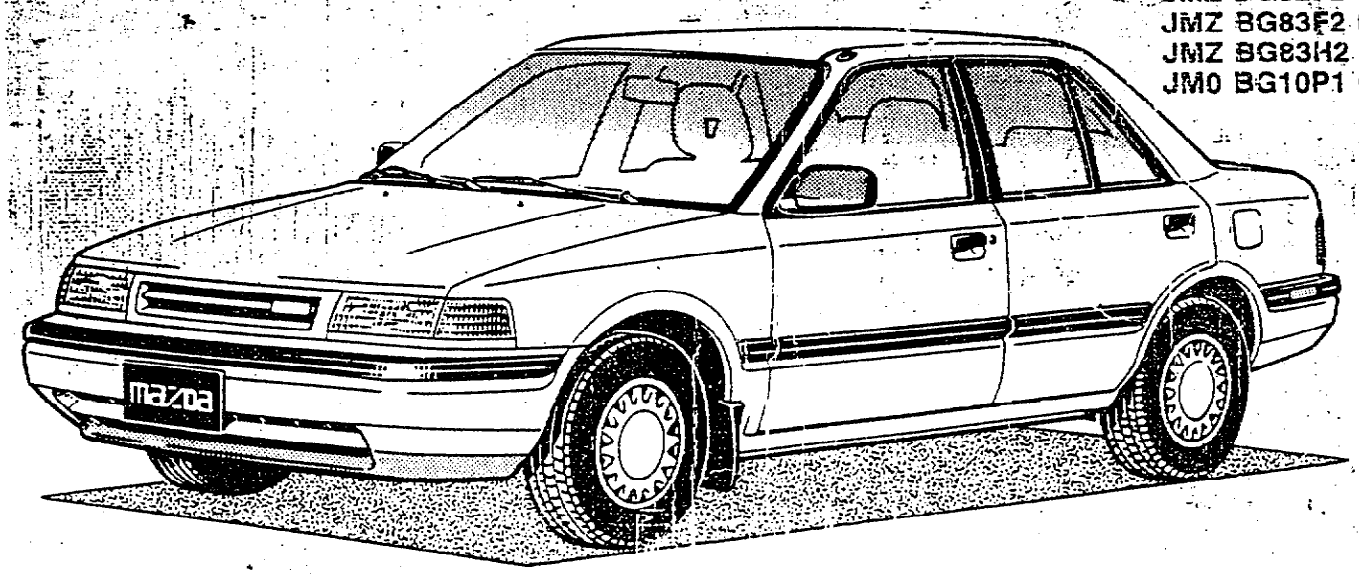
Mazda 323

4-WHEEL DRIVE

Workshop Manual Supplement

JMZ BG8262 00
JMZ BG8362 00
JMZ BG82F2 00
JMZ BG83F2 00
JMZ BG83H2 00
JM0 BG10P1 00



12/89 1229-10-89L

mazda

Europe, Australia

Mazda 323 4-Wheel Drive Workshop Manual Supplement

FOREWORD

This is a supplement to the workshop manual(s) shown below. This supplement describes service procedures of new or modified mechanical and/or electrical systems. For service procedures and important safety notices not contained in this supplement, please refer to the previous workshop manual.

Workshop Manual:
Form No.1203-10-89F (Vol.1) Europe
1204-10-89F (Vol.1) Australia
1206-10-89F (Vol.2)

All information in this supplement was the latest available at the time of printing, all alternations related to modifications will be notified by Service Bulletin.

Mazda Motor Corporation
HIROSHIMA, JAPAN

APPLICATION:
This manual is applicable to vehicles beginning with the Vehicle Identification Numbers (VIN) shown on the following page.

CONTENTS

This manual explains only the sections marked with shadows ( )

PRINTED IN JAPAN, Dec., '89 (N)
1229-10-89L

VEHICLE IDENTIFICATION NUMBERS (VIN)

Europe

JMZ BG8262 00 100001 ~
JMZ BG8362 00 100001 ~
JMZ BG82F2 00 100001 ~
JMZ BG83F2 00 100001 ~
JMZ BG83H2 00 100001 ~

Australia

JM0 BG10P1 00 100001 ~

GENERAL INFORMATION

03UGIX-001

IMPORTANT INFORMATION

BASIC ASSUMPTIONS

This workshop manual assumes that you have certain special tools that are necessary for the safe and efficient performance of service operations on Mazda vehicles and that you know how to use them properly. It also assumes that you are familiar 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, and other precautionary information that you should carefully read and follow to reduce the risk of personal injury to yourself or others and the risk of improper service that may damage the vehicle or render it unsafe. If there is no such information in regard to any specific service method, this does not mean 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 those at an Authorized Mazda Dealer.

WARNING ON LUBRICANTS AND GREASES

Avoid all prolonged and repeated contact with mineral oils, especially used oils. Used oils contaminated during service (e.g., engine sump oils) are more irritating and more likely to cause serious effects, including skin cancer, in the event of gross and prolonged skin contact.

Wash skin thoroughly after work involving oil.
Protective hand cleaners may be of value provided they can be removed from the skin with water. Do not use gasoline, paraffin, or other solvents to remove oil from the skin.

Lubricants and greases may be slightly irritating to the eyes.

Repeated or prolonged skin contact should be avoided by wearing protective clothing if necessary. Particular care should be taken with used oils and greases containing lead. Do not allow work clothing to be contaminated with oil. Dry clean or launder such clothing at regular intervals.

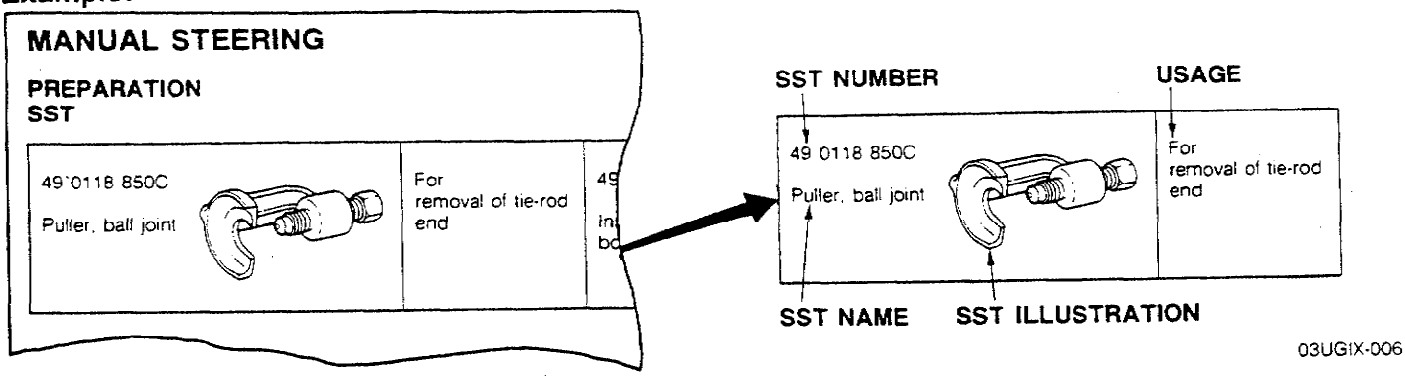
9MUGIX-002

HOW TO USE THIS MANUAL

PREPARATION

PREPARATION points out the needed **Special Service Tool (SST)** for the service operation that it proceeds. Gather all necessary **SST** before beginning work.

