NISSAN SERENA
MODEL C23 SERIES
SERVICE MANUAL

VOLUME 1

Edition: September 1992
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NISSAN EUROPE N.V.
Service Operations Section
Amsterdam, The Netherlands

NISSAN SERENA

MODEL C23 SERIES

Volume 1

QUICK REFERENCE INDEX

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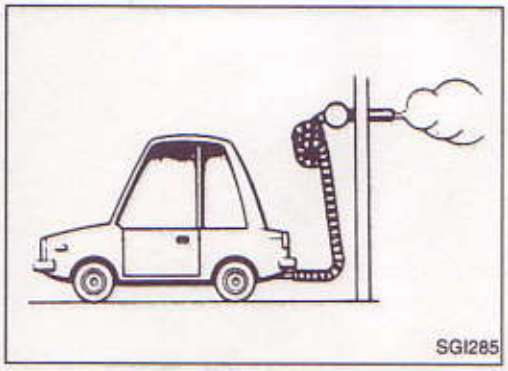
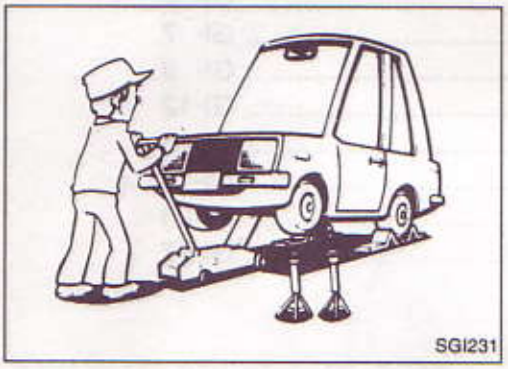
SECTION GI

CONTENTS

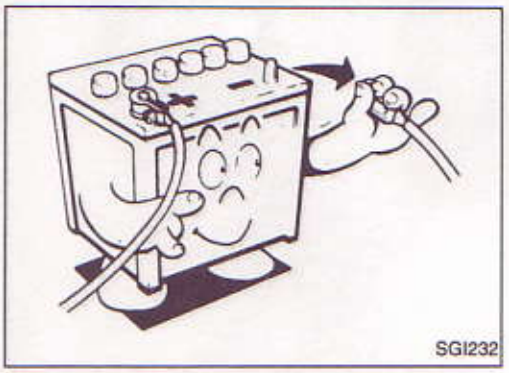
Observe the following precautions to ensure safe and proper servicing. These precautions are not described in each individual section.


SGI285

1. 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.


SGI231

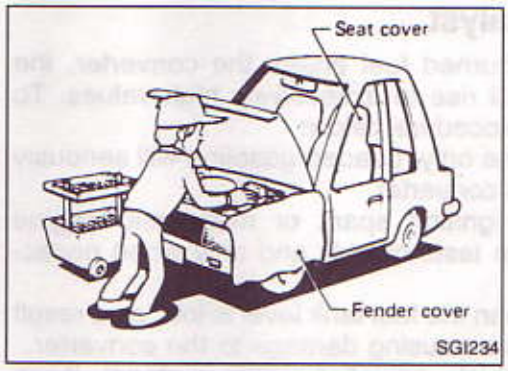
2. Before jacking up the vehicle, apply wheel chocks or other tire blocks to the wheels to prevent the vehicle from moving. After jacking up the vehicle, support the vehicle weight with safety stands at the points designated for proper lifting and towing before working on the vehicle.
   These operations should be done on a level surface.
3. When removing a heavy component such as the engine or transaxle/transmission, take care not to lose your balance and drop it. Also, do not allow it to strike adjacent parts, especially the brake tubes and master cylinder.


SGI232

4. Before starting repairs which do not require battery power, always turn off the ignition switch, then disconnect the ground cable from the battery to prevent accidental short circuit.


SGI233

5. To prevent serious burns, avoid contact with hot metal parts such as the radiator, exhaust manifold, tail pipe and muffler. Do not remove the radiator cap when the engine is hot.



6. Before servicing the vehicle, protect fenders, upholstery and carpeting with appropriate covers.
   Take caution that keys, buckles or buttons on your person do not scratch the paint.
7. Clean all disassembled parts in the designated liquid or solvent prior to inspection or assembly.
8. Replace oil seals, gaskets, packings, O-rings, locking washers, cotter pins, self-locking nuts, etc. with new ones.
9. Replace inner and outer races of tapered roller bearings and needle bearings as a set.
10. Arrange the disassembled parts in accordance with their assembled locations and sequence.
11. Do not touch the terminals of electrical components which use microcomputers (such as electronic control units).
    Static electricity may damage internal electronic components.
12. After disconnecting vacuum or air hoses, attach a tag to indicate the proper connection.
13. Use only the lubricants specified in MA section.
14. Use approved bonding agent, sealants or their equivalents when required.
15. Use tools and recommended special tools where specified for safe and efficient service repairs.
16. When repairing the fuel, oil, water, vacuum or exhaust systems, check all affected lines for leaks.
17. Dispose of drained oil or the solvent used for cleaning parts in an appropriate manner.

Precautions for E.F.I. or E.C.C.S. Engine

1. Before connecting or disconnecting E.F.I. or E.C.C.S. harness connector to or from any E.F.I. or E.C.C.S. control unit, be sure to turn the ignition switch to the "OFF" position and disconnect the negative battery terminal.
   Otherwise, there may be damage to the control unit.
2. Before disconnecting pressurized fuel line from fuel pump to injectors, be sure to release fuel pressure to eliminate danger.
3. Be careful not to jar components such as control unit and air flow meter.

Precautions for Catalyst

If a large amount of unburned fuel enters the converter, the converter temperature will rise to excessively high values. To prevent this, follow the procedure below:

1. Use unleaded gasoline only. Leaded gasoline will seriously damage the catalytic converter.
2. When checking for ignition spark or measuring engine compression, perform tests quickly and only when necessary.
3. Do not run engine when the fuel tank level is low, as a result the engine may misfire causing damage to the converter.
4. Do not place the vehicle on inflammable material. Keep inflammable material off the exhaust pipe.

Asbestos Safety Instructions (Based on Regulations of the Republic of Ireland, Switzerland and the United Kingdom)

This vehicle uses parts containing asbestos, most are not hazardous but Brake and Clutch linings can be. Consult the manufacturer or his agent for further details. When working with these please observe the "Garage Workers' Asbestos Code" available through your Nissan Dealer, Local Authority or Health and Safety Executive. In particular, work in a well-ventilated place using where possible appropriate dust extraction equipment and avoid creating dust. Dampen all asbestos/dust where possible prior to machining, cutting, cleaning, etc. Use only hand or low speed tools.
Dispose of all asbestos waste, wet rags, etc., in a closed container as directed by your local waste disposal authority.

Precautions for Fuel

GASOLINE ENGINE:

Catalytic converter equipped model:
Unleaded gasoline of at least 95 octane (RON)

CAUTION:

Do not use leaded gasoline. Using leaded gasoline will damage the catalytic converter.

Except above:
Leaded or unleaded gasoline of at least 95 octane (RON)

DIESEL ENGINE*:

LD20 engine models ... Diesel fuel of at least 50 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 temperatures will cause wax to form in the fuel. As a result, it may prevent the engine from running smoothly.**

Precautions for Fuel (Cont'd)

- **Do not add gasoline or other alternate fuels to diesel fuel. Only under the following conditions you may use diesel fuel by mixing kerosene or regular gasoline (not premium gasoline) to prevent the fuel from thickening due to wax separation:**
  If the summer type diesel fuel is used at an ambient temperature below 0°C (32°F), add kerosene or regular gasoline but not more than 30% by volume. However, keep in mind that there may be less engine output performance due to the proportion of added fuel. The use of kerosene for motor vehicles is not permitted in some countries, e.g. U.K.

Engine Oils

Prolonged and repeated contact with mineral oil will result in the removal of natural fats from the skin, leading to dryness, irritation and dermatitis. In addition, used engine oil contains potentially harmful contaminants which may cause skin cancer. Adequate means of skin protection and washing facilities must be provided.

HEALTH PROTECTION PRECAUTIONS

1. Avoid prolonged and repeated contact with oils, particularly used engine oils.
2. Wear protective clothing, including impervious gloves where practicable.
3. Do not put oily rags in pockets.
4. Avoid contaminating clothes, particularly underwear, with oil.
5. Heavily soiled clothing and oil-impregnated footwear should not be worn. Overalls must be cleaned regularly.
6. First Aid treatment should be obtained immediately for open cuts and wounds.
7. Use barrier creams, applying them before each work period, to help the removal of oil from the skin.
8. 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.
9. Do not use petrol, kerosine, diesel fuel, gas oil, thinners or solvents for cleaning skin.
10. If skin disorders develop, obtain medical advice without delay.
11. Where practicable, degrease components prior to handling.
12. 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.

(For the United Kingdom, see also HSE Cautionary Notice SHW 397 "Effects of Mineral Oil on the Skin".)

