

SUZUKI

SQ416/SQ420

SUPPLEMENTARY SERVICE MANUAL For Canvas Top Model

USE THIS MANUAL WITH MANUALS
MENTIONED IN FOREWORD OF THIS
MANUAL.

SUZUKI
Caring for Customers
99501-65D10-01E
(英)

IMPORTANT

WARNING/CAUTION/NOTE

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

WARNING:

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

CAUTION:

Indicates a potential hazard that could result in vehicle damage.

NOTE:

Indicates special information to make maintenance easier or instructions clearer.

WARNING:

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

WARNING:

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

- Service on and around the air bag system components or wiring must be performed only by an authorized SUZUKI dealer.

Refer to “Air Bag System Components and Wiring Location View” under “General Description” in air bag system section in order to confirm whether you are performing service on or near the air bag system components or wiring. Please observe all WARNINGS and “Service Precautions” under “On-Vehicle Service” in air bag system section before performing service on or around the air bag system components or wiring. Failure to follow WARNINGS could result in unintentional activation of the system or could render the system inoperative. Either of these two conditions may result in severe injury.

- 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, instrument panel or any other air bag system component (on or around air bag system components or wiring). Modifications can adversely affect air bag system performance and lead to injury.
- If the vehicle will be exposed to temperatures over 93°C (200°F) (for example, during a paint baking process), remove the air bag system components (air bag (inflator) module, sensing and diagnostic module (SDM), seat belt pretensioner (if equipped) beforehand to avoid component damage or unintended activation.

FOREWORD

This SUPPLEMENTARY SERVICE MANUAL is a supplement to SQ416/SQ420/SQ625 SERVICE MANUAL. It has been prepared exclusively for the following applicable model.

Applicable model:
SQ416/SQ420 Canvas Top Model

It describes only different service information of SQ416/SQ420 canvas top model as compared with SQ416/SQ420/SQ625 SERVICE MANUAL.

Therefore, whenever servicing SQ416/SQ420 canvas top model, consult this supplement first. And for any section, item or description not found in this supplement, refer to the related service manual below.

When replacing parts or servicing by disassembling, it is recommended to use SUZUKI genuine parts, tools and service materials (lubricants, sealants, etc.) as specified in each description.

All information, illustrations and specifications contained in this literature are based on the latest product information available at the time of publication approval. And used as the main subject of description is the unit of standard specifications among others.

Therefore, note that illustrations may differ from the unit being actually serviced. The right is reserved to make changes at any time without notice.

RELATED MANUAL:

Manual Name	Manual No.
SQ416/SQ420/SQ625 Service Manual	99500-65D00
SQ416/SQ420/SQ625 Unit Repair Manual for Manual Transmission, Automatic Transmission, Transfer and Differential	99501-65D00
SQ416/SQ420/SQ625 Wiring Diagram Manual	99512-65D01

SUZUKI MOTOR CORPORATION

OVERSEAS SERVICE DEPARTMENT

TABLE OF CONTENTS	SECTION
GENERAL INFORMATION	
General Information	0A
HEATING AND AIR CONDITIONING	
Air Conditioning	1B
STEERING, SUSPENSION, WHEELS AND TIRES	
Power Steering (P/S) System	3B1
Air Bag Steering Wheel and Column	3C1
Front Suspension	3D
Rear Suspension	3E
Wheel and Tires	3F
DRIVE SHAFT/PROP. SHAFT	
Front Drive Shaft/Shaft Bearing, Oil Seal	4A2
BRAKES	5
Brake Pipe/Hose/Master Cylinder	5A
ENGINE	
General Information and Diagnosis	6
Engine and Emission Control System (SFI for G16/J20)	6E1
Charging System	6H
TRANSMISSION, CLUTCH AND DIFFERENTIAL	
Automatic Transmission	7B1
BODY ELECTRICAL SYSTEM	
Lighting System	8B
Instrumentation/Driver Information	8C
Windows, Mirrors, Security and Lock	8D
BODY SERVICE	9
RESTRAINT SYSTEM	
Seat Belt	10A
Air Bag System	10B

0A

1B

3B1

3C1

3D

3E

3F

4A2

5

5A

6

6E1

6H

7B1

8B

8C

8D

9

10A

10B

SECTION 0A

GENERAL INFORMATION

NOTE:
For the descriptions (items) not found in this section, refer to the same section of the Service Manual mentioned in FOREWORD of this manual.

CONTENTS

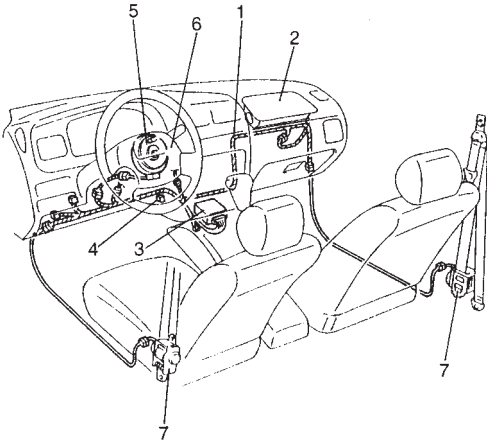
PRECAUTIONS	0A- 2
Precautions for Vehicle Equipped with a Supplemental Restraint (Air Bag) System	0A- 2
Diagnosis	0A- 2
Servicing and Handling	0A- 3

PRECAUTIONS

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

WARNING:

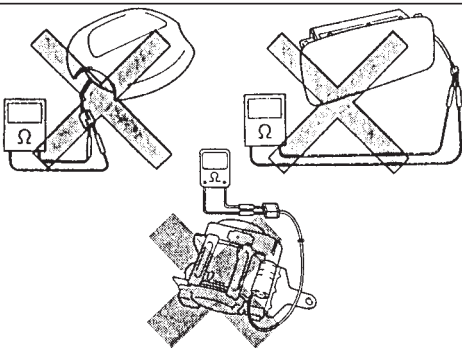
- The configuration of air bag system parts are as shown in the figure. When it is necessary to service (remove, reinstall and inspect) these parts, be sure to follow procedures described in SECTION 10B. Failure to follow proper procedures could result in possible air bag system activation, personal 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.



- | | |
|--|---|
| 1. Air bag wire harness | 5. Contact coil |
| 2. Passenger air bag (inflator) module | 6. Driver air bag (inflator) module |
| 3. SDM | 7. Seat belt pretensioner (if equipped) |
| 4. DLC | |

DIAGNOSIS

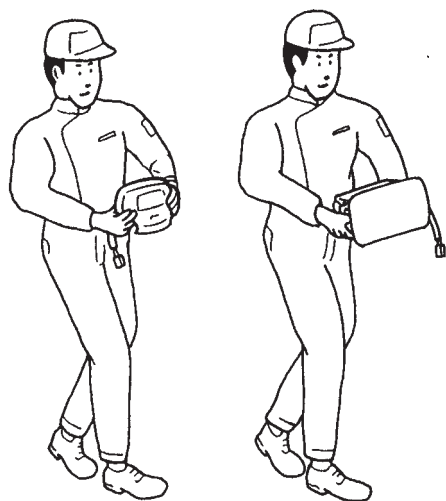
- When troubleshooting air bag system, be sure to follow “DIAGNOSIS” in SECTION 10B. Bypassing these procedures may result in extended diagnostic time, incorrect diagnosis, and incorrect parts replacement.
- Never use electrical test equipment other than that specified in this manual.



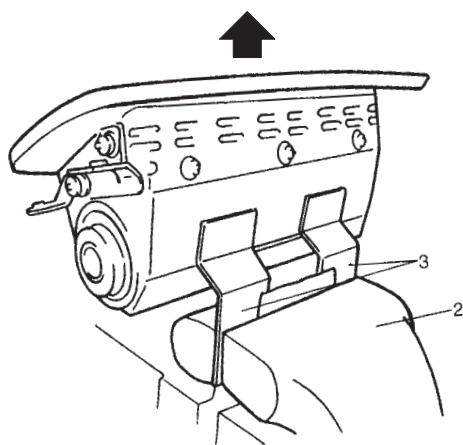
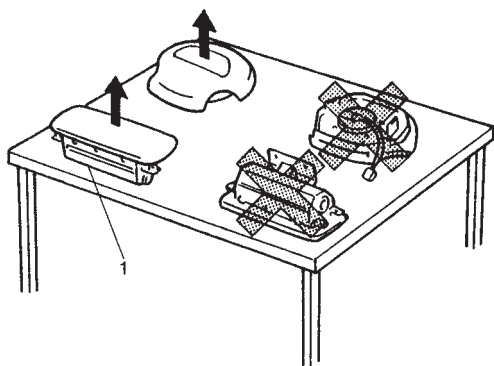
WARNING:

Never attempt to measure the resistance of the air bag (inflator) modules (driver and passenger) 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.

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



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



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

SERVICING AND HANDLING

WARNING:

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

Driver and Passenger Air Bag (Inflator) Modules

- For handling and storage of a live air bag (inflator) module, select a place where the ambient temperature below 65°C (150°F), without high humidity and away from electric noise.
- When carrying a live air bag (inflator) module, make sure the bag opening is pointed away from you. In case of an accidental deployment, the bag will then deploy with minimal chance of injury. Never carry the air bag (inflator) module by the wires or connector on the underside of the module. When placing a live air bag (inflator) module on a bench or other surface, always face the bag up, away from the surface. As the live passenger air bag (inflator) module must be placed with its bag (trim cover) facing up, place it on the workbench with a slit or use the workbench vise to hold it securely at its lower mounting bracket. This is necessary so that a free space is provided to allow the air bag to expand in the unlikely event of accidental deployment. Otherwise, personal injury may result.
- Never dispose of live (undeployed) air bag (inflator) modules (driver and passenger). If disposal is necessary, be sure to deploy them according to deployment procedures described in SECTION 10B 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.

WARNING:**SDM**

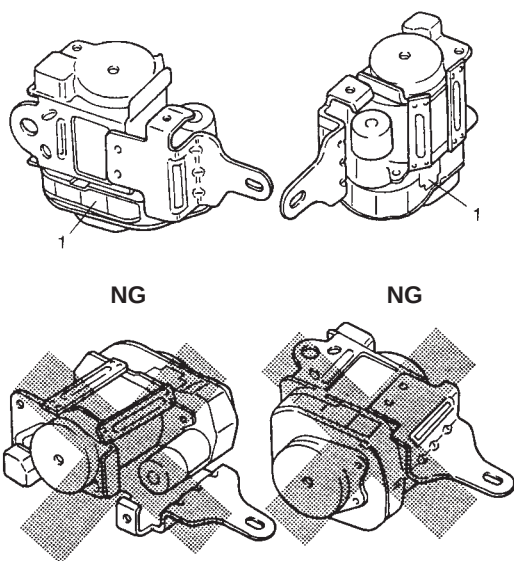
- During service procedures, be very careful when handling a Sensing and Diagnostic Module (SDM). Never strike or jar the SDM.

Never power up the air bag system when the SDM is not rigidly attached to the vehicle. All SDM and mounting bracket fasteners must be carefully torqued and the arrow must be pointing toward the front of the vehicle to ensure proper operation of the air bag system.

The SDM could be activated when powered while not rigidly attached to the vehicle which could cause deployment and result in personal injury.

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, be sure not to lay it with its exhaust hole provided side facing down. It is also prohibited to put something on its face with an exhaust hole or to put a seat belt pretensioner on top of another. Otherwise, personal injury may result.
- Never dispose of live (inactivated) seat belt pretensioners (driver and passenger). If disposal is necessary, be sure to activate them according to activation procedures described in SECTION 10B 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.



1. Exhaust hole

CAUTION:

- 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 an Accident” in SECTION 10B.
- When servicing parts other than air bag system, if shocks may be applied to air bag system component parts, remove those parts beforehand.
- When handling the air bag (inflator) modules (driver and passenger), seat belt pretensioners (driver and passenger) or SDM, be careful not to drop it or apply an impact to it. If an excessive impact was applied (e.g., dropped from a height of 91.4 cm (3 feet) or more), never attempt disassembly or repair but replace it with a new one.
- When grease, cleaning agent, oil, water, etc. has got onto air bag (inflator) modules (driver and passenger) or seat belt pretensioners (driver and passenger), wipe off immediately with a dry cloth.
- Air bag wire harness can be identified easily as it is covered with a yellow protection tube. Be very careful when handling it.
- When an open in air bag wire harness, damaged wire harness, connector or terminal is found, replace wire harness, connectors and terminals as an assembly.
- Do not apply power to the air bag system unless all components are connected or a diagnostic chart requests it, as this will set a diagnostic trouble code.
- Never use air bag system component parts from another vehicle.
- When using electric welding, be sure to temporarily disable air bag system referring to “Disabling Air Bag System” described in “Service Precautions” under “On-Vehicle Service” in SECTION 10B.
- Never expose air bag system component parts directly to hot air (drying or baking the vehicle after painting) or flames.
- WARNING/CAUTION labels are attached on each part of air bag system components. Be sure to follow the instructions.
- After vehicle is completely repaired, perform “Air Bag Diagnostic System Check” described in “Diagnosis” in SECTION 10B.

SECTION 1B

AIR CONDITIONING (OPTIONAL)

WARNING:

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

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

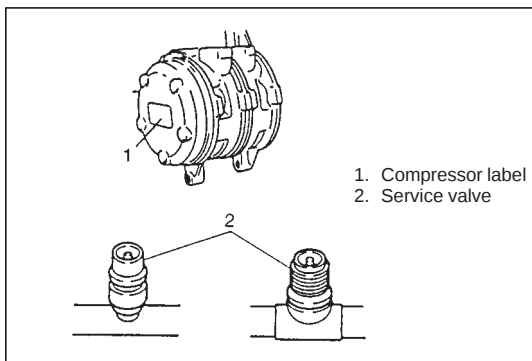
CAUTION:

The air conditioning system of this vehicle uses refrigerant HFC-134a (R-134a).
None of refrigerant, compressor oil and component parts is interchangeable between two types of A/C: one using refrigerant CFC-12 (R-12) and the other using refrigerant HFC-134a (R-134a).
Be sure to check which refrigerant is used before any service work including inspection and maintenance. For identification between these two types, refer to the description in page 1B-2.
When replenishing or changing refrigerant and compressor oil and when replacing parts, make sure that the material or the part to be used is appropriate to the A/C installed in the vehicle being serviced. Use of incorrect one will result in leakage of refrigerant, damage in parts or other faulty condition.

NOTE:
For the descriptions (items) not found in this section, refer to the same section of the Service Manual mentioned in FOREWORD of this manual.

CONTENTS

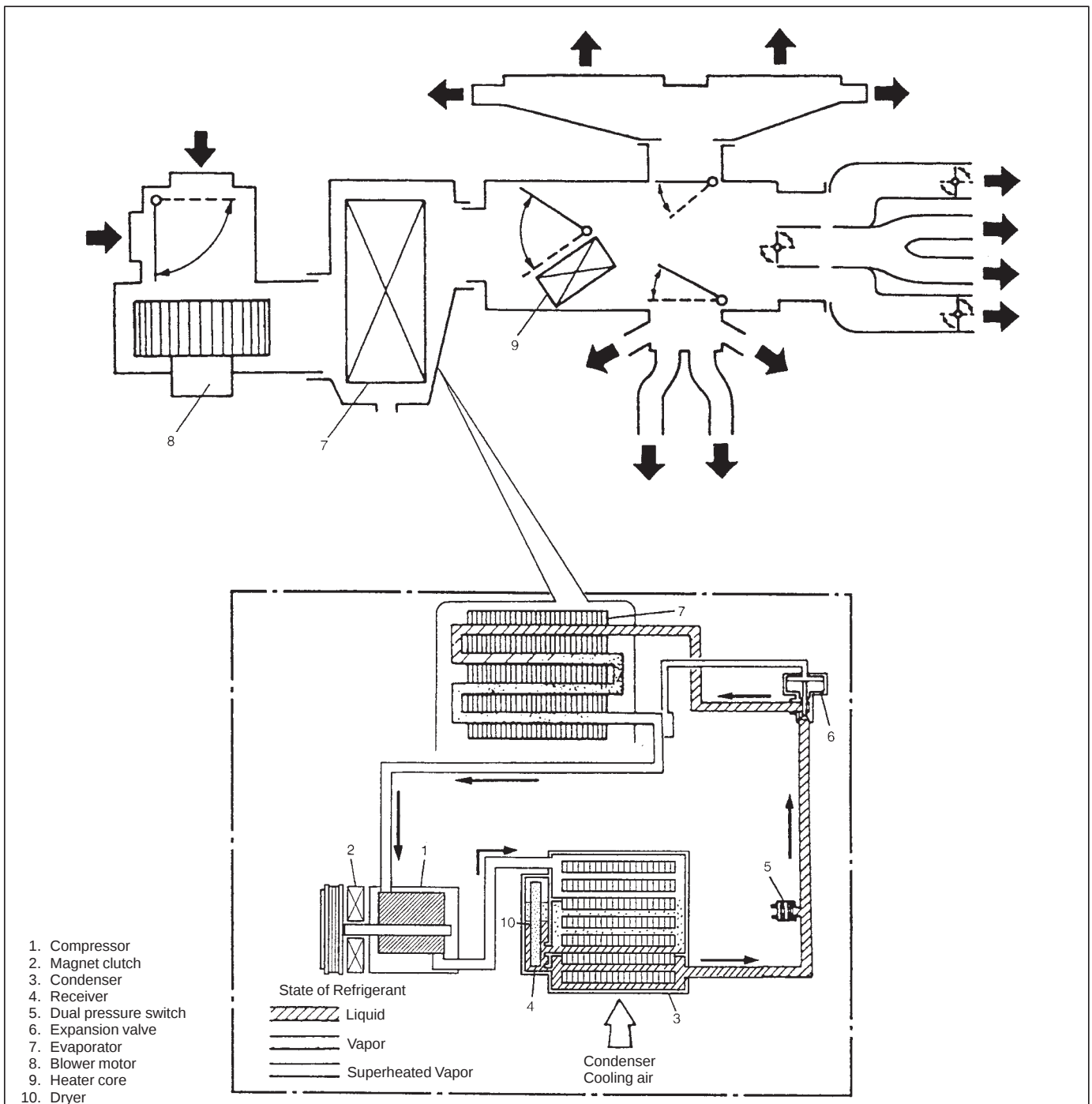
GENERAL DESCRIPTION	1B- 2
Major Components and Refrigerant	
Flow of Air Conditioning System	1B- 2
Component Location in Engine Room	1B- 3
RECOVERY, EVACUATION AND CHARGING	1B- 4
Procedure of Charging	1B- 4
ON-VEHICLE SERVICE	1B- 6
Refrigerant System	1B- 6
Compression System	1B-13
SPECIAL TOOLS	1B-18



