

# GENERAL INFORMATION

## SECTION **GI**

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Precautions

Observe the following precautions to ensure safe and proper servicing. These precautions are not described in each individual section.

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**PRECAUTIONS FOR SUPPLEMENTAL RESTRAINT SYSTEM (SRS) “AIR BAG” AND “SEAT BELT PRE-TENSIONER”**

NHG10001S01

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER” used along with a seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. The SRS system composition which is available to INFINITI I35 is as follows:

- For a frontal collision  
The Supplemental Restraint System consists of driver air bag module (located in the center of the steering wheel), front passenger air bag module (located on the instrument panel on passenger side), seat belt pre-tensioners, a diagnosis sensor unit, crash zone sensor, warning lamp, wiring harness and spiral cable.
- For a side collision  
The Supplemental Restraint System consists of front side air bag module (located in the outer side of front seat), satellite sensor, diagnosis sensor unit (one of components of air bags for a frontal collision), wiring harness, warning lamp (one of components of air bags for a frontal collision).

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 should be performed by an authorized INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the RS section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harness connector.

# PRECAUTIONS

Precautions (Cont'd)

## PRECAUTIONS FOR IVIS (INFINITI VEHICLE IMMOBILIZER SYSTEM — NATS)

NHG10001S02

IVIS (NATS) will immobilize the engine if someone tries to start it without the registered key of IVIS (NATS).

Both of the originally supplied ignition key IDs have been IVIS (NATS) registered.

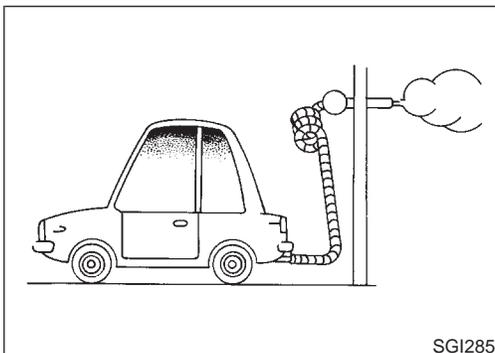
The security indicator is located on the instrument panel. The indicator blinks when the ignition switch is in "OFF" or "ACC" position. Therefore, IVIS (NATS) warns outsiders that the vehicle is equipped with the anti-theft system.

- When IVIS (NATS) detects malfunction, the security indicator lamp lights up while ignition switch is in "ON" position. This lighting up indicates that the anti-theft is not functioning, so prompt service is required.
- When servicing IVIS (NATS) (trouble diagnoses, system initialization and additional registration of other IVIS (NATS) ignition key IDs), CONSULT-II hardware and CONSULT-II IVIS (NATS) software is necessary.

Regarding the procedures of IVIS (NATS) initialization and IVIS (NATS) ignition key ID registration, refer to CONSULT-II operation manual, IVIS/NVIS.

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

- When servicing IVIS (NATS) (trouble diagnoses, system initialization and additional registration of other IVIS (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 five key IDs can be registered into IVIS (NATS).
- When failing to start the engine first time using the key of IVIS (NATS), start as follows.
  - a) Leave the ignition key in "ON" position for approximately 5 seconds.
  - b) Turn ignition key to "OFF" or "LOCK" position and wait approximately 5 seconds.
  - c) Repeat step 1 and 2 again.
  - d) Restart the engine while keeping the key separate from any others on key-chain.



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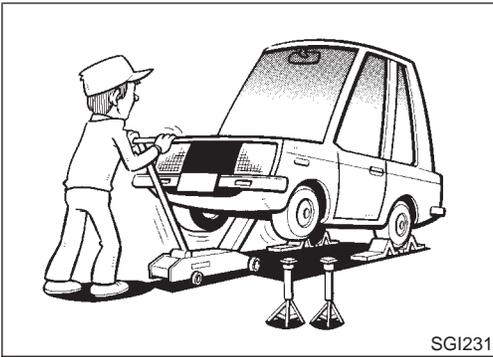
## GENERAL PRECAUTIONS

NHG10001S03

- Do not operate the engine for an extended period of time without proper exhaust ventilation. Keep the work area well ventilated and free of any inflammable materials. Special care should be taken when handling any inflammable or poisonous materials, such as gasoline, refrigerant gas, etc. When working in a pit or other enclosed area, be sure to properly ventilate the area before working with hazardous materials. Do not smoke while working on the vehicle.

# PRECAUTIONS

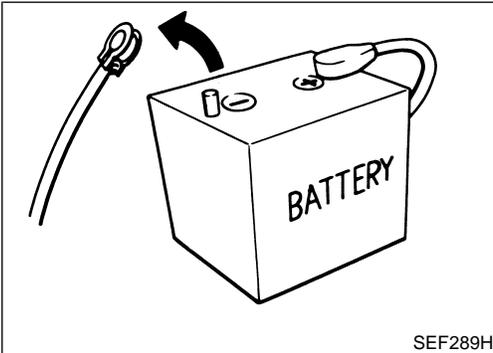
Precautions (Cont'd)



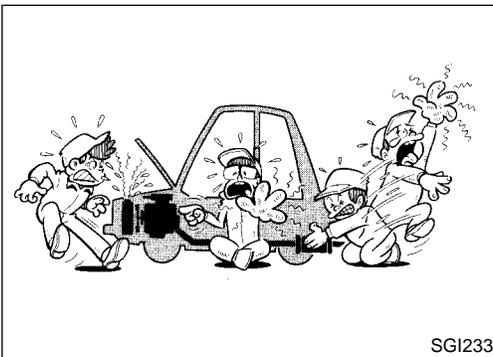
- Before jacking up the vehicle, apply wheel chocks or other tire blocks to the wheels to prevent the vehicle from moving. After jacking up the vehicle, support the vehicle weight with safety stands at the points designated for proper lifting before working on the vehicle.

These operations should be done on a level surface.

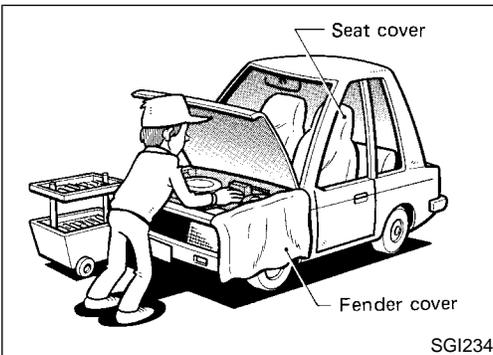
- When removing a heavy component such as the engine or transaxle, be careful not to lose your balance and drop them. Also, do not allow them to strike adjacent parts, especially the brake tubes and master cylinder.



- Before starting repairs which do not require battery power: Turn off ignition switch. Disconnect the negative battery terminal.



- To prevent serious burns: Avoid contact with hot metal parts. Do not remove the radiator cap when the engine is hot.



- Before servicing the vehicle: Protect fenders, upholstery and carpeting with appropriate covers. Take caution that keys, buckles or buttons do not scratch paint.

- Clean all disassembled parts in the designated liquid or solvent prior to inspection or assembly.
- Replace oil seals, gaskets, packings, O-rings, locking washers, cotter pins, self-locking nuts, etc. with new ones.
- Replace inner and outer races of tapered roller bearings and needle bearings as a set.
- Arrange the disassembled parts in accordance with their assembled locations and sequence.
- Do not touch the terminals of electrical components which use microcomputers (such as ECMs). Static electricity may damage internal electronic components.

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## PRECAUTIONS

Precautions (Cont'd)

- After disconnecting vacuum or air hoses, attach a tag to indicate the proper connection.
- Use only the fluids and lubricants specified in this manual.
- Use approved bonding agent, sealants or their equivalents when required.
- Use tools and recommended special tools where specified for safe and efficient service repairs.
- When repairing the fuel, oil, water, vacuum or exhaust systems, check all affected lines for leaks.
- Dispose of drained oil or the solvent used for cleaning parts in an appropriate manner.

Do not attempt to top off the fuel tank after the fuel pump nozzle shuts off automatically. Continued refueling may cause fuel overflow, resulting in fuel spray and possibly a fire.

### **WARNING:**

**To prevent ECM from storing the diagnostic trouble codes, do not carelessly disconnect the harness connectors which are related to the engine control system and TCM (Transmission Control Module) system. The connectors should be disconnected only when working according to the WORK FLOW of TROUBLE DIAGNOSES in EC and AT sections.**



### **PRECAUTIONS FOR MULTIPOINT FUEL INJECTION SYSTEM OR ENGINE CONTROL SYSTEM**

NHG10001S04

- Before connecting or disconnecting any harness connector for the multipoint fuel injection system or ECM:
  - Turn ignition switch to "OFF" position.
  - Disconnect negative battery terminal.
  - Otherwise, there may be damage to ECM.
- Before disconnecting pressurized fuel line from fuel pump to injectors, be sure to release fuel pressure.
- Be careful not to jar components such as ECM and mass air flow sensor.

### **PRECAUTIONS FOR THREE WAY CATALYST**

NHG10001S05

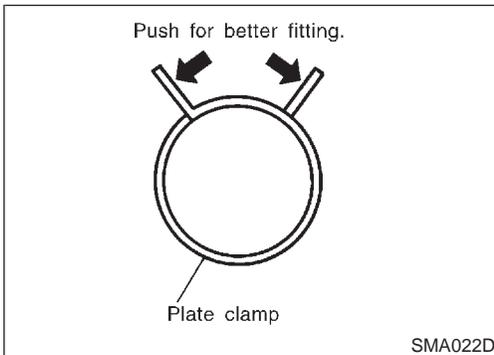
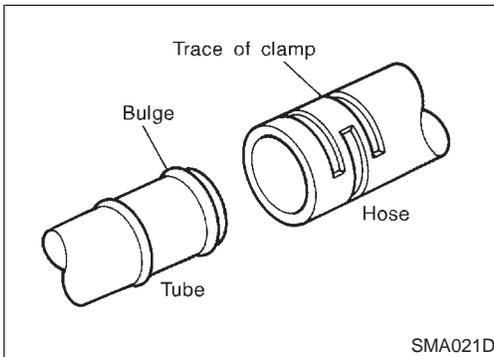
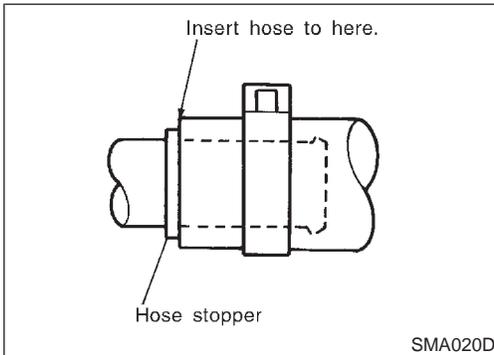
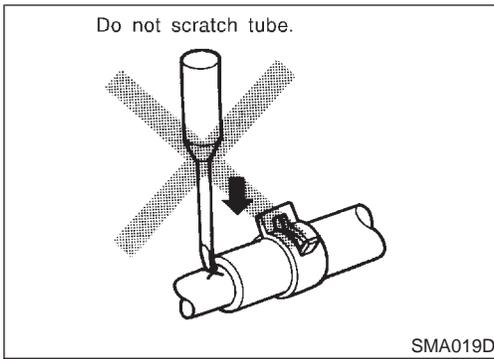
If a large amount of unburned fuel flows into the catalyst, the catalyst temperature will be excessively high. To prevent this, follow the instructions below:

- Use unleaded gasoline only. Leaded gasoline will seriously damage the three way catalyst.
- When checking for ignition spark or measuring engine compression, make tests quickly and only when necessary.
- Do not run engine when the fuel tank level is low, otherwise the engine may misfire, causing damage to the catalyst.

Do not place the vehicle on flammable material. Keep flammable material off the exhaust pipe and the three way catalyst.

# PRECAUTIONS

Precautions (Cont'd)



## PRECAUTIONS FOR HOSES

NHG10001S06

### Hose Removal and Installation

NHG10001S0601

- To prevent damage to rubber hose, do not pry off rubber hose with tapered tool or screwdriver.

- To reinstall the rubber hose securely, make sure of hose insertion length and clamp orientation. (If tube is equipped with hose stopper, insert rubber hose into tube until it butts up against hose stopper.)

### Hose Clamping

NHG10001S0602

- If old rubber hose is re-used, install hose clamp in its original position (at the indentation where the old clamp was). If there is a trace of tube bulging left on the old rubber hose, align rubber hose at that position.
- Discard old clamps; replace with new ones.

- After installing leaf spring clamps, apply force to them in the direction of the arrow, tightening rubber hose equally all around.

## PRECAUTIONS FOR ENGINE OILS

NHG10001S07

Prolonged and repeated contact with used engine oil may cause skin cancer. Try to avoid direct skin contact with used oil. If skin contact is made, wash thoroughly with soap or hand cleaner as soon as possible.

### Health Protection Precautions

NHG10001S0701

- Avoid prolonged and repeated contact with oils, particularly used engine oils.
- Wear protective clothing, including impervious gloves where practicable.

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## PRECAUTIONS

Precautions (Cont'd)

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- Do not put oily rags in pockets.
- Avoid contaminating clothes, particularly underclothing, with oil.
- Heavily soiled clothing and oil-impregnated footwear should not be worn. Overalls must be cleaned regularly.
- First Aid treatment should be obtained immediately for open cuts and wounds.
- Use barrier creams, applying them before each work period, to help the removal of oil from the skin.
- Wash with soap and water to ensure all oil is removed (skin cleansers and nail brushes will help). Preparations containing lanolin replace the natural skin oils which have been removed.
- Do not use gasoline, kerosine, diesel fuel, gas oil, thinners or solvents for cleaning skin.
- If skin disorders develop, obtain medical advice without delay.
- Where practicable, degrease components prior to handling.
- Where there is a risk of eye contact, eye protection should be worn, for example, chemical goggles or face shields; in addition an eye wash facility should be provided.

### Environmental Protection Precautions

NHG10001S0702

Burning used engine oil in small space heaters or boilers can be recommended only for units of approved design. The heating system must meet the requirements of HM Inspectorate of Pollution for small burners of less than 0.4 MW. If in doubt, check with the appropriate local authority and/or manufacturer of the approved appliance.

Dispose of used oil and used oil filters through authorized waste disposal contractors to licensed waste disposal sites, or to the waste oil reclamation trade. If in doubt, contact the local authority for advice on disposal facilities.

It is illegal to pour used oil on to the ground, down sewers or drains, or into water courses.

**The regulations concerning the pollution vary between regions.**

### PRECAUTIONS FOR FUEL

NHG10001S08

Use premium unleaded gasoline with an octane rating of at least 91 AKI (Anti-Knock Index) number (research octane number 96). If premium unleaded gasoline is not available, regular unleaded gasoline with an octane rating of at least 87 AKI (research octane number 91) can be used.

However, for maximum vehicle performance, the use of premium unleaded gasoline is recommended.

#### **CAUTION:**

**Do not use leaded gasoline. Using leaded gasoline will damage the three way catalyst.**

**Using a fuel other than that specified could adversely affect the emission control devices and systems, and could also affect the warranty coverage validity.**

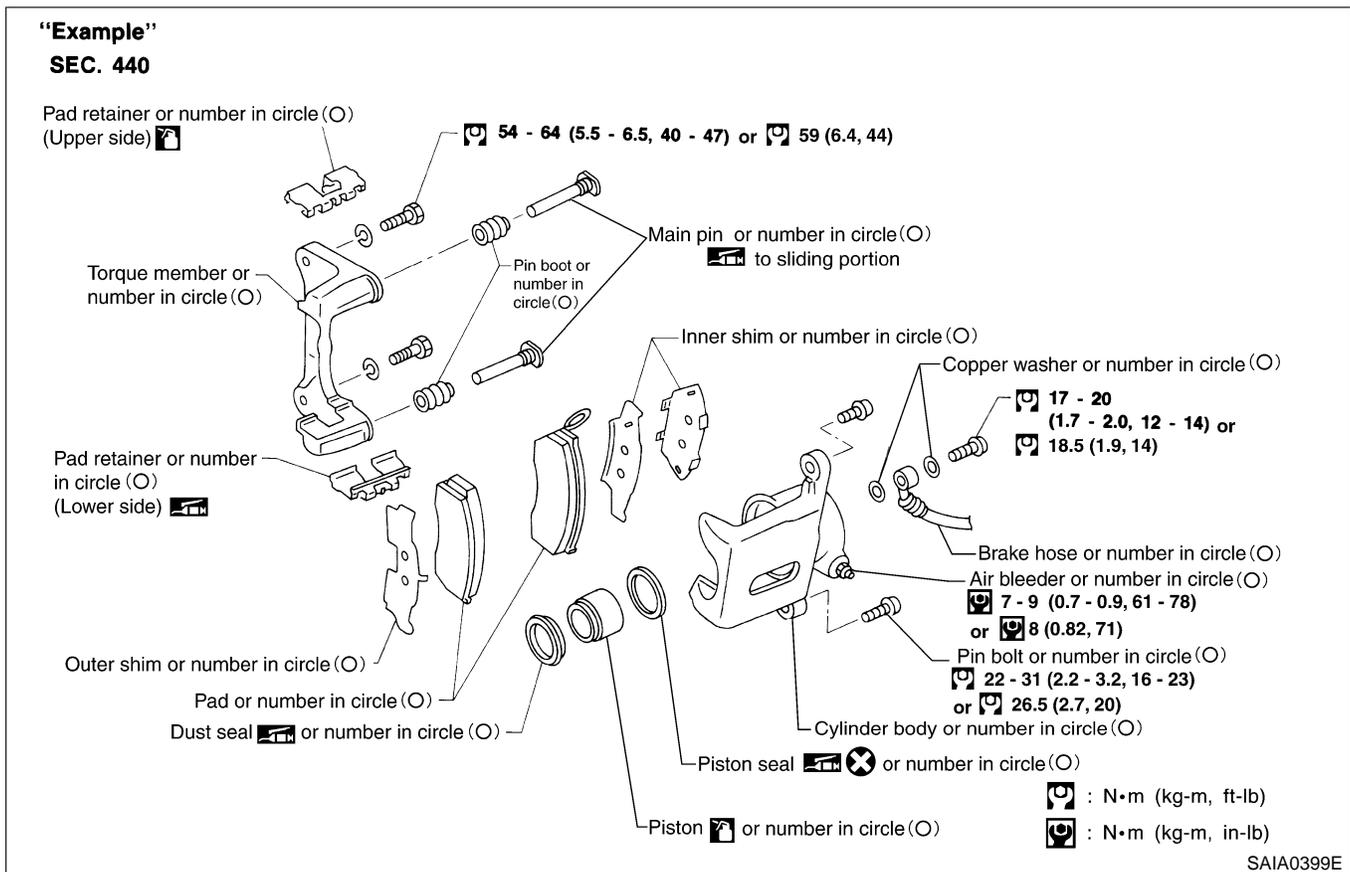
### PRECAUTIONS FOR AIR CONDITIONING

NHG10001S09

Use an approved refrigerant recovery unit any time the air conditioning system must be discharged. Refer to HA-107, "HFC-134a (R-134a) Service Procedure".

# HOW TO USE THIS MANUAL

- The captions **WARNING** and **CAUTION** warn you of steps that must be followed to prevent personal injury and/or damage to some part of the vehicle.  
**WARNING** indicates the possibility of personal injury if instructions are not followed.  
**CAUTION** indicates the possibility of component damage if instructions are not followed.  
**BOLD TYPED STATEMENTS** except **WARNING** and **CAUTION** give you helpful information.
- **ALPHABETICAL INDEX** is provided at the end of this manual so that you can rapidly find the item and page you are searching for.
- **A QUICK REFERENCE INDEX**, a black tab (e.g. **BR**) is provided on the first page. You can quickly find the first page of each section by matching it to the section's black tab.
- **THE CONTENTS** are listed on the first page of each section.
- **THE TITLE** is indicated on the upper portion of each page and shows the part or system.
- **THE PAGE NUMBER** of each section consists of two letters which designate the particular section and a number (e.g. "BR-5").
- **THE LARGE ILLUSTRATIONS** are exploded views (See below.) and contain tightening torques, lubrication points, section number of the **PARTS CATALOG** (e.g. SEC. 440) 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**.  
Components shown in an illustration may be identified by a circled number. When this style of illustration is used, the text description of the components will follow the illustration.



- **THE SMALL ILLUSTRATIONS** show the important steps such as inspection, use of special tools, knacks of work and hidden or tricky steps which are not shown in the previous large illustrations. Assembly, inspection and adjustment procedures for the complicated units such as the automatic transaxle or transmission, etc. are presented in a step-by-step format where necessary.
- The **UNITS** given in this manual are primarily expressed as the SI UNIT (International System of Unit), and alternatively expressed in the metric system and in the yard/pound system. Also with regard to tightening torque of bolts and nuts, there are descriptions both about range and about the standard tightening torque.

