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This file was not scanned to deprive Mazda of any money - it was scanned due to the rareness of the original manuals and the overwhelming need of the RX-7 owner to have this information so that they can accurately troubleshoot problems. Perhaps if Mazda's dealerships could support the Rotary Engine it wouldn't be so necessary for the owners to do so.



Many thanks to Lenny Terris for scanning this.

# 1994 Mazda RX-7 Workshop Manual

## **WARNING**

Servicing a vehicle can be dangerous. If you have not received service-related training, the risks of injury and property damage increase. The recommended servicing procedures for the vehicle in this workshop manual were developed with Mazda-trained technicians in mind. This manual may be useful to non-Mazda trained technicians, but a technician with our service-related training and experience will be at less risk when performing servicing operations. However, all users of this manual are expected to know general safety procedures.

This manual contains "Warnings" and "Cautions" applicable to risks not normally encountered in a general technician's experience. They should be followed to reduce the risk of injury and the risk that improper service or repair may damage the vehicle or render it unsafe. It is also important to understand that the "Warnings" and "Cautions" are not exhaustive. It is impossible to warn of all the hazardous consequences that might result from failure to follow the procedures

The procedures recommended and described in this manual are effective methods of performing service and repair. Some require tools specifically designed for a specific purpose. Nonrecommended procedures and tools should include consideration for safety of the technician and continued safe operation of the vehicle.

Parts should be replaced with genuine Mazda replacement parts, not parts of lesser quality. Use of a nonrecommended replacement part should include consideration for safety of the technician and continued safe operation of the vehicle.

# 1994 Mazda RX-7 Workshop Manual

## FOREWORD

A thorough familiarization with this manual is important for proper repair and maintenance.

It should always be kept in a handy place for quick and easy reference.

The contents of this manual, including 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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## 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.

**Mazda Motor Corporation  
HIROSHIMA, JAPAN**

## APPLICATION:

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

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Technical Data		TD
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Wiring Diagram (Form No.5273-10-93H) (Part No. 9999-95-022G-94)		Z

\* Refer to the 1994 RX-7 Body Electrical Troubleshooting Manual (Form No. 1380-10-93H, Part No.9999-95-085F-94) for servicing of the body electrical components.

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Printed in the U.S.A. (8/93)  
Form No. 1378-10-93H  
Part No. 9999-95-018B-94

**VEHICLE IDENTIFICATION NUMBERS (VIN)**  
JM1FD 333\*RO 300001 ~

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## SAFETY INFORMATION

### LUBRICANTS

Avoid prolonged and repeated contact with petroleum-based oils. Used oil may irritate the skin, and can cause skin cancer and other skin disorders.

Wash thoroughly after working with oil. We recommend water soluble hand cleaners. Do not use kerosene, gasoline, or any other solvent, to remove oil from your skin.

If repeated or prolonged contact with oil is necessary, wear protective clothing. Soiled clothing, particularly those soiled with used oils and greases containing lead, should be cleaned at regular intervals.

### JACKING POSITIONS

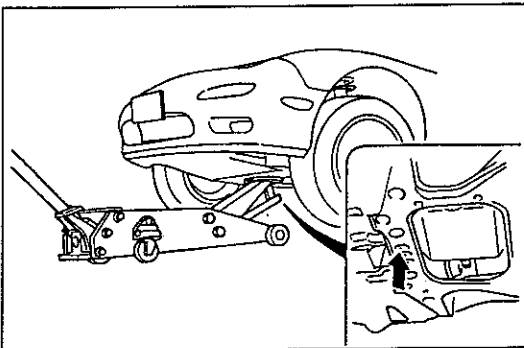
#### Warning

- Improperly jacking a vehicle is dangerous. The vehicle can slip off the jack and cause serious injury. Use only the correct front and rear jacking positions and block the wheels.

Use safety stands to support the vehicle after it has been lifted.

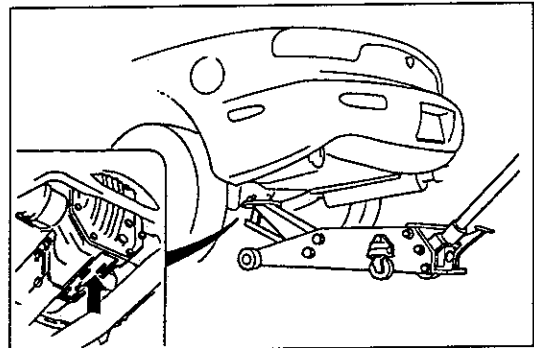
#### Front

At the center of the crossmember



#### Rear

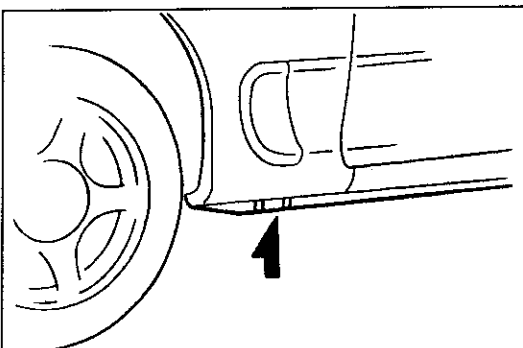
At the center of the crossmember



### SAFETY STAND POSITIONS

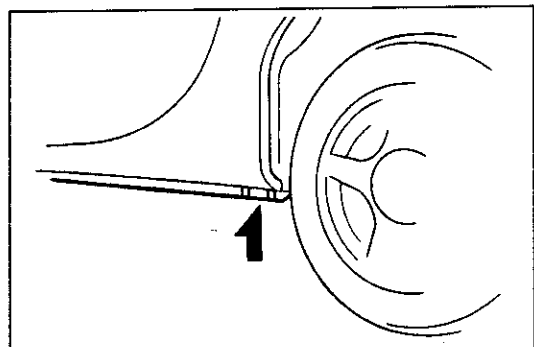
#### Front

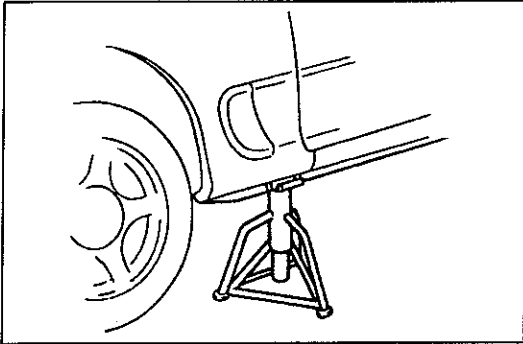
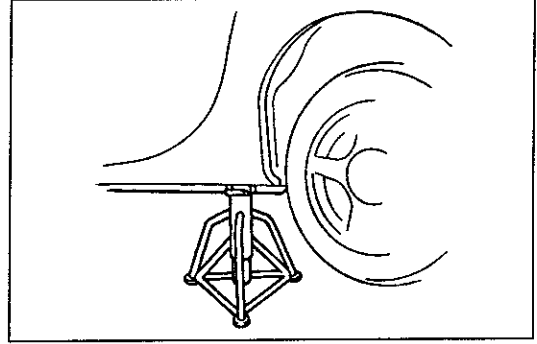
Both sides of the vehicle



