FOREWORD

This Service Manual has been prepared with the latest service information available at the time of publication. It is subdivided into various group categories and each section contains diagnosis, disassembly, repair, and installation procedures along with complete specifications and tightening references. Use of this manual will aid in properly performing any servicing necessary to maintain or restore the high levels of performance and reliability designed into these outstanding vehicles.

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NOTE:
For Engine, Chassis & Body, refer to ...
Volume-1
"Engine, Chassis & Body"
## FUSIBLE LINK AND FUSE LOCATION

<table>
<thead>
<tr>
<th>Name</th>
<th>Symbol</th>
<th>Name</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dedicated fuse ① to ⑦</td>
<td>B</td>
<td>Fusible link</td>
<td>A</td>
</tr>
<tr>
<td>Dedicated fuse ⑧ ⑨</td>
<td>C</td>
<td>Multi-purpose fuse</td>
<td>D</td>
</tr>
<tr>
<td>Dedicated fuse ⑩</td>
<td>E</td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>

**NOTE**
The "Name" column is arranged in alphabetical order.

### <Engine compartment>

![Diagram of engine compartment with fusible link and multi-purpose fuse locations]

### <Interior>

![Diagram of interior with multi-purpose fuse location]

TSB Revision
## INSPECTION TERMINAL LOCATION

<table>
<thead>
<tr>
<th>Name</th>
<th>Symbol</th>
<th>Name</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine speed detection connector</td>
<td>A</td>
<td>Ignition timing adjustment connector</td>
<td>A</td>
</tr>
<tr>
<td>Fuel pump check connector</td>
<td>A</td>
<td>Self-diagnosis check connector</td>
<td>B</td>
</tr>
</tbody>
</table>

**NOTE**
The “Name” column is arranged in alphabetical order.

### <Engine compartment>

![Engine compartment diagram](image1)

### <Interior>

![Interior diagram](image2)

**TSB Revision**
GROUNDING LOCATION

<Engine compartment>

1. Strut assembly
2. Wiper motor
3. Strut assembly
4. Strut assembly

TSB Revision
<Interior>

5. Front deck crossmember

6. Center reinforcement (RH)

7. Front floor crossmember

8. ABS control unit
<table>
<thead>
<tr>
<th>Name</th>
<th>Symbol</th>
<th>Name</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diode (ABS circuit)</td>
<td>A</td>
<td>Diode (Seat belt warning circuit)</td>
<td>C</td>
</tr>
<tr>
<td>Diode (Fog light circuit)</td>
<td>D</td>
<td>Diode (Theft-alarm circuit)</td>
<td>C</td>
</tr>
<tr>
<td>Diode (MPI circuit)</td>
<td>B</td>
<td>Diode (4WS fluid level warning light circuit)</td>
<td>E</td>
</tr>
</tbody>
</table>

**<Engine compartment>**

![Diagram](image1)

**<Dash panel>**

![Diagram](image2)

**<Instrument panel>**

![Diagram](image3)
Remarks
(1) Alphabets assigned to the connectors are keyed to those assigned to connectors on P.9.
(2) Terminals of the harness side connector are indicated in parentheses ( ).
## CENTRALIZED JUNCTION

**FUSIBLE LINK (Relay box in engine compartment)**

<table>
<thead>
<tr>
<th>No.</th>
<th>Circuit</th>
<th>Housing color</th>
<th>Rated capacity (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Alternator circuit</td>
<td>Wine red</td>
<td>120</td>
</tr>
<tr>
<td>2</td>
<td>Pop-up motor circuit</td>
<td>Pink</td>
<td>30</td>
</tr>
<tr>
<td>3</td>
<td>Lighting circuit</td>
<td>Green</td>
<td>40</td>
</tr>
<tr>
<td>4</td>
<td>Ignition switch circuit</td>
<td>Pink</td>
<td>30</td>
</tr>
<tr>
<td>5</td>
<td>Radiator fan motor and condenser fan motor circuit</td>
<td>Green</td>
<td>40</td>
</tr>
<tr>
<td>6</td>
<td>Junction block (Multipurpose fuse 1, 6, 12, 18, 21)</td>
<td>Green</td>
<td>40</td>
</tr>
<tr>
<td>7</td>
<td>ABS circuit</td>
<td>Yellow</td>
<td>60</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Power window circuit</td>
<td>Pink</td>
<td>30</td>
</tr>
<tr>
<td>10</td>
<td>Defogger circuit</td>
<td>Green</td>
<td>40</td>
</tr>
<tr>
<td>11</td>
<td>Active aero circuit</td>
<td>Pink</td>
<td>30</td>
</tr>
</tbody>
</table>
## DEDICATED FUSE

<table>
<thead>
<tr>
<th>Power supply circuit</th>
<th>No.</th>
<th>Rated capacity (A)</th>
<th>Housing color</th>
<th>Circuit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery</td>
<td>1</td>
<td>20</td>
<td>Yellow</td>
<td>MPI circuit</td>
</tr>
<tr>
<td>Taillight relay</td>
<td>2</td>
<td>15</td>
<td>Blue</td>
<td>Taillight circuit</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fusible link ①</td>
<td>4</td>
<td>15</td>
<td>Blue</td>
<td>Fog light circuit</td>
</tr>
<tr>
<td>Headlight relay</td>
<td>5</td>
<td>10</td>
<td>Red</td>
<td>Upper beam circuit</td>
</tr>
<tr>
<td>Battery</td>
<td>6</td>
<td>10</td>
<td>Red</td>
<td>Horn circuit</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>10</td>
<td>Red</td>
<td>ABS circuit</td>
</tr>
<tr>
<td>Fusible link ⑤</td>
<td>8</td>
<td>20</td>
<td>Yellow</td>
<td>Condenser fan motor circuit</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>10</td>
<td>Red</td>
<td>Air conditioner circuit</td>
</tr>
<tr>
<td>Defogger relay</td>
<td>10</td>
<td>10</td>
<td>Red</td>
<td>Remote controlled mirror heater circuit</td>
</tr>
</tbody>
</table>

*<Relay box in engine compartment>*

*<Air conditioner relay box in engine compartment>*

*<Interior relay box>*

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TSB Revision
## GENERAL – Centralized Junction

### MULTI-PURPOSE FUSE (In junction block)

<table>
<thead>
<tr>
<th>Power supply circuit</th>
<th>No.</th>
<th>Rated capacity (A)</th>
<th>Load circuit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery</td>
<td>1</td>
<td>10</td>
<td>Combination meter, Starter relay &lt;A/T&gt;, Theft-alarm starter relay &lt;M/T&gt;, Ignition key cylinder, Illumination light, Seat belt buzzer, Seat belt solenoid (LH), ETACS unit, Active aero control unit</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ignition switch</td>
<td>IG2</td>
<td>3</td>
<td>Radiator fan motor relay, Air conditioner compressor, Lock controller, Blower motor relay, Air conditioner control unit, ABS relay, ECS control unit, Condenser fan motor relay, Defogger relay</td>
</tr>
<tr>
<td>ACC</td>
<td>4</td>
<td>10</td>
<td>Audio, Motor antenna control unit, Auto-cruise control unit, ETACS unit</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>15</td>
<td>Remote controlled mirror, Cigarette lighter</td>
</tr>
<tr>
<td>Battery</td>
<td>6</td>
<td>10</td>
<td>Door lock relay, Motor antenna control unit, Fog light relay, Daytime running light relay</td>
</tr>
<tr>
<td>Ignition switch IG2</td>
<td>7</td>
<td>10</td>
<td>ELC-4 A/T control unit</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ignition switch</td>
<td>ACC</td>
<td>9</td>
<td>Wiper relay, Wiper motor, Washed motor, Rear intermittent wiper relay</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10</td>
<td>Accessory socket, Headlight relay (Vehicles without theft-alarm system)</td>
</tr>
<tr>
<td>IG1</td>
<td>11</td>
<td>15</td>
<td>Combination meter, Combination gauge, ETACS unit, Speed sensor, Motor antenna control unit, Turn signal and hazard flasher unit, Auto cruise control main switch, Active aero control unit</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>15</td>
<td>Ignition coil, Power transistor, Engine control relay, Engine control unit</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Battery</td>
<td>14</td>
<td>10</td>
<td>Theft-alarm horn, Theft-alarm horn relay</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Battery</td>
<td>16</td>
<td>30</td>
<td>Blower motor</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>15</td>
<td>Rear combination light, High-mounted stop light</td>
</tr>
<tr>
<td>Ignition switch IG1</td>
<td>18</td>
<td>10</td>
<td>Back-up light, Turn-signal and hazard flasher unit, SRS diagnosis unit</td>
</tr>
<tr>
<td>Battery</td>
<td>19</td>
<td>10</td>
<td>Engine control unit, ELC-4 A/T control unit, ETACS unit, Dome light, Foot light, Door light, Luggage compartment light, Combination meter, Air conditioner control unit, Auto-cruise control unit, Audio, Seat belt solenoid (RH), ECS control unit, Active aero control unit</td>
</tr>
</tbody>
</table>

[Multi-purpose fuse diagram]
**CENTRALIZED RELAY**

<table>
<thead>
<tr>
<th>Classification</th>
<th>Name</th>
<th>Classification</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relay box in engine compartment</td>
<td>A-01X Headlight relay</td>
<td>Air conditioner relay box in engine compartment</td>
<td>A-31X Condenser fan motor relay (HI)</td>
</tr>
<tr>
<td></td>
<td>A-02X ABS power relay</td>
<td></td>
<td>A-32X Radiator fan motor control relay</td>
</tr>
<tr>
<td></td>
<td>A-03X Fog light relay</td>
<td></td>
<td>A-33X Magnetic clutch relay</td>
</tr>
<tr>
<td></td>
<td>A-04X Radiator fan motor relay (LO)</td>
<td></td>
<td>A-34X Condenser fan motor relay (LO)</td>
</tr>
<tr>
<td></td>
<td>A-05X Taillight relay</td>
<td>Interior relay box</td>
<td>C-04X Door lock relay</td>
</tr>
<tr>
<td></td>
<td>A-06X Horn relay</td>
<td></td>
<td>C-05X</td>
</tr>
<tr>
<td></td>
<td>A-07X Radiator fan motor relay (HI)</td>
<td></td>
<td>C-06X Defogger relay</td>
</tr>
<tr>
<td></td>
<td>A-08X Pop-up motor relay</td>
<td></td>
<td>C-07X Power window relay</td>
</tr>
<tr>
<td></td>
<td>A-09X Starter relay</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A-10X Alternator relay</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A-11X Jumper connector</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
INSPECTION OF HARNESS CONNECTOR

CONTINUITY AND VOLTAGE TEST FOR CONNECTOR

Following procedures shall be followed for testing continuity and voltage at connector in order to prevent improper contact and deterioration of waterproofing in connector.

CONVENTIONAL (NON-WATERPROOF) CONNECTOR

Check shall be done by inserting a probing needle from harness side.

WATER PROOF CONNECTOR

Caution
Do not insert probing needle from harness side as it will deteriorate waterproofing and cause rusting. To inspect the energized circuit, use the ECI checker.

CHECK FOR IMPROPER ENGAGEMENT OF TERMINAL

When the terminal stopper of connector is out of order, engagement of male and female terminals becomes improper even when the connector itself is engaged perfectly and the terminal sometimes slips out to the rear side of connector. Ascertain, therefore, that each terminal does not come off the connector by pulling each harness wire.

ENGAGING AND DISENGAGING OF CONNECTOR TERMINAL

Connectors which are loose shall be rectified by removing the female terminal from connector housing and raising its lance to establish a more secure engagement. Removal of connector terminal used for ECI and 4 A/T control circuit shall be done in the following manner.

COMPUTER CONNECTOR

(1) Insert screwdriver [1.4 mm (.06 in.) width] as shown in the figure, disengage front holder and remove it.
(2) Insert harness of terminal to be rectified deep into connector from harness side and hold it there.

(3) Insert tip of screwdriver [1.4 mm (.06 in.) width] into connector in a manner as shown in the figure, raise housing lance slightly with it and pull out harness.

**Caution**
Tool No. 753787-l supplied by AMP can be used instead of screwdriver.

(4) Insert needle through a hole provided on terminal and raise contact point of male terminal.

**ROUND WATERPROOF CONNECTOR**
(1) Remove waterproof cap by using a screwdriver.
(2) Insert tip of screwdriver [1.4 mm (.06 in.) or 2.0 mm (.08 in.) width] into connector in a manner as shown in the figure, raise housing lance slightly with it and pull out harness.

(3) Insert screwdriver through a hole provided on terminal and raise contact point of male terminal.
GENERAL — Inspection of Harness Connector

RECTANGULAR WATERPROOF CONNECTOR

1) Disengage front holder by using a screwdriver and remove it.

2) Insert tip of screwdriver [*0.8 mm (.03 in.) width] into connector in a manner as shown in the figure, push it lightly to raise housing lance and pull out harness. *If right size screwdriver is not available, convert a conventional drive to suit the size.

3) Press contact point of male terminal down by holding a screwdriver [1.4 mm (.06 in.) width] in a manner as shown in the figure.

INJECTOR CONNECTOR

1) Remove waterproof cap.

2) Insert tip of screwdriver [1.4 mm (.06 in.) width] into connector in a manner as shown in the figure, press in terminal lance and pull out harness.

3) Press contact point of male terminal down by holding a screwdriver [1.4 mm (.06 in.) width] in a manner as shown in the figure.

Caution
Correct lance to be in proper condition before terminal is inserted into connector.
HOW TO DIAGNOSE

The most important point in troubleshooting is to determine “Probable Causes”. Once the probable causes are determined, parts to be checked can be limited to those associated with such probable causes. Therefore, unnecessary checks can be eliminated. The determination of the probable causes must be based on a theory and be supported by facts and must not be based on intuition only.

TROUBLESHOOTING STEPS

If an attempt is made to solve a problem without going through correct steps for troubleshooting, the problem symptoms could become more complicated, resulting in failure to determine the causes correctly and making incorrect repairs. The four steps below should be followed in troubleshooting.

1. Observation of Problem Symptoms
   - Observe the symptom carefully. Check if there are also other problems.

2. Determination of Probable Causes
   - In determining the probable causes, it is necessary to check the wiring diagram to understand the circuit as a system. Knowledge of switches, relays and other parts is necessary for accurate determination. The causes of similar problems in the past must be taken into account.

3. Checking of Parts Associated with Probable Causes and Determination of Faulty Parts
   - Troubleshooting is carried out by making step by step checks until the true cause is found. Always go through the procedures considering what check is to be made where for the best results.

   After the problems are corrected, be sure to check that the system operates correctly. Also, check that new problems have not been caused by the repair.

INFORMATION FOR DIAGNOSIS

This manual contains the cable diagrams as well as the individual circuit drawings, operational explanations, and troubleshooting hints for each component required to facilitate the task of troubleshooting. The information is compiled in the following manner:

1. Cable diagrams show the connector positions, etc., on the actual vehicle as well as the harness path.
2. Circuit drawings show the configuration of the circuit with all switches in their normal positions.
3. Operational explanations include circuit drawings of voltage flow when the switch is operated and how the component operates in reaction.
4. Troubleshooting hints include numerous examples of problems which might occur, traced backward in a common-sense manner to the origin of the trouble.

Problems whose origins may not be found in this manner are pursued through the various system circuits.

NOTE

Components of ECI, ETACS, ECS, etc. with ECU do not include 3 and 4 above. For this information, refer to a manual which includes details of these components.
INSPECTION
1. Visual and aural checks
Check relay operation, blower motor rotation, light illumination, etc. visually or aurally. The flow of current is invisible but can be checked by the operation of the parts.

2. Simple checks
For example, if a headlight does not come on and a faulty fuse or poor grounding is suspected, replace the fuse with a new one or ground the light to the body by a jumper wire to determine which part is responsible for the problem.

3. Checking with instruments
Use an appropriate instrument in an adequate range and read the indication correctly. You must have sufficient knowledge and experience to handle instruments correctly.

INSPECTION INSTRUMENTS
In inspection, make use of the following instruments.
1. Test lights
A test light consists of a 12V bulb and lead wires. It is used to check voltages or short circuits.

2. Self-power test light
A self-power test light consists of a bulb, battery and lead wires connected in series. It is used to check continuity or grounding.
3. Jumper wire
   A jumper wire is used to close an open circuit. Never use one to connect a power supply directly to a load.

4. Voltmeter
   A voltmeter is used to measure the circuit voltage. Normally, the positive (red lead) probe is applied to the point of voltage measurement and the negative (black lead) probe to the body ground.

5. Ohmmeter
   An ohmmeter is used to check continuity or measure resistance of a switch or coil. If the measuring range has been changed, the zero point must be adjusted before measurement.

CHECKING SWITCHES
In a circuit diagram, a switch is represented by a symbol and in the idle state.

1. Normal open or normal close switch
   Switches are classified into those which make the circuit open and those which make the circuit closed when off.
2. SWITCH CONNECTION

This figure illustrates a complex switch. The continuity between terminals at each position is as indicated in the table below.

<table>
<thead>
<tr>
<th>Position</th>
<th>Terminal No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>OFF</td>
<td>0</td>
</tr>
<tr>
<td>1st stage</td>
<td>0</td>
</tr>
<tr>
<td>2nd stage</td>
<td>0</td>
</tr>
<tr>
<td>3rd stage</td>
<td>0</td>
</tr>
<tr>
<td>4th stage</td>
<td></td>
</tr>
</tbody>
</table>

NOTE
O→O denotes continuity between terminals.

CHECKING RELAYS

1. When current flows through the coil of a relay, its core is magnetized to attract the iron piece, closing (ON) the contact at the tip of the iron piece. When the coil current turned off, the iron piece is made to return to its original position by a spring, opening the contact (OFF).

2. By using a relay, a heavy current can be turned on and off by a switch of small capacity. For example, in the circuit shown here, when the switch is turned on (closed), current flows to the coil of the relay. Then, its contact is turned on (closed) and the light comes on. The current flowing at this time to the switch is the relay coil current only and is very small.

3. The relays may be classified into the normal open type and the normal close type by their contact construction.

NOTE
The deenergized state means that no current is flowing through the coil and the energized state means that current is flowing through the coil.
How to Diagnose

Deenergized state

State of fuse blown due to thermal fatigue

Current flows

Current does not flow

When a normal close type relay, as illustrated here is checked, there should be continuity between terminals (1) and (2) and between terminals 3 and 4 when the relay is deenergized, and the continuity should be lost between terminals 3 and 4 when the battery voltage is applied to the terminals 1 and 2. A relay can be checked in this manner and it cannot be determined if a relay is okay or faulty by checking its state only when it is deenergized (or energized).

CHECKING FUSES

A blade type fuse has test taps provided to allow checking of the fuse itself without removing it from the fuse block. The fuse is okay if the test light comes on when its one lead is connected to the test taps (one at a time) and the other lead is grounded. (Change the ignition switch position adequately so that the fuse circuit becomes live.)

CAUTIONS IN EVENT OF BLOWN FUSE

When a fuse is blown, there are two probable causes as follows: One is that it is blown due to flow of current exceeding its rating.

The other is that it is blown due to repeated on/off current flowing through it. Which of the two causes is responsible can be easily determined by visual check as described below.

(1) Fuse blown due to current exceeding rating

The illustration shows the state of a fuse blown due to this cause. In this case, do not replace the fuse with a new one hastily since a current heavy enough to blow the fuse has flowed through it. First, check the circuit for shorting and check for abnormal electric parts. Only after the correction of such shorting or parts, fuse of the same capacity should be used as a replacement. Never use a fuse of larger capacity than the one that has blown. If such a fuse is used, electric parts or wirings could be damaged before the fuse blows in the event an overcurrent occurs again.

(2) Fuse blown due to repeated current on/off

The illustration shows the state of a fuse blown due to repeated current on/off. Normally, this type of problem occurs after fairly long period of use and hence is less frequent than the above type. In this case, you may simply replace with a new fuse of the same capacity.
CHECKING CABLES AND WIRES
1. Check connections for looseness, rust and stains.
2. Check terminals and wires for corrosion by battery electrolyte, etc.
3. Check terminals and wires for open circuit or impending open circuit.
4. Check wire insulation and coating for damage, cracks and degrading.
5. Check conductive parts of terminals for contact with other metallic parts (vehicle body and other parts).
6. Check grounding parts to verify that there is complete continuity between attaching bolt(s) and vehicle body.
7. Check for incorrect wiring.
8. Check that wirings are so clamped as to prevent contact with sharp corners of the vehicle body, etc. or hot parts (exhaust manifold, pipe, etc.).
9. Check that wirings are clamped firmly to secure enough clearance from the fan pulley, fan belt and other rotating or moving parts.
10. Check that the wirings between the fixed parts such as the vehicle body and the vibrating parts such as the engine are made with adequate allowance for vibrations.

HANDLING ON-VEHICLE BATTERY
When checking or servicing does not require power from the on-vehicle battery, be sure to disconnect the cable from the battery (−) terminal. This is to prevent problems that could be caused by shorting of the circuit. Disconnect the (−) terminal first and reconnect it last.

TROUBLESHOOTING
A circuit consists of the power supply, switch, relay, load, ground, etc. There are various methods to check a circuit including an overall check, voltage check, shortcircuit check and continuity check. Each of these methods is briefly described in the following.

1. VOLTAGE CHECK
   (1) Ground one lead wire of the test light. If a voltmeter is used instead of the test light, ground the grounding side lead wire.
   (2) Connect the other lead wire of the test light to the power side terminal of the switch connector. The test light should come on or the voltmeter should indicate a voltage.
   (3) Then, connect the test light or voltmeter to the motor connector. The test light should not come on, or the voltmeter should indicate no voltage. When the switch is turned on in this state, the test light should come on, or the voltmeter should indicate a voltage, with motor starting to run.
   (4) The circuit illustrated here is normal but if there is any problem such as the motor failing to run, check voltages beginning at the connector nearest to the motor until the faulty part is identified.
2. CHECKING SHORT CIRCUITS

A blown fuse indicates that a circuit is shorted. The circuit responsible can be determined by the following procedures.

- Remove the blown fuse and connect a test light in its place (switch is in the off position).

  - Test light comes on: YES
    - Short circuit between fuse block and switch (A)

  - Test light remains on: NO
    - Short circuit between the switch and illumination light connector (B)

  - Turn on the switch (Test light comes on but the illumination light does not come on)

    - Disconnect the illumination light connector

    - Test light remains on: YES
      - Short circuit between the switch and illumination light connector (B)

    - NO
3. CHECKING CONTINUITY

(1) When the switch is in the OFF position, the self power test light should come on or the ohmmeter should read 0 ohm only when the terminals 1 and 2 are interconnected.

(2) When the switch is the ON position, the self power test light should come on or the ohmmeter should read 0 ohm only when the terminals 3 and 4 are interconnected.
# CONFIGURATION DIAGRAM

## CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dash Panel</td>
<td>34</td>
</tr>
<tr>
<td>Engine and Transaxle &lt;A/T&gt;</td>
<td>32</td>
</tr>
<tr>
<td>Engine and Transaxle &lt;M/T&gt;</td>
<td>30</td>
</tr>
<tr>
<td>Engine Compartment</td>
<td>28</td>
</tr>
<tr>
<td>How to Read Configuration Diagrams</td>
<td>27</td>
</tr>
<tr>
<td>Instrument Panel and Floor Console</td>
<td>36</td>
</tr>
<tr>
<td>Interior</td>
<td>38</td>
</tr>
<tr>
<td>Luggage Compartment</td>
<td>40</td>
</tr>
<tr>
<td>Overall Configuration Diagram</td>
<td>26</td>
</tr>
</tbody>
</table>
HOW TO READ CONFIGURATION DIAGRAMS

The wiring harness diagrams clearly show the connector locations and harness routings at each site on actual vehicles.

Denotes connector No.
The same connector No. is used throughout the circuit diagrams to facilitate connector location searches.
The first alphabetical symbol indicates the location site of the connector and a number that follows in the unique number.
Numbers are assigned to parts in clockwise order on the diagram.
In case connectors of the same shape (same number of poles) are located close to each other, connector colors are shown to aid identification.

Example: A-12 (black)

- Connector color
- Number specific to connector (serial number)
- Connector location site symbol
  A: Engine compartment
  B: Engine and transaxle
  C: Dash panel
  D: Instrument panel and floor console
  E: Interior
  F: Luggage compartment

Denotes a section covered by a corrugated tube.

Denotes a ground point.
Same ground number is used throughout circuit diagrams to facilitate search of ground point. Refer to GROUNDING LOCATION for details of groundpoints.

TSB Revision
ENGINE COMPARTMENT

Connect symbol A

A-01X Headlight relay
A-02X ABS power relay
A-03X Foglight relay
A-04X Radiator fan motor relay (LO)
A-05X Taillight relay
A-06X Horn relay
A-07X Radiator fan motor relay (HI)
A-08X Pop-up motor relay
A-09X Starter relay
A-10X Alternator relay
A-11X Jumper connector
A-12 ABS front speed sensor (RH)
A-13 ECS front shock absorber (RH)
A-14 Washer fluid level sensor
A-15 Front wiper motor
A-16 Engine speed detection connector
A-17 Fuel pump check connector
A-18 Ignition timing adjustment connector
A-19 Front wiper motor

Refer to CENTRALIZED JUNCTION

A-20 Purge control solenoid valve
A-21 EGR control solenoid valve (Vehicles for California)
A-22 EGR temperature sensor (Vehicles for California)
A-23 No connection <Turbo>
A-24 Brake fluid level sensor
A-25 ECS front shock absorber (LH)
A-26 Theft-alarm horn
A-27 Auto-cruise vacuum pump
A-28 ABS front speed sensor (LH)
A-29 4WS fluid level sensor <Turbo>
ENGINE HOOD

A-73

A-41 Headlight (LH)
A-42 Front wiring harness and headlight wiring harness (LH) combination
A-43 Foglight (LH)
A-44 Pop-up motor (LH)
A-45 Condenser fan motor
A-46 Inspection light
A-47 Horn
A-50 Fuel pump resistor <Turbo>
A-51 A/T fluid temperature sensor
A-52 Kickdown servo switch <A/T>
A-53 Pulse generator <A/T>
A-54 Radiator fan motor
A-55 Engine coolant level sensor
A-56 Active aerodynamic front venturi skirt
A-57 Fog light (RH)
A-58 Pop-up motor (RH)
A-59 Front wiring harness and headlight wiring harness (RH) combination
A-60 Headlight (RH)
A-61 Front combination light (RH)
A-62 SRS front impact sensor (RH)
A-63 ABS hydraulic unit
A-64 Hood switch
A-65 Diode (for ABS circuit)
A-66 Diode (for ABS circuit)
A-67 Front wiring harness and control wiring harness combination
A-68 Fuel pressure solenoid valve <Turbo>
A-69 Pop-up motor (RH)
A-69 Resistor <Turbo>
A-70 Waste gate solenoid valve <Turbo>
A-71 Fuel pressure solenoid valve <Turbo>
A-72 Control wiring harness and solenoid valve harness combination
A-73 Inspection light

Remarks
(1) The mark * shows the standard mounting position of wiring harness.
(2) For details concerning the ground point (example: n), refer to P.4.

TSB Revision
ENGINE AND TRANSAXLE \(<\text{M/T}>\)

**Connector symbol**

![Connector symbol](image)

**Front View**

B-01  Engine coolant temperature gauge unit
B-02  Engine coolant temperature sensor
B-03  Engine coolant temperature switch (for air conditioner circuit)
B-04  Crank angle sensor and top dead center sensor
B-05  Throttle position sensor
B-06  Control wiring harness and oil pressure wiring harness combination
B-07  Control wiring harness and injector wiring harness combination
B-08  Detonation sensor

![Diagram of engine and transaxle](image)

B-09  Variable induction servomotor
B-10  [with intake control valve position sensor] <Non-Turbo>
B-11  Injector No. 5
B-12  Injector No. 3
B-13  Injector No. 1
B-14  Ignition coil
B-15  Capacitor
B-16  Oxygen sensor (LH) <Turbo>
B-17  Alternator
B-18  Alternator
B-19  Oxygen sensor (RH) <Turbo>
B-20  Magnetic clutch
B-21  Power transistor

**TSB Revision**
Rear View

- B-23 Starter motor
- B-24
- B-25 Back-up light switch
- B-26
- B-27
- B-28 Fuel pump relay <Turbo>
- B-29 Air flow sensor (with intake air temperature sensor and atmospheric sensor)
- B-30 Control wiring harness and battery cable combination
- B-31 Injector No. 2
- B-32 Injector No. 4
- B-33 Injector No. 6
- B-34 Speed sensor <Turbo>
- B-35 Idle speed control servo (stepper motor)
- B-36 Oil pressure gauge unit
- B-37 Oil pressure switch
- B-38 Power steering oil pressure switch

Remarks
(1) The mark ★ shows the standard mounting position of wiring harness.
(2) For details concerning the ground point (example: [3]), refer to P. 4.
(3) "-" means that the connector with code-number is not used.

