

IMPORTANT

WARNING/CAUTION/NOTE

Please read this manual and follow its instructions carefully. To emphasize special information, the words **WARNING**, **CAUTION** and **NOTE** have special meanings. Pay special attention to the messages highlighted by these signal words.

WARNING:

Indicates a potential hazard that could result in death or injury.

CAUTION:

Indicates a potential hazard that could result in vehicle damage.

NOTE:

Indicates special information to make maintenance easier or instructions clearer.

WARNING:

This service manual is intended for authorized **SUZUKI** dealers and qualified service mechanics only. Inexperienced mechanics or mechanics without the proper tools and equipment may not be able to properly perform the services described in this manual. Improper repair may result in injury to the mechanic and may render the vehicle unsafe for the driver and passengers.

FOREWORD

This SUPPLEMENTARY SERVICE MANUAL is a supplement to SF SERIES SERVICE MANUALS mentioned in next page and has been prepared exclusively for the following applicable model.

Applicable model: SF310/SF413 of and after the vehicle identification numbers below.

Vehicle Identification Number (Vehicle Specification)
⊗ TSMMAA44S00600001 ⊗ (SF310 3 door H/B 2WD)
⊗ TSMMAB44S00600001 ⊗ (SF310 5 door H/B 2WD)
⊗ TSMMAA35S00600001 ⊗ (SF413 3 door H/B 2WD)
⊗ TSMMAB35S00600001 ⊗ (SF413 5 door H/B 2WD)
⊗ TSMMAB35S10600001 ⊗ (SF413 5 door H/B 2WD)
⊗ TSMMSF35S00600001 ⊗ (SF413 3 door H/B 4WD)
⊗ TSMMSG35S00600001 ⊗ (SF413 5 door H/B 4WD)
⊗ TSMMAH35S00600001 ⊗ (SF413 4 door N/B 2WD)
⊗ TSMMAH35S10600001 ⊗ (SF413 4 door N/B 2WD)

When servicing the above applicable models, refer to this SUPPLEMENTARY SERVICE MANUAL first. If necessary information is not found in this SUPPLEMENTARY SERVICE MANUAL, refer to RELATED MANUALS specified next page.

All information, illustrations and specifications contained in this literature are based on the latest product information available at the time of publication approval. And used as the main subject of description is the vehicle of standard specifications among others. Therefore, note that illustrations may differ from the vehicle being actually serviced.

The right is reserved to make changes at any time without notice.

SUZUKI MOTOR CORPORATION

OVERSEAS SERVICE DEPARTMENT

RELATED MANUALS

Related manuals listed below are in the chronological order with the latest one at the top. For the efficient use of manuals, start with one at the top of the list (i.e., the latest one). If desired section, item or description is not found in it, try next one in the list and do the same one by one till what is being searched is found.

MODEL	NO.	RELATED SERVICE MANUAL	APPLICABILITY
SF310/ SF413	1	SF310/SF413 WIRING DIAGRAM MANUAL (99512-80E10-019)	This manual is prepared exclusively for the applicable model mentioned in FOREWORD of this supplementary service manual.
SF SERIES	1	SF SERIES SUPPLEMENTARY SERVICE MANUAL (99501-80E00-xxx)	This manual describes the updated information from the SF310 and SF413 Service Manuals below.
SF310 (1,000 cc)	1	SF310 SUPPLEMENTARY SERVICE MANUAL (99501-60B00-xxx)	This manual describes the items that are updated (modified and added) from the Service Manual (99500-60B01).
	2	SF310 SERVICE MANUAL (99500-60B01-xxx)	This manual is the base manual for the above manual.
SF413 (1,300 cc)	1	SF413 SUPPLEMENTARY SERVICE MANUAL (99501-63B30-xxx) [Pub. No. G4203GE]	This manual describes the items that are updated (modified and added) from the Service Manual (99500-63B01).
	2	SF413 SUPPLEMENTARY SERVICE MANUAL (99501-63B20-xxx) [Pub. No. G4202GE]	This manual describes the items for 4WD model that are updated (modified and added) from the Service Manual (99500-63B01).
	2	SF413 SUPPLEMENTARY SERVICE MANUAL (99501-63B10-xxx)	This manual describes the items for SEDAN model that are updated (modified and added) from the Service Manual (99500-63B01).
	3	SF413 SERVICE MANUAL (99500-63B01-xxx) [Pub. No. G4200GE]	This manual is the base manual for the above manuals.
SF SERIES (A/C)	1	AIR CONDITIONING BASIC MANUAL (99520-02130-xxx)	This manual is the base manual of A/C system.

TABLE OF CONTENTS	SECTION
GENERAL INFORMATION	
General Information	0A
Maintenance and Lubrication	0B
HEATING AND AIR CONDITIONING	
Heater and Ventilation	1A
Air Conditioning (Optional)	1B
ENGINE	
General Information and Diagnosis (TBI for G10)	6
General Information and Diagnosis (TBI for G13)	6
General Information and Diagnosis (SFI for G13)	6-1
Engine Mechanical (G10 Engine)	6A
Engine Mechanical (G13 1-cam 16-valves Engine)	6A1
Engine Cooling	6B
Engine Fuel	6C
Engine and Emission Control System (TBI for G10)	6E1
Engine and Emission Control System (TBI for G13)	6E1
Engine and Emission Control System (SFI for G13)	6E2
Ignition System (TBI for G10)	6F
Ignition System (TBI for G13)	6F
Ignition System (SFI for G13)	6F1
Cranking System	6G
Charging System	6H
Exhaust System	6K
TRANSMISSION, CLUTCH AND DIFFERENTIAL	
Automatic Transmission	7B
BODY ELECTRICAL SYSTEM	8
Wiring Diagram	8A
IMMOBILIZER CONTROL SYSTEM	8G

0A
0B
1A
1B
6
6
6-1
6A
6A1
6B
6C
6E1
6E1
6E1
6E2
6F
6F
6F1
6G
6H
6K
7B
8
8A
8G

NOTE:

The screen toned Section 8A is contained in **WIRING DIAGRAM MANUAL** mentioned in **RELATED MANUALS**.

SECTION 0A

GENERAL INFORMATION

CONTENTS

HOW TO USE THIS MANUAL 0A- 2

PRECAUTIONS 0A- 3

 Precaution for Vehicles Equipped with a Supplemental Restraint (Air Bag) System 0A- 3

 General Precautions 0A- 6

 Precautions for Catalytic Converter 0A- 9

 Precautions for Electrical Circuit Service 0A- 9

 Electrical Circuit Inspection Procedure 0A-12

 Intermittent and Poor Connection 0A-15

 Precaution for Installing Mobile Communication Equipment 0A-16

 Precaution in Servicing Full-Time 4WD Vehicle 0A-17

IDENTIFICATION INFORMATION 0A-18

 Vehicle Identification Number 0A-18

 Identification Whether Vehicle Equipped with WU-TWC or Not 0A-18

 Engine Identification Number 0A-18

 Transmission Identification Number 0A-18

WARNING, CAUTION AND INFORMATION LABELS 0A-19

VEHICLE LIFTING POINTS 0A-20

ABBREVIATIONS AND SYMBOLS MAY BE USED IN THIS MANUAL 0A-22

FASTENER INFORMATION 0A-25

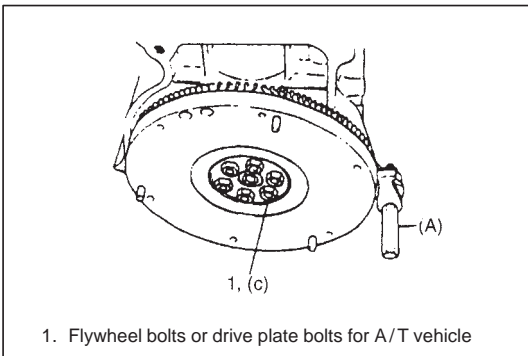
 Metric Fasteners 0A-25

 Fasteners Strength Identification 0A-25

 Standard Tightening Torque 0A-26

HOW TO USE THIS MANUAL

- 1) There is a TABLE OF CONTENTS FOR THE WHOLE MANUAL on the third page of this manual, whereby you can easily find the section that offers the information you need. Also, there is a CONTENTS on the first page of EACH SECTION, where the main items in that section are listed.
- 2) Each section of this manual has its own pagination. It is indicated at the top of each page along with the Section name.
- 3) The SPECIAL TOOL usage and TIGHTENING TORQUE SPECIFICATION are given as shown in figure below.



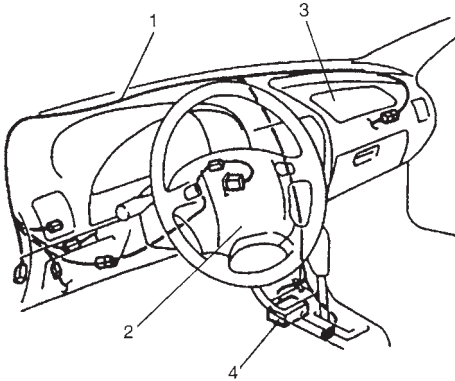
- 6) Install oil pump. Refer to "Oil pump".
- 7) Install flywheel (for M/T vehicle) or drive plate (for A/T vehicle).
Using special tool, lock flywheel or drive plate, and tighten flywheel or drive plate bolts to specified torque.

Special Tool
(A): 09924-17810
Tightening Torque
(c): 78 N·m (7.8 kg·m, 56.0 lb·ft)

- 4) A number of abbreviations are used in the text. For their full explanations, refer to "**ABBREVIATIONS AND SYMBOLS MAY BE USED IN THIS MANUAL**" of this section.
- 5) The SI, metric and foot-pound systems are used as units in this manual.
- 6) DIAGNOSIS are included in each section as necessary.
- 7) At the end of each section, there are descriptions of SPECIAL TOOLS, REQUIRED SERVICE MATERIALS and TIGHTENING TORQUE SPECIFICATIONS that should be used for the servicing work described in that section.

PRECAUTIONS

PRECAUTION FOR VEHICLES EQUIPPED WITH A SUPPLEMENTAL RESTRAINT (AIR BAG) SYSTEM



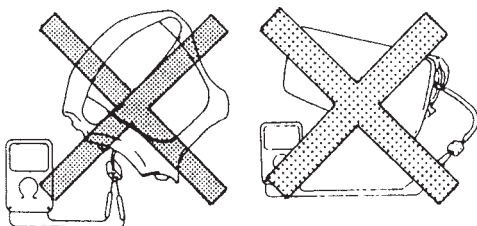
1. Air bag wire harness
2. Driver air bag (inflator) module
3. Passenger air bag (inflator) module
4. SDM

WARNING:

- The configuration of air bag system parts are as shown in the figure. When it is necessary to service (remove, reinstall and inspect) these parts, be sure to follow procedures described in Section 9J. Failure to follow proper procedures could result in possible air bag deployment, personal injury, damage to parts or air bag being unable to deploy when necessary.
- If the air bag system and another vehicle system both need repair, Suzuki recommends that the air bag system be repaired first, to help avoid unintended air bag deployment.
- Do not modify the steering wheel, dashboard, or any other air bag system component. Modifications can adversely affect air bag system performance and lead to injury.
- If the vehicle will be exposed to temperatures over 93°C, 200°F (for example, during a paint baking process), remove the air bag system components (air bag (inflator) modules, sensing and diagnostic module) beforehand to avoid component damage or unintended deployment.

DIAGNOSIS

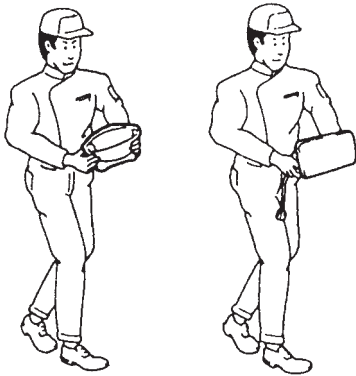
- When troubleshooting air bag system, be sure to follow “DIAGNOSIS” in Section 9J. Bypassing these procedures may result in extended diagnostic time, incorrect diagnosis, and incorrect parts replacement.
- Never use electrical test equipment other than that specified in this manual.



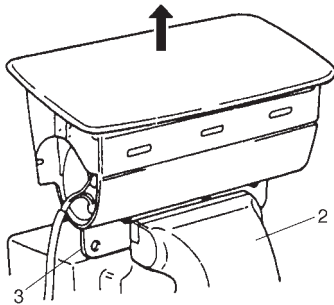
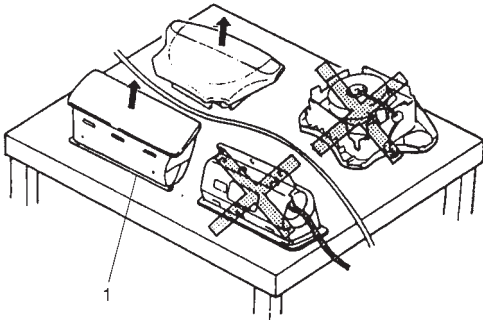
WARNING:

Never attempt to measure the resistance of the air bag (inflator) modules (driver and passenger). It is very dangerous as the electric current from the tester may deploy the air bag.

ALWAYS CARRY AIR BAG (INFLATOR) MODULE WITH TRIM COVER (AIR BAG OPENING) AWAY FROM BODY.



ALWAYS PLACE AIR BAG (INFLATOR) MODULE ON WORKBENCH WITH TRIM COVER (AIR BAG OPENING) UP, AWAY FROM LOOSE OBJECTS.



1. Slit on workbench
2. Workbench vise
3. Lower mounting bracket

HANDLING AND SERVICING

WARNING:

- Many of service procedures require disconnection of "AIR BAG" fuse and air bag (inflator) modules (driver and passenger) from deployment loop to avoid an accidental deployment.

Driver and Passenger Air Bag (Inflator) Modules

- For handling and storage of a live air bag (inflator) module, select a place where the ambient temperature below 65°C (150°F), without high humidity and away from electric noise.
- When carrying a live air bag (inflator) module, make sure the bag opening is pointed away from you. In case of an accidental deployment, the bag will then deploy with minimal chance of injury. Never carry the air bag (inflator) module by the wires or connector on the underside of the module. When placing a live air bag (inflator) module on a bench or other surface, always face the bag up, away from the surface. As the live passenger air bag (inflator) module must be placed with its bag (trim cover) facing up, place it on the workbench with a slit or use the workbench vise to hold it securely at its lower mounting bracket. This is necessary so that a free space is provided to allow the air bag to expand in the unlikely event of accidental deployment. Otherwise, personal injury may result.
- Never dispose of live (undeployed) air bag (inflator) modules (driver and passenger). If disposal is necessary, be sure to deploy them according to deployment procedures described in Section 9J before disposal.
- The air bag (inflator) module immediately after deployment is very hot. Wait for at least half an hour to cool it off before proceeding the work.
- After an air bag (inflator) module has been deployed, the surface of the air bag may contain a powdery residue. This powder consists primarily of cornstarch (used to lubricate the bag as it inflates) and by-products of the chemical reaction. As with many service procedures, gloves and safety glasses should be worn.

SDM

- During service procedures, be very careful when handling a Sensing and Diagnostic Module (SDM). Never strike or jar the SDM. Never power up the air bag system when the SDM is not rigidly attached to the vehicle. All SDM and mounting bracket fasteners must be carefully torqued and the arrow must be pointing toward the front of the vehicle to ensure proper operation of the air bag system. The SDM could be activated when powered while not rigidly attached to the vehicle which could cause deployment and result in personal injury.

CAUTION:

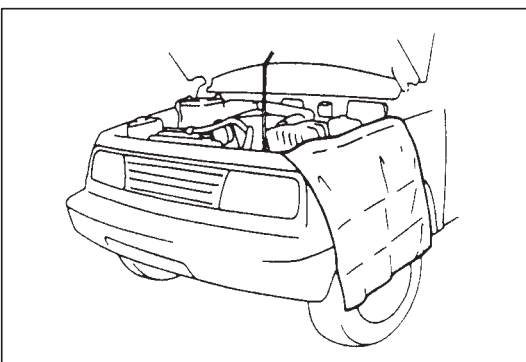
- Even when the accident was light enough not to cause air bags to deploy, be sure to inspect system parts and other related parts according to instructions under “Repair and Inspection Required after an Accident” in Section 9J.
- When servicing parts other than air bag system, if shocks may be applied to air bag system component parts, remove those parts beforehand.
- When handling the air bag (inflator) modules (driver and passenger) or SDM, be careful not to drop it or apply an impact to it. If an excessive impact was applied (e.g., dropped from a height of 91.4 cm (3 feet) or more), never attempt disassembly or repair but replace it with a new one.
- When grease, cleaning agent, oil, water, etc. has got onto air bag (inflator) modules (driver and passenger), wipe off immediately with a dry cloth.
- Air bag wire harness can be identified easily as it is covered with a yellow protection tube. Be very careful when handling it.
- When an open in air bag wire harness, damaged wire harness, connector or terminal is found, replace wire harness, connectors and terminals as an assembly.
- Do not apply power to the air bag system unless all components are connected or a diagnostic chart requests it, as this will set a diagnostic trouble code.
- Never use air bag system component parts from another vehicle.
- When using electric welding, be sure to temporarily disable air bag system referring to “Disabling Air Bag System” under “Service Precaution” in Section 9J.
- Never expose air bag system component parts directly to hot air (drying or baking the vehicle after painting) or flames.
- WARNING/CAUTION labels are attached on each part of air bag system components. Be sure to follow the instructions.
- After vehicle is completely repaired, perform “Air Bag Diagnostic System Check” described in “Diagnosis” in Section 9J.

