This supplement contains information concerning necessary service procedures and relevant data for the model S14 series face-lift.

All information, illustrations and specifications contained in this supplement are based on the latest product information available at the time of publication. If your NISSAN model differs from the specifications contained in this supplement, consult your NISSAN distributor for information.

The right is reserved to make changes in specifications and methods at any time without notice.
HOW TO USE THIS MANUAL

► This Service Manual contains the new service procedures, service data and specifications for the face-lifted model S14 series which has been in production since July, 1995.

► This Service Manual does not contain the service procedures, etc. which are the same as those for former models*. Please use this manual in conjunction with the NISSAN model S14 series Service Manual (Pub. No. SM4E-0814G0).

► Follow the instruction below when using this manual.

White on black

NISSAN
MODEL S14 SERVICE

Black on white

Specific section titles are printed white on a black background in the QUICK REFERENCE INDEX.

Service procedures and service data are added or changed. Use this SUPPLEMENT MANUAL. Only the added or changed points are introduced in these chapters.

NISSAN
S14
SERVICE MANUAL

Those sections which are printed black on a white background are not contained in this manual.

NISSAN
S14
SERVICE MANUAL


IMPORTANT SAFETY NOTICE

The proper performance of service is essential for both the safety of the technician and the efficient functioning of the vehicle. The service methods in this Service Manual are described in such a manner that the service may be performed safely and accurately.

Service varies with the procedures used, the skills of the technician and the tools and parts available. Accordingly, anyone using service procedures, tools or parts which are not specifically recommended by NISSAN must first be completely satisfied that neither personal safety nor the vehicle’s safety will be jeopardized by the service method selected.
APPLIED FROM:
For Europe: JN1GBAS14U0010001
For Australia: JN1GBAS14A00002001
For New Zealand: JN1GBAS14A0700501
Except for Europe, Australia and New Zealand: GBAS14-001001

OUTLINE OF MODIFICATIONS:
Electrical system
- NATS V2.0 (Nissan Anti-theft System Ver. 2.0) has been adopted on models for Europe.
- A rear fog lamp warning buzzer has been adopted on models for Europe.
- A seat belt warning lamp/buzzer has been adopted on models for Australia.

CONTENTS

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRECAUTIONS</td>
<td>2</td>
</tr>
<tr>
<td>Precautions for NATS V2.0 (For Europe)</td>
<td>2</td>
</tr>
<tr>
<td>HOW TO USE THIS MANUAL</td>
<td>3</td>
</tr>
<tr>
<td>HOW TO READ WIRING DIAGRAMS</td>
<td>4</td>
</tr>
<tr>
<td>Wiring Diagram Codes (Cell Codes)</td>
<td>4</td>
</tr>
<tr>
<td>CONSULT CHECKING SYSTEM</td>
<td>5</td>
</tr>
<tr>
<td>Function and System Application</td>
<td>5</td>
</tr>
<tr>
<td>Checking Equipment</td>
<td>5</td>
</tr>
<tr>
<td>TIGHTENING TORQUE OF STANDARD BOLTS</td>
<td>6</td>
</tr>
</tbody>
</table>
Precautions for NATS V2.0 (For Europe)

NATS (Nissan Anti-Theft System)

NATS V2.0 will immobilize the engine if someone tries to start it without the registered key of NATS V2.0. Both of the originally supplied ignition key IDs have been NATS registered.

The NATS security indicator is located on the instrument panel. The indicator blinks when the ignition switch is in "OFF" or "ACC" position. Therefore, NATS warns outsiders that the vehicle is equipped with the anti-theft system.

• When NATS detects trouble, the malfunction indicator lamp (MIL) blinks. This blinking indicates that the anti-theft is not functioning, so prompt service is required.

• When servicing NATS (trouble diagnoses, system initialisation and additional registration of other NATS ignition key IDs), CONSULT hardware and CONSULT NATS software is necessary. Regarding the procedures of NATS initialisation and NATS ignition key ID registration, refer to CONSULT operation manual, NATS V2.0.

Therefore, CONSULT NATS software (program card and operation manual) must be kept strictly confidential to maintain the integrity of the anti-theft function.

• When servicing NATS V2.0 (trouble diagnoses, system initialisation and additional registration of other NATS ignition key IDs), it may be necessary to re-register original key identification. Therefore, be sure to receive all keys from vehicle owner.

A maximum of four key IDs can be registered into NATS.

• When failing to start the engine first-time using the key of NATS V2.0, start as follows.
  (1) Turn ignition key to "OFF".
  (2) Wait approx. 5 seconds.
  (3) Turn ignition key to "START" again while keeping the key apart from any others on key-chain.
HOW TO USE THIS MANUAL

- THE LARGE ILLUSTRATIONS are exploded views (See below.) and contain tightening torques, lubrication points and other information necessary to perform repairs. The illustrations should be used in reference to service matters only. When ordering parts, refer to the appropriate PARTS CATALOG.

The following SYMBOLS AND ABBREVIATIONS are used:

\[ \begin{align*}
... & \quad \text{Tightening torque} \\
\circ & \quad \text{Should be lubricated with grease. Unless otherwise indicated, use recommended multi-purpose grease.} \\
\square & \quad \text{Should be lubricated with oil.} \\
\bigcirc & \quad \text{Sealing point} \\
\star & \quad \text{Checking point} \\
\times & \quad \text{Always replace after every disassembly.} \\
\text{LH, RH} & \quad \text{Left-Hand, Right-Hand} \\
\text{FR, RR} & \quad \text{Front, Rear} \\
\text{ATF} & \quad \text{Automatic Transmission Fluid} \\
\text{M/T} & \quad \text{Manual Transaxle/Transmission} \\
\text{A/T} & \quad \text{Automatic Transaxle/Transmission} \\
\end{align*} \]
HOW TO READ WIRING DIAGRAMS

Wiring Diagram Codes (Cell Codes)
• Use the chart below to find out what each wiring diagram code stands for.
• Only the modified wiring diagrams are included in this service manual, as shown in the chart below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Section</th>
<th>Wiring Diagram Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AACV</td>
<td>EC</td>
<td>AACV-AAC Valve</td>
</tr>
<tr>
<td>ABS</td>
<td>BR</td>
<td>Anti-lock Brake System</td>
</tr>
<tr>
<td>A/C, A</td>
<td>HA</td>
<td>Auto Air Conditioner</td>
</tr>
<tr>
<td>A/C, M</td>
<td>HA</td>
<td>Manual Air Conditioner</td>
</tr>
<tr>
<td>A/T</td>
<td>AT</td>
<td>Automatic Transmission</td>
</tr>
<tr>
<td>ATIC</td>
<td>EC</td>
<td>AT Control</td>
</tr>
<tr>
<td>CHIME</td>
<td>EL</td>
<td>Warning Chime</td>
</tr>
<tr>
<td>CMPS</td>
<td>EC</td>
<td>Camshaft Position Sensor</td>
</tr>
<tr>
<td>COOL/F</td>
<td>EC</td>
<td>Cooling Fan Control</td>
</tr>
<tr>
<td>DEF/G</td>
<td>EC</td>
<td>Rear Window Defogger Signal</td>
</tr>
<tr>
<td>ECTS</td>
<td>EC</td>
<td>Engine Coolant Temperature Sensor</td>
</tr>
<tr>
<td>EGRCUV</td>
<td>EC</td>
<td>EGR and canister Control Solenoid Valve</td>
</tr>
<tr>
<td>F/FOG</td>
<td>EL</td>
<td>Front Fog Lamp</td>
</tr>
<tr>
<td>FICD</td>
<td>EC</td>
<td>IACV-FICD Solenoid Valve</td>
</tr>
<tr>
<td>F/PUMP</td>
<td>EC</td>
<td>Fuel Pump</td>
</tr>
<tr>
<td>HO2S</td>
<td>EC</td>
<td>Heated Oxygen Sensor</td>
</tr>
<tr>
<td>IGN/SG</td>
<td>EC</td>
<td>Ignition Signal</td>
</tr>
<tr>
<td>ILL</td>
<td>EL</td>
<td>Illumination</td>
</tr>
<tr>
<td>INJECT</td>
<td>EC</td>
<td>Injector</td>
</tr>
<tr>
<td>INTL</td>
<td>EL</td>
<td>Interior, Spot and Trunk Room Lamps</td>
</tr>
<tr>
<td>KS</td>
<td>EC</td>
<td>Knock Sensor</td>
</tr>
<tr>
<td>MAFS</td>
<td>FG</td>
<td>Mass Air Flow Sensor</td>
</tr>
<tr>
<td>MAIN</td>
<td>EC</td>
<td>Main Power Supply and Ground Circuit</td>
</tr>
<tr>
<td>METER</td>
<td>EL</td>
<td>Speedometer, Tachometer, Temp. and Fuel Gauges</td>
</tr>
<tr>
<td>MIL</td>
<td>EC</td>
<td>MIL, Data Link Connector For Consult</td>
</tr>
<tr>
<td>MIRROR</td>
<td>EL</td>
<td>Door Mirror</td>
</tr>
<tr>
<td>MULTI</td>
<td>EL</td>
<td>Multi-remote Control System</td>
</tr>
<tr>
<td>MATS</td>
<td>EL</td>
<td>Nissan Anti-Theft System</td>
</tr>
<tr>
<td>PNP/SW</td>
<td>EC</td>
<td>Park/Neutral Position Switch</td>
</tr>
<tr>
<td>POWER</td>
<td>EL</td>
<td>Power Supply Routing</td>
</tr>
<tr>
<td>PST/SW</td>
<td>EC</td>
<td>Power Steering Oil Pressure Switch</td>
</tr>
<tr>
<td>R/FOG</td>
<td>EL</td>
<td>Rear Fog Lamp</td>
</tr>
<tr>
<td>SRS</td>
<td>RS</td>
<td>Supplemental Restraint System</td>
</tr>
<tr>
<td>S/SIG</td>
<td>EC</td>
<td>Start Signal</td>
</tr>
<tr>
<td>THEFT</td>
<td>EL</td>
<td>Theft Warning System</td>
</tr>
<tr>
<td>TPS</td>
<td>EC</td>
<td>Throttle Position Sensor</td>
</tr>
<tr>
<td>TURN</td>
<td>EL</td>
<td>Turn Signal and Hazard Warning Lamps</td>
</tr>
<tr>
<td>VBS</td>
<td>FG</td>
<td>Vehicle Speed Sensor</td>
</tr>
<tr>
<td>VTC</td>
<td>EC</td>
<td>VTC Solenoid Valve</td>
</tr>
<tr>
<td>WARN</td>
<td>EL</td>
<td>Warning Lamps</td>
</tr>
<tr>
<td>WGVV</td>
<td>EC</td>
<td>Wastegate Valve Control Solenoid Valve</td>
</tr>
<tr>
<td>WINDOW</td>
<td>EL</td>
<td>Power Window</td>
</tr>
</tbody>
</table>
# CONSULT CHECKING SYSTEM

## Function and System Application

<table>
<thead>
<tr>
<th>Diagnostic test mode</th>
<th>Function</th>
<th>ECCS</th>
<th>A/T</th>
<th>Air bag</th>
<th>ABS</th>
<th>NATS*1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work support</td>
<td>This mode enables a technician to adjust some devices faster and more accurately by following the indications on CONSULT.</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-diagnostic results</td>
<td>Self-diagnostic results can be read and erased quickly.</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>ECU discriminated No.</td>
<td>Classification number of a replacement ECU can be read to prevent an incorrect ECU from being installed.</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data monitor</td>
<td>Input/Output data in the ECM can be read.</td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active test</td>
<td>Diagnostic Test Mode in which CONSULT drives some actuators apart from the ECMs and also shifts some parameters in a specified range.</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECM part number</td>
<td>ECM part number can be read.</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Function test</td>
<td>Conducted by CONSULT instead of a technician to determine whether each system is &quot;OK&quot; or &quot;NG&quot;.</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control unit initialization</td>
<td>All registered ignition key IDs in NATS components can be initialized and new IDs can be registered.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Self-function check</td>
<td>ECM checks its own NATS communication interface.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>

* x: Applicable
* 1: NATS; Nissan Anti-Theft System

## Checking Equipment

*When ordering the below equipment, contact your NISSAN distributor.*

<table>
<thead>
<tr>
<th>Tool name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NISSAN CONSULT</td>
<td><img src="image" alt="Tool" /></td>
</tr>
<tr>
<td>(1) CONSULT unit and accessories</td>
<td><img src="image" alt="Tool" /></td>
</tr>
<tr>
<td>(2) Program card</td>
<td><img src="image" alt="Tool" /></td>
</tr>
<tr>
<td>• AE990 for Australia</td>
<td><img src="image" alt="Tool" /></td>
</tr>
<tr>
<td>• EE940 except for Australia</td>
<td><img src="image" alt="Tool" /></td>
</tr>
<tr>
<td>• NATS EE940'1 for NATS</td>
<td><img src="image" alt="Tool" /></td>
</tr>
</tbody>
</table>

1: An order for NATS program card must be placed only with NISSAN EUROPE N.V.
## TIGHTENING TORQUE OF STANDARD BOLTS

<table>
<thead>
<tr>
<th>Grade</th>
<th>Bolt size</th>
<th>Pitch diameter*</th>
<th>Head type</th>
<th>Hexagon head bolt</th>
<th>Hexagon flange bolt</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>mm</td>
<td></td>
<td>N·m</td>
<td>kg·m</td>
</tr>
<tr>
<td>M6</td>
<td>6.0</td>
<td>1.0</td>
<td>0.62</td>
<td>3.8</td>
<td>43.1</td>
</tr>
<tr>
<td>M8</td>
<td>8.0</td>
<td>1.0</td>
<td>1.3</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3</td>
<td>9</td>
<td>16</td>
<td>1.8</td>
</tr>
<tr>
<td>M10</td>
<td>10.0</td>
<td>1.5</td>
<td>2.5</td>
<td>18</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.5</td>
<td>19</td>
<td>38</td>
<td>3.1</td>
</tr>
<tr>
<td>M12</td>
<td>12.0</td>
<td>1.75</td>
<td>4.3</td>
<td>31</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.7</td>
<td>34</td>
<td>66</td>
<td>5.7</td>
</tr>
<tr>
<td>M14</td>
<td>14.0</td>
<td>1.5</td>
<td>7.5</td>
<td>54</td>
<td>88</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7.5</td>
<td>54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M6</td>
<td>6.0</td>
<td>1.0</td>
<td>0.66</td>
<td>5.2</td>
<td>74.6</td>
</tr>
<tr>
<td>M8</td>
<td>8.0</td>
<td>1.0</td>
<td>2.1</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.2</td>
<td>16</td>
<td>26</td>
<td>2.7</td>
</tr>
<tr>
<td>M10</td>
<td>10.0</td>
<td>1.5</td>
<td>4.2</td>
<td>30</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.2</td>
<td>30</td>
<td>51</td>
<td>5.2</td>
</tr>
<tr>
<td>M12</td>
<td>12.0</td>
<td>1.75</td>
<td>4.4</td>
<td>32</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7.7</td>
<td>52</td>
<td>84</td>
<td>9.6</td>
</tr>
<tr>
<td>M14</td>
<td>14.0</td>
<td>1.75</td>
<td>7.9</td>
<td>57</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td></td>
<td>13.0</td>
<td>94</td>
<td>147</td>
<td>15.6</td>
</tr>
<tr>
<td>M6</td>
<td>6.0</td>
<td>1.0</td>
<td>1.2</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>M8</td>
<td>8.0</td>
<td>1.25</td>
<td>3.0</td>
<td>22</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.2</td>
<td>23</td>
<td>37</td>
<td>3.8</td>
</tr>
<tr>
<td>M10</td>
<td>10.0</td>
<td>1.5</td>
<td>6.0</td>
<td>43</td>
<td>79</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6.0</td>
<td>43</td>
<td>74</td>
<td>7.5</td>
</tr>
<tr>
<td>M12</td>
<td>12.0</td>
<td>1.75</td>
<td>10.0</td>
<td>72</td>
<td>116</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11.0</td>
<td>82</td>
<td>137</td>
<td>14.0</td>
</tr>
<tr>
<td>M14</td>
<td>14.0</td>
<td>1.75</td>
<td>18.0</td>
<td>130</td>
<td>206</td>
</tr>
</tbody>
</table>

1. Special parts are excluded.
2. This standard is applicable to bolts having the following marks embossed on the bolt head.

---

**Grade**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>4T</td>
<td>4</td>
</tr>
<tr>
<td>7T</td>
<td>7</td>
</tr>
<tr>
<td>9T</td>
<td>9</td>
</tr>
</tbody>
</table>

* * Nominal diameter

**Grade**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>4T</td>
<td>4</td>
</tr>
<tr>
<td>7T</td>
<td>7</td>
</tr>
<tr>
<td>9T</td>
<td>9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>4T</td>
<td>4</td>
</tr>
<tr>
<td>7T</td>
<td>7</td>
</tr>
</tbody>
</table>
| 9T    | 9    | Nominal diameter of bolt threads (Unit: mm)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>4T</td>
<td>4</td>
</tr>
<tr>
<td>7T</td>
<td>7</td>
</tr>
</tbody>
</table>
| 9T    | 9    | Metric screw threads

GI-6
MODIFICATION NOTICE:
- The mass air flow sensor harness connector has been changed.
- The boost pressure sensor has been eliminated.
- The ECM harness connector has been changed from 76-pin type to 64-pin type (Europe models only).

CONTENTS

ENGINE AND EMISSION CONTROL OVERALL SYSTEM ................................................. 2

ECCS Component Parts Location ................................................. 2
System Chart ................................................................. 3
System Diagram ............................................................. 4
Vacuum Hose Drawing ......................................................... 5
Circuit Diagram .............................................................. 6

ENGINE AND EMISSION CONTROL SYSTEM DESCRIPTION .......................................... 8
Boost Pressure Control .......................................................... 8
Idle Speed/Ignition Timing/Idle Mixture ........................................ 9
Ratio Inspection ............................................................... 10
Trouble Diagnoses ............................................................. 14
Contents ................................................................. 14

When you read wiring diagrams:
- Read GI section, "HOW TO READ WIRING DIAGRAMS".
- See EL section, "POWER SUPPLY ROUTING" for power distribution circuit.
When you perform trouble diagnoses, read GI section, "HOW TO FOLLOW FLOW CHART IN TROUBLE DIAGNOSES" and "HOW TO PERFORM EFFICIENT DIAGNOSIS FOR AN ELECTRICAL INCIDENT".
ECCS Component Parts Location

- IACV (Idle Air Control Valve)
- EGR (Exhaust Gas Recirculation) valve
- MAP (Manifold Absolute Pressure) sensor
- Knock sensor
- Mass air flow sensor
- Coolant temperature sensor
- Throttle position sensor
- Turbocharger
- Wastegate valve control solenoid valve
- Power transistor
- Injector
- Ignition coil and spark plug
- Heated oxygen sensor
- Camshaft position sensor
- Charge air cooler
- Compressed air cylinder
- Activated carbon canister
- Pressure regulator
ENGINE AND EMISSION CONTROL OVERALL SYSTEM

Vacuum Hose Drawing

- Pressure regulator
- EGR and canister control solenoid valve
- Recirculation valve
- Intake manifold collector
- Throttle body
- Air duct (Mass air flow sensor to turbocharger)
- EGR valve
- Activated carbon canister
- EGRC-8PT valve
- Turbocharger
- 3-way connector
- Wastegate valve control solenoid valve
- Wastegate valve actuator

EC-5
ENGINE AND EMISSION CONTROL SYSTEM DESCRIPTION

INPUT/OUTPUT SIGNAL LINE

- Camshaft position sensor
- Engine speed and piston position
- Throttle position sensor
- Throttle valve idle position
- Knock sensor
- Engine knocking
- Vehicle speed sensor
- Vehicle speed
- ECM (ECU control module)
- Wastegate valve control solenoid valve (a duty type)

SYSTEM DESCRIPTION

The output signal maps of the ECM are selected according to fuel octane rating, gear position (M/T model) and vehicle speed (A/T model). The wastegate valve control solenoid valve changes the source vacuum which activates the actuator. This results in a proportional boost pressure to the acceleration. Knock signs are used to determine fuel octane rating.

OPERATION

<table>
<thead>
<tr>
<th>Fuel octane rating</th>
<th>Gear position or vehicle speed</th>
<th>Boost pressure control map</th>
</tr>
</thead>
</table>
| Premium            | • 1, 2 and 3 speed gears (M/T model)  
                      • Less than 46 km/h (29 MPH) (A/T model)  
                      • 4 and 5 speed gears (M/T model)  
                      • More than 46 km/h (29 MPH) (A/T model)  | A slow response type  |
| Lower than the above | Any                           | Fixed                      |
IDLE SPEED/IGNITION TIMING/IDLE MIXTURE RATIO INSPECTION

A

**START**

Visually check the following:
- Air cleaner clogging
- Hoses and ducts for leaks
- EGR valve operation
- Electrical connectors
- Gasket
- Throttle valve

B

Start engine and warm it up until engine coolant temperature indicator points to the middle of gauge. Ensure that engine speed is below 1,000 rpm.

C

Open engine hood and run engine at about 2,000 rpm for about 2 minutes under no-load.

D

Perform diagnostic test mode II (Self-diagnostic results).

- Repair or replace components as necessary.

E

Run engine at about 2,000 rpm for about 2 minutes under no-load. Race engine two or three times under no-load, then run engine for about 1 minute at idle speed.

F

1) Select "IGNITION TIMING ADJ" in WORK SUPPORT mode.
2) Touch "START".

G

1) Stop engine and disconnect throttle position sensor harness connector.
2) Start engine.

Race engine two or three times to about 2,000 rpm under no-load. Then run engine at idle speed.

H

Check ignition timing with a timing light

15°±2° BTDC

OK NG

Adjust ignition timing by turning camshaft position sensor after loosening securing bolts.

EC-9
IDLE SPEED/IGNITION TIMING/IDLE MIXTURE RATIO INSPECTION

A

- IGN TIMING ADJ
- CONDITION SETTING
- IGN/T FEEDBACK
- HOLD

- CAS-TPM (REF) 750rpm
- IGN TIMING
- IDLE POSITION

Check idle speed.

- Read idle speed in "IGN TIMING ADJ" in "WORK SUPPORT" mode.

- OR

- Check idle speed.

- 800 ± 50 rpm (A/T in "N" position)

B

1) Select "IGN TIMING ADJ" in "WORK SUPPORT" mode.
2) Touch "START".

- OR

- Turn off engine and disconnect throttle position sensor harness connector. Then start engine.

- Race engine two or three times to about 2,000 rpm under no-load. Then run engine at idle speed.

C

Adjust idle speed by turning idle speed adjusting screw.

- 750 ± 50 rpm (A/T in "N" position)

D

Touch "Back".

1) Stop engine and connect throttle position sensor harness connector.
2) Start engine.

- Race engine two or three times to about 2,000 rpm under no-load. Then run engine at idle speed.

Check idle speed.

- Read idle speed in "DATA MONITOR" mode with CONSULT.

- OR

- Check idle speed.

- 800 ± 50 rpm (A/T in "N" position)

E

OK

NG

Check AAC valve and replace if necessary.

Check AAC valve harness and repair if necessary.

Check ECM function* by substituting another known good ECM.

*: ECM may be the cause of a problem, but this is rarely the case.

EC-10
IDLE SPEED/IGNITION TIMING/IDLE MIXTURE RATIO INSPECTION

1. Run engine at about 2,000 rpm for about 2 minutes under no-load.

2. Set on-board diagnostic system of ECM to Diagnostic Test Mode II (heated oxygen sensor monitor).

3. Check heated oxygen sensor signal.
   1) Select "M/F/C M/V" in "Data monitor" mode.
   2) Maintaining engine at 2,000 rpm under no-load (engine is warmed up sufficiently), check that the monitor fluctuates between "LEAN" and "RICH" more than 5 times during 10 seconds.
   3) Cycle: RICH → LEAN → RICH
   4) Cycle: RICH → LEAN → RICH

4. Replace heated oxygen sensor. Connect heated oxygen sensor harness connector.

5. Run engine at about 2,000 rpm for about 2 minutes under no-load.

6. Set on-board diagnostic system of ECM to Diagnostic Test Mode II (heated oxygen sensor monitor).

7. Check heated oxygen sensor signal.
   1) Select "M/F/C M/V" in "Data monitor" mode.
   2) Maintaining engine at 2,000 rpm under no-load (engine is warmed up sufficiently), check that the monitor fluctuates between "LEAN" and "RICH" more than 5 times during 10 seconds.
   3) Cycle: RICH → LEAN → RICH
   4) Cycle: RICH → LEAN → RICH

Make sure that malfunction indicator lamp goes on and off more than 5 times during 10 seconds at 2,000 rpm.

EC-11
Check heated oxygen sensor harness:
1. Turn off engine and disconnect battery ground cable.
2. Disconnect ECM connector from ECM.
3. Disconnect heated oxygen sensor harness connector. Then connect harness side terminal for heated oxygen sensor to ground with a jumper wire.
4. Check for continuity between terminal No. 19 (for Europe) or No. 29 (except for Europe) of ECM connector and ground metal on vehicle body.

Continuity exists ........................................... OK
Continuity does not exist .................................. NG

OK NG

Repair or replace harness.

Connect ECM connector to ECM.
IDLE SPEED/IGNITION TIMING/IDLE MIXTURE RATIO INSPECTION

1. Select "ENGINE TEMP" or "ENG COOLANT TEMP" in "ACTIVE TEST" mode.
2. Set "ENG COOLANT TEMP" to 20°C (68°F) by touching "UP" and "DN".

OR

1. Disconnect engine coolant temperature sensor harness connector.
2. Connect a resistor (2.5 kΩ) between terminals of engine coolant temperature sensor harness connector.

Start engine and warm it up until engine coolant temperature indicator points to the middle of gauge. (Be sure to start engine after installing a 2.5 kΩ resistor.)

Race engine two or three times under no-load, then run engine at idle speed.

Check "CO" %.