TSB Revision
ENGINE AND TRANSAXLE <A/T>

Front View

- B-01 Engine coolant temperature gauge unit
- B-02 Engine coolant temperature sensor
- B-03 Engine coolant temperature switch (for air conditioner circuit)
- B-04 Crank angle sensor and top dead center sensor
- B-05 Throttle position sensor
- B-06 Control wiring harness and oil pressure wiring harness combination
- B-07 Control wiring harness and injector wiring harness combination
- B-08 Detonation sensor
- B-09 Variable induction servomotor
- B-10 1(with intake control valve position sensor)
- B-11 Injector No. 5
- B-12 Injector No. 3
- B-13 Injector No. 1
- B-14 Ignition coil
- B-15 Capacitor
- B-16 —
- B-17 1Alternator
- B-18 —
- B-19 —
- B-20 Magnetic clutch
- B-21 —
- B-22 1Power transistor

* B-17
* B-20
* B-14
* B-13
* B-12
* B-11
* B-10
* B-09
* B-08
* B-07
* B-06
* B-05
* B-04
* B-03
* B-02
* B-01

1 TSB Revision
B-23  Starter motor
B-24  
B-25  
B-26  Inhibitor switch
B-27  ELC-4 A/T control solenoid valve
B-28  
B-29  Air flow sensor (with intake air temperature sensor and atmospheric sensor)
B-30  Control wiring harness and battery cable combination
B-31  Injector No. 2
B-32  Injector No. 4
B-33  Injector No. 6
B-34  
B-35  Idle speed control servo (stepper motor)
B-36  Oil pressure gauge unit
B-37  Oil pressure switch
B-38  Power steering oil pressure switch

Remarks
(1) The mark ★ shows the standard mounting position of wiring harness.
(2) For details concerning the ground point (example: ●), refer to P.4.
(3) "—" means that the connector with code-number is not used.
34 CONFIGURATION DIAGRAM - Dash Panel

DASH PANEL

Connector symbol

C

JUNCTION BLOCK

<Front side>

C-01 Body wiring harness (LH)
C-02 and front wiring harness combination
C-04X Door lock relay
C-05X Defogger relay
C-06X Power window relay
C-08 Diode (for seat belt warning circuit)
C-10 Column switch
C-11 Accelerator pedal switch
C-12 Diode (for theft-alarm circuit)
C-13 Control wiring harness and instrument panel wiring harness combination
C-14 Body wiring harness (LH) and instrument panel wiring harness combination
C-15 Air conditioner control panel
C-16 Air conditioner switch
C-18 Air conditioner switch
C-19 Blowerswitch
C-20 Heater control panel illumination light
C-21 Blend air damper control motor

<Front side>

C-04X
C-05X
C-06X
C-07X

C-01
C-02
C-03

C-07
C-09
C-10
C-11
C-12
C-13
C-08

Junction block

C-67
C-66
C-65

C-64 C-63 C-62 C-61
C-60 C-59 C-58 C-57

C-01 C-02 C-03

C-07 X 

Refer to CENTRALIZED JUNCTION

C-22 Mode selection damper control motor
C-23 Power transistor (for full-auto air conditioner circuit)
C-24 Blower resistor
C-25 Air conditioner control unit
C-26 Air-inlet sensor <Manual air conditioner>
C-27 Air selection damper control motor
C-28 Body wiring harness (LH) and control harness combination
C-29 Body wiring harness (LH) and front wiring harness combination
C-30 Body wiring harness (LH) and body wiring harness (RH) combination
C-31 Foot light (RH)
C-32 Body wiring harness (RH) and front wiring harness combination
C-33 Body wiring harness (RH) and front wiring harness combination
C-34 Body wiring harness (RH) and body wiring harness (RH) combination
C-35 Auto-cruise control unit
C-36 Body wiring harness (RH) and control wiring harness combination
C-37 Blower motor
C-38 Blower motor relay (HI)
C-39 Air conditioner compressor or lock controller
C-40 Air-inlet sensor <Manual air conditioner>
C-41 TSB Revision
Air-thermo sensor
Engine coolant temperature sensor
Engine control relay
Overdrive switch
ELC-4 A/T control unit
Air conditioner control unit
<Full-auto air conditioner>
Engine control unit
Oxygen sensor <Non-Trubo>
Theft-alarm starter relay
Clock spring
Key reminder switch
Ignition switch
Steering wheel angle speed sensor
Stop light switch
Clutch pedal switch (for auto-cruise control circuit)
Clutch pedal switch (for theft-alarm circuit)
ETACS unit
Footlight (LH)
Front wiring harness and junction block combination
Adapter wiring harness and junction block combination
Theft-alarm horn relay
Blower motor relay
Roof wiring harness and junction block combination
Body wiring harness (LH) and junction block combination
Self-diagnosis check connector
Body wiring harness (LH) and junction block combination

Remarks
(1) The mark ✷ shows the standard mounting position of wiring harness.
(2) The details concerning the ground point (example: □), refer to P.5.
(3) "-" means that the connector with code-number is not used.
INSTRUMENT PANEL AND FLOOR CONSOLE

Connector symbol

D

- D-01 Pop-up switch and fog light switch
- D-02 Front speaker (LH)
- D-03 Combination meter
- D-04 Defogger switch and ECS switch
- D-05 Diode (for fog light circuit)
- D-06 Hazard switch
- D-07 Combination gauge
- D-08 Diode (for 4WS fluid level warning light circuit)
- D-09 Glove box illumination light
- D-10 Photosensor

- D-11 Front speaker (RH)
- D-12 Glove box illumination light switch
- D-13 Instrument panel wiring harness and control wiring harness combination
- D-14 Instrument panel wiring harness and body wiring harness (RH) combination
- D-15 Ashtray illumination light
- D-16 Power seat switch
- D-17 Cigarette lighter illumination light
- D-18 Cigarette lighter
- D-19 Body wiring harness (LH) and console wiring harness combination
- TSB Revision
### CONFIGURATION DIAGRAM – Instrument Panel and Floor Console

#### Instrument Panel and Floor Console

- **D-13**
- **D-14**
- **D-15**
- **D-16**
- **D-17**
- **D-18**
- **D-19**
- **D-20**
- **D-21**
- **D-22**
- **D-23**
- **D-24**
- **D-25**
- **D-26**
- **D-27**
- **D-28**
- **D-29**
- **D-30**
- **D-31**
- **D-32**
- **D-33**
- **D-34**
- **D-35**
- **D-36**
- **D-37**
- **D-38**
- **D-39**
- **D-40**
- **D-41**
- **D-42**
- **D-43**
- **D-44**
- **D-45**

#### SRS diagnosis unit
- **D-25**

#### ABS G sensor
- **D-27**

#### Parking brake switch
- **D-28**

#### Active aero switch
- **D-29**

#### Accessory socket
- **D-30**

#### Auto-cruise main switch
- **D-32**

#### Seatbelt warning buzzer
- **D-33**

#### Accessory socket
- **D-35**

#### Radio
- **D-36**

#### Rear wiper and washer switch
- **D-37**

#### Active exhaust switch
- **D-38**

#### Remote-control mirror switch
- **D-39**

#### Rheostat
- **D-40**

#### Instrument panel wiring harness and accessory harness combination
- **D-41**

#### Body wiring harness (LH) combination
- **D-42**

#### Instrument panel wiring harness and adapter wiring harness combination
- **D-43**

#### Instrument panel wiring harness and front wiring harness combination
- **D-44**

### Remarks

The remark ★ shows the standard mounting position of wiring harness.

---

**TSB Revision**
E-01  Body wiring harness (RH) and door wiring harness (RH) combination
E-02  Vanity mirror illumination light (LH)
E-03  Door mirror (RH)
E-04  Door speaker (RH)
E-05  Dome light
E-06  Power window sub switch
E-07  Vanity mirror illumination light (RH)
E-08  Power window motor (RH)
E-09  Door light (RH)
E-10  Door key cylinder unlock switch (RH)
E-11  Door lock actuator (RH)
E-12  ABS control unit
E-13  ABS resistor <AWD>
E-14  Front seat belt solenoid (RH)
E-15  Door switch (RH)
E-16  ABS rear speed sensor (RH)
E-17  No connection
E-18  Rear intermittent wiper relay
E-19  ABS rear speed sensor (LH)
E-20  Front seat belt solenoid (LH)
E-21  Door switch (LH)
E-22 Door lock actuator (LH)
E-23 Door key cylinder unlock switch (LH)
E-24 Front seat belt switch (RH)
E-25 Door light (LH)
E-26 Front seat belt switch (LH)
E-27 Power seat assembly
E-28 ECSR sensor
E-29 Door speaker
E-30 Turn signal and hazard flasher unit
E-31 Diode (for MPI circuit)
E-32 Body wiring harness (LH) and door wiring harness (LH) combination

E-33 Door mirror (LH)
E-34 Power window main switch
E-35 Power window motor (LH)

Remarks
(1) The mark * shows the standard mounting position of wiring harness.
(2) For details concerning the ground point (example: □ ), refer to P.5.
LUGGAGE COMPARTMENT

Connector symbol

| F-01 | Interior temperature sensor |
| F-02 | Defogger (+) |
| F-03 | Rear wiper motor |
| F-04 | High-mounted stoplight or active aerorear spoiler |
| F-05 | Defogger (-) |
| F-06 | Rear speaker (RH) |
| F-07 | ECS rear shock absorber (RH) |
| F-08 | Luggage compartment light |
| F-09 | ABS resistor <FWD> |
| F-10 | Rear combination light (RH) |
| F-11 | Back-up light (RH) |
| F-12 | ECS control unit |
| F-13 | Body wiring harness (RH) and fuel tank wiring harness combination |
| F-14 | Rear wiper motor |
| F-15 | Fuel tank |
| F-16 | License plate light (RH) |
| F-17 | Body wiring harness (RH) and rear bumper wiring harness combination |
| F-18 | Body wiring harness (RH) and body |
| F-19 | Body wiring harness (LH) and body |
| F-20 | Body wiring harness (RH) combination |
| F-21 | License plate light (LH) |
| F-22 | Luggage compartment light switch |
| F-23 | Liftgate cylinder lock switch |
| F-24 | Liftgate switch |
| F-25 | Backup light (LH) |
| F-26 | Active exhaust control unit |
| F-27 | Active aerorear spoiler |
| F-28 | Body wiring harness (LH) and liftgate wiring harness combination |
| F-29 | Active exhaust actuator assembly |
| F-30 | Rear combination light (LH) |
| F-31 | Motor antenna control unit |
| F-32 | ECS rear shock absorber (LH) |
| F-33 | Rear speaker (LH) |
| F-34 | Body wiring harness (LH) and liftgate wiring harness combination |

Remarks

(1) The mark ★ shows the standard mounting position of wiring harness.
(2) For details concerning the ground point (example: 10), refer to P.6.
CIRCUIT DIAGRAMS

CONTENTS

Active Aero Circuit ................................................................. 142
Active Exhaust System Circuit .................................................. 119
Anti-lock Braking System (ABS) Circuit ...................................... 107
Audio Circuit ........................................................................ 54-82
Auto-cruise Control Circuit ........................................................ 125
Back-up Light Circuit ................................................................. 54-48
Buzzer Circuit ........................................................................... 76
Central Door Locking Circuit ...................................................... 81
Charging Circuit ....................................................................... 16-3
Cigarette Lighter Circuit ............................................................. 54-80
Cooling Circuit ......................................................................... 68
Defogger Circuit ........................................................................ 54-115
Dome Light, Foot Light and Ignition Key Cylinder Illumination Light Circuit ...................................................... 54-44
Door Light and Luggage Compartment Light Circuit ..................... 54-46
ELC-4 A/T Circuit ....................................................................... 71
Electronic Control Suspension (ECS) Circuit ............................... 115
Fog Light Circuit ....................................................................... 54-41
Full Auto Air Conditioner Circuit ................................................ 91
Glove Box Light, Vanity Mirror Light and Inspection Light Circuit ................................................................. 54-47
Headlight Circuit ........................................................................ 54-33
Heater Circuit .......................................................................... 84
Horn Circuit ........................................................................... 54-76
How to Read Circuit Diagrams .................................................. 42
Ignition Circuit ......................................................................... 16-25
Indicator Circuit ..................................................................... 54-19
MPI Circuit ............................................................................... 52
Manual Air Conditioner Circuit ..................................................... 85
Meter and Gauges Circuit ............................................................ 54-13
Power Distribution .................................................................... 48
Power Seat Circuit .................................................................... 133
Power Window Circuit ................................................................. 78
Rear Wiper and Washer Circuit .................................................... 104
Remote Controlled Mirror Circuit ................................................ 106
Starting Circuit ........................................................................ 16-15
Stop Light Circuit ..................................................................... 54-52
Supplemental Restraint System (SRS) Circuit ............................. 122
Tail Light, Position Light and License Plate Light Circuit ................. 54-43
Tension-reducer Type Seat Belt Circuit ......................................... 135
Theft-alarm System Circuit .......................................................... 137
Turn-signal Light and Hazard Light Circuit .................................. 54-49
Warning Light Circuit ................................................................. 54-15
Windshield Wiper and Washer Circuit ........................................ 101
HOW TO READ CIRCUIT DIAGRAMS

The circuit of each system from the fuse (or fusible link) to ground is shown. The power supply is shown at the top and the ground at the bottom to facilitate understanding of how the current flows.

- Indicates power takeout.
- Indicates connector No. The same No. as in the wiring harness diagram is used.
- An "X" at the end of a connector No. indicates that the connector is connected to a centralized junction that is shown in the section "Centralized Junction".
- Indicates the operating conditions of the engine coolant switch, etc.
- Indicates that the diagram is continued at \( \wedge \) on the next page.
- Indicates shield wire.

TSB Revision
Indicates terminal No.

A broken line indicates that these connectors are the same intermediate connectors.

Indicates that the diagram is continued from on the previous page.

Indicates input/output to/from control unit (current flow direction).

In case two or more connectors are connected to the same device, markings indicating the same connector are connected by a broken line.

Indicates current flow downward or upward as controlled by the control unit.

Indicates harness junction where wire diameter or color changes.

Indicates J/B (Junction Block).

Indicates vehicle body ground point (Same No. as that of ground point in GROUNDING LOCATION).

Indicates continuity of harnesses on the opposite page of a double page circuit diagram.

Indicates that the terminal is a spare one if the device (sensor in this case) is not provided.

TSB Revision
### How to Read Circuit Diagrams

#### Connector marking

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Symbol</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Male</td>
<td><img src="image" alt="Male Connector Symbol" /></td>
<td>Double connector contour lines indicate male connector terminals and single contour lines indicates female terminals as illustrated here.</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td><img src="image" alt="Female Connector Symbol" /></td>
<td></td>
</tr>
</tbody>
</table>

#### Connector symbol marking

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Symbol</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Device</td>
<td><img src="image" alt="Device Connector Symbol" /></td>
<td>The symbol indicates the connector as viewed from the illustrated direction. At the connection with a device, the connector symbol on the device side is shown, and for an intermediate connector, the male connector symbol is shown.</td>
</tr>
</tbody>
</table>

#### Connector connection marking

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Symbol</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Direct connection type</td>
<td><img src="image" alt="Direct Connection Type Symbol" /></td>
<td>A connection between a device and connector on the harness side is either by direct insertion in the device (direct connection type) or by connection with a harness connector furnished on the device side (harness connection type). The two types are indicated as illustrated.</td>
</tr>
<tr>
<td>4</td>
<td>Harness connection type</td>
<td><img src="image" alt="Harness Connection Type Symbol" /></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Intermediate connector</td>
<td><img src="image" alt="Intermediate Connector Symbol" /></td>
<td></td>
</tr>
</tbody>
</table>

#### Grounding markings

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Symbol</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Body ground</td>
<td><img src="image" alt="Body Ground Symbol" /></td>
<td>Grounding is either by body ground, device ground or control unit interior ground. These are indicated as illustrated.</td>
</tr>
<tr>
<td>7</td>
<td>Device ground</td>
<td><img src="image" alt="Device Ground Symbol" /></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Ground in control unit</td>
<td><img src="image" alt="Ground in Control Unit Symbol" /></td>
<td></td>
</tr>
</tbody>
</table>
## Symbols

Devices appearing in circuit diagrams are indicated by the following symbols.

<table>
<thead>
<tr>
<th>Battery</th>
<th>Bodyground</th>
<th>Single bulb</th>
<th>Resistor</th>
<th>Diode</th>
<th>Capacitor</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Battery Symbol" /></td>
<td><img src="image2" alt="Bodyground Symbol" /></td>
<td><img src="image3" alt="Single bulb Symbol" /></td>
<td><img src="image4" alt="Resistor Symbol" /></td>
<td><img src="image5" alt="Diode Symbol" /></td>
<td><img src="image6" alt="Capacitor Symbol" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fuse</th>
<th>Equipment ground</th>
<th>Dual bulb</th>
<th>Variable resistor</th>
<th>Zener diode</th>
<th>Crossing of wires without connection</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image7" alt="Fuse Symbol" /></td>
<td><img src="image8" alt="Equipment ground Symbol" /></td>
<td><img src="image9" alt="Dual bulb Symbol" /></td>
<td><img src="image10" alt="Variable resistor Symbol" /></td>
<td><img src="image11" alt="Zener diode Symbol" /></td>
<td><img src="image12" alt="Crossing of wires without connection Symbol" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fusible link</th>
<th>ECU interior ground</th>
<th>Speaker</th>
<th>Coil</th>
<th>Transistor</th>
<th>Crossing of wires with connection</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image13" alt="Fusible link Symbol" /></td>
<td><img src="image14" alt="ECU interior ground Symbol" /></td>
<td><img src="image15" alt="Speaker Symbol" /></td>
<td><img src="image16" alt="Coil Symbol" /></td>
<td><img src="image17" alt="Transistor Symbol" /></td>
<td><img src="image18" alt="Crossing of wires with connection Symbol" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Connector</th>
<th>Motor</th>
<th>Horn</th>
<th>Pulse generator</th>
<th>Buzzer</th>
<th>Chime</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image19" alt="Connector Symbol" /></td>
<td><img src="image20" alt="Motor Symbol" /></td>
<td><img src="image21" alt="Horn Symbol" /></td>
<td><img src="image22" alt="Pulse generator Symbol" /></td>
<td><img src="image23" alt="Buzzer Symbol" /></td>
<td><img src="image24" alt="Chime Symbol" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Thyristor</th>
<th>Piezoelectric device</th>
<th>Thermistor</th>
<th>Light emitting diode</th>
<th>Photo diode</th>
<th>Photo transistor</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image25" alt="Thyristor Symbol" /></td>
<td><img src="image26" alt="Piezoelectric device Symbol" /></td>
<td><img src="image27" alt="Thermistor Symbol" /></td>
<td><img src="image28" alt="Light emitting diode Symbol" /></td>
<td><img src="image29" alt="Photo diode Symbol" /></td>
<td><img src="image30" alt="Photo transistor Symbol" /></td>
</tr>
</tbody>
</table>
WIRE COLOR CODES

Wire colors are identified by the following color codes.

<table>
<thead>
<tr>
<th>Code</th>
<th>Wire color</th>
<th>Code</th>
<th>Wire color</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Black</td>
<td>P</td>
<td>Pink</td>
</tr>
<tr>
<td>BR</td>
<td>Brown</td>
<td>R</td>
<td>Red</td>
</tr>
<tr>
<td>G</td>
<td>Green</td>
<td>SB</td>
<td>Sky blue</td>
</tr>
<tr>
<td>GR</td>
<td>Gray</td>
<td>V</td>
<td>Violet</td>
</tr>
<tr>
<td>L</td>
<td>Blue</td>
<td>W</td>
<td>White</td>
</tr>
<tr>
<td>LG</td>
<td>Light green</td>
<td>Y</td>
<td>Yellow</td>
</tr>
<tr>
<td>0</td>
<td>Orange</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

NOTE
If a cable has two colors, the first of the two color code characters indicates the basic color (color of the cable coating) and the second indicates the marking color.

Example: `<F>1.25G-B`
CIRCUIT DIAGRAMS — Power Distribution

FUSIBLE LINK

- Power Distribution
- Fusible Link
- Alternator
- Pop-Up Motor
- Radiator Fan Motor
- Headlight
- Headlight Switch
- Horn
- Horn Relay
- Engine Control Unit
- Condenser Fan Motor
- Combination Meter (Beam)
- Fog Light
- Engine
- Air Conditioner
- Magnetic Clutch

1: Vehicles without the theft-alarm system
2: Vehicles with the theft-alarm system

TSB Revision
CIRCUIT DIAGRAMS - MPI Circuit <Turbo>

- ENGINE CONTROL RELAY
- FUEL PRESSURE SOLENOID VALVE
- FURG CONTROL SOLENOID VALVE
- EGR SOLENOID VALVE
- WASTE GATE SOLENOID VALVE
- PRESSURE SOLENOID VALVE

- FUEL INJECTION RELAY
- ENGINE COOLANT TEMPERATURE SWITCH (FOR AIR CONDITIONER)
- POWER STEERING OIL PRESSURE SWITCH

- ENGINE CONTROL UNIT
- POWER STEERING OIL PRESSURE SWITCH
- SELF-DIAGNOSIS CHECK CONNECTOR
- IGNITION TIMING ADJUSTMENT CONNECTOR

TSB Revision 1
### COMPONENTS LOCATION

<table>
<thead>
<tr>
<th>Name</th>
<th>Symbol</th>
<th>Name</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air flow sensor (with built-in intake air temperature sensor and barometric pressure sensor)</td>
<td>A</td>
<td>Inhibitor switch &lt;A:T&gt;</td>
<td>I</td>
</tr>
<tr>
<td>Air-conditioner relay</td>
<td>O</td>
<td>Injector</td>
<td>K</td>
</tr>
<tr>
<td>Air-conditioner switch</td>
<td>G</td>
<td>ISC serv (stepper motor)</td>
<td>L</td>
</tr>
<tr>
<td>Control relay</td>
<td>N</td>
<td>Oxygen sensor</td>
<td>E</td>
</tr>
<tr>
<td>Detonation sensor</td>
<td>T</td>
<td>Power steering oil pressure switch</td>
<td>H</td>
</tr>
<tr>
<td>EGR control solenoid valve &lt;California – Non Turbo, Turbo&gt;</td>
<td>Z</td>
<td>Purge control solenoid valve</td>
<td>X</td>
</tr>
<tr>
<td>EGR temperature sensor &lt;California&gt;</td>
<td>Y</td>
<td>Resistor &lt;Turbo&gt;</td>
<td>W</td>
</tr>
<tr>
<td>Engine control unit</td>
<td>S</td>
<td>Self-diagnosis output terminal and self-diagnosis/data transmission selector terminal</td>
<td>R</td>
</tr>
<tr>
<td>Engine coolant temperature sensor</td>
<td>B</td>
<td>TDC sensor and crank angle sensor</td>
<td>D</td>
</tr>
<tr>
<td>Engine warning light</td>
<td>P</td>
<td>Throttle position sensor (with built-in idle switch)</td>
<td>C</td>
</tr>
<tr>
<td>Fuel pressure control valve &lt;Turbo&gt;</td>
<td>V</td>
<td>Variable induction control serv (DC motor) (with built-in induction control valve position sensor) &lt;Non Turbo&gt;</td>
<td>J</td>
</tr>
<tr>
<td>Ignition coil (power transistor)</td>
<td>M</td>
<td>Vehicle speed sensor (reed switch)</td>
<td>F</td>
</tr>
<tr>
<td>Ignition timing adjusting terminal</td>
<td>Q</td>
<td>Waste gate solenoid valve &lt;Turbo&gt;</td>
<td>U</td>
</tr>
</tbody>
</table>

**NOTE**

The "Name" column is in alphabetical order.

---

![Circuit Diagram](image-url)
Air flow sensor (with built-in intake air temperature sensor and barometric pressure sensor)

Engine coolant temperature sensor

Throttle position sensor (with built-in idle switch)

TDC sensor and crank angle sensor

Oxygen sensor

Vehicle speed sensor (reed switch)

Oxygen sensor, right

Air-conditioner switch

Power steering oil pressure switch

TSB Revision
J <Non Turbo>
Variable induction control servo (DC motor) (with built-in induction control valve position sensor)

K
Injector

L ISC servo (stepper motor)

M Ignition coil (power transistor)

N Control relay

O Air-conditioner relay

P Engine warning light

Q Ignition timing adjusting terminal

R Self-diagnosis output terminal and self-diagnosis/data transmission selector terminal

S Engine control unit

TSB Revision
COOLING CIRCUIT

CIRCUIT DIAGRAMS – Cooling Circuit
## COMPONENTS LOCATION

<table>
<thead>
<tr>
<th>Name</th>
<th>Symbol</th>
<th>Name</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condenser fan motor relay (HI)</td>
<td>B</td>
<td>Radiator fan motor relay (LO)</td>
<td>A</td>
</tr>
<tr>
<td>Condenser fan motor relay (LO)</td>
<td>B</td>
<td>Radiator fan motor control relay</td>
<td>B</td>
</tr>
<tr>
<td>Radiator fan motor relay (HI)</td>
<td>A</td>
<td>Thermo sensor</td>
<td>C</td>
</tr>
</tbody>
</table>

![Diagram A](image1.png)

![Diagram B](image2.png)

![Diagram C](image3.png)
## COMPONENTS LOCATION

<table>
<thead>
<tr>
<th>Name</th>
<th>Symbol</th>
<th>Name</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>A/T fluid temperature sensor</td>
<td>A</td>
<td>Kickdown servo switch</td>
<td>A</td>
</tr>
<tr>
<td>ELC4 A/T control unit</td>
<td>C</td>
<td>Pulse generator</td>
<td>A</td>
</tr>
<tr>
<td>Engine control unit</td>
<td>C</td>
<td>Throttle position sensor</td>
<td>B</td>
</tr>
</tbody>
</table>

### Diagrams

- **Diagram A**: A/T fluid temperature sensor, Kickdown servo switch, Pulse generator A, Throttle position sensor.
- **Diagram B**: Engine control unit, ELC-4 A/T control unit.
- **Diagram C**: Engine control unit, ELC-4 A/T control unit.
BUZZER CIRCUIT

FUSIBLE LINK (

C-68 1
10A

C-80 4

IGNITION SWITCH (TG1)

KEY REMINDER SWITCH C-58

WHEN KEY IS REMOVED

D-33 BUZZER

DIODE C-08

SEAT BELT SWITCH E-26

E-21

DOOR SWITCH (LH)

SELF-DIAGNOSIS CHECK CONNECTOR C-79

ETACS UNIT

VEHICLES WITHOUT THEFT-ALARM SYSTEM

VEHICLES WITH THEFT-ALARM SYSTEM

TSB Revision
COMPONENTS LOCATION

<table>
<thead>
<tr>
<th>Name</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETACS unit</td>
<td>A</td>
</tr>
</tbody>
</table>

TSB Revision
CIRCUIT DIAGRAMS – Power Window Circuit

POWER WINDOWS RELAY

FUSIBLE LINK (6)

IGNITION SWITCH (IG1)

POWER WINDOW RELAY

J/B

C-68

1

7 c-a2

10A

3 C-80

10A

C-77

R-Y

1

C-70

R-B

2

JUMPER CONNECTOR

51

ETACS UNIT

16

14

10

14

57

59

SELF-DIAGNOSIS CHECK CONNECTOR

DOOR SWITCH

VEHICLES *1

VEHICLES *2

WITH THEFT-ALARM SYSTEM

WITHOUT THEFT-ALARM SYSTEM

VEHICLES WITHOUT THEFT-ALARM SYSTEM

VEHICLES WITH THEFT-ALARM SYSTEM

TSB Revision
COMPONENTS LOCATION

<table>
<thead>
<tr>
<th>Name</th>
<th>Symbol</th>
<th>Name</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETACS unit</td>
<td>A</td>
<td>Power window relay</td>
<td>B</td>
</tr>
</tbody>
</table>

19F0134

A

ETACS unit

16F0354

B

Power window relay

16F0124

TSB Revision
CENTRAL DOOR LOCKING CIRCUIT

[Diagram of a central door locking circuit with various components and labels.]
COMPONENTS LOCATION

<table>
<thead>
<tr>
<th>Name</th>
<th>Symbol</th>
<th>Name</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETACS unit</td>
<td>A</td>
<td>Door lock relay</td>
<td>B</td>
</tr>
</tbody>
</table>

CIRCUIT DIAGRAMS — Central Door Locking Circuit

TSB Revision
MANUAL AIR CONDITIONER CIRCUIT

FUSIBLE LINK ⑥

IGNITION SWITCH(IG2)

2L-R

FAN MOTOR (FAN MOTOR)

RADIATOR ASSEMBLY

A-55

A-04X

OFF

A-07X

ON

RESISTOR

ON-OFF

ON-OFF

ON-OFF

RADIATOR FAN ASSEMBLY

A-55

KX35-AC-R1203-NW
CIRCUIT DIAGRAMS - Manual Air Conditioner Circuit

TSB Revision
CIRCUIT DIAGRAMS – Manual Air Conditioner Circuit

ON-OFF:

- DUAL PRESSURE SWITCH
  - A-35
  - 210kPa (29.9 psi)
  - 350kPa (50.6 psi)

ON-OFF:

- THERMOSTAT
  - 155°C (311°F)
  - 110°C (230°F)

ON-OFF:

- ENGINE COOLANT TEMPERATURE SWITCH
  - 115°C (239°F)
  - 100°C (212°F)

COMPARISON

- COMPARATOR CIRCUIT
- OPERATOR CIRCUIT

Dedicated Fuse

- 10A

Revolution Sensor

- 6-20

Engine Control Unit

- C-54
- C-52
- E-20

TSB Revision
CIRCUIT DIAGRAMS - Manual Air Conditioner Circuit

- AIR CONDITIONER COMPRESSION LOCK CONTROLLER
- D-42 COMBINATION METER/TACHOMETER
- POWER TRANSISTOR
- ENGINE SPEED CIRCUIT
- AIR CONDITIONER SWITCH
- MULTI-PURPOSE CIRCUIT

POWER TRANSISTOR

W W W-B (W-B)

GND

V

7 14

2 4 5 10

3 5

6

11

L-R

L-R
FULL AUTO AIR CONDITIONER CIRCUIT

FUSIBLE LINK (5)

IGNITION SWITCH (182)

RADIATOR FAN ASSEMBLY

RADIATOR FAN MOTOR

A-04X

A-07X

RESISTOR

THRMO SENSOR

RADIATOR ASSEMBLY

TSB Revision
## COMPONENTS LOCATION

<table>
<thead>
<tr>
<th>Name</th>
<th>Symbol</th>
<th>Name</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air conditioner compressor lock controller</td>
<td>H</td>
<td>Engine coolant temperature sensor</td>
<td>I</td>
</tr>
<tr>
<td>Air conditioner control unit</td>
<td>D</td>
<td>Engine coolant temperature switch</td>
<td>A</td>
</tr>
<tr>
<td>Air-inlet sensor</td>
<td>G</td>
<td>interior temperature sensor</td>
<td>K</td>
</tr>
<tr>
<td>Air-thermo sensor</td>
<td>E</td>
<td>Magnetic clutch relay</td>
<td>B</td>
</tr>
<tr>
<td>Blower motor relay</td>
<td>J</td>
<td>Photo sensor</td>
<td>F</td>
</tr>
<tr>
<td>Blower motor relay (HI)</td>
<td>H</td>
<td>Radiator fan motor control relay</td>
<td>B</td>
</tr>
<tr>
<td>Condenser fan motor relay (LO)</td>
<td>B</td>
<td>Revolution sensor</td>
<td>C</td>
</tr>
<tr>
<td>Condenser fan motor relay (HI)</td>
<td>B</td>
<td>Thermostat</td>
<td>C</td>
</tr>
<tr>
<td>Engine control unit</td>
<td>D</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. **Component Diagrams**
   - **A**: Air conditioner control unit
   - **B**: Blower motor relay
   - **C**: Condenser fan motor relay (LO)
   - **D**: Revolution sensor

2. **Component Details**
   - **Engine coolant temperature switch**: 16F0065
   - **Compressor**: 16F0030
   - **Revolution sensor**: 16F0077
   - **Air conditioner control unit**: 16F0292

3. **TSB Revision**
*1: VEHICLES WITHOUT THEFT-ALARM SYSTEM

*2: VEHICLES WITH THEFT-ALARM SYSTEM
COMPONENTS LOCATION

<table>
<thead>
<tr>
<th>Name</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETACS unit</td>
<td>A</td>
</tr>
</tbody>
</table>
COMPONENTS LOCATION

<table>
<thead>
<tr>
<th>Name</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rear intermittent wiper relay</td>
<td>A</td>
</tr>
<tr>
<td>Name</td>
<td>Symbol</td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------</td>
</tr>
<tr>
<td>ABS control unit</td>
<td>D</td>
</tr>
<tr>
<td>ABS power relay</td>
<td>B</td>
</tr>
<tr>
<td>Front speed sensor</td>
<td>E</td>
</tr>
<tr>
<td>G sensor</td>
<td>C</td>
</tr>
</tbody>
</table>

**COMPONENTS LOCATION**

![Diagram A](16F0257)

![Diagram B](19F0134)

![Diagram C](16F008)

![Diagram D](16F005)

![Diagram E](16F0267)

**TSB Revision**
**COMPONENTS LOCATION**

<table>
<thead>
<tr>
<th>Name</th>
<th>Symbol</th>
<th>Name</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECS control unit</td>
<td>E</td>
<td>Steering wheel angle speed sensor</td>
<td>B</td>
</tr>
<tr>
<td>Engine control unit</td>
<td>C</td>
<td>Throttle position sensor</td>
<td>A</td>
</tr>
<tr>
<td>G sensor</td>
<td>D</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>
ACTIVE EXHAUST SYSTEM CIRCUIT

CIRCUIT DIAGRAMS – Active Exhaust System Circuit

ACTIVE EXHAUST SYSTEM CIRCUIT

- Ignition Switch
- Tailight Relay
- Dedicated Fuse
- Combination Meter
- Active Exhaust Switch

Diagram showing connections and components of the active exhaust system circuit.
INPUT SIGNAL
- CRANK ANGLE SENSOR
- THROTTLE POSITION SENSOR

ENGINE CONTROL UNIT

FUSIBLE LINK

POWER WINDOWS RELAY

ACTIVE EXHAUST CONTROL UNIT

ACTUATOR ASSEMBLY

FULL CLOSE
FULL OPEN

TSB Revision
## COMPONENTS LOCATION

<table>
<thead>
<tr>
<th>Name</th>
<th>Symbol</th>
<th>Name</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active exhaust control unit</td>
<td>C</td>
<td>Power window relay</td>
<td>A</td>
</tr>
<tr>
<td>Engine control unit</td>
<td>B</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

