

1988 Mazda RX-7 Workshop Manual

FOREWORD

This workshop manual is intended for use by service technicians of authorized Mazda dealers to help them service Mazda vehicles. This manual can be also useful for Mazda owners in diagnosing certain problems and performing some repair and maintenance on Mazda vehicles.

For proper repair and maintenance, it is important to be thoroughly familiarized with this manual. It is recommended that this manual always be kept in a handy place for quick and easy reference.

All the contents of this manual, including photographs, drawings, and specifications, are the latest available at the time of printing. As modifications affecting repair or maintenance occur, relevant information supplementary to this volume will be made available at Mazda dealers. This manual should be kept up-to-date.

Mazda Motor Corporation reserves the right to alter the specifications and contents of this manual without obligation or advance notice.

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A new wiring diagram style has been beginning with the '88 RX-7.

Therefore, electrical circuit diagrams in this workshop manual may not be the same as in the wiring diagram.

**Mazda Motor Corporation
HIROSHIMA JAPAN**

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IMPORTANT INFORMATION

BASIC ASSUMPTIONS

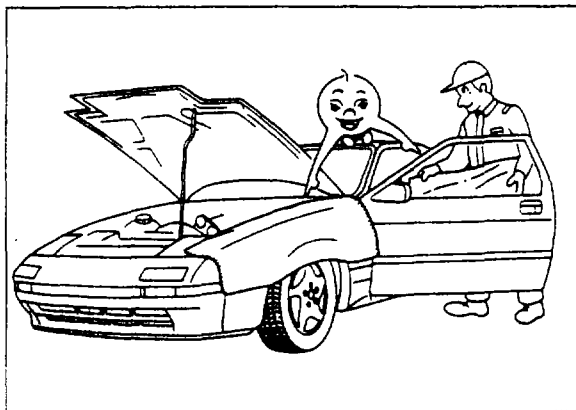
This workshop manual assumes that you have and know how to properly use certain special tools which are necessary for the safe and efficient performance of service operations on Mazda vehicles. The manual also assumes that you are familiar generally with automobile systems and basic service and repair procedures. You should not attempt to use this manual unless these assumptions are correct and you understand the consequences described below.

SAFETY RISK

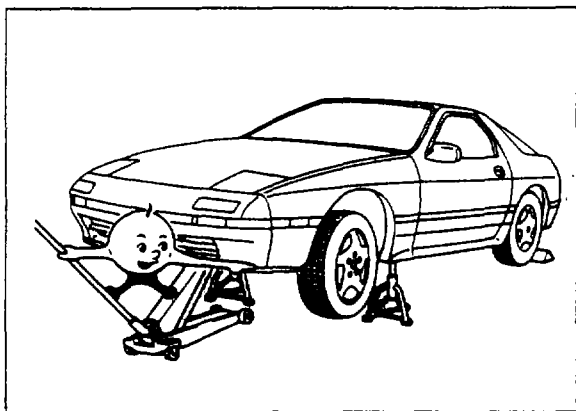
This manual contains certain notes, warnings, etc., which you should carefully read and follow in order to eliminate the risk of personal injury to yourself or others and the risk of improper service which may damage the vehicle or render it unsafe. The fact that there are no such notes, etc., with respect to any specific service method does not mean that there is no possibility that personal safety or vehicle safety will be jeopardized by the use of incorrect methods or tools.

POSSIBLE LOSS OF WARRANTY

The manufacturer's warranty on Mazda vehicles and engines can be voided if improper service or repairs are performed by persons other than an authorized Mazda dealer.



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FUNDAMENTAL PROCEDURES

As you read through the procedure, you will come across NOTES, CAUTIONS, and WARNINGS. Each one is there for a specific purpose. **NOTES** give you **added information** that will help you to complete a particular procedure. **CAUTIONS** are given to prevent you from making an error that could **damage the vehicle**. **WARNINGS** remind you to be especially careful in those areas where carelessness can cause **personal injury**. The following list contains some general WARNINGS that you should follow when you work on a vehicle.