Idle CO: Less than 1% (and engine runs smoothly)

After checking CO%,
1) Disconnect the resistor from terminals of engine coolant temperature sensor.
2) Connect engine coolant temperature sensor harness connector to engine coolant temperature sensor.

NG

Connect heated oxygen sensor harness connector to heated oxygen sensor.

Check fuel pressure regulator.

Check mass air flow sensor.

Check injector. Clean or replace if necessary.

Check engine coolant temperature sensor.

Check ECM function* by substituting another known good ECM.

ECM may be the cause of a problem, but this is rarely the case.

EC-13
## TROUBLE DIAGNOSES

### Contents

On-board Diagnostic System — Diagnostic Test Mode II (Self-diagnostic results) ................. EC-16  
CONSULT ................................................................................................................................. EC-18

<table>
<thead>
<tr>
<th>Diagnostic Procedure 22</th>
<th>MAIN POWER SUPPLY AND GROUND CIRCUIT (Not self-diagnostic item) .......... EC-19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic Procedure 23</td>
<td>CAMSHAFT POSITION SENSOR (Diagnostic trouble code No. 11) ....................... EC-23</td>
</tr>
<tr>
<td>Diagnostic Procedure 24</td>
<td>MASS AIR FLOW SENSOR (Diagnostic trouble code No. 12) .......................... EC-26</td>
</tr>
<tr>
<td>Diagnostic Procedure 25</td>
<td>ENGINE COOLANT TEMPERATURE SENSOR (Diagnostic trouble code No. 13) ......... EC-29</td>
</tr>
<tr>
<td>Diagnostic Procedure 26</td>
<td>IGNITION SIGNAL (Diagnostic trouble code No. 21) .................................. EC-32</td>
</tr>
<tr>
<td>Diagnostic Procedure 27</td>
<td>KNOCK SENSOR (Diagnostic trouble code No. 34) ..................................... EC-39</td>
</tr>
<tr>
<td>Diagnostic Procedure 28</td>
<td>THROTTLE POSITION SENSOR (Diagnostic trouble code No. 43) ...................... EC-41</td>
</tr>
<tr>
<td>Diagnostic Procedure 29</td>
<td>A/T CONTROL (Diagnostic trouble code No. 54) ....................................... EC-44</td>
</tr>
<tr>
<td>Diagnostic Procedure 30</td>
<td>START SIGNAL (Not self-diagnostic item) .................................................. EC-46</td>
</tr>
<tr>
<td>Diagnostic Procedure 31</td>
<td>VEHICLE SPEED SENSOR (Not self-diagnostic item) ..................................... EC-49</td>
</tr>
<tr>
<td>Diagnostic Procedure 32</td>
<td>EGR AND CANISTER CONTROL (Not self-diagnostic item) ............................ EC-51</td>
</tr>
<tr>
<td>Diagnostic Procedure 33</td>
<td>HEATED OXYGEN SENSOR (Not self-diagnostic item) ................................... EC-55</td>
</tr>
<tr>
<td>Diagnostic Procedure 34</td>
<td>INJECTOR CIRCUIT (Not self-diagnostic item) .......................................... EC-58</td>
</tr>
<tr>
<td>Diagnostic Procedure 35</td>
<td>FUEL PUMP (Not self-diagnostic item) ....................................................... EC-61</td>
</tr>
<tr>
<td>Diagnostic Procedure 36</td>
<td>WASTEGATE VALVE CONTROL (Not self-diagnostic item) ............................ EC-64</td>
</tr>
<tr>
<td>Diagnostic Procedure 37</td>
<td>VTC CONTROL (Not self-diagnostic item) ................................................... EC-67</td>
</tr>
<tr>
<td>Diagnostic Procedure 38</td>
<td>IACV-AAC VALVE (Not self-diagnostic item) ............................................. EC-70</td>
</tr>
<tr>
<td>Diagnostic Procedure 39</td>
<td>IACV-FICD SOLENOID VALVE (Not self-diagnostic item) ............................ EC-73</td>
</tr>
<tr>
<td>Diagnostic Procedure 40</td>
<td>COOLING FAN CONTROL (Not self-diagnostic item) ................................... EC-77</td>
</tr>
<tr>
<td>Diagnostic Procedure 41</td>
<td>POWER STEERING OIL PRESSURE SWITCH (Not self-diagnostic item) ............ EC-85</td>
</tr>
<tr>
<td>Diagnostic Procedure 42</td>
<td>NEUTRAL POSITION SWITCH &amp; A/T CONTROL UNIT (Not self-diagnostic item) .... EC-67</td>
</tr>
<tr>
<td>Diagnostic Procedure 43</td>
<td>REAR WINDOW DEFOGGER SWITCH (Not self-diagnostic item) ...................... EC-91</td>
</tr>
</tbody>
</table>

EC-14
## TROUBLE DIAGNOSES

### Diagnostic Procedure 45
MALFUNCTION INDICATOR LAMP & DATA LINK CONNECTOR FOR CONSULT
(Not self-diagnostic item) ................................................................. EC-93

### Diagnostic Procedure 22
MAIN POWER SUPPLY AND GROUND CIRCUIT (Not self-diagnostic item) .............. EC-94

### Diagnostic Procedure 23
CAMSHTAFT POSITION SENSOR (Diagnostic trouble code No. 11) ..................... EC-98

### Diagnostic Procedure 24
MASS AIR FLOW SENSOR (Diagnostic trouble code No. 12) .................................. EC-101

### Diagnostic Procedure 25
ENGINE COOLANT TEMPERATURE SENSOR (Diagnostic trouble code No. 13) ........... EC-104

### Diagnostic Procedure 26
IGNITION SIGNAL (Diagnostic trouble code No. 21) ............................................. EC-107

### Diagnostic Procedure 29
THROTTLE POSITION SENSOR (Diagnostic trouble code No. 43) .......................... EC-114

### Diagnostic Procedure 30
A/T CONTROL (Diagnostic trouble code No. 54) .................................................. EC-117

### Diagnostic Procedure 33
EGR AND CANISTER CONTROL (Not self-diagnostic item) ..................................... EC-119

### Diagnostic Procedure 34
HEATED OXYGEN SENSOR (Not self-diagnostic item) .......................................... EC-123

### Diagnostic Procedure 35
INJECTOR CIRCUIT (Not self-diagnostic item) ..................................................... EC-124

### Diagnostic Procedure 40
IACV-FICD SOLENOID VALVE (Not self-diagnostic item) ...................................... EC-128

### Diagnostic Procedure 43
NEUTRAL POSITION SWITCH & A/T CONTROL UNIT
(PARK/NEUTRAL POSITION SIGNAL) (Not self-diagnostic item) ......................... EC-130

### Electrical Components Inspection
FOR ALL AREAS .................................................................................. EC-132
### TROUBLE DIAGNOSES

**On-board Diagnostic System — Diagnostic Test**  
**Mode II (Self-diagnostic results)**

#### Display diagnostic trouble code table

<table>
<thead>
<tr>
<th>Diagnostic trouble code No.</th>
<th>Detected items</th>
<th>Malfunction is detected when ...</th>
<th>Check item (remedy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Camshaft position sensor circuit</td>
<td>Either 0° or 180° signal is not entered for the first few seconds during engine cranking.</td>
<td>Harness and connector</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Harmonic high or low voltage is entered.)</td>
<td>(Harness and connector</td>
</tr>
<tr>
<td>12</td>
<td>Mass airflow sensor circuit</td>
<td>The mass airflow sensor circuit is open or shorted.</td>
<td>Harness and connector</td>
</tr>
<tr>
<td>13</td>
<td>Engine coolant temperature sensor circuit</td>
<td>The engine coolant temperature sensor circuit is open or shorted.</td>
<td>Harness and connector</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(An abnormally high or low output voltage is entered.)</td>
<td>(Harness and connector</td>
</tr>
<tr>
<td>21</td>
<td>Ignition signal circuit</td>
<td>The ignition signal in the primary circuit is not entered during engine cranking or running.</td>
<td>Harness and connector</td>
</tr>
<tr>
<td>34</td>
<td>Knock sensor circuit</td>
<td>The knock sensor circuit is open or shorted.</td>
<td>Harness and connector</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(An abnormally high or low output voltage is entered.)</td>
<td>(Harness and connector</td>
</tr>
<tr>
<td>43</td>
<td>Throttle position sensor circuit</td>
<td>The throttle position sensor circuit is open or shorted.</td>
<td>Harness and connector</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(An abnormally high or low output voltage is entered.)</td>
<td>(Harness and connector</td>
</tr>
<tr>
<td>54</td>
<td>Signal circuit from A/T control unit to ECM (A/T only)</td>
<td>The A/T communication line is open or shorted.</td>
<td>Harness and connector</td>
</tr>
</tbody>
</table>

* Check items causing a malfunction of camshaft position sensor circuit first, if both "CAMSHAFT POSITION SENSOR (No. 11)" and "IGN SIGNAL-PRIMARY (No. 21)" are displayed one after the other.
TROUBLE DIAGNOSES

On-board Diagnostic System — Diagnostic Test Mode II (Self-diagnostic results) (Cont’d)

HOW TO ERASE DIAGNOSTIC TEST MODE II (SELF-DIAGNOSTIC RESULTS)

The diagnostic trouble code is erased from the backup memory on the ECM when the diagnostic test mode is changed from Diagnostic Test Mode II to Diagnostic Test Mode I. (Refer to "HOW TO SWITCH DIAGNOSTIC TEST M Jetodes"):  
- If the battery terminal is disconnected, the diagnostic trouble code will be lost from the backup memory within 24 hours.
- Be careful not to erase the stored memory before starting trouble diagnoses.

For Europe models

- If the MIL blinks or "NATS MALFUNCTION" is displayed on "SELF-DIAG RESULTS" screen, perform self-diagnostic results mode with CONSULT using NATS program card (NATS-E940). Refer to EL section.
- Confirm no self-diagnostic results of NATS is displayed before touching "ERASE" in "SELF-DIAG RESULTS" mode with CONSULT.
- When replacing ECM, initialization of NATS V2.0 system and registration of all NATS V2.0 Ignition key IDs must be carried out with CONSULT using NATS program card (NATS-E940). Therefore, be sure to receive all keys from vehicle owner. Regarding the procedures of NATS initialization and NATS Ignition key ID registration, refer to CONSULT operation manual, NATS V2.0.
<table>
<thead>
<tr>
<th>ECCS COMPONENT PARTS</th>
<th>WORK SUPPORT</th>
<th>SELF-DIAGNOSTIC RESULTS</th>
<th>DATA MONITOR</th>
<th>ACTIVE TEST</th>
<th>FUNCTION TEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camshaft position sensor</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mass air flow sensor</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engine coolant temperature sensor</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heated oxygen sensors</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehicle speed sensors</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Throttle position sensor</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knock sensor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ignition switch (start signal)</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Air conditioner switch | | | | | X
| Park/Neutral position switch | | | | | |
| Power steering oil pressure switch | | | | X | |
| Battery | | | | | |
| A/F signal | | | | | |
| Injectors | | | | | |
| Power transistor (ignition timing) | X | | | X | |
| IACV-AAC valve | X | | | X | |
| Valve timing control solenoid valve | | | | X | |
| EGR solenoid valve | | | | X | |
| Air conditioner relay | | | | | |
| Fuel pump relay | | | X | | |
| Cooling fan relay | | | | X | |
| Waste gate valve control solenoid valve | | | | | X

X: Applicable

EC-18
Diagnostic Procedure 22
MAIN POWER SUPPLY AND GROUND CIRCUIT (Not self-diagnostic item)

EC-MAIN-01

Refer to EL-POWER.

: LHD models
: RHD models

Refer to last page (Foldout page).
TROUBLE DIAGNOSES

Diagnostic Procedure 22 (Cont'd)

For Europe

Harness layout

LHD models
Passenger's dash side
ECM harness connector

RHD models
Passenger's dash side
ECM harness connector

LHD models
Behind ECM
HECOS relay

RHD models
Behind ECM
ECOS relay

INSPECTION START

A

CHECK POWER SUPPLY.
1) Turn ignition switch "ON".
2) Check voltage between ECM terminals 6a, 6p and ground. Voltage: Battery voltage

NO

B

CHECK GROUND CIRCUIT.
1) Disconnect ECM harness connector.
2) Check harness continuity between ECM terminals 56, 13, 28, 6b, 6c, 6d, 14 and engine ground. Continuity should exist. If NG, repair harness or connectors.

OK

Check ECM pin terminals for damage or the connection of ECM harness connector.

EC-20
CHECK HARNESS CONTINUITY BETWEEN ECCS RELAY AND ECM.
1) Turn ignition switch “OFF”.
2) Disconnect ECM harness connector.
3) Disconnect ECCS relay.
4) Check harness continuity between ECM terminals ①, ② and terminal ③.
   Continuity should exist.
   If OK, check harness for short.

CHECK VOLTAGE BETWEEN ECCS RELAY AND GROUND.
1) Check voltage between terminals ①, ② and ground.
   Voltage: Battery voltage

CHECK VOLTAGE BETWEEN ECM AND GROUND.
1) Check voltage between ECM terminals ④ and ground.
   Voltage: Battery voltage

CHECK GROUND CIRCUIT.
1) Check harness continuity between ECM terminals ④ and engine ground.
   Continuity should exist.
   If OK, check harness for short.

CHECK OUTPUT SIGNAL CIRCUIT.
1) Check harness continuity between ECM terminal ⑤ and terminal ⑥.
   Continuity should exist.
   If OK, check harness for short.
CHECK INPUT SIGNAL CIRCUIT.
1) Turn ignition switch "ON".
2) Check voltage between ECM terminal (3) and ground.
Voltage: Battery voltage

OK NG

CHECK COMPONENT (ECCS relay)
Refer to "Electrical Components Inspection".

OK NG

Replace ECCS relay.

Trouble is not fixed.
Check ECM pin terminals for damage or the connection of ECM harness connector. Reconnect ECM harness connector and retest.
TROUBLE DIAGNOSES

Diagnostic Procedure 23

CAMSHAFT POSITION SENSOR (Diagnostic trouble code No. 11)

EC-CMPS-01

Refer to EL-POWER.
TROUBLE DIAGNOSES

Diagnostic Procedure 23 (Cont'd)

For Europe

Harnes layout

LHD models
Passenger’s dash side
ECM harness connector

RHD models
Passenger’s dash side
ECM harness connector

INSPECTION START

A

CHECK POWER SUPPLY:
1) Disconnect camshaft position sensor harness connector.
2) Turn ignition switch “ON”.
3) Check voltage between terminal B and ground.
   Voltage: Battery voltage

NG
Check the following:
- Harness for open or short between camshaft position sensor and ECCS relay
- NG, repair harness or connectors.

OK

B

CHECK GROUND CIRCUIT:
1) Turn ignition switch “OFF”.
2) Loosen and retighten ground screws.
3) Check harness continuity between terminal A and engine ground.
   Continuity should exist.
   If OK, check harness for short.

NG
Repair harness or connectors.

OK

EC-24
TROUBLE DIAGNOSES

Diagnostic Procedure 23 (Cont'd)

CHECK INPUT SIGNAL CIRCUIT.
1) Reconnect camshaft position sensor harness connector.
2) Start engine.
3) Read "CAS-RPM" or "CAMPS-RPM" signal in "DATA MONITOR" mode with CONSULT.

ECM ± 50 rpm (AT: in "N" position)

OR

1) Disconnect ECM harness connector.
2) Check harness continuity between terminal "A" and ECM terminals "B", "B" (180° signal), terminal "D" and ECM terminals "E", "F" (180° signal).

CONTINUITY SHOULD EXIST.
1) OK, check harness for short.

CHECK COMPONENT
(Camshaft position sensor).
Refer to "Electrical Components Inspection".

OK

Disconnect and reconnect harness connectors in the circuit. Then retest.

Trouble is not fixed.

Check ECM pin terminals for damage or the connection of ECM harness connector. Reconnect ECM harness connector and retest.

Perform FINAL CHECK by the following procedure after repair is completed.

FINAL CHECK

1) Erase the diagnostic test mode II (Self-diagnostic results) memory.
2) Perform test drive.
3) Perform diagnostic test mode II (Self-diagnostic results) again.

OK

INSPECTION END

NG

Recheck ECM pin terminals for damage or the connection of ECM harness connector.

EC-25
TROUBLE DIAGNOSES

Diagnostic Procedure 24
MASS AIR FLOW SENSOR (Diagnostic trouble code No. 12)

Refer to EL-POWER.

EC-MAFS-01

Refer to last page (Foldout page).

EC-26
TROUBLE DIAGNOSES

Diagnostic Procedure 24 (Cont'd)

For Europe

Harness layout

LHD models
Passenger's cash side

ECM harness connectors

RHD models
Passenger's cash side

ECM harness connectors

INSPECTION START

A)

CHECK POWER SUPPLY.
1) Disconnect mass air flow sensor harness connector.
2) Turn ignition switch "ON".
3) Check voltage between terminal @ and ground.
   Voltage: Battery voltage

OK

NG

Check the following.
  - Harness for open or short between mass air flow sensor and ECCS relay
  - If NG, repair harness or connectors.

B)

CHECK GROUND CIRCUIT.
1) Turn ignition switch "OFF".
2) Disconnect ECM harness connector.
3) Loosen and retighten ground screws.
4) Check harness continuity between terminal ③ and ECM terminal ②.
   Continuity should exist.
   If OK, check harness for short.

OK

NG

Repair harness or connectors.

EC-27
Diagnostic Procedure 24 (Cont'd)

**MONITOR** MONITOR MONITOR MONITOR MONITOR MONITOR

**AIR FLOW MTR 1.4W** AIR FLOW MTR 1.4W AIR FLOW MTR 1.4W AIR FLOW MTR 1.4W AIR FLOW MTR 1.4W AIR FLOW MTR 1.4W

**RECORD** RECORD RECORD RECORD RECORD

1. **CHECK INPUT SIGNAL CIRCUIT.**
   - 1) Reconnect mass air flow sensor harness connector and ECM harness connector.
   - 2) Start engine and warm it up sufficiently.
   - 3) Read "AIR FLOW MTR" or "MAS AIR FLOW SE" signal in "DATA MONITOR" mode with CONSULT.
   - Voltage: 0.8 - 1.5V (At idle)

2. **CHECK COMPONENT**
   - Mass air flow sensor.
   - Refer to "Electrical Components Inspection". (See page EC-107.)

OK

OK

OK

Repair harness or connectors.

Replace mass air flow sensor.

Perform FINAL CHECK by the following procedure after repair is completed.

1. **FINAL CHECK**

   1) Erase the diagnostic test mode II (Self-diagnostic results) memory.
   2) Perform test drive.
   3) Perform diagnostic test mode II (Self-diagnostic results) again.

OK

NG

Recheck ECM pin terminals for damage or the connection of ECM harness connector.

INSPECTION END
Diagnostic Procedure 25
ENGINE COOLANT TEMPERATURE SENSOR (Diagnostic trouble code No. 13)

EC-ECTS-01

EC-29
TROUBLE DIAGNOSES

Diagnostic Procedure 25 (Cont'd)

INSTRUCTION START

A

CHECK POWER SUPPLY.
1) Start engine and warm it up sufficiently.
2) Select "ENG TEMP SEN" or "COOLANT TEMP/S" signal in "DATA MONITOR" mode with CONSULT.
3) Stop engine.
4) When starting engine make sure that CONSULT indicates "ENG TEMP SEN" or "COOLANT TEMP/S" is 50°C (122°F) or more.

B

1) Disconnect harness connectors (6), (10), (11).
2) Turn ignition switch "ON".
3) Check voltage between terminal and ground.
Voltage: Approximately 5V

C

CHECK GROUND CIRCUIT.
1) Turn ignition switch "OFF".
2) Check harness continuity between terminal and engine ground. Continuity should exist. If OK, check harness for short.

D

CHECK COMPONENT
(Engine coolant temperature sensor). Refer to "Electrical Components Inspection".

NG

Replace engine coolant temperature sensor.

OK

Disconnect and reconnect harness connectors in the circuit. Then retest.

Trouble is not fixed.

Check ECM pin terminals for damage or the connection of ECM harness connector. Reconnect ECM harness connector and retest.
TROUBLE DIAGNOSES

Diagnostic Procedure 25 (Cont'd)

Perform FINAL CHECK by the following procedure after repair is completed.

FINAL CHECK

1) Erase the diagnostic test mode II (Self-diagnostic results) memory.
2) Perform test drive.
3) Perform diagnostic test mode II (Self-diagnostic results) again.

OK → INSPECTION END

NG

Recheck ECM pin terminals for damage or the connection of ECM harness connector.

EC-31
Diagnostic Procedure 26

IGNITION SIGNAL (Diagnostic trouble code No. 21)

**LHD MODELS**

**EC-IGN/SG-01**

Refer to EL-POWER.

Refer to last page (foldout page).

EC-32
TROUBLE DIAGNOSES

Diagnostic Procedure 26 (Cont'd) For Europe

---

**INSPECTION START**

---

**CHECK POWER SUPPLY**

1. Disconnect ignition coil harness connectors.
2. Turn ignition switch "ON".
3. Check voltage between terminal ① and ground. Voltage: Battery voltage

---

**CHECK POWER SUPPLY II.**

1. Disconnect ignition coil wires.
2. Turn ignition switch "OFF".
3. Check harness continuity between terminal ① and terminal ②.
4. Continuity should exist. If OK, check harness for short.

---

**CHECK POWER SUPPLY III.**

1. Turn ignition switch "ON".
2. Check voltage between terminals ①, ③ and ground. Voltage: Battery voltage

---

**CHECK GROUND CIRCUIT I.**

1. Turn ignition switch "OFF".
2. Check harness continuity between terminal ① and engine ground. Continuity should exist. If OK, check harness for short.

---

**CHECK COMPONENT**

Replace Ignition cell (Ignition coil relay). Refer to "Electrical Components Inspection".

---

Trouble is not fixed.

Check ECM pin terminals for damage or the connection of ECM harness connector. Reconnect ECM harness connector and retest.
TROUBLE DIAGNOSES

Diagnostic Procedure 26 (Cont’d)

CHECK GROUND CIRCUIT-II.

1) Turn ignition switch "OFF".
2) Check harness continuity between terminal (①) and engine ground. Continuity should exist.
   If OK, check harness for short.
3) Disconnect power transistor unit harness connector.
   If OK, check harness continuity between terminal (①) and engine ground. Continuity should exist.

CHECK OUTPUT SIGNAL CIRCUIT.

1) Check harness continuity between terminals (①, ②, ⑤, ⑨) and terminal (①). Continuity should exist.
   If OK, check harness for short.
2) Disconnect ECM harness connector.
   If OK, check harness continuity between terminal (①, ⑥) and terminal (①, ⑨).
   Continuity should exist.
   If OK, check harness for short.

CHECK COMPONENTS

Replace malfunctioning component(s).

EC-37
Perform FINAL CHECK by the following procedure after repair is completed.

**FINAL CHECK**

1) Erase the diagnostic test mode II (Self-diagnostic results) memory.
2) Perform test drive.
3) Perform diagnostic test mode II (Self-diagnostic results) again.

**OK**

**INSPECTION END**

Recheck ECM pin terminals for damage or the connection of ECM harness connector.
TROUBLE DIAGNOSES

Diagnostic Procedure 26

KNOCK SENSOR (Diagnostic trouble code No. 34)

EC-KS-01

---

ECM (ECU) CONTROL MODULE

KNOCK SENSOR

---

EC-39
TROUBLE DIAGNOSES

Diagnostic Procedure 28 (Cont'd)

For Europe

**INSPECTION START**

CHECK INPUT SIGNAL CIRCUIT.

1) Disconnect ECM harness connector and harness connectors (CD, DH).
2) Check harness continuity between terminal (D) and ECM terminal (D).
   Continuity should exist.
   If OK, check harness for short.

OK

Loosen and relighten ground screws.

CHECK COMPONENT
(Knock sensor)
Refer to “Electrical Components Inspection”

OK

Disconnect and reconnect harness connectors in the circuit. Then retest.

Trouble is fixed.

Check ECM pin terminals for damage or the connection of ECM harness connector. Reconnect ECM harness connector and retest.

Perform FINAL CHECK by the following procedure after repair is completed.

**FINAL CHECK**

1) Erase the diagnostic test mode II (Self-diagnostic results) memory.
2) Perform test drive.
3) Perform diagnostic test mode II (Self-diagnostic results) again.

OK

**INSPECTION END**

EC-40
Diagnostic Procedure 29
THROTTLE POSITION SENSOR (Diagnostic trouble code No. 43)

EC-TPS-01

TROUBLE DIAGNOSES
TROUBLE DIAGNOSES

Diagnostic Procedure 29 (Cont'd)

**INSPECTION START**

**A**

- CHECK POWER SUPPLY.
  1. Disconnect throttle position sensor harness connector.
  2. Turn ignition switch "ON".
  3. Check voltage between terminal ④ and ground.
  Voltage: Approximately 5V

**B**

- CHECK GROUND CIRCUIT.
  1. Disconnect throttle position sensor harness connector.
  2. Turn ignition switch "OFF".
  3. Loosen and retighten ground screws.
  4. Check harness continuity between terminal ⑤ and engine ground.

Continuity should exist.
If OK, check harness for short.

**C**

- CHECK INPUT SIGNAL CIRCUIT.
  1. Reconnect throttle position sensor harness connector.
  2. Turn ignition switch "ON".
  3. Perform "THROTTLE SENSOR CKT" or "THROTTLE POS SEN CKT" in "FUNCTION TEST" mode with CONSULT.

**D**

- THROTTLE SENSOR CKT
  1. Connect throttle position sensor harness connector.
  2. Turn ignition switch "ON".
  3. Perform "THROTTLE SENSOR CKT" or "THROTTLE POS SEN CKT" in "FUNCTION TEST" mode with CONSULT.

**E**

- THROTTLE SENSOR CKT
  1. Disconnect ECM harness connector.
  2. Check harness continuity between ECM terminal ⑥ and terminal ⑦.

Continuity should exist.
If OK, check harness for short.