GENERAL PRECAUTIONS

The WARNING and CAUTION below describe some general precautions that you should observe when servicing a vehicle. These general precautions apply to many of the service procedures described in this manual, and they will not necessarily be repeated with each procedure to which they apply.

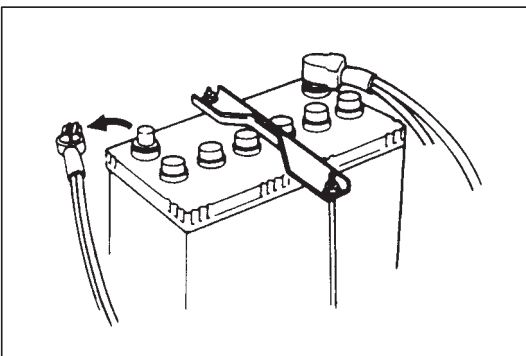
WARNING:

- Whenever raising a vehicle for service, be sure to follow the instructions under “VEHICLE LIFTING POINTS” on SECTION 0A.
- When it is necessary to do service work with the engine running, make sure that the parking brake is set fully and the transmission is in Neutral (for manual transmission vehicles) or Park (for automatic transmission vehicles). Keep hands, hair, clothing, tools, etc. away from the fan and belts when the engine is running.
- When it is necessary to run the engine indoors, make sure that the exhaust gas is forced outdoors.
- Do not perform service work in areas where combustible materials can come in contact with a hot exhaust system. When working with toxic or flammable materials (such as gasoline and refrigerant), make sure that the area you work in is well-ventilated.
- To avoid getting burned, keep away from hot metal parts such as the radiator, exhaust manifold, tail-pipe, muffler, etc.
- New and used engine oil can be hazardous. Children and pets may be harmed by swallowing new or used oil. Keep new and used oil and used engine oil filters away from children and pets. Continuous contact with used engine oil has been found to cause [skin] cancer in laboratory animals. Brief contact with used oil may irritate skin. To minimize your exposure to used engine oil, wear a long-sleeve shirt and moisture-proof gloves (such as dish washing gloves) when changing engine oil. If engine oil contacts your skin, wash thoroughly with soap and water. Launder any clothing or rags if wet with oil, recycle or properly dispose of used oil and filters.
- Make sure the bonnet is fully closed and latched before driving. If it is not, it can fly up unexpectedly during driving, obstructing your view and resulting in an accident.

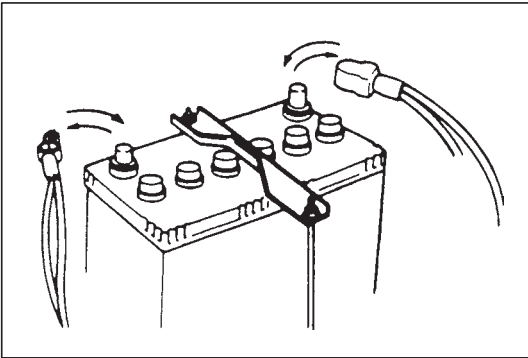


CAUTION:

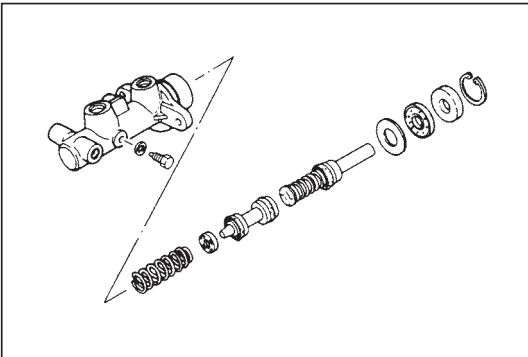
- Before starting any service work, cover fenders, seats and any other parts that are likely to get scratched or stained during servicing. Also, be aware that what you wear (e.g. buttons) may cause damage to the vehicle's finish.



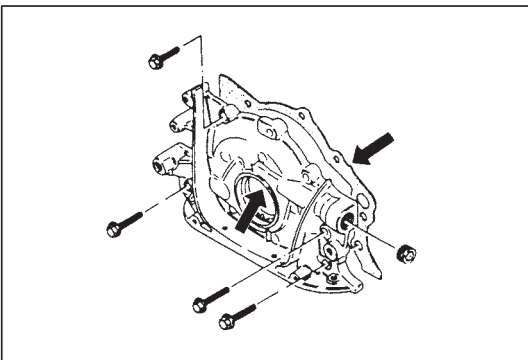
- When performing service to electrical parts that does not require use of battery power, disconnect the negative cable of the battery.



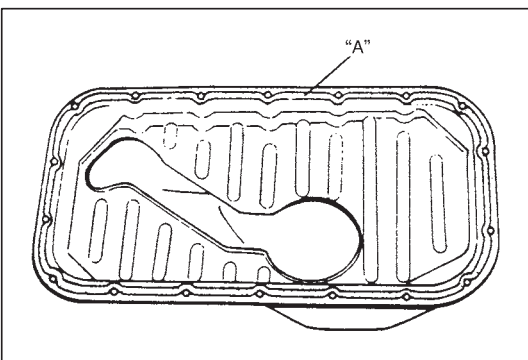
- When removing the battery, be sure to disconnect the negative cable first and then the positive cable. When reconnecting the battery, connect the positive cable first and then the negative cable, and replace the terminal cover.



- When removing parts that are to be reused, be sure to keep them arranged in an orderly manner so that they may be reinstalled in the proper order and position.

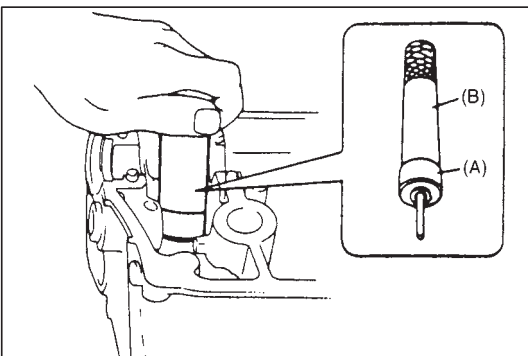


- Whenever you use oil seals, gaskets, packing, O-rings, locking washers, split pins, self-locking nuts, and certain other parts as specified, be sure to use new ones. Also, before installing new gaskets, packing, etc., be sure to remove any residual material from the mating surfaces.



- Make sure that all parts used in reassembly are perfectly clean.
- When use of a certain type of lubricant, bond or sealant is specified, be sure to use the specified type.

“A”: Sealant 99000-31150

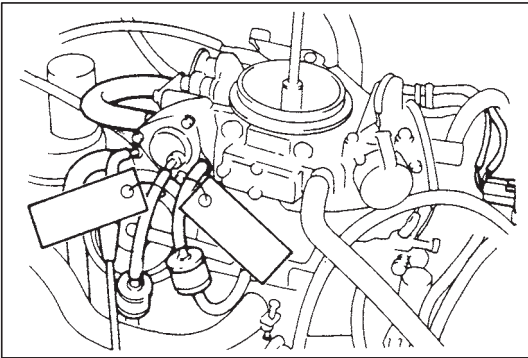


- Be sure to use special tools when instructed.

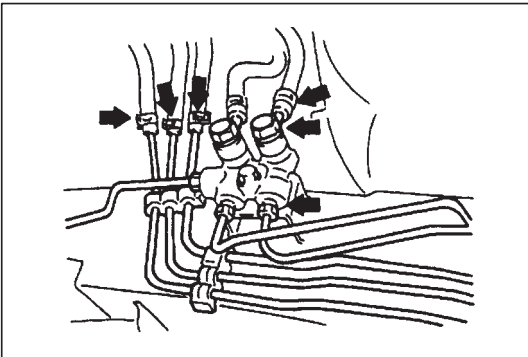
Special Tool

(A): 09917-98221

(B): 09916-58210

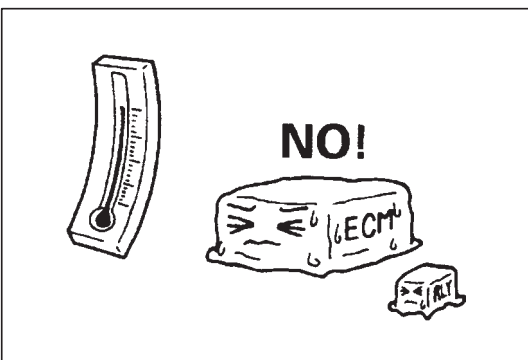


- When disconnecting vacuum hoses, attach a tag describing the correct installation positions so that the hoses can be re-installed correctly.

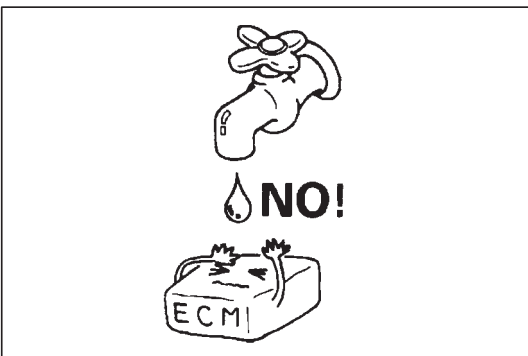


- After servicing fuel, oil, coolant, vacuum, exhaust or brake systems, check all lines related to the system for leaks.

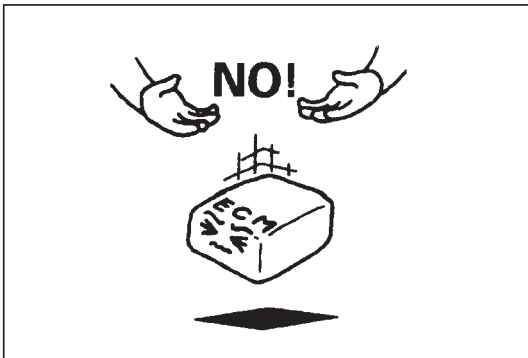
- For vehicles equipped with fuel injection systems, never disconnect the fuel line between the fuel pump and injector without first releasing the fuel pressure, or fuel can be sprayed out under pressure.



- When performing a work that produces a heat exceeding 80°C in the vicinity of the electrical parts, remove the heat sensitive electrical part(s) beforehand.



- Use care not to expose connectors and electrical parts to water which will be a cause of a trouble.

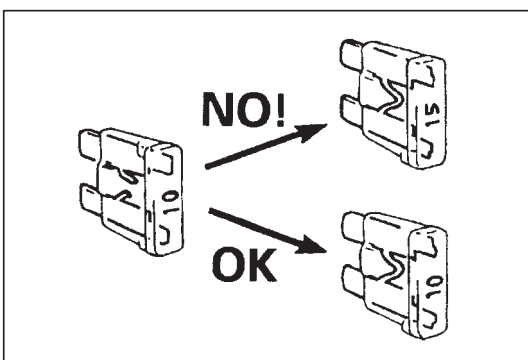


- Always be careful not to handle electrical parts (computer, relay, etc.) in a rough manner or drop them.

PRECAUTIONS FOR CATALYTIC CONVERTER

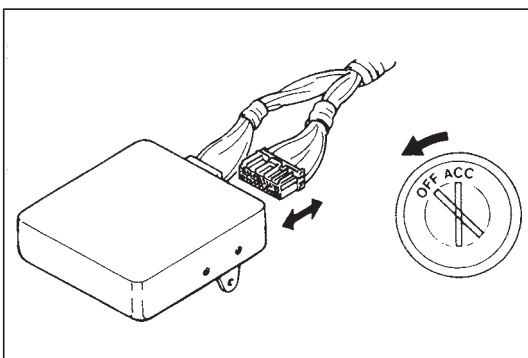
For vehicles equipped with a catalytic converter, use only unleaded gasoline and be careful not to let a large amount of unburned gasoline enter the converter or it can be damaged.

- Conduct a spark jump test only when necessary, make it as short as possible, and do not open the throttle.
- Conduct engine compression checks within the shortest possible time.
- Avoid situations which can result in engine misfire (e.g. starting the engine when the fuel tank is nearly empty.).

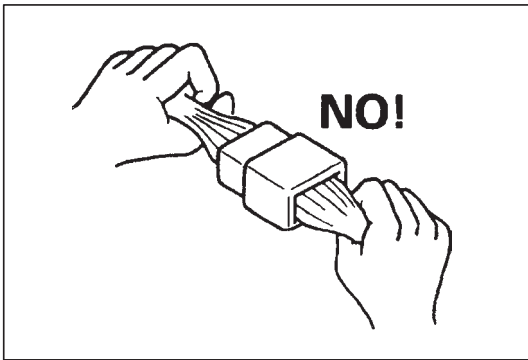


PRECAUTIONS FOR ELECTRICAL CIRCUIT SERVICE

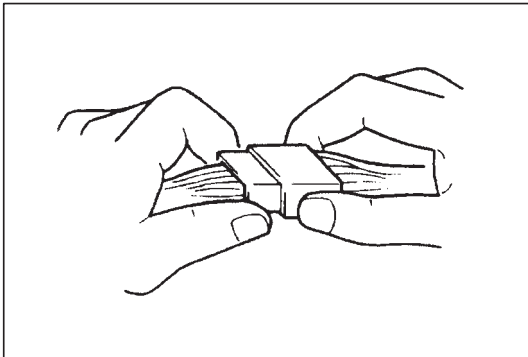
- When replacing a fuse, make sure to use a fuse of the specified capacity. Use of a fuse with a larger capacity will cause a damage to the electrical parts and a fire.



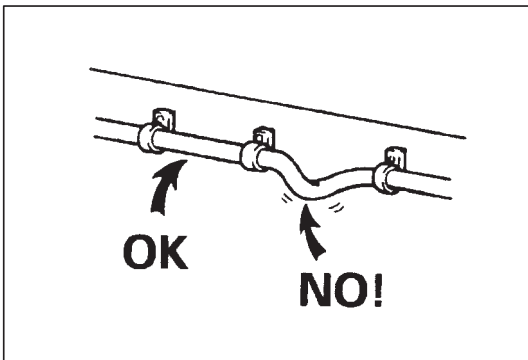
- When disconnecting and connecting coupler, make sure to turn ignition switch OFF, or electronic parts may get damaged.



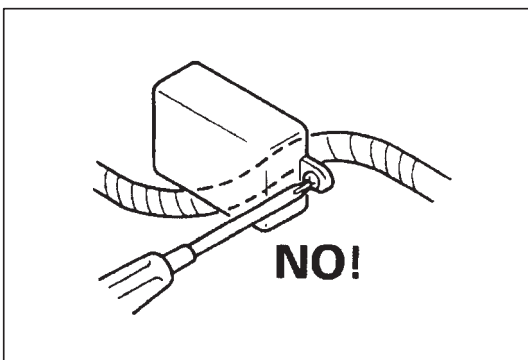
- When disconnecting connectors, never pull the wiring harness. Unlock the connector lock first and then pull them apart by holding connectors themselves.



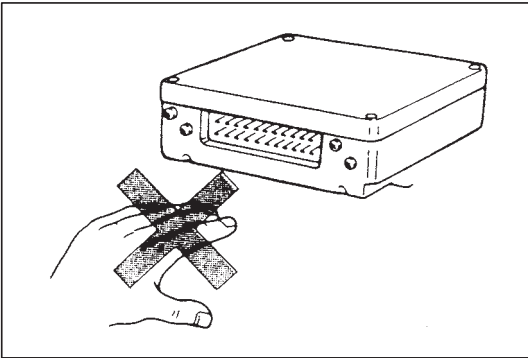
- When connecting connectors, also hold connectors and put them together until they lock securely (a click is heard).



- When installing the wiring harness, fix it with clamps so that no slack is left.

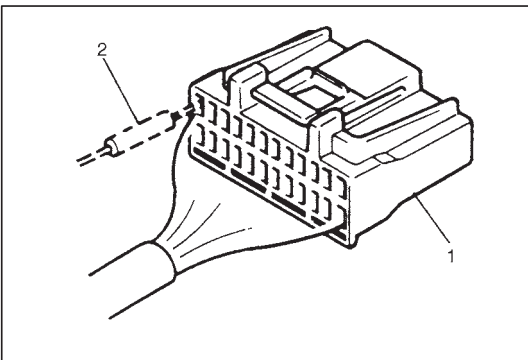


- When installing vehicle parts, be careful so that the wiring harness is not interfered with or caught by any other part.

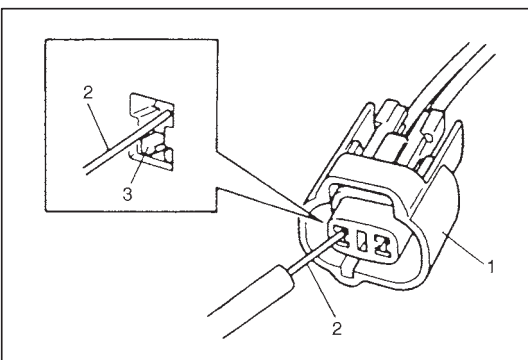


- Be careful not to touch the electrical terminals of parts which use microcomputers (e.g. electronic control unit like as ECM, PCM, P/S controller, etc.). The static electricity from your body can damage these parts.