PROTECTION OF THE VEHICLE

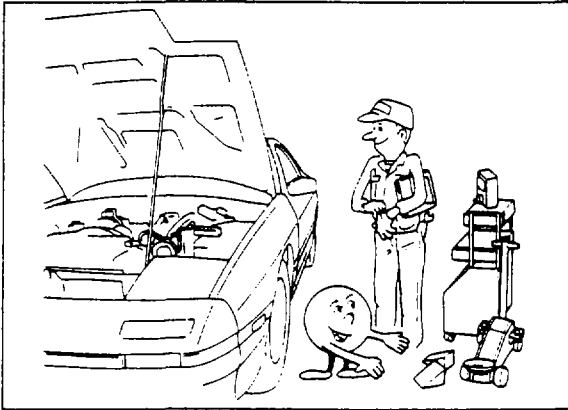
Always be sure to cover fenders, seats, and floor areas before starting work.

A WORD ABOUT SAFETY

The following precautions must be followed when jacking up the vehicle.

1. Block wheels.
2. Use only specified jacking positions.
3. Support vehicle with safety stands (rigid racks).

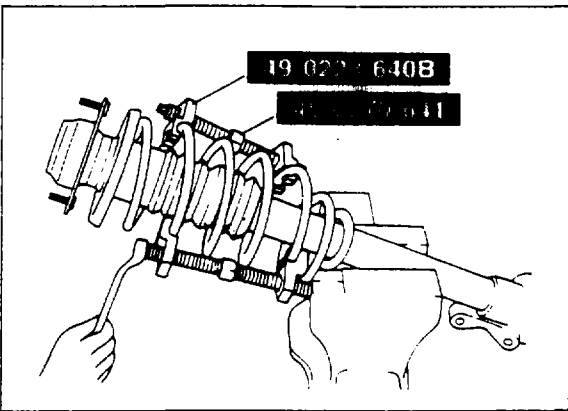
Start the engine only after making certain the engine compartment is clear of tools and all persons are clear.



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PREPARATION OF TOOLS AND MEASURING EQUIPMENT

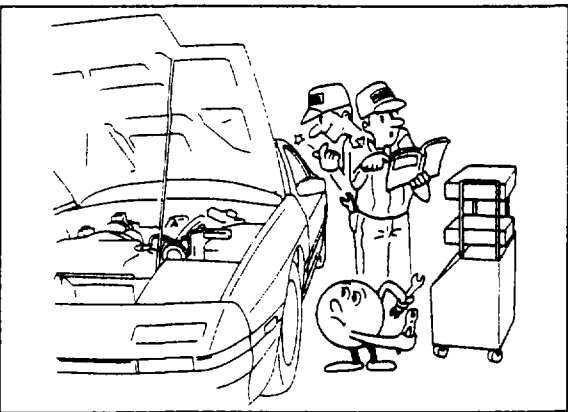
Be sure that all necessary tools and measuring equipment are available before starting any work activity.



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SPECIAL TOOLS

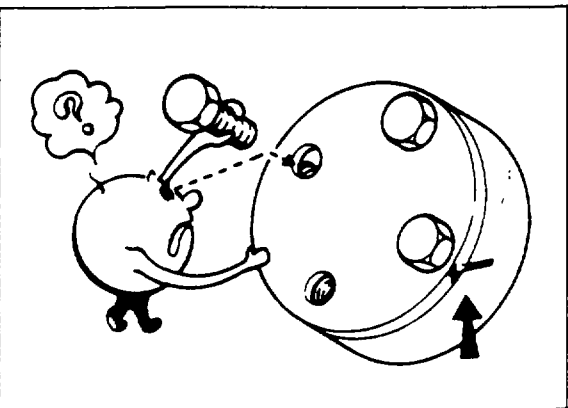
Use special tools when they are required.



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REMOVAL OF PARTS

While correcting a problem, try also to determine its cause. Begin work only after first learning which parts and subassemblies must be removed and disassembled for replacement or repair.