Engine Oils (Cont'd)

ENVIRONMENTAL PROTECTION PRECAUTIONS

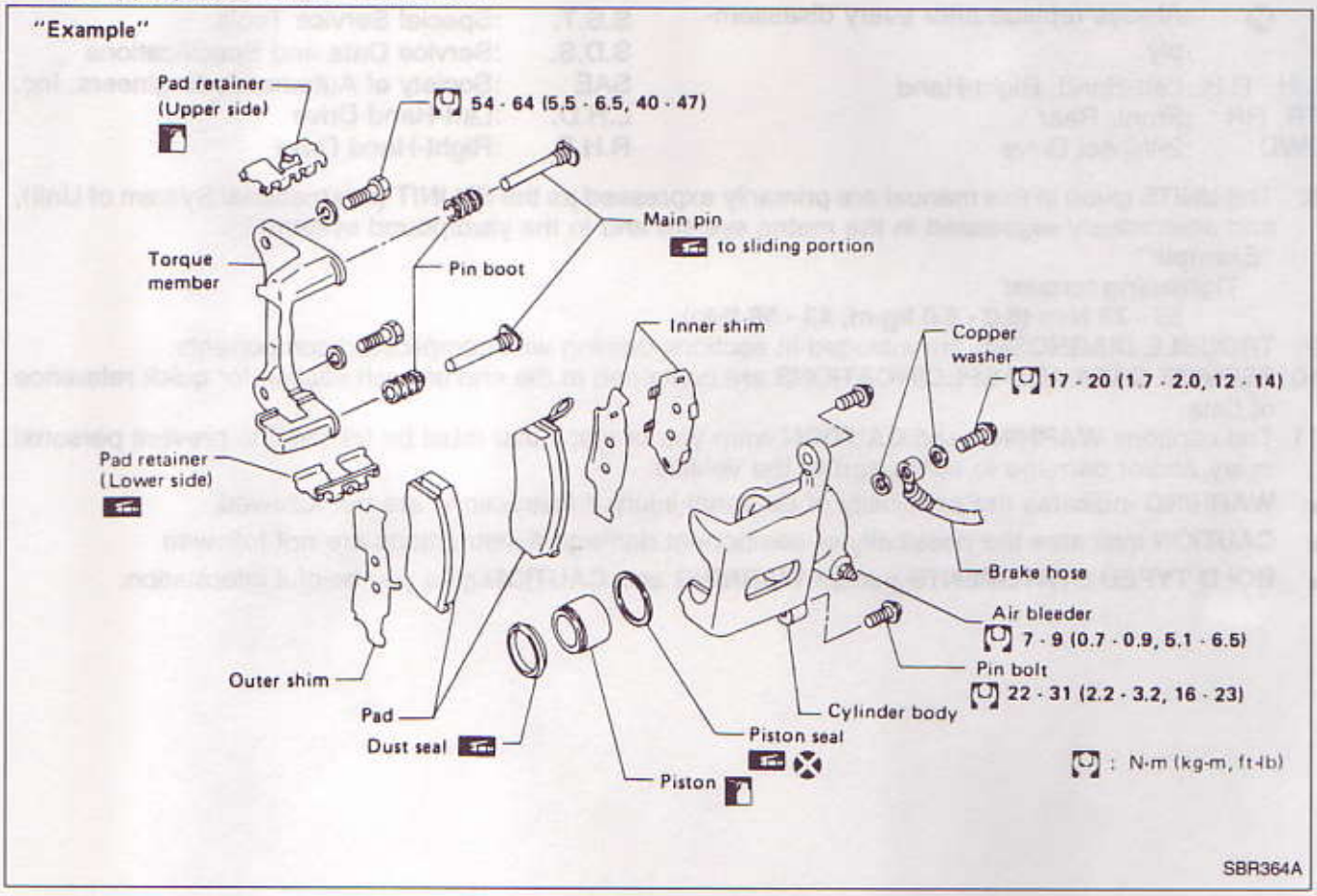
Burning used engine oil in small space heaters or boilers can be recommended only for units of approved design. The heating system must meet the requirements of HM Inspectorate of Pollution for small burners of less than 0.4 MW. If in doubt check with the appropriate local authority and/or manufacturer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

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

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

The regulations concerning the pollution of the environment will vary from country to country.

1. **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 mating it to the section's black tab.
2. **THE CONTENTS** are listed on the first page of each section.
3. **THE TITLE** is indicated on the upper portion of each page and shows the part or system.
4. **THE PAGE NUMBER** of each section consists of two letters which designate the particular section and a number (e.g. "BR-5").
5. **THE LARGE ILLUSTRATIONS** are exploded views (See below) and contain tightening torques, lubrication points and other information necessary to perform repairs.
   The illustrations should be used in reference to service matters only. When ordering parts, refer to the appropriate **PARTS CATALOG.**



6. **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.

7. The following **SYMBOLS AND ABBREVIATIONS** are used:

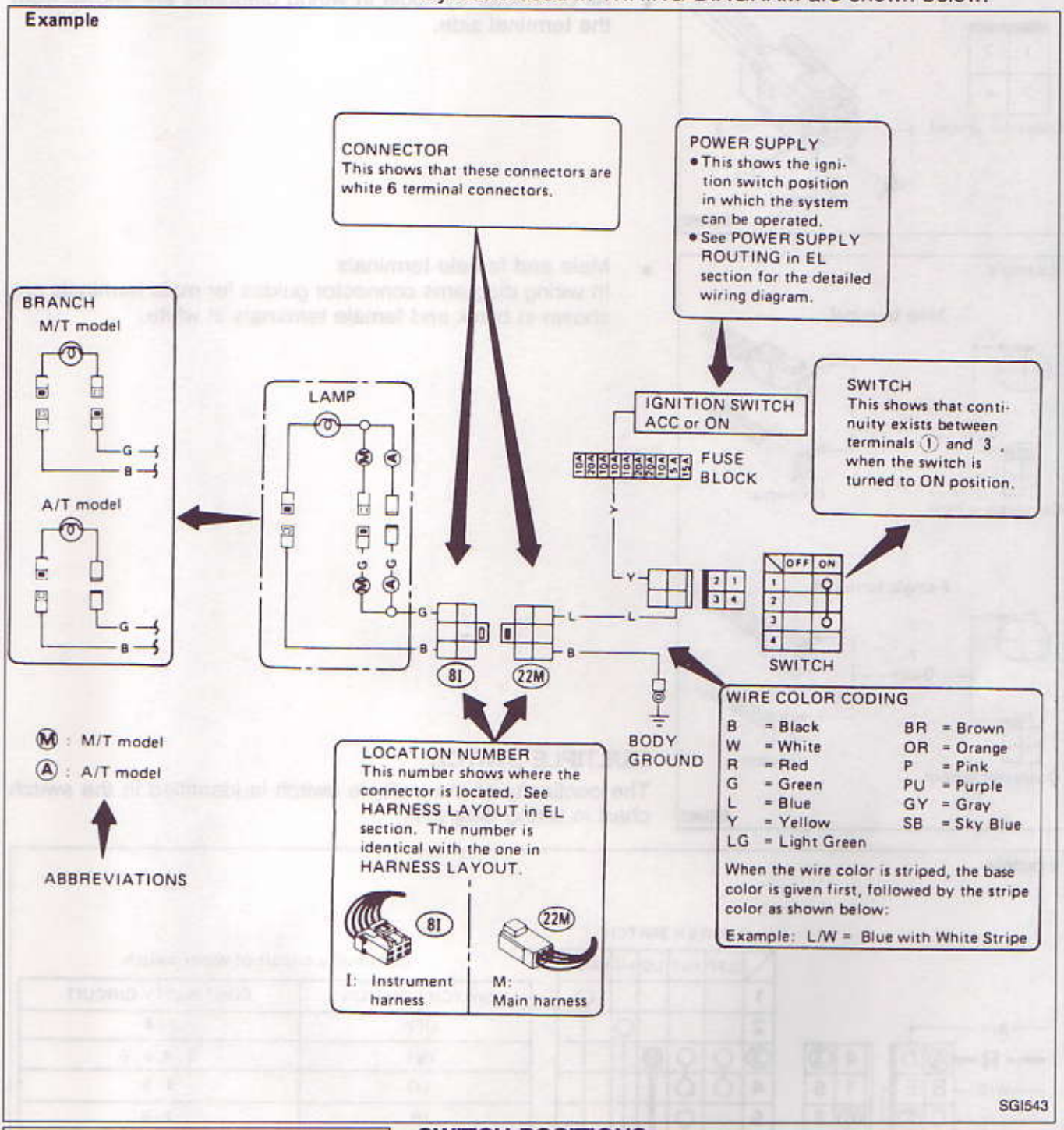
	:Tightening torque
	:Should be lubricated with grease. Unless otherwise indicated, use recommended multi-purpose grease.
	:Should be lubricated with oil.
	:Sealing point
	:Checking point
	:Always replace after every disassembly.
L.H., R.H.	:Left-Hand, Right-Hand
FR, RR	:Front, Rear
2WD	:2-Wheel Drive
Ⓟ	:Apply petroleum jelly.
ATF	:Apply A.T.F.
A.T.F.	:Automatic Transmission Fluid
★	:Select with proper thickness.
☆	:Adjustment is required.
M/T	:Manual Transaxle/Transmission
A/C	:Air Conditioner
P/S	:Power Steering
S.S.T.	:Special Service Tools
S.D.S.	:Service Data and Specifications
SAE	:Society of Automotive Engineers, Inc.
L.H.D.	:Left-Hand Drive
R.H.D.	:Right-Hand Drive