# HOW TO USE THIS MANUAL

## “Example”

### Range

Outer socket lock nut: 59 - 78 N-m (6.0 - 8.0 kg-m, 43 - 58 ft-lb)

### Standard

Drive shaft installation bolt: 44.3 N-m (4.5 kg-m, 33 ft-lb)

- **TROUBLE DIAGNOSES** are included in sections dealing with complicated components.
- **SERVICE DATA AND SPECIFICATIONS** are contained at the end of each section for quick reference of data.
- The following **SYMBOLS AND ABBREVIATIONS** are used:

| SYMBOL   | ABBREVIATION  | SYMBOL         | ABBREVIATION                          |
|--|---|----------------|---------------------------------------|
| <br> | Tightening torque   | 2WD            | 2-Wheel Drive                         |
|   | Should be lubricated with grease. Unless otherwise indicated, use recommended multi-purpose grease. | A/C            | Air Conditioner                       |
|   | Should be lubricated with oil.  | P/S            | Power Steering                        |
|   | Sealing point   | SST            | Special Service Tools                 |
|   | Checking point  | SAE            | Society of Automotive Engineers, Inc. |
|   | Always replace after every disassembly.   | ATF            | Automatic Transmission Fluid          |
| <br>P   | Apply petroleum jelly.  | D <sub>1</sub> | Drive range 1st gear                  |
|   | Apply ATF.  | D <sub>2</sub> | Drive range 2nd gear                  |
| ★  | Select with proper thickness.   | D <sub>3</sub> | Drive range 3rd gear                  |
| ☆  | Adjustment is required.   | D <sub>4</sub> | Drive range 4th gear                  |
| SDS  | Service Data and Specifications   | OD             | Overdrive                             |
| LH, RH   | Left-Hand, Right-Hand   | 2 <sub>2</sub> | 2nd range 2nd gear                    |
| FR, RR   | Front, Rear   | 2 <sub>1</sub> | 2nd range 1st gear                    |
| M/T  | Manual Transaxle/Transmission   | 1 <sub>2</sub> | 1st range 2nd gear                    |
| A/T  | Automatic Transaxle/Transmission  | 1 <sub>1</sub> | 1st range 1st gear                    |

# HOW TO READ WIRING DIAGRAMS

Sample/Wiring Diagram — EXAMPL —

## Sample/Wiring Diagram — EXAMPL —

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- For Description, refer to GI-14.

GI-EXAMPL-02



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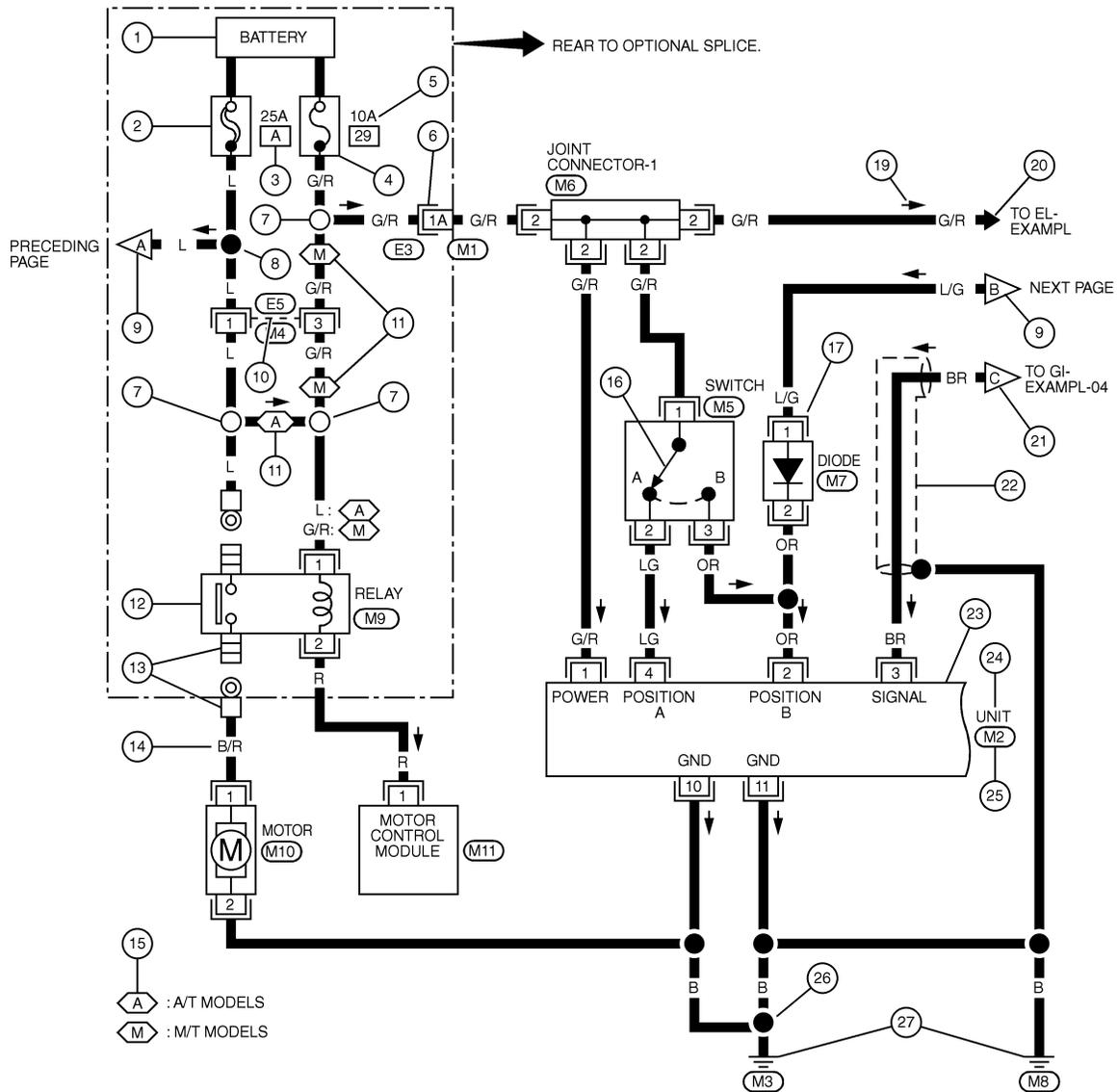
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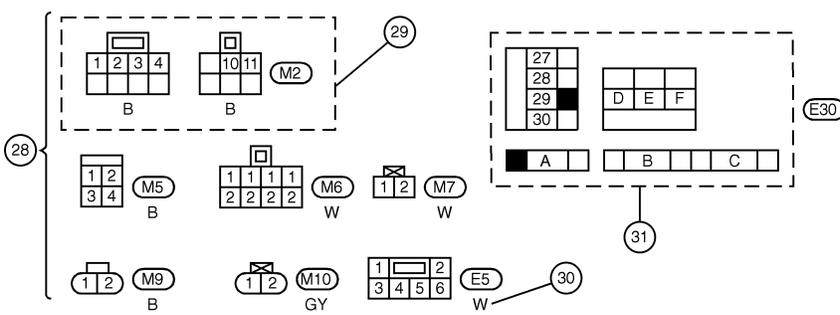
REAR TO OPTIONAL SPLICE.

TO EL-EXAMPL

NEXT PAGE

TO GI-EXAMPL-04

: A/T MODELS  
 : M/T MODELS



REFER TO THE FOLLOWING.

-SUPER MULTIPLE JUNCTION (SMJ)  
 -ELECTRICAL UNITS

32

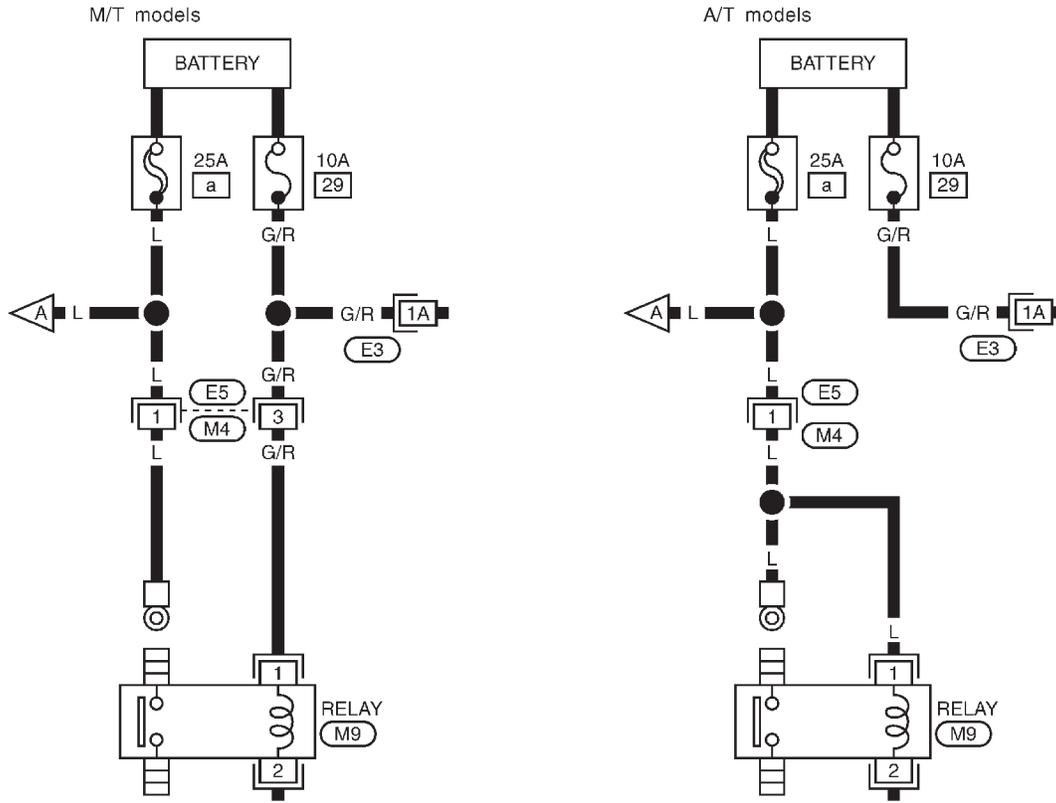
# HOW TO READ WIRING DIAGRAMS

Sample/Wiring Diagram — EXAMPL — (Cont'd)

## OPTIONAL SPLICE

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Optional splice



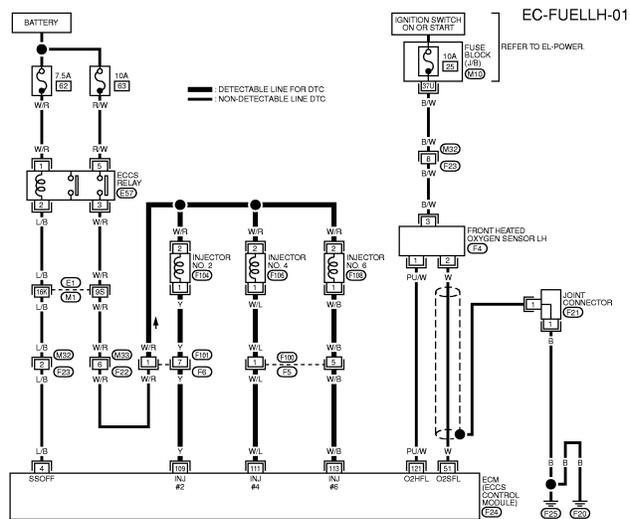
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# HOW TO READ WIRING DIAGRAMS

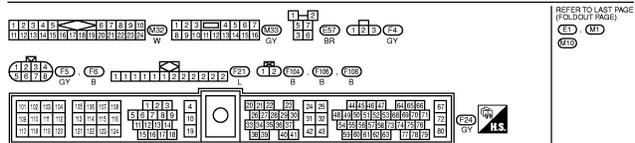
Sample/Wiring Diagram — EXAMPL — (Cont'd)

## CONTROL UNIT TERMINALS AND REFERENCE VALUE CHART

NHG10003S0102



Some wiring diagrams may have the control unit terminals and reference value chart. The chart describes the specification data of control unit terminals as reference value.



CONTROL UNIT TERMINALS AND REFERENCE VALUE (MEASURED BETWEEN EACH TERMINAL AND XX)

| Pin | Item                                  | Condition                        | Spec. |
|-----|---------------------------------------|----------------------------------|-------|
| 10  | Driver and passenger door lock motors | Ignition key is in "ON" position | 12V   |
| 10  | Driver and passenger door lock motors | Ignition key is in "ON" position | 12V   |
| 10  | Driver and passenger door lock motors | Ignition key is in "ON" position | 12V   |
| 10  | Driver and passenger door lock motors | Ignition key is in "ON" position | 12V   |
| 10  | Driver and passenger door lock motors | Ignition key is in "ON" position | 12V   |
| 10  | Driver and passenger door lock motors | Ignition key is in "ON" position | 12V   |
| 10  | Driver and passenger door lock motors | Ignition key is in "ON" position | 12V   |
| 10  | Driver and passenger door lock motors | Ignition key is in "ON" position | 12V   |
| 10  | Driver and passenger door lock motors | Ignition key is in "ON" position | 12V   |
| 10  | Driver and passenger door lock motors | Ignition key is in "ON" position | 12V   |

Control unit terminals and reference value chart

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# HOW TO READ WIRING DIAGRAMS

Description

| Description      |                            |   |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
|------------------|----------------------------|---|-----------|------------|-----------|-------------|---------|----------|-----------|-------------|----------|-----------|------------|---------------|------------------|-----------------|--|-----------------|
| Number           | Item                       | Description   |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
| 1                | Power condition            | <ul style="list-style-type: none"> <li>This shows the condition when the system receives battery positive voltage (can be operated).</li> </ul>   |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
| 2                | Fusible link               | <ul style="list-style-type: none"> <li>The double line shows that this is a fusible link.</li> <li>The open circle shows current flow in, and the shaded circle shows current flow out.</li> </ul>  |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
| 3                | Fusible link/fuse location | <ul style="list-style-type: none"> <li>This shows the location of the fusible link or fuse in the fusible link or fuse box. For arrangement, refer to EL-12, "POWER SUPPLY ROUTING".</li> </ul>   |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
| 4                | Fuse                       | <ul style="list-style-type: none"> <li>The single line shows that this is a fuse.</li> <li>The open circle shows current flow in, and the shaded circle shows current flow out.</li> </ul>  |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
| 5                | Current rating             | <ul style="list-style-type: none"> <li>This shows the current rating of the fusible link or fuse.</li> </ul>  |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
| 6                | Connectors                 | <ul style="list-style-type: none"> <li>This shows that connector E3 is female and connector M1 is male.</li> <li>The G/R wire is located in the 1A terminal of both connectors.</li> <li>Terminal number with an alphabet (1A, 5B, etc.) indicates that the connector is SMJ connector. Refer to GI-19.</li> </ul>  |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
| 7                | Optional splice            | <ul style="list-style-type: none"> <li>The open circle shows that the splice is optional depending on vehicle application.</li> </ul>   |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
| 8                | Splice                     | <ul style="list-style-type: none"> <li>The shaded circle shows that the splice is always on the vehicle.</li> </ul>   |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
| 9                | Page crossing              | <ul style="list-style-type: none"> <li>This arrow shows that the circuit continues to an adjacent page.</li> <li>The A will match with the A on the preceding or next page.</li> </ul>  |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
| 10               | Common connector           | <ul style="list-style-type: none"> <li>The dotted lines between terminals show that these terminals are part of the same connector.</li> </ul>  |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
| 11               | Option abbreviation        | <ul style="list-style-type: none"> <li>This shows that the circuit is optional depending on vehicle application.</li> </ul>   |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
| 12               | Relay                      | <ul style="list-style-type: none"> <li>This shows an internal representation of the relay. For details, refer to EL-9, "STANDARDIZED RELAY".</li> </ul>   |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
| 13               | Connectors                 | <ul style="list-style-type: none"> <li>This shows that the connector is connected to the body or a terminal with bolt or nut.</li> </ul>  |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
| 14               | Wire color                 | <ul style="list-style-type: none"> <li>This shows a code for the color of the wire.</li> </ul> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">B = Black</td> <td style="width: 50%;">BR = Brown</td> </tr> <tr> <td>W = White</td> <td>OR = Orange</td> </tr> <tr> <td>R = Red</td> <td>P = Pink</td> </tr> <tr> <td>G = Green</td> <td>PU = Purple</td> </tr> <tr> <td>L = Blue</td> <td>GY = Gray</td> </tr> <tr> <td>Y = Yellow</td> <td>SB = Sky Blue</td> </tr> <tr> <td>LG = Light Green</td> <td>CH = Dark Brown</td> </tr> <tr> <td></td> <td>DG = Dark Green</td> </tr> </table> <p>When the wire color is striped, the base color is given first, followed by the stripe color as shown below:<br/>Example: L/W = Blue with White Stripe</p> | B = Black | BR = Brown | W = White | OR = Orange | R = Red | P = Pink | G = Green | PU = Purple | L = Blue | GY = Gray | Y = Yellow | SB = Sky Blue | LG = Light Green | CH = Dark Brown |  | DG = Dark Green |
| B = Black        | BR = Brown                 |   |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
| W = White        | OR = Orange                |   |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
| R = Red          | P = Pink                   |   |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
| G = Green        | PU = Purple                |   |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
| L = Blue         | GY = Gray                  |   |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
| Y = Yellow       | SB = Sky Blue              |   |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
| LG = Light Green | CH = Dark Brown            |   |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
|                  | DG = Dark Green            |   |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
| 15               | Option description         | <ul style="list-style-type: none"> <li>This shows a description of the option abbreviation used on the page.</li> </ul>   |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
| 16               | Switch                     | <ul style="list-style-type: none"> <li>This shows that continuity exists between terminals 1 and 2 when the switch is in the A position. Continuity exists between terminals 1 and 3 when the switch is in the B position.</li> </ul>   |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
| 17               | Assembly parts             | <ul style="list-style-type: none"> <li>Connector terminal in component shows that it is a harness incorporated assembly.</li> </ul>   |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
| 18               | Cell code                  | <ul style="list-style-type: none"> <li>This identifies each page of the wiring diagram by section, system and wiring diagram page number.</li> </ul>  |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |
| 19               | Current flow arrow         | <ul style="list-style-type: none"> <li>Arrow indicates electric current flow, especially where the direction of standard flow (vertically downward or horizontally from left to right) is difficult to follow.</li> <li>A double arrow "↔" shows that current can flow in either direction depending on circuit operation.</li> </ul>   |           |            |           |             |         |          |           |             |          |           |            |               |                  |                 |  |                 |

# HOW TO READ WIRING DIAGRAMS

Description (Cont'd)

| Number | Item                       | Description  |
|--------|----------------------------|--|
| 20     | System branch              | <ul style="list-style-type: none"> <li>This shows that the system branches to another system identified by cell code (section and system).</li> </ul>  |
| 21     | Page crossing              | <ul style="list-style-type: none"> <li>This arrow shows that the circuit continues to another page identified by cell code.</li> <li>The C will match with the C on another page within the system other than the next or preceding pages.</li> </ul>  |
| 22     | Shielded line              | <ul style="list-style-type: none"> <li>The line enclosed by broken line circle shows shield wire.</li> </ul>   |
| 23     | Component box in wave line | <ul style="list-style-type: none"> <li>This shows that another part of the component is also shown on another page (indicated by wave line) within the system.</li> </ul>  |
| 24     | Component name             | <ul style="list-style-type: none"> <li>This shows the name of a component.</li> </ul>  |
| 25     | Connector number           | <ul style="list-style-type: none"> <li>This shows the connector number.</li> <li>The letter shows which harness the connector is located in.<br/>Example: <b>M</b>: main harness. For detail and to locate the connector, refer to EL-486, "Main Harness". A coordinate grid is included for complex harnesses to aid in locating connectors.</li> </ul> |
| 26     | Ground (GND)               | <ul style="list-style-type: none"> <li>The line spliced and grounded under wire color shows that ground line is spliced at the grounded connector.</li> </ul>  |
| 27     | Ground (GND)               | <ul style="list-style-type: none"> <li>This shows the ground connection. For detailed ground distribution information, refer to EL-20, "Ground Distribution".</li> </ul>   |
| 28     | Connector views            | <ul style="list-style-type: none"> <li>This area shows the connector faces of the components in the wiring diagram on the page.</li> </ul>   |
| 29     | Common component           | <ul style="list-style-type: none"> <li>Connectors enclosed in broken line show that these connectors belong to the same component.</li> </ul>  |
| 30     | Connector color            | <ul style="list-style-type: none"> <li>This shows a code for the color of the connector. For code meaning, refer to wire color codes, Number 14 of this chart.</li> </ul>  |
| 31     | Fusible link and fuse box  | <ul style="list-style-type: none"> <li>This shows the arrangement of fusible link(s) and fuse(s), used for connector views of "POWER SUPPLY ROUTING" in EL section.<br/>The open square shows current flow in, and the shaded square shows current flow out.</li> </ul>  |
| 32     | Reference area             | <ul style="list-style-type: none"> <li>This shows that more information on the Super Multiple Junction (SMJ), Electrical Units, exists at the end of the manual. Refer to GI-19 for details.</li> </ul>  |

