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Section 00

Precautions

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Precautions

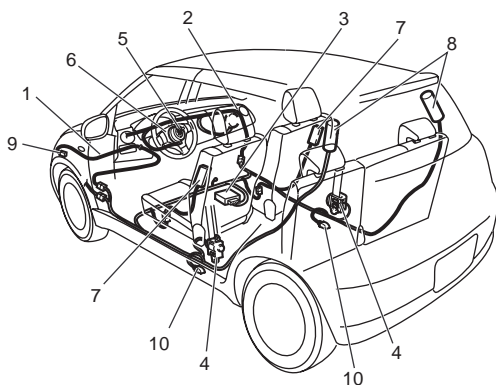
Precautions

Precautions for Vehicles Equipped with a Supplemental Restraint (Air Bag) System

S7RS0B0000001

▲ 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 Air Bag System section. Failure to follow proper procedures could result in possible air bag system activation, personal injury, damage to parts or air bag system being unable to activate 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 system activation.
- Do not modify the steering wheel, dashboard, or any other air bag system components. 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 beforehand to avoid component damage or unintended air bag system activation.



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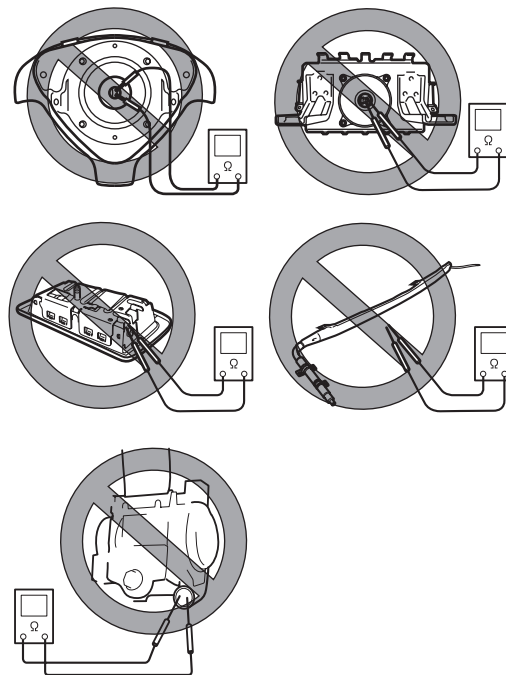
1. Air bag wire harness (in floor, main and instrument panel harness)	6. Driver air bag (inflator) module
2. Passenger air bag (inflator) module	7. Side air bag (inflator) module (if equipped)
3. SDM	8. Curtain air bag (inflator) module (if equipped)
4. Seat belt pretensioner	9. Forward sensor
5. Contact coil	10. Side sensor (if equipped)

Diagnosis

- When troubleshooting air bag system, be sure to follow "Diagnosis" in Air Bag System section. Bypassing these procedures may result in extended diagnostic time, incorrect diagnosis, and incorrect parts replacement.
- Never use electrical test equipment other than that specified.

▲ WARNING

Never attempt to measure the resistance of the air bag (inflator) modules (driver, passenger, side and curtain) and seat belt pretensioners (driver and passenger). It is very dangerous as the electric current from the tester may deploy the air bag or activate the pretensioner.



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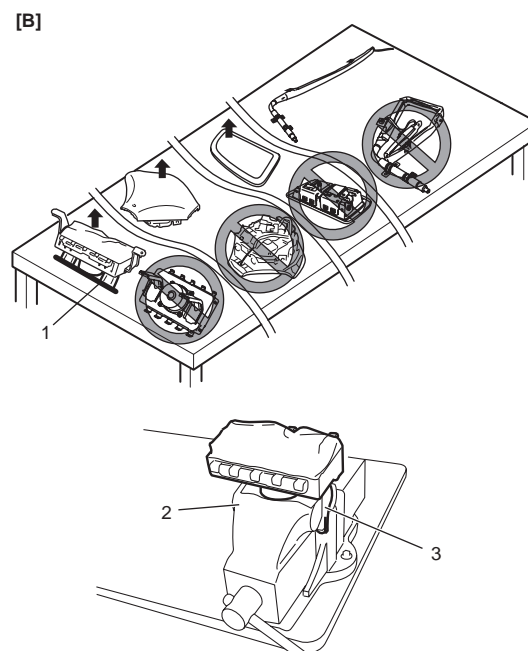
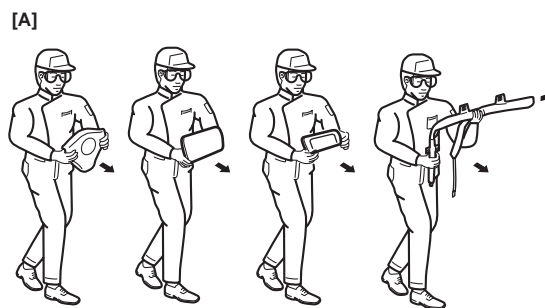
Servicing and Handling

▲ WARNING

Many of service procedures require disconnection of “A/BAG” fuse and all air bag (inflator) module(s) from initiator circuit to avoid an accidental deployment.

Driver, Passenger, Side and Curtain 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 (1) or use the workbench vise (2) to hold it securely at its lower mounting bracket (3). It is also prohibited to place anything on top of the trim cover and stack air bag (inflator) modules. 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, passenger, side and curtain). If disposal is necessary, be sure to deploy them according to deployment procedures described in “Air Bag (Inflator) Module and Seat Belt Pretensioner Disposal in Section 8B” 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.



I4RS0A000003-02

[A]: Always carry air bag (inflator) module with trim cover (air bag opening) away from body.

[B]: Always place air bag (inflator) module on workbench with trim cover (air bag opening) up, away from loose objects.

▲ WARNING

SDM

- For handling and storage of a SDM, select a place where the ambient temperature below 65 °C (150 °F), without high humidity and away from electric noise.
- 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.

▲ WARNING

Driver and Passenger Seat Belt Pretensioners

- For handling and storage of a live seat belt pretensioner, select a place where the ambient temperature below 65 °C (150 °F), without high humidity and away from electric noise.
- Never carry seat belt pretensioner by wire or connector of pretensioner. When placing a live seat belt pretensioner on the workbench or some place like that, never put something on seat belt pretensioner. Otherwise, personal injury may result.
- Never dispose of live (inactivated) seat belt pretensioners (drive and passenger). If disposal is necessary, be sure to activate them according to activation procedures described in “Air Bag (Inflator) Module and Seat Belt Pretensioner Disposal in Section 8B” before disposal.
- The seat belt pretensioner immediately after activation is very hot. Wait for at least half an hour to cool it off before proceeding the work.
- With many service procedures, gloves and safety glasses should be worn to prevent any possible irritation of the skin or eyes.

- Even when the accident was light enough not to cause air bags to activate, be sure to inspect system parts and other related parts according to instructions under “Repair and Inspection Required after Accident in Section 8B”.
- 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, passenger, side and curtain), seat belt pretensioners (driver and passenger), forward sensor, side sensors or SDM, be careful not to drop it or apply an impact to it. If an excessive impact was applied, 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, passenger, side and curtain) or seat belt pretensioners (drive and passenger), wipe off immediately with a dry cloth.
- Air bag wire harness is included in floor and instrument panel wire harnesses. Air bag wire harness branched off from floor and instrument panel wire harnesses can be identified easily as it is covered with a yellow protection tube and it has yellow connectors. 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 flow requests it, as this will set a DTC.
- Never use air bag system component parts from another vehicle.
- When using electric welding, be sure to disconnect all air bag (inflator) module connectors and pretensioner connectors from air bag wire harness respectively.
- 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 in Section 8B”.

General Precautions

S7RS0B0000002

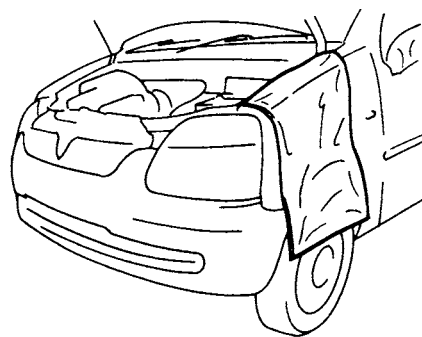
The WARNING and CAUTION describe some general precautions that you should observe when servicing a vehicle. These general precautions apply to many of the service procedures, and they will not necessarily be repeated with each procedure to which they apply.

▲ WARNING

- Whenever raising a vehicle for service, be sure to follow the instructions under “Vehicle Lifting Points in 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.

- Be sure to observe following instructions when handling service materials such as fuel, oil, fluid, coolant, grease, sealant, thread lock cement, etc. Otherwise, your health may be ruined.
 - Whenever handling any of these service materials, wear safety glasses to protect your eyes. If it gets into your eye, it may cause inflammation.
 - Whenever handling any of these service materials, wear moisture-proof gloves to protect your skin. If it adheres to your skin, it may cause inflammation.
 - Do not swallow any of these service materials. It would cause diarrhea or nausea.
 - Keep all these materials out of children’s reach.
- 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.

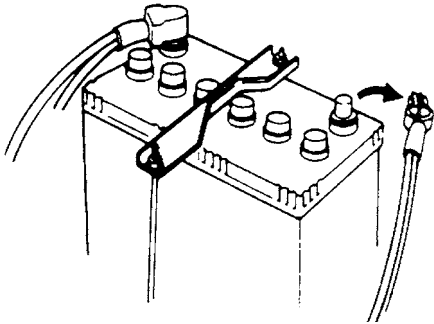
- Before starting any service work, cover fenders, seats and any other parts that are likely to get scratched or stained during servicing. Also, be aware that what you wear (e.g., buttons) may cause damage to the vehicle’s finish.



I2RH01010025-01

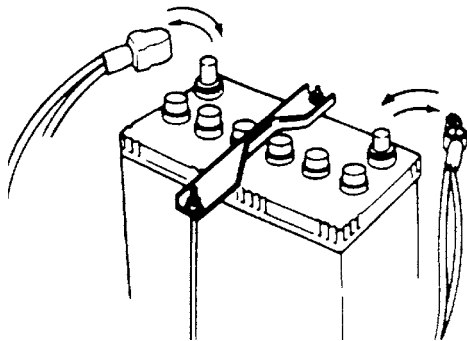
00-5 Precautions:

- When performing service to electrical parts that does not require use of battery power, disconnect the negative cable of the battery.
- When disconnecting the negative cable from the battery, be careful to the following.
 - Check and record DTCs in ECM and HVAC control module if necessary before disconnecting.
 - Record displayed contents of the clock and/or audio system, etc. before disconnecting and reset it as before after connecting.
 - For vehicle equipped with electric throttle body system, perform electric throttle body system calibration referring to “Electric Throttle Body System Calibration in Section 1C” after reconnecting the negative cable to the battery.
 - For vehicle equipped with ESP®, calibrate steering angle sensor referring to “Sensor Calibration in Section 4F” after reconnecting the negative cable to the battery.



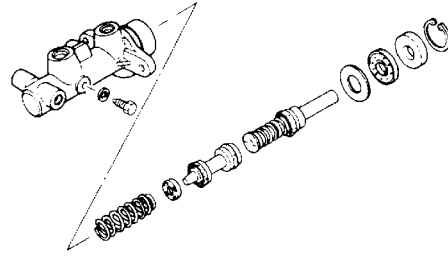
I2RH01010026-01

- 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.



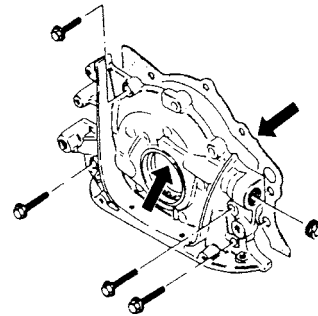
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- When removing parts that are to be reused, be sure to keep them arranged in an orderly manner so that they may be reinstalled in the proper order and position.



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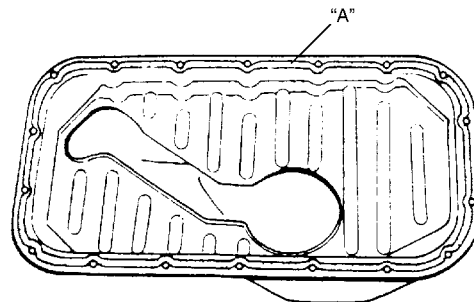
- Whenever you use oil seals, gaskets, packing, O-rings, locking washers, split pins, self-locking nuts, and certain other parts as specified, be sure to use new ones. Also, before installing new gaskets, packing, etc., be sure to remove any residual material from the mating surfaces.