#### Rear

Both sides of the vehicle



**VEHICLE LIFT POSITIONS****Front****Rear****DYNAMOMETER**

When test-running a vehicle on a dynamometer

- Place a fan, preferably a vehicle-speed proportional type, in front of the vehicle.
- Connect an exhaust gas ventilation unit.
- Cool the exhaust pipes with a fan.
- Keep the area around the vehicle uncluttered.
- Watch the water temperature gauge.

**COMPRESSED AIR**

When using compressed air to clean or remove parts

- Wear protective eyewear.
- Hold a rag over the opening to prevent parts from shooting out.
- Take precautions so that people around you are not struck by flying debris.

## HOW TO USE THIS MANUAL

### ADVISORY MESSAGES

You'll find several **Warnings**, **Cautions**, and **Notes** in this manual.

#### Warning

- A **Warning** indicates a situation in which serious injury or death could result if the warning is ignored.

#### Caution

- A **Caution** indicates a situation in which damage to the vehicle could result if the caution is ignored.

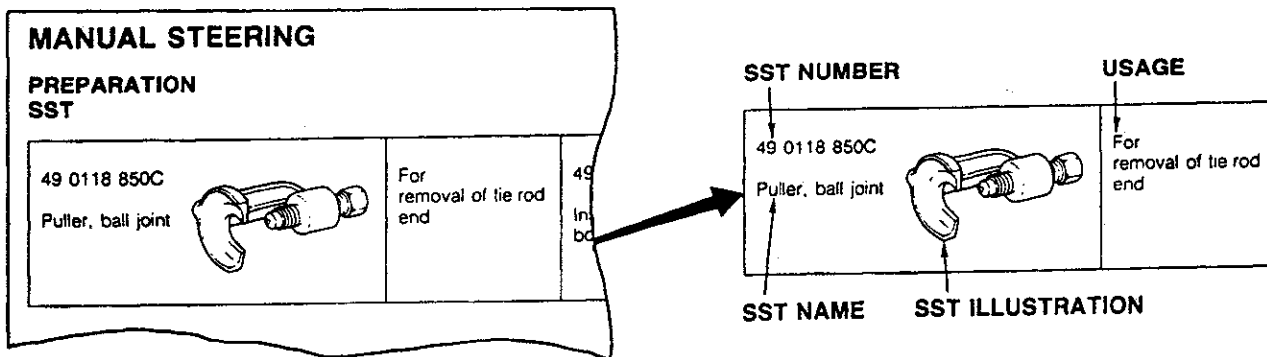
#### Note

- A **Note** provides added information that will help you to complete a particular procedure.

### PREPARATION

This points out the needed **SSTs** for the service operation. It is best to gather all necessary **SSTs** before beginning work.

#### Example:



### REPAIR PROCEDURE

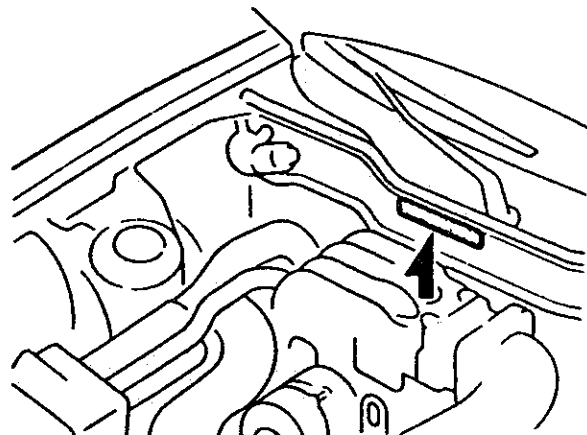
1. Most repair operations begin with an overview illustration. It identifies the components, shows how the parts fit together, and describes visual part inspection. If a damaged or worn part is found, repair or replace it as necessary.
2. Expendable parts, tightening torques, and symbols for oil, grease, 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.



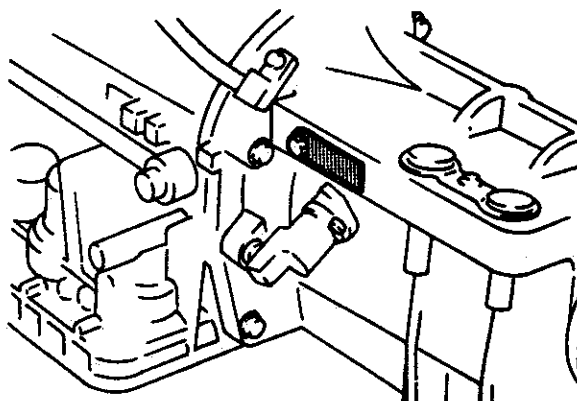


### IDENTIFICATION NUMBER LOCATIONS

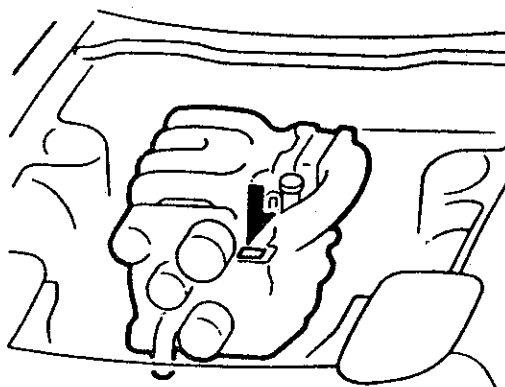
VEHICLE IDENTIFICATION NUMBER (VIN)



AUTOMATIC TRANSMISSION MODEL AND NUMBER



ENGINE MODEL AND NUMBER



### UNITS

Electrical current	..... A (ampere)
Electric potential	..... V (volt)
Electric power	..... W (watt)
Length	..... mm (millimeters)
	..... in (inches)
Negative pressure	..... kPa (kilo Pascal)
	..... mmHg (millimeters of mercury)
	..... inHg (inches of mercury)
Positive pressure	..... kPa (kilo Pascal)
	..... kgf/cm <sup>2</sup> (kilogram force per square centimeter)
	..... psi (pounds per square inch)
Resistance	..... Ω (ohm)
Torque	..... N·m (Newton meter)
	..... kgf·m (kilogram force per meter)
	..... kgf·cm (kilogram force per centimeter)
	..... ft·lb (foot pounds)
	..... in·lb (inch pounds)
Volume	..... L (liter)
	..... US qt (U.S. quart)
	..... Imp qt (Imperial quart)

