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Section 00

Precautions

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Precautions

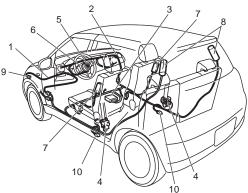
Precautions

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

S5RS0D0000001

A 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.



I4RS0B000001-02

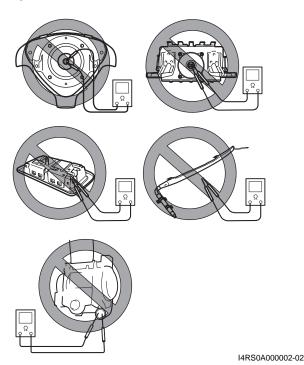
Air bag wire harness (in floor, main and instrument panel harness)	6. Driver air bag (inflator) module
Passenger air bag (inflator) module	Side air bag (inflator) module (if equipped)
3. SDM	Curtain air bag (inflator) module (if equipped)
Seat belt pretensioner	Forward sensor
Contact coil	10. Side sensor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

A 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.



Servicing and Handling

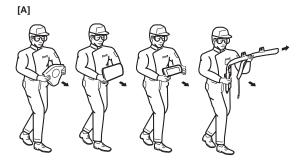
▲ WARNING

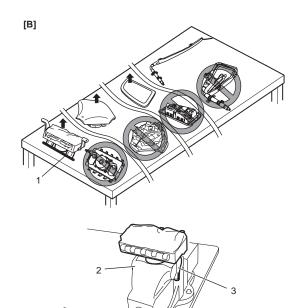
Many of service procedures require disconnection of "A/BAG" fuse and all air bag (inflator) module(s) from initiator circuit to avoid an accidental deployment.

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

A 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.

A 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".

Precautions: 00-4

General Precautions

S5RS0D0000002

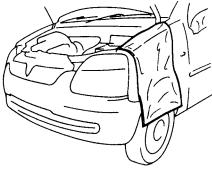
The WARNING and CAUTION describe some general precautions that you should observe when servicing a vehicle. These general precautions apply to many of the service procedures, and they will not necessarily be repeated with each procedure to which they apply.

▲ 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 wellventilated.
- 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 longsleeve 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.

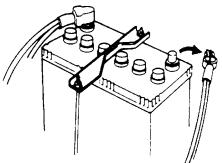
- Be sure to observe following instructions when handling service materials such as fuel, oil, fluid, coolant, grease, sealant, thread lock cement, etc. Otherwise, your health may be ruined.
 - Whenever handling any of these service materials, wear safety glasses to protect your eyes. If it gets into 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.



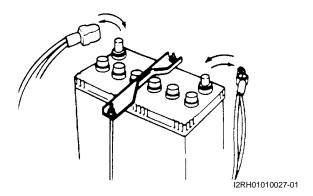
I2RH01010025-01

- 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, PS control module and/or immobilizer 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.

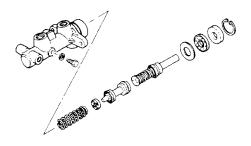


I2RH01010026-01

 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.

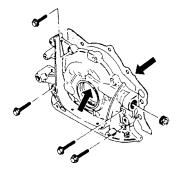


 When removing parts that are to be reused, be sure to keep them arranged in an orderly manner so that they may be reinstalled in the proper order and position.



I2RH01010028-01

Whenever you use oil seals, gaskets, packing, Orings, 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.

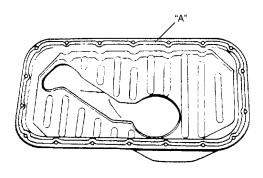


I2RH01010029-01

Make sure that all parts used in reassembly are perfectly clean.

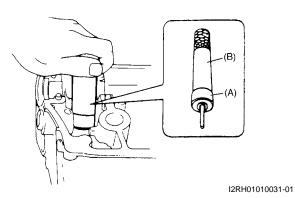
When use of a certain type of lubricant, bond or sealant is specified, be sure to use the specified type.

