

# GI

## SECTION

# GENERAL INFORMATION

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# PRECAUTIONS

## PRECAUTIONS

PFP:00001

### Description

BAS0002D

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

### Precautions for Supplemental Restraint System (SRS) “AIR BAG” and “SEAT BELT PRE-TENSIONER”

BAS0002E

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the SRS and SB section of this Service Manual.

#### WARNING:

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

### Precautions for NATS (NISSAN ANTI-THEFT SYSTEM)

BAS0002F

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

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

The security indicator is located on the instrument panel. The indicator blinks when the immobilizer system is functioning.

Therefore, NATS warns outsiders that the vehicle is equipped with the anti-theft system.

- When NATS detects trouble, 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 NATS (trouble diagnoses, system initialization and additional registration of other NATS ignition key IDs), CONSULT-II hardware and CONSULT-II NATS software is necessary. Regarding the procedures of NATS initialization and NATS ignition key ID registration, refer to CONSULT-II operation manual, NATS.

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

- When servicing NATS (trouble diagnoses, system initialization and additional registration of other NATS ignition key IDs), it may be necessary to re-register original key identification. Therefore, be sure to receive all keys from vehicle owner. A maximum of four or five key IDs can be registered into NATS.
- When failing to start the engine first time using the key of NATS, start as follows.
  1. Leave the ignition key in "ON" position for approximately 5 seconds.
  2. Turn ignition key to "OFF" or "LOCK" position and wait approximately 5 seconds.
  3. Repeat step 1 and 2 again.
  4. Restart the engine while keeping the key separate from any others on key-chain.

### Maintenance Information

BAS0004J

If any of following part is replaced, always replace with new\* one.

If it's not (or fail to do so), the electrical system may not be operated properly.

\*: New one means a virgin control unit that has never been energized on-board.

### RHD MODELS

- BCM (Models without Intelligent Key system)
- Intelligent Key unit (Models with Intelligent Key system)
- ECM
- IPDM E/R

# PRECAUTIONS

- Combination meter
- EPS control unit

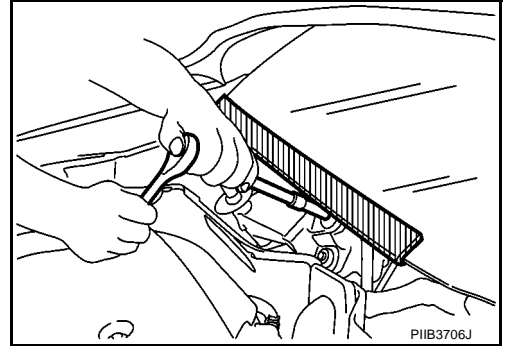
## LHD MODELS

- BCM (Models without Intelligent Key system)
- Intelligent Key unit (Models with Intelligent Key system)
- ECM

## Precautions for Procedures without Cowl Top Cover

BAS0002G

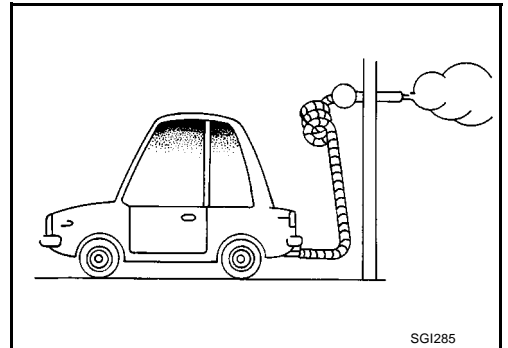
When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc.



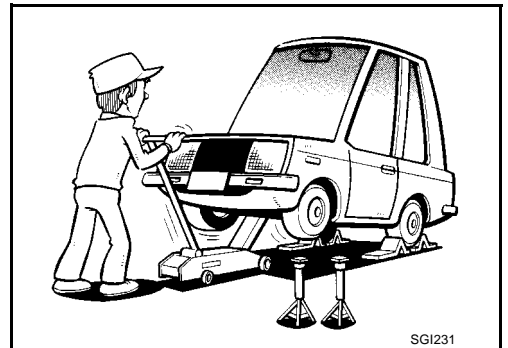
## General Precautions

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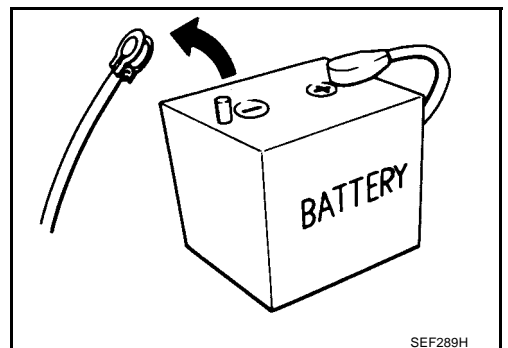
- Do not operate the engine for an extended period of time without proper exhaust ventilation. Keep the work area well ventilated and free of any inflammable materials. Special care should be taken when handling any inflammable or poisonous materials, such as gasoline, refrigerant gas, etc. When working 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.



- 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/transmission, 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.

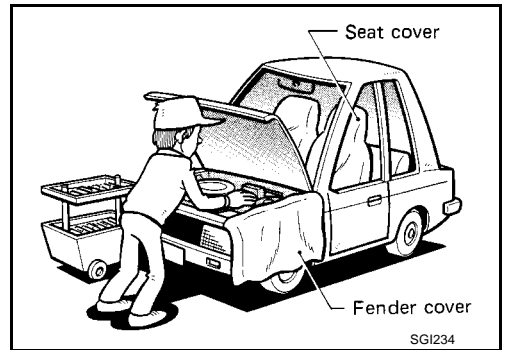


- Before starting repairs which do not require battery power: Turn off ignition switch. Disconnect the negative battery terminal.
- If the battery terminals are disconnected, recorded memory of radio and each control unit is erased.



# PRECAUTIONS

- To prevent serious burns:  
Avoid contact with hot metal parts.  
Do not remove the radiator cap when the engine is hot.
- 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.
- 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 ECM).  
Static electricity may damage internal electronic components.
- 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.
- Before servicing the vehicle:  
Protect fenders, upholstery and carpeting with appropriate covers.  
Take caution that keys, buckles or buttons do not scratch paint.



## 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 Three Way Catalyst

BAS0002I

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

- 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 for Fuel GASOLINE ENGINE (REGULAR GASOLINE)

BAS0002J

- Three way catalyst equipped models ... use unleaded gasoline with an octane rating of at least 91 RON (research octane number).

# PRECAUTIONS

## CAUTION:

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

- Except for the above models ... use unleaded or leaded gasoline with an octane rating of at least 88 RON (research octane number).  
Use unleaded gasoline if instructed on the fuel filler lid.

## GASOLINE ENGINE (PREMIUM GASOLINE)

Use premium unleaded gasoline with an octane rating of at least 95 RON (research octane number). If premium unleaded gasoline is not available, regular unleaded gasoline with an octane rating of at least 91 RON (research octane number) 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.**

## DIESEL ENGINE

- For Europe model; use diesel fuel of at least 50 cetane.
- Except for Europe model; use diesel fuel of at least 45 cetane.

If two types of diesel fuel are available, use summer or winter fuel properly according to the following temperature conditions.

- Above -7°C (20°F) ... Summer type diesel fuel.
- Below -7°C (20°F) ... Winter type diesel fuel.

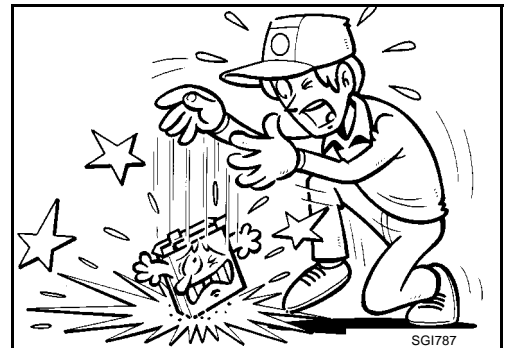
## CAUTION:

- **Do not use home heating oil, gasoline or other alternate fuels in your diesel engine. The use of those can cause engine damage.**
- **Do not use summer fuel at temperature below -7°C (20°F). The cold temperature will cause wax to form in the fuel. As a result, it may prevent the engine from running smoothly.**
- **Do not add gasoline or other alternate fuels to diesel fuel.**

## Precautions for Multiport Fuel Injection System or Engine Control System

BAS0002K

- Before connecting or disconnecting any harness connector for the multiport 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.

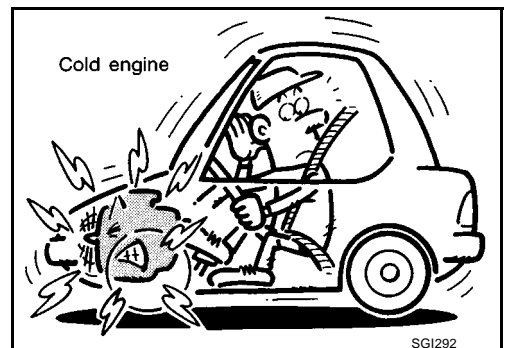


## Precautions for Turbocharger (If Equipped)

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The turbocharger turbine revolves at extremely high speeds and becomes very hot. Therefore, it is essential to maintain a clean supply of oil flowing through the turbocharger and to follow all required maintenance instructions and operating procedures.

- Always use the recommended oil. Follow the instructions for proper time to change the oil and proper oil level.
- Avoid accelerating engine to a high rpm immediately after starting.
- If engine had been operating at high rpm for an extended period of time, let it idle for a few minutes prior to shutting it off.



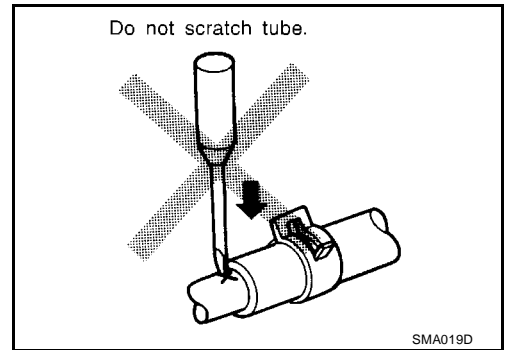
# PRECAUTIONS

## Precautions for Hoses

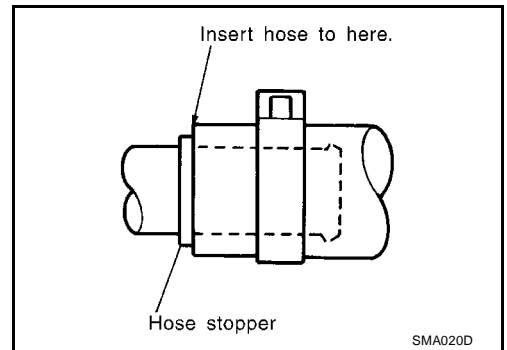
BAS0002M

### HOSE REMOVAL AND INSTALLATION

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

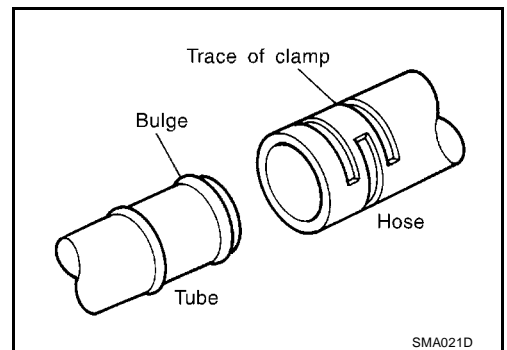


- To reinstall the rubber hose securely, make sure that hose insertion length and orientation is correct. (If tube is equipped with hose stopper, insert rubber hose into tube until it butts up against hose stopper.)

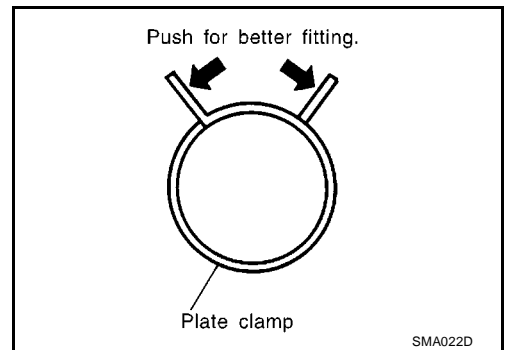


### HOSE CLAMPING

- 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 plate clamps, apply force to them in the direction of the arrow, tightening rubber hose equally all around.



## Precautions for Engine Oils

BAS0002N

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

- Avoid prolonged and repeated contact with oils, particularly used engine oils.

## PRECAUTIONS

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- Wear protective clothing, including impervious gloves where practicable.
- Do not put oily rags in pockets.
- Avoid contaminating clothes, particularly underpants, 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, kerosene, diesel fuel, gas oil, thinners or solvents for cleaning skin.
- If skin disorders develop, obtain medical advice without delay.
- Where practical, 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

For the service site in UK, 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 sources.

The regulations concerning pollution vary between regions.

### Precautions for Air Conditioning

BAS00020

Use an approved refrigerant recovery unit any time the air conditioning system must be discharged. Refer to ATC/MTC section "HFC-134a (R-134a) Service Procedure", "REFRIGERANT LINES" for specific instructions.



# HOW TO USE THIS MANUAL

## HOW TO USE THIS MANUAL

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### Description

BAS0002P

This volume explains "Removal, Disassembly, Installation, Inspection and Adjustment" and "Trouble Diagnoses".

B

### Terms

BAS0002Q

- 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.  
Standard value:Tolerance at inspection and adjustment.  
Limit value:The maximum or minimum limit value that should not be exceeded at inspection and adjustment.

C

D

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### Units

BAS0002R

- 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.  
"Example"

F

**Outer Socket Lock Nut : 59 - 78 N-m (6.0 - 8.0 kg-m, 43 - 58 ft-lb)**

G

### Contents

BAS0002S

- **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 or three letters which designate the particular section and a number (e.g. "BR-5").
- **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.

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# HOW TO USE THIS MANUAL

BAS0004K

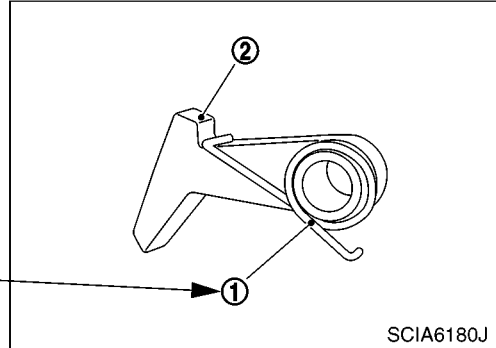
## Relation between Illustrations and Descriptions

The following sample explains the relationship between the part description in an illustration, the part name in the text and the service procedures.


### < Example 1 >

1. Remove return spring (1) from parking pawl (2).

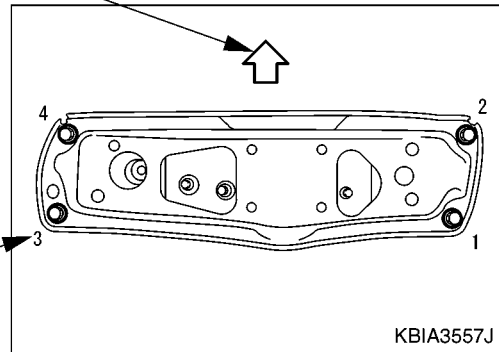
The identifier number of the part name in the text is consistent with the identifier part number in the illustration.



### < Example 2 >

-  : Vehicle front
- Tighten rear member mounting bolts following the numerical order shown in the illustration.
- Note : View upward

The numbers in the illustration are consistent with the service operation instructions.