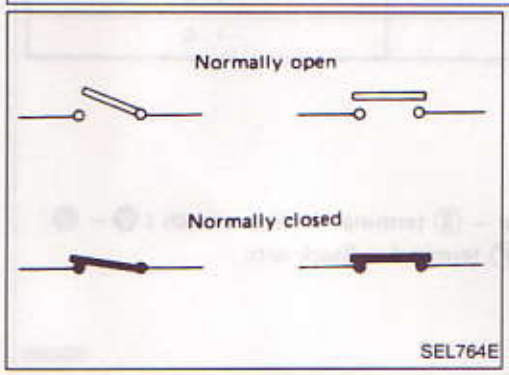
8. The **UNITS** given in this manual are primarily expressed as the SI UNIT (International System of Unit), and alternatively expressed in the metric system and in the yard/pound system.
   "Example"
   Tightening torque:
   59 - 78 N·m (6.0 - 8.0 kg-m, 43 - 58 ft-lb)
9. **TROUBLE DIAGNOSES** are included in sections dealing with complicated components.
10. **SERVICE DATA AND SPECIFICATIONS** are contained at the end of each section for quick reference of data.
11. 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.

WIRING DIAGRAM

Symbols used in WIRING DIAGRAM are shown below:



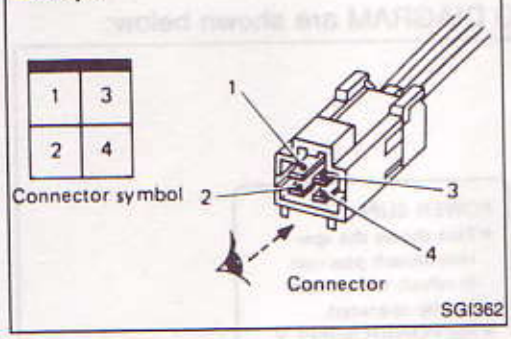


SWITCH POSITIONS

Wiring diagram switches are shown with the vehicle in the following condition.

- Ignition switch "OFF".
- Doors, hood and trunk lid/back door closed.
- Pedals are not depressed and parking brake is released.

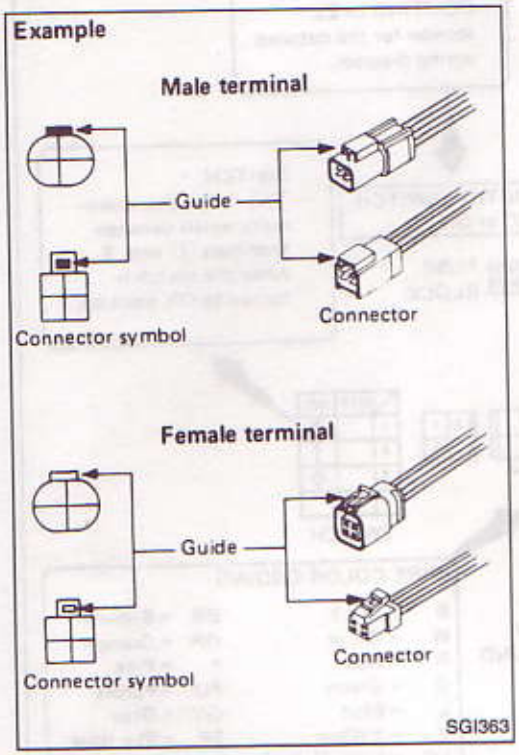
Example



CONNECTOR SYMBOLS

- All connector symbols in wiring diagrams are shown from the terminal side.

Example

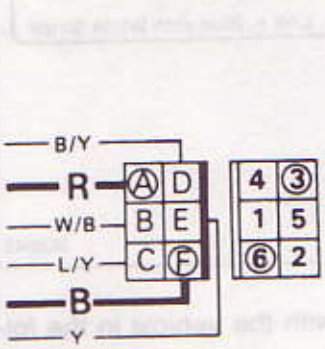


- Male and female terminals
  In wiring diagrams connector guides for male terminals are shown in black and female terminals in white.

MULTIPLE SWITCH

The continuity of the multiple switch is identified in the switch chart in wiring diagrams.

Example



WIPER SWITCH

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

Continuity circuit of wiper switch

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

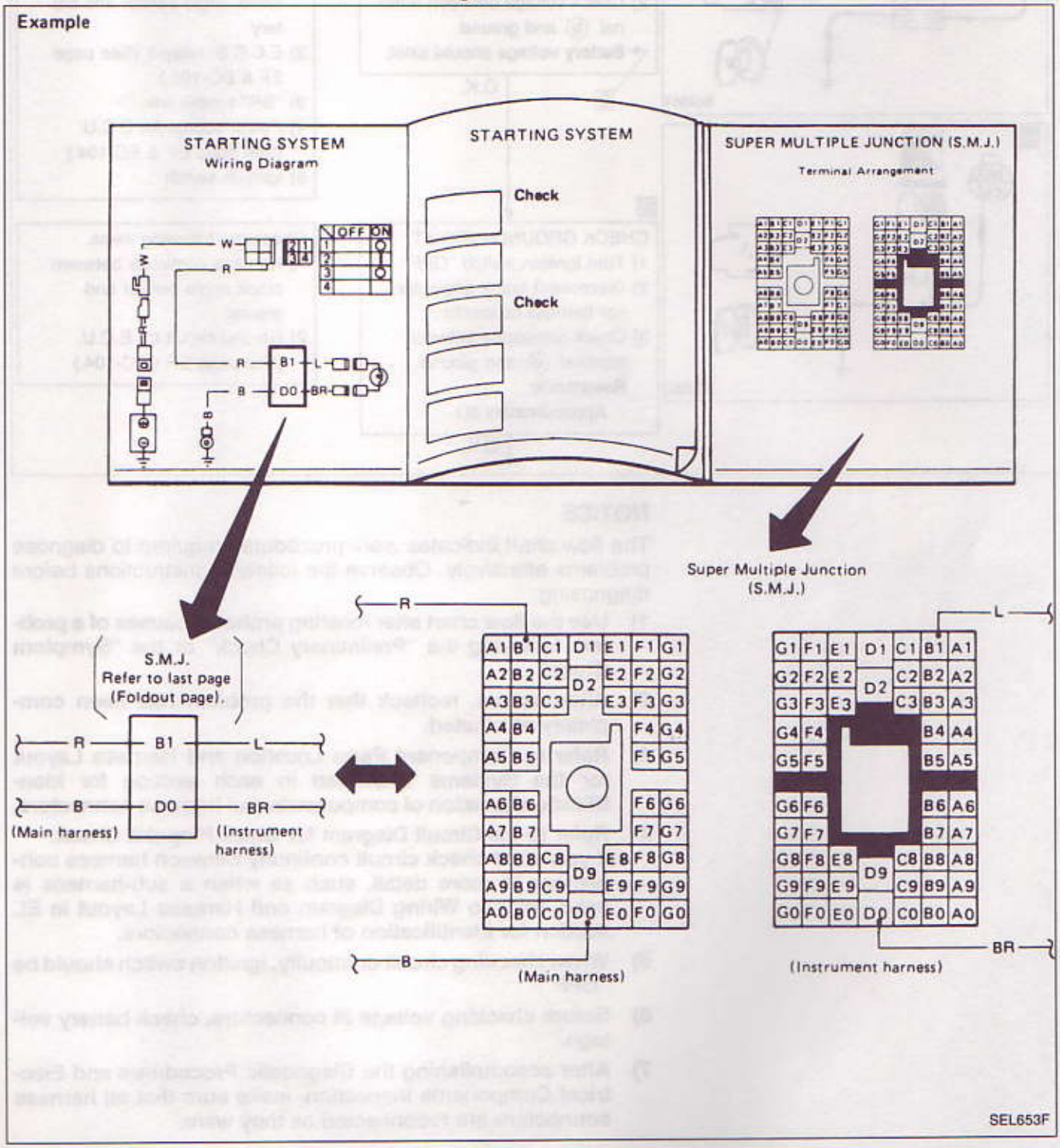
Example: Wiper switch in LO position
Continuity circuit: Red wire – Ⓐ terminal – ③ terminal – Wiper switch (● – ●: LO) – ⑥ terminal – Ⓕ terminal – Black wire