I2RH01010029-01

- 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”: Water tight sealant 99000-31250 (SUZUKI Bond No.1207F)



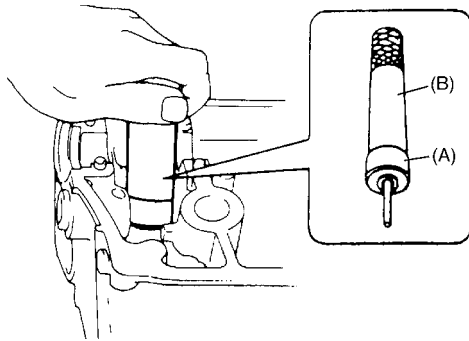
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- Be sure to use special tools when instructed.

Special tool

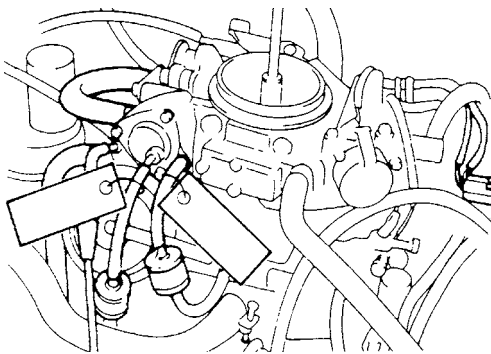
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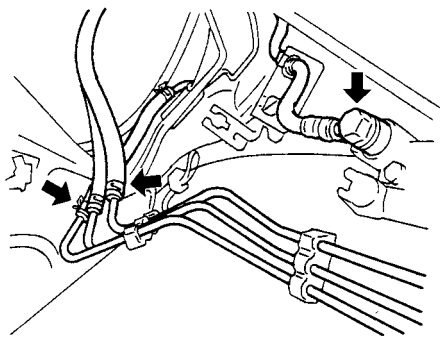
I2RH01010031-01

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



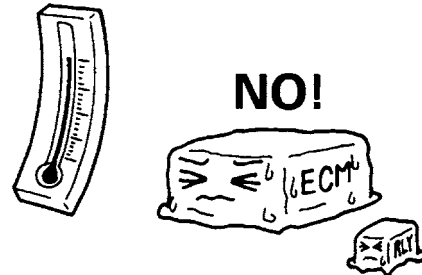
I2RH01010032-01

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



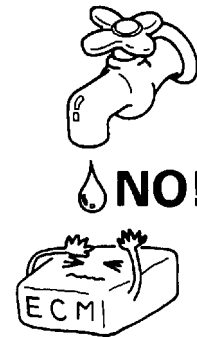
I2RH01010033-01

- 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 (176 °F) in the vicinity of the electrical parts, remove the heat sensitive electrical part(s) beforehand.



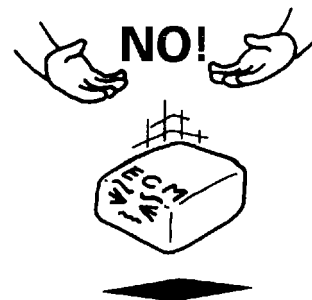
I2RH01010034-01

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



I2RH01010035-01

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



I2RH01010036-01

Warning for Wheel (with tire) Removal

S7RS0B0000003

▲ WARNING

When removing any of these wheels installed with wheel bolts, never remove all wheel bolts at the same time. Leave at least 1 bolt for each wheel as it is to prevent wheel from dropping. When removing this remaining 1 bolt, hold wheel and tire so as not to allow them to come off.

Warning for Handling Emergency Flat Tire Repair Kit

S7RS0B0000004

▲ WARNING

If vehicle is equipped with Emergency Flat Tire Repair Kit instead of spare tire, be sure to observe "Precaution for Emergency Flat Tire Repair Kit in Section 2D" when handling Emergency Flat Tire Repair Kit and repairing flat tire. Otherwise, your health may be ruined or it will be impossible to repair flat tire.

Precautions for Catalytic Converter

S7RS0B0000005

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 Installing Mobile Communication Equipment

S7RS0B0000006

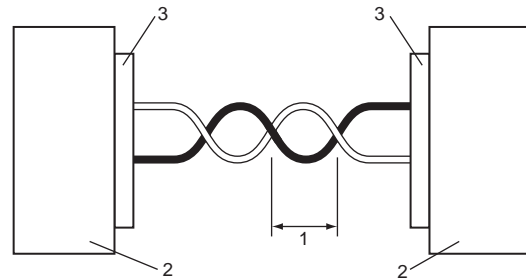
When installing mobile communication equipment such as CB (Citizens-Band)-radio or cellular-telephone, be sure to observe the following precautions. Failure to follow cautions may adversely affect electronic control system.

- 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 for CAN Communication System

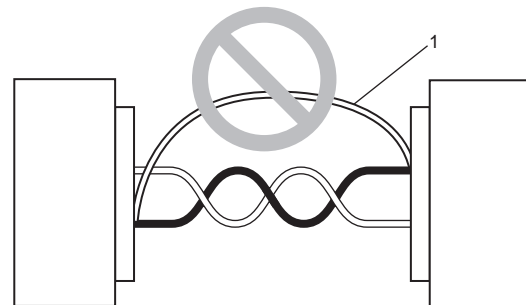
S7RS0B0000007

- The loose (1) in the wire harnesses twist of the CAN lines except around the connector (3) should be within 100 mm (3.9 in.). Refer to the wiring diagram for the CAN lines discrimination. Excessively-loosed lines may be influenced by the electric noise.



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- Do not connect terminals of the CAN line using a bypass wire (1). Otherwise, the CAN line may be influenced by the electric noise.

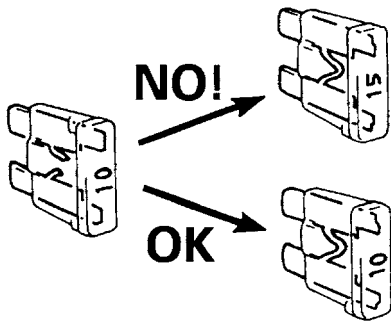


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Precautions for Electrical Circuit Service

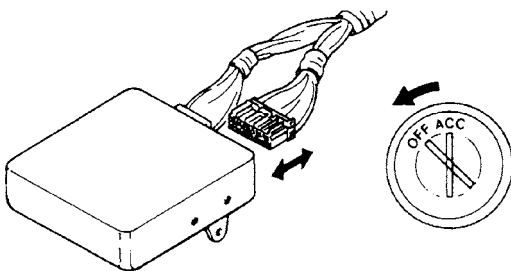
S7RS0B0000008

- 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.



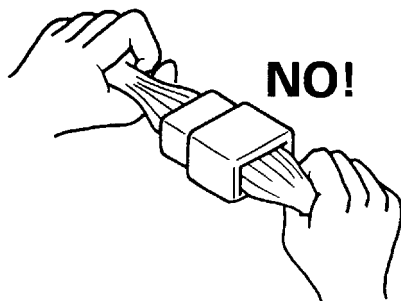
I2RH01010038-01

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



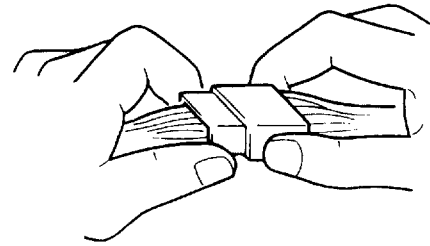
I2RH01010039-01

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



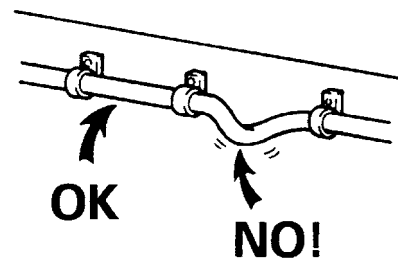
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- When connecting connectors, also hold connectors and put them together until they lock securely (a click is heard).



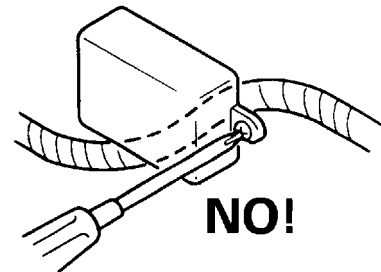
I2RH01010041-01

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



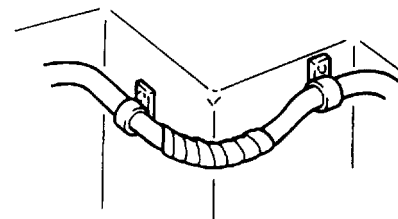
I2RH01010042-01

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



I2RH01010043-01

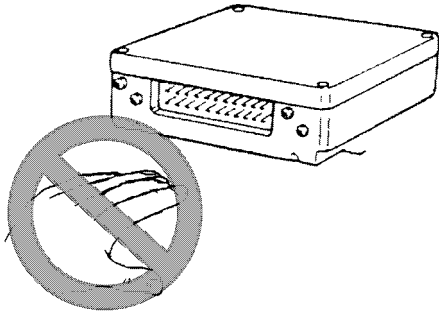
- To avoid damage to the harness, protect its part which may contact against a part forming a sharp angle by winding tape or the like around it.



I2RH01010044-01

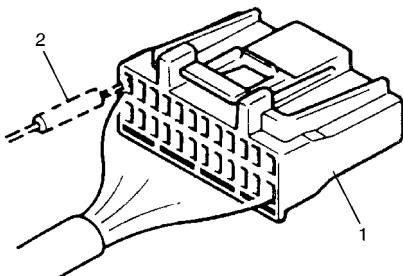
00-9 Precautions:

- 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.



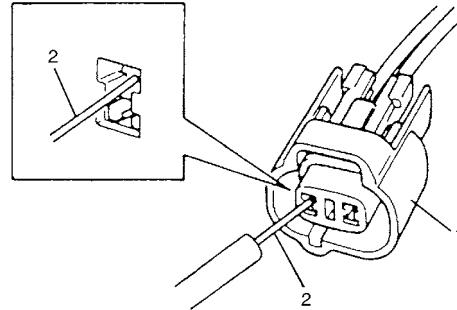
I3RMOA000004-01

- 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, be sure to insert the probe (2) from the wire harness side (backside) of the connector (1).



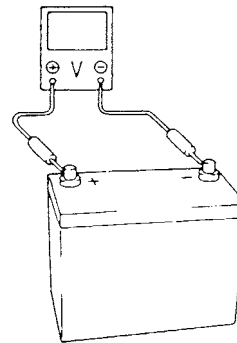
I2RH01010046-01

- 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 male terminal is supposed to fit.



I2RH01010047-01

- 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 at each terminal, 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.



I2RH01010048-01

Air Bag Warning

S7RS0B0000009

⚠ 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, Wiring and Connectors Location in Section 8B” in order to confirm whether you are performing service on or near the air bag system components or wiring. Please observe all WARNINGS in Air Bag System section and “Precautions on Service and Diagnosis of Air Bag System in Section 8B” 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).

Air Bag System Service Warning

S7RS0B0000010

⚠ WARNING

- Service on or around the air bag system components or wiring must be performed only by an authorized SUZUKI dealer. Please observe all WARNINGS in Air Bag System section and “Precautions on Service and Diagnosis of Air Bag System in Section 8B” before performing service on or around the air bag system components or wiring. Failure to follow WARNINGS could result in unintended activation of the system or could render the system inoperative. Either of these two conditions may result in severe injury.
- The procedures in the air bag system section must be followed in the order listed to disable the air bag system temporarily and prevent false DTCs from setting. Failure to follow procedures could result in possible activation of the air bag system, personal injury or otherwise unneeded air bag system repairs.

Fastener Caution

S7RS0B0000011

⚠ CAUTION

When fasteners are removed, always reinstall them at the same location from which they were removed. If a fastener needs to be replaced, use the correct part number fastener for that application. If the correct part number fastener is not available, a fastener of equal size and strength (or stronger) may be used. Fasteners that are not reused, and those requiring thread-locking compound, will be called out. The correct torque value must be used when installing fasteners that require it. If the conditions are not followed, parts or system damage could result.

Suspension Caution

S7RS0B0000012

⚠ CAUTION

- All suspension fasteners are an important attaching part in that it could affect the performance of vital parts and systems, and/or could result in major repair expense. They must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of this part.
- Never attempt to heat, quench or straighten any suspension part. Replace it with a new part or damage to the part may result.

Wheels and Tires Caution

S7RS0B0000013

⚠ CAUTION

All wheel fasteners are important attaching parts in that they could affect the performance of vital parts and systems, and/or could result in major repair expense. They must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of all parts. There is to be no welding as it may result in extensive damage and weakening of the metal.

Precaution for Vehicle Equipped with ESP® System

S7RS0B0000015

- When testing with any of the following equipments (when vehicle is tested by rotating wheels (tires) under vehicle stop), be sure to deactivate ESP® system referring to “Precautions in Speedometer Test or Other Tests in Section 4F” to obtain correct data.
 - 2 or 4-wheel chassis dynamometer
 - Speedometer tester
 - Brake tester
 - Etc.

