

# PATROL GQ

MODEL Y60 SERIES



GENERAL INFORMATION

GI

MAINTENANCE

MA

ENGINE MECHANICAL

EM

ENGINE LUBRICATION &  
COOLING SYSTEMS

LC

ENGINE CONTROL SYSTEM

EC

ACCELERATOR CONTROL,  
FUEL & EXHAUST SYSTEM

FE

CLUTCH

CL

MANUAL TRANSMISSION

MT

AUTOMATIC TRANSMISSION

AT

TRANSFER

TF

PROPELLER SHAFT &  
DIFFERENTIAL CARRIER

PD

FRONT AXLE & FRONT SUSPENSION

FA

REAR AXLE & REAR SUSPENSION

RA

BRAKE SYSTEM

BR

STEERING SYSTEM

ST

BODY & TRIM

BF

HEATER & AIR CONDITIONER

HA

ELECTRICAL SYSTEM

EL

# FOREWORD

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This manual contains maintenance and repair procedures for NISSAN PATROL GR, model Y61 series.

In order to assure your safety and the efficient functioning of the vehicle, this manual should be read thoroughly. It is especially important that the PRECAUTIONS in the GI section be completely understood before starting any repair task.

All information in this manual is based on the latest product information at the time of publication. The right is reserved to make changes in specifications and methods at any time without notice.

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## IMPORTANT SAFETY NOTICE

The proper performance of service is essential for both the safety of the technician and the efficient functioning of the vehicle.

The service methods in this Service Manual are described in such a manner that the service may be performed safely and accurately.

Service varies with the procedures used, the skills of the technician and the tools and parts available. Accordingly, anyone using service procedures, tools or parts which are not specifically recommended by NISSAN must first completely satisfy himself that neither his safety nor the vehicle's safety will be jeopardized by the service method selected.



**NISSAN EUROPE S.A.S.**

Service Engineering Section

Paris, France

SECTION

**GI**

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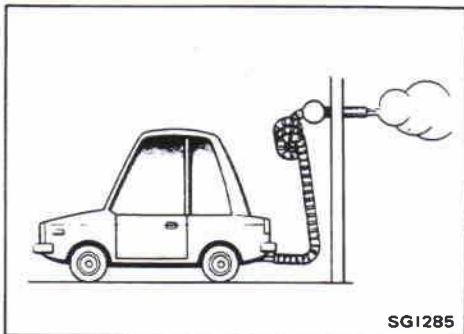
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## PRECAUTIONS

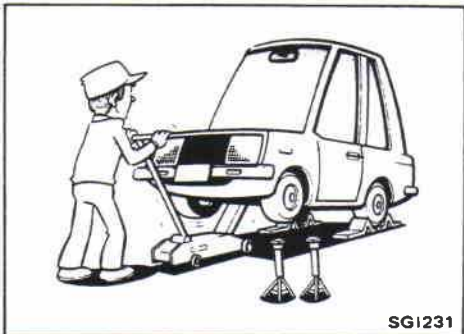
Observe the following precautions to ensure safe and proper servicing. These precautions are not described in each individual section.



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.

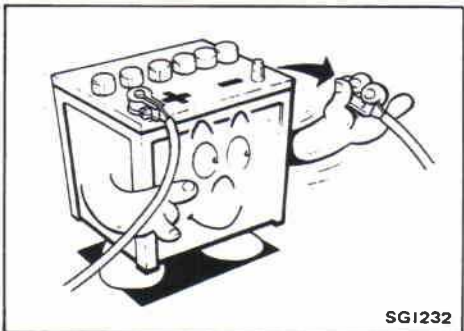
Do not smoke while working on the vehicle.



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, 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.



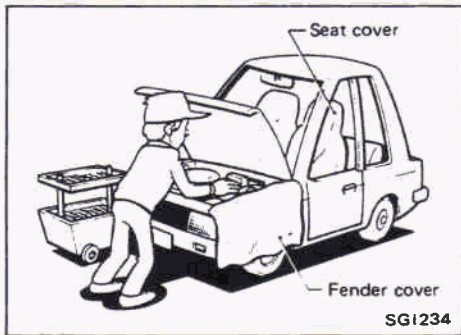
4. Before starting repairs which do not require battery power, always turn off the ignition switch, then disconnect the ground cable from the battery to prevent accidental short circuit.



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.

## PRECAUTIONS

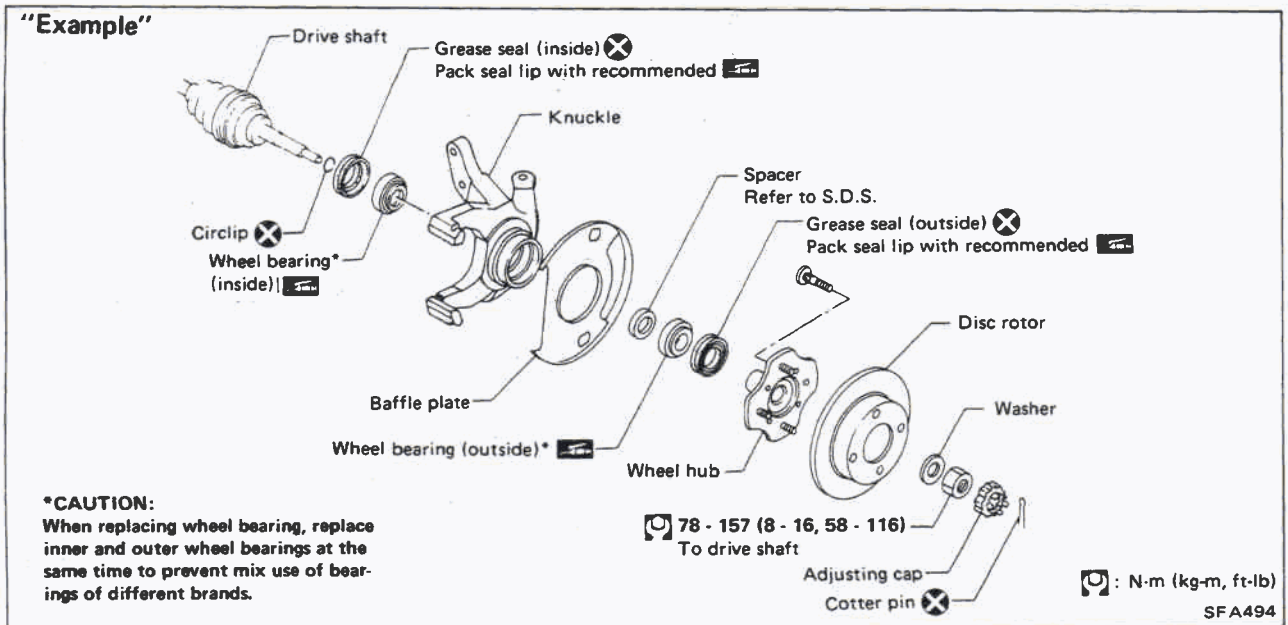
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6. Before servicing the vehicle, protect fenders, upholstery and carpeting with appropriate covers.  
Take caution that keys, buckles or buttons on your person do not scratch the paint.
7. Clean all disassembled parts in the designated liquid or solvent 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.