SGI365

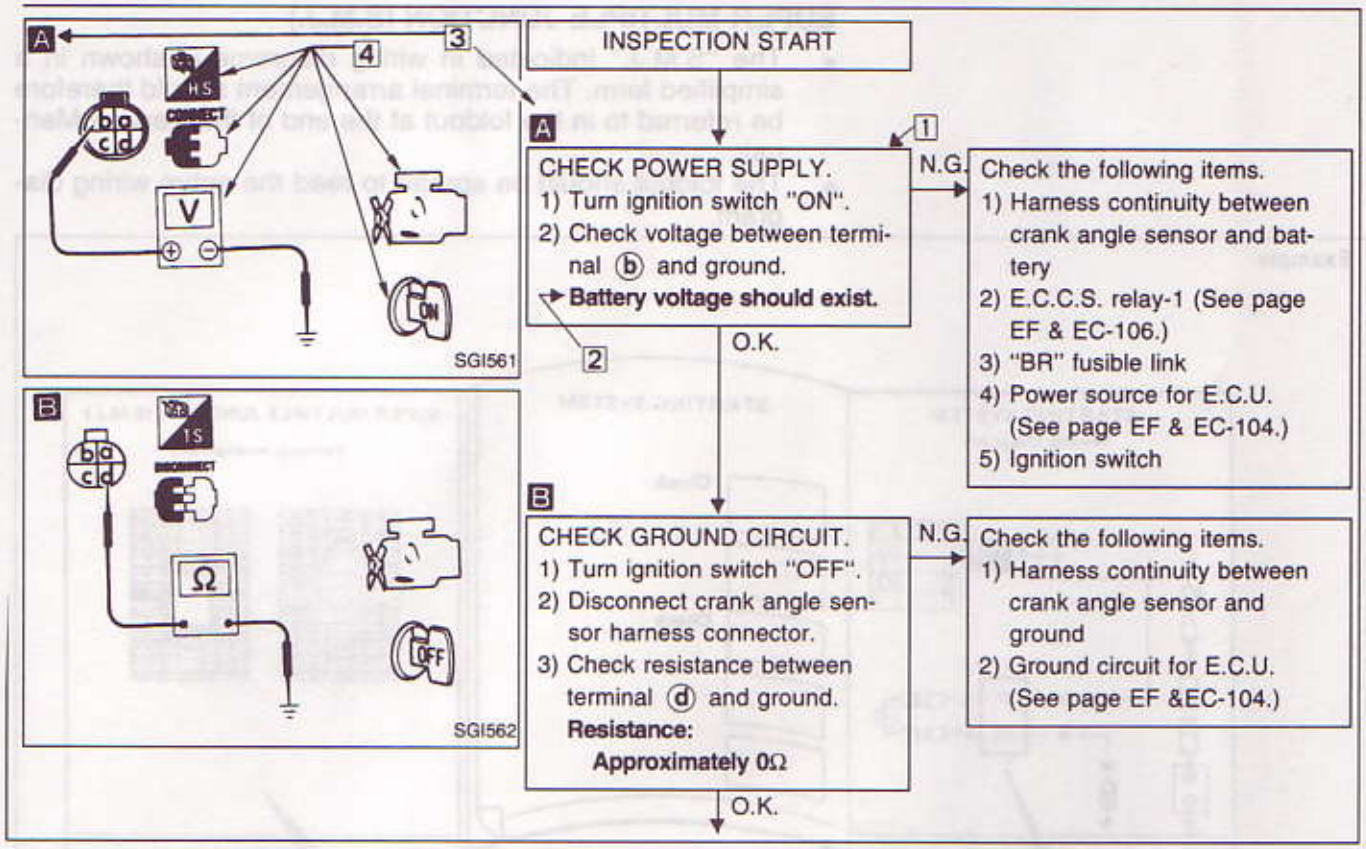
SUPER MULTIPLE JUNCTION (S.M.J.)

- The "S.M.J." indicated in wiring diagrams is shown in a simplified form. The terminal arrangement should therefore be referred to in the foldout at the end of the Service Manual.
- The foldout should be spread to read the entire wiring diagram.

Example



Example



NOTICE

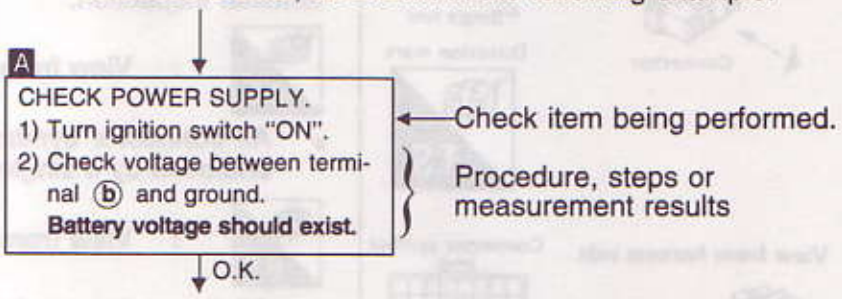
The flow chart indicates work procedures required to diagnose problems effectively. Observe the following instructions before diagnosing.

1) **Use the flow chart after locating probable causes of a problem following the "Preliminary Check" or the "Symptom Chart".**
2) **After repairs, recheck that the problem has been completely eliminated.**
3) **Refer to Component Parts Location and Harness Layout 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 must check circuit continuity between harness connectors in more detail, such as when a sub-harness is used, refer to Wiring Diagram and Harness Layout in EL section for identification of harness connectors.**
5) **When checking circuit continuity, ignition switch should be "OFF".**
6) **Before checking voltage at connectors, check battery voltage.**
7) **After accomplishing the Diagnostic Procedures and Electrical Components Inspection, make sure that all harness connectors are reconnected as they were.**

HOW TO FOLLOW THIS FLOW CHART

1 Work and diagnostic procedure

Start to diagnose a problem using procedures indicated in enclosed blocks, as shown in the following example.



2 Measurement results

Required results are indicated in bold type in the corresponding block, as shown below:
These have the following meanings:

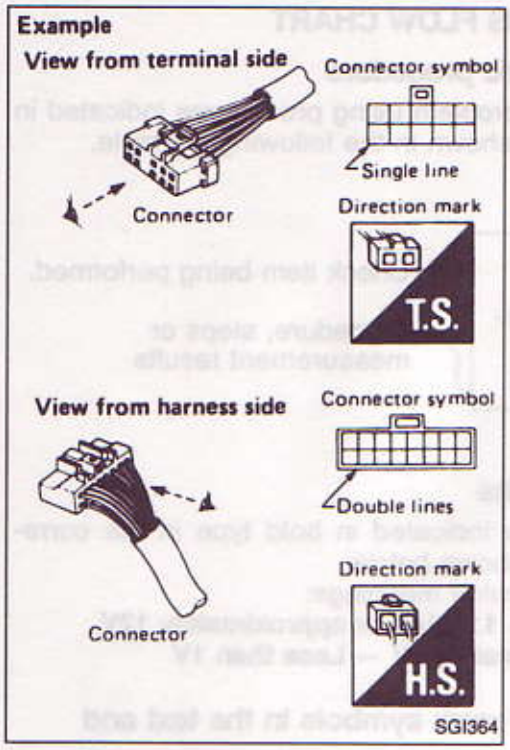
Battery voltage → 11 - 14V or approximately 12V
Voltage: Approximately 0V → Less than 1V

3 Cross reference of work symbols in the text and illustrations

Illustrations are provided as visual aids for work procedures. For example, symbol A indicated in the left upper portion of each illustration corresponds with the symbol in the flowchart for easy identification. More precisely, the procedure under the "CHECK POWER SUPPLY." outlined previously is indicated by illustration A .

4 Symbols used in illustrations

Symbols included in illustrations refer to measurements or procedures. Before diagnosing a problem, familiarize yourself with each symbol.



Direction mark

A direction mark is shown to clarify the side of connector (terminal side or harness side).
Direction marks are mainly used in the illustrations indicating terminal inspection.