ESP® control module

- When ESP® control module is removed / installed, do not use impact wrenches which generate shock or impact to avoid damaging sensors in ESP® control module.
- When any of the following operation is done, calibrate steering angle sensor referring to “Sensor Calibration in Section 4F”.
 - When battery or dome fuse is removed.
 - When steering angle sensor is replaced.

Brake Caution

S7RS0B0000014

⚠ CAUTION

All brake fasteners are important attaching parts in that they could affect the performance of vital parts and systems, and/or could result in major repair expense. They must be replaced with one of same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of all parts. There is to be no welding as it may result in extensive damage and weakening of the metal.

Repair Instructions

Electrical Circuit Inspection Procedure

S7RS0B0006001

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.

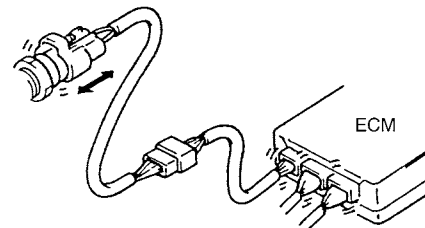
Open Circuit Check

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

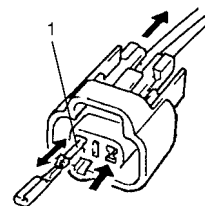
When checking system circuits including an electronic control unit such as ECM, TCM, ABS control module, etc., it is important to perform careful check, starting with items which are easier to check.

- 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.



I2RH01010049-01

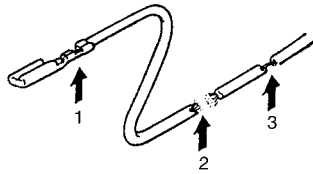
- 3) Using a test male terminal, check both terminals of the circuit being checked for contact tension of its female terminal. Check each terminal visually for poor contact (possibly caused by dirt, corrosion, rust entry of foreign object, etc.). At the same time, check to make sure that each terminal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



I2RH01010050-01

1. Check contact tension by inserting and removing just for once.

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

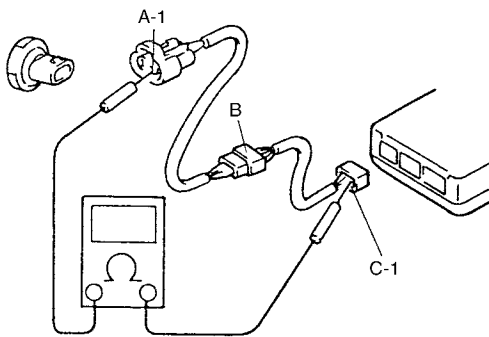


I2RH01010051-01

1. Looseness of crimping
2. Open
3. Thin wire (single strand of wire)

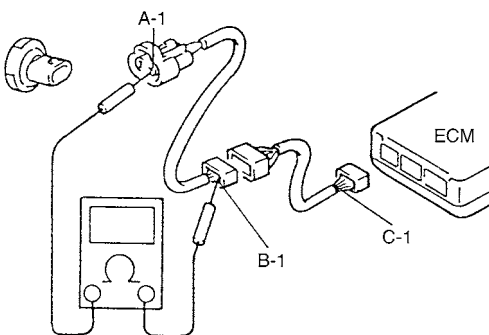
Continuity Check

- 1) 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".



I2RH01010052-01

- 2) 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.



I2RH01010053-01

Voltage Check

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

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

- a) If measurements were taken as shown in the figure and results were as listed in the following, 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

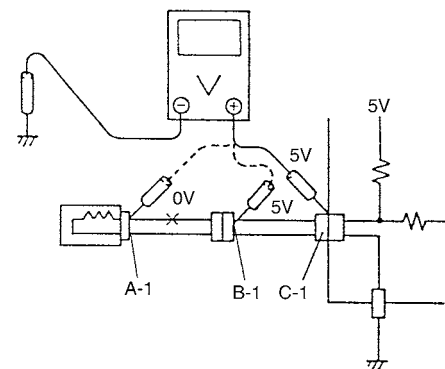
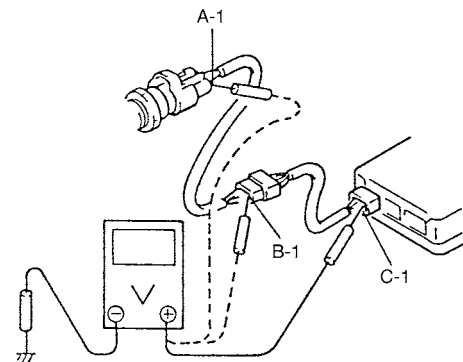
- b) Also, if measured values were as listed in the following, it means that there is a resistance (abnormality) of such level that corresponds to the voltage drop in the circuit between terminals "A-1" and "B-1".

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



I5RH01000005-01

Short Circuit Check (Wire Harness to Ground)

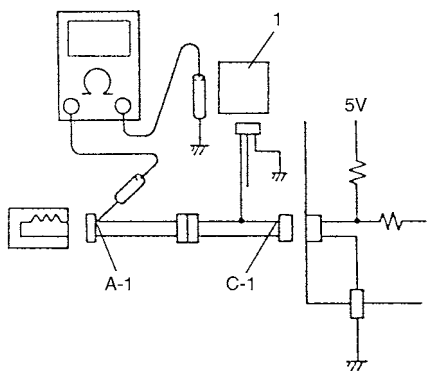
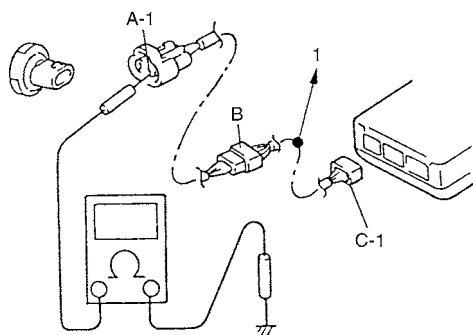
- 1) Disconnect negative (-) cable at battery.
- 2) Disconnect connectors at both ends of the circuit to be checked.

NOTE

If the circuit to be checked is connected to other parts (1), disconnect all connectors of those parts.

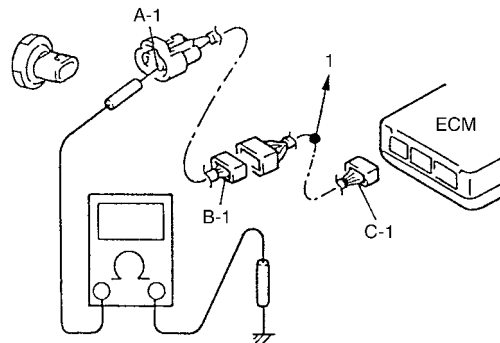
Otherwise, diagnosis will be misled.

- 3) Measure resistance between terminal at one end of circuit ("A-1" terminal in the 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.



I5RH01000006-01

- 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".



I2RH01010056-01

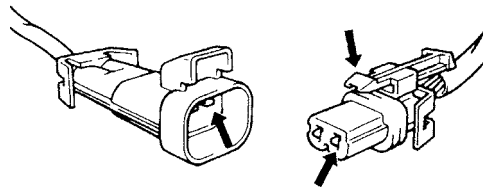
1. To other parts

Intermittent and Poor Connection Inspection

S7RS0B0006002

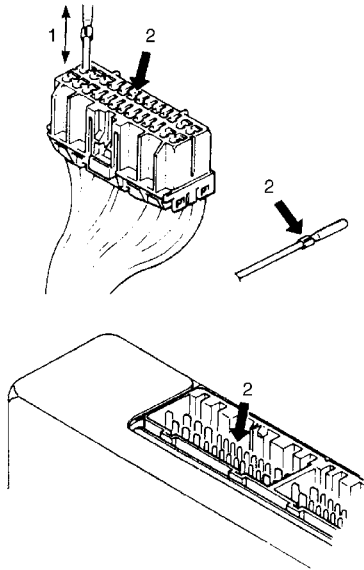
Most intermittent are caused by faulty electrical connections or wiring, although a sticking relay or solenoid can occasionally be at fault. When checking it for proper connection, perform careful check of suspect circuits for:

- 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.



I2RH01010057-01

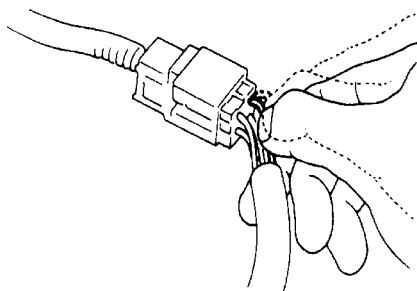
- Improperly formed or damaged terminals.
Check each connector terminal in problem circuits carefully to ensure good contact tension by using the corresponding mating terminal.
If contact tension is not enough, reform it to increase contact tension or replace.



I5RH01000007-01

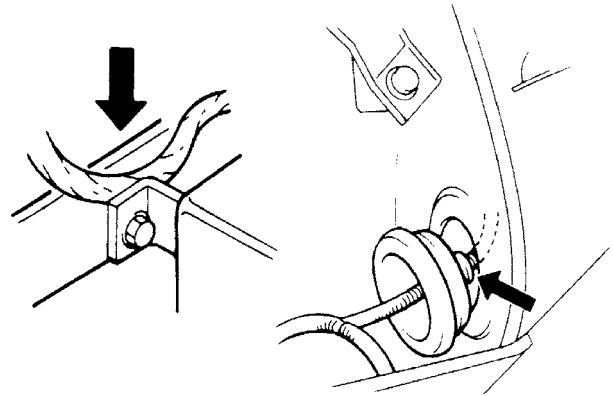
- | |
|---|
| 1. Check contact tension by inserting and removing just once. |
| 2. Check each terminal for bend and proper alignment. |

- 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.



I2RH01010059-01

- 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.



I2RH01010060-01

Section 0

General Information

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General Information

General Description

Abbreviations

S7RS0B0101001

A:
ABDC: After Bottom Dead Center
ABS: Anti-lock Brake System
AC: Alternating Current
A/C: Air Conditioning
A-ELR: Automatic-Emergency Locking Retractor
A/F: Air Fuel Mixture Ratio
ALR: Automatic Locking Retractor
API: American Petroleum Institute
APP sensor: Accelerator Pedal Position Sensor
A/T: Automatic Transmission, Automatic Transaxle
ATDC: After Top Dead Center
ATF: Automatic Transmission Fluid, Automatic Transaxle Fluid
B:
B+: Battery Positive Voltage
BBDC: Before Bottom Dead Center
BCM: Body Electrical Control Module
BDC: Bottom Dead Center
BTDC: Before Top Dead Center
C:
CAN: Controller Area Network
CKT: Circuit
CKP Sensor: Crankshaft Position Sensor
CMP Sensor: Camshaft Position Sensor
CO: Carbon Monoxide
CPP Switch: Clutch Pedal Position Switch (Clutch Switch, Clutch Start Switch)
CPU: Central Processing Unit
CRS: Child Restraint System
D:
DC: Direct Current
DLC: Data Link Connector (Assembly Line Diag. Link, ALDL, Serial Data Link, SDL)
DOHC: Double Over Head Camshaft
DOJ: Double Offset Joint
DRL: Daytime Running Light
DTC: Diagnostic Trouble Code (Diagnostic Code)
E:
EBCM: Electronic Brake Control Module, ABS Control Module
EBD: Electronic Brake Force Distribution
ECM: Engine Control Module
ECT Sensor: Engine Coolant Temperature Sensor (Water Temp. Sensor, WTS)
EFE Heater: Early Fuel Evaporation Heater (Positive Temperature Coefficient, PTC Heater)
EGR: Exhaust Gas Recirculation
EGRT Sensor: EGR Temperature Sensor (Recirculated Exhaust Gas Temp. Sensor, REGTS)
ELR: Emergency Locking Retractor
ESP®: Electronic Stability Program
EPS: Electronic Power Steering
EVAP: Evaporative Emission

EVAP Canister: Evaporative Emission Canister (Charcoal Canister)




