## HOW TO USE THIS MANUAL

1. **A QUICK REFERENCE INDEX**, a black tab (e.g. **FA**) 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.
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. "FA-5").
5. **THE LARGE ILLUSTRATION** is an exploded view (See below) and contains tightening torques, lubrication points and other information necessary to perform repairs.  
The illustration should be used in reference to the service matters only. When ordering parts, refer to the appropriate **PARTS CATALOG**.



6. **THE SMALL ILLUSTRATION** shows 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 illustration. Assembly, inspection and adjustment procedures for the complicated units such as the automatic trans-axle or transmission, etc. are presented in a step-by-step format where necessary.
7. The followings **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.

- S.D.S.: Service Data and Specifications
- L.H., R.H.: Left-Hand, Right-Hand
- M/T: Manual Transaxle/Transmission
- A/T: Automatic Transaxle/Transmission
- Tool: Special Service Tools
- L.H.D., R.H.D.: Left-Hand drive models, Right-Hand drive models

## HOW TO USE THIS MANUAL

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8. The **UNIT** given in this manual are primarily expressed with the SI UNIT (International System of Unit), and alternately 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)

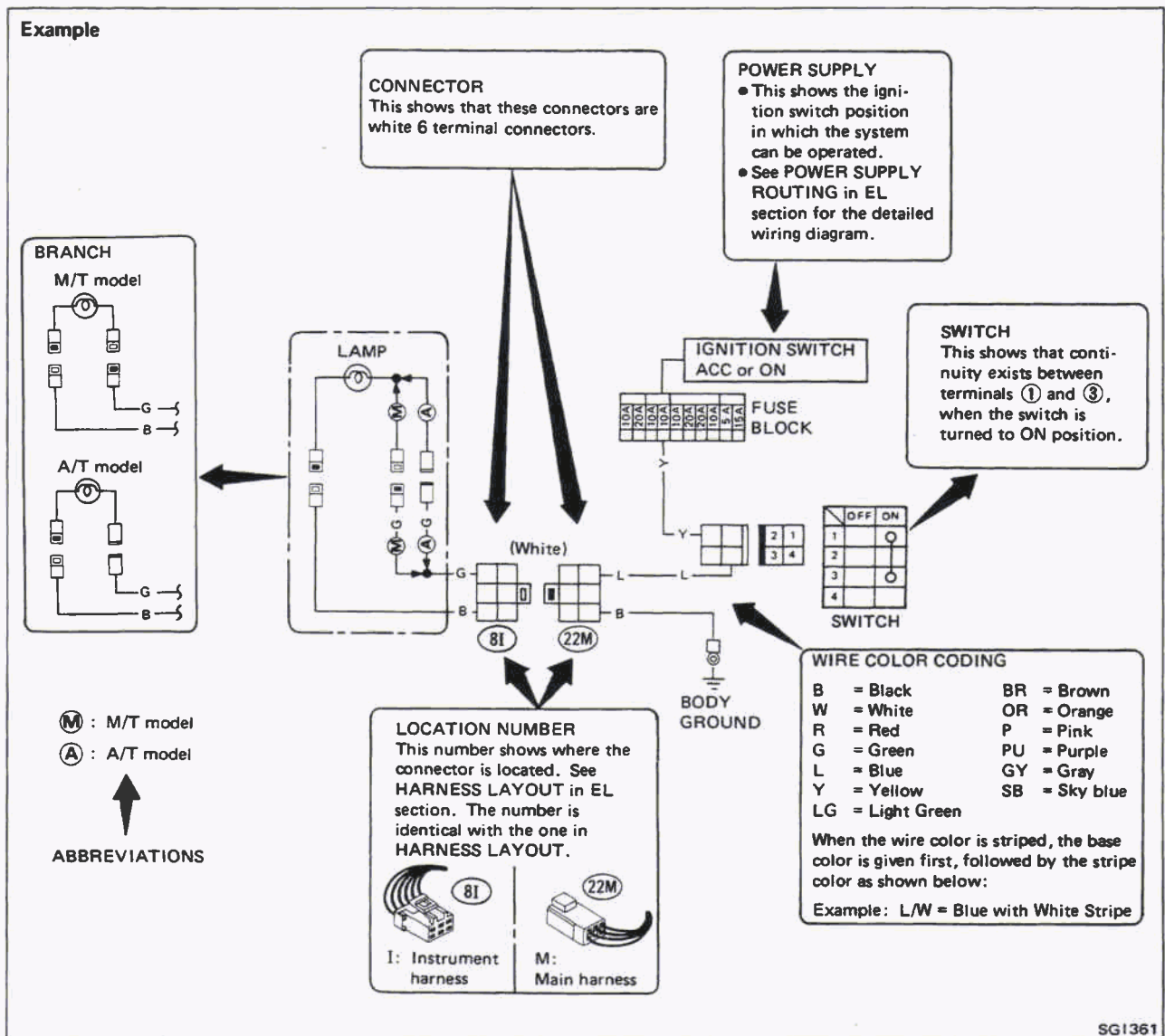
9. **TROUBLE DIAGNOSES AND CORRECTIONS** are included in sections dealing with complicated components.
10. **SERVICE DATA AND SPECIFICATIONS** is contained at the end of each section for quick reference of data.
11. The captions **WARNING** and **CAUTION** warn you of steps that must be followed to prevent personal injury and/or damage to some part of the vehicle.

## HOW TO READ WIRING DIAGRAMS

### WIRING DIAGRAM

Symbols used in WIRING DIAGRAM are shown below.

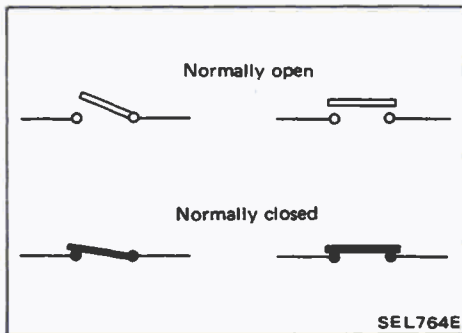
#### Example



SG1361



## HOW TO READ WIRING DIAGRAMS

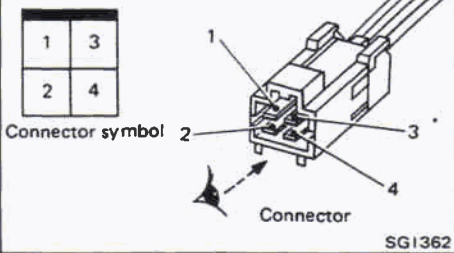


### SWITCH POSITIONS

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.