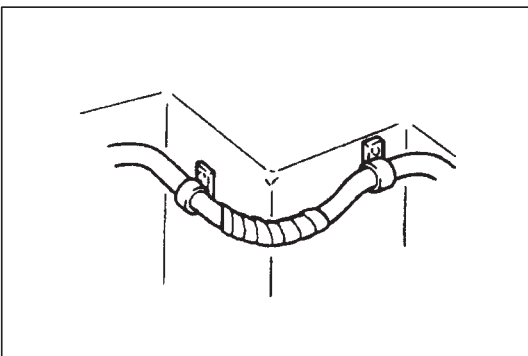
- Never connect any tester (voltmeter, ohmmeter, or whatever) to electronic control unit when its coupler is disconnected. Attempt to do it may cause damage to it.
- Never connect an ohmmeter to electronic control unit with its coupler connected to it. Attempt to do it may cause damage to electronic control unit and sensors.
- Be sure to use a specified voltmeter/ohmmeter. Otherwise, accurate measurements may not be obtained or personal injury may result. If not specified, use a voltmeter with high-impedance ($M\Omega/V$ minimum) or a digital type voltmeter.



- When taking measurements at electrical connectors using a tester probe (2), be sure to insert the probe from the wire harness side (backside) of the connector (1).

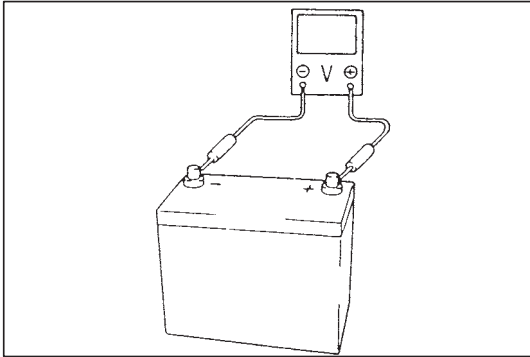


- When connecting meter probe (2) from terminal side of coupler (1) because it can't be connected from harness side, use extra care not to bend male terminal of coupler or force its female terminal open for connection. In case of such coupler as shown connect probe as shown to avoid opening female terminal. Never connect probe where (3) male terminal is supposed to fit.



- To avoid damage to the harness, protect its part which may contact against a part forming a sharp angle by winding tape or the like around it.

- When checking connection of terminals, check its male half for bend and female half for excessive opening and both for locking (looseness), corrosion, dust, etc.



- Before measuring voltage to check for electrical system, check to make sure that battery voltage is 11 V or higher. Such terminal voltage check at low battery voltage will lead to erroneous diagnosis.

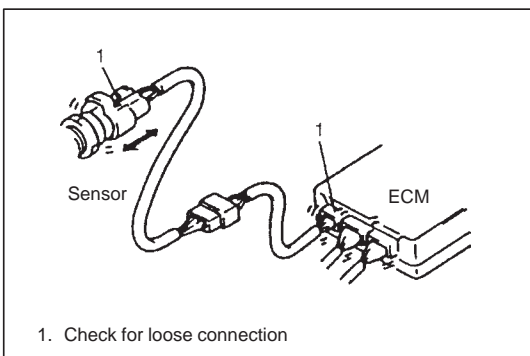
ELECTRICAL CIRCUIT INSPECTION PROCEDURE

While there are various electrical circuit inspection methods, described here is a general method to check its open and short circuit by using an ohmmeter and a voltmeter.

OPEN CIRCUIT CHECK

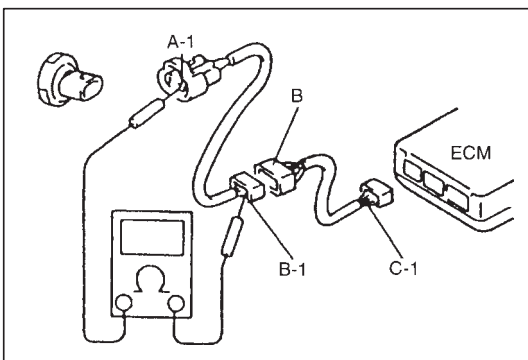
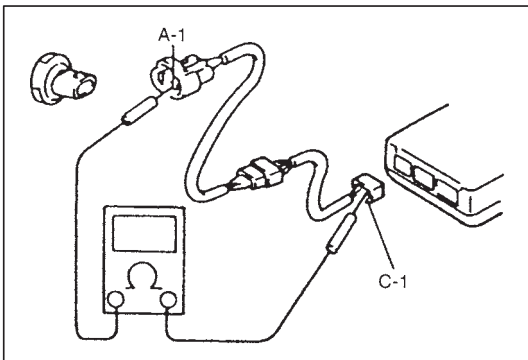
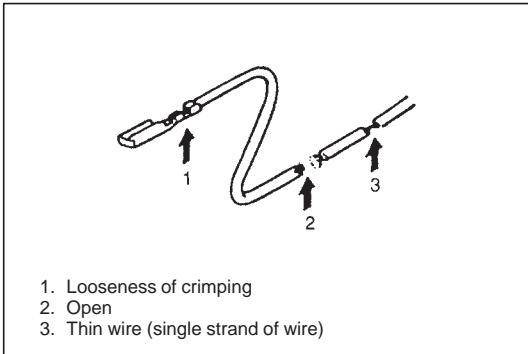
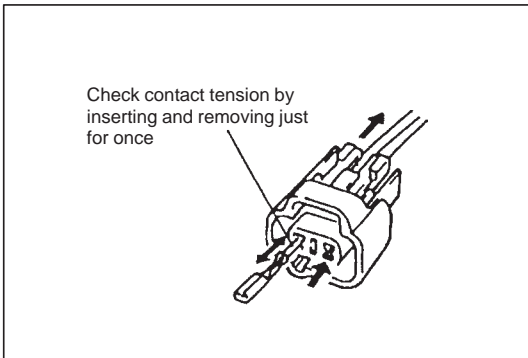
Possible causes for the open circuit are as follows. As the cause is in the connector or terminal in many cases, they need to be checked particularly carefully.

- Loose connection of connector.
- Poor contact of terminal (due to dirt, corrosion or rust on it, poor contact tension, entry of foreign object etc.).
- Wire harness being open.



When checking system circuits including an electronic control unit such as ECM, TCM, ABS control module, etc., it is important to perform careful check, starting with items which are easier to check.

- 1) Disconnect negative cable from battery.
- 2) Check each connector at both ends of the circuit being checked for loose connection. Also check lock condition of connector if equipped with connector lock.



- Using a test male terminal, check both terminals of the circuit being checked for contact tension of its female terminal. Check each terminal visually for poor contact (possibly caused by dirt, corrosion, rust, entry of foreign object, etc.). At the same time, check to make sure that each terminal is locked in the connector fully.

- Using continuity check or voltage check procedure described in the following page, check the wire harness for open circuit and poor connection with its terminals. Locate abnormality, if any.

Continuity Check

- Measure resistance between connector terminals at both ends of the circuit being checked (between A-1 and C-1 in the figure). If no continuity is indicated (infinity or over limit), that means that the circuit is open between terminals A-1 and C-1.

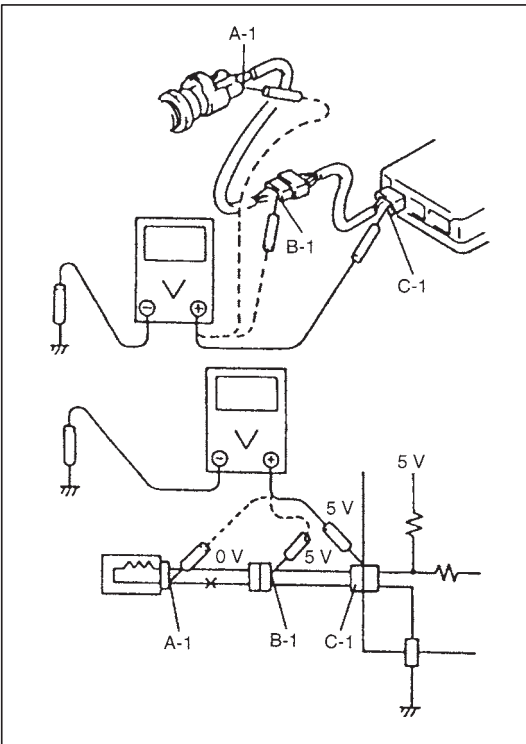
- Disconnect the connector included in the circuit (connector-B in the figure) and measure resistance between terminals A-1 and B-1.

If no continuity is indicated, that means that the circuit is open between terminals A-1 and B-1. If continuity is indicated, there is an open circuit between terminals B-1 and C-1 or an abnormality in connector-B.

Voltage Check

If voltage is supplied to the circuit being checked, voltage check can be used as circuit check.

- With all connectors connected and voltage applied to the circuit being checked, measure voltage between each terminal and body ground.



If measurements were taken as shown in the figure at the left and results were as listed below, it means that the circuit is open between terminals B-1 and A-1.

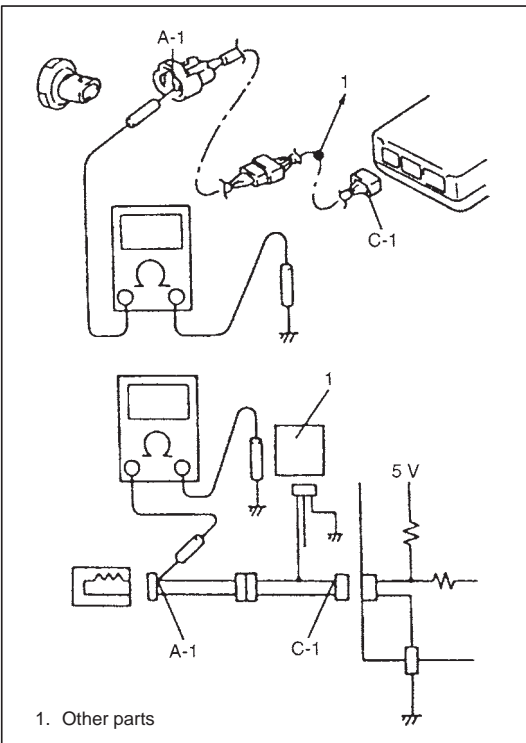
Voltage Between:

- C-1 and body ground: Approx. 5 V
- B-1 and body ground: Approx. 5 V
- A-1 and body ground: 0 V

Also, if measured values were as listed below, it means that there is a resistance (abnormality) of such level that corresponds to the voltage drop in the circuit between terminals A-1 and B-1.

Voltage Between:

- C-1 and body ground: Approx. 5 V
 - B-1 and body ground: Approx. 5 V
 - A-1 and body ground: Approx. 3 V
- } 2 V voltage drop



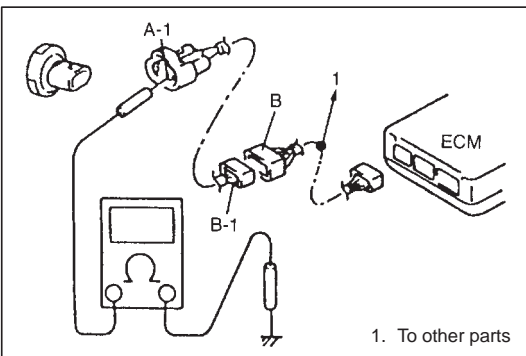
SHORT CIRCUIT CHECK (wire harness to ground)

- 1) Disconnect negative cable from battery.
- 2) Disconnect connectors at both ends of the circuit to be checked.

NOTE:

If the circuit to be checked is connected to other parts, disconnect all connectors of those parts. Otherwise, diagnosis will be misled.

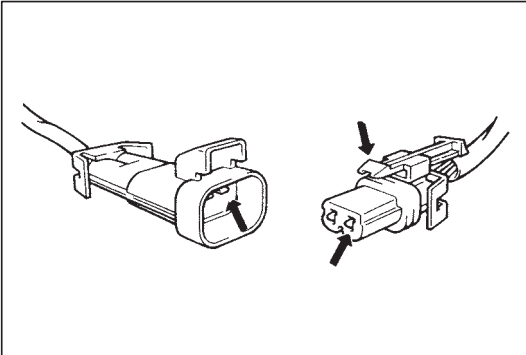
- 3) Measure resistance between terminal at one end of circuit (A-1 terminal in figure) and body ground. If continuity is indicated, it means that there is a short to ground between terminals A-1 and C-1 of the circuit.



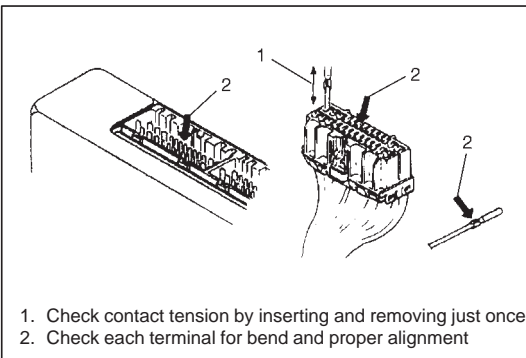
- 4) Disconnect the connector included in circuit (connector B) and measure resistance between A-1 and body ground. If continuity is indicated, it means that the circuit is shorted to the ground between terminals A-1 and B-1.

INTERMITTENT AND POOR CONNECTION

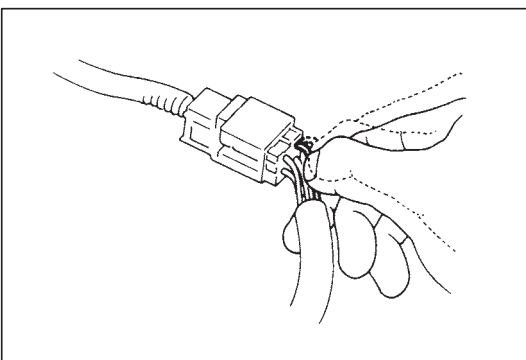
Most intermittent are caused by faulty electrical connections or wiring, although a sticking relay or solenoid can occasionally be at fault. When checking it for proper connection, perform careful check of suspect circuits for:



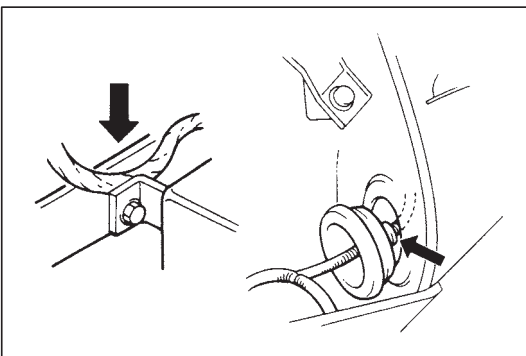
- Poor mating of connector halves, or terminals not fully seated in the connector body (backed out).
- Dirt or corrosion on the terminals. The terminals must be clean and free of any foreign material which could impede proper terminal contact. However, cleaning the terminal with a sand paper or the like is prohibited.
- Damaged connector body, exposing the terminals to moisture and dirt, as well as not maintaining proper terminal orientation with the component or mating connector.



- Improperly formed or damaged terminals.
Check each connector terminal in problem circuits carefully to ensure good contact tension by using the corresponding mating terminal.
If contact tension is not enough, reform it to increase contact tension or replace.



- Poor terminal-to-wire connection.
Check each wire harness in problem circuits for poor connection by shaking it by hand lightly. If any abnormal condition is found, repair or replace.



- Wire insulation which is rubbed through, causing an intermittent short as the bare area touches other wiring or parts of the vehicle.
- Wiring broken inside the insulation. This condition could cause continuity check to show a good circuit, but if only 1 or 2 strands of a multi-strand-type wire are intact, resistance could be far too high.
If any abnormality is found, repair or replace.

PRECAUTION FOR INSTALLING MOBILE COMMUNICATION EQUIPMENT

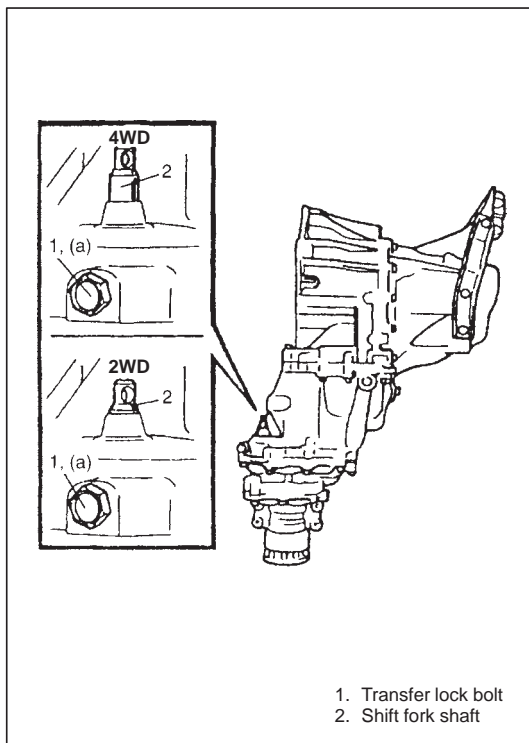
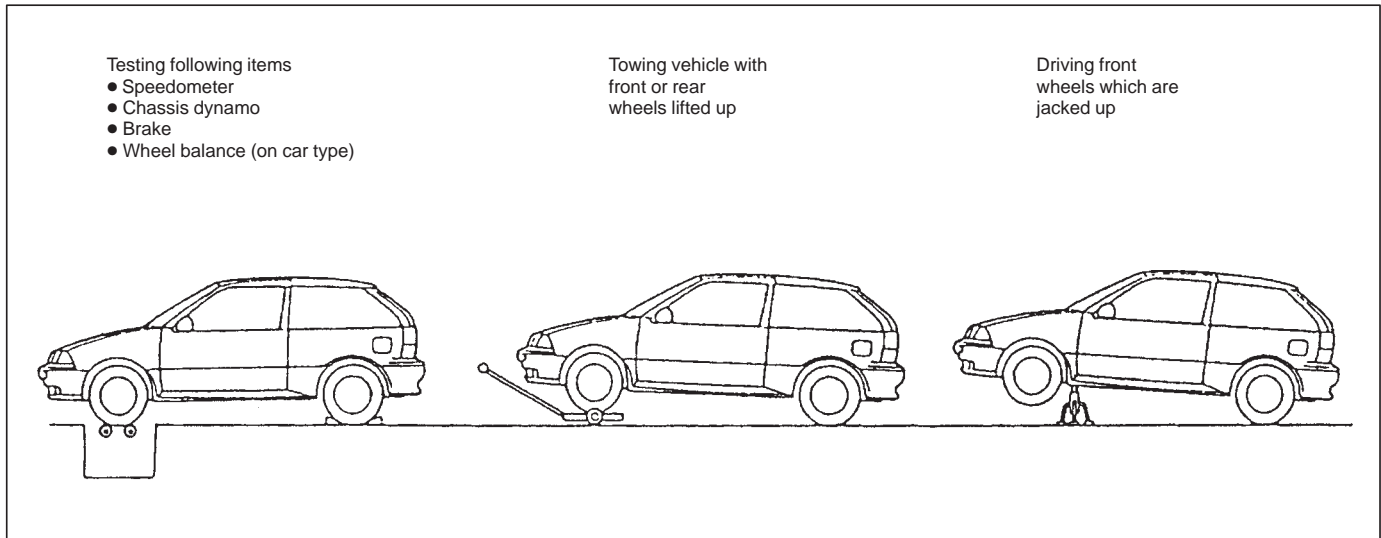
When installing mobile communication equipment such as CB (Citizens-Band)-radio or cellular-telephone, be sure to observe the following precautions.