F:
4WD: 4 Wheel Drive
G:
GEN: Generator
GND: Ground
GPS: Global Positioning System
H:
HVAC: Heating, Ventilating and Air Conditioning
HC: Hydrocarbons
HO2S: Heated Oxygen Sensor
I:
IAC Valve: Idle Air Control Valve (Idle Speed Control Solenoid Valve, ISC Solenoid Valve)
IAT Sensor: Intake Air Temperature Sensor (Air temperature Sensor, ATS)
ICM: Immobilizer Control Module
IG: Ignition
ISC Actuator: Idle Speed Control Actuator
L:
LH: Left Hand
LHD: Left Hand Drive Vehicle
LSPV: Load Sensing Proportioning Valve
M:
MAF Sensor: Mass Air Flow Sensor (Air Flow Sensor, AFS, Air Flow Meter, AFM)
MAP Sensor: Manifold Absolute Pressure Sensor (Pressure Sensor, PS)
Max: Maximum
MFI: Multiport Fuel Injection (Multipoint Fuel Injection)
Min: Minimum
MIL: Malfunction Indicator Lamp ("SERVICE ENGINE SOON" Light)
M/T: Manual Transmission, Manual Transaxle
N:
NOx: Nitrogen Oxides
O:
OBD: On-Board Diagnostic System (Self-Diagnosis Function)
O/D: Overdrive
OHC: Over Head Camshaft
O2S: Oxygen Sensor
P:
PCM: Powertrain Control Module
PCV: Positive Crankcase Ventilation
PNP: Park / Neutral Position
P/S: Power Steering
PSP Switch: Power Steering Pressure Switch (P/S Pressure Switch)
R:
RH: Right Hand
RHD: Right Hand Drive Vehicle
S:
SAE: Society of Automotive Engineers

SAS: Steering Angle Sensor
SDM: Sensing and Diagnostic Module (Air Bag Controller, Air bag Control Module)
SDT: Smart Diagnostic Tester
SFI: Sequential Multiport Fuel Injection
SOHC: Single Over Head Camshaft
T:
TBI: Throttle Body Fuel Injection (Single-Point Fuel Injection, SPI)
TCC: Torque Converter Clutch
TCM: Transmission Control Module (A/T Controller, A/T Control Module)
TDC: Top Dead Center
TP Sensor: Throttle Position Sensor

TVV: Thermal Vacuum Valve (Thermal Vacuum Switching Valve, TVSV, Bimetal Vacuum Switching Valve, BVSV)
TWC: Three Way Catalytic Converter (Three Way Catalyst)
2WD: 2 Wheel Drive
U:
USB: Universal Serial Bus
V:
VIN: Vehicle Identification Number
VSS: Vehicle Speed Sensor
VVT: Variable Valve Timing (Camshaft Position Control)
W:
WU-OC: Warm Up Oxidation Catalytic Converter
WU-TWC: Warm Up Three Way Catalytic Converter

Symbols

S7RS0B0101002

Symbol	Definition	Symbol	Definition
	Tightening torque		Apply SUZUKI BOND NO. 1216B 99000-31230
	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 99000-25011		
	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 99000-25121		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. 1207F 99000-31250		Note on reassembly
	Apply SUZUKI BOND NO. 1217G 99000-31260		

Wire Color Symbols

S7RS0B0101003

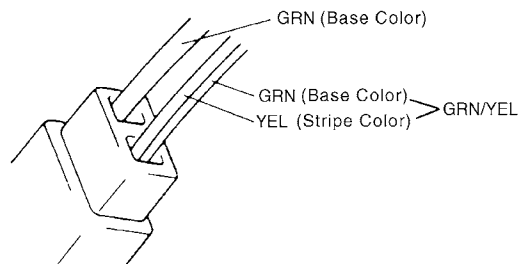
Symbol	Wire Color	Symbol	Wire Color
B	BLK	O, Or	ORN
Bl	BLU	R	RED
Br	BRN	W	WHT
G	GRN	Y	YEL
Gr	GRY	P	PNK
Lbl	LT BLU	V	PPL
Lg	LT GRN		

0A-3 General Information:

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. "GRN").

The dual-colored wire uses two color symbols (i.e. "GRN/YEL"). The first symbol represents the base color of the wire ("GRN" in the figure) and the second symbol represents the color of the stripe ("YEL" in the figure).



I2RH01010010-01

Fasteners Information

S7RS0B0101004

Metric Fasteners

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

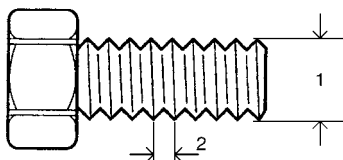
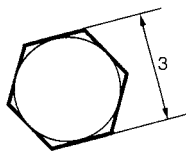
⚠ CAUTION

Even when the nominal diameter (1) of thread is the same, the thread pitch (2) or the width across flats (3) may vary between ISO and JIS. Refer to JIS-TO-ISO Main Fasteners Comparison Table below for the difference. Installing a mismatched bolt or nut will cause damage to the thread.

Before installing, check the thread pitch for correct matching and then tighten it by hand temporarily. If it is tight, recheck the thread pitch.

JIS-TO-ISO Main Fasteners Comparison Table

		Nominal diameter				
		M6	M8	M10	M12	M14
JIS	Thread pitch	1.0	1.25	1.25	1.25	1.5
	Width across flats	10	12	14	17	19
ISO	Thread pitch	1.0	1.25	1.5	1.5	1.5
	Width across flats	10	13	16	18	21

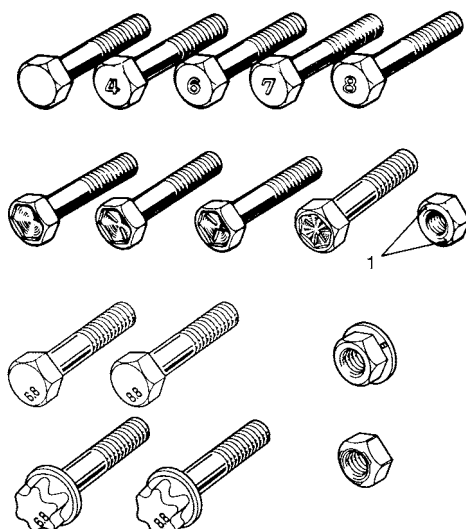


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Fastener Strength Identification

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. Metric bolts: Identification class numbers or marks correspond to bolt strength (increasing numbers represent increasing strength).



I5RH01010001-01

1. Nut strength identification

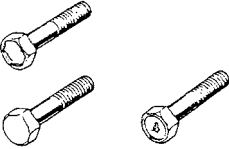

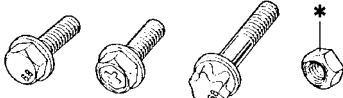

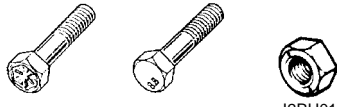

Standard Tightening Torque

Each fastener should be tightened to the torque specified in each section. 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 following chart.
- The following chart is applicable only where the fastened parts are made of steel light alloy.

Tightening torque chart

Strength	Unit	Thread diameter (Nominal diameter) (mm)								
		4	5	6	8	10	12	14	16	18
A equivalent of 4T strength fastener  I2RH01010012-01	N·m	1.5	3.0	5.5	13	29	45	65	105	160
	kgf·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  I2RH01010013-01	N·m	2.4	4.7	8.4	20	42	80	125	193	280
	kgf·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 *: Self-lock nut (6 strength)  I2RH01010014-01	N·m	2.4	4.9	8.8	21	44	84	133	203	298
	kgf·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  I2RH01010015-01	N·m	2.3	4.5	10	23	50	85	135	210	240
	kgf·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 bolt (8 strength nut) without flange  I2RH01010016-01	N·m	3.1	6.3	11	27	56	105	168	258	373
	kgf·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 bolt (8 strength nut) with flange  I2RH01010017-01	N·m	3.2	6.5	12	29	59	113	175	270	395
	kgf·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

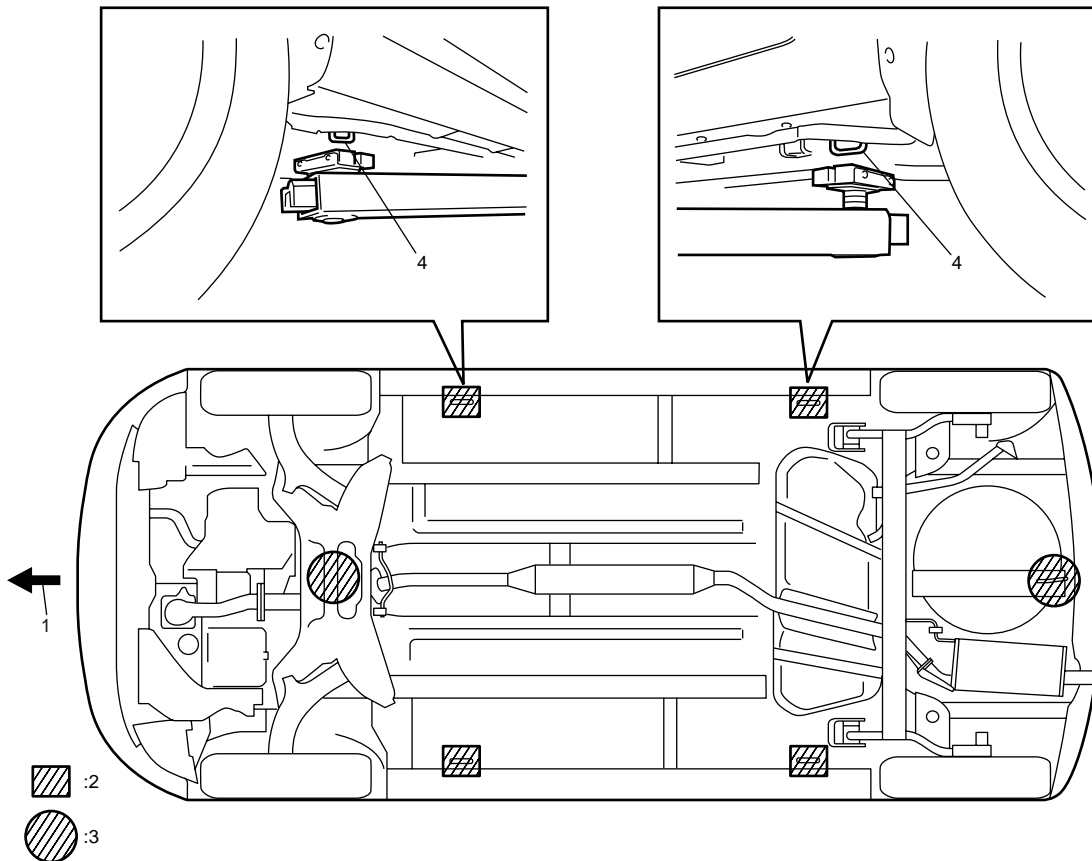
*:Self-lock nut

Vehicle Lifting Points

▲ WARNING

- Before applying hoist to underbody, always take vehicle balance throughout service into consideration. Vehicle balance on hoist may change depending on 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



1. Vehicle front	3. Floor jack position
2. Support position for frame contact hoist and safety stand	4. Body mounting stay

When Using Floor Jack

⚠ WARNING

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.

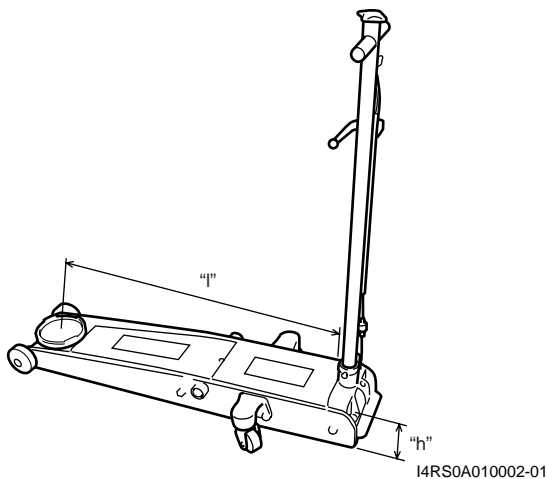
⚠ CAUTION

- Never apply jack against rear suspension parts (i.e., stabilizer, etc.) or vehicle floor, or it may get deformed.
- When jacking up the front end, be sure to use an air type floor jack with the following specified height or a manual type floor jack of the following size. Otherwise, the jack may cause the bumper or vehicle body panel a damage.

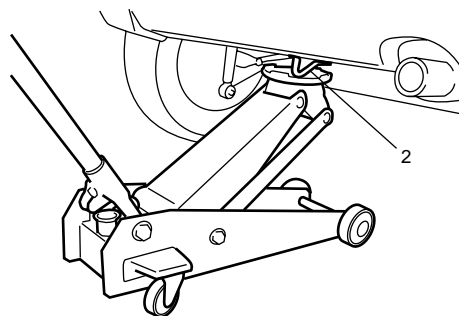
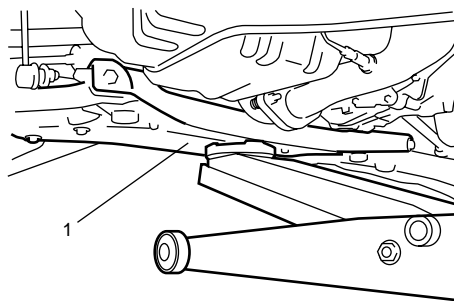
Jack size

Height "h": under 145 mm (under 5.71 in.)