GENERAL DESCRIPTION

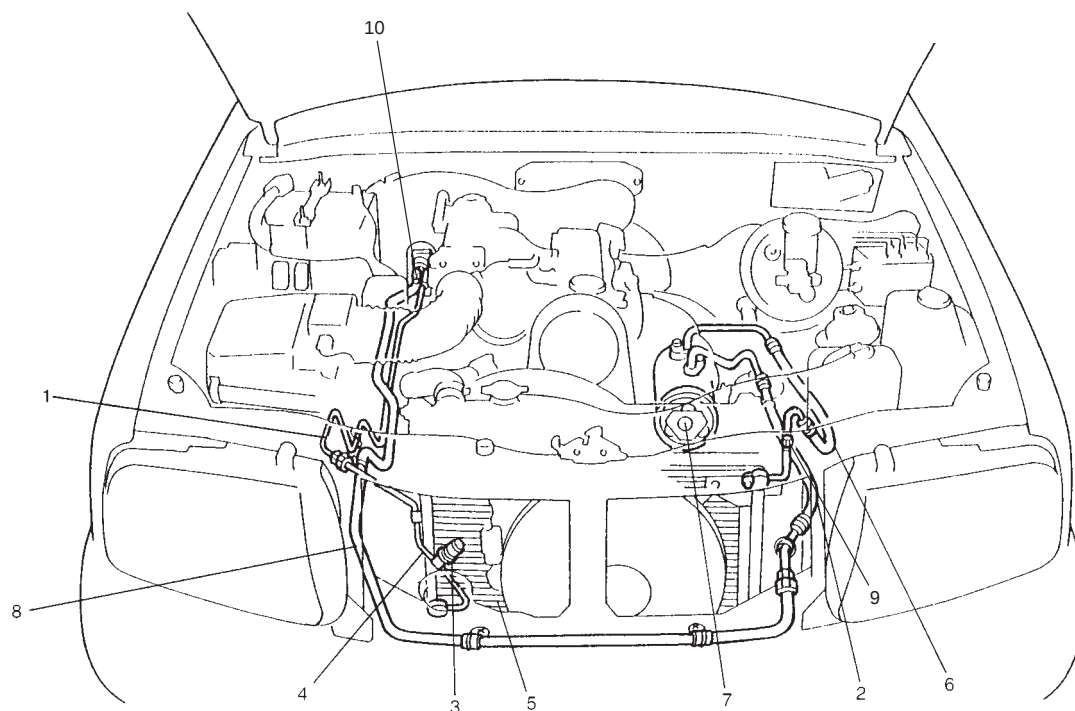
Whether the A/C in the vehicle being serviced uses R-134a or R-12 is indicated on LABEL on the compressor. Also, it can be checked by the shape of the service (charge) valve.

MAJOR COMPONENTS AND REFRIGERANT FLOW OF AIR CONDITIONING SYSTEM



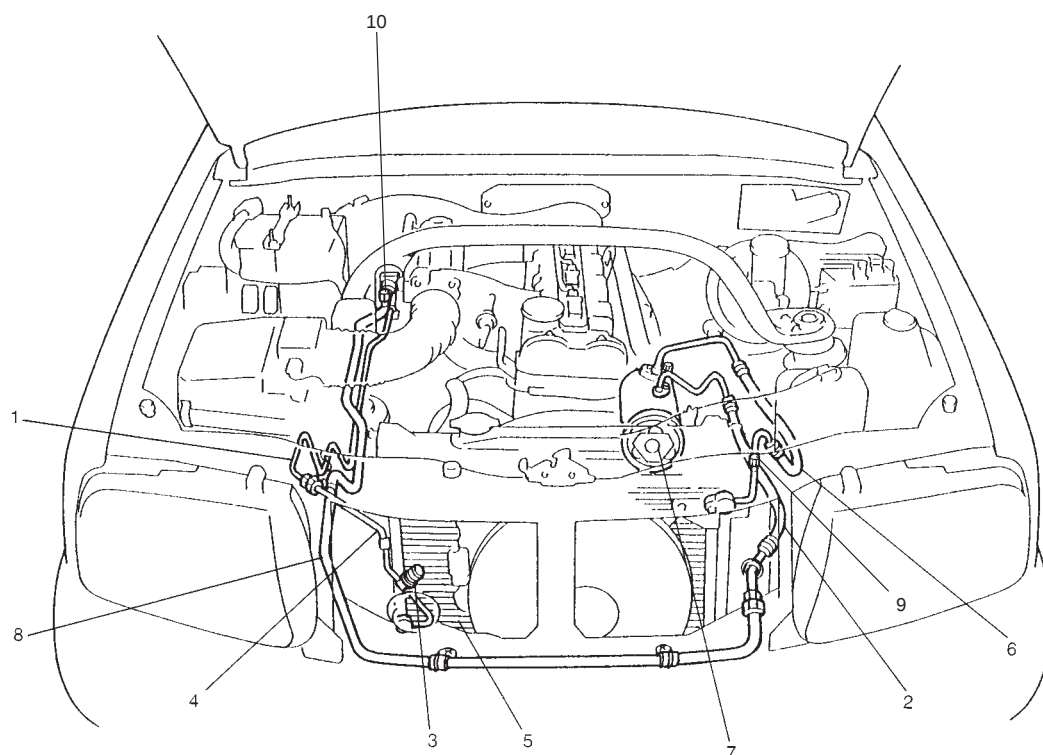
COMPONENT LOCATION IN ENGINE ROOM

G16 LH steering vehicle

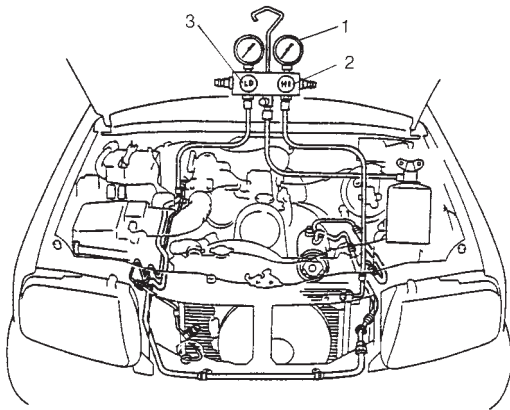


- | | |
|----------------------------|--------------------------------|
| 1. Liquid pipe | 6. Compressor delivery hose |
| 2. Compressor suction hose | 7. Compressor |
| 3. Dual pressure switch | 8. Suction pipe |
| 4. Condenser outlet pipe | 9. High pressure service valve |
| 5. Condenser | 10. Low pressure service valve |

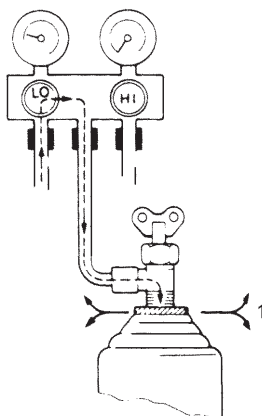
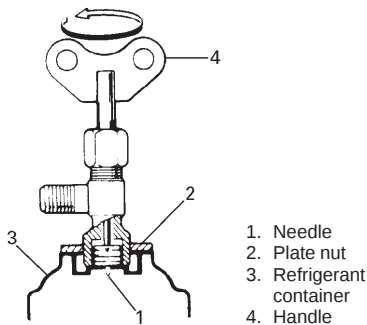
J20 LH steering vehicle



G16 LH steering vehicle shown



1. Manifold gauge set
2. High pressure side (Delivery side hose)
3. Low pressure side (Suction side pipe)



1. "Hiss"

RECOVERY, EVACUATION AND CHARGING

PROCEDURE OF CHARGING

- 1) Make sure that hoses are routed properly after evacuating the system.
- 2) Connect the manifold gauge set in position. Thus open refrigerant container valve to purge the charging line. Then open the low pressure-side valve.

WARNING:

Make sure that high pressure-side valve is closed securely.

- 3) Start engine and keep engine speed at 1,000 r/min. Then, operate air conditioning.
- 4) Charge A/C system with refrigerant in vapor state. At this time, refrigerant container should be held upright.
- 5) When refrigerant container is emptied, use following procedure to replace it with a new refrigerant container.
 - a. Close low pressure valve.
 - b. Replace empty container with a refrigerant container which has been charged with refrigerant. When using refrigerant container tap valve, use following procedure for replacement.
 - i) Retract needle and remove refrigerant container tap valve by loosening its plate nut.
 - ii) Install previously-removed refrigerant container tap valve to a new refrigerant container.
 - c. Purge any air existing in center charging hose. When using refrigerant container tap valve, use following procedure to purge air.
 - i) Once fully tighten refrigerant container tap valve and then loosen (open) plate nut slightly.
 - ii) Open low pressure valve of manifold gauge set a little.
 - iii) As soon as refrigerant comes out with a "hiss" through a clearance between refrigerant container and tap valve, tighten plate nut as well as manifold gauge set low pressure valve.
 - iv) Turn handle of tap valve clockwise so that its needle is screwed into the new container to make a hole for refrigerant flow.

- 6) After the system has been charged with specified amount (350 – 450 g, 12.3 – 16.0 oz.) of refrigerant or when low and high pressure gauges have indicated specified value below respectively, close low pressure side valve of manifold gauge set.

Low pressure gauge when charged with specified amount

About 200 – 300 kPa (2 – 3 kg/cm², 29 – 43 psi)

(At A/C inlet temperature 30 – 35°C, 86 – 95°F)

High pressure gauge when charged with specified amount

About 1370 – 1670 kPa (14 – 17 kg/cm², 200 – 244 psi)

(At A/C inlet temperature 30 – 35°C, 86 – 95°F)

ON-VEHICLE SERVICE

REFRIGERATING SYSTEM

CHECK AND SUPPLEMENT OF REFRIGERANT

To check if refrigerant is properly charged or not, perform "CORRECTIVE MEASURES FOR MALFUNCTION SYMPTOMS" in this section.

As a result, if adjustment a proper amount of refrigerant is necessary for refrigerant system.

Charge a proper amount of refrigerant to refrigerant system according to charging procedure described in recovery, evacuation and charging.

NOTE:

Do not perform an additional refrigerant charging to A/C system. This cause it to overcharge.

CONDENSER ASSEMBLY

INSPECTION

Check a) condenser fins for blockage, b) condenser fittings for leakage, and c) condenser fins for damage.

Clogged condenser fins should be washed with water, and should be dried with compressed air.

NOTE:

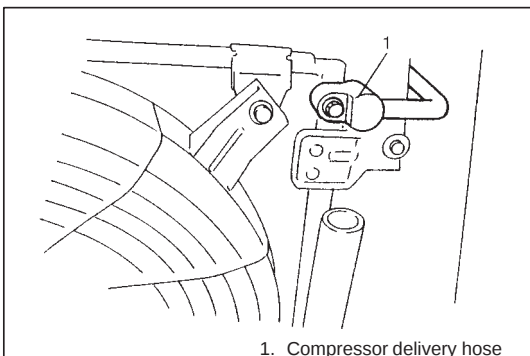
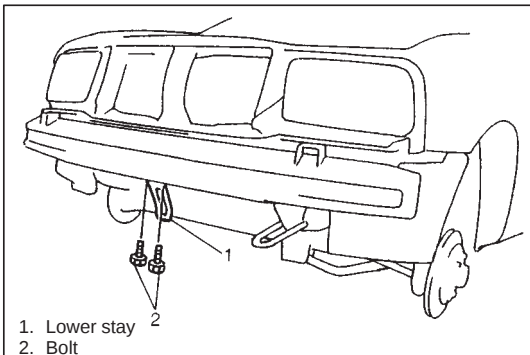
Be careful not to damage condenser fins. If condenser fin is bent, straighten it by using a screwdriver or pair of pliers. If any leakage is found from fitting or tube, repair or replace condenser.

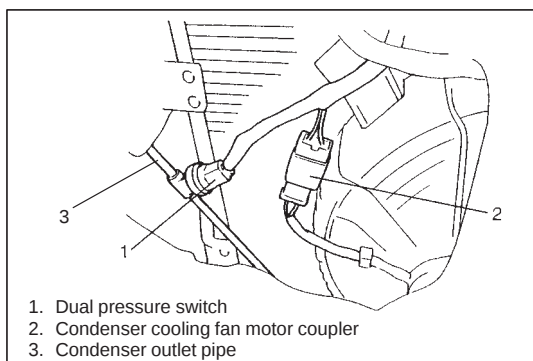
REMOVAL

- 1) Disconnect negative (–) cable at battery.
- 2) Recover refrigerant by using recovery and recycling equipment. Be sure to follow the instruction manual for the equipment. The amount of compressor oil removed must be measured and the same amount added to the system.
- 3) Remove front bumper assembly and lower stay (Refer to Section 9 "BODY SERVICE").
- 4) Disconnect compressor delivery hose from condenser inlet fittings.

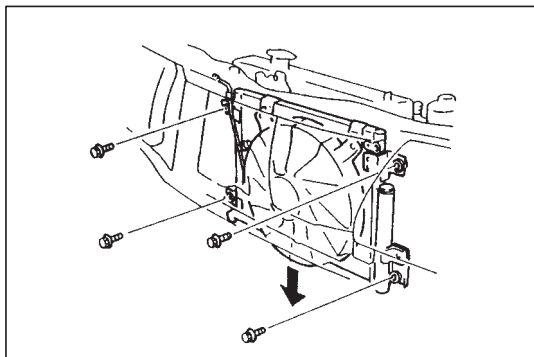
NOTE:

As soon as above hose and pipe are disconnected, cap opened fittings so that moisture and dust do not enter condenser.





- 5) Disconnect coupler from dual pressure switch.
- 6) Disconnect condenser outlet pipe.
- 7) Disconnect condenser cooling fan motor coupler.



- 8) Remove condenser with fan.

NOTE:

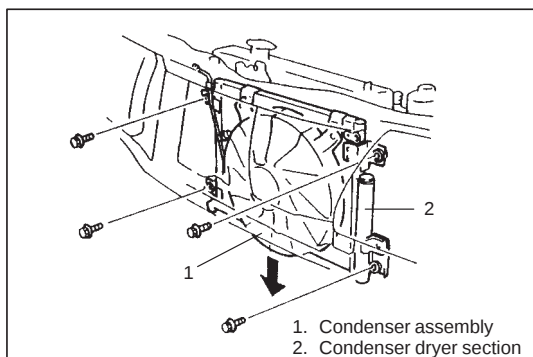
Be careful not to damage fins of condenser and radiator.

- 9) Remove cooling fan from condenser.

INSTALLATION

Reverse removal sequence to install condenser, noting following point.

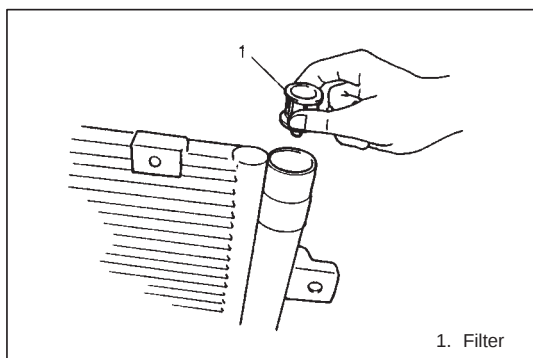
- 1) When replacing condenser, add 20 to 30 cc of refrigerating oil from compressor suction-side.
- 2) Evacuate and charge system according to previously-described procedure.



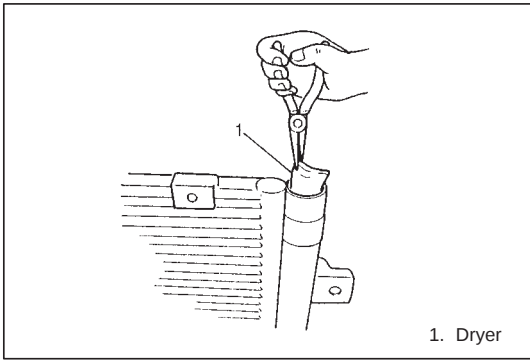
REPLACEMENT OF CONDENSER DRYER

REMOVAL

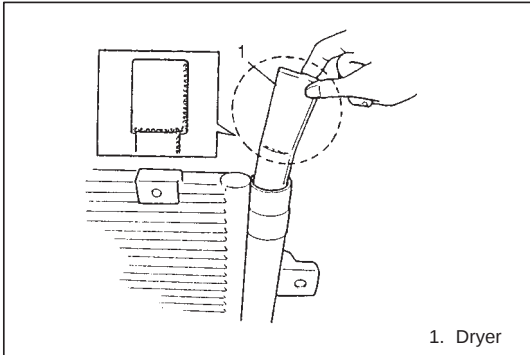
- 1) Remove condenser assembly from vehicle (refer to "CONDENSER ASSEMBLY REMOVAL" in this section).
- 2) Remove the cap using a hexagon wrench.



- 3) Remove the filter from the receiver.



4) Remove the dryer using a plier.



INSTALLATION

Reverse removal sequence to install condenser dryer, according to instruction manual with supply parts.

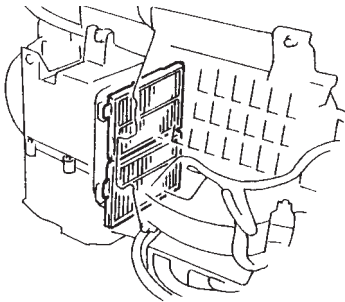
NOTE:

- When replacing condenser dryer, add 40 cc of refrigerating oil the same as compressor oil.
- Do not remove the dryer from the plastic bag until just before inserting it into the receiver.
- Install the condenser dryer with its double-layer portion facing the bottom of the receiver.

Cap Tightening Torque

- : $12.5 \pm 2.5 \text{ N}\cdot\text{m}$
- : $1.25 \pm 0.25 \text{ kg}\cdot\text{m}$
- : $9 \pm 1.8 \text{ lb}\cdot\text{ft}$

LH steering vehicle shown

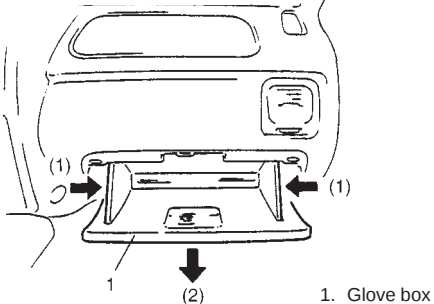


FILTER ELEMENT

REMOVAL

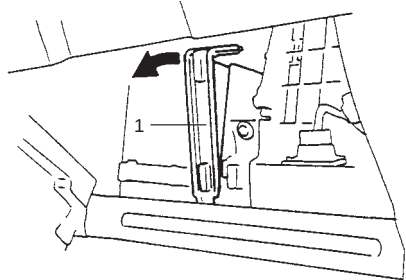
- 1) Disconnect negative cable at battery.
- 2) For vehicle with air bag system, disable air bag system. Refer to DISABLING AIR BAG SYSTEM in Section 10B.