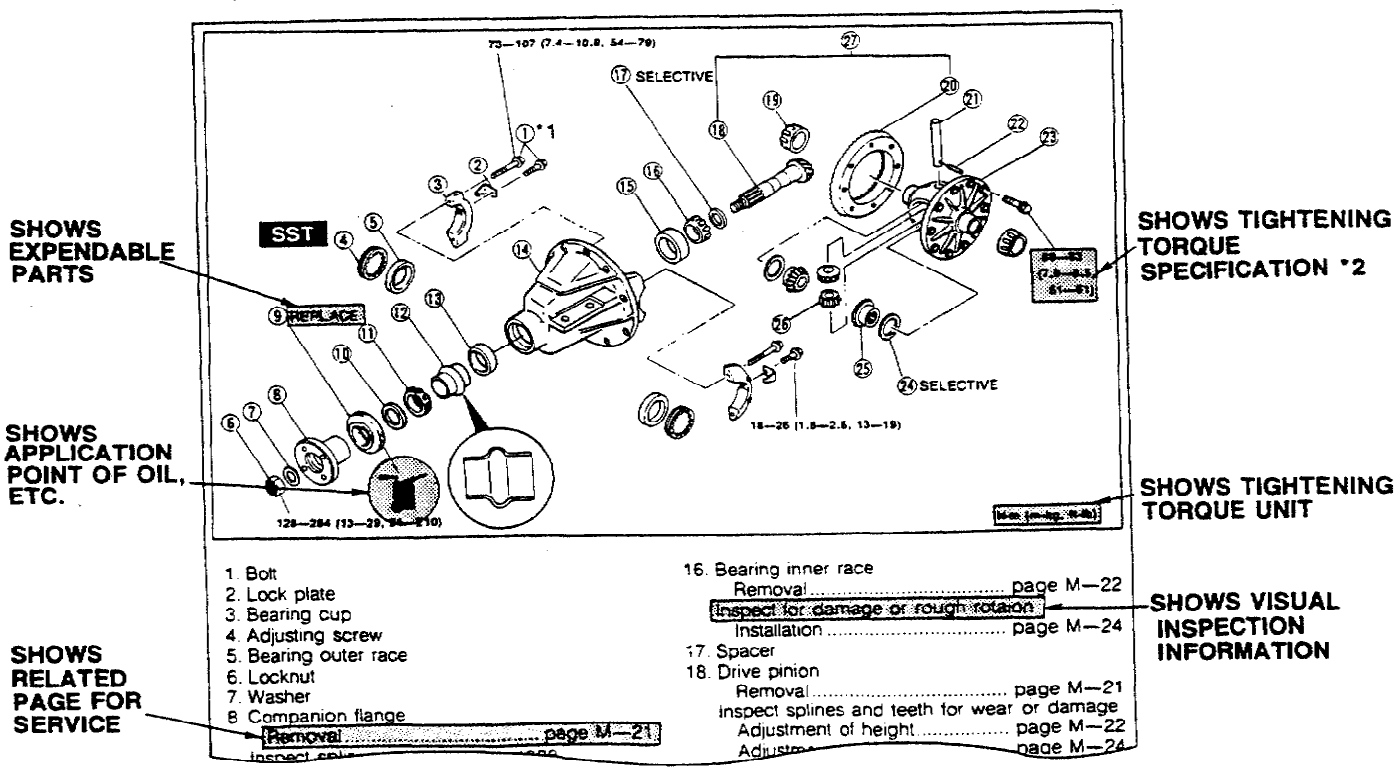
Example:



REPAIR PROCEDURE

1. Most repair operations begin with an overview illustration. It identifies the components, shows how the parts fit together, and visual parts inspections. If a damaged or worn part is found, repair or replace it as necessary.
2. Expendable parts, tightening torques, and symbols for oil, grease, and sealant are shown in the overview illustration.
3. Pages related to service procedures are shown under the illustration. Refer to this information when servicing the related part.

Example:



*1: The numbering (ex.①) shows service procedure.
*2: Units shown in N·m (m-kg, ft-lb) unless otherwise specified.

SYMBOLS

There are six symbols indicating oil, grease, and sealant. These symbols show the points of applying such materials during service.

Symbol	Meaning	Kind
	Apply oil	New engine oil or gear oil as appropriate
	Apply brake fluid	Only brake fluid
	Apply automatic transmission fluid	Only ATF
	Apply grease	Appropriate grease
	Apply sealant	Appropriate sealant
	Apply petroleum jelly	Appropriate petroleum jelly

05UGIX-005

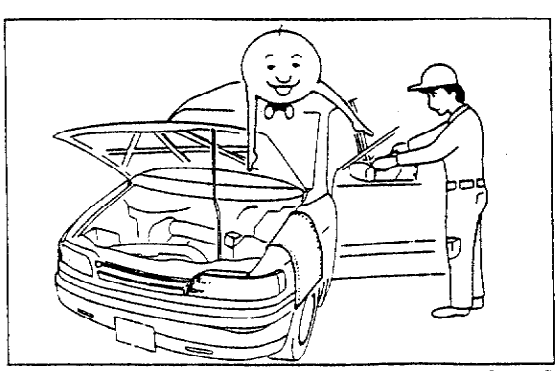
Note

- **When special oil or grease is needed, this is shown in the illustration.**

NOTES, CAUTIONS, AND WARNINGS

As you read through the procedures, 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 you should follow when you work on a vehicle.

9MUGIX-036



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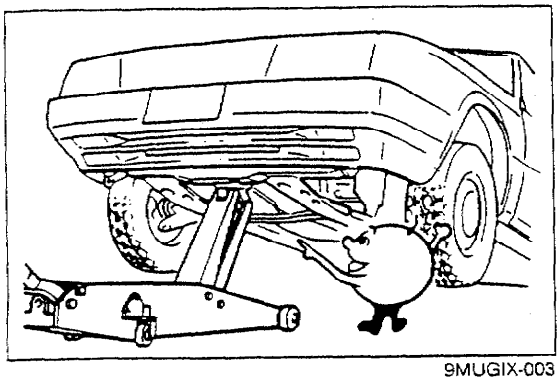
FUNDAMENTAL PROCEDURES