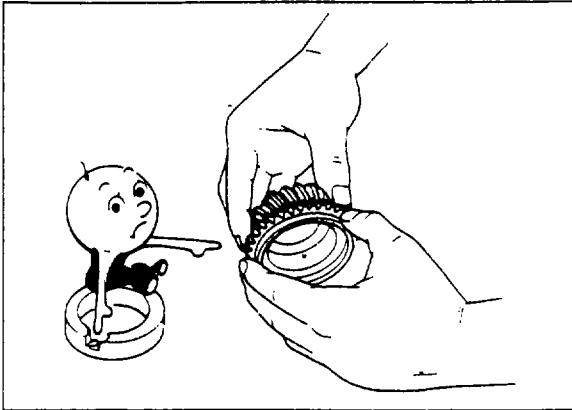


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DISASSEMBLY

If the disassembly procedure is complex, requiring many parts to be disassembled, all parts should be disassembled in a way that will not affect their performance or external appearance, and be identified so that reassembly can be performed easily and efficiently.

G FUNDAMENTAL PROCEDURES

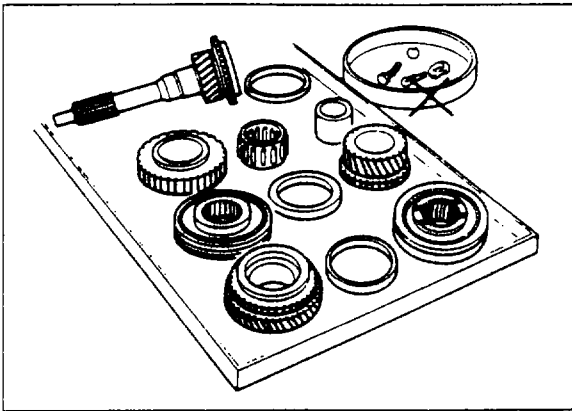


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DISASSEMBLY

1. Inspection of parts

Each part when removed should be carefully inspected for malfunctioning, deformation, damage, and other problems.

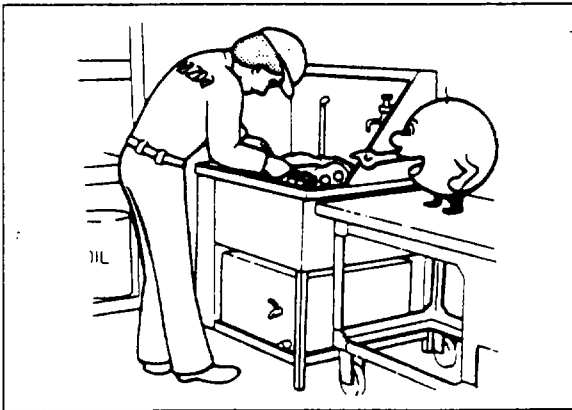


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2. Arrangement of parts

All disassembled parts should be carefully arranged for reassembly.

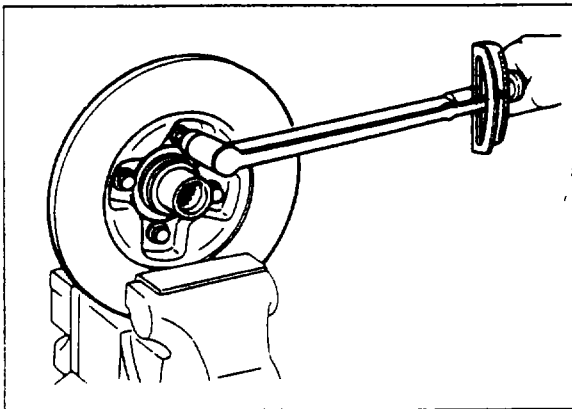
Be sure to separate or otherwise identify the parts to be replaced from those that will be reused.



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3. Cleaning parts for reuse

All parts to be reused should be carefully and thoroughly cleaned by the appropriate method.