LH steering vehicle shown



3) Pull down glove box.

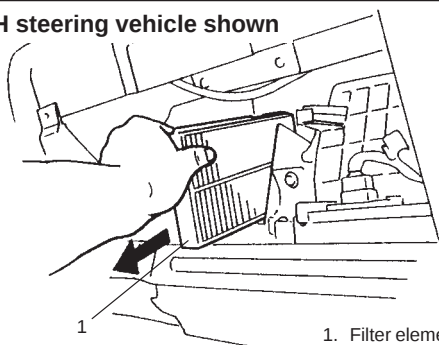
LH steering vehicle shown



1. Filter cover

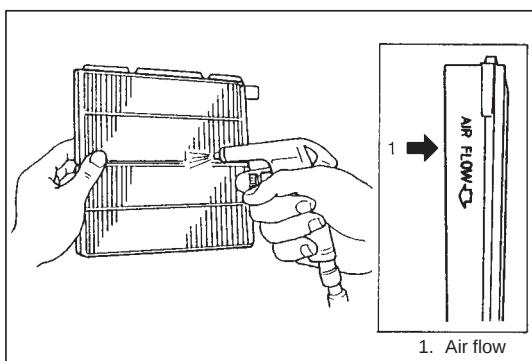
4) Remove filter cover.

LH steering vehicle shown



1. Filter element

5) Pull out filter element. Pull out upper filter first then the lower one.

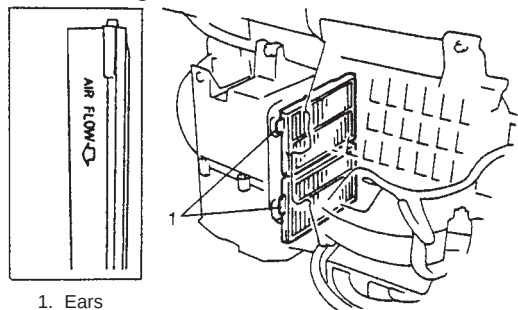


1. Air flow

CLEAN

Blow off dust by compressed air from air outlet side of the filter element.

LH steering vehicle shown



1. Ears

INSTALLATION

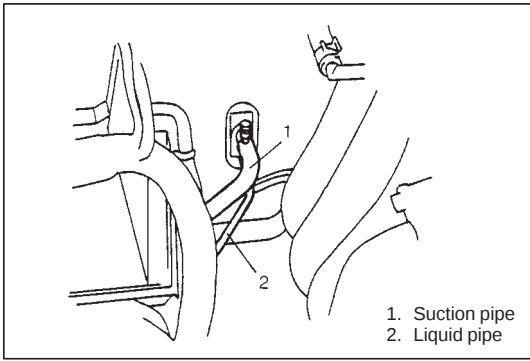
Reverse removal procedure for installation noting the followings:

- Install filter into cooling unit directing arrow mark on its end face to heater unit.
- Enable air bag system after installation. Refer to ENABLING AIR BAG SYSTEM in Section 10B.

EVAPORATOR (COOLING UNIT)

REMOVAL

- 1) Disconnect negative (–) cable at battery.
- 2) Disable air bag system. Refer to “Disabling Air Bag System” in Section 10B.
- 3) Recover refrigerant by using recovery and recycling equipment. Be sure to follow the instruction manual for the equipment. The amount of compressor oil removed must be measured and the same amount added to the system.

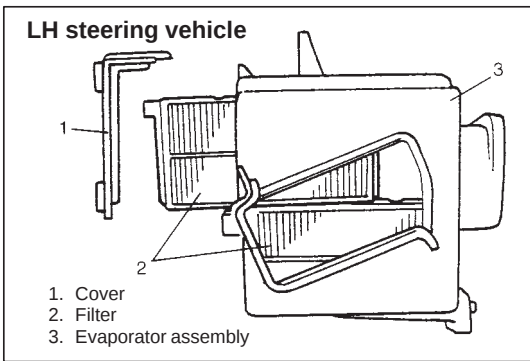


- 4) Disconnect suction pipe, and liquid pipe from evaporator (cooling unit).

NOTE:

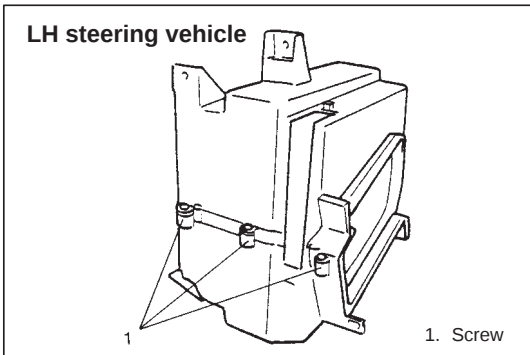
As soon as above hose and pipe are disconnected, cap opened fittings so that moisture and dust may not enter cooling unit.

- 5) Remove blower motor unit. Refer to Section 1A "HEATER AND VENTILATION".
- 6) Disconnect thermistor wire coupler.
- 7) Remove evaporator with evaporator case.

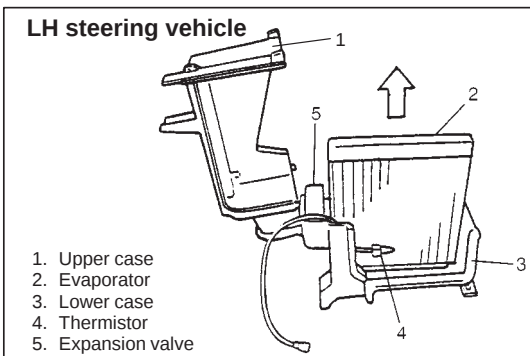


DISASSEMBLY

- 1) Remove filter assembly (if equipped).



- 2) Remove screws to separate evaporator upper and lower cases from each other.



- 3) Remove upper case and remove evaporator from lower case.
- 4) Remove following components from evaporator.
 - Expansion valve
 - Thermistor

INSPECTION

- 1) Check evaporator fins for blockage. If found clogged, use compressed air to clean the fins.

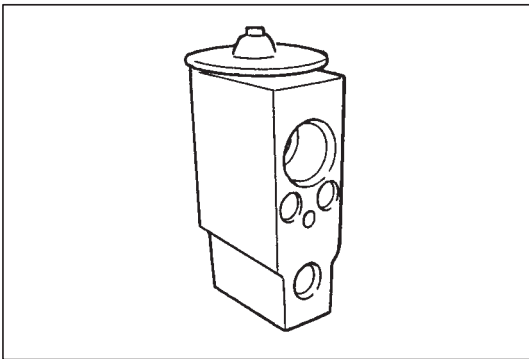
NOTE:

Do not use water for cleaning of evaporator.

- 2) Check inlet and outlet fittings for crack or scratch. Repair them as required.

ASSEMBLY AND INSTALLATION

- 1) Reverse removal sequence to install evaporator.
- 2) Enable air bag system. Refer to "Enabling Air Bag System" in Section 10B.
- 3) Evacuate and charge system according to previously described procedure.



EXPANSION VALVE

INSPECTION

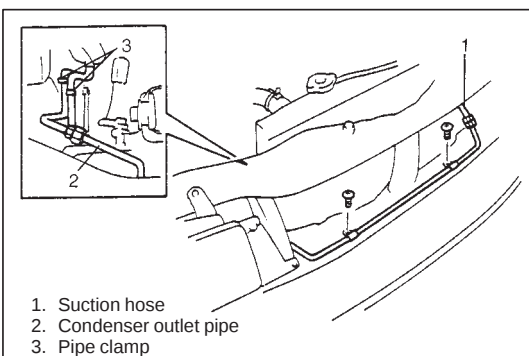
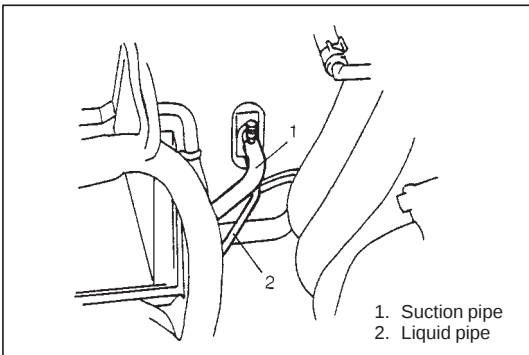
Refer to "Troubleshooting Procedure Using Manifold Gauge Set" in this section.

REMOVAL

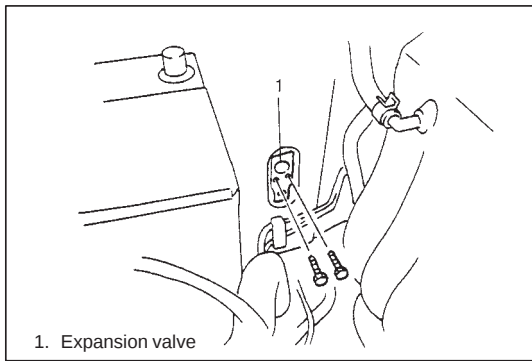
- 1) Recover refrigerant by using recovery and recycling equipment. Be sure to follow the instruction manual for the equipment. The amount of compressor oil removed must be measured and the same amount added to the system.
- 2) Remove front grill.
- 3) Disconnect suction pipe, and liquid pipe from evaporator (Cooling unit).

NOTE:

As soon as above hose and pipe are disconnected, cap opened fittings so that moisture and dust may not enter cooling unit.



- 4) Disconnect suction pipe, and liquid pipe from suction hose and condenser outlet pipe.
- 5) Remove pipe clamp then remove suction pipe and liquid pipe.

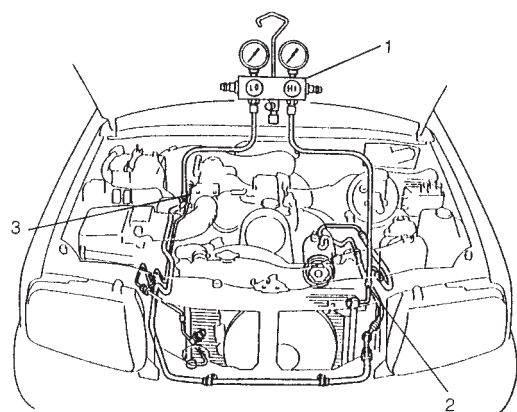


6) Remove expansion valve.

INSTALLATION

- 1) Reverse removal sequence to install expansion valve.
- 2) Evacuate and charge system according to previously described procedure.

G16 LH steering vehicle



1. Manifold gauge set
2. High pressure side
(Delivery side hose)
3. Low pressure side
(Suction side pipe)

COMPRESSION SYSTEM

COMPRESSOR

INSPECTION

- 1) Install manifold gauge set as illustrated.
- 2) Close Hi and Lo hand valves.
- 3) Run engine at fast idle.
- 4) Check compressor for following:
 - a. High pressure gauge reading is not low and low pressure gauge reading is not higher than normal.
 - b. Metallic sound.
 - c. Leakage from shaft seal.

If any of the above checks indicated a defect, repair compressor.

REMOVAL

- 1) Run engine at idle with A/C ON for 10 minutes.
- 2) Disconnect negative cable at battery.
- 3) Recover refrigerant from refrigeration system using recovery and recycling equipment.

NOTE:

The amount of compressor oil removed must be measured and the same amount must be poured when installing the compressor.

- 4) Disconnect thermal protector lead wire.
- 5) Disconnect suction and discharge hoses from compressor.

NOTE:

Cap open fitting immediately to keep moisture out of system.

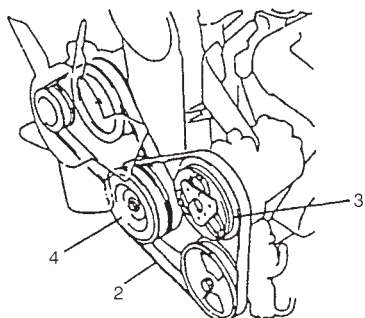
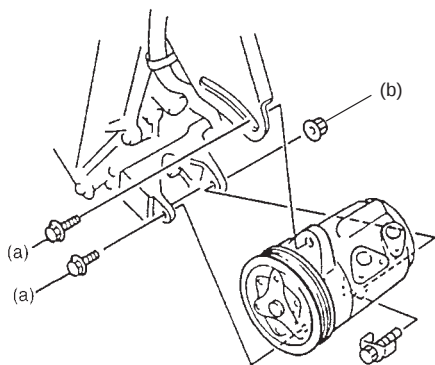
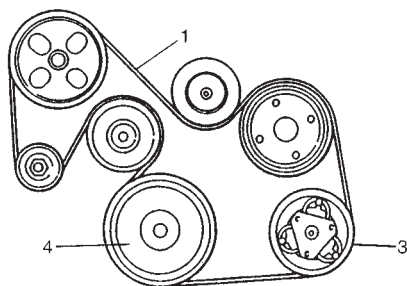
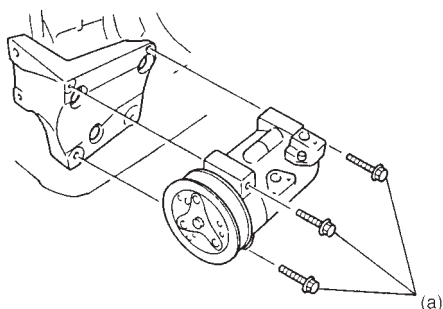
6) For G16 engine:

Remove compressor drive belt by loosening compressor mounting bolts.

For J20 engine:

Remove generator belt. Refer to Section 6H for details.

- 7) Remove compressor with clutch assembly from its mount.
- 8) Drain oil from compressor, and measure its amount.

G16 engine**J20 engine**

- | | |
|--------------------------|----------------------|
| 1. Generator belt | 3. Compressor pulley |
| 2. Compressor drive belt | 4. Crankshaft pulley |

INSTALLATION

- 1) Pour new compressor oil. The amount must be the same with the amount measured in REMOVAL.

NOTE:

Compressor assembly supplied from factory is filled up with following amount of oil.

Amount of oil in compressor: 120 cm³ (120 cc, 7.5 in³)

- 2) **For G16 engine:**

Install compressor temporarily to bracket, then install compressor drive belt.

For J20 engine:

Install compressor to its bracket.

Tighten bolts (a) first, then (b).

Tightening Torque

(a), (b): 23 N·m (2.3 kg-m, 17.0 lb-ft)

- 3) Connect suction and discharge hoses to compressor.

- 4) **For G16 engine:**

Tension compressor drive belt by tightening compressor mounting bolts. Refer to Section 3B1 for drive belt tension.

Tighten bolt (a) first, then (b).

Tightening Torque

(a): 23 N·m (2.3 kg-m, 17.0 lb-ft)

For J20 engine:

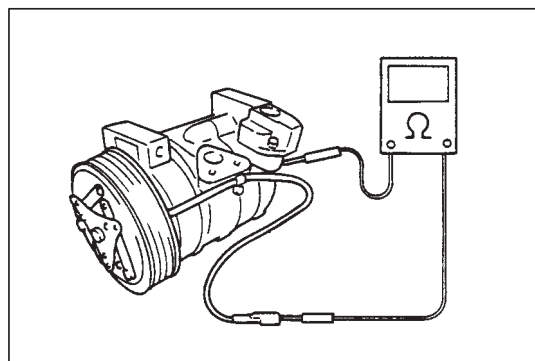
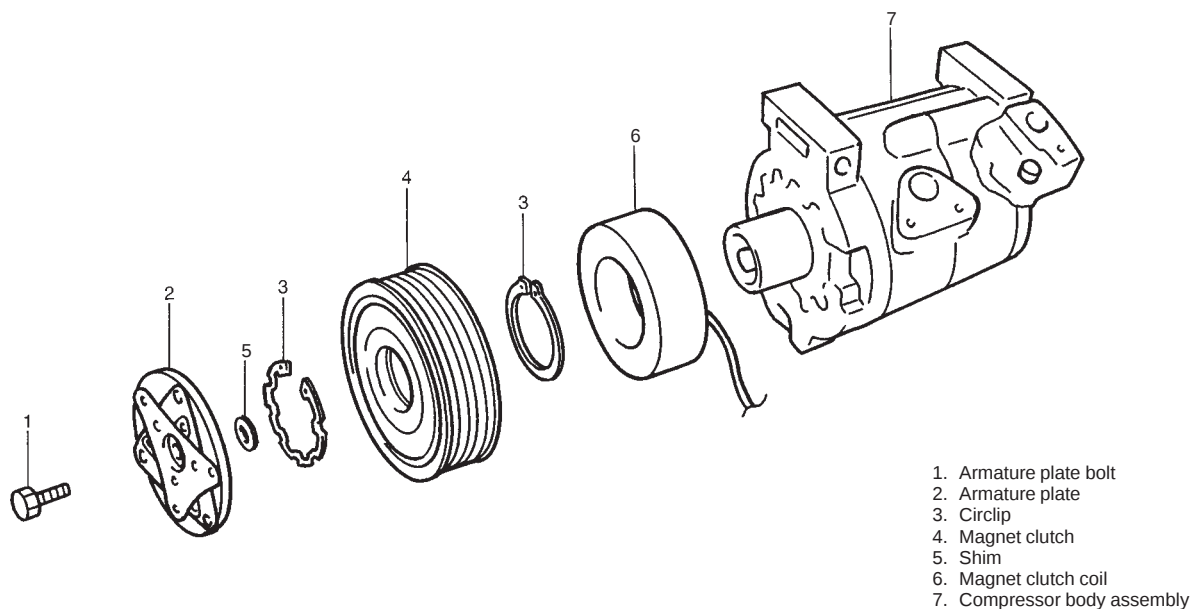
Install generator belt. Refer to Section 6H for details.

- 5) Connect thermal protector lead wire.
- 6) Evacuate and charge system according to previously described procedure.

CAUTION:

Be sure to use HFC-134a (R-134a) compressor oil.