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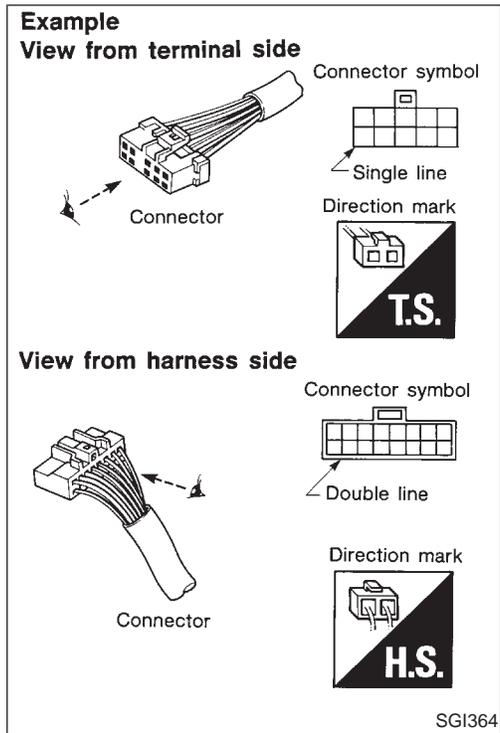
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# HOW TO READ WIRING DIAGRAMS

Description (Cont'd)

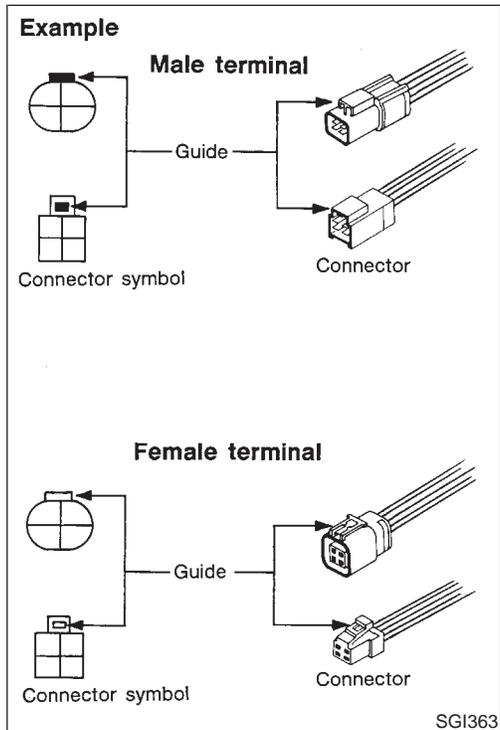


## CONNECTOR SYMBOLS

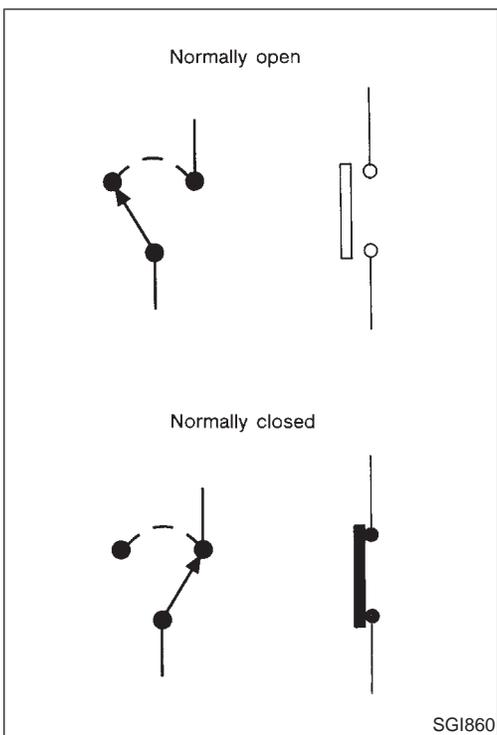
=NHGI0003S0201

Most of connector symbols in wiring diagrams are shown from the terminal side.

- Connector symbols shown from the terminal side are enclosed by a single line and followed by the direction mark.
- Connector symbols shown from the harness side are enclosed by a double line and followed by the direction mark.
- Certain systems and components, especially those related to OBD, may use a new style slide-locking type harness connector. For description and how to disconnect, refer to EL-7, "HARNESS CONNECTOR".



- Male and female terminals  
Connector guides for male terminals are shown in black and female terminals in white in wiring diagrams.



## SWITCH POSITIONS

NHG10003S0204

Switches are shown in wiring diagrams as if the vehicle is in the “normal” condition.

A vehicle is in the “normal” condition when:

- ignition switch is “OFF”,
- doors, hood and trunk lid/back door are closed,
- pedals are not depressed, and
- parking brake is released.

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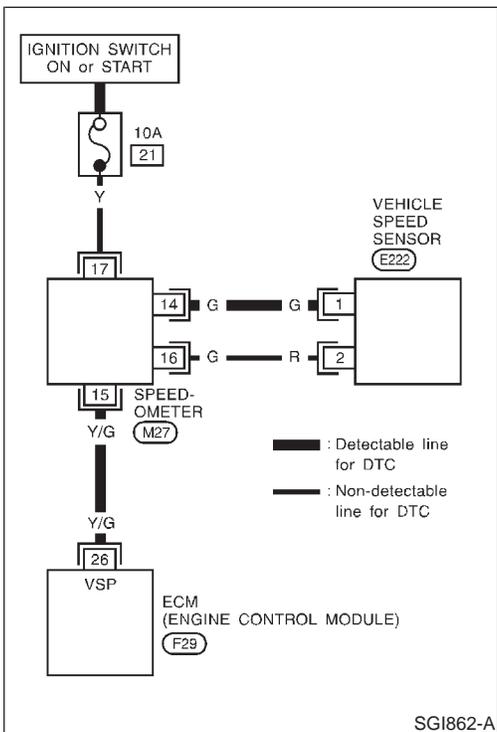
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## DETECTABLE LINES AND NON-DETECTABLE LINES

NHG10003S0205

In some wiring diagrams, two kinds of lines, representing wires, with different weight are used.

- A line with regular weight (wider line) represents a “detectable line for DTC (Diagnostic Trouble Code)”. A “detectable line for DTC” is a circuit in which ECM can detect its malfunctions with the on board diagnostic system.
- A line with less weight (thinner line) represents a “non-detectable line for DTC”. A “non-detectable line for DTC” is a circuit in which ECM cannot detect its malfunctions with the on board diagnostic system.

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# HOW TO READ WIRING DIAGRAMS

Description (Cont'd)

## MULTIPLE SWITCH

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The continuity of multiple switch is described in two ways as shown below.

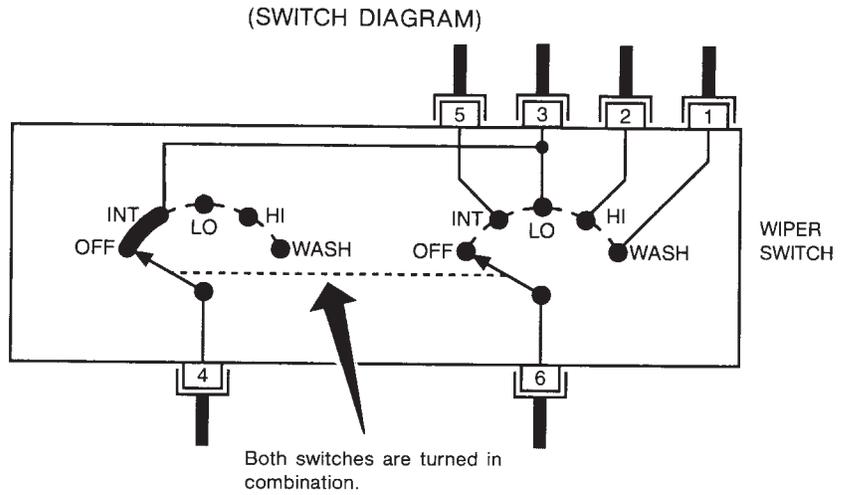
- The switch chart is used in schematic diagrams.
- The switch diagram is used in wiring diagrams.

### Example

(SWITCH CHART)

WIPER SWITCH

|   | OFF | INT | LO | HI | WASH |
|---|-----|-----|----|----|------|
| 1 |     |     |    |    | ○    |
| 2 |     |     |    | ○  |      |
| 3 | ○   | ○   | ○  |    |      |
| 4 | ○   | ○   |    |    |      |
| 5 |     | ○   |    |    |      |
| 6 |     | ○   | ○  | ○  | ○    |



Continuity circuit of wiper switch

| SWITCH POSITION | CONTINUITY CIRCUIT |
|-----------------|--------------------|
| OFF             | 3-4                |
| INT             | 3-4, 5-6           |
| LO              | 3-6                |
| HI              | 2-6                |
| WASH            | 1-6                |

SGI875

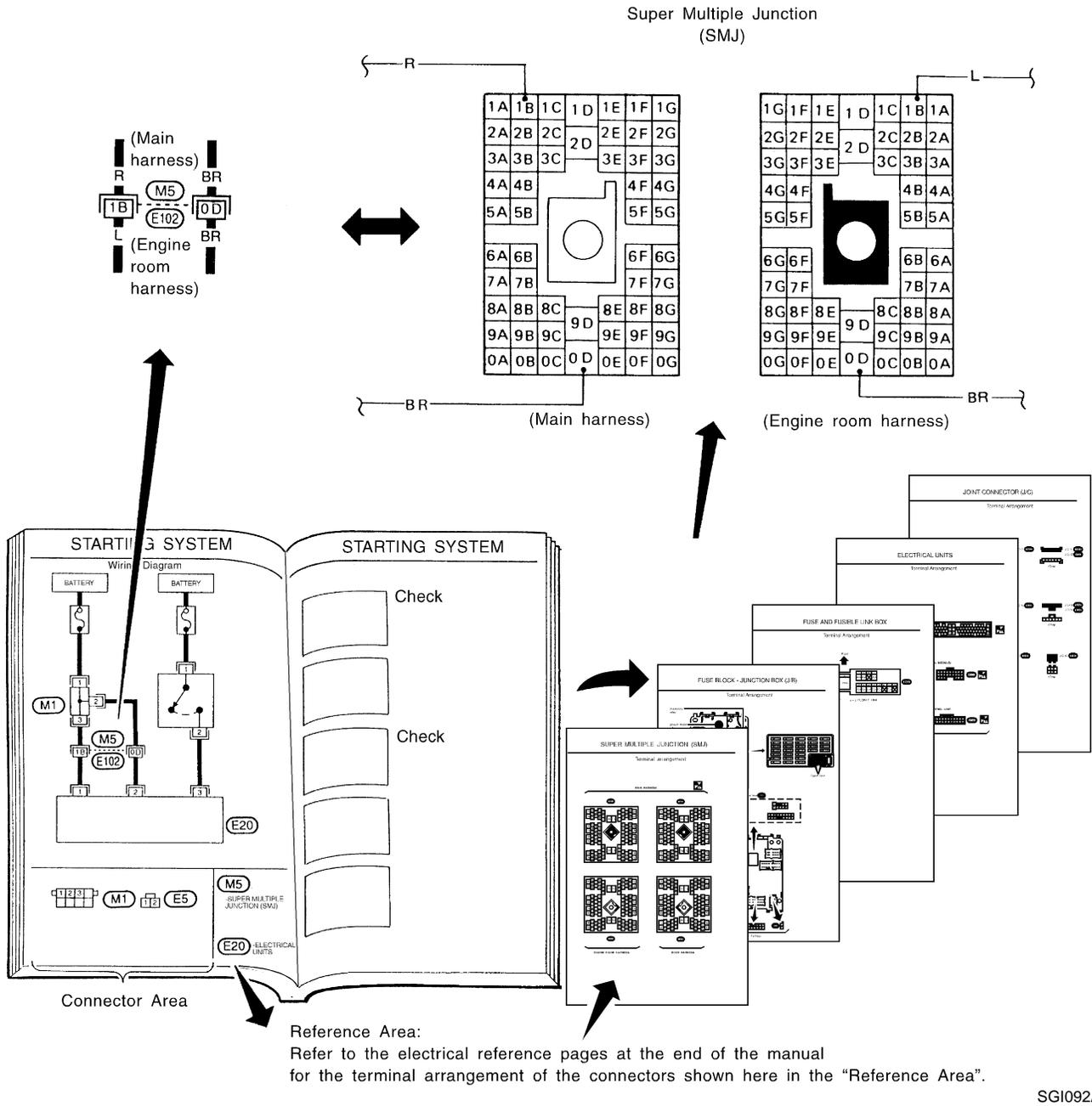
## REFERENCE AREA

=NHGI0003S0207

The Reference Area of the wiring diagram contains references to additional electrical reference pages at the end of the manual. If connector numbers and titles are shown in the Reference Area of the wiring diagram, these connector symbols are not shown in the Connector Area.

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### Example



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### Super multiple junction (SMJ)

In a wiring diagram, the SMJ connectors include a letter of the alphabet in the terminal number.

SMJ connector numbers are shown in the Reference Area of the wiring diagram. SMJ terminal arrangement can be found on the electrical reference pages at the end of the manual. For terminal arrangement of these connectors, refer to the "SUPER MULTIPLE JUNCTION (SMJ)" electrical reference page at the end of the

# HOW TO READ WIRING DIAGRAMS

Description (Cont'd)

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manual.

## **Fuse block — Junction box (J/B)**

Fuse block — Junction box (J/B) connector number is shown in the Reference Area of the wiring diagram. For connector terminal and fuse arrangement, refer to the “FUSE BLOCK — Junction Box (J/B)” electrical reference page at the end of the manual.

## **Fuse and fusible link box**

For fuse arrangement in the fuse and fusible link box, refer to the “FUSE AND FUSIBLE LINK BOX” electrical reference page at the end of the manual.

## **Electrical units**

Electrical unit connector symbols are shown in the Connector Area of the wiring diagram.

However, when there is not enough space to show the connector terminal arrangement in the Connector Area of the wiring diagram, the electrical unit connector number is shown in the Reference Area of the wiring diagram. For electrical unit connector terminal arrangement, refer to the “ELECTRICAL UNITS” electrical reference page at the end of the manual. Most of the electrical unit connectors on this page are shown from the harness side of the connector.

## **Joint connector**

Joint connector symbols are shown in the connector area of the wiring diagram. For connector internal wiring layout and joint connector terminal arrangement, refer to the “JOINT CONNECTOR (J/C)” electrical reference page at the end of the manual.

# HOW TO CHECK TERMINAL

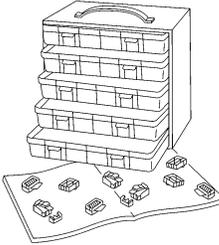
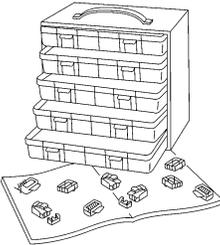
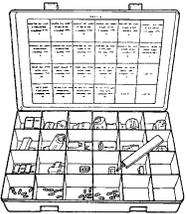
Connector and Terminal Pin Kit

## Connector and Terminal Pin Kit

NHGI0004S01

Use the connector and terminal pin kit listed below when replacing connectors or terminals.

The connector and terminal pin kit contains some of the most commonly used INFINITI connectors and terminals. For detailed connector and terminal pin replacement procedures, refer to the latest NISSAN/INFINITI CONNECTOR AND TERMINAL PIN SERVICE MANUAL.

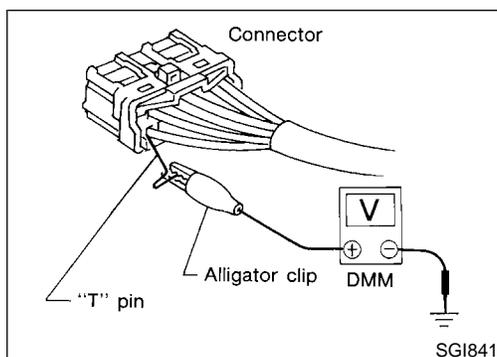
| Tool number<br>(Kent-Moore No.)<br>Tool name  | Description   |
|---|---|
| —<br>(J38751-95NI)<br>Connector and terminal<br>pin kit (NISSAN)<br>—<br>(J38751-95INF)<br>Connector and terminal<br>pin kit (INFINITI)<br>—<br>(J42992-98KIT)<br>OBD and terminal repair<br>kit<br>—<br>(J42992-2000UPD)<br>OBD-II Connector Kit<br>Update | <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>J38751-95NI</p>  </div> <div style="text-align: center;"> <p>J38751-95INF</p>  </div> <div style="text-align: center;"> <p>J42992-98KIT</p>  </div> <div style="text-align: center;"> <p>J42992-2000UPD</p>  </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <span data-bbox="427 915 529 934">WAIA0004E</span> <span data-bbox="954 903 1057 921">WAIA0005E</span> </div> |

## How to Probe Connectors

NHGI0004S02

Connector damage and an intermittent connection can result from improperly probing of the connector during circuit checks.

The probe of a digital multimeter (DMM) may not correctly fit the connector cavity. To correctly probe the connector, follow the procedures below using a "T" pin. For the best contact grasp the "T" pin using an alligator clip.



## PROBING FROM HARNESS SIDE

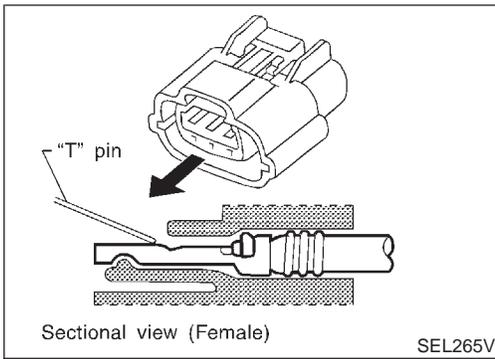
NHGI0004S0201

Standard type (not waterproof type) connector should be probed from harness side with "T" pin.

- If the connector has a rear cover such as a ECM connector, remove the rear cover before probing the terminal.
- Do not probe waterproof connector from harness side. Damage to the seal between wire and connector may result.

# HOW TO CHECK TERMINAL

How to Probe Connectors (Cont'd)

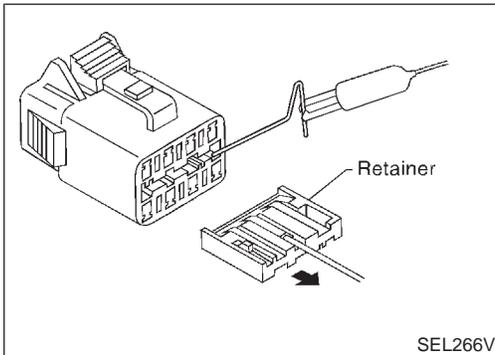


## PROBING FROM TERMINAL SIDE

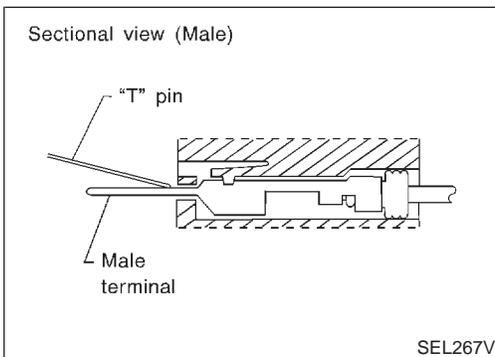
NHG10004S0202

### Female terminal

- There is a small notch above each female terminal. Probe each terminal with the "T" pin through the notch. **Do not insert any object other than the same type male terminal into female terminal.**



- Some connectors do not have a notch above each terminal. To probe each terminal, remove the connector retainer to make contact space for probing.



### Male terminal

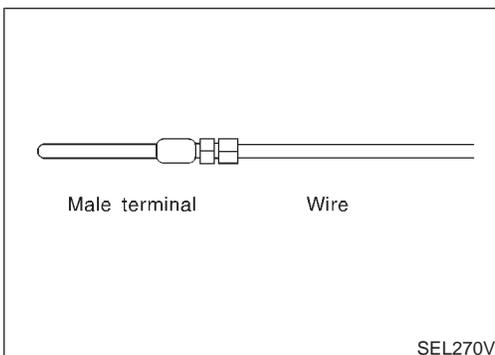
Carefully probe the contact surface of each terminal using a "T" pin. **Do not bend terminal.**

## How to Check Enlarged Contact Spring of Terminal

NHG10004S03

An enlarged contact spring of a terminal may create intermittent signals in the circuit.