Failure to follow cautions may adversely affect electronic control system.

- Keep the antenna as far away as possible from the vehicle's electronic control unit.
- Keep the antenna feeder more than 20 cm (7.9 in.) away from electronic control unit and its wire harnesses.
- Do not run the antenna feeder parallel with other wire harnesses.
- Confirm that the antenna and feeder are correctly adjusted.

PRECAUTION IN SERVICING FULL-TIME 4WD VEHICLE

When performing any of the following types of work, be sure to make the vehicle as front wheel drive by cutting transmission of driving force to the rear wheels. Otherwise, rear wheels are driven and vehicle accidents, damage and personal injury may result.



SWITCHING FROM 4WD TO 2WD

Set 4WD/2WD select lever located at lower side of transfer driven case to 2WD as follows.

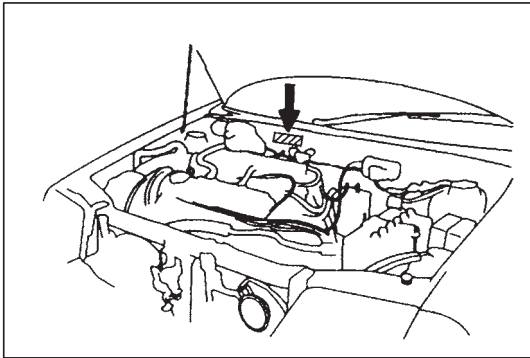
- 1) Loosen transfer lock bolt.
- 2) Push in shift fork shaft fully.
- 3) With shift fork shaft pushed in, tighten transfer lock bolt.

Tightening Torque

(a): 19 N·m (1.9 kg-m, 14.0 lb-ft)

NOTE:

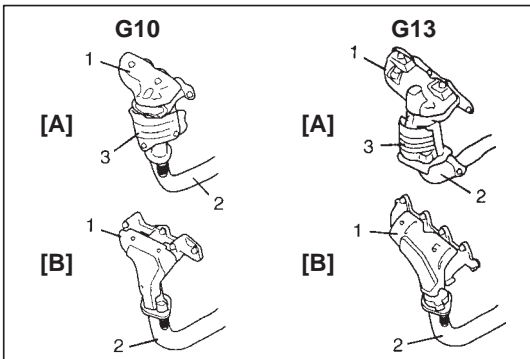
- If shift fork shaft is hard to move, try to move it while turning it to the right and left little by little. Do the same when setting back to 4WD after servicing vehicle.
- Upon completion of servicing, always set shift fork shaft back to 4WD.



IDENTIFICATION INFORMATION

VEHICLE IDENTIFICATION NUMBER

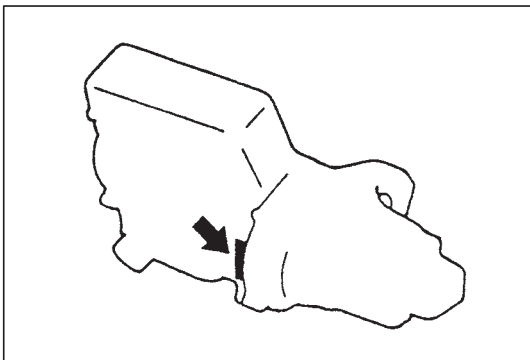
The number is punched on the front dash panel in the engine room.



IDENTIFICATION WHETHER VEHICLE EQUIPPED WITH WU-TWC OR NOT

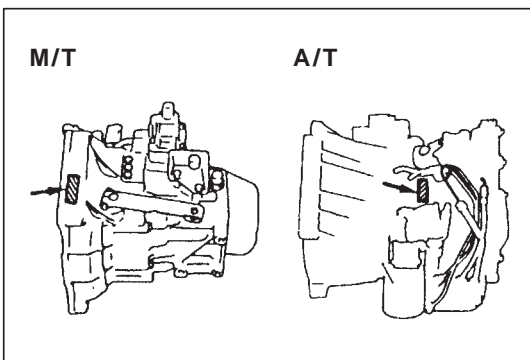
It can be identified by the shape of exhaust manifold (1) and exhaust pipe (2).

- [A]: Vehicle equipped with WU-TWC (3)
- [B]: Vehicle not equipped with WU-TWC



ENGINE IDENTIFICATION NUMBER

The number is punched on the cylinder block.



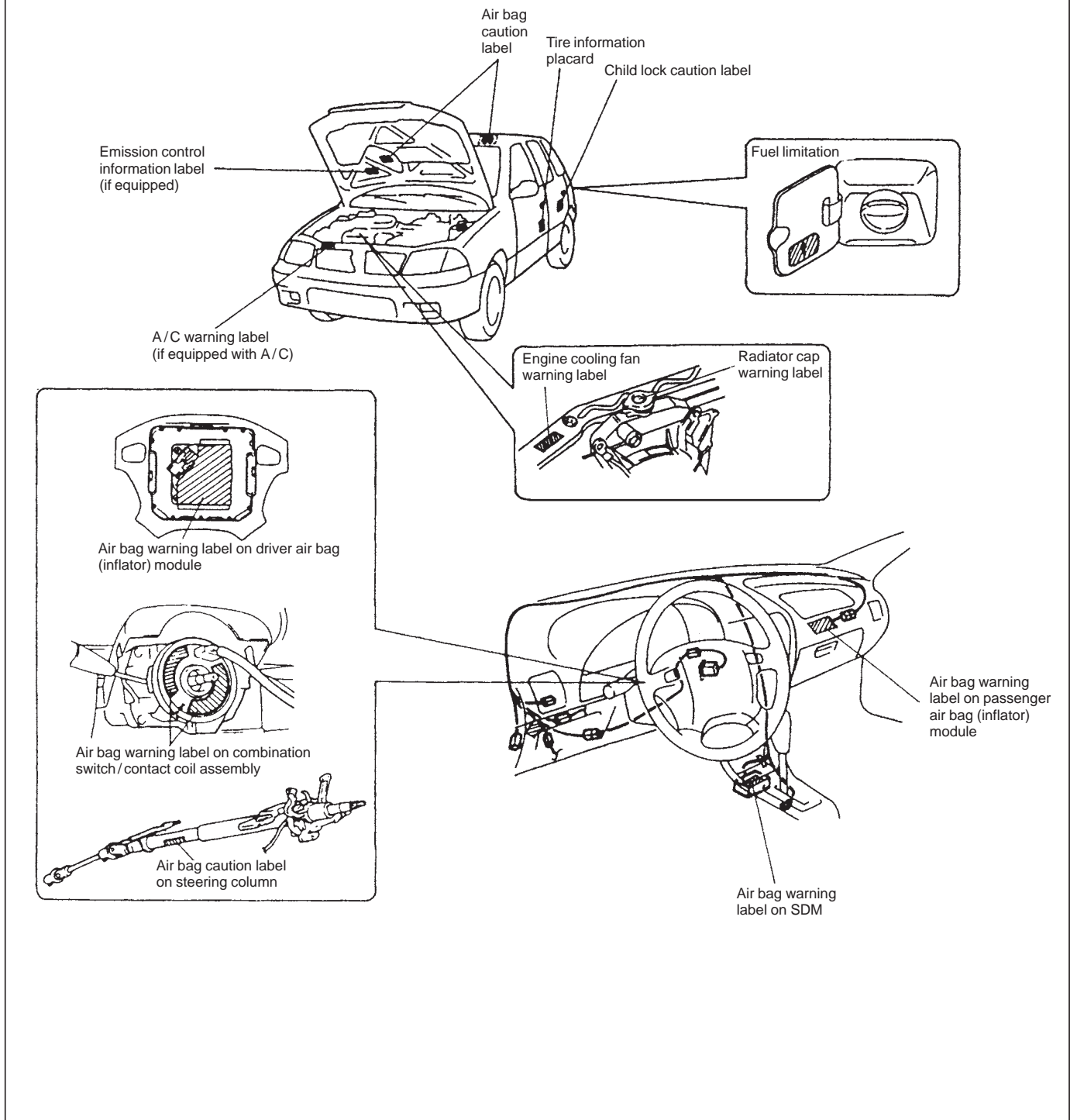
TRANSMISSION IDENTIFICATION NUMBER

The number is punched on the transmission case.

WARNING, CAUTION AND INFORMATION LABELS

The figure below shows main labels among others that are attached to vehicle component parts. When servicing and handling parts, refer to WARNING/CAUTION instructions printed on labels. If any WARNING/CAUTION label is found stained or damaged, clean or replace it as necessary.

NOTE:
Air bag CAUTION/WARNING labels are attached on the vehicle equipped with air bag system only.



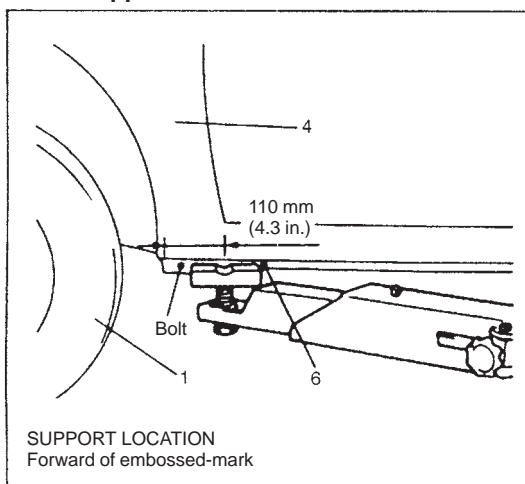
VEHICLE LIFTING POINTS

WARNING:

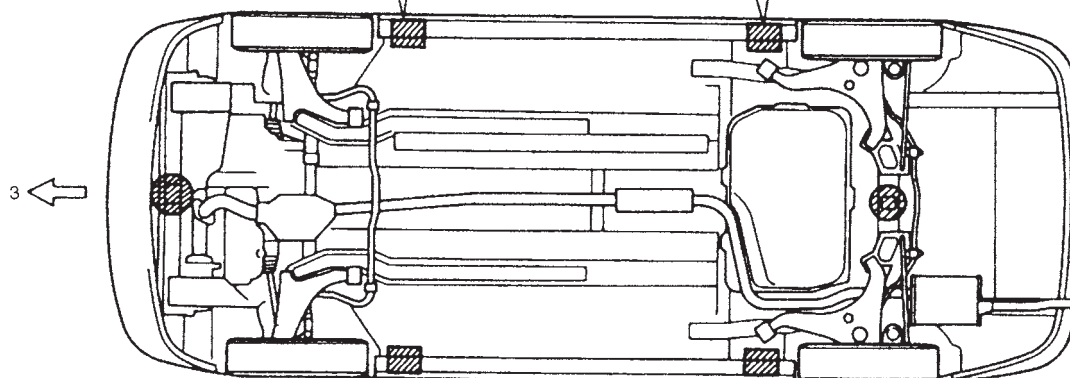
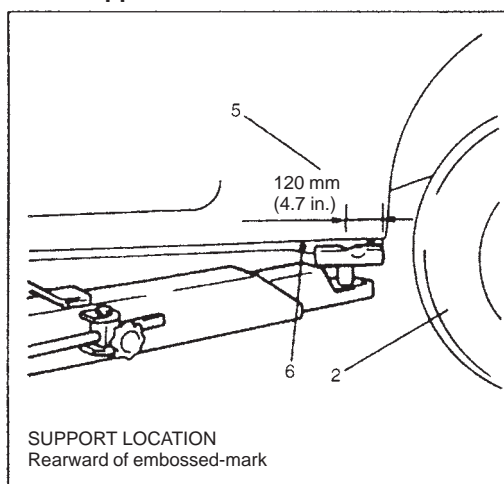
- Before applying hoist to underbody, always take vehicle balance throughout service into consideration. Vehicle balance on hoist may change depending of what part to be removed.
- Before lifting up the vehicle, check to be sure that end of hoist arm is not in contact with brake pipe, fuel pipe, bracket or any other part.
- When using frame contact hoist, apply hoist as shown (right and left at the same position). Lift up the vehicle till 4 tires are a little off the ground and make sure that the vehicle will not fall off by trying to move vehicle body in both ways. Work can be started only after this confirmation.
- Make absolutely sure to lock hoist after vehicle is hoisted up.

When using frame contact hoist:


Front Support Location




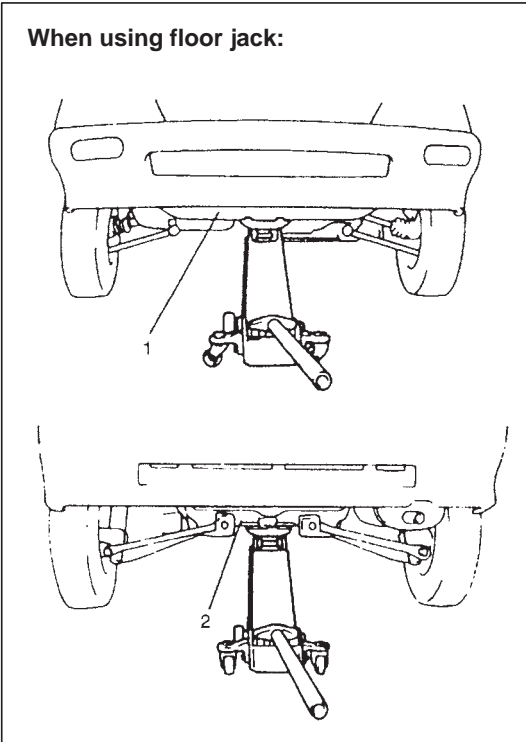
Rear Support Location



1. Front left tire
2. Rear left tire
3. Front
4. Front fender left panel
5. Rear left panel
6. Embossed-mark

 : Support position for frame contact hoist and safety stand

 : Floor jack position

When using floor jack:

In raising front or rear vehicle end off the floor by jacking, be sure to put the jack against the center portion of front cross member (1) or rear cross member (2).

WARNING:

- Never apply jack against suspension parts (i.e., stabilizer, etc.) or vehicle floor, or it may get deformed.
- If the vehicle to be jacked up only at the front or rear end, be sure to block the wheels on ground in order to ensure safety.

After the vehicle is jacked up, be sure to support it on stands. It is extremely dangerous to do any work on the vehicle raised on jack alone.

To perform service with either front or rear vehicle end jacked up, be sure to place safety stands under body so that body is securely supported. And then check to ensure that body does not slide on safety stands and the vehicle is held stable for safety's sake.



