ABBREVIATIONS

AAS	Auto adjusting suspension
ABDC	After bottom dead center
ABS	Anti-lock braking system
ACC	Accessories
ACV	Air control valve
ASV	Air supply valve
AT	Automatic transmission
ATDC	After top dead center
ATF	Automatic transmission fluid
ATS	Ambient temperature sensor
AWS	Accelerated warm-up system
BAC	Bypass air control
BBDC	Before bottom dead center
BTDC	Before top dead center
EC-AT	Electronically controlled Automatic Transmission
ECPS	Electronically controlled power steering
ECU	Engine control unit
EGI	Electronic gasoline injection
E/L	Electrical load
ESA	Electronic spark advance
ESPS	Engine speed sensing power steering
ETS	Evaporator temperature sensor
EX	Exhaust
IC	Integrated circuit
IGN	Ignition
IN	Intake
INT	Intermittent
ISC	Idle speed control
LH	Left hand
LSD	Limited slip differential
M	Motor
MOP	Metering oil pump
MT	Manual transmission
OD	Overdrive
OFF	Switch off
ON	Switch on
PBV	Proportioning bypass valve
PCTS	Passenger compartment temperature sensor
PCV	Positive crankcase ventilation
PRC	Pressure regulator control
P/S	Power steering
P/W	Power window
RH	Right hand
RTS	Reduce torque signal
SLS	Slip lockup signal
SR	Sensor rotor
SST	Special service tool
ST	Start
SW	Switch
TDC	Top dead center
TNS	Tail number side
TRS	Torque reduced signal
VDI	Variable dynamic effect intake
VRIS	Variable resonance induction system
WSS	Wheel speed sensor
WTS	Water temperature sensor

GI

## SAE STANDARDS

In accordance with new regulations, SAE (Society of Automotive Engineers) standard names and abbreviations are now used in this manual. The table below lists the names and abbreviations that have been used in Mazda manuals up to now and their SAE equivalents.

## Engine and Emission Systems

Previous Standard		SAE Standard		
Abbreviation	Name	Abbreviation	Name	Remark
—	Accelerator Pedal	AP	Accelerator Pedal	
—	Air Cleaner	ACH	Air Cleaner Housing	
—	Air/Fuel (A/F) Solenoid Valve	MCS	Mixture Control Solenoid	F2 Carburetor
—	Airflow Meter	VAF	Volume Airflow Sensor	
—	Airflow Sensor	MAF	Mass Airflow Sensor	
—	Alternator	ALT	Alternator	
—	Atmospheric Pressure Sensor	BARO	Barometric Absolute Pressure Sensor	
—	Carburetor	CARB	Carburetor	
—	Catalytic Converter	OC	Oxidation Catalyst	
		TWC	Three-Way Catalyst	
		WU-TWC	Warm Up Three-Way Catalyst	#1
—	Circuit Opening Relay	FPR	Fuel Pump Relay	#2
—	Cooling Fan Control	CFC	Coolant Fan Control	
—	Crank Angle Sensor	CPS	Crankshaft Position Sensor	
—	Diagnosis Connector	DLC	Data Link Connector	
—	Direct Ignition	DLI	Distributorless Ignition	
EGL	Electronic Gasoline Injection System	CIS	Continuous Fuel Injection System	
—	Electronic Spark Ignition	EI	Electronic Ignition	#3
—	EGR Modulator Solenoid	EGRC	EGR Function Control	
—	EGR Gas Sensor	EGRS	EGR Function Sensor	#4
	EGR Position Sensor			
	EGR Position Switch			
ECU	Engine Control Unit	PCM	Powertrain Control Module	#5
		PCME	Powertrain Control Module (Engine)	
—	Engine Modification	EM	Engine Modification	
—	Engine Speed	RPM	Engine Speed	
—	Evaporative Emission Control System	EVAP	Fuel Evaporative System	
—	Exhaust Gas Recirculation System	EGR	Exhaust Gas Recirculation	System name
—	Feedback System	CLS	Closed Loop System	
—	Flexible Fuel	FF	Flexible Fuel	
—	Fuel Pump	FP	Fuel Pump	
—	IC Regulator	VR	Voltage Regulator	

#1: Directly connected to exhaust manifold

#2: In some models, there is a "Fuel Pump Relay" that controls pump speed.

That relay is now called the "Fuel Pump Relay (Speed)"

#3: Controlled by the PCME (PCM)

#4: EGR valve controller device name

#5: Device that controls engine and powertrain

## Engine and Emission Systems (cont'd)

Previous Standard		SAE Standard		
Abbreviation	Name	Abbreviation	Name	Remark
—	Intake Air Thermosensor	IATS	Intake Air Temperature Sensor	
—	Intercooler	CAC	Charge Air Cooler	
—	ISC Solenoid Valve	IACV	Idle Air Control Valve	
—	Knock Sensor	KS	Knock Sensor	
—	Malfunction Indicator Light	MIL	Malfunction Indicator Light	
—	Multiport Fuel Injection	MFI	Multiport Fuel Injection	
—	Oxidizing Converter	OC	Oxidation Catalyst	
—	Oxygen Sensor	HO2S	Heated Oxygen Sensor	With heater
		O2S	Oxygen Sensor	
—	Open Loop	OL	Open Loop	
PTC	Positive Temperature Coefficient Heater	EFE	Early Fuel Evaporation	
—	Pressure Sensor	MAP	Manifold Absolute Pressure Sensor	
		MVS	Manifold Vacuum Sensor	Checks vacuum only
		SAPV	Secondary Air Pulse Valve	
—	Reed Valve	SAPV	Secondary Air Pulse Valve	
—	Relief 1 Solenoid Valve	SABV	Secondary Air Bypass Valve	
—	Secondary Air Injection System	PAIR	Pulsed Secondary Air Injection	Pulsed injection
		AIR	Secondary Air Injection	#6
—	Sequential Fuel Injection	SMFI	Sequential Multipoint Fuel Injection	
—	Service Code(s)	DTC	Diagnostic Trouble Code(s)	
—	Spark Ignition	DI	Distributor Ignition	
—	Supercharger	SC	Supercharger	
—	Switching Solenoid Valve	SASV	Secondary Air Switching Valve	
—	Test Mode(s)	DTM	Diagnostic Test Mode(s)	#7
—	Three-Way Catalyst	TWC	Three-Way Catalyst	
—	Throttle Body	TB	Throttle Body	
—	Throttle Sensor	TPS	Throttle Position Sensor	
—	Turbocharger	TC	Turbocharger	
—	VAC	MDP	Manifold Differential Pressure	
—	Vacuum Switch	MVZS	Manifold Vacuum Zone Switch	
—	Water Thermosensor	ECTS	Engine Coolant Temperature Sensor	