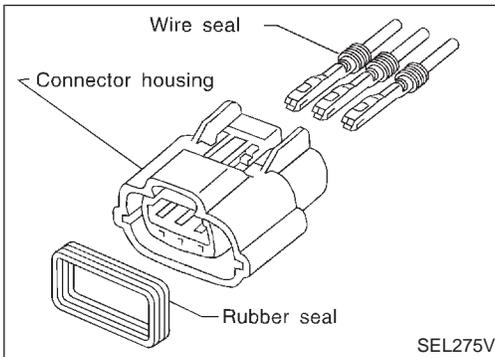
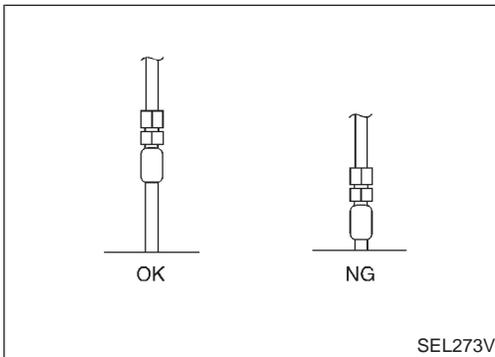
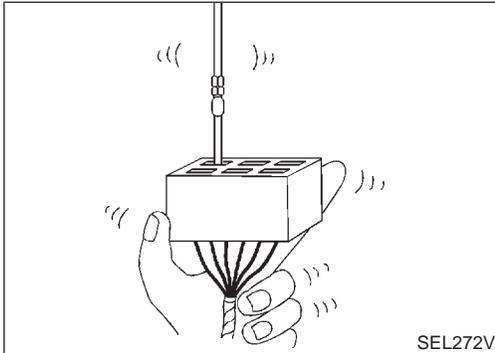
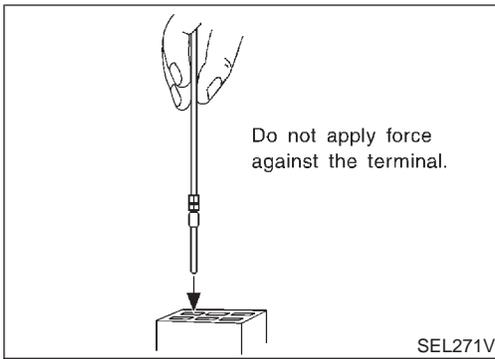
If the intermittent open circuit occurs, follow the procedure below to inspect for open wires and enlarged contact spring of female terminal.



1. Assemble a male terminal and approx. 10 cm (3.9 in) of wire. **Use a male terminal which matches the female terminal.**
2. Disconnect the suspected faulty connector and hold it terminal side up.

# HOW TO CHECK TERMINAL

How to Check Enlarged Contact Spring of Terminal (Cont'd)



3. While holding the wire of the male terminal, try to insert the male terminal into the female terminal.

**Do not force the male terminal into the female terminal with your hands.**

4. While moving the connector, check whether the male terminal can be easily inserted or not.

- If the male terminal can be easily inserted into the female terminal, replace the female terminal.

## Waterproof Connector Inspection

If water enters the connector, it can short interior circuits. This may lead to intermittent problems.

Check the following items to maintain the original waterproof characteristics.

### RUBBER SEAL INSPECTION

- Most waterproof connectors are provided with a rubber seal between the male and female connectors. If the seal is missing, the waterproof performance may not meet specifications.
- The rubber seal may come off when connectors are disconnected. Whenever connectors are reconnected, make sure the rubber seal is properly installed on either side of male or female connector.

### WIRE SEAL INSPECTION

The wire seal must be installed on the wire insertion area of a waterproof connector. Be sure that the seal is installed properly.

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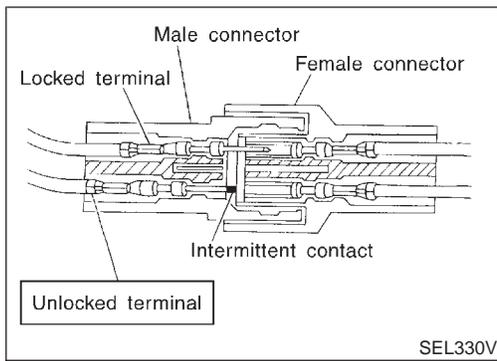
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# HOW TO CHECK TERMINAL

## Terminal Lock Inspection



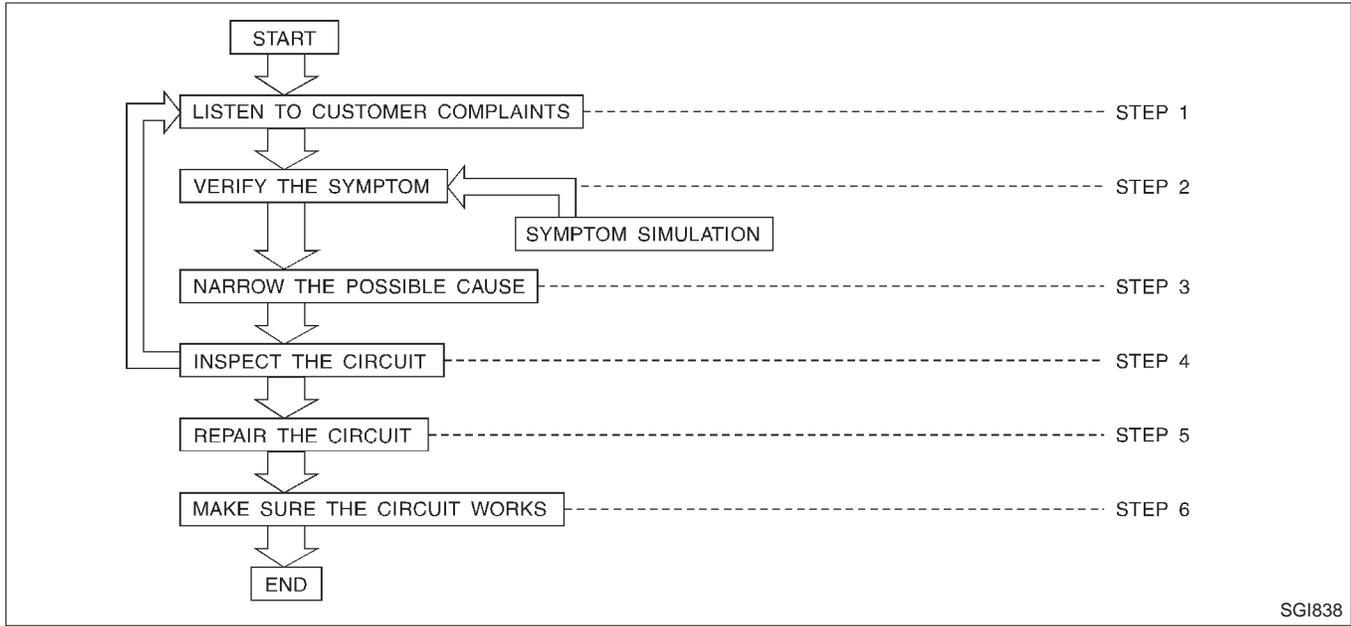
## Terminal Lock Inspection

NHG10004S05

Check for unlocked terminals by pulling wire at the end of connector. An unlocked terminal may create intermittent signals in the circuit.

## Work Flow

NHG10005S01



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| STEP   | DESCRIPTION  |
|--------|--|
| STEP 1 | Get detailed information about the conditions and the environment when the incident occurred. The following are key pieces of information required to make a good analysis:  |
|        | <b>WHAT</b> Vehicle Model, Engine, Transmission and the System (i.e. Radio).   |
|        | <b>WHEN</b> Date, Time of Day, Weather Conditions, Frequency.  |
|        | <b>WHERE</b> Road Conditions, Altitude and Traffic Situation.  |
|        | <b>HOW</b> System Symptoms, Operating Conditions (Other Components Interaction), Service History and if any After Market Accessories have been installed.  |
| STEP 2 | Operate the system, road test if necessary.<br>Verify the parameter of the incident.<br>If the incident cannot be duplicated, refer to "Incident Simulation Tests" next page.  |
| STEP 3 | Get the proper diagnosis materials together including:<br>POWER SUPPLY ROUTING<br>System Operation Descriptions<br>Applicable Service Manual Sections<br>Check for any Service Bulletin.<br>Identify where to begin diagnosis based upon your knowledge of the system operation and the customer comments. |
| STEP 4 | Inspect the system for mechanical binding, loose connectors or wiring damage.<br>Determine which circuits and components are involved and diagnose using the Power Supply Routing and Harness Layouts.   |
| STEP 5 | Repair or replace the incident circuit or component.   |
| STEP 6 | Operate the system in all modes. Verify the system works properly under all conditions. Make sure you have not inadvertently created a new incident during your diagnosis or repair steps.   |

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# HOW TO PERFORM EFFICIENT DIAGNOSIS FOR AN ELECTRICAL INCIDENT

## Incident Simulation Tests

NHGI0005S02

### INTRODUCTION

NHGI0005S0201

Sometimes the symptom is not present when the vehicle is brought in for service. If possible, re-create the conditions present at the time of the incident. Doing so may help avoid a No Trouble Found Diagnosis. The following section illustrates ways to simulate the conditions/environment under which the owner experiences an electrical incident.

The section is broken into the six following topics:

- Vehicle vibration
- Heat sensitive
- Freezing
- Water intrusion
- Electrical load
- Cold or hot start up

Get a thorough description of the incident from the customer. It is important for simulating the conditions of the problem.

### VEHICLE VIBRATION

NHGI0005S0202

The incident may occur or become worse while driving on a rough road or when engine is vibrating (idle with A/C on). In such a case, you will want to check for a vibration related condition. Refer to the illustration below.

#### Connectors & Harness

Determine which connectors and wiring harness would affect the electrical system you are inspecting. **Gently** shake each connector and harness while monitoring the system for the incident you are trying to duplicate. This test may indicate a loose or poor electrical connection.

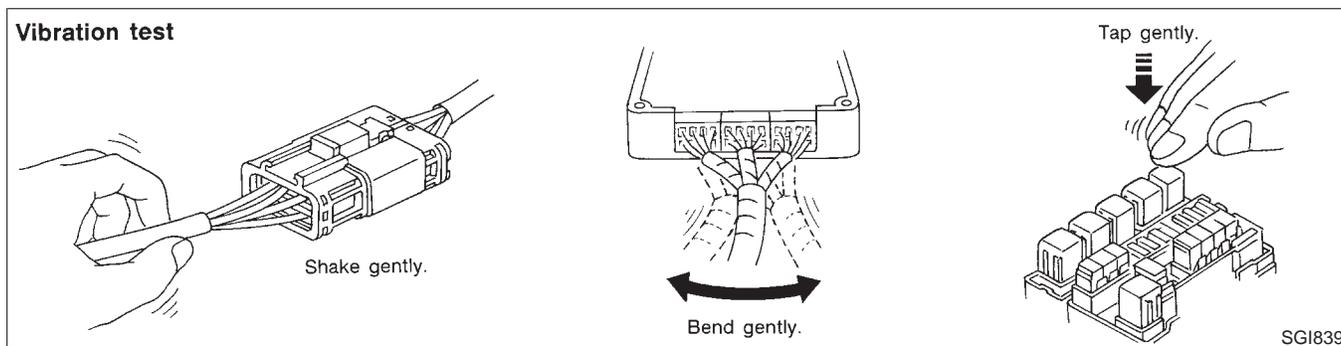
#### Hint

Connectors can be exposed to moisture. It is possible to get a thin film of corrosion on the connector terminals. A visual inspection may not reveal this without disconnecting the connector. If the problem occurs intermittently, perhaps the problem is caused by corrosion. It is a good idea to disconnect, inspect and clean the terminals on related connectors in the system.

#### Sensors & Relays

**Gently** apply a slight vibration to sensors and relays in the system you are inspecting.

This test may indicate a loose or poorly mounted sensor or relay.



## Engine Compartment

There are several reasons a vehicle or engine vibration could cause an electrical complaint. Some of the things to check for are:

- Connectors not fully seated.
- Wiring harness not long enough and is being stressed due to engine vibrations or rocking.
- Wires laying across brackets or moving components.
- Loose, dirty or corroded ground wires.
- Wires routed too close to hot components.

To inspect components under the hood, start by verifying the integrity of ground connections. (Refer to GROUND INSPECTION described later.) First make sure that the system is properly grounded. Then check for loose connection by **gently shaking** the wiring or components as previously explained. Using the wiring diagrams inspect the wiring for continuity.

### Behind The Instrument Panel

An improperly routed or improperly clamped harness can become pinched during accessory installation. Vehicle vibration can aggravate a harness which is routed along a bracket or near a screw.

### Under Seating Areas

An unclamped or loose harness can cause wiring to be pinched by seat components (such as slide guides) during vehicle vibration. If the wiring runs under seating areas, inspect wire routing for possible damage or pinching.

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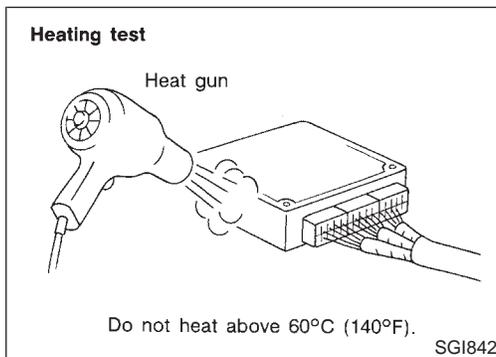
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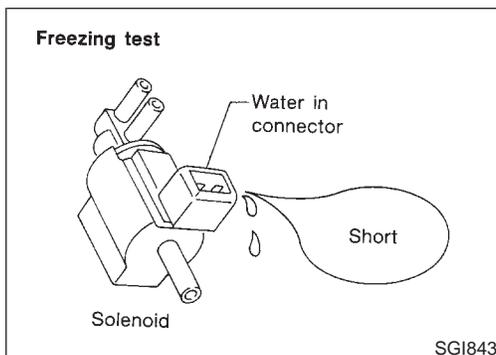
## HEAT SENSITIVE

NHG10005S0203

The owner's incident may occur during hot weather or after car has sat for a short time. In such cases you will want to check for a heat sensitive condition.

To determine if an electrical component is heat sensitive, heat the component with a heat gun or equivalent.

**Do not heat components above 60°C (140°F).** If incident occurs while heating the unit, either replace or properly insulate the component.



## FREEZING

NHG10005S0204

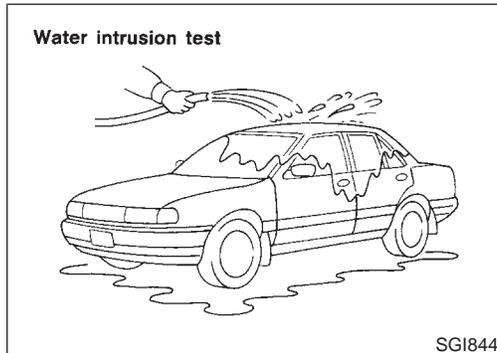
The customer may indicate the incident goes away after the car warms up (winter time). The cause could be related to water freezing somewhere in the wiring/electrical system.

There are two methods to check for this. The first is to arrange for the owner to leave his car overnight. Make sure it will get cold enough to demonstrate his complaint. Leave the car parked outside overnight. In the morning, do a quick and thorough diagnosis of those electrical components which could be affected.

# HOW TO PERFORM EFFICIENT DIAGNOSIS FOR AN ELECTRICAL INCIDENT

## Incident Simulation Tests (Cont'd)

The second method is to put the suspect component into a freezer long enough for any water to freeze. Reinstall the part into the car and check for the reoccurrence of the incident. If it occurs, repair or replace the component.

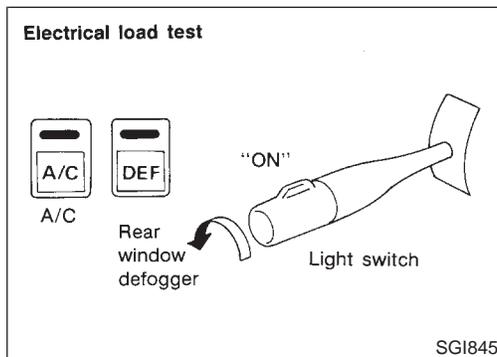


### WATER INTRUSION

NHG10005S0205

The incident may occur only during high humidity or in rainy/snowy weather. In such cases the incident could be caused by water intrusion on an electrical part. This can be simulated by soaking the car or running it through a car wash.

**Do not spray water directly on any electrical components.**



### ELECTRICAL LOAD

NHG10005S0206

The incident may be electrical load sensitive. Perform diagnosis with all accessories (including A/C, rear window defogger, radio, fog lamps) turned on.

### COLD OR HOT START UP

NHG10005S0207

On some occasions an electrical incident may occur only when the car is started cold. Or it may occur when the car is restarted hot shortly after being turned off. In these cases you may have to keep the car overnight to make a proper diagnosis.

## Circuit Inspection

NHG10005S03

### INTRODUCTION

NHG10005S0301

In general, testing electrical circuits is an easy task if it is approached in a logical and organized method. Before beginning it is important to have all available information on the system to be tested. Also, get a thorough understanding of system operation. Then you will be able to use the appropriate equipment and follow the correct test procedure.

You may have to simulate vehicle vibrations while testing electrical components. **Gently shake** the wiring harness or electrical component to do this.

|       |   |   |
|-------|---|---|
| OPEN  | A circuit is open when there is no continuity through a section of the circuit. |   |
| SHORT | There are two types of shorts.  |   |
|       | • SHORT CIRCUIT   | When a circuit contacts another circuit and causes the normal resistance to change. |
|       | • SHORT TO GROUND   | When a circuit contacts a ground source and grounds the circuit.                    |

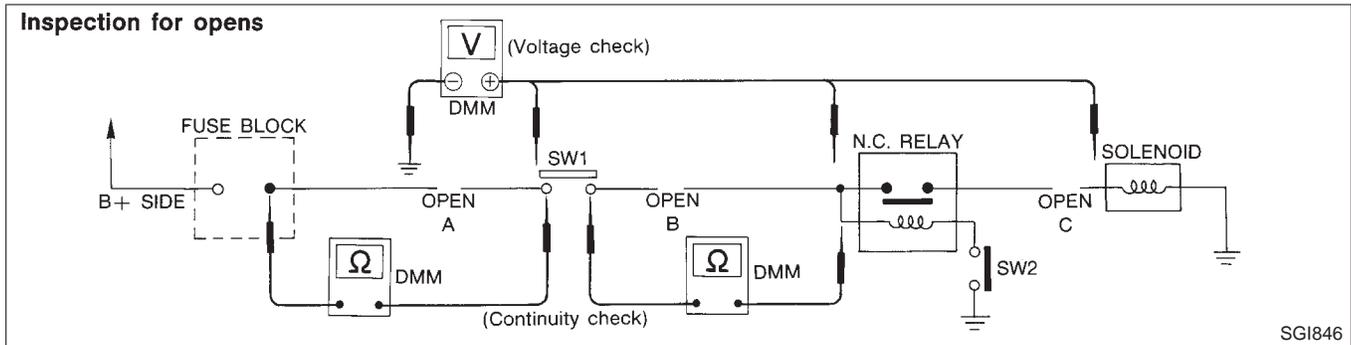
**NOTE:**

Refer to "HOW TO CHECK TERMINAL" in GI-21 to probe or check terminal.

**TESTING FOR "OPENS" IN THE CIRCUIT**

NHGI0005S0302

Before you begin to diagnose and test the system, you should rough sketch a schematic of the system. This will help you to logically walk through the diagnosis process. Drawing the sketch will also reinforce your working knowledge of the system.



**Continuity Check Method**

The continuity check is used to find an open in the circuit. The Digital Multimeter (DMM) set on the resistance function will indicate an open circuit as over limit (no beep tone or no ohms symbol). Make sure to always start with the DMM at the highest resistance level.

To help in understanding the diagnosis of open circuits please refer to the schematic above.

- 1) Disconnect the battery negative cable.
- 2) Start at one end of the circuit and work your way to the other end. (At the fuse block in this example)
- 3) Connect one probe of the DMM to the fuse block terminal on the load side.
- 4) Connect the other probe to the fuse block (power) side of SW1. Little or no resistance will indicate that portion of the circuit has good continuity. If there were an open in the circuit, the DMM would indicate an over limit or infinite resistance condition. (point A)
- 5) Connect the probes between SW1 and the relay. Little or no resistance will indicate that portion of the circuit has good continuity. If there were an open in the circuit, the DMM would indicate an over limit or infinite resistance condition. (point B)
- 6) Connect the probes between the relay and the solenoid. Little or no resistance will indicate that portion of the circuit has good continuity. If there were an open in the circuit, the DMM would indicate an over limit or infinite resistance condition. (point C)

Any circuit can be diagnosed using the approach in the above example.

**Voltage Check Method**

To help in understanding the diagnosis of open circuits please refer to the previous schematic.

In any powered circuit, an open can be found by methodically checking the system for the presence of voltage. This is done by switching the DMM to the voltage function.