SAIA0519E

# HOW TO USE THIS MANUAL

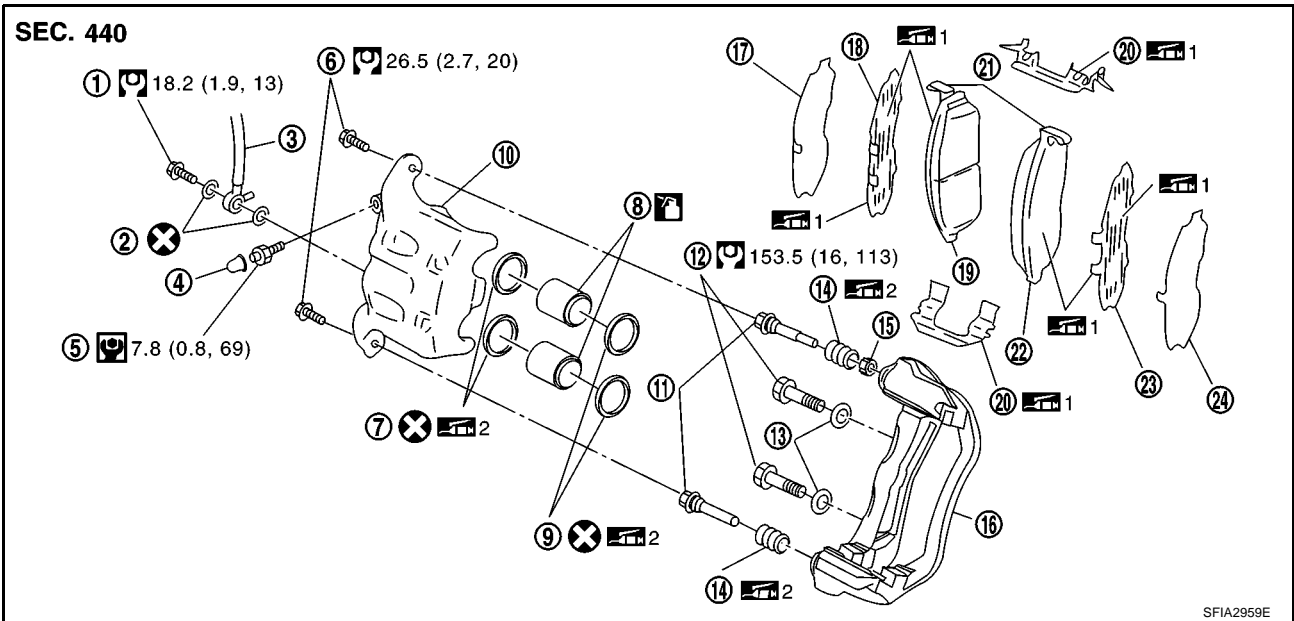
BAS0002T

## Components

- **THE LARGE ILLUSTRATIONS** are exploded views (see the following) 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.



- |                   |                      |                                 |
|-------------------|----------------------|---------------------------------|
| 1. Union bolt     | 2. Copper washer     | 3. Brake hose                   |
| 4. Cap            | 5. Bleed valve       | 6. Sliding pin bolt             |
| 7. Piston seal    | 8. Piston            | 9. Piston boot                  |
| 10. Cylinder body | 11. Sliding pin      | 12. Torque member mounting bolt |
| 13. Washer        | 14. Sliding pin boot | 15. Bushing                     |
| 16. Torque member | 17. Inner shim cover | 18. Inner shim                  |
| 19. Inner pad     | 20. Pad retainer     | 21. Pad wear sensor             |
| 22. Outer pad     | 23. Outer shim       | 24. Outer shim cover            |

1: PBC (Poly Butyl Cuprysil) grease 2: Rubber grease or silicone-based grease

: Brake fluid

Refer to GI section for additional symbol definitions.

## SYMBOLS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	Tightening torque The tightening torque specifications of bolts and nuts may be presented as either a range or a standard tightening torque.		Always replace after every disassembly.
	: N•m (kg-m, ft-lb) : N•m (kg-m, in-lb)		Apply petroleum jelly.
	Should be lubricated with grease. Unless otherwise indicated, use recommended multi-purpose grease.		Apply molybdenum added petroleum jelly.
	Should be lubricated with oil.		Apply ATF.
	Sealing point		Select with proper thickness.
	Sealing point with locking sealant.		Adjustment is required.
	Checking point		

SAIA0749E

# HOW TO USE THIS MANUAL

BAS0002U

## How to Follow Trouble Diagnoses

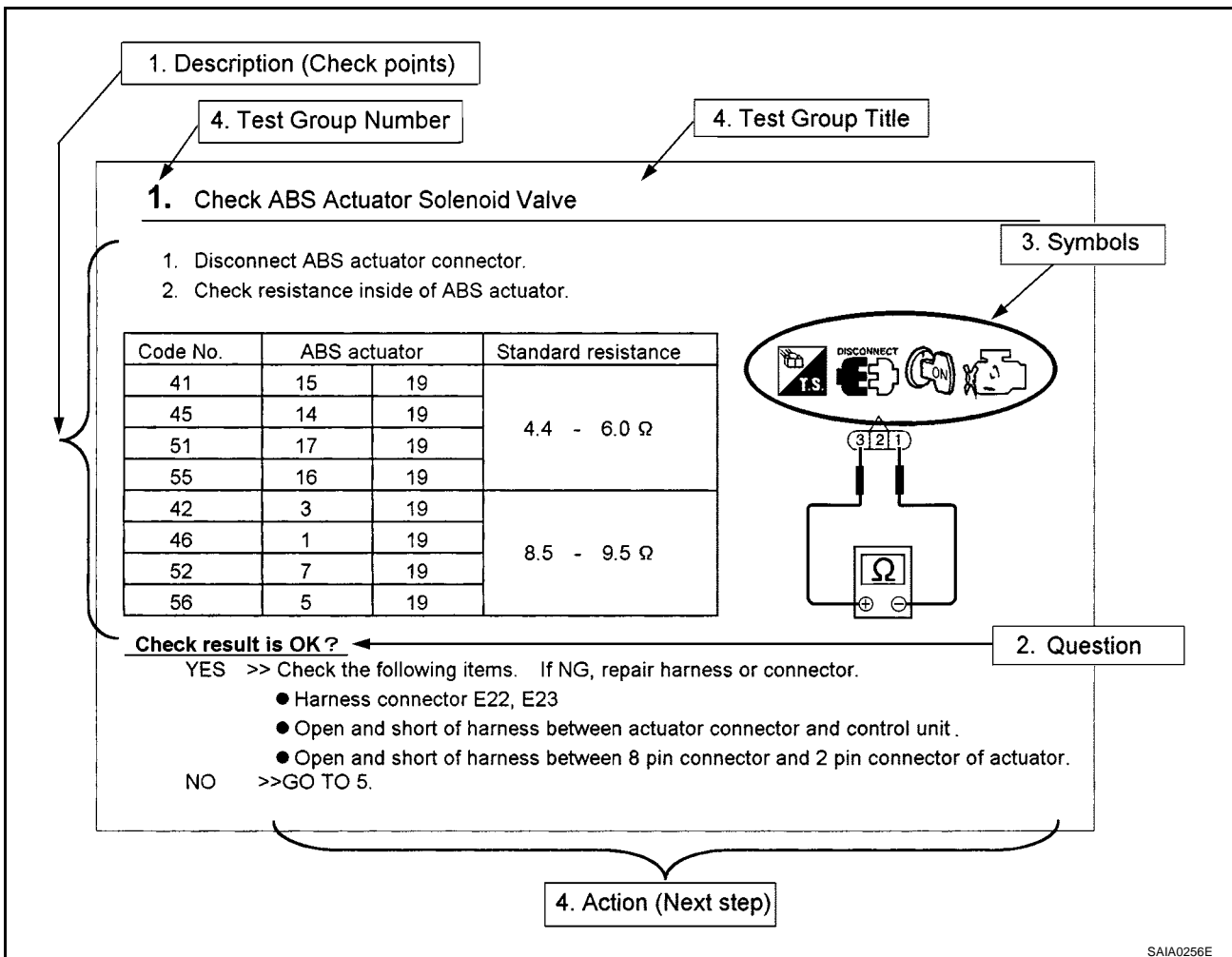
### DESCRIPTION

#### NOTICE:

Trouble diagnoses indicate work procedures required to diagnose problems 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 PG 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.**

## HOW TO FOLLOW TEST GROUPS IN TROUBLE DIAGNOSES



1. **Work and diagnostic procedure**  
Start to diagnose a problem 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:

# HOW TO USE THIS MANUAL

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" in GI Section and "KEY TO SYMBOLS SIGNIFYING MEASUREMENTS OR PROCEDURES" below.

### 4. **Action items**

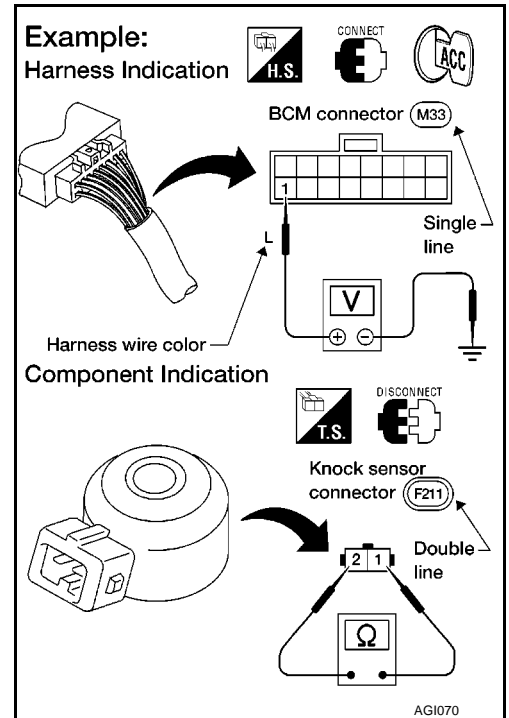
Next action for each test group is indicated based on result of each question. Test group number is shown in the left upper portion of each test group.

## HARNESS WIRE COLOR AND CONNECTOR NUMBER INDICATION

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

### TYPE 1: Harness Wire Color and Connector Number are Shown in Illustration

- 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.



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## TYPE 2: Harness Wire Color and Connector Number are Shown in Text

### Example 1:

**2 CHECK INTAKE SENSOR CIRCUIT BETWEEN INTAKE SENSOR AND AUTO AMP. (LCU)**

1. Disconnect auto amp. (LCU) harness connector.
2. Check circuit continuity between intake sensor harness connector M59 terminal No. 2 (GW) and auto amp. (LCU) harness connector M56 terminal No. 11 (GW).

OK or NG

### Example 2:

**POWER SUPPLY AND GROUND CIRCUIT CHECK**

**Power Supply Circuit Check**

#NCEL00-16807  
#NCEL00-1680701

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

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

SGI144A

## KEY TO SYMBOLS SIGNIFYING MEASUREMENTS OR PROCEDURES

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	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, CONSULT-II or GST
	Insert key into ignition switch.		A/C switch is "OFF".
	Remove key from ignition switch.		A/C switch is "ON".
	Insert and remove key repeatedly.		REC switch is "ON".
	Turn ignition switch to "OFF" position.		REC switch is "OFF".
	Turn ignition switch to "ACC" position.		Fan switch is "ON". (At any position except for "OFF" position)
	Turn ignition switch to "ON" position.		Fan switch is "OFF".
	Turn ignition switch to "START" position.		Apply fuse.
	Turn ignition switch from "OFF" to "ACC" position.		Apply positive voltage from battery with fuse directly to components.
	Turn ignition switch from "ACC" to "ON" position.		
	Turn ignition switch from "ACC" to "OFF" position.		

SAIA0750E

# HOW TO USE THIS MANUAL

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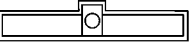
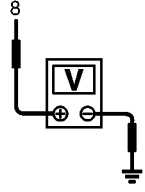












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SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	Turn ignition switch from "OFF" to "ON" position.		Drive vehicle.
	Turn ignition switch from "ON" to "OFF" position.		
	Do not start engine, or check with engine stopped.		Disconnect battery negative cable.
	Start engine, or check with engine running.		Depress brake pedal.
	Apply parking brake.		Release brake pedal.
	Release parking brake.		Depress accelerator pedal.
	Check after engine is warmed up sufficiently.		Release accelerator pedal.
	Voltage should be measured with a voltmeter.	  	Pin terminal check for SMJ type ECM or TCM connectors. <b>For details regarding the terminal arrangement, refer to the "ELECTRICAL UNITS" electrical reference page at the end of the manual.</b>
	Circuit resistance should be measured with an ohmmeter.		
	Current should be measured with an ammeter.		
	Pulse signal should be checked with an oscilloscope.		
	Procedure with CONSULT-II		
	Procedure without CONSULT-II		
	Place selector lever in "P" position.		
	Place selector lever in "N" position.		
	Jack up front portion.		
	Jack up rear portion.		
	Inspect under engine room.		
	Inspect under floor.		
	Inspect rear under floor.		

SAIA0751E

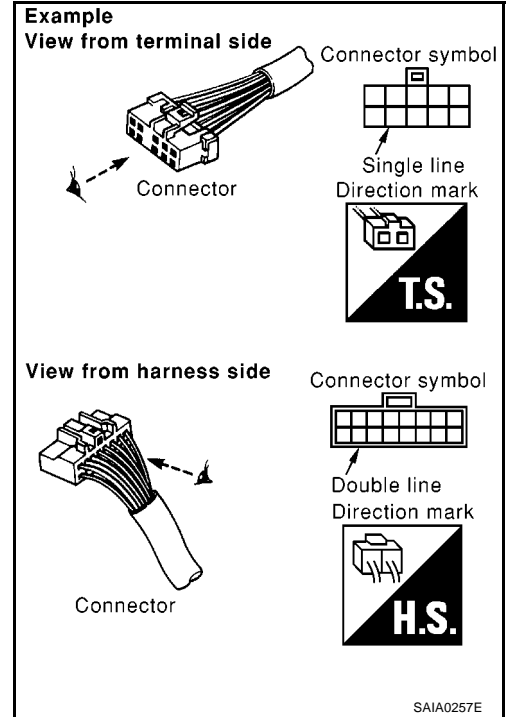
# HOW TO USE THIS MANUAL

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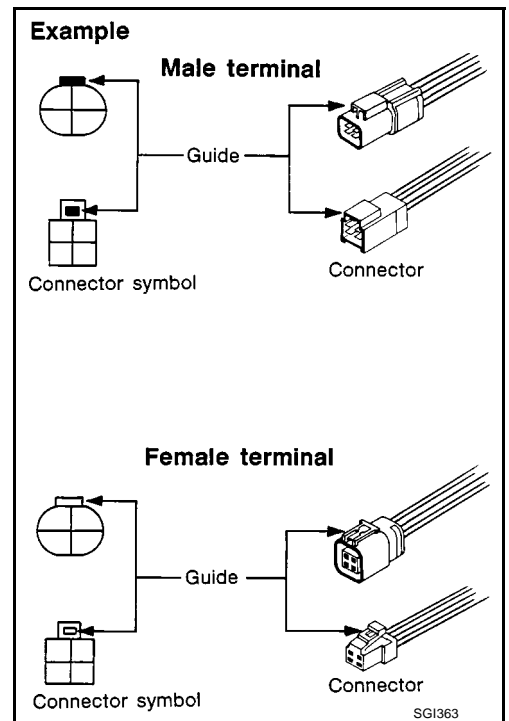
## How to Read Wiring Diagrams CONNECTOR SYMBOLS

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 PG section, "Description", "HARNESS CONNECTOR".