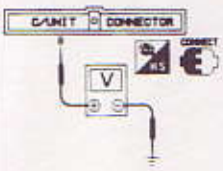
: **View from terminal side ... T.S.**

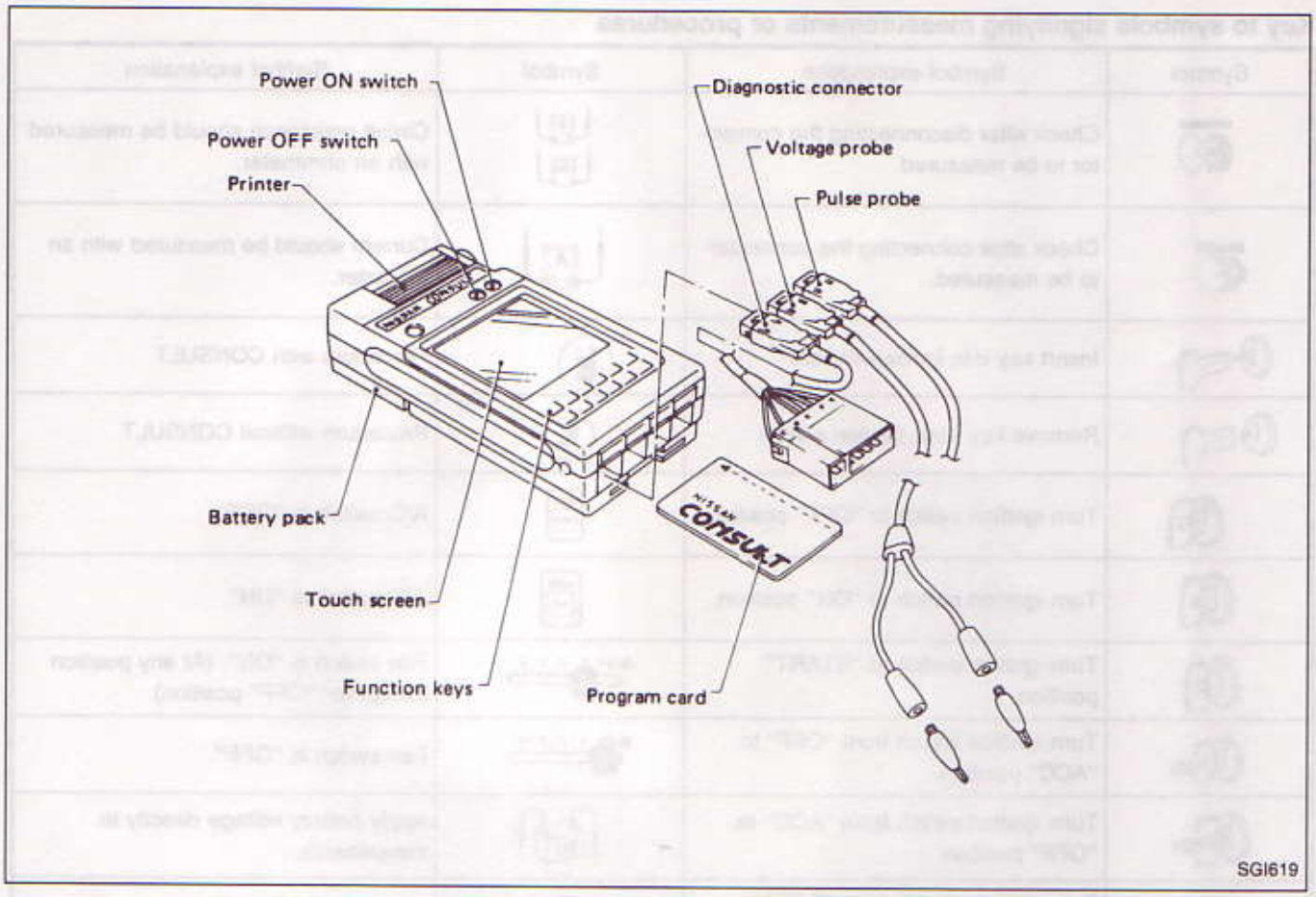
- **All connector symbols shown from the terminal side are enclosed by a single line.**

: **View from harness side ... H.S.**

- **All connector symbols shown from the harness side are enclosed by a double line.**

Key to symbols signifying measurements or procedures

Symbol	Symbol explanation	Symbol	Symbol explanation
	Check after disconnecting the connector to be measured.		Circuit resistance should be measured with an ohmmeter.
	Check after connecting the connector to be measured.		Current should be measured with an ammeter.
	Insert key into ignition switch.		Procedure with CONSULT
	Remove key from ignition switch.		Procedure without CONSULT
	Turn ignition switch to "OFF" position.		A/C switch is "OFF".
	Turn ignition switch to "ON" position.		A/C switch is "ON"
	Turn ignition switch to "START" position.		Fan switch is "ON". (At any position except for "OFF" position)
	Turn ignition switch from "OFF" to "ACC" position.		Fan switch is "OFF".
	Turn ignition switch from "ACC" to "OFF" position.		Apply battery voltage directly to components.
	Turn ignition switch from "OFF" to "ON" position.		Drive vehicle.
	Turn ignition switch from "ON" to "OFF" position.		Disconnect battery negative cable.
	Do not start engine, or check with engine stopped.		Depress brake pedal.
	Start engine, or check with engine running.		Release brake pedal.
	Apply parking brake.		Depress accelerator pedal.
	Release parking brake.		Release accelerator pedal.
	Check after engine is warmed up sufficiently.		Pin terminal check for S.M.J. type E.C.U. connector. **For details regarding the terminal arrangement, refer to the foldout page.** 
	Voltage should be measured with a voltmeter.		



Lithium Battery Replacement

CONSULT contains a lithium battery. When replacing the battery, follow the instructions below:

WARNING:

Replace the lithium battery with SANYO Electric Co., Ltd., CR2032 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 promptly.

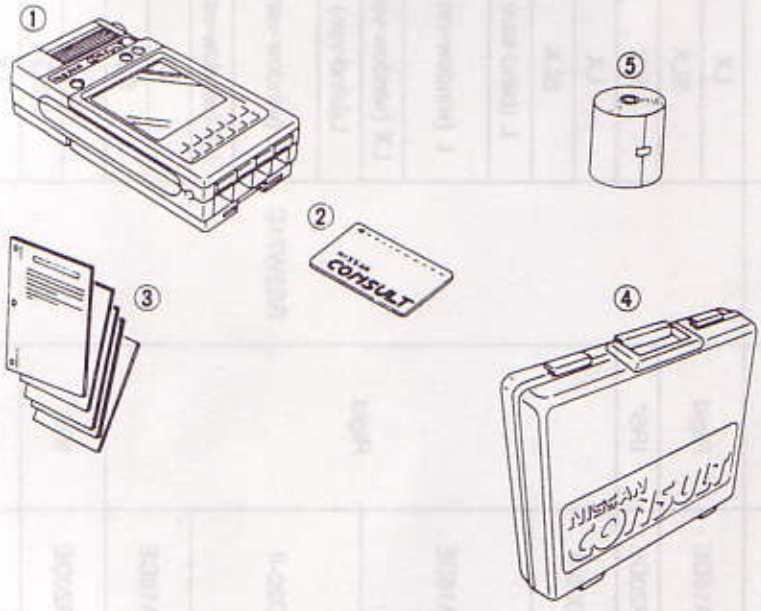
Function and System Application

Diagnostic mode	Function	E.C.C.S. (GA 16DE & SR20DE engines)
Work support	This mode enables a technician to adjust some devices faster and more accurately by following the indications on CONSULT.	x
Self-diagnostic results	Self-diagnostic results can be read and erased quickly.	x
Data monitor	Input/Output data in the control unit can be read.	x
Active test	Mode in which CONSULT drives some actuators apart from the control units and also shifts some parameters in a specified range.	x
E.C.U. part number	E.C.U. part number can be read.	x
Function test	E.C.C.S. faults can be isolated to a general area, semi-automatically and in a short time, by following the directions on the screen.	x

x: Applicable

Checking Equipment

When ordering this equipment, contact your NISSAN distributor.

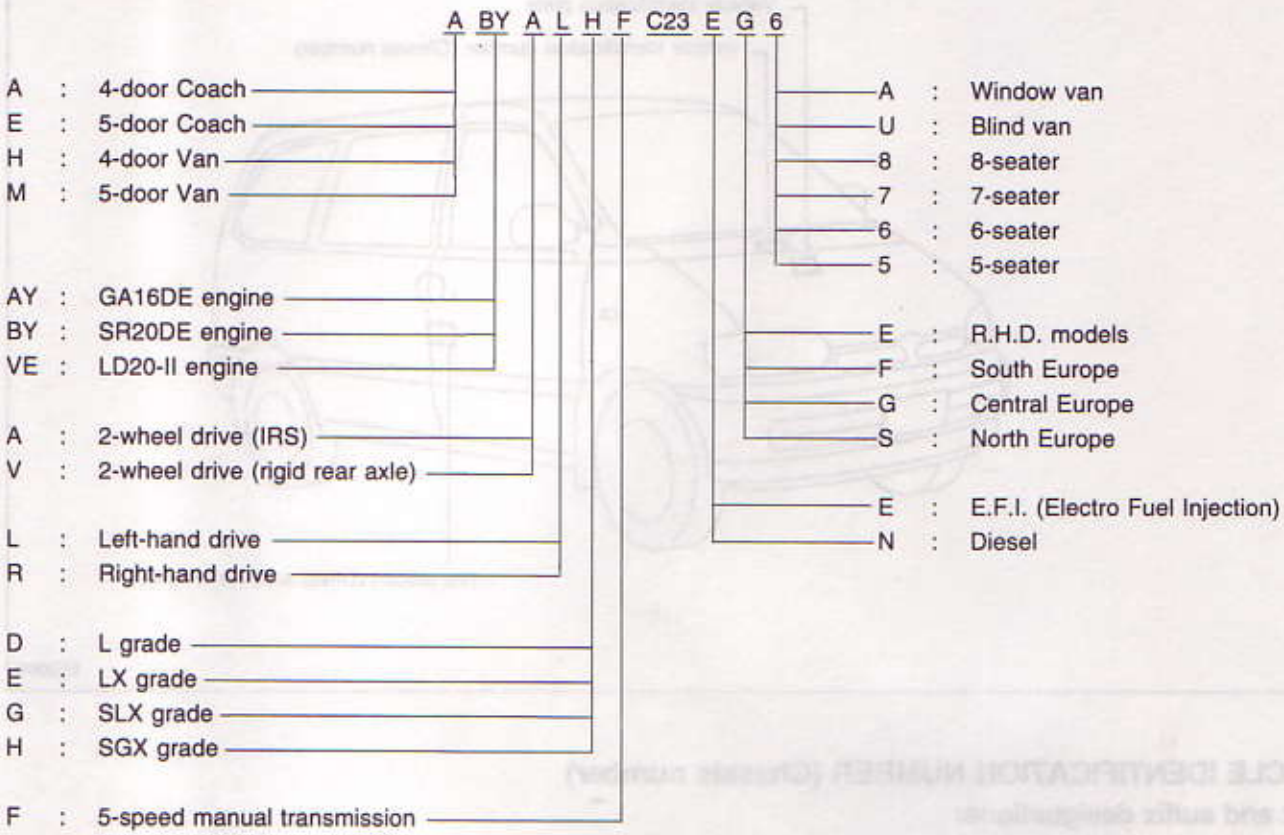
Tool name	Description
NISSAN CONSULT kit ① CONSULT unit and accessories ② Program card ③ Operation manuals ④ Carrying case ⑤ Thermal paper (Rolls)	