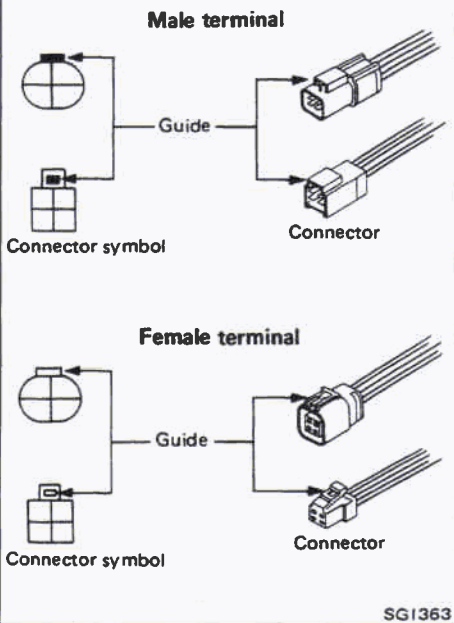
### Example



### CONNECTOR SYMBOLS

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

### Example

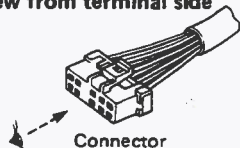


- Male and female terminals  
Connector guides for male terminals are shown in black and female terminals in white in wiring diagrams.

## HOW TO READ WIRING DIAGRAMS

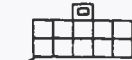
### Example

View from terminal side



Connector

Connector symbol

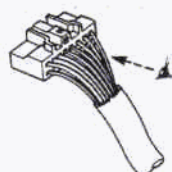


Single line

Direction mark

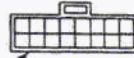


View from harness side



Connector

Connector symbol



Double lines

Direction mark



SG1364

### 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.



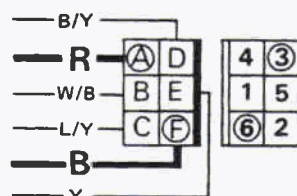
: View from harness side . . . H.S.

- All connector symbols shown from the harness side are enclosed by double lines.

### 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 - ① terminal - ③ terminal - Wiper switch (● - ●: LO) - ⑥ terminal - ⑤ terminal - Black wire

SG1365

Destination	Handle	Engine	Transmission	Transfer	Model	Hardtop				Station Wagon	
						Forward facing	Less	Side facing	High-roof	2nd center split bench 3rd forward facing	2nd center split bench 3rd side facing
									Side facing		
Rear seat arrangement						H233B					
Front differential						H233B					
Rear differential											
Grade											
Transfer											
Gulf standard (Middle East)	L.H.	TB42	FS5R50A	TX12A	STD	KLY60SFR	—	KLY60GSFR	JLY60GSFR	—	WLGY60GSFR
			FS5R50A		DX	KLY60FR	—	—	WLGY60FR	WLGY60GFR	
			RE4R03A		DX	KLY60KR	—	—	WLGY60KR	—	
Except Gulf standard (Middle East) and Australia	L.H.	TB42	FN4R50A	STD	KLY60S	—	—	JLY60GS	—	—	
			FS5R50A	STD	—	—	—	—	—		
			FS5R50A	DX	KLY60F	—	—	—	—		
		TD42	FN4R50A	STD	KRLY60S	—	—	JRLY60GS	—	—	
			FS5R50A	STD	—	—	—	—	—		
			FS5R50A	DX	KRLY60F	—	—	—	—		
	R.H.	TB42	FN4R50A	STD	KY60SU	—	—	JY60GSU	—	—	
			FS5R50A	STD	—	—	—	—	—		
			FS5R50A	DX	KY60FU	—	—	—	—		
		TD42	FN4R50A	STD	KRY60SU	—	—	JRY60GSU	—	—	
			FS5R50A	STD	—	—	—	—	—		
			FS5R50A	DX	KRY60FU	—	—	—	—		
Australia	R.H.	TB42	FS5R50A	STD	KY60SFM	—	—	—	—	—	
			FS5R50A	DX	KY60FM	—	—	—	—		
			RE4R03A	DX	KY60KM	—	—	—	—		
		TD42	FS5R50A	STD	KRY60SFM	KRY60LSFM	—	—	—	—	
			FS5R50A	DX	KRY60FM	—	—	—	—		