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

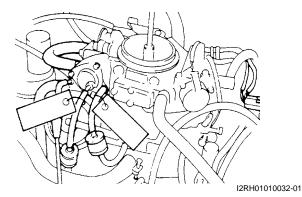


I2RH01010030-01

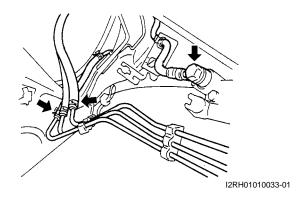
Special tool (A): 09917-98221 (B): 09916-58210



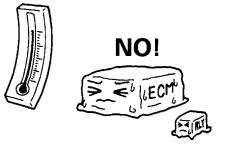
 When disconnecting vacuum hoses, attach a tag describing the correct installation positions so that the hoses can be reinstalled correctly.



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



- For vehicles equipped with fuel injection systems, never disconnect the fuel line between the fuel pump and injector without first releasing the fuel pressure, or fuel can be sprayed out under pressure.
- When performing a work that produces a heat exceeding 80 °C (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

S5RS0D0000003

A 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.

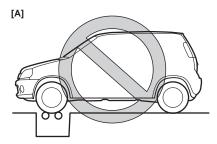
Precautions in Servicing Full-Time 4WD Vehicle

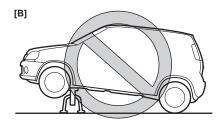
⚠ CAUTION

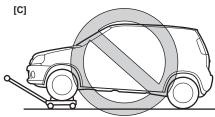
This full-time 4WD vehicle can not be converted to 2WD manually.

Observe the following caution in servicing. Otherwise, front wheels drive rear wheels or vise-versa and vehicle accidents, drivetrain damage and personal injury may result.

 Never perform any of the following types of service work.



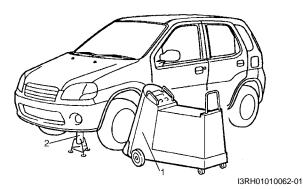




I3RH0A000004-03

- [A]: Testing with 2-wheel chassis dynamometer, speedometer tester or brake tester.
- [B]: Driving front wheels, which are jacked up.
- [C]: Towing under the condition where either front or rear wheels can not rotate

- When testing with 2-wheel chassis dynamometer, speedometer tester or brake tester, be sure to make the vehicle as front wheel drive by removing rear propeller shaft.
- When using On-vehicle type wheel balancing equipment (1), be sure to jack up all four wheels, off the ground completely and support vehicle with safety stands (2).
 Be careful of the other wheels, which will rotate at the same time.



- This vehicle should be towed under one of the following conditions:
 - With all wheels on a flatbed truck.
 - With front or rear wheels lifted and a dolly under the other wheels.

Precautions for Catalytic Converter

S5RS0D0000004

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

S5RS0D0000005

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

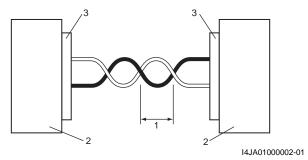
Failure to follow cautions may adversely affect electronic control system.

- 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.

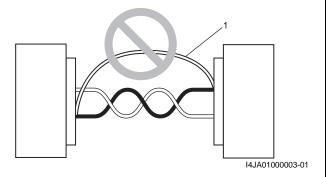
Precaution for CAN Communication System

S5RS0D00

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.



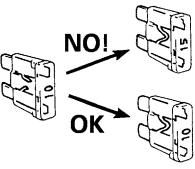
 Do not connect terminals of the CAN line using a bypass wire (1). Otherwise, the CAN line may be influenced by the electric noise.



Precautions for Electrical Circuit Service

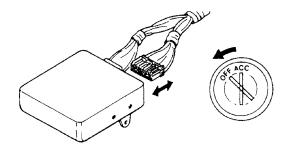
S5RS0D0000007

 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.



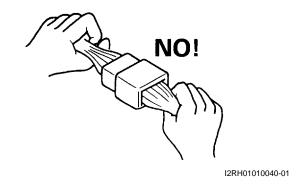
I2RH01010038-01

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

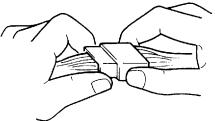


I2RH01010039-01

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

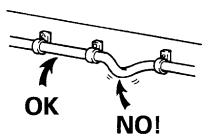


 When connecting connectors, also hold connectors and put them together until they lock securely (a click is heard).



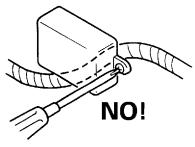
I2RH01010041-01

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



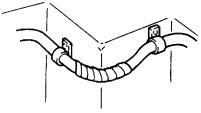
I2RH01010042-01

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



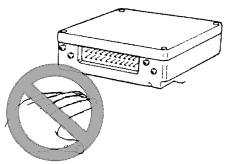
I2RH01010043-01

 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.