EC-42
TROUBLE DIAGNOSES

Diagnostic Procedure 29 (Cont'd)

CHECK COMPONENT
(Throttle position sensor).
Refer to "Electrical Components Inspection".

OK

Replace throttle position sensor.

NO

Disconnect and reconnect harness connectors in the circuit. Then retest.

Trouble is not fixed.

Check ECM pin terminals for damage or the connection of ECM harness connector. Reconnect ECM harness connector and retest.

Perform FINAL CHECK by the following procedure after repair is completed.

FINAL CHECK

1) Erase the diagnostic test mode II (Self-diagnostic results) memory.
2) Perform test drive.
3) Perform diagnostic test mode II (Self-diagnostic results) again.

OK

INPECTION END

NG

Recheck ECM pin terminals for damage or the connection of ECM harness connector.
TROUBLE DIAGNOSES

Diagnostic Procedure 30
A/T CONTROL (Diagnostic trouble code No. 54)

EC-AT/C-01

ECM (ECCS CONTROL MODULE) (IT)

LIS L/W L/R

L/G

L/H models
A/T models

EC-44
TROUBLE DIAGNOSES

Diagnostic Procedure 30 (Cont'd)

INSPECTION START

CHECK INPUT SIGNAL CIRCUIT.

1) Disconnect ECM harness connector and ART control unit harness connector.
2) Check harness continuity between ECM terminal 6 and terminal 8, ECM terminal 7 and terminal 8.
   Continuity should exist. If OK, check harness for short.
   If NG, repair harness or connectors.

In case the diagnosis is not fixed, check ECM pin terminals for damage or the connection of ECM harness connector. Reconnect ECM harness connector and retest.

Perform FINAL CHECK by the following procedure after repair is completed.

FINAL CHECK

1) Erase the diagnostic test mode II (Self-diagnostic results) memory.
2) Perform test drive.
3) Perform diagnostic test mode II (Self-diagnostic results) again.

OK

INSPECTION END

Check the following:
- Harness connectors (TD, WD) (LHD models)
- Harness connectors (TF, WR) (RHD models)
- Harness for open or short between ECM and ART control unit

If NG, repair harness or connectors.

EC-45
Diagnostic Procedure 31

START SIGNAL (Not self-diagnostic item)

EC-S/SIG-01

Refer to EL-Power.

Refer to last page (Foldout page).

EC-46
Harness layout

Diagnostic Procedure 31 (Cont'd)

For Europe

1. CLOSE THROTTLE, SHIFT TO P OR N RANGE.
2. TOUCH START AND ENGINE IMMEDIATELY.

START SIGNAL CKT.

START SIGNAL OFF
IDLE POSITION ON
IGN "ON" OFF
AIR COND SIG OFF
NEUTRAL SW ON

RECORD

CHECK OVERALL FUNCTION
1) Turn ignition switch "ON".
2) Perform "START SIGNAL CKT" in "FUNCTION TEST" mode with CONSULT.
3) Check "START SIGNAL" in "MONITOR" mode with CONSULT.

IGN "ON" OFF
IGN "START" ON

1) Turn ignition switch to "START".
2) Check voltage between ECM terminal @ and ground.
Voltage: Ignition switch "START" Battery voltage Except above: Approximately 6V

OK

NG

Check if 7.5A fuse is OK.

NG

Replace 7.5A fuse.

OK
TROUBLE DIAGNOSES

Diagnostic Procedure 31 (Cont'd)

CHECK INPUT SIGNAL CIRCUIT.
1) Turn ignition switch "OFF".
2) Disconnect ECM harness connector and 7.5A fuse.
3) Check harness continuity between ECM terminal @ and fuse block. Continuity should exist.
   If OK, check harness for short.

OK

Disconnect and reconnect harness connectors in the circuit. Then retest.

Trouble is not fixed.

Check ECM pin terminals for damage or the connection of ECM harness connector. Reconnect ECM harness connector and retest.

NO

Check the following:
- Harness connectors ( ), ( )
- Harness for open or short between ECM and fuse block
   If NO, repair harness or connectors.
Diagnostic Procedure 32

VEHICLE SPEED SENSOR (Not self-diagnostic item)

Refer to last page (Foldout page).

EC-VSS-01

EC-49
TROUBLE DIAGNOSES

Diagnostic Procedure 32 (Cont'd)

INSPECTION START

CHECK OVERALL FUNCTION.
1) Jack up drive wheels.
2) Perform "CAR SPEED SEN CIRCUIT" or "VEHICLE SPEED SEN OKT" in "FUNCTION TEST" mode with CONSULT.

 OR

3) Read "CAR SPEED SEN" or "VEHICLE SPEED SE" signal in "DATA MONITOR" mode with CONSULT.
CONSULT value should be the same as the speedometer indication.

5) Disconnect ECM harness connector.
6) Turn ignition switch "ON".
7) Check voltage between ECM terminal and body ground.
Voltage should vary between approx. 0 to 5V.

CHECK SPEEDOMETER FUNCTION.
Make sure that speedometer functions properly.
[Refer to EL section.]
TROUBLE DIAGNOSES

Diagnostic Procedure 33

EGR AND CANISTER CONTROL (Not self-diagnostic item)

Refer to EL-PODER.

EC-EGRC/V-01

Refer to last page (Vailout page).

EC-51
CHECK OVERALL FUNCTION.
1) Start engine and warm it up sufficiently.
2) Perform diagnostic test mode 11 (Self-diagnostic results).
   Make sure that diagnostic trouble code No. 12 is not displayed.
3) Make sure that EGR valve spring moves up and down (Use your finger) under the following conditions:
   - At Idle: Spring does not move.
   - Racing engine from Idle to 3,000 rpm: Spring moves up and down.

CHECK VACUUM SOURCE TO EGR VALVE.
1) Disconnect vacuum hoses to EGR valve and activated carbon canister.
2) Make sure that vacuum exists under the following conditions:
   - At Idle: Vacuum should not exist.
   - Racing engine from Idle to 3,600 rpm: Vacuum should exist.

CHECK COMPONENTS (EGR valve, EGR-BPT valve and activated carbon canister).
Refer to "Electrical Components Inspection".
Replace malfunctioning component(s).
Diagnostic Procedure 33 (Cont’d)

CHECK CONTROL FUNCTION.
1) Check voltage between ECM terminal (A) and ground under the following conditions.
   Voltage:
   At idle
   Approximately 0V
   Engine speed is 2,000 rpm
   Battery voltage

CHECK VACUUM HOSE.
1) Check vacuum hose for clogging, cracks, and proper connection.

CHECK POWER SUPPLY.
1) Stop engine.
2) Disconnect EGR & canister control solenoid valve harness connector.
3) Turn ignition switch “ON”.
4) Check voltage between terminal (A) and ground.
   Voltage: Battery voltage

CHECK OUTPUT SIGNAL CIRCUIT.
1) Turn ignition switch “OFF”.
2) Disconnect ECM harness connector.
3) Check harness continuity between ECM terminal (B) and terminal (A).
   Continuity should exist.
   If OK, check harness for short.

Check the following.
- Harness connectors
- Harness connectors
- 10A fuse
- Harness for open or short between EGR & canister control solenoid valve and fuse
If NG, repair harness or connectors.

Check the following.
- Harness connectors
- Harness connectors
- Harness connectors (RHD models)
- Harness connectors
- Harness connectors
- Harness for open or short between ECM and EGR & canister control solenoid valve
If NG, repair harness or connectors.

EC-53
**TROUBLE DIAGNOSES**

**Diagnostic Procedure 33 (Cont'd)**

**For Europe**

1. **EGR CONT CIRCUIT.**
   - **DOES THE SOLENOID VALVE MAKE AN OPERATING SOUND EVERY 3 SECONDS?**
     - **NEXT**
     - **NO**
     - **YES**

2. **CHECK COMPONENT (EGR & canister control solenoid valve).**
   - 1) Reconnect EGR & canister control solenoid valve harness connector and ECM harness connector.
   - 2) Turn ignition switch "ON".
   - 3) Perform "EGR CONT CIRCUIT" or "EGRC SOLN CIRCUIT" in "FUNCTION TEST" mode with CONSULT.
   - **OK**
     - Refer to "Electrical Components Inspection".
   - **NG**
     - Replace EGR & canister control solenoid valve.

3. **ACTIVE TEST.**
   - **EGR CONT SOLN OFF**
   - **ON**
   - **ON/OFF**

**EC-54**
Diagnostic Procedure 34
HEATED OXYGEN SENSOR (Not self-diagnostic item)
EC-H02S-01

Refer to EL-POWER.

EC

Refer to last page (Foldout page).

EC-55
TROUBLE DIAGNOSES

Diagnostic Procedure 34 (Cont'd)

INSPECTION START

A

CHECK HEATED OXYGEN SENSOR CIRCUIT.
1) Start engine and warm it up sufficiently.
2) Perform "MIXTURE RATIO TEST" in "FUNCTION TEST" mode with CONSULT.
3) Make sure that "MIX/FIC MNT" in "DATA MONITOR" mode indicates "RICH" and "LEAN" periodically more than 5 times during 10 seconds at 2,000 rpm.

B

CHECK POWER SUPPLY.
1) Stop engine.
2) Disconnect heated oxygen sensor harness connector.
3) Turn ignition switch "ON".
4) Check voltage between terminal @ and ground.
   Voltage: Battery voltage

C

CHECK OUTPUT SIGNAL CIRCUIT.
1) Turn ignition switch "OFF".
2) Disconnect ECM harness connector.
3) Check harness continuity between terminal @ and ECM terminal @. Continuity should exist. If OK, check harness for short.

EC-56
CHECK INPUT SIGNAL CIRCUIT.
1) Loosen and retighten ground screws.  
2) Check harness continuity between 
ECM terminal ① and terminal ②. 
Continuity should exist. 
If OK, check harness for short.

OK

Repair harness or connectors.

NG

Disconnect and reconnect harness connectors in the circuit. 
Then test.

Trouble is not fixed.

Check ECM pin terminals for damage 
or the connection of ECM harness connector. 
Reconnect ECM harness connector and retest.

Trouble is not fixed.

Replace heated oxygen sensor.
Diagnostic Procedure 35

INJECTOR CIRCUIT (Not self-diagnostic item)

Refer to EL-POWER.

EC-INJECT-01

ECM (ECCS CONTROL MODULE)

Refer to last page (Foldout page).
Harness layout

LHD models  
Passenger's side  
ECM harness connector

RHD models  
Passenger's side  
ECM harness connector

INSPECTION START

POWER BALANCE
MONITOR
CAS-RPM [REF] 600 rpm
AIR FLOW MTR 0.9 SV
MC VALVE 41%

CHECK OVERALL FUNCTION.
1) Start engine.
2) Perform "POWER BALANCE" in "ACTIVE TEST" mode with CONSULT.
3) Make sure that each circuit produces a momentary engine speed drop.

2) Listen to each injector operating sound. Clicking noise could be heard.

EC-59
TRouble Diagnoses

Diagnostic Procedure 35 (Cont'd)

For Europe

I5)

CHECK POWER SUPPLY.
1) Stop engine.
2) Disconnect harness connectors.
3) Turn ignition switch "ON".
4) Check voltage between terminal and ground.
Voltage: Battery voltage.

MECl66B

If NG, repair harness or connectors.

CHECK OUTPUT SIGNAL CIRCUIT.
1) Turn ignition switch "OFF".
2) Disconnect ECM harness connector.
3) Check harness continuity between ECM terminal and terminal or short between ECM terminal and terminal or ECM terminal and terminal or harness connector.
Continuity should exist.
If OK, check harness for short.

OK

If NG, repair harness or connectors.

CHECK COMPONENT
Replace injector.

OK

Disconnect and reconnect harness connectors in the circuit. Then retest.

Trouble is not fixed.

Check ECM pin terminals for damage or the connection of ECM harness connector. Reconnect ECM harness connector and retest.

EC-60
TROUBLE DIAGNOSES

Diagnostic Procedure 36

FUEL PUMP (Not self-diagnostic item)

Refer to EL-POWER.

EC-F/PUMP-01

- LH3 models
- RHD models
- W1: 1, W2: 2
- W3: B/P, W4: B/Y
- W5: LHO models
- W6: RHO models

Refer to last page (Foldout page)...

EC-61
TROUBLE DIAGNOSES

Diagnostic Procedure 36 (Cont'd)

A

CHECK OVERALL FUNCTION.
1) Turn ignition switch "ON":
2) Listen to fuel pump operating sound.
Fuel pump should operate for 1 second after ignition switch is turned "ON":

OK → INSPECTION END
NG

B

CHECK POWER SUPPLY.
1) Turn ignition switch "OFF":
2) Disconnect fuel pump relay.
3) Turn ignition switch "ON":
4) Check voltage between terminals ①, ② (LHD models), ③, ④ (RHD models) and ground.
   Voltage: Battery voltage

OK
NG
Check the following.
1) 15A fuse
   • Harness for open or short between fuel pump relay and fuse
   If NG, repair harness or connectors.
2) Inspect harness connectors ①, ②
   • Harness for open or short between fuel pump relay and fuse

C

CHECK GROUND CIRCUIT.
1) Turn ignition switch "OFF":
2) Disconnect fuel pump harness connector.
3) Check harness continuity between terminal ⑪ and body ground, terminal ⑫ and terminal ⑬.
   Continuity should exist.
   If OK, check harness for short.

OK
NG
Check the following.
1) Harness connectors ⑤, ⑥
   • Harness for open or short between fuel pump and fuel pump relay
   • Harness for open or short between fuel pump and body ground
   If NG, repair harness or connectors.
2) Inspect harness connectors ①, ②
   • Harness for open or short between ECM and fuel pump relay

D

CHECK OUTPUT SIGNAL CIRCUIT.
1) Disconnect ECM harness connector.
2) Check harness continuity between ECM terminal ⑭ and terminal ⑮ (LHD models), ⑯ (RHD models).
   Continuity should exist.
   If OK, check harness for short.

OK
NG
Check the following.
1) Harness connectors ①, ②
   • Harness for open or short between ECM and fuel pump relay
   If NG, repair harness or connectors.
TROUBLE DIAGNOSES

Diagnostic Procedure 36 (Cont'd)

For Europe

• FUEL PUMP CIRCUIT

1. Pinch fuel feed hose with fingers. Is there any pressure pulsation on the fuel feed hose?

Does the fuel pump relay make an operating sound every 2 seconds?

Replace fuel pump relay.

PULSATION ON THE FUEL CHECK COMPONENT FEED HOSE? (Fuel pump relay)

2) Reconnect fuel pump relay, fuel pump harness connector,
and ECM harness connector.

Every 7 SECONDS

3) Turn fuel pump relay "ON" and "OFF" in "ACTIVE TEST"
mode with CONSULT and check operating sound.

OK

Refer to "Electrical Components Inspection".

CHECK COMPONENT
(Fuel pump).

Refer to "Electrical Components Inspection".

OK

Disconnect and reconnect harness connectors in the circuit. Then release.

Trouble is not fixed.

Check ECM pin terminals for damage or the connection of ECM harness connector. Reconnect ECM harness connector and release.

OK

Replace fuel pump.

NG
Diagnostic Procedure 37

WASTEGATE VALVE CONTROL (Not self-diagnostic item)

Refer to EL-POWER.

EC-WG/V-01

LHD models
RHD models

ECM (ECCS CONTROL MODULE)

Ref to last page (Foldout page).
Diagnostic Procedure 37 (Cont'd)

For Europe

Harness layout

LHD models
Passenger's dash side
ECM harness connector
Door RH

RHD models
Passenger's dash side
ECM harness connector

INSPECTION START

1) Start engine and warm it up sufficiently.
2) Perform diagnostic test mode II (Self-diagnostic results). Make sure that diagnostic trouble code No. 55 is displayed.
3) Stop engine.
4) Disconnect air passage hose to waste gate valve control solenoid valve and restart engine.
5) Make sure that boost pressure exists under the following conditions.
   - At Idle: Boost pressure should not exist. Engine is racing quickly (No to about 5,000 rpm).
   - Boost pressure should exist.

CHECK COMPONENT (Waste gate valve actuator).
Refer to "TURBOCHARGER" in EM section.
If NG, replace waste gate valve actuator.

INSPECTION END

EC-65
TROUBLE DIAGNOSES

Diagnostic Procedure 37 (Cont'd)

CHECK CONTROL FUNCTION
1) Check voltage between ECM terminal and ground under the following conditions.
   Voltage:
   - At Idle
   - Battery voltage
   - Engine is racing quickly
     (Up to about 5,000 rpm).
   Approximately 4 - 5 V

CHECK POWER SUPPLY.
1) Stop engine.
2) Disconnect wastegate valve control solenoid valve harness connector.
3) Turn ignition switch "ON"
4) Check voltage between terminal and ground.
   Voltage: Battery voltage

CHECK OUTPUT SIGNAL CIRCUIT.
1) Turn ignition switch "OFF".
2) Disconnect ECM harness connector.
3) Check harness continuity between ECM terminal and terminal.
   Continuity should exist.
   If OK, check harness for short.
   If NG, repair harness or connectors.

CHECK COMPONENT
(Wastegate valve control solenoid valve).
Refer to "Electrical Components Inspection".

 Replace wastegate valve control solenoid valve.

Disconnect and reconnect harness connectors in the circuit. Then retest.

Troubleshooting is not fixed.

Check ECM pin terminals for damage or the connection of ECM harness connector.
Reconnect ECM harness connector and retest.
Diagnostic Procedure 38
VALVE TIMING CONTROL (Not self-diagnostic item)

Refer to EL-POWER.

EC-VTC-01

Refer to last page (Foldout page).

EC-VTC-01
CHECK CONTROL FUNCTION.
1. Jack up drive wheels.
2. Start engine.
3. Shift gear to any position except the neutral position (A/T model). Shift selector lever to any position except "N" or "P" position (A/T model).
4. Check voltage between ECM terminal "C1D" and ground under the following conditions:
   Voltage: Quickly depress accelerator pedal, then quickly release it. Approximately 0V at idle battery voltage.

OK

CHECK VTC SOLENOID VALVE OPERATION.
1. Stop engine.
2. Connect a suitable jumper wire between ECM terminal "C1D" and body ground.
3. Start engine and make sure that improper idle condition occurs. If it does not occur, go to CHECK COMPONENT (VTC solenoid valve).

NG

DIAGNOSTIC PROCEDURE 38 (Cont'd)

For Europe

EC-68
TROUBLE DIAGNOSES

Diagnostic Procedure 38 (Cont'd)

CHECK POWER SUPPLY.
1) Stop engine.
2) Disconnect VTC solenoid valve harness connector.
3) Turn ignition switch "ON".
4) Check voltage between terminal 3 and ground.
   Voltage: Battery voltage.

Check the following:
- Harness connectors
- 10A fuse
- Harness for open or short between VTC solenoid valve and fuse
  If NG, repair harness or connectors.

CHECK INPUT SIGNAL CIRCUIT.
1) Turn ignition switch "OFF".
2) Disconnect ECM harness connector.
3) Check harness continuity between terminal 3 and ECM terminal 15D.
   Continuity should exist.
   If OK, check harness for short.

Repair harness or connectors.

CHECK COMPONENT (VTC solenoid valve).
1) Reconnect ECM harness connector and VTC solenoid valve harness connector.
2) Turn ignition switch "ON".
3) Perform "VALVE TIMING S/V CKT" in "FUNCTION TEST" mode with CONSULT.
   OR
   3) Perform "VALVE TIMING SOL" in "ACTIVE TEST" mode with CONSULT.
   4) Turn VTC solenoid valve "ON" and "OFF", and check operating sound.
   OR
   Refer to "Electrical Components Inspection".

Replace VTC solenoid valve.

Valve is not fixed.

Check ECM pin terminals for damage or the connection of ECM harness connector. Reconnect ECM harness connector and retest.

EC-69
Diagnostic Procedure 39

IACV-AAC VALVE (Not self-diagnostic item)

EC-AAC/V-01
Diagnostic Procedure 39 (Cont'd)

Inspection Start

A

CHECK OVERALL FUNCTION.

1) Start engine and warm it up sufficiently.
2) Check idle speed.
   - 800±50 rpm (A/T: in "N" position)
   - If NG, adjust idle speed
3) Perform "IGN TIMING ADJ" in "WORK SUPPORT" mode with CONSULT.
4) Disconnect throttle position sensor harness connector.
5) Make sure that idle speed drops.

EC-71
TROUBLE DIAGNOSES

Diagnostic Procedure 39 (Cont'd)

① CHECK POWER SUPPLY.
1) Stop engine.
2) Disconnect IACV-AAC valve harness connector.
3) Check voltage between terminal ③ and ground.
   Voltage: Battery voltage

② Check the following:
- Harness connectors (E3), (F3)
- Harness connectors (E2), (F1)
- 7.5A fuse
- Harness for open or short between IACV-AAC valve and fuse
If NG, repair harness or connectors.

③ Repair harness or connectors.

④ CHECK OUTPUT SIGNAL CIRCUIT.
1) Reconnect IACV-AAC valve harness connector.
2) Perform "AAC VALVE SYSTEM" or "IACV-AAC/V SYSTEM" in "FUNCTION TEST" mode with CONSULT.
   OR
   2) Perform "AAC VALVE OPENING TEST" or "IACV-AAC/V OPENING TEST" in "ACTIVE TEST" mode with CONSULT.
   OR

⑤ Replace IACV-AAC valve.

⑥ Discontinue and reconnect harness connectors in the circuit. Then retest.
Trouble is not fixed.

Check ECM pin terminals for damage or the connection of ECM harness connector. Reconnect ECM harness connector and retest.
TROUBLE DIAGNOSES

Diagnostic Procedure 40
IACV-FICD SOLENOID VALVE (Not self-diagnostic item)

LHD MODELS

Refer to EL-POWER.

To compressor (Refer to HA-A/C, M.)

To push control unit (Refer to HA-A/C, M.)

Refer to last page (Foldout page).

Refer to EC-73

EC-FICD-01
Diagnostic Procedure 40 (Cont'd)

For Europe

Harness layout

C-HD models
Passenger's dash side
ECM harness connector

RHD models
Passenger's door side
ECM harness connector

Make sure the collector.

Engine start

1) Start engine and warm it up sufficiently.
2) Check idle speed.
   - Read idle speed in "DATA MONITOR" mode with CONSULT.
   - Check idle speed: 800 ± 50 rpm (M/T: In "N" position)
   If NG, adjust idle speed.
3) Turn air conditioner switch and turn on "ON".
4) Recheck idle speed: 800 rpm or more

Check if air conditioner compressor functions normally.

Refer to HA section.

EC-75
TROUBLE DIAGNOSES

Diagnostic Procedure 40 (Cont'd)

CHECK POWER SUPPLY.
1) Stop engine and turn air conditioner switch and blower fan switch "OFF".
2) Disconnect IACV-FICD solenoid valve harness connector.
3) Restart engine and turn air conditioner switch and blower fan switch "ON".
4) Check voltage between terminal ③ and ground.
Voltage: Battery voltage

CHECK GROUND CIRCUIT.
1) Stop engine.
2) Check harness continuity between terminal ③ and engine ground.
Continuity should exist.
If OK, check harness for short.

CHECK COMPONENT (IACV-FICD solenoid valve).
Refer to "Electrical Components Inspection".

Disconnect and reconnect harness connectors in the circuit. Then retest.
Trouble is not fixed,
Check ECM pin terminals for damage or the connection of ECM harness connector. Reconnect ECM harness connector and retest.

Check the following.
- Harness connectors
- Harness connectors
- Harness for opens or short between A/C relay and IACV-FICD solenoid valve
If NG, repair harness or connectors.
DIAGNOSTIC PROCEDURE 41

COOLING FAN CONTROL (Not self-diagnostic item)

Refer to EL-POWER.

Refer to last page (Foldout page)

EC-COOL/F-01

EC-77
 Diagnostic Procedure 41 (Cont'd)

**TROUBLE DIAGNOSES**

**Diagnostic Procedure 41 (Cont'd)**

**Harness layout**

**LHD models**
Passenger's dash side
ECM harness connector

**RHD models**
Passenger's dash side
ECM harness connector

---

**INSTRUCTION START**

**CHECK OVERALL FUNCTION-I.**
1. Turn ignition switch "ON".
2. Make sure that engine coolant temperature is low.
4. Make sure that cooling fan is not operating.

**OK**
Go to "CHECK OVERALL FUNCTION-II".

**NG**

1. LHD

---

**EC-79**
LHD models

CHECK HARNESS CONTINUITY BETWEEN COOLING FAN RELAY-1 AND GROUND

1) Stop engine.
2) Disconnect cooling fan relay-1.
3) Disconnect triple-pressure switch harness connector.
4) Check harness continuity between terminal ③ and terminal ⑥, terminal ⑤ and body ground.
Continuity should exist.
If OK, check harness for short.
If NG, repair harness or connectors.

NG Replace triple-pressure switch.
OK Go to "CHECK OUTPUT SIGNAL CIRCUIT" in PROCEDURE A.

RHD models

CHECK HARNESS CONTINUITY BETWEEN COOLING FAN RELAY-1 AND ECM

1) Stop engine.
2) Disconnect cooling fan relay-1.
3) Disconnect ECM harness connector.
4) Check harness continuity between terminal ③ and ECM terminal ⑤.
Continuity should exist.
If OK, check harness for short.
If NG, repair harness or connectors.

NG Replace triple-pressure switch.
OK Go to "CHECK OUTPUT SIGNAL CIRCUIT" in PROCEDURE A.
Diagnostic Procedure 41 (Cont'd)

For Europe

With air conditioner

1) Start engine.
2) Set temperature lever at full cold position.
3) Turn air conditioner switch "ON".
4) Turn blower fan switch "ON".
5) Run engine at idle for a few minutes with air conditioner operating.
6) Make sure that cooling fan operates at low speed.

Without air conditioner

1) Start engine.
2) Keep engine speed at about 2,000 rpm until engine is warmed up sufficiently.
3) Make sure that cooling fan begins to operate at low speed during warm-up.