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



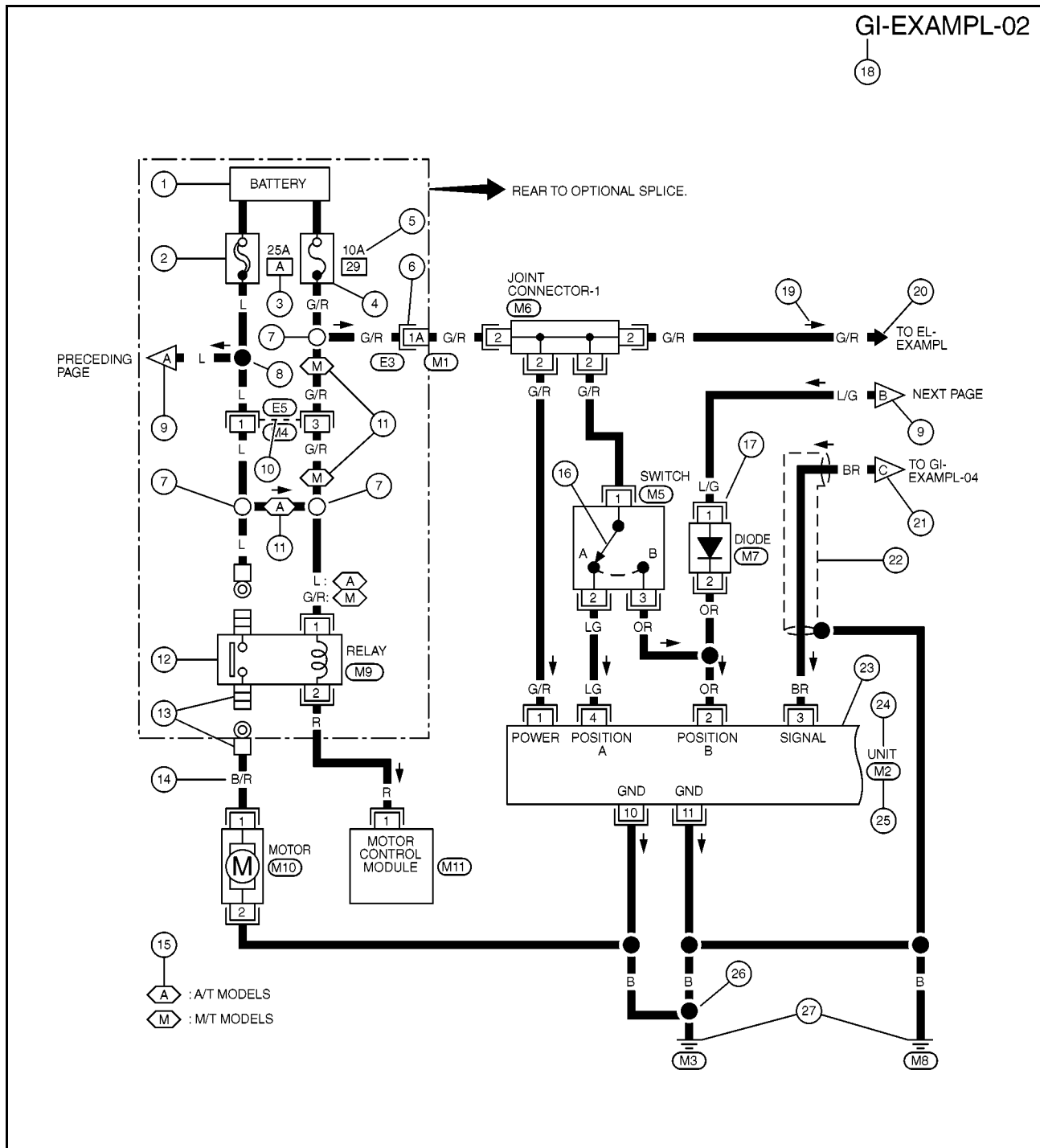


# HOW TO USE THIS MANUAL

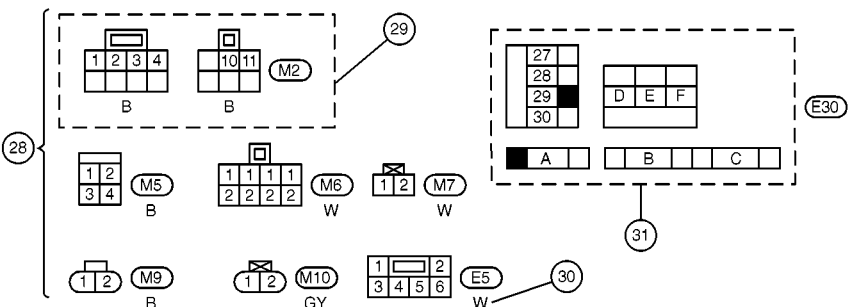
## SAMPLE/WIRING DIAGRAM - EXAMPL -

- For detail, refer to following "DESCRIPTION".

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(A) : A/T MODELS  
(M) : M/T MODELS

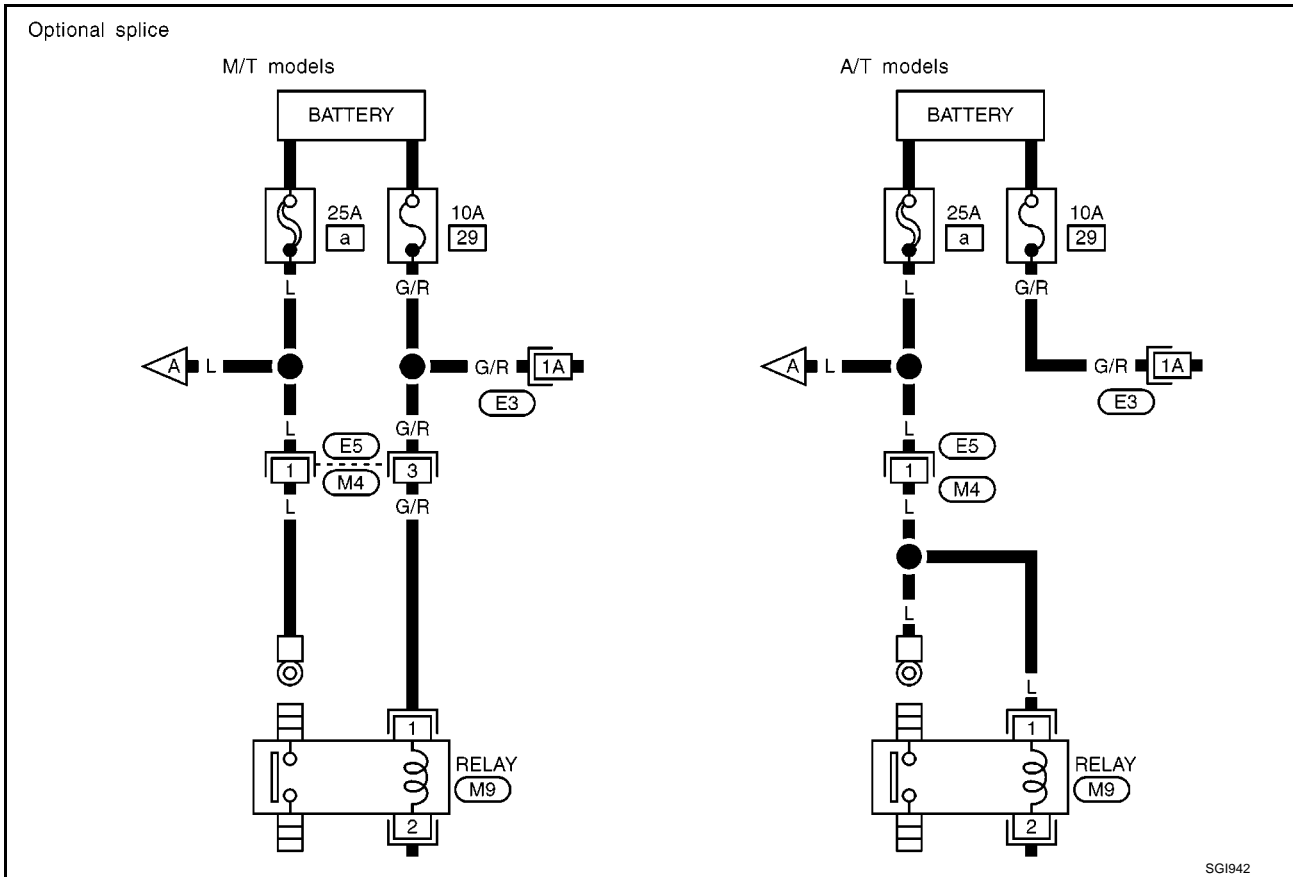


REFER TO THE FOLLOWING.  
(E3) - SUPER MULTIPLE JUNCTION (SMJ)  
(M11) - ELECTRICAL UNITS  
(32)

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# HOW TO USE THIS MANUAL

## Optional Splice



## 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 PG section, 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 PG section, SMJ (SUPER MULTIPLE JUNCTION).</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 PG section, 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>

# HOW TO USE THIS MANUAL

Number	Item	Description																
14	Wire color	<ul style="list-style-type: none"> <li>This shows a code for the color of the wire.</li> </ul>																
		<table border="0"> <tr> <td>B = Black</td> <td>BR = Brown</td> </tr> <tr> <td>W = White</td> <td>OR or O = Orange</td> </tr> <tr> <td>R = Red</td> <td>P = Pink</td> </tr> <tr> <td>G = Green</td> <td>PU or V (Violet) = Purple</td> </tr> <tr> <td>L = Blue</td> <td>GY or GR = 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>	B = Black	BR = Brown	W = White	OR or O = Orange	R = Red	P = Pink	G = Green	PU or V (Violet) = Purple	L = Blue	GY or GR = Gray	Y = Yellow	SB = Sky Blue	LG = Light Green	CH = Dark Brown		DG = Dark Green
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L = Blue	GY or GR = Gray																	
Y = Yellow	SB = Sky Blue																	
LG = Light Green	CH = Dark Brown																	
	DG = Dark Green																	
<p>When the wire color is striped, the base color is given first, followed by the stripe color as shown below: Example: L/W = Blue with White Stripe</p>																		
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>																
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.</li> <li>Example: <b>M</b> : main harness. For detail and to locate the connector, refer to PG section "Main Harness", "Harness Layout". 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 "Ground Distribution" in PG section.</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 PG section.</li> <li>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) and Joint Connectors (J/C) exists on the PG section. Refer to "Reference Area" for details.</li> </ul>																

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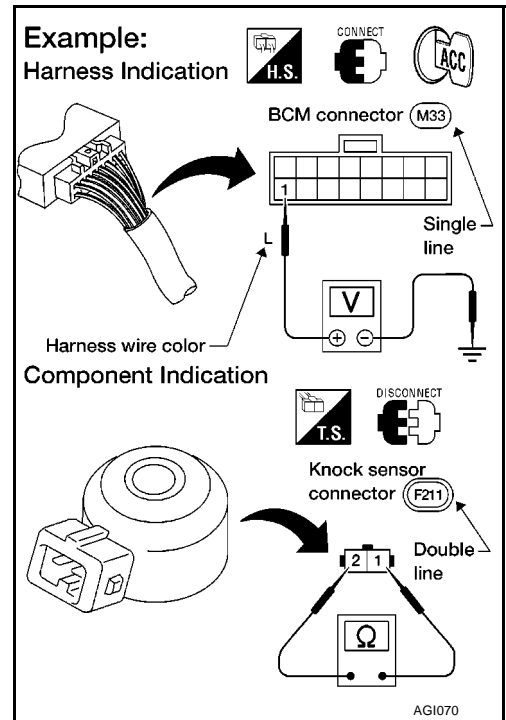
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# HOW TO USE THIS MANUAL

## Harness Indication

- Letter designations next to test meter probe indicate harness (connector) wire color.
- Connector numbers in a single circle M33 indicate harness connectors.



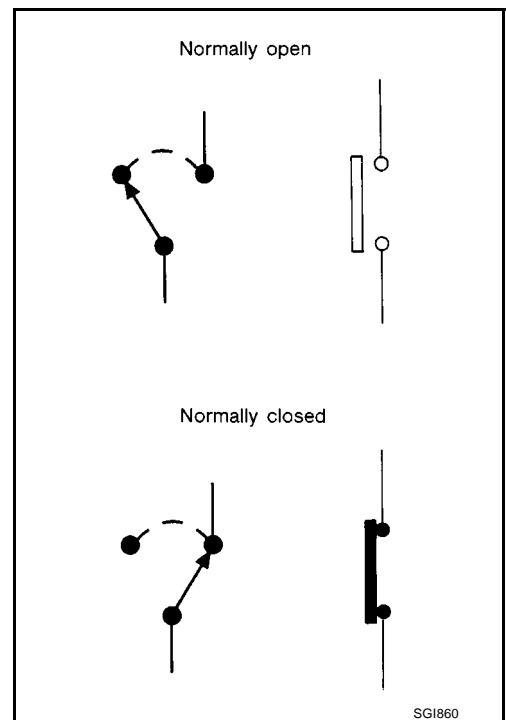
## Component Indication

Connector numbers in a double circle F211 indicate component connectors.

## Switch Positions

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.

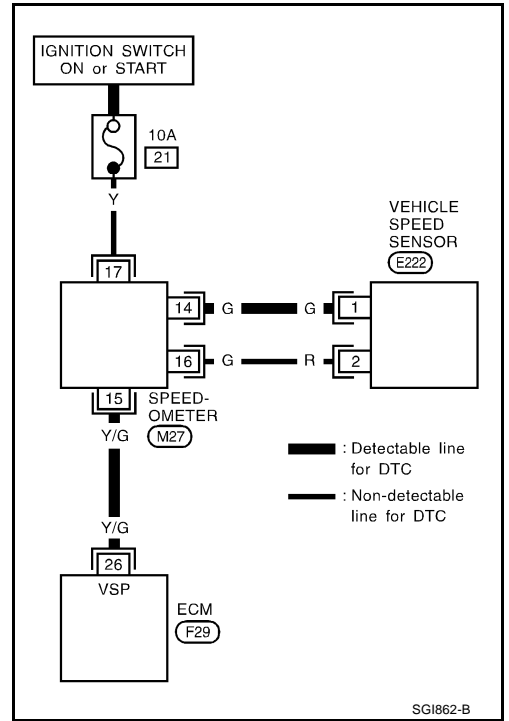


# HOW TO USE THIS MANUAL

## Detectable Lines and Non-Detectable Lines

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 USE THIS MANUAL

## Multiple Switch

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

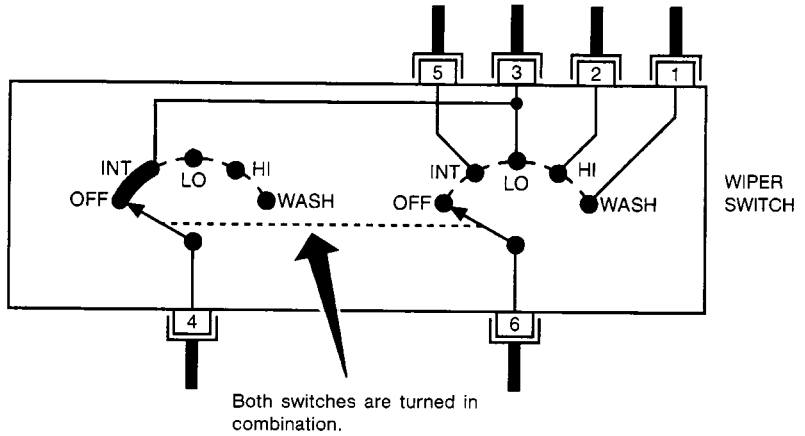
- The switch chart is used in schematic diagrams.
- The switch diagram is used in wiring diagrams.