PROTECTION OF THE VEHICLE

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



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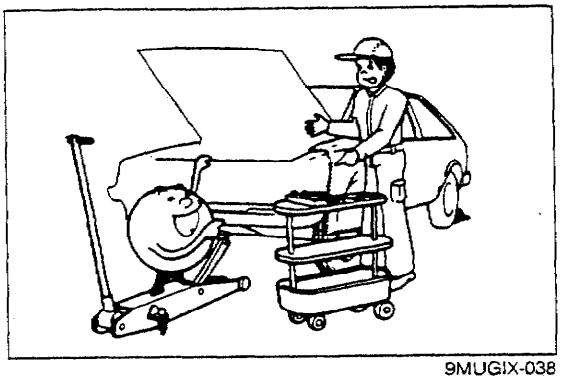
A WORD ABOUT SAFETY

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

1. Block the wheels.
2. Use only the specified jacking positions.
3. Support the vehicle with safety stands.

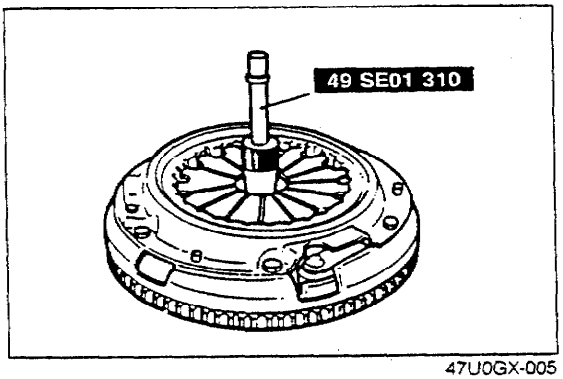
Start the engine only after making certain the engine compartment is clear of tools and people.



9MUGIX-038

PREPARATION OF TOOLS AND MEASURING EQUIPMENT

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



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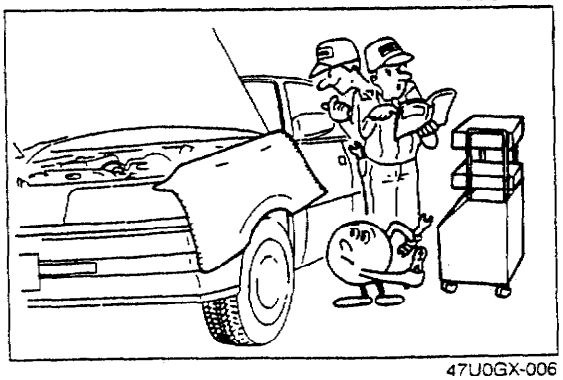
SPECIAL TOOLS

Use special tools when they are required.



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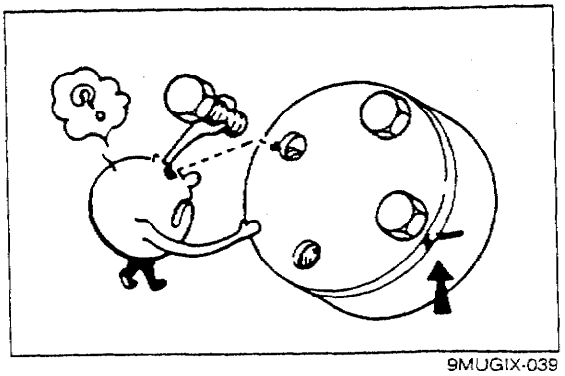
REMOVAL OF PARTS

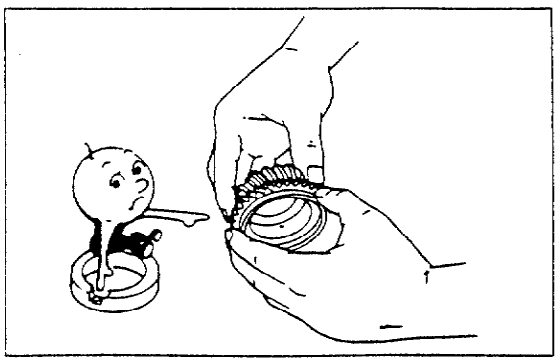
While correcting a problem, try also to determine its cause. Begin work only after first learning which parts and subassemblies must be removed and disassembled for replacement or repair.



9MUGIX-039

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 identified so that reassembly can be performed easily and efficiently.



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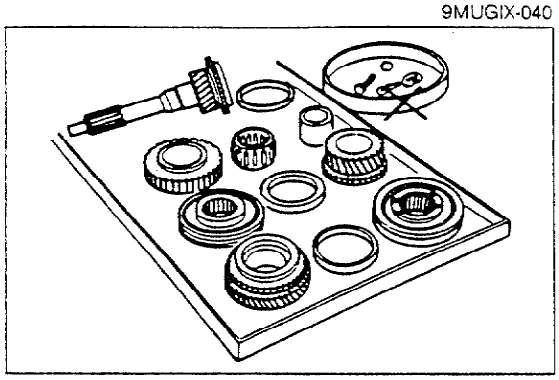
1. Inspection of parts

When removed, each part should be carefully inspected for malfunctioning, deformation, damage, and other problems.



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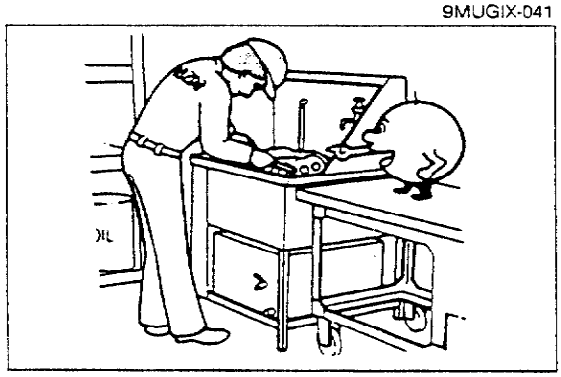
2. Arrangement of parts

All disassembled parts should be carefully arranged for re-assembly.

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



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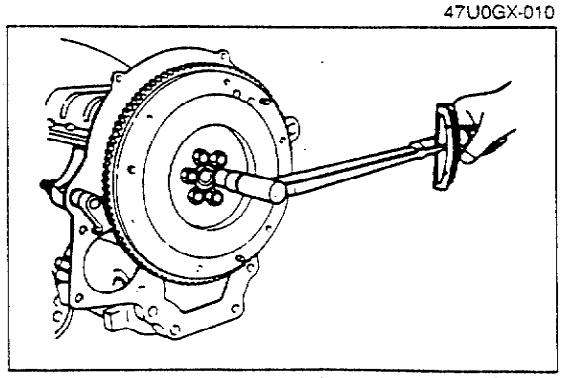
3. Cleaning parts for reuse

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



9MUGIX-004

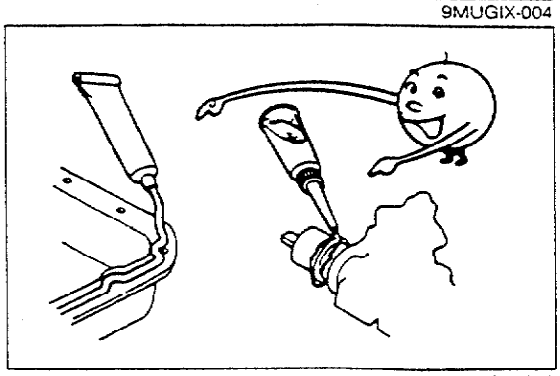
REASSEMBLY

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

Refer to STANDARD BOLT AND NUT TIGHTENING TORQUE in Section TD for tightening torques not mentioned in the main text.