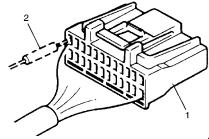
I2RH01010044-01

 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.



I3RM0A000004-01

- 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 Ω/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

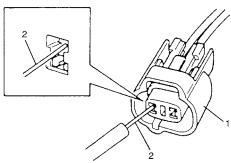
Precautions: 00-10

 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 of force its female terminal open for connection.

In case of such coupler as shown connect probe as shown to avoid opening female terminal.

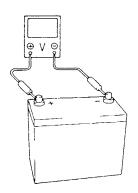
Never connect probe where male terminal is

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

S5RS0D0000008

▲ 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

S5RS0D0000009

▲ 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

S5RS0D0000010

⚠ 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

S5RS0D0000011

⚠ 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

S5RS0D0000012

⚠ 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.

Brake Caution

S5RS0D0000013

⚠ 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

S5RS0D000600

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.

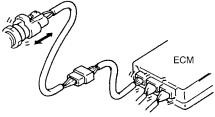
Open Circuit Check

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

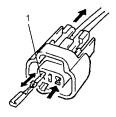
When checking system circuits including an electronic control unit such as ECM, TCM, ABS control module, etc., it is important to perform careful check, starting with items which are easier to check.

- 1) Disconnect negative (-) cable from battery
- 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

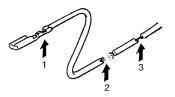
3) Using a test male terminal, check both terminals of the circuit being checked for contact tension of its female terminal. Check each terminal visually for poor contact (possibly caused by dirt, corrosion, rust entry of foreign object, etc.). At the same time, check to make sure that each terminal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



I2RH01010050-01

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.

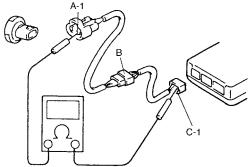


I2RH01010051-01

- 1. Looseness of crimping
- Oper
- 3. Thin wire (single strand of wire)

Continuity Check

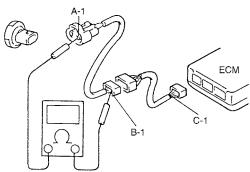
1) Measure resistance between connector terminals at both ends of the circuit being checked (between "A-1" and "C-1" in the figure). If no continuity is indicated (infinity or over limit), that means that the circuit is open between terminals "A-1" and "C-1".



I2RH01010052-01

 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

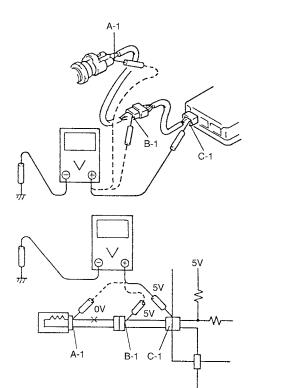
"B-1" and body ground: Approx. 5 V

"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



Short Circuit Check (Wire Harness to Ground)

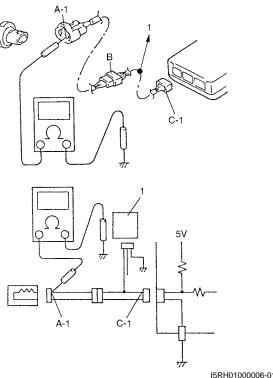
- 1) Disconnect negative (-) cable at battery.
- 2) Disconnect connectors at both ends of the circuit to be checked.

NOTE

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

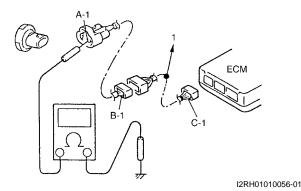
Otherwise, diagnosis will be misled.

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".



To other parts

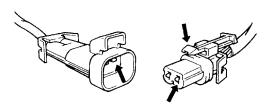
I5RH01000005-01

Intermittent and Poor Connection Inspection

S5RS0D0006002

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:

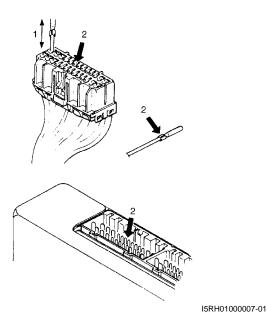
- Poor mating of connector halves, or terminals not fully seated in the connector body (backed out).
- Dirt or corrosion on the terminals. The terminals must be clean and free of any foreign material which could impede proper terminal contact. However, cleaning the terminal with a sand paper or the like 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.