![Diagram of Active Exhaust System Circuit](image1)

![Diagram of Engine Control Unit](image2)

![Diagram of Power Window Relay](image3)

---

**TSB Revision**
SUPPLEMENTAL RESTRAINT SYSTEM (SRS) CIRCUIT

STARTER RELAY
IGNITION SWITCH (ST)

WITH THEFT-ALARM

INHIBITOR SWITCH

M/T A/T

C-30

0.85B-R

0.85B-Y

C-31

A-67

FRONT IMPACT SENSOR (LH)
FRONT IMPACT SENSOR (RH)

SAFETY INFLATION SENSOR

TSB Revision
### COMPONENTS LOCATION

<table>
<thead>
<tr>
<th>Name</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front impact sensor</td>
<td>A</td>
</tr>
<tr>
<td>SRS diagnosis unit</td>
<td>B</td>
</tr>
</tbody>
</table>

**TSB Revision**
## COMPONENTS LOCATION

<table>
<thead>
<tr>
<th>Name</th>
<th>Symbol</th>
<th>Name</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto-cruise control unit</td>
<td>B</td>
<td>Throttle position sensor</td>
<td>A</td>
</tr>
<tr>
<td>Engine control unit</td>
<td>C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**TSB Revision**
POWER SEAT CIRCUIT

POWER SEAT SWITCH
D-21

FUSIBLE LINK (3)

SIDE SUPPORT

LUMBAR SUPPORT

CLOSE
SPREAD
PUSH
RELEASE

POWER
WINDOWS
RELAY

SWITCH

FRONT HEIGHT
REAR HEIGHT

LIMIT SWITCH

FRONT LUMBAR SUPPORT MOTOR

REAR LUMBAR SUPPORT MOTOR

FRONT HEIGHT MOTOR

REAR HEIGHT MOTOR

LIMIT SWITCH

POWER SEAT ASSEMBLY

TSB Revision
COMPONENTS LOCATION

<table>
<thead>
<tr>
<th>Name</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETACS unit</td>
<td>A</td>
</tr>
</tbody>
</table>

TSB Revision
THEFT-ALARM SYSTEM CIRCUIT

[Diagram of the Theft-alarm System Circuit]

IGNITION SWITCH (IG1)
IGNITION SWITCH (ACC) - Theft-alarm System Circuit

FUSIBLE LINK 6

5-W-0

1 C-68

JUMPED CONNECTOR A-11X

COMBINATION METER D-04

J/F B

WHEN KEY IS REMOVED

KEY REMINDER SWITCH

ETAGS UNIT

JUMPED CONNECTOR A-11X

DOOR LOCK ACTUATOR (RH) E-11

DOOR LOCK ACTUATOR (LH) E-22

DOOR KEY CYLINDER UNLOCK SWITCH (RH) E-10

DOOR KEY CYLINDER UNLOCK SWITCH (LH) E-23

ENTS UNIT

TSB Revision
CIRCUIT DIAGRAMS – Theft-alarm System Circuit

FUSIBLE LINK

J/B

C-68

10A

C-72

THEFT-ALARM RELAY

L-G

G-B

DIODE

c-12

C-76

C-78

C-30

C-66

C-68

L-G

R-B

R-B

R-B

BATTERY

DEDICATED FUSE

CLOCK SPRING

SWITCH

HORN

A-26

THEFT-ALARM HORN

A-27

HORN RELAY

A-06X

1 A-4E

A-48

A-5C

LIFTGATE CYLINDER LOCK SWITCH

F-23

F-24

HORN SWITCH

TSG Revision
CIRCUIT DIAGRAMS – Theft-alarm System Circuit

COMPONENTS Location

<table>
<thead>
<tr>
<th>Name</th>
<th>Symbol</th>
<th>Name</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETACS unit</td>
<td>A</td>
<td>Starter relay</td>
<td>C</td>
</tr>
<tr>
<td>Headlight relay</td>
<td>A</td>
<td>Theft-alarm horn relay</td>
<td>B</td>
</tr>
<tr>
<td>Horn relay</td>
<td>A</td>
<td>Theft-alarm starter relay</td>
<td>D</td>
</tr>
</tbody>
</table>

A

ETACS unit

B

Starter relay

C

Theft-alarm horn relay

D

Theft-alarm starter relay
ACTIVE AERO CIRCUIT

Ignition Switch (IG1)

Fusible Link 6

Dedicated Fuse

J/B C-82

1.25R-W

J/B C-69

15A D

C-83

J/B

D-44

0.85B-W

C-71

B-W

10A

C-80

B-L

R-B

R-Y

Jumper Connector

A-11X

Self-Diagnosis Check Connector

Front

Rear

Speed Sensor

Active Aero Switch

D-29

Rheostat

C-15

B-Y

VX35-AC-R1512-NM

TSB Revision
COMPONENTS LOCATION

<table>
<thead>
<tr>
<th>Name</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active aero control unit</td>
<td>A</td>
</tr>
</tbody>
</table>
ENGINE ELECTRICAL

CONTENTS

CHARGING SYSTEM ....................... 2
ALTERNATOR ............................... 9
SERVICE ADJUSTMENT PROCEDURES .... 5
  Charging System Inspection .......... 5
SPECIFICATIONS ......................... 2
  General Specifications ................. 2
  Service Specifications ................. 2
TROUBLESHOOTING ....................... 3

IGNITION SYSTEM ....................... 24
IGNITION SYSTEM ....................... 28
SERVICE ADJUSTMENT PROCEDURES .... 27
  Spark Plug Cable Test ................. 27
  Spark Plug Test ........................ 27

SPECIFICATIONS ......................... 24
  General Specifications ................. 24
  Service Specifications ................. 24

STARTING SYSTEM ....................... 14
SPECIFICATIONS ......................... 14
  General Specifications ................. 14
  Service Specifications ................. 14

IGNITION SYSTEM ....................... 24

STARTER MOTOR ......................... 18
TROUBLESHOOTING ....................... 15

TROUBLESHOOTING ....................... 25

M16AA-A
## CHARGING SYSTEM SPECIFICATIONS

### GENERAL SPECIFICATIONS

#### ALTERNATOR

<table>
<thead>
<tr>
<th>Items</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Battery voltage sensing</td>
</tr>
<tr>
<td>Rated output VIA</td>
<td>12/110</td>
</tr>
<tr>
<td>Voltage regulator</td>
<td>Electronic type</td>
</tr>
</tbody>
</table>

### SERVICE SPECIFICATIONS

<table>
<thead>
<tr>
<th>Items</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternator</td>
<td></td>
</tr>
<tr>
<td>Standard value</td>
<td></td>
</tr>
<tr>
<td>Regulated voltage</td>
<td></td>
</tr>
<tr>
<td>Ambient temp. at voltage regulator °C</td>
<td>°F</td>
</tr>
<tr>
<td>-20°C (-4°F)</td>
<td>14.2 – 15.4</td>
</tr>
<tr>
<td>20°C (68°F)</td>
<td>13.9 – 14.9</td>
</tr>
<tr>
<td>60°C (140°F)</td>
<td>13.4 – 14.6</td>
</tr>
<tr>
<td>80°C (176°F)</td>
<td>13.1 – 14.5</td>
</tr>
<tr>
<td>Slip ring O.D. mm (in.)</td>
<td>26.7 (1.05)</td>
</tr>
<tr>
<td>Rotor coil resistance Ω</td>
<td>4pprox. 3 – 5</td>
</tr>
<tr>
<td>Limit</td>
<td></td>
</tr>
<tr>
<td>Output current A</td>
<td>Min. 77</td>
</tr>
<tr>
<td>Slip ring O.D. mm (in.)</td>
<td>26.1 (1.03)</td>
</tr>
</tbody>
</table>
TROUBLESHOOTING

CIRCUIT DIAGRAM

ALTERNATOR

FUSIBLE LINK 1

FUSIBLE LINK 2

IGNITION SWITCH (IG1)

ALTERNATOR RELAY

A-10X

COMBINATION METER

VOLTAGE REGULATOR

FIELD COIL

STATOR COIL

ALTERNATOR
OPERATION
When engine is stopped
When the ignition switch is switched to the "ON" position, electricity flows from the "L" terminal of the alternator to the field coil, and at the same time the charging warning light illuminates.

When engine is being started/has started
When the engine is started, charging voltage is applied to the "L" terminal of the alternator, with the result that the charging warning light is extinguished.
In addition, because battery voltage is applied to the "S" terminal of the alternator, this battery voltage is monitored at the IC voltage regulator, thus switching ON and OFF the current to the field coil and thereby controlling the output voltage of the alternator.
Power is supplied to each load from the "B" terminal of the alternator.

NOTE
The alternator relay functions as a back-up for the flow of electricity to the field coil if there is a disconnection or damaged wiring of the charging warning light.

TROUBLESHOOTING HINTS
1. Charging warning light does not go on when the ignition switch is turned to "ON", before the engine starts.
   • Check the bulb.
2. Charging warning light fails to go off once the engine starts.
   • Check the IC voltage regulator (located within the alternator).
3. Discharged or overcharged battery.
   • Check the IC voltage regulator (located within the alternator).
4. The charging warning light illuminates dimly.
   • Check the diode (within the combination meter) for a short-circuit.

COMPONENT LOCATION

<table>
<thead>
<tr>
<th>Name</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternator relay</td>
<td>A</td>
</tr>
</tbody>
</table>

TSB Revision
SERVICE ADJUSTMENT PROCEDURES

CHARGING SYSTEM INSPECTION

VOLTAGE DROP TEST OF ALTERNATOR OUTPUT WIRE

This test judges whether or not the wiring (including the fusible link) between the alternator B terminal and the battery (+) terminal is sound by the voltage drop method.

Preparation

1. Turn the ignition switch to “OFF”.
2. Disconnect the battery ground cable.
3. Disconnect the alternator output lead from the alternator “B” terminal.
4. Connect a DC ammeter in series to the “B” terminal and the disconnected output lead. Connect the (+) lead of the ammeter to the “B” terminal and the (-) lead to the disconnected output wire.

NOTE
Use of a clamp type ammeter that can measure current without disconnecting the harness is preferred. The reason is that when checking a vehicle that has a low output current due to poor connection of the alternator “B” terminal, such poor connection is corrected as the “B” terminal is loosened and a test ammeter is connected in its place and as a result, causes for the trouble may not be determined.

5. Connect a digital voltmeter between the alternator “B” terminal and battery (+) terminal. Connect the (+) lead wire of the voltmeter to the “B” terminal and the (-) lead wire to the battery (+) terminal.
6. Connect the battery ground cable.
7. Leave the hood open.

Test

1. Start the engine.
2. Turn on or off the headlights and small lights and adjust the engine speed so that the ammeter reads 20 A and read off the voltmeter indication under this condition.

Result

1. It is okay if the voltmeter indicates the standard value.
   Standard value: 0.2 V max.
2. If the voltmeter indicates a value that is larger than the standard value, poor wiring is suspected, in which case check the wiring from the alternator “B” terminal to fusible link to battery (+) terminal. Check for loose connection, color change due to overheated harness, etc. and correct them before testing again.

(3) Upon completion of the test, set the engine speed at idle. Turn off the lights and turn off the ignition switch.
4. Disconnect the battery ground cable.
5. Disconnect the ammeter and voltmeter that have been connected for the test purpose.
6. Connect the alternator output wire to the alternator “B” terminal.
7. Connect the battery ground cable.
OUTPUT CURRENT TEST
This test judges whether or not the alternator gives an output current that is equivalent to the nominal output.

Preparation
(1) Prior to the test, check the following items and correct as necessary.
   (a) Check the battery installed in the vehicle to ensure that it is in sound state*. The battery checking method is described in “BATTERY”
   NOTE
   “The battery that is used to test the output current should be one that has been rather discharged. With a fully charged battery, the test may not be conducted correctly due to an insufficient load.
   (b) Check tension of the alternator drive belt. The belt tension check method is described in “GROUP 11 - Engine Adjustment”

(2) Turn off the ignition switch.
(3) Disconnect the battery ground cable.
(4) Disconnect the alternator output wire from the alternator “B” terminal.
(5) Connect a DC ammeter in series between the “B” terminal and the disconnected output wire. Connect the (+) lead of the ammeter to the “B” terminal and connect the (−) lead wire to the disconnected output wire.

NOTE
Tighten each connection by bolt and nut securely as a heavy current will flow. Do not rely on clips.

(6) Connect a voltmeter (0 to 20V) between the “B” terminal and ground. Connect the (+) lead wire to the alternator “B” terminal and (−) lead wire to a sound ground.
(7) Set the engine tachometer and connect the battery ground cable.
(8) Leave the engine hood open.

Test
(1) Check to see that the voltmeter reads the same value as the battery voltage. If the voltmeter reads OV, an open circuit in the wire between the alternator “B” terminal and battery (−) terminal, a blown fusible link or poor grounding is suspected.
(2) Turn on the headlight switch and start the engine.

(3) Set the headlight at high beam and the heater blower switch at HIGH, quickly increase the engine speed to 2,500 rpm and read the maximum output current value indicated by the ammeter.

NOTE
After the engine start up, the charging current quickly drops, therefore, above operation must be done quickly to read maximum current value correctly.
**Result**

(1) The ammeter reading must be higher than the limit value. If it is lower but the alternator output wire is normal, remove the alternator from the vehicle and check it.

Limit: 77A min.

**Caution**

(a) The nominal output current value is shown on the name plate affixed to the alternator body.

(b) The output current value changes with the electrical load and the temperature of the alternator itself. Therefore, the nominal output current may not be obtained if the vehicle electrical load at the time of test is small.

In such a case, keep the headlights on to cause discharge of the battery or use lights of another vehicle as a load to increase the electrical load. The nominal output current may not be obtained if the temperature of the alternator itself or ambient temperature is too high. In such a case, reduce the temperature before testing again.

(2) Upon completion of the output current test, lower the engine speed to the idle speed and turn off the ignition switch.

(3) Disconnect the battery ground cable.

(4) Remove the test ammeter and voltmeter and the engine tachometer.

(5) Connect the alternator output wire to the alternator “B” terminal.

(6) Connect the battery ground cable.

---

**REGULATED VOLTAGE TEST**

The purpose of this test is to check that the electronic voltage regulator controls the voltage correctly.

**Preparation**

(1) Prior to the test, check the following items and correct if necessary.

(a) Check the battery installed on the vehicle to see that it is fully charged. For battery checking method, see “BATTERY”.

(b) Check the alternator drive belt tension. For belt tension check, see “GROUP 11 - Engine Adjustment”

(2) Turn the ignition switch to “OFF”.

(3) Disconnect the battery ground cable.

(4) Connect a digital voltmeter between the “S” terminal of the alternator and ground. Connect the (+) lead of the voltmeter to the “S” terminal of the alternator, inserting from the wire side of the 2-way connector and connect the (-) lead to sound ground or battery (-) terminal.

(5) Disconnect the alternator output wire from the alternator “B” terminal.

(6) Connect a DC ammeter in series between the “B” terminal and the disconnected output wire. Connect the (+) lead of the ammeter to the “B” terminal and connect the (-) lead wire to the disconnected output wire.

(7) Set the engine tachometer and connect the battery ground cable.

---

**Test**

(1) Turn on the ignition switch and check that the voltmeter indicates the following value.

**Voltage: Battery voltage**

If it reads OV, there is an open circuit in the wire between the alternator “S” terminal and the battery (+) or the fusible link is blown.

(2) Start the engine. Keep all lights and accessories off.

(3) Run the engine at a speed of about 2,500 rpm and read the voltmeter when the alternator output current drops to 10A or less.
Result

(1) If the voltmeter reading agrees with the value listed in the regulating voltage table below, the voltage regulator is functioning correctly. If the reading is other than the standard value, the voltage regulator or the alternator is faulty.

### Regulating voltage table

<table>
<thead>
<tr>
<th>Voltage regulator ambient temperature °C (°F)</th>
<th>Regulating voltage V</th>
</tr>
</thead>
<tbody>
<tr>
<td>-20 (-4)</td>
<td>14.2 – 15.4</td>
</tr>
<tr>
<td>20 (68)</td>
<td>13.9 – 14.9</td>
</tr>
<tr>
<td>60 (140)</td>
<td>13.4 – 14.6</td>
</tr>
<tr>
<td>80 (176)</td>
<td>13.1 – 14.5</td>
</tr>
</tbody>
</table>

(2) Upon completion of the test, set the engine speed at idle and turn off the ignition switch.

(3) Disconnect the battery ground cable.

(4) Remove the test voltmeter and ammeter and the engine tachometer.

(5) Connect the alternator output wire to the alternator “B” terminal.

(6) Connect the battery ground cable.
ALTERNATOR
REMOVAL AND INSTALLATION

Removal steps
1. Air hose E <Turbo>
2. Air pipe C <Turbo>
3. Clamp nuts of suction hose <Vehicles with air conditioner>
4. Drive belt (Refer to GROUP 11 - Engine Adjustment.)
5. Alternator connector
6. Oxygen sensor connector <Turbo>
7. Alternator and alternator bracket assembly
8. Alternator bracket
9. Alternator

SERVICE POINT OF REMOVAL
3. REMOVAL OF CLAMP NUT

On vehicles with an air conditioner, remove the clamp nut, raise the suction hose and suspend it from the engine hood using a cord.
**DISASSEMBLY AND REASSEMBLY**

**Disassembly steps**
- 1. Alternator pulley
- 2. Rotor assembly
- 3. Rear bearing
- 4. Bearing retainer
- 5. Front bearing
- 6. Front bracket
- 7. Stator
- 8. Insulator
- 9. Plate
- 10. Regulator and brush holder
- 11. Slinger
- 12. Rectifier
- 13. Brush
- 14. Brush spring
- 15. Rear bracket

**SERVICE POINTS OF DISASSEMBLY**

**SEPARATING THE STATOR AND FRONT BRACKET**

Insert plain screwdriver between front bracket and stator core and pry downward.

**Caution**
Do not insert screwdriver too deep, as there is danger of damage to stator coil.
1. REMOVAL OF ALTERNATOR PULLEY
   (1) Clamp the rotor in a vise with soft jaws.
   (2) After removing the nut, remove the pulley and front bracket from the rotor.

7. REMOVAL OF STATOR / 10. REGULATOR AND BRUSH HOLDER
   (1) When removing the meter, unsolder stator lead wire from the main diode of the rectifier.
   (2) When removing the brush holder, unsolder it from the rectifier.
   **Caution**
   (1) When soldering or unsoldering, use care to make sure that heat of soldering iron is not transmitted to diodes for a long period. Finish soldering or unsoldering in as short a time as possible.
   (2) Use care that no undue force is exerted to leads of diodes.

INSPECTION

**ROTOR**
(1) Check rotor coil for continuity. Check to ensure that there is continuity between slip rings.
   If resistance is extremely small, it means that there is a short. If there is no continuity or if there is short circuit, replace rotor assembly.
   **Resistance value : Approx 3 – 5 Ω**
(2) Check rotor coil for grounding. Check to ensure that there is no continuity between slip ring and core. If there is continuity, replace rotor assembly.

**STATOR**
(1) Make continuity test on stator coil. Check to ensure that there is continuity between coil leads.
   If there is no continuity, replace stator assembly.
(2) Check coil for grounding. Check to ensure that there is no continuity between coil and core. If there is continuity, replace stator assembly.

RECTIFIERS

(1) Positive Rectifier Test
Check for continuity between positive rectifier and stator coil lead connection terminal with a circuit tester. If there is continuity in both directions, diode is shorted. Replace rectifier assembly.

(2) Negative Rectifier Test
Check for continuity between negative rectifier and stator coil lead connection terminal. If there is continuity in both direction, diode is shorted, and rectifier assembly must be replaced.

(3) Diode Trio Test
Check three diodes for continuity by connecting an ammeter to both ends of each diode. If there is no continuity in both directions, diode is faulty and heatsink assembly must be replaced.

BRUSH REPLACEMENT

(1) Replace brush by the following procedures if it has been worn to limit line.
(2) Unsolder pigtail and remove old brush and spring.  

(3) Install brush spring and new brush in brush holder.  
(4) Insert the brush to where there is a space 2 to 3 mm (.079 to .118 in.) between the limit line and the end of the brush holder.  

(5) Solder pigtail to brush holder as shown in the illustration.  

SERVICE POINT OF REASSEMBLY  
2. INSTALLATION OF ROTOR ASSEMBLY  
Before rotor is attached to rear bracket, insert wire through small hole made in rear bracket to lift brush. After rotor has been installed, remove the wire.
## STARTING SYSTEM
### SPECIFICATIONS
#### GENERAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Items</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Starter motor</strong></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Reduction drive (with planetary gear)</td>
</tr>
<tr>
<td>Rated output kW/V</td>
<td>1.211</td>
</tr>
<tr>
<td>No. of pinion teeth</td>
<td>8</td>
</tr>
</tbody>
</table>

#### SERVICE SPECIFICATIONS

<table>
<thead>
<tr>
<th>Items</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard value</td>
<td></td>
</tr>
<tr>
<td><strong>Starter motor</strong></td>
<td></td>
</tr>
<tr>
<td>Free running characteristics</td>
<td></td>
</tr>
<tr>
<td>Terminal voltage V</td>
<td>11</td>
</tr>
<tr>
<td>Current A</td>
<td>90 or less</td>
</tr>
<tr>
<td>Speed rpm</td>
<td>3,000 or more</td>
</tr>
<tr>
<td>Pinion gap mm (in.)</td>
<td>0.5 – 2.0 (.020 – .079)</td>
</tr>
<tr>
<td>Commutator runout mm (in.)</td>
<td>0.05 (.002)</td>
</tr>
<tr>
<td>Commutator diameter mm (in.)</td>
<td>29.4 (1.158)</td>
</tr>
<tr>
<td>Undercut depth mm (in.)</td>
<td>0.5 (.020)</td>
</tr>
<tr>
<td>Limit</td>
<td></td>
</tr>
<tr>
<td>Commutator runout mm (in.)</td>
<td>0.1 (.004)</td>
</tr>
<tr>
<td>Commutator diameter mm (in.)</td>
<td>28.4 (1.118)</td>
</tr>
</tbody>
</table>
TROUBLESHOOTING

CIRCUIT DIAGRAM

<VEHICLES WITHOUT THEFT-ALARM SYSTEM>
<VEHICLES WITH THEFT-ALARM SYSTEM>

BATTERY → IGNITION SWITCH(ST) → STARTER RELAY A-09X → STARTER MOTOR

KEY REMINDER SWITCH A/T M/T

FUSIBLE LINK C-68 5V-B

C-60 10A

WHEN KEY REMOVED

THEFT-ALARML STARTER RELAY C-56

BSGS UNIT

TSB Revision
OPERATION

• For models equipped with the M/T, the clutch switch contact is switched OFF when the clutch pedal is depressed; when the ignition switch is then switched to the “ST” position, electricity flows to the starter relay and the starter motor, the contact (magnetic switch) of the starter is switched ON and the starter motor is activated.

NOTE
If the ignition switch is switched to the “ST” position without the clutch pedal being depressed, electricity flows to the starter relay (coil), the clutch switch (contacts) and to ground, with the result that the contacts of the starter relay are switched OFF, and, because the power to the starter motor is thereby interrupted, the starter motor is not activated.

• For models equipped with the A/T, when the ignition switch is switched to the “ST” position while the selector lever is at the “P” or “N” position, the contact (magnetic switch) of the starter is switched ON and the starter motor is activated.

TROUBLESHOOTING HINTS

The starter motor does not operate at all.
• Check the starter (coil).
• Check for poor contact at the battery terminals and starter.
• Check inhibitor switch.
• Check clutch pedal switch.
• Check starter relay.
• Check theft-alarm starter relay.
• Check key reminder switch.
STARTING SYSTEM – Starter Motor

STARTER MOTOR

REMOVAL AND INSTALLATION
Refer to GROUP 22 – Transaxle.

INSPECTION

PINION GAP ADJUSTMENT

1. Disconnect field coil wire from M-terminal of magnetic switch.
2. Connect a 12V battery between S-terminal and M-terminal.
3. Set switch to “ON”, and pinion will move out.
   
   Caution
   This test must be performed quickly (in less than 10 seconds) to prevent coil from burning.

4. Check pinion to stopper clearance (pinion gap) with a feeler gauge.
   Pinion gap: 0.5 – 2.0 mm (.020 – .079 in.)

5. If pinion gap is out of specification, adjust by adding or removing gaskets between magnetic switch and front bracket.

PULL-IN TEST OF MAGNETIC SWITCH

1. Disconnect field coil wire from M-terminal of magnetic switch.
2. Connect a 12V battery between S-terminal and M-terminal.
   
   Caution
   This test must be performed quickly (in less than 10 seconds) to prevent coil from burning.

3. If pinion moves out, then pull-in coil is good. If it doesn’t, replace magnetic switch.

HOLD-IN TEST OF MAGNETIC SWITCH

1. Disconnect field coil wire from M-terminal of magnetic switch.
2. Connect a 12V battery between S-terminal and body.
   
   Caution
   This test must be performed quickly (in less than 10 seconds) to prevent coil from burning.

3. If pinion remains out, everything is in order. If pinion moves in, hold-in circuit is open. Replace magnetic switch.

TSB Revision
FREE RUNNING TEST
(1) Place starter motor in a vise equipped with soft jaws and connect a fully-charged 12-volt battery to starter motor as follows:
(2) Connect a test ammeter (100-ampere scale) and carbon pile rheostat in series with battery positive post and starter motor terminal.
(3) Connect a voltmeter (15-volt scale) across starter motor.
(4) Rotate carbon pile to full-resistance position.
(5) Connect battery cable from battery negative post to starter motor body.
(6) Adjust rheostat until the battery voltage shown by the voltmeter is 11.5V (for the direct-drive type) or 11 V (for the reduction-drive type).
(7) Confirm that the maximum amperage is within the specifications and that the starter motor turns smoothly and freely.
Current: Max. 90 Amps

RETURN TEST OF MAGNETIC SWITCH
(1) Disconnect field coil wire from M-terminal of magnetic switch.
(2) Connect a 12V battery between M-terminal and body.
Caution
This test must be performed quickly (in less than 10 seconds) to prevent coil from burning.
(3) Pull pinion out and release. If pinion quickly returns to its original position, everything is in order. If it doesn't, replace magnetic switch.

STARTER RELAY
(1) Remove the starter relay from the relay box.
(2) Connect battery to terminal 2 and check continuity between terminals with terminal 4 grounded.

<table>
<thead>
<tr>
<th>Power is supplied</th>
<th>3-4 terminals</th>
<th>3-5 terminals</th>
<th>1-2 terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power is supplied</td>
<td>No continuity</td>
<td>Continuity</td>
<td>Continuity</td>
</tr>
<tr>
<td>Power is not supplied</td>
<td>Continuity</td>
<td>No continuity</td>
<td>Continuity</td>
</tr>
</tbody>
</table>
SERVIE POINTS OF DISASSEMBLY

9. REMOVAL OF ARMATURE / 11. BALL

Caution
When removing the armature, take care not to lose the ball (which is used as a bearing) in the armature end.
17. REMOVAL OF SNAP RING / 18. STOP RING

(1) Press the stop ring, by using an appropriate socket wrench, to the snap ring side.

(2) After removing the snap ring (by using snap-ring pliers), remove the stop ring and the overrunning clutch.

CLEANING STARTER MOTOR PARTS

1. Do not immerse parts in cleaning solvent. Immersing the yoke and field coil assembly and/or armature will damage insulation. Wipe these parts with a cloth only.

2. Do not immerse drive unit in cleaning solvent. Overrunning clutch is pre-lubricated at the factory and solvent will wash lubrication from clutch.

3. The drive unit may be cleaned with a brush moistened with cleaning solvent and wiped dry with a cloth.

INSPECTION

CHECKING THE COMMUTATOR

(1) Place the armature on a pair of V-blocks, and check the deflection by using a dial gauge.

   Standard value: 0.05 mm (.0020 in.)
   Limit: 0.1 mm (.0040 in.)

(2) Check the outer diameter of the commutator.

   Standard value: 29.4 mm (1.158 in.)
   Limit: 28.4 mm (1.118 in.)
STARTING SYSTEM – Starter Motor

(3) Check the depth of the undercut between segments.
Standard value: 0.5 mm (.020 in.)

BRUSH HOLDER
Check for continuity between brush holder plate and brush holder.
The normal condition is non-continuity.

OVERRUNNING CLUTCH
1. While holding clutch housing, rotate the pinion. Drive pinion should rotate smoothly in one direction, but should not rotate in opposite direction. If clutch does not function properly, replace overrunning clutch assembly.
2. Inspect pinion for wear or burrs. If pinion is worn or burred, replace overrunning clutch assembly. If pinion is damaged, also inspect ring gear for wear or burrs.

FRONT AND REAR BRACKET BUSHING
Inspect bushing for wear or burrs. If bushing is worn or burred, replace front bracket assembly or rear bracket assembly.

REPLACEMENT OF BRUSHES AND SPRINGS
1. Brushes that are worn beyond wear limit line, or oil-soaked, should be replaced.
2. When replacing field coil brushes, crush worn brush with pliers, taking care not to damage pigtail.
3. Sand pigtail end with sandpaper to ensure good soldering.
4. Insert pigtail into hole provided in new brush and solder it. Make sure that pigtail and excess solder do not come out onto brush surface.
5. When replacing ground brush, slide the brush from brush holder by prying retaining spring back.

**TESTING ARMATURE**

**TESTING ARMATURE FOR SHORT-CIRCUIT**
1. Place armature in a growler.
2. Hold a thin steel blade parallel and just above while rotating armature slowly in growler. A shorted armature will cause blade to vibrate and be attracted to the core. Replace shorted armature.

**TESTING ARMATURE FOR GROUNDING**
Check the insulation between the armature coil cores and the commutator segments. They are normal if there is no continuity.

**CHECKING FOR ARMATURE COIL WIRING DAMAGE / DISCONNECTION**
Check for continuity between segments. The condition is normal if there is continuity.

**SERVICE POINTS OF REASSEMBLY**

18. INSTALLATION OF STOP RING / 17. SNAP RING
Using a suitable pulling tool, pull overrunning clutch stop ring over snap ring.
IGNITION SYSTEM

SPECIFICATIONS

GENERAL SPECIFICATIONS
CRANK ANGLE SENSOR

<table>
<thead>
<tr>
<th>Items</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Contact pointless type</td>
</tr>
<tr>
<td>Identification No.</td>
<td>T1T4937 1</td>
</tr>
<tr>
<td>Part No.</td>
<td>MD1 53464</td>
</tr>
<tr>
<td>Advance mechanism</td>
<td>Controlled by engine control unit</td>
</tr>
<tr>
<td>Firing order</td>
<td>1 - 2 - 3 - 4 - 5 - 6</td>
</tr>
</tbody>
</table>

IGNITION COIL

<table>
<thead>
<tr>
<th>Items</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Mold 3-coil</td>
</tr>
<tr>
<td>Identification No.</td>
<td>F-536</td>
</tr>
<tr>
<td>Part No.</td>
<td>MD1 52648</td>
</tr>
</tbody>
</table>

SPARK PLUG

<table>
<thead>
<tr>
<th>Items</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>NGK</td>
<td>PFR6J-11</td>
</tr>
<tr>
<td>NIPPON DENSO</td>
<td>PK20PR-P11</td>
</tr>
</tbody>
</table>

SERVICE SPECIFICATIONS

<table>
<thead>
<tr>
<th>Items</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard value</td>
<td></td>
</tr>
<tr>
<td>Ignition coil</td>
<td></td>
</tr>
<tr>
<td>Primary coil resistance at 20°C (68°F) Ω</td>
<td>0.67 – 0.81</td>
</tr>
<tr>
<td>Secondary coil resistance at 20°C (68°F) kΩ</td>
<td>11.31 – 15.30</td>
</tr>
<tr>
<td>Spark plug gap mm (in.)</td>
<td>1.0 – 1.1 (0.39 – 0.43)</td>
</tr>
</tbody>
</table>
IGNITION SYSTEM  — Troubleshooting

OPERATION

- Turn ignition switch to "ON" position, and battery voltage will be applied to primary winding of ignition coil.
- When crank angle sensor signal is input to engine control unit, engine control unit makes ON-OFF control of power transistors one by one.
- When power transistor is turned on, current flows from ignition coil (primary winding) to ground through power transistor.
- When power transistor A is turned from ON to OFF, the spark plugs of No. 1 and No. 4 cylinders spark. Turning of power transistor B from ON to OFF will produce sparking in spark plugs of No. 2 and No. 5 cylinders. Furthermore, when power transistor C is turned from ON to OFF, sparking is produced in spark plugs of No. 3 and No. 6 cylinders.