#6: Supplies air to three-way catalytic

#7: Diagnostic trouble codes depend on the test mode

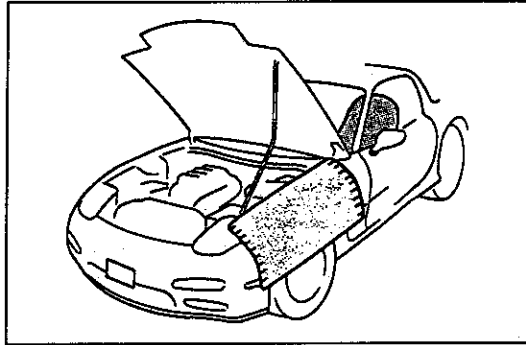
## Transmission (Transaxle) and Steering System

Previous Standard		SAE Standard		
Abbreviation	Name	Abbreviation	Name	Remark
—	Clutch Position	CPP	Clutch Pedal Position	
—	EC-AT Control Unit	PCMT	Powertrain Control Module (Transaxle)	FF
			Powertrain Control Module (Transmission)	FR
—	Fully Closed	CTP	Closed Throttle Position	
—	Fully Open	WOT	Wide Open Throttle	
—	Inhibitor Switch	PNS	Park/Neutral Switch	
—	Lock-Up Position	TCC	Torque Converter Clutch	
—	Output Signal(s)	PTCS	Powertrain Control Signal(s)	
—	Overdrive	4GR	Fourth Gear	
—	Power Steering Pressure Switch	SPS	Steering Pressure Sensor	
—	Pulse Generator	VSPG	Vehicle Speed Pulse Generator	
—	Vehicle Speed Sensor	VSS	Vehicle Speed Sensor	
—	3rd Gear	3GR	Third Gear	

## Body Electrical System and Heater and Air Conditioner Systems

Previous Standard		SAE standard		
Abbreviation	Name	Abbreviation	Name	Remark
—	A/C Switch	ACS	Air Conditioning Sensor	
—	Air Conditioner	A/C	Air Conditioner	
V <sub>B</sub>	Battery Voltage	B+	Battery Positive Voltage	
—	Coolant Level Sensor	COLS	Coolant Level Sensor	
—	Ground	GND	Ground	
—	Self-Diagnosis System	OBD	On-Board Diagnosis System	#8

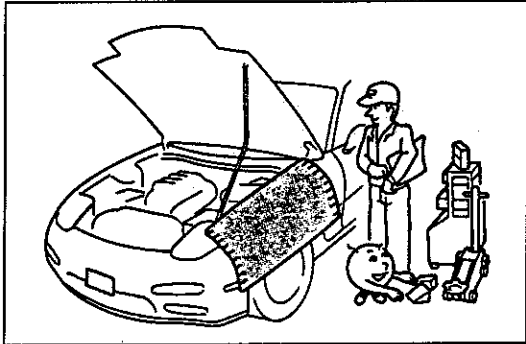
#8: System name. Other related names are unchanged.



**FUNDAMENTAL PROCEDURES**

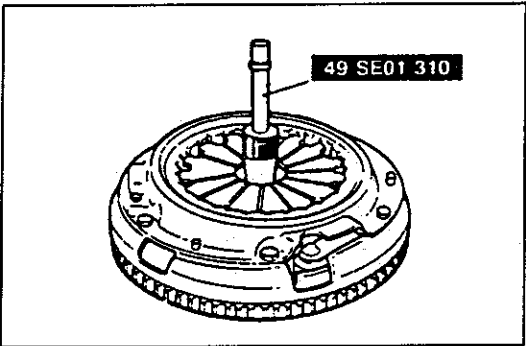
**PROTECTION OF THE VEHICLE**

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



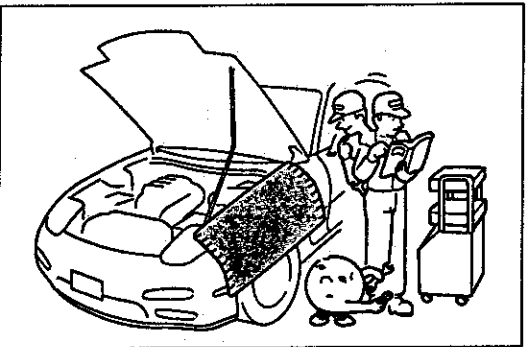
**PREPARATION OF TOOLS AND MEASURING EQUIPMENT**

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



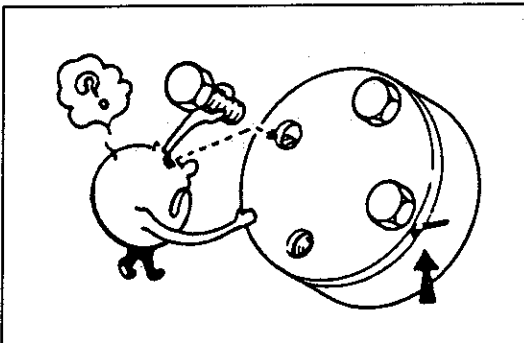
**SPECIAL TOOLS**

Use special tools when they are required.



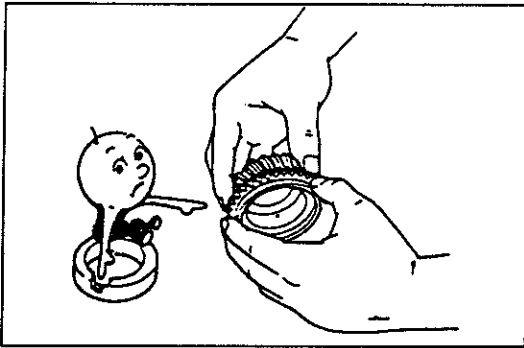
**REMOVAL OF PARTS**

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. After removing the part, plug all holes and ports to prevent foreign material from entering.



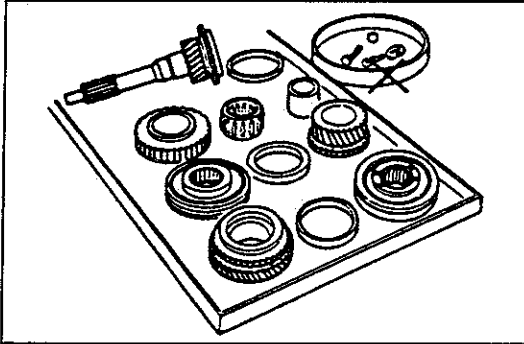
**DISASSEMBLY**

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.