CHECK OVERALL FUNCTION

CHECK COOLING FAN LOW SPEED OPERATION.

With air conditioner

1) Start engine.
2) Set temperature lever at full cold position.
3) Turn air conditioner switch "ON".
4) Turn blower fan switch "ON".
5) Run engine at idle for a few minutes with air conditioner operating.
6) Make sure that cooling fan operates at low speed.

Without air conditioner

1) Start engine.
2) Keep engine speed at about 2,000 rpm until engine is warmed up sufficiently.
3) Make sure that cooling fan begins to operate at low speed during warm-up.

CHECK COOLING FAN HIGH SPEED OPERATION.

1) Turn both air conditioner switch and blower fan switch "OFF".
2) Stop engine.
3) Connect 400Ω resistor between terminals [2] and [3] on harness connector [CD]. (Refer to "Diagnostic Procedure 25")
4) Restart engine and make sure that cooling fan operates at high speed.

EC-81
TROUBLE DIAGNOSES

Diagnostic Procedure 41 (Cont'd)

PROCEDURE A

INSPECTION START

CHECK POWER SUPPLY.
1) Stop engine.
2) Disconnect cooling fan relay-1.
3) Turn ignition switch "ON".
4) Check voltage between terminals and ground. Voltage: Battery voltage

CHECK GROUND CIRCUIT.
1) Turn ignition switch "OFF".
2) Disconnect cooling fan motor harness connector.
3) Check harness continuity between terminal and terminal and body ground. Continuity should exist. OK, check harness for short.

CHECK OUTPUT SIGNAL CIRCUIT.
1) Disconnect ECM harness connector.
2) Check harness continuity between ECM terminal and terminal. Continuity should exist. OK, check harness for short.

CHECK COMPONENT
(Cooling fan relay-1). Refer to "Electrical Components Inspection".

EC-82
TROUBLE DIAGNOSES

Diagnostic Procedure 41 (Cont'd)

CHECK COMPONENT (Cooling fan motor)
1) Reconnect cooling fan relay-1, cooling fan motor harness connector and ECM harness connector.
2) Turn ignition switch "ON".
3) Perform "RADIATOR FAN CIRCUIT" or "COOLING FAN CIRCUIT" in "FUNCTION TEST" mode with CONSULT.
OR
3) Perform "RADIATOR FAN TEST" or "COOLING FAN" in "ACTIVE TEST" mode with CONSULT.
OR
3) Refer to "Electrical Components Inspection".

OK

Disconnect and reconnect harness connectors in the circuit. Then retest.

Trouble is not fixed.

Check ECM pin terminals for damage or the connection of ECM harness connector. Reconnect ECM harness connector and retest.

PROCEDURE B

INSPECTION START

CHECK POWER SUPPLY.
1) Stop engine.
2) Disconnect cooling fan relay-2.
3) Turn ignition switch "ON".
4) Check voltage between terminals 1, 2, and ground. Voltage: Battery voltage

OK

Check the following.
- Harness for open or short between cooling fan relay-2 and harness connector
- Harness for open or short between cooling fan relay-2 and fusible link
If NG, repair harness or connectors.
TROUBLE DIAGNOSES

Diagnostic Procedure 41 (Cont'd)

I) CHECK GROUND CIRCUIT.
1) Turn ignition switch "OFF".
2) Disconnect cooling fan motor harness connector.
3) Check harness continuity between terminal (1) and terminal (2), terminal (2) and body ground. Continuity should exist. If OK, check harness for short.

NG
Repair harness or connectors.

OK

II) CHECK OUTPUT SIGNAL CIRCUIT.
1) Disconnect ECM harness connector.
2) Check harness continuity between ECM terminal (8) and terminal (9). Continuity should exist. If OK, check harness for short.

NG
Check the following.
- Harness connectors
- Harness connectors
- Harness for open or short between ECM and cooling fan relay-2
If NG, repair harness or connectors.

OK

III) CHECK COMPONENT
(Cooling fan relay-2).
Refer to "Electrical Components Inspection".

NG
Replace cooling fan relay.

OK

IV) CHECK COMPONENT
(Cooling fan motor).
1) Reconnect cooling fan relay-2, cooling fan motor harness connector and ECM harness connector.
2) Disconnect 400 Ω resistor from harness connector (5).
3) Turn ignition switch "ON".
4) Perform "RADIPTOR FAN CIRCUIT" or "COOLING FAN CIRCUIT" in "FUNCTION TEST" mode with CONSULT.

NG
- Replace cooling fan motor.
- Refer to "Electrical Components Inspection".

OK

Trouble is not fixed.

Check ECM pin terminals for damage or the connection of ECM harness connector. Reconnect ECM harness connector and retest.
DIAGNOSTIC PROCEDURE 42
POWER STEERING OIL PRESSURE SWITCH (Not self-diagnostic item)

EC-PST/SW-01

Refer to last page (Foldout page)

EC-85
TROUBLE DIAGNOSES

Diagnostic Procedure 42 (Cont'd)

For Europe

INSPECTION START

CHECK CONTROL FUNCTION
1) Start engine and warm it up sufficiently.
2) Perform "PWST SIGNAL CIRCUIT" in "FUNCTION TEST" mode with CONSULT.
3) Check voltage between ECM terminal @ and ground.
Voltage:
- When steering wheel is turned quickly
Approximately 4 - 5V
- Except above
4.5V

OK

INSPECTION END

CHECK GROUND CIRCUIT.
1) Stop engine.
2) Disconnect power steering oil pressure switch harness connector.
3) Check harness continuity between terminal @ and body ground.
Continuity should exist.
- If OK, check harness for short.
- If NG, repair harness or connectors.

NG

CHECK INPUT SIGNAL CIRCUIT.
1) Disconnect ECM harness connector.
2) Check harness continuity between ECM terminal @ and terminal @.
- LHD models
Continuity should exist.
- If OK, check harness for short.

OK

NG

CHECK COMPONENT
(Power steering oil pressure switch).
Refer to "Electrical Components Inspection".

OK

- If NG, repair harness or connectors.

CG-86
Diagnostic Procedure 43

NEUTRAL POSITION SWITCH & A/T CONTROL UNIT (PARK/NEUTRAL POSITION SIGNAL)
(Not self-diagnostic item)

EC-PNP/SW-01

Refer to last page (Foldout page).

EC-87
Diagnostic Procedure 43 (Cont'd)

Neutral position switch

FOR EUROPE

CHECK OVERALL FUNCTION
1) Turn ignition switch "ON".
2) Perform "NEUTRAL SW CIRCUIT" or "NEUTRAL POSI SW OK" in "FUNCTION TEST" mode with CONSULT.

OR

2) Check "NEUTRAL SW" or "NEUTRAL POS SW" signal in "DATA MONITOR" mode with CONSULT.
Neutral position: ON
Except above: OFF

1) Set shift lever to the neutral position.
2) Disconnect ECM harness connector.
3) Check harness continuity between ECM terminal and body ground. Continuity should exist. If OK, check harness for short.

EC-88
CHECK INPUT SIGNAL CIRCUIT:
1) Check harness continuity between 
   ECM terminal (6) and terminal (9). 
   Continuity should exist. 
   If OK, check harness for short.
   NG

CHECK COMPONENT 
   (Neutral position switch).
   Refer to "ON-VEHICLE SERVICE" in MT section.

OK

NG

OK

Trouble is not fixed.

Check ECM pin terminals for damage 
or the connection of ECM harness con- 
nector. Reconnect ECM harness con- 
nector and retest.
TROUBLE DIAGNOSES

Diagnostic Procedure 43 (Cont'd)

A/T CONTROL UNIT (PARK/NEUTRAL POSITION SIGNAL) CIRCUIT

INSPECTION START

1) Turn ignition switch "ON".

2) Perform "NEUTRAL SW CIRCUIT" or "NEUTRAL POSI SW Ckt" in "FUNCTION TEST" mode with CONSULT.

OR

2) Check "NEUTRAL SW" or "NEUT POSI SW" signal in "DATA MONITOR" mode with CONSULT.
   - "N" or "P": ON
   - Except above: OFF

3) Check voltage between ECM terminals @ and ground under the following conditions.
   - Voltage: "Nil" or "Low"
   - Approximately 5V
   - Except above
   - Approximately 5V

CHECK INPUT SIGNAL CIRCUIT.

1) Turn ignition switch "OFF".

2) Disconnect ECM harness connector.

3) Disconnect A/T control unit harness connector.

4) Check harness continuity between ECM terminal @ and terminal #.
   - Continuity should exist.
   - OK: Check harness for short.
   - NG: Check ECM terminal @ and terminal #.

CHECK INHIBITOR SWITCH FUNCTION.

Make sure that inhibitor switch functions properly. (Refer to AT section.)

OK

Trouble is not fixed.

Check ECM pin terminals for damage or the connection of ECM harness connector. Reconnect ECM harness connector and retest.
TROUBLE DIAGNOSES

Diagnostic Procedure 44

REAR WINDOW DEFOGGER SWITCH (Not self-diagnostic item)

EC-DEF/S-01

Refer to EL-POWER.

EC

Refer to last page (Foldout page).

EC-91
Diagnostic Procedure 44 (Cont'd)

**INSPECTION START**

**A**

**CHECK OVERALL FUNCTION.**

1) Turn ignition switch "ON".
2) Check "LOAD SIGNAL" in "DATA MONITOR" mode with CONSULT.

Rear window defogger switch "ON": ON
Rear window defogger switch "OFF": OFF

3) Check voltage between ECM terminal (1) and ground under the following conditions:

- Battery voltage
- Rear window defogger switch "ON" approximately 0V
- Rear window defogger switch "OFF"

**B**

**CHECK INPUT SIGNAL CIRCUIT.**

1) Turn ignition switch "OFF".
2) Disconnect ECM harness connector.
3) Disconnect rear window defogger relay.
4) Check harness continuity between ECM terminal (1) and terminal (2). Continuity should exist.

- If OK, check harness for short.
- If NG, repair harness or connectors.

**NG**

Check the following:
- Harness connectors (2), (3)
- Harness for open or short between ECM and rear window defogger relay.
- If NG, repair harness or connectors.

**OK**

Disconnect and reconnect harness connectors in the circuit. Then retset.

Trouble is not fixed.

Check ECM pin terminals for damage or the connection of ECM harness connector. Reconnect ECM harness connector and retset.

**EC-92**
Diagnostic Procedure 22

MAIN POWER SUPPLY AND GROUND CIRCUIT (Not self-diagnostic item)

Refer to EL-POWER.

EC-MAIN-01

LHD models
RHD models

Refer to last page (Foldout page)
TROUBLE DIAGNOSES

Diagnostic Procedure 22 (Cont'd)

**Harness layout**

**LHD models**
- Passenger's side
- ECM harness connector

**RHD models**
- Passenger's side
- ECM harness connector

**LHD models**
- Behind ECM
- CCS relay

**RHD models**
- Behind ECM

---

**INSPECTION START**

**CHECK POWER SUPPLY.**
1. Turn ignition switch "ON".
2. Check voltage between ECM terminals C, E and ground.
   Voltage: Battery voltage

**CHECK GROUND CIRCUIT.**
1. Turn ignition switch "OFF".
2. Disconnect ECM harness connector.
   Continuity should exist.
   If NG, repair harness or connectors.

**OK**
Check ECM pin terminals for damage or the connection of ECM harness connector.

EC-95
TROUBLE DIAGNOSES

Diagnostic Procedure 22 (Cont'd)

CHECK HARNESS CONTINUITY BETWEEN ECCS RELAY AND ECM.
1) Turn ignition switch “OFF”.
2) Disconnect ECM harness connector.
3) Disconnect ECCS relay.
4) Check harness continuity between ECM terminals ⑨, ⑩ and terminal ⑤.
   Continuity should exist. If OK, check harness for short.

CHECK VOLTAGE BETWEEN ECCS RELAY AND GROUND.
1) Check voltage between terminals ⑨, ⑩ and ground.
   Voltage: Battery voltage

CHECK VOLTAGE BETWEEN ECM AND GROUND.
1) Check voltage between ECM terminals ⑬, ⑭ and ground.
   Voltage: Battery voltage

CHECK GROUND CIRCUIT.
1) Check harness continuity between ECM terminals ⑯, ⑰ and engine ground.
   Continuity should exist. If OK, check harness for short.

CHECK OUTPUT SIGNAL CIRCUIT.
1) Check harness continuity between ECM terminal ① and terminal ⑧.
   Continuity should exist. If OK, check harness for short.
TROUBLE DIAGNOSES

Diagnostic Procedure 22 (Cont'd)

CHECK INPUT SIGNAL CIRCUIT.
1) Turn ignition switch "ON".
2) Check voltage between ECM terminal
   @ and ground.
   Voltage: Battery voltage
   OK
   NG

CHECK COMPONENT
   (ECCS relay).
   Refer to "Electrical Components
   Inspection".
   OK
   NG

Replace ECCS relay.

OK

Trouble is not fixed.

EC-97
TROUBLE DIAGNOSES

Diagnostic Procedure 23 (Cont'd)

CHECK INPUT SIGNAL CIRCUIT.
1) Reconnect camshaft position sensor harness connector.
2) Start engine.
3) Read "CAS-RPM" or "CMPS-RPM" signal in "DATA MONITOR" mode with CONSULT.
   80±50 rpm (AT: in "N" position)
   OR
1) Disconnect ECM harness connector.
2) Check harness continuity between terminal ② and ECM terminals ②, ⑧ (1st signal), terminal ③ and ECM terminals ④, ⑥ (180° signal).
   Continuity should exist.
   OK, check harness for short.
   NG
   Replace camshaft position sensor.

OK

Disconnect and reconnect harness connectors in the circuit. Then retest.

Trouble is not fixed

Check ECM pin terminals for damage or the connection or ECM harness connector. Reconnect ECM harness connector and retest.

Perform FINAL CHECK by the following procedure after repair is completed.

FINAL CHECK

1) Erase the diagnostic test mode II (Self-diagnostic results) memory.
2) Perform test drive.
3) Perform diagnostic test mode II (Self-diagnostic results) again.

OK

INSPECTION END

EC-100
Diagnostic Procedure 24

MASS AIR FLOW SENSOR (Diagnostic trouble code No. 12)

EC-MAFS-01

Refer to EL-POWER.
TROUBLE DIAGNOSES

Diagnostic Procedure 24 (Cont’d)

Harness layout

**LHD models**
- Passenger's dash side
- ECM harness connector

**RHD models**
- Passenger's dash side
- ECM harness connector

**INSPECTION START**

**A**
- CHECK POWER SUPPLY.
  1) Disconnect mass air flow sensor harness connector.
  2) Turn ignition switch "ON".
  3) Check voltage between terminal @ and ground. Voltage: Battery voltage

**OK**

**NG**
- Check the following.
  - Harness for open or short between mass air flow sensor and ECM relay
  - If NG, repair harness or connectors.

**B**
- CHECK GROUND CIRCUIT.
  1) Turn ignition switch "OFF".
  2) Disconnect ECM harness connector.
  3) Loosen and retighten ground screws.
  4) Check harness continuity between terminal @ and ECM terminal @. Continuity should exist.
  5) If OK, check harness for short.

**OK**

**NG**
- Repair harness or connectors.

EC-102
TROUBLE DIAGNOSES

Diagnostic Procedure 24 (Cont'd)

CHECK INPUT SIGNAL CIRCUIT.
1) Reconnect mass air flow sensor harness connector and ECM harness connector.
2) Start engine and warm it up sufficiently.
3) Read "AIR FLOW MTR" or "MAS AIRFL W" signal in "DATA MONITOR" mode with CONSULT.
Voltage: 0.8 - 1.5V (At Idile)

OR
1) Check harness continuity between terminal (1) and ECM terminal (5). Continuity should exist.
If OK, check harness for short.

CHECK COMPONENT
(Mass air flow sensor).
Refer to "Electrical Components Inspection". (See page EG-137.)

OK
Disconnect and reconnect harness connectors in the circuit. Then retest.
Trouble is not fixed.

Check ECM pin terminals for damage or the connection of ECM harness connector. Reconnect ECM harness connector and retest.

Perform FINAL CHECK by the following procedure after repair is completed.

FINAL CHECK

1) Erase the diagnostic test mode II (Self-diagnostic results) memory.
2) Perform test drive
3) Perform diagnostic test mode II (Self-diagnostic results) again.

OK

INSPECTION END
Diagnostic Procedure 25

ENGINE COOLANT TEMPERATURE SENSOR (Diagnostic trouble code No. 13)

EC-ECTS-01
**Diagnostic Procedure 25 (Cont'd)**

**INSPECTION START**

**A** CHECK POWER SUPPLY.
1) Start engine and warm it up sufficiently.
2) Select "ENG TEMP SEN" or "COOLANT TEMP" signal in "DATA MONITOR" mode with CONSULT.
3) Stop engine.
4) When restarting engine make sure that CONSULT indicates "ENG TEMP SEN" or "COOLANT TEMP" is 50°C (122°F) or more.

**CHECK**
- **ENG TEMP SEN**
- **COOLANT TEMP**

**B** CHECK GROUND CIRCUIT.
1) Turn ignition switch "OFF".
2) Check harness continuity between terminal and engine ground.
   - For LHD All models: Harness connectors should exist. If OK, check harness for short.
   - For RHD All models: Harness for open or short between ECM and harness connector.
   - Harness for open or short between ECM and harness connector.
     - Harness connectors (LHD A/T models)
     - Harness connectors (RHD A/T models)
     - Harness for open or short between ECM and harness connector.

**CHECK COMPONENT**
- Engine coolant temperature sensor.
- Refer to "Electrical Components Inspection".

**EC-105**
TROUBLE DIAGNOSES

Diagnostic Procedure 25 (Cont'd)

Perform FINAL CHECK by the following procedure after repair is completed.

FINAL CHECK

1) Erase the diagnostic test mode II (Self-diagnostic results) memory.
   2) Perform test drive.
   3) Perform diagnostic test mode II (Self-diagnostic results) again.

NG
   Recheck ECM pin terminals for damage or the connection of ECM harness connector.

OK

INSPECTION END

EC-106
IGNITION SIGNAL (Diagnostic trouble code No. 21)

LHD MODELS

EC-IGN/SG-01

Refer to EL-POWER.

EC-107
TROUBLE DIAGNOSES

Diagnostic Procedure 26 (Cont’d)

EC-IGN/SG-04

ECM (ECU CONTROL MODULE)

POWER TRANSISTOR UNIT

EC110
TROUBLE DIAGNOSES

Diagnostic Procedure 26 (Cont'd)

**INSPECTION START**

**A**
- **CHECK POWER SUPPLY-I.**
  1. Disconnect ignition coil harness connectors.
  2. Turn ignition switch "ON".
  3. Check voltage between terminal 3 and ground.
    Voltage: Battery voltage

**NG**
- Go to "CHECK GROUND CIRCUIT-III" on next page.

**OK**
- Check the following:
  1. Harness connectors (1), (2)
  2. Harness for open or short between ignition coil and ground.
  3. Harness for open or short between ignition coil relay and ECM relay.
  If NG, repair harness or connectors.

**B**
- **CHECK POWER SUPPLY-II.**
  1. Turn ignition switch "OFF".
  2. Connect harness connectors.
  3. Check harness continuity between terminal 3 and terminal 4.
    Continuity should exist.
  4. If OK, check harness for short.

**OK**
- Replace ignition coil relay.

**NG**
- Repair harness or connectors.

**C**
- **CHECK POWER SUPPLY-III.**
  1. Turn ignition switch "ON".
  2. Check harness continuity between terminal 6 and ground.
    Voltage: Battery voltage

**OK**
- Replace ignition coil relay.

**NG**
- Repair harness or connectors.

**D**
- **CHECK GROUND CIRCUIT-I.**
  1. Turn ignition switch "ON".
  2. Check harness continuity between terminal 6 and engine ground.
    Continuity should exist.
  3. If OK, check harness for short.

**OK**
- Repair harness or connectors.

**NG**
- Disconnect and reconnect harness connectors in the circuit. Then retest.

Trouble is not fixed.

- Check ECM pin terminals for damage or the connection of ECM harness connectors. Reconnect ECM harness connector and retest.

EC-111
TROUBLE DIAGNOSES
Diagnostic Procedure 26 (Cont’d)

CHECK GROUND CIRCUIT-2:
1) Turn ignition switch "OFF".
2) Check harness continuity between terminal ⑥ and engine ground.
   Continuity should exist.
   If OK, check harness for short.
3) Disconnect power transistor unit harness connector.
4) Check harness continuity between terminal ② and engine ground.
   Continuity should exist.
   If OK, check harness for short.

OK

CHECK OUTPUT SIGNAL CIRCUIT:
1) Check harness continuity between terminals ⑤, ⑧, ① and terminal ⑥.
   Continuity should exist.
   If OK, check harness for short.
2) Disconnect ECM harness connector.
3) Check harness continuity between following terminals. ① - ⑧ ① - ② ⑤ - ⑧ ⑤ - ②
   Continuity should exist.
   If OK, check harness for short.

OK

CHECK COMPONENTS
(Refer to "Electrical Component Inspection".)

OK

Trouble is not fixed.

Check ECM pin terminals for damage or the connection of ECM harness connector.
Disconnect ECM harness connector and retest.

NG

Repair harness or connectors.

No.0-1 No.2-3 No.3-5 No.4-6

NG

Replace malfunctioning component(s).

NG

Check the following:
- Harness connectors ⑤, ⑧
- Harness connectors ①, ⑥
- Harness connectors ⑤, ② (LHD models)
- Harness connectors ⑤, ① (LHD models)
- Harness for open or short between ignition coil and power transistor unit
- Harness for open or short between ECM and power transistor unit
 If NG, repair harness or connectors.
TROUBLE DIAGNOSES

Diagnostic Procedure 26 (Cont’d)

Perform FINAL CHECK by the following procedure after repair is completed.

FINAL CHECK

1) Erase the diagnostic test mode II (Self-diagnostic results) memory.
2) Perform test drive.
3) Perform diagnostic test mode II (Self-diagnostic results) again.

NG

Recheck ECM pin terminals for damage or the connection of ECM harness connector.

OK

INSPECTION END

EC-113
Diagnostic Procedure 29
THROTTLE POSITION SENSOR (Diagnostic trouble code No. 43)

EC-TPS-01

Diagnosis of the Throttle Position Sensor

- A/T models
- LHD models
- RHD models

EC-114
TROUBLE DIAGNOSES

Diagnostic Procedure 29 (Cont'd)

**INSPECTION START**

A. CHECK POWER SUPPLY.
1) Disconnect throttle position sensor harness connector.
2) Turn ignition switch "ON".
3) Check voltage between terminal B and ground.
   Voltage: Approximately 5V
   - Repair harness or connectors.
   - OK

B. CHECK GROUND CIRCUIT.
1) Turn ignition switch "OFF".
2) Loosen and retighten ground screws.
3) Check harness continuity between terminal C and engine ground.
   Continuity should exist.
   If OK, check harness for short.
   - OK

C. CHECK INPUT SIGNAL CIRCUIT.
1) Reconnect throttle position sensor harness connectors.
2) Turn ignition switch "ON".
3) Perform "THROTTLE SENSOR CKT" or "THROTTLE POSI SEN CKT" in "FUNCTION TEST" mode with CONSULT.
   OK

D. CHECK THE FOLLOWING.
- Harness connectors (EC, DB)
- Harness connectors (TB, DB)
- Harness for open or short between ECM and throttle position sensor
- Harness for open or short between A/T control unit and throttle position sensor
- If NG, repair harness or connectors.

EC-115
TROUBLE DIAGNOSES

Diagnostic Procedure 29 (Cont'd)

CHECK COMPONENT
(Throttle position sensor).
Refer to "Electrical Components
Inspection".

Replace throttle position
sensor.

OK

Disconnect and reconnect harness con-
nectors in the circuit. Then retest.

Trouble is not fixed.

Check ECM pin terminals for damage
or the connection of ECM harness con-
nector. Reconnect ECM harness con-
nector and retest.

Perform FINAL CHECK by the following procedure after repair
is completed.

FINAL CHECK

1) Erase the diagnostic test mode II
(Self-diagnostic results) memory.
2) Perform test drive.
3) Perform diagnostic test mode II
(Self-diagnostic results) again.

Replace ECM pin termi-
nals for damage or the
connection of ECM har-
ness connector.

OK

INSPECTION END
TROUBLE DIAGNOSES

Diagnostic Procedure 30

A/T CONTROL (Diagnostic trouble code No. 54)

EC-AT/C-01

EC-117
DIAGNOSTIC PROCEDURE 30 (Cont'd)

INSPECTION START

CHECK INPUT SIGNAL CIRCUIT.

NG

Check the following:

- Harness connectors ▶, ▶
  (LHD models)
- Harness connectors ▶, ▶
  (RHD models)
- Harness for open or
  short between ECM
  and A/T control unit
  If NG, repair harness or
  connectors.

OK

Disconnect and reconnect harness connectors in the circuit. Then retest.

Trouble is not fixed:

Check ECM pin terminals for damage or the connection of ECM harness connector. Reconnect ECM harness connector and retest.

Perform FINAL CHECK by the following procedure after repair is completed.

FINAL CHECK

1) Erase the diagnostic test mode II
   (Self-diagnostic results) memory.
2) Perform test drive.
3) Perform diagnostic test mode II
   (Self-diagnostic results) again.

OK

INSPECTION END
TROUBLE DIAGNOSES

Diagnostic Procedure 33

EGR AND CANISTER CONTROL (Not self-diagnostic item)

EC-EGRC/V-01

Refer to last page (Foldout page).

EC-119
Except for Europe

Diagnostic Procedure 33 (Cont'd)

**A**

CHECK OVERALL FUNCTION.
1) Start engine and warm it up sufficiently.
2) Perform diagnostic test mode 2 (Self-diagnostic results).
   Make sure that diagnostic trouble code No. 12 is not displayed.
3) Make sure that EGR valve spring moves up and down (Use your finger) under the following conditions.
   At idle:
   Spring does not move.
   Racing engine from idle to 3,000 rpm:
   Spring moves up and down.