ABBREVIATIONS AND SYMBOLS MAY BE USED IN THIS MANUAL

ABBREVIATIONS

A		E	
ABS	: Anti-Lock Brake System	EBCM	: Electronic Brake Control Module, ABS Control Module
ATDC	: After Top Dead Center	ECM	: Engine Control Module
API	: American Petroleum Institute	ECT Sensor	: Engine Coolant Temperature Sensor (Water Temp. Sensor, WTS)
ATF	: Automatic Transmission Fluid	EGR	: Exhaust Gas Recirculation
ALR	: Automatic Locking Retractor	EGRT Sensor	: EGR Temperature Sensor (Recirculated Exhaust Gas Temp. Sensor, REGTS)
AC	: Alternating Current	EFE Heater	: Early Fuel Evaporation Heater (Positive Temperature Coefficient, PTC Heater)
A/T	: Automatic Transmission	ELR	: Emergency Locking Retractor
A/C	: Air Conditioning	EPS	: Electronic Power Steering
ABDC	: After Bottom Dead Center	EVAP	: Evaporative Emission
A/F	: Air Fuel Mixture Ratio	EVAP Canister	: Evaporative Emission Canister (Charcoal Canister)
A-ELR	: Automatic-Emergency Locking Retractor		
B		F	
B+	: Battery Positive Voltage	4WD	: 4 Wheel Drive
BTDC	: Before Top Dead Center	G	
BBDC	: Before Bottom Dead Center	GEN	: Generator
C		GND	: Ground
CKT	: Circuit	H	
CMP Sensor	: Camshaft Position Sensor (Crank Angle Sensor, CAS)	HC	: Hydrocarbons
CO	: Carbon Monoxide	HO2S	: Heated Oxygen Sensor
CPP Switch	: Clutch Pedal Position Switch (Clutch Switch, Clutch Start Switch)	I	
CPU	: Central Processing Unit	IAC Valve	: Idle Air Control Valve (Idle Speed Control Solenoid Valve, ISC Solenoid Valve)
CRS	: Child Restraint System	IAT Sensor	: Intake Air Temperature Sensor (Air temperature Sensor, ATS)
D		ICM	: Immobilizer Control Module
DC	: Direct Current	IG	: Ignition
DLC	: Data Link Connector (Assembly Line Diag. Link, ALDL, Serial Data Link, SDL)	ISC Actuator	: Idle Speed Control Actuator (Motor)
DOHC	: Double Over Head Camshaft		
DOJ	: Double Offset Joint		
DRL	: Daytime Running Light		
DTC	: Diagnostic Trouble Code (Diagnostic Code)		

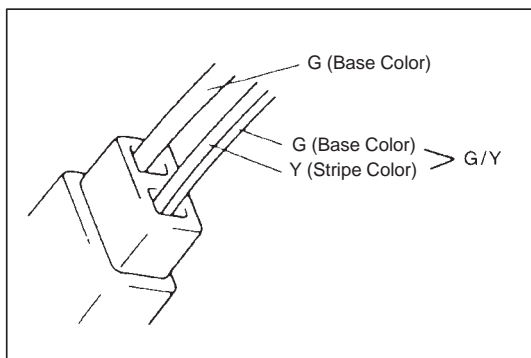
L		T	
LH	: Left Hand	TBI	: Throttle Body Fuel Injection (Single-Point Fuel Injection, SPI)
LSPV	: Load Sensing Proportioning Valve	TCC	: Torque Converter Clutch
M		TCM	: Transmission Control Module (A/T Controller, A/T Control Module)
MAF Sensor	: Mass Air Flow Sensor (Air Flow Sensor, AFS, Air Flow Meter, AFM)	TP Sensor	: Throttle Position Sensor
MAP Sensor	: Manifold Absolute Pressure Sensor (Pressure Sensor, PS)	TVV	: Thermal Vacuum Valve (Thermal Vacuum Switching Valve, TVSV, Bimetal Vacuum Switching Valve, BVSV)
Max	: Maximum	TWC	: Three-Way Catalytic Converter (Three-Way Catalyst)
MFI	: Multiport Fuel Injection (Multipoint Fuel Injection)	2WD	: 2 Wheel Drive
Min	: Minimum	V	
MIL	: Malfunction Indicator Lamp	VIN	: Vehicle Identification Number
M/T	: Manual Transmission	VSS	: Vehicle Speed Sensor
N		W	
NOx	: Nitrogen Oxides	WU-OC	: Warm Up Oxidation Catalytic Converter
O		WU-TWC	: Warm Up Three-Way Catalytic Converter
OBD	: On-Board Diagnostic System (Self-Diagnosis Function)		
O/D	: Overdrive		
OHC	: Over Head Camshaft		
P			
PNP	: Park/Neutral Position		
P/S	: Power Steering		
PSP Switch	: Power Steering Pressure Switch (P/S Pressure Switch)		
PCM	: Powertrain Control Module		
PCV	: Positive Crankcase Ventilation		
R			
RH	: Right Hand		
S			
SAE	: Society of Automotive Engineers		
SDM	: Sensing and Diagnostic Module (Air Bag Controller, Air Bag Control Module)		
SFI	: Sequential Multiport Fuel Injection		
SOHC	: Single Over Head Camshaft		

SYMBOLS

SYMBOL	DEFINITION	SYMBOL	DEFINITION
	Tightening torque		Apply SUZUKI BOND NO. 1216 99000-31160
	Apply oil (Engine, transmission, transfer, differential)		Apply SILICONE SEALANT 99000-31120
	Apply fluid (Brake, power steering or automatic transmission fluid)		Apply SEALING COMPOUND 366E 99000-31090
	Apply SUZUKI SUPER GREASE A 99000-25010		
	Apply SUZUKI SUPER GREASE C 99000-25030		Apply THREAD LOCK 1322 99000-32110
	Apply SUZUKI SUPER GREASE E 99000-25050		Apply THREAD LOCK 1333B 99000-32020
	Apply SUZUKI SUPER GREASE H 99000-25120		Apply THREAD LOCK 1342 99000-32050
	Apply SUZUKI SUPER GREASE I 99000-25210		
	Apply SUZUKI BOND NO. 1215 99000-31110		Do not reuse
	Apply SUZUKI BOND NO. 1207C 99000-31150		Note on reassembly

WIRE COLOR SYMBOLS

Symbol		Wire Color	Symbol		Wire Color
B	BLK	Black	O, Or	ORN	Orange
Bl	BLU	Blue	R	RED	Red
Br	BRN	Brown	W	WHT	White
G	GRN	Green	Y	YEL	Yellow
Gr	GRY	Gray	P	PNK	Pink
Lbl	LT BLU	Light blue	V	PPL	Violet
Lg	LT GRN	Light green			



There are two kinds of colored wire used in this vehicle. One is single-colored wire and the other is dual-colored (striped) wire. The single-colored wire uses only one color symbol (i.e. "G"). The dual-colored wire uses two color symbols (i.e. "G/Y"). The first symbol represents the base color of the wire ("G" in the figure) and the second symbol represents the color of the stripe ("Y" in the figure).

FASTENERS INFORMATION

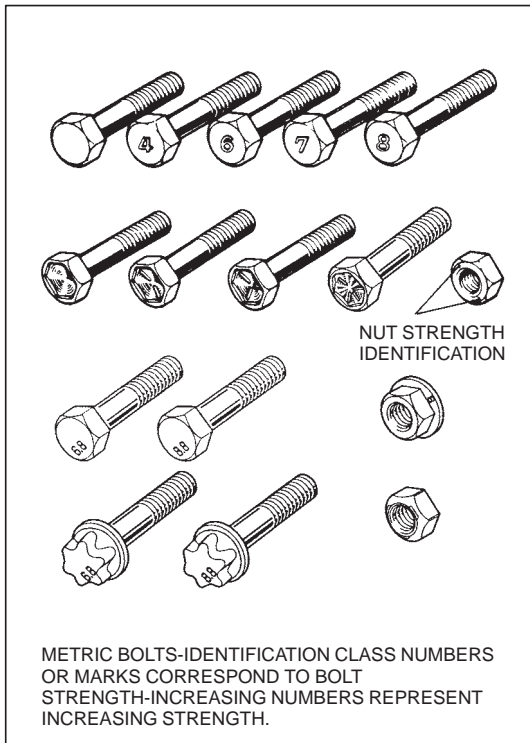
METRIC FASTENERS

Most of the fasteners used for this vehicle are metric fasteners. When replacing any fasteners, it is most important that replacement fasteners be the correct diameter, thread pitch and strength.

FASTENER STRENGTH IDENTIFICATION

Most commonly used metric fastener strength property classes are 4T, 6.8, 7T, 8.8 and radial line with the class identification embossed on the head of each bolt. Some metric nuts will be marked with punch, 6 or 8 mark strength identification on the nut face. Figure shows the different strength markings.

When replacing metric fasteners, be careful to use bolts and nuts of the same strength or greater than the original fasteners (the same number marking or higher). It is likewise important to select replacement fasteners of the correct diameter and thread pitch. Correct replacement bolts and nuts are available through the parts division.



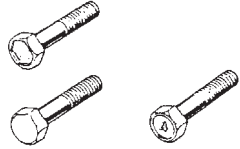

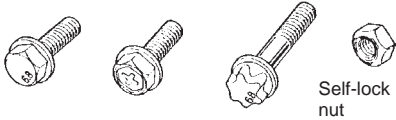

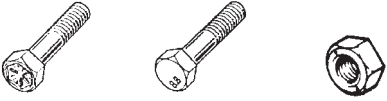

STANDARD TIGHTENING TORQUE

Each fastener should be tightened to the torque specified in each section of this manual. If no description or specification is provided, refer to the following tightening torque chart for the applicable torque for each fastener. When a fastener of greater strength than the original one is used, however, use the torque specified for the original fastener.

NOTE:

- For the flanged bolt, flanged nut and self-lock nut of 4T and 7T strength, add 10% to the tightening torque given in the chart below.
- The chart below is applicable only where the fastened parts are made of steel or light alloy.

Tightening torque chart

Thread Diameter (Nominal Diameter) (mm)		4	5	6	8	10	12	14	16	18	
Strength											
	A equivalent of 4T strength fastener 	N-m	1.5	3.0	5.5	13	29	45	65	105	160
	kg-m	0.15	0.30	0.55	1.3	2.9	4.5	6.5	10.5	16	
lb-ft	1.0	2.5	4.0	9.5	21.0	32.5	47.0	76.0	116.0		
A equivalent of 6.8 strength fastener without flange 	N-m	2.4	4.7	8.4	20	42	80	125	193	280	
	kg-m	0.24	0.47	0.84	2.0	4.2	8.0	12.5	19.3	28	
	lb-ft	2.0	3.5	6.0	14.5	30.5	58.0	90.5	139.5	202.5	
A equivalent of 6.8 strength fastener with flange 	N-m	2.4	4.9	8.8	21	44	84	133	203	298	
	kg-m	0.24	0.49	0.88	2.1	4.4	8.4	13.3	20.3	29.8	
	lb-ft	2.0	3.5	6.5	15.5	32.0	61.0	96.5	147.0	215.5	
A equivalent of 7T strength fastener 	N-m	2.3	4.5	10	23	50	85	135	210	240	
	kg-m	0.23	0.45	1.0	2.3	5.0	8.5	13.5	21	24	
	lb-ft	2.0	3.5	7.5	17.0	36.5	61.5	98.0	152.0	174.0	
A equivalent of 8.8 strength fastener without flange 	N-m	3.1	6.3	11	27	56	105	168	258	373	
	kg-m	0.31	0.63	1.1	2.7	5.6	10.5	16.8	25.8	37.3	
	lb-ft	2.5	4.5	8.0	19.5	40.5	76.0	121.5	187.0	270.0	
A equivalent of 8.8 strength fastener with flange 	N-m	3.2	6.5	12	29	59	113	175	270	395	
	kg-m	0.32	0.65	1.2	2.9	5.9	11.3	17.5	27	39.5	
	lb-ft	2.5	5.0	9.0	21.0	43.0	82.0	126.5	195.5	286.0	

SECTION 0B

MAINTENANCE AND LUBRICATION

WARNING:

For vehicles equipped with Supplemental Restraint (Air Bag) System:

- Service on and around the air bag system components or wiring must be performed only by an authorized SUZUKI dealer. Refer to “Air Bag System Components and Wiring Location View” under “General Description” in air bag system section in order to confirm whether you are performing service on or near the air bag system components or wiring. Please observe all WARNINGS and “Service Precautions” under “On-Vehicle Service” in air bag system section before performing service on or around the air bag system components or wiring. Failure to follow WARNINGS could result in unintentional activation of the system or could render the system inoperative. Either of these two conditions may result in severe injury.
- Technical service work must be started at least 90 seconds after the ignition switch is turned to the “LOCK” position and the negative cable is disconnected from the battery. Otherwise, the system may be activated by reserve energy in the Sensing and Diagnostic Module (SDM).

CONTENTS

MAINTENANCE SCHEDULE	0B- 2
Normal Condition Schedule	0B- 2
Maintenance Recommended Under Severe Driving Conditions	0B- 4
MAINTENANCE SERVICE	0B- 5
Engine	0B- 5
Ignition System	0B-10
Fuel System	0B-10
Emission Control System	0B-12
Brake	0B-12
Chassis and Body	0B-14
Final Inspection	0B-20
RECOMMENDED FLUIDS AND LUBRICANTS	0B-21

MAINTENANCE SCHEDULE

NORMAL CONDITION SCHEDULE

Interval: This interval should be judged by odometer reading or months, whichever comes first.	This table includes services as scheduled up to 90,000 km (54,000 miles) mileage. Beyond 90,000 km (54,000 miles), carry out the same services at the same intervals respectively.							
	Km (× 1,000)	15	30	45	60	75	90	
	Miles (× 1,000)	9	18	27	36	45	54	
	Months	12	24	36	48	60	72	
1. ENGINE								
1-1. Drive belt (tension, damage)	V-belt	I	R	I	R	I	R	
	V-rib belt (Flat type)	–	–	I	–	–	R	
1-2. Camshaft timing belt	Replace every 100,000 km (60,000 miles).							
1-3. Valve lash (1.3 liter engine)	–	I	–	I	–	I		
1-4. Engine oil and oil filter	Vehicle with O2S (SG, SH, SJ)	R	R	R	R	R	R	
	Vehicle with O2S (SE, SF)	Replace every 10,000 km (6,000 miles) or 8 months						
	Vehicle without O2S							
1-5. Engine coolant	–	R	–	R	–	R		
1-6. Exhaust system (leakage, damage, tightness)	–	I	–	I	–	I		
2. IGNITION SYSTEM								
2-1. Spark plugs	When unleaded fuel is used	Vehicle without O2S	–	R	–	R	–	R
		Vehicle with O2S	–	–	R	–	–	R
	When leaded fuel is used		Refer to “Severe Driving Condition” schedule.					
2-2. Distributor cap and rotor (if equipped)	–	–	I	–	–	I		
3. FUEL SYSTEM								
3-1. Air cleaner filter	Paved-road	I	I	R	I	I	R	
	Dusty condition	Refer to “Severe Driving Condition” schedule.						
3-2. Fuel lines (deterioration, leakage, damage)	–	I	–	I	–	I		
3-3. Fuel tank	–	–	I	–	–	I		

NOTES:

- For Item 2-1 “spark plugs”, replace every 50,000 km if the local law requires.
- For Sweden, Item 2-1, 4-1 and 4-2 should be performed by odometer reading only.
- For Item 1-2 Camshaft timing belt: This belt may be replaced every 90,000 km (54,000 miles) according to customer’s maintenance convenience.

Interval: This interval should be judged by odometer reading or months, whichever comes first.	This table includes services as scheduled up to 90,000 km (54,000 miles) mileage. Beyond 90,000 km (54,000 miles), carry out the same services at the same intervals respectively.						
	Km (× 1,000)	15	30	45	60	75	90
	Miles (× 1,000)	9	18	27	36	45	54
	Months	12	24	36	48	60	72
4. EMISSION CONTROL SYSTEM							
4-1. PCV (Positive Crankcase Ventilation) Valve	Vehicle without O2S	-	-	I	-	-	I
	Vehicle with O2S	-	-	-	-	-	I
4-2. Fuel evaporative emission control system		-	-	-	-	-	I
5. BRAKE							
5-1. Brake discs and pads		I	I	I	I	I	I
	Brake drums and shoes	-	I	-	I	-	I
5-2. Brake hoses and pipes		-	I	-	I	-	I
5-3. Brake fluid		-	R	-	R	-	R
5-4. Brake lever and cable		Inspect at first 15,000 km (9,000 miles) only.					
6. CHASSIS AND BODY							
6-1. Clutch pedal (for manual transmission)		-	I	-	I	-	I
6-2. Tires/wheel discs		I	I	I	I	I	I
6-3. Propeller shaft (4WD) and drive shafts		-	-	I	-	-	I
6-4. Suspension system		-	I	-	I	-	I
6-5. Steering system		-	I	-	I	-	I
6-6. Power steering (if equipped)		I	I	I	I	I	I
6-7. Manual transmission oil		I	-	R	-	-	R
6-8. Automatic transmission	Fluid level	-	I	-	I	-	I
	Fluid change	Replace every 165,000 km (99,000 miles).					
	Fluid hose	-	-	-	R	-	-
6-9. Rear differential oil (4WD) (R: 1st 15,000 km only)		R or I	-	I	-	I	-
6-10. All latches, hinges and locks		-	I	-	I	-	I

NOTES:

- “R”: Replace or change
- “I”: Inspect and correct or replace if necessary

MAINTENANCE RECOMMENDED UNDER SEVERE DRIVING CONDITIONS

If the vehicle is usually used under the conditions corresponding to any severe condition code given below, it is recommended that applicable maintenance operation be performed at the particular interval as given in the chart below.