Model Variation

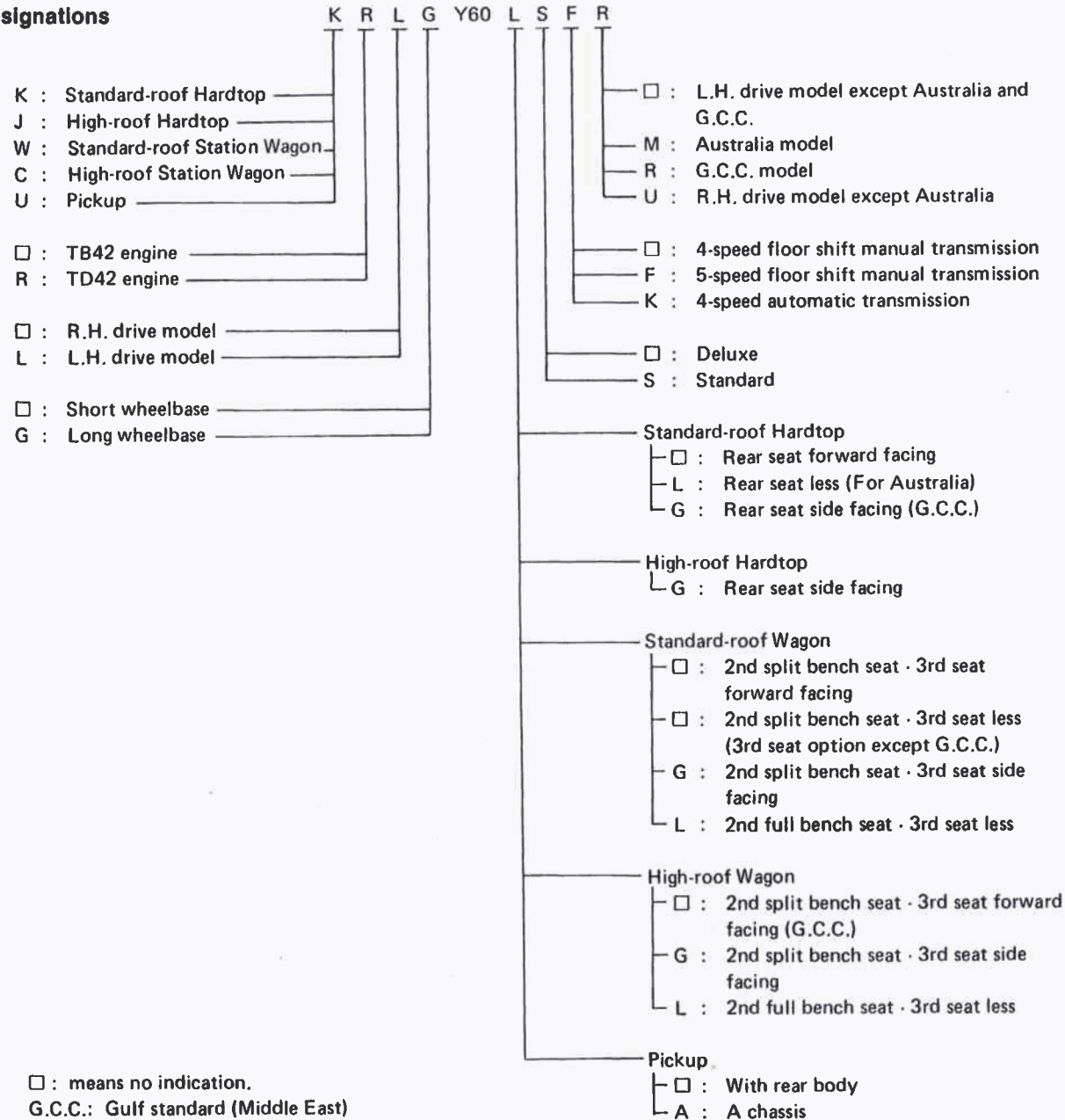
IDENTIFICATION INFORMATION

Destination	Handle	Engine	Transmission	Transfer	Grade	Front differential	Rear differential	Rear seat arrangement	Model	Station Wagon					Pickup					
										2nd center split bench 3rd less	2nd full bench 3rd less	2nd center split bench 3rd forward facing	2nd center split bench 3rd side facing	2nd full bench 3rd less	A chassis					
																High-roof				
																H233B				
																H233B				
Gulf standard (Middle East)	L.H.	TB42	FS5R50A	TX12A	STD	—	—	—	—	—	ULGY60SFR	—								
			DX		—	—	CLGY60FR	CLGY60GFR	—	—	—									
			RE4R03A		DX	—	—	—	CLGY60GKR	—	—	—								
Except Gulf standard (Middle East) and Australia	L.H.	TB42	FN4R50A		STD	WLGY60S	WLGY60LS	—	CLGY60GS	CLGY60LS	ULGY60S	ULGY60AS								
			FS5R50A		STD	—	—	—	—	ULGY60SF	ULGY60ASF									
			FS5R50A		DX	WLGY60F	—	—	CLGY60GF	—	—	—								
		TD42	FN4R50A		STD	WRLGY60S	WRLGY60LS	—	CRLGY60GS	CRLGY60LS	URLGY60S	URLGY60AS								
			FS5R50A		STD	—	—	—	—	URLGY60SF	URLGY60ASF									
			FS5R50A		DX	WRLGY60F	—	—	CRLGY60GF	—	—	—								
	R.H.	TB42	FN4R50A		STD	WGY60SU	WGY60LSU	—	—	—	UGY60SU	UGY60ASU								
			FS5R50A		STD	—	—	—	—	UGY60SFU	UGY60ASFU									
			FS5R50A		DX	WGY60FU	—	—	CGY60GFU	—	—	—								
		TD42	FN4R50A		STD	WRGY60SU	WRGY60LSU	—	CRGY60GSU	—	URGY60SU	URGY60ASU								
			FS5R50A		STD	—	—	—	—	URGY60SFU	URGY60ASFU									
			FS5R50A		DX	WRGY60FU	—	—	CRGY60GFU	—	—	—								
Australia	R.H.	TB42	FS5R50A		STD	WGY60SFM	WGY60LSFM	—	—	—	UGY60SFM	UGY60ASFM								
			FS5R50A		DX	WGY60FM	—	—	—	—	—	—								
			RE4R03A		DX	WGY60KM	—	—	—	—	—	—								
		TD42	FS5R50A		STD	WRGY60SFM	WRGY60LSFM	—	—	—	URGY60SFM	URGY60ASFM								
			FS5R50A		DX	WRGY60FM	—	—	—	—	—	—								
			FS5R50A		DX	WRGY60FM	—	—	—	—	—	—								

Model Variation (Cont'd)