MAGNET CLUTCH

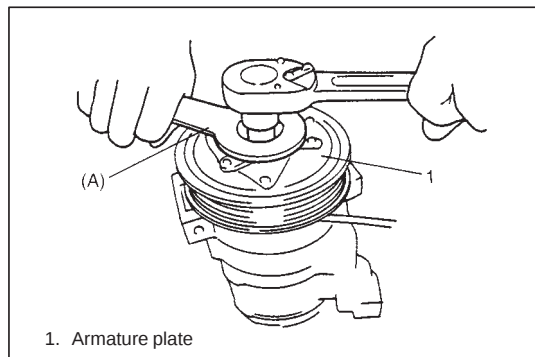


INSPECTION

- Inspect pressure plate and rotor for signs of oil.
- Check clutch bearings for noise and grease leakage.
- Using an ohmmeter, measure resistance of stator coil between clutch lead wire and ground.

If measured resistance is not within tolerance, replace coil.

Standard resistance: 3.9 – 4.3 Ω at 20 °C, 68 °F



REMOVAL

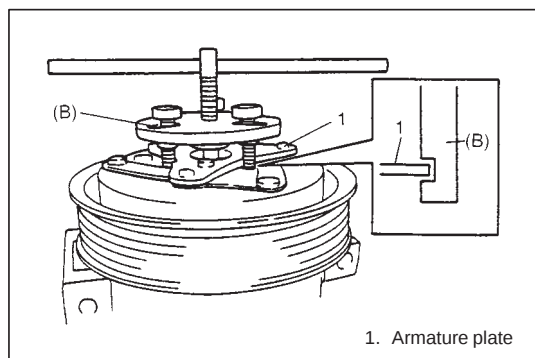
- Remove compressor from vehicle. Refer to COMPRESSOR in this section.
- Fix armature plate with special tool (A) and remove armature plate bolt and washer.

Special Tool

(A): 09991-06020

NOTE:

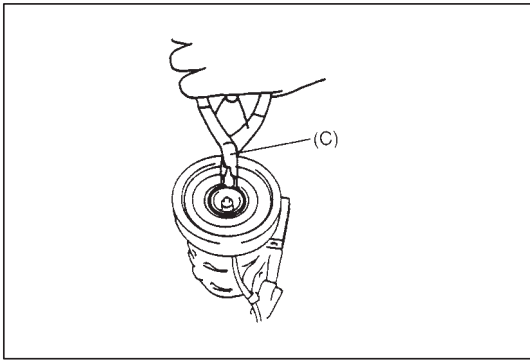
Do not reuse armature plate bolt.



- Using special tool (B), remove armature plate.

Special Tool

(B): 09991-06030

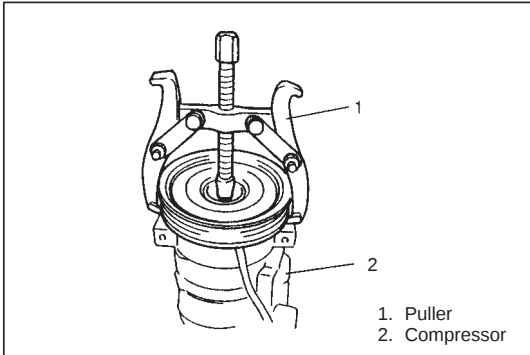


- 4) Remove shims from shaft.
- 5) Using special tool (C), remove circlip.

Special Tool

(C): 09900-06107

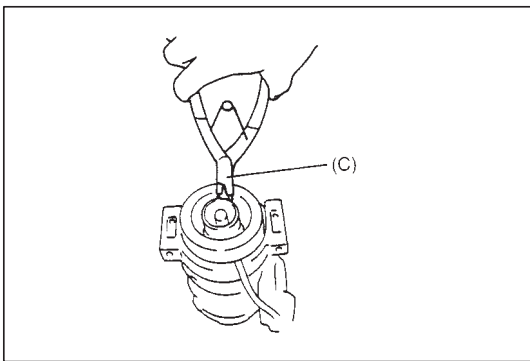
- 6) Remove magnet clutch lead wire clamp screw, and remove magnet clutch read wire ground terminal.



- 7) Remove magnet clutch with puller.

NOTE:

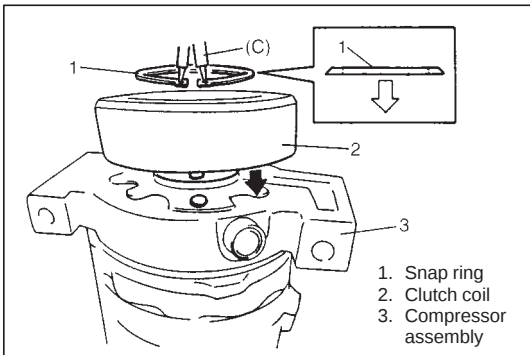
Be careful not to damage pulley when tapping magnet clutch.



- 8) Remove magnet clutch coil.

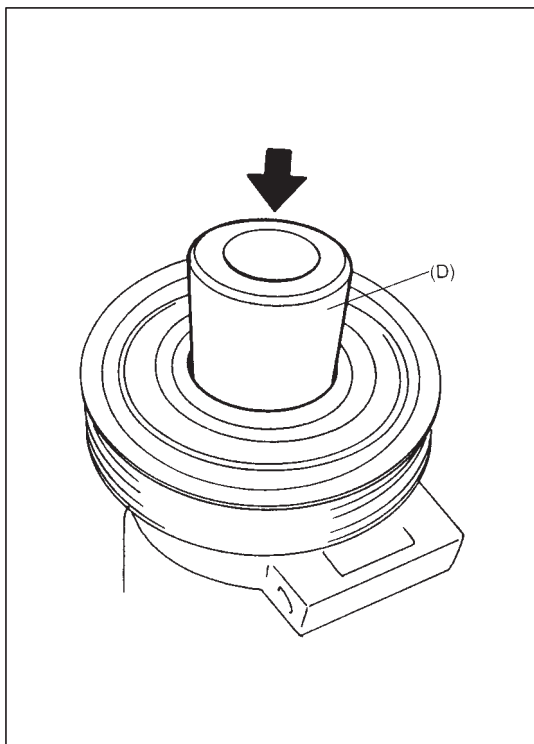
Special tool

(C): 09900-06107



INSTALLATION

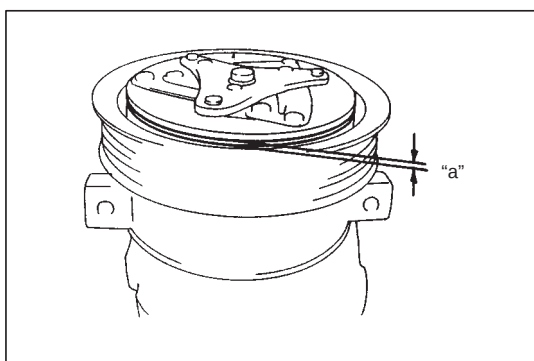
- 1) Install magnet clutch coil.
Protrusion on under side of coil ring must match hole in compressor assembly to prevent movement and correctly locate lead wire.
 - 2) Using special tool (C), install snap ring as shown.
- Special Tool**
(C): 09990-06107
- 3) Install clamp portion and ground terminal of lead wire.



- 4) Install magnet clutch.
 - (1) Set magnet clutch squarely over clutch installation boss.
 - (2) Place special tool (D) onto clutch bearing.
Ensure that edge rests only on inner race of bearing.
 - (3) Install snap ring.

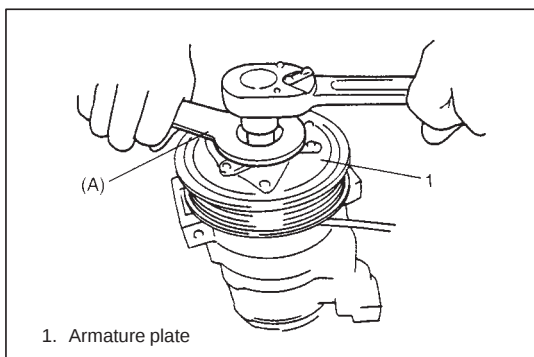
Special Tool
(D): 09991-06010

CAUTION:
 Be careful not to scratch bearing seal.



- 5) Adjust clearance, between armature plate and magnet clutch by putting shim on compressor shaft.

Standard clearance "a": 0.3 – 0.5 mm (0.012 – 0.02 in.)

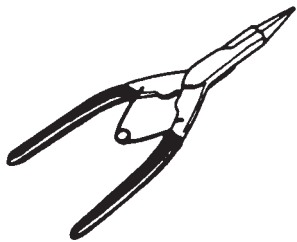


- 6) Tighten new armature plate nut as specified below.

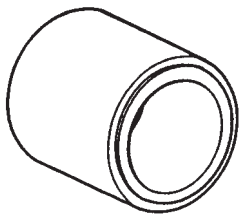
Tightening Torque
(a): 14 N·m (1.4 kg-m, 10.5 lb-ft)

Special Tool
(A): 09991-06020

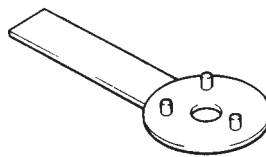
SPECIAL TOOLS



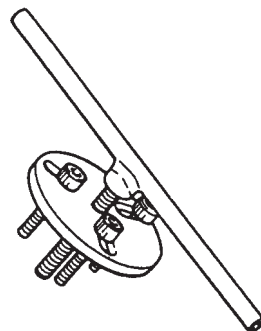
09900-06107
Snap ring pliers
(Opening type)



09991-06010
Magnet clutch pulley installer



09991-06020
Armature plate spanner



09991-06030
Armature plate remover

SECTION 3B1

POWER STEERING (P/S) SYSTEM

WARNING:

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

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

NOTE:

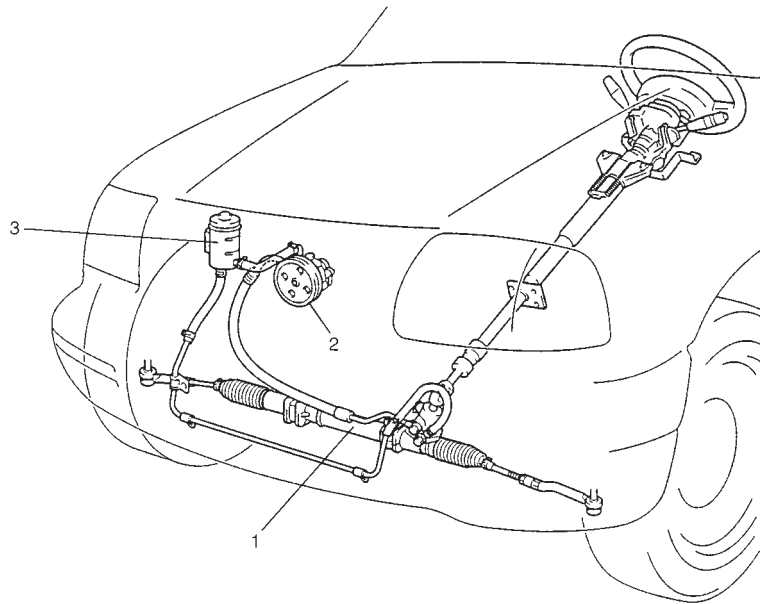
- For the descriptions (items) not found in this section, refer to the same section of the Service Manual mentioned in FOREWORD of this manual.
- Power Steering Gear Box cannot be disassembled or adjusted.
- All steering gear fasteners are important attaching parts in that they could affect the performance 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 these parts.

CONTENTS

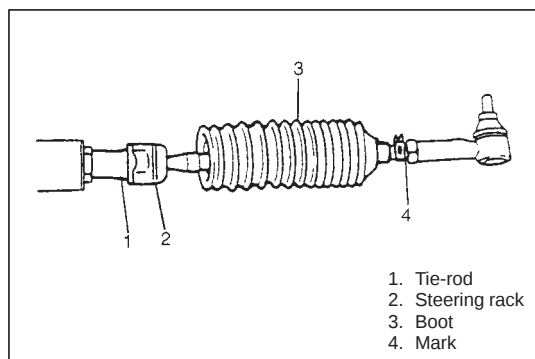
GENERAL DESCRIPTION	3B1- 2
ON-VEHICLE SERVICE	3B1- 3
Rack Boot/Tie-rod	3B1- 3
Power Steering Pump	3B1- 5
TIGHTENING TORQUE SPECIFICATIONS	3B1- 6
SPECIAL TOOL	3B1- 6

GENERAL DESCRIPTION

The power steering (P/S) system in this vehicle reduces the driver's effort needed in turning the steering wheel by utilizing the hydraulic pressure generated by the power steering (P/S) pump which is driven by the engine. It is an integral type with the rack and pinion gears and the control valve unit, hydraulic pressure cylinder unit all built in the steering gear box.



1. Power steering gear box
2. Power steering pump
3. Oil tank

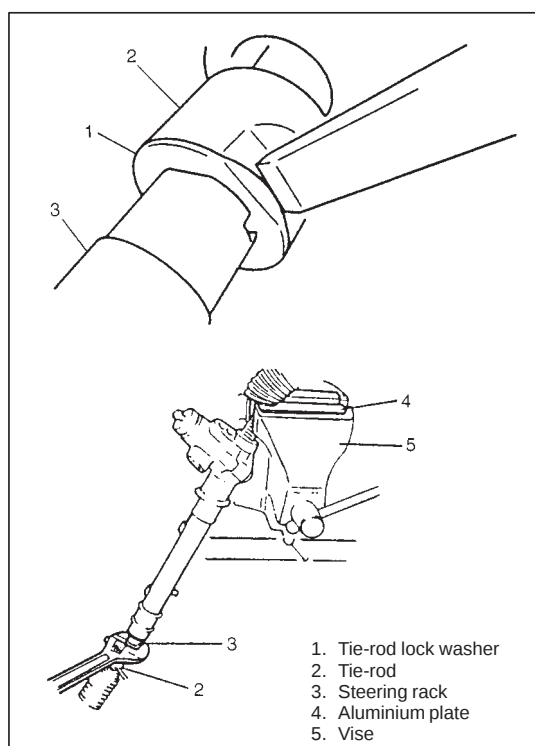


ON-VEHICLE SERVICE

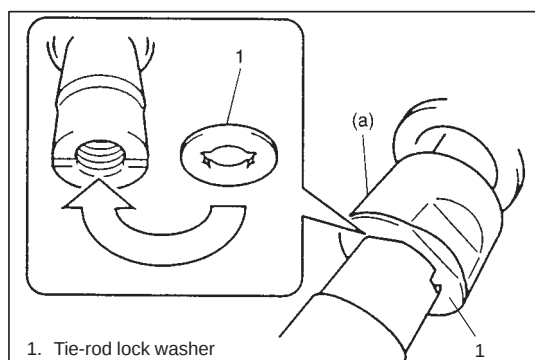
RACK BOOT/TIE-ROD (LH STEERING VEHICLE)

REMOVAL

- 1) Remove steering gear case, refer to POWER STEERING GEAR BOX ASSEMBLY REMOVAL.
- 2) For ease of adjustment after installation, make marking of tie-rod end lock nut position of tie-rod thread.
- 3) Loosen tie-rod end lock nut and remove tie-rod end.
- 4) Remove boot band and clip.
- 5) Remove boot from tie-rod.



- 6) Unbend washer (2 places), and remove tie-rod from rack.



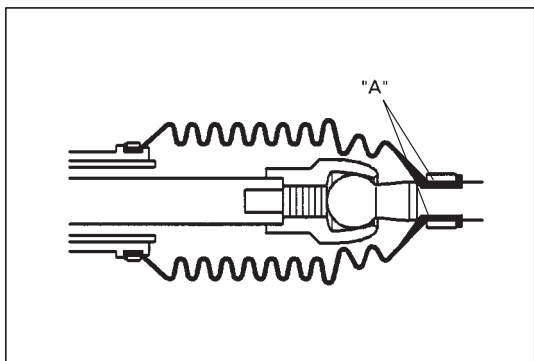
INSTALLATION

- 1) Install new tie-rod lock washer and tie-rod to rack.
- 2) Tighten tie-rod ball nut to specified torque.

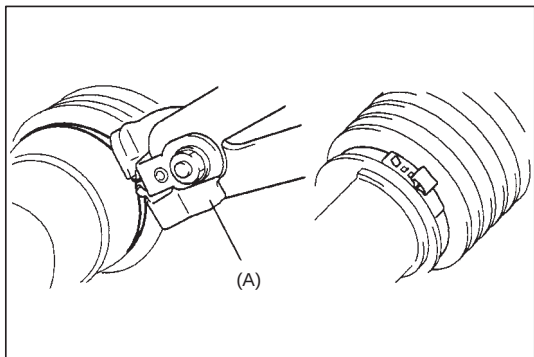
Tightening Torque

(a): 85 N·m (8.5 kg-m, 61.5 lb-ft)

- 3) Bend lock washer 2 place at the flat part of tie-rod ball nut.



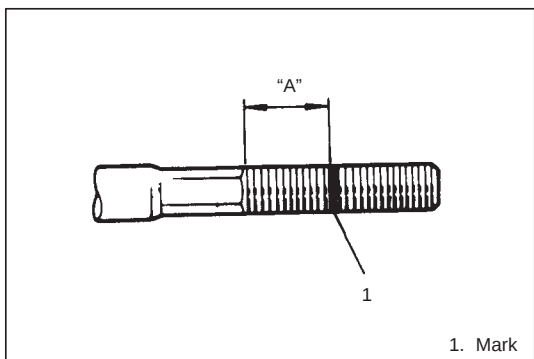
- 4) Apply grease to "A" indicated in figure.
- 5) Position boot properly in grooves of gear case and tie-rod.
Check to ensure that boot is free from twist and dent.



- 6) Fasten boot with new clamp and clip securely.

Special Tool

(A): 09943-55010



- 7) Install tie-rod end lock nut and tie-rod end to tie-rod.
Position lock nut to marking made in removal.