### Example

(SWITCH CHART)

WIPER SWITCH		OFF	INT	LO	HI	WASH
1						○
2				○		
3	○	○	○			
4	○	○				
5		○				
6		○	○	○	○	

(SWITCH DIAGRAM)



Continuity circuit of wiper switch

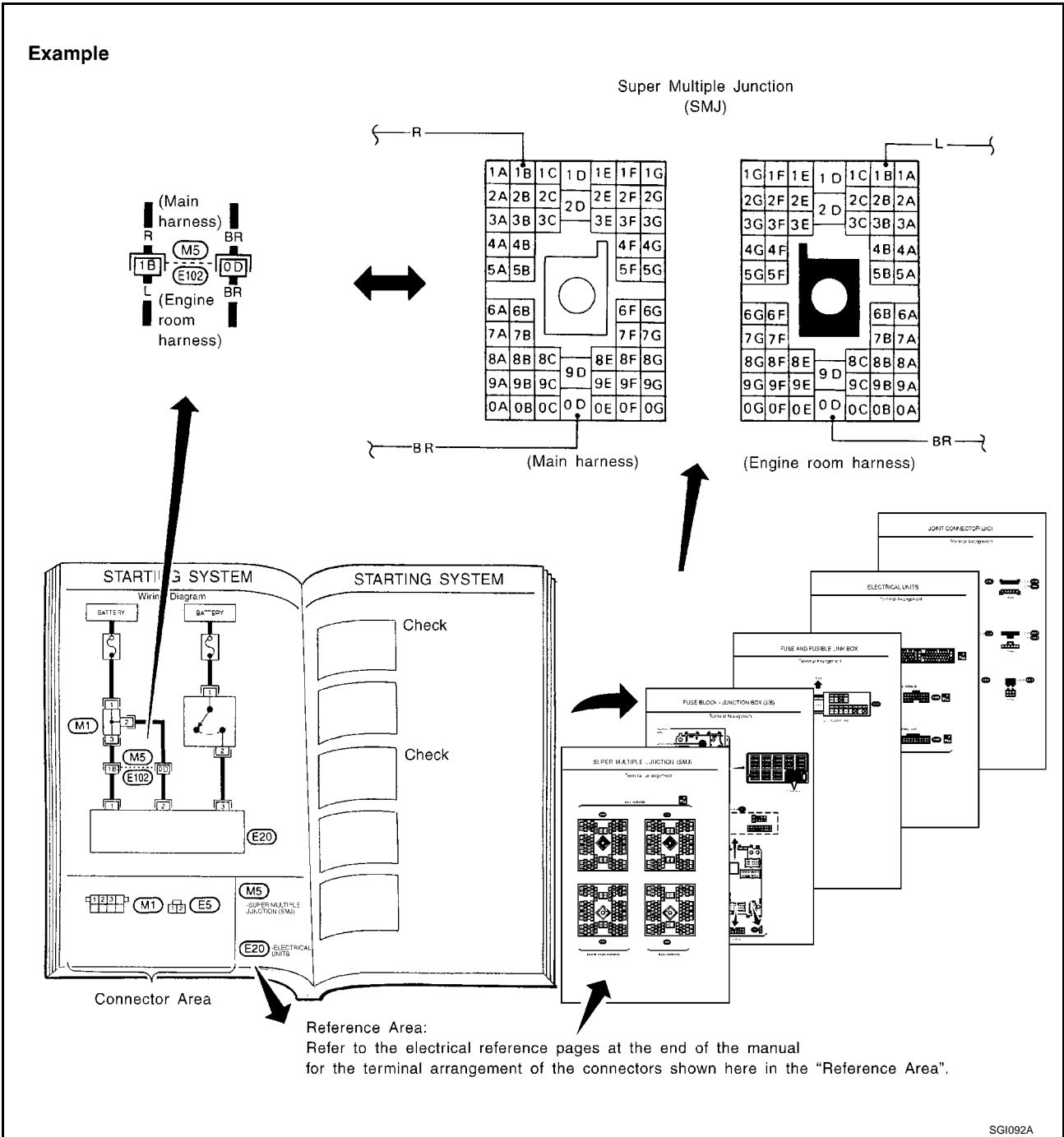
SWITCH POSITION	CONTINUITY CIRCUIT
OFF	3-4
INT	3-4, 5-6
LO	3-6
HI	2-6
WASH	1-6

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# HOW TO USE THIS MANUAL

## Reference Area

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.



## Abbreviations

BAS0002W

The following **ABBREVIATIONS** are used:

ABBREVIATION	DESCRIPTION
A/C	Air Conditioner
A/T	Automatic Transaxle/Transmission
ATF	Automatic Transmission Fluid
D1	Drive range 1st gear
D2	Drive range 2nd gear

## HOW TO USE THIS MANUAL

ABBREVIATION	DESCRIPTION
D3	Drive range 3rd gear
D4	Drive range 4th gear
FR, RR	Front, Rear
LH, RH	Left-Hand, Right-Hand
M/T	Manual Transaxle/Transmission
OD	Overdrive
P/S	Power Steering
SAE	Society of Automotive Engineers, Inc.
SDS	Service Data and Specifications
SST	Special Service Tools
2WD	2-Wheel Drive
22	2nd range 2nd gear
21	2nd range 1st gear
12	1st range 2nd gear
11	1st range 1st gear



# SERVICE INFORMATION FOR ELECTRICAL INCIDENT

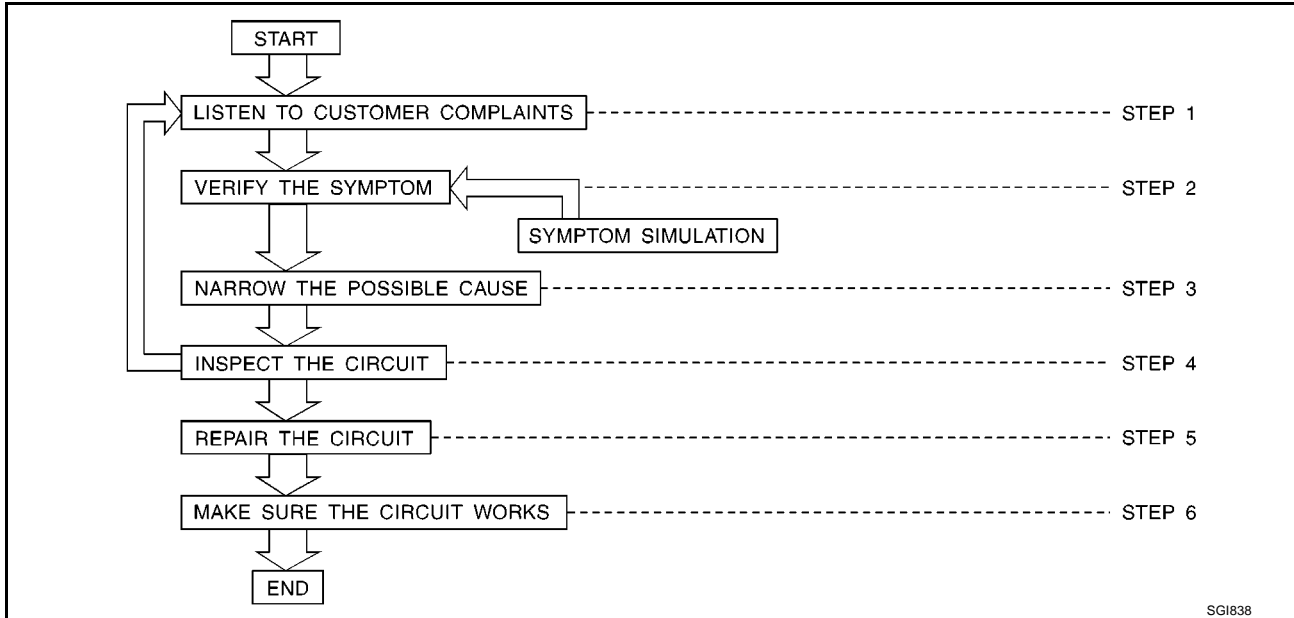
## SERVICE INFORMATION FOR ELECTRICAL INCIDENT

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### How to Perform Efficient Diagnosis for an Electrical Incident WORK FLOW

BAS002X



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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/Transaxle 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.
STEP 2	Operate the system, road test if necessary. Verify the parameter of the incident. If the problem cannot be duplicated, refer to "Incident Simulation Tests".
	Get the proper diagnosis materials together including: <ul style="list-style-type: none"> <li>● Power Supply Routing</li> <li>● System Operation Descriptions</li> <li>● Applicable Service Manual Sections</li> <li>● Check for any Service Bulletins</li> </ul> Identify where to begin diagnosis based upon your knowledge of the system operation and the customer comments.
STEP 3	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. 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.

## INCIDENT SIMULATION TESTS

### Introduction

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

# SERVICE INFORMATION FOR ELECTRICAL INCIDENT

- 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

The problem 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 following illustration.

## CONNECTORS & HARNESS

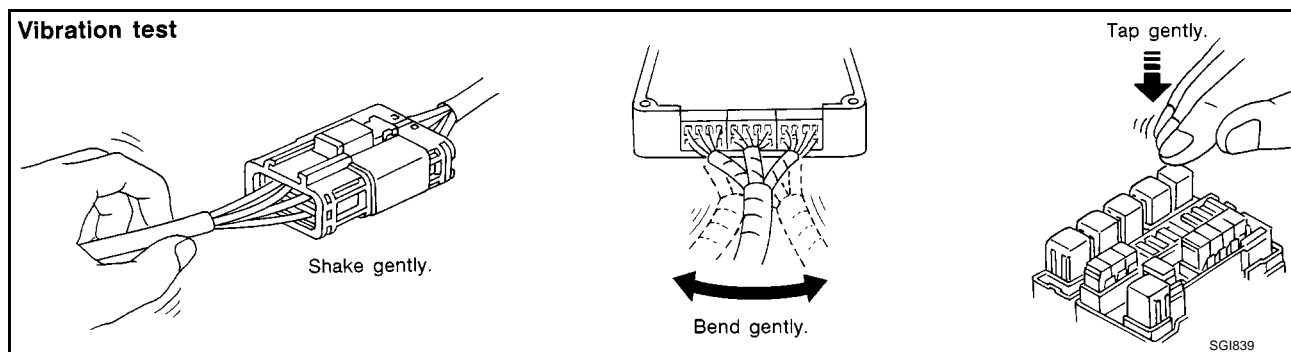
Determine which connectors and wiring harness would affect the electrical system you are inspecting. Gently shake each connector and harness while monitoring the system for the incident you are trying to duplicate. This test may indicate a loose or poor electrical connection.

## 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 check 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.

# SERVICE INFORMATION FOR ELECTRICAL INCIDENT

## UNDER SEATING AREAS

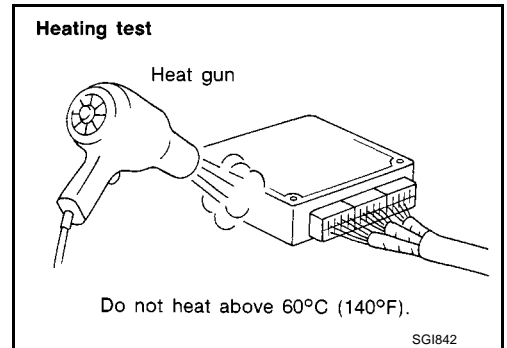
An unclamped or loose harness can cause wiring to be pinched by seat components (such as slide guides) during vehicle vibration. If the wiring runs under seating areas, inspect wire routing for possible damage or pinching.

## Heat Sensitive

The customer's concern 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.

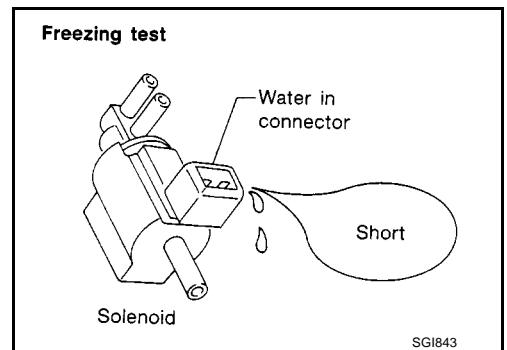


## Freezing

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.

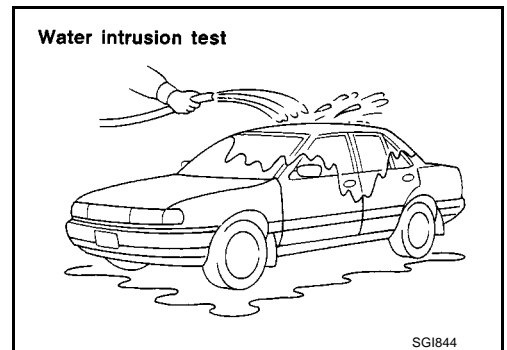
The second method is to put the suspect component into a freezer long enough for any water to freeze. Reinstall the part into the car and check for the reoccurrence of the incident. If it occurs, repair or replace the component.



## Water Intrusion

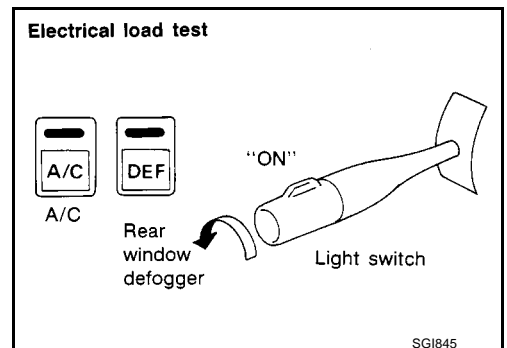
The incident may occur only during high humidity or in rainy/snowy weather. In such cases the incident could be caused by water intrusion on an electrical part. This can be simulated by soaking the car or running it through a car wash.

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



## Electrical Load

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



# SERVICE INFORMATION FOR ELECTRICAL INCIDENT

## Cold or Hot Start Up

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

### Introduction

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.

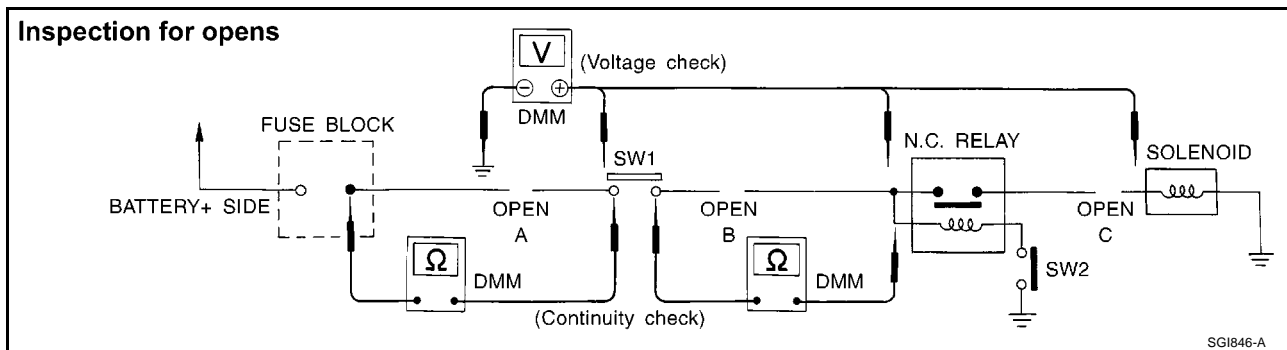
OPEN	A circuit is open when there is no continuity through a section of the circuit.	
SHORT	There are two types of shorts.	
	● SHORT CIRCUIT	When a circuit contacts another circuit and causes the normal resistance to change.
	● SHORT TO GROUND	When a circuit contacts a ground source and grounds the circuit.

### NOTE:

Refer to "How to Check Terminal" to probe or check terminal.

## Testing for "Opens" in the Circuit

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 previous schematic.

- Disconnect the battery negative cable.
- Start at one end of the circuit and work your way to the other end. (At the fuse block in this example)
- Connect one probe of the DMM to the fuse block terminal on the load side.
- 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)
- 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)
- 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 previous example.