- 1) Connect one probe of the DMM to a known good ground.
- 2) Begin probing at one end of the circuit and work your way to the other end.
- 3) With SW1 open, probe at SW1 to check for voltage.

# HOW TO PERFORM EFFICIENT DIAGNOSIS FOR AN ELECTRICAL INCIDENT

Circuit Inspection (Cont'd)

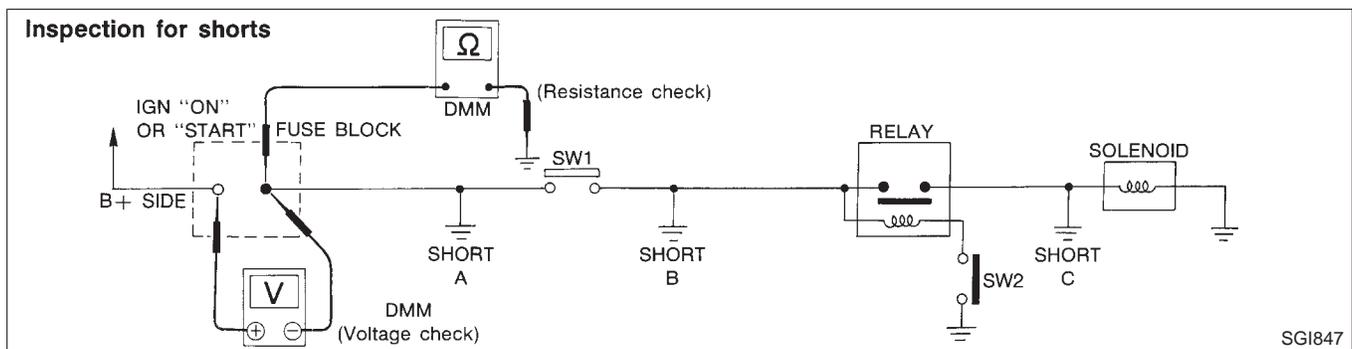
- voltage; open is further down the circuit than SW1.
- no voltage; open is between fuse block and SW1 (point A).
- 4) Close SW1 and probe at relay.
  - voltage; open is further down the circuit than the relay.
  - no voltage; open is between SW1 and relay (point B).
- 5) Close the relay and probe at the solenoid.
  - voltage; open is further down the circuit than the solenoid.
  - no voltage; open is between relay and solenoid (point C).

Any powered circuit can be diagnosed using the approach in the above example.

## TESTING FOR "SHORTS" IN THE CIRCUIT

NHG10005S0303

To simplify the discussion of shorts in the system please refer to the schematic below.



### Resistance Check Method

- 1) Disconnect the battery negative cable and remove the blown fuse.
- 2) Disconnect all loads (SW1 open, relay disconnected and solenoid disconnected) powered through the fuse.
- 3) Connect one probe of the ohmmeter to the load side of the fuse terminal. Connect the other probe to a known good ground.
- 4) With SW1 open, check for continuity.
  - continuity; short is between fuse terminal and SW1 (point A).
  - no continuity; short is further down the circuit than SW1.
- 5) Close SW1 and disconnect the relay. Put probes at the load side of fuse terminal and a known good ground. Then, check for continuity.
  - continuity; short is between SW1 and the relay (point B).
  - no continuity; short is further down the circuit than the relay.
- 6) Close SW1 and jump the relay contacts with jumper wire. Put probes at the load side of fuse terminal and a known good ground. Then, check for continuity.
  - continuity; short is between relay and solenoid (point C).
  - no continuity; check solenoid, retrace steps.

### Voltage Check Method

- 1) Remove the blown fuse and disconnect all loads (i.e. SW1 open, relay disconnected and solenoid disconnected) powered through the fuse.
- 2) Turn the ignition key to the ON or START position. Verify battery voltage at the B + side of the fuse terminal (one lead on the B + terminal side of the fuse block and one lead on a known good ground).
- 3) With SW1 open and the DMM leads across both fuse terminals, check for voltage.
  - voltage; short is between fuse block and SW1 (point A).
  - no voltage; short is further down the circuit than SW1.

- 4) With SW1 closed, relay and solenoid disconnected and the DMM leads across both fuse terminals, check for voltage. voltage; short is between SW1 and the relay (point B). no voltage; short is further down the circuit than the relay.
- 5) With SW1 closed, relay contacts jumped with fused jumper wire check for voltage. voltage; short is down the circuit of the relay or between the relay and the disconnected solenoid (point C). no voltage; retrace steps and check power to fuse block.

## GROUND INSPECTION

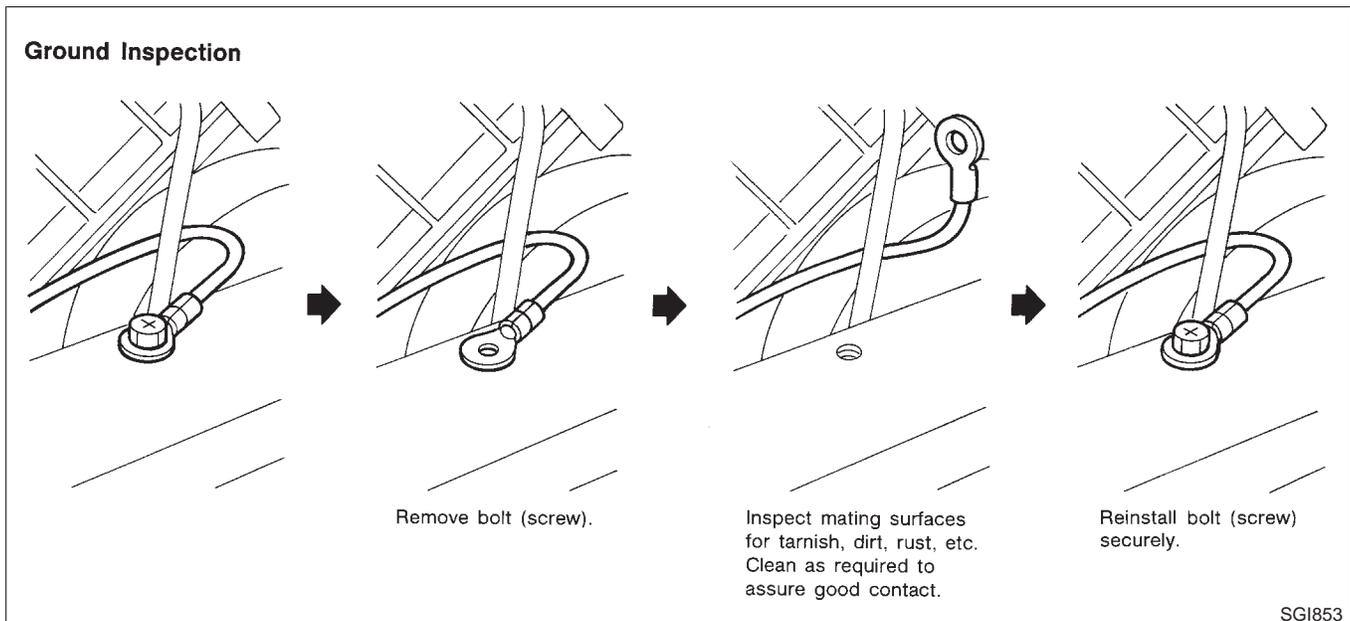
NHGI0005S0304

Ground connections are very important to the proper operation of electrical and electronic circuits. Ground connections are often exposed to moisture, dirt and other corrosive elements. The corrosion (rust) can become an unwanted resistance. This unwanted resistance can change the way a circuit works.

Electronically controlled circuits are very sensitive to proper grounding. A loose or corroded ground can drastically affect an electronically controlled circuit. A poor or corroded ground can easily affect the circuit. Even when the ground connection looks clean, there can be a thin film of rust on the surface.

When inspecting a ground connection follow these rules:

- 1) Remove the ground bolt or screw.
- 2) Inspect all mating surfaces for tarnish, dirt, rust, etc.
- 3) Clean as required to assure good contact.
- 4) Reinstall bolt or screw securely.
- 5) Inspect for "add-on" accessories which may be interfering with the ground circuit.
- 6) If several wires are crimped into one ground eyelet terminal, check for proper crimps. Make sure all of the wires are clean, securely fastened and providing a good ground path. If multiple wires are cased in one eyelet make sure no ground wires have excess wire insulation.



## VOLTAGE DROP TESTS

NHGI0005S0305

Voltage drop tests are often used to find components or circuits which have excessive resistance. A voltage drop in a circuit is caused by a resistance **when the circuit is in operation**.

Check the wire in the illustration. When measuring resistance with

# HOW TO PERFORM EFFICIENT DIAGNOSIS FOR AN ELECTRICAL INCIDENT

Circuit Inspection (Cont'd)

ohmmeter, contact by a single strand of wire will give reading of 0 ohms. This would indicate a good circuit. When the circuit operates, this single strand of wire is not able to carry the current. The single strand will have a high resistance to the current. This will be picked up as a slight voltage drop.

Unwanted resistance can be caused by many situations as follows:

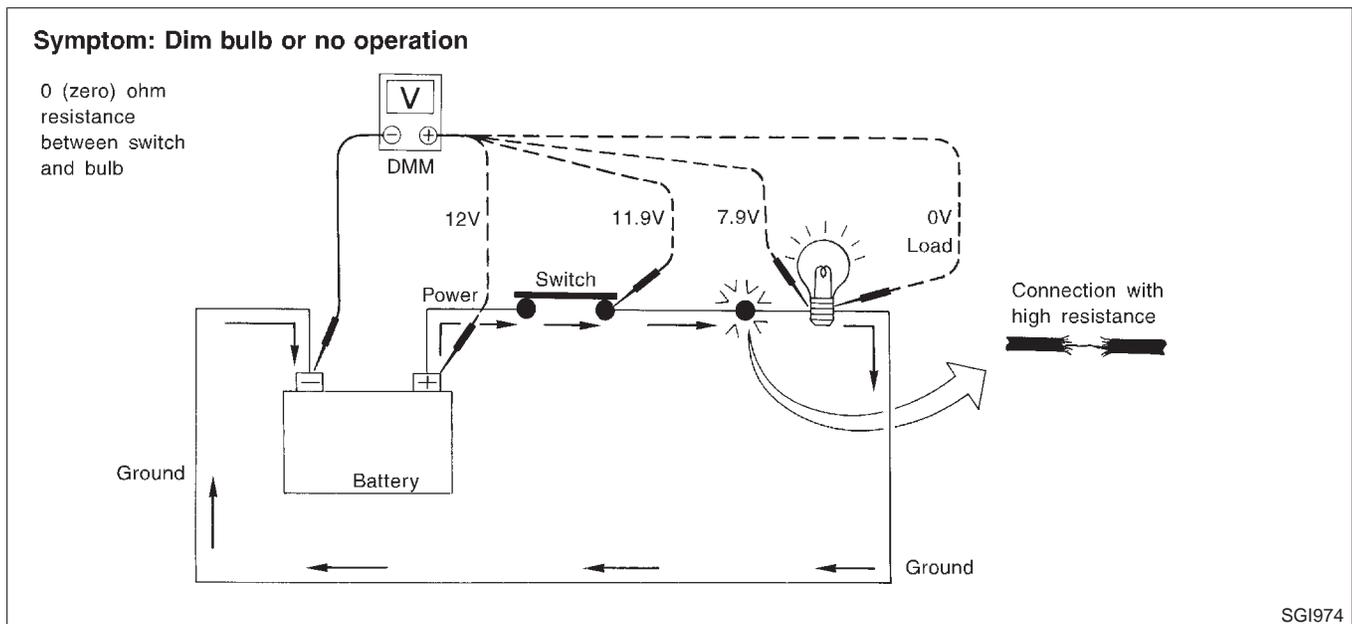
- Undersized wiring (single strand example)
- Corrosion on switch contacts
- Loose wire connections or splices.

If repairs are needed always use wire that is of the same or larger gauge.

## Measuring Voltage Drop — Accumulated Method

- 1) Connect the voltmeter across the connector or part of the circuit you want to check. The positive lead of the voltmeter should be closer to power and the negative lead closer to ground.
- 2) Operate the circuit.
- 3) The voltmeter will indicate how many volts are being used to “push” current through that part of the circuit.

**Note in the illustration that there is an excessive 4.1 volt drop between the battery and the bulb.**



## Measuring Voltage Drop — Step by Step

The step by step method is most useful for isolating excessive drops in low voltage systems (such as those in “Computer Controlled Systems”).

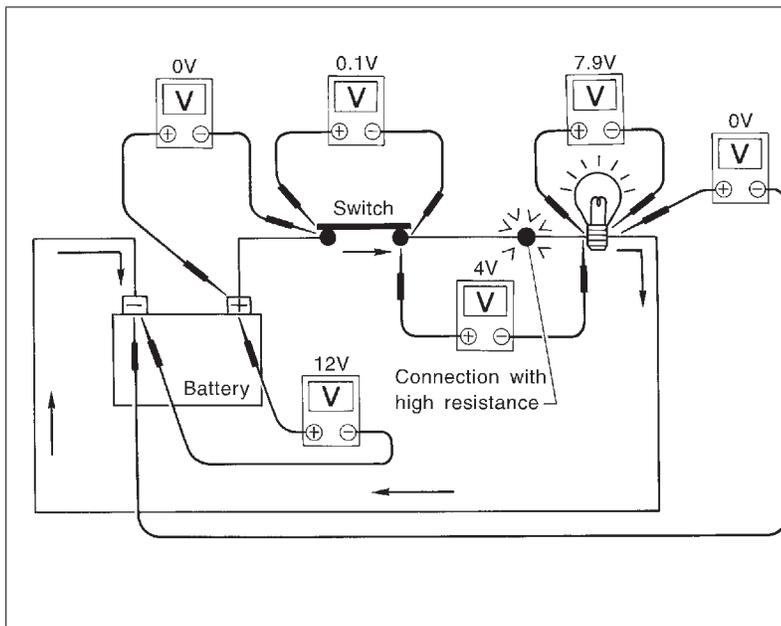
Circuits in the “Computer Controlled System” operate on very low amperage.

The (Computer Controlled) system operations can be adversely affected by any variation in resistance in the system. Such resistance variation may be caused by poor connection, improper installation, improper wire gauge or corrosion.

The step by step voltage drop test can identify a component or wire with too much resistance.

# HOW TO PERFORM EFFICIENT DIAGNOSIS FOR AN ELECTRICAL INCIDENT

Circuit Inspection (Cont'd)



1. Connect the voltmeter as shown, starting at the battery and working your way around the circuit.
2. An unusually large voltage drop will indicate a component or wire that needs to be repaired. As you can see the illustration above, the poor connection causes a 4 volt drop.

The chart that follows illustrates some maximum allowable voltage drops. These values are given as a guideline, the exact value for each component may vary.

| COMPONENT          | VOLTAGE DROP            |
|--------------------|-------------------------|
| Wire               | negligible < .001 volts |
| Ground Connections | Approx. 0.1 volts       |
| Switch Contacts    | Approx. 0.3 volts       |

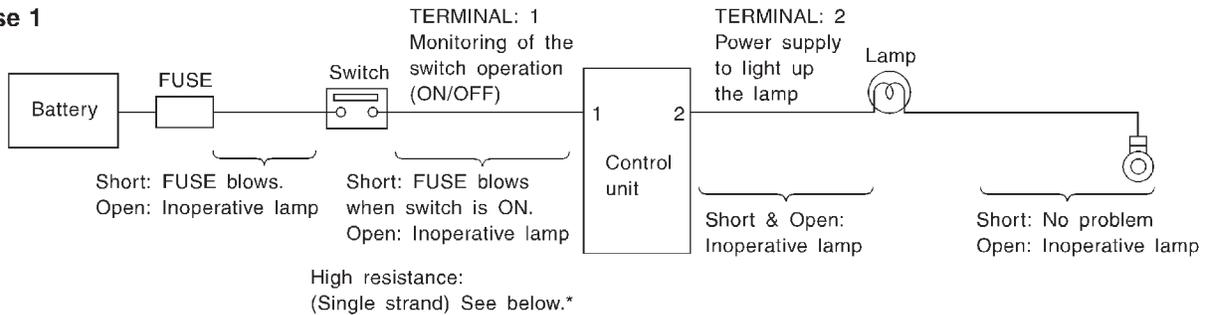
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## CONTROL UNIT CIRCUIT TEST

NHG10005S0306

System Description: When the switch is ON, the control unit lights up the lamp.

### Case 1



MG1034A

### Input-output voltage chart

| Pin No. | Item   | Condition  | Voltage value [V] | In case of high resistance such as single strand [V] * |
|---------|--------|------------|-------------------|--|
| 1       | Switch | Switch ON  | Battery voltage   | Lower than battery voltage Approx. 8 (Example)         |
|         |        | Switch OFF | Approx. 0         | Approx. 0  |
| 2       | Lamp   | Switch ON  | Battery voltage   | Approx. 0 (Inoperative lamp)                           |
|         |        | Switch OFF | Approx. 0         | Approx. 0  |

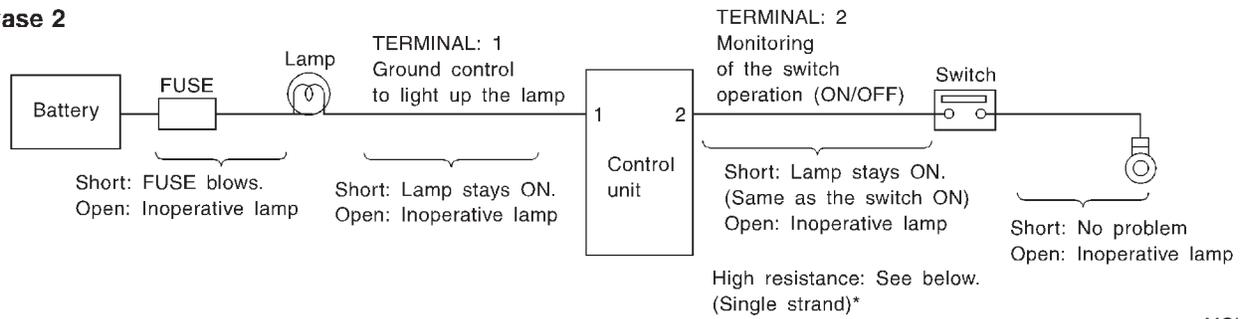
The voltage value is based on the body ground.

\* : If high resistance exists in the switch side circuit (caused by a single strand), terminal 1 does not detect battery voltage. Control unit does not detect the switch is ON even if the switch does not turn ON. Therefore, the control unit does not supply power to light up the lamp.

# HOW TO PERFORM EFFICIENT DIAGNOSIS FOR AN ELECTRICAL INCIDENT

Circuit Inspection (Cont'd)

## Case 2



MGI035A

## Input-output voltage chart

| Pin No. | Item   | Condition  | Voltage value [V] | In case of high resistance such as single strand [V]<br>* |
|---------|--------|------------|-------------------|---|
| 1       | Lamp   | Switch ON  | Approx. 0         | Battery voltage (Inoperative lamp)                        |
|         |        | Switch OFF | Battery voltage   | Battery voltage   |
| 2       | Switch | Switch ON  | Approx. 0         | Higher than 0 Approx. 4 (Example)                         |
|         |        | Switch OFF | Approx. 5         | Approx. 5   |

The voltage value is based on the body ground.

\* : If high resistance exists in the switch side circuit (caused by a single strand), terminal 2 does not detect approx. 0V. Control unit does not detect the switch is ON even if the switch does not turn ON. Therefore, the control unit does not control ground to light up the lamp.

## HOW TO FOLLOW TROUBLE DIAGNOSES

### NOTICE:

Trouble diagnoses indicate work procedures required to diagnose incidents effectively. Observe the following instructions before diagnosing.