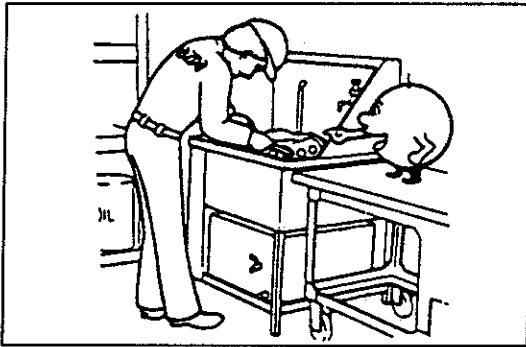
### 1. Inspection of parts

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



### 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.



### 3. Cleaning parts for reuse

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

#### Warning

- Using compressed air can cause dirt and other particles to fly out, causing injury to the eyes. Wear protective eye wear whenever using compressed air.

### REASSEMBLY

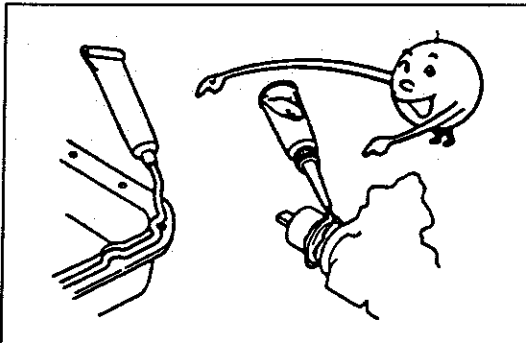
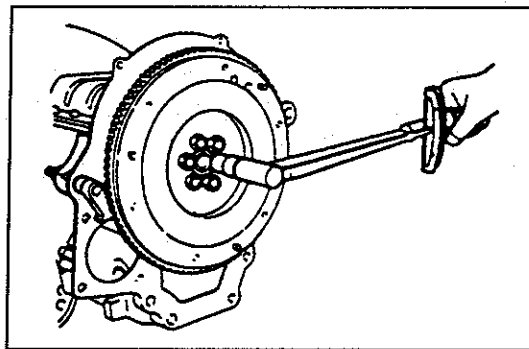
Standard values, such as torques and certain adjustments, must be strictly observed in the reassembly of all parts. Refer to STANDARD BOLT AND NUT TIGHTENING TORQUE in section TD for tightening torques not mentioned in the main text.

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

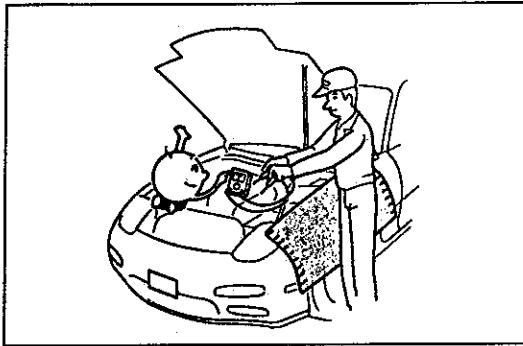
- |                |                 |
|----------------|-----------------|
| 1. Oil seals   | 4. Gaskets      |
| 2. O-rings     | 5. Lock washers |
| 3. Cotter pins | 6. Nylon nuts   |

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.

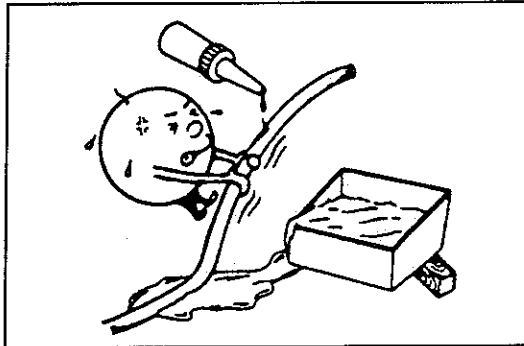






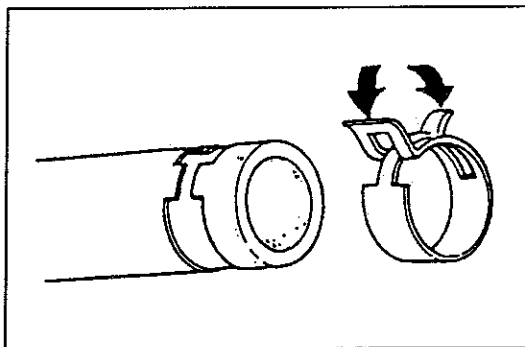
**ADJUSTMENTS**

Use suitable gauges and testers when making adjustments.



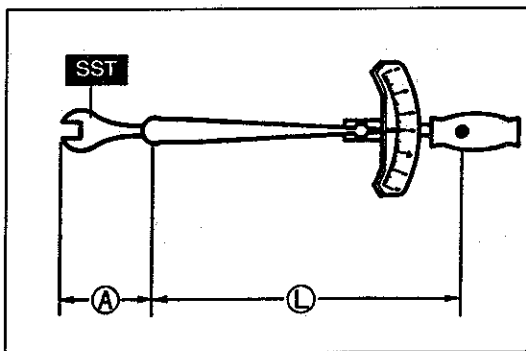
**RUBBER PARTS AND TUBING**

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



**HOSE CLAMPS**

When reinstalling, position the hose clamp in the original location on the hose, and squeeze the clamp lightly with large pliers to ensure a good fit.

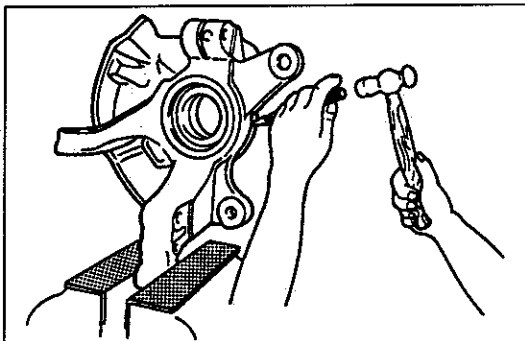


**TORQUE FORMULAS**

When using a torque wrench-SST combination, the written torque must be recalculated due to the extra length that the SST adds to the torque wrench. Recalculate the torque by using the following formulas. Choose the formula that applies to you.