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

1. Oil seals
2. Gaskets
3. O-rings
4. Lock washers
5. Cotter pins
6. Nylon nuts



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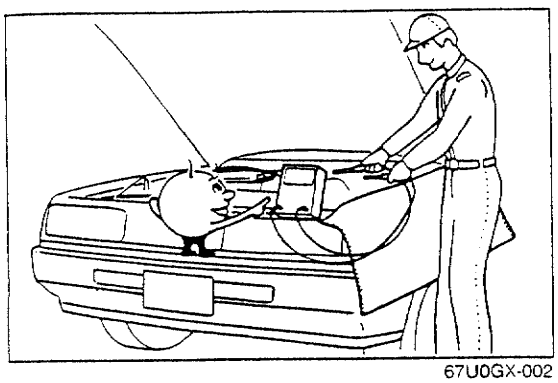
Depending on location:

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 (such as oil seals) before reassembly.



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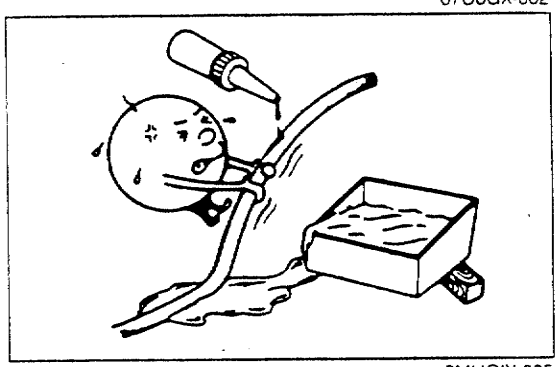
ADJUSTMENTS

Use suitable gauges and/or testers when making adjustments.



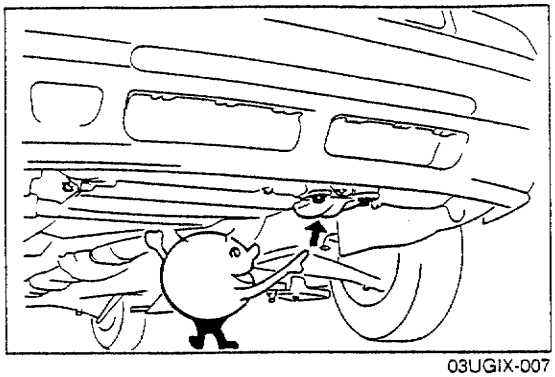
9MUGIX-005

RUBBER PARTS AND TUBING

Prevent gasoline or oil from getting on rubber parts or tubing.

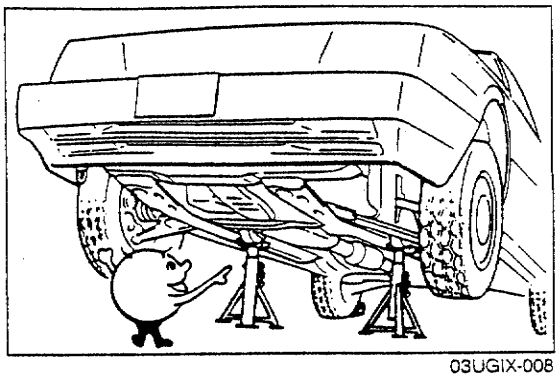
JACK AND SAFETY STAND POSITIONS

FRONT END
Jack position:
At the front crossmember



03UGIX-007

Safety stand positions:
On both sides of the body frame



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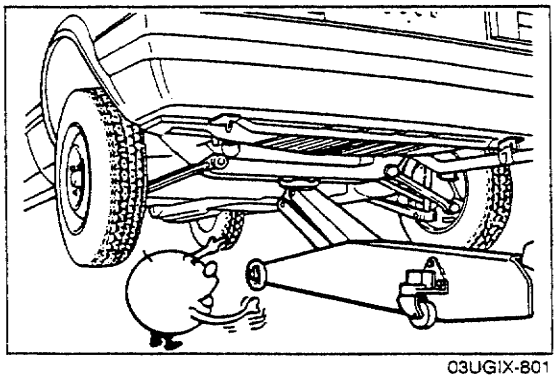
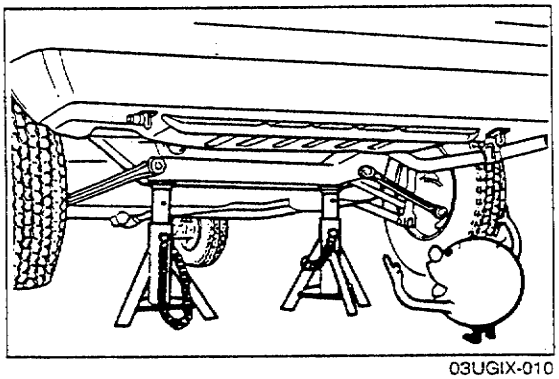
REAR END
Jack position:
At the center of the rear crossmember (2WD)
At the rear differential (4WD)



03UGIX-801

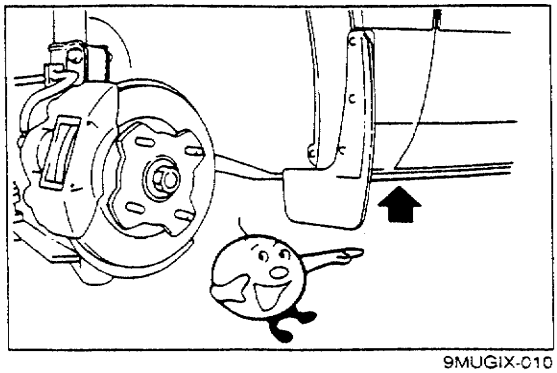
Safety stand positions:
On both sides of the body frame



03UGIX-010

VEHICLE LIFT (2-SUPPORT TYPE) POSITIONS

FRONT END
Frame
Side sills



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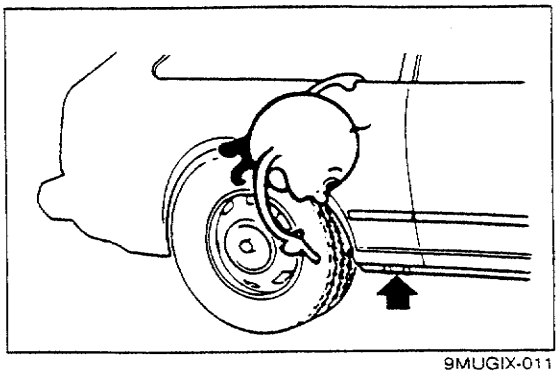
REAR END
Frame
Side sills