Severe condition code

- | | |
|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A – Repeated short trips | F – Leaded fuel use |
| B – Driving on rough and/or muddy roads | G – (For Diesel engine) Town use/Towing a trailer/
Sustained high speed driving/
Hot climates above 30°C (86°F)/
Low quality lubricants or fuel |
| C – Driving on dusty roads | |
| D – Driving in extremely cold weather and/or
salted roads | H – Trailer towing (if admitted) |
| E – Repeated short trips in extremely cold weather | |

Severe Condition Code	Maintenance	Maintenance Operation	Maintenance Interval
- B C D - - - -	ITEM 1-1 Drive belt (V-rib belt)	I	Every 15,000 km (9,000 miles) or 12 months
		R	Every 45,000 km (27,000 miles) or 36 months
A - C D E F - H	ITEM 1-4 Engine oil and filter	R	Every 5,000 km (3,000 miles) or 4 months
A B C - E F - H	ITEM 2-1 Spark plugs	R	Every 10,000 km (6,000 miles) or 8 months
- - C - - - - -	ITEM 3-1 Air cleaner filter *1	I	Every 2,500 km (1,500 miles)
		R	Every 30,000 km (18,000 miles) or 24 months
- B C D - - - H	ITEM 6-2 Wheel bearings	I	Every 15,000 km (9,000 miles) or 12 months
- B - D E - - H	ITEM 6-3 Propeller shaft (4WD) and drive shafts	I	Every 15,000 km (9,000 miles) or 12 months
- B - - E - - H	ITEM 6-7/6-8 Manual transmission oil and differential oil (4WD)	R	Every 30,000 km (18,000 miles) or 24 months
- B - - E - - H	ITEM 6-9 Automatic transmission fluid	R	Every 30,000 km (18,000 miles) or 24 months

NOTES:

- "R": Replace or change
- "I": Inspect and correct or replace if necessary
- *1: Inspect or replace more frequently if necessary

MAINTENANCE SERVICE

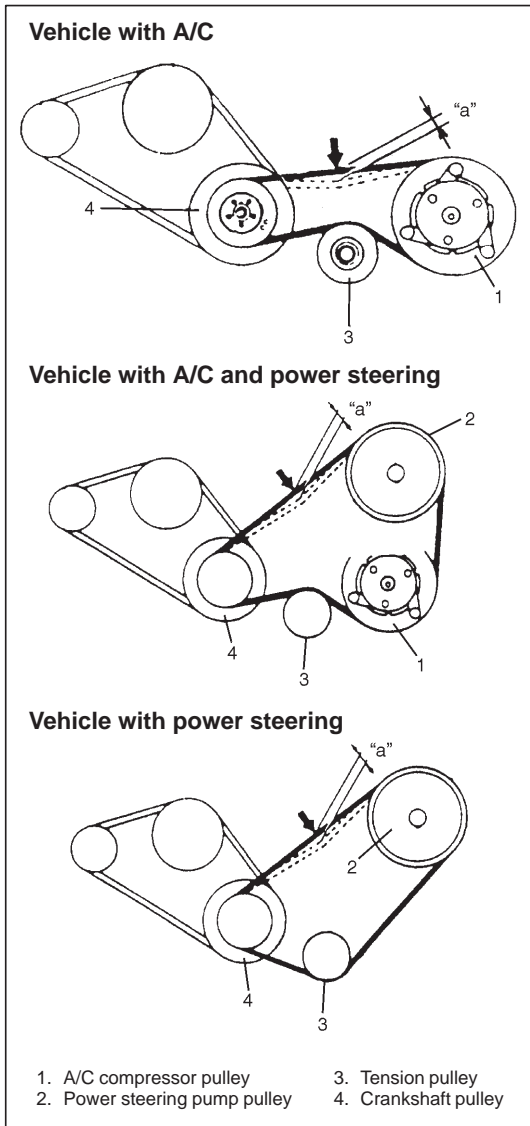
ENGINE

ITEM 1-1

Drive Belt Inspection and Replacement

WARNING:

Disconnect negative cable at battery before checking and replacing belt.



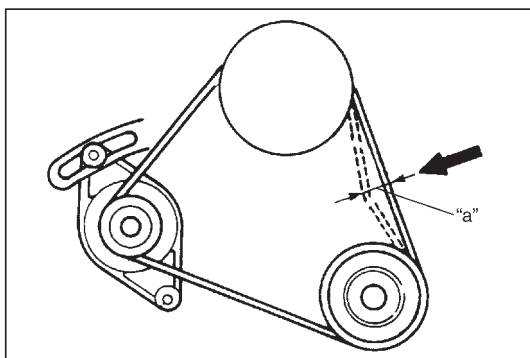
A/C Compressor and/or Power Steering Pump Drive Belt Inspection (If equipped)

- 1) Detach air cleaner assembly from vehicle body and shift its position.
- 2) Inspect belt for wear, deterioration and tension. Replace or adjust, if necessary.

A/C compressor and/or power steering pump drive belt tension "a":
7 – 9 mm (0.28 – 0.35 in.) deflection under 10 kg or 22 lb pressure

A/C Compressor and/or Power Steering Pump Drive Belt Replacement

- 1) Disconnect negative cable from battery.
- 2) Remove engine under cover of right side.
- 3) Loosen belt tension and replace belt with new one.
- 4) Adjust belt tension to specification referring to SECTION 1B or SECTION 3B1.
- 5) Install engine under cover and connect negative cable to battery.



Water Pump Belt Inspection

- 1) Inspect belt for cracks, cuts, deformation, wear and cleanliness. Replace, if necessary.
- 2) Check pump belt for tension and adjust it as necessary.

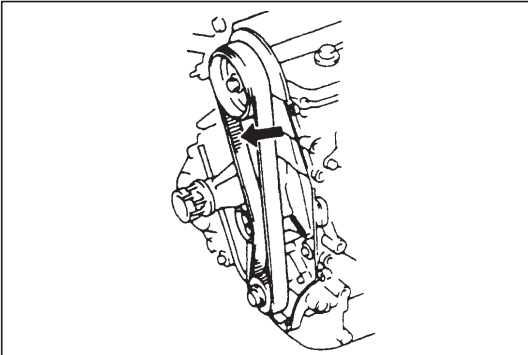
Water pump belt tension "a":
6 – 8 mm (0.24 – 0.32 in.) deflection under 10 kg or 22 lb pressure

Water Pump Belt Replacement

Replace belt with a new one. Refer to SECTION 6B for replacement procedure of pump belt.

NOTE:

When replacing belt with a new one, adjust belt tension to 5 – 7 mm (0.20 – 0.27 in.).



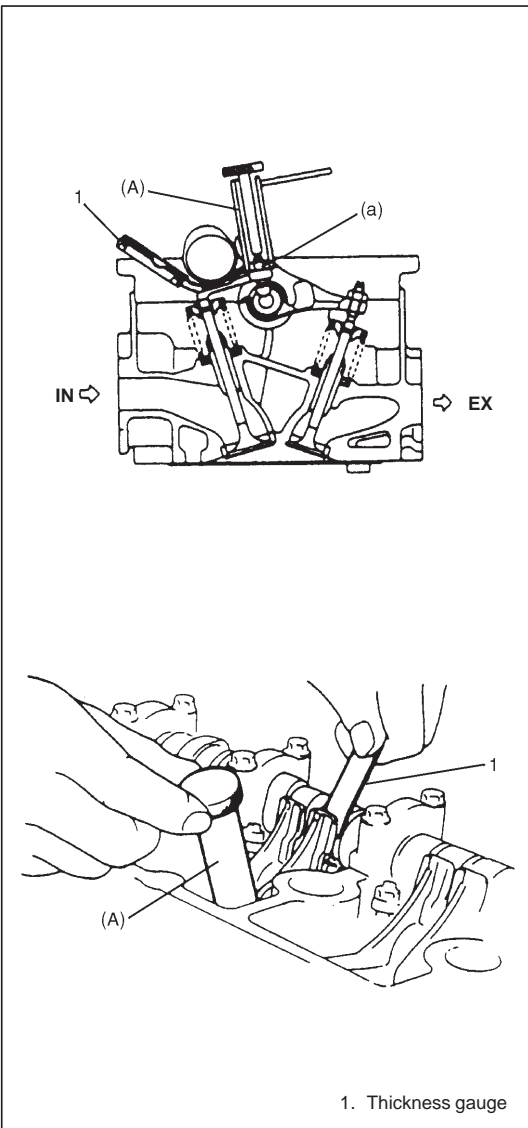
ITEM 1-2

Camshaft Timing Belt Replacement

Replace belt with new one. Refer to SECTION 6A or 6A1 for replacement procedure.

CAUTION:

- Do not bend or twist timing belt.
- Do not allow timing belt to come into contact with oil, water, etc.



ITEM 1-3

Valve Lash Inspection (1.3 liter engine only)

- 1) Remove cylinder head cover.
- 2) Inspect intake and exhaust valve lash and adjust as necessary. Refer to SECTION 6A1 for valve lash inspection and adjustment procedure.

Valve lash (gap) specification		When cold (Coolant temperature is 15 – 25°C or 59 – 77°F)	When hot (Coolant temperature is 60 – 68°C or 140 – 154°F)
		Intake	0.13 – 0.17 mm (0.005 – 0.007 in.)
Exhaust		0.23 – 0.27 mm (0.009 – 0.011 in.)	0.28 – 0.32 mm (0.011 – 0.013 in.)

Special Tool

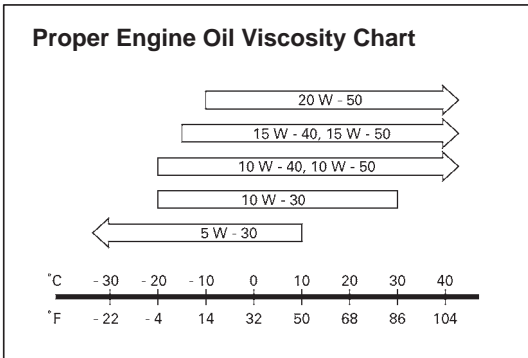
(A): 09917-18211

Tightening Torque

(a): 12 N·m (1.2 kg·m, 8.5 lb·ft)

- 3) Install cylinder head cover and tighten bolts to specification.

1. Thickness gauge

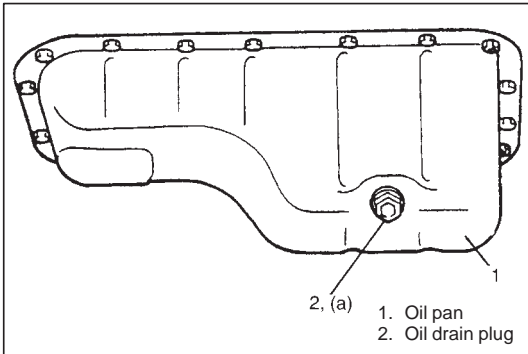


ITEM 1-4

Engine Oil and Filter Change

WARNING:
 New and used engine oil can be hazardous.
 Be sure to read “WARNING” in General Precaution in SECTION 0A and observe what is written there.

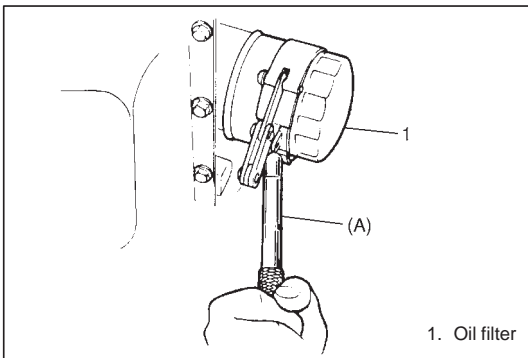
Use engine oil of SE, SF, SG, SH or SJ grade.
 Select the appropriate oil viscosity according to the left chart.



Before draining engine oil, check engine for oil leakage. If any evidence of leakage is found, make sure to correct defective part before proceeding to following work.

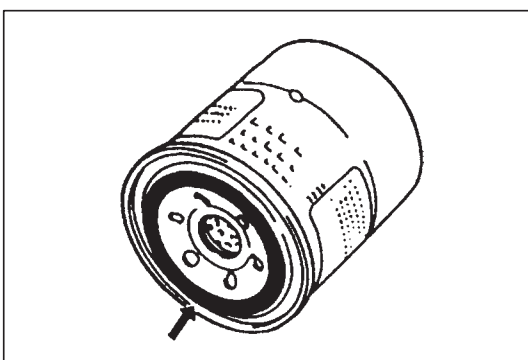
- 1) Drain engine oil by removing drain plug.
- 2) After draining oil, wipe drain plug clean. Reinstall drain plug, and tighten it securely as specified below.

Tightening Torque
(a): 35 N·m (3.5 kg-m, 25.5 lb-ft)



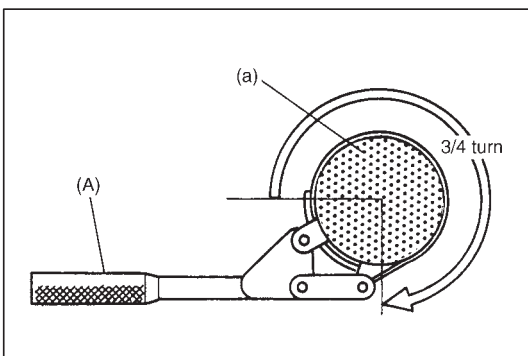
- 3) Loosen oil filter by using oil filter wrench (Special tool).

Special Tool
(A): 09915-47330



- 4) Apply engine oil to new oil filter O-ring.
- 5) Screw new filter on oil filter stand by hand until filter O-ring contacts mounting surface.

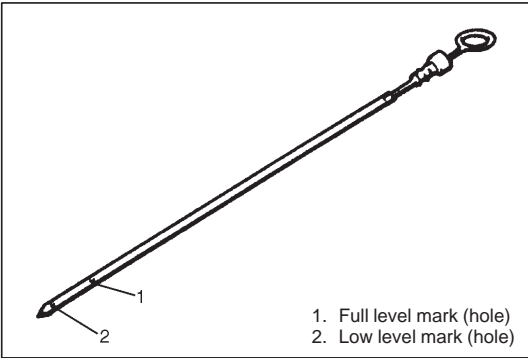
CAUTION:
 To tighten oil filter properly, it is important to accurately identify the position at which filter O-ring first contacts mounting surface.



- 6) Tighten filter 3/4 turn from the point of contact with mounting surface using an oil filter wrench.

Special Tool
(A): 09915-47330

Tightening Torque (Reference)
(a): 14 N·m (1.4 kg-m, 10.5 lb-ft)



- 7) Replenish oil until oil level is brought to FULL level mark on dipstick (oil pan and oil filter capacity). Filler inlet is at the top of cylinder head cover.
- 8) Start engine and run it for three minutes. Stop it and wait another 5 minutes before checking oil level. Add oil, as necessary, to bring oil level to FULL level mark on dipstick.

Engine Oil Capacity

	1.0 L and 1.3 L Engine
Oil pan capacity	About 3.1 liters (6.5/5.5 US/Imp pt.)
Oil filter capacity	About 0.2 liter (0.4/0.3 US/Imp pt.)
Others	About 0.3 liter (0.6/0.5 US/Imp pt.)
Total	About 3.6 liters (7.5/6.3 US/Imp pt.)

NOTE:

Engine oil capacity is specified as left table. However, note that amount of oil required when actually changing oil may somewhat differ from data in left table depending on various conditions (temperature, viscosity, etc.).

- 9) Check oil filter and drain plug for oil leakage.

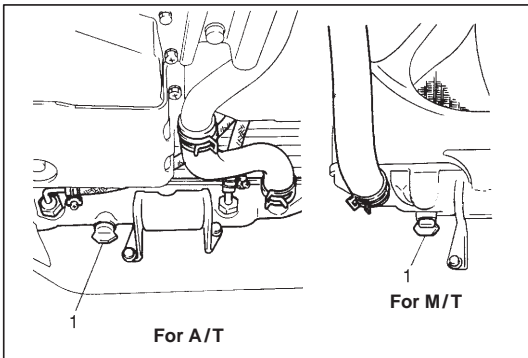
ITEM 1-5

Engine Coolant Change

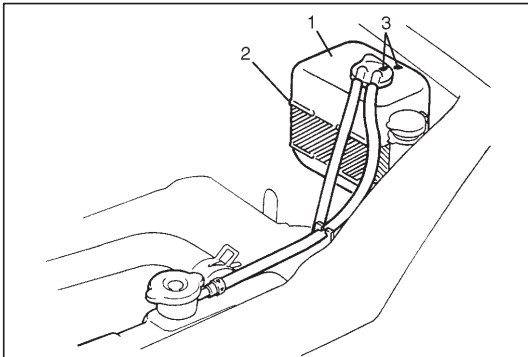
WARNING:
To help avoid danger of being burned, do not remove radiator cap while engine and radiator are still hot. Scalding fluid and steam can be blown out under pressure if cap is taken off too soon.

CAUTION:
When changing engine coolant, use mixture of 50% water and 50% ethylene-glycol base coolant (Anti-Freeze/Anti-corrosion coolant) for the market where ambient temperature falls lower than -16°C (3°F) in winter and mixture of 70% water and 30% ethylene-glycol base coolant for the market where ambient temperature doesn't fall lower than -16°C (3°F).
Even in a market where no freezing temperature is anticipated, mixture of 70% water and 30% ethylene-glycol base coolant should be used for the purpose of corrosion protection and lubrication.

Refer to SECTION 6B for COOLANT CAPACITY.



- 1) Remove radiator cap when engine is cool.
- 2) Loosen radiator drain plug (1) to drain coolant.
- 3) Remove reservoir and drain.
- 4) Tighten drain plug securely. Also install reservoir.
- 5) Slowly pour specified amount of coolant to the base of radiator filler neck, and run engine, with radiator cap removed, until radiator upper hose is hot. This drives out any air which may still be trapped within cooling system. Add coolant as necessary until coolant level reaches filler throat of radiator. Reinstall radiator cap.



- 6) Add coolant to reservoir (1) so that its level aligns with Full mark (2). Then, reinstall cap to reservoir aligning match marks (3) on reservoir and cap.

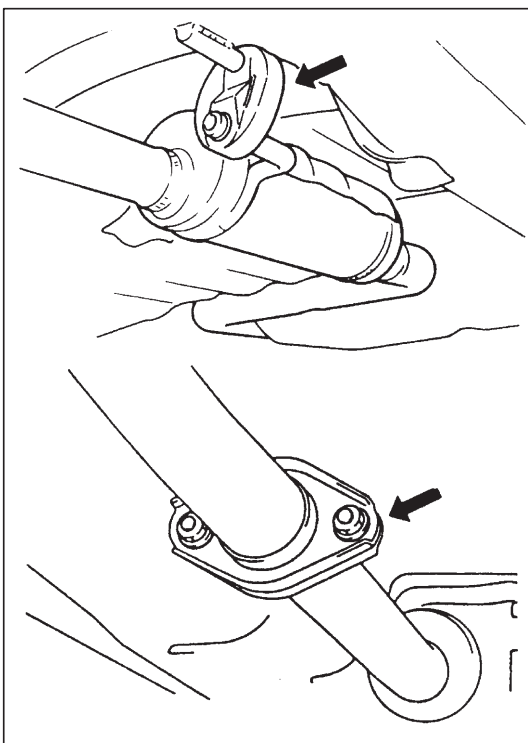
ITEM 1-6

Exhaust System Inspection

WARNING:

To avoid danger of being burned, do not touch exhaust system when it is still hot.