- 1) **Before performing trouble diagnoses, read the “Preliminary Check”, the “Symptom Chart” or the “Work Flow”.**
- 2) **After repairs, re-check that the problem has been completely eliminated.**
- 3) **Refer to Component Parts and Harness Connector Location for the Systems described in each section for identification/location of components and harness connectors.**
- 4) **Refer to the Circuit Diagram for quick pinpoint check. If you need to check circuit continuity between harness connectors in more detail, such as when a sub-harness is used, refer to Wiring Diagram in each individual section and Harness Layout in EL section for identification of harness connectors.**
- 5) **When checking circuit continuity, ignition switch should be OFF.**
- 6) **Before checking voltage at connectors, check battery voltage.**
- 7) **After accomplishing the Diagnostic Procedures and Electrical Components Inspection, make sure that all harness connectors are reconnected as they were.**

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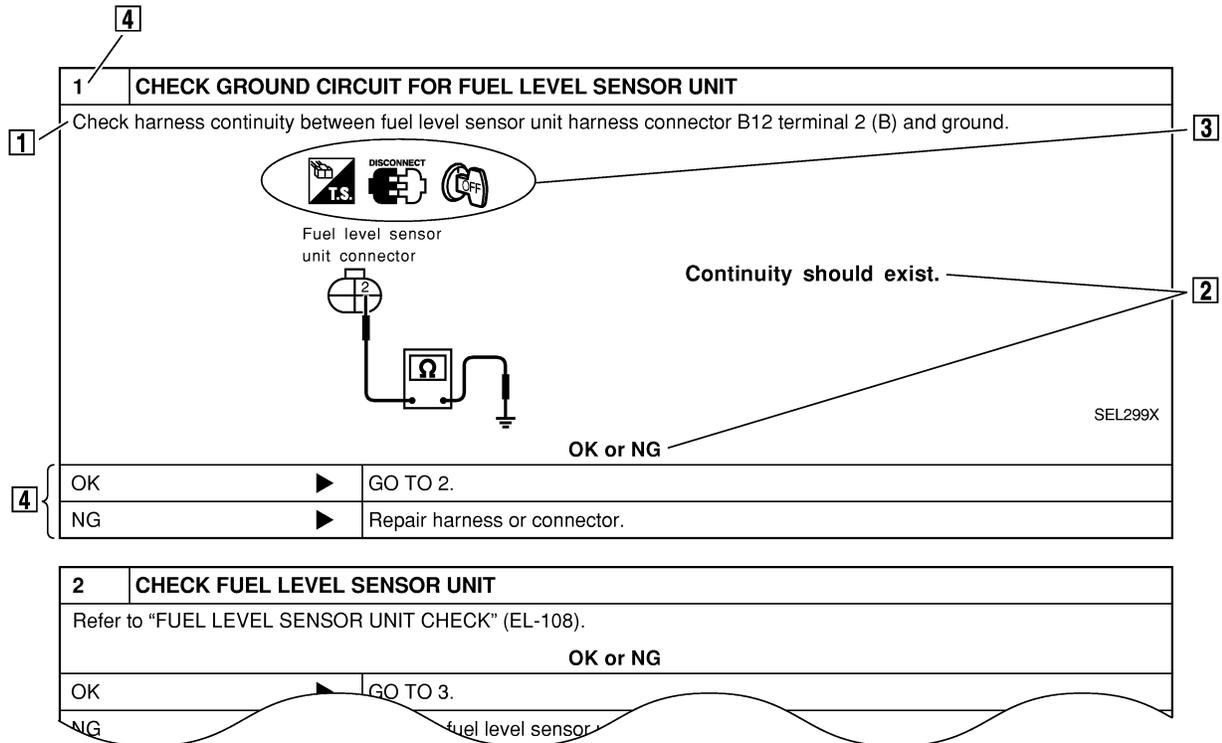
# HOW TO FOLLOW TROUBLE DIAGNOSES

How to Follow Test Groups in Trouble Diagnoses

## How to Follow Test Groups in Trouble Diagnoses

NHG10006S01

### Example

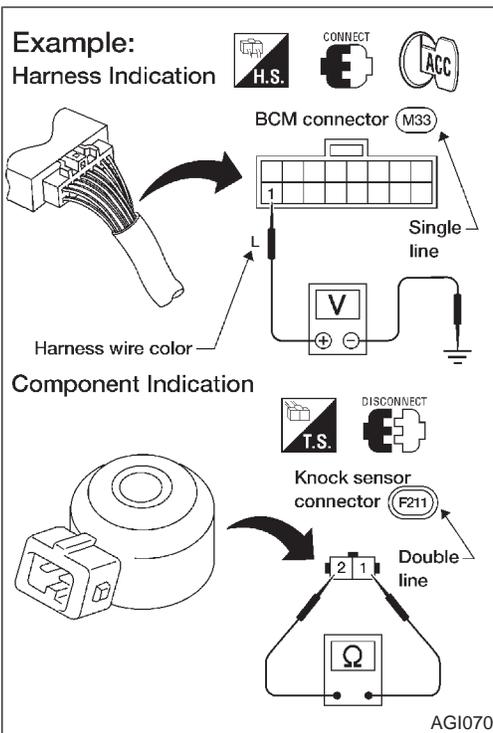


SGI138AA

- 1) **Work and diagnostic procedure**  
Start to diagnose an incident using procedures indicated in enclosed test groups.
- 2) **Questions and required results.**  
Questions and required results are indicated in bold type in test group.  
The meaning of are as follows:
  - a. **Battery voltage → 11 - 14V or approximately 12V**
  - b. **Voltage: Approximately 0V → Less than 1V**
- 3) **Symbol used in illustration**  
Symbols included in illustrations refer to measurements or procedures. Before diagnosing a problem, familiarize yourself with each symbol. Refer to "CONNECTOR SYMBOLS" (GI-16) and "Key to Symbols Signifying Measurements or Procedures" (GI-38).
- 4) **Action items**  
Next action for each test group is indicated based on result of each question. Test group number is shown in the left upper portion of each test group.

# HOW TO FOLLOW TROUBLE DIAGNOSES

Harness Wire Color and Connector Number Indication



## Harness Wire Color and Connector Number Indication

NHG10006S03

There are two types of harness wire color and connector number indication.

### TYPE 1: HARNESS WIRE COLOR AND CONNECTOR NUMBER ARE SHOWN IN ILLUSTRATION

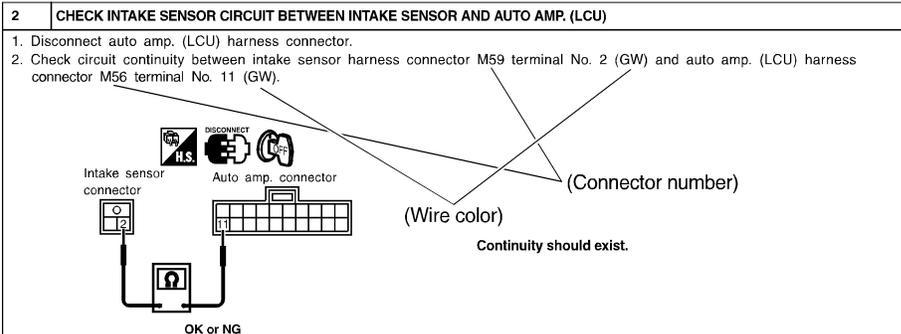
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- Letter designations next to test meter probe indicate harness wire color.
- Connector numbers in a single circle (e.g. M33) indicate harness connectors.
- Connector numbers in a double circle (e.g. F211) indicate component connectors.

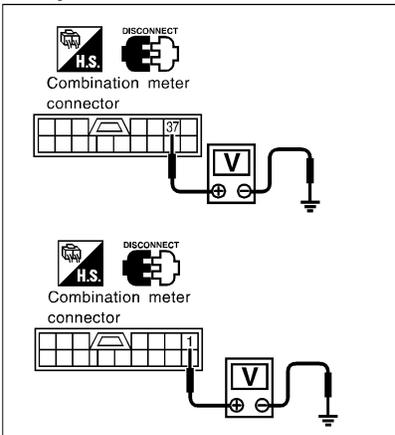
### TYPE 2: HARNESS WIRE COLOR AND CONNECTOR NUMBER ARE SHOWN IN TEXT

NHG10006S0302

#### Example 1:



#### Example 2:



### POWER SUPPLY AND GROUND CIRCUIT CHECK

#### Power Supply Circuit Check

NCEL00-16807  
 NCEL00-16807/1

| Terminals |                       | (-)    | Ignition switch position |                 |                 |
|-----------|-----------------------|--------|--------------------------|-----------------|-----------------|
| (+)       |                       |        | OFF                      | ACC             | ON              |
| Connector | Terminal (Wire color) |        |                          |                 |                 |
| M40       | 37 (Y)                | Ground | Battery voltage          | Battery voltage | Battery voltage |
| M41       | 1 (Y)                 | Ground | 0V                       | 0V              | Battery voltage |

- If NG, check the following.
- 7.5A fuse (No. 5, located in fuse block (J/B))
  - 10A fuse (No. 11, located in fuse block (J/B))
  - Harness for open or short between fuse and combination meter

Connector number Wire color

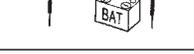
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# HOW TO FOLLOW TROUBLE DIAGNOSES

Key to Symbols Signifying Measurements or Procedures

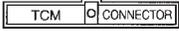
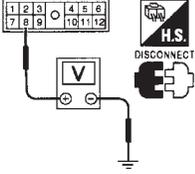
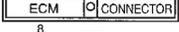
## Key to Symbols Signifying Measurements or Procedures

NHGI0006S02

| Symbol  | Symbol explanation                                      | Symbol   | Symbol explanation  |
|---|---|--|---|
|    | Check after disconnecting the connector to be measured. |     | Procedure with Generic Scan Tool (GST, OBD-II scan tool)              |
|    | Check after connecting the connector to be measured.    |     | Procedure without CONSULT-II or GST                                   |
|    | Insert key into ignition switch.                        |     | A/C switch is "OFF".  |
|    | Remove key from ignition switch.                        |     | A/C switch is "ON".   |
|    | Turn ignition switch to "OFF" position.                 |     | REC switch is "ON".   |
|    | Turn ignition switch to "ON" position.                  |     | REC switch is "OFF".  |
|    | Turn ignition switch to "START" position.               |     | Fan switch is "ON". (At any position except for "OFF" position)       |
|    | Turn ignition switch from "OFF" to "ACC" position.      |     | Fan switch is "OFF".  |
|   | Turn ignition switch from "ACC" to "OFF" position.      |    | Apply positive voltage from battery with fuse directly to components. |
|  | Turn ignition switch from "OFF" to "ON" position.       |  | Drive vehicle.  |
|  | Turn ignition switch from "ON" to "OFF" position.       |   | Disconnect battery negative cable.                                    |
|  | Do not start engine, or check with engine stopped.      |   | Depress brake pedal.  |
|  | Start engine, or check with engine running.             |   | Release brake pedal.  |
|  | Apply parking brake.                                    |   | Depress accelerator pedal.  |
|  | Release parking brake.                                  |   | Release accelerator pedal.  |

# HOW TO FOLLOW TROUBLE DIAGNOSES

Key to Symbols Signifying Measurements or Procedures (Cont'd)

| Symbol  | Symbol explanation                                      | Symbol   | Symbol explanation   |
|---|---|--|--|
|  | Check after engine is warmed up sufficiently.           |  | <p>Pin terminal check for SMJ type ECM and TCM connectors.<br/> <b>For details regarding the terminal arrangement, refer to the electrical reference pages at the end of the manual.</b></p>  |
|  | Voltage should be measured with a voltmeter.            |  |  |
|  | Circuit resistance should be measured with an ohmmeter. |  |  |
|  |   | Current should be measured with an ammeter.  |  |
|  | Procedure with CONSULT-II                               |  |  |
|  | Procedure without CONSULT-II                            |  |  |

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## CONSULT-II CHECKING SYSTEM

Function and System Application

## Function and System Application

NHGI0007S01

| Diagnostic test mode          | Function   | ENGINE | A/T | ABS (Including TCS) | ABS (Including VDC) | AIR BAG | SMART EN-TRANCE | IVIS (NATS)*1 |
|-------------------------------|--|--------|-----|---------------------|---------------------|---------|-----------------|---------------|
| Work support                  | This mode enables a technician to adjust some devices faster and more accurate by following the indications on CONSULT-II.               | x      | x   | —                   | x                   | —       | x               | —             |
| Self-diagnostic results       | Self-diagnostic results can be read and erased quickly.  | x      | x   | x                   | x                   | x       | —               | x             |
| Trouble diagnostic record     | Current self-diagnostic results and all trouble diagnostic records previously stored can be read.  | —      | —   | —                   | —                   | x       | —               | —             |
| ECU discriminated No.         | Classification number of a replacement ECU can be read to prevent an incorrect ECU from being installed.                                 | —      | —   | —                   | —                   | x       | —               | —             |
| Data monitor                  | Input/Output data in the ECU (ECM) can be read.  | x      | x   | x                   | x                   | —       | x               | —             |
| Data monitor (Spec.)          | The specified values will be displayed when an OK/NG judgement is difficult for the DATA MONITOR items by Barchart and Line Graph.       | x      | —   | —                   | —                   | —       | —               | —             |
| CAN diagnosis support monitor | Indicates the communication condition of CAN communication line.   | x      | x   | x                   | x                   | —       | —               | —             |
| DTC work support              | This mode enables a technician to set operating conditions to confirm self-diagnosis status/results.                                     | —      | x   | —                   | —                   | —       | —               | —             |
| Active test                   | Diagnostic Test Mode in which CONSULT-II drives some actuators apart from the ECMs and also shifts some parameters in a specified range. | x      | —   | x                   | x                   | —       | x               | —             |
| ECU (ECM) part number         | ECU (ECM) part number can be read.   | x      | x   | x                   | x                   | —       | —               | —             |
| Control unit initialization   | All registered ignition key IDs in NATS components can be initialized and new IDs can be registered.                                     | —      | —   | —                   | —                   | —       | —               | x             |
| SRT & DTC confirmation        | The results of SRT (System Readiness Test) and the self-diagnosis status/results can be confirmed.                                       | x      | —   | —                   | —                   | —       | —               | —             |

# CONSULT-II CHECKING SYSTEM

Function and System Application (Cont'd)

| Diagnostic test mode | Function  | ENGINE | A/T | ABS (Including TCS) | ABS (Including VDC) | AIR BAG | SMART EN-TRANCE | IVIS (NATS)*1 |
|----------------------|---|--------|-----|---------------------|---------------------|---------|-----------------|---------------|
| Function test        | Conducted by CONSULT-II instead of a technician to determine whether each system is "OK" or "NG" (No Good). | x      | x   | x                   | x                   | x       | —               | —             |

x: Applicable

\*1: IVIS (NATS) [Infiniti Vehicle Immobilizer System (Nissan Anti-Theft System)]

## Nickel Metal Hydride Battery Replacement

NHG10007S04

CONSULT-II contains a nickel metal hydride battery. When replacing the battery obey the following:

### WARNING:

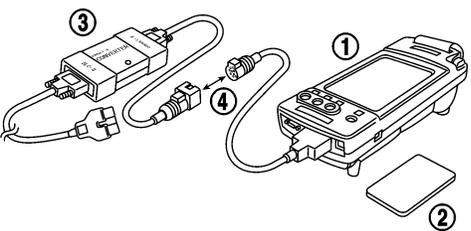
Replace the nickel metal hydride battery with Genuine CONSULT-II battery only. Use of another battery may present a risk of fire or explosion. The battery may present a fire or chemical burn hazard if mistreated. Do not recharge, disassemble or dispose of in fire.

Keep the battery out of reach of children and discard used battery conforming to the local regulations.

## Checking Equipment

NHG10007S02

When ordering the below equipment, contact your NISSAN/INFINITI distributor.

| Tool name  | Description  |
|--|--|
| <b>NISSAN CONSULT-II</b><br>① CONSULT-II unit (Tester internal software: Resident version 3.3.0) and accessories<br>② Program card AED03E and AEN02C<br>③ CONSULT-II CONVERTER<br>④ "CONSULT-II Pigtail" Cable |  <p>SAIA0363E</p> |

### NOTE:

- The CONSULT-II must be used in conjunction with a program card. CONSULT-II does not require loading (Initialization) procedure.
- Be sure the CONSULT-II is turned off before installing or removing a program card.
- Previous CONSULT-II "Y" DLC-I and DLC-II cables should NOT be used anymore because their DDL connector pins can be damaged during cables swapping.

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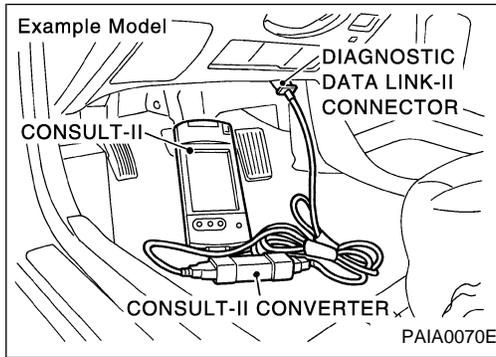
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# CONSULT-II CHECKING SYSTEM

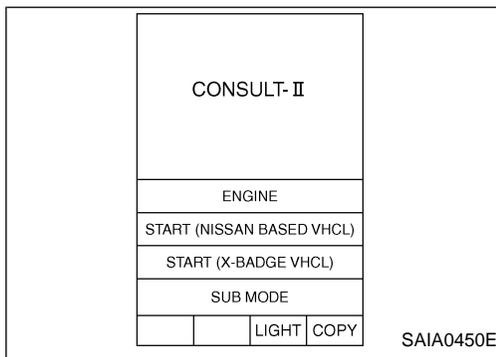
CONSULT-II Start Procedure

## CONSULT-II Start Procedure

NHGI0007S05



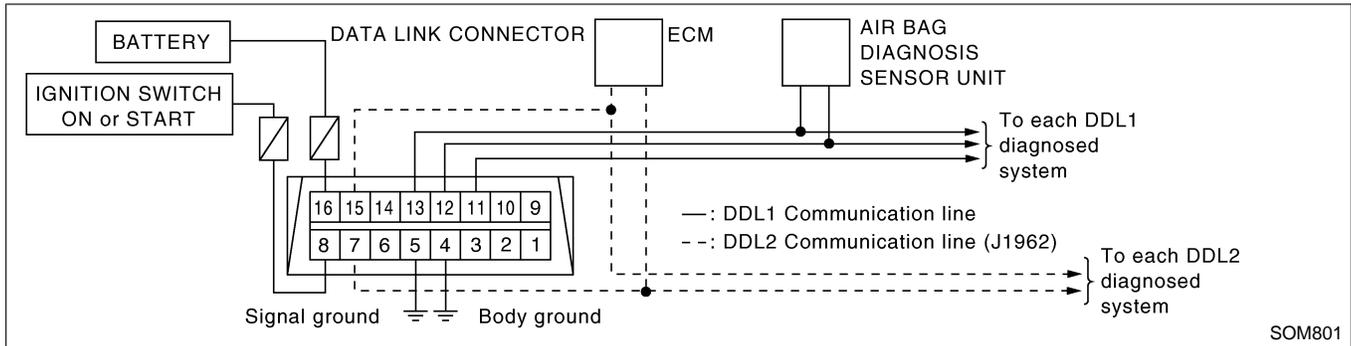
1. Turn off the ignition switch.
2. Connect CONSULT-II and CONSULT-II CONVERTER to the data link connector.



3. Turn on the ignition switch.
4. Touch "START (NISSAN BASED VHCL)" or "System shortcut" (eg: Engine) on the screen.

## CONSULT-II Data Link Connector (DLC) Circuit

NHGI0007S03



## INSPECTION PROCEDURE

NHGI0007S0301

If the CONSULT-II cannot diagnose the system properly, check the following items.

| Symptom   | Check item  |
|---|---|
| CONSULT-II cannot access any system.  | <ul style="list-style-type: none"> <li>● CONSULT-II DLC power supply circuit (Terminal 8) and ground circuit (Terminal 4) (For detailed circuit, refer to EC-729, "MIL &amp; DATA LINK CONNECTORS".)</li> <li>● CONSULT-II DLC cable and CONSULT-II CONVERTER</li> </ul>  |
| CONSULT-II cannot access individual system. (Other systems can be accessed.)<br>Refer to "Function and System Application" for the systems supported by CONSULT-II. | <ul style="list-style-type: none"> <li>● CONSULT-II program card (Check the appropriate CONSULT-II program card for the system. Refer to GI-41.)</li> <li>● Power supply and ground circuit for the control unite of the system (For detailed circuit, refer to wiring diagram for each system.)</li> <li>● Open or short circuit between the system and CONSULT-II DLC (For detailed circuit, refer to wiring diagram for each system.)</li> </ul> |

# CONSULT-II CHECKING SYSTEM

CONSULT-II Data Link Connector (DLC) Circuit (Cont'd)

**NOTE:**

The DDL1 and DDL2 circuits from DLC pins 12, 13, 14, and 15 may be connected to more than one system. A short in a DDL circuit connected to a control unit in one system may affect CONSULT-II access to other systems.