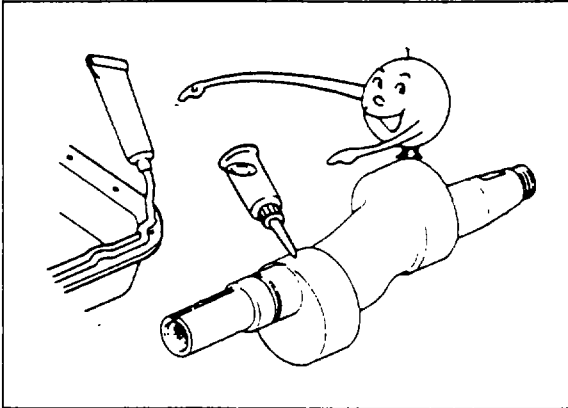
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REASSEMBLY

Standard values, such as torques and certain adjustments, must be strictly observed in the reassembly of all parts.

If removed, these parts should be replaced with new ones:

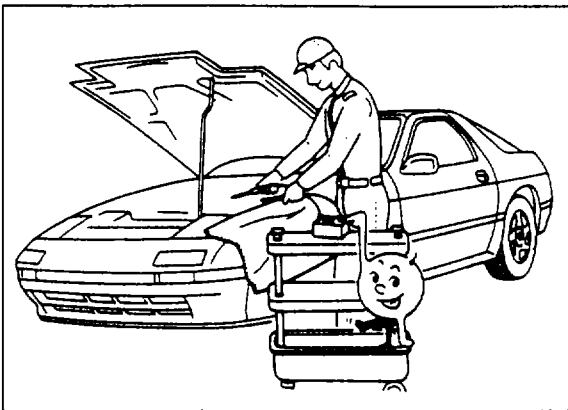
1. Oil seals
2. Gasket
3. O-rings
4. Lock washers
5. Cotter pins (split pins)
6. Nylon nuts



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Depending on where they are;

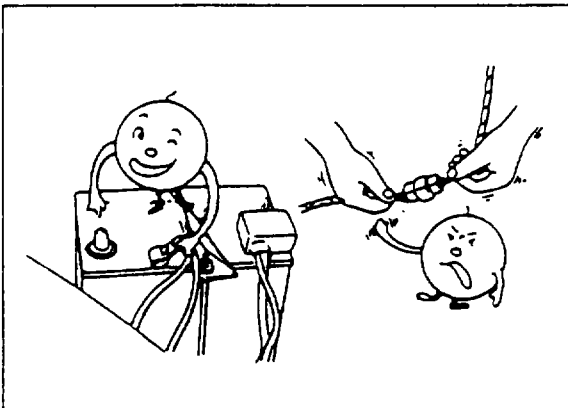
1. Sealant should be applied to gaskets.
2. Oil should be applied to the moving components of parts.
3. Specified oil or grease should be applied at the prescribed locations (oil seals, etc.) before assembly.



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ADJUSTMENTS

Use suitable gauges and/or testers when making various adjustments.



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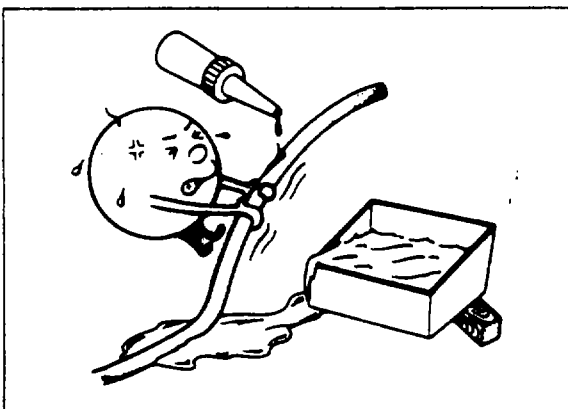
ELECTRICAL SYSTEM

Be sure to disconnect the battery cable from the negative (-) terminal of the battery.

Never pull on the wiring when disconnecting connectors.

When locking connectors, make sure to listen for a "click" that will let you know they are securely locked.