TROUBLESHOOTING HINTS

1. Engine cranks, but does not start.
   - Spark is insufficient or does not occur at all (on spark plug).
     - Check ignition coil.
     - Check crank angle sensor.
     - Check power transistor.
     - Check spark plugs.
     - Check spark plug cable.
   - Spark is good.
     - Check ignition timing.

2. Engine idles roughly or stalls.
   - Check spark plugs.
   - Check ignition timing.
   - Check ignition coil.
   - Check spark plug cable.

3. Poor acceleration
   - Check ignition timing.
   - Check spark plug cable.
   - Check ignition coil.
SERVICE ADJUSTMENT PROCEDURES

SPARK PLUG CABLE TEST

(1) Disconnect, one at a time, each of the spark plug cables while the engine is idling to check whether the engine's running performance changes or not.

Caution
Wear rubber gloves while doing so.

(2) If the engine performance does not change, check the resistance of the spark plug cable, and check the spark plug itself.

SPARK PLUG TEST

(1) Remove the spark plug and connect to the spark plug cable.
(2) Ground the spark plug outer electrode (body), and crank the engine.
Check to be sure that there is an electrical discharge between the electrodes at this time.
IGNITION SYSTEM
REMOVAL AND INSTALLATION

Removal steps
1. Center cover
2. Spark plug cable
3. Spark plug
4. Ignition coil
5. Power transistor
6. Crank angle sensor

Pre-removal and Post-installation Operation
- Removal and Installation of Surge Tank
(Refer to GROUP 15-Intake Manifold.)
INSPECTION

SPARK PLUG
Check the plug gap and replace if the limit is exceeded.
Standard value: 1.0 - 1.1 mm (.039 - .043 in.)
Limit: 1.3 mm (.051 in.)

Caution
1. Do not attempt to adjust the gap of the platinum plug.
2. Cleaning of the platinum plug may result in damage to the platinum tip. Therefore, if carbon deposits must be removed, use a plug cleaner and complete cleaning within 20 seconds for protection of the electrode. Do not use wire brushes.

SPARK PLUG CABLE
(1) Check cap and coating for cracks.
(2) Measure resistance.

<table>
<thead>
<tr>
<th>Spark plug cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 1</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>8.6</td>
</tr>
</tbody>
</table>

Unit: kΩ

POWER TRANSISTOR

NOTE
An analog-type circuit tester should be used.

No. 1 - No. 4 coil side
(1) Connect the negative (-) terminal of the 1.5V power supply to terminal (7) of the power transistor; then check whether there is continuity between terminal (3) and terminal (7) when terminal (6) and the positive (+) terminal are connected and disconnected.

NOTE
Connect the (-) probe of the circuit tester to terminal (3).

<table>
<thead>
<tr>
<th>Terminal (6) and (+) terminal</th>
<th>Terminal (3) and terminal (7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connected</td>
<td>Continuity</td>
</tr>
<tr>
<td>Unconnected</td>
<td>No continuity</td>
</tr>
</tbody>
</table>

(2) Replace the power transistor if there is a malfunction.

No. 2 - No. 5 coil side
(1) Connect the negative (-) terminal of the 1.5V power supply to terminal (7) of the power transistor; then check whether there is continuity between terminal (2) and terminal (7) when terminal (5) and the positive (+) terminal are connected and disconnected.

NOTE
Connect the (-) probe of the circuit tester to terminal (2).
IGNITION SYSTEM – Ignition System

<table>
<thead>
<tr>
<th>Terminal 5 and (+) terminal</th>
<th>Terminal 2 and terminal 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connected</td>
<td>Continuity</td>
</tr>
<tr>
<td>Unconnected</td>
<td>No continuity</td>
</tr>
</tbody>
</table>

(2) Replace the power transistor if there is a malfunction.

No. 3 – No. 6 coil side

(1) Connect the negative (-) terminal of the 1.5V power supply to terminal 7 of the power transistor; then check whether there is continuity between terminal 1 and terminal 7 when terminal 4 and the positive (+) terminal are connected and disconnected.

NOTE
Connect the (−) probe of the circuit tester to terminal 1.

<table>
<thead>
<tr>
<th>Terminal 4 and (+) terminal</th>
<th>Terminal 1 and terminal 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connected</td>
<td>Continuity</td>
</tr>
<tr>
<td>Unconnected</td>
<td>No continuity</td>
</tr>
</tbody>
</table>

(2) Replace the power transistor if there is a malfunction.

IGNITION COIL

Primary Coil Resistance
Measure the resistance between connector terminal 3 (power) and each coil terminal.

Measuring point:
- Coil A (No. 1 – No. 4 cylinder side coil) .................................. 2 – 3
- Coil B (No. 2 – No. 5 cylinder side coil) .................................. 1 – 3
- Coil C (No. 3 – No. 6 cylinder side coil) .................................. 4 – 3

Standard value: 0.67 – 0.81 Ω

Secondary Coil Resistance
Measure the resistance between each coil high voltage terminals.

Measuring point:
- Coil A (No. 1 – No. 4 cylinder side coil)
- Coil B (No. 2 – No. 5 cylinder side coil)
- Coil C (No. 3 – No. 6 cylinder side coil)

Standard value: 11.3 – 15.3 kΩ
SERVICE POINTS OF INSTALLATION

6. INSTALLATION OF CRANK ANGLE SENSOR

(1) Turn the crankshaft so that the No. 1 cylinder is at compression top dead center.
   Caution
   Be careful not to turn it to the No. 4 cylinder compression top dead center by mistake.

(2) Install, lining up the matchmarks on the crank angle sensor housing and the coupling.

2. INSTALLATION OF SPARK PLUG CABLE

Improper arrangement of spark plug cables will induce voltage between the cables, causing miss firing and developing a surge at acceleration in high-speed operation. Therefore, be careful to arrange the spark plug cables properly by the following procedure.

1. Install the spark plug cable clamps as shown in the illustration.
2. The numerals on the support and clamp indicate the spark plug cable No.
3. Pay attention to the following items when the spark plug cables are installed.
   (1) Install the cables securely to avoid possible contact with metal parts.
   (2) Install the cables neatly, ensuring they are not too tight, loose, twisted or kinked.
Do not contact the cable clamp and the air intake hose.

Approx. 56 mm (1.97 in.)

Approx. 110 mm (4.33 in.)
(Vehicle without turbocharger)

Contact the cable clamp with the hose clamp.

Air intake hose

Vehicle without turbocharger

Vehicle with turbocharger
SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

(1) A Supplemental Restraint System (SRS), which uses a driver-side air bag, has been installed in the 3000GT.
(2) The SRS includes the following components: impact sensors, SRS diagnosis unit: SRS warning light, air bag module, clock spring, interconnecting wiring. Other SRS-related components (that may have to be removed/installed in connection with SRS service or maintenance) are indicated in the table of contents by an asterisk (*).

WARNING!
(1) Improper service or maintenance of any component of the SRS, or any SRS-related component, can lead to personal injury or death to service personnel (from inadvertent firing of the air bag) or to the driver (from rendering the SRS inoperative).
(2) Service or maintenance of any SRS component or SRS-related component must be performed only at an authorized MITSUBISHI dealer.
(3) MITSUBISHI dealer personnel must thoroughly review this manual, and especially its GROUP 52B – Supplemental Restraint System (SRS), before beginning any service or maintenance of any component of the SRS or any SRS-related component.
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>SERVICE ADJUSTMENT PROCEDURES</td>
<td>63</td>
</tr>
<tr>
<td>SPECIFICATIONS</td>
<td>32</td>
</tr>
<tr>
<td>General Specifications</td>
<td>32</td>
</tr>
<tr>
<td>Service Specifications</td>
<td>32</td>
</tr>
<tr>
<td>TROUBLESHOOTING</td>
<td>33</td>
</tr>
<tr>
<td>METERS AND GAUGES</td>
<td>9</td>
</tr>
<tr>
<td>COMBINATION GAUGES</td>
<td>28</td>
</tr>
<tr>
<td>COMBINATION METERS</td>
<td>26</td>
</tr>
<tr>
<td>INDICATORS AND WARNING LIGHTS</td>
<td>30</td>
</tr>
<tr>
<td>SERVICE ADJUSTMENT PROCEDURES</td>
<td>21</td>
</tr>
<tr>
<td>SPECIFICATIONS</td>
<td>9</td>
</tr>
<tr>
<td>General Specifications</td>
<td>9</td>
</tr>
<tr>
<td>Sealants and Adhesives</td>
<td>11</td>
</tr>
<tr>
<td>Service Specifications</td>
<td>11</td>
</tr>
<tr>
<td>TROUBLESHOOTING</td>
<td>12</td>
</tr>
<tr>
<td>REAR WINDOW DEFOGGER</td>
<td>115</td>
</tr>
<tr>
<td>DEFOGGER RELAY</td>
<td>123</td>
</tr>
<tr>
<td>REAR WINDOW DEFOGGER SWITCH</td>
<td>122</td>
</tr>
<tr>
<td>SERVICE ADJUSTMENT PROCEDURES</td>
<td>122</td>
</tr>
<tr>
<td>TROUBLESHOOTING</td>
<td>115</td>
</tr>
<tr>
<td>THEFT-ALARM SYSTEM</td>
<td>124</td>
</tr>
<tr>
<td>TROUBLESHOOTING</td>
<td>124</td>
</tr>
<tr>
<td>AUTO-CRUISE CONTROL SYSTEM</td>
<td></td>
</tr>
<tr>
<td>Refer to GROUP 13</td>
<td></td>
</tr>
<tr>
<td>CENTRAL DOOR LOCKING SYSTEM</td>
<td></td>
</tr>
<tr>
<td>Refer to GROUP 42</td>
<td></td>
</tr>
<tr>
<td>ELECTRONIC CONTROL DOOR MIRROR</td>
<td></td>
</tr>
<tr>
<td>Refer to GROUP 51</td>
<td></td>
</tr>
<tr>
<td>POWER WINDOW</td>
<td></td>
</tr>
<tr>
<td>Refer to GROUP 51</td>
<td></td>
</tr>
<tr>
<td>RADIATOR FAN MOTOR</td>
<td></td>
</tr>
<tr>
<td>Refer to GROUP 14</td>
<td></td>
</tr>
</tbody>
</table>
BATTERY

SPECIFICATIONS

GENERAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Items</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>75D26R-MF</td>
</tr>
<tr>
<td>Ampere hours [5HR] Ah</td>
<td>52</td>
</tr>
<tr>
<td>Cranking rating [at − 18°C (0°F)] A</td>
<td>490</td>
</tr>
<tr>
<td>Reserve capacity min.</td>
<td>123</td>
</tr>
</tbody>
</table>

NOTES

1. CRANKING RATING is the current a battery can deliver for 30 seconds and maintain a terminal voltage of 7.2 volts or greater at a specified temperature.
2. RESERVE CAPACITY RATING is the amount of time a battery can deliver 25A and maintain a minimum terminal voltage of 10.5 at 27°C (80°F).

TROUBLESHOOTING

BATTERY TESTING PROCEDURE

<table>
<thead>
<tr>
<th>TEST STEP</th>
<th>RESULT</th>
<th>ACTION TO TAKE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A0 VISUAL INSPECTION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Remove negative cable, then positive cable.</td>
<td>OK</td>
<td>CLEAN terminals and clamps. GO to A1.</td>
</tr>
<tr>
<td>• Check for dirty or corroded connections.</td>
<td>OK</td>
<td>GO to A1.</td>
</tr>
</tbody>
</table>

| A1 LOOSE BATTERY POST    |                             |                                     |
| • Check for loose battery post. | OK | REPLACE battery. |
|                           | OK | GO to A2. |

| A2 CRACKED BATTERY COVER |                             |                                     |
| • Remove holddowns and shields. | OK | REPLACE battery. |
| • Check for broken/cracked case or cover.    | OK | GO to A3. |

| A3 TEST INDICATOR/OPEN CIRCUITVOLTAGE TEST |                             |                                     |
| • Turn headlights on for 15 seconds.       | OK | CHARGE battery at 5 amps, then GO to A3. |
| • Turn headlights off for 2 minutes to allow battery voltage to stabilize. | Green dot invisible and open circuit voltage under 12.4 volts | |
| • Disconnect cables.                       | OK | GO to A4. |
| • Read open circuit voltage.               | OK |                                     |
**TEST STEP**

<table>
<thead>
<tr>
<th>A4</th>
<th>LOAD TEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>Connect a load tester to the battery.</td>
</tr>
<tr>
<td>-</td>
<td>Load the battery at the recommended discharge rate (See LOAD TEST RATE CHART) for 15 seconds.</td>
</tr>
<tr>
<td>-</td>
<td>Read voltage after 15 seconds, then remove load.</td>
</tr>
</tbody>
</table>

**LOAD TEST CHART**

<table>
<thead>
<tr>
<th>Minimum voltage</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>°F</td>
</tr>
<tr>
<td>9.6</td>
<td>70 and above</td>
</tr>
<tr>
<td>9.5</td>
<td>60</td>
</tr>
<tr>
<td>9.4</td>
<td>50</td>
</tr>
<tr>
<td>9.3</td>
<td>40</td>
</tr>
<tr>
<td>9.1</td>
<td>30</td>
</tr>
<tr>
<td>8.9</td>
<td>20</td>
</tr>
<tr>
<td>8.7</td>
<td>10</td>
</tr>
<tr>
<td>8.5</td>
<td>0</td>
</tr>
</tbody>
</table>

**LOAD TEST RATE CHART**

<table>
<thead>
<tr>
<th>Load test (Amps)</th>
<th>Cranking Rating OFF</th>
<th>Reserve Capacity</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>240 amps</td>
<td>490 amps</td>
<td>123 minutes</td>
<td>75D26R-MF</td>
</tr>
</tbody>
</table>

**RESULT**

- Voltage is less than minimum listed (white indicator).
  - **OK** REPLACE battery
- Voltage is more than minimum listed.
  - **OK** Battery OK.

**SERVICE ADJUSTMENT PROCEDURES**

**BATTERY INSPECTION**

**BATTERY VISUAL INSPECTION (1)**
The battery contains a visual test indicator which gives blue signal when an adequate charge level exists, and white signal when charging is required.

**BATTERY VISUAL INSPECTION (2)**
Make sure ignition switch is in Off position and all battery feed accessories are Off.
1. Disconnect ground cable from battery before disconnecting (+) cable.
2. Remove battery from vehicle.
   - **Caution**
   Care should be taken in the event battery case is cracked or leaking to protect hands from the electrolyte. A suitable pair of rubber gloves (not the household type) should be worn when removing battery by hand.
3. Inspect battery carrier for damage caused by loss of acid from battery. If acid damage is present, it will be necessary to clean area with a solution of clean warm water and baking soda. Scrub area with a stiff bristle brush and wipe off with a cloth moistened with ammonia or baking soda in water.
4. Clean top of battery with same solutions as described in step (3).
5. Inspect battery case and cover for cracks. If cracks are present, battery must be replaced.
6. Clean the battery post with a suitable battery post cleaning tool.
7. Clean the inside surfaces of the terminal clamps with a suitable battery terminal cleaning tool. Replace damaged or frayed cables and broken terminals clamps.
8. Install the battery in vehicle.
9. Connect (+) and (−) cables to battery in the order of mention.
10. Tighten the clamp nut securely.

### OPEN CIRCUIT VOLTAGE TEST (3)
1. Turn headlights on for 15 seconds.
2. Turn headlights off for 2 minutes to allow battery voltage to stabilize.
3. Disconnect cables.
4. Read open circuit voltage.
5. If the open circuit voltage is under 12.4 volts, charge the battery. (See BATTERY CHARGING)

### LOAD TEST (4)
1. Connect a load tester to the battery.
2. Load the battery at 15 amps for 15 seconds to remove surface charge.
3. Load the battery at the recommended discharge rate. (See LOAD TEST RATE CHART.)
4. Read voltage after 15 seconds and then remove the load.
5. If the voltage is not maintained at the minimum voltage in the LOAD TEST CHART throughout the test, the battery should be replaced.

### BATTERY CHARGING

**Caution**
When batteries are being charged, an explosive gas forms beneath the cover of each cell. Do not smoke near batteries on charge or which have recently been charged.
Do not break live circuits at the terminals of the batteries on charge. A spark will occur where the live circuit is broken.
Keep all open flames away from the battery.
Battery electrolyte temperature may temporarily be allowed to rise to 55°C (131°F). Increase of electrolyte temperature above 55°C (131°F) is harmful to the battery, causing deformation of battery cell, decrease in life of battery, etc.

### Charge Rate Chart

<table>
<thead>
<tr>
<th>Battery</th>
<th>Slow Charging</th>
<th>Fast Charging</th>
</tr>
</thead>
<tbody>
<tr>
<td>75D26R-MF (490 amps)</td>
<td>5 amps, 15 hrs.</td>
<td>20 amps, 3.75 hrs.</td>
</tr>
<tr>
<td></td>
<td>10 amps, 7.5 hrs.</td>
<td>30 amps, 2.5 hrs.</td>
</tr>
</tbody>
</table>

When the dot appears or when maximum charge shown below is reached, charging should be stopped.

**NOTE**
When the charging is performed at 5 amps, charging is virtually 100% three hours after the indicator’s indication changes from white to green.
Use fast charging only in an emergency.
If the indicator does not turn to green even after the battery is charged, the battery should be replaced; do not overcharge.
IGNITION SWITCH

IGNITION SWITCH
REMOVAL AND INSTALLATION

Removal steps of ignition switch segment
1. Air bag module
2. Steering wheel
3. Knee protector
   (Refer to GROUP 52A—Instrument Panel.)
4. Column cover lower
5. Column cover upper
6. Lap cooler duct and foot shower duct
7. Column switch and clock spring assembly
8. Ignition key illumination ring
9. Steering lock cylinder
10. Key reminder switch segment
11. Ignition switch segment

Removal steps of steering lock cylinder
1. Air bag module
2. Steering wheel
3. Knee protector
   (Refer to GROUP 52A—Instrument Panel.)
4. Column cover lower
5. Column cover upper
6. Lap cooler duct and foot shower duct
7. Column switch and clock spring assembly
8. Ignition key illumination ring
9. Steering lock cylinder

SERVICE POINTS OF REMOVAL

1. REMOVAL OF AIR BAG MODULE

   (1) To remove the clock spring connector (squib connector) from the air bag module, force the lock outward, and pry it with a plain screwdriver as shown in the illustration at the left to make sure that no undue force is exerted on the connector when it is removed.

Caution

1. After the battery cables have been disconnected, allow more than 30 seconds before starting any further work.
2. The capacitor in the SRS diagnosis unit retains enough voltage to deploy the air bag for a given period after the battery voltage has been removed. If servicing is started before the end of this given period, unintended deployment of the air bag could result and cause serious injury.

   (2) The removed air bag module should be stored in a clean, dry, flat place with the pad cover face up.
2. REMOVAL OF STEERING WHEEL
Remove the steering wheel by using a steering wheel puller.

Caution
Do not hammer on the steering wheel to remove it; doing so may damage the collapsible mechanism.

4. REMOVAL OF COLUMN COVER LOWER / 5. COLUMN COVER UPPER
After the screws have been removed, remove the covers, while making sure not to break the grippers.

9. REMOVAL OF STEERING LOCK CYLINDER
(1) Insert the ignition key into the steering lock cylinder and place the key in the ACC position.
(2) Press the lock pin down with a Phillips head screwdriver (small-size one) to remove the steering lock cylinder.

INSPECTION
IGNITION SWITCH INSPECTION
(1) Remove the knee protector, the column cover lower and the column cover upper. (Refer to GROUP 52A – Instrument Panel.)
(2) Disconnect the wiring connector from the ignition switch and key reminder switch, and connect an ohmmeter to the switch side connector.
(3) Operate the switch, and check the continuity between the terminals.

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Ignition switch</th>
<th>Key reminder switch</th>
<th>Ignition key illumination, light</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position</td>
<td>Key</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>LOCK</td>
<td>Removed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACC</td>
<td>Inserted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ON</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>START</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE: ○ indicates that there is continuity between the terminals.
SERVICE POINTS OF INSTALLATION

7. INSTALLATION OF COLUMN SWITCH AND CLOCK SPRING ASSEMBLY

Line up the "NEUTRAL" mark of the clock spring with the mating mark to center the clock spring.

Caution
If the clock spring is not centered, problems such as intermediate failure of the steering wheel to turn, broken ribbon cable in the clock spring, or the like could occur. As a result, they might hinder proper operation of the SRS, resulting in serious injury.
## METERS AND GAUGES

### SPECIFICATIONS

#### GENERAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Items</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speedometer</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td></td>
</tr>
<tr>
<td>&lt;Non-turbo&gt;</td>
<td>Mechanical type</td>
</tr>
<tr>
<td>&lt;Turbo&gt;</td>
<td>Electrical type</td>
</tr>
<tr>
<td>Tachometer</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Pulse type</td>
</tr>
<tr>
<td>Fuel gauge</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Coil type</td>
</tr>
<tr>
<td>Fuel gauge unit</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Variable resistance type</td>
</tr>
<tr>
<td>Engine coolant temperature gauge</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Coil type</td>
</tr>
<tr>
<td>Engine coolant temperature gauge unit</td>
<td>Thermistor type</td>
</tr>
<tr>
<td>Type</td>
<td></td>
</tr>
<tr>
<td>Oil pressure gauge</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Bi-metal type</td>
</tr>
<tr>
<td>Oil pressure gauge unit</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Bi-metal type</td>
</tr>
<tr>
<td>Pressure gauge &lt;Turbo&gt;</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Moving coil type</td>
</tr>
<tr>
<td>Voltage gauge &lt;Non-turbo&gt;</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Moving iron type</td>
</tr>
</tbody>
</table>
### INDICATORS AND WARNING LIGHTS

<table>
<thead>
<tr>
<th>Items</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turn signal indicator light</td>
<td>3.0</td>
</tr>
<tr>
<td>High beam indicator light</td>
<td>1.4 (74)</td>
</tr>
<tr>
<td>Charging system warning light</td>
<td>1.4 (74)</td>
</tr>
<tr>
<td>Oil pressure warning light</td>
<td>1.4 (74)</td>
</tr>
<tr>
<td>Door-ajar warning light</td>
<td>1.4 (74)</td>
</tr>
<tr>
<td>Brake warning light</td>
<td>1.4 (74)</td>
</tr>
<tr>
<td>Low fuel warning light</td>
<td>3.4 (158)</td>
</tr>
<tr>
<td>Seat belt warning light</td>
<td>1.4 (74)</td>
</tr>
<tr>
<td>Cruise control indicator light</td>
<td>1.4 (74)</td>
</tr>
<tr>
<td>Engine coolant level warning light</td>
<td>1.4 (74)</td>
</tr>
<tr>
<td>Check engine warning light</td>
<td>1.4 (74)</td>
</tr>
<tr>
<td>Security indicator light</td>
<td>1.4 (74)</td>
</tr>
<tr>
<td>Power/economy changeover indicator light</td>
<td>1.12</td>
</tr>
<tr>
<td>Overdrive indicator light</td>
<td>1.12</td>
</tr>
<tr>
<td>Supplemental restraint system warning light</td>
<td>1.4 (74)</td>
</tr>
<tr>
<td>Anti-lock braking system warning light</td>
<td>1.4 (74)</td>
</tr>
<tr>
<td>Active aero system warning indicator light</td>
<td>1.4 (74)</td>
</tr>
<tr>
<td>Washer fluid level indicator light</td>
<td>1.4 (74)</td>
</tr>
<tr>
<td>4-wheel steering oil level warning light</td>
<td>1.4 (74)</td>
</tr>
<tr>
<td>Cruise control ON indicator light</td>
<td>1.4 (74)</td>
</tr>
<tr>
<td>Tour/sport mode indicator light*2</td>
<td>1.12</td>
</tr>
<tr>
<td>Tour mode indicator light*3</td>
<td>1.12</td>
</tr>
</tbody>
</table>

**NOTE**

(1) The values in parentheses denote SAE trade numbers.
(2) The *1 symbol indicates vehicles with theft-alarm system.
(3) The *2 symbol indicates vehicles with Electronic Control Suspension.
(4) The *3 symbol indicates vehicles with Active Exhaust System.
## Service Specifications

<table>
<thead>
<tr>
<th>Items</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard Values</strong></td>
<td></td>
</tr>
<tr>
<td>Speedometer indication error mph</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>19-22</td>
</tr>
<tr>
<td>40</td>
<td>38-44</td>
</tr>
<tr>
<td>60</td>
<td>57-66</td>
</tr>
<tr>
<td>80</td>
<td>76-88</td>
</tr>
<tr>
<td>100</td>
<td>94-110</td>
</tr>
<tr>
<td>Tachometer indication error rpm</td>
<td></td>
</tr>
<tr>
<td>1,000</td>
<td>± 100</td>
</tr>
<tr>
<td>3,000</td>
<td>± 150</td>
</tr>
<tr>
<td>5,000</td>
<td>± 250</td>
</tr>
<tr>
<td>6,000</td>
<td>± 300</td>
</tr>
<tr>
<td>Fuel gauge unit resistance Ω</td>
<td></td>
</tr>
<tr>
<td>Point F</td>
<td>3 ± 2</td>
</tr>
<tr>
<td>Point E</td>
<td>110 ± 7</td>
</tr>
<tr>
<td>Fuel gauge unit float height mm (in.)</td>
<td></td>
</tr>
<tr>
<td>Point F</td>
<td>18.6 – 21.6 (.73 – .85)</td>
</tr>
<tr>
<td>Point E</td>
<td>193.4 – 196.4 (7.61 – 7.73)</td>
</tr>
<tr>
<td>Engine coolant temperature gauge unit resistance Ω [at 70°C(158°F)]</td>
<td>104 ± 13.5</td>
</tr>
<tr>
<td>Fuel gauge resistance Ω</td>
<td></td>
</tr>
<tr>
<td>Between A – B</td>
<td>Approx. 254</td>
</tr>
<tr>
<td>Between A – C</td>
<td>Approx. 101</td>
</tr>
<tr>
<td>Between B – C</td>
<td>Approx. 153</td>
</tr>
<tr>
<td>Engine coolant temperature gauge resistance Ω</td>
<td></td>
</tr>
<tr>
<td>Between A – B</td>
<td>Approx. 51</td>
</tr>
<tr>
<td>Between A – C</td>
<td>Approx. 139</td>
</tr>
<tr>
<td>Between B – C</td>
<td>Approx. 190</td>
</tr>
<tr>
<td>Oil pressure gauge resistance Ω</td>
<td></td>
</tr>
<tr>
<td>Approx. 42</td>
<td></td>
</tr>
<tr>
<td>Pressure gauge resistance ≪Turbo≫ Ω</td>
<td></td>
</tr>
<tr>
<td>Approx. 72</td>
<td></td>
</tr>
</tbody>
</table>

## Sealants and Adhesives

<table>
<thead>
<tr>
<th>Items</th>
<th>Specified sealants and adhesives</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine coolant temperature gauge unit</td>
<td>3M ATD Part No. 8660 or equivalent</td>
<td>Semi-drying sealant</td>
</tr>
</tbody>
</table>
TROUBLESHOOTING

OPERATION

<Fuel gauge>
- When the ignition key is at the “ON” position, the fuel gauge is activated.
- When there is much fuel, the unit's resistance is small and the current flowing in the circuit is great, so the gauge's indicator indicates in the “F” area.
- When there is little fuel, the unit's resistance is high and the current flowing in the circuit is small, so the gauge's indicator indicates in the “E” area.

<Engine coolant temperature gauge>
- When the ignition key is at the “ON” position, the engine coolant temperature gauge is activated.
- When the engine coolant temperature is high, the unit's resistance is low and there is a great flow of current in the circuit, so the gauge's indicator indicates in the “H” area.
- When the engine coolant temperature is low, the unit's resistance is high and there is a small flow of current in the circuit, so the gauge's indicator indicates in the “C” area.

<Reed switch (NON-TURBO) / Speed sensor (TURBO)>
- Pulses are produced in accordance with the vehicle speed, and vehicle-speed signals are input to systems (the MPI system, etc.) that regulate according to the vehicle speed.

TROUBLESHOOTING HINTS

1. The fuel gauge doesn't function, or shows the incorrect indication.
   (1) Disconnect the connector of the fuel pump and gauge unit assembly; the “F” side is indicated when terminal 5 is then grounded.
   - Check the fuel gauge.
2. The engine coolant temperature gauge doesn't function, or shows the incorrect indication.
   (1) The “H” side is indicated when the connector of the engine coolant temperature gauge unit is disconnected and then grounded.
   - Check the engine coolant temperature gauge unit.
3. Systems dependent upon control according to the vehicle speed do not function correctly.
   - Check the reed switch (NON-TURBO)
   - Check the speed sensor (TURBO)

<Oil pressure gauge>
- When the ignition key is at the “ON” position, the oil pressure gauge is activated.
- When oil pressure is high, the internal contacts of the gauge unit are kept closed for a longer period of time. This causes more current to flow in the circuit, and the gauge pointer swings to the high pressure side.
- When oil pressure is low, the internal contacts of the gauge unit open in a shorter period of time. Therefore, there is less current flowing in the circuit and the gauge pointer swings to the low pressure side.

<Pressure gauge (TURBO)>
- When the ignition key is set to the “ON” position, the gauge indicator will be at “0”.
- When the engine is started, the indicator will move from “0” to the minus (−) side, and then, as the boost level increases, it will move to the plus (+) side.

<Voltage gauge (NON-TURBO)>
- When the ignition key is placed in the “ON” position, the voltage gauge operates and indicates a battery voltage of approximately 12V.
- When the engine is started, the voltage gauge indicates a battery voltage of 12 to 16V, indicating that the battery is on charge.

NOTE
For operation of indicator and warning light, refer to P.54-30 INDICATORS AND WARNING LIGHTS.

4. The oil pressure gauge doesn't function, or shows the incorrect indication.
   (1) The “H” side is indicated when the connector of the oil pressure gauge unit is disconnected and then grounded.
   - Check the oil pressure gauge unit.
5. The meter illumination light does not illuminate.
   (1) The tail lights illuminate.
   - Check the rheostat.
6. The voltage gauge doesn't function, or shows the incorrect indication.
   - Check the voltage gauge.
SERVICE ADJUSTMENT PROCEDURES

INSPECTION

SPEEDOMETER INSPECTION

(1) Assure tire pressure at standard value. (Refer to GROUP 31 Specifications.)
(2) Set the vehicle on a speedometer tester.
(3) Set free rollers securely on the floor according to the wheelbase and rear tread of the vehicle (when rear wheels are to be set on free rollers).
(4) Raise the rear wheels on a jack and place rigid racks to support the specified positions of the side sills (when rear wheels are to be raised on a jack).
(5) Make sure the parking brake has been set. <FWD>

(6) Attach anchoring bars on the tie-down brackets and secure their ends to the anchor plates.
(7) Make sure the tension on the right and left bars is the same. Also be sure there is enough tension on each bar.
(8) Attach a chain or wire to the rear tie-down hole. Make sure the end of the wire or chain is secured firmly.
(9) Take all other necessary precautions.
(10) Use a speedometer tester to measure the speedometer's indication error.