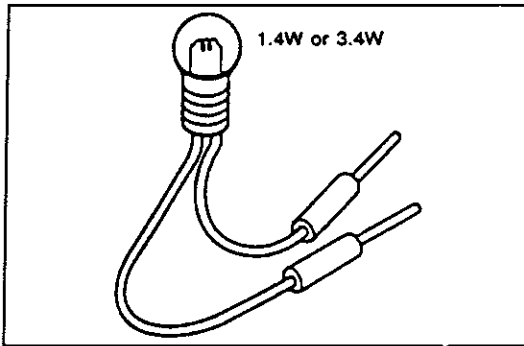
Torque Unit	Formula	L&A Unit
N·m	$N \cdot m \times [L/(L+A)]$	centimeter
kgf·m	$kgf \cdot m \times [L/(L+A)]$	centimeter
kgf·cm	$kgf \cdot cm \times [L/(L+A)]$	centimeter
ft·lb	$ft \cdot lb \times [L/(L+A)]$	inch
in·lb	$in \cdot lb \times [L/(L+A)]$	inch

A = The length of the SST past the torque wrench drive.  
L = The length of the torque wrench.



**WISE**

When using a vise, put protective plates in the jaws of the vise to prevent damage to parts.



## ELECTRICAL TROUBLESHOOTING TOOLS

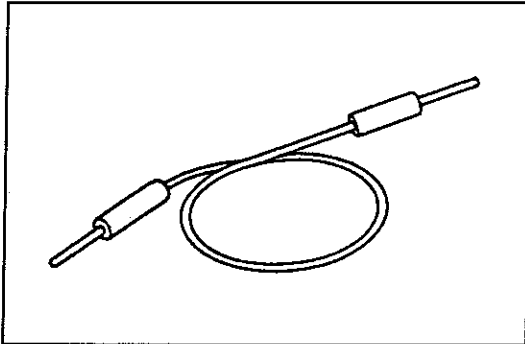
### TEST LIGHT

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

- Using a bulb over 3.4W when checking the control unit may damage the control unit.

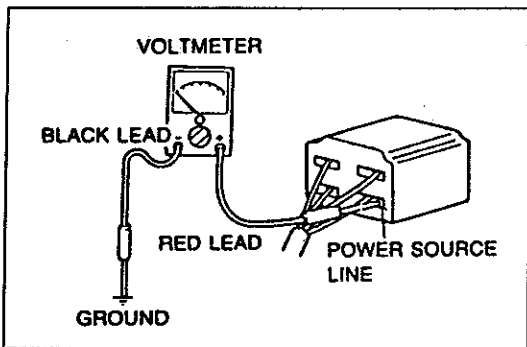


### JUMPER WIRE

A jumper wire is used to create a temporary circuit. Connect the jumper wire between the terminals of a circuit to bypass a switch.

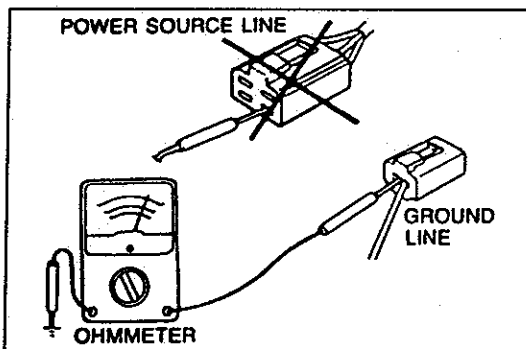
#### Caution

- 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 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.

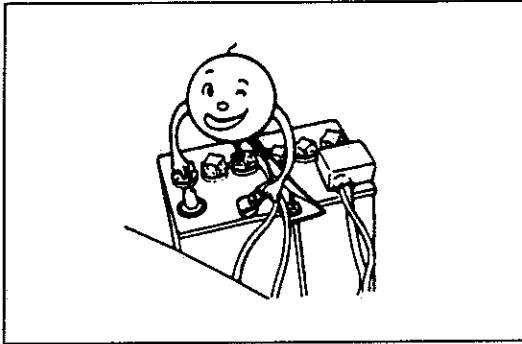


### OHMMETER

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

#### Caution

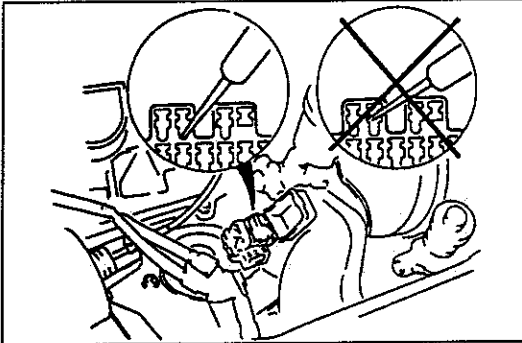
- Do not connect the ohmmeter to any circuit to which voltage is applied; this will damage the ohmmeter.



## ELECTRICAL PARTS

### BATTERY CABLE

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



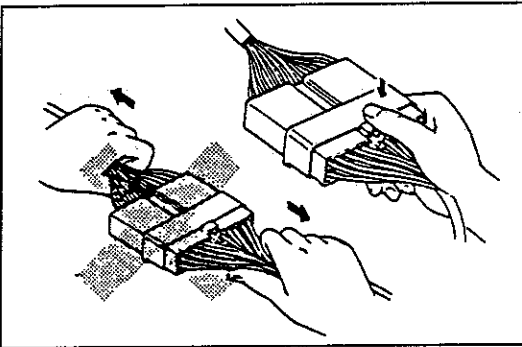
### CONNECTORS

#### Data Link Connector

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

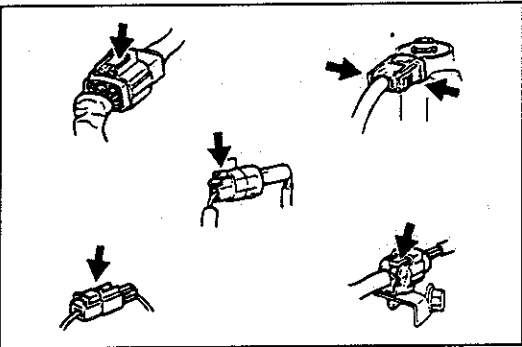
#### Caution

- Inserting a jumper wire probe into the data link connector terminal may damage the terminal.

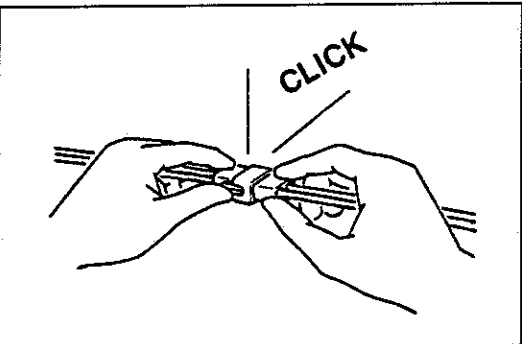


#### Disconnecting Connectors

When disconnecting two connectors, grasp the connectors, not the wires.