# SERVICE INFORMATION FOR ELECTRICAL INCIDENT

## VOLTAGE CHECK METHOD

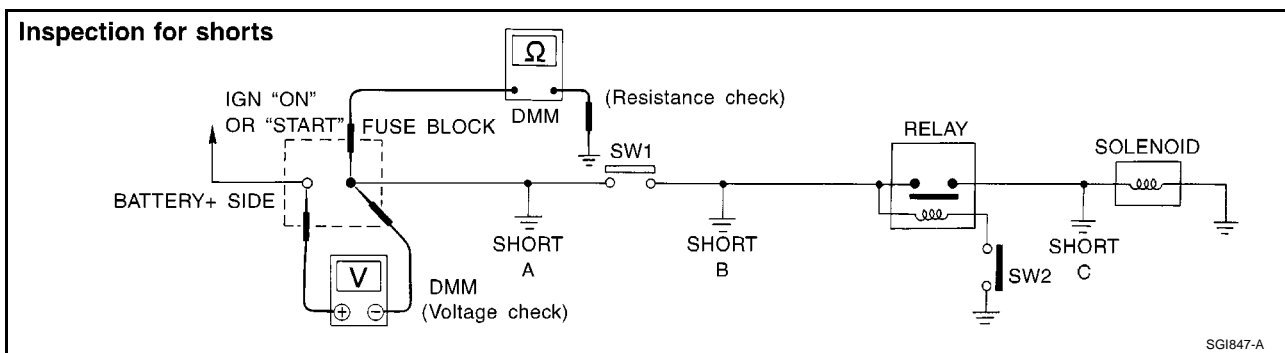
To help in understanding the diagnosis of open circuits please refer to the previous schematic. In any powered circuit, an open can be found by methodically checking the system for the presence of voltage. This is done by switching the DMM to the voltage function.

- Connect one probe of the DMM to a known good ground.
- Begin probing at one end of the circuit and work your way to the other end.
- With SW1 open, probe at SW1 to check for voltage.  
voltage; open is further down the circuit than SW1.  
no voltage; open is between fuse block and SW1 (point A).
- 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).
- 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 previous example.

## Testing for “Shorts” in the Circuit

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



## RESISTANCE CHECK METHOD

- Disconnect the battery negative cable and remove the blown fuse.
- Disconnect all loads (SW1 open, relay disconnected and solenoid disconnected) powered through the fuse.
- Connect one probe of the DMM to the load side of the fuse terminal. Connect the other probe to a known good ground.
- 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.
- 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.
- 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

- Remove the blown fuse and disconnect all loads (i.e. SW1 open, relay disconnected and solenoid disconnected) powered through the fuse.
- Turn the ignition key to the ON or START position. Verify battery voltage at the battery + side of the fuse terminal (one lead on the battery + terminal side of the fuse block and one lead on a known good ground).
- With SW1 open and the DMM leads across both fuse terminals, check for voltage.  
voltage; short is between fuse block and SW1 (point A).

# SERVICE INFORMATION FOR ELECTRICAL INCIDENT

no voltage; short is further down the circuit than SW1.

- 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.
- 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

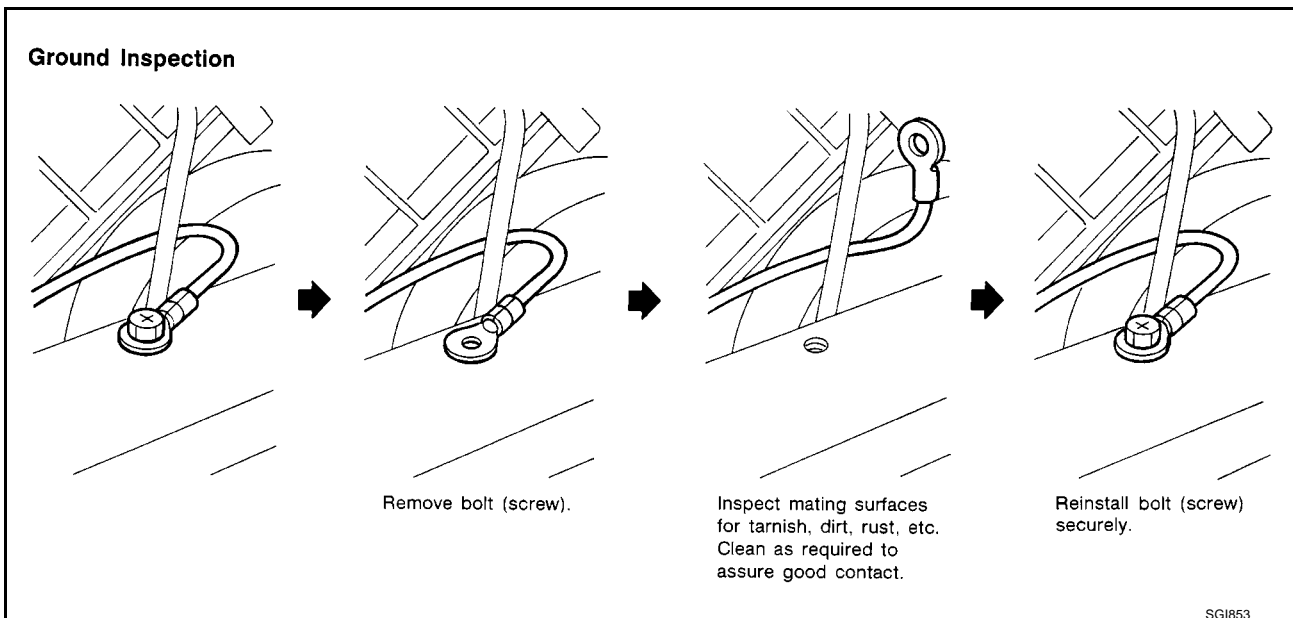
Ground connections are very important to the proper operation of electrical and electronic circuits. Ground connections are often exposed to moisture, dirt and other corrosive elements. The corrosion (rust) can become an unwanted resistance. This unwanted resistance can change the way a circuit works.

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:

- Remove the ground bolt or screw.
- Inspect all mating surfaces for tarnish, dirt, rust, etc.
- Clean as required to assure good contact.
- Reinstall bolt or screw securely.
- Inspect for “add-on” accessories which may be interfering with the ground circuit.
- 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.

For detailed ground distribution information, refer to “Ground Distribution” in PG section.



## Voltage Drop Tests

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 DMM, 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.

# SERVICE INFORMATION FOR ELECTRICAL INCIDENT

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

GI

## MEASURING VOLTAGE DROP — ACCUMULATED METHOD

- Connect the DMM across the connector or part of the circuit you want to check. The positive lead of the DMM should be closer to power and the negative lead closer to ground.
- Operate the circuit.
- The DMM 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.**

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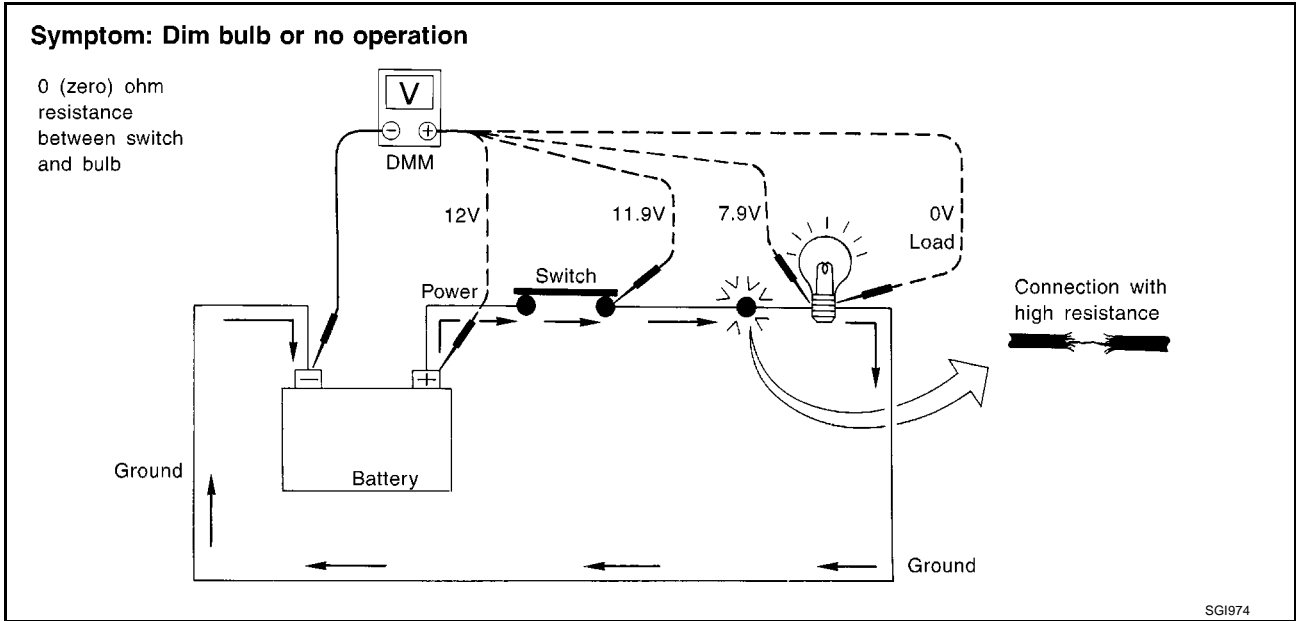
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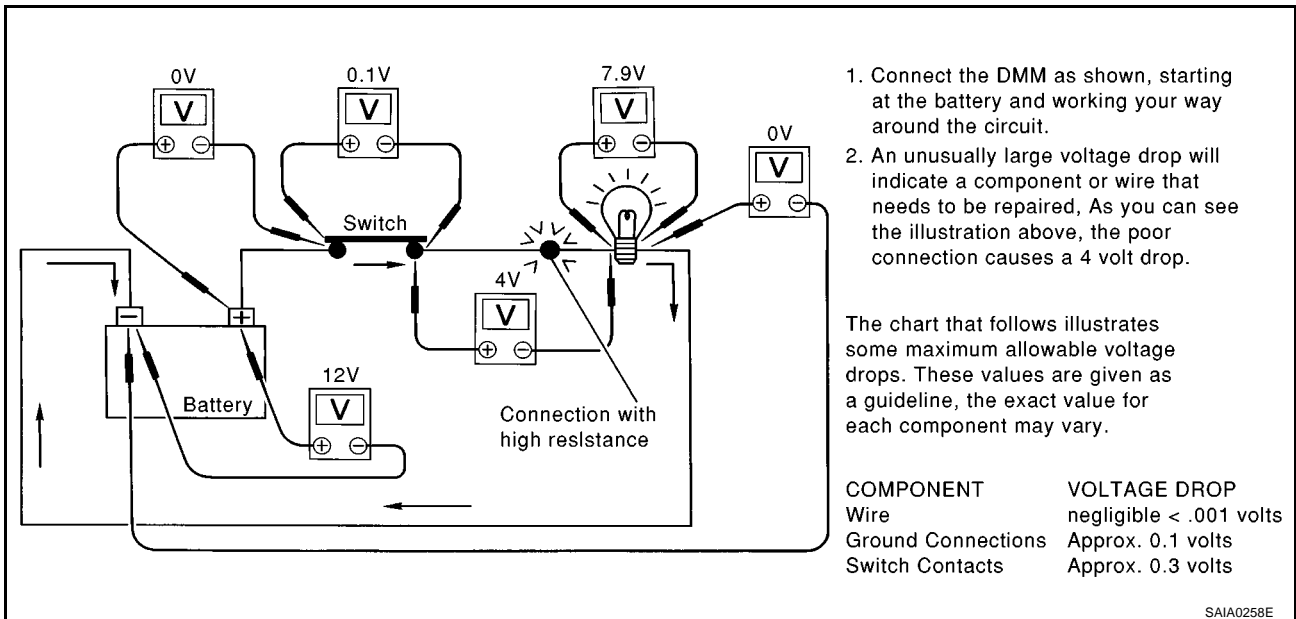
## MEASURING VOLTAGE DROP — STEP-BY-STEP

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.

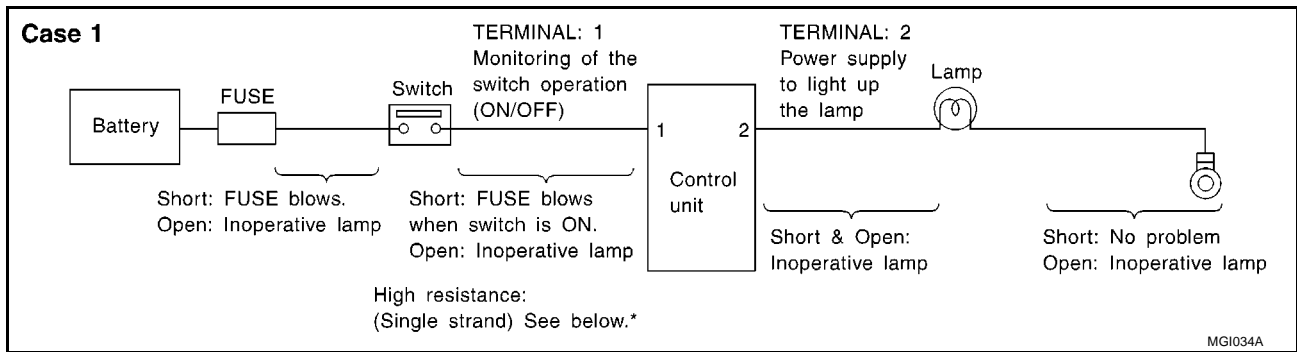
The step by step voltage drop test can identify a component or wire with too much resistance.



# SERVICE INFORMATION FOR ELECTRICAL INCIDENT

## Control Unit Circuit Test

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

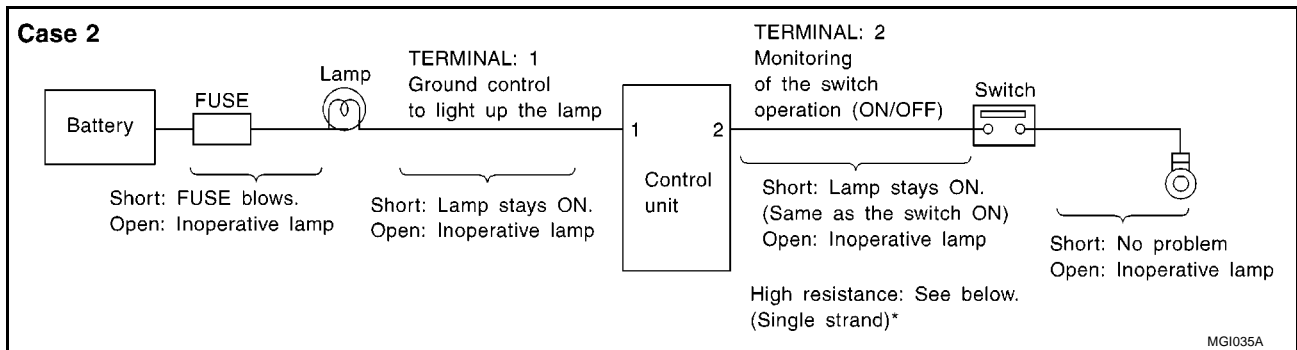


## INPUT-OUTPUT VOLTAGE CHART

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.



## INPUT-OUTPUT VOLTAGE CHART

Pin No.	Item	Condition	Voltage value [V]	In case of high resistance such as single strand [V] *
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.



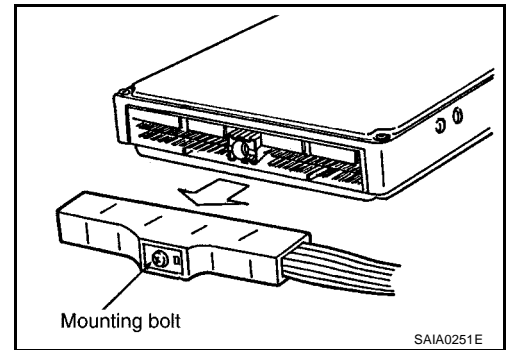
# SERVICE INFORMATION FOR ELECTRICAL INCIDENT

## Control Units and Electrical Parts PRECAUTIONS

BAS0002Y

GI

- Never reverse polarity of battery terminals.
- Install only parts specified for a vehicle.
- Before replacing the control unit, check the input and output and functions of the component parts.
- Do not apply excessive force when disconnecting a connector.
- If a connector is installed by tightening bolts, loosen bolt mounting it, then take it out by hand.