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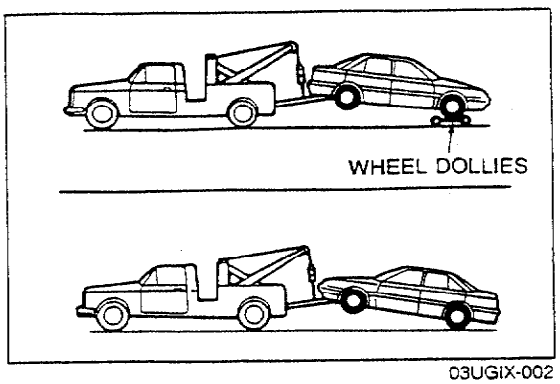

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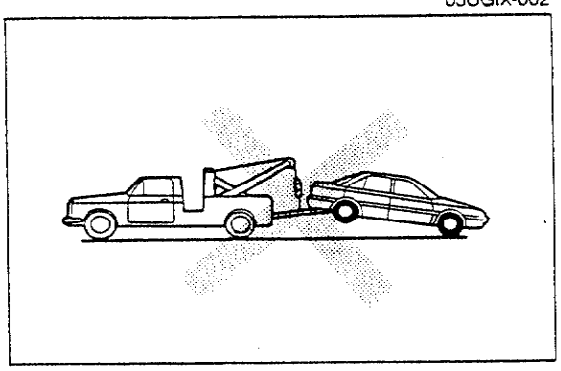


TOWING

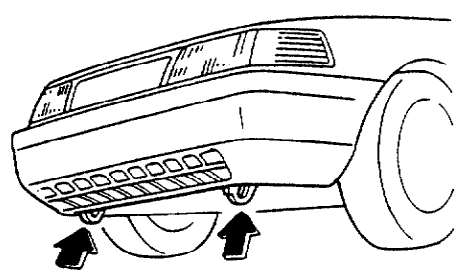
Proper towing equipment is necessary to prevent damage to the vehicle.
Laws and regulations applicable to vehicles in tow must always be observed.
As a general rule, towed vehicles should be pulled with the driving wheels off the ground. If excessive damage or other conditions prevent towing the vehicle with the driving wheels off the ground, use wheel dollies.

With either automatic or manual transaxle:
1. Set the ignition switch in the ACC position;
2. Place the selector lever or shift lever in N (Neutral);
3. Release the parking brake.

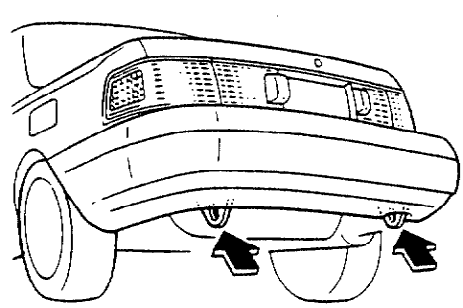
Caution

- **Do not tow the vehicle backward with driving wheels on the ground. This may cause internal damage to the transaxles.**
- **Do not use the hook loops under the front and rear of the vehicle for towing purposes. These hook loops are designed ONLY for transport tie-down. If tie-down hook loops are used for towing, the front/rear bumper will be damaged.**

TIE-DOWN HOOKS — FRONT

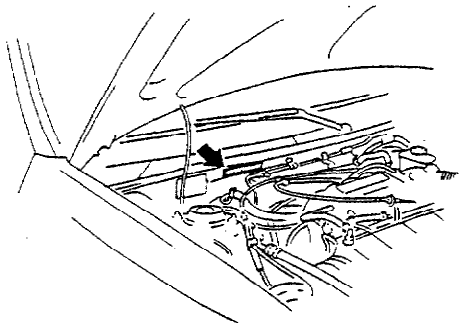


TIE-DOWN HOOKS — REAR

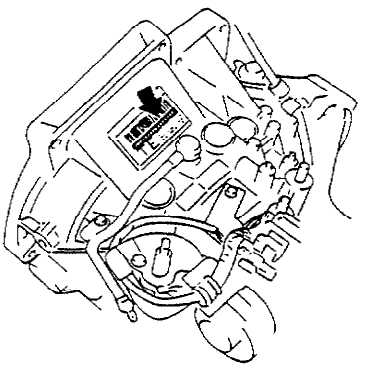


IDENTIFICATION NUMBER LOCATIONS

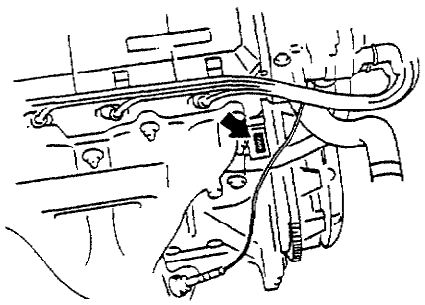
VEHICLE IDENTIFICATION NUMBER (VIN)



AUTOMATIC TRANSAXLE MODEL AND NUMBER



ENGINE MODEL AND NUMBER



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UNITS

N·m (m-kg or cm-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 (usually positive)
mmHg (inHg)	Pressure (usually negative)
W	Watt
liters (US qt, Imp qt)	Volume
mm (in)	Length

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ABBREVIATIONS

ABDC	After bottom dead center
A/C	Air conditioner
ACC	Accessories
ATX	Automatic transaxle
ATDC	After top dead center
ATF	Automatic transmission fluid
BAC	Bypass air control
BBDC	Before bottom dead center
BTDC	Before top dead center
CPU	Central processing unit
EC-AT	Electronically-controlled automatic transmission
ECU	Engine control unit
EGI	Electronic gasoline injection
E/L	Electrical load
EX	Exhaust
IC	Integrated circuit
IGN	Ignition
IN	Intake
INT	Intermittent
ISC	Idle speed control
LH	Left hand
M	Motor
MIL	Malfunction indicator lamp
MTX	Manual transaxle
OD	Overdrive
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
SST	Special service tool
ST	Start
SW	Switch
TDC	Top dead center
4WD	4-wheel drive