Body	Engine	Rear axle	Transmission	Destination / Grade	R.H.D. models	L.H.D. models		
						For South Europe	For Central Europe	For North Europe
5-door coach	GA16DE	Rigid	RS5W71C	LX	EAYVREF-EE8	EAYVLEF-EF8	–	–
				SLX	EAYVRGF-EE7	EAYVLGF-EF7	EAYVLGF-EG7	EAYVLGF-ES7
	SR20DE	IRS*		SLX	EBYARGF-EE7	EBYALGF-EF7	EBYALGF-EG7	EBYALGF-ES7
	LD20-II	Rigid		LX	EVEVREF-NE8	EVEVLEF-NF8	–	–
				SLX	EVEVRGF-NE7	EVEVLGF-NF7	EVEVLGF-NG7	–
5-door van	GA16DE	Rigid		L (blind-van)	MAYVRDF-EEU	MAYVLDF-EFU	MAYVLDF-EGU	MAYVLDF-ESU
				L (window-van)	MAYVRDF-EEA	MAYVLDF-EFA	MAYVLDF-EGA	MAYVLDF-ESA
					–	MAYVLDF-EF5	MAYVLDF-EG5	MAYVLDF-ES5
				LX (window-van)	–	MAYVLEF-EF5	MAYVLEF-EG5	MAYVLEF-ES5
	LD20-II			L(blind-van)	MVEVRDF-NEU	MVEVLDF-NFU	MVEVLDF-NGU	MVEVLDF-NSU
				L (window-van)	MVEVRDF-NEA	MVEVLDF-NFA	MVEVLDF-NGA	MVEVLDF-NSA
					–	MVEVLDF-NF5	MVEVLDF-NG5	–
				LX (window-van)	–	MVEVLEF-NF5	MVEVLEF-NG5	–
4-door coach	GA16DE	Rigid		LX	AAYVREF-EE8	AAYVLEF-EF8	AAYVLEF-EG8	AAYVLEF-ES8
				SLX	AAYVRGF-EE7	AAYVLGF-EF7	AAYVLGF-EG7	AAYVLGF-ES7
	SR20DE	IRS*		SLX	ABYARGF-EE7	ABYALGF-EF7	ABYALGF-EG7	ABYALGF-ES7
				SGX	ABYARHF-EE6	ABYALHF-EF6	ABYALHF-EG6	ABYALHF-ES6
	LD20-II	Rigid		LX	AVEVREF-NE8	AVEVLEF-NF8	AVEVLEF-NG8	–
				SLX	AVEVRGF-NE7	AVEVLGF-NF7	AVEVLGF-NG7	–
		IRS*		SGX	AVEARHF-NE6	AVEALHF-NF6	AVEALHF-NG6	–
4-door van	GA16DE	Rigid		L (window-van)	–	HAYVLDF-EFA	HAYVLDF-EGA	HAYVLDF-ESA
	LD20-II				–	HVEVLDF-NFA	HVEVLDF-NGA	HVEVLDF-NSA

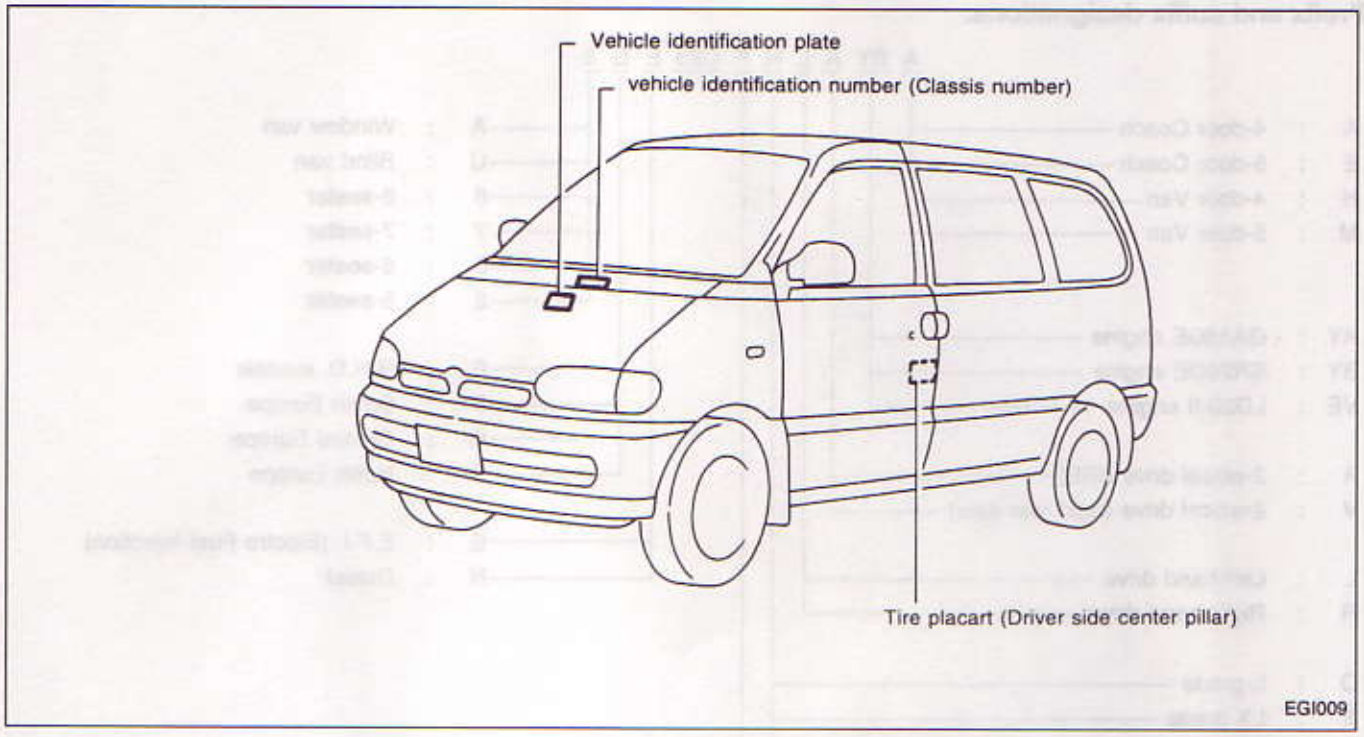
*IRS: Independent Rear Suspension

Model Variation (Cont'd)

Prefix and suffix designations:



Identification Number



VEHICLE IDENTIFICATION NUMBER (Chassis number)

Prefix and suffix designations:

VSK A B A C23 U O XXXXXX

Manufacturer code

Body
- A : 4dr Coach
- B : 5dr Coach
- H : 4dr Van
- M : 5dr Van

Engine
- A : GA16DE
- B : SR20DE
- D : LD20-II

Axle
- A : I.R.S.
- V : rigid rear axle

Model

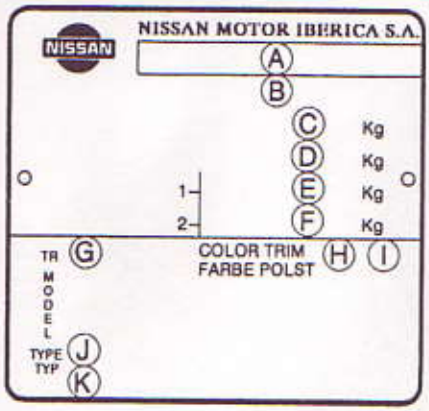
U : for Europe

Stopgap (no meaning)

Vehicle serial number

Identification Number (Cont'd)

IDENTIFICATION PLATE

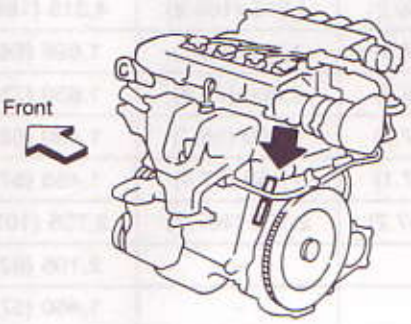


A Type approval number
B Vehicle identification number (chassis number)
C Gross vehicle weight (G.V.W.)
D Gross combination weight (G.C.W.)
E Gross axle weight (Front)
F Gross axle weight (Rear)
G Production serial number
H Body colour code
I Trim colour code
J Vehicle type specification
K Model and type of vehicle