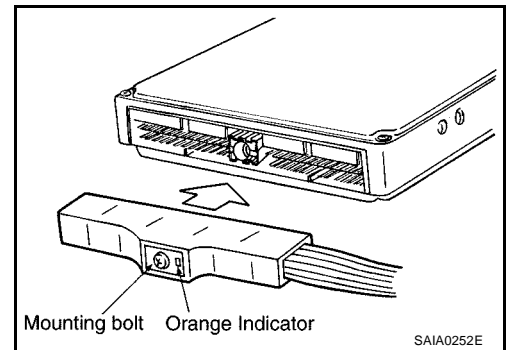
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- Before installing a connector, make sure the terminal is not bent or damaged, and then correctly connect it. When installing a connector by tightening bolts, fix it by tightening the mounting bolt until the painted projection of the connector becomes even with the surface.

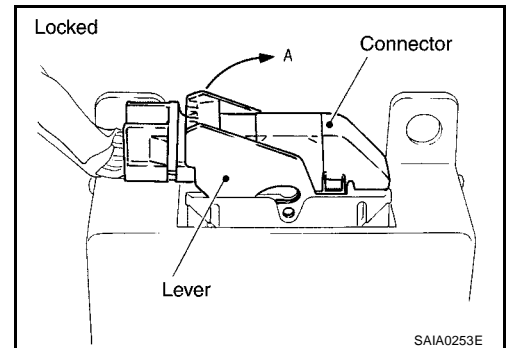


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- For removal of the lever type connector, pull the lever up to the direction pointed to by the arrow A in the figure, and then remove the connector.



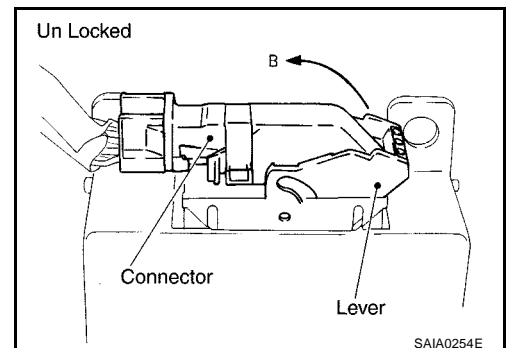
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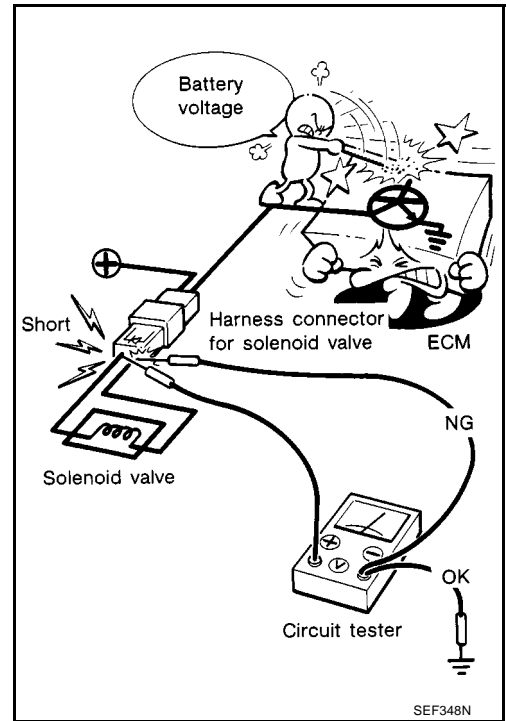
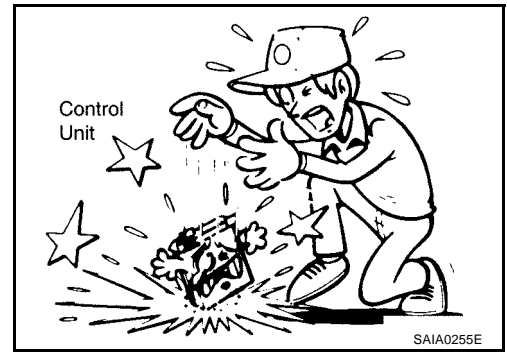
- For installation of the lever type connector, pull down the lever to the direction pointed by the arrow B in the figure, and then push the connector until a clicking noise is heard.



M

## SERVICE INFORMATION FOR ELECTRICAL INCIDENT

- Do not apply excessive shock to the control unit by dropping or hitting it.
  - Be careful to prevent condensation in the control unit due to rapid temperature changes and do not let water or rain get on it. If water is found in the control unit, dry it fully and then install it in the vehicle.
  - Be careful not to let oil get on the control unit connector.
  - Avoid cleaning the control unit with volatile oil.
  - Do not disassemble the control unit, and do not remove the upper and lower covers.
- 
- When using a DMM, be careful not to let test probes get close to each other to prevent the power transistor in the control unit from damaging battery voltage because of short circuiting.
  - When checking input and output signals of the control unit, use the specified check adapter.



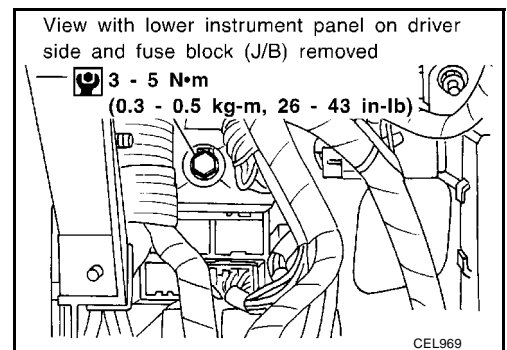
### SMJ INSTALLATION

To install SMJ, tighten bolts until orange "fulltight" mark appears and then retighten to specified torque as required.

**SMJ** :3 - 5 N·m (0.3 - 0.5 kg·m, 26 - 43 in·lb)

#### CAUTION:

Do not overtighten bolts, otherwise, they may be damaged.



# CONSULT-II CHECKING SYSTEM

## CONSULT-II CHECKING SYSTEM

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### Description

BAS0002Z

- CONSULT-II is a hand-held type tester. When it is connected with a diagnostic connector equipped on the vehicle side, it will communicate with the control unit equipped in the vehicle and then enable various kinds of diagnostic tests.
- Refer to "CONSULT-II Software Operation Manual" for more information.

### Function and System Application

BAS00030

Diagnostic test mode	Function	ENGINE	A/T	AIR BAG	ABS (Including ESP)	EPS	IPDM E/R	BCM	INTELLIGENT KEY	NATS*1
Work support	This mode enables a technician to adjust some devices faster and more accurately by following the indications on CONSULT-II.	x	x	-	-	-	-	x	x	x
Self-diagnostic results	Self-diagnostic results can be read and erased quickly.	x	x	x	x	x	x	x	x	x
Trouble diagnostic record	Current self-diagnostic results and all trouble diagnostic records previously stored can be read.	-	-	x	-	-	-	-	-	-
Data monitor	Input/Output data in the ECU can be read.	x	x	-	x	x	x	-	x	x
CAN diagnosis support monitor	Indicates the communication condition of CAN communication line.	x	x	-	x	x	x	x	x	-
Active test	Diagnostic Test Mode in which CONSULT-II drives some actuators apart from the ECUs and also shifts some parameters in a specified range.	x	-	-	x	-	x	x	x	-
DTC & SRT confirmation	The results of SRT (System Readiness Test) and the self-diagnosis status/result can be confirmed.	x*2	-	-	-	-	-	-	-	-
DTC work support	Select the operating condition to confirm Diagnosis Trouble Codes.	-	x	-	-	-	-	-	-	-
ECU part number	ECU part number can be read.	x	x	-	x	x	-	x	x	-
ECU discriminated No.	Classification number of a replacement ECU can be read to prevent an incorrect ECU from being installed.	-	-	x	-	-	-	-	-	-
Function test	Conducted by CONSULT-II instead of a technician to determine whether each system is "OK" or "NG".	x*2	x	x	x	-	-	-	-	-
Control unit initialization	All registered ignition key IDs in NATS components can be initialized and new IDs can be registered.	-	-	-	-	-	-	-	-	x
Self-function check	ECU checks its own NATS communication interface.	-	-	-	-	-	-	-	-	x
Configuration	The vehicle configuration can be read and written on brand-new BCM and IPDM E/R	-	-	-	-	-	x	x	-	-

x: Applicable

\*1: Nissan Anti-Theft System

\*2: Petrol engine models

## Nickel Metal Hydride Battery Replacement

BAS00031

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.

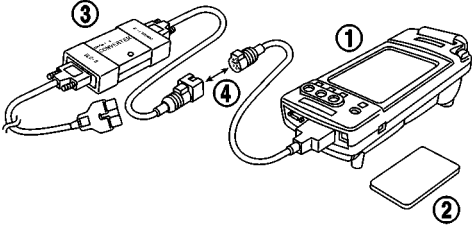
Keep the battery out of reach of children and discard used battery conforming to the local regulations.

# CONSULT-II CHECKING SYSTEM

BAS00032

## Checking Equipment

When ordering the following equipment, contact your NISSAN distributor.

Tool name	Description
<p><b>NISSAN CONSULT-II</b></p> <p>1. CONSULT-II unit (Tester internal soft: Resident version 3.3.0) and accessories</p> <p>2. Program card AED06A and AEN06A (For NATS) To confirm the best combination of these softwares, refer to CONSULT-II Operation Manual.</p> <p>3. CONSULT-II CONVERTER</p> <p>4. "CONSULT-II Pigtail" Cable</p>	 <p style="text-align: right;">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.

### CAUTION:

- If CONSULT-II is used with no connection of CONSULT-II CONVERTER, malfunctions might be detected in self-diagnosis depending on control unit which carries out CAN communication.
- If CONVERTER is not connected with CONSULT-II, vehicle occur the "FAIL-SAFE MODE" which is "LIGHT UP the HEADLIGHT" and/or "Cooling FAN ROTATING" when CONSULT-II is started.
- Previous CONSULT-II "I" and "Y" DLC-I and DLC-II cables should NOT be used anymore because their DDL connector pins can be damaged during cable swapping.

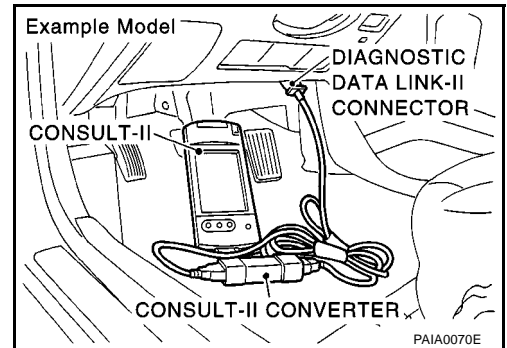
## CONSULT-II Start Procedure

BAS00033

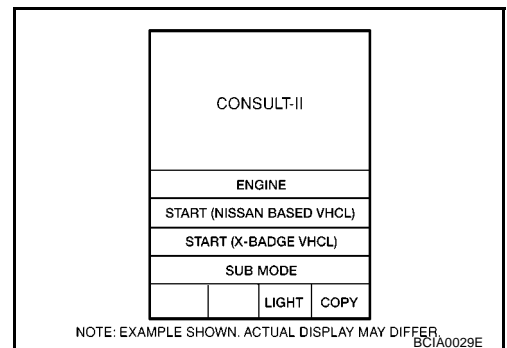
### NOTE:

Turning ignition switch off when performing CAN diagnosis could cause CAN memory to be erased.

1. Connect CONSULT-II and CONSULT-II CONVERTER to the data link connector.

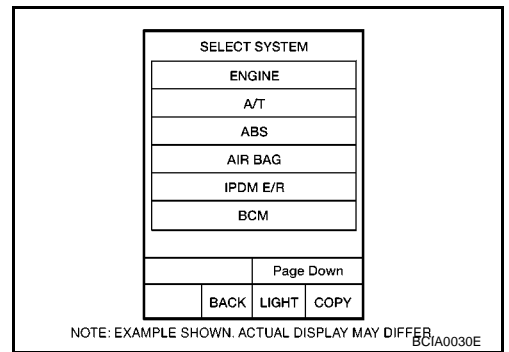


2. If necessary, turn on the ignition switch.
3. Touch "START(NISSAN BASED VECL)" or "System Shortcut" (e.g.: Engine) on the screen.

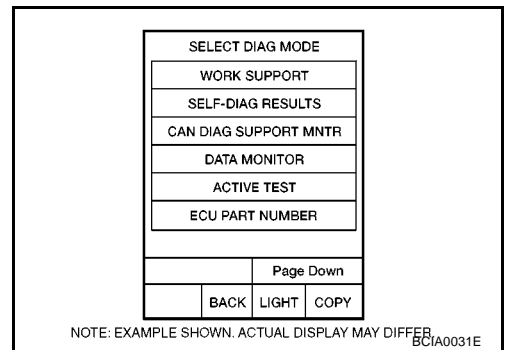


# CONSULT-II CHECKING SYSTEM

4. Touch necessary system on "SELECT SYSTEM" screen.  
If necessary system is not indicated, check power supply and ground of system control unit. If it is normal, refer to [GI-38](#), "[CONSULT-II Data Link Connector \(DLC\) Circuit](#)".



5. Select the desired part to be diagnosed on the "SELECT DIAG MODE" screen.



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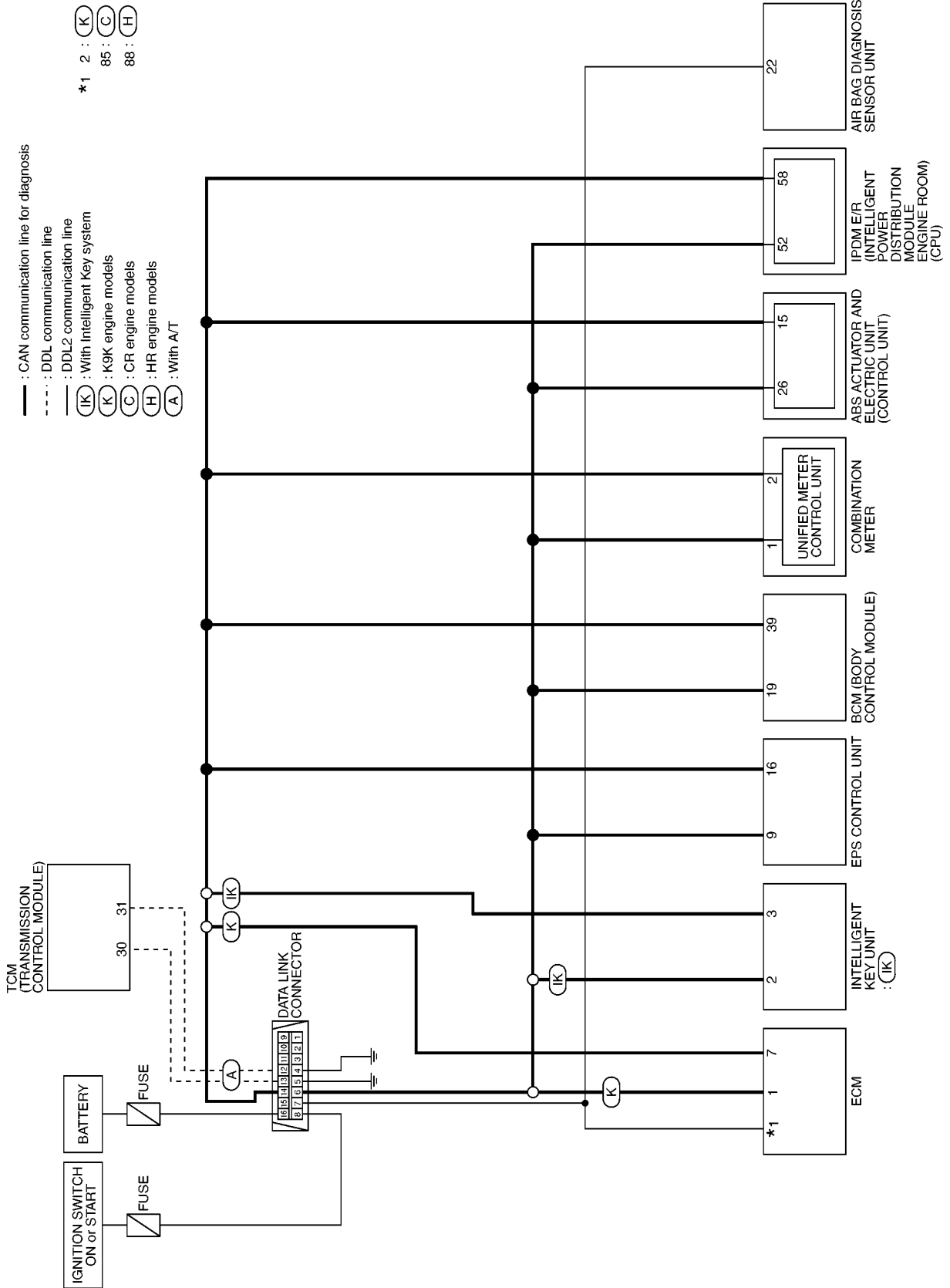
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# CONSULT-II CHECKING SYSTEM