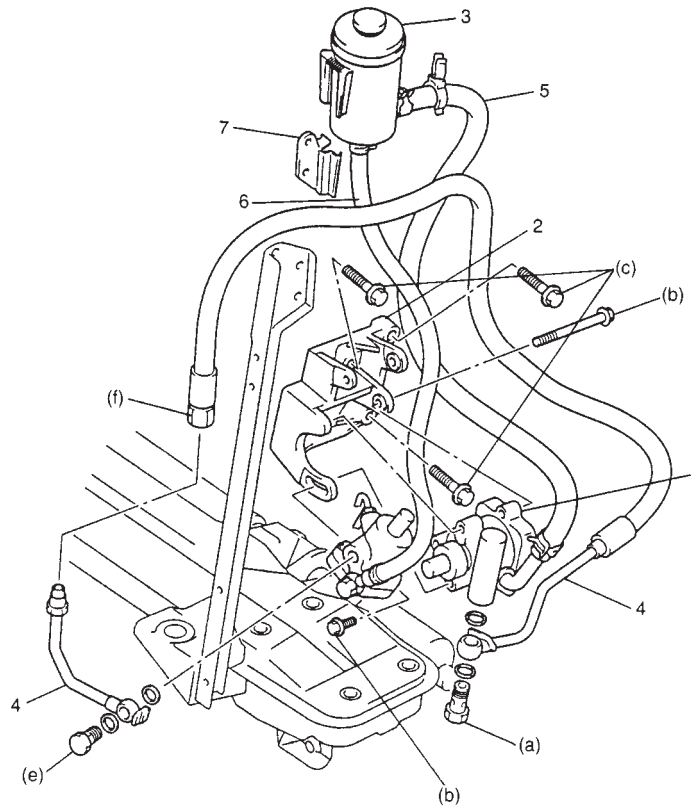
NOTE:

When tie-rod was replaced, measure length "A" on removed tie-rod and use it on new replacement tie-rod so as to position lock nut properly.

- 8) Install steering gear case. Refer to POWER STEERING GEAR BOX ASSEMBLY INSTALLATION in this section.

POWER STEERING PUMP

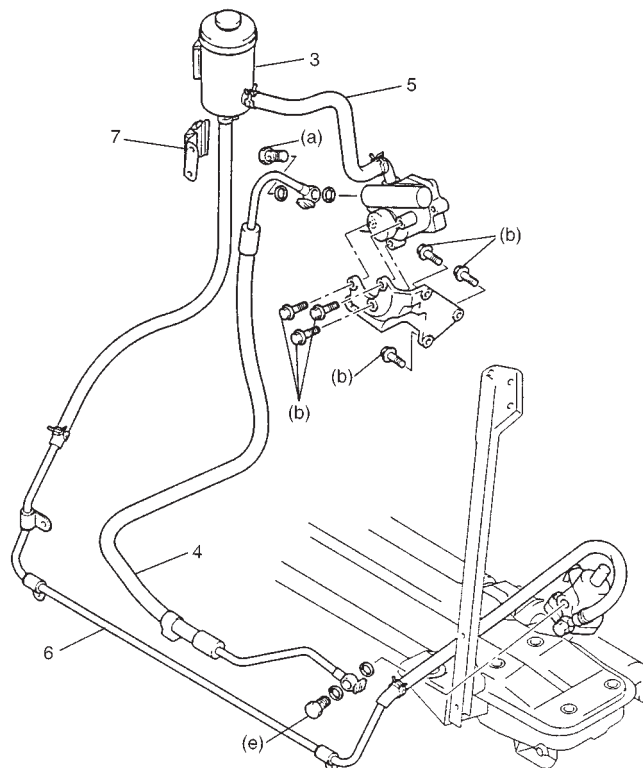
[A]



Tightening Torque

- (a): 60 N·m (6.0 kg-m, 43.5 lb-ft)
- (b): 25 N·m (2.5 kg-m, 18.5 lb-ft)
- (c): 55 N·m (5.5 kg-m, 40.0 lb-ft)
- (e): 35 N·m (3.5 kg-m, 25.5 lb-ft)
- (f): 40 N·m (4.0 kg-m, 29.0 lb-ft)

[B]



[A]: G16 Type engine
[B]: J20 Type engine

- 1. Power steering pump assembly
- 2. Bracket
- 3. Power steering oil tank

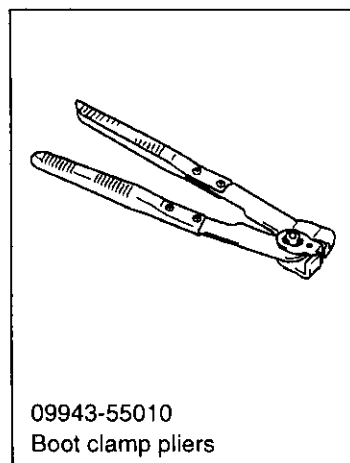
- 4. High pressure hose & pipe
- 5. Suction hose

- 6. Low pressure return hose
- 7. Oil tank bracket

TIGHTENING TORQUE SPECIFICATIONS

Fastening parts		Tightening torque		
		N·m	kg·m	lb·ft
Pump bracket bolt	G16 Type engine	55	5.5	40.0
	J20 Type engine	25	2.5	18.5
Tie-rod (LH steering vehicle)		85	8.5	61.5

SPECIAL TOOL



SECTION 3C1

AIR BAG STEERING WHEEL AND COLUMN

WARNING:

- Service on and around the air bag system components or wiring must be performed only by an authorized SUZUKI dealer. Please observe all WARNINGS and “Service Precautions” under “On-Vehicle Service” in air bag system section before performing service on or around the air bag system components or wiring. Failure to follow WARNINGS could result in unintentional activation of the system or could render the system inoperative. Either of these two conditions may result in severe injury.
- The procedures in this section must be followed in the order listed to disable the air bag system temporarily and prevent false diagnostic trouble codes 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.

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 above procedures are not followed, parts or system damage could result.

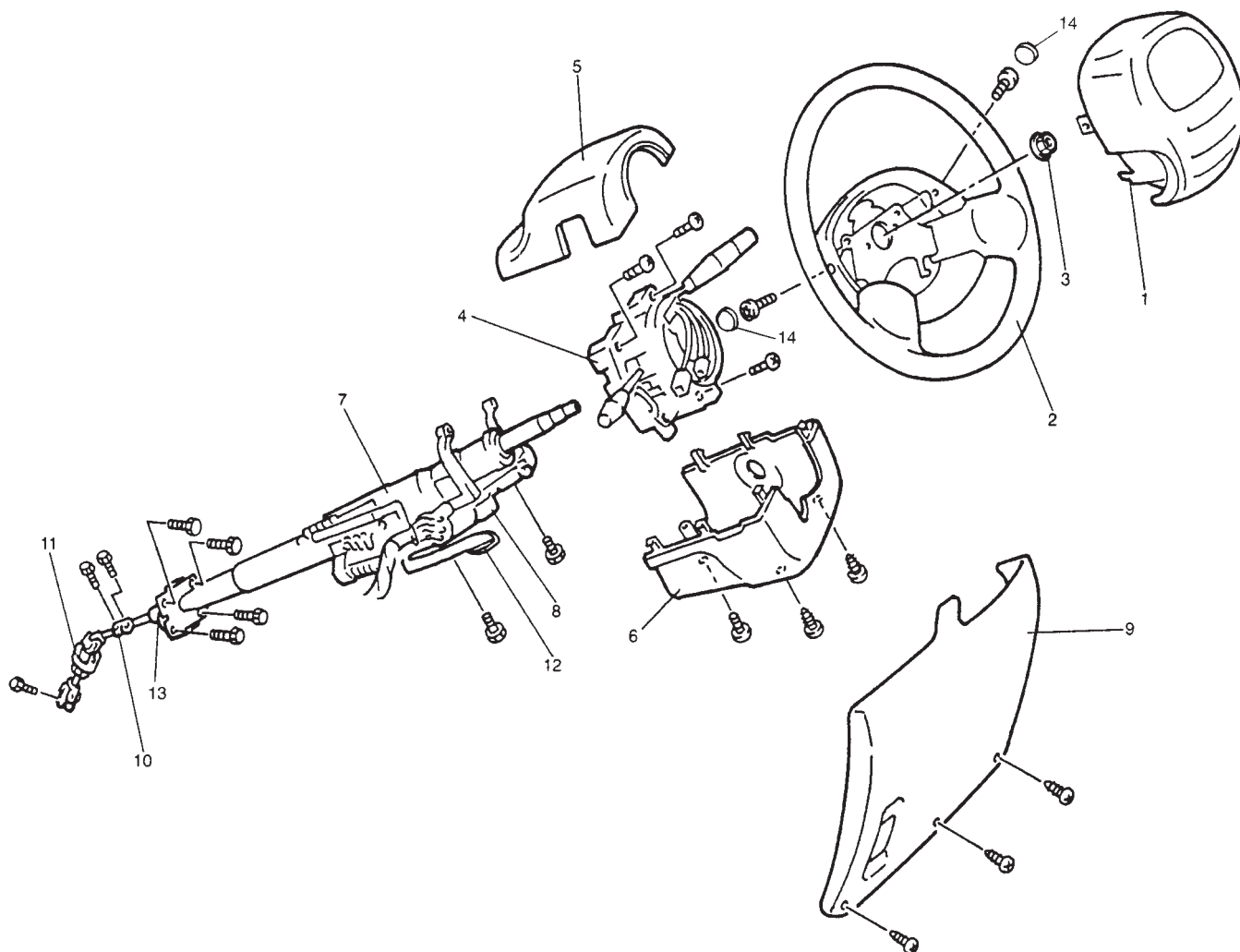
NOTE:

For the descriptions (items) not found in this section, refer to the same section of the Service Manual mentioned in FOREWORD of this manual.

CONTENTS

GENERAL DESCRIPTION	3C1- 2
ON-VEHICLE SERVICE	3C1- 3
Driver air bag (inflator) module	3C1- 3

GENERAL DESCRIPTION



- | | |
|---|--|
| 1. Driver air bag (inflator) module | 8. Steering lock assembly |
| 2. Steering wheel | 9. Steering column hole cover |
| 3. Steering wheel nut | 10. Steering shaft joint |
| 4. Contact coil and combination switch assembly | 11. Steering lower shaft assembly |
| 5. Steering column upper cover | 12. Adjustable steering column release lever |
| 6. Steering column lower cover | 13. Steering column lower seal |
| 7. Steering column assembly | 14. Cap |

ON-VEHICLE SERVICE

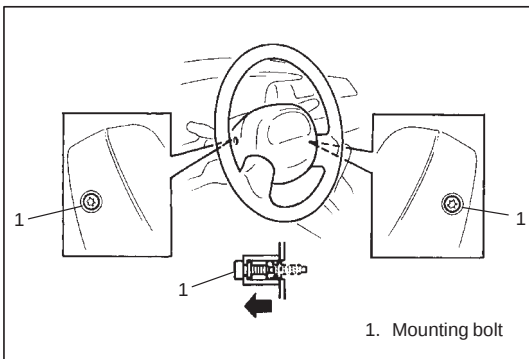
DRIVER AIR BAG (INFLATOR) MODULE

WARNING:

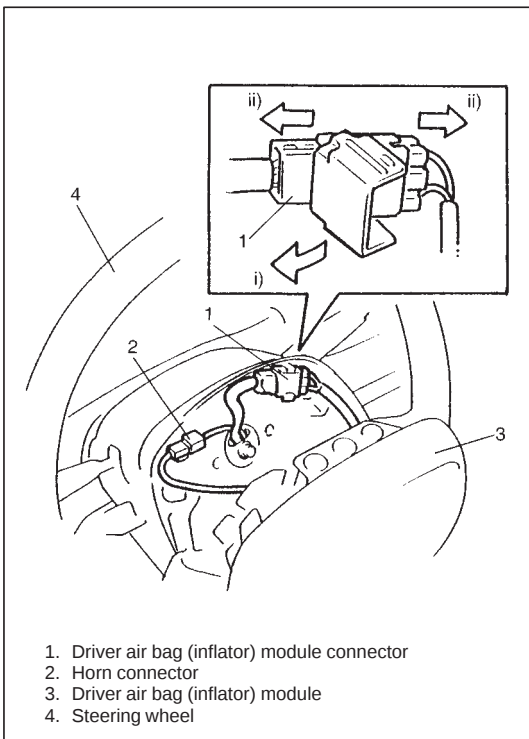
When handling an air bag (inflator) module, be sure to read "Service Precautions" under "On-Vehicle Service" in SECTION 10B and observe each instruction. Failure to follow them could cause a damage to the air bag (inflator) module or result in personal injury.

REMOVAL

- 1) Disconnect negative battery cable at battery terminal.
- 2) Disable air bag system. Refer to "Disabling Air Bag System" under "Service Precautions" in SECTION 10B.



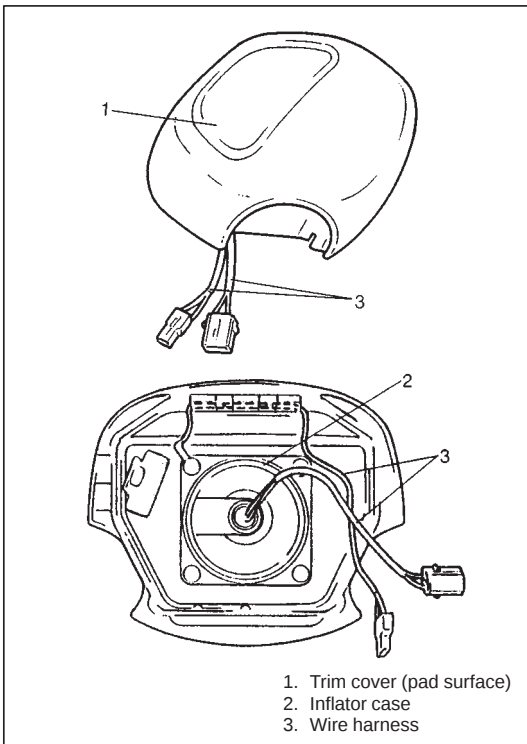
- 3) Remove mounting bolt hole caps (2pcs).
- 4) Loosen 2 bolts mounting driver air bag (inflator) module till it turns freely, pull them out and fix them to bolt clamps.
- 5) Remove air bag (inflator) module from steering wheel.



- 6) Remove driver air bag (inflator) module (yellow) connector and horn connector from steering wheel.
- 7) Disconnect driver air bag (inflator) module (yellow) connector of driver air bag (inflator) module and horn connector as shown in the figure.
 - i) Release locking of lever.
 - ii) After unlocked, disconnect connector.

WARNING:

Special care is necessary when handling and storing a live (undeployed) air bag (inflator) module. Observe "Service Precautions" under "On-Vehicle Service" in SECTION 10B. Otherwise, personal injury may result.



INSPECTION

WARNING:

Never disassemble air bag (inflator) module or measure its resistance. Otherwise, personal injury may result.

CAUTION:

If air bag (inflator) module was dropped from a height of 90 cm (3 ft) or more, it should be replaced.

Check air bag (inflator) module visually and if any of the following is found, replace it with a new one.

- Air bag being deployed
- Trim cover (pad surface) being cracked
- Wire harness or connector being damaged
- Air bag (inflator) module being damaged or having been exposed to strong impact (dropped)

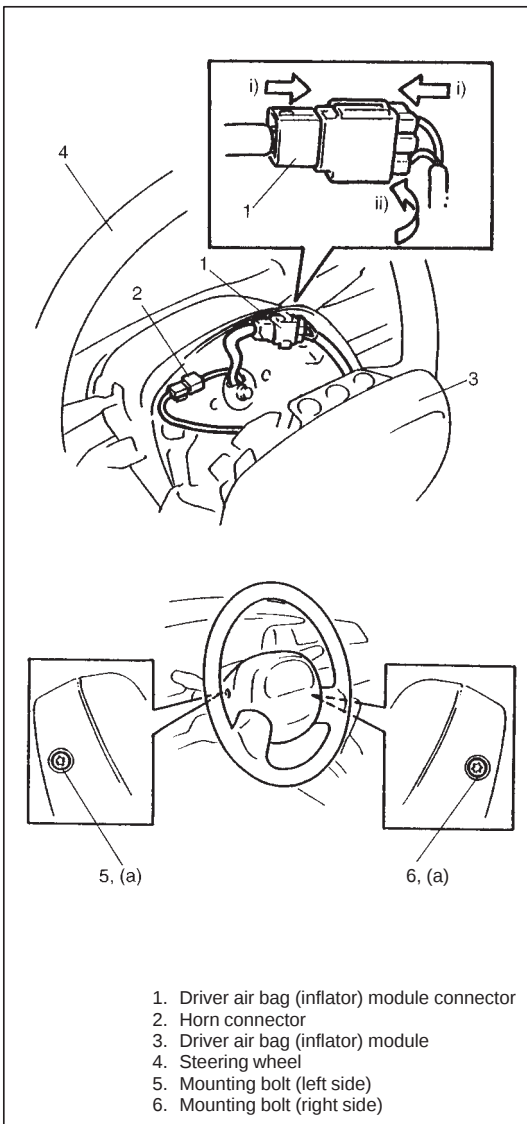
INSTALLATION

- 1) Connect horn connector securely.
- 2) Connect yellow connector of driver air bag (inflator) module connector as shown in the figure securely.
 - i) Connect connector.
 - ii) Lock connector with lock lever.
- 3) Install horn connector and driver air bag (inflator) module connector.
- 4) Install driver air bag (inflator) module to steering wheel, taking care so that no part of wire harness is caught between them.
- 5) Make sure that clearance between module and steering wheel is uniform all the way.
- 6) Tighten driver air bag (inflator) module mounting bolt (left side) to specified torque first and then driver air bag (inflator) module mounting bolt (right side) to specified torque.

Tightening Torque

(a): 9 N·m (0.9 kg-m, 6.5 lb-ft)

- 7) Install mounting bolt hole caps (2 pcs).
- 8) Connect negative battery cable.
- 9) Enable air bag system. Refer to "Enabling Air Bag System" under "Service Precautions" in SECTION 10B.