Length "l": above 900 mm (above 35.4 in.)

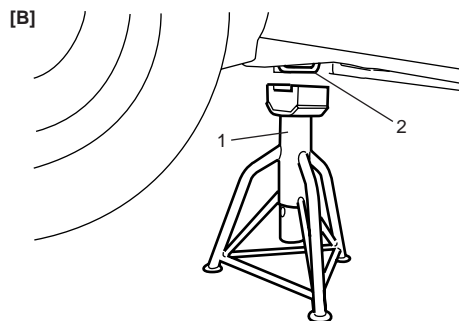
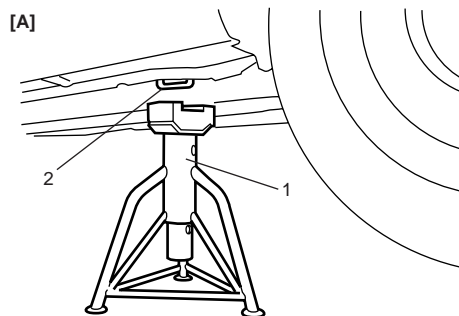


In raising front or rear vehicle end off the floor by jacking, be sure to put the jack against front suspension frame (1) or rear jacking bracket (2).



I4RS0A010003-01

To perform service with either front or rear vehicle end jacked up, be sure to place safety stands (1) under body mounting stay (2) so that vehicle body is securely supported. And then check to ensure that body mounting stay (2) does not slide on safety stands (1) and the vehicle is held stable for safety's sake.



I4RS0A010004-01

[A]: Front	[B]: Rear
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Engine Supporting Points

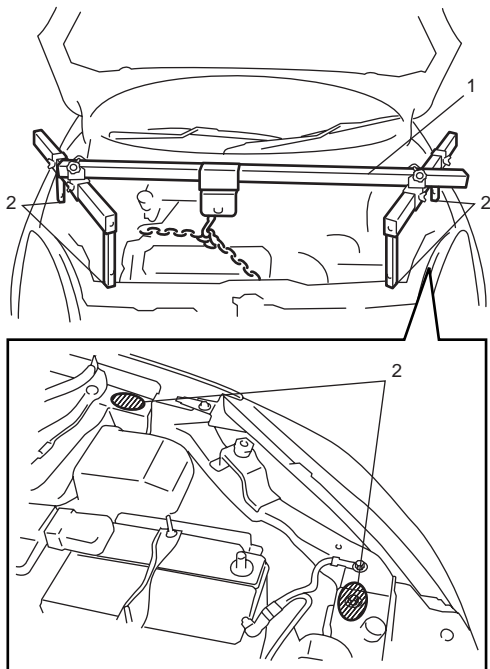
S7RS0B0101006

▲ WARNING

When using engine supporting device (1), be sure to observe the followings.

Otherwise, not only deformation of vehicle body but also personal injury may result.

- Apply supporting device at the specified positions (2) indicated in figure
- Install supporting device taking a well-balanced posture.
- Do not contact supporting device with other parts than engine room body panel and engine hooks.

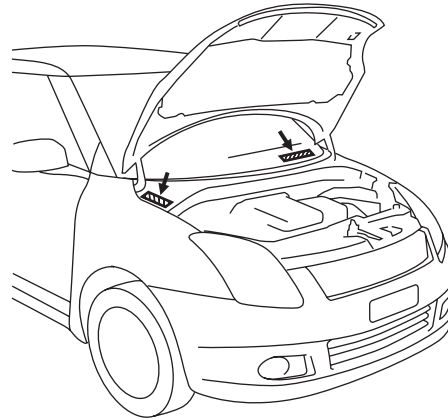


I4RS0A010005-01

Vehicle Identification Number

S7RS0B0101007

The number is punched close by the right side strut support in engine room and it is also attached on the left side of instrument panel depending on the vehicle specification.

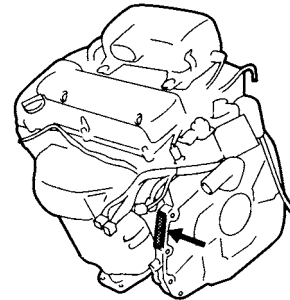


I4RS0B010003-01

Engine Identification Number

S7RS0B0101008

The number is punched on cylinder block.

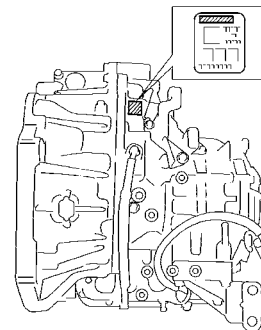


I3RM0A010005-01

Transmission Identification Number

S7RS0B0101009

The automatic transmission identification number is located on transmission case.



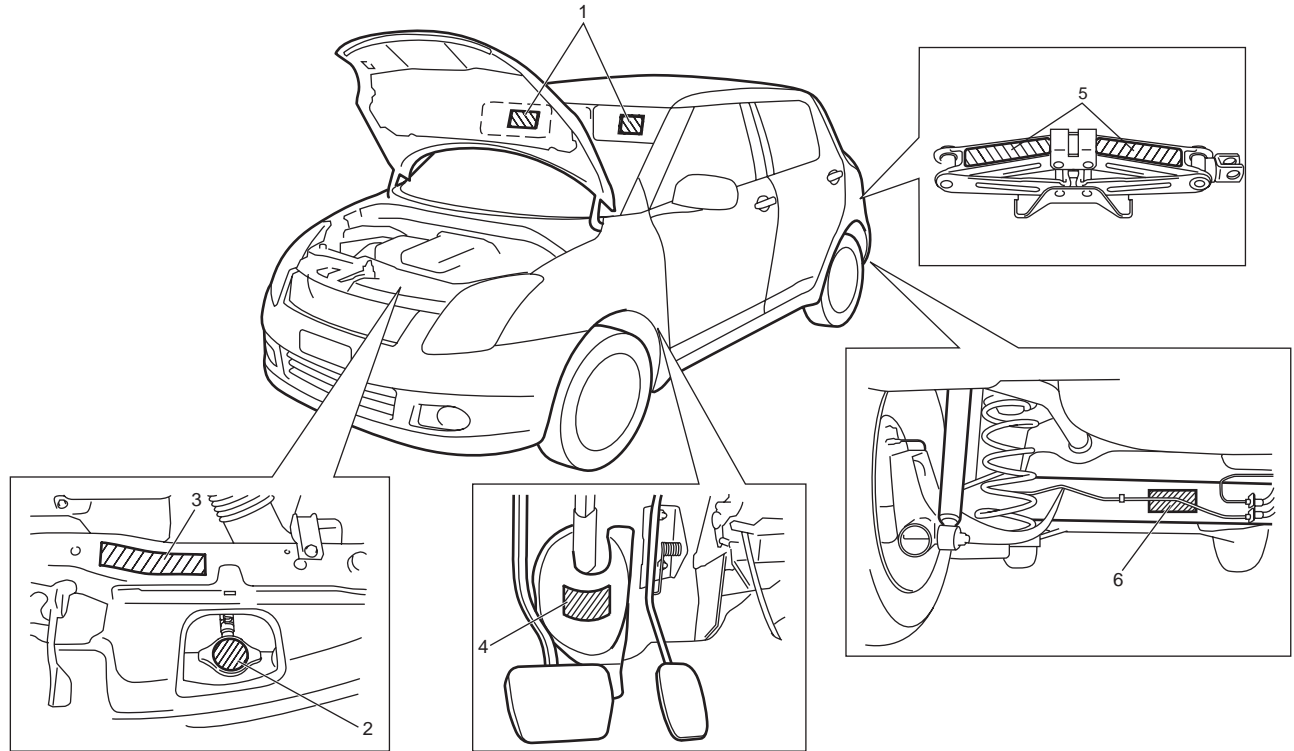
I4RS0A010008-01

Component Location

Warning, Caution and Information Labels Location

S7RS0B0103001

The figure 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.

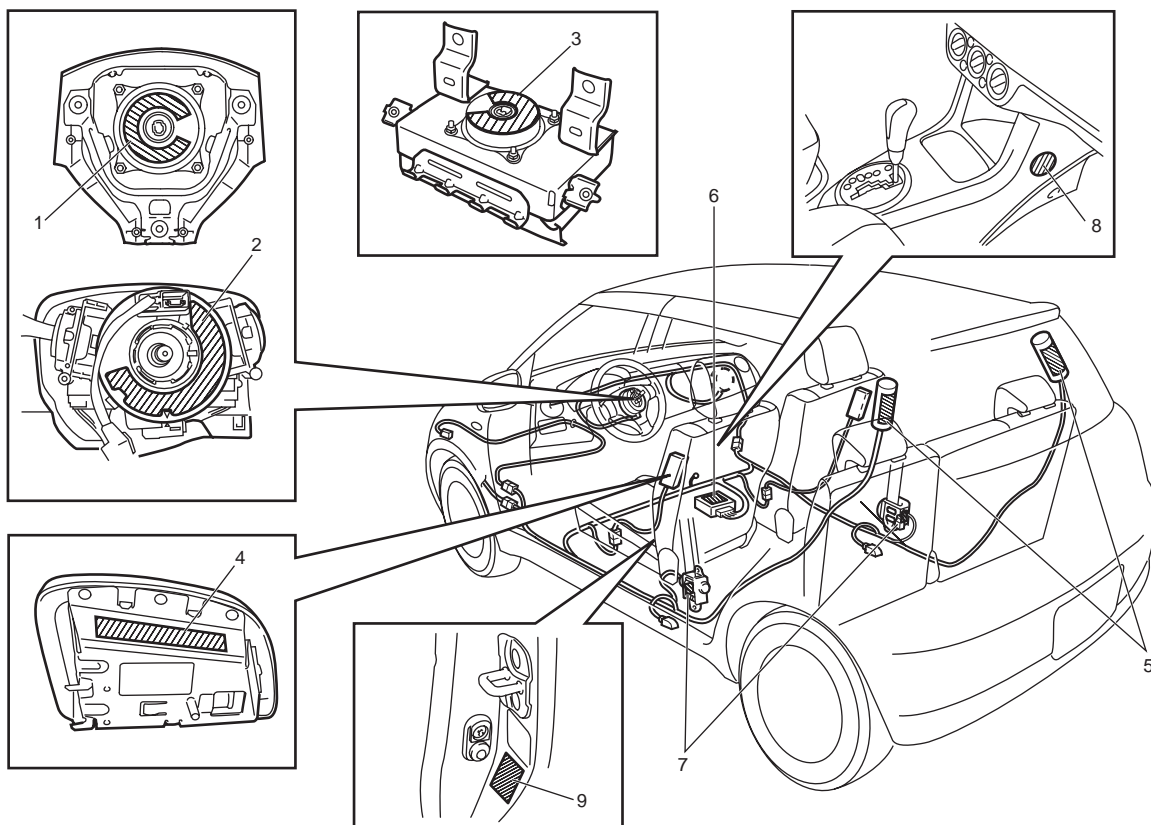


I5RS0C010001-02

1. Air bag label on sun visor (if equipped)	4. Steering shaft joint cover label (if equipped)
2. Radiator cap label	5. Jack label
3. Engine cooling fan label	6. Rear beam label

0A-9 General Information:

[A]



I4RS0B010002-03

1. Air bag label on driver air bag (inflator) module	6. Air bag label on SDM
2. Air bag label on combination switch and contact coil assembly	7. Pretensioner label on seat belt retractor
3. Air bag label on passenger air bag (inflator) module	8. Child seat label (if equipped)
4. Air bag label on side air bag (inflator) module (if equipped)	9. Side/Curtain air bag label on pillar (both right and left sides) (if equipped)
5. Air bag label on curtain air bag (inflator) module (if equipped)	[A]: These labels are attached on vehicle equipped with air bag system only.

Maintenance and Lubrication

Precautions

Precautions for Maintenance and Lubrication

S7RS0B0200001

Air Bag Warning

Refer to "Air Bag Warning in Section 00".

Scheduled Maintenance

Maintenance Schedule under Normal Driving Conditions

S7RS0B0205001

NOTE

- This interval should be judged by odometer reading or months, whichever comes first.
- This table includes service 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.