Any service on exhaust system should be performed when it is cool.



When carrying out periodic maintenance or vehicle is raised for other service, check exhaust system as follows:

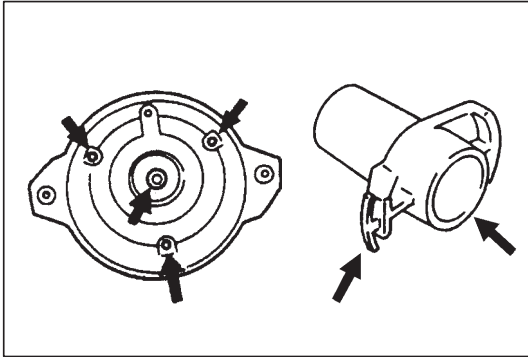
- Check rubber mountings for damage and deterioration.
- Check exhaust system for leakage, loose connections, dents, and damages.
If bolts or nuts are loose, tighten them to specification. Refer to SECTION 6K for torque specification of bolts and nuts.
- Check nearby body areas for damaged, missing or mispositioned parts, open seams, holes, loose connections or other defects which could permit exhaust fumes to seep into vehicle.
- Make sure that exhaust system components have enough clearance from underbody to avoid overheating and possible damage to floor carpet.
- Any defects should be fixed at once.

IGNITION SYSTEM

ITEM 2-1

Spark Plugs Replacement

Replace spark plugs with new ones referring to SECTION 6F or 6F1.



ITEM 2-2

Distributor Cap and Rotor Inspection (if equipped)

- Check distributor cap and rubber caps for cracks.
- Clean dusty and stained parts using a dry, soft cloth.
- Check center electrode and terminals for wear.
- Check rotor for cracks and its electrode for wear.

Repair or replace any component which is found to be in malcondition.

FUEL SYSTEM

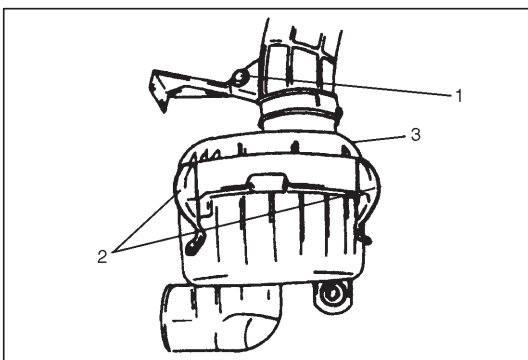
ITEM 3-1

Air Cleaner Filter Inspection

1) Take out air cleaner filter as follows.

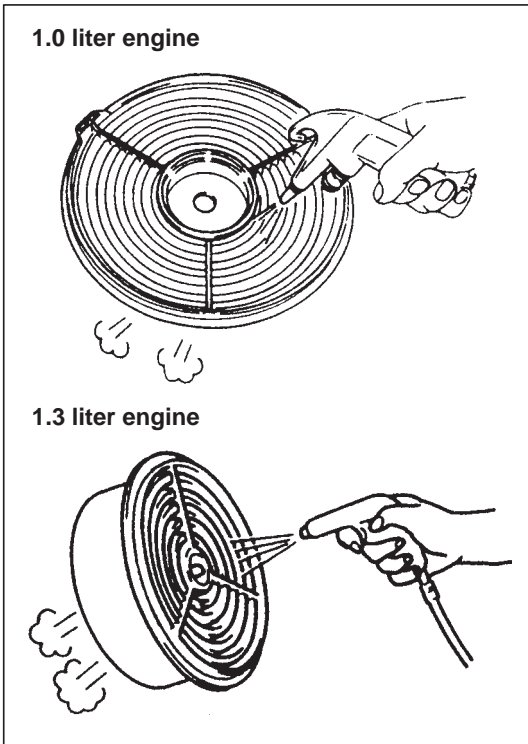
For 1.0 liter engine:

- i) Remove air cleaner upper case after removing case nut and clamps.
- ii) Remove air cleaner filter.



For 1.3 liter engine:

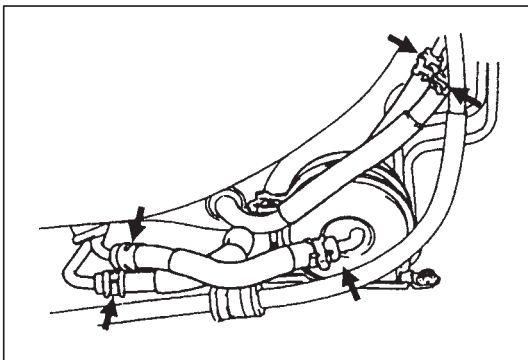
- i) Disconnect air cleaner outlet hose from case after loosening its clamp and removing bolt (1) shown in figure.
- ii) Remove air cleaner case cap (3) from case by unhooking its clamps (2), then take out air cleaner filter.



- 2) Visually check that air cleaner filter is not excessively dirty, damaged or oily.
- 3) Clean filter with compressed air from air outlet side of filter.
- 4) Install air cleaner filter into case.
- 5) Clamp case cap securely and install hose to case and bracket if removed.

Air Cleaner Filter Replacement

Replace air cleaner filter with new one according to steps 1), 4) and 5) of Air Cleaner Filter Inspection.



ITEM 3-2

Fuel Lines Inspection

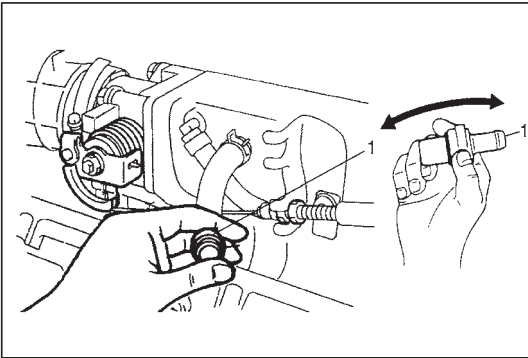
- Check fuel lines for loose connection, deterioration or damage which could cause leakage.
Make sure all clamps are secure.
- Replace any damaged or deteriorate parts.
There should be no sign of fuel leakage or moisture at any fuel connection.

ITEM 3-3

Fuel Tank Inspection

Check fuel tank for damage, cracks, fuel leakage, corrosion and tank bolts looseness.

If a problem is found, repair or replace.



EMISSION CONTROL SYSTEM

ITEM 4-1

PCV (Positive Crankcase Ventilation) Valve Inspection

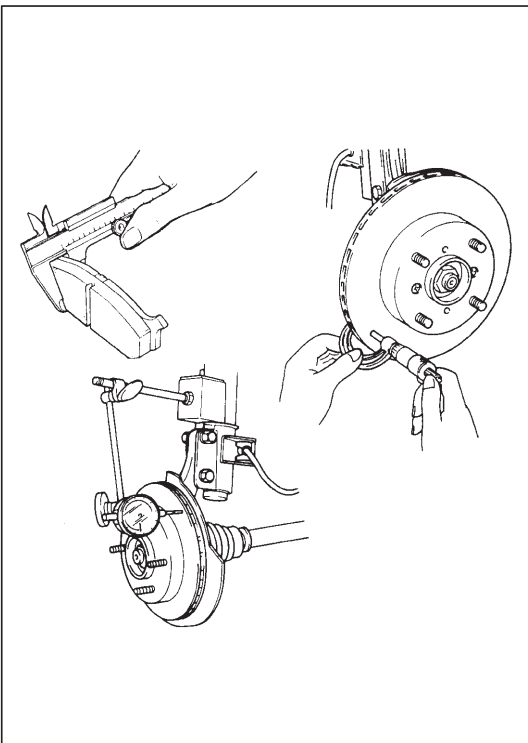
Check crankcase ventilation hoses and PCV hoses for leaks, cracks or clog, and PCV valve (1) for stick or clog. Refer to ON-VEHICLE SERVICE of SECTION 6E1 or 6E2 for PCV valve checking procedure.

ITEM 4-2

Fuel Evaporative Emission Control System Inspection

- 1) Visually inspect hoses for cracks, damage or excessive bends. Inspect all clamps for damage and proper position.
- 2) Check EVAP canister for operation and clog, referring to SECTION 6E1 or 6E2.

If a malfunction is found, repair or replace.



BRAKE

ITEM 5-1

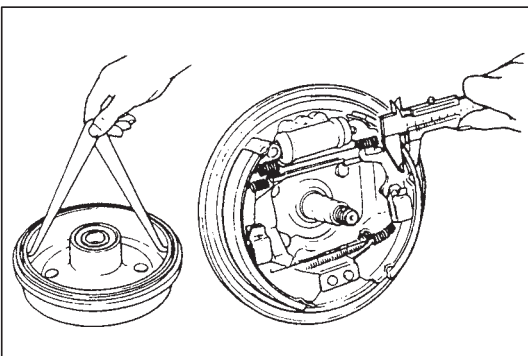
Brake Discs, Pads, Drums and Shoes Inspection

Brake discs and pads

NOTE:

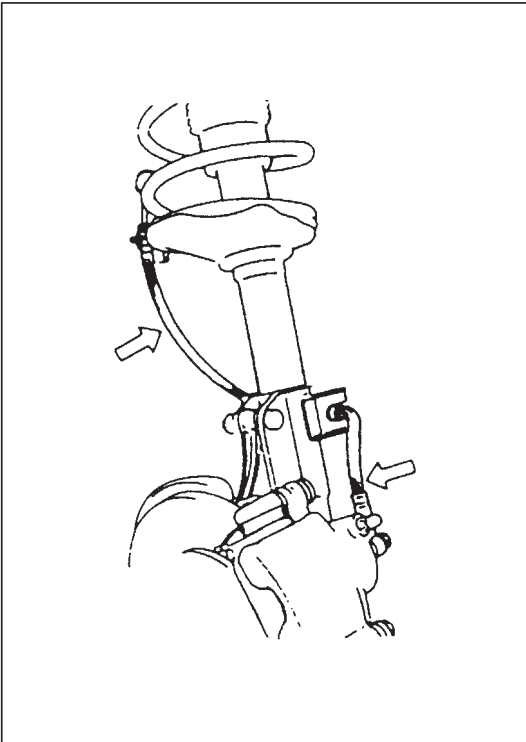
If noise is heard from brake when brake pedal is depressed, check brake pad lining for wear. If it is worn, both right and left brake pads should be replaced with new ones.

- 1) Remove wheel and caliper but don't disconnect brake hose from caliper.
- 2) Check disc brake pads and discs for excessive wear, damage and deflection. Replace parts as necessary. For the details, refer to SECTION 5.
- 3) Install caliper and wheel.



Brake drums and shoes

- 1) Remove wheel and brake drum.
- 2) Check rear brake drums and brake linings for excessive wear and damage.
At the same time, check wheel cylinders for leakage. Replace as necessary.
For the details, refer to SECTION 5.
- 3) Install brake drum and wheel.

**ITEM 5-2****Brake Hoses and Pipes Inspection**

Perform this inspection where there is enough light and use a mirror as necessary.

- Check brake hoses and pipes for proper hook-up, leaks, cracks, chafing, wear, corrosion, bends, twists and other damage. Replace any of these parts as necessary.
- Check all clamps for tightness and connections for leakage.
- Check that hoses and pipes are clear of sharp edges, moving parts.

CAUTION:

After replacing any brake pipe or hose, be sure to carry out air purge operation.

ITEM 5-3**Brake Fluid Change****CAUTION:**

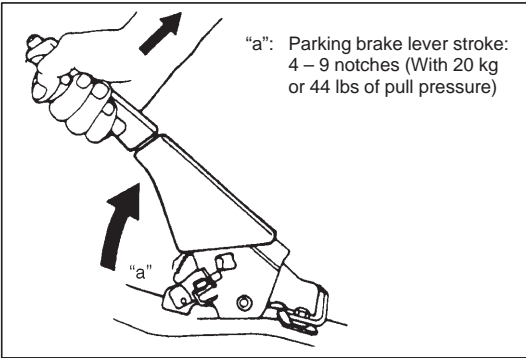
Since brake system of this vehicle is factory-filled with brake fluid indicated on reservoir cap, do not use or mix different type of fluid when refilling; otherwise serious damage will occur.

Do not use old or used brake fluid, or any fluid from a unsealed container.

Change brake fluid as follows.

Drain existing fluid from brake system completely, fill system with specified fluid and carry out air purge operation.

For air purging procedure, refer to SECTION 5.



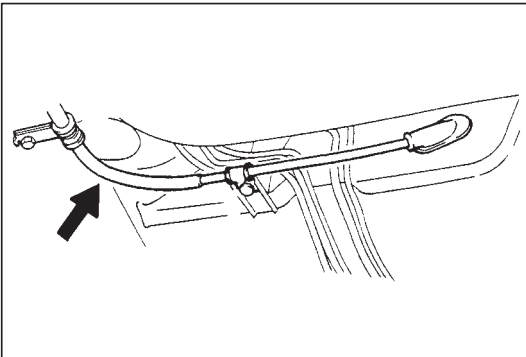
ITEM 5-4

Brake Lever and Cable Inspection

Parking brake lever

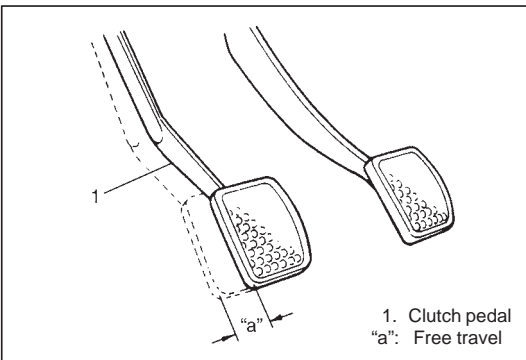
- Check tooth tip of each notch for damage or wear. If any damage or wear is found, replace parking lever.
- Check parking brake lever for proper operation and stroke, and adjust it if necessary.

For checking and adjusting procedures, refer to PARKING BRAKE INSPECTION AND ADJUSTMENT of SECTION 5.



Parking brake cable

Inspect brake cable for damage and smooth movement. Replace cable if it is in deteriorated condition.

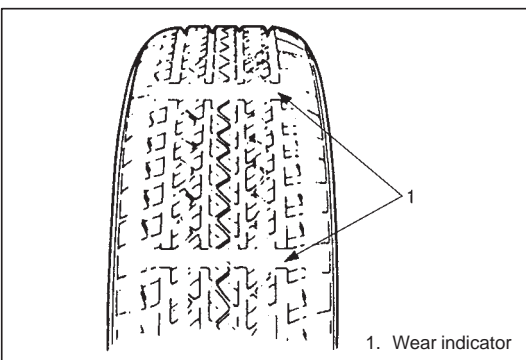


CHASSIS AND BODY

ITEM 6-1

Clutch Pedal Free Travel Inspection

Check clutch pedal free travel. Refer to SECTION 7C for procedure to check and adjust it.



ITEM 6-2

Tire and Wheel Disc Inspection

[Tire inspection]

- 1) Check tire for uneven or excessive wear, or damage. If defective, replace.

- 2) Check inflating pressure of each tire and adjust pressure to specification as necessary.

NOTE:

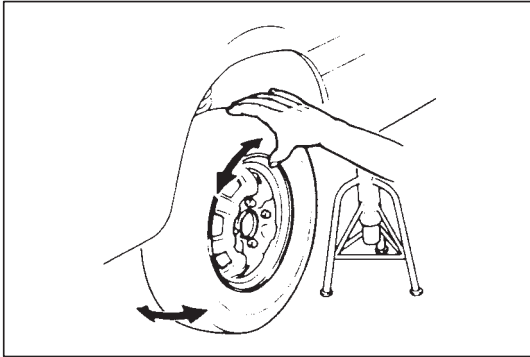
- Tire inflation pressure should be checked when tires are cool.
- Specified tire inflation pressure should be found on tire placard or in owner's manual which came with vehicle.

[Wheel disc inspection]

Inspect each wheel disc for dents, distortion and cracks. A disc in badly damaged condition must be replaced.

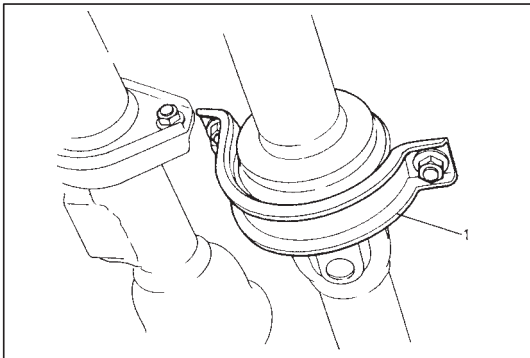
[Tire rotation]

Rotate tires referring to SECTION 3F.