SECTION 3D

FRONT SUSPENSION

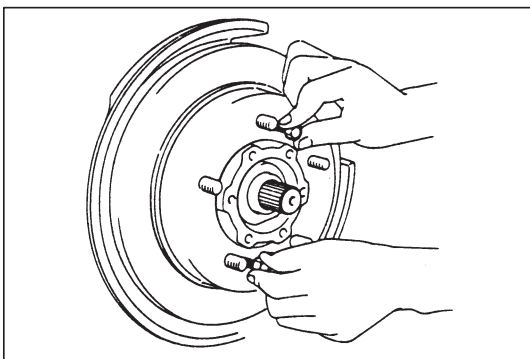
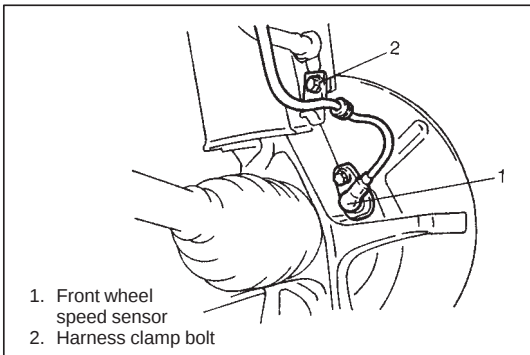
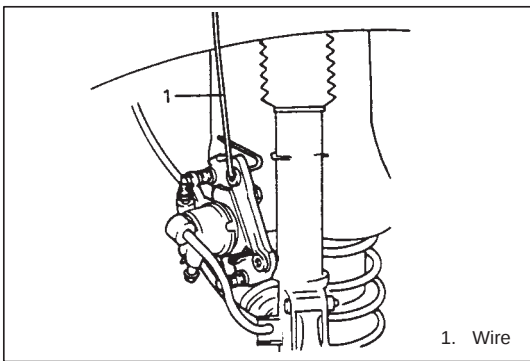
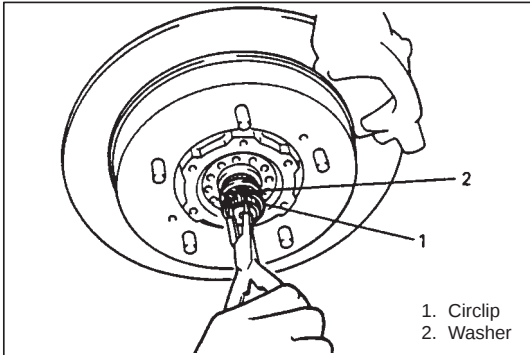
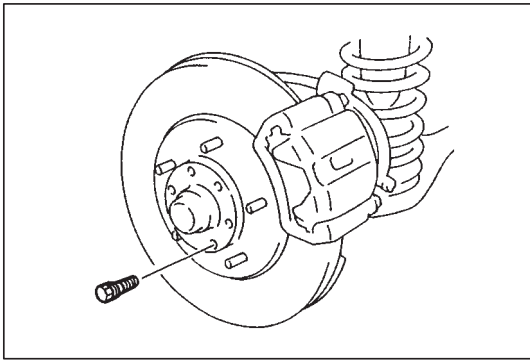
CAUTION:

- All front 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 front suspension part. Replace it with a new part or damage to the part may result.

NOTE:
For the descriptions (items) not found in this section, refer to the same section of the Service Manual mentioned in FOREWORD of this manual.

CONTENTS

ON-VEHICLE SERVICE	3D- 2
Coil Spring	3D- 2
Knuckle/Wheel Spindle	3D- 6
TIGHTENING TORQUE SPECIFICATIONS	3D- 9



ON-VEHICLE SERVICE

COIL SPRING

REMOVAL

- 1) Hoist vehicle, allowing front suspension to hang free.
- 2) Remove wheels.
- 3) Remove axle shaft drive flange.
- 4) Remove front drive shaft circlip and washer.
- 5) Remove caliper bolts and suspend caliper with a wire hook.
- 6) If equipped with ABS, remove harness clamp bolt and remove front wheel speed sensor from knuckle.

CAUTION:

Hang removed caliper with a wire hook so as to prevent brake hose from bending and twisting excessively or being pulled.

Don't operate brake pedal with pads removed.

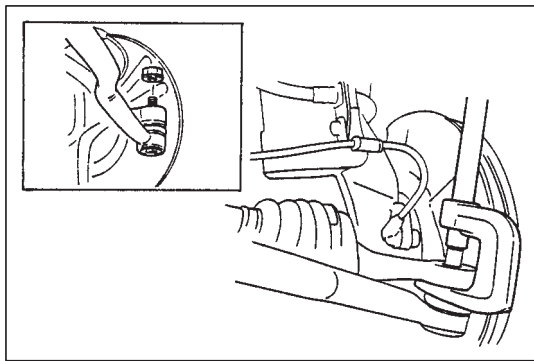
CAUTION:

- Do not pull wire harness when removing front wheel speed sensor.
- Do not cause damage to surface of front wheel speed sensor and do not allow dust, etc. to enter its installation hole.

- 7) Remove brake disc.

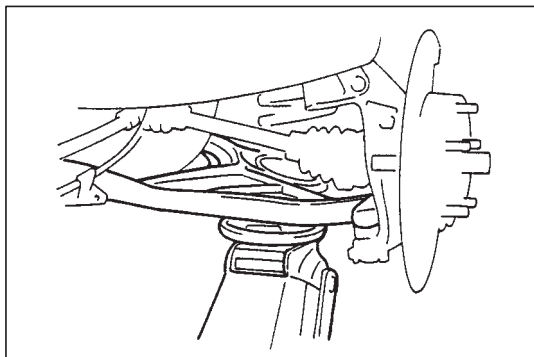
NOTE:

If brake disc can not be removed by hand, use 8 mm bolts as shown.

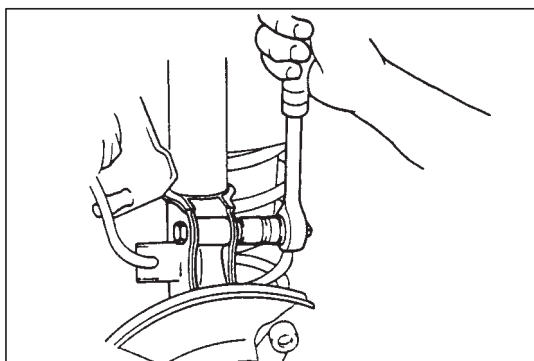


8) Remove stabilizer bar, refer to steps 2) to 5) of item STABILIZER BAR/BUSHINGS REMOVAL in this section.

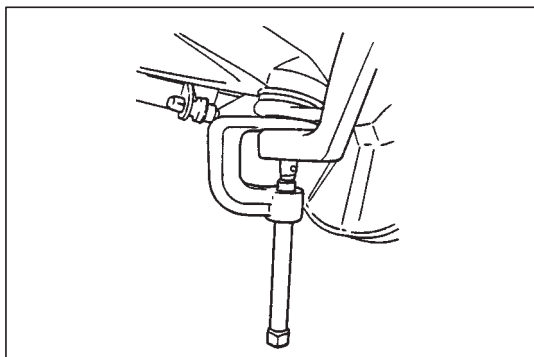
9) Disconnect tie rod end from knuckle by using puller.



10) Support lower arm, using jack as shown.

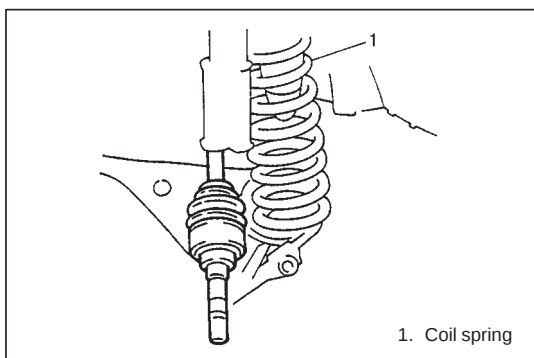


11) Remove strut bracket bolts.



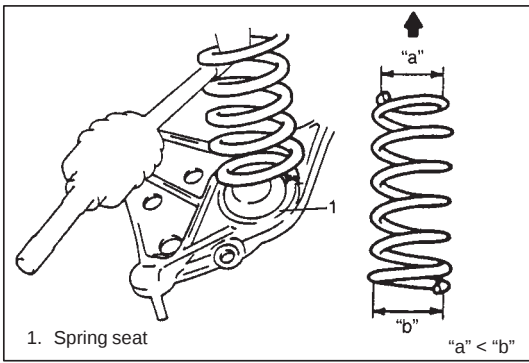
12) Remove ball stud nut.

13) Using puller, disconnect knuckle from ball stud.



14) Remove knuckle and wheel hub comp, while lowering jack.

15) Remove coil spring.



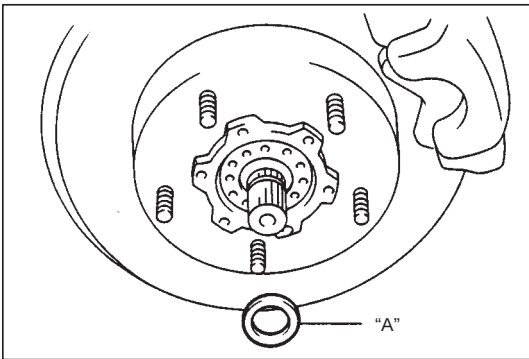
INSTALLATION

Reverse removal procedure to install coil spring.

NOTE:

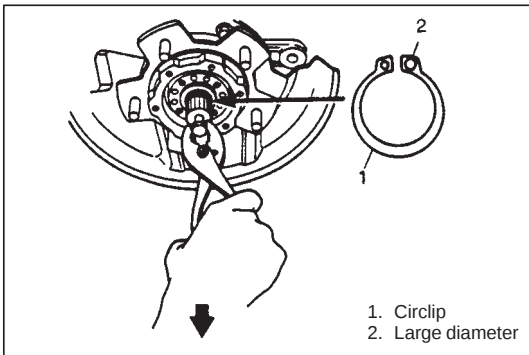
Upper and lower diameters of coil spring are different. Bring larger diameter end at bottom and set its open end in place on spring seat.

- Be sure to use specified torque for tightening each fastener. Refer to torque specification chart at the end of this section.
- As for ball stud nut, be sure to use new nut.
- Tighten tie-rod end nut with pushing ball stud to upper side so as not ball stud to be rotated.

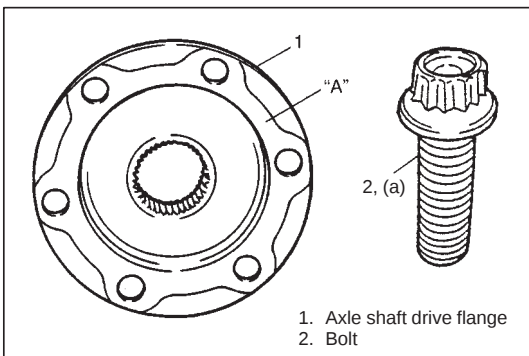


- Apply lithium grease to front drive shaft washer and front wheel spindle outer.

"A": Grease 99000-25010



- When installing circlip to drive shaft, utilize screw hole in drive shaft to pull it out and bring large diameter of circlip at right as shown.

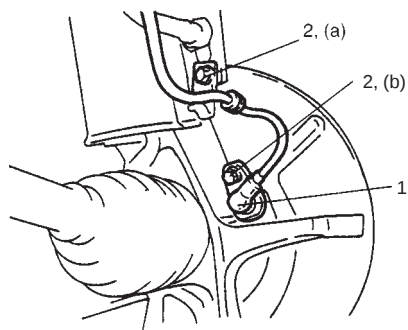


- When installing axle shaft drive flange to wheel hub, apply sealant to mating surface of axle shaft drive flange and tighten flange bolt to specified torque.

"A": Sealant 99000-31090

Tightening Torque

(a): 48 N·m (4.8 kg·m, 35.0 lb·ft)



1. Front wheel speed sensor
2. Bolt

- Check that no foreign material is attached to sensor and rotor. Install wheel speed sensor and its harness clamp.

Tightening Torque

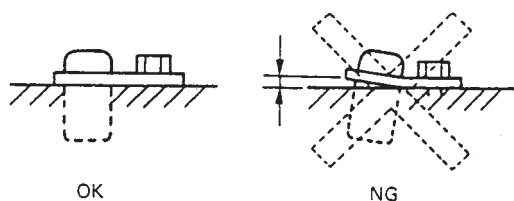
(a): 10 N·m (1.0 kg-m, 7.5 lb-ft)

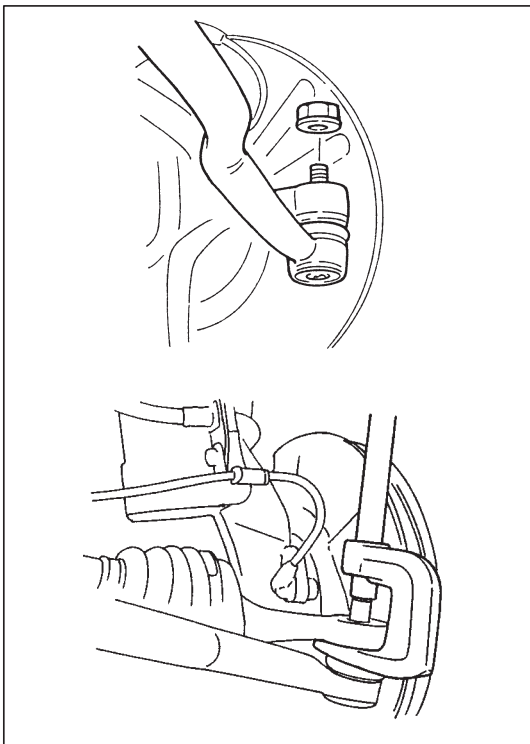
(b): 23 N·m (2.3 kg-m, 17.0 lb-ft)

CAUTION:

- Do not pull wire harness or twist more than necessary when installing front wheel speed sensor.
- Fit harness grommet to inner fender securely.

- Check that there is no clearance between sensor and knuckle.

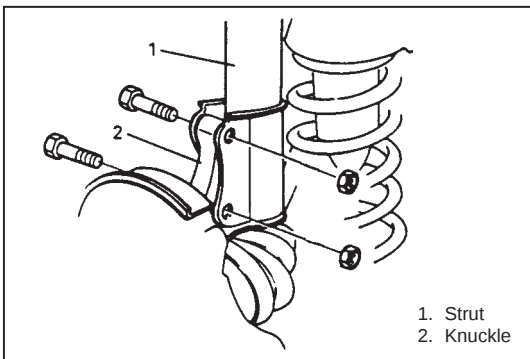




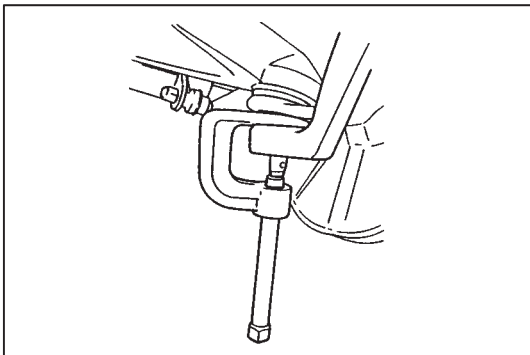
KNUCKLE/WHEEL SPINDLE

REMOVAL

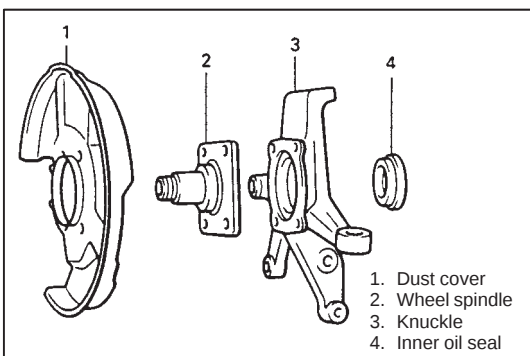
- 1) Hoist vehicle and remove wheel.
- 2) Remove axle shaft drive flange, drive shaft circlip and washer. Refer to steps 3) to 4) of item COIL SPRING REMOVAL in this section.
- 3) Remove wheel hub. Refer to steps 3) to 9) of item WHEEL HUB/BEARING/OIL SEAL REMOVAL in this section.
- 4) Disconnect tie-rod end from knuckle.



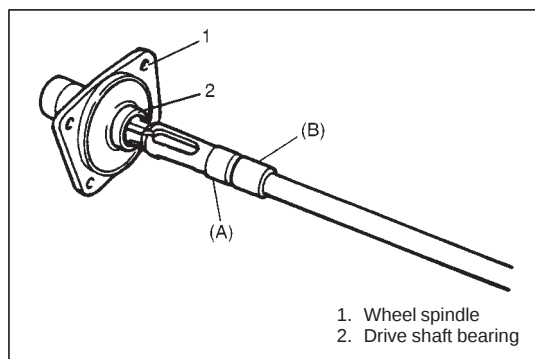
- 5) Remove ball stud nut.
- 6) Support lower arm with jack.
- 7) Remove strut bracket bolts from strut bracket.



- 8) By using puller, disconnect knuckle from ball stud.



- 9) While lowering jack, remove knuckle/wheel spindle comp.
- 10) Remove inner oil seal, dust cover and wheel spindle.

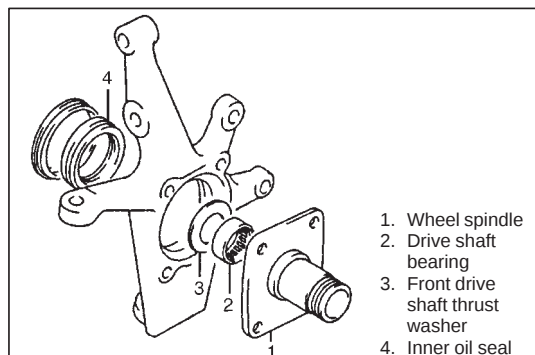


11) Remove drive shaft bearing by using special tool.

Special Tool

(A): 09923-74510

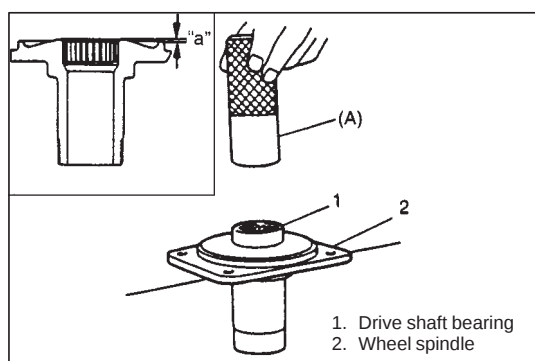
(B): 09930-30102



INSTALLATION

Reverse removal sequence to install knuckle, wheel spindle oil seal and drive shaft bearing, noting following points.

- Install front drive shaft thrust washer with its chamfered side facing to drive shaft side.

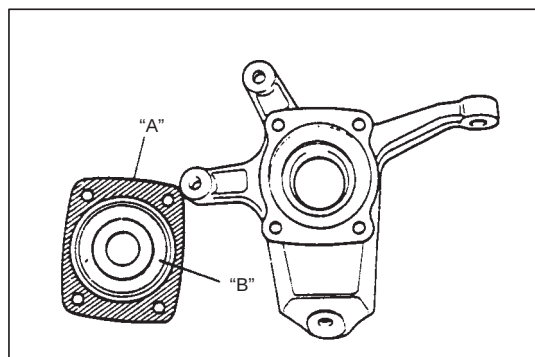


- Install drive shaft bearing by using special tool.

Special Tool

(A): 09913-80112

Depth "a": 1.75 – 2.50 mm (0.069 – 0.098 in.)