Standard value:

<table>
<thead>
<tr>
<th>Standard indication</th>
<th>Allowable range</th>
</tr>
</thead>
<tbody>
<tr>
<td>mph</td>
<td>mph</td>
</tr>
<tr>
<td>20</td>
<td>19 – 22</td>
</tr>
<tr>
<td>40</td>
<td>38 – 44</td>
</tr>
<tr>
<td>60</td>
<td>57 – 66</td>
</tr>
<tr>
<td>80</td>
<td>76 – 88</td>
</tr>
<tr>
<td>100</td>
<td>94 – 110</td>
</tr>
</tbody>
</table>

Caution
Do not operate the clutch or accelerator abruptly or decelerate during the operations.
TACHOMETER INSPECTION

(1) Insert paper clip into the engine revolution speed detector terminal provided in the engine compartment, and connect the engine tachometer to the inserted paper clip.

Caution
As the tachometer is negative grounded, do not connect battery conversely to prevent damaging transistor and diode.

NOTE
For tachometer inspection, use of a fluxmeter-type engine tachometer is recommended. (Because a fluxmeter only needs to be clipped to the high tension cable.)

(2) Connect the engine tachometer and compare the engine tachometer and tachometer readings. Replace tachometer if difference is excessive.

Standard value: 1,000 rpm ±100 rpm
3,000 rpm ±150 rpm
5,000 rpm ±250 rpm
6,000 rpm ±300 rpm

Caution
The engine speed signal output from the engine is one-third of the actual speed. When the engine speed is measured, make sure that the engine tachometer is placed in the 2-cylinder range. (The real speed is indicated.)

FUEL GAUGE SIMPLE INSPECTION

Remove the fuel gauge unit coupling connector.

Connect a test light to the harness connector.

Place the ignition switch in the ON position.

Check the test light and gauge conditions.

1. Test light lights. (Pointer of gauge does not swing.)
   - Replace fuel gauge.

2. Test light lights. (Pointer of gauge swings.)
   - Replace fuel gauge unit.

3. Test light does not light. (Pointer of gauge does not swing.)
   - Correct harness.

TSB Revision
FUEL GAUGE UNIT INSPECTION
To check, remove fuel gauge unit from fuel tank. (Refer to GROUP 13 — Fuel Tank.)

Fuel Gauge Unit Resistance
(1) Check that resistance value between the fuel gauge terminal and ground terminal is at standard value when fuel gauge unit float is at point F (highest) and point E (lowest).

Standard value: Point F: $3 \pm 2 \Omega$
Point E: $110 \pm 7 \Omega$

(2) Check that resistance value changes smoothly when float moves slowly between point F (highest) and point E (lowest).

Fuel Gauge Unit Float Height
Move float and measure the height at point F (highest) and point E (lowest) with float arm touching stopper.

Standard value:
Point F: 18.6 - 21.6 mm (.73 - .85 in.)
Point E: 193.4 - 196.4 mm (7.61 - 7.73 in.)

FUEL SENSOR INSPECTION
Connect fuel gauge unit to battery via test light (12V - 3.4W). Immerse in water. Condition good if light goes off when unit thermistor is in water and lights when unit is removed from water.

Caution
After completing this test, wipe the unit dry and install it in the fuel tank.
ENGINE COOLANT TEMPERATURE GAUGE SIMPLE INSPECTION

Remove the water temperature gauge unit coupling connector.

Connect the harness connector via a test light to the ground.

Place the ignition switch in the ON position.

Check: the test light and gauge conditions.

1. Test light lights. (Pointer of gauge does not swing.)
   - Replace water temperature gauge.

2. Test light lights. (Pointer of gauge swings.)
   - Replace water temperature gauge unit.

3. Test light does not light. (Pointer of gauge does not swing.)
   - Correct harness.

ENGINE COOLANT TEMPERATURE GAUGE UNIT INSPECTION

To check, remove engine coolant temperature gauge unit from the thermostat housing.

Engine Coolant Temperature Gauge Unit Resistance

(1) Immerse unit in 70°C (158°F) water to measure resistance.
   Standard value: \(104 \pm 13.5 \Omega\)

(2) After checking, apply the specified sealant around the thread of engine coolant temperature gauge unit and install on the thermostat housing.
   Specified sealant: 3M ATD Part No. 8660 or equivalent

1 C0003

1 C0004

TSB Revision
**OIL PRESSURE GAUGE SIMPLE INSPECTION**

Remove the oil pressure gauge unit coupling connector.

Connect the harness connector via a test light to the ground.

Place the ignition switch in the ON position.

Check the test light and gauge conditions.

1. Test light lights. (Pointer of gauge does not swing.) → Replace oil pressure gauge.
2. Test light lights. (Pointer of gauge swings.) → Replace oil pressure gauge unit.
3. Test light does not light. (Pointer of gauge does not swing.) → Correct harness.

**VOLTAGE GAUGE SIMPLE TEST**

Start engine and let it idle.

Connect voltmeter to battery.

Check voltage gauge for conditions.

1. Voltage indicated by voltmeter differs from voltage indicated by voltage gauge (position indicated by pointer). → Replace gauge.
2. Gauge does not operate. → Correct harness or replace gauge.
COMBINATION METERS
REMOVAL AND INSTALLATION

Removal steps
1. Knee protector (Refer to GROUP 52A — Instrument Panel.)
2. Column cover lower
3. Column cover upper
4. Meter bezel
5. Combination meter
6. Adapter (Mechanical speedometer type) / Washer tank (Refer to GROUP 51 — Windshield Wiper and Washer.)
7. Vehicles speed sensor (Electrical speedometer type)

SERVICE POINTS OF REMOVAL
2. REMOVAL OF COLUMN COVER LOWER / 3. COLUMN COVER UPPER
After the screws have been removed, remove the covers, while making sure not to break the grippers.

6. REMOVAL OF ADAPTER <Mechanical Speedometer Type>
(1) Disconnect the speedometer cable at the transaxle end of the cable.
(2) Pull the speedometer cable slightly toward the vehicle interior, release the lock by turning the adaptor to the left or right, and then remove the adapter.
**DISASSEMBLY AND REASSEMBLY**

**Disassembly steps**
1. Trip counter reset knob
2. Meter glass
3. Window plate
4. Speedometer
5. Fuel gauge
6. Tachometer
7. Printed-circuit board
8. Meter case

**INSPECTION**

**REED SWITCH INSPECTION**

*〈Mechanical Speedometer Type〉*

Use circuit tester to check circuit repeats off/on between terminals when speedometer shaft turned several times.

**VEHICLES SPEED SENSOR INSPECTION**

*〈Electrical Speedometer Type〉*

1. Remove the vehicles speed sensor and connect as shown in the illustration, using a $3 - 10 \, \text{kΩ}$ resistance.
2. Use a voltmeter to check for voltage at terminals 2 and 3 when the pulse generator shaft is turning. (One revolution is four pulses.)

**FUEL GAUGE INSPECTION**

Measure resistance between terminals with circuit tester.

**Standard value:**

- A - B  Approx. 254 Ω
- A - C  Approx. 101 Ω
- B - C  Approx. 153 Ω
COMBINATION GAUGES
REMOVAL AND INSTALLATION

Removal steps
1. Instrument panel
   (Refer to GROUP 52A - Instrument Panel.)
   Distribution duct
   (Refer to GROUP 55 - Ventilators (Instrument Panel.).)
2. Combination gauge

INSPECTION
PRESSURE GAUGE INSPECTION <Turbo>
Measure resistance between terminals with circuit tester.
Standard value: Approx. 72 Ω

VOLTAGE GAUGE INSPECTION <Non-Turbo>
Refer to P.54-25

OIL PRESSURE GAUGE INSPECTION
Measure resistance between terminals with circuit tester.
Standard value: Approx. 42 Ω

ENGINE COOLANT TEMPERATURE GAUGE INSPECTION
(1) Remove the IG terminal screw from area A.
(2) Measure resistance between terminals with circuit tester.
Caution
For inspection, use a circuit tester which uses a measurement current of 4mA or less.
Standard value:

- A - B Approx. 51 Ω
- A - C Approx. 139 Ω
- B - C Approx. 190 Ω
DISASSEMBLY AND REASSEMBLY

Disassembly steps

1. Gauge bracket
2. Gauge glass
3. Window plate
4. Voltage gauge <Non-Turbo> or Pressure gauge <Turbo>
5. Oil pressure gauge
6. Engine coolant temperature gauge
7. Printed-circuit board
8. Gauge case
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>🔄 🔄</td>
<td>Turn signal indicator. This indicator flashes, as do the same side of turn-signal light flashes. If the turn-signal light is burnt out, the indicator flashes faster than normal indicator. This indicator is common with hazard light.</td>
</tr>
<tr>
<td>🌆</td>
<td>High beam indicator. This indicator illuminates when the headlights are on high beam.</td>
</tr>
<tr>
<td>🚪</td>
<td>Door-ajar warning light. This warning light illuminates when the door or liftgate is either open or not completely closed.</td>
</tr>
<tr>
<td>💼</td>
<td>Seat belt warning light. This warning light illuminates for 6 seconds when the ignition key is in “ON” position, even if the driver has fastened his seat belt.</td>
</tr>
<tr>
<td>🚪</td>
<td>Brake warning light. This warning light illuminates when the ignition key is in “ON” position, and goes off after the engine has started. This indicator comes on when the parking brake is applied or brake fluid level falls less than the specific level.</td>
</tr>
<tr>
<td>�疳</td>
<td>Low fuel warning light. This warning light illuminates when the fuel in the fuel tank falls less than approx. 10 liters (2.6 gals.).</td>
</tr>
<tr>
<td>🚪</td>
<td>Charging system warning light. This warning light illuminates when the ignition key is in “ON” position, and goes off after the engine has started. This indicator comes on when the drive belt breaks or the trouble occurs in the charging system.</td>
</tr>
<tr>
<td>🥢</td>
<td>Oil pressure warning light. This warning light illuminates when the ignition key is in “ON” position, and goes off after the engine has started. This indicator comes on when the oil falls or the trouble occurs in the oil circulating system while driving.</td>
</tr>
<tr>
<td>🧶</td>
<td>Engine coolant level warning light. This warning light illuminates when the engine coolant level in the radiator reservoir tank falls below the specified level.</td>
</tr>
<tr>
<td>🧰</td>
<td>Check engine warning light. This warning light illuminates when the ignition key is turned to the “ON” position, but should go out in a few seconds. If the light illuminates while the vehicle is moving, there is a malfunction of a component related to exhaust gases.</td>
</tr>
<tr>
<td>🛣️</td>
<td>Cruise control indicator. This indicator illuminates when the cruise control is activated.</td>
</tr>
<tr>
<td>🚙</td>
<td>Overdrive indicator. This indicator will light up when the overdrive switch is off.</td>
</tr>
<tr>
<td>🔒</td>
<td>SECURITY indicator. This indicator illuminates for about 20 seconds when the theft-alarm system can be set, and then the illumination stops.</td>
</tr>
<tr>
<td>Symbol</td>
<td>Operation</td>
</tr>
<tr>
<td>--------</td>
<td>-----------</td>
</tr>
<tr>
<td><strong>ASC ON</strong></td>
<td>Cruise control ON indicator This indicator illuminates when the cruise control main switch is switched ON.</td>
</tr>
<tr>
<td><strong>Washer fluid level indicator</strong></td>
<td>This indicator illuminates when the washer fluid level in the washer tank falls to a low level.</td>
</tr>
<tr>
<td><strong>ANTI LOCK</strong></td>
<td>Anti-lock braking system warning light This warning light blinks 4 times in 0.6 to 0.8 second when the ignition key is placed in the “ON” position. With the ignition key in the “ST” position, the warning light stays on. Then move the ignition key from the “ST” position to the “ON” position, and the warning light blinks 3 times in 0.6 to 0.8 second if the warning light operates normally. This warning light illuminates when a malfunction is discovered in the anti-lock braking system.</td>
</tr>
<tr>
<td><strong>PWR</strong></td>
<td>Power/economy changeover indicator This indicator illuminates when the Power/Economy select switch is set to the POWER position.</td>
</tr>
<tr>
<td><strong>SRS</strong></td>
<td>Supplemental Restraint System (SRS) warning light When the ignition key is in ON position, the warning light illuminates for about 7 seconds to indicate that the light itself is illuminating normally. This light illuminates if there is a malfunction of the Supplemental Restraint System.</td>
</tr>
<tr>
<td><strong>4WS OIL</strong></td>
<td>4-wheel steering oil level warning light This warning light illuminates when the power steering oil level in the reservoir tank falls to a low level.</td>
</tr>
<tr>
<td><strong>TOUR</strong></td>
<td>Tour mode indicator (for Active Exhaust System) This indicator illuminates when the active exhaust system switch is set to the TOUR mode position.</td>
</tr>
<tr>
<td><strong>TOUR SPORT</strong></td>
<td>Tour/Sport mode indicator (for Electronic Control Suspension) When the ignition key is in ON position, depending on which is set, either the TOUR or SPORT mode indicator remain illuminated.</td>
</tr>
<tr>
<td><strong>AERO</strong></td>
<td>Active aero system warning light This warning light illuminates in the event of a malfunction in the active aero system. It will also illuminate when the ignition key is turned to the “ON” position, and then it will go out in a few seconds. If it does not illuminate when the ignition key is turned to the “ON” position, or it remains on, take your car to your nearest authorized dealer and have the system checked.</td>
</tr>
</tbody>
</table>
# LIGHTING SYSTEM

## SPECIFICATIONS

### GENERAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Items</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exterior lights</td>
<td></td>
</tr>
<tr>
<td>Headlight W</td>
<td>65/45</td>
</tr>
<tr>
<td>Fog light W</td>
<td>55</td>
</tr>
<tr>
<td>Front combination light</td>
<td></td>
</tr>
<tr>
<td>Turn-signal light/side marker light CP</td>
<td>3212 (2057)</td>
</tr>
<tr>
<td>Rear combination light</td>
<td></td>
</tr>
<tr>
<td>Turn-signal light/side marker and tail light CP</td>
<td>3212 (2057)</td>
</tr>
<tr>
<td>Stop light / side marker and tail light CP</td>
<td>3212 (2057)</td>
</tr>
<tr>
<td>Back-up light CP</td>
<td>32 (1156)</td>
</tr>
<tr>
<td>License plate light CP</td>
<td>3 (168)</td>
</tr>
<tr>
<td>High-mounted stop light</td>
<td></td>
</tr>
<tr>
<td>Vehicles without rear spoiler CP</td>
<td>32 (1156)</td>
</tr>
<tr>
<td>Vehicles with fixed rear spoiler W</td>
<td>4</td>
</tr>
<tr>
<td>Vehicles with active rear spoiler</td>
<td>LED (Light Emitting Diode)</td>
</tr>
<tr>
<td>Engine compartment inspection light W</td>
<td>3.8 (194)</td>
</tr>
<tr>
<td>Interior lights</td>
<td></td>
</tr>
<tr>
<td>Foot light W</td>
<td>3.4 (158)</td>
</tr>
<tr>
<td>Dome light W</td>
<td>8</td>
</tr>
<tr>
<td>Spot light W</td>
<td>8</td>
</tr>
<tr>
<td>Door light W</td>
<td>5</td>
</tr>
<tr>
<td>Glove compartment light W</td>
<td>3.4 (158)</td>
</tr>
<tr>
<td>Luggage compartment light W</td>
<td>5</td>
</tr>
</tbody>
</table>

**NOTE**

The values in parentheses denote SAE trade number.

---

### SERVICE SPECIFICATIONS

<table>
<thead>
<tr>
<th>Items</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limit</td>
<td></td>
</tr>
<tr>
<td>Headlight intensity</td>
<td>20,000 cd or more</td>
</tr>
</tbody>
</table>
TROUBLESHOOTING

HEADLIGHT CIRCUIT

<VEHICLES WITHOUT THEFT-ALARM SYSTEM>

CIRCUIT DIAGRAM
<VEHICLES WITH THEFT-ALARM SYSTEM>
CIRCUIT DIAGRAM

LIGHTING SYSTEM - Troubleshooting
<Headlights ON operation>

- On vehicles without a theft alarm system, when the lighting switch is placed in the HEAD position with the ignition switch in the ACC or ON position, current flows through the multi-purpose fuse 6 to the coil of headlight relay, the lighting switch and ground, and causes the contacts of the headlight relay to close, raising the headlights.

- On vehicles with a theft alarm system, when the lighting switch is placed in the HEAD position, current flows through the coil of the headlight relay to the ETACS control unit, the lighting switch and ground, and causes the contacts of the headlight relay to close, raising the headlights.

- When the dimmer switch is placed in the LO position, the headlight low-beams go on. When the switch is placed in the HI position, the headlight high-beams go on.

<Pop-up operation – Operation by lighting switch>

- When the lighting switch is placed in the HEAD position, current flows through multi-purpose fuse 6 to the lighting switch, diode and ETACS control unit. Then the UP timer circuit in the ETACS control unit is operated and current flows from the ETACS control unit to the DOWN contacts of the pop-up motor U/D (UP/DOWN) switch, the coil of the pop-up motor relay and ground, causing the contacts of the pop-up motor relay to close.

- When the contacts of the pop-up motor relay close, current flows through the contacts of the pop-up motor relay to the pop-up motor and ground, causing the pop-up motor to rotate, which brings the headlights to the DOWN position. The pop-up motor rotates until the automatic DOWN stop position is reached, then the contacts of the interlocked U/D (UP/DOWN) switch change from the D to U contacts. As a result, the contacts of the pop-up motor relay open to cut off current supply to the pop-up motor. Then the pop-up motor ceases to rotate, holding the headlights in the DOWN position.

<Pop-up operation – Operation by pop-up switch>

- When the pop-up switch is placed in the UP position, current flows through multi-purpose fuse 6 to the lighting switch, the pop-up switch and the ETACS control unit, which brings the headlights to the UP position and holds them in the UP position just like when they are operated by the lighting switch.

- When the pop-up switch is placed in the DOWN position, current flows through the multi-purpose fuse 6 to the lighting switch, the pop-up switch and the ETACS control unit, which brings the headlights to the DOWN position and holds them in the DOWN position just like when they are operated by the lighting switch.

TSB Revision
<High-beam indicator light>
- When the headlights are ON and in the high-beam position, or when the passing switch is placed in the ON position, current flows through the contacts of the headlight relay to the dedicated fuse 5, the high-beam indicator light and ground, causing the high-beam indicator light to go ON, indicating that the headlight high-beam are ON.

Headlight Operating Conditions

<table>
<thead>
<tr>
<th>Switch position</th>
<th>Headlight operation (Pop-up position)</th>
<th>Headlight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pop-up switch UP</td>
<td>Lighting switch HEAD</td>
<td>ON (UP)<em>&lt;sup&gt;2&lt;/sup&gt;, OFF (UP)</em>&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Lighting switch TAIL or OFF</td>
<td>OFF (UP)*&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Passing switch ON</td>
<td>ON (UP)*&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Passing switch OFF</td>
<td>OFF (UP)*&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>Pop-up switch DOWN</td>
<td>Lighting switch HEAD</td>
<td>ON (UP)*&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Lighting switch TAIL or OFF</td>
<td>OFF (DOWN)*&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Passing switch ON</td>
<td>ON (DOWN)*&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Passing switch OFF</td>
<td>OFF (DOWN)*&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

NOTE
(1) Mark *<sup>1</sup> denotes the operation of the headlights with the ignition switch in the ACC or ON position on vehicles without a theft alarm system; and operation of the headlights, regardless of ignition switch position, on vehicles with a theft alarm system.
(2) Mark *<sup>2</sup> denotes the operation of the headlights with the ignition switch in the OFF position on vehicles without a theft alarm system.
(3) (UP) indicates that the headlights are in the UP position, whereas (DOWN) indicates that the headlights are in the DOWN position.

TROUBLESHOOTING HINTS

1. Headlights don’t come on.
   (1) But the tail lights do illuminate.
      - Check the headlight relay.
      - Check the multi-purpose fuse 6.
      - Check the fusible link 3.
   (2) The tail lights also don’t illuminate.
      - Check the lighting switch.
      - Check the fusible link 3.
2. The low beam at both sides doesn’t illuminate.
   - Check the "LO" contacts of the dimmer switch.
3. The upper beam at both sides doesn’t illuminate.
   (1) The passing signal functions OK.
      - Check the "HI" contacts of the dimmer switch.
   (2) The passing signal doesn’t function.
      - Check the dimmer switch.
4. One headlight doesn’t illuminate.
   - Check the bulb.
5. Can’t switch from low to high beam or vice-versa.
   - Check the dimmer switch.
6. The high beam indicator light doesn’t illuminate.
   (1) The high beam of the headlights is normal.
      - Check dedicated fuse No. 5.
      - Check the bulb.
   (1) They rise only when the lighting switch is operated.
      - Check the pop-up switch.
   (2) They rise only when the pop-up switch is operated.
      - Check the lighting switch.
8. Headlights do not retract.
   - Check the pop-up switch.
   - Check the ETACS control unit.
9. One headlight does not move.
   - Check the pop-up motor relay.
   - Check the pop-up motor.

NOTE
- For information concerning the headlight relay and pop-up motor relay, refer to P.54-68, 69, and for the theft-alarm system, refer to P.54-124.
- For information concerning the ETACS control unit, refer to P.54-53.

TSB Revision
OPERATION

- When the fog light switch is placed in the ON position with the lighting switch in the HEAD position and the dimmer switch in the LO position, current flows through the multi-purpose fuse to the lighting switch, the diode fog light switch, the coil of the fog light relay, the dimmer switch and ground, causing the contacts of the fog light relay to close. When the contacts of the fog light relay close, current flows through the dedicated fuse to the contacts of the fog light relay, the fog lights and ground, causing the fog lights to come on.
- When the dimmer switch is placed in the HI position or the lighting switch is placed in the TAIL or OFF position while the fog lights are ON, current supply to the fog light relay is cut off. As a result, the contacts of the fog light relay open, and the fog lights go out.

Fog Lights Operation Conditions

<table>
<thead>
<tr>
<th>Fog light switch</th>
<th>Lighting switch</th>
<th>Dimmer switch</th>
<th>Fog lights</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF or TAIL position</td>
<td>ON position</td>
<td>LO position</td>
<td>OFF</td>
</tr>
<tr>
<td>HEAD position</td>
<td></td>
<td>HI position</td>
<td>OFF</td>
</tr>
</tbody>
</table>

TROUBLESHOOTING HINTS

1. The right or left fog lights only go on.
   - Check the bulb.
2. Fog lights do not go on when the fog light switch is set at ON.
   - Check the dedicated fuse.
   - Check the fog light relay.
   - Check the fog light switch.

NOTE
For information concerning the fog light relay, refer to P.54-68.
TAIL LIGHT, POSITION LIGHT AND LICENSE PLATE LIGHT CIRCUIT

CIRCUIT DIAGRAM

FUSIBLE LINK (C)

1.25R-B 2R-B

16 C-02

G-Y

G-W

FRONT COMBINATION LIGHT (LH)

A-39

C-82

REAR COMBINATION LIGHT (LR)

G-Y

G-W

LICENSE PLATE LAMP

1.25R-B 6C-02

4 F-30

B

C-81

2B

F-21

(LH)

F-17

(RH)

F-18

B

F-10

4

HEAD

TAIL

COLUMN SWITCH (LIGHTING SWITCH) C-10

OFF

FRONT COMBINATION LIGHT (RH)

A-82

C-69

1.25W

2

G-W

FRONT COMBINATION LIGHT (RH)

A-82

C-69

1.25W

2

G-W

FRONT COMBINATION LIGHT (RH)

A-82

C-69

1.25W

2

G-W

FRONT COMBINATION LIGHT (RH)

A-82

C-69

1.25W

2

G-W

FRONT COMBINATION LIGHT (RH)

A-82

C-69

1.25W

2

G-W

FRONT COMBINATION LIGHT (RH)

A-82

C-69

1.25W

2

G-W

FRONT COMBINATION LIGHT (RH)

A-82

C-69

1.25W

2

G-W

FRONT COMBINATION LIGHT (RH)

A-82

C-69

1.25W

2

G-W
OPERATION

- When the lighting switch is placed in the ON or HEAD position, current flows through the coil of the tail light relay to the lighting switch and ground, causing the contacts of the tail light relay to close. Then current flows through the contacts of the tail light relay to the dedicated fuse 2, the individual lights and ground, causing the tail lights, position lights and license plate lights to go ON.

TROUBLESHOOTING HINTS

1. All rights don’t illuminate.
   (1) The headlights don’t illuminate, either.
   - Check the fusible link 3.
   (2) The headlights illuminate.
   - Check the tail light relay.
   - Check the dedicated fuse 2.

NOTE
For information concerning the tail light relay, refer to P.54-68.

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DOME LIGHT, FOOT LIGHT AND IGNITION KEY CYLINDER ILLUMINATION LIGHT CIRCUIT

OPERATION

<Dome light>

- Placing the dome light switch in the ON position causes the dome light to come on at all times.
- Opening any one of the doors with the dome light switch in the DOOR position causes the dome light to come on.
- When all doors are closed, the ETACS control unit is activated causing the dome light to decrease its intensity of light gradually and to go out in about 6 seconds.

NOTE
If the ignition switch is in the ON position, the dome light does not decrease its light intensity, rather it goes out at once.

<Foot lights and ignition key illumination light>

- When either driver or co-driver door is opened, the foot lights and ignition key illumination light come on.
- When all doors are closed, the ETACS control unit is activated causing the foot lights and ignition key illumination light to decrease its intensity of light gradually and to go out in about 6 seconds.

NOTE
If the ignition switch is in the ON position, the foot lights and ignition key illumination light does not decrease its light intensity, rather it goes out at once.

TROUBLESHOOTING HINTS

1. Dome light does not come on when a door is opened with the dome light switch in the DOOR position.
   (1) The foot lights and ignition key cylinder illumination light don’t illuminate, either.
   - Check the door switch.
   - Check the ETACS control unit.
   (2) The foot lights and ignition key cylinder illumination light illuminate.
   - Check the dome light switch.
   - Check the bulb.

2. Dome light, foot lights and ignition key illumination light go out at once when doors are closed.
   - Check the ETACS control unit.

NOTE
For information concerning the ETACS control unit, refer to P.54-58.
**OPERATION**

- Battery voltage is always applied (via sub-fusible link No. 6 and multipurpose fuse No. 19) to the luggage compartment light and door light.
- When the door is opened, the door switch is switched ON and the door light illuminates.
- When the liftgate is opened, the luggage compartment light switch is switched ON and the luggage compartment light illuminates.

**TSB Revision**
OPERATION

- When the lighting switch is placed in the TAIL or HEAD position, and the contacts of the tail light relay close, battery voltage is applied via the dedicated fuse ② to the glove box light, the vanity mirror light and the inspection light.
- When the glove box is opened, the glove box illumination light switch is switched ON and the glove box illumination light illuminates.
- When the vanity mirror lid is opened, the vanity mirror light switch is switched ON and the vanity mirror light illuminates.
- When the engine hood is opened, the inspection light switch is switched ON and the inspection light illuminates.
OPERATION

- When, with the ignition switch at the “ON” position, the shift lever (or the selector lever) is moved to the “R” position, the backup light switch (M/T) is switched ON (or the inhibitor switch (A/T) is switched to the “R” position), and the backup light illuminates.
TURN-SIGNAL LIGHT AND HAZARD LIGHT CIRCUIT

CIRCUIT DIAGRAM

IGNITION SWITCH (IG1)  BATTERY  TAILLIGHT RELAY

DETERMINED FUSE

J/B  15A

C-71  15A

D-44  0.85G-R  0.85G-L  0.85G-W

HAZARD SWITCH

D-08

TURN SIGNAL AND HAZARD FLASHER UNIT

E-30

X35-AC-R002-NM

TSB Revision
OPERATION

1. When operation is normal
   - When the ignition switch is switched to the ON position, battery voltage is applied (via the multi-purpose fuse and hazard switch) to the turn-signal and hazard flasher unit.
   - When the turn-signal switch is switched to the LH position, Tr1 (within the flasher unit) is switched ON and OFF repeatedly. Then the contacts of the relay 1 (also within the flasher unit) repeatedly switch from ON to OFF, causing the turn-signal lights and turn-signal indicator light LH to flash.
   - When the turn-signal switch is switched to the RH position, Tr2 (within the flasher unit) is switched ON and OFF repeatedly. Then the contacts of relay 2 (also within the flasher unit) repeatedly switch from ON to OFF, causing the turn-signal lights and turn-signal indicator light RH to flash.

2. If one of the bulbs is burned out
   - If the LH (or RH) turn-signal light bulb is burned-out, the resistance of the turn-signal circuit as a whole increases, resulting in shorter ON and OFF intervals of the LH Tr1 (or RH Tr2) and a higher flashing rate of the LH lights (or RH lights).

COMPONENTS LOCATION

<table>
<thead>
<tr>
<th>Name</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turn-signal and hazard flasher unit</td>
<td>A</td>
</tr>
</tbody>
</table>

<Hazard-warning lights>
- When the hazard-warning switch is switched to the “ON” position, the relay contact of the turn signal and hazard flasher unit is switched ON and OFF repeatedly, in the same manner as for the operation of the turn-signal lights, and the left and right turn-signal lights and turn-signal indicator lights simultaneously flash repeatedly.

NOTE
The number of flashes of the hazard-warning lights does not change if there is damaged or disconnected wiring of one light.

TROUBLESHOOTING HINTS

1. The turn-signal lights and hazard-warning lights do not operate at all.
   - Check the hazard switch contact (power supply side).
   - Check the turn-signal and hazard flasher unit.

2. All turn-signal lights at the left (or right) side do not function.
   (1) The hazard-warning lights function normally.
       - Check the hazard switch contact (turn-signal side).
       - Check the turn-signal switch.

3. The number of flashes of the turn-signal lights is excessive.
   - Check the bulbs.

4. The hazard-warning lights do not function.
   (1) The turn-signal lights function normally.
       - Check the hazard switch contact (hazard-warning light side).
STOP LIGHT CIRCUIT
CIRCUIT DIAGRAM

FUSIBLE LINK 6

1 C-66 SW-B
2 J/B
3 15A

WITH AUTO-CRUISE CONTROL
C-62 0.85G

STOP LIGHT SWITCH

WITHOUT AUTO-CRUISE CONTROL
C-61 0.85G

REAR COMBINATION LIGHT (LH)

F-31 0.85G
F-04 0.85G

REAR COMBINATION LIGHT (RH)

F-10 0.85G

* VEHICLES WITH ACTIVE AERO

X3S-AC-R0G04-NM

TSB Revision
HEADLIGHT UP/DOWN SYSTEM
TROUBLESHOOTING GUIDE

Input Check

Using the multi-use tester or voltmeter, check whether or not the input signals from each switch are being input to the ETACS unit.

1. Connect the multi-use tester to the diagnosis check connector located at the right side of the junction block or connect the voltmeter between the ETACS terminal and the ground terminal.

2. Check if the buzzer of the multi-use tester sounds or the needle of the voltmeter moves when each switch noted below is operated.

   If the buzzer sounds or the needle moves, the input signals are being input to the ETACS unit, so that switch can be considered to be functioning normally. If not, the switch or switch input circuit is faulty. Check the switch and the switch input circuit.