**B**

CHECK VACUUM SOURCE TO EGR VALVE.
1) Disconnect vacuum hoses to EGR valve and activated carbon canister.
2) Make sure that vacuum exists under the following conditions.
   At idle:
   Vacuum should exist.
   Racing engine from idle to 3,000 rpm:
   Vacuum should exist.
TROUBLE DIAGNOSES

Diagnostic Procedure 33 (Cont’d)

CHECK CONTROL FUNCTION:
1) Check voltage between ECM terminal GID and ground under the following conditions.
Voltage:
- At idle: Approximately 2V
- Engine speed is 2,000 rpm
- Battery voltage

CHECK VACUUM HOSE:
1) Check vacuum hose for clogging, cracks, and proper connection.

CHECK POWER SUPPLY:
1) Stop engine.
2) Disconnect EGR & canister control solenoid valve harness connector.
3) Turn ignition switch "ON".
4) Check voltage between terminal @ and ground.
Voltage: Battery voltage

CHECK OUTPUT SIGNAL CIRCUIT:
1) Turn ignition switch "OFF".
2) Disconnect ECM harness connector.
3) Check harness continuity between ECM terminal ⑩ and terminal ⑫.
   Continuity should exist.
   If OK, check harness for short.

CHECK VACUUM HOSE:
1) Check vacuum hose for clogging, cracks, and proper connection.

EC-121
TROUBLE DIAGNOSES

Except for Europe

Diagnostic Procedure 33 (Cont'd)

[Diagram]

EGR CONT SV/Circuit

Does the solenoid valve make an operating sound every 3 seconds?

YES

NO

NEXT

CHECK COMPONENT

EGR & canister control solenoid valve.

1) Reconnect EGR & canister control solenoid valve harness connector and ECM harness connector.

2) Turn ignition switch "ON".

3) Perform "EGR CONT SV/Circuit" or "EGRC SOLV CIRCUIT" in "FUNCTION TEST" mode with CONSULT.

OR

Refer to "Electrical Components Inspection".

OK

NG

Replace EGR & canister control solenoid valve.

Disconnect and reconnect harness connectors in the circuit. Then retest.

Trouble is not fixed.

Check ECM pin terminals for damage or the connection of ECM harness connector. Reconnect ECM harness connector and retest.

EC-122
Diagnostic Procedure 34
HEATED OXYGEN SENSOR (Not self-diagnostic item)

EC-H02S-01

Refer to EL-POWER.

HEATED OXYGEN SENSOR
ECM (ECRS CONTROL MODULE)

Refer to last page (Foldout page).

EC-123
Diagnostic Procedure 35

INJECTOR CIRCUIT (Not self-diagnostic item)

Refer to EL-POWER.

EC-INJECT-01

LHD models
RHD models

EC-124
TROUBLE DIAGNOSES

Diagnostic Procedure 36

FUEL PUMP (Not self-diagnostic item)

EC-F/PUMP-01

Refer to last page

Refer to last page

EC-125
TROUBLE DIAGNOSES

Diagnostic Procedure 36 (Cont'd)

A

CHECK OVERALL FUNCTION.
1) Turn ignition switch “ON”.
2) Listen to fuel pump operating sound.
Fuel pump should operate for 1 second after ignition switch is turned “ON”.

B

CHECK POWER SUPPLY.
1) Turn ignition switch “OFF”.
2) Disconnect fuel pump relay harness connector.
3) Check voltage between terminals (1, 3) (LHD models), (2, 4) (RHD models) and ground.
Voltage: Battery voltage

C

CHECK GROUND CIRCUIT.
1) Turn ignition switch “OFF”.
2) Disconnect fuel pump harness connector.
3) Check harness continuity between terminal (2) and body ground, terminal (4) and terminal (3).
Continuity should exist.
If OK, check harness for short.

D

CHECK OUTPUT SIGNAL CIRCUIT.
1) Disconnect ECM harness connector.
2) Check harness continuity between ECM terminal (7) and terminal (2) (LHD models), (8) (RHD models).
Continuity should exist.
If OK, check harness for short.
## TROUBLE DIAGNOSES

### Diagnostic Procedure 36 (Cont’d)

**C**

**FUEL PUMP CIRCUIT**
- Pinch fuel feed hose with fingers.
- Is there any pressure pulsation on the fuel feed hose?
- Does the fuel pump relay make an operating sound every 2 seconds?

<table>
<thead>
<tr>
<th>NEXT</th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
</table>

**E**

**ACTIVE TEST**
- Fuel pump relay on
- Monitor for CAS RPM (REF, Opm)
- On/Off

**F**

**CHECK COMPONENT**
- Fuel pump relay.
  1. Reconnect fuel pump relay, fuel pump harness connector, and ECM harness connector.
  2. Turn ignition switch "ON".
  3. Perform "FUEL PUMP CIRCUIT" in "FUNCTION TEST" mode with CONSULT.

**G**

**CHECK COMPONENT**
- Fuel pump.
  1. Refer to "Electrical Components Inspection".
  2. Turn fuel pump relay "ON" and "OFF" in "ACTIVE TEST" mode with CONSULT and check operating sound.

**H**

Disconnector and reconnect harness connectors in the circuit. Then retest.

Trouble is not fixed.

Check ECM pin terminals for damage or the connection of ECM harness connector. Reconnect ECM harness connector and retest.

---

**NONE**

Replace fuel pump relay.

Replace fuel pump.

EC-127
Diagnostic Procedure 40

IACV-FICD SOLENOID VALVE (Not self-diagnostic item)

LHD MODELS

Refer to EL-POWER.

To compressor (Refer to HA-A/C M and HA-A/C A.)

To auto A/C unit or zone control unit (Refer to HA-A/C M and A/C A.)

Refer to last page (Foldout page).
RHD MODELS

EC-FICD-02

Refer to EL-POWER.

To auto A/C unit or push control unit (Refer to HA-A/C, M and HA-A/C, A.)

Refer to last page (Foldout page):

EC-129
Diagnostic Procedure 43

NEUTRAL POSITION SWITCH & A/T CONTROL UNIT (PARK/NEUTRAL POSITION SIGNAL)
(Not self-diagnostic item)

EC-PNP/SW-01

Refer to last page (Foldout page).
TROUBLE DIAGNOSES

Diagnostic Procedure 43 (Cont'd)

A/T CONTROL UNIT (PARK/NEUTRAL POSITION SIGNAL) CIRCUIT

<table>
<thead>
<tr>
<th>Inspection Start</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check overall function.</td>
</tr>
</tbody>
</table>
1) Turn ignition switch "ON".
2) Perform "NEUTRAL SW CIRCUIT" or "NEUTRAL POSI SW CIRCUIT" or "FUNCTION TEST" mode with CONSULT.

<table>
<thead>
<tr>
<th>Inspection End</th>
</tr>
</thead>
<tbody>
<tr>
<td>OK</td>
</tr>
</tbody>
</table>

NEUTRAL SW CIRCUIT

SHIFT OUT OF N/P-RANGE THEN TOUCH START

START

Check overall function.
1) Turn ignition switch "ON".
2) Perform "NEUTRAL SW CIRCUIT" or "NEUTRAL POSI SW CIRCUIT" or "FUNCTION TEST" mode with CONSULT.

- Check "NEUTRAL SW" or "NEUT POS SW" signal in "DATA MONITOR" mode with CONSULT.
- "N" or "P": ON
- Excluded above: OFF

2) Check voltage between ECM terminal and ground under the following conditions.
Voltage: "N" or "P"
Approximately 5V
Excluded above
Approximately 5V

Check input signal circuit.
1) Turn ignition switch "OFF".
2) Disconnect ECM harness connector.
3) Disconnect A/T control unit harness connector.
4) Check harness continuity between ECM terminal and terminal. Continuity should exist. If OK, check harness for short.

OK

Check inhibitor switch function. Make sure that inhibitor switch functions properly. (Refer to AT section).

OK

Disconnect and reconnect harness connectors in the circuit. Then release.

Trouble is not fixed.

Check ECM pin terminals for damage or the connection of ECM harness connector. Reconnect ECM harness connector and release.

EC-131
TROUBLE DIAGNOSES

Electrical Components Inspection

ECM HARNESS CONNECTOR TERMINAL LAYOUT

For Europe

Except for Europe

EC-132
<table>
<thead>
<tr>
<th>TERMINAL NO.</th>
<th>ITEM</th>
<th>CONDITION</th>
<th>DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 3 5 25</td>
<td>Ignition signal</td>
<td>Engine is running.</td>
<td>0 - 0.1V</td>
</tr>
<tr>
<td>1 3 5 25</td>
<td>Ignition signal</td>
<td>Idle speed</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Engine speed is 2,900 rpm.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Tachometer</td>
<td>Engine is running.</td>
<td>Approximately 0.2V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Idle speed</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>ECCS relay (Self-shutoff)</td>
<td>Engine is running.</td>
<td>Approximately 0V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For a few seconds after turning ignition switch &quot;OFF&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Engine speed is 2,900 rpm.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Engine speed is 2,900 rpm.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>A few seconds after turning ignition switch &quot;OFF&quot; and thereafter</td>
<td>BATTERY VOLTAGE (11 - 14V)</td>
</tr>
<tr>
<td>9</td>
<td>Cooling fan relay (Low speed)</td>
<td>Engine is running.</td>
<td>BATTERY VOLTAGE (11 - 14V)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cooling fan is not operating.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cooling fan is operating.</td>
<td>Approximately 0.1V</td>
</tr>
<tr>
<td>10</td>
<td>Cooling fan relay (High speed)</td>
<td>Engine is running.</td>
<td>BATTERY VOLTAGE (11 - 14V)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cooling fan is not operating.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cooling fan is operating at low speed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cooling fan is operating at high speed.</td>
<td>Approximately 0.1V</td>
</tr>
<tr>
<td>11</td>
<td>Air conditioner relay</td>
<td>Engine is running.</td>
<td>Approximately 0.1V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Both A/C switch and blower switch are &quot;ON&quot;.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>A/C switch is &quot;OFF&quot;.</td>
<td>BATTERY VOLTAGE (11 - 14V)</td>
</tr>
<tr>
<td>16</td>
<td>Mass air flow sensor</td>
<td>Engine is running.</td>
<td>0.8 - 1.5V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Warm-up condition)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Idle speed</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Engine speed is 3,000 rpm.</td>
<td>1.4 - 2.0V</td>
</tr>
<tr>
<td>18</td>
<td>Engine coolant temperature sensor</td>
<td>Engine is running.</td>
<td>0 - 5.0V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Output voltage varies with engine coolant temperature.</td>
<td></td>
</tr>
</tbody>
</table>

EC-133
**TROUBLE DIAGNOSES**

**Electrical Components Inspection (Cont’d)**

*Data are reference values.*

<table>
<thead>
<tr>
<th>TERMINAL NO.</th>
<th>ITEM</th>
<th>CONDITION</th>
<th>DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Heated oxygen sensor</td>
<td>Engine is running</td>
<td>0 - 0.3V → 0.6 - 0.9V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Engine speed is 2,000 rpm after warming up sufficiently.</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Throttle position sensor</td>
<td>Ignition switch &quot;ON&quot;</td>
<td>0.35 - 0.65V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Accelerator pedal released</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ignition switch &quot;ON&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Accelerator pedal fully depressed</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Camshaft position sensor (Position signal)</td>
<td>Engine is running</td>
<td>2.0 - 3.0V</td>
</tr>
<tr>
<td>23</td>
<td>Camshaft position sensor (Position signal)</td>
<td>Engine is running</td>
<td>2.0 - 3.0V</td>
</tr>
<tr>
<td>27</td>
<td>Knock sensor</td>
<td>Engine is running</td>
<td>2.0 - 3.0V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Accelerator pedal released</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>Load signal</td>
<td>Ignition switch &quot;ON&quot;</td>
<td>0V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Neutral position (MT models)</td>
<td>0V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;N&quot; or &quot;P&quot; position (AT models)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Approximately 3V</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Approximately 0V</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>Start signal</td>
<td>Ignition switch &quot;ON&quot;</td>
<td>Approximately 5V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ignition switch &quot;START&quot;</td>
<td>BATTERY VOLTAGE (11 - 14V)</td>
</tr>
<tr>
<td>35</td>
<td>Neutral position/inhibitor switch</td>
<td>Ignition switch &quot;ON&quot;</td>
<td>0V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Neutral position (MT models)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;N&quot; or &quot;P&quot; position (AT models)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Approximately 0V</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Approximately 5V</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>Ignition switch</td>
<td>Ignition switch &quot;OFF&quot;</td>
<td>0V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ignition switch &quot;ON&quot;</td>
<td>BATTERY VOLTAGE (11 - 14V)</td>
</tr>
<tr>
<td>37</td>
<td>Throttle position sensor power supply</td>
<td>Ignition switch &quot;ON&quot;</td>
<td>Approximately 5V</td>
</tr>
<tr>
<td>38</td>
<td>Power supply for ECM</td>
<td>Ignition switch &quot;ON&quot;</td>
<td>BATTERY VOLTAGE (11 - 14V)</td>
</tr>
<tr>
<td>41</td>
<td>Air conditioner switch</td>
<td>Engine is running</td>
<td>Approximately 0V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Both air conditioner switch and blower switch are &quot;ON&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Engine is running</td>
<td>BATTERY VOLTAGE (11 - 14V)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Air conditioner switch is &quot;OFF&quot;</td>
<td></td>
</tr>
<tr>
<td>TERMINAL NO.</td>
<td>ITEM</td>
<td>CONDITION</td>
<td>&quot;DATA&quot;</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------------------</td>
<td>-----------------------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>43</td>
<td>Power steering oil pressure switch</td>
<td>Engine is running. Steering wheel is being turned.</td>
<td>Approximately 0V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Engine is running. Steering wheel is not being turned.</td>
<td>4 - 5V</td>
</tr>
<tr>
<td>46</td>
<td>Power supply (Back-up)</td>
<td>Ignition switch &quot;OFF&quot;</td>
<td>BATTERY VOLTAGE (11 - 14V)</td>
</tr>
<tr>
<td>101</td>
<td>Injector No. 1</td>
<td>Engine is running.</td>
<td>BATTERY VOLTAGE (11 - 14V)</td>
</tr>
<tr>
<td>103</td>
<td>Injector No. 3</td>
<td>Engine is running.</td>
<td>BATTERY VOLTAGE (11 - 14V)</td>
</tr>
<tr>
<td>110</td>
<td>Injector No. 2</td>
<td>Engine is running.</td>
<td>BATTERY VOLTAGE (11 - 14V)</td>
</tr>
<tr>
<td>112</td>
<td>Injector No. 4</td>
<td>Engine is running.</td>
<td>BATTERY VOLTAGE (11 - 14V)</td>
</tr>
<tr>
<td>102</td>
<td>Wastegate valve control solenoid valve</td>
<td>Engine is running. Idle speed</td>
<td>BATTERY VOLTAGE (11 - 14V)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Revving engine up to 5,000 rpm.</td>
<td>Approximately 5V</td>
</tr>
<tr>
<td>105</td>
<td>EGR valve &amp; canister control solenoid valve</td>
<td>Engine is running. (Warm-up condition)</td>
<td>Approximately 5V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Engine speed is 2,000 rpm</td>
<td>BATTERY VOLTAGE (11 - 14)</td>
</tr>
<tr>
<td>108</td>
<td>Fuel pump relay</td>
<td>Ignition switch &quot;ON&quot;</td>
<td>Approximately 0V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 seconds after turning ignition switch &quot;ON&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Engine is running.</td>
<td>BATTERY VOLTAGE (11 - 14V)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ignition switch &quot;ON&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 seconds after turning ignition switch &quot;ON&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>and thereafter</td>
<td></td>
</tr>
<tr>
<td>111</td>
<td>Heated oxygen sensor heater</td>
<td>Engine is running. Engine speed is below 4,000 rpm.</td>
<td>Approximately 0V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Engine is running. Engine speed is above 4,000 rpm.</td>
<td>BATTERY VOLTAGE (11 - 14V)</td>
</tr>
<tr>
<td>113</td>
<td>IACV-AAC valve</td>
<td>Engine is running.</td>
<td>9 - 14V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Idle speed</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Engine is running. Steering wheel is being turned.</td>
<td>5 - 9V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Air conditioner is operating.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rear defogger is &quot;ON&quot;</td>
<td></td>
</tr>
<tr>
<td>TERMINAL NO.</td>
<td>ITEM</td>
<td>CONDITION</td>
<td>DATA</td>
</tr>
<tr>
<td>-------------</td>
<td>------------------</td>
<td>------------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>114</td>
<td>VTC solenoid valve</td>
<td><strong>Engine is running</strong> (Jacked-up condition)</td>
<td>BATTERY VOLTAGE (11 - 14V)</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Idle speed</strong></td>
<td>Approximately 6V</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Engine is running</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Engine speed is above 1,650 rpm</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Data are reference values.*
TROUBLE DIAGNOSES

Electrical Components Inspection (Cont’d)

MASS AIR FLOW SENSOR

1. Fold back mass air flow sensor harness connector rubber as shown in the figure if the harness connector is connected.
2. Turn ignition switch "ON".
3. Start engine and warm it up sufficiently.
4. Check voltage between terminal (❬) and ground.

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Voltage V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idle speed</td>
<td>0.8 - 1.5</td>
</tr>
<tr>
<td>3,000 rpm</td>
<td>1.4 - 2.0</td>
</tr>
</tbody>
</table>

5. If NG, remove mass air flow sensor from air duct. Check hot film for damage or dust.
MODIFICATION NOTICE:
The service data and specifications (SOS), case and gear components have been changed.

CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAJOR OVERHAUL</td>
<td>2</td>
</tr>
<tr>
<td>Case Components</td>
<td>2</td>
</tr>
<tr>
<td>Gear Components</td>
<td>3</td>
</tr>
<tr>
<td>SERVICE DATA AND SPECIFICATIONS</td>
<td>4</td>
</tr>
<tr>
<td>(SOS)</td>
<td></td>
</tr>
<tr>
<td>General Specifications</td>
<td>4</td>
</tr>
<tr>
<td>Inspection and Adjustment</td>
<td>5</td>
</tr>
</tbody>
</table>
Apply recommended sealant

NISSAN genuine part: JTP6-Q-00025 or equivalent.
MAJOR OVERHAUL

Gear Components

SEC. 322

- Snap ring
- Pilot bearing
- Main drive gear ball bearing
- Snap ring
- Main drive gear
- Steel roller
- Thrust washer
- MAINSHAFT BALL BEARING
- Needle bearing
- Synchronizer hub
- Mainshaft lock nut
- Reverse idler gear
- Reverse idler gear bushing
- Spread spring
- Reverse main gear
- Needle bearing
- Counter shaft front bearing
- Snap ring

Apply gear oil to gears, shafts, synchronizers, and bearings when assembling.

* : Select with proper thickness.

ATTENTION TO ITS DIRECTION.

MT-3

SM771C
### General Specifications

<table>
<thead>
<tr>
<th>Transmission model</th>
<th>FS5W71C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of speeds</td>
<td>5</td>
</tr>
<tr>
<td>Synchromesh type</td>
<td>Warner</td>
</tr>
</tbody>
</table>

#### Gear ratio

<table>
<thead>
<tr>
<th>Gear ratio</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
<th>5th</th>
<th>OD</th>
<th>Reverse</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>3.321</td>
<td>1.902</td>
<td>1.306</td>
<td>1.000</td>
<td>0.838</td>
<td>3.362</td>
<td></td>
</tr>
</tbody>
</table>

#### Number of teeth

<table>
<thead>
<tr>
<th>Mainshaft</th>
<th>Drive</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>OD</th>
<th>Reverse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive</td>
<td>22</td>
<td>27</td>
<td>28</td>
<td>22</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>1st</td>
<td>53</td>
<td>27</td>
<td>28</td>
<td>22</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td></td>
<td>27</td>
<td>28</td>
<td>22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td></td>
<td></td>
<td>28</td>
<td>22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OD</td>
<td></td>
<td></td>
<td></td>
<td>37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reverse</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>36</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Countershaft</th>
<th>Drive</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>OD</th>
<th>Reverse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive</td>
<td>31</td>
<td>14</td>
<td>20</td>
<td>26</td>
<td>37</td>
<td>15</td>
</tr>
<tr>
<td>1st</td>
<td>14</td>
<td>20</td>
<td>26</td>
<td>37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td></td>
<td>20</td>
<td>26</td>
<td>37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td></td>
<td></td>
<td>26</td>
<td>37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OD</td>
<td></td>
<td></td>
<td></td>
<td>37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reverse</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

| Reverse idler gear | 21 |

| Oil capacity | (imp pt) | 2.5 (4-3/8) |

### Remarks

- Sub-gear
- Reverse synchromesh
- Double baulk ring type synchromesh

MT-4
SERVICES DATA AND SPECIFICATIONS (SOS)

GEAR END PLAY

<table>
<thead>
<tr>
<th>Gear</th>
<th>End play mm (In)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st gear</td>
<td>0.51 - 0.41 (0.0202 - 0.0161)</td>
</tr>
<tr>
<td>2nd gear</td>
<td>0.11 - 0.21 (0.0043 - 0.0083)</td>
</tr>
<tr>
<td>3rd gear</td>
<td>0.11 - 0.21 (0.0043 - 0.0083)</td>
</tr>
<tr>
<td>OD gear</td>
<td>0.24 - 0.41 (0.0094 - 0.0161)</td>
</tr>
</tbody>
</table>

CLEARANCE BETWEEN BAULK RING AND GEAR

1st, main drive, OD and reverse baullk ring

<table>
<thead>
<tr>
<th>Unit mm (In)</th>
<th>Standard</th>
<th>Wear limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>1.2 - 1.6 (0.047 - 0.063)</td>
<td>0.8 (0.031)</td>
</tr>
<tr>
<td>Main drive</td>
<td>1.2 - 1.6 (0.047 - 0.063)</td>
<td>0.8 (0.031)</td>
</tr>
<tr>
<td>OD</td>
<td>1.2 - 1.6 (0.047 - 0.063)</td>
<td>0.8 (0.031)</td>
</tr>
<tr>
<td>Reverse</td>
<td>1.10 - 1.55 (0.0433 - 0.0610)</td>
<td>0.7 (0.028)</td>
</tr>
</tbody>
</table>

2nd and 3rd baullk ring

<table>
<thead>
<tr>
<th>Unit mm (In)</th>
<th>Standard</th>
<th>Wear limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.7 - 0.9 (0.028 - 0.036)</td>
<td>0.3 (0.012)</td>
</tr>
<tr>
<td>B</td>
<td>0.6 - 1.1 (0.024 - 0.044)</td>
<td>0.3 (0.012)</td>
</tr>
</tbody>
</table>

AVAILBLE SNAP RINGS

Main drive gear bearing

<table>
<thead>
<tr>
<th>Allowable clearance</th>
<th>Thickness mm (In)</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0 - 0.13 mm (0 - 0.0051 in)</td>
<td>1.87 (0.0736)</td>
<td>32204-16001</td>
</tr>
<tr>
<td>1.94 (0.0764)</td>
<td>32201-16002</td>
<td></td>
</tr>
<tr>
<td>2.01 (0.0791)</td>
<td>32201-16003</td>
<td></td>
</tr>
</tbody>
</table>

Main drive bearing

<table>
<thead>
<tr>
<th>Allowable clearance</th>
<th>Thickness mm (In)</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0 - 0.18 mm (0 - 0.0071 in)</td>
<td>1.87 (0.0736)</td>
<td>32204-16001</td>
</tr>
<tr>
<td>1.94 (0.0764)</td>
<td>32201-16002</td>
<td></td>
</tr>
<tr>
<td>2.01 (0.0791)</td>
<td>32201-16003</td>
<td></td>
</tr>
</tbody>
</table>

OD mainshaft bearing

<table>
<thead>
<tr>
<th>Allowable clearance</th>
<th>Thickness mm (In)</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0 - 0.14 mm (0 - 0.0055 in)</td>
<td>1.1 (0.043)</td>
<td>32215-20100</td>
</tr>
<tr>
<td>1.2 (0.047)</td>
<td>32215-20101</td>
<td></td>
</tr>
<tr>
<td>1.3 (0.051)</td>
<td>32215-20102</td>
<td></td>
</tr>
<tr>
<td>1.3 (0.051)</td>
<td>32215-20103</td>
<td></td>
</tr>
</tbody>
</table>

Counter drive gear

<table>
<thead>
<tr>
<th>Allowable clearance</th>
<th>Thickness mm (In)</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0 - 0.15 mm (0 - 0.0059 in)</td>
<td>1.4 (0.056)</td>
<td>32215-15000</td>
</tr>
<tr>
<td>1.6 (0.063)</td>
<td>32215-16001</td>
<td></td>
</tr>
<tr>
<td>1.6 (0.063)</td>
<td>32215-16002</td>
<td></td>
</tr>
</tbody>
</table>

MT-5
### AVAILABLE SHIMS

**Counter front bearing**

<table>
<thead>
<tr>
<th>Allowable clearance</th>
<th>Thickness of shim</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 0.15 (0 - 0.006)</td>
<td>0.1 (0.004)</td>
<td>32216-V5000</td>
</tr>
<tr>
<td>4.52 - 4.53 (1.143 - 1.147)</td>
<td>0.2 (0.008)</td>
<td>32216-V5001</td>
</tr>
<tr>
<td>4.52 - 4.41 (1.141 - 1.078)</td>
<td>0.3 (0.012)</td>
<td>32216-V5002</td>
</tr>
<tr>
<td>4.22 - 4.31 (1.061 - 1.087)</td>
<td>0.4 (0.016)</td>
<td>32216-V5003</td>
</tr>
<tr>
<td>4.12 - 4.21 (1.053 - 1.067)</td>
<td>0.5 (0.020)</td>
<td>32216-V5004</td>
</tr>
<tr>
<td>3.92 - 4.01 (1.000 - 1.018)</td>
<td>0.6 (0.024)</td>
<td>32216-V5005</td>
</tr>
</tbody>
</table>

MT-6
AUTOMATIC TRANSMISSION

SECTION AT

MODIFICATION NOTICE:
- The wiring diagrams and service data and specifications (SDS) have been changed.