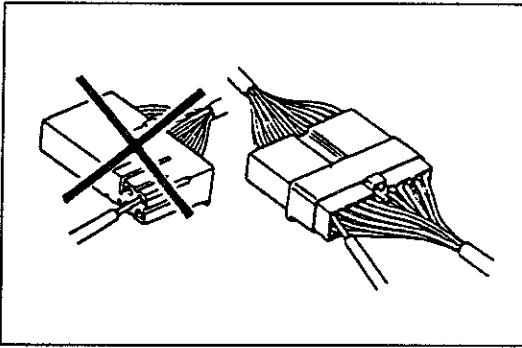


Connectors can be disconnected by pressing or pulling the lock lever as shown.

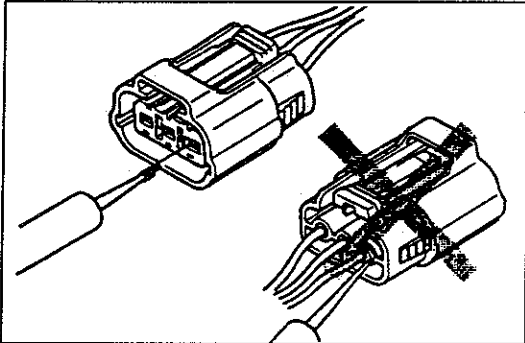


#### Locking Connectors

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

**Inspection**

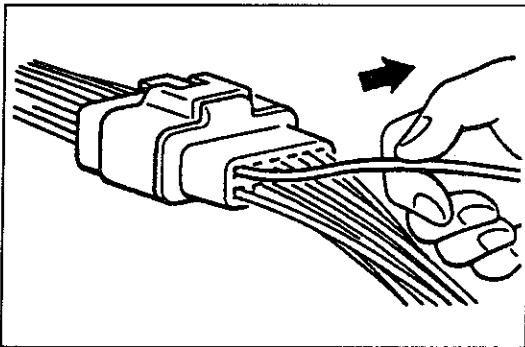
1. When a tester is used to check for continuity or to measure voltage, insert the tester probe from the wiring harness side.



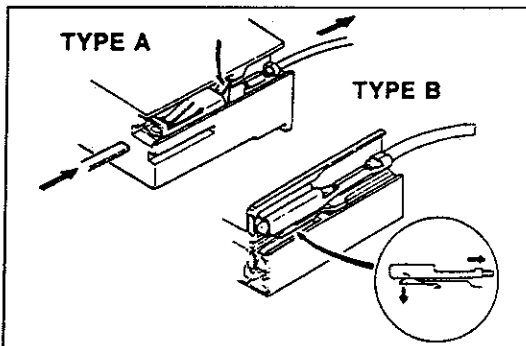
2. Check the terminals of waterproof connectors from the connector side, as they cannot be accessed from the wiring harness side.

**Caution**

- To prevent damage to the terminal, wrap a thin wire around the lead before inserting it into the terminal.

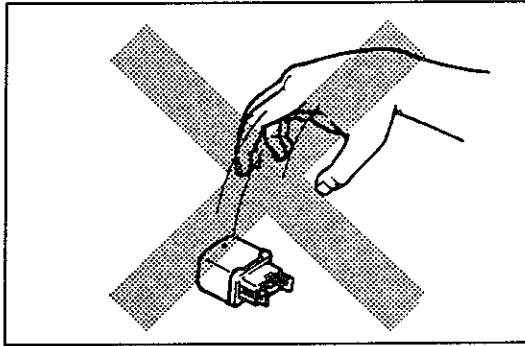
**TERMINALS****Inspection**

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

**Replacement**

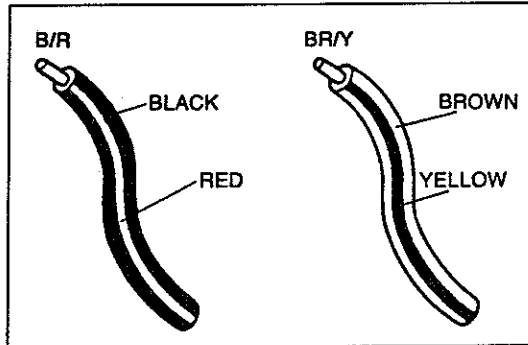
Use the appropriate tools to remove a terminal as shown. When installing a terminal, be sure to insert it until it locks securely.

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.



**SENSORS, SWITCHES, AND RELAYS**

Handle sensors, switches, and relays carefully. Do not drop them or strike them against other objects.

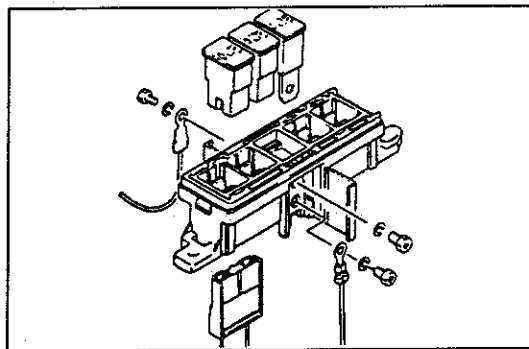


**WIRING HARNESS**

**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.

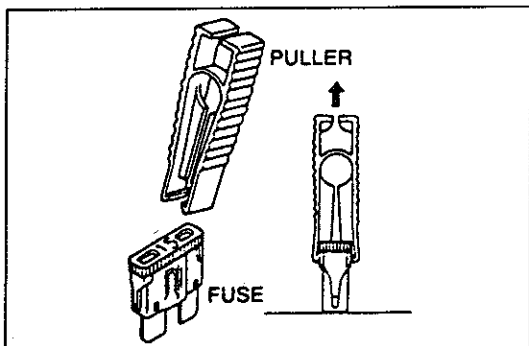
CODE	COLOR	CODE	COLOR
B	Black	O	Orange
BR	Brown	P	Pink
G	Green	R	Red
GY	Gray	V	Violet
L	Blue	W	White
LB	Light Blue	Y	Yellow
LG	Light Green	—	—