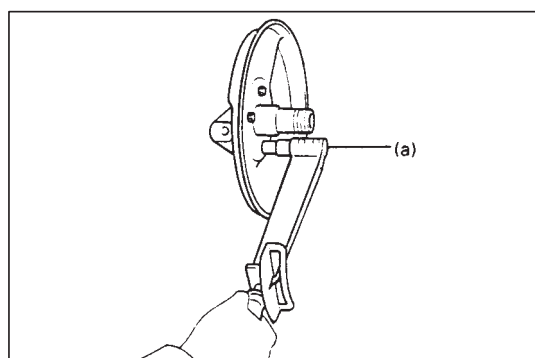
NOTE:

- When installing wheel spindle to knuckle, coat their mating surfaces with sealant.

"A": Sealant 99000-31110

- Also, fill recess in wheel spindle with about 10 g lithium grease.

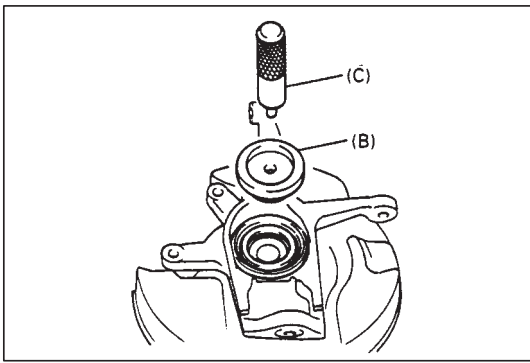
"B": Grease 99000-25010



- Tighten wheel spindle nut to specified torque.

Tightening Torque

(a): 50 N·m (5.0 kg-m, 36.5 lb-ft)

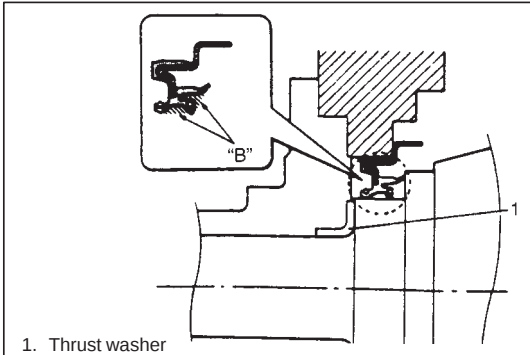


- Press-fitting inner oil seal.
Drive in inner oil seal until its end contacts stepped surface of knuckle using special tools.

Special Tool

(B): 09944-66010

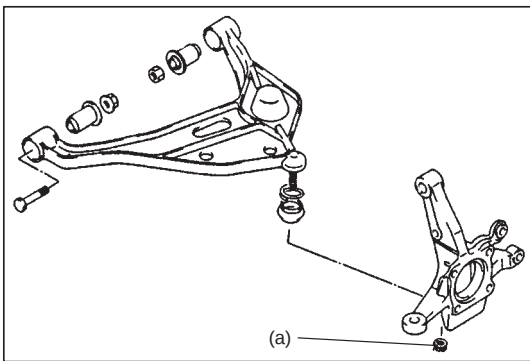
(C): 09924-74510



- Apply lithium grease to oil seal lip and into its hollow to fill more than 60% of its vacant space.

“B”: Grease 99000-25010

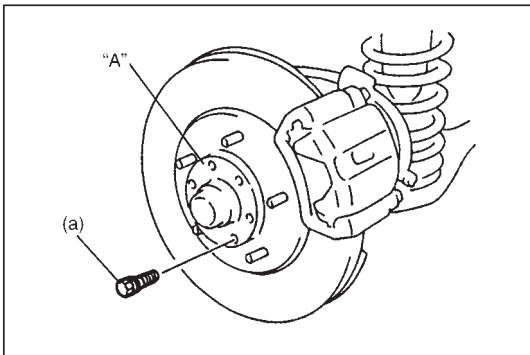
- Press-fit front drive shaft thrust washer to drive shaft, if it is removed.



- Tighten control arm ball stud nut.
When tightening ball stud nut, use new nut and tighten it to specified torque.

Tightening Torque

(a): 60 N·m (6.0 kg-m, 43.5 lb-ft)



- When installing axle shaft drive flange to wheel hub, apply sealant to mating surface of axle shaft drive flange.

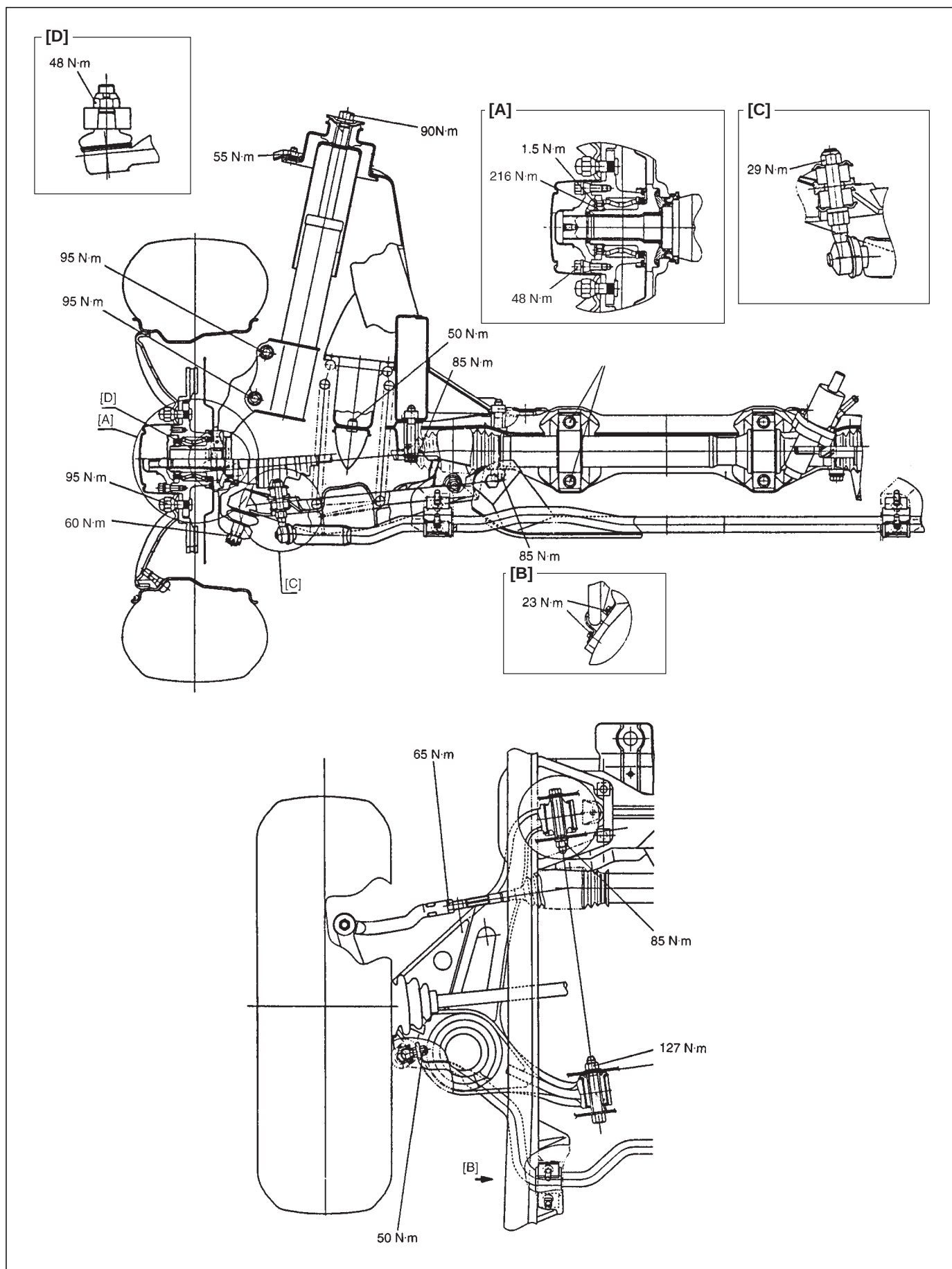
“A”: Sealant 99000-31090

Tightening Torque

(a): 48 N·m (4.8 kg-m, 35.0 lb-ft)

- For installation procedures following the above, refer to WHEEL HUB/BEARING/OIL SEAL INSTALLATION of this section.
- Tightening torque.
For any tightening torque other than those specified in text, refer to torque specification table at the end of this section.

TIGHTENING TORQUE SPECIFICATIONS



SECTION 3E

REAR SUSPENSION

NOTE:

- 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.
- For the descriptions (items) not found in this section, refer to the same section of the Service Manual mentioned in FOREWORD of this manual.

CONTENTS

ON-VEHICLE SERVICE	3E- 2
Shock Absorber	3E- 2
Lower Rod	3E- 3
Rear Axle Shaft Inner Oil Seal	3E- 4
SPECIAL TOOL	3E- 4

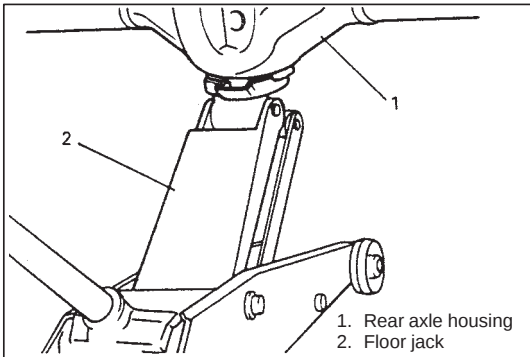
ON-VEHICLE SERVICE

SHOCK ABSORBER

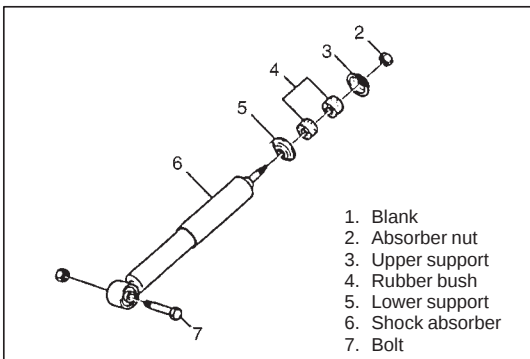
The shock absorber is non-adjustable, non-refillable, and cannot be disassembled. The only service the shock absorber requires is replacement when it has lost its resistance, is damaged, or leaking fluid.

REMOVAL

- 1) Hoist vehicle and remove rear wheel.
- 2) Support rear axle housing by using floor jack to prevent it from lowering.



- 3) Remove absorber nut.
- 4) Remove lower mounting bolt.
- 5) Remove shock absorber.



INSTALLATION

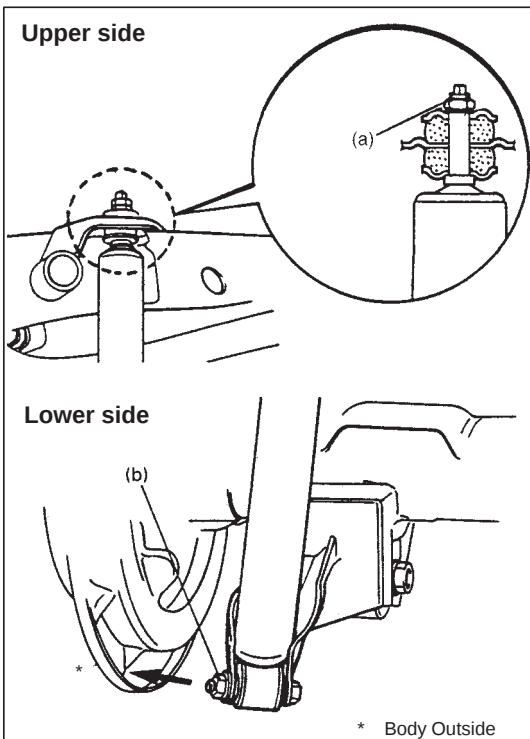
- 1) Install shock absorber. Refer to figure for proper installing direction of lower mounting bolt.
- 2) Remove floor jack.
- 3) Lower hoist.
- 4) Tighten nuts to specified torque.

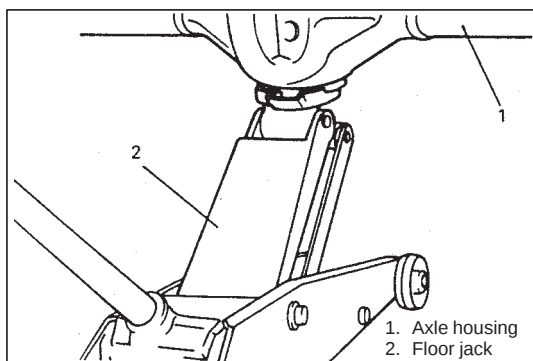
NOTE:

- Tighten lower nut with vehicle off hoist and in non-loaded condition.
- Use new absorber nut.

Tightening Torque

- (a): 29 N·m (2.9 kg-m, 21.0 lb-ft)
(b): 85 N·m (8.5 kg-m, 61.5 lb-ft)

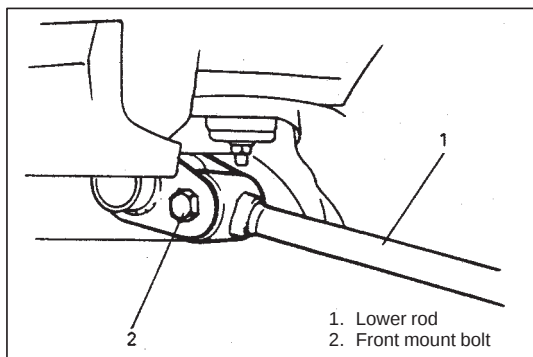




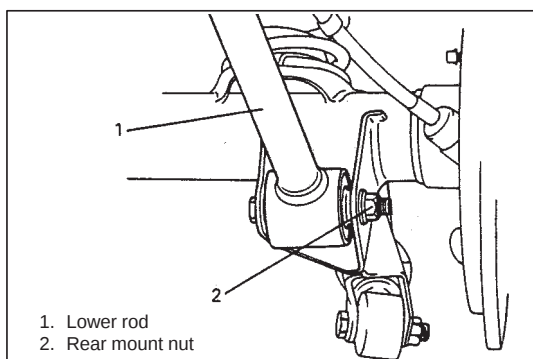
LOWER ROD

REMOVAL

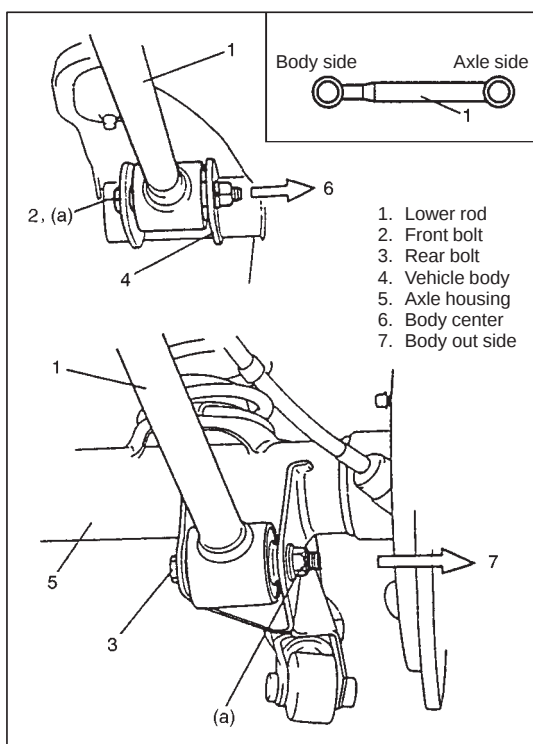
- 1) Hoist vehicle and remove rear wheel.
- 2) Support rear axle housing by using floor jack.



- 3) Remove lower rod front mount bolt.



- 4) Remove lower rod rear mount bolt.



INSTALLATION

- 1) Install lower rod to chassis frame and axle housing, referring to figure for proper installing direction of bolts.

Nuts should not be tightened.

- 2) Remove floor jack from rear axle housing.
- 3) Install wheel and tighten wheel nuts to specified torque.

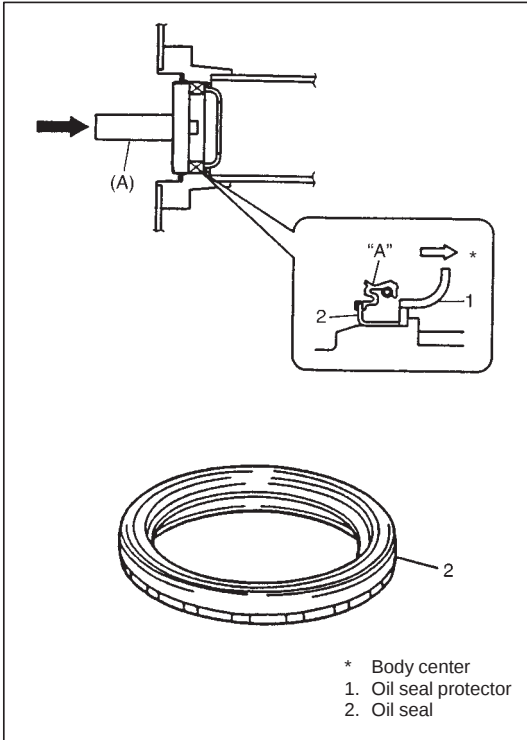
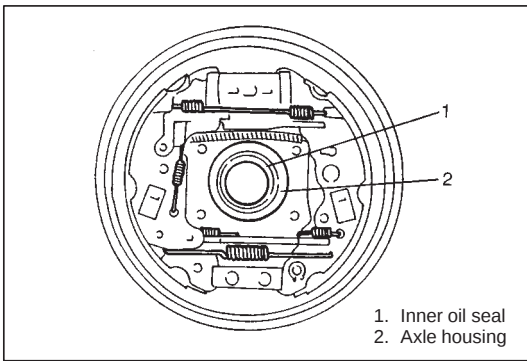
Tightening Torque for wheel nuts

95 N·m (9.5 kg-m, 69.0 lb-ft)

- 4) Lower hoist and with vehicle in non loaded condition, tighten front bolts and rear bolts and nuts of lower rod to specified torque.

Tightening Torque

(a): 90 N·m (9.0 kg-m, 65.0 lb-ft)



REAR AXLE SHAFT INNER OIL SEAL

REMOVAL

- 1) Remove rear axle shaft. For details, refer to steps 1) to 7) of REAR AXLE SHAFT REMOVAL in this section.
- 2) Fix brake back plate by inserting screwdriver to the hole for bearing retainer mounting.
- 3) Remove rear axle shaft inner oil seal.