CONTENTS

TROUBLE DIAGNOSES ............................ 2
Circuit Diagram for Quick Pinpoint Check ...... 2
Wiring Diagram — AT — .......................... 3

SERVICE DATA AND SPECIFICATIONS (SDS) .... 15
General Specifications ........................... 15
Specifications and Adjustment .................... 15
TROUBLE DIAGNOSES

Wiring Diagram — AT —

LHD MODELS

AT-A/T-01

Refer to EL-POWER.

AT

DATA LINK CONNECTOR FOR CONSULT (H8)

B To AT-A/T-04

AT-3
TROUBLE DIAGNOSES

Wiring Diagram — AT — (Cont’d)

AT-A/T-02

IGNITION SWITCH
ON or START

Refer to EL-POWER.

G

To back-up
lamp
(Refer to
EL-BACK/L.)

INHIBITORSWITCH

AT-4
TROUBLE DIAGNOSES
Wiring Diagram — AT — (Cont’d)

RHD MODELS

AT-A/T-07

Refer to last page (Foldout page).

Refer to EL-POWER.

Next page

To AT-A/T-10

AT-9
TROUBLE DIAGNOSES

Wiring Diagram — AT — (Cont’d)

AT-A/T-08

IGNITION SWITCH
ON or START

 Refer to EL-POWER.

G

Next page

prechasing

G/CR

G/CR

G/CR

G/CR

G/CR

G/CR

IGNITION SWITCH

7.5A

Refer to EL-POWER.

THROTTLE
POSITION
SWITCH

To back-up
lamp
(Refer to
EL-BACK/L.)

INHIBITOR
SWITCH

AT-10
TROUBLE DIAGNOSES

Wiring Diagram — AT — (Cont'd)

AT-A/T-10

ENGINE COOLANT TEMPERATURE SENSOR

THROTTLE POSITION SENSOR

ECM

SECS CONTROL MODULE

TACHO

LIB

To AT-A/T-07

Refer to last page (Foldout page).

Refer to last page (Foldout page).

AT-12
TROUBLE DIAGNOSES
Wiring Diagram — AT — (Cont'd)

AT-A/T-12

Refer to last page (P1105 page)
## SERVICE DATA AND SPECIFICATIONS (SDS)

### General Specifications

<table>
<thead>
<tr>
<th>Engine</th>
<th>SR20DET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic transmission model</td>
<td>RE6H0A</td>
</tr>
<tr>
<td>Transmission model code number</td>
<td>43N65</td>
</tr>
<tr>
<td>Stall torque ratio</td>
<td>2.3 : 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transmission gear ratio</th>
<th>1st</th>
<th>2nd</th>
<th>Top</th>
<th>OD</th>
<th>Reverse</th>
<th>Stall torque ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3.785</td>
<td>1.545</td>
<td>1.000</td>
<td>0.934</td>
<td>2.972</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recommended oil</th>
<th>Genuine Nissan ATF or equivalent</th>
</tr>
</thead>
</table>

| Oil capacity        | (Impqll) 7.9 (7) |

### Specifications and Adjustment

#### VEHICLE SPEED WHEN SHIFTING GEARS

<table>
<thead>
<tr>
<th>Throttle position</th>
<th>Vehicle speed kn/h (MPH)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>D₁ → D₂</td>
</tr>
<tr>
<td>Full throttle</td>
<td></td>
</tr>
<tr>
<td></td>
<td>64 - 68</td>
</tr>
<tr>
<td>Half throttle</td>
<td></td>
</tr>
<tr>
<td></td>
<td>61 - 56</td>
</tr>
<tr>
<td></td>
<td>(57 - 60)</td>
</tr>
</tbody>
</table>

#### VEHICLE SPEED WHEN PERFORMING AND RELEASING LOCK-UP

<table>
<thead>
<tr>
<th>Throttle position</th>
<th>OD switch (Shift position)</th>
<th>Vehicle speed kn/h (MPH)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lock-up &quot;ON&quot;</td>
<td>Lock-up &quot;OFF&quot;</td>
</tr>
<tr>
<td>Full throttle</td>
<td>ON</td>
<td>183 - 191</td>
</tr>
<tr>
<td></td>
<td>[D₁]</td>
<td>(114 - 119)</td>
</tr>
<tr>
<td></td>
<td>OFF</td>
<td>91 - 96</td>
</tr>
<tr>
<td></td>
<td>[D₂]</td>
<td>(57 - 60)</td>
</tr>
<tr>
<td>Half throttle</td>
<td>ON</td>
<td>146 - 154</td>
</tr>
<tr>
<td></td>
<td>[D₃]</td>
<td>(91 - 95)</td>
</tr>
<tr>
<td></td>
<td>OFF</td>
<td>82 - 85</td>
</tr>
<tr>
<td></td>
<td>[D₄]</td>
<td>(57 - 60)</td>
</tr>
</tbody>
</table>

#### STALL REVOLUTION

| Stall | 3,725 - 3,875 |

#### LINE PRESSURE

<table>
<thead>
<tr>
<th>Engine speed rpm</th>
<th>Line pressure kPa (tor. kgf/cm², psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>D₁, D₂ and 1 positions</td>
<td>R positions</td>
</tr>
<tr>
<td>Idle</td>
<td>D₁, D₂</td>
</tr>
<tr>
<td>1,039 - 1,116</td>
<td>1,690 - 1,556</td>
</tr>
<tr>
<td>Stall</td>
<td>10.60 - 12.00, 100.7 105.1</td>
</tr>
</tbody>
</table>
### RETURN SPRINGS

#### Specifications and Adjustment (Cont'd)

<table>
<thead>
<tr>
<th>Parts</th>
<th>Unit: mm (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Upper body</strong></td>
<td></td>
</tr>
<tr>
<td>1. Torque converter relief valve spring</td>
<td>31742-41X23</td>
</tr>
<tr>
<td>2. Pressure regulator valve spring</td>
<td>31742-41X24</td>
</tr>
<tr>
<td>3. Pressure modulator valve spring</td>
<td>31742-41X19</td>
</tr>
<tr>
<td>4. Shutoff shift valve D spring</td>
<td>31752-41X00</td>
</tr>
<tr>
<td>5. 4-2 sequence valve spring</td>
<td>31756-41X00</td>
</tr>
<tr>
<td>6. Shift valve B spring</td>
<td>31762-41X01</td>
</tr>
<tr>
<td>7. 6-2 relay valve spring</td>
<td>31756-41X02</td>
</tr>
<tr>
<td>8. Shift valve A spring</td>
<td>31762-41X01</td>
</tr>
<tr>
<td>9. Overrun clutch control valve spring</td>
<td>31762-41X03</td>
</tr>
<tr>
<td>10. Overrun clutch reducing valve spring</td>
<td>31742-41X03</td>
</tr>
<tr>
<td>11. Shutoff shift valve E spring</td>
<td>31762-41X04</td>
</tr>
<tr>
<td>12. Pilot valve spring</td>
<td>31762-41X13</td>
</tr>
<tr>
<td>13. Lock-up control valve spring</td>
<td>31743-41X22</td>
</tr>
<tr>
<td><strong>Control valve</strong></td>
<td></td>
</tr>
<tr>
<td>14. Modulator accumulator piston spring</td>
<td>31742-27X77</td>
</tr>
<tr>
<td>15. 1st reducing valve spring</td>
<td>31756-41X05</td>
</tr>
<tr>
<td>16. 3-2 timing valve spring</td>
<td>31742-41X06</td>
</tr>
<tr>
<td>17. Shutoff/shift valve spring</td>
<td>31743-41X05</td>
</tr>
<tr>
<td><strong>Lower body</strong></td>
<td></td>
</tr>
<tr>
<td>18. Reverse clutch</td>
<td>16 pcs</td>
</tr>
<tr>
<td>19. High clutch</td>
<td>16 pcs</td>
</tr>
<tr>
<td>20. Forward clutch</td>
<td>20 pcs</td>
</tr>
<tr>
<td><strong>Reverse clutch</strong></td>
<td>16 pcs</td>
</tr>
<tr>
<td><strong>Band/servo</strong></td>
<td></td>
</tr>
<tr>
<td>Spring A</td>
<td>31605-41X06</td>
</tr>
<tr>
<td>Spring B</td>
<td>31605-41X00</td>
</tr>
<tr>
<td>Spring C</td>
<td>31605-41X02</td>
</tr>
<tr>
<td><strong>Accumulator A</strong></td>
<td></td>
</tr>
<tr>
<td>Accumulator A</td>
<td>31650-41X02</td>
</tr>
<tr>
<td>Accumulator B</td>
<td>31650-41X13</td>
</tr>
<tr>
<td>Accumulator C</td>
<td>31650-41X09</td>
</tr>
<tr>
<td>Accumulator D</td>
<td>31650-41X05</td>
</tr>
</tbody>
</table>

**AT-16**
## SERVICE DATA AND SPECIFICATIONS (SDS)

### Specifications and Adjustment (Cont'd)

#### ACCUMULATOR O-RING

<table>
<thead>
<tr>
<th>Accumulator</th>
<th>Diameter mm (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Small diameter and</td>
<td>29 (1.14)</td>
</tr>
<tr>
<td>Large diameter and</td>
<td>45 (1.77)</td>
</tr>
</tbody>
</table>

#### CLUTCHES AND BRAKES

<table>
<thead>
<tr>
<th>Clutch Type</th>
<th>Number of drive plates</th>
<th>Number of driven plates</th>
<th>Thickness of drive plate mm (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reverse clutch</td>
<td>2</td>
<td>2</td>
<td>Standard: 2.0 (0.079)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wear limit: 1.8 (0.071)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Clearance: 0.5 - 0.8 (0.020 - 0.031)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Allowable limit: 1.2 (0.047)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Thickness of retaining plate mm (in)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Standard: 4.8 (0.188)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wear limit: 5.0 (0.197)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Clearance: 5.2 (0.205)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Allowable limit: 5.4 (0.213)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Thickness of retaining plate mm (in)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Standard: 5.6 (0.220)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wear limit: 3.1537-42X02</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Thickness of retaining plate mm (in)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Standard: 3.6 (0.142)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wear limit: 3.8 (0.149)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Clearance: 4.0 (0.157)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Allowable limit: 4.2 (0.165)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Thickness of retaining plate mm (in)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Standard: 4.4 (0.173)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wear limit: 4.6 (0.181)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Clearance: 4.8 (0.188)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Allowable limit: 5.0 (0.197)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Thickness of retaining plate mm (in)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Standard: 3.4 (0.134)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wear limit: 3.6 (0.142)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Clearance: 3.8 (0.156)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Allowable limit: 4.0 (0.157)</td>
</tr>
</tbody>
</table>

#### Forward clutch

<table>
<thead>
<tr>
<th>Clutch Type</th>
<th>Number of drive plates</th>
<th>Number of driven plates</th>
<th>Thickness of drive plate mm (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7</td>
<td>7</td>
<td>Standard: 1.6 (0.063)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wear limit: 1.4 (0.055)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Clearance: 0.43 - 0.45 (0.017 - 0.025)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Allowable limit: 0.65 (0.026)</td>
</tr>
</tbody>
</table>

#### Overrun clutch

<table>
<thead>
<tr>
<th>Clutch Type</th>
<th>Number of drive plates</th>
<th>Number of driven plates</th>
<th>Thickness of drive plate mm (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>5</td>
<td>Standard: 2.0 (0.079)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wear limit: 1.8 (0.071)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Clearance: 1.0 - 1.4 (0.039 - 0.055)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Allowable limit: 2.0 (0.079)</td>
</tr>
</tbody>
</table>

#### High clutch

<table>
<thead>
<tr>
<th>Clutch Type</th>
<th>Number of drive plates</th>
<th>Number of driven plates</th>
<th>Thickness of drive plate mm (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5</td>
<td>5</td>
<td>Standard: 1.6 (0.063)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wear limit: 1.4 (0.055)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Clearance: 1.8 - 2.2 (0.071 - 0.087)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Allowable limit: 2.0 (0.079)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Thickness mm (in)</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.4 (0.134)</td>
<td>31537-43X01</td>
</tr>
<tr>
<td>3.6 (0.142)</td>
<td>31537-43X02</td>
</tr>
<tr>
<td>3.8 (0.156)</td>
<td>31537-43X03</td>
</tr>
<tr>
<td>4.0 (0.157)</td>
<td>31537-43X04</td>
</tr>
<tr>
<td>4.2 (0.165)</td>
<td>31537-43X05</td>
</tr>
<tr>
<td>4.4 (0.173)</td>
<td>31537-43X06</td>
</tr>
<tr>
<td>4.6 (0.181)</td>
<td>31537-43X07</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Thickness mm (in)</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.6 (0.181)</td>
<td>31537-43X13</td>
</tr>
<tr>
<td>4.8 (0.188)</td>
<td>31537-43X14</td>
</tr>
<tr>
<td>5.0 (0.197)</td>
<td>31537-43X15</td>
</tr>
<tr>
<td>5.2 (0.205)</td>
<td>31537-43X16</td>
</tr>
<tr>
<td>5.4 (0.213)</td>
<td>31537-43X17</td>
</tr>
<tr>
<td>5.6 (0.220)</td>
<td>31537-43X18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Thickness mm (in)</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.2 (0.160)</td>
<td>31537-41X05</td>
</tr>
<tr>
<td>4.4 (0.172)</td>
<td>31537-41X08</td>
</tr>
<tr>
<td>4.6 (0.181)</td>
<td>31537-41X09</td>
</tr>
<tr>
<td>4.8 (0.188)</td>
<td>31537-41X10</td>
</tr>
<tr>
<td>5.0 (0.197)</td>
<td>31537-41X11</td>
</tr>
</tbody>
</table>
## SERVICE DATA AND SPECIFICATIONS (SDS)

### Specifications and Adjustment (Cont'd)

#### OIL PUMP AND LOW ONE-WAY CLUTCH

<table>
<thead>
<tr>
<th>Oil pump clearance mm (in)</th>
<th>Standard</th>
<th>0.01 - 0.024 (0.0004 - 0.0009)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotor, vanes and control</td>
<td>Standard</td>
<td>0.03 - 0.044 (0.0012 - 0.0017)</td>
</tr>
<tr>
<td>Sealing ring clearance</td>
<td>Standard</td>
<td>0.10 - 0.15 (0.0040 - 0.0059)</td>
</tr>
<tr>
<td>Allowable limit</td>
<td></td>
<td>0.25 (0.0098)</td>
</tr>
</tbody>
</table>

#### TOTAL END PLAY

<table>
<thead>
<tr>
<th>Total end play &quot;T&quot;, mm (in)</th>
<th>Part number</th>
</tr>
</thead>
</table>
| 0.25 - 0.55 mm (0.0098 - 0.0217 in) | 31656-41X01
| 0.6 (0.023)                 | 31656-41X02 |
| 1.0 (0.039)                 | 31656-41X03 |
| 1.2 (0.047)                 | 31656-41X04 |
| 1.4 (0.055)                 | 31656-41X05 |
| 1.6 (0.063)                 | 31656-41X06 |
| 1.8 (0.071)                 | 31656-41X07 |
| 2.0 (0.079)                 | 31656-41X08 |

#### REVERSE CLUTCH DRUM END PLAY

<table>
<thead>
<tr>
<th>Reverse clutch drum end play &quot;Tz&quot;, mm (in)</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.10 - 0.90 mm (0.004 - 0.0354 in)</td>
<td></td>
</tr>
<tr>
<td>0.5 (0.020)</td>
<td>31656-41X01</td>
</tr>
<tr>
<td>1.1 (0.040)</td>
<td>31656-41X02</td>
</tr>
<tr>
<td>1.2 (0.047)</td>
<td>31656-41X03</td>
</tr>
<tr>
<td>1.5 (0.059)</td>
<td>31656-41X04</td>
</tr>
<tr>
<td>1.7 (0.067)</td>
<td>31656-41X05</td>
</tr>
<tr>
<td>1.9 (0.075)</td>
<td>31656-41X06</td>
</tr>
</tbody>
</table>

### REPAIR AND INSTALLATION

<table>
<thead>
<tr>
<th>Maximum control linkage</th>
<th>Number of returning revolutions for lock nut</th>
</tr>
</thead>
<tbody>
<tr>
<td>31 - 10 N·m</td>
<td>1</td>
</tr>
<tr>
<td>11.1 - 15 N·m</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Distance between end of clutch housing and torque converter</th>
</tr>
</thead>
<tbody>
<tr>
<td>23.5 mm (0.925 in) or more</td>
</tr>
</tbody>
</table>
FRONT AXLE &
FRONT SUSPENSION

SECTION FA

MODIFICATION NOTICE:
• The service data and specifications (SDS) have been changed.

CONTENTS

FRONT SUSPENSION ........................................... 2
SERVICE DATA AND SPECIFICATIONS (SDS) ........ 3
Inspection and Adjustment ............................ 3
When installing rubber parts, final tightening must be carried out under seated condition with tires on ground.

Fuel, radiator coolant and engine at full.

Spare tire, jack, hand tools and meta in designated positions.

FA-2
SERVICE DATA AND SPECIFICATIONS (SDS)

## Inspection and Adjustment

### LOWER BALL JOINT

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Swinging force “A”</strong></td>
<td>78 - 543</td>
</tr>
<tr>
<td>(Measuring point: cotter pin hole of ball stud)</td>
<td>(8.8 - 54.3, 1.8 - 12.3)</td>
</tr>
<tr>
<td><strong>Torque “B”</strong></td>
<td>0.5 - 3.4</td>
</tr>
<tr>
<td>N·m (deg-cm, in-lb)</td>
<td>(3 - 35, 4.3 - 30.4)</td>
</tr>
<tr>
<td><strong>Vertical end play “C”</strong></td>
<td>0 (0)</td>
</tr>
<tr>
<td>mm (in)</td>
<td></td>
</tr>
</tbody>
</table>
MODIFICATION NOTICE:
• The service data and specifications (SDS) have been changed.

CONTENTS

SERVICE DATA AND SPECIFICATIONS (SDS) ................ 2
  General Specifications ........................................ 2
## SERVICE DATA AND SPECIFICATIONS (SDS)

### DRIVE SHAFT

<table>
<thead>
<tr>
<th>Joint type</th>
<th>Final drive side</th>
<th>Wheel side</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grease name</td>
<td>TSB2F</td>
<td>TSB2C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Final drive side</th>
<th>Wheel side</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grease name</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nissin genuine grease or equivalent</td>
</tr>
</tbody>
</table>

### General Specifications

<table>
<thead>
<tr>
<th>Specified amount of grease (g)</th>
<th>Final drive side</th>
<th>Wheel side</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>102 - 107 (3.60 - 3.77)</td>
<td>115 - 125 (4.06 - 4.41)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Most length (mm, in)</th>
<th>Final drive side</th>
<th>Wheel side</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>95 - 97 (3.74 - 3.82)</td>
<td></td>
</tr>
</tbody>
</table>

---

RA-2
MODIFICATION NOTICE:
• The anti-lock brake system wiring diagrams have been changed.
• The service data and specifications (SDS) have been changed.

CONTENTS

ANTI-LOCK BRAKE SYSTEM ........................................... 2
Wiring Diagram — ABS ........................................... 2

SERVICE DATA AND SPECIFICATIONS (SDS) ........... 12
General Specifications ........................................... 12
Inspection and Adjustment .................................... 12
ANTI-LOCK BRAKE SYSTEM

Wiring Diagram — ABS —

LHD MODELS

Refer to EL-POWER.

DATA LINK CONNECTOR FOR CONSULT

ABS CONTROL UNIT

Refer to last page (Foldout page).

BR-2
ANTI-LOCK BRAKE SYSTEM

Wiring Diagram — ABS — (Cont’d)

Refer to last page (Foldout page).
## SERVICE DATA AND SPECIFICATIONS (SDS)

### General Specifications

<table>
<thead>
<tr>
<th>Component</th>
<th>Without ABS</th>
<th>With ABS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master cylinder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cylinder bore diameter (mm)</td>
<td>23.81 (1.516)</td>
<td>23.40 (1.511)</td>
</tr>
<tr>
<td>Control valve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valve model</td>
<td>Proportioning valve (built into master cylinder)</td>
<td></td>
</tr>
<tr>
<td>Split point</td>
<td>3,662 (26.2, 40.5, 56.9) x 0.4</td>
<td></td>
</tr>
<tr>
<td>Brake booster</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Booster model</td>
<td>M20 or G23</td>
<td>M18X1T</td>
</tr>
<tr>
<td>Diaphragm diameter (mm)</td>
<td>220 (8.66)</td>
<td></td>
</tr>
<tr>
<td>Brake fluid</td>
<td>DOT3 or DOT4</td>
<td>DOT3</td>
</tr>
<tr>
<td>Recommended brake fluid</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### DISC BRAKE

<table>
<thead>
<tr>
<th>Component</th>
<th>CL11H tapering brake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brake model</td>
<td>OPF-25VA disc brake</td>
</tr>
<tr>
<td>Pad wear limit</td>
<td>2.6 (0.087)</td>
</tr>
<tr>
<td>Minimum thickness</td>
<td></td>
</tr>
<tr>
<td>Rotor repair limit</td>
<td>26 (1.02)</td>
</tr>
<tr>
<td>Minimum thickness</td>
<td>8 (0.37)</td>
</tr>
</tbody>
</table>

### Inspection and Adjustment

#### PARKING BRAKE

<table>
<thead>
<tr>
<th>Component</th>
<th>CENTER LEVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free height (mm)</td>
<td>129 - 135 (5.08 - 5.31)</td>
</tr>
<tr>
<td>Compessed height (mm)</td>
<td>105 (4.13)</td>
</tr>
<tr>
<td>Clearance (mm)</td>
<td>0.3 - 1.0 (0.012 - 0.040)</td>
</tr>
</tbody>
</table>

*Without ABS for Australia*
RESTRAINT SYSTEM

SECTION RS

MODIFICATION NOTICE:
Wiring diagrams have been changed.

CONTENTS

PRECAUTION ........................................................................ 2
Supplemental Restraint System (SRS) “AIR BAG” and “SEAT BELT PRE-TENSIONER” .... 2
TROUBLE DIAGNOSES — Supplemental
Restraint System (SRS) ..................................................... 3
Wiring Diagram — SRS ...................................................... 3
PRECAUTION

Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

The Supplemental Restraint System "Air Bag" and "Seat Belt Pre-tensioner", used along with a seat belt, help to reduce the risk or severity of injury to the driver and front passenger in a frontal collision. The Supplemental Restraint System consists of air bag modules (located in the center of the steering wheel and on the instrument panel on the passenger side), seat belt pre-tensioners, a diagnosis sensor unit, warning lamp, wiring harness and spiral cable.

WARNING:
- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system.
- All SRS air bag electrical wiring harnesses and connectors are covered with yellow outer insulation. Do not use electrical test equipment on any circuit related to the SRS.
TROUBLE DIAGNOSES — Supplemental Restraint System (SRS)

Wiring Diagram — SRS — (Cont'd)

Refer to last page (Pullout page).

RS-SRS-03
MODIFICATION NOTICE:

- On RHD models for Europe, the triple-pressure switch has been replaced by a dual-pressure switch.
- Wiring diagrams have been changed.

CONTENTS

<table>
<thead>
<tr>
<th>MANUAL</th>
<th>MANUAL AND AUTO</th>
</tr>
</thead>
<tbody>
<tr>
<td>TROUBLE DIAGNOSES</td>
<td>2</td>
</tr>
<tr>
<td>Circuit Diagram — Manual Air Conditioner</td>
<td>2</td>
</tr>
<tr>
<td>Wiring Diagram — A/C, M</td>
<td>3</td>
</tr>
<tr>
<td>Diagnostic Procedure 6</td>
<td>13</td>
</tr>
<tr>
<td>Electrical Components Inspection</td>
<td>17</td>
</tr>
<tr>
<td>SERVICE PROCEDURES</td>
<td>24</td>
</tr>
<tr>
<td>Refrigerant Lines</td>
<td>24</td>
</tr>
<tr>
<td>SERVICE DATA AND SPECIFICATIONS (SDS)</td>
<td>25</td>
</tr>
<tr>
<td>General Specifications</td>
<td>25</td>
</tr>
<tr>
<td>Inspection and Adjustment</td>
<td>25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AUTO</th>
</tr>
</thead>
<tbody>
<tr>
<td>TROUBLE DIAGNOSES</td>
</tr>
<tr>
<td>Wiring Diagram — A/C, A</td>
</tr>
</tbody>
</table>
Wiring Diagram — A/C, M —

LHD MODEL

Refer to EL-POWER.

HA-A/C, M-01

Refer to last page (Foldout page)
HA-A/C, M-02

For Europe
Not for Europe

Refer to EL-Power.

HA-4
TROUBLE DIAGNOSES

Wiring Diagram — A/C, M — (Cont’d)

HA-A/C, M-03

To HA-A/C, M-01

HA-5
Refer to last page (Foldout page)
Diagnostic Procedure 6

SYMPTOM: Magnet clutch does not operate when A/C switch and fan switch are ON.

- Perform PRELIMINARY CHECK 2 before referring to the following flow chart.

A. CHECK POWER SUPPLY FOR COMPRESSOR.
   Disconnect compressor harness connector.
   Do approx. 12 volts exist between compressor harness terminal No. ① and body ground?

   Yes
   Check magnet clutch coil.
   NG
   Replace magnet clutch.
   (Refer to HA-146 in 614 SERVICE MANUAL, Publication No.: BM-4E0140.)

   No
   Replace thermal protector.

B. CHECK POWER SUPPLY FOR THERMAL PROTECTOR.
   Disconnect thermal protector harness connector.
   Do approx. 12V exist between thermal protector harness terminal No. ① and body ground?

   Yes
   Replace thermal protector.

A (Go to next page.)
Diagnostic Procedure 6 (Cont'd)

F Disconnect A/C relay harness connector.