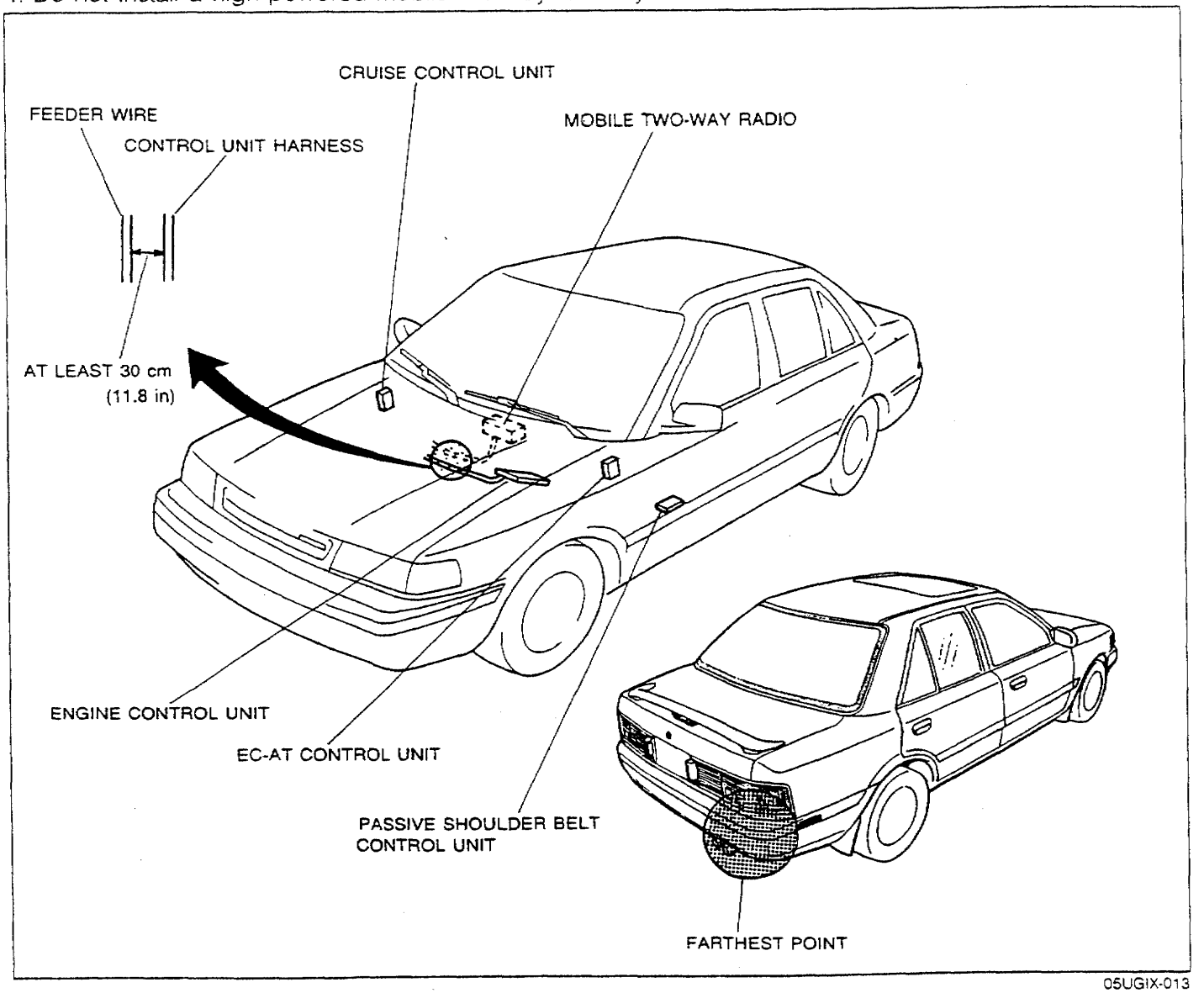
03UGIX-802

CAUTION

INSTALLATION OF MOBILE TWO-WAY RADIO SYSTEM

If a mobile two-way radio system is installed improperly or if a high-powered type is used, the EGI system and other systems may be affected.
When the vehicle is to be equipped with a mobile two-way radio, observe the following precautions:

1. Install the antenna at the farthest point from control units.
2. Install the antenna feeder as far as possible from the control unit harnesses **(at least 30 cm [11.8 in])**.
3. Ensure that the antenna and feeder are properly adjusted.
4. Do not install a high-powered mobile two-way radio system.



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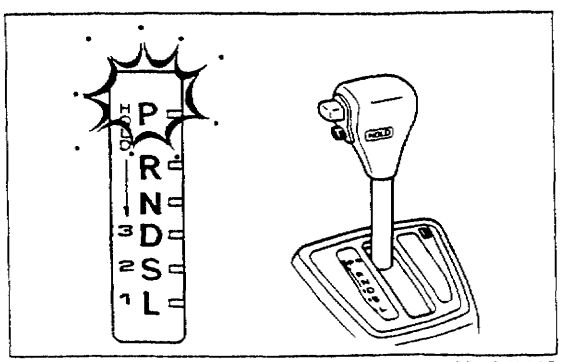
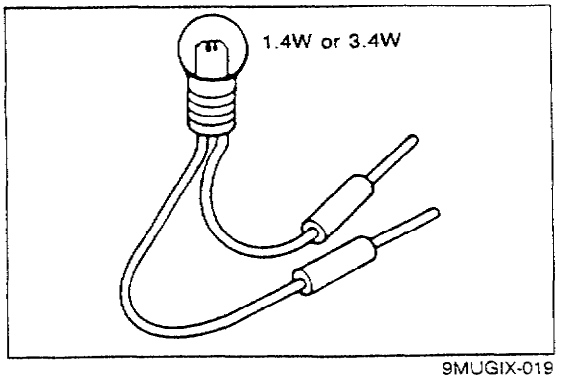


03UGIX-005

REMOVAL OF IGNITION KEY ON AUTOMATIC TRANSAXLE MODEL

The selector lever must be in P (PARK) to turn the ignition key to the OFF position. If the switch seems to be off but the key cannot be removed, the switch may still be in the ACC position, or the selector lever may not be in P (PARK). Shift the selector lever to P (PARK), and turn the ignition key to the LOCK position. The key should now be free for removal.

CAUTION



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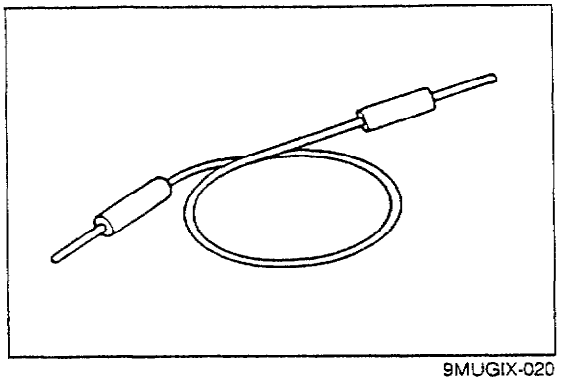

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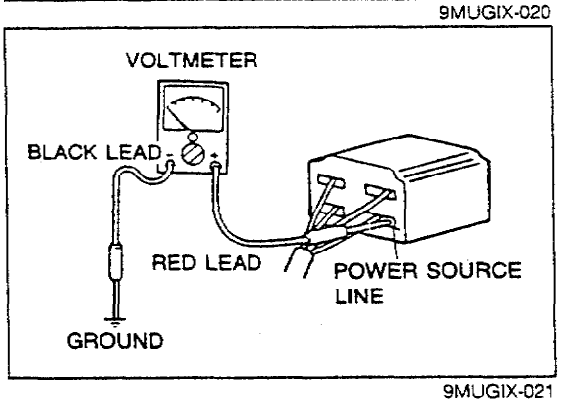