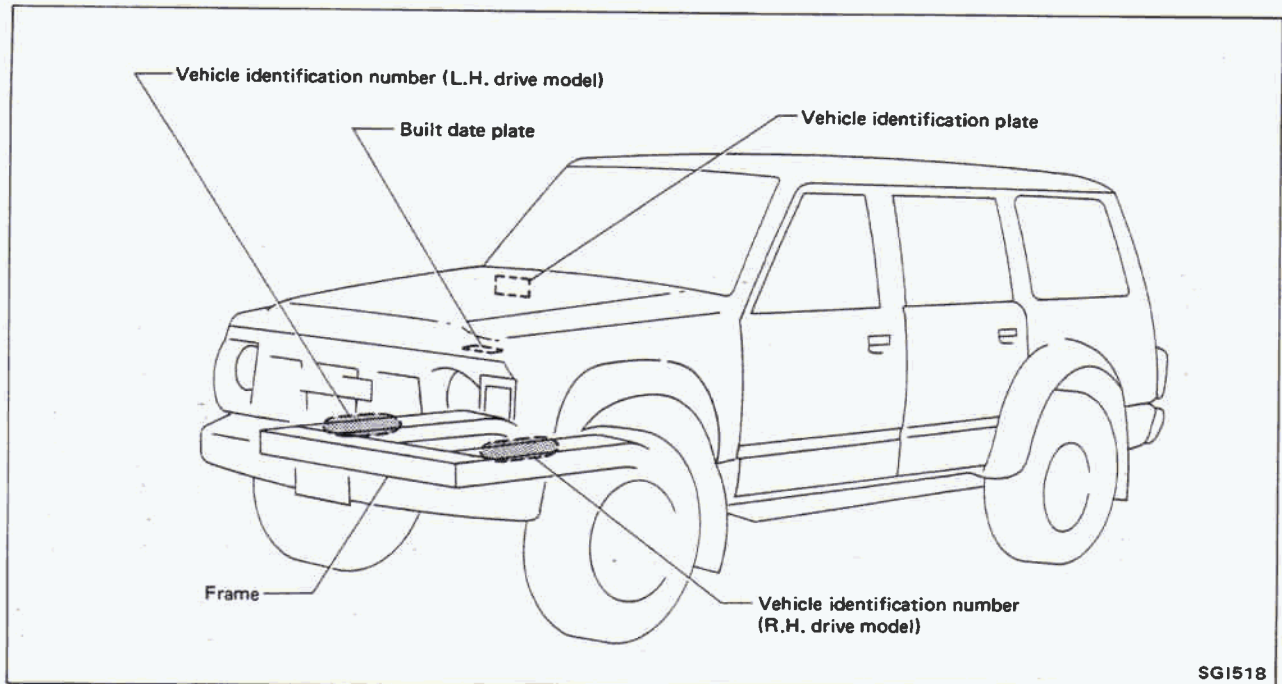
IDENTIFICATION INFORMATION

# Prefix and suffix designations



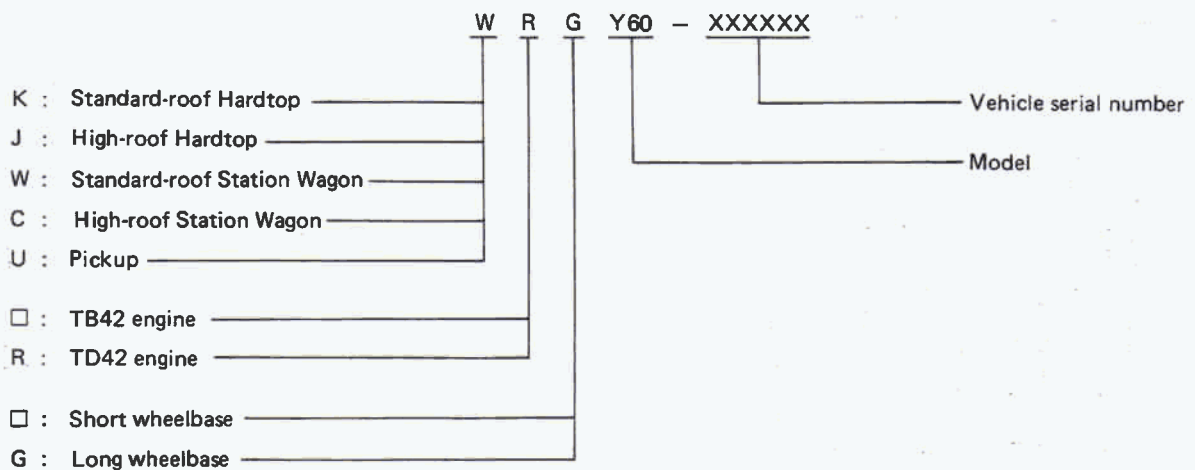
## IDENTIFICATION INFORMATION

### Identification Number



### VEHICLE IDENTIFICATION NUMBER (Chassis number)

#### Prefix and suffix designations





## IDENTIFICATION INFORMATION

### Identification Number (Cont'd)

#### IDENTIFICATION PLATE

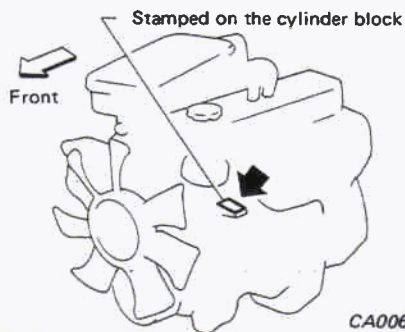
NISSAN MOTOR CO., LTD. JAPAN	
型式	TYPE TIPO
CHASSIS NO. NO. DE CHASSIS	
MODEL MODELO	
カラー COLOR TRIM トリム COLOR GUARNICION	
エンジン ENGINE ジン MOTOR	
ミッション TRANS. AXLE アックスル TRANS. EJE	
工場	PLANT PLANTA
日産自動車株式会社	
MADE IN JAPAN	

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

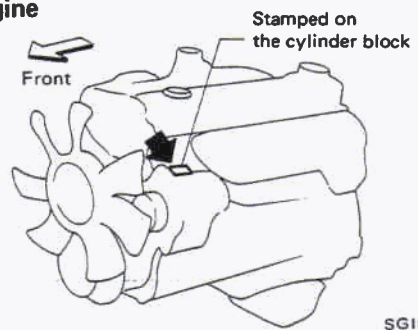
SGI534

#### ENGINE SERIAL NUMBER

##### TB42 engine

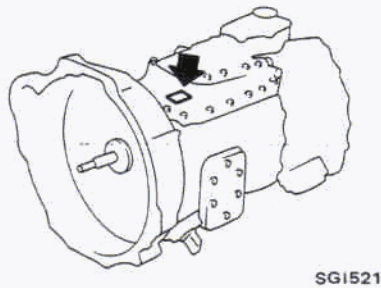


##### TD42 engine

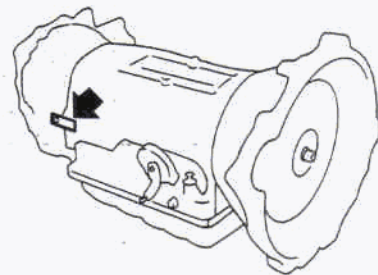


#### TRANSMISSION SERIAL NUMBER

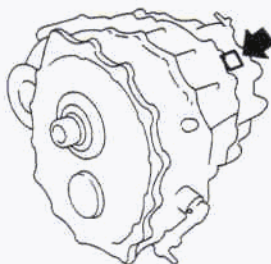
##### Manual transmission



##### Automatic transmission



#### TRANSFER SERIAL NUMBER



## IDENTIFICATION INFORMATION

### Dimensions

		Station Wagon	Hardtop	Pickup
Overall length*5	mm (in)	4,810 (189.4), 4,850 (190.9)*1	4,240 (166.9), 4,280 (168.5)*1	4,970 (195.7)
Overall width	mm (in)	1,800 (70.9)	1,800 (70.9)	1,690 (66.5)
Overall height	mm (in)	1,815 (71.5), 1,995 (78.5)*2, 1,785 (70.3)*3, 1,815 (71.5)*4	1,825 (71.9), 1,995 (78.5)*2, 1,795 (70.7)*3, 1,825 (71.9)*4	1,855 (73.0)
Front tread	mm (in)	1,530 (60.2)	1,530 (60.2)	1,435 (56.5)
Rear tread	mm (in)	1,535 (60.4)	1,535 (60.4)	1,405 (55.3)
Wheelbase	mm (in)	2,970 (116.9)	2,400 (94.5)	2,970 (116.9)

\*1: For Gulf standard (Middle East)

\*2: High-roof models

\*3: For Australia equipped with 215/80R16 tires

\*4: For Australia

\*5: For models with winch ... over length beyond 185 mm (7.3 in)

### Wheels & Tires

Road wheel		5.50F-16SDC	6JJ-16	5.50F-15SDC	7JJ-15
Size					
Offset	mm (in)	30 (1.18)	30 (1.18)	-5 (-0.20)	5 (0.20)
Tire size		6.50-16-6PRLT 7.00-16-6PRLT (Front) 7.00-16-10PRLT (Rear) 7.50-16-6PRLT 7.50-16-8PRLT 7.50R16-6PRLT 7.50R16-8PRLT	215/80R16 107Q	9.00-15-6PR	10R15-6PRLT