Check circuit continuity between A/C relay harness terminal No. 3 and thermal protector harness terminal No. 6.

Note

E CHECK POWER SUPPLY for A/C RELAY. Do approx. 12 volts exist between A/C relay harness terminal No. 3, 6 and body ground?

No Replace A/C relay.

OK

Reconnect A/C relay.

F CHECK COIL SIDE CIRCUIT OF A/C RELAY. Do approx. 12 volts exist between ECM (ECCS control module) harness terminal No. 5 and body ground?

Yes

(Go to next page.)

No

Note

Check circuit continuity between A/C relay harness terminal No. 3 and triple-pressure switch harness terminal No. 5 or ECM (ECCS control module) harness terminal No. 6. For terminal arrangement, refer to last page (Foldout page).

OK

Check circuit continuity between triple- or dual-pressure switch harness terminal No. 3 and ECM (ECCS control module) harness terminal No. 6 or 5.

Note: If the result is NG after checking circuit continuity, repair harness or connector.

HA-14
TROUBLE DIAGNOSES

Diagnostic Procedure 6 (Cont'd)

1. Disconnect thermo control amp. harness connector.

2. Check circuit continuity between thermo control amp. harness terminal No. 3 and ECM (ECCS control module) harness terminal No. 7 or 8.

3. CHECK POWER SUPPLY FOR THERMO CONTROL AMP.
   - Disconnect thermo control amp. harness connector.
   - Do approx. 12 volts exist between thermo control amp. harness terminal No. 0 and body ground?

4. CHECK BODY GROUND CIRCUIT FOR THERMO CONTROL AMP.
   - Turn A/C switch or DEF switch ON.
   - Check for continuity between thermo control amp. harness terminal 3 and body ground.

5. CHECK THERMO CONTROL AMP.
   - Refer to HA-66 in S14 SERVICE MANUAL, Publication No.: SME-0814S0.
   - Check voltage between ECM (ECCS control module) harness terminals 3, 6 and body ground.
   - Refer to EC section ("ECM Terminals and Reference Value", "TROUBLE DIAGNOSES — General Description") in S14 SERVICE MANUAL, Publication No.: SME-0814S0.

Note:
If the result is NG after checking circuit continuity, repair harness or connector.

HA-15
Diagnostic Procedure 6 (Cont'd)

1. Check circuit continuity between thermo control amp. harness terminal No. ⑥ and push control unit harness terminal No. ⑥.

OK

Note

Disconnected fan switch harness connector.

OK

Note

Check circuit continuity between push control unit terminal No. ⑧ and fan switch harness terminal No. ⑨.

OK

Note

CHECK BODY GROUND CIRCUIT FOR FAN SWITCH.
Check for continuity between fan switch harness terminal ⑨ and body ground.

OK

NG

Replace fan switch.

OK

Replace push control unit.

Note:
If the result is NG after checking circuit continuity, repair harness or connector.

HA-16
### Electrical Components Inspection

**DUAL-PRESSURE SWITCH**

RHD models for Europe

<table>
<thead>
<tr>
<th></th>
<th>ON (kPa (bar, kg/cm², psi))</th>
<th>OFF (kPa (bar, kg/cm², psi))</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low-pressure side</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increasing to</td>
<td>107 - 216 (1.07 - 2.16, 1.6 - 2.2, 23 - 31)</td>
<td>150.0 - 221.0 (1.500 - 2.210, 2.15 - 2.26, 22.1 - 29.2)</td>
</tr>
<tr>
<td>Decreasing to</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>High-pressure side</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decreasing to</td>
<td>1,275 - 1,667 (12.7 - 16.7, 13 - 17, 185 - 243)</td>
<td>2,452 - 2,844 (24.5 - 28.4, 25 - 29, 245 - 284)</td>
</tr>
</tbody>
</table>

HA-17
LHD MODEL
SEC. 271-272-276

Refrigerant Lines

<table>
<thead>
<tr>
<th>Part</th>
<th>Diameter</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 20 (1.0 - 2.0, 87 - 174)</td>
<td>8 mm (0.31 in) dia.</td>
<td>(For A/C kit model)</td>
</tr>
<tr>
<td>15 - 30 (1.5 - 2.0, 11 - 14)</td>
<td>8 mm (0.31 in) dia.</td>
<td>(For A/C kit model)</td>
</tr>
<tr>
<td>20 - 35 (2.0 - 3.5, 14 - 18)</td>
<td>12 mm (0.47 in) dia.</td>
<td>(For A/C kit model)</td>
</tr>
</tbody>
</table>

Tightening torque:
- [A] : 10 - 20 (1.0 - 2.0, 87 - 174) N·m (90 - 174 ft·lb)
- [B] : 5 - 11 (5.8 - 11.1, 29 - 59) N·m (50 - 80 ft·lb)
- [C] : 2 - 4 (0.3 - 0.4, 28 - 59) N·m (20 - 42 ft·lb)

(O-ring size):
- [A] : 8 - 11 (0.8 - 1.1, 89.95) mm
- [B] : 3 - 4 (0.3 - 0.4, 26 - 35) mm

(Far A/C kit model):
- Liquid tank
- Expansion valve
- Thermo control amp.
- Compressor
- Cooling unit
- Low-pressure (Suction) service valve
- High-pressure (Discharge) service valve
- Thermal protector

HA-24
General Specifications

<table>
<thead>
<tr>
<th>COMPRESSOR</th>
<th>LUBRICANT</th>
<th>REFRIGERANT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>Model</td>
<td>Type</td>
</tr>
<tr>
<td>DKV-14C</td>
<td>ZEIXL</td>
<td>HFC-134a</td>
</tr>
<tr>
<td>Type</td>
<td>make</td>
<td>(R-134a)</td>
</tr>
<tr>
<td>Vane rotary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Displacement cm³ (cu in)/Rev</td>
<td>Part No.</td>
<td>Capacity</td>
</tr>
<tr>
<td>140 (8.54)</td>
<td>KLHCO-RAGRO</td>
<td>0.60 - 0.70 (1.32 - 1.54)</td>
</tr>
<tr>
<td>Direction of rotation</td>
<td>Capacity</td>
<td>kg (lb)</td>
</tr>
<tr>
<td>Clockwise (viewed from drive end)</td>
<td></td>
<td>0.60 - 0.70 (1.32 - 1.54)</td>
</tr>
<tr>
<td>Drive belt</td>
<td>Total in system</td>
<td>200 (7.0)</td>
</tr>
<tr>
<td>Poly V type</td>
<td>Compressor (Service part) charging amount</td>
<td>200 (7.0)</td>
</tr>
</tbody>
</table>

Inspection and Adjustment

ENGINE IDLING SPEED
When A/C is ON
- Refer to EC section ("Inspection and Adjustments", "SERVICE DATA AND SPECIFICATIONS").

BELT TENSION
- Refer to MA section ("Checking Drive Belts", "ENGINE MAINTENANCE").
When you read wiring diagrams:
• Read GI section, "HOW TO READ WIRING DIAGRAMS".
When you perform trouble diagnoses, read GI section, "HOW TO FOLLOW FLOW CHART IN TROUBLE DIAGNOSES" and "HOW TO PERFORM EFFICIENT DIAGNOSIS FOR AN ELECTRICAL INCIDENT".

CONTENTS

PRECAUTIONS .......................................................... 2
Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER" .... 2
POWER SUPPLY ROUTING ........................................ 4
Schematic ................................................................. 4
Wiring Diagram — POWER .......................................... 6
BATTERY ................................................................. 15
Service Data and Specifications (SDS) .................................. 15
STARTING SYSTEM .................................................. 16
Construction .......................................................... 16
Service Data and Specifications (SDS) .................................. 16
EXTERIOR LAMP ..................................................... 17
Front Fog Lamp/Wiring Diagram — R/FOG .......................... 17
Rear Fog Lamp/Wiring Diagram — R/FOG .......................... 19
Turn Signal and Hazard Warning Lamps/
Schematic ............................................................... 21
Turn Signal and Hazard Warning
Lamps/Wiring Diagram — TURN ................................. 22
INTERIOR LAMP ....................................................... 27
Illumination/Schematic ............................................... 27
Illumination/Wiring Diagram — EL .................................. 28
Interior, Spot and Trunk Room Lamps/Wiring
Diagram — INT/L ..................................................... 32
METER AND GAUGES ............................................... 35
Combination METER ................................................ 35
Speedometer, Tachometer, Temp. and Fuel
Gauges/Wiring Diagram — METER .............................. 36
WARNING LAMPS AND BUZZER .................................. 37
Warning Lamps/Schematic ........................................... 37
Warning Lamps/Wiring Diagram — WARN .......................... 38
Warning BUZZER/Wiring Diagram — CHIME ........................ 44
POWER WINDOW ...................................................... 40
Schematic ............................................................. 40
Wiring Diagram — WINDOW ....................................... 40
Trouble Diagnoses .................................................. 50
POWER DOOR MIRROR ............................................. 51
Wiring Diagram — MIRROR ......................................... 51
MULTI-REMOTE CONTROL SYSTEM ................................ 53
Wiring Diagram — MULTI ........................................... 53
THEFT WARNING SYSTEM ......................................... 57
Wiring Diagram — THEFT ........................................... 57
NATS (Nissan Anti-Theft System) .................................... 63
System Description ................................................ 63
Component Parts Location ......................................... 64
Wiring Diagram — NATS ............................................. 65
Trouble Diagnoses .................................................. 67
LOCATION OF ELECTRICAL UNIT .............................. 82
Passenger Compartment ........................................... 82
Main Harness ......................................................... 84
Engine Room Harness .............................................. 88
Engine Control Harness ........................................... 89
Body Harness ......................................................... 96
Door Harness (LHD models) ....................................... 100
Door Harness (RHD models) ....................................... 101
SUPER MULTIPLE JUNCTION (SMJ) ............................... Foldout
Disconntecting and Connecting .................................. Foldout
Terminal Arrangement ............................................... Foldout

LOCATION OF ELECTRICAL UNIT -- --- . .82
Passenger Compartment ···-····-··· .. 82
Main Harness ......................................................... 84
Engine Room Harness .............................................. 88
Engine Control Harness ........................................... 89
Body Harness ......................................................... 96
Door Harness (LHD models) ....................................... 100
Door Harness (RHD models) ....................................... 101
SUPER MULTIPLE JUNCTION (SMJ) ............................... Foldout
Disconntecting and Connecting .................................. Foldout
Terminal Arrangement ............................................... Foldout

WIRING DIAGRAM REFERENCE CHART

EDCS .................................................................... EC SECTION
A/C CONTROL .......................................................... AT SECTION
ANTI-LOCK BRAKING SYSTEM ................................ BR SECTION
AIR BAG AND SEAT BELT PRE-TENSIONER .................. RE SECTION
HEATER AND AIR CONDITIONER ............................ NA SECTION

EL-1
Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

The Supplemental Restraint System "Air Bag" and "Seat Belt Pre-tensioner", used along with a seat belt, help to reduce the risk or severity of injury to the driver and front passenger in a frontal collision. The Supplemental Restraint System consists of air bag modules (located in the center of the steering wheel and on the instrument panel on the passenger side), seat belt pre-tensioners, a diagnostic sensor unit, warning lamp, wiring harness and spiral cable. Information necessary to service the system safely is included in the RS section of this Service Manual.

WARNING:
- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses are covered with yellow insulation either just before the harness connectors or the complete harness, for easy identification.
NOTE

PRECAUTIONS
POWER SUPPLY ROUTING
Wiring Diagram — POWER — (Cont'd)

EL-POWER-03

Flexible Link and Fuse Block-2

1: LHD models
2: RHD models
3: LHD models without Daytime light system
4: Except 3
5: R
6: R/N
7: R/W
8: H/LAMP, DTRL, R/FOG
9: H/LAMP, DTRL, HLC
10: HORN, THEFT
11: TAIL/L. F/FOG, ILL
12: AAC/V
13: MAIN, MAFE, CMPS, IGN/SS, NATS

FRONT
POWER SUPPLY ROUTING

Wiring Diagram — POWER — (Cont'd)

EL-POWER-08

[Diagram showing wiring connections with labels for fuse blocks, G/Y, ABS, PU, H/SEAT, L, DIFF, B/W, F/PUMP, LHD, RHD, etc.]

EL-13
## Service Data and Specifications (SDS)

<table>
<thead>
<tr>
<th>Applied model</th>
<th>For Europe and Australia</th>
<th>Except for Europe and Australia</th>
<th>Optional on LHD models for Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td>5502OR</td>
<td>6502OR</td>
<td>8002OR</td>
</tr>
<tr>
<td><strong>Capacity (V-AH)</strong></td>
<td>12 - 60</td>
<td>12 - 65</td>
<td>12 - 65</td>
</tr>
</tbody>
</table>
STARTING SYSTEM

Construction

Service Data and Specifications (SDS)

STARTER MOTOR

<table>
<thead>
<tr>
<th>M1T60581</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td><strong>Reduction gear type</strong></td>
</tr>
<tr>
<td><strong>System voltage</strong> V</td>
<td>12</td>
</tr>
<tr>
<td><strong>No load</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Terminal voltage</strong> V</td>
<td>11.0</td>
</tr>
<tr>
<td><strong>Current</strong> A</td>
<td>50 - 75</td>
</tr>
<tr>
<td><strong>Revolution</strong> rpm</td>
<td>3,000 - 4,000</td>
</tr>
<tr>
<td><strong>Minimum diameter of commutator</strong> mm (in)</td>
<td>26.8 (1.06)</td>
</tr>
<tr>
<td><strong>Minimum length of brush</strong> mm (in)</td>
<td>12.8 (0.42)</td>
</tr>
<tr>
<td><strong>Brush spring tension</strong> N (kg, lb)</td>
<td>13.7 - 25.5 (1.4 - 2.6, 2.1 - 5.7)</td>
</tr>
<tr>
<td><strong>Movement: &quot;E&quot; in height of pinion assembly</strong> mm (in)</td>
<td>0.3 - 2.0 (0.02 - 0.079)</td>
</tr>
</tbody>
</table>

EL-16
Front Fog Lamp/Wiring Diagram — F/FOG —
LHD MODELS WITH DAYTIME LIGHT SYSTEM

Refer to EL-POWER.
EXTERIOR LAMP

Rear Fog Lamp/Wiring Diagram — R/FOG —

WITH DAYTIME LIGHT SYSTEM

EL-R/FOG-01

Refer to EL-POWER.

G/Y To EL-ILL

G/Y To EL-CHIME

R/L To EL-ILL

Refer to last page (Front page 196)
EXTERIOR LAMP

Rear Fog Lamp/Wiring Diagram — R/FOG —

(Cont’d)

WITHOUT DAYTIME LIGHT SYSTEM

EL-R/FOG-02

Refer to EL-POWER.

R/L → To EL-ILL

G/Y → To EL-CHIME

Refer to last page (Foldout page).

EL-20
EXTERIOR LAMP
Turn Signal and Hazard Warning Lamps/Wiring
Diagram — TURN — (Cont'd)

RHD MODELS

Refer to EL-POWER.

EL-TURN-03

R/L ➔ To EL-ILL

@: For Europe
®: Except for Europe
\[ \ldots \] L6/8, \[ \ldots \] Y

Next page

EL-24
EXTERIOR LAMP

Turn Signal and Hazard Warning Lamps/Wiring Diagram — TURN — (Cont’d)

EL-TURN-04

Preceding page

For Europe

Except for Europe

Refer to last page (Foldout page).

EL

EL-25
EXTerior lamp

Turn Signal and Hazard Warning Lamps/Wiring
Diagram — TURN — (Cont’d)

EL-26
Refer to EL-POWER.

R: RHD models
L: LHD models without daytime light system
E: Except for Europe
M: Models with daytime light system
I: For Europe
N: Except for Europe
11, 12: Models with daytime light system
11, 12, 13: For Europe

Refer to last page (Foldout page).

EL-28
LHD MODELS

Refer to EL-POWER.

Models with sun roof
Models without sun roof

Refer to last page (Foldout page).

EL-33
METER AND GAUGES

Speedometer, Tachometer, Temp. and Fuel Gauges/Wiring Diagram — METER —

EL-METER-01

Refer to EL-POWER.

[Diagram of wiring connections and component labels, including Ignition Switch, Electric Speedometer, Tachometer, Fuel Gauge, Water Temp. Gauge, and ECUs.]

COMBINATION METER (850)

Ignition Switch IN or START

To EC-VSS, AT-Y/T, PD-U/IFF and EL-HORN

Vehicle Speed Sensor

Refer to last page (Foldout page).
WARNING LAMPS AND BUZZER

LHD MODELS

Warning Lamps/Wiring Diagram — WARN —

EL-WARN-01

DIAGNOSIS SENSOR UNIT

COMBINATION METER (RHD)

Refer to EL-POWER.

Except for Europe

24 ~ 32

A/BAG Refer to RS-SRS:

LED

Next page

Combination Meter (RHD)

EL-38
WARNING LAMPS AND BUZZER

Warning Lamps/Wiring Diagram — WARN —
(Cont'd)

EL-WARN-03

Refer to EL-POWER.

BATTERY

NATS IMMUNE
(Refer to EL-NATS.)

Refer to last page (Foldout page).

EL-40
WARNING LAMPS AND BUZZER

Warning Lamps/Wiring Diagram — WARN —
(Cont'd)

EL-WARN-06

For Europe
Except for Europe
For Australia

Refer to EL-NATS.

SMART ENTRANCE CONTROL UNIT
(Refer to EL-THEFT.)

BATTERY

Refer to EL-POWER.

Sec. Output

7.5A EL-POWER

PRECEDING PAGE

To EL-WARN-04

Y/PW

W/R

Y/B

L/R

L/R

SECURITY INDICATOR

S/G

INDICATOR OUTPUT

END LAMP OUTPUT

OFF OIL WARNING LAMP SWITCH

SMART ENTRANCE CONTROL UNIT (Refer to EL-THEFT.)

Special Features

BRAKE

PULLED

RELEASES

PARKING BRAKE SWITCH

ON (Hi temper.)

OFF (Low temper.)

For Europe
Except for Europe
For Australia

Refer to last page (Pullout page).

HEL3106

EL-43
WARNING LAMPS AND BUZZER

Warning Buzzer/Wiring Diagram — CHIME —
(Cont'd)

EL-CHIME-02

Refer to EL-POWER.

Refer to last page (Foldout page).

EL-45
POWER WINDOW MAIN SWITCH (Driver's side)

<table>
<thead>
<tr>
<th>DRIVER'S SIDE</th>
<th>LOCK</th>
<th>PASSENGER SIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ONE-TOUCH</td>
<td></td>
<td>Manual</td>
</tr>
<tr>
<td>U</td>
<td>R</td>
<td>N</td>
</tr>
<tr>
<td>N</td>
<td>D</td>
<td>OFF</td>
</tr>
<tr>
<td>LOCK</td>
<td></td>
<td>PASSenger</td>
</tr>
<tr>
<td>OFF</td>
<td></td>
<td>SIDE</td>
</tr>
</tbody>
</table>

POWER WINDOW REGULATOR (Passenger side)

POWER WINDOW REGULATOR (Driver's side)

To illumination system

Auto-up mode is mounted except for Finland

IGNITION SWITCH ON or START

BATTERY (via fuseable link)

FUSE

FUSIBLE LINK

CIRCUIT BREAKER

Schematic
POWER WINDOW
Wiring Diagram — WINDOW — (Cont'd)

EL-WINDOW-02

Preceding page

POWER WINDOW MAIN SWITCH

POWER WINDOW REGULATOR DRIVER'S SIDE

LHD models

RHD models

#2...Auto-up mode is mounted except for Finland.

EL-48
## POWER WINDOW

### Trouble Diagnoses

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible cause</th>
<th>Repair order</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the power windows can be operated using any switch.</td>
<td>1. 7.5A fuse, 25A fusible link and circuit breaker</td>
<td>1. Check 7.5A fuse (No. 6, located in fuse block), 25A fuse link (No. 1, located in fuse and fusible link box) and circuit breaker. Turn ignition switch “ON” and verify battery positive voltage is present at terminal 5 of power window main switch and terminal 6 of sub-switches.</td>
</tr>
<tr>
<td></td>
<td>2. Grounds (E) and (F)</td>
<td>2. Check grounds (E) and (F).</td>
</tr>
<tr>
<td></td>
<td>4. Open/shunt in power window main switch circuit</td>
<td>4. Check W/B wire between power window relay and power window main switch for open/short circuit.</td>
</tr>
<tr>
<td>Driver's side power window cannot be operated but passenger windows can be operated.</td>
<td>1. Driver's side power window regulator circuit</td>
<td>1. Check driver's side power window regulator circuit.</td>
</tr>
<tr>
<td></td>
<td>2. Driver's side power window regulator</td>
<td>2. Check driver's side power window regulator.</td>
</tr>
<tr>
<td>Passenger power windows cannot be operated.</td>
<td>1. Power window sub-switch</td>
<td>1. Check power window sub-switch.</td>
</tr>
<tr>
<td></td>
<td>2. Passenger side power window regulators</td>
<td>2. Check passenger side power window regulator.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.2. Check harnesses between power window sub-switch and passenger side power window regulator for open/short circuit.</td>
</tr>
<tr>
<td>Passenger power window cannot be operated using power window main switch but can be operated by power window sub-switch.</td>
<td>1. Power window main switch</td>
<td>1. Check power window main switch.</td>
</tr>
<tr>
<td>Driver's side power window auto function cannot be operated using power window main switch.</td>
<td>1. Power window main switch</td>
<td>1. Check power window main switch.</td>
</tr>
</tbody>
</table>
MULTI-REMOTE CONTROL SYSTEM

Wiring Diagram — MULTI —

Refer to EL-POWER.

<@>: Models with sun roof
<@>: Models without sun roof

#1... (specify numbers)
MULTI-REMOTE CONTROL SYSTEM

Wiring Diagram — MULTI — (Cont'd)

EL-MULTI-04

Refer to EL-POWER.

MULTI-REMOTE CONTROL RELAY-1

MULTI-REMOTE CONTROL RELAY-2

Y/G To EL-THEFT

Y To EL-TURN

G/B To EL-TURN

G/Y To EL-TURN

Refer to last page (Foldout page).

EL-56
THEFT WARNING SYSTEM

Wiring Diagram — THEFT —

EL-THEFT-01

Refer to EL-POWER.

G -> To EL-THEFT-06

Refer to last page (Foldout page):

EL-57
NATS (Nissan Anti-Theft System)

System Description

NATS V2.0 for the S14 model has the following immobiliser functions:
- Since only NATS ignition keys, whose ID nos. have been registered into the ECM and IMMU of NATS, allow the engine to run, operation of a stolen vehicle without a NATS registered key is prevented by NATS. That is to say, NATS V2.0 will immobilize the engine if someone tries to start it without the registered key of NATS V2.0.
- Both of the originally supplied ignition key IDs have been NATS registered. If requested by the vehicle owner, a maximum of four key IDs can be registered into the NATS components.
- The NATS security indicator (NATS security ind.) blinks when the ignition switch is in "OFF" or "ACC" position. Therefore, NATS warns outsiders that the vehicle is equipped with the anti-theft system.
- When NATS detects trouble, the malfunction indicator lamp (MIL) blinks.
- NATS trouble diagnoses, system initialisation and additional registration of other NATS ignition key IDs must be carried out using CONSULT hardware and CONSULT NATS software. When NATS initialisation has been completed, the ID of the inserted ignition key is automatically NATS registered. Then, if necessary, additional registration of other NATS ignition key IDs can be carried out.

Regarding the procedures of NATS initialisation and NATS ignition key ID registration, refer to CONSULT operation manual, NATS V2.0.
- When diagnosing NATS V2.0 using CONSULT, adapter and adapter harness for NATS V1.0 are not necessary, although a direct DDL cable connection between CONSULT and DDL connector is required.
- When servicing a malfunction of the NATS V2.0 (indicated by flashing of Malfunction Indicator Lamp) or registering another NATS ignition key ID no., it may be necessary to re-register original key identification. Therefore, be sure to receive all keys from vehicle owner.

System Composition

The immobiliser function of the NATS for the S14 model consists of the following:
- NATS ignition key
- NATS antenna amp. located in the ignition key cylinder
- NATS immobiliser control unit (NATS IMMU)
- Engine control module (ECM)
- NATS security module (NATS security ind.)
- Malfunction indicator lamp (MIL)
NATS (Nissan Anti-Theft System)

Component Parts Location

LHD models

- NATS security ind.
- NATS antenna unit
- NATS security unit
- ECM
- MIL

RHD models

- NATS security ind.
- NATS antenna unit
- ECM
- Door RH

EL-84
NATS (Nissan Anti-Theft System)

Wiring Diagram — NATS —

LHD MODELS

Refer to last page (Foldout page).

EL-NATS-01

Refer to EL-POWER.

ECM (Engine Control Unit)

Refer to EL-POWER.

Refer to EL-POWER.
NATS (Nissan Anti-Theft System)

Trouble Diagnoses

WORK FLOW

CHECK IN

Listen to customer complaints or request. (Get symptoms)

TROUBLE

Verify the blinking of MIL.

Using the CONSULT program card for NATS check the "SELF-DIAG RESULTS" with CONSULT.

Search diagnostic results referring to NATS. But no information about engine self-diagnostic results is displayed on CONSULT.

Turn ignition switch "OFF".

Repair NATS.

If necessary, carry out "SELF-FUNCTION CHECK" or "C/U INITIALISATION" with CONSULT.

Turn ignition switch "ON".

Erase the NATS "SELF-DIAG RESULTS" by using CONSULT. (Touch "ERASE")

Start the engine.

Verify no blinking of MIL.

OK

CHECK OUT

Perform running test with CONSULT in engine "SELF-DIAG RESULTS" mode.

Verify "NO FAILURE" displayed on the CONSULT screen.

OK

CHECK OUT

Turn ignition switch "OFF".

Repair ECCS. (Refer to EC section.)

Turn ignition switch "ON".

Verify no blinking of MIL.