Handle sensors and relays carefully. Be careful not to drop them or strike them against other parts.



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RUBBER PARTS AND TUBING

Always prevent gasoline or oil from getting on rubber parts or tubing.

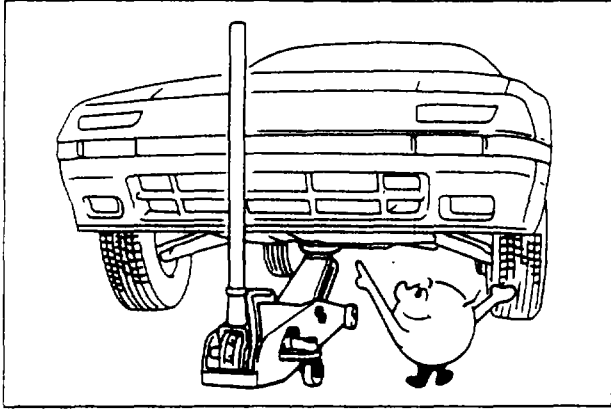
G JACK AND SAFETY STAND (RIGID RACK) POSITIONS

JACK AND SAFETY STAND (RIGID RACK) POSITIONS

FRONT END

Jack position:

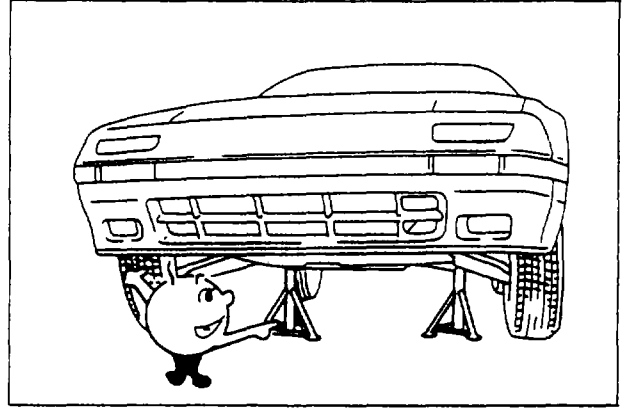
At the center of the crossmember



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Safety stand positions:

On both sides of the body frame

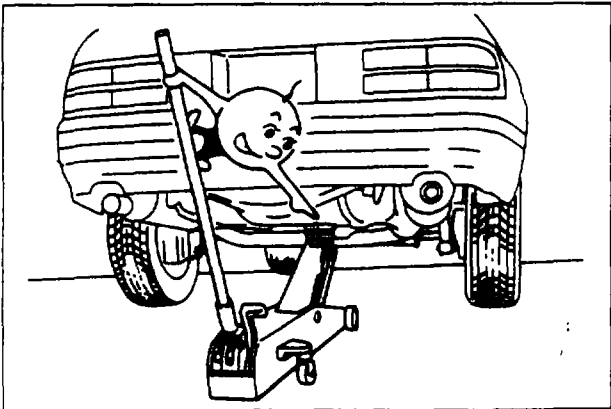


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REAR END

Jack position:

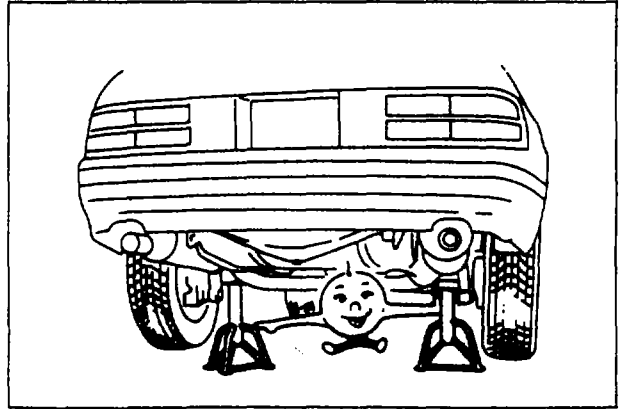
At the differential



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Safety stand positions:

On both sides of the body frame



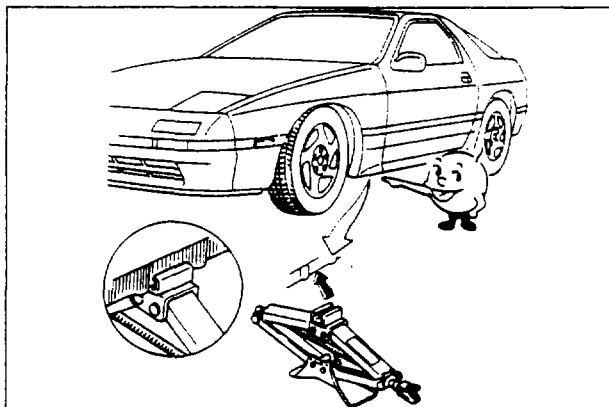
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VEHICLE LIFT (2-SUPPORT TYPE) POSITIONS

FRONT END

Frame

Side sills (front)

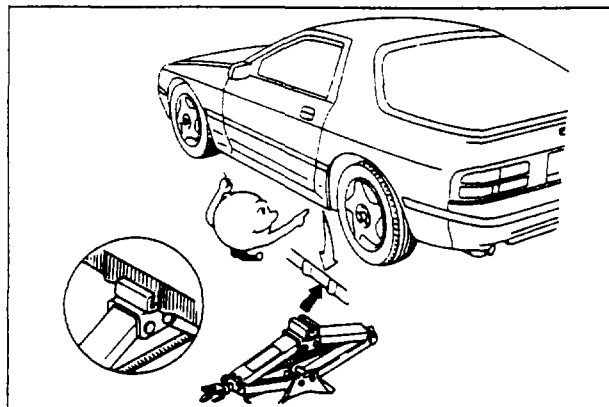


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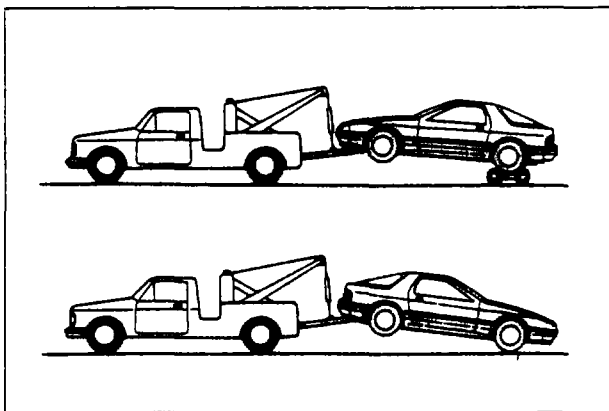
REAR END

Frame

Side sills (rear)



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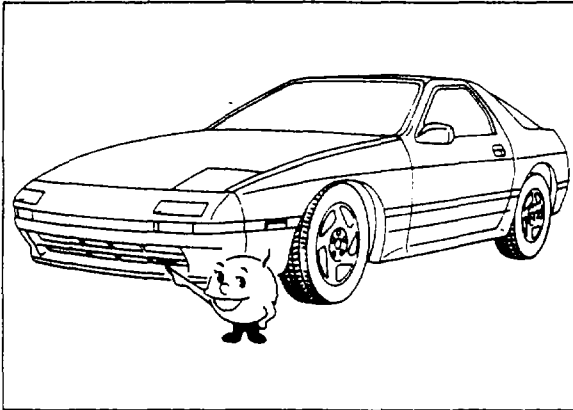
TOWING

Proper lifting or towing equipment is necessary to prevent damage to the vehicle during any towing operation. State and local laws applicable to vehicles in tow must be followed.

If towing is necessary, we recommend you have it done by your Mazda Dealer or a commercial tow truck service.