## **RECOMMENDED FUEL AND CAPACITY**

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### **GASOLINE ENGINE**

**For Australia ... Unleaded gasoline of above 91 octane (RON)**

**Do not use leaded gasoline.**

**Except for Australia ... Gasoline of above 88 octane (RON)**

### **DIESEL ENGINE**

**Above 45 cetane**

### **FUEL TANK CAPACITY**

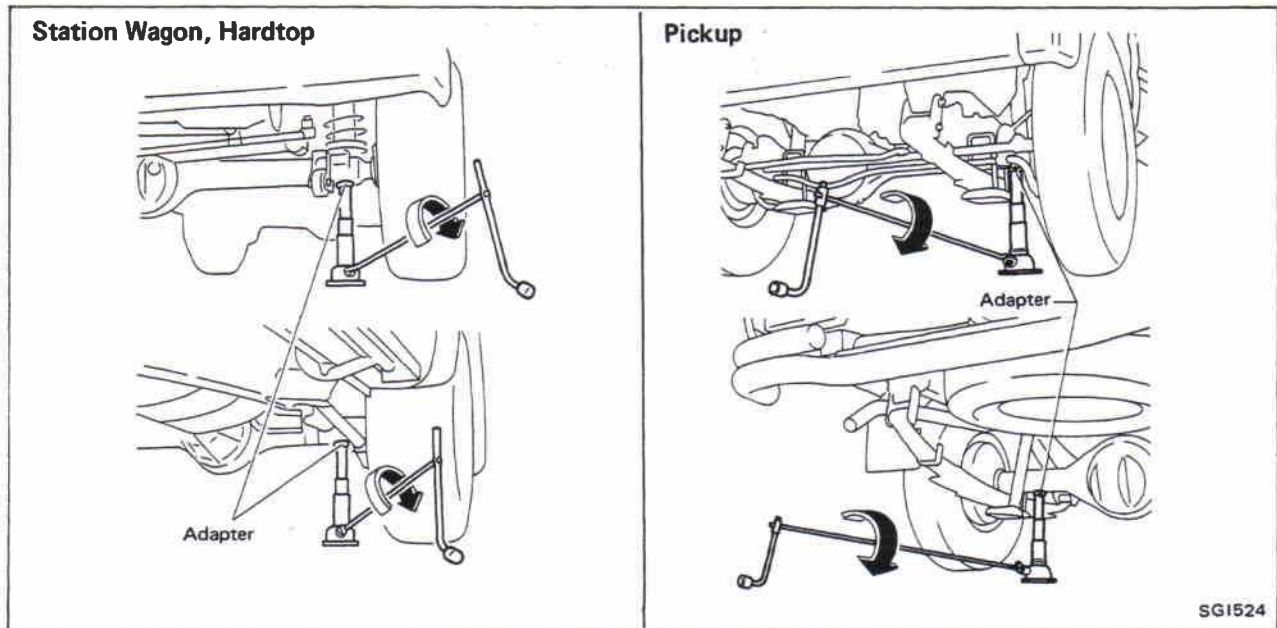
**95ℓ (20-7/8 Imp gal)**

## LIFTING POINTS AND TOW TRUCK TOWING

### WARNING:

- a. Never get under the vehicle while it is supported only by the jack. Always use safety stands to support the frame when you have to get under the vehicle.
- b. Place wheel chocks at both front and back of the wheel which is diagonally opposite the jack position.  
Example: If the jack is positioned at the L.H. front wheel, place wheel chocks at R.H. rear wheel.

### Screw Jack



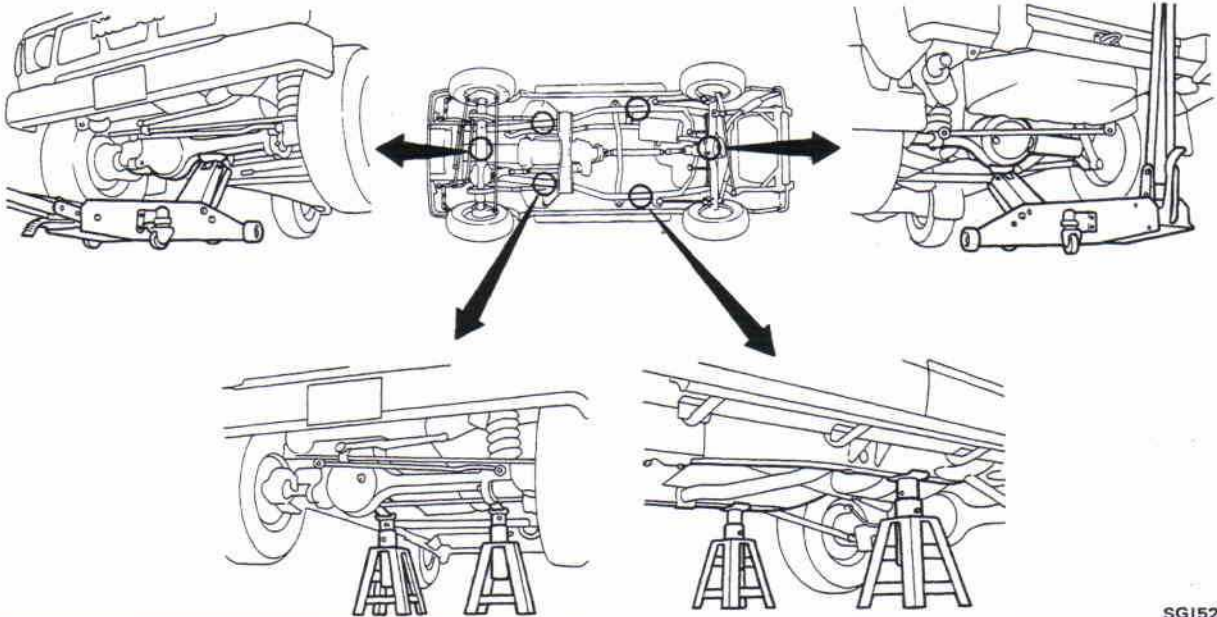
## LIFTING POINTS AND TOW TRUCK TOWING

### Garage Jack and Safety Stand

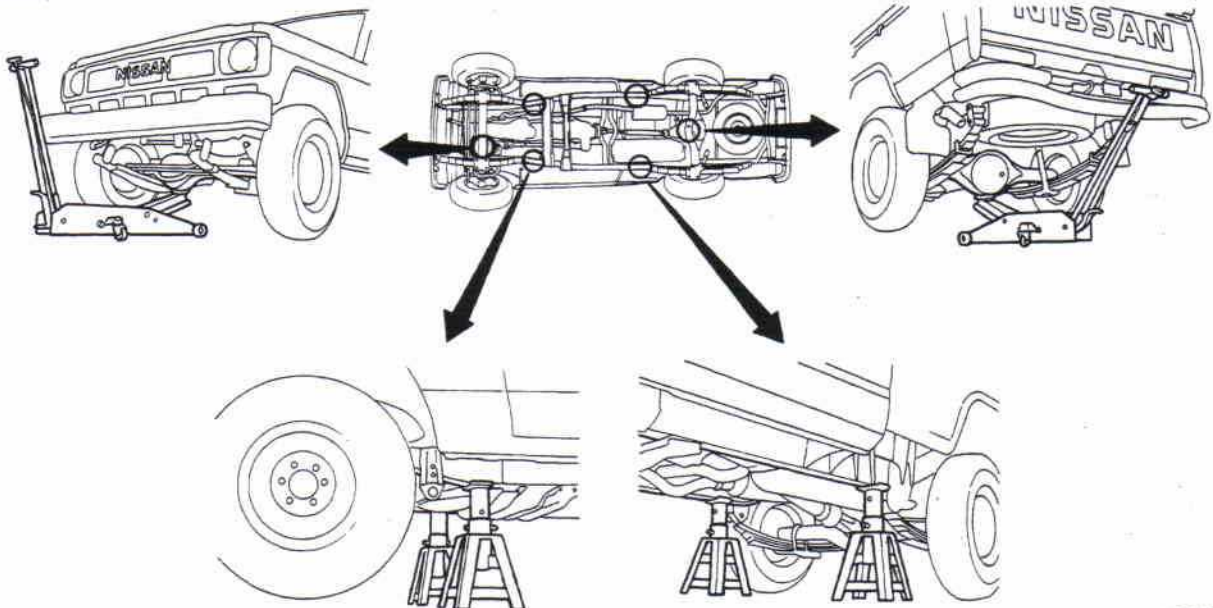
#### CAUTION:

- Place a wooden or rubber block between safety stand and vehicle body when the supporting body is flat.