Interval	Km (x 1,000)	15	30	45	60	75	90
	Miles (x 1,000)	9	18	27	36	45	54
	Months	12	24	36	48	60	72
Engine							
Accessory drive belt (I: ☞, R: ☞)		—	—	I	—	—	R
Valve lash (clearance) (I: ☞)		—	I	—	I	—	I
Engine oil and oil filter (R: ☞)		R	R	R	R	R	R
Engine coolant (R: ☞)		—	—	R	—	—	R
Exhaust system (I: ☞)		—	I	—	I	—	I
Ignition system							
Spark plugs (R: ☞)	When unleaded fuel is used	Iridium Plug		Replace every 60,000 km (36,000 miles) or 48 months			
	When leaded fuel is used, refer to "Maintenance Recommended under Severe Driving Conditions".						
Fuel system							
Air cleaner filter (R: ☞, I: ☞)	Paved-road	I	I	R	I	I	R
	Dusty conditions	Refer to "Maintenance Recommended under Severe Driving Conditions".					
Fuel lines and connections (I: ☞)		—	I	—	I	—	I
Fuel filter (R: ☞) (See NOTE below)		Replace every 105,000 km (63,000 miles)					
Fuel tank (I: ☞)		—	—	I	—	—	I
Emission control system							
PCV valve (I: ☞)		—	—	—	—	—	I
Fuel evaporative emission control system (I: ☞)		—	—	—	—	—	I
Brake							
Brake discs and pads (thickness, wear, damage) (I: ☞)		I	I	I	I	I	I
Brake hoses and pipes (leakage, damage, clamp) (I: ☞)		—	I	—	I	—	I
Brake fluid (R: ☞)		—	R	—	R	—	R
Brake lever and cable (damage, stroke, operation) (I: ☞)		Inspect at first 15,000 km (9,000 miles only)					
Chassis and body							
Clutch (fluid leakage, level) (I: ☞)		—	I	—	I	—	I
Tires (wear, damage, rotation) / wheels (damage) (I: ☞ / ☞)		I	I	I	I	I	I
Suspension system (tightness, damage, rattle, breakage) (I: ☞)		—	I	—	I	—	I
Steering system (tightness, damage, breakage, rattle) (I: ☞)		—	I	—	I	—	I
Drive shaft (axle) boots (I: ☞)		—	—	I	—	—	I
Manual transaxle oil (leakage, level) (I: ☞ 1st 15,000 km only) (R: ☞)		I	—	R	—	—	R

0B-2 Maintenance and Lubrication:

Interval	Km (x 1,000)	15	30	45	60	75	90
	Miles (x 1,000)	9	18	27	36	45	54
	Months	12	24	36	48	60	72
Automatic transaxle fluid	Fluid level (I: ☞)	—	I	—	I	—	I
	Fluid change (R: ☞)	Replace every 165,000 km (99,000 miles)					
	Fluid hose (I: ☞)	—	—	—	I	—	—
All latches, hinges and locks (I: ☞)	—	I	—	I	—	I	—
HVAC air filter (if equipped) (I: ☞) (R: ☞)	—	I	R	—	I	—	R

NOTE

- “R”: Replace or change
- “I”: Inspect and correct, replace or lubricate if necessary
- For spark plugs, replace every 50,000 km if the local law requires.
- Periodic replacement of fuel filter is not necessary if it is not instructed in “Periodic Maintenance Schedule” section of the Owner’s manual. The scheduled maintenance varies depending on the vehicle specification.

Maintenance Recommended under Severe Driving Conditions

S7RS0B0205002

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 shown in the following table.

Severe condition code:

- A: Repeated short trips
- B: Driving on rough and/or muddy roads
- C: Driving on dusty roads
- D: Driving in extremely cold weather and/or salted roads
- E: Repeated short trips in extremely cold weather
- F: Leaded fuel use
- G: ————
- H: Towing a trailer (if admitted)

Severe condition code	Maintenance	Maintenance operation	Maintenance interval
- B C D - - - -	Accessory drive 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	Engine oil and oil filter	☞ R	Every 7,500 km (4,500 miles) or 6 months
- - C - - - - -	Air cleaner filter *1	☞ I	Every 2,500 km (1,500 miles)
		☞ R	Every 30,000 km (18,000 miles) or 24 months
A B C - E F - H	Spark plugs Iridium plug	☞ R	Every 30,000 km (18,000 miles) or 24 months
- B C D - - - H	Wheel bearings	☞ I	Every 15,000 km (9,000 miles) or 12 months
- B - D E - - H	Drive shaft (axle) boots	☞ I	Every 15,000 km (9,000 miles) or 12 months
- B - - E - - H	Manual transaxle oil	☞ R	First time only: 15,000 km (9,000 miles) or 12 months
			Second time and after: Every 30,000 km (18,000 miles) or 24 months reckoning from 0 km (0 mile) or 0 month

Severe condition code	Maintenance	Maintenance operation	Maintenance interval
- B - - E - - H	Automatic transaxle fluid	☞ R	Every 30,000 km (18,000 miles) or 24 months
- - C D - - - -	HVAC air filter (if equipped) *2	☞ I	Every 15,000 km (9,000 miles) or 12 months
		☞ R	Every 45,000 km (27,000 miles) or 36 months

NOTE

- “I”: Inspect and correct or replace if necessary
- “R”: Replace or change
- *1: Inspect or replace more frequently if the vehicle is used under dusty conditions.
- *2: Clean or replace more frequently if the air from the air conditioning decreases.

Repair Instructions

Accessory Drive Belt Inspection

S7RS0B0206001

▲ WARNING

All inspection and replacement are to be performed with ENGINE NOT RUNNING.

Water Pump and Generator Drive Belt

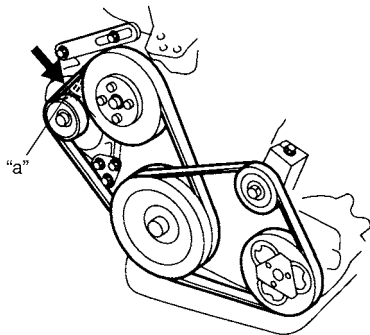
- 1) Disconnect negative (-) cable at battery.
- 2) Inspect belt for cracks, cuts, deformation, wear and cleanliness. If any defect exists, replace. Check belt for tension.

Water pump and generator belt tension

“a”: 4.5 – 5.5 mm (0.18 – 0.22 in.) deflection under 100 N (10 kg, 22 lb) pressure

NOTE

When replacing belt with a new one, adjust belt tension to 3.5 – 4 mm (0.14 – 0.16 in.)



I3RM0A020001-01

- 3) If belt is too tight or too loose, adjust it to specification by adjusting alternator position.
- 4) Tighten alternator adjusting bolts and pivot bolt.
- 5) Connect negative (-) cable to battery.

A/C Compressor Drive Belt

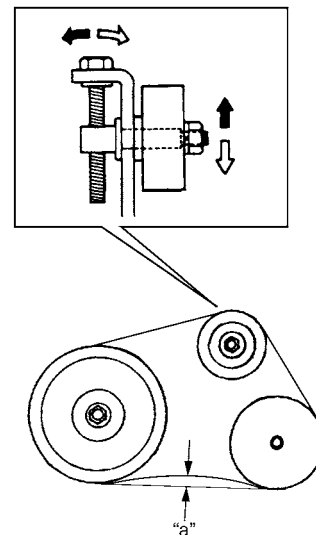
- 1) Disconnect negative (-) cable at battery.
- 2) Inspect belt for cracks, cuts, deformation, wear and cleanliness. If any defect exists, replace. Check belt for tension. If belt tension is out of specification, adjust it referring to “Compressor Drive Belt Inspection and Adjustment in Section 7B”.

A/C compressor drive belt tension

“a”: 7 – 8 mm (0.28 – 0.31 in.) deflection under 100 N (10 kg, 22 lb) pressure

NOTE

When replacing belt with a new one, adjust belt tension to 6 – 7 mm (0.24 – 0.28 in.).



I4RS0A020001-01

- 3) Connect negative (-) cable to battery.

Accessory Drive Belt Replacement

S7RS0B0206002

Water Pump and Generator Drive Belt

Replace belt with new one referring to "Water Pump / Generator Drive Belt Removal and Installation in Section 1J".

A/C Compressor Drive Belt

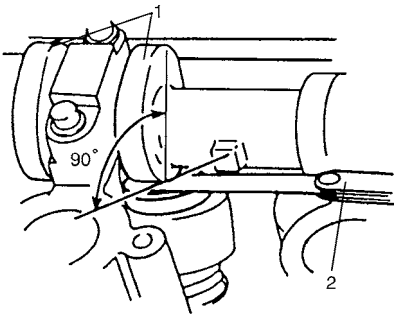
Replace belt with new one referring to "Compressor Drive Belt Removal and Installation in Section 7B".

Valve Lash (Clearance) Inspection

S7RS0B0206003

Inspect intake and exhaust valve lash and adjust as necessary.

Refer to "Valve Lash (Clearance) Inspection in Section 1D" for valve lash inspection and adjustment procedure.



I2RH0B020003-02

1. Camshaft	2. Thickness gauge
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Engine Oil and Filter Change

S7RS0B0206004

▲ WARNING

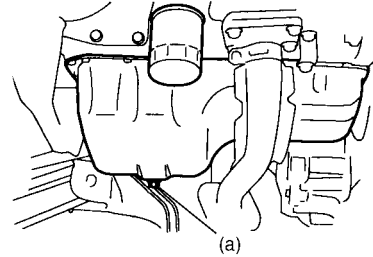
- New and used engine oil can be hazardous. Be sure to read "WARNING" in "General Precautions in Section 00" and observe what is written there.
- Step 1) – 7) outlined below must be performed with **ENGINE NOT RUNNING**. For Step 8), be sure to have adequate ventilation while engine is running.

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 the following work.

- 1) Drain engine oil by removing drain plug.
- 2) After draining oil, wipe drain plug clean. Reinstall drain plug.

Tightening torque

Engine oil drain plug (a): 35 N-m (3.5 kgf-m, 25.5 lb-ft)

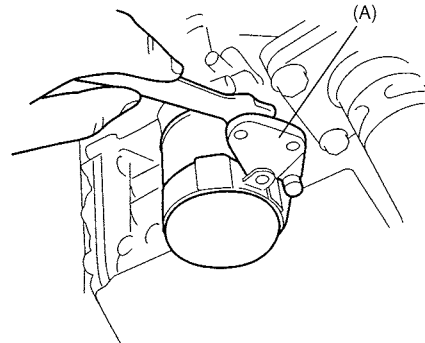


I2RH0B020004-01

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

Special tool

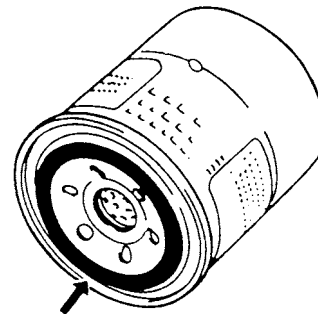
(A): 09915-47331



I2RH0B020005-01

NOTE

Before fitting new oil filter, be sure to oil its O-ring. Use engine oil for this purpose.



IYSQ01020009-01

- Screw new filter on oil filter stand by hand until the filter O-ring contacts mounting surface.

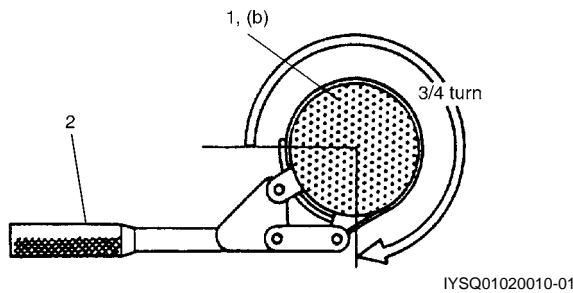
⚠ CAUTION

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

- Tighten the filter (1) 3/4 turn from the point of contact with the mounting surface using an oil filter wrench (2).

Tightening torque

Oil filter (b): 14 N-m (1.4 kgf-m, 10.5 lb-ft) for reference



- Replenish oil until oil level is brought to FULL level mark on dipstick (oil pan and oil filter capacity). The filler inlet is at the top of the cylinder head cover. It is recommended to use engine oil of SG, SH, SJ, SL or SM grade. Select the appropriate oil viscosity according to the proper engine oil viscosity chart [A].

NOTE

Engine oil capacity is specified as the following.

However, note that the amount of oil required when actually changing oil may somewhat differ from the data depending on various conditions (temperature, viscosity, etc.).

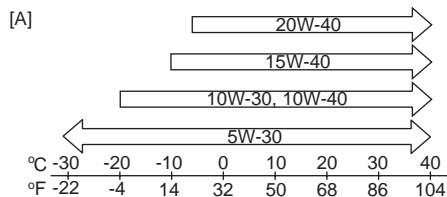
Engine oil specification

Oil pan capacity: About 3.7 liters (7.8 / 6.5 US / Imp pt.)

Oil filter capacity: About 0.2 liter (0.4 / 0.3 US / Imp pt.)