EGI001

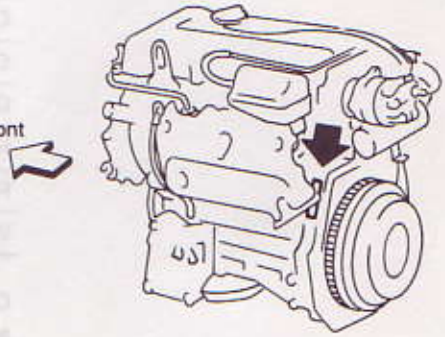
ENGINE SERIAL NUMBER

GA16DE engine



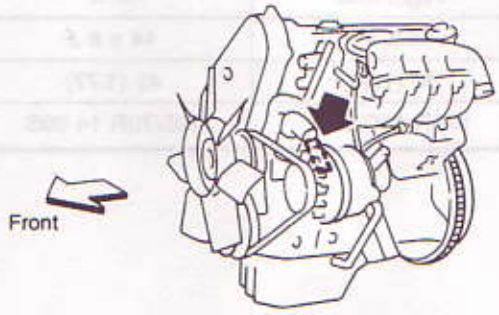
EGI002

SR20DE engine



EGI003

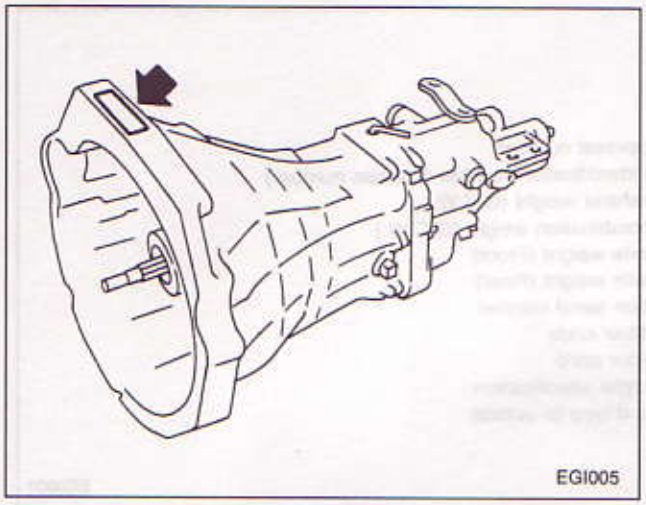
LD20-II engine



EGI004

Identification Number (Cont'd)

MANUAL TRANSMISSION NUMBER



Dimensions

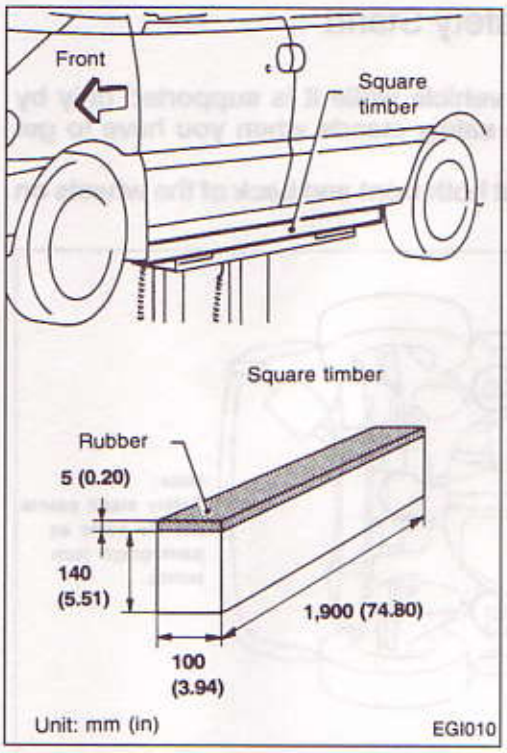
Unit: mm (in)

		Coach		Van
		Models with I.R.S	Models with rigid rear axle	
Overall length		4,315 (169.9)	4,315 (169.9)	4,315 (169.9)
Overall width		1,710 (67.3)	1,695 (66.7)	1,695 (66.7)
Overall height		1,860 (73.2)	1,850 (72.8)	1,850 (72.8)
Front tread		1,460 (57.5)	1,490 (58.7)	1,490 (58.7)
Rear tread		1,450 (57.1)	1,458 (57.4)	1,458 (57.4)
Wheelbase		2,735 (107.7)	2,735 (107.7)	2,735 (107.7)
Cargo space	Length*	–	–	2,105 (82.9)
	Width	–	–	1,460 (57.5)
	Height	–	–	1,275 (50.2)

*At floor level

Wheels and Tires

	Rigid axle	I.R.S.
Road wheel size	14 x 5 J	14 x 6 J
Offset mm (in)	30 (1.18)	45 (1.77)
Tire size	175R 14C 8PR	195/70R 14 90S



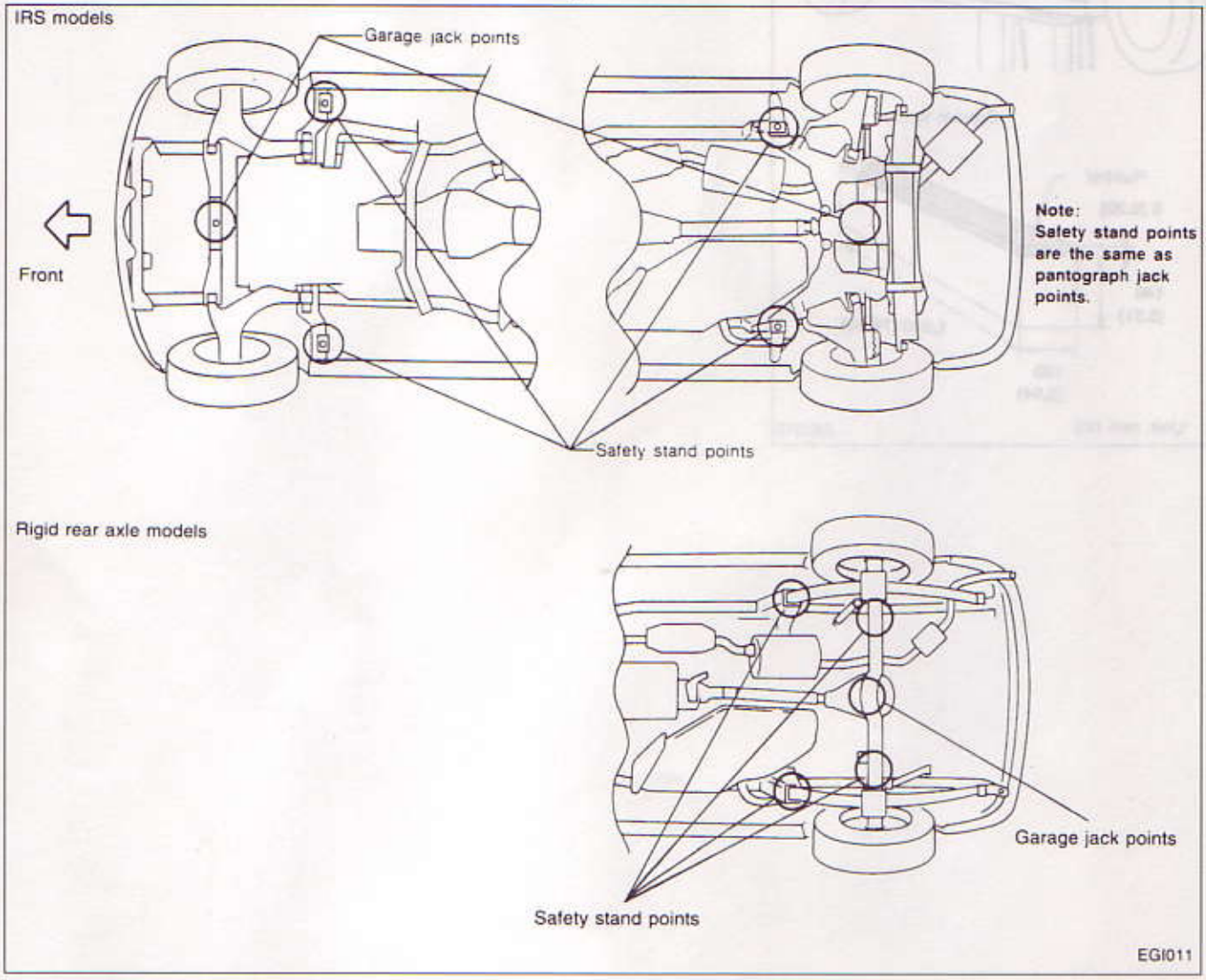
Board-on Lift

CAUTION:
Make sure vehicle is empty when lifting.
Support side sill flange with wooden block to avoid interference with parts located under floor.