   Pop-up switch

TROUBLESHOOTING QUICK-REFERENCE TABLE

<table>
<thead>
<tr>
<th>Problem</th>
<th>Probable cause</th>
<th>Check method</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headlight do not operate when pop-up switch or lighting switch is operated.</td>
<td>Pop-up switch and lighting switch input circuit broken.</td>
<td>If input check result is not satisfactory, perform off-vehicle circuit check No. 2 (P. 54-55).</td>
<td>Correct harness or replace pop-up switch, lighting switch.</td>
</tr>
<tr>
<td></td>
<td>Pop-up motor relay and pop-up motor activation circuit broken.</td>
<td>Perform off-vehicle circuit check No. 3 (P. 54-56).</td>
<td>Correct harness or replace pop-up motor relay, pop-up motor.</td>
</tr>
<tr>
<td></td>
<td>Faulty ECU.</td>
<td>-</td>
<td>Replace ECU.</td>
</tr>
<tr>
<td>Headlights can be operated by lighting switch, but not by pop-up switch.</td>
<td>Pop-up switch and lighting switch input circuit broken.</td>
<td>If input check result is not satisfactory; perform off-vehicle circuit check No. 2 (P. 54-55).</td>
<td>Correct harness or replace pop-up switch.</td>
</tr>
<tr>
<td>Headlights can be operated by pop-up switch, but not by lighting switch.</td>
<td>Pop-up switch and lighting switch input circuit broken.</td>
<td>Perform off-vehicle circuit check No. 2 (P. 54-55).</td>
<td>Correct harness or replace lighting switch.</td>
</tr>
</tbody>
</table>

NOTE
"ECU" (electronic control unit) indicates the ETACS unit.
CHECKING INDIVIDUAL PART AND CIRCUIT
1. ETACS Power-supply and Ground Circuit

Description of operation
A stabilizer 5V power is supplied from No. 51 terminal directly connected to the battery to ECU through the constant voltage circuit.
If the power circuit is not in normal condition, other ETACS systems do not operate either.

Electronic control unit terminal voltage (Disconnect the ECU connector and check at the wiring harness side.)

<table>
<thead>
<tr>
<th>ECU terminal No.</th>
<th>Signal</th>
<th>Condition</th>
<th>Terminal voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>51</td>
<td>Electronic control unit power supply</td>
<td>At all times</td>
<td>System voltage</td>
</tr>
</tbody>
</table>

Checking the ground circuit (Disconnect the connector and check the wiring harness side.)

<table>
<thead>
<tr>
<th>Terminal No.</th>
<th>Connected to/measured part</th>
<th>Measurement</th>
<th>Tester connection</th>
<th>Check conditions</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>57*1</td>
<td>Electronic control unit ground</td>
<td>Resistance</td>
<td>57*1-ground</td>
<td>At all times</td>
<td>Continuity</td>
</tr>
<tr>
<td>59*2</td>
<td></td>
<td></td>
<td>59*2-ground</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE
*1: Vehicles without theft-alarm system
*2: Vehicles with theft-alarm system
2. Pop-up Switch and Lighting Switch Input Circuit

Description of operation
When the pop-up switch is placed in the “UP” position or the lighting switch is placed in the “HEAD” position, current flow to No. 61 terminal (on vehicles without theft-alarm system) or No. 65 terminal (on vehicles with theft-alarm system) of ECU to operate the UP timer circuit for 5 seconds. When the pop-up switch is placed in the “DOWN” position or the lighting switch is placed in the “OFF” or “TAIL” position, current flows to No. 62 terminal (on vehicles without theft-alarm system) or No. 66 terminal (on vehicles with theft-alarm system) to operate the down timer circuit for 5 seconds.
Electronic control unit terminal voltage (Disconnect the ECU connector and check at the wiring harness side.)

<table>
<thead>
<tr>
<th>ECU terminal No.</th>
<th>Signal</th>
<th>Status</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>61*1</td>
<td>UP</td>
<td>Pop-up switch is in “UP” position or lighting switch is in “HEAD” position.</td>
<td>System voltage</td>
</tr>
<tr>
<td>65*2</td>
<td></td>
<td>Pop-up switch is in “DOWN” position or lighting switch is in “OFF” or “TAIL” position.</td>
<td>0V</td>
</tr>
<tr>
<td>62*1</td>
<td>DOWN</td>
<td>Pop-up switch is in “DOWN” position or lighting switch is in “OFF” or “TAIL” position.</td>
<td>System voltage</td>
</tr>
<tr>
<td>66*1</td>
<td></td>
<td>Pop-up switch is in “UP” position or lighting switch is in “HEAD” position.</td>
<td>0V</td>
</tr>
</tbody>
</table>

Checking individual part

Pop-up switch: Refer to P.54-70.
Lighting switch (Column switch): Refer to P.54-74.

3. Pop-up Motor Relay and Pop-up Motor Activation Circuit

*1: Vehicles without theft-alarm system
*2: Vehicles with theft-alarm system
Description of operation

- **Raising of Headlight**
  
  When the pop-up switch is placed in the “UP” position or the lighting switch is placed in the “HEAD” position, transistor Tr of ECU is turned ON for 5 seconds to let current flow from the pop-up motor (coil side) to the ground through the U contacts of the U/D (UP/DOWN) switch for the pop-up motor, closing the contacts of the pop-up motor relay to raise the headlights. When the crank arm attached to the pop-up motor comes to the automatic up stop position, the contacts of the U/D (UP/DOWN) switch change from the U contacts to the D contacts. Therefore, the current flowing to the pop-up motor is interrupted, stopping the pop-up motor and leaving the headlight at the UP position.

- **Lowering of Headlight**
  
  When the pop-up switch is placed in the “DOWN” position or the lighting switch is placed in the “OFF” or “TAIL” position, transistor Tr of ECU is turned ON for 5 seconds to let current flow from the pop-up motor relay (coil side) to the ground through the D contacts of the U/D (UP/DOWN) switch for the pop-up motor. The pop-up motor relay (contact side) will be closed, lowering the headlight. When the crank arm attached to the pop-up motor comes to the automatic down stop position, the contacts of the U/D (UP/DOWN) switch change from the U contacts to the D contacts. Therefore, the current flowing to the pop-up motor is interrupted, stopping the pop-up motor and leaving the headlight at the DOWN position.

### Checking the ground circuit (Disconnect the connector and check the wiring harness side.)

<table>
<thead>
<tr>
<th>Terminal No.</th>
<th>Connected to/measured part</th>
<th>Measurement</th>
<th>Tester connection</th>
<th>Check conditions</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>Pop-up motor relay ground</td>
<td>Resistance</td>
<td>55-ground</td>
<td>Headlight in lowered position</td>
<td>No continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Headlight in raised position</td>
<td>Continuity</td>
</tr>
<tr>
<td>56</td>
<td>Pop-up motor relay ground</td>
<td>Resistance</td>
<td>56-ground</td>
<td>Headlight in lowered position</td>
<td>Continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Headlight in raised position</td>
<td>Not continuity</td>
</tr>
</tbody>
</table>

### Checking individual part

- Pop-up motor relay: Refer to P.54-69.
- Pop-up motor: Refer to P.54-65.
TROUBLESHOOTING QUICK-REFERENCE TABLE

<table>
<thead>
<tr>
<th>Problem</th>
<th>Probable cause</th>
<th>Check method</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lights do not come on after opening every door.</td>
<td>Door switch input circuit broken.</td>
<td>If input test results are not satisfactory, perform off-vehicle circuit check No. 3 (P.54-61).</td>
<td>Replace door switch or correct harness.</td>
</tr>
<tr>
<td>NOTE (1) Dome light switch must be interlocked with door operation. (2) When dome light switch is turned on, dome light must come on.</td>
<td>Driving circuit broken.</td>
<td>Perform off-vehicle circuit check No. 4 (P.54-62).</td>
<td>Correct lights or harness.</td>
</tr>
<tr>
<td>Even if ignition switch is turned on while lights are being dimmed, lights do not go out at the same time.</td>
<td>Ignition switch input circuit broken.</td>
<td>If input check results are not satisfactory, perform off-vehicle circuit check No. 2 (P.54-60).</td>
<td>Correct harness.</td>
</tr>
<tr>
<td></td>
<td>Faulty ECU.</td>
<td></td>
<td>Replace ECU.</td>
</tr>
</tbody>
</table>

NOTE
(1) ECU (Electronic control unit) indicates the ETACS unit.
(2) The lights include the dome light, foot light and ignition key cylinder illumination light.

TSB Revision
CHECKING INDIVIDUAL PART AND CIRCUIT

1. ETACS Power-supply and Ground Circuit

Description of operation
A stabilized 5V power is supplied from No. 51 terminal directly connected to the battery to ECU through the constant voltage circuit.
If the power circuit is not in normal condition, other ETACS systems do not operate either.

ECU terminal voltage (with ECU connector connected)

<table>
<thead>
<tr>
<th>ECU terminal No.</th>
<th>Signal</th>
<th>Condition</th>
<th>Terminal voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>51</td>
<td>ECU power supply</td>
<td>At all times</td>
<td>System voltage</td>
</tr>
</tbody>
</table>

Checking of grounded circuit (Disconnect ECU connector and check harness side)

<table>
<thead>
<tr>
<th>Terminal No.</th>
<th>Connected to/measured part</th>
<th>Measurement item</th>
<th>Tester connection</th>
<th>Check conditions</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>57&quot;</td>
<td>ECU ground</td>
<td>Resistance</td>
<td>57*1-ground</td>
<td>At all times</td>
<td>Continuity present</td>
</tr>
<tr>
<td>59&quot;</td>
<td></td>
<td></td>
<td>59*2-ground</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*1: Vehicles without theft-alarm system
*2: Vehicles with theft-alarm system
2. Ignition Switch Input Circuit

![Diagram of Ignition Switch Input Circuit]

*1: Vehicles without theft-alarm system  
*2: Vehicles with theft-alarm system

**Description of operation**

When the ignition switch is in the ON position, H signal is sent to ECU and the timer circuit is turned off to suspend dimming operation.

**ECU terminal voltage (Disconnect ECU connector and check harness side)**

<table>
<thead>
<tr>
<th>ECU terminal No.</th>
<th>Signal</th>
<th>Condition</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>52</td>
<td>Ignition switch (ON)</td>
<td>Ignition switch</td>
<td>OFF, 0V</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ON, System voltage</td>
</tr>
</tbody>
</table>

**Checking individual part**

Ignition switch: Refer to P.54-7.
3. Door Switch Input Circuit

Description of operation
When all doors are closed, H signal is sent to ECU. When the ignition switch is turned off, the timer circuit operates to start dimming of the lights (dome light, foot light and ignition key cylinder illumination light). When the door switch system is not in normal condition, the lights do not operate normally in an interlocked relationship with the doors.

ECU terminal voltage (with ECU connector connected)

<table>
<thead>
<tr>
<th>ECU terminal No.</th>
<th>Signal</th>
<th>Condition</th>
<th>Terminal voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>8<em>¹ 10</em>²</td>
<td>Door switch signal</td>
<td>A door is opened.*³ (Door switch is ON)</td>
<td>0V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All doors are closed. (Door switch is OFF)</td>
<td>5V</td>
</tr>
</tbody>
</table>

Door switch circuit check (Disconnect ECU 'connector and check harness side)

<table>
<thead>
<tr>
<th>ECU terminal No.</th>
<th>Connected to/measured part</th>
<th>Measurement item</th>
<th>Tester connection</th>
<th>Check conditions</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>8<em>¹ 10</em>²</td>
<td>Door switch</td>
<td>Resistance</td>
<td>8*¹-ground</td>
<td>All doors are closed</td>
<td>No continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10*²-ground</td>
<td>A door is opened.*³</td>
<td>Continuity</td>
</tr>
</tbody>
</table>

Checking individual part
Door switch: Refer to GROUP 42 – Door Assembly.

NOTE
*1: Vehicles without theft-alarm system
*2: Vehicles with theft-alarm system
*3: Check which is marked with *3 is performed on each door after making sure that all doors except the checked door are closed.
4. Lights Driving Circuit

Description of operation
When a door is opened, the circuit is grounded at the door switch through ECU. If the door is closed from the above state, the circuit is grounded by ECU to dim the light.

NOTE
The dome light switch must be interlocked with the door operation.

ECU terminal voltage (with ECU connector connected)

<table>
<thead>
<tr>
<th>ECU terminal No.</th>
<th>Signal</th>
<th>Condition</th>
<th>Terminal voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>7*1</td>
<td>Light signal</td>
<td>All doors are closed.</td>
<td>System voltage</td>
</tr>
<tr>
<td>9*2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SERVICE ADJUSTMENT PROCEDURES

HEADLIGHT AIMING

PRE-AIMING INSTRUCTIONS
1. Test dimmer switch operation.
2. Observe operation of high beam light mounted in instrument cluster.
3. Inspect for badly rusted or faulty headlight assemblies. These conditions must be corrected before a satisfactory adjustment can be made.
4. Place vehicle on a level floor.
5. Bounce front suspension through three (3) oscillations by applying body weight to hood or bumper.
6. Inspect tire inflation.
7. Rock vehicle sideways to allow vehicle to assume its normal position.
8. If fuel tank is not full, place a weight in trunk of vehicle to simulate weight of a full tank [3 kg (6.5 lbs.) per gallon].
9. There should be no other load in the vehicle other than driver or substituted weight of approximately 70 kg (150 lbs.) placed in driver’s position.
10. Thoroughly clean headlight lenses.
11. Adjust headlights following the instructions of the headlight tester manufacturer.

LUMINOUS INTENSITY MEASUREMENT

Measure the luminous intensity of headlights with a photometer in accordance with the instruction manual prepared by the manufacturer of the photometer and make sure that the luminous intensity is within the following limit.

Limit: 20,000 cd or more

NOTE
1. When measuring the luminous intensity of headlight, keep the engine at 2,000 rpm and have the battery charged.
2. If there are specific regulations for luminous intensity of headlights in the region where the vehicle is operated, make sure that the intensity conforms to the requirements of such regulations.

FOG LIGHT AIMING
1. Place vehicle on a known level floor 7.6 m (25 feet) from aiming screen or light colored wall.
2. Use adjusting screw to adjust the top end of high intensity zone to dimension A.
**Lighting System**

**Headlight**

**Removal and Installation**

**Removal Steps**

1. Headlight bezel, upper
2. Headlight bezel, lower
3. Retaining ring
4. Headlight
5. Spring
6. Mounting ring
7. Housing
8. Rod assembly
9. Headlight hood
10. Link assembly
11. Boot
12. Pop-up motor

**Service Points of Removal**

1. **Removal of Headlight Bezel, Upper**
   
   (1) Raise the headlights by using the pop-up switch. Disconnect the negative (−) battery terminal.
   
   (2) Remove the headlight bezel, upper.

8. **Removal of Rod Assembly**

   Using a flat head screwdriver (wrap cloth or similar on the ball joint area to prevent injury), disconnect the connector.

   **NOTE**

   When disconnecting the rod assembly from the link, hold the 'link by hand.

**TSB Revision**
FOG LIGHT

REMOVAL AND INSTALLATION

INSPECTION

POP-UP MOTOR

Rotate the manual knob of the pop-up motor clockwise by hand to check continuity between terminals.

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Continuity range</th>
</tr>
</thead>
<tbody>
<tr>
<td>When the (+) terminal of the ohmmeter is connected to ① and the (−) terminal is connected to ②</td>
<td>B</td>
</tr>
<tr>
<td>When the (+) terminal of the ohmmeter is connected to ① and the (−) terminal is connected to ⑥</td>
<td>A</td>
</tr>
</tbody>
</table>

Removal steps
1. Front air side spoiler
2. Fog light
3. Socket cover
4. Bulb
SERVICE POINT OF REMOVAL

4. REMOVAL OF BULB

(1) Remove the socket cover.
(2) Remove the bulb mounting spring and remove the bulb.

Caution
Do not touch the surface of the headlight bulb with bare hands or dirty gloves.
If there are deposits on the surface, loosen and remove the deposits with a cloth dipped in alcohol or thinner, and let the surface dry before mounting the bulb.

FRONT COMBINATION LIGHT AND OPTICAL HORN LENS

REMOVAL AND INSTALLATION

Removal steps
1. Light cover
2. Front combination light
REAR COMBINATION LIGHT AND LICENSE PLATE LIGHT LIGHTING SYSTEM – Rear Combination Light and License Plate Light

REMOVAL AND INSTALLATION

Removal steps
1. Rear combination light unit
2. Bulb
   Rear side trim (Refer to GROUP 52A – Trims.)
3. Socket assembly
HIGH MOUNTED STOP LIGHT
REMOVAL AND INSTALLATION

Removal steps
1. Liftgate lower trim
   (Refer to GROUP 52A - Trims.)
2. High mounted stop light cover
3. High mounted stop light lens and bracket
4. Gasket

<Vehicles with rear spoiler>
1. Liftgate lower trim
   (Refer to GROUP 52A - Trims.)
2. Rear spoiler
   (Refer to GROUP 51 - Aero Parts.)
3. High mounted stop light

<Vehicles with active rear spoiler>
1. Light unit
2. Socket assembly
3. Bulb

SERVICE POINT OF REMOVAL
3. REMOVAL OF HIGH-MOUNTED STOP LIGHT
   (Vehicles with fixed rear spoiler)
   Remove the air spoiler center stay mounting screws before
   removing the high-mounted stop light.

RELAY
INSPECTION
HEADLIGHT RELAY / TAILLIGHT RELAY / FOG LIGHT
RELAY
(1) Take out the headlight relay, taillight relay or fog light relay
    from the engine compartment relay box.
(2) Connect battery to terminal 1 and check continuity between terminals with terminal 3 grounded.

<table>
<thead>
<tr>
<th>Power is supplied</th>
<th>4 – 5 terminals</th>
<th>Continuity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power is not supplied</td>
<td>4 – 5 terminals</td>
<td>No continuity</td>
</tr>
<tr>
<td></td>
<td>1 – 3 terminals</td>
<td>Continuity</td>
</tr>
</tbody>
</table>

**POP-UP MOTOR RELAY**

(1) Take out the pop-up motor relay from the engine compartment relay box.

(2) Check for continuity between terminals under the conditions described below.

<table>
<thead>
<tr>
<th>Battery voltage</th>
<th>Terminal 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuity no voltage</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuity with voltage</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Θ</td>
<td>- - - -</td>
</tr>
</tbody>
</table>

**NOTE**

(1) ○○ indicates that there is continuity between the terminals.

(2) Θ--Θ indicates terminals to which battery voltage is applied.
POP-UP SWITCH AND FOG LIGHT SWITCH

REMOVAL AND INSTALLATION

Removal steps
1. Knee protector
   (Refer to GROUP 52A – Instrument Panel.)
2. Column cover lower
3. Column cover upper
4. Meter bezel
5. Pop-up switch and fog light switch
6. Rear window defogger switch

SERVICE POINTS OF REMOVAL

2. REMOVAL OF COLUMN COVER LOWER / 3. COLUMN COVER UPPER

After the screws have been removed, remove the covers, while making sure not to break the grippers.

INSPECTION

Operate the switch to check for continuity between terminals.

<table>
<thead>
<tr>
<th>Switch position</th>
<th>Terminal</th>
<th>1</th>
<th>5</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pop-up switch</td>
<td>UP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DOWN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fog light switch</td>
<td>ON</td>
<td></td>
<td></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>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE
(1) ○○ indicates that there is continuity between the terminals.
(2) Refer to P.54-122. Check the rear window defogger switch.
RHEOSTAT

INSPECTION
1. Remove the instrument panel switch from the knee protector.

2. Connect the battery and a test bulb (40W) as shown in the figure.
3. The function of the rheostat is normal if the intensity of illumination changes smoothly, without flashing or flickering, when the rheostat is operated.

HAZARD SWITCH

INSPECTION
1. Remove the center air outlet assembly from instrument panel. [Refer to GROUP 55 – Ventilators (Instrument Panel).]

2. Operate the switch to check for continuity between terminals.

NOTE
○○ indicates that there is continuity between the terminals.
### COLUMN SWITCH

#### SPECIFICATIONS

**GENERAL SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Items</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column switch</td>
<td></td>
</tr>
<tr>
<td>Lighting switch</td>
<td></td>
</tr>
<tr>
<td>Rated load A</td>
<td>0.22 ± 0.05</td>
</tr>
<tr>
<td>Voltage drop V</td>
<td>0.2 or less</td>
</tr>
<tr>
<td>Turn-signal switch</td>
<td></td>
</tr>
<tr>
<td>Rated load A</td>
<td>6.6 ± 0.5</td>
</tr>
<tr>
<td>Voltage drop V</td>
<td>0.2 or less</td>
</tr>
<tr>
<td>Dimmer/passing switch</td>
<td></td>
</tr>
<tr>
<td>Rated load A</td>
<td></td>
</tr>
<tr>
<td>High beam</td>
<td>10.7 ± 0.8</td>
</tr>
<tr>
<td>Low beam</td>
<td>9.8 ± 0.7</td>
</tr>
<tr>
<td>Passing</td>
<td>20.5 ± 1.5</td>
</tr>
<tr>
<td>Voltage drop V</td>
<td>0.2 or less</td>
</tr>
</tbody>
</table>

**NOTE**

For the wiper and washer switch, refer to GROUP 51 - Windshield Wiper and Washer.
1. Air bag module
2. Steering wheel
3. Knee protector
(Refer to GROUP 52A — Instrument Panel.)
4. Column cover lower
5. Column cover upper
6. Lap cooler duct and foot shower duct
7. Column switch left (For lighting switch, dimmer/passing switch and turn signal switch)
8. Column switch right (For wiper and washer switch)

**SERVICE POINTS OF REMOVAL**

**1. REMOVAL OF AIR BAG MODULE**

1. Remove the air bag module mounting nut using a socket wrench from the back side.
2. To remove the clock spring connector (squib connector) from the air bag module, force the lock outward, and pry it with a plain screwdriver as shown in the illustration at the left to make sure that no undue force is exerted on the connector when it is removed.

**Caution**

Wait at least 30 seconds after disconnecting the battery cable before doing any further work. The SRS system is designed to retain enough voltage to deploy the air bag for a short time even after the battery has been disconnected, so serious injury may result from unintended air bag deployment if work is done on the SRS system immediately after the battery cable is disconnected.

3. The removed air bag module should be stored in a clean, dry place with the pad cover face up.
2. REMOVAL OF STEERING WHEEL

Remove the steering wheel by using a steering wheel puller.

Caution
Do not hammer on the steering wheel. Doing so may damage the collapsible column mechanism.

4. REMOVAL OF COLUMN COVER LOWER / 5. COLUMN COVER UPPER

After the screws have been removed, remove the covers, while making sure not to break the grippers.

INSPECTION

(1) Remove the knee protector and the column cover. (Refer to GROUP 52A – Instrument Panel.)

(2) Disconnect the column switch left connector (16 terminals) and check the continuity between the terminals for each switch.

LIGHTING SWITCH

Operate the switch and check the continuity between the terminals.

<table>
<thead>
<tr>
<th>Switch position</th>
<th>Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>14</td>
</tr>
</tbody>
</table>

NOTE
O-O indicates that there is continuity between the terminals.

TURN SIGNAL SWITCH

Operate the switch and check the continuity between the terminals.

<table>
<thead>
<tr>
<th>Switch position</th>
<th>Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Neutral</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Right</td>
<td></td>
</tr>
</tbody>
</table>

NOTE
O-C indicates that there is continuity between the terminals.
**COLUMN SWITCH – Column Switch**

**DIMMER/PASSING SWITCH**
Operate the switch and check the continuity, between the terminals.

<table>
<thead>
<tr>
<th>Switch position</th>
<th>Terminal</th>
<th>2</th>
<th>8</th>
<th>9</th>
<th>16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimmer switch</td>
<td>LOW</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>HIGH</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Passing switch</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE**
O-O indicates that there is continuity between the terminals.

**WIPER AND WASHER SWITCH**
Refer to GROUP 51 – Windshield Wiper and Washer

**SERVICE POINT OF INSTALLATION**

**2. INSTALLATION OF STEERING WHEEL**
To center the clock spring, line up the “NEUTRAL” mark of the clock spring with the mating mark.

**Caution**
If the clock spring's mating mark is not properly aligned, the steering wheel may not be completely rotational during a turn, or the flat cable within the clock spring may be severed, obstructing normal operation of the SRS and possibly leading to serious injury to the vehicle's driver.
HORN

SPECIFICATIONS

GENERAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Items</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Flat type</td>
</tr>
<tr>
<td>Effective sounding voltage V</td>
<td>11.5 - 15</td>
</tr>
<tr>
<td>Power consumption A</td>
<td>3.0</td>
</tr>
<tr>
<td>Sound level dB</td>
<td></td>
</tr>
<tr>
<td>&quot;low&quot; sound</td>
<td>100 - 112</td>
</tr>
<tr>
<td>&quot;high&quot; sound</td>
<td>100 - 112</td>
</tr>
<tr>
<td>Fundamental frequency Hz</td>
<td></td>
</tr>
<tr>
<td>&quot;low&quot; sound</td>
<td>350 - 390</td>
</tr>
<tr>
<td>&quot;high&quot; sound</td>
<td>395 - 435</td>
</tr>
</tbody>
</table>

NOTE: The * symbol is applicable to vehicles equipped with the theft-alarm horn

TROUBLESHOOTING

VEHICLES WITHOUT THEFT-ALARM SYSTEM

CIRCUIT DIAGRAM
OPERATION

- The horn switch always receives battery voltage via the dedicated fuse and the coil of the horn relay.
- When the horn switch is set to ON, the contacts of the horn relay close. Then current flows through the dedicated fuse to the contacts of the horn relay, the horn and ground, causing the horn to sound.

TROUBLESHOOTING HINTS

1. One of the horns does not sound.
   - Check the horn.
2. Horns do not sound.
   - Check the horn switch.
   - Check the dedicated fuse.

NOTE

(1) For vehicles equipped with the theft-alarm system, refer to P.54-124.
(2) For information concerning the horn relay and theft-alarm horn relay, refer to P.54-79.

REMOVAL AND INSTALLATION

Removal steps

1. Air bag module
2. Horn contact switch
3. Horn contact plate and wire
4. Horn switch

SERVICE POINT OF REMOVAL

1. REMOVAL OF AIR BAG MODULE

(1) Remove the air bag module mounting nut using a socket wrench from the back side.
(2) To remove the clock spring connector (squib connector) from the air bag module, force the lock outward, and pry it with a plain screwdriver as shown in the illustration at the left to make sure that no undue force is exerted on the connector when it is removed.

Caution

Wait at least 30 seconds after disconnecting the battery cable before doing any further work. The SRS system is designed to retain enough voltage to deploy the air bag for a short time even after the battery has been disconnected, so serious injury may result from unintended air bag deployment if work is done on the SRS system immediately after the battery cable is disconnected.

(3) The removed air bag module should be stored in a clean, dry place with the pad cover face up.
**REPLACE**

**INSPECTION**

**HORN RELAY**

1. Take out the horn relay from the engine compartment relay box.

2. Connect battery to terminal 1 and check continuity between terminals with terminal 3 grounded.

<table>
<thead>
<tr>
<th>Power is supplied</th>
<th>4 – 5 terminals</th>
<th>Continuity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power is not supplied</td>
<td>4 – 5 terminals</td>
<td>No continuity</td>
</tr>
<tr>
<td></td>
<td>1 – 3 terminals</td>
<td>Continuity</td>
</tr>
</tbody>
</table>

**THEFT-ALARM HORN RELAY**

1. Take out the theft-alarm horn relay from junction block.

2. Connect battery to terminal 2 and check continuity between terminals with terminal 4 grounded.

<table>
<thead>
<tr>
<th>Power is supplied</th>
<th>1 – 3 terminals</th>
<th>Continuity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power is not supplied</td>
<td>1 – 3 terminals</td>
<td>No continuity</td>
</tr>
<tr>
<td></td>
<td>2 – 4 terminals</td>
<td>Continuity</td>
</tr>
</tbody>
</table>

TSB Revision
## CIGARETTE LIGHTER

### SPECIFICATIONS

#### GENERAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Items</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. input W</td>
<td>120</td>
</tr>
<tr>
<td>Reset time second</td>
<td>Within 18</td>
</tr>
<tr>
<td>Thermal fuse fusion temperature °C (°F)</td>
<td>180 – 250 (356 – 482)</td>
</tr>
</tbody>
</table>

### TROUBLESHOOTING

#### CIRCUIT DIAGRAM

![Circuit Diagram](image)
CIGARETTE LIGHTER
REMOVAL AND INSTALLATION

Removal steps
1. Console side cover (RH)
2. Plug
3. Fixing ring
4. Socket case
5. Plate
6. Socket
7. Protector

INSPECTION
- Take out the plug, and check for a worn edge on the element spot connection, and for shreds of tobacco or other material on the element.
- Using an ohmmeter, check the continuity of the element.

CAUTIONS FOR USE OF THE CIGARETTE LIGHTER SOCKET AS AUXILIARY POWER SOURCE
1. When using a “plug-in” type of accessory, do not use anything with a load of more than 120W.
2. It is recommended that only the lighter be inserted in the receptacle.
Use of “plug-in” type accessories may damage the receptacle and result in poor retention of the lighter.

NOTE
The specified load should be strictly observed, because overloaded cord burns the ignition switch and harness.
RADIO REMOTE CONTROL SWITCH

REAR SPEAKER

TAILLIGHT RELAY

CLOCK SPRING

RADIO WITH TAPE PLAYER

DOOR SPEAKER

FRONT SPEAKER

RHEOSTAT

TSB Revision
## TROUBLESHOOTING CHART

<table>
<thead>
<tr>
<th>Item</th>
<th>Problem symptom</th>
<th>Relevant chart</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise</td>
<td>Noise appears at certain places when traveling (AM).</td>
<td>A-1</td>
</tr>
<tr>
<td></td>
<td>Noise appears at certain places when traveling (FM).</td>
<td>A-2</td>
</tr>
<tr>
<td></td>
<td>Mixed with noise, only at night (AM).</td>
<td>A-3</td>
</tr>
<tr>
<td></td>
<td>Broadcasts can be heard but both AM and FM have a lot of noise.</td>
<td>A-4</td>
</tr>
<tr>
<td></td>
<td>There is more noise either on AM or on FM.</td>
<td>A-5</td>
</tr>
<tr>
<td></td>
<td>There is noise when starting the engine.</td>
<td>A-6</td>
</tr>
<tr>
<td></td>
<td>Some noise appears when there is vibration or shocks during traveling.</td>
<td>A-7</td>
</tr>
<tr>
<td></td>
<td>Noise sometimes appears on FM during traveling.</td>
<td>A-8</td>
</tr>
<tr>
<td></td>
<td>Ever-present noise.</td>
<td>A-9</td>
</tr>
<tr>
<td>Radio</td>
<td>When switch is set to ON, no power is available.</td>
<td>B-1</td>
</tr>
<tr>
<td></td>
<td>No sound from one speaker.</td>
<td>B-2</td>
</tr>
<tr>
<td></td>
<td>There is noise but no reception for both AM and FM or no sound from AM, or no sound from FM.</td>
<td>B-3</td>
</tr>
<tr>
<td></td>
<td>Insufficient sensitivity.</td>
<td>B-4</td>
</tr>
<tr>
<td></td>
<td>Distortion on AM or on both AM and FM.</td>
<td>B-5</td>
</tr>
<tr>
<td></td>
<td>Distortion on FM only.</td>
<td>B-6</td>
</tr>
<tr>
<td></td>
<td>Too few automatic select stations.</td>
<td>B-7</td>
</tr>
<tr>
<td></td>
<td>Insufficient memory (preset stations are erased).</td>
<td>B-8</td>
</tr>
<tr>
<td>Cassette player</td>
<td>Cassette tape will not insert.</td>
<td>C-1</td>
</tr>
<tr>
<td></td>
<td>No sound.</td>
<td>C-2</td>
</tr>
<tr>
<td></td>
<td>No sound from one speaker.</td>
<td>C-3</td>
</tr>
<tr>
<td></td>
<td>Sound quality is poor, or sound is weak.</td>
<td>C-4</td>
</tr>
<tr>
<td></td>
<td>Cassette tape will not eject.</td>
<td>C-5</td>
</tr>
<tr>
<td></td>
<td>Uneven revolution. Tape speed is fast or slow.</td>
<td>C-6</td>
</tr>
<tr>
<td></td>
<td>Automatic search does not work</td>
<td>C-7</td>
</tr>
<tr>
<td></td>
<td>Faulty auto reverse.</td>
<td>C-8</td>
</tr>
<tr>
<td></td>
<td>Tape gets caught in mechanism.</td>
<td>C-9</td>
</tr>
<tr>
<td>CD player</td>
<td>CD will not be accepted.</td>
<td>D-1</td>
</tr>
<tr>
<td></td>
<td>No sound.</td>
<td>D-2</td>
</tr>
<tr>
<td></td>
<td>CD sound skips.</td>
<td>D-3</td>
</tr>
<tr>
<td></td>
<td>Sound quality is poor.</td>
<td>D-4</td>
</tr>
<tr>
<td></td>
<td>CD will not be ejected.</td>
<td>D-5</td>
</tr>
<tr>
<td></td>
<td>No sound from one speaker.</td>
<td>D-6</td>
</tr>
<tr>
<td>Motor antenna</td>
<td>Motor antenna won’t extend or retract.</td>
<td>E-1</td>
</tr>
<tr>
<td></td>
<td>Motor antenna extends and retracts but does not receive.</td>
<td>E-2</td>
</tr>
</tbody>
</table>

**TSB Revision**
CHART
A. NOISE

A-I Noise appears at certain places when traveling (AM):

- Is there a particular structure? No
  - Find out the following information from the user:
    1. Place
    2. Locality conditions (valley, mountain, etc.)
    3. Name and frequency of stations affected by noise

- Yes
  - Do the following measures eliminate the noise?
    1. Change to a different station with a strong signal to boost resistance to interference.
    2. Suppress high tones to reduce noise.