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# IDENTIFICATION INFORMATION

Model Variation

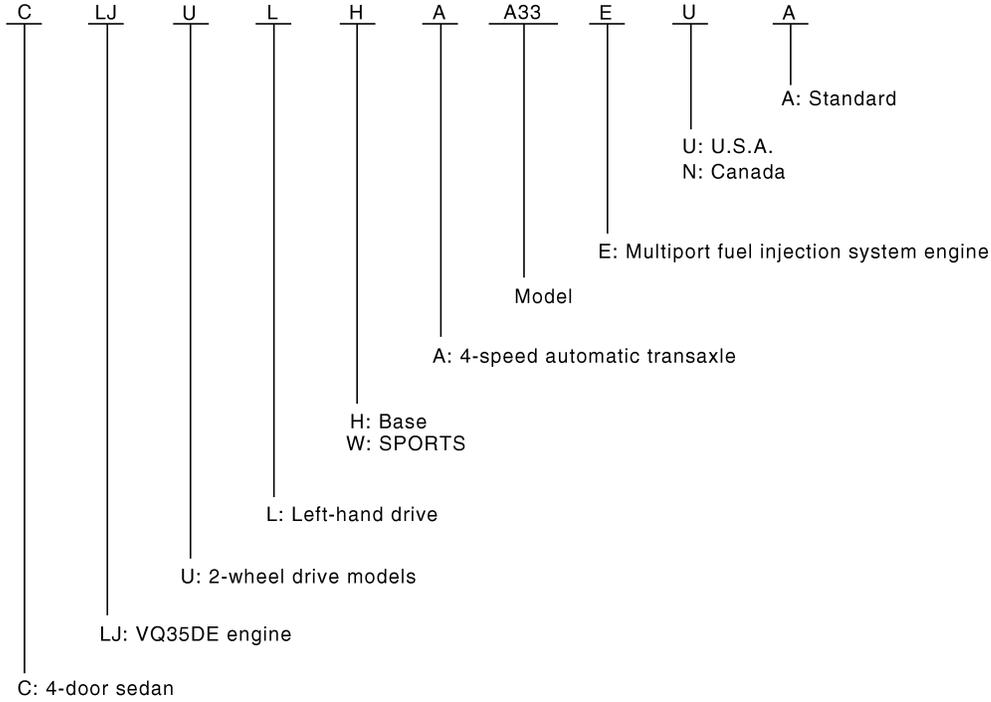
## Model Variation

NHGI0008S01

| Body  | Engine | Grade  | Transaxle |         | Destination |             |
|-------|--------|--------|-----------|---------|-------------|-------------|
|       |        |        |           |         | U.S.A.      | Canada      |
| Sedan | VQ35DE | BASE   | 4 A/T     | RE4F04B | CLJULHA-EUA | CLJULHA-ENA |
|       |        | SPORTS | 4 A/T     | RE4F04B | CLJULWA-EUA | CLJULWA-ENA |

## PREFIX AND SUFFIX DESIGNATIONS

NHGI0008S0101



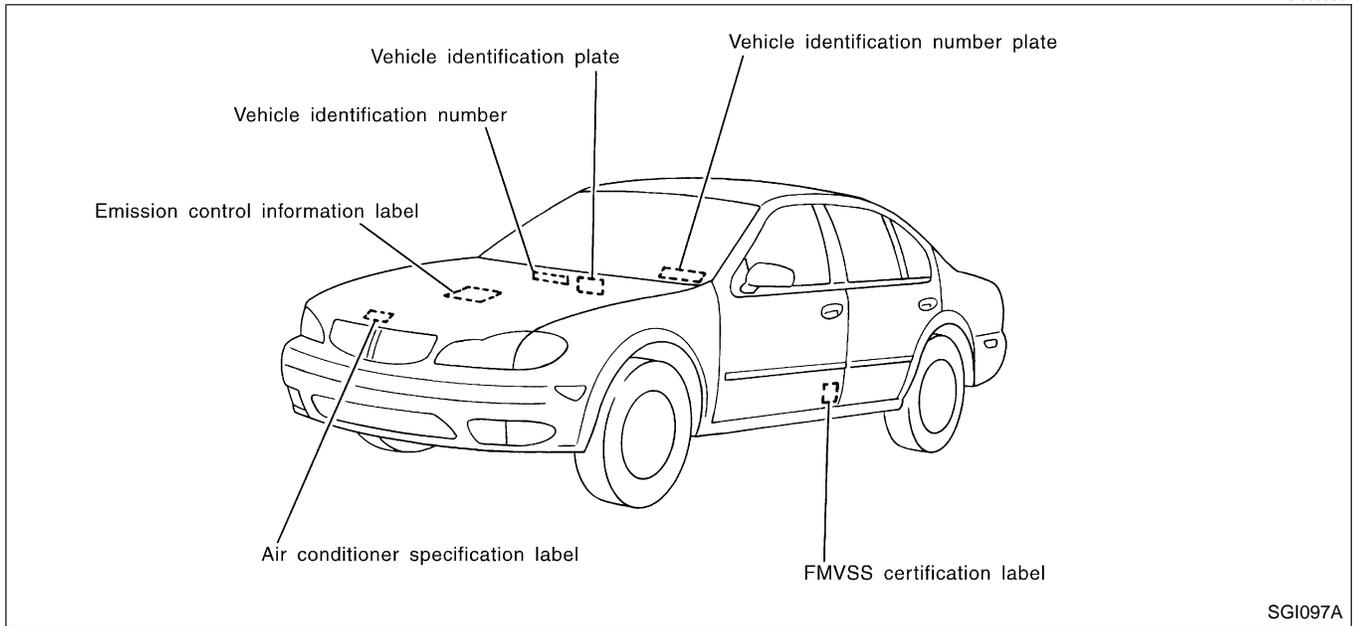
SGI098AC

# IDENTIFICATION INFORMATION

Identification Number

## Identification Number

NHG10008S02



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## VEHICLE IDENTIFICATION NUMBER ARRANGEMENT

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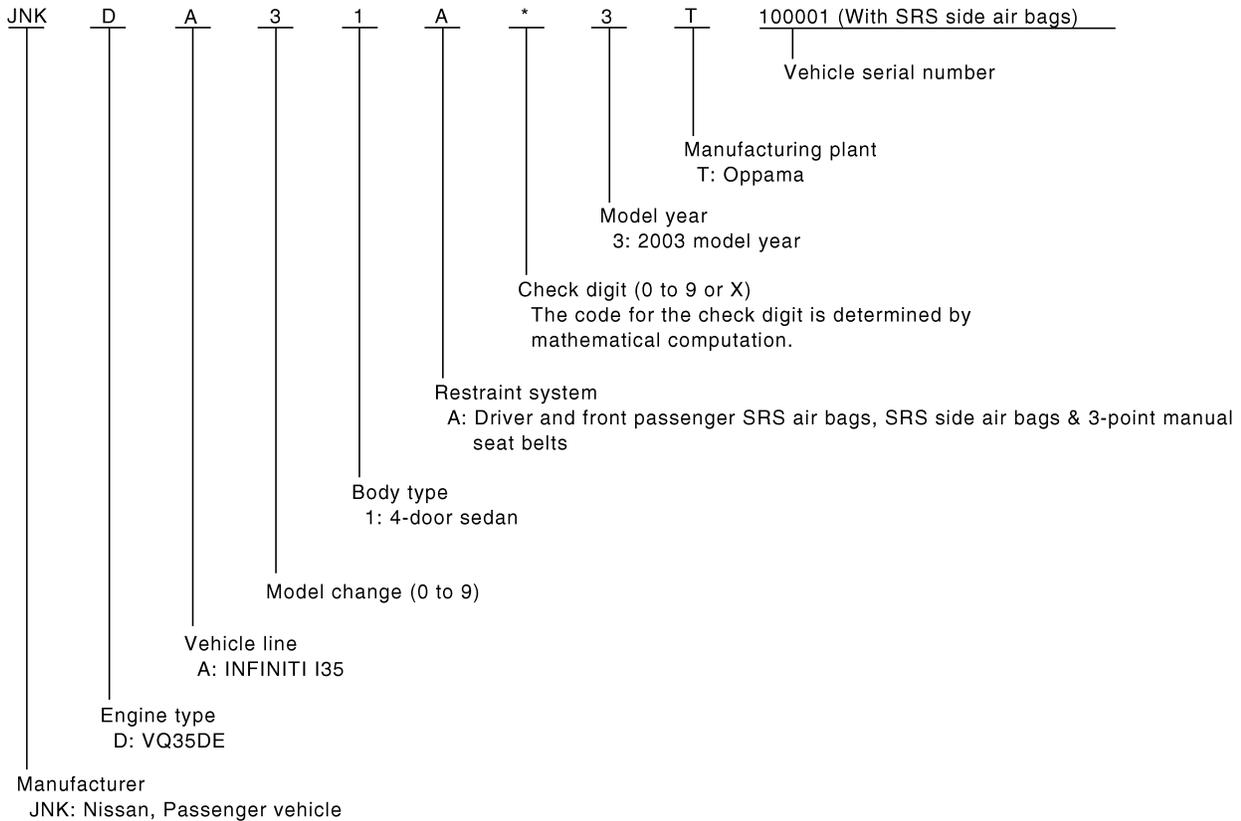
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SGI099AF

# IDENTIFICATION INFORMATION

Identification Number (Cont'd)

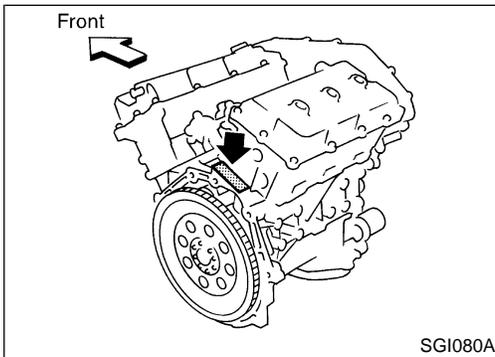
## IDENTIFICATION PLATE

NHG10008S0202

|  |              |                 |     |
|--|--------------|-----------------|-----|
| <b>NISSAN MOTOR CO., LTD. JAPAN</b>      |              |                 |     |
| 型式                                       | TYPE<br>TIPO | △ 1             |     |
| CHASSIS NO.<br>NO. DE CHASIS             |              | △ 2             |     |
| MODEL<br>MODELO                          |              | △ 3             |     |
| ○ カラー-COLOR TRIM<br>トリム COLOR GUARNICION |              | △ 4             | △ 5 |
| エン ENGINE<br>ジン MOTOR                    |              | △ 6             | △ 7 |
| ミッション TRANS., AXLE<br>アクスル TRANS., EJE   |              | △ 8             | △ 9 |
|  | 工場           | PLANT<br>PLANTA |     |
| 日産自動車株式会社                                |              | MADE IN JAPAN   |     |

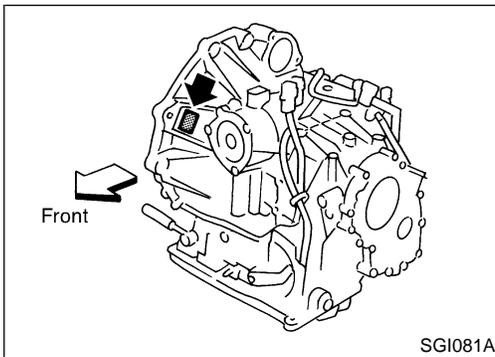
- 1 Type
- 2 Vehicle identification number (Chassis number)
- 3 Model
- 4 Body color code
- 5 Trim color code
- 6 Engine model
- 7 Engine displacement
- 8 Transmission model
- 9 Axle model

MG1039A



### ENGINE SERIAL NUMBER

NHG10008S0203



### AUTOMATIC TRANSAXLE NUMBER

NHG10008S0204

# IDENTIFICATION INFORMATION

Dimensions

## Dimensions

=NHGI0008S03  
Unit: mm (in)

| Item                                |               | Sedan   |
|-------------------------------------|---------------|---|
| Overall length                      |               | 4,921 (193.7)   |
| Overall width                       |               | 1,782 (70.16)   |
| Overall height                      |               | 1,449 (57.0)*1<br>1,440 (56.69)*2                                     |
| Front tread                         |               | 1,530 (60.2)*1<br>1,520 (59.8)*2                                      |
| Rear tread                          |               | 1,510 (59.4)*1<br>1,500 (59.1)*2                                      |
| Wheelbase                           |               | 2,750 (108.3)   |
| Gross vehicle weight rating kg (lb) |               | See the "FMVSS certification label" on the driver's side lock pillar. |
| Gross axle weight rating            | Front kg (lb) |   |
|                                     | Rear kg (lb)  |   |

\*1: For models with P215/55R17 93H tire size

\*2: For models with P225/50R17 93V tire size

## Wheels and Tires

NHGI0008S04

| Item       |              | Size                                | Offset    |
|------------|--------------|-------------------------------------|-----------|
| Road wheel | Aluminum     | 17 x 7JJ                            | 40 (1.57) |
|            |              | 17 x 7JJ                            | 45 (1.77) |
| Tire size  | Conventional | P215/55R17 93H<br>P225/50R17 93V    |           |
|            | Spare        | Conventional<br>T135/90D16 (T type) |           |

# LIFTING POINTS AND TOW TRUCK TOWING

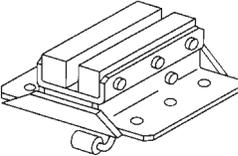
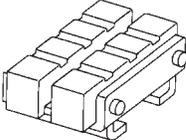
Preparation

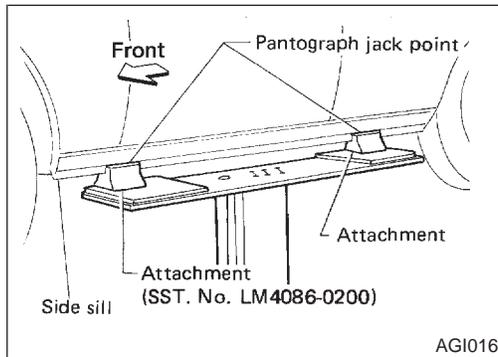
## Preparation SPECIAL SERVICE TOOLS

NHGI0009S01

NHGI0009S0101

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

| Tool number<br>(Kent-Moore number)<br>Tool name | Description   |
|---|---|
| LM4086-0200<br>( — )<br>Board on attachment     |  <p>NT001</p> |
| LM4519-0000<br>( — )<br>Safety stand attachment |  <p>NT002</p> |



AGI016

### Board-on Lift

NHGI0009S02

**CAUTION:**

Make sure vehicle is empty when lifting.

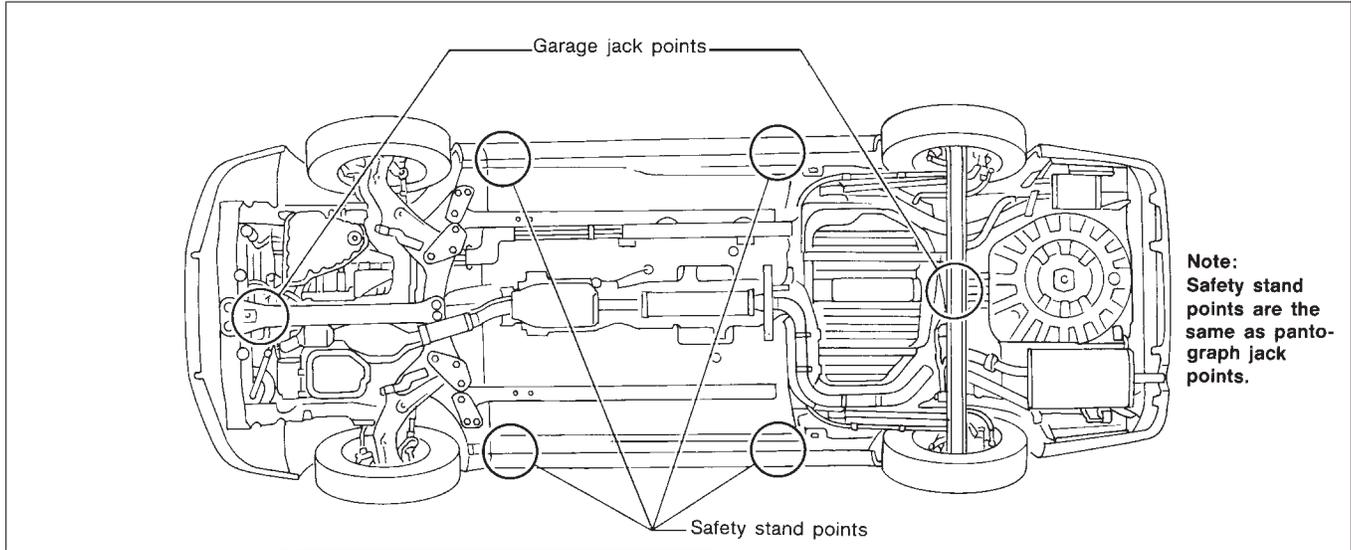
- The board-on lift attachment (LM4086-0200) set at front end of vehicle should be set on the front of the sill under the front door opening.
- Position attachments at front and rear ends of board-on lift.

## Garage Jack and Safety Stand

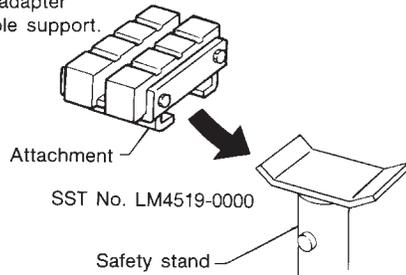
=NHGI0009S03

### WARNING:

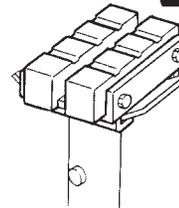
- Never get under the vehicle while it is supported only by the jack. Always use safety stands when you have to get under the vehicle.
- Place wheel chocks at both front and back of the wheels on the ground.



Use safety stand adapter as shown for stable support.



Fit the lower side sill into groove.



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# LIFTING POINTS AND TOW TRUCK TOWING

2-pole Lift

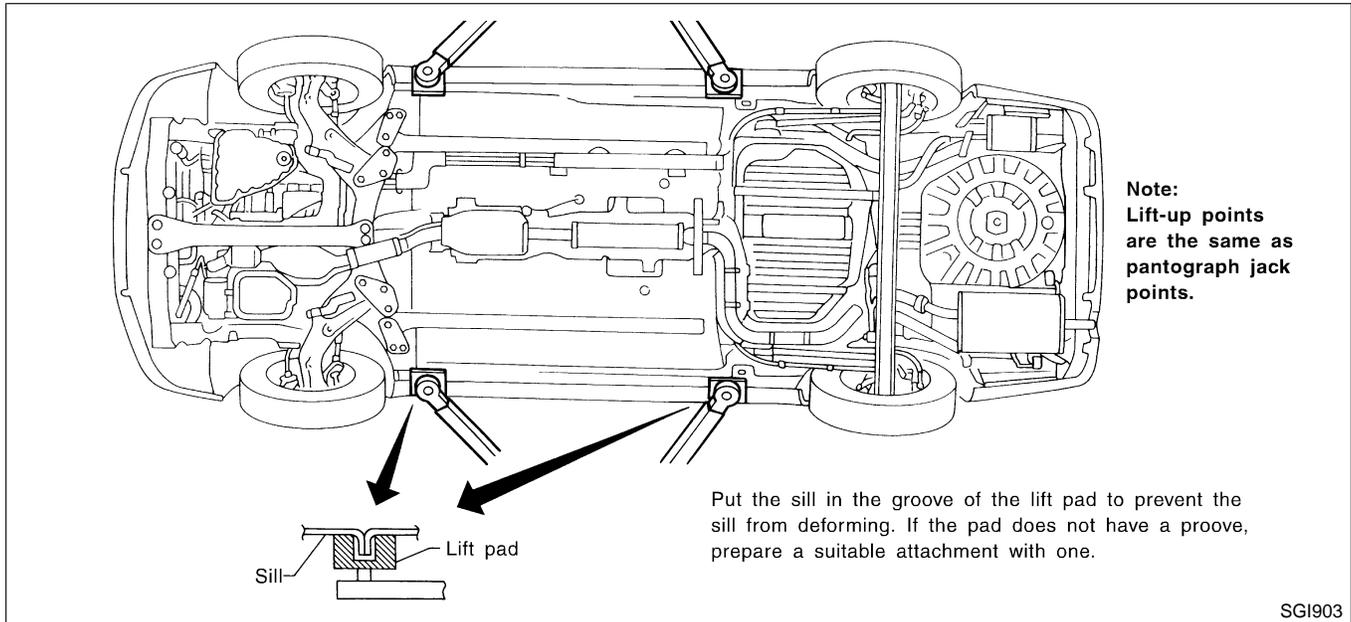
## 2-pole Lift

=NHGI0009S04

### **WARNING:**

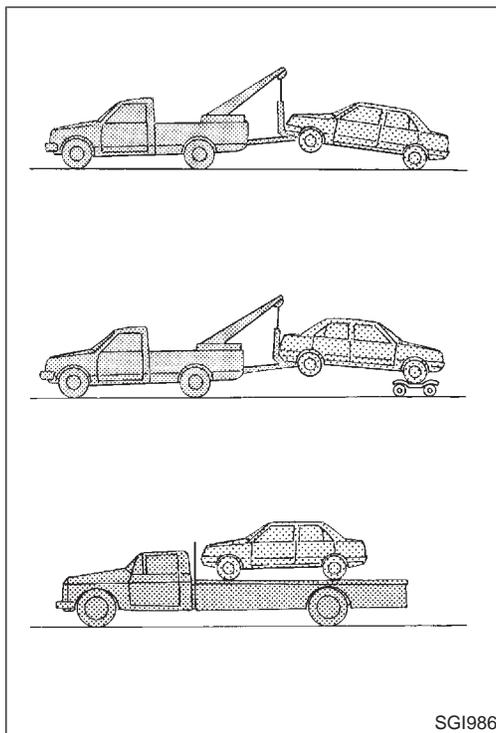
When lifting the vehicle, open the lift arms as wide as possible and ensure that the front and rear of the vehicle are well balanced.