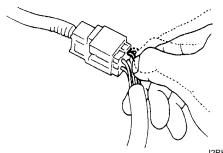
 If contact tension is not enough, reform it to increase contact tension or replace.



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

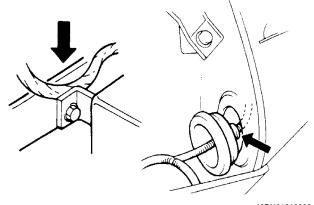
Poor terminal-to-wire connection.

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

A:

S5RS0D0101001

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

R٠

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)

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:

HAVC: 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

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

S:

SAE: Society of Automotive Engineers

SDM: Sensing and Diagnostic Module (Air Bag

Controller, Air bag Control Module)

SFI: Sequential Multiport Fuel Injection

SOHC: Single Over Head Camshaft

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

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

S5RS0D0101002

Symbol	Definition	Symbol	Definition
O	Tightening torque	■ 1216B	Apply SUZUKI BOND NO. 1216B 99000-31230
	Apply oil (engine, transmission, transfer, differential)	Si	Apply SILICONE SEALANT 99000-31120
FLD	Apply fluid (brake, power steering or automatic transmission fluid)	■366E	Apply SEALING COMPOUND 366E 99000-31090
Æ	Apply SUZUKI SUPER GREASE A 99000-25010		
ÆŌH	Apply SUZUKI SUPER GREASE C 99000-25030	₹1322	Apply THREAD LOCK 1322 99000-32110
ÆĒH	Apply SUZUKI SUPER GREASE E 99000-25050	₹[333B]	Apply THREAD LOCK 1333B 99000-32020
ÆÐH	Apply SUZUKI SUPER GREASE H 99000-25120	√ 1342	Apply THREAD LOCK 1342 99000-32050
<i>5</i> 0#	Apply SUZUKI SUPER GREASE I 99000-25210		
1215	Apply SUZUKI BOND NO. 1215 99000-31110	8	Do not reuse
■1207F	Apply SUZUKI BOND NO. 1207F 99000-31250		Note on reassembly
■ 1217 G	Apply SUZUKI BOND NO. 1217G 99000-31260		

Wire Color Symbols

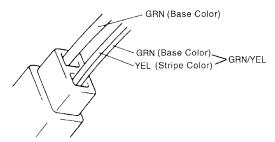
S5RS0D0101003

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

There are two kinds of colored wire used in this vehicle. One is single-colored wire and the other is dual-colored (striped) wire.

The single-colored wire uses only one color symbol (i.e. "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

Metric Fasteners

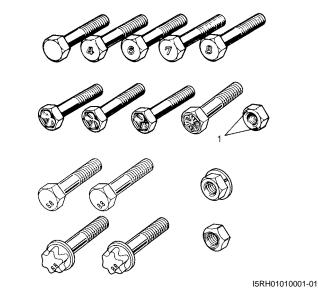
S5RS0D0101004

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

Fastener Strength Identification

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

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



. 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

rightening torque chart	1		TI			/NI = !-			/ · \	
Strength	Unit	4						meter)		40
		4	5	6	8	10	12	14	16	18
A equivalent of 4T strength fastener	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
I2RH01010012-01										
A equivalent of 6.8 strength fastener	N⋅m	2.4	4.7	8.4	20	42	80	125	193	280
without flange	kgf-m	0.24	0.47	0.84	2.0	4.2	8.0	12.5	19.3	28
12RH01010013-01	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	N⋅m	2.4	4.9	8.8	21	44	84	133	203	298
with flange	kgf-m	0.24	0.49	0.88	2.1	4.4	8.4	13.3	20.3	29.8
*: Self-lock nut (6 strength)	lb-ft	2.0	3.5	6.5	15.5	32.0	61.0	96.5	147.0	215.5
12RH01010014-01										
A equivalent of 7T strength fastener	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
12RH01010015-01	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	N⋅m	3.1	6.3	11	27	56	105	168	258	373
strength nut) without flange	kgf-m	0.31	0.63	1.1	2.7	5.6	10.5	16.8	25.8	37.3
12RH01010016-01	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	N⋅m	3.2	6.5	12	29	59	113	175	270	395
strength nut) with flange	kgf-m	0.32	0.65	1.2	2.9	5.9	11.3	17.5	27	39.5
	Ib-ft	2.5	5.0	9.0	21.0	43.0	82.0	126.5	195.5	286.0
		2.3	J.0	3.0	21.0	73.0	02.0	120.3	133.3	200.0
I2RH01010017-01										