  - If due to vehicle noise:
    It may not be possible to prevent noise if the signal is weak.

  - If due to external noise:
    In almost all cases, prevention on the receiver side is impossible. Weak signals especially are susceptible to interference.

- If there is more noise than other radios, find out the noise conditions and the name and frequency of the receiving stations from the user, and consult with the service center.

TSB Revision
A-2 Noise appears at certain places when traveling (FM).

Do the following measures eliminate the noise?

- Change to a different station with a strong signal to boost resistance to interference.
- Suppress high tones to reduce noise.
- Extend antenna completely. (Whip antenna)

Yes  OK

No

If there is more noise than other radios, find out the noise conditions and the name and frequency of the receiving stations from the user, and consult with the service center.

NOTE

About FM waves:

FM waves have the same properties as light, and can be deflected and blocked. Wave reception is not possible in the shadow of obstructions such as buildings or mountains.

1. The signal becomes weak as the distance from the station’s transmission antenna increases. Although this may vary according to the signal strength of the transmitting station and intervening geographical formations or buildings, the area of good reception is approx. 20 – 25 km (12 – 16 miles) for stereo reception, and 30 – 40 km (19 – 25 miles) for monaural reception.

2. The signal becomes weak when an area of shadow from the transmitting antenna (places where there are obstructions such as mountains or buildings between the antenna and the car), and noise will appear. <This is called first fading, and gives a steady buzzing noise.>

3. If a direct signal hits the antenna at the same time as a signal reflected by obstructions such as mountains or buildings, interference of the two signals will generate noise. During traveling, noise will appear each time the vehicle’s antenna passes through this kind of obstructed area. The strength and interval of the noise varies according to the signal strength and the conditions of deflection. <This is called multipath noise, and is a repetitious buzzing.>

4. Since FM stereo transmission and reception has a weaker field than monaural, it is often accompanied by a hissing noise.

FM Broadcast Good Reception Areas

For stereo: 20 – 25 km (12 – 16 miles)

For monaural: 30 – 40 km (19 – 25 miles)

FM Signal Characteristics and Signal Interference

First fading interference

Multipath interference
The following factors can be considered as possible causes of noise appearing at night.

1. Factors due to signal conditions: Due to the fact that long-distance signals are more easily received at night, even stations that are received without problem during the day may experience interference in a general worsening of reception conditions. The weaker a station is the more susceptible it is to interference, and a change to a different station or the appearance of a beating sound* may occur.
   Beat sound*: Two signals close in frequency interfere with each other, creating a repetitious high-pitched sound. This sound is generated not only by sound signals but by electrical waves as well.

2. Factors due to vehicle noise: Alternator noise may be a cause.

Is the noise still obvious even with the lamps OFF?  

Do the following measures eliminate the noise?

- Tune to a station with a strong signal.
- Tune to a station with a strong signal without completely extending the antenna.

Does the noise fade away when the vehicle harness is moved away from the radio chassis? (if the harness is not in the proper position).

If there is more noise than other radios, consult a service center.
A-4 Broadcasts can be heard but both AM and FM have a lot of noise.

(1) Noise occurs when the engine is stopped.
Yes

Do the following measures eliminate the noise?
- Tune to a station with a strong signal.
- Extend the antenna completely. (Whip antenna)
- Adjust the sound quality to suppress high tones.

No

Is the radio body ground mounted securely?
Yes

No

Is the antenna plug properly connected to the radio?
Yes

Is the antenna itself in good condition or is it properly mounted?
Yes

Is the noise eliminated?
Yes

OK

No

If there is more noise than other radios, consult a service center.

No

If there is more noise than other radios, consult a service center.

NOTE
About noise encountered during FM reception only. Due to differences in FM and AM systems, FM is not as susceptible as AM to interference from engines, power lines, lightning, etc. On the other hand, there are cases due to the characteristics of FM waves of noise or distortion generated by typical noise interference (first fading and multipath). (Refer to A-2.)

<Noise (hissing) occurs in weak signal areas such as mountainous regions, but this is not due to a problem with the radio.>

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A-5: There is more noise either on AM or on FM.

1. There is much noise only on AM
   Due to differences in AM and FM systems, AM is more susceptible to noise interference.

   Were conditions such as the following present when noise was received?
   - Lightning was flashing. A motorcycle was passing.
   - A vehicle passed close by, but it appeared to be a vehicle generating a particularly large amount of noise radiation.
   - Passed beneath a power line. Passed under a bridge.
   - Passed beneath a telephone line.
   - Passed close by a signal generator.
   - Passed close by some other source of electrical noise.

   Yes
   Continue to check for static; when static is detected, check for the conditions listed above.

   No

   If the problem is particularly worse than other radios, consult a service center.

2. There is much noise only on FM
   Due to differences in FM and AM systems, FM is not as susceptible as AM to interference from engines, power lines, lightning, etc. On the other hand, there are cases due to the characteristics of FM waves of noise or distortion generated by typical noise interference (first fading and multipath). (Refer to A-2) <Noise (hissing) occurs in weak signal areas such as mountainous regions, but this is not due to a problem with the radio.>
## A-6 There is noise when starting the engine.

<table>
<thead>
<tr>
<th>Noise type</th>
<th>Conditions</th>
<th>Cause</th>
<th>Inspection or replacement</th>
</tr>
</thead>
</table>
| AM, FM: Ignition noise (Popping, Snapping, Cracking, Buzzing) | • Increasing the engine speed causing the popping sound to speed up, and volume decreases.  
• Disappears when the ignition switch is turned to ACC. | • Mainly due to the spark plugs.  
• Due to the engine noise. | Noise-preventive part  
Mounting place (next page)  
1  
2, 3 |
| Other electrical components | Noise may appear as electrical components become older. | Repair or replace electrical components. |
| Static electricity (Cracking, Crinkling) | • Disappears when the vehicle is completely stopped.  
• Severe when the clutch is engaged.  
• Various noises are produced depending on the body part of the vehicle. | Occurs when parts or wiring move for some reason and contact metal parts of the body.  
Due to detachment from the body of the front hood, bumpers, exhaust pipe and muffler, suspension, etc. | Return parts or wiring to their proper position.  
Ground parts by bonding.  
Cases where the problem is not eliminated by a single response to one area are common, due to several body parts being imperfectly grounded. |

### Caution
1. Connecting a high tension cable to the noise filter may destroy the noise filter and should never be done.
2. Check that there is no external noise. Since failure due to inability to identify the noise source, this operation must be performed.
3. Noise prevention should be performed by suppressing strong sources of noise step by step.

### NOTE
1. Condenser  
The condenser does not pass D.C. current, but as the number of waves increases when it passes A.C. current, impedance (resistance against A.C.) decreases, and current flow is facilitated. A noise suppressing condenser which takes advantage of this property is inserted between the power line for the noise source and the ground. This suppresses noise by grounding the noise component (A.C. or pulse signal) to the body of the vehicle.

2. Coil  
The coil passes D.C. current, but impedance rises as the number of waves increases relative to the A.C. current. A noise suppressing coil which takes advantage of this property is inserted into the power line for the noise source, and works by preventing the noise component from flowing or radiating out of the line.
NOISE SUPPRESSION PARTS MOUNTING POSITIONS

1. Noise condenser

2. Ground cable

3. Ground cable
A-7 Some noise appears when there is vibration or shocks during traveling.

- Are connectors properly connected?
  - Yes
  - No → Ensure proper connection

- Does noise appear when the radio switch is turned on while the vehicle is stopped and the radio is struck while tuned away from a station?
  - Yes
  - No → Static electricity noise:

  Body static electric from the shock absorber rubber bushings used to prevent vibration, tires, etc. occurs because of separation from the ground, causing a buzzing noise. Since no measures can be taken on the radio side, steps should be taken to discharge the static electricity of the vehicle body.

- Is the radio correctly grounded? (Is the mounting screw tightened securely?)
  - Yes
  - No → Tighten the screw securely.

- Is the antenna correctly grounded? (If noise appears when the antenna is moved, this means the ground is not securely connected.)
  - Yes
  - No → If rust is present of the antenna ground screw, clean and tighten the ground securely.

Repair or replace radio.
Noise sometimes appears on FM during traveling.

1. Is the antenna completely extended?
   - Yes
   - No
     - Check the antenna itself. (Refer to E-l, 2.)

2. Does the problem clear up when retuned?
   - Yes
     - OK
   - No

3. Does the problem appear only in certain locations and only with certain stations?
   - Yes
     - Due to electrical field conditions. (Multipath noise*, fading noise*).
   - No

4. Are connectors properly connected?
   - Yes
   - No
     - Check connector connections.

5. Does noise appear when the radio switch is turned on while the vehicle is stopped and the radio is struck while tuned away from a station?
   - Yes
   - No
     - Static electricity noise:
       Body static electric from the shock absorber rubber bushings used to prevent vibration, tires, etc. occurs because of separation from the ground, causing a buzzing noise. Since no measures can be taken on the radio side, steps should be taken to discharge the static electricity of the vehicle body.

6. Is the radio body correctly grounded? (Is the mounting screw tightened securely?)
   - Yes
   - No
     - Tighten the screw securely.

7. Is the antenna correctly grounded? (If noise appears when the antenna is moved, this means the ground is not securely connected.)
   - Yes
     - Repair or replace radio.
   - No
     - If rust is present of the antenna ground screw, clean and tighten the ground securely.

* About multipath noise and fading noise
Because the frequency of FM waves is extremely high, it is highly susceptible to effects from geological formations and buildings. These effects disrupt the broadcast signal and obstruct reception in several ways.

- Multipath noise
  This describes the echo that occurs when the broadcast signal is reflected by a large obstruction and enters the receiver with a slight time delay relative to the direct signal (repetitious buzzing).
- Fading noise
  This is a buzzing noise that occurs when the broadcast beam is disrupted by obstructing objects and the signal strength fluctuates intricately within a narrow range.
A-9 Ever-present noise.

Noise is often created by the following factors, and often the radio is OK when it is checked individually.
- Traveling conditions of the vehicle
- Terrain of area traveled through
- Surrounding buildings
- Signal conditions
- Time period

For this reason, if there are still problems with noise even after the measures described in steps A-1 to A-8 have been taken, get information on the factors listed above as well as determining whether the problem occurs with AM or FM, the station names, frequencies, etc., and contact a service center.

B. RADIO

B-1 No power is supplied when the switch is set to ON.

- Is multi-purpose fuse No. 4 blown or is the circuit open?
  - Yes: Replace fuse or repair harness.
  - No: Is the connector at the back of the radio connected properly?
    - Yes: Connect connector securely.
    - No: Disconnect and check the connector at the rear of the radio. Is the ACC power (12V) being supplied to the radio?
      - Yes: Repair harness.
      - No: Repair or replace radio.

B-2 No sound from one speaker.

- Check to see if there is any sound when attached to another radio.
  - Yes: Repair or replace radio unit.
  - No: Remove the connector on the back of the radio and check the speaker harness for conductance.
    - Yes: It conducts electricity but is shorted out.
    - No: Check the speaker for conductance.
      - Yes: Repair speaker harness and ensure proper connection of relay connectors.
      - No: Repair or replace speaker.
B-3  There is noise but no reception for both AM and FM or no sound from AM, or no sound from FM.

Is the check being conducted under special electrical field conditions?
  Yes
  No
  Example: in an underground garage or inside a building.

Is proper performance obtained when the vehicle is moved?
  Yes  OK
  No

Is the antenna completely extended?
  Yes
  No

Check the antenna itself. (Refer to E-1, 2.)

Does tuning solve the problem?
  Yes  OK
  No

Are the antenna plug and radio unit properly connected?
  Yes
  No

Reconnect

Does the problem disappear if connected to another radio?
  Yes  Repair or replace radio
  No

Antenna not properly mounted.

TSB Revision
**B-4 Insufficient sensitivity.**

Is the check being conducted under special electrical field conditions?

- Yes
  - Example: in an underground garage or inside a building

- No
  - Is proper performance obtained when the vehicle is moved?
    - Yes
      - OK
    - No
      - Is the antenna completely extended?
        - Yes: Check the antenna itself. (Refer to E-1, 2.)
        - No: Does tuning solve the problem?
          - Yes: OK
          - No
            - Is the problem limited to the reception of a specific radio station from a specific position?
              - Yes: Electrical field condition related*. (multipath noise or fading noise)
              - No: Is the antenna plug properly connected to the unit?
                - Yes: Ensure proper connection.
                - No: Does the problem disappear when a different radio is connected?
                  - Yes: Repair or replace radio.

* For multipath noise and fading noise problems, refer to P.54-94.
B-5 Distortion on AM or on both AM and FM.

- **How much distortion is there?**
  - Occasional
  - Constant

- **Are the speaker cords in contact with the cone paper?**
  - Yes
  - No

- **Remove the speakers and check for torn cone paper or foreign objects.**
  - Yes
  - No

- **Check for deformation with speaker installed.**
  - Yes
  - No

- **Repair or replace radio.**

- **Distortion in the vicinity of the radio station**
  - Yes
  - Excessive antenna input

- **Due to weak electrical field of radio station**

B-6 Distortion on FM only

- **Does the distortion persist when the radio is tuned to another station?**
  - No
  - Yes

- **Does distortion increase or decrease when the vehicle is moved?**
  - No
  - Yes

- **Due to multipath noise**

TSB Revision
B-7 Too few automatic select stations.

Is the check being conducted under special electrical field conditions?
- Yes
- No
  - Example: in an underground garage or inside a building

Is proper performance obtained when the vehicle is moved?
- Yes
  - OK
- No
  - Check the antenna itself. (Refer to E-1, 2.)

Is the antenna completely extended?
- Yes
- No
  - Check the antenna itself. (Refer to E-1, 2.)

Is the antenna plug properly connected to the equipment?
- Yes
  - Ensure proper connection.
- No

Does the equipment work properly if the radio is changed?
- Yes
  - Malfunctioning radio.
- No

B-8 Insufficient memory (preset stations are erased).

Is multi-purpose fuse No. 19 blown or is the circuit open?
- Yes
  - Replace fuse or repair harness.
- No

Disconnect and check the connector at the rear of the radio. Is the memory backup (battery) power being supplied?
- No
  - Repair harness.
- Yes
  - Repair or replace radio.
C. CASSETTE PLAYER

**C-1** Cassette tape will not be inserted.

- Are there any foreign objects in the cassette player? 
  - Yes: Remove the object(s)*
  - No

  * Attempting to force a foreign object (e.g., a coin or clip, etc.) out of the cassette player may damage the mechanism. The player should be taken to a service dealer for repair.

- Does the cassette player work if another tape is inserted? 
  - Yes: Replace tape *
  - No

  * Ensure that the tape label is not loose, that the tape itself is not deformed and that the tape is tightly wound. Also, tape of C-120 or greater length often get caught in the mechanism and should not be used.

Repair or replace cassette player.

**C-2** No sound (even after a tape has been inserted).

- Is multi-purpose fuse No. 4 blown or is the circuit open? 
  - Yes: Replace fuse or repair harness.
  - No

- Is connector at rear of radio connected tightly? 
  - No: Connect connector firmly.
  - Yes

- Disconnect connector at rear of radio. Is ACC power being supplied to the radio? 
  - Yes: Repair or replace cassette player.
  - No: Repair harness.

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C-3 No sound from one speaker.

Clean the cassette player head and check again. Yes OK

No

- Ensure that the tape label is not loose, that the tape itself is not deformed and that the tape is tightly wound.
- Tapes of C-1 20 or greater length often get caught in the mechanism and should not be used.

Replace the cassette player and check again. Yes Repair or replace cassette player.

No

Yes It conducts electricity but is shorted out. Repair speaker harness.

No

Remove the connector on the back of the radio and check the speaker harness for conductance.

Yes

Replace speaker harness and ensure proper connection of relay connectors.

No

Check the speaker for conductance.

Yes

No

Repair or replace speaker.

TST Revision
C-4 Sound quality is poor, or sound is weak.

Does the player play properly when another tape* is inserted? (Yes/OK)

No
- Ensure that the tape label is not loose, that the tape itself is not deformed and that the tape is tightly wound.
- Tapes of C-120 or greater length often get caught in the mechanism and should not be used.

Does the player play properly when the tape player head is cleaned? (Yes/OK)

No

Is proper operation obtained when the cassette player is replaced? (Yes/Repair or replace cassette player)

No

Repair or replace speaker.

C-5 Cassette tape will not eject.

The problems covered here are all the result of the use of a bad tape (deformed or not properly tightened) or of a malfunction of the cassette player itself. Malfunctions involving the tape becoming caught in the mechanism and ruining the case are also possible, and attempting to force the tape out of the player can cause damage to the mechanism. The player should be taken to a service dealer for repair.
C-6  Uneven revolution. Tape speed is fast or slow.

Does the player play OK if the tape is changed?  Yes  OK

No
Are there any foreign objects inside the cassette player?  Yes  Remove foreign object(s).

No

Is the head or capstan roller dirty?

Yes  Clean.

No

Repair or replace cassette player.

C-7  Automatic search does not work.

Does the MSS (automatic search) button* depress properly?  No  Button improperly operated.

Yes

Does the player play OK if the tape* is changed?  Yes

No  Tape used is bad.

Yes

- When the time between songs on a tape is less than three seconds, or when there is a three second period in the middle of a song in which the volume level is extremely low, the automatic search function may not work properly.

- Ensure that the tape label is not loose, that the tape itself is not deformed and that the tape is tightly wound. Also, tapes of C-1 20 or greater length often get caught in the mechanism and should not be used.

Malfunction of the cassette player unit

Malfunction of the cassette player unit

TSB Revision
**C-8** Faulty auto reverse.

Does the player play OK if the tape is changed?  
Yes  OK

No

- Ensure that the tape label is not loose, that the tape itself is not deformed and that the tape is tightly wound.
- Tapes of C-1 20 or greater length often get caught in the mechanism and should not be used.

Does the problem only occur while the vehicle is being driven?  
Yes  No

No  Repair or replace cassette player.

Is the cassette player properly installed to the vehicle?  
Yes  No

No  Ensure cassette player installation.

Repair or replace cassette player.

---

**C-9** Tape gets caught in mechanism*1.

*1 When the tape is caught in the mechanism, the case may not eject. When this occurs, do not try to force the tape out as this may damage the tape player mechanism. Take the cassette to a service dealer for repair.

Does the player play OK if the tape*2 is changed?  
Yes  Tape used is bad.

No

*2 Ensure that the tape label is not loose, that the tape itself is not deformed and that the tape is tightly wound. Also, tapes of C-1 20 or greater length often get caught in the mechanism and should not be used.

Repair or replace cassette player.
D. CD PLAYER

D-I CD will not be accepted.

Does the shutter open when a CD is inserted? *1

No

Take out the CD.

Yes

Is CD rejected from approx. 15 mm depth of the insertion panel though CD can be inserted? *2

No

OK

Yes

Though CD is completely inserted once, “error” is displayed and the CD is rejected? *3

No

OK

Yes

Check CD.
- Is the labeled side faced downward?
- Is the recorded face of the CD dirty?
- Does dew exit on the recorded face of the CD?

Yes

Insert the CD correctly or check to see if the CD is defective.

No

Replace CD.

*1 If the CD is already loaded, doesn't the shutter open to allow insertion when another CD is inserted?

*2 If the key switch is not at ACC or ON, the CD stops at depth of 15 mm below the panel surface even when it is inserted, and it will be rejected when pushed farther?

*3 Even though the CD is loaded, E (error) is sometimes displayed with the CD rejected because of vibration/shock or dew on the CD face or optical lens.
D-2 No sound.

Does it play if an existing proper CD is inserted? Yes → Replace defective CD.

No

Does "WAIT" indicator flicker? Yes → Return it to normal temperature, and recheck operation. Does it operate properly? Yes → OK

No

Are the radio set and CD player connected securely? No → Securely connect them.

Yes → Repair or replace CD player.

(The combined radio cassette must operate properly.)

D-3 CD sound skips.

1. Sound sometimes skips during parking.

Is CD face scratched or dirty? Yes → CD is defective, or clean CD.

No →

Does it play properly if CD is replaced with an existing proper CD? Yes → Replace CD.

No → Repair or replace CD player.

2. Sound sometimes skips during driving.

(Stop vehicle, and check it.)

(Check it by using a proper CD which is free of scratch, dirt or other abnormality.)

Does sound skip when the side of CD player is tapped? Yes → Securely mount the CD player.

No → Check the sound skipping state during driving in detail, and contact a service shop.
D-4 | Sound quality is poor.

- Does it play properly if another proper CD is loaded?
  - Yes
    - Replace CD.
  - No
    - Repair or replace CD player.

D-5 | CD will not be ejected.

- Is the key switch (ignition key) at ACC or ON?
  - No
    - Turn the key to ON.
  - Yes
    - Is the combined amplifier or radio set connected securely?
      - No
        - Securely connect the subjected one.
      - Yes
        - If CD is not ejected, don't reject it. The player may be damaged. Therefore, contact a service shop for repairs.

D-6 | No sound from one speaker.

- Is CD player securely connected to the combined radio set?
  - No
    - Securely connect them.
  - Yes
    - Does it play properly if another CD player is combined?
      - Yes
        - Repair or replace CD player.
      - No
        - Repair or replace the combined radio set.
E. MOTOR ANTENNA

E-1 | Motor antenna won't extend or retract.

Clean and polish the surface of the antenna rod.

Is the radio power switch ON?
Yes

Is voltage (approx. 12V) emitted to the radio's motor antenna terminal?
Yes

Is the antenna bent?
Yes

Is the antenna relay OK?
Yes

Is the motor OK?
Yes

Repair the harness.

No

Switch it ON.

No

Repair or replace the radio.

No

Repair the bend, or replace the antenna mast.

Yes

Replace the antenna relay.

No

Replace the motor.
E-2 Motor antenna extends and retracts but does not receive.

1. Is the antenna* itself OK?
   - Yes: Replace the feeder cable.
   - No: Repair or replace it.

2. Is operation normal when a new antenna assembly is directly installed to the radio?
   - Yes: Replace the feeder cable.
   - No: Refer to B. "Radio trouble shooting".

Checking the antenna*

<table>
<thead>
<tr>
<th>Ohmmeter measurement locations</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circuits from F to A, B, C, D and E</td>
<td>Continuity</td>
</tr>
<tr>
<td>Circuit between G and H</td>
<td>Continuity</td>
</tr>
<tr>
<td>Circuits from H to A, B, C, D and E</td>
<td>No continuity</td>
</tr>
</tbody>
</table>
RADIO REMOTE-CONTROL
REMOVAL AND INSTALLATION

Removal steps

1. Air bag module
2. Radio remote control switch

SERVICE POINT OF REMOVAL

1. REMOVAL OF AIR BAG MODULE

(1) Remove the air bag module mounting nut using a socket wrench from the back side.

(2) To remove the clock spring connector (squib connector) from the air bag module, force the lock outward, and pry it with a plain screwdriver as shown in the illustration at the left to make sure that no undue force is exerted on the connector when it is removed.

Caution
Wait at least 30 seconds after disconnecting the battery cable before doing any further work. The SRS system is designed to retain enough voltage to deploy the air bag for a short time even after the battery has been disconnected, so serious injury may result from unintended air bag deployment if work is done on the SRS system immediately after the battery cable is disconnected.

(3) The removed air bag module should be stored in a clean, dry place with the pad cover face up.
RADIO AND TAPE PLAYER
REMOVAL AND INSTALLATION

Removal steps
1. Radio panel
2. Radio and tape player
3. CD player
4. Radio bracket
5. Front console assembly (Refer to GROUP 52A - Console Box.)
6. CD amplifier
7. CD amplifier bracket A
8. CD amplifier bracket B

SPEAKER
<DOOR SPEAKER>
REMOVAL AND INSTALLATION

Removal steps
1. Door trim (Refer to GROUP 42 - Door Trim and Waterproof Film.)
2. Speaker garnish
3. Speaker
4. Speaker cover

TSB Revision
<REAR SPEAKER>

REMOVAL AND INSTALLATION

1. Quarter trim (Refer to GROUP 52A - Trims.)
2. Speaker garnish
3. Speaker
4. Speaker box

MOTOR ANTENNA - ANTENNA FEEDER CABLE

REMOVAL AND INSTALLATION

Removal steps of motor antenna
- Rear side trim (LH)
- Ring nut
- Base
- Antenna pole
- Antenna feeder cable and motor antenna connection
- Motor antenna

Removal steps of antenna feeder cable
- Rear side trim (LH)
- (Refer to GROUP 52A - Trims.)
- Quarter trim (LH)
- Rear console assembly
- (Refer to GROUP 52A - Console Box.)
- Radio and tape player
- (Refer to P.54-111.)
- Antenna feeder cable and motor antenna connection
- Rear seat cushion
- Rear seatback
- Inner seat belt
- Console side cover (LH)
- Antenna feeder cable

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SERVICE POINT OF REMOVAL
6. REMOVAL OF REAR SEAT CUSHION
Raise and remove the seat cushion with the lever pulled.

INSPECTION
INSPECTION OF ANTENNA MOTOR
Disconnect the motor antenna control unit connector, connect the positive terminal of the power supply to terminal ① and connect the negative terminal to terminal ④ to check that the antenna goes up, and that when the connections are reversed, the antenna goes down.

INSPECTION OF MOTOR ANTENNA CONTROL UNIT
(1) Connect the harness connector to the motor antenna. (Body harness).
(2) Disconnect the antenna motor connector.
(3) With the ignition switch in the ACC or ON position, operate the radio switch and check the voltage between the terminals during the period when the antenna is going up or going down.

<table>
<thead>
<tr>
<th>Antenna operating direction</th>
<th>Terminals to check</th>
<th>Voltage (V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Down</td>
<td>1 – 3</td>
<td>10 – 13</td>
</tr>
<tr>
<td>Up</td>
<td>3 – 4</td>
<td>10 – 13</td>
</tr>
</tbody>
</table>

SERVICE POINT OF INSTALLATION
6. INSTALLATION OF REAR SEAT CUSHION
(1) Securely fit the attachment wire of the seat cushion under the seatback.
(2) Pass the inner seat belt buckles through the cushion.
(3) Securely fit the lock plates of the seat cushion into the holes in the floor.
REPLACEMENT OF ANTENNA POLE

(1) Remove the ring nut.

(2) Set the radio switch to ON. After the antenna pole has extended, remove the antenna pole and rack cable as an assembly.

(3) Extend the antenna pole up to its farthest point.

   **NOTE**
   If the motor end of the rack cable is bent, straighten it.

(4) Force the rack cable into the motor assembly with the tooth side of the rack cable toward the luggage compartment.

(5) Turn the tooth side of the rack cable toward the rear of the vehicle (90° clockwise) to bring the rack cable into mesh with the motor gear.

(6) Lightly pull the rack cable. If it comes out without resistance, it means that the rack cable is not in mesh with the motor gear. Recheck that the rack cable end is not bent before repeating the above-mentioned steps (2) and (3).

(7) With the antenna pole upright and the radio switch at OFF, take up the rack cable. As the rack cable is taken up, insert the antenna pole toward the motor antenna.

(8) After the ring nut has been tightened, set the radio switch to ON and OFF to check the operation of the antenna pole.
OPERATION

- When the defogger switch is turned ON with the ignition switch in ON position, the defogger relay is energized causing defogger to operate.
- At the same time, the defogger indicator light lights up indicating that the defogger is in operation.
- The defogger timer keeps the defogger relay remaining energized for 11 minutes after the defogger switch has been turned ON. If the defogger switch is pushed a second time during this 11-min. period, timer is cancelled and the defogger is turned off.

TROUBLESHOOTING HINTS

1. Defogger is inoperative.
   1) Indicator does not come on, either.
      - Check multi-purpose fuse No. 3.
      - Check defogger relay.
   2) Indicator comes on.
      - Check defogger.

2. Once the defogger is operating it cannot be stopped by operating the defogger switch again.
   - Check defogger switch.
   - Check the defogger relay.

NOTE
For information concerning the defogger relay and ETACS control unit, refer to P.54-117, 123.
TROUBLESHOOTING GUIDE

INPUT CHECK

Using the multi-use tester or voltmeter, check whether or not the input signals from each switch are being input to the ETACS unit.

(1) Connect the multi-use tester to the diagnosis check connector located at the right side of the junction block or connect the voltmeter between the ETACS terminal and the ground terminal.

(2) Check if the buzzer of the multi-use tester sounds or the needle of the voltmeter moves when each switch noted below is operated.

If the buzzer sounds or the needle moves, the input signals are being input to the ETACS unit, so that switch can be considered to be functioning normally. If not, the switch or switch input circuit is faulty. Check the switch and the switch input circuit.

- Ignition switch
- Defogger switch

TROUBLESHOOTING QUICK-REFERENCE TABLE

<table>
<thead>
<tr>
<th>Problem</th>
<th>Probable cause</th>
<th>Checking method</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defogger does not operate when defogger switch is turned on with ignition switch placed in ‘ON’ position.</td>
<td>Ignition switch input circuit broken.</td>
<td>If input check results are not satisfactory, checking individual part and circuit No. 1 (P.54-118) is checked.</td>
<td>Correct harness.</td>
</tr>
<tr>
<td>Defogger switch input circuit broken.</td>
<td>If input check results are not satisfactory, checking individual part and circuit No. 2 (P.54-119) is checked.</td>
<td>Correct harness or replace defogger switch.</td>
<td></td>
</tr>
<tr>
<td>Alternator input circuit broken.</td>
<td>Checking individual part and circuit No. 3 (P.54-120) is checked.</td>
<td>Correct harness or replace alternator.</td>
<td></td>
</tr>
<tr>
<td>Defogger relay activation circuit broken.</td>
<td>Checking individual part and circuit No. 4 (P.54-121) is checked.</td>
<td>Correct harness or replace defogger relay.</td>
<td></td>
</tr>
<tr>
<td>Faulty ECU.</td>
<td></td>
<td>–</td>
<td>Replace ECU.</td>
</tr>
<tr>
<td>Defogger operates but goes off soon. Or it does not turn off after timer operating time is exceeded.</td>
<td>Faulty ECU.</td>
<td>–</td>
<td>Replace ECU.</td>
</tr>
</tbody>
</table>

NOTE
"ECU" (electronic control unit) indicates the ETACS unit.