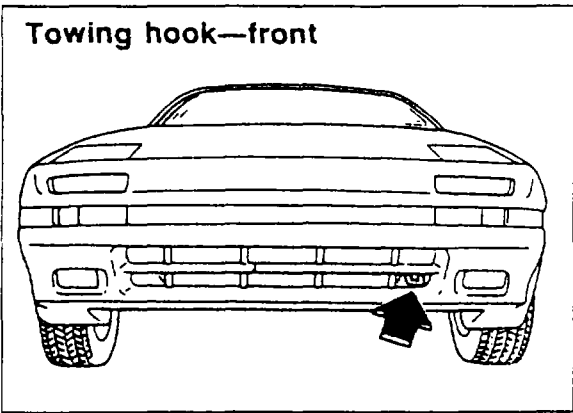
WITH MANUAL TRANSMISSION

If the transmission, rear axle and steering system are not damaged, the vehicle may be towed on all four wheels. If these components are damaged, use a towing dolly.



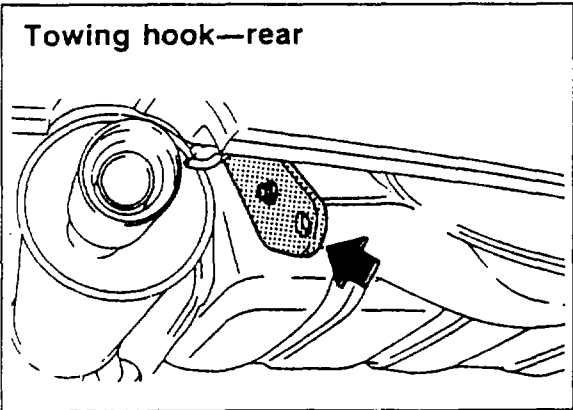
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Towing hook—front



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Towing hook—rear



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WITH AUTOMATIC TRANSMISSION

If excessive damage or other conditions prevent towing the vehicle with the driving wheels off the ground, use wheel dollies. If all four wheels are on the ground, the vehicle may only be towed forward. In this case, do not exceed 30 mph (45 km/h) and/or a distance of 10 miles (15 km) or transmission damage could result.

If towing speed will exceed 30 mph (45 km/h), or if the towing distance will exceed 10 miles (15 km), use one of three methods:

1. Place the rear wheels on a dolly.
2. Tow with the rear wheels off the ground.
3. Disconnect the propeller shaft.

If the transmission or rear axle are inoperative, tow with the rear wheels off the ground, or have the propeller shaft disconnected.

CAUTION

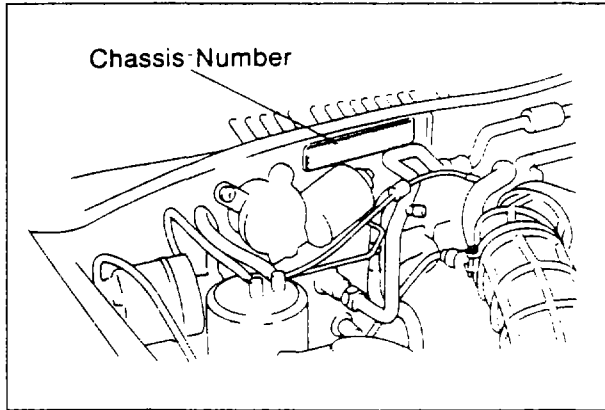
- The following points are important when the vehicle is towed with all 4 wheels on the ground. Please be advised that the shift lever must be set at NEUTRAL, the ignition key in the "ACC" position and the parking brake released.

Remember that the power assist for the brakes and steering (if equipped) will not be available when the engine is inoperative.

- The towing hook should be used only in an emergency situation, (e.g., to pull the vehicle out of a ditch, a snow bank or mud).
- When the towing hook is used, always pull the cable or chain in a straight direction with respect to the hook. Do not apply force to the hook in a side direction.

To prevent damage, do not take up slack in the cable or chain too quickly.