^{*:}Self-lock nut

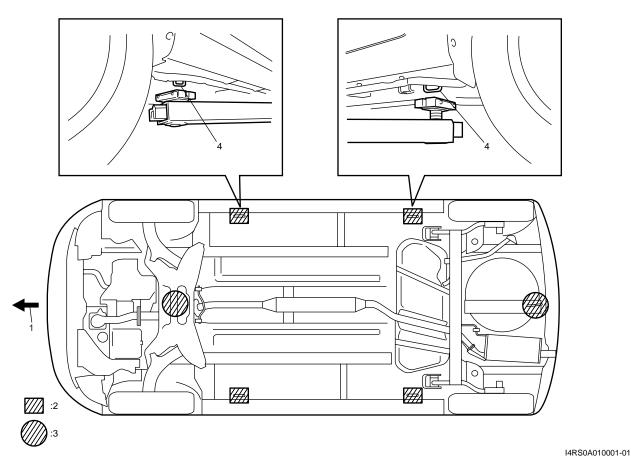
Vehicle Lifting Points

S5RS0D0101005

▲ 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



	Vehicle front	Floor jack position
Ī	2. Support position for frame contact hoist and safety stand	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.

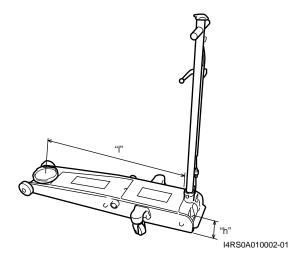
After the vehicle is jacked up, be sure to support it on stands. It is extremely dangerous to do any work on the vehicle raised on jack alone.

⚠ CAUTION

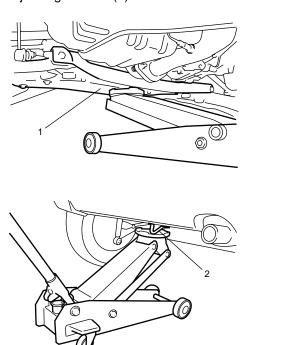
- Never apply jack against rear suspension parts (i.e., stabilizer, etc.) or vehicle floor, or it may get deformed.
- When jacking up the front end, be sure to use an air type floor jack with the following specified height or a manual type floor jack of the following size. Otherwise, the jack may cause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

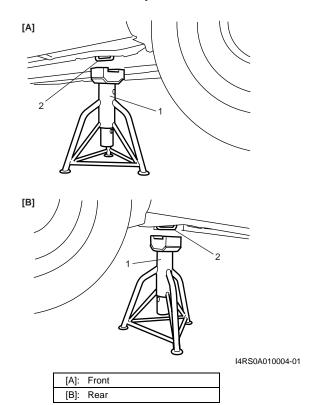


In raising front or rear vehicle end off the floor by jacking, be sure to put the jack against front suspension frame (1) or rear jacking bracket (2).



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.



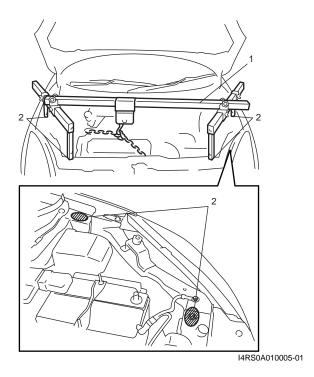
Engine Supporting Points

S5RS0D0101006

A 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.

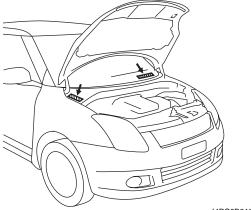
- Apply supporting device at the specified positions (2) indicated in figure
- Install supporting device taking a wellbalanced posture.
- Do not contact supporting device with other parts than engine room body panel and engine hooks.



Vehicle Identification Number

S5RS0D0101007

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

S5RS0D0101008

The number is punched on cylinder block.

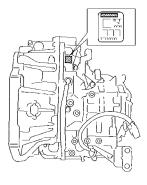


I3RM0A010005-01

Transmission Identification Number

S5RS0D0101009

The automatic transmission identification number is located on transmission case.