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

BAS00034



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# CONSULT-II CHECKING SYSTEM

## INSPECTION PROCEDURE

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 "MIL &amp; Data Link Connectors Wiring Diagram" in EC section.)</li> <li>● CONSULT-II DLC cable and CONSULT-II CONVERTER</li> </ul>
CONSULT-II cannot access individual system. (Other systems can be accessed.)	<ul style="list-style-type: none"> <li>● CONSULT-II program card (Check the appropriate CONSULT-II program card for the system. Refer to "Checking Equipment".)</li> <li>● Power supply and ground circuit for the control unit 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> <li>● Open or short circuit CAN communication line. Refer to <a href="#">LAN-3. "Precautions When Using CONSULT-II"</a>.</li> </ul>

### 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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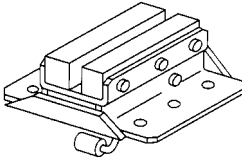
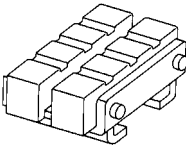
# LIFTING POINT

## LIFTING POINT

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### Commercial Service Tools

BAS00035

Tool name	Description
Board on lift attachment	 <p>S-NT001</p>
Safety stand attachment	 <p>S-NT002</p>

#### CAUTION:

- Every time the vehicle is lifted up, maintain the complete vehicle curb condition.
- Since the vehicle's center of gravity changes when removing main parts on the front side (engine, transmission, suspension etc.), support a jack up point on the rear side garage jack with a mission jack or equivalent.
- Since the vehicle's center of gravity changes when removing main parts on the rear side (rear axle, suspension, etc.), support a jack up point on the front side garage jack with a mission jack or equivalent.
- Be careful not to smash or do not do anything that would affect piping parts.

### Garage Jack, Safety Stand and 2-Pole Lift

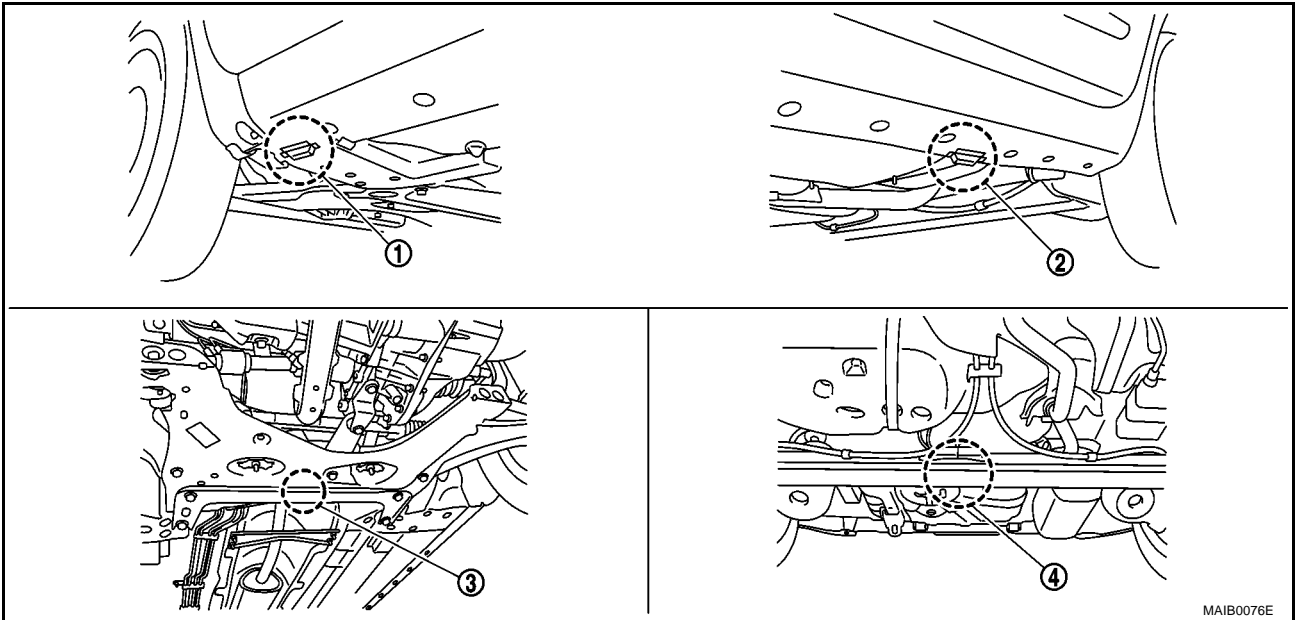
BAS00036

#### WARNING:

- Park the vehicle on a level surface when using the jack. Make sure to avoid damaging pipes, tubes, etc. under the vehicle.
- 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.
- 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.



# LIFTING POINT



1. Safety stand point and lift up point (front)
2. Safety stand point and lift up point (rear)
3. Garage jack point (front)
4. Garage jack point (rear)

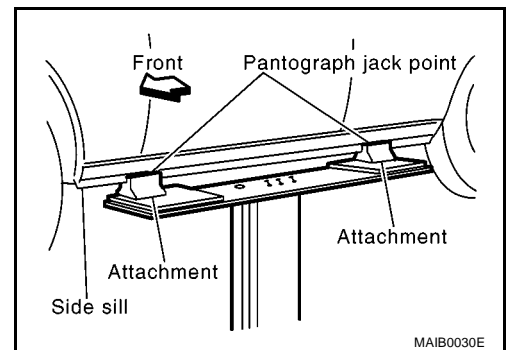
## Board-On Lift

BAS00038

### CAUTION:

Make sure vehicle is empty when lifting.

- The board-on lift attachment 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.



# TOW TRUCK TOWING

## TOW TRUCK TOWING

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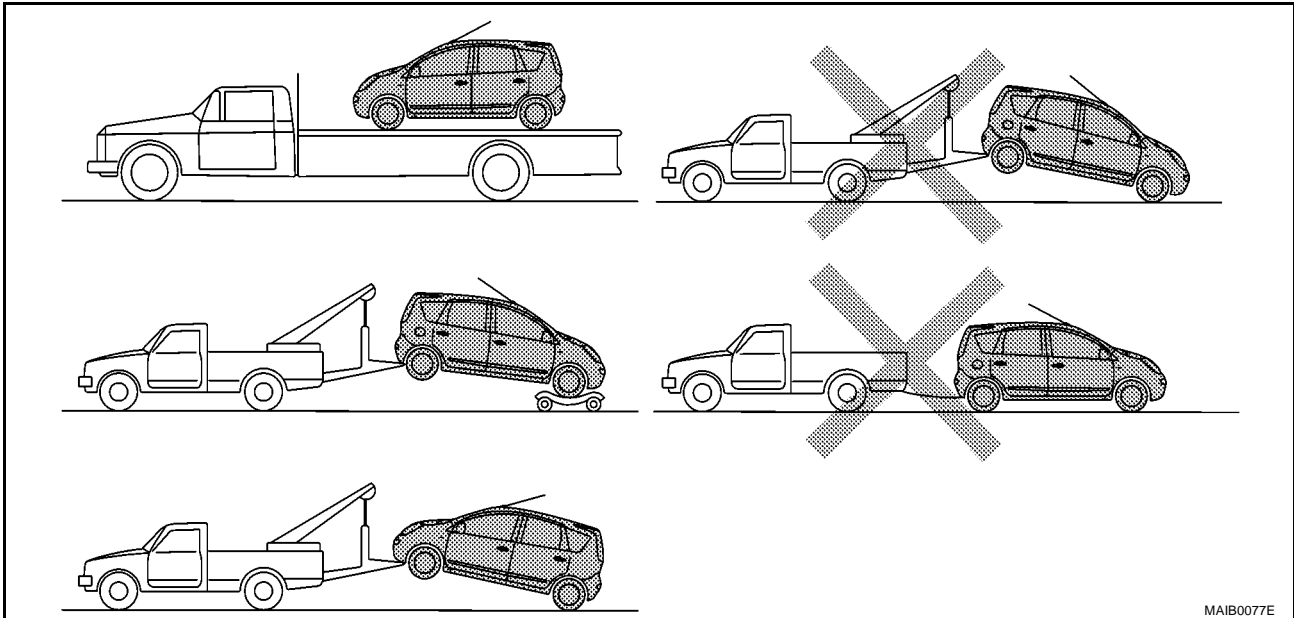
### Tow Truck Towing

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#### CAUTION:

- All applicable 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.

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



MAIB0077E

### TOWING AN AUTOMATIC TRANSAXLE MODEL WITH FOUR WHEELS ON GROUND

#### CAUTION:

Never tow an automatic transaxle model with four wheels on the ground as this may cause serious and expensive damage to the transaxle.

### Vehicle Recovery (Freeing a Stuck Vehicle)

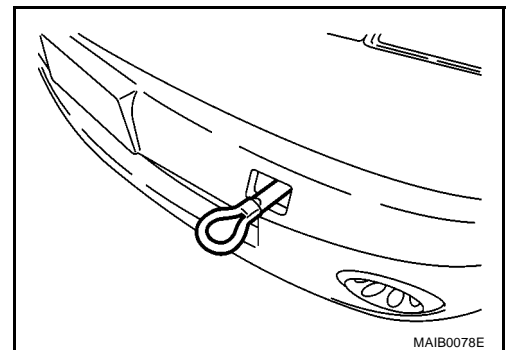
#### FRONT

BAS0003A

- Use the towing hook only, not other parts of the vehicle. Otherwise, the vehicle body will be damaged.
- Use the towing hook only to free a vehicle stuck in sand, snow, mud, etc. Never tow the vehicle for a long distance using only the towing hook.
- The towing hook is under tremendous force when used to free a stuck vehicle. Always pull the cable straight out from the front or rear of the vehicle. Never pull on the hook at an angle.
- Stand clear of a stuck vehicle.

#### WARNING:

- Do not spin the tyres at high speed. This could cause them to explode and result in serious injury. Parts of the vehicle could also overheat and be damaged.
- Install removable towing hook securely using wheel nut wrench.

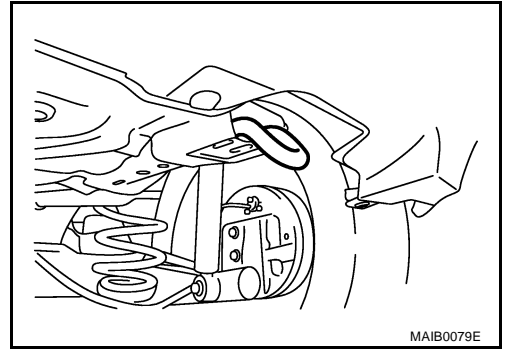


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# TOW TRUCK TOWING

## REAR

Recovery hook is not available.



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# TIGHTENING TORQUE OF STANDARD BOLTS