OK

DON'T ERASE BEFORE CHECKING ENG DIAG

ENGINE SELF-DIAG RESULTS

"NO FAILURE" displayed on CONSULT screen.

EL-67
NATS (Nissan Anti-Theft System)

Trouble Diagnoses (Cont'd)
CONSULT INSPECTION PROCEDURE

1. Turn off ignition switch.
2. Connect "CONSULT" to Data link connector for CONSULT.
   (Data link connector for CONSULT is located behind the
   fuse box cover.)

3. Insert NATS program card into CONSULT.
   Program card
   NATS-E940
4. Turn on ignition switch.
5. Touch "START".
6. Touch "V.2.0 (GASOLINE)".
7. Perform each diagnostic test mode according to each ser­
   vice procedure.
   For further information, see the CONSULT Operation Manual,
   NATS V2.0.

EL-68
NATS (Nissan Anti-Theft System)

Trouble Diagnoses (Cont'd)

CONSULT DIAGNOSTIC TEST MODE FUNCTION

<table>
<thead>
<tr>
<th>CONSULT DIAGNOSTIC TEST MODE</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIU INITIALIZATION</td>
<td>When replacing any of following three components, CIU initialization is necessary.</td>
</tr>
<tr>
<td>SELF-FUNCTION CHECK</td>
<td>ECM checks its own NATS communication interface by itself.</td>
</tr>
<tr>
<td>SELF-DIAGNOSTIC RESULTS</td>
<td>Detected items (screen terms) are as shown in the chart below.</td>
</tr>
</tbody>
</table>

HOW TO READ SELF-DIAGNOSTIC RESULTS

- **Result display screen (When no malfunction is detected)**
  - SELF-DIAG RESULTS
  - Failure detected time
  - No self-diagnostic failure indicated.
  - Further testing may be required.

- **Result display screen (When malfunction is detected)**
  - SELF-DIAG RESULTS
  - Failure detected time
  - IMMU
  - Difference of Key

- ERASE PRINT

Detected items (screen terms) are shown in the chart below.

### SELF-DIAGNOSTIC RESULTS ITEM CHART

<table>
<thead>
<tr>
<th>Detected items (screen terms)</th>
<th>Description</th>
<th>Reference page</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMMU</td>
<td>ECM received the signal from IMMU that IMMU is malfunctioning.</td>
<td>EL-72</td>
</tr>
<tr>
<td>ECM</td>
<td>ECM is malfunctioning.</td>
<td>EL-72</td>
</tr>
<tr>
<td>CHAIN OF ECM-IMMU</td>
<td>Communication impossible between ECM and IMMU.</td>
<td>EL-73</td>
</tr>
<tr>
<td>DIFFERENCE OF KEY</td>
<td>IMMU can receive the key ID signal but the result of ID verification between key ID and IMMU is NG.</td>
<td>EL-75</td>
</tr>
<tr>
<td>CHAIN OF IMMU-KEY</td>
<td>IMMU cannot receive the key ID signal.</td>
<td>EL-76</td>
</tr>
<tr>
<td>ID DISCORD, IMMU-ECM</td>
<td>The result of ID verification between IMMU and ECM is NG. System initialization is required.</td>
<td>EL-78</td>
</tr>
<tr>
<td>MINGLE NOISE</td>
<td>Noise (interference) mingled into NATS communication lines during communication.</td>
<td>EL-79</td>
</tr>
<tr>
<td>DONT ERASE BEFORE CHECK-ENG ENG DIAG</td>
<td>Engine trouble data and NATS trouble data have been detected in ECM.</td>
<td>EL-67</td>
</tr>
</tbody>
</table>

* If trip number is more than 1, MIL does not blink.

EL-69
**SYMPTOM MATRIX CHART 1**
(Self-diagnosis related item)

<table>
<thead>
<tr>
<th>SYSTEM (Malfunctioning part or mode)</th>
<th>REFERENCE PART NO. OF ILLUSTRATION ON NEXT PAGE</th>
<th>SYMPTOM</th>
<th>X: Possibility Item &quot;MIL&quot; Malfunction Indicator Lamp</th>
<th>DIAGNOSTIC PROCEDURE</th>
<th>X: Displayed &quot;SELF-DIAG RESULTS&quot; on CONSULT screen</th>
<th>DIAGNOSTIC PROCEDURE (Reference page)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMMU</td>
<td>A</td>
<td>X</td>
<td>Engine will start.</td>
<td>IMMU</td>
<td>PROCEDURE 1</td>
<td>(EL-72)</td>
</tr>
<tr>
<td>ECM</td>
<td>B</td>
<td>X</td>
<td></td>
<td>ECM</td>
<td>PROCEDURE 2</td>
<td>(EL-72)</td>
</tr>
<tr>
<td>Open circuit in battery voltage line of IMMU circuit</td>
<td>C1</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open circuit in ignition line of IMMU circuit</td>
<td>C2</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open circuit in ground line of IMMU circuit</td>
<td>C3</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open circuit in communication line between IMMU and ECM</td>
<td>C4</td>
<td>X</td>
<td>Chain of ECM-IMMU PROCEDURE 3 (EL-72)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short circuit between IMMU and ECM communication line and battery voltage line</td>
<td>C4</td>
<td>X</td>
<td>Chain of ECM-IMMU PROCEDURE 3 (EL-72)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short circuit between IMMU and ECM communication line and ground line</td>
<td>C4</td>
<td>X</td>
<td>Chain of ECM-IMMU PROCEDURE 3 (EL-72)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open circuit in power source line of ANT/AMP circuit</td>
<td>C3</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECM</td>
<td>B</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMMU</td>
<td>A</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unregistered key</td>
<td>D</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMMU</td>
<td>A</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication line between ANT/AMP and IMMU</td>
<td>E1</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open circuit or short circuit of battery voltage line or short circuit of ground line</td>
<td>E2</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open circuit in power source line of ANT/AMP circuit</td>
<td>E3</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open circuit in ground line of ANT/AMP circuit</td>
<td>E4</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malfunction of key ID chip</td>
<td>E5</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMMU</td>
<td>A</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antenna amp.</td>
<td>E6</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**NATS (Nissan Anti-Theft System)**

**Trouble Diagnoses (Cont'd)**

<table>
<thead>
<tr>
<th>SYSTEM (Malfunctioning part or mode)</th>
<th>REFERENCE PART NO. OF ILLUSTRATION ON NEXT PAGE</th>
<th>SYMPTOM</th>
<th>DIAGNOSTIC PROCEDURE (Reference page)</th>
</tr>
</thead>
<tbody>
<tr>
<td>System initialization has not yet been completed</td>
<td></td>
<td>Blinking of MIL, Engine will start.</td>
<td>Don't erase before checking this diag</td>
</tr>
<tr>
<td>ECM</td>
<td></td>
<td>Blinking of MIL, Hard to start engine.</td>
<td></td>
</tr>
<tr>
<td>Noise interference in communication line</td>
<td></td>
<td></td>
<td>PROCEDURE 7 (EL-71)</td>
</tr>
<tr>
<td>Engine trouble data and NATS trouble data have been detected in ECM</td>
<td></td>
<td></td>
<td>WORK FLOW (EL-67)</td>
</tr>
</tbody>
</table>

**SYMPTOM MATRIX CHART 2**

(Non self-diagnosis related item)

<table>
<thead>
<tr>
<th>SYSTEM (Malfunctioning part or mode)</th>
<th>SYMPTOM</th>
<th>DIAGNOSTIC PROCEDURE (Reference page)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NATS security Ind.</td>
<td>NATS security Ind. does not light up.</td>
<td>PROCEDURE 8 (EL-71)</td>
</tr>
<tr>
<td>Open circuit between Fuse and NATS IMMU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuation of initialization mode</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NATS IMMU</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DIAGNOSTIC SYSTEM DIAGRAM**

---

**EL-71**
Trouble Diagnoses (Cont'd)

**DIAGNOSTIC PROCEDURE 1**
Self-diagnostic results:
"IMMU" displayed on CONSULT screen

1. Confirm SELF-DIAGNOSTIC RESULTS "IMMU" displayed on CONSULT screen.
   - Ref. part No. *A.

   **Yes**
   - Replace IMMU.
   - Perform initialisation with CONSULT.
     - For the operation of initialisation, refer to "CONSULT operation manual NATS V2.0".

   **No**
   - Replace IMMU.

*Ref. part No.: reference part No. of Diagnostic System Diagram on EL-71.

**DIAGNOSTIC PROCEDURE 2**
Self-diagnostic results:
"ECM" displayed on CONSULT screen

1. Confirm SELF-DIAGNOSTIC RESULTS "ECM" displayed on CONSULT screen.
   - Ref. part No. *B.

   **Yes**
   - Replace ECM.
   - Perform initialisation with CONSULT.
     - For the operation of initialisation, refer to "CONSULT operation manual NATS V2.0".

   **No**
   - Replace ECM.

*Ref. part No.: reference part No. of Diagnostic System Diagram on EL-71.
DIAGNOSTIC PROCEDURE 3

Self-diagnostic results:
"CHAIN OF ECM-IMMU" displayed on CONSULT screen

1. Check the following:
   - 7.5A fuse
   - Harness continuity between fuse and IMMU connector [C2]
   - If NG, repair harness or connector
   - Ref. part No. C1

2. Check harness continuity between ECM terminal [C2] or [C3] and IMMU connector [C2] or [C3].
   - OK or NG, repair harness or connectors.
   - Ref. part No. C3
NATS (Nissan Anti-Theft System)

Trouble Diagnoses (Cont'd)

CHECK COMMUNICATION LINE CIRCUIT.
1) Disconnect ECM connector and IMMU connector.
2) Check voltage between the following terminals and ground.
   ECM (6), ECM (8), IMMU (5) and IMMU (6)
   Voltage: 5V

Communication line is short-circuited with battery voltage line or ignition switch ON line. Repair harness or connectors.
Ref. part No. C4

CHECK NATS ANTENNA AMP. CIRCUIT.
1) Disconnect NATS antenna amp. connector.
2) Turn ignition switch "ON".
3) Check voltage between antenna amp. terminal (9) and ground.
   Voltage: More than 4.7V

NATS antenna amp. +5V line is short-circuited with battery voltage line or ground line. Repair harness or connectors.
Ref. part No. E3

SEL-FUNCTION CHECK
1) Connect ECM connector and disconnect IMMU connector.
2) Turn ignition switch "ON".
3) Touch "SEL-FUNCTION CHECK" on CONSULT "SELECT DIAG MODE" screen.

ECM is malfunctioning. Replace ECM.
Ref. part No. B

Perform initialization with CONSULT.
For the operation of initialization, refer to "CONSULT operation manual NATS V2.0".
NATS (Nissan Anti-Theft System)

Trouble Diagnoses (Cont'd)

**DIAGNOSTIC PROCEDURE 4**

Self-diagnostic results:

**DIFFERENCE OF KEY** displayed on CONSULT screen

A) Continue SELF-DIAGNOSTIC RESULTS "DIFFERENCE OF KEY" displayed on CONSULT screen.

B) Perform initialisation with CONSULT.

C) IU INITIALIZATION STOPPED or FAILED

END

[Diagrams and instructions related to self-function check and initialization process, including steps for checking communication interface, displaying diagnostic results, and performing initialization with CONSULT.]

EL-75
Self-diagnostic results:
"CHAIN OF IMMU-KEY" displayed on CONSULT screen

A

Check harness and connectors.

B

Check harness and connectors.

C

Communication line is short-circuited with ground line.

D

Communication line is short-circuited with battery voltage line or ignition switch "ON" line. Repair harness or connectors.

E

Power source line is open circuit. Repair harness or connector. Refer part No. E3

Self-diagnostic procedure:
1) Disconnect IMMU connector and NATS antenna amp. connector.
2) Check continuity between the following IMMU terminals and NATS antenna amp. terminals.

IMMU terminal NATS antenna amp. terminal Ref. part No.
① ③ E3

Continuity should exist.

Check voltage between the following terminals and ground.

IMMU terminal NATS antenna amp. terminal Ref. part No.
① ③ E1

Voltage: 6V

CHECK ANTENNA AMP. POWER SOURCE CIRCUIT
1) Connect IMMU connector.
2) Check voltage between NATS antenna amp. terminal ③ and ground.

Voltage: More than 4.7V

OK

NG
NATS (Nissan Anti-Theft System)

Trouble Diagnoses (Cont'd)

- **CHECK ANTENNA AMP. GROUND LINE CIRCUIT:**
  1. Turn ignition switch “OFF”.
  2. Check continuity between NATS antenna amp. terminal @ and ground.
  Continuity should exist.

- **CHECK NATS IGNITION KEY ID CHIP:**
  1. Connect NATS antenna amp. connector.
  2. Pull the ignition key out.
  3. Start engine with another registered NATS ignition key.

- **CHECK IMMU OUTPUT VOLTAGE:**
  1. Turn the ignition switch “ON”.
  2. Check voltage between IMMU terminal @ and ground.
  Voltage: More than 4.7V

- **CHECK IMMU GROUND CIRCUIT:**
  1. Turn the ignition switch “OFF”.
  2. Disconnect IMMU connector.
  3. Check continuity between IMMU terminal @ and ground.
  Continuity should exist.

- **CHECK IMMU FUNCTION 1:**
  1. Connect IMMU connector and NATS antenna amp. connector.
  2. Check voltage between IMMU terminal @ and ground.

<table>
<thead>
<tr>
<th>Time (After turning ignition switch “ON”)</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>For approx. 0.5 sec.</td>
<td>Approx. 2.3 - 5</td>
</tr>
<tr>
<td>After 1 sec.</td>
<td>0</td>
</tr>
</tbody>
</table>

- **Perform initialisation with CONSULT.**
  - For the operation of initialisation, refer to “CONSULT operation manual NATS V2.0”.
  - Replace IMMU, Ref. part No. A

- **Perform initialisation with CONSULT.**
  - For the operation of initialisation, refer to “CONSULT operation manual NATS V2.0”.
  - Replace IMMU, Ref. part No. A
NATS (Nissan Anti-Theft System)

Trouble Diagnoses (Cont'd)

CHECK IMMU FUNCTION 2
1) Disconnect NATS antenna amp. connector.
2) Turn ignition switch “ON”.
3) Check voltage between IMMU terminal 5 and ground.
Voltage: 6 sec. after turning ignition switch “ON”
Approx. 4.5 - 5V

Replace IMMU.
Rel. part No. A

Perform initialisation with CONSULT.
For the operation of initialisation, refer to "CONSULT operation manual NATS V2.0".

NATS antenna amp. is malfunctioning.
When replacing the amp. hold on to amp. body. Take care not to pull on amp. harness.

DIAGNOSTIC PROCEDURE 6

Self-diagnostic results:
"ID DISCORD, IMM-ECM" displayed on CONSULT screen

Confirm SELF-DIAG RESULTS: "ID DISCORD, IMM-ECM" displayed on CONSULT screen.

Initialisation incompletes or failed with CONSULT.
EDM is malfunctioning; Replace ECM.
Rel. part No. F

Start engine.

Perform initialisation with CONSULT.
For the operation of initialisation, refer to "CONSULT operation manual NATS V2.0".

END
Ref. part No. H
Trouble Diagnoses (Cont’d)

DIAGNOSTIC PROCEDURE 7
Self-diagnostic results:
“MINGLE NOISE” displayed on CONSULT screen

A. Confirm SELF-DIAGNOSTIC RESULTS “MINGLE NOISE” displayed on CONSULT screen.

B. Touch “ERASE” on CONSULT SELF-DIAGNOSTIC RESULTS screen.

Start engine.

DIAGNOSTIC PROCEDURE 8
“NATS SECURITY IND. DOES NOT LIGHT UP”

Check 7.5A fuse (No. 39, located in the fuse block).

NG Replace fuse.

OK

NATS INITIALISATION
Perform initialisation with CONSULT.
For the operation of initialisation, refer to “CONSULT operation manual NATS V2.0”.

Turn ignition switch “OFF”.

Start engine and turn ignition switch “OFF”.

Check NATS security ind. blinking.

OK END

NG

EL-79
NATS (Nissan Anti-Theft System)

Trouble Diagnoses (Cont'd)

A. Check voltage between NATS security ind. connector terminal ① and ground. Voltage: Battery voltage

- OK
- NG

NG: Repair harness or connector.

B. CHECK NATS SECURITY IND. CIRCUIT.
1) Disconnect NATS IMMU connector.
2) Check harness continuity between NATS security ind. connector terminal ⑥ and NATS IMMU connector terminal ⑧. Continuity should exist.

- OK
- NG

NG: Repair harness.

C. CHECK NATS IMMU FUNCTION
1) Connect NATS IMMU connector.
2) Disconnect NATS security ind. connector.
3) Check continuity between NATS IMMU terminal ⑥ and ground. Continuity should exist intermittently.

- OK
- NG

NG: NATS IMMU is malfunctioning. Replace IMMU.

NG: Repair harness.

OK: Perform initialization with CONSULT.

For the operation of initialization, refer to "CONSULT operation manual NATS V2.0".

NATS security ind. is malfunctioning. Pull out NATS security ind. with harness and connector.

Check harness connection

- OK
- NG

NG: Repair harness.

NATS security ind. cell is malfunctioning. Replace NATS security ind.
NATS (Nissan Anti-Theft System)

NOTE
- Cooling fan relay-2 (Except for Europe)
- Fusible link and fuse block-1
- Cooling fan relay-1
- Theft warning relay (Except for Europe)
- AL conditioner relay
- Horn relay
- Theft warning horn relay (Except for Europe)
- Front fog lamp relay (For Europe)
- Fusible link and fuse block-2
- Fusible link and fuse block-3
- Brake fluid level switch
- Theft warning horn (Except for Europe)
- Front wheel sensor RH (For ASB)
- Side turn signal lamp RH
- Inhibitor switch (A/T models)
- Revolution sensor (A/T models)
- To terminal code assembly (A/T models)
- To E1D
- To E1D
- Front fog lamp motor
- Battery
- Headlight washer motor (For Europe)
- Front washer motor
- Rear washer motor (Except for Australia)
- Headlight washer motor (For Australia)
- Front fog lamp RH
- Headlight RH outer
- Headlight aiming motor RH (For Europe)
- Headlight RH inner
- Front fog lamp RH
- Front turn signal lamp RH
- Body ground
- Cooling fan motor (Except for Europe)
- Cooling fan motor (For Europe)
- Ambient sensor (For auto A/T)
- Horn (High)
- Horn (Low)
Door Harness (LHD models)

FRONT LH

- (1): To (2)
- (2): To (3)
- (3): Door speaker
- (4): Power window regulator
- (5): Door mirror defogger
- (6): Door mirror
- (7): Power window main switch
- (8): Lock knob switch
ALPHABETICAL INDEX

SECTION IDX

IDX-1
# ALPHABETICAL INDEX

<table>
<thead>
<tr>
<th>A</th>
<th>Electrical load signal circuit (For Europe)</th>
<th>EC-91</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Electrical units location</td>
<td>EL-82</td>
</tr>
<tr>
<td></td>
<td>Engine coolant temperature sensor inspection (Except for Europe)</td>
<td>EC-104</td>
</tr>
<tr>
<td></td>
<td>Engine coolant temperature sensor inspection (For Europe)</td>
<td>EC-29</td>
</tr>
<tr>
<td>B</td>
<td>Fog lamp, front</td>
<td>EL-17</td>
</tr>
<tr>
<td></td>
<td>Fog lamp, rear - See Rear fog lamp</td>
<td>EL-19</td>
</tr>
<tr>
<td></td>
<td>Fuel gauge</td>
<td>EL-36</td>
</tr>
<tr>
<td></td>
<td>Fuel pump inspection (Except for Europe)</td>
<td>EC-125</td>
</tr>
<tr>
<td></td>
<td>Fuel pump inspection (For Europe)</td>
<td>EC-61</td>
</tr>
<tr>
<td>C</td>
<td>Gauges</td>
<td>EL-35</td>
</tr>
<tr>
<td></td>
<td>Gears (MT)</td>
<td>MT-3</td>
</tr>
<tr>
<td>D</td>
<td>Harness layout</td>
<td>EL-84</td>
</tr>
<tr>
<td></td>
<td>Hazard warning lamp</td>
<td>EL-21</td>
</tr>
<tr>
<td></td>
<td>Heated oxygen sensor heater inspection (Except for Europe)</td>
<td>EC-123</td>
</tr>
<tr>
<td></td>
<td>Heated oxygen sensor heater inspection (For Europe)</td>
<td>EC-55</td>
</tr>
<tr>
<td></td>
<td>How to read wiring diagrams</td>
<td>GI-4</td>
</tr>
<tr>
<td></td>
<td>How to use this manual</td>
<td>GI-3</td>
</tr>
<tr>
<td>E</td>
<td>IACV - FICD solenoid valve inspection (Except for Europe)</td>
<td>EC-128</td>
</tr>
<tr>
<td></td>
<td>IACV - FICD solenoid valve inspection (For Europe)</td>
<td>EC-73</td>
</tr>
<tr>
<td></td>
<td>IACV-AAC valve inspection (For Europe)</td>
<td>EC-70</td>
</tr>
<tr>
<td></td>
<td>Ignition coil inspection (Except for Europe)</td>
<td>EC-107</td>
</tr>
<tr>
<td></td>
<td>Ignition coil inspection (For Europe)</td>
<td>EC-32</td>
</tr>
<tr>
<td></td>
<td>Ignition control system (Except for Europe)</td>
<td>EC-107</td>
</tr>
<tr>
<td></td>
<td>Ignition control system (For Europe)</td>
<td>EC-32</td>
</tr>
<tr>
<td></td>
<td>Illumination</td>
<td>EL-27</td>
</tr>
<tr>
<td></td>
<td>Injector inspection (Except for Europe)</td>
<td>EC-124</td>
</tr>
<tr>
<td></td>
<td>Injector inspection (For Europe)</td>
<td>EC-58</td>
</tr>
</tbody>
</table>

**IDX-2**
<table>
<thead>
<tr>
<th>ALPHABETICAL INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interior lamp ........................................... EL-27, 33</td>
</tr>
<tr>
<td>Knock sensor (KS) inspection (For Europe) .................. EC-39</td>
</tr>
<tr>
<td>Location of electrical units .................................. EL-82</td>
</tr>
<tr>
<td>Main drive gear (MT) ........................................ MT-3</td>
</tr>
<tr>
<td>Main shaft (MT) ............................................. MT-3</td>
</tr>
<tr>
<td>Mass air flow sensor inspection (Except for Europe) ...... EC-101</td>
</tr>
<tr>
<td>Mass air flow sensor inspection (For Europe) ............ EC-26</td>
</tr>
<tr>
<td>Meter and gauges ............................................. EL-35</td>
</tr>
<tr>
<td>MIL &amp; Data link connectors circuit (For Europe) ......... EC-93</td>
</tr>
<tr>
<td>MT overhaul .................................................. MT-2</td>
</tr>
<tr>
<td>Multi-remote control system ................................. EL-53</td>
</tr>
<tr>
<td>NATS (Nissan Anti-Theft System) ............................ EL-63</td>
</tr>
<tr>
<td>NATS V.2.0 precautions (For Europe) ...................... GI-2</td>
</tr>
<tr>
<td>Neutral position switch inspection (Except for Europe) . EC-130</td>
</tr>
<tr>
<td>Neutral position switch inspection (For Europe) ........ EC-87</td>
</tr>
<tr>
<td>Power door mirror ............................................ EL-51</td>
</tr>
<tr>
<td>Power steering oil pressure switch inspection (For Europe) ........................................ EC-85</td>
</tr>
<tr>
<td>Power supply routing ......................................... EL-4</td>
</tr>
<tr>
<td>Power transistor inspection (Except for Europe) .......... EC-107</td>
</tr>
<tr>
<td>Power transistor inspection (For Europe) .................. EC-32</td>
</tr>
<tr>
<td>Power window .................................................. EL-46</td>
</tr>
<tr>
<td>Rear fog lamp ................................................ EL-19</td>
</tr>
<tr>
<td>Rear window signal (For Europe) ............................ EC-91</td>
</tr>
<tr>
<td>Reverse gear (MT) ............................................ MT-3</td>
</tr>
<tr>
<td>Reverse idler shaft (MT) .................................... MT-3</td>
</tr>
<tr>
<td>Self-diagnostic results ....................................... EC-16</td>
</tr>
<tr>
<td>Speedometer .................................................. EL-36</td>
</tr>
<tr>
<td>Spot lamp ........................................................ EL-33</td>
</tr>
<tr>
<td>Starter ......................................................... EL-16</td>
</tr>
<tr>
<td>Symbols and abbreviations ................................... GI-3</td>
</tr>
<tr>
<td>Synchronizer (MT) ............................................ MT-3</td>
</tr>
<tr>
<td>Tachometer .................................................... EL-36</td>
</tr>
<tr>
<td>Theft warning system ......................................... EL-57</td>
</tr>
<tr>
<td>Throttle position sensor inspection (Except for Europe) EC-114</td>
</tr>
<tr>
<td>Throttle position sensor inspection (For Europe) ....... EC-41</td>
</tr>
<tr>
<td>Tightening torque of standard bolts ....................... GI-6</td>
</tr>
<tr>
<td>Transmission case (MT) ..................................... EC-41</td>
</tr>
<tr>
<td>Trunk room lamp ............................................... EL-93</td>
</tr>
<tr>
<td>Turn signal lamp ............................................. EL-21</td>
</tr>
<tr>
<td>Vacuum hose drawing (ECCS) ................................. EC-5</td>
</tr>
<tr>
<td>Vehicle speed sensor (VSS) inspection (For Europe) .... EC-49</td>
</tr>
<tr>
<td>WTC solenoid valve inspection (For Europe) .............. EC-67</td>
</tr>
<tr>
<td>Warning buzzer ................................................ EL-44</td>
</tr>
<tr>
<td>Warning lamps ................................................. EL-37</td>
</tr>
<tr>
<td>Wastegate Valve Control Solenoid ........................................ EL-64</td>
</tr>
<tr>
<td>Water temperature gauge ..................................... EL-36</td>
</tr>
</tbody>
</table>