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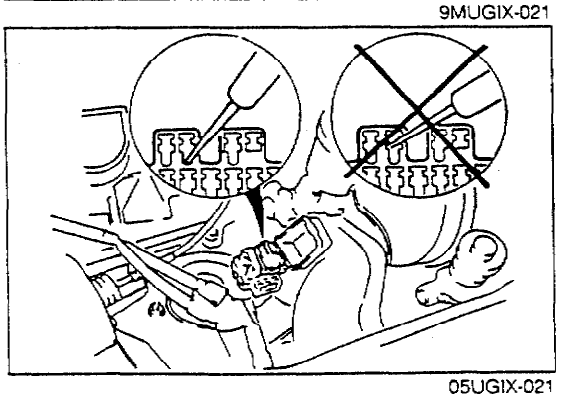

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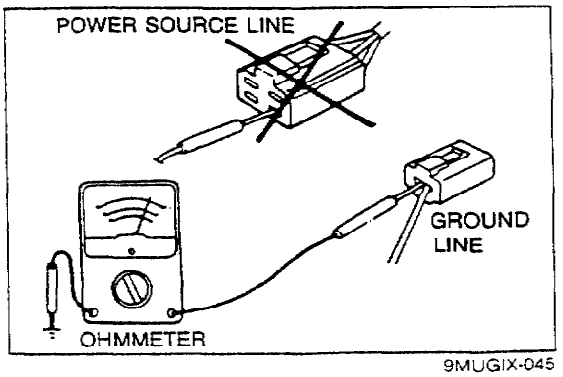

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ELECTRICAL TROUBLESHOOTING TOOLS

Test Light

The test light, as shown in the figure, uses a 12V bulb. The two lead wires should be connected to probes.
The test light is used for simple voltage checks and for checking for short circuits.

Caution

- **When checking the control unit, never use a bulb over 3.4W.**

Jumper Wire

The jumper wire is used for testing by shorting across switch terminals and ground connections.

Caution

- **Do not connect a jumper wire from the power source line to a body ground; this may cause burning or other damage to harnesses or electronic components.**

Voltmeter

The DC voltmeter is used to measure of circuit voltage. A voltmeter with a range of 15V or more is used by connecting the positive (+) probe (red lead wire) to the point where voltage is to be measured and the negative (–) probe (black lead wire) to a body ground.

Diagnosis Connector

Insert the probe into the service hole when connecting a jumper wire to the diagnosis connector.

Caution

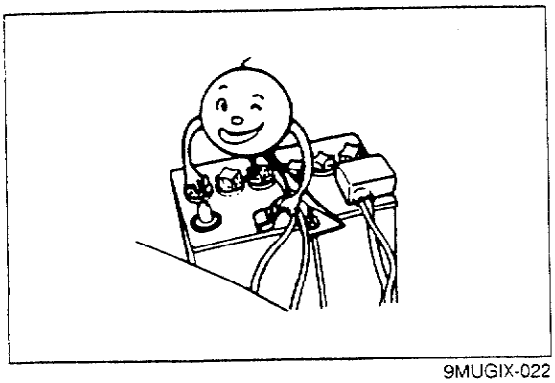
- **Do not insert the jumper wire probe into the diagnosis connector terminal, which may damage the terminal.**

Ohmmeter

The ohmmeter is used to measure the resistance between two points in a circuit and also to check for continuity and diagnosis of short circuits.

Caution

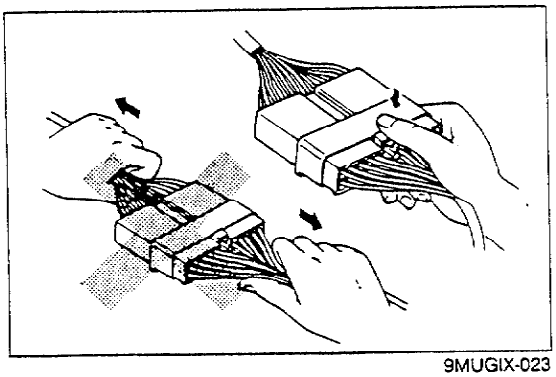
- **Do not attempt to connect the ohmmeter to any circuit to which voltage is applied; this may burn or otherwise damage the ohmmeter.**


9MUGIX-022

CAUTION WITH ELECTRICAL PARTS

Battery Cable

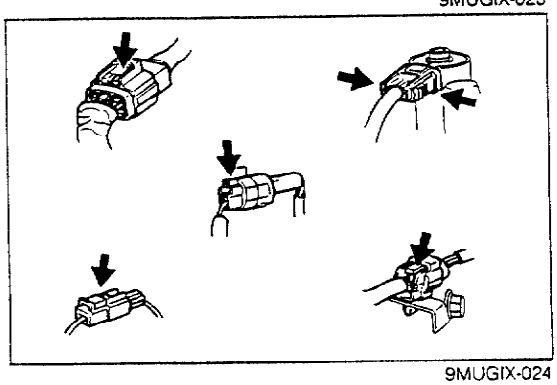
Before disconnecting connectors or replacing electrical parts, disconnect the negative battery cable.


9MUGIX-023

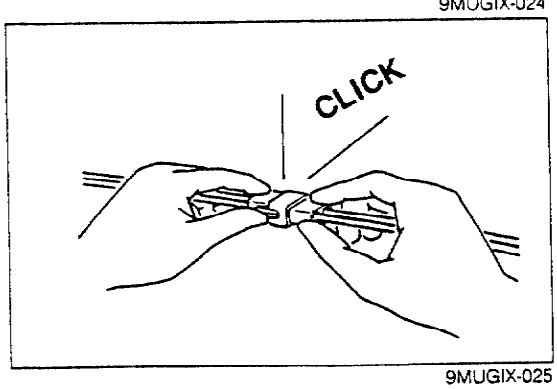
Connectors

Removal of connector

Never pull on the wiring harness when disconnecting connectors.


9MUGIX-024

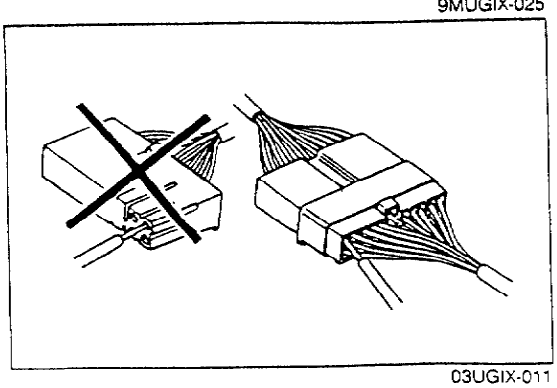
Connectors can be removed by pressing or pulling the lock lever as shown.



9MUGIX-025

Locking of connector

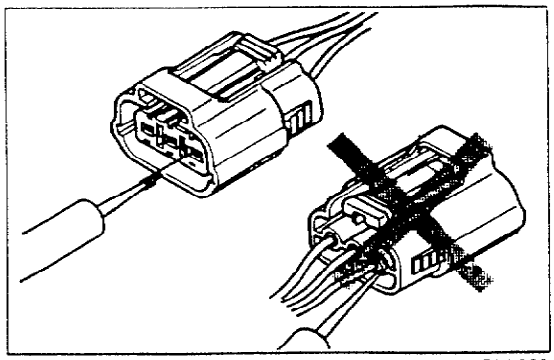
When locking connectors, make sure to listen for a click that will indicate they are securely locked.