#### Station Wagon, Hardtop



#### Pickup



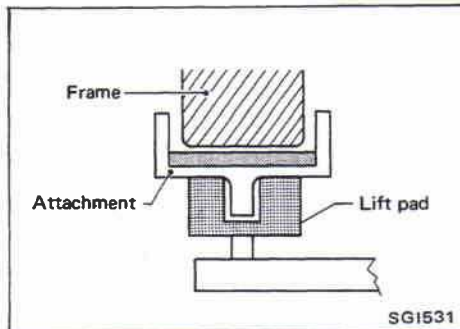
## LIFTING POINTS AND TOW TRUCK TOWING

### 2-pole Lift

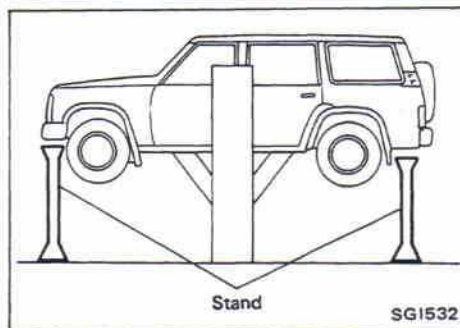
**WARNING:**

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.

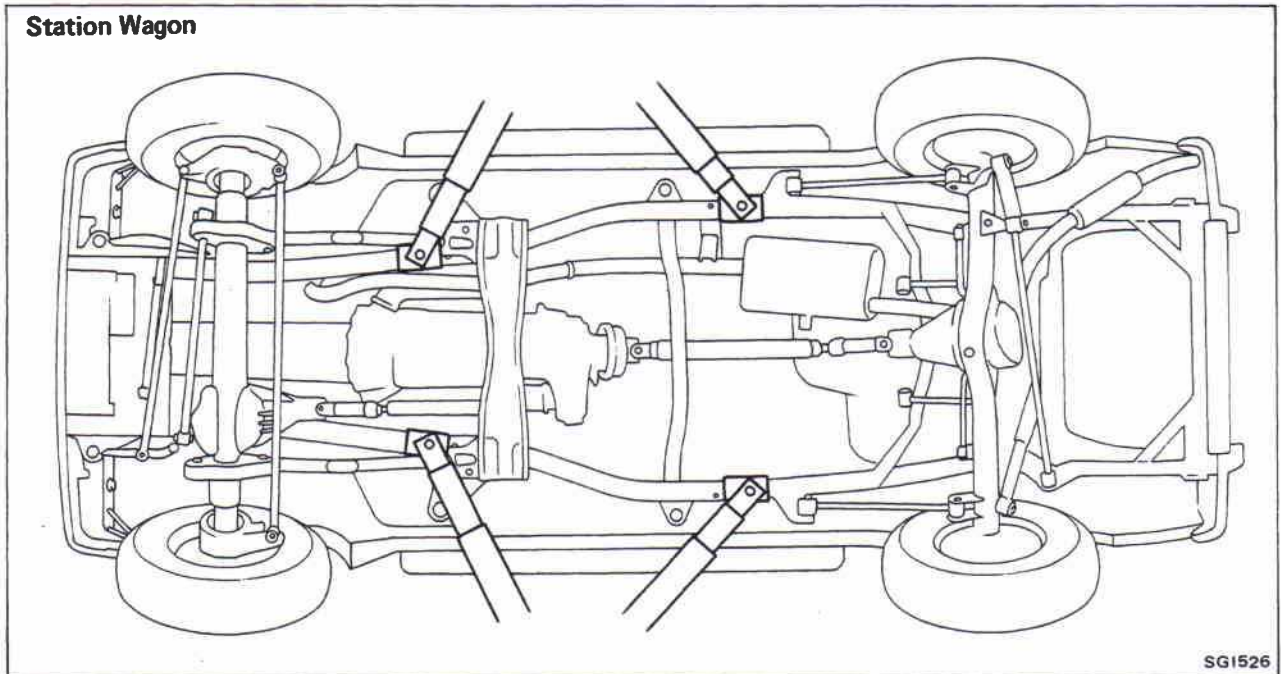


Put the attachment in the slit of the lift pad to prevent the frame from slipping.



Use suitable stands at the correct places as illustrated, to prevent the vehicle from becoming unbalanced.