NOTE:

Take care not to bend the brake pipe.

INSTALLATION

- 1) Using special tool drive in oil seal until it contacts oil seal protector in axle housing.

NOTE:

- Make sure that oil seal is free from inclination as it is installed.
- Refer to figure so that oil seal is installed in proper direction.

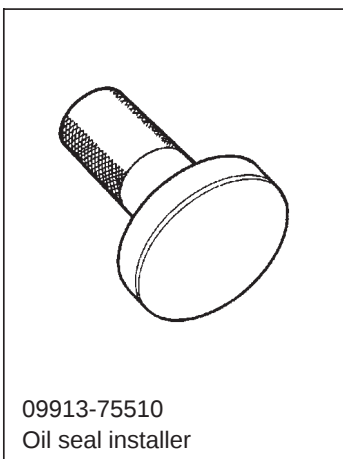
Special Tool

(A): 09913-75510

"A": Grease 99000-25010

- 2) For procedure hereafter, refer to steps 6) to 11) of REAR AXLE SHAFT INSTALLATION in this section.

SPECIAL TOOL



SECTION 3F

WHEELS AND TIRES

NOTE:

- 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.

- For the descriptions (items) not found in this section, refer to the same section of the Service Manual mentioned in FOREWORD of this manual.

3F

CONTENTS

GENERAL DESCRIPTION	3F- 1
Tires	3F- 1
Wheels	3F- 1
ON-VEHICLE SERVICE	3F- 2
Tire	3F- 2

GENERAL DESCRIPTION

TIRES

This vehicle is equipped with following tire, depending on vehicle specification.

P205/75 R15 (1.6ℓ) or P215/65 R16 (2.0ℓ)

The tires are of tubeless type. The tires are designed to operate satisfactorily with loads up to the full rated load capacity when inflated to the recommended inflation pressure.

Correct tire pressures and driving habits have an important influence on tire life. Heavy cornering, excessively rapid acceleration, and unnecessary sharp braking increase tire wear.

WHEELS

Standard equipment wheels are following steel wheels.

15 x 5 1/2 JJ (1.6ℓ) or 16 x 6 1/2 J (2.0ℓ)

ON-VEHICLE SERVICE

TIRE

MOUNTING AND DEMOUNTING

Use tire changing machine to mount or demount tires. Follow equipment manufacturer's instructions. Do not use hand tools or tire irons alone to change tires as they may damage tire beads or wheel rim.

Rim bead seats should be cleaned with wire brush or coarse steel wool to remove lubricants, old rubber and light rust. Before mounting or demounting tire, bead area should be well lubricated with approved tire lubricant.

After mounting, inflate to 240 kPa (35 psi) so that beads are completely seated.

Then adjust pressure to specified shown on tire placard.

WARNING:

Do not stand over tire when inflating. Bead may break when bead snaps over rim's safety hump and cause serious personal injury.

Do not exceed 240 kPa (35 psi) pressure when inflating. If 240 kPa (35 psi) pressure will not seat beads, deflate, re-lubricate and reinflate. Over inflation may cause bead to break and cause serious personal injury.

Install valve core and inflate to proper pressure.

TIRE REPAIR

There are many different materials and techniques on the market to repair tires. As not all of these work on all types of tires, tire manufacturers have published detailed instructions on how and when to repair tires. These instructions can be obtained from the tire manufacturer.

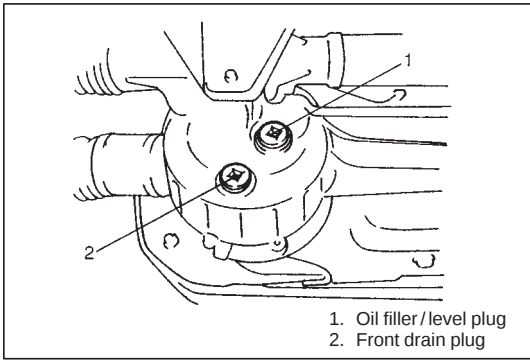
SECTION 4A2

FRONT DRIVE SHAFT/SHAFT BEARING,
OIL SEAL

NOTE:
For the descriptions (items) not found in this section, refer to the same section of the Service Manual mentioned in FOREWORD of this manual.

CONTENTS

ON-VEHICLE SERVICE	4A2- 2
Drive Shaft	4A2- 2

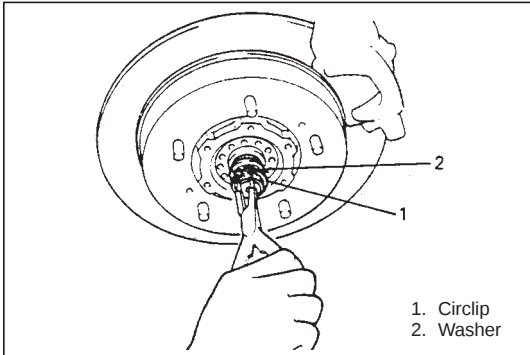


ON-VEHICLE SERVICE

DRIVE SHAFT

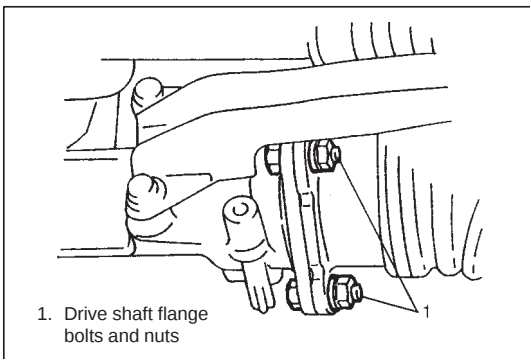
REMOVAL (LEFT SIDE)

1) Hoist vehicle and remove wheel.

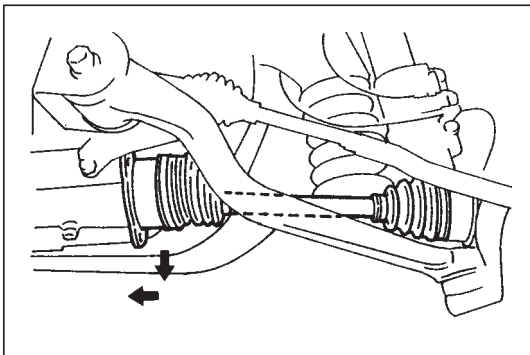


2) Remove axle shaft drive flange.

3) Remove drive shaft circlip and washer.



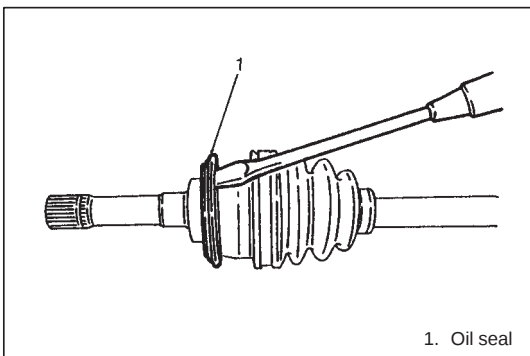
4) Remove drive shaft flange bolts and nuts.



5) Remove drive shaft assembly to differential side as shown in left figure.

CAUTION:

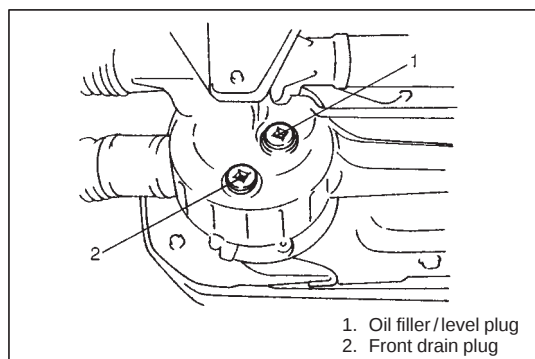
To prevent breakage of boots (wheel side and differential side), be careful not to bring them into contact with other parts when removing drive shaft assembly.



6) Remove drive shaft thrust washer from drive shaft and remove drive shaft oil seal as shown in figure.

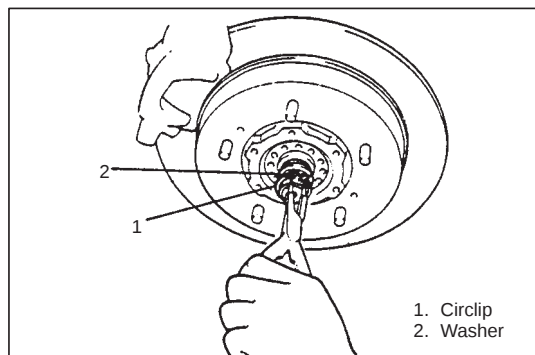
CAUTION:

Be careful not to cause damage to drive shaft joint.

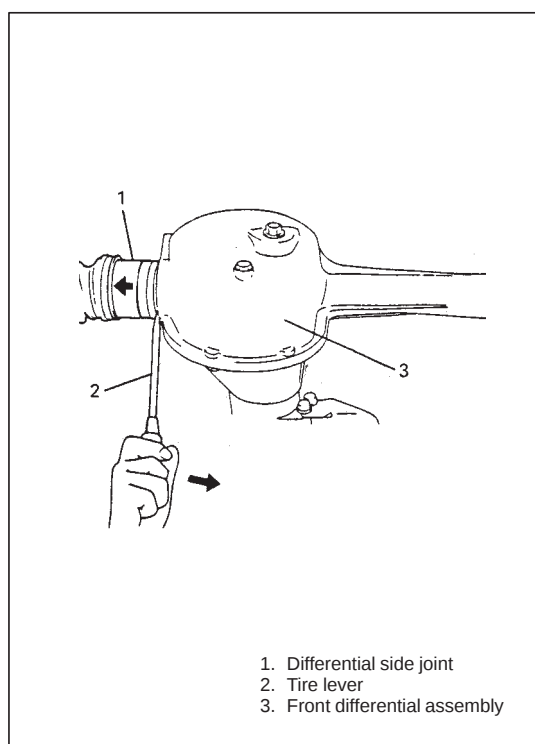


REMOVAL (RIGHT SIDE)

- 1) Hoist vehicle and remove wheel.
- 2) Drain differential gear oil.



- 3) Remove axle shaft drive flange.
- 4) Remove drive shaft circlip and washer.
- 5) Remove knuckle and wheel hub comp, refer to steps 5) to 7) and 9) to 14) of item COIL SPRING REMOVAL in Section 3D.

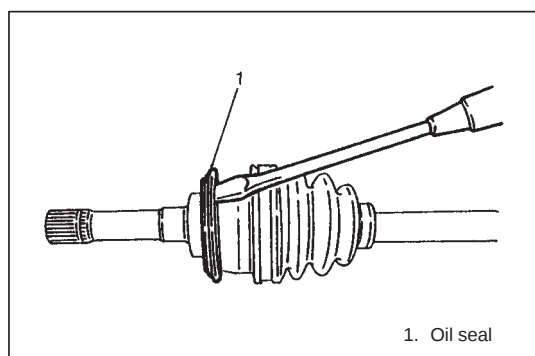


- 6) Remove drive shaft assembly.

To detach snap ring fitted on the spline of differential side joint (inboard joint) from differential side gear, pull inboard joint by using a tire lever.

CAUTION:

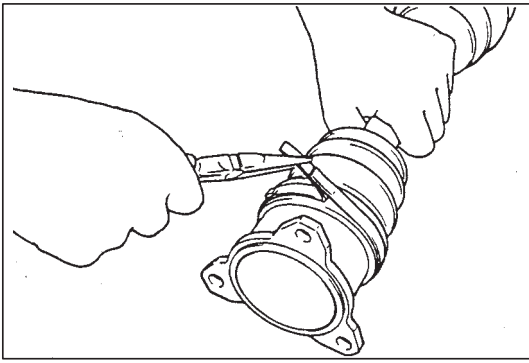
To prevent breakage of boots (wheel side and differential side), be careful not to bring them into contact with other parts when removing drive shaft assembly.



- 7) Remove drive shaft thrust washer from drive shaft and remove drive shaft oil seal as shown in figure.

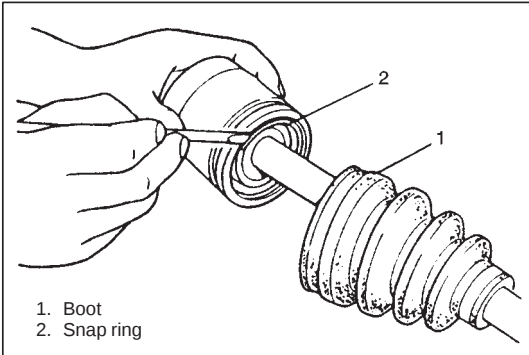
CAUTION:

Be careful not to cause damage to drive shaft joint.

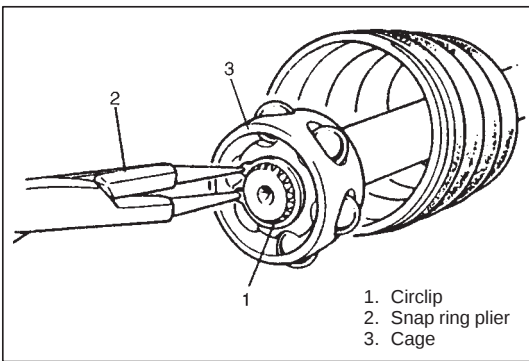


DISASSEMBLY

1) Remove boot band of differential side joint.



2) Slide boot toward the center of shaft and remove snap ring from outer race, then take shaft out of outer race.



3) Remove circlip and then cage.

4) Remove inside and outside boots from shaft.

CAUTION:

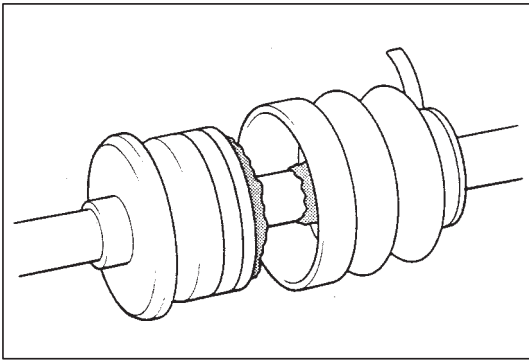
- Do not disassemble wheel side joint (outboard joint). If any malfunction is found in joint, replace it as assembly.
- Do not disassemble ball joint of differential side joint. If any malfunction is found in ball joint, replace differential side joint assembly.

INSPECTION

- Check boots for breakage or deterioration. Replace them as necessary.
- Check circlip, snap ring and boot bands for breakage or deformation. Replace as necessary.

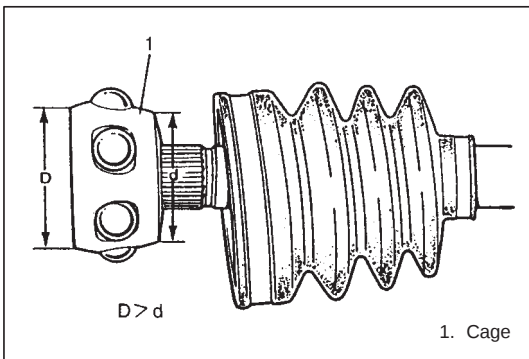
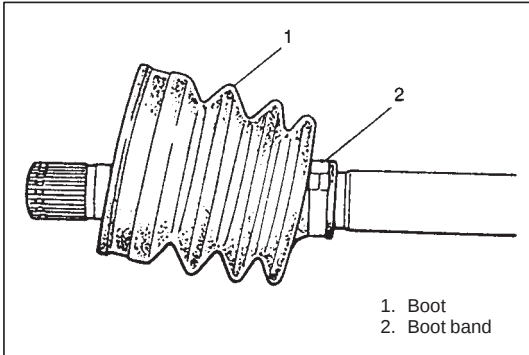
CLEANING

- Wash disassembled parts (except boots) in degreaser. After washing, dry parts completely by blowing air.
- Clean boots with cloth. DO NOT wash boots in degreaser, such as gasoline or kerosene, etc..
Washing in degreaser causes deterioration of boot.



ASSEMBLY

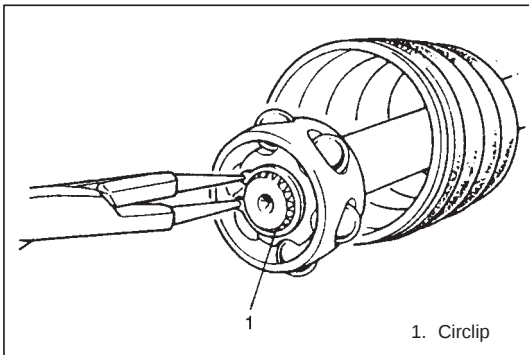
- 1) Fully apply joint grease to wheel side joint.
Use joint grease in the tube included in spare part or joint grease (99000-25120).
- 2) Fit wheel side boot on shaft.
Fill up inside of boot with joint grease of about 85 gram.
Before fixing boot band, insert screwdriver into boot on joint side and allow air to enter boot so that air pressure in boot becomes the same as atmospheric pressure.
- 3) Fixing boot band.
- 4) Install boot onto drive shaft till its small diameter side fits to shaft groove and fix there with boot band.



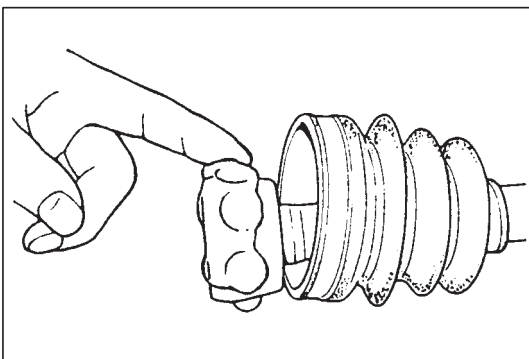
- 5) Install cage to shaft.

CAUTION:

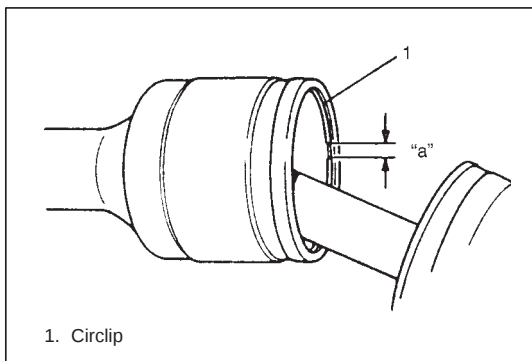
Install cage directing smaller outside diameter side to shaft end.



- 6) Install circlip by using snap ring plier.