**FUSE**

**Replacement**

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



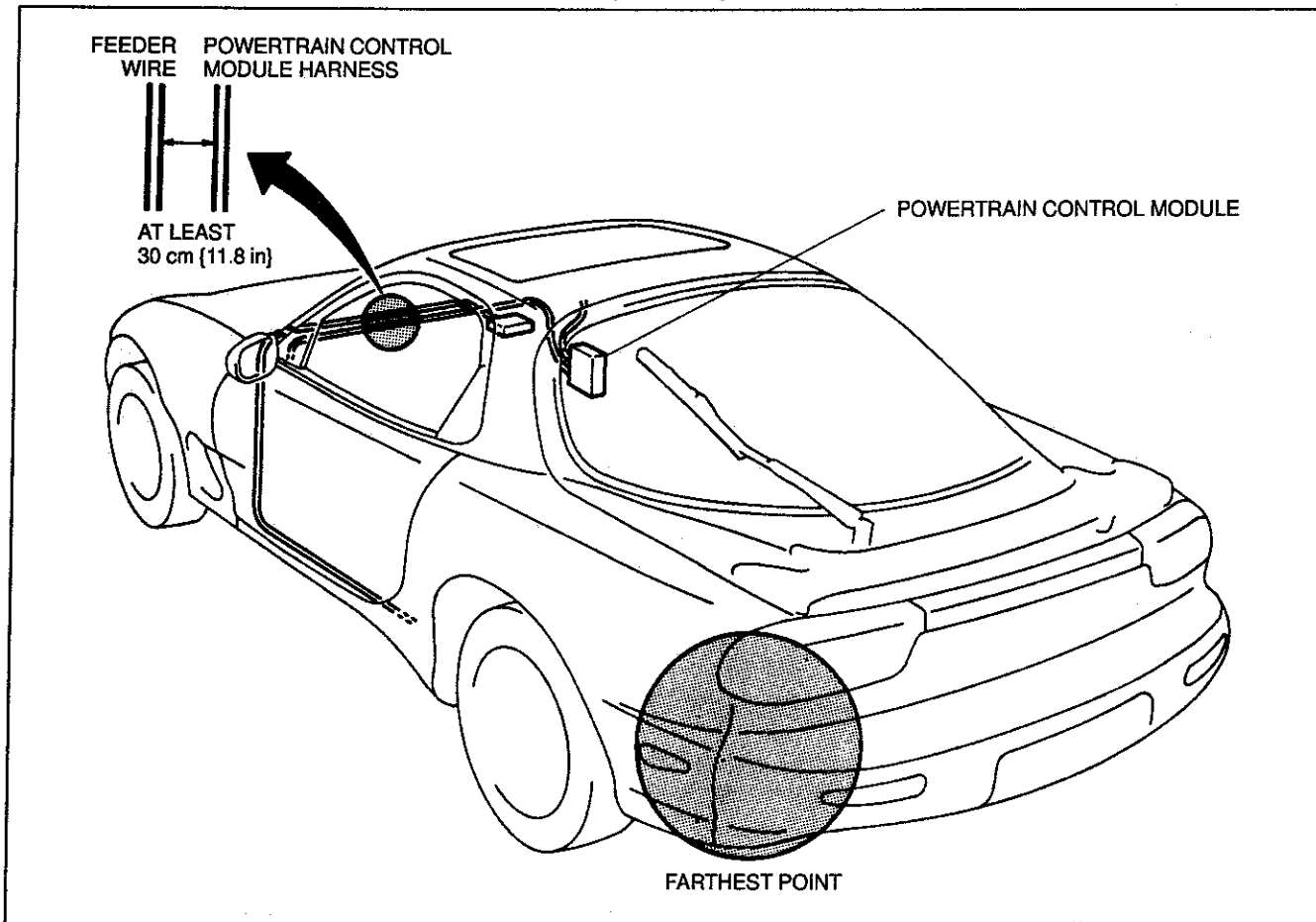
3. When replacing a pullout fuse, use the fuse puller supplied in the fuse box cover.

## 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 CIS and other systems may be affected.

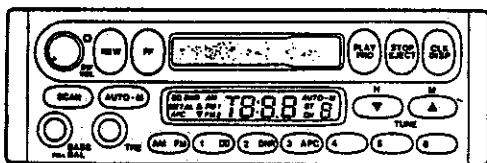
When the vehicle is to be equipped with a mobile two-way radio, observe the following precautions:

1. Install the antenna at the farthest point from control modules.
2. Install the antenna feeder as far as possible from the control module 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.

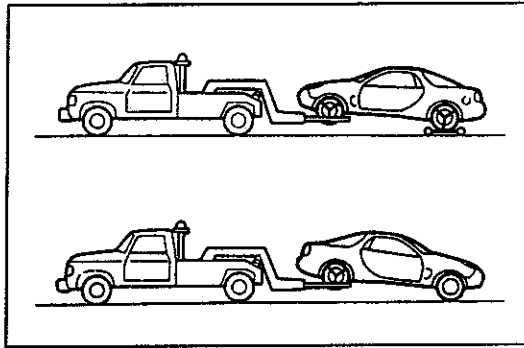


## AUDIO ANTITHEFT SYSTEM

An audio with an antitheft function is optionally available. Before removing the negative battery terminal or disconnecting the audio power source, obtain the code number and deactivate the audio antitheft system. (Refer to 1994 RX-7 Body Electrical Troubleshooting Manual.)



## TOWING



## 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 transmission.

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.

**With manual transmission**

If the transmission, rear axle, and steering system are not damaged, the vehicle may be towed on all four wheels. If any of these components are damaged, use wheel dollies.

**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 be towed only forward. Don't exceed 45 km/h (28 mph) and a distance of 15 km (10 miles); you could damage the transmission.

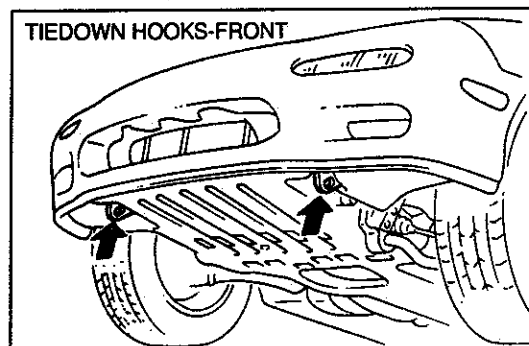
If speed must exceed 45 km/h (28 mph) or a towing distance of 15 km (10 miles), use one of these methods:

- Place the rear wheels on a dolly;
- Tow with the rear wheels off the ground;
- Disconnect the propeller shaft.

If the transmission or rear axle is inoperative, tow with the rear wheels off the ground.

**Caution**

- Don't tow with sling-type equipment. This could damage your vehicle. Use wheel-lift or flatbed equipment.

**Caution**

- Don't use the hook loops under the front for towing. They are designed ONLY for tying down the vehicle when it's being transported. Using them for towing will damage the bumper.