### Station Wagon

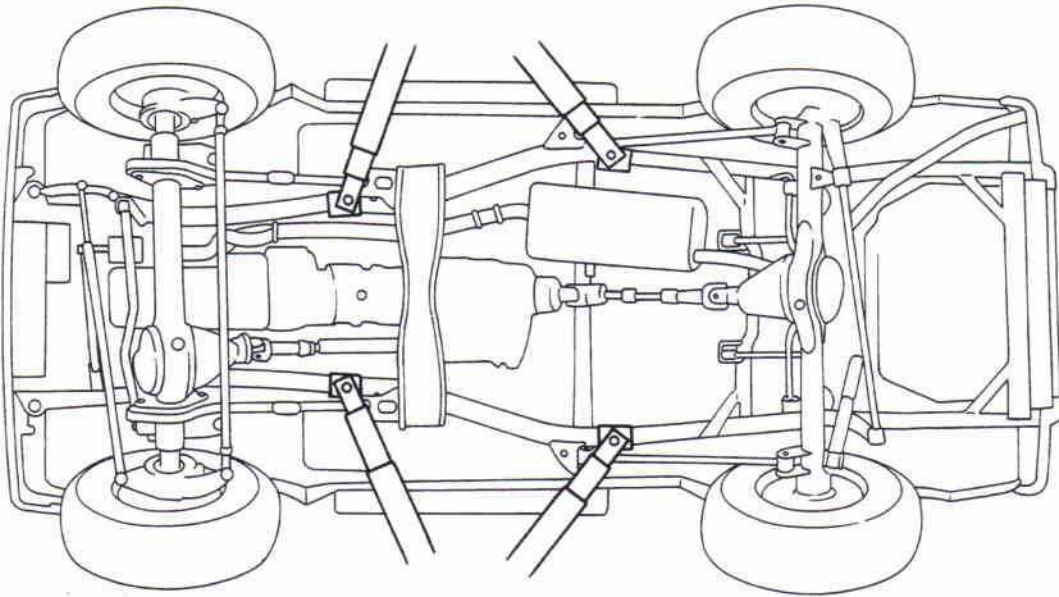




## LIFTING POINTS AND TOW TRUCK TOWING

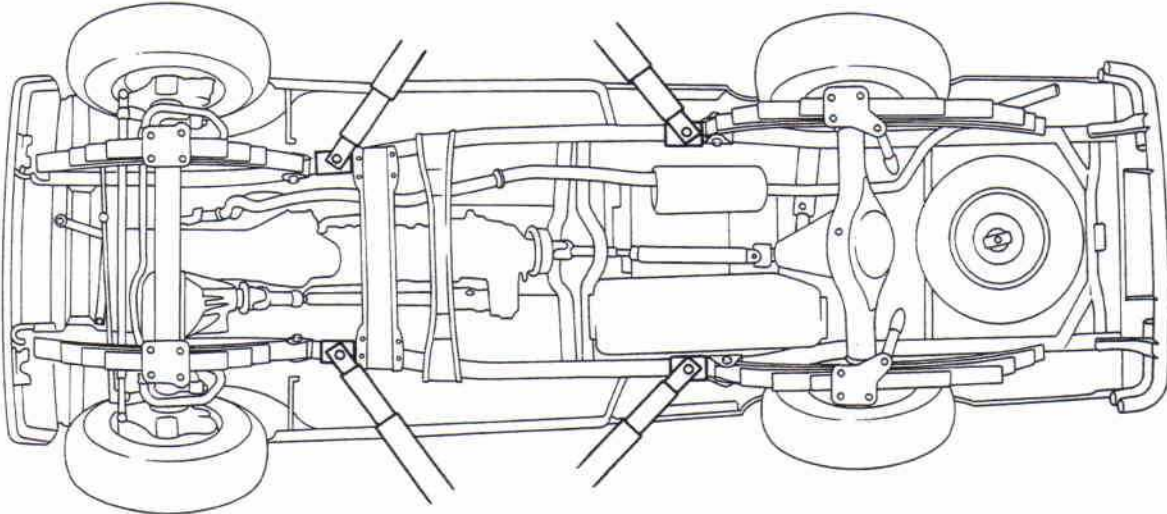
### 2-pole Lift (Cont'd)

Hardtop



SGI527

Pickup



SGI528

## LIFTING POINTS AND TOW TRUCK TOWING

### 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.
- Attach safety chains for all towing.
- When towing, make sure that the transmission, steering system and power train are in good order. If any unit is damaged, a dolly must be used.
- When towing with the front wheels on the ground:  
Turn the ignition key to the "OFF" position and secure the steering wheel in a straight-ahead position with a rope or similar device. Never place the ignition key in the "LOCK" position. This will result in damage to the steering lock mechanism.

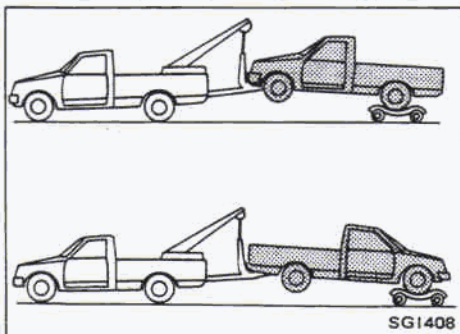
- When towing with the rear wheels on the ground:

For M/T model

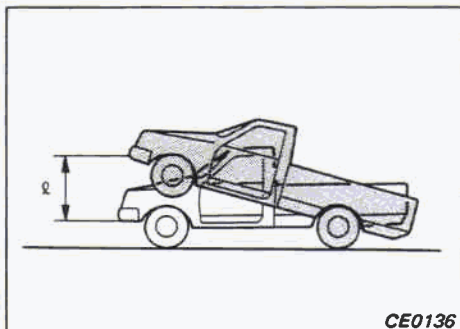
Release parking brake, set free-running hubs to the free position. Move both gearshift and transfer lever to neutral ("N" position).

For A/T model

Release parking brake, set free-running hubs to the free position. Move gearshift lever to "N" position, and move transfer lever to "2H" position.



NISSAN recommends that a dolly be used as illustrated.



If you have to tow a manual transmission model with front wheels raised (with rear wheels on ground)

Observe the following restricted raising heights.

- Do not raise the front end over  $\ell$ .

Wagon/Pickup/Van

$\ell = 600 \text{ mm (23.62 in)}$

Hardtop

$\ell = 500 \text{ mm (19.69 in)}$

## LIFTING POINTS AND TOW TRUCK TOWING

### Tow Truck Towing (Cont'd)

If you have to tow an automatic transmission model with four wheels on ground or tow an automatic transmission model with front wheels raised (with rear wheels on ground)

Observe the following restricted towing speeds, distances and raising heights.

- Speed: Below 50 km/h (30 MPH)
- Distance: Less than 65 km (40 miles)
- Do not raise the front end over  $\ell$ .

Wagon/Pickup

$\ell$  = 600 mm (23.62 in)

Hardtop

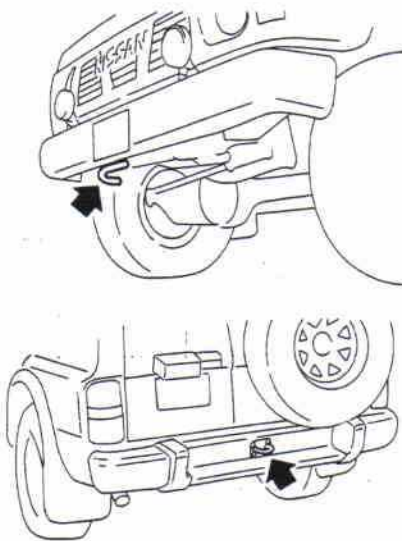
$\ell$  = 500 mm (19.69 in)

If the speed, distance or height must be greater, remove the front and rear propeller shafts beforehand to prevent damage to the transmission.

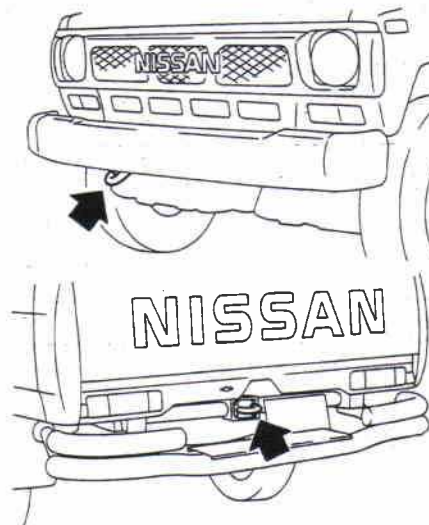
### TOWING HOOKS

The towing hooks are provided only for emergency.

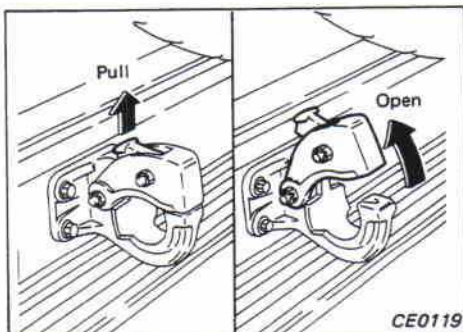
Station Wagon, Hardtop



Pickup



SGI529



### PINTLE HOOK

Do not use the pintle hook for towing another vehicle, trailer, etc. This hook is designed for use only in an emergency, i.e., when getting the vehicle out of the mud.

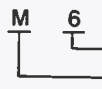
## TIGHTENING TORQUE OF STANDARD BOLTS

Grade	Bolt size	Bolt dia- meter* 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.

\*: Nominal diameter

Grade	Mark
4T .....	4
7T .....	7
9T .....	9


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