CHASSIS NUMBER LOCATION



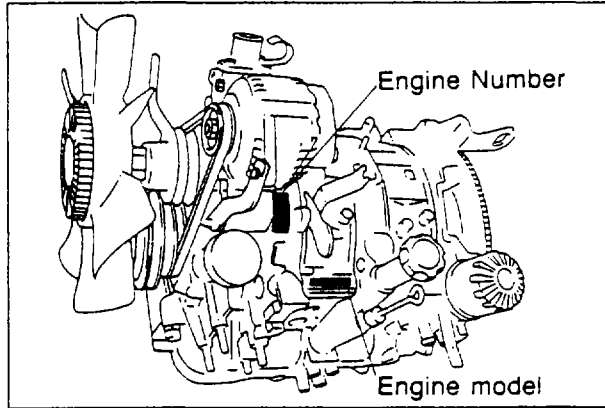
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UNITS

N·m (m·kg, ft·lb or in·lb)	Torque
rpm	Revolutions per minute
A	Ampere(s)
V	Volt(s)
Ω	Ohm(s) (resistance)
kPa (kg/cm ² , psi)	Pressure
mmHg (in Hg)	vacuum
W	Watt
cc(cu in)	capacity
liters (Us qt, Imp qt)	capacity

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ENGINE MODEL AND NUMBER LOCATION



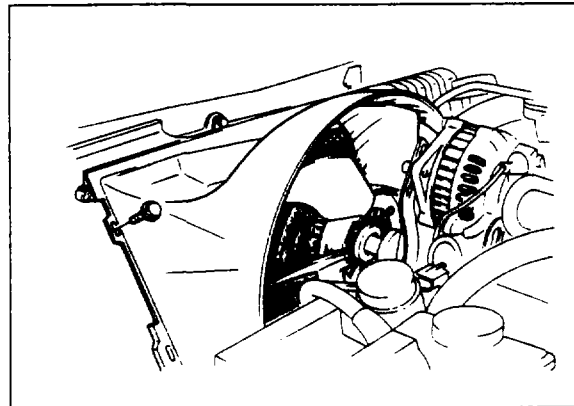
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ABBREVIATIONS

ABS	Anti-lock brake system
A/C	Air conditioner
ACC	Accessories
ABDC	After bottom dead center
ATDC	After top dead center
A/T	Automatic transmission
ATF	Automatic transmission fluid
BAC	Bypass air control
BBDC	Before bottom dead center
BTDC	Before top dead center
EGI	Electronic gasoline injection
ESA	Electronic spark advance
E/L	Electrical load
EX	Exhaust
IG	Ignition
IN	Intake
IC	Integrated circuit
INT	Intermittent
LH	Left hand
M/T	Manual transmission
M	Motor
OFF	Switch off
ON	Switch on
PCV	Positive crankcase ventilation
PRC	Pressure regulator control
P/S	Power steering
P/W	Power window
RH	Right hand
ST	Start
SW	Switch

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CAUTION



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Use caution when working near the engine cooling fan while the engine is running.

CAUTION

HOW TO USE THE TACHOMETER AND TIMING LIGHT

1. When using a **tachometer**, connect it to the **service connector** (black wire, black connector) at the **trailing side** coil with igniter.
2. If the tachometer does not function correctly on the trailing side coil, connect it to the **leading side** coil (Black wire terminal).
3. If using an **inductive (secondary pick up) type tachometer**, connect it to the **trailing side** high tension lead. If connected to the **leading side** coil, it will not function correctly.
4. Self powered timing lights might not function. Use only a vehicle-battery-powered timing light for checking ignition timing.

INSTALLATION OF A MOBIL TWO-WAY RADIO SYSTEM

If a mobile two-way radio system is installed improperly, or if a wrong type is used, the EGI system and other systems may be affected.

When vehicle is equipped with a mobile two-way radio system, observe the following precautions.

1. Install the antenna at the farthest point from the control unit.
2. Keep the antenna feeder away from the control unit harness as far as possible.
(at least 30 cm (11.8 in))
3. Insure that the antenna and feeder are properly adjusted.
4. Do not install an excessively powerful mobile two-way radio system.