03UGIX-011

Inspection

1. When a tester is used to check for continuity or to measure voltage, insert the tester probe from the wire harness side.

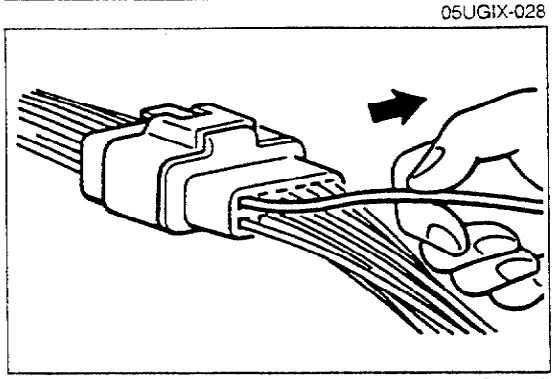
CAUTION



05UGIX-028

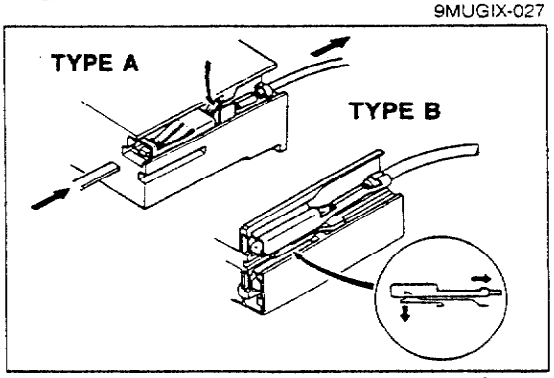
2. Check the terminals of waterproof connectors from the connector side, as they cannot be accessed from the wire harness side.

Caution
- **Use fine wire to prevent damage to the terminal.**
- **Do not damage the terminal when inserting the tester lead.**



9MUGIX-027

Terminals
Inspection
Pull lightly on individual wires to check that they are secured in the terminal.

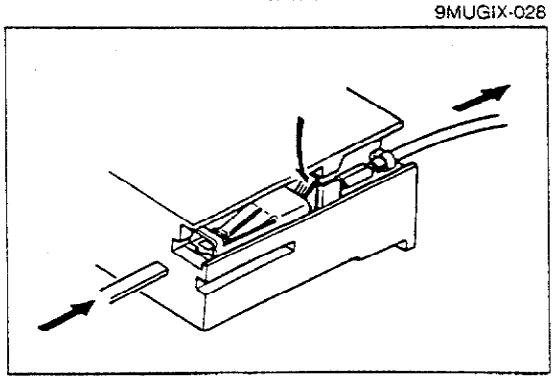


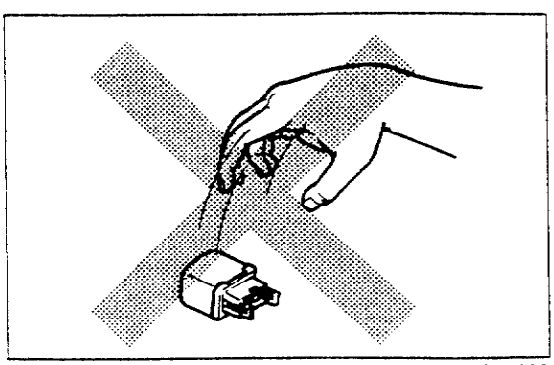
9MUGIX-026

Replacement of terminals
Use the appropriate tools to remove the terminal as shown. When installing the terminal, be sure to insert it until it locks securely.

<Female>
Insert a thin piece of metal from the terminal side of the connector, and then, with the terminal locking tab pressed down, pull the terminal out from the connector.

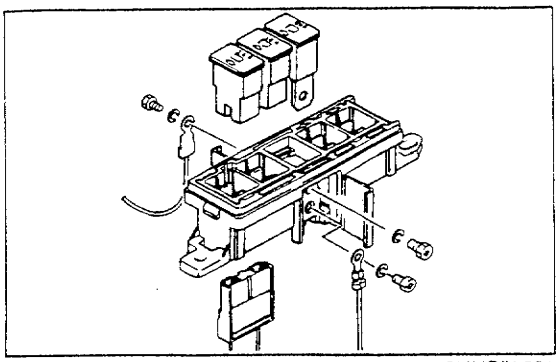
<Male>
Same as the female type.

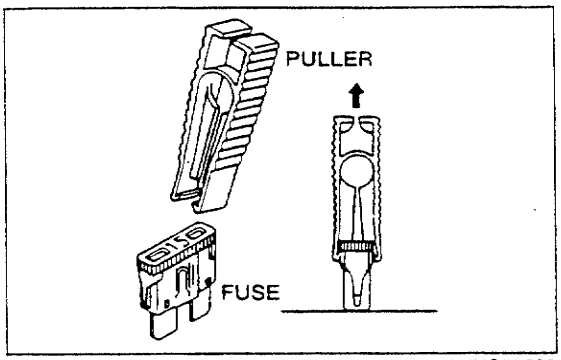




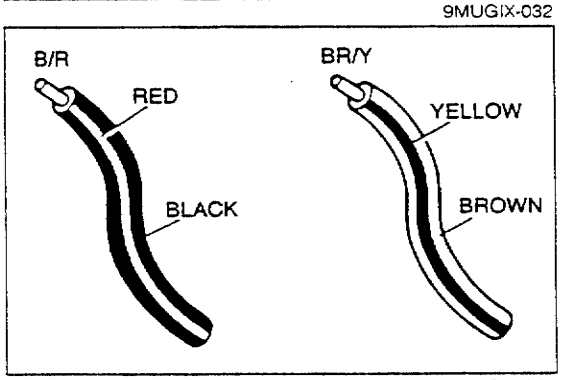
9MUGIX-030

Sensors, Switches, and Relays
Handle sensors, switches, and relays carefully. Do not drop them or strike them against other parts.


9MUGIX-031



9MUGIX-032



9MUGIX-029

Fuse
Replacement

1. When replacing a fuse, be sure to replace it with one of specified capacity.
   If a fuse again fails after it has been replaced, the circuit probably has a short circuit and the wiring should be checked.
2. Be sure the negative battery terminal is disconnected before replacing a main fuse (80A).
3. When replacing a pullout fuse, use the fuse puller supplied in the fuse box cover.

Wiring Harness
Wiring color codes

Two-color wires are indicated by a two-color code symbol. The first letter indicates the base color of the wire and the second the color of the stripe.

CODE	COLOR		CODE	COLOR
B	Black		O	Orange
BR	Brown		P	Pink
G	Green		R	Red
GY	Gray		V	Violet
L	Blue		W	White
LB	Light Blue		Y	Yellow
LG	Light Green		—	—

PRE-DELIVERY INSPECTION AND SCHEDULED MAINTENANCE SERVICES

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