When setting the lift arm, do not allow the arm to contact the brake tubes, brake cable, fuel lines and sill spoiler.



SGI903

NHG10009S05



## Tow Truck Towing

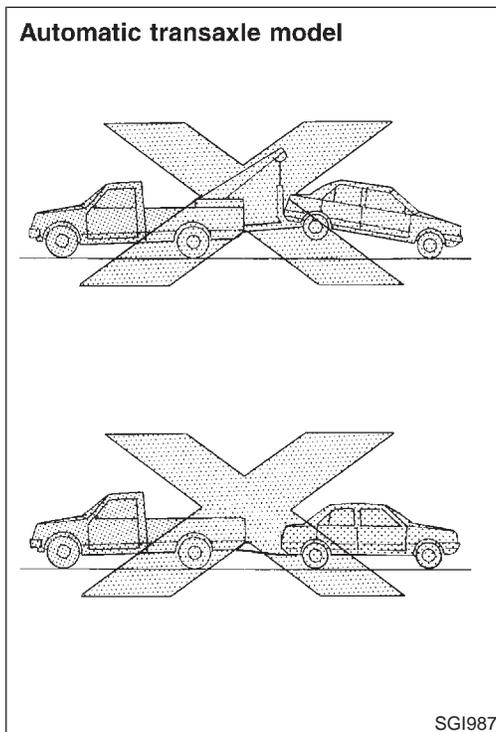
### CAUTION:

- All applicable state or Provincial (in Canada) laws and local laws regarding the towing operation must be obeyed.
- It is necessary to use proper towing equipment to avoid possible damage to the vehicle during towing operation. Towing is in accordance with Towing Procedure Manual at dealer.
- Always attach safety chains before towing.
- When towing, make sure that the transmission, steering system and power train are in good order. If any unit is damaged, dollies must be used.

INFINITI recommends that the vehicle be towed with the driving (front) wheels off the ground as illustrated.

### CAUTION:

- Always release the parking brake when towing the vehicle with the front wheels raised with the rear wheels on the ground.
- When towing manual transaxle models with the front wheels on the ground (If a towing dollies does not be used), turn the ignition key to the OFF position, and secure the steering wheel in the straight-ahead position with a rope or similar device. Never place the ignition key in the LOCK position. This will result in damage to the steering lock mechanism. Move the shift lever to the N (Neutral) position.
- Never tow an automatic transaxle model with the rear wheels raised and the front wheels on the ground. This may cause serious and expensive damage to the transaxle. If it is necessary to tow the vehicle with the rear wheels raised, always use towing dollies under the front wheels.
- Never tow an automatic transaxle model from the rear (that is backward) with four wheels on the ground. This may cause serious and expensive damage to the transaxle.



## VEHICLE RECOVERY (FREEING A STUCK VEHICLE)

NHG10009S0501

- Tow chains or cables must be attached only to the main structural members of the vehicle.
- Pulling devices should be routed so they do not touch any part of the suspension, steering, brake or cooling systems.
- Always pull the cable straight out from the front or rear of the vehicle. Never pull on the vehicle at an angle.
- Pulling devices such as ropes or canvas straps are not recommended for use in vehicle towing or recovery.

# TIGHTENING TORQUE OF STANDARD BOLTS

| Grade | Bolt size | Bolt diameter * mm | Pitch mm | Tightening torque (Without lubricant) |      |       |       |                     |      |       |       |
|-------|-----------|--------------------|----------|---------------------------------------|------|-------|-------|---------------------|------|-------|-------|
|       |           |                    |          | Hexagon head bolt                     |      |       |       | Hexagon flange bolt |      |       |       |
|       |           |                    |          | N·m                                   | kg·m | ft·lb | in·lb | N·m                 | kg·m | ft·lb | in·lb |
| 4T    | M6        | 6.0                | 1.0      | 5.5                                   | 0.56 | 4     | 49    | 7                   | 0.71 | 5     | 62    |
|       | M8        | 8.0                | 1.25     | 13.5                                  | 1.4  | 10    | —     | 17                  | 1.7  | 13    | —     |
|       |           |                    | 1.0      | 13.5                                  | 1.4  | 10    | —     | 17                  | 1.7  | 13    | —     |
|       | M10       | 10.0               | 1.5      | 28                                    | 2.9  | 21    | —     | 35                  | 3.6  | 26    | —     |
|       |           |                    | 1.25     | 28                                    | 2.9  | 21    | —     | 35                  | 3.6  | 26    | —     |
|       | M12       | 12.0               | 1.75     | 45                                    | 4.6  | 33    | —     | 55                  | 5.6  | 41    | —     |
|       |           |                    | 1.25     | 45                                    | 4.6  | 33    | —     | 65                  | 6.6  | 48    | —     |
| M14   | 14.0      | 1.5                | 80       | 8.2                                   | 59   | —     | 100   | 10                  | 74   | —     |       |
| 7T    | M6        | 6.0                | 1.0      | 9                                     | 0.92 | 7     | 80    | 11                  | 1.1  | 8     | 97    |
|       | M8        | 8.0                | 1.25     | 22                                    | 2.2  | 16    | —     | 28                  | 2.9  | 21    | —     |
|       |           |                    | 1.0      | 22                                    | 2.2  | 16    | —     | 28                  | 2.9  | 21    | —     |
|       | M10       | 10.0               | 1.5      | 45                                    | 4.6  | 33    | —     | 55                  | 5.6  | 41    | —     |
|       |           |                    | 1.25     | 45                                    | 4.6  | 33    | —     | 55                  | 5.6  | 41    | —     |
|       | M12       | 12.0               | 1.75     | 80                                    | 8.2  | 59    | —     | 100                 | 10   | 74    | —     |
|       |           |                    | 1.25     | 80                                    | 8.2  | 59    | —     | 100                 | 10   | 74    | —     |
| M14   | 14.0      | 1.5                | 130      | 13                                    | 96   | —     | 170   | 17                  | 125  | —     |       |
| 9T    | M6        | 6.0                | 1.0      | 11                                    | 1.1  | 8     | —     | 13.5                | 1.4  | 10    | —     |
|       | M8        | 8.0                | 1.25     | 28                                    | 2.9  | 21    | —     | 35                  | 3.6  | 26    | —     |
|       |           |                    | 1.0      | 28                                    | 2.9  | 21    | —     | 35                  | 3.6  | 26    | —     |
|       | M10       | 10.0               | 1.5      | 55                                    | 5.6  | 41    | —     | 80                  | 8.2  | 59    | —     |
|       |           |                    | 1.25     | 55                                    | 5.6  | 41    | —     | 80                  | 8.2  | 59    | —     |
|       | M12       | 12.0               | 1.75     | 100                                   | 10   | 74    | —     | 130                 | 13   | 96    | —     |
|       |           |                    | 1.25     | 100                                   | 10   | 74    | —     | 130                 | 13   | 96    | —     |
| M14   | 14.0      | 1.5                | 170      | 17                                    | 125  | —     | 210   | 21                  | 155  | —     |       |

\*: Nominal diameter

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

| Grade | Mark |
|-------|------|
| 4T    | 4    |
| 7T    | 7    |
| 9T    | 9    |

|                      |   |
|----------------------|---|
| M                    | 6   |
|                      |   |
| Metric screw threads | Nominal diameter of bolt threads (Unit: mm) |

# RECOMMENDED CHEMICAL PRODUCTS AND SEALANTS

Refer to the following chart for help in selecting the appropriate chemical product or sealant.

## Recommended Chemical Products and Sealants

|   | Product Description  | Purpose  | Nissan North America Part No. (USA) | Nissan Canada Part No. (Canada) | Aftermarket Cross Reference Part Nos.   | GI             |
|---|--|--|-------------------------------------|---------------------------------|---|----------------|
| 1 | Rear View Mirror Adhesive                                    | Used to permanently remount rear view mirrors to windows.  | 999MP-AM000P                        | 99998-50505                     | Permatex 81844  | MA             |
| 2 | Anaerobic Liquid Gasket                                      | For metal-to-metal flange sealing. Can fill a 0.38 mm (0.015 inch) gap and provide instant sealing for most powertrain applications.                   | 999MP-AM001P                        | 99998-50503                     | Permatex 51813 and 51817  | EM<br>LC       |
| 3 | High Performance Thread Sealant                              | Provides instant sealing on any threaded straight or parallel threaded fitting. (Thread sealant only, no locking ability.)<br>● Do not use on plastic. | 999MP-AM002P                        | 999MP-AM002P                    | Permatex 56521  | EC<br>FE<br>AT |
| 4 | Silicone RTV   | Gasket Maker   | 999MP-AM003P (Ultra Grey)           | 99998-50506 (Ultra Grey)        | Permatex Ultra Grey 82194;<br>Three Bond 1207, 1215, 1216, 1217F and 1217G;<br>Nissan RTV Part No. 999MP-A7007          | AX<br>SU       |
|   |  | Gasket Maker for Maxima/Quest 5-speed automatic transmission (RE5F22A)   | —                                   | —                               | Three Bond 1281B or exact equivalent in its quality   | BR<br>ST       |
| 5 | High Temperature, High Strength Thread Locking Sealant (Red) | Threadlocker   | 999MP-AM004P                        | 999MP-AM004P                    | Permatex 27200;<br>Three Bond 1360, 1360N, 1305 N&P, 1307N, 1335, 1335B, 1363B, 1377C, 1386B, D&E and 1388              | RS<br>BT       |
| 6 | Medium Strength Thread Locking Sealant (Blue)                | Threadlocker (service tool removable)  | 999MP-AM005P                        | 999MP-AM005P                    | Permatex 24200, 24206, 24240, 24283 and 09178;<br>Three Bond 1322, 1322N, 1324 D&N, 1333D, 1361C, 1364D, 1370C and 1374 | HA<br>SC       |

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# SAE J1930 TERMINOLOGY LIST

SAE J1930 Terminology List

## SAE J1930 Terminology List

NHGI0011S01

All emission related terms used in this publication in accordance with SAE J1930 are listed. Accordingly, new terms, new acronyms/abbreviations and old terms are listed in the following chart.

\*\*\*: Not applicable

| NEW TERM  | NEW ACRONYM / ABBREVIATION | OLD TERM                  |
|---|----------------------------|---------------------------|
| Air cleaner   | ACL                        | Air cleaner               |
| Barometric pressure sensor                          | BARO sensor                | ***                       |
| Barometric pressure sensor-BCDD                     | BAROS-BCDD                 | BCDD                      |
| Camshaft position                                   | CMP                        | ***                       |
| Camshaft position sensor                            | CMPS                       | Crank angle sensor        |
| Canister  | ***                        | Canister                  |
| Carburetor  | CARB                       | Carburetor                |
| Charge air cooler                                   | CAC                        | Intercooler               |
| Closed loop   | CL                         | Closed loop               |
| Closed throttle position switch                     | CTP switch                 | Idle switch               |
| Clutch pedal position switch                        | CPP switch                 | Clutch switch             |
| Continuous fuel injection system                    | CFI system                 | ***                       |
| Continuous trap oxidizer system                     | CTOX system                | ***                       |
| Crankshaft position                                 | CKP                        | ***                       |
| Crankshaft position sensor                          | CKPS                       | ***                       |
| Data link connector                                 | DLC                        | ***                       |
| Diagnostic test mode                                | DTM                        | Diagnostic mode           |
| Diagnostic test mode selector                       | DTM selector               | Diagnostic mode selector  |
| Diagnostic test mode I                              | DTM I                      | Mode I                    |
| Diagnostic test mode II                             | DTM II                     | Mode II                   |
| Diagnostic trouble code                             | DTC                        | Malfunction code          |
| Direct fuel injection system                        | DFI system                 | ***                       |
| Distributor ignition system                         | DI system                  | Ignition timing control   |
| Early fuel evaporation-mixture heater               | EFE-mixture heater         | Mixture heater            |
| Early fuel evaporation system                       | EFE system                 | Mixture heater control    |
| Electrically erasable programmable read only memory | EEPROM                     | ***                       |
| Electronic ignition system                          | EI system                  | Ignition timing control   |
| Engine control                                      | EC                         | ***                       |
| Engine control module                               | ECM                        | ECCS control unit         |
| Engine coolant temperature                          | ECT                        | Engine temperature        |
| Engine coolant temperature sensor                   | ECTS                       | Engine temperature sensor |
| Engine modification                                 | EM                         | ***                       |
| Engine speed  | RPM                        | Engine speed              |

# SAE J1930 TERMINOLOGY LIST

SAE J1930 Terminology List (Cont'd)

| NEW TERM  | NEW ACRONYM / ABBREVIATION          | OLD TERM                            |     |
|---|-------------------------------------|-------------------------------------|-----|
| Erasable programmable read only memory                    | EPROM                               | ***                                 | GI  |
| Evaporative emission canister                             | EVAP canister                       | Canister                            |     |
| Evaporative emission system                               | EVAP system                         | Evaporative emission control system | MA  |
| Exhaust gas recirculation valve                           | EGR valve                           | EGR valve                           |     |
| Exhaust gas recirculation control-BPT valve               | EGRC-BPT valve                      | BPT valve                           | EM  |
| Exhaust gas recirculation control-solenoid valve          | EGRC-solenoid valve                 | EGR control solenoid valve          | LC  |
| Exhaust gas recirculation temperature sensor              | EGRT sensor                         | Exhaust gas temperature sensor      | EC  |
| EGR temperature sensor                                    |                                     |                                     |     |
| Flash electrically erasable programmable read only memory | FEEPROM                             | ***                                 | FE  |
| Flash erasable programmable read only memory              | FEPROM                              | ***                                 | AT  |
| Flexible fuel sensor                                      | FFS                                 | ***                                 | AX  |
| Flexible fuel system                                      | FF system                           | ***                                 |     |
| Fuel level sensor   | ***                                 | ***                                 | SU  |
| Fuel pressure regulator                                   | ***                                 | Pressure regulator                  |     |
| Fuel pressure regulator control solenoid valve            | ***                                 | PRVR control solenoid valve         | BR  |
| Fuel tank temperature sensor                              | FTT sensor                          | Tank fuel temperature sensor        | ST  |
| Fuel trim   | FT                                  | ***                                 |     |
| Heated oxygen sensor                                      | HO2S                                | Exhaust gas sensor                  | RS  |
| Idle air control system                                   | IAC system                          | Idle speed control                  |     |
| Idle air control valve-air regulator                      | IACV-air regulator                  | Air regulator                       | BT  |
| Idle air control valve-auxiliary air control valve        | IACV-AAC valve                      | Auxiliary air control (AAC) valve   | HA  |
| Idle air control valve-FICD solenoid valve                | IACV-FICD solenoid valve            | FICD solenoid valve                 |     |
| Idle air control valve-idle up control solenoid valve     | IACV-idle up control solenoid valve | Idle up control solenoid valve      | SC  |
| Idle speed control-FI pot                                 | ISC-FI pot                          | FI pot                              |     |
| Idle speed control system                                 | ISC system                          | ***                                 | EL  |
| Ignition control  | IC                                  | ***                                 |     |
| Ignition control module                                   | ICM                                 | ***                                 | IDX |
| Indirect fuel injection system                            | IFI system                          | ***                                 |     |
| Intake air  | IA                                  | Air                                 |     |
| Intake air temperature sensor                             | IAT sensor                          | Air temperature sensor              |     |
| Knock   | ***                                 | Detonation                          |     |
| Knock sensor  | KS                                  | Detonation sensor                   |     |

## SAE J1930 TERMINOLOGY LIST

SAE J1930 Terminology List (Cont'd)

| NEW TERM  | NEW ACRONYM /<br>ABBREVIATION | OLD TERM   |
|---|-------------------------------|--|
| Malfunction indicator lamp                            | MIL                           | Check engine light   |
| Manifold absolute pressure                            | MAP                           | ***  |
| Manifold absolute pressure sensor                     | MAPS                          | ***  |
| Manifold differential pressure                        | MDP                           | ***  |
| Manifold differential pressure sensor                 | MDPS                          | ***  |
| Manifold surface temperature                          | MST                           | ***  |
| Manifold surface temperature sensor                   | MSTS                          | ***  |
| Manifold vacuum zone                                  | MVZ                           | ***  |
| Manifold vacuum zone sensor                           | MVZS                          | ***  |
| Mass air flow sensor                                  | MAFS                          | Air flow meter   |
| Mixture control solenoid valve                        | MC solenoid valve             | Air-fuel ratio control solenoid valve                              |
| Multiport fuel injection system                       | MFI system                    | Fuel injection control   |
| Nonvolatile random access memory                      | NVRAM                         | ***  |
| On board diagnostic system                            | OBD system                    | Self-diagnosis   |
| Open loop   | OL                            | Open loop  |
| Oxidation catalyst                                    | OC                            | Catalyst   |
| Oxidation catalytic converter system                  | OC system                     | ***  |
| Oxygen sensor   | O2S                           | Exhaust gas sensor   |
| Park position switch                                  | ***                           | Park switch  |
| Park/neutral position switch                          | PNP switch                    | Park/neutral switch<br>Inhibitor switch<br>Neutral position switch |
| Periodic trap oxidizer system                         | PTOX system                   | ***  |
| Positive crankcase ventilation                        | PCV                           | Positive crankcase ventilation                                     |
| Positive crankcase ventilation valve                  | PCV valve                     | PCV valve  |
| Powertrain control module                             | PCM                           | ***  |
| Programmable read only memory                         | PROM                          | ***  |
| Pulsed secondary air injection control solenoid valve | PAIRC solenoid valve          | AIV control solenoid valve   |
| Pulsed secondary air injection system                 | PAIR system                   | Air induction valve (AIV) control                                  |
| Pulsed secondary air injection valve                  | PAIR valve                    | Air induction valve  |
| Random access memory                                  | RAM                           | ***  |
| Read only memory                                      | ROM                           | ***  |
| Scan tool   | ST                            | ***  |
| Secondary air injection pump                          | AIR pump                      | ***  |
| Secondary air injection system                        | AIR system                    | ***  |
| Sequential multiport fuel injection system            | SFI system                    | Sequential fuel injection  |
| Service reminder indicator                            | SRI                           | ***  |

# SAE J1930 TERMINOLOGY LIST

SAE J1930 Terminology List (Cont'd)

| NEW TERM   | NEW ACRONYM /<br>ABBREVIATION | OLD TERM                                    |
|--|-------------------------------|---|
| Simultaneous multiport fuel injection system     | ***                           | Simultaneous fuel injection                 |
| Smoke puff limiter system                        | SPL system                    | ***   |
| Supercharger                                     | SC                            | ***   |
| Supercharger bypass                              | SCB                           | ***   |
| System readiness test                            | SRT                           | ***   |
| Thermal vacuum valve                             | TVV                           | Thermal vacuum valve                        |
| Three way catalyst                               | TWC                           | Catalyst                                    |
| Three way catalytic converter system             | TWC system                    | ***   |
| Three way + oxidation catalyst                   | TWC + OC                      | Catalyst                                    |
| Three way + oxidation catalytic converter system | TWC + OC system               | ***   |
| Throttle body                                    | TB                            | Throttle chamber<br>SPI body                |
| Throttle body fuel injection system              | TBI system                    | Fuel injection control                      |
| Throttle position                                | TP                            | Throttle position                           |
| Throttle position sensor                         | TPS                           | Throttle sensor                             |
| Throttle position switch                         | TP switch                     | Throttle switch                             |
| Torque converter clutch solenoid valve           | TCC solenoid valve            | Lock-up cancel solenoid<br>Lock-up solenoid |
| Transmission control module                      | TCM                           | A/T control unit                            |
| Turbocharger                                     | TC                            | Turbocharger                                |
| Vehicle speed sensor                             | VSS                           | Vehicle speed sensor                        |
| Volume air flow sensor                           | VAFS                          | Air flow meter                              |
| Warm up oxidation catalyst                       | WU-OC                         | Catalyst                                    |
| Warm up oxidation catalytic converter system     | WU-OC system                  | ***   |
| Warm up three way catalyst                       | WU-TWC                        | Catalyst                                    |
| Warm up three way catalytic converter system     | WU-TWC system                 | ***   |
| Wide open throttle position switch               | WOTP switch                   | Full switch                                 |

GI

MA

EM

LC

EC

FE

AT

AX

SU

BR

ST

RS

BT

HA

SC

EL

IDX

## NOTES