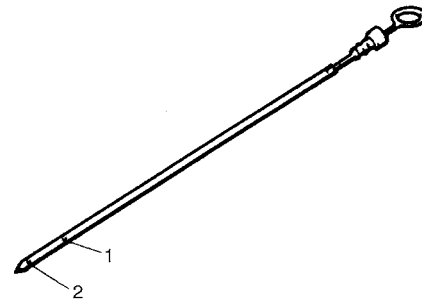
Others: About 0.3 liter (0.6 / 0.5 US / Imp pt.)

Total: About 4.2 liters (8.9 / 7.4 US / Imp pt.)



I7RS0B020001-02

- Check oil filter and drain plug for oil leakage.
- Start engine and run it for 3 minutes. Stop it and wait another 5 minutes before checking oil level. Add oil, as necessary, to bring oil level to FULL level mark (1) on dipstick.



2. Low level mark (hole)

IYSQ01020012-01

Engine Coolant Change

S7RS0B0206005

⚠ 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% specified water and 50% ANTIFREEZE / ANTICORROSION COOLANT for the purpose of corrosion protection and lubrication.

Change engine coolant with new one referring to "Cooling System Flush and Refill in Section 1F".

Exhaust System Inspection

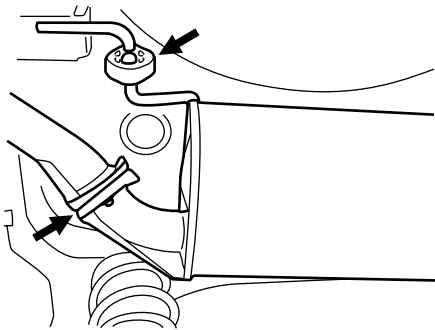
S7RS0B0206006

▲ 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 the vehicle is raised for other service, check exhaust system as follows:

- Check rubber mountings for damage, deterioration, and out of position.
- Check exhaust system for leakage, loose connections, dents and damages. If bolts or nuts are loose, tighten them to specification.
- 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 the vehicle.
- Make sure that exhaust system components have enough clearance from the underbody to avoid overheating and possible damage to floor carpet.



I4RS0A020003-01

- Any defects should be fixed at once.

Spark Plug Replacement

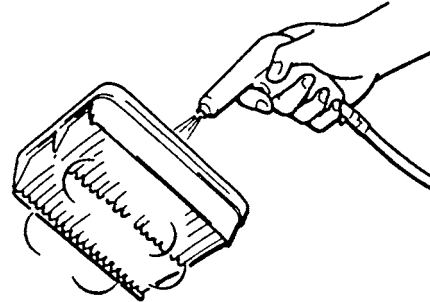
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Replace spark plugs with new ones referring to "Spark Plug Removal and Installation in Section 1H".

Air Cleaner Filter Inspection

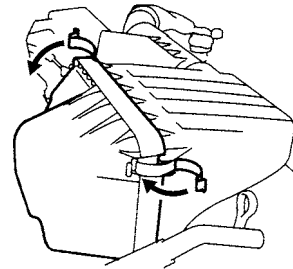
S7RS0B0206008

- 1) Remove air cleaner case clamps.
- 2) Take air cleaner filter out of case.
- 3) Check that filter is not excessively dirty, damaged or oily, clean filter with compressed air from air outlet side of filter.



I2RH01140007-01

- 4) Install air cleaner filter and Clamp cap securely.



I4RS0B020001-01

Air Cleaner Filter Replacement

S7RS0B0206009

Replace air cleaner filter with new one according to Steps 1), 2) and 4) of "Air Cleaner Filter Inspection".

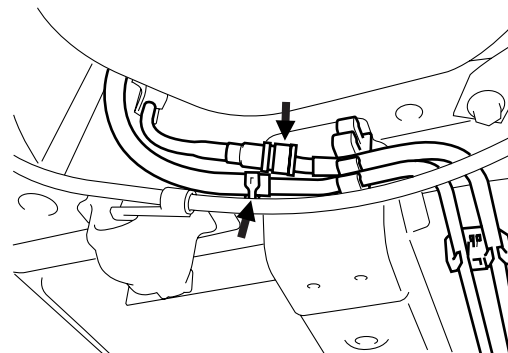
Fuel Lines and Connections Inspection

S7RS0B0206010

Visually inspect fuel lines and connections for evidence of fuel leakage, hose cracking and damage. Make sure all clamps are secure.

Repair leaky joints, if any.

Replace hoses that are suspected of being cracked.



I4RS0A020005-01

Fuel Filter Replacement

S7RS0B0206011

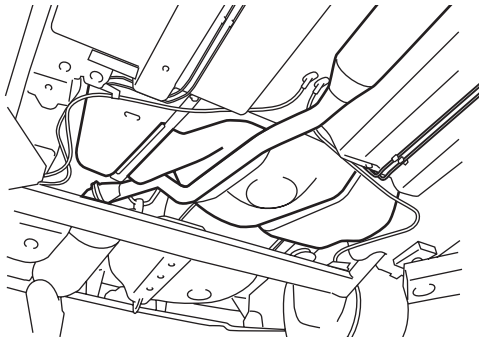
Fuel filter is installed in fuel pump assembly in fuel tank. Replace fuel filter or fuel pump assembly with new one, referring to "Fuel Pump Assembly Removal and Installation in Section 1G" for proper procedure.

Fuel Tank Inspection

S7RS0B0206012

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

If a problem is found, repair or replace.



I4RS0B020002-02

PCV Valve Inspection

S7RS0B0206013

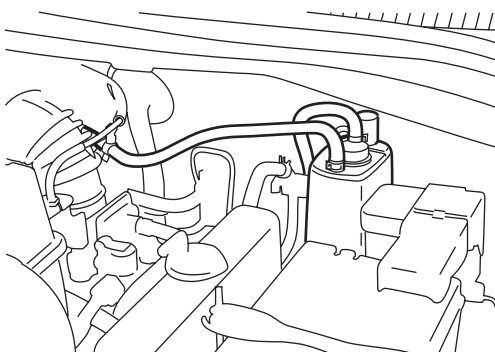
Check crankcase ventilation hose and PCV hose for leaks, cracks or clog, and PCV valve for stick or clog. Refer to "PCV Valve Inspection in Section 1B" for PCV valve checking procedure.

Fuel Evaporative Emission Control System Inspection

S7RS0B0206014

- 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 "EVAP Canister Inspection in Section 1B".

If a malfunction is found, repair or replace.



I4RS0A020006-01

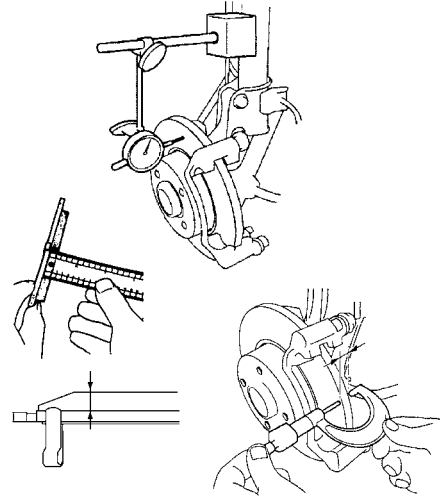
Brake Discs and Pads Inspection

S7RS0B0206015

- 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 details, refer to "Front Disc Brake Pad Inspection in Section 4B", "Front Brake Disc Inspection in Section 4B", "Rear Disc Brake Pad Inspection in Section 4C" and/or "Rear Brake Disc Inspection in Section 4C".

Be sure to torque caliper pin bolts to specification.



I3RM0A020006-01

Brake Hoses and Pipes Inspection

S7RS0B0206016

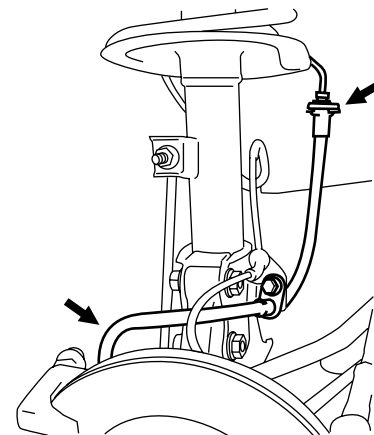
Perform this inspection where there is enough light and use a mirror as necessary.

- Check brake hoses and pipes for proper hookup, leaks, cracks, chafing and other damage.
- Check that hoses and pipes are clear of sharp edges and moving parts.

Repair or replace any of these parts as necessary.

⚠ CAUTION

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



I4RS0A020008-01

Brake Fluid Inspection

S7RS0B0206035

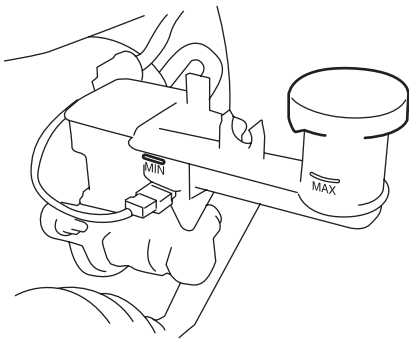
- 1) Check around master cylinder and reservoir for fluid leakage. If found leaky, correct.
- 2) Check fluid level.
If fluid level is lower than the minimum level of reservoir, refilling is necessary. Fill reservoir with specified brake fluid.
For the details, refer to "Brake Fluid Level Inspection in Section 4A".

⚠ CAUTION

**Since brake system of this vehicle is factory-filled with brake fluid indicated on reservoir tank 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 an unsealed container.**

Brake fluid

Refer to reservoir cap of brake master cylinder.



I7RW01020002-01

Brake Fluid Replacement

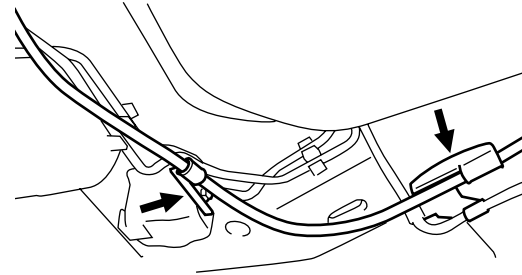
S7RS0B0206017

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 "Air Bleeding of Brake System in Section 4A".

Brake Lever and Cable Inspection

S7RS0B0206018

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

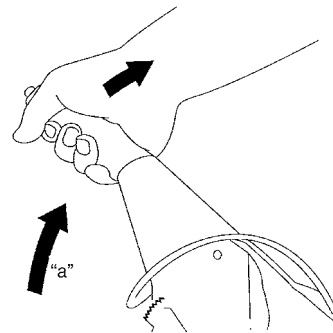


I4RS0A020009-01

- 2) Check tooth tip of each notch for damage or wear. If any damage or wear is found, replace parking lever.
- 3) 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 in Section 4D".

Parking brake lever stroke

"a": 4 – 9 notches (with 200 N (20 kg, 44 lbs) of pull pressure)

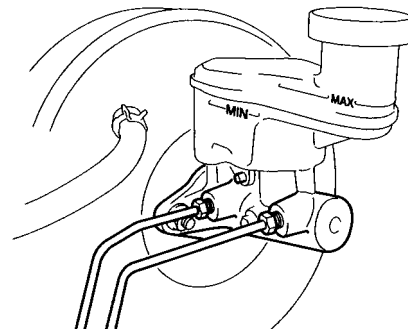


I4RS0B020005-01

Clutch Fluid Inspection

S7RS0B0206019

- 1) Check clutch system for evidence of fluid leakage.
Repair leaky point if any.
- 2) Check reservoir for fluid level referring to "Clutch Fluid Level Inspection in Section 5C".
If fluid is lower than minimum level of reservoir, refill reservoir with specified brake fluid indicated on reservoir cap.

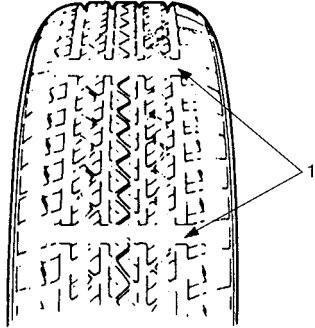


I4RS0A410006-01

Tires Inspection

S7RS0B0206020

- 1) Check tires for uneven or excessive wear, or damage. If defective, replace. Refer to "Irregular and/or Premature Wear Description in Section 2D" and "Wear Indicators Description in Section 2D" for details.



I2RH01020022-01

1. Wear indicator

- 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 the vehicle.

- 3) Rotate tires. For details, refer to "Tire Rotation in Section 2D".

Wheel Discs Inspection

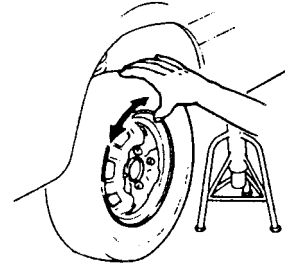
S7RS0B0206021

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

Wheel Bearing Inspection

S7RS0B0206022

- 1) Check front wheel bearing for wear, damage, abnormal noise or rattles. For details, refer to "Front Wheel Hub, Disc, Nut and Bearing Check in Section 2B".
- 2) Check rear wheel bearing for wear, damage, abnormal noise or rattles. For details, refer to "Rear Wheel Disc, bolt and Bearing Inspection in Section 2C".