TSB Revision
CHECKING INDIVIDUAL PART AND CIRCUIT

1. IGNITION SWITCH INPUT CIRCUIT

**Operation Description**

As the condition for operation of the system, HIGH-level signals are sent to the electronic control unit when the ignition switch is set to the "ON" position.

**Electronic Control Unit Terminal Voltage (Disconnect the ECU Connector and Check at the Wiring Harness; Side.)**

<table>
<thead>
<tr>
<th>ECU terminal No.</th>
<th>Signal</th>
<th>Status</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>52</td>
<td>Ignition switch “ON”</td>
<td>Ignition switch</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ACC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>System voltage</td>
</tr>
</tbody>
</table>

**Checking the Ground Circuit (Disconnect the Connector and Check the Wiring Harness Side.)**

<table>
<thead>
<tr>
<th>Terminal No.</th>
<th>Connected to/measured part</th>
<th>Measurement</th>
<th>Tester connection</th>
<th>Check conditions</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>57*1</td>
<td>Electronic control unit ground</td>
<td>Resistance</td>
<td>57*1-ground</td>
<td>At all times</td>
<td>Continuity</td>
</tr>
<tr>
<td>59*2</td>
<td></td>
<td></td>
<td>59*2-ground</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE**

*1: Vehicles without theft-alarm system  
*2: Vehicles with theft-alarm system

**Checking Individual Part**

Ignition switch: Refer to P.54-7
2. DEFOGGER SWITCH INPUT CIRCUIT

**Operation Description**

When the defogger switch is turned on with the ignition placed in the “ON” position and the alternator generating current (L terminal is not lower than 10V), the timer circuit of ECU operates.

**Electronic Control Unit Terminal Voltage (Connection Status of Electronic Control Unit Connector)**

<table>
<thead>
<tr>
<th>ECU terminal No.</th>
<th>Signal</th>
<th>Status</th>
<th>Terminal voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>10<em>1, 12</em>2</td>
<td>Defogger switch “ON” signal</td>
<td>Defogger switch “OFF”</td>
<td>5V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Defogger switch “ON”</td>
<td>ov</td>
</tr>
</tbody>
</table>

**Checking the Defogger Switch (“ON” Position) Circuit (Disconnect the ECU Connector and Check at the Wiring Harness Side.)**

<table>
<thead>
<tr>
<th>ECU terminal No.</th>
<th>Connected to/measured component</th>
<th>Measurement</th>
<th>Tester connection</th>
<th>Check condition</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>10<em>1, 12</em>2</td>
<td>Defogger switch “ON”</td>
<td>Resistance</td>
<td>10*1-ground</td>
<td>Defogger switch “OFF”</td>
<td>No continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12*2-ground</td>
<td>Defogger switch “ON”</td>
<td>Continuity</td>
</tr>
</tbody>
</table>

**NOTE**
*1: Vehicles without theft-alarm system  
*2: Vehicles with theft-alarm system

**Checking Individual Part**
Defogger switch: Refer to P.54-122.
3. ALTERNATOR INPUT CIRCUIT

Operation Description
When the alternator is producing current (L terminal is not lower than 10V), H signal is input to ECU. Therefore, the defogger relay can be turned on by means of the defogger switch.

NOTE
When the alternator no more produces current (L terminal is not higher than 3.5V), the defogger relay is turned off even if the defogger is in operation.

Electronic Control Unit Terminal Voltage (Connection Status of Electronic Control Unit Connector)

<table>
<thead>
<tr>
<th>ECU terminal Signal</th>
<th>Status</th>
<th>Terminal voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2<em>1 4</em>2</td>
<td>Alternator signal</td>
<td>ignition switch &quot;ON&quot;</td>
</tr>
<tr>
<td></td>
<td>When alternator is producing current</td>
<td>0V</td>
</tr>
<tr>
<td></td>
<td>When alternator is not producing current</td>
<td>5V</td>
</tr>
</tbody>
</table>

NOTE
*1: Vehicles without theft-alarm system
*2: Vehicles with theft-alarm system

Checking Individual Part
Alternator: Refer to GROUP 16 – Alternator.
4. DEFOGGER RELAY ACTIVATION CIRCUIT

**Operation Description**

When the defogger switch is turned on with the ignition switch placed in the ON position and with the alternator producing current (L terminal is not lower than 10V), the transistor of ECU is turned on for 11 minutes to turn on the defogger relay. Therefore, the current supplied from the battery flows to the defogger through fusible link No. 9.

**NOTE**

If the defogger switch is turned on again or the alternator no more produces current (L terminal is not higher than 3.5V) while the defogger is in operation, the defogger relay is turned off and the current stops flowing to the defogger.

**Electronic Control Unit Terminal Voltage**

(Disconnect the ECU Connector and Check at the Wiring Harness Side.)

<table>
<thead>
<tr>
<th>ECU terminal No.</th>
<th>Signal</th>
<th>Status</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>3*1</td>
<td>Defogger relay</td>
<td>Ignition switch</td>
<td>OFF, ov</td>
</tr>
<tr>
<td>5*2</td>
<td></td>
<td></td>
<td>ACC, System voltage</td>
</tr>
</tbody>
</table>

**NOTE**

*1: Vehicles without theft-alarm system
*2: Vehicles with theft-alarm system

**Checking Individual Part**

Defogger relay: Refer to P.54-123.
SERVICE ADJUSTMENT PROCEDURES

THE PRINTED-HEATER LINES CHECK

1. Run engine at 2,000 rpm. Check heater element with battery at full.

2. Turn ON rear window defogger switch. Measure heater element voltage with circuit tester at rear window glass center A. Condition good if indicating about 6 V.

3. If 12 V is indicated at A, there is a break in the negative terminals from A. Move test bar slowly to negative terminal to detect where voltage changes suddenly (0 V).

4. If 0 V is indicated at A, there is a break in the positive terminals from A. Detect where the voltage changes suddenly (12 V) with the same method described.

THE PRINTED-HEATER LINES REPAIR

REQUIRED MATERIALS

- Thinner
- Tape
- Conductive paint
- Lead-free gasoline
- Fine brush

1. Clean disconnected area with lead-free gasoline. Tape along both sides of heater element.

2. Mix conductive paint thoroughly. Thin the required amount of paint in a separate container with a small amount of thinner and paint break three times at 15 minute intervals.

3. Remove tape and leave for a while before use (circuit complete).

4. When completely dry (after 24 hours) finish exterior with a knife.

Caution
Clean glass with a soft cloth (dry or damp) along defogger heater element.

REAR WINDOW DEFOGGER SWITCH

1. Remove rear window defogger switch from the meter bezel. (Refer to P.54-70.)

2. Operate the switch and check the continuity between the terminals.

<table>
<thead>
<tr>
<th>Switch position</th>
<th>Terminal</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ON</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE
O-O indicates that there is continuity between the terminals.
DEFOGGER RELAY

INSPECTION

(1) Remove defogger relay from the instrument panel relay box.

(2) Connect battery power source to terminal 5. Check circuit between terminals with terminal 3 grounded.

<table>
<thead>
<tr>
<th>Power is supplied</th>
<th>1 – 2 terminals</th>
<th>Continuity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power is not supplied</td>
<td>1 – 2 terminals</td>
<td>No continuity</td>
</tr>
<tr>
<td></td>
<td>3 – 5 terminals</td>
<td>Continuity</td>
</tr>
</tbody>
</table>
TROUBLESHOOTING GUIDE
CHECKING THE INPUT

1. Connect a voltmeter between terminal for “A” and terminal for ground, or connect the multi-use tester to the diagnosis connector.

2. Make sure that when the following switches are turned on, the output shown in the illustration is delivered. (Only those switches which are related to the theft-alarm system are listed here.)
   - Driver and front passenger door switches
   - Headlight switch
   - Driver and front passenger door lock switches
   - Passing light switch
   - Pop-up switch
   - Hood switch
   - Liftgate switch
   - Door key cylinder switch
   - Liftgate switch

<table>
<thead>
<tr>
<th>Tester</th>
<th>output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltmeter</td>
<td>Rectangular wave</td>
</tr>
<tr>
<td></td>
<td>12 V 100 ms is output</td>
</tr>
</tbody>
</table>

If there is no output of a voltage pattern at all, check for a malfunction of that switch or for damaged or disconnected wiring.
# THEFT-ALARM SYSTEM - Troubleshooting

## TROUBLESHOOTING QUICK-REFERENCE TABLE

For information concerning the locations of electrical components, refer to GENERAL - Theft-alarm System Circuit.

### 1. ARMING / DISARMING RELATIONSHIP

<table>
<thead>
<tr>
<th>Trouble symptom</th>
<th>Cause</th>
<th>Check method</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>The system is not armed (The SECURITY light doesn't illuminate, and the alarm doesn't function.) (The central door locking system functions normally. If the central locking system does not function normally, refer to P.54-129.)</td>
<td>Damaged or disconnected wiring of ECU power supply circuit</td>
<td>Check by using check chart P.54-127.</td>
<td>Replace the fusible link No. 6 or the fuse No. 19. Replace the harness.</td>
</tr>
<tr>
<td></td>
<td>Damaged or disconnected wiring of door switch input circuit</td>
<td>Check by using check chart P.54-128.</td>
<td>Repair the harness or replace the door switch.</td>
</tr>
<tr>
<td>The arming procedures are followed, but the SECURITY light does not illuminate. (There is an alarm, however, when an alarm test is conducted after about 20 seconds have passed.)</td>
<td>Damaged or disconnected wiring of SECURITY light activation circuit</td>
<td>Check by using check chart P.54-132.</td>
<td>Replace the fusible link No. 6 or the fuse No. 19. Replace the harness.</td>
</tr>
<tr>
<td></td>
<td>Blown SECURITY light bulb</td>
<td></td>
<td>Replace the bulb.</td>
</tr>
<tr>
<td></td>
<td>Malfunction of the ECU.</td>
<td></td>
<td>Replace the ECU.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

### 2. ACTIVATION / DEACTIVATION RELATIONSHIP

<table>
<thead>
<tr>
<th>Trouble symptom</th>
<th>Cause</th>
<th>Check method</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is no alarm when, as an alarm test, a door is opened without using the key. (The arming and disarming are normal, and the alarm is activated when the liftgate or hood is opened.)</td>
<td>Damaged or disconnected wiring of door switch (all doors) input circuit</td>
<td>If input checks (P.54-124) indicate a malfunction, check by using check chart P.54-128.</td>
<td>Repair the harness or replace the door switch.</td>
</tr>
<tr>
<td></td>
<td>Malfunction of the door switch</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Malfunction of the ECU</td>
<td></td>
<td>Replace the ECU.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There is no alarm when, as an alarm test, the liftgate is opened without using the key. (The alarm is activated, however, by opening a door or the hood.)</td>
<td>Damaged or disconnected wiring of liftgate switch input circuit</td>
<td>If input checks (P.54-124) indicate a malfunction, check by using check chart P.54-131.</td>
<td>Repair the harness or replace the liftgate switch.</td>
</tr>
<tr>
<td></td>
<td>Malfunction of the liftgate switch.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Malfunction of the ECU</td>
<td></td>
<td>Replace the ECU.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trouble symptom</td>
<td>Cause</td>
<td>Check method</td>
<td>Remedy</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>There is no alarm when, as an alarm test the hood is opened from within the vehicle. (The alarm is activated, however, by opening a door or the liftgate.)</td>
<td>Damaged or disconnected wiring of hood switch input circuit.</td>
<td>If input checks (P.54-124) indicate a malfunction, check by using check chart P.54-128.</td>
<td>Repair the harness or replace the hood switch.</td>
</tr>
<tr>
<td></td>
<td>Malfunction of the hood switch.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Malfunction of the ECU.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engine would not start [Engine starting is possible when the starter relay is in the switched-off (normally closed) condition, with the clutch switch is in the switch-off and the ECU harness connector disconnected.]</td>
<td>There is a short-circuit of the starter relay activation circuit</td>
<td>Check by using check chart P.54-135.</td>
<td>Repair the harness.</td>
</tr>
<tr>
<td>When, as a test of the alarm, a door or the liftgate is opened without using the key, or the hood is opened from within the vehicle, the horn and the theft-alarm horn sound but the headlights don't flash. (The headlights can, however, be switched ON by using the passing switch.)</td>
<td>Damaged or disconnected wiring of headlight power supply circuit or headlight activation circuit</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Malfunction of the ECU.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The headlights flash during an alarm test but the horn or the theft alarm horn does not sound.</td>
<td>Damaged or disconnected wiring of horn relay power supply circuit or horn activation circuit.</td>
<td>Check by using check chart P.54-132, 133, 134.</td>
<td>Repair the harness. Replace the horn. Replace dedicated fuse No. 6 or the fusible link No. 6.</td>
</tr>
<tr>
<td></td>
<td>Malfunction of the ECU.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The system is not deactivated when, during an alarm test in which the alarm is intentionally activated, the door or liftgate is unlocked by using the key. (The system also cannot be disarmed.)</td>
<td>Damaged or disconnected wiring of door key cylinder and liftgate unlock switch input circuit</td>
<td>If input checks (P.54-124) indicate a malfunction, check by using check chart P.54-130, 131.</td>
<td>Repair the harness. Replace the key cylinder switch or the liftgate switch.</td>
</tr>
<tr>
<td></td>
<td>Malfunction of door key cylinder and liftgate unlock switch.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Malfunction of the ECU.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ECU: Electronic Control Unit

NOTE

(1) If the liftgate unlock switch or door key cylinder unlock switch is operated roughly, or if these switches have been installed incorrectly or switches themselves are defective the ECU may not accept the warning or alarm cancelling signal. In such case, the alarm operation will take place when the door is opened using a key.

[When the door key cylinder switch has been shorted, however, if the ignition switch is turned ON, the ECU judges the detectionswitch as faulty and thereafter, it will prevent setting of 'warning/alarm until the shorting is corrected.]}

(2) If the liftgate is opened using a key and is left as opened when the door key cylinder switch system has a trouble (wiring harness damage, open circuit, etc.), the ECU judges it as the liftgate holding mode and does not produce alarm even when the door is opened.
CHECKING THE CIRCUIT AND INDIVIDUAL PART

1. ETACS POWER-SUPPLY AND GROUND CIRCUITS

**Description of operation**

The battery supplies a stabilized 5V power supply to the ECU, via the constant-voltage circuit and terminal 51 (which is directly connected to the battery).

ECU terminal voltage (Connection condition of the ECU connector).

<table>
<thead>
<tr>
<th>ECU terminal No.</th>
<th>Signal</th>
<th>Condition</th>
<th>Terminal voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>51</td>
<td>ECU power supply</td>
<td>At all times</td>
<td>12V</td>
</tr>
</tbody>
</table>

Checking the ground circuit (Disconnect the connector and check at the wiring harness side.)

<table>
<thead>
<tr>
<th>ECU terminal No.</th>
<th>Connected to/measured component</th>
<th>Measurement</th>
<th>Tester connection</th>
<th>Check condition</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>59</td>
<td>ECU ground</td>
<td>Resistance</td>
<td>59-ground</td>
<td>At all times</td>
<td>Continuity</td>
</tr>
</tbody>
</table>

2. KEY-REMEMINDER SWITCH INPUT CIRCUIT

**Description of operation**

The key-reminder switch is switched OFF and HIGH-level signals are sent to the ECU when the key is inserted into the ignition key cylinder: when the key is removed, the key-reminder switch is switched ON and LOW-level signals are sent to the ECU.

ECU terminal voltage (Connection condition of the ECU connector).

<table>
<thead>
<tr>
<th>ECU terminal No.</th>
<th>Signal</th>
<th>Condition</th>
<th>Terminal voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>64</td>
<td>Key-reminder switch</td>
<td>Key removed</td>
<td>12V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Key inserted</td>
<td>0V</td>
</tr>
</tbody>
</table>

Checking the key-reminder switch circuit (Disconnect the connector of the ECU and check at the wiring harness side.)

<table>
<thead>
<tr>
<th>ECU terminal No.</th>
<th>Connected to/measured component</th>
<th>Measurement</th>
<th>Tester connection</th>
<th>Check condition</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>64</td>
<td>Key-reminder switch</td>
<td>Resistance</td>
<td>64-ground</td>
<td>Key removed</td>
<td>Continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Key inserted</td>
<td>No continuity</td>
</tr>
</tbody>
</table>
3. HOOD SWITCH INPUT CIRCUIT

**Description of operation**

When the hood is closed (the hood switch is switched OFF), HIGH-level signals are sent to the ECU. When the hood is opened (the hood switch is switched ON), LOW-level signals are sent to the ECU.

ECU terminal voltage (Connection condition of the ECU connector).

<table>
<thead>
<tr>
<th>ECU terminal No.</th>
<th>Signal</th>
<th>Condition</th>
<th>Terminal voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Hood switch</td>
<td>Open</td>
<td>0V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Closed</td>
<td>5V*</td>
</tr>
</tbody>
</table>

* Measurement is not possible by using a voltmeter, but is possible by using an oscilloscope.

Checking the hood switch circuit (Disconnect the connector of the ECU and check at the wiring harness side.)

<table>
<thead>
<tr>
<th>ECU terminal No.</th>
<th>Connected to/measured part</th>
<th>Measurement</th>
<th>Tester connection</th>
<th>Check condition</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Hood switch</td>
<td>Resistance</td>
<td>18 - ground</td>
<td>Hood</td>
<td>Closed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Open</td>
<td>No continuity</td>
</tr>
</tbody>
</table>

4. DOOR SWITCH INPUT CIRCUIT

**Description of operation**

When the door is closed (the door switch is switched OFF), HIGH-level signals are sent to the ECU. When the door is opened (the door switch is switched ON), LOW-level signals are sent to the ECU.

ECU terminal voltage (Connection condition of the ECU).

<table>
<thead>
<tr>
<th>ECU terminal No.</th>
<th>Signal</th>
<th>Condition</th>
<th>Terminal voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Driver door switch</td>
<td>Open</td>
<td>0V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Closed</td>
<td>5V*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ECU terminal No.</th>
<th>Connected to/measured part</th>
<th>Measurement</th>
<th>Tester connection</th>
<th>Check condition</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Driver door switch</td>
<td>Resistance</td>
<td>10 - ground</td>
<td>Driver door</td>
<td>Closed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Open</td>
<td>No continuity</td>
</tr>
<tr>
<td>10</td>
<td>Passenger door switch</td>
<td>Resistance</td>
<td>10 - ground</td>
<td>Passenger door</td>
<td>Closed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Open</td>
<td>No continuity</td>
</tr>
</tbody>
</table>

* Measurement is not possible by using a voltmeter, but is possible by using an oscilloscope.

Checking the door switch circuit (Disconnect the connector of the ECU and check at the wiring harness side.)

<table>
<thead>
<tr>
<th>ECU terminal No.</th>
<th>Connected to/measured part</th>
<th>Measurement</th>
<th>Tester connection</th>
<th>Check condition</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Driver door switch</td>
<td>Resistance</td>
<td>10 - ground</td>
<td>Driver door</td>
<td>Closed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Open</td>
<td>No continuity</td>
</tr>
<tr>
<td>10</td>
<td>Passenger door switch</td>
<td>Resistance</td>
<td>10 - ground</td>
<td>Passenger door</td>
<td>Closed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Open</td>
<td>No continuity</td>
</tr>
</tbody>
</table>
5. DOOR LOCK ACTUATOR SWITCH INPUT CIRCUIT

Description of operation
When a door is locked by the lock knob or the key, the door lock actuator switch is switched OFF, and HIGH-level signals are sent to the ECU. These signals activate the timer circuit of the ECU, thereby causing the activation circuit to function, thus activating the door lock actuator of all doors.

ECU terminal voltage (Connection condition of the ECU connector).

<table>
<thead>
<tr>
<th>ECU terminal No.</th>
<th>Signal (driver door)</th>
<th>Condition</th>
<th>Terminal voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Door lock actuator switch</td>
<td>Lock: OFF</td>
<td>5V*</td>
</tr>
<tr>
<td>14</td>
<td>Door lock actuator switch</td>
<td>Lock: OFF</td>
<td>5V*</td>
</tr>
</tbody>
</table>

* Measurement is not possible by using a voltmeter, but is possible by using an oscilloscope.

Checking the door lock switch circuit (Disconnect the connector of the ECU and check at the wiring harness side.)

<table>
<thead>
<tr>
<th>ECU terminal No.</th>
<th>Connected/measured part</th>
<th>Measurement</th>
<th>Tester connection</th>
<th>Check conditions</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Door lock actuator switch</td>
<td>Resistance</td>
<td>13 - ground</td>
<td>Door lock actuator switch</td>
<td>Lock: OFF, No continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unlock: ON</td>
<td>Continuity</td>
</tr>
<tr>
<td>14</td>
<td>Door lock actuator switch</td>
<td>Resistance</td>
<td>14 - ground</td>
<td>Door lock actuator switch</td>
<td>Lock: OFF, No continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unlock: ON</td>
<td>Continuity</td>
</tr>
</tbody>
</table>
6. DOOR KEY CYLINDER UNLOCK AND LIFTGATE CYLINDER LOCK SWITCH INPUT CIRCUIT

Description of operation
When the door key is rotated or the liftgate key is unlocked, LOW-level signals are sent to the ECU.

ECU terminal voltage (Connection condition of the ECU connector).

<table>
<thead>
<tr>
<th>ECU terminal No</th>
<th>Signal</th>
<th>Condition</th>
<th>Terminal voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Door key cylinder unlock switch</td>
<td>Not rotate</td>
<td>5V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rotate</td>
<td>0V</td>
</tr>
<tr>
<td></td>
<td>Door key cylinder (LH)</td>
<td>Not rotate</td>
<td>5V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rotate</td>
<td>0V</td>
</tr>
<tr>
<td>20</td>
<td>Liftgate unlock switch</td>
<td>Liftgate</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lock</td>
<td>5V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unlock</td>
<td>0V</td>
</tr>
</tbody>
</table>

Checking the door key cylinder and liftgate unlock switch circuit (Disconnect the connector of the ECU and check at the wiring harness side.)

<table>
<thead>
<tr>
<th>ECU terminal No</th>
<th>Connected to/measured part</th>
<th>Measurement</th>
<th>Tester connection</th>
<th>Check conditions</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Door key cylinder unlock switch</td>
<td>Resistance</td>
<td>19 ground</td>
<td>Door key cylinder (LH)</td>
<td>Not rotate</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Rotate</td>
<td>Continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Door key cylinder (RH)</td>
<td>Not rotate</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Rotate</td>
<td>Continuity</td>
</tr>
<tr>
<td>20</td>
<td>Liftgate unlock switch</td>
<td>Resistance</td>
<td>20 - ground</td>
<td>Liftgate</td>
<td>Lock</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unlock</td>
<td>Continuity</td>
</tr>
</tbody>
</table>
7. LIFTGATE SWITCH INPUT CIRCUIT

Description of operation
When the liftgate is closed (the liftgate switch is switched OFF), HIGH-level signals are sent to the ECU. When the liftgate is opened (the liftgate switch is switched ON), LOW-level signals are sent to the ECU.

ECU terminal voltage (Connection condition of the ECU connector).

<table>
<thead>
<tr>
<th>ECU terminal No.</th>
<th>Signal</th>
<th>Condition</th>
<th>Terminal voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>Liftgate switch</td>
<td>Open</td>
<td>0V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Closed</td>
<td>5V*</td>
</tr>
</tbody>
</table>

* Measurement is not possible by using a voltmeter, but is possible by using an oscilloscope.

Checking the liftgate switch circuit (Disconnect the connector of the ECU and Check at the wiring harness side.)

<table>
<thead>
<tr>
<th>ECU terminal No.</th>
<th>Connected to measured part</th>
<th>Measurement</th>
<th>Tester connection</th>
<th>Check conditions</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>Liftgate switch</td>
<td>Resistance</td>
<td>17 - ground</td>
<td>Liftgate</td>
<td>Closed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No continuity</td>
<td>Open</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Continuity</td>
<td></td>
</tr>
</tbody>
</table>
8. SECURITY LIGHT ACTIVATION CIRCUIT

Description of operation
If all doors are in locked state after key-less locking, the ECU transistor is turned ON and the security light comes on.

Checking the security light activation circuit (Disconnect the connector of the ECU and check at the wiring harness side.)

<table>
<thead>
<tr>
<th>Step</th>
<th>Check object</th>
<th>Judgement</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10A connector terminal voltage 51</td>
<td>12V ov</td>
<td>Fuse or damaged or disconnected</td>
<td>Replace the fuse</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Harness damaged or disconnected, or short-circuit</td>
<td>Repair the harness</td>
</tr>
<tr>
<td>2</td>
<td>10A connector terminal voltage 52</td>
<td>12v ov</td>
<td>Damaged or disconnected wiring of SECURITY light bulb</td>
<td>Replace the bulb</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Harness damaged or disconnected</td>
<td>Repair the harness</td>
</tr>
<tr>
<td>3</td>
<td>ECU terminal voltage 57</td>
<td>12v ov</td>
<td>Harness damaged or disconnected, or short-circuit</td>
<td>Repair the harness</td>
</tr>
</tbody>
</table>

9. HORN RELAY POWER-SUPPLY CIRCUIT

Description of operation
Power voltage is always supplied to the horn relay.

Checking the horn relay power-supply circuit (Disconnect the horn relay)

<table>
<thead>
<tr>
<th>Check object</th>
<th>Judgement</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>HORN RELAY connector terminal voltage 5</td>
<td>12V 0V</td>
<td>Fuse or disconnected</td>
<td>Replace the fuse</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Damaged or disconnected</td>
<td>Repair the harness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Damaged or disconnected harness</td>
<td>Repair the harness</td>
</tr>
</tbody>
</table>
10. HORN ACTIVATION CIRCUIT

Description of operation
The ECU transistor is turned ON if the vehicle door, etc. are opened without use of the key. This energizes the horn relay to activate the horn.

Checking the horn activation circuit (Disconnect the connector of the ECU, then short-circuit terminal connector No. 58, and activate the horn relay.)

<table>
<thead>
<tr>
<th>Step</th>
<th>Check object</th>
<th>Judgement</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Horn relay terminal voltage (4-Ground)</td>
<td>12V 0V</td>
<td>Malfunction of the horn relay</td>
<td>Check the horn relay (Refer to P.54-79.)</td>
</tr>
<tr>
<td>2</td>
<td>Horn terminal voltage (LH&amp;RH) (t-Ground)</td>
<td>12V ov</td>
<td>Harness damaged or disconnected</td>
<td>Repair the harness</td>
</tr>
<tr>
<td>3</td>
<td>Horn terminal voltage (LH&amp;RH) (1-Ground)</td>
<td>Horn voltage (0V)</td>
<td>Malfunction of the horn</td>
<td>Replace the horn</td>
</tr>
</tbody>
</table>

11. THEFT ALARM HORN RELAY POWER-SUPPLY CIRCUIT

Description of operation
Power voltage is always supplied to the theft alarm horn relay.

Checking the horn relay power-supply circuit (Disconnect the theft alarm horn relay)

<table>
<thead>
<tr>
<th>Check object</th>
<th>Judgement</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>THEFT ALARM HORN RELAY connector terminal voltage</td>
<td>12V ov</td>
<td>Fuse damaged or disconnected</td>
<td>Replace the fuse</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Damaged or disconnected harness</td>
<td>Repair the harness</td>
</tr>
</tbody>
</table>
12. THEFT ALARM HORN ACTIVATION CIRCUIT

Description of operation
The ECU transistor is turned ON if the vehicle door, etc. are opened without use of the key. This energizes the theft alarm horn relay to activate the horn.
Checking the horn activation circuit (Disconnect the connector of the ECU, then short-circuit terminal connector No. 58, and activate the theft alarm horn relay.)

<table>
<thead>
<tr>
<th>Step</th>
<th>Check object</th>
<th>J udgment</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Horn relay terminal voltage (1-ground)</td>
<td>12V 0V</td>
<td>Malfunction of the horn relay</td>
<td>Check the horn relay (Refer to P.54/59.)</td>
</tr>
<tr>
<td>2</td>
<td>Horn terminal voltage (1-Ground)</td>
<td>12V 0V</td>
<td>Harness damaged or disconnected</td>
<td>Repair the harness</td>
</tr>
<tr>
<td>3</td>
<td>Horn terminal voltage (1-Ground)</td>
<td>Horn sounds (0V)</td>
<td>Malfunction of the horn</td>
<td>Replace the horn</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Battery voltage</td>
<td>Damaged or disconnected wiring of ground circuit</td>
<td>Repair the harness</td>
</tr>
</tbody>
</table>

13. HEADLIGHT POWER-SUPPLY CIRCUIT

Description of operation
Power voltage is always supplied to the headlight relay.
Checking the headlight power-supply circuit (Disconnect the headlight relay)

<table>
<thead>
<tr>
<th>Check object</th>
<th>Judgement</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Wiring harness side) terminal voltage (5-Ground)</td>
<td>12V 0V</td>
<td>Fusible link blown</td>
<td>Replace the fusible link</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Damaged or disconnected harness</td>
<td>Repair the harness</td>
</tr>
</tbody>
</table>
14. HEADLIGHT ACTIVATION CIRCUIT

Description of operation
The ECU transistor is turned ON if the vehicle door, etc. are opened without use of the key. This energizes the headlight relay to activate the headlight.

Checking the headlight activation circuit (Disconnect the connector of the ECU, then short-circuit terminal connector No. 2, and activate the headlight relay.)

<table>
<thead>
<tr>
<th>Step</th>
<th>Check object</th>
<th>Judgement</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Headlight relay terminal voltage (4-Ground)</td>
<td>12V ov</td>
<td>Malfunction of the headlight relay</td>
<td>Check the headlight relay (Refer to P.54-68.)</td>
</tr>
<tr>
<td>2</td>
<td>Headlight terminal voltage (3-Ground)</td>
<td>12v ov</td>
<td>Harness damaged or disconnected</td>
<td>Repair the harness</td>
</tr>
<tr>
<td>3</td>
<td>Headlight terminal voltage (1-Ground)</td>
<td>Low/Hi</td>
<td>Malfunction of the headlight</td>
<td>Replace the headlight or column switch. Repair the harness.</td>
</tr>
<tr>
<td></td>
<td>(2-Ground)</td>
<td>12V ov</td>
<td>Harness damaged or disconnected</td>
<td></td>
</tr>
</tbody>
</table>

15. STARTER RELAY ACTIVATION CIRCUIT

Description of operation
The ECU transistor is turned ON if the vehicle door etc. are opened without use of the key. This turns OFF the starter relay and power ceases to be supplied to the starter magnet switch.

Checking the starter relay activation circuit (Disconnect the connector of the ECU, depress fully the clutch pedal and activate the starter relay)

<table>
<thead>
<tr>
<th>Step</th>
<th>Check object</th>
<th>Judgement</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Starter relay terminal voltage (2-Ground)</td>
<td>12v ov</td>
<td>Malfunction of the starter relay</td>
<td>Check the starter relay</td>
</tr>
<tr>
<td>2</td>
<td>Starter motor terminal (1-Ground)</td>
<td>12V ov</td>
<td>Harness damaged or disconnected</td>
<td>Repair the harness</td>
</tr>
<tr>
<td></td>
<td>(Starter motor connector B-24: Separation)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Continuity between &quot;B-24&quot; connector and ground</td>
<td>0 Ω</td>
<td>Damaged magnet switch</td>
<td>Replace magnet switch</td>
</tr>
</tbody>
</table>