Garage Jack and Safety Stand

WARNING:

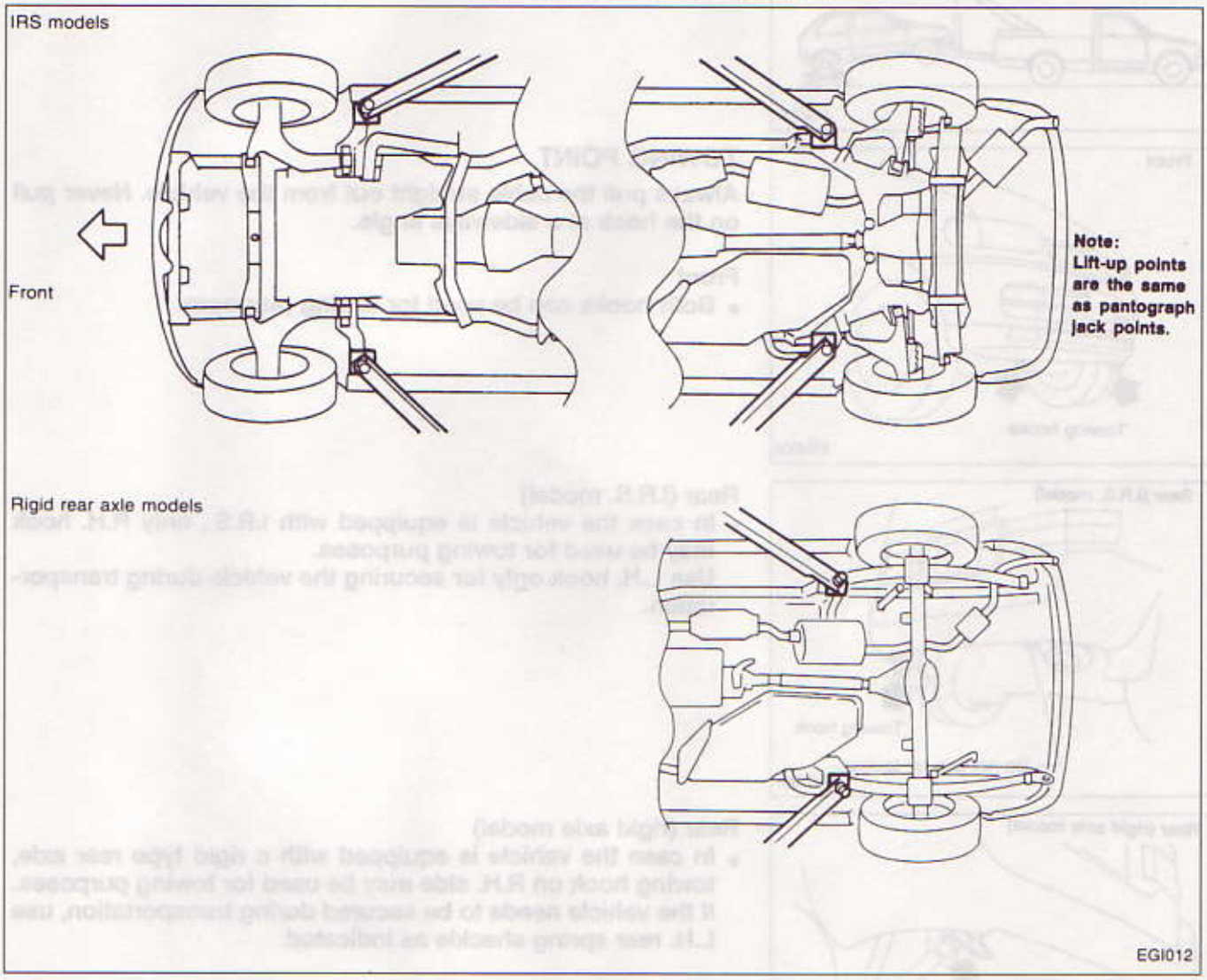
- **Never get under the vehicle while it is supported only by the jack. Always use safety stands when you have to get under the vehicle.**
- **Place wheel chocks at both front and back of the wheels on the ground.**



2-pole Lift

WARNING:

When lifting the vehicle, open the lift arms as wide as possible and ensure that the front and rear of the vehicle are well balanced. When setting the lift arm, do not allow the arm to contact the brake tubes and fuel lines.

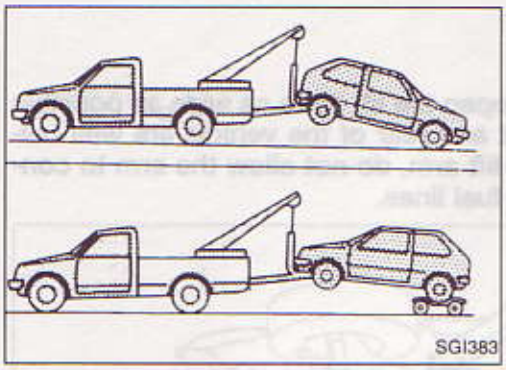


Tow Truck Towing

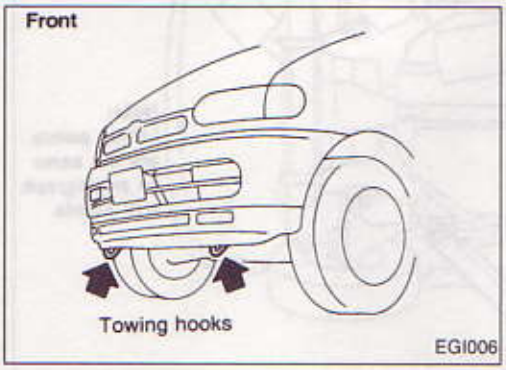
CAUTION:

- **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 a towing operation.**
- **When towing with the rear wheels on the ground, release the parking brake and move the gearshift lever to neutral ("N" position).**

Tow Truck Towing (Cont'd)


SGI383

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

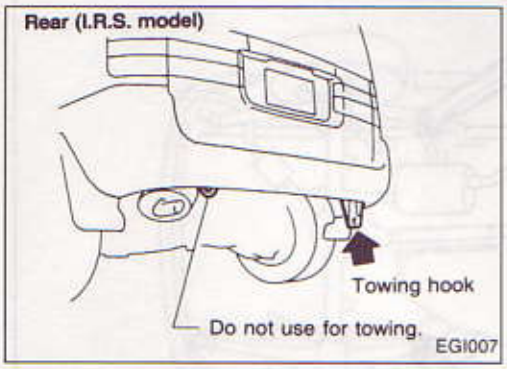


TOWING POINT

Always pull the cable straight out from the vehicle. Never pull on the hook at a sideways angle.

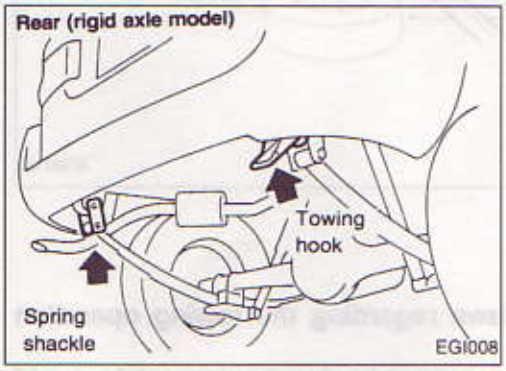
Front

- **Both hooks can be used for towing purposes**



Rear (I.R.S. model)

- **In case the vehicle is equipped with I.R.S., only R.H. hook may be used for towing purposes.**
  Use L.H. hook only for securing the vehicle during transportation.



Rear (rigid axle model)

- **In case the vehicle is equipped with a rigid type rear axle, towing hook on R.H. side may be used for towing purposes. If the vehicle needs to be secured during transportation, use L.H. rear spring shackle as indicated.**

TIGHTENING TORQUE OF STANDARD BOLTS

Grade	Bolt size	Bolt diameter* mm	Pitch mm	Tightening torque (Without lubricant)					
				Hexagon head bolt			Hexagon flange bolt		
				N·m	kg-m	ft-lb	N·m	kg-m	ft-lb
4T	M6	6.0	1.0	5.1	0.52	3.8	6.1	0.62	4.5
	M8	8.0	1.25	13	1.3	9	15	1.5	11
			1.0	13	1.3	9	16	1.6	12
	M10	10.0	1.5	25	2.5	18	29	3.0	22
			1.25	25	2.6	19	30	3.1	22
	M12	12.0	1.75	42	4.3	31	51	5.2	38
			1.25	46	4.7	34	56	5.7	41
	M14	14.0	1.5	74	7.5	54	88	9.0	65
7T	M6	6.0	1.0	8.4	0.86	6.2	10	1.0	7
	M8	8.0	1.25	21	2.1	15	25	2.5	18
			1.0	22	2.2	16	26	2.7	20
	M10	10.0	1.5	41	4.2	30	48	4.9	35
			1.25	43	4.4	32	51	5.2	38
	M12	12.0	1.75	71	7.2	52	84	8.6	62
			1.25	77	7.9	57	92	9.4	68
	M14	14.0	1.5	127	13.0	94	147	15.0	108
9T	M6	6.0	1.0	12	1.2	9	15	1.5	11
	M8	8.0	1.25	29	3.0	22	35	3.6	26
			1.0	31	3.2	23	37	3.8	27
	M10	10.0	1.5	59	6.0	43	70	7.1	51
			1.25	62	6.3	46	74	7.5	54
	M12	12.0	1.75	98	10.0	72	118	12.0	87
			1.25	108	11.0	80	137	14.0	101
	M14	14.0	1.5	177	18.0	130	206	21.0	152

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

*: Nominal diameter

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