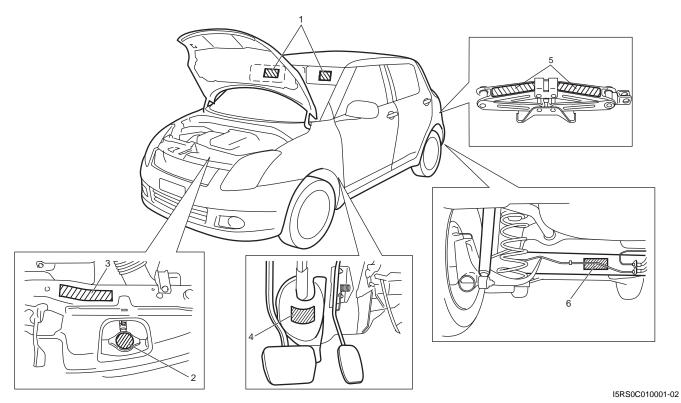
I4RS0A010008-01

Component Location

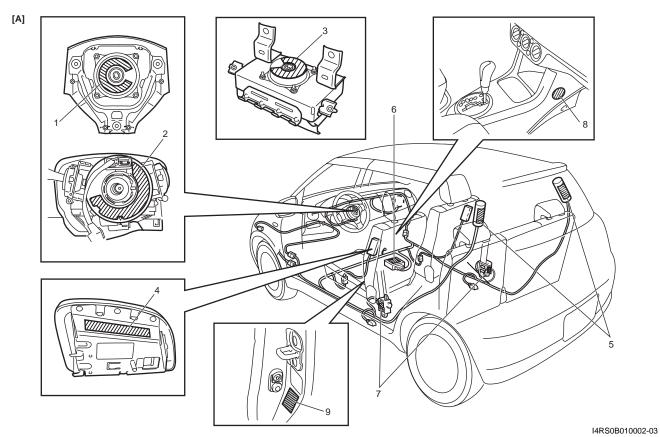
Warning, Caution and Information Labels Location

S5RS0D0103001

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.



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



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

Maintenance and Lubrication

Precautions

Precautions for Maintenance and Lubrication

Air Bag Warning

Refer to "Air Bag Warning in Section 00".

S5RS0D0200001

Scheduled Maintenance

Maintenance Schedule under Normal Driving Conditions

S5RS0D0205001

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 bel				_		I	_	_	R	
Valve lash (clearance) (I: ☞)			_		_	I	_	I		
Engine oil and oil filter (R: 🍘)			R	R	R	R	R	R		
Engine coolant (R: 🌮)			_		R	_	_	R		
Exhaust system (I: 🍞)						_	I	_	ı	
Ignition system										
Spark plugs (R: *)	When unleaded fuel is used	Vehicle with O2S Vehicle without O2S	Nickel Plug	_		R	_	_	R	
				Replace every 105,000 km (63,000						
			Iridium Plug	miles) or 84 months						
				_	R	_	R	_	R	
			Iridium Plug	_		_	R	_	_	
		l is used, refer to	"Maintenance Recom	mended	d unde	r Seve	re Drivi	ing		
	Conditions".									
Fuel system										
			Paved-road	ı	I	R	I	I	R	
Air cleaner filter (R:	☞, I: ☞)		Dusty conditions	Refer	to "Ma	intenar	nce Re	comme	ended	
Dusty conditions		Dusty Conditions	under Severe Driving Conditions".							
Fuel lines and connections (I: 🌮)			_		_	I	_	I		
Fuel filter (R: 🌮) (See NOTE below)			Replace every 105,000 km (63,000 miles)							
Fuel tank (I: F)			_	_		_	_			
Emission control s	svstem			I .		<u> </u>	<u> </u>	<u> </u>		
PCV valve (I: *) Vehicle with O2 Vehicle without			2S	_	_	_	_	_		
				_		1	_	_		
Fuel evaporative emission control system (I: 🏲)				_		_	_	_	I	
Brake	•	,		ı		I	I	I		
Brake discs and pads (thickness, wear, damage) (I: *)					ı	I	ı	ı	I	
Brake drums and shoes (wear, damage) (I: 🌮)				ı	_	I	_	I		
Brake hoses and pipes (leakage, damage, clamp) (I: *)				ı	_	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	
Tires (wear, damage, rotation) / wheels (damage) (I: 🍞 / 🍞)			I		ı	I	I	I		
Suspension system (tightness, damage, rattle, breakage) (I: *)						_	I	_	I	