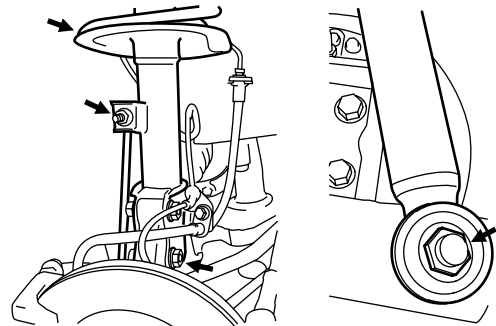


I2RH01020023-01

Suspension System Inspection

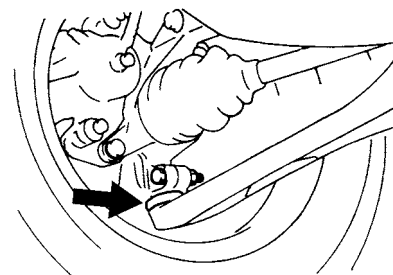
S7RS0B0206023

- Inspect front struts and rear shock absorbers 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.



I4RS0A020011-01

- Check front suspension arm ball joint stud dust seals for leakage, detachment, tear or any other damage. Replace defective boot, if any.



I4RS0A020012-01

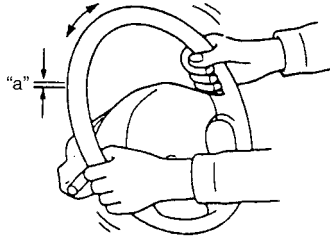
Steering System Inspection

S7RS0B0206024

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

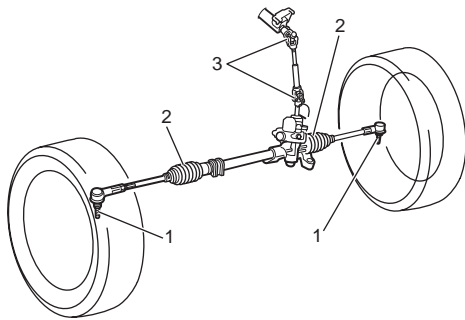
Steering wheel play

“a”: 0 – 30 mm (0 – 1.1 in.)



I2RH01020026-01

- 2) Check bolts and nuts for tightness and retighten them as necessary. Repair or replace defective parts, if any.
- 3) Check steering linkage for looseness and damage. Repair or replace defective parts, if any.
- 4) Check boots (1) and (2) of steering linkage and steering gear case for damage (leak, detachment, tear, etc.). If damage is found, replace defective boot with new one.
If any dent is found on steering gear case boots, correct it to original shape by turning steering wheel to the right or left as far as it stops and holding it for a few seconds.
- 5) Check universal joints (3) of steering shaft for rattle and damage. If rattle or damage is found, replace defective part with a new one.



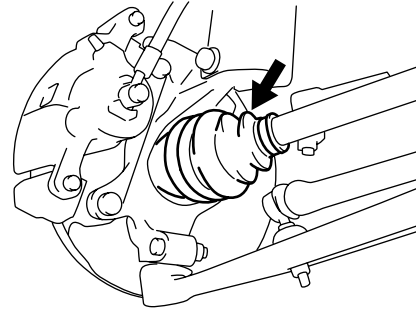
I4RS0B020007-01

- 6) Check that steering wheel can be turned fully to the right and left. Repair or replace defective parts, if any.
- 7) If equipped with power steering system, check also, in addition to check items, that steering wheel can be turned fully to the right and left more lightly when engine is running at idle speed than when it is stopped. Repair, if found faulty.
- 8) Check wheel alignment referring to “Front Wheel Alignment Inspection and Adjustment in Section 2B”.

Drive Shaft (Axle) Boots Inspection

S7RS0B0206025

- Check drive shaft boots (wheel side and differential side) for leaks, detachment, tear or other damage. Replace defective parts as necessary.

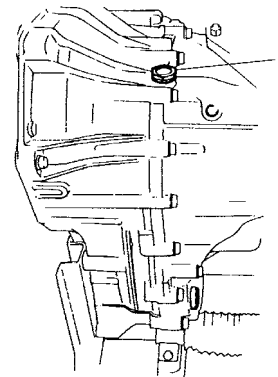


I2RH01310001-01

Manual Transaxle Oil Inspection

S7RS0B0206026

- 1) Inspect transaxle 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 filler/level plug (1) of transaxle.



I6RS0C020001-01

- 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 “Manual Transaxle Oil Change in Section 5B”.
- 5) Apply sealant to filler/level plug and tighten it to specified torque.

Manual Transaxle Oil Replacement

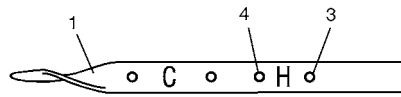
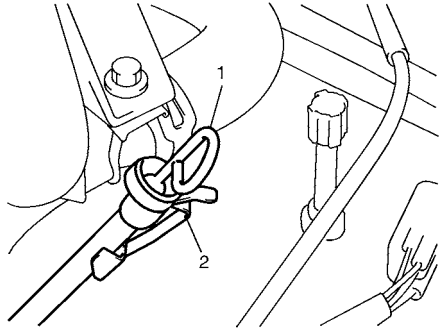
S7RS0B0206027

- Change transaxle oil with new specified oil referring to “Manual Transaxle Oil Change in Section 5B”.

Automatic Transaxle Fluid Level Inspection

S7RS0B0206028

- 1) Inspect transaxle 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 under specified conditions referring to "A/T Fluid Level Check in Section 5A". If fluid level is low, replenish specified fluid.



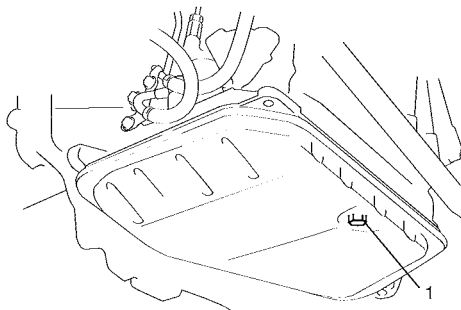
I4RS0A020016-01

1. Dipstick	3. FULL HOT mark
2. Clamp	4. LOW HOT mark

Automatic Transaxle Fluid Replacement

S7RS0B0206029

- 1) Inspect transaxle case for evidence of fluid leakage. Repair leaky point, if any.
- 2) Make sure that vehicle is placed level for fluid level check.
- 3) Change fluid. For its procedure, refer to "A/T Fluid Change in Section 5A".



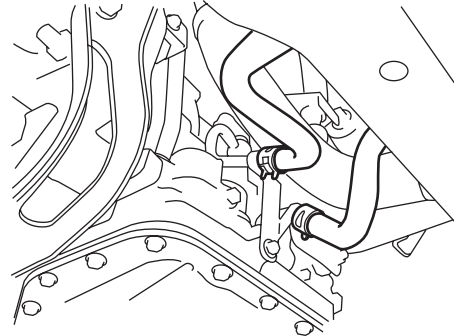
I4RS0A020017-01

1. Drain plug

Automatic Transaxle Fluid Cooler Hose Inspection

S7RS0B0206030

Check automatic transaxle fluid cooler hose for fluid leakage, cracks, damage and deterioration. Replace hose and/or clamp if any faulty condition is found.



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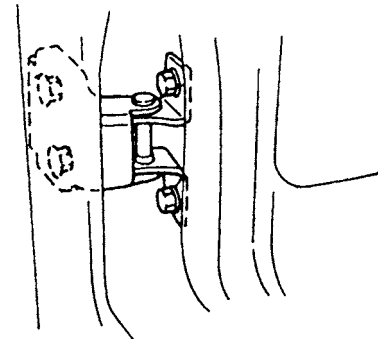
All Latches, Hinges and Locks Inspection

S7RS0B0206031

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.



I2RH01020033-01

Engine Hood

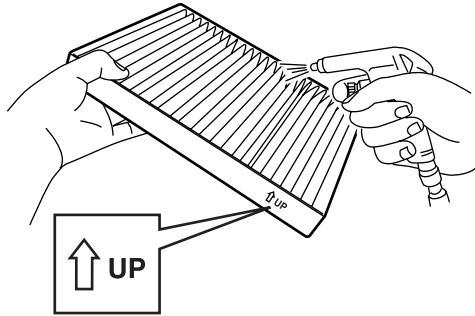
Check that secondary latch operates properly (check that secondary latch keeps hood from opening all the way even when pulling hood release handle inside vehicle.) Also check that hood opens and closes smoothly and properly and hood locks securely when closed.

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

HVAC Air Filter (If Equipped) Inspection

S7RS0B0206032

- 1) Remove HVAC air filter from HVAC unit referring to "HVAC Air Filter Removal and Installation (If Equipped) in Section 7A".
- 2) Check for dirt and dust. If HVAC air filter is excessively dirty, replace HVAC air filter with new one. If not, go to next step.
- 3) Blow compressed air on the air outlet side of HVAC air filter for removing dust.



I4RS0A020018-01

- 4) Install HVAC air filter into HVAC unit referring to "HVAC Air Filter Removal and Installation (If Equipped) in Section 7A".

HVAC Air Filter (If Equipped) Replacement

S7RS0B0206033

Replace HVAC air filter with new one referring to "HVAC Air Filter Removal and Installation (If Equipped) in Section 7A".

Final Inspection for Maintenance Service

S7RS0B0206034

▲ 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. Check that seat belt is securely locked. If "REPLACE BELT" label on seat belt is visible, replace belt.

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 any 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 vehicle could move without warning and possibly cause personal injury or property damage.

On automatic transaxle vehicles, try to start the engine in each select lever position. The starting motor should crank only in "P" (Park) or "N" (Neutral).

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

On Automated Manual Transaxle vehicles, try to start the engine in each select lever position. The starting motor should crank only when select lever is in "N" (Neutral) and brake pedal is depressed.

Exhaust System Check

Check for leakage, cracks or loose supports.

Clutch (for Manual Transaxle)

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 (Transaxle)

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

With automatic transaxle or Automated Manual Transaxle equipped vehicle, also check that shift indicator indicates properly according to which position select lever is shifted to.

With automatic transaxle 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 do 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 mode control lever to defroster position and fan switch lever to "HI" position for this check.

Specifications

Tightening Torque Specifications

S7RS0B0207001

Fastening part	Tightening torque			Note
	N·m	kgf·m	lb·ft	
Engine oil drain plug	35	3.5	25.5	
Oil filter	14	1.4	10.5	for reference 

Reference:

For the tightening torque of fastener not specified in this section, refer to "Fasteners Information in Section 0A".

Special Tools and Equipment

Recommended Fluids and Lubricants

S7RS0B0208001

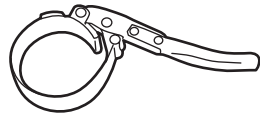
Engine oil	SG, SH, SJ, SL or SM grade (Refer to "Engine Oil and Filter Change" for engine oil viscosity.)
Engine coolant (Ethylene glycol base coolant)	"Antifreeze/Anticorrosion coolant"
Brake fluid	Refer to reservoir cap of brake master cylinder.
Manual transaxle oil	Refer to "Manual Transaxle Oil Change in Section 5B".
Automatic transaxle fluid	Refer to "A/T Fluid Change in Section 5A".
Door hinges	Engine oil or water resistance chassis grease
Hood latch assembly	Engine oil or water resistance chassis grease
Key lock cylinder	Spray lubricant

0B-14 Maintenance and Lubrication:

Special Tool

S7RS0B0208002

09915-47331
Oil filter wrench



Section 1

Engine

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Precautions

Precautions

Precautions for Engine

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Air Bag Warning

Refer to "Air Bag Warning in Section 00".

Precautions on Engine Service

Refer to "Precautions on Engine Service in Section 1A".

Precautions in Diagnosing Trouble

Refer to "Precautions in Diagnosing Trouble in Section 1A".

Precautions of ECM Circuit Inspection

Refer to "Precautions of ECM Circuit Inspection in Section 1A".

Precautions on Fuel System Service

Refer to "Precautions on Fuel System Service in Section 1G".

Precaution for CAN Communication System

Refer to "Precaution for CAN Communication System in Section 00".

Precautions for Catalytic Converter

Refer to "Precautions for Catalytic Converter in Section 00".

Precautions for Electrical Circuit Service

Refer to "Precautions for Electrical Circuit Service in Section 00".

Precautions of Electric Throttle Body System Calibration

Refer to "Precautions of Electric Throttle Body System Calibration in Section 1A".