Wheel Bearing Inspection

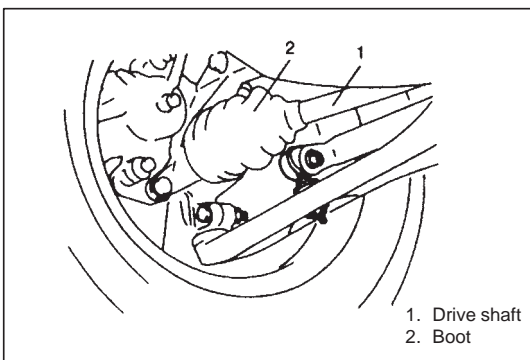
- 1) Check front wheel bearing for wear, damage, abnormal noise or rattles. For details, refer to SECTION 3D.
- 2) Check rear wheel bearing for wear, damage abnormal noise or rattle. For details, refer to SECTION 3E.



ITEM 6-3

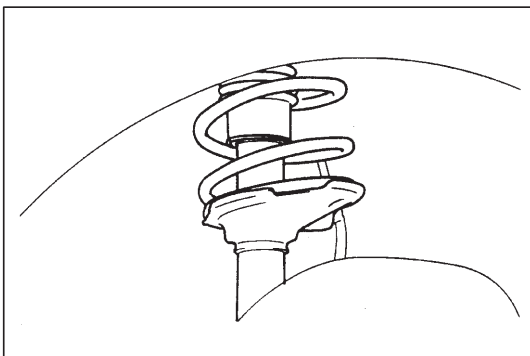
Propeller Shaft Inspection (4WD vehicle only)

- 1) Check propeller shaft connecting bolts for looseness. If looseness is found, tighten to specified torque.
- 2) Check propeller shaft joints for wear, play and damage. If any defect is found, replace.
- 3) Check propeller shaft center support (1) for biting of foreign matter, crack, abnormal noise and damage. If any defect is found, replace.



Drive Shaft Boot Inspection

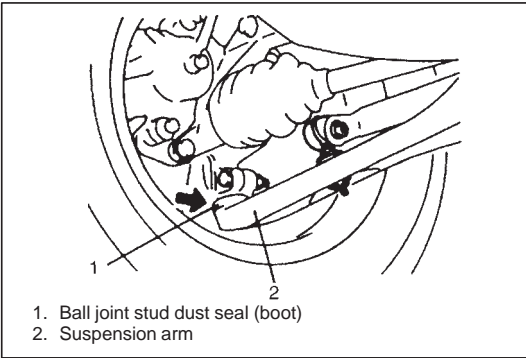
Check drive shaft boots (wheel side and differential side) for leakage, detachment, tear or any other damage. Replace boot as necessary.



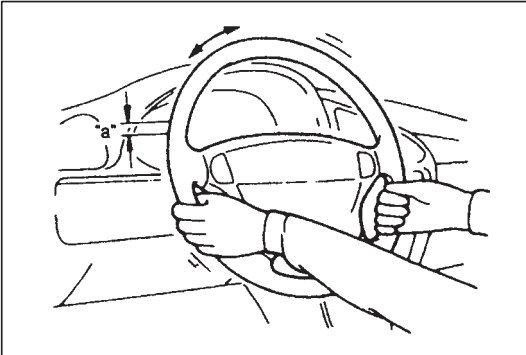
ITEM 6-4

Suspension System Inspection

- Inspect front & rear struts for evidence of oil leakage, dents or any other damage on sleeves; and inspect anchor ends for deterioration. Replace defective parts, if any.



- Check front and rear suspension systems for damaged, loose or missing parts; also for parts showing signs of wear or lack of lubrication.
Repair or replace defective parts, if any.
- Check front suspension arm ball joint stud dust seals for leakage, detachment, tear or any other damage.
Replace defective boot, if any.

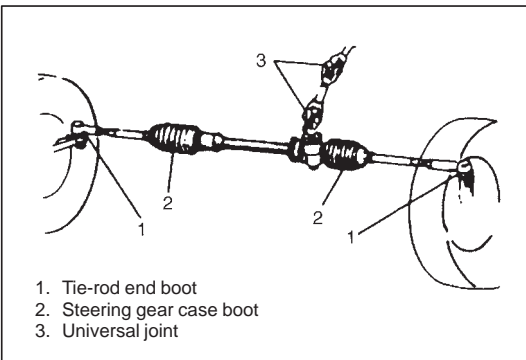


ITEM 6-5

Steering System Inspection

- 1) Check steering wheel for play and rattle, holding vehicle straight on ground.

Steering wheel play "a": 0 – 30 mm (0 – 1.1 in.)

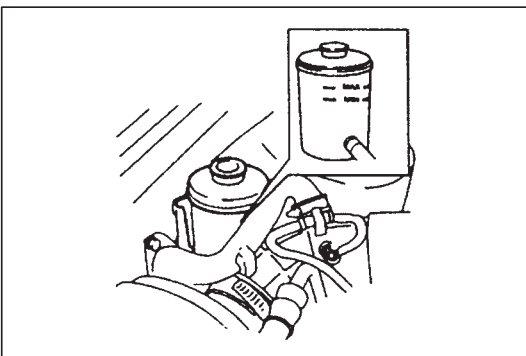


- 2) Check steering linkage for looseness and damage. Repair or replace defective parts, if any.
- 3) Check boots of steering linkage and steering gear case for damage (leaks, detachment, tear, etc.). If damage is found, replace defective boot with new one.
- 4) Check universal joints of steering shaft for rattle and damage. If rattle or damage is found, replace defective part with a new one.

ITEM 6-6

Power Steering (P/S) System Inspection (if equipped)

- 1) Visually check power steering system for fluid leakage and hose for damage and deterioration.
Repair or replace defective parts, if any.



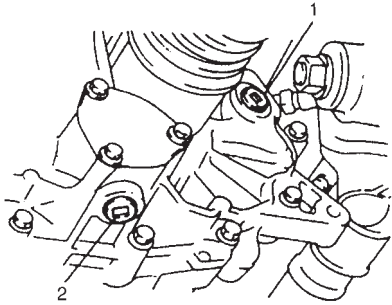
- 2) With engine stopped, check fluid level indicated on fluid tank, which should be between MAX and MIN marks. If it is lower than MIN, fill fluid up to MAX mark.

NOTE

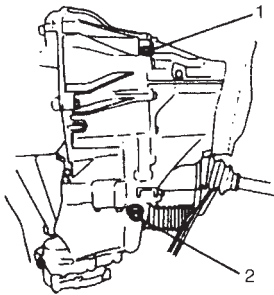
- Be sure to use specified P/S fluid.
- Fluid level should be checked when fluid is cool.

- 3) Visually check pump drive belt for cracks and wear.
- 4) Check belt for tension, referring to item 1-1 in this section.
If necessary, adjust or replace.

2WD



4WD



- 1. Oil filler/level plug
- 2. Oil drain plug

ITEM 6-7

Manual Transmission Oil Inspection and Change

[Inspection]

- 1) Inspect transmission case for evidence of oil leakage.
Repair leaky point if any.
- 2) Make sure that vehicle is placed level for oil level check.
- 3) Remove oil level plug of transmission.
- 4) Check oil level.
Oil level can be checked roughly by means of filler/level plug hole. That is, if oil flows out of level plug hole or if oil level is found up to hole when level plug is removed, oil is properly filled.
If oil is found insufficient, pour specified oil up to level hole.
For specified oil, refer to description of oil change under ON-VEHICLE SERVICE in SECTION 7A or 7A1.
- 5) Tighten level plug to specified torque.

[Change]

- 1) Place the vehicle level and drain oil by removing drain plug.
- 2) Apply sealant to drain plug and tighten drain plug to specified torque.
- 3) Pour specified oil up to level hole.
- 4) Tighten filler plug to specified torque.
For recommended oil, its amount and tightening torque data, refer to ON-VEHICLE SERVICE of SECTION 7A or 7A1.

ITEM 6-8

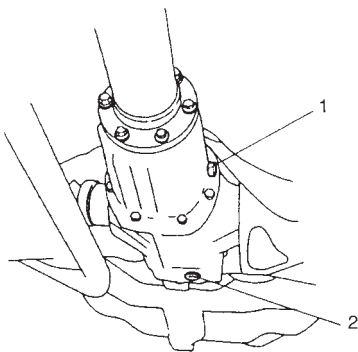
**Rear Differential Oil Inspection and Change
(4WD vehicle only)**

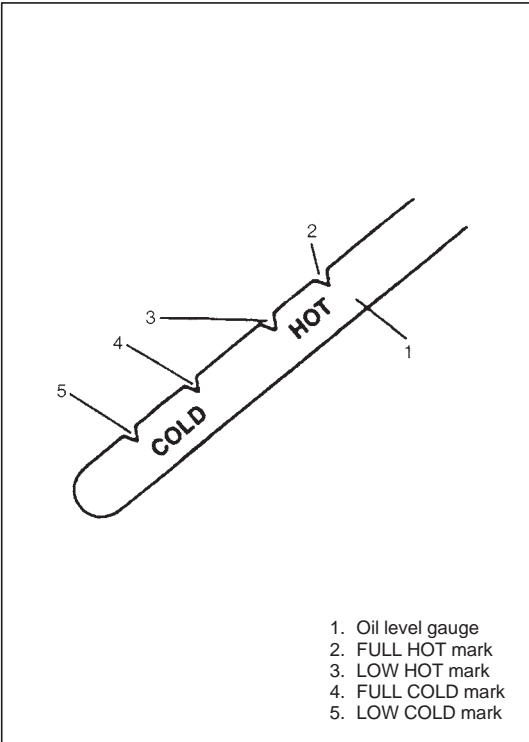
[Inspection]

- 1) Inspect rear differential case for evidence of oil leakage.
Repair leaky point, if any.
- 2) Make sure that the vehicle is placed level for oil level check.
- 3) Remove level plug (1) of differential. Oil level can be checked roughly by means of level plug hole.
That is, if oil flows out of level plug hole or if oil level is found up to hole when level plug is removed, oil is properly filled.
If oil is found insufficient, pour specified amount of specified oil as given in SECTION 7E.
- 4) Tighten it to specified torque.

[Change]

Place the vehicle level and drain oil by removing drain plug (2). Pour specified amount of specified oil, tighten drain plug and filler plug to specified torque, referring to ON-VEHICLE SERVICE in SECTION 7E.





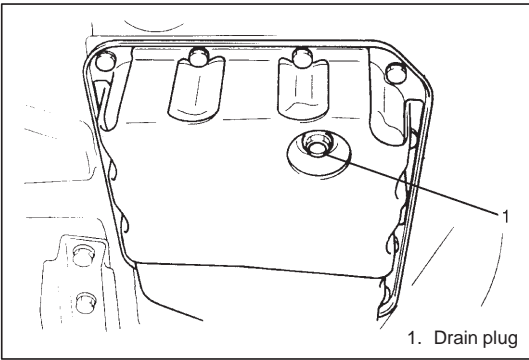
ITEM 6-9

Automatic Transmission

[Fluid level inspection]

- 1) Inspect transmission case for evidence of fluid leakage.
 Repair leaky point, if any.
- 2) Make sure that vehicle is placed level for fluid level check.
- 3) Check fluid level.

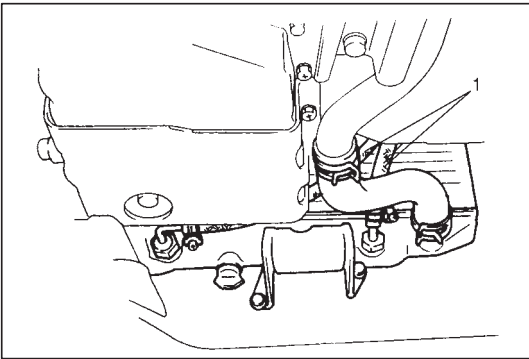
For fluid level checking procedure, refer to ON-VEHICLE SERVICE in SECTION 7B and be sure to perform it under specified conditions. If fluid level is low, replenish specified fluid.



[Fluid change]

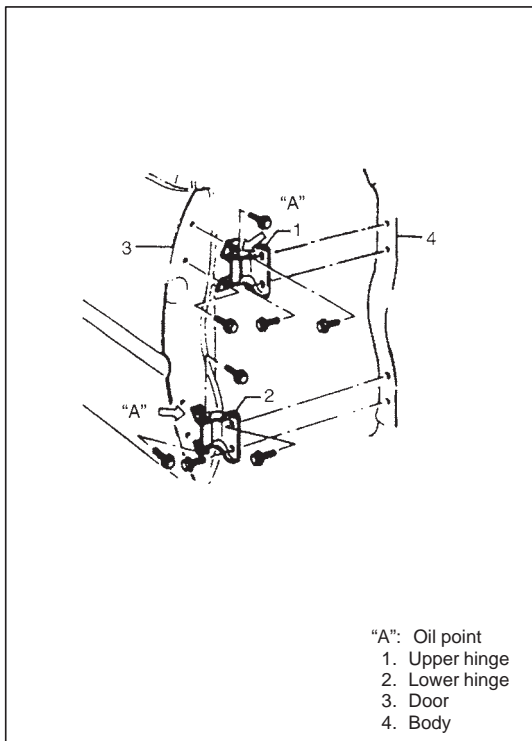
- 1) Perform steps 1) and 2) of above Fluid Level Inspection.
- 2) Change fluid. For its procedure, refer to ON-VEHICLE SERVICE in SECTION 7B.

CAUTION:
 Use of specified fluid is absolutely necessary.



[Fluid cooler hose change]

Replace inlet and outlet hoses (1) of cooler hose and their clamps. For replacement procedure, refer to ON-VEHICLE SERVICE in SECTION 7B.



ITEM 6-10

All Latches, Hinges and Locks Inspection

Doors

Check that each door of front, rear and back doors opens and closes smoothly and locks securely when closed.

If any malfunction is found, lubricate hinge and latch or repair door lock system.

Engine hood

Check that secondary latch operates properly (check that secondary latch keeps hood from opening all the way even when pulling hood release handle inside vehicle.). Also check that hood opens and closes smoothly and properly and hood locks securely when closed.

If any malfunction is found, lubricate hinge and latch, or repair hood lock system.

FINAL INSPECTION

WARNING:

When carrying out road tests, select a safe place where no man or no running vehicle is seen so as to prevent any accident.

Seats

Check that seat slides smoothly and locks securely at any position. Also check that reclining mechanism of front seat back allows it to be locked at any angle.

Seat Belt

Inspect belt system including webbing, buckles, latch plates, retractors and anchors for damage or wear. If "REPLACE BELT" label on belt is visible, replace belt.

Check that seat belt is securely locked.

Battery Electrolyte Level Check

Check that the electrolyte level of all battery cells is between the upper and lower level lines on the case. If battery is equipped with built-in indicator, check battery condition by the indicator.

Accelerator Pedal Operation

Check that pedal operates smoothly without getting caught or interfered by and other part.

Engine Start

Check engine start for readiness.

WARNING:

Before performing the following check, be sure to have enough room around the vehicle. Then, firmly apply both the parking brake and the regular brakes. Do not use the accelerator pedal. If the engine starts, be ready to turn off the ignition promptly. Take these precautions because the car could move without warning and possibly cause personal injury or property damage.

On automatic transmission vehicles, try to start the engine in each gear. The starter should crank only in "P" (Park) or "N" (Neutral).

On manual transmission vehicles, place the shift lever in "Neutral," depress clutch pedal fully and try to start.

Exhaust System Check

Check for leakage, cracks or loose supports.

Clutch (For manual transmission)

Check for the following.

- Clutch is completely released when depressing clutch pedal.
- No slipping clutch occurs when releasing pedal and accelerating.
- Clutch itself is free from any abnormal condition.

Gearshift or Select Lever (Transmission)

Check gear shift or select lever for smooth shifting to all positions and for good performance of transmission in any position.

With automatic transmission equipped vehicle, also check that shift indicator indicates properly according to which position select lever is shifted to.

CAUTION:

With automatic transmission equipped vehicle, make sure that vehicle is at complete stop when shifting select lever to "P" range position and release all brakes.

Brake

[Foot brake]

Check the following;

- that brake pedal has proper travel,
- that brake works properly,
- that it is free from noise,
- that vehicle does not pull to one side when brake is applied,
- and that brake does not drag.

[Parking brake]

Check that lever has proper travel.

WARNING:

With vehicle parked on a fairly steep slope, make sure nothing is in the way downhill to avoid any personal injury or property damage. Be prepared to apply regular brake quickly even if vehicle should start to move.

Check to ensure that parking brake is fully effective when the vehicle is stopped on the safe slope and brake lever is pulled all the way.

Steering

- Check to ensure that steering wheel is free from instability, or abnormally heavy feeling.
- Check that the vehicle does not wander or pull to one side.

Engine

- Check that engine responds readily at all speeds.
- Check that engine is free from abnormal noise and abnormal vibration.

Body, Wheels and Power Transmitting System

Check that body, wheels and power transmitting system are free from abnormal noise and abnormal vibration or any other abnormal condition.

Meters and Gauge

Check that speedometer, odometer, fuel meter, temperature gauge, etc. are operating accurately.

Lights

Check that all lights operate properly.

Windshield Defroster

Periodically check that air comes out from defroster outlet when operating heater or air conditioning. Set fan switch lever to "HI" position and mode lever to defroster position for this check.

RECOMMENDED FLUIDS AND LUBRICANTS

Engine oil	SE, SF, SG, SH or SJ (Refer to engine oil viscosity chart in item 1-4.)
Engine coolant	Ethylene-glycol base coolant ("Antifreeze/Anticorrosion coolant")
Brake fluid	DOT3
Manual transmission oil	See SECTION 7A
Rear differential oil	See SECTION 7E
Automatic transmission fluid	An equivalent of DEXRON®-IIE or DEXRON®-III
Power steering fluid	See material table on SECTION 3B1
Door hinges	Engine oil
Engine hood latch	Engine oil
Key lock cylinder	Spray lubricant