## TIGHTENING TORQUE OF STANDARD BOLTS

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### Tightening Torque Table

BAS0003B

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

MG1044A

# IDENTIFICATION INFORMATION

## IDENTIFICATION INFORMATION

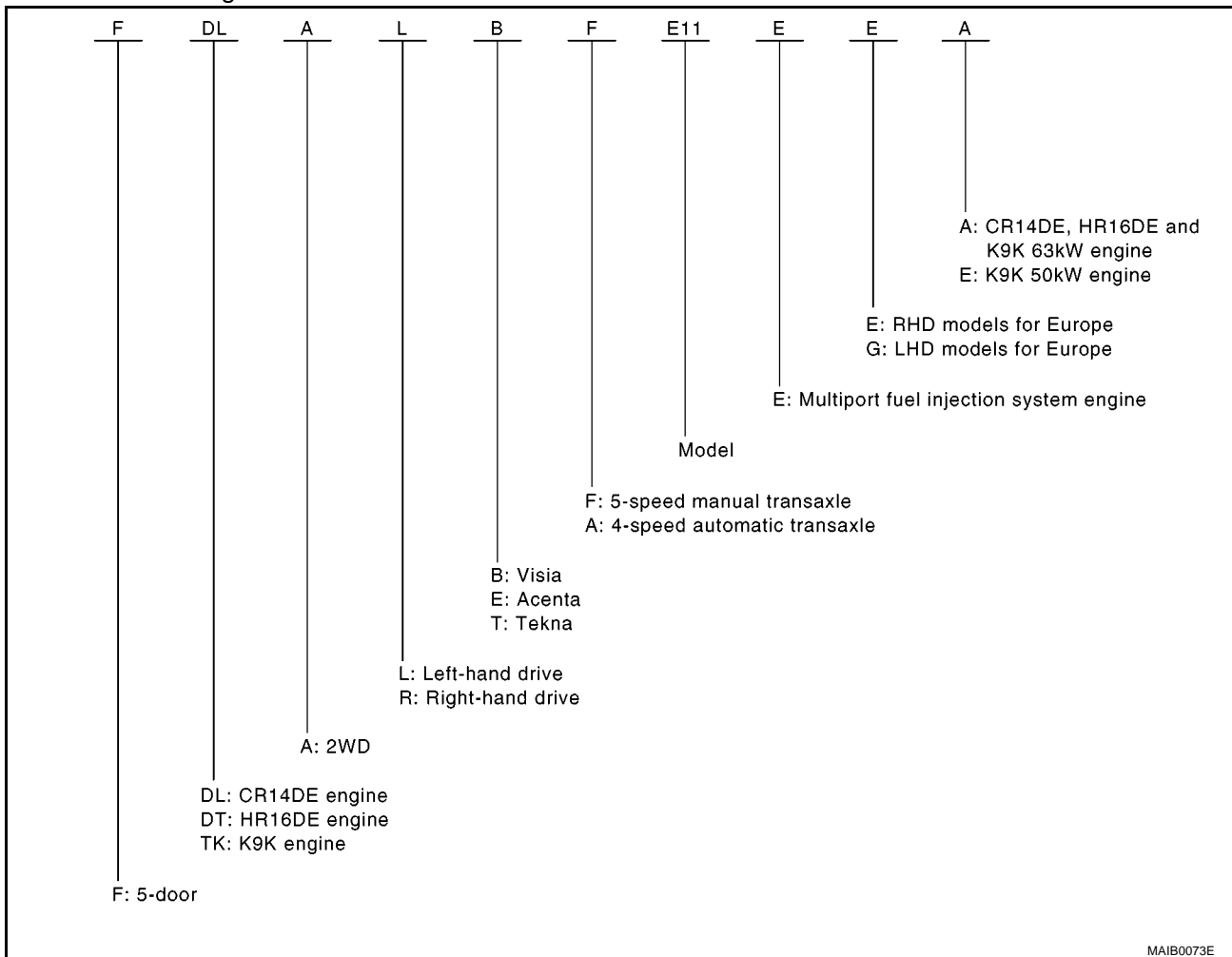
PFP:00010

### Model Variation

BAS003C

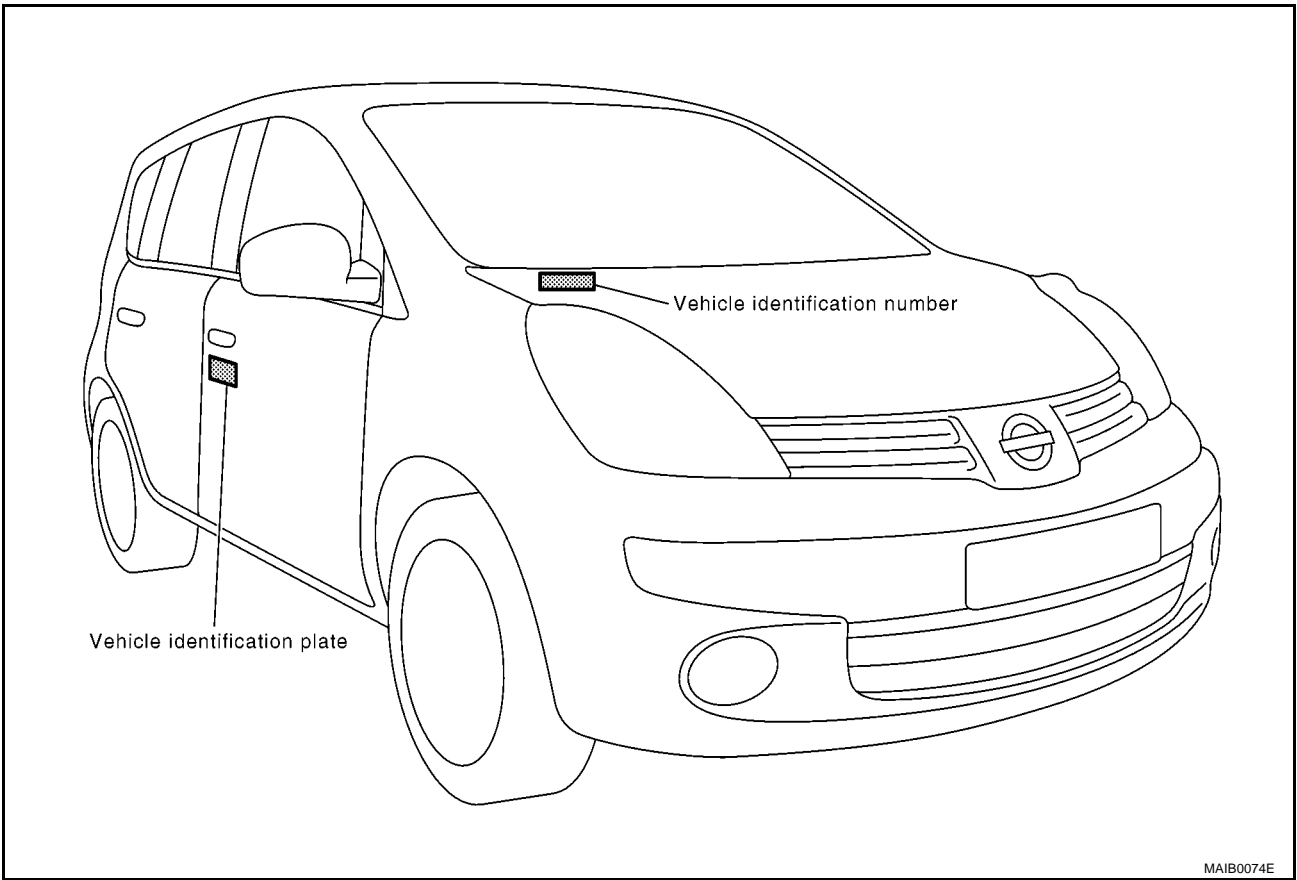
Body	RHD	LHD	Engine	Transaxle	Grade	
5-door	FDLARBF-EEA	FDLALBF-EGA	CR14DE	JH3	Visia	
	FDLAREF-EEA	FDLALEF-EGA			Acenta	
	FDTARBF-EEA	FDTALBF-EGA	HR16DE		RE4F03B	Visia
	FDTAREF-EEA	FDTALEF-EGA				Acenta
	FDTARTF-EEA	FDTALTF-EGA		Tekna		
	FDTARBA-EEA	FDTALBA-EGA		Visia		
	FDTAREA-EEA	FDTALEA-EGA		Acenta		
	FDTARTA-EEA	FDTALTA-EGA		Tekna		
	FTKARBF-EEE	FTKALBF-EGE	K9K 50 kW	JH3	Visia	
	FTKAREF-EEE	FTKALEF-EGE			Acenta	
	FTKARBF-EEA	FTKALBF-EGA	K9K 63 kW	JR5	Visia	
	FTKAREF-EEA	FTKALEF-EGA			Acenta	
	FTKARTF-EEA	FTKALTF-EGA			Tekna	

Prefix and suffix designations:

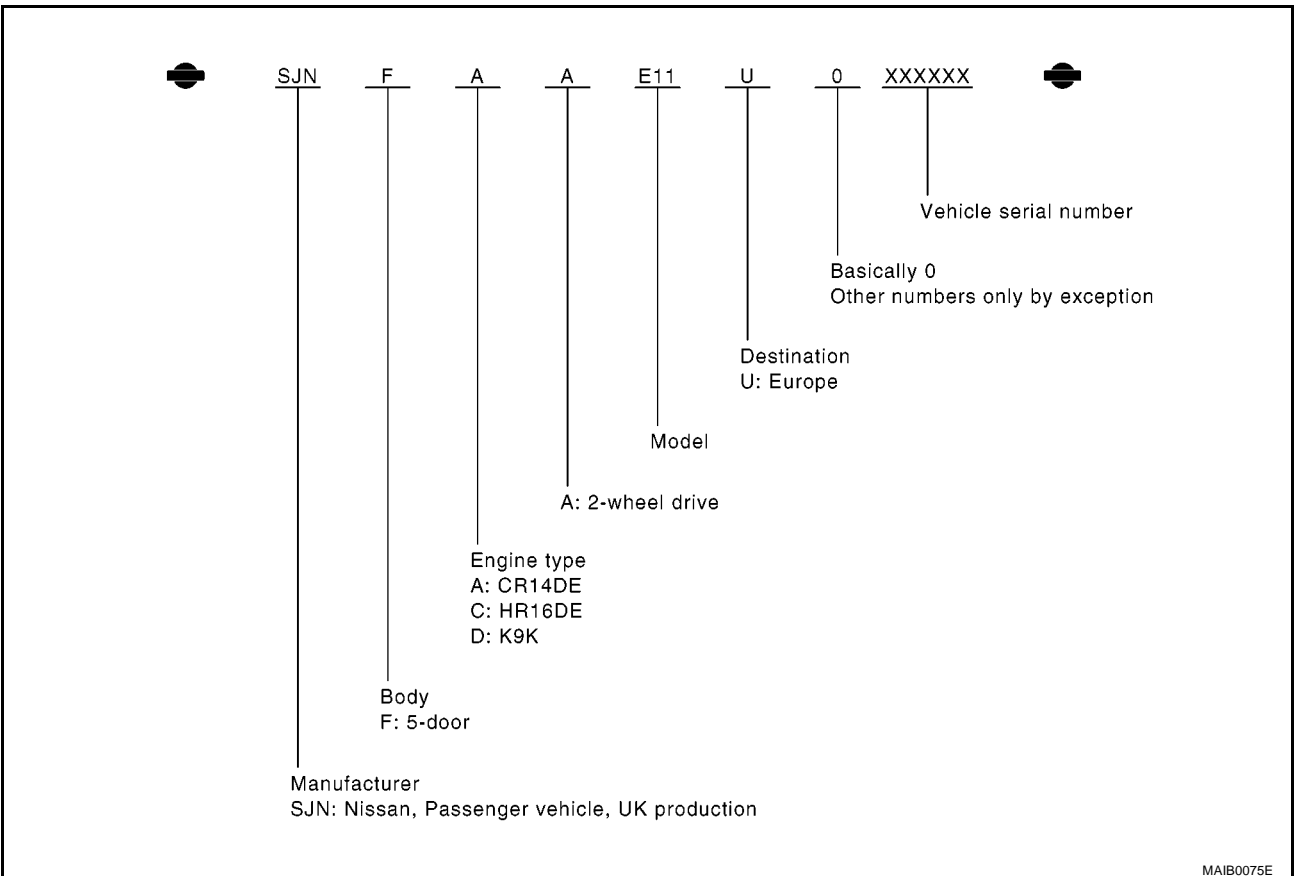


# IDENTIFICATION INFORMATION

## IDENTIFICATION NUMBER

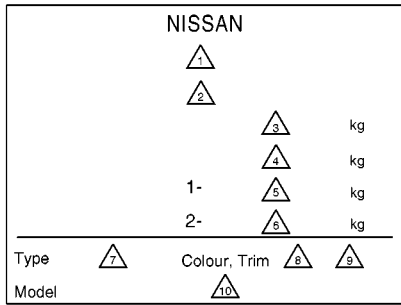


## VEHICLE IDENTIFICATION NUMBER ARRANGEMENT



# IDENTIFICATION INFORMATION

## IDENTIFICATION PLATE

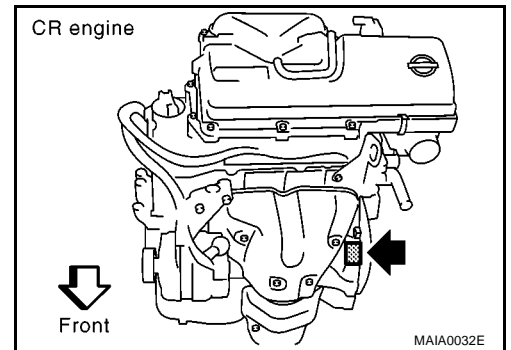


- 1 Type approval number (Models for Europe with Euro-OBD system)  
Blank (Models for Europe without Euro-OBD system)
- 2 Vehicle identification number (Chassis number)
- 3 Gross vehicle weight
- 4 Gross combination weight  
Gross vehicle weight  
+ Gross trailing capacity (Weight)
- 5 Gross axle weight (Front)
- 6 Gross axle weight (Rear)
- 7 Vehicle type

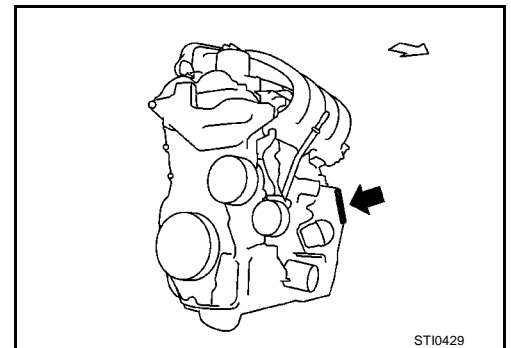
- 8 Body color code
- 9 Trim color code
- 10 Model

MAIB0019E

## ENGINE SERIAL NUMBER (CR ENGINE)



## ENGINE SERIAL NUMBER (HR ENGINE)



GI

B

C

D

E

F

G

H

I

J

K

L

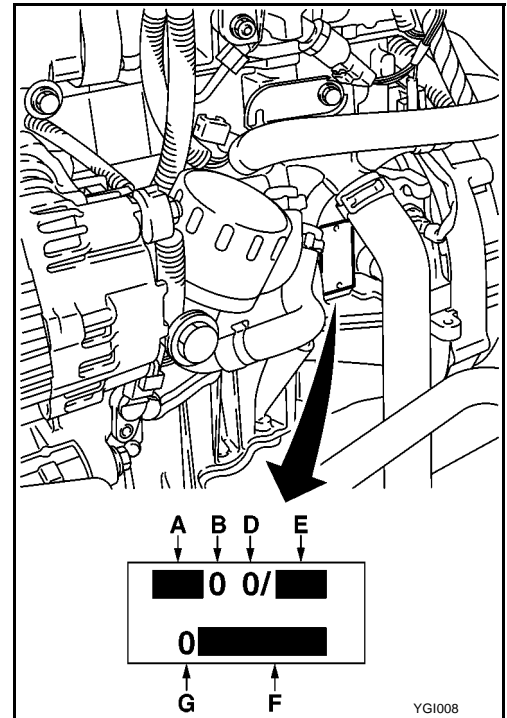
M

# IDENTIFICATION INFORMATION

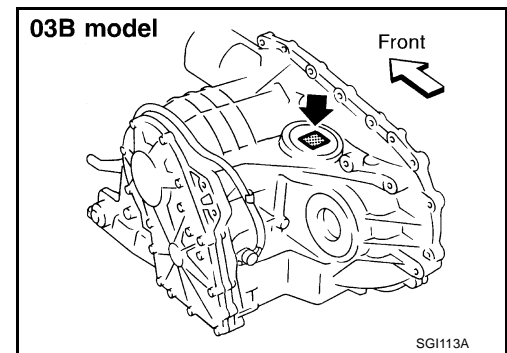
## ENGINE IDENTIFICATION (K9K ENGINE)

Identification is engraved on the cylinder block which carries:

- A: engine type,
- B: engine type approval letter,
- D: Renault code,
- E: engine suffix,
- F: engine fabrication number,
- G: engine assembly plant.



## AUTOMATIC TRANSAXLE NUMBER



## Dimensions

BAS0003D

Unit: mm (in)

Overall length	4,085 (160.83)
Overall width	1,690 (66.54)
Overall height	1,625 (63.98)
Front tread	1,470 (57.87)
Rear tread	1,460 (57.48)
Wheelbase	2,600 (102.36)

## Wheels & Tyres

BAS0003E

	Conventional	Spare
Road wheel size/offset mm (in)	15 × 5.5J Steel/45 (1.77) 15 × 5.5J Aluminium/45 (1.77) 16 × 6J Aluminium/45 (1.77)	14 × 4T Steel/40 (1.57) 15 × 4T Steel/40 (1.57)
Tyre size	175/65R15 185/65R15 185/55R16	T125/70D14 T125/70D15



# TERMINOLOGY

## TERMINOLOGY

PFP:00011

### ISO 15031-2 Terminology List

BAS003F

All emission related terms used in this publication in accordance with ISO 15031-2 are listed. Accordingly, new terms, new acronyms/abbreviations and old terms are listed in the following chart.

NEW TERM	NEW ACRONYM / ABBREVIATION	OLD TERM
Air cleaner	ACL	Air cleaner
Barometric pressure	BARO	***
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	***
Data link connector for CONSULT-II	DLC for CONSULT-II	Diagnostic connector for CONSULT-II
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
Erasable programmable read only memory	EPROM	***
Evaporative emission canister	EVAP canister	Canister
Evaporative emission system	EVAP system	Canister control solenoid valve
Exhaust gas recirculation valve	EGR valve	EGR valve

# TERMINOLOGY

NEW TERM	NEW ACRONYM / ABBREVIATION	OLD TERM
Exhaust gas recirculation control-BPT valve	EGRC-BPT valve	BPT valve
Exhaust gas recirculation control-solenoid valve	EGRC-solenoid valve	EGR control solenoid valve
Exhaust gas recirculation temperature sensor	EGRT sensor	Exhaust gas temperature sensor
EGR temperature sensor		
Flash electrically erasable programmable read only memory	FEEPROM	***
Flash erasable programmable read only memory	FEPROM	***
Flexible fuel sensor	FFS	***
Flexible fuel system	FF system	***
Fuel pressure regulator	***	Pressure regulator
Fuel pressure regulator control solenoid valve	***	PRVR control solenoid valve
Fuel trim	FT	***
Heated Oxygen sensor	HO2S	Exhaust gas sensor
Idle air control system	IAC system	Idle speed control
Idle air control valve-air regulator	IACV-air regulator	Air regulator
Idle air control valve-auxiliary air control valve	IACV-AAC valve	Auxiliary air control (AAC) valve
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
Idle speed control-FI pot	ISC-FI pot	FI pot
Idle speed control system	ISC system	***
Ignition control	IC	***
Ignition control module	ICM	***
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
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

# TERMINOLOGY

NEW TERM	NEW ACRONYM / ABBREVIATION	OLD TERM
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 Inhibitor switch 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 multipoint fuel injection system	SFI system	Sequential fuel injection
Service reminder indicator	SRI	***
Simultaneous multipoint 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 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 Lock-up solenoid

GI

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# TERMINOLOGY

NEW TERM	NEW ACRONYM / ABBREVIATION	OLD TERM
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

\*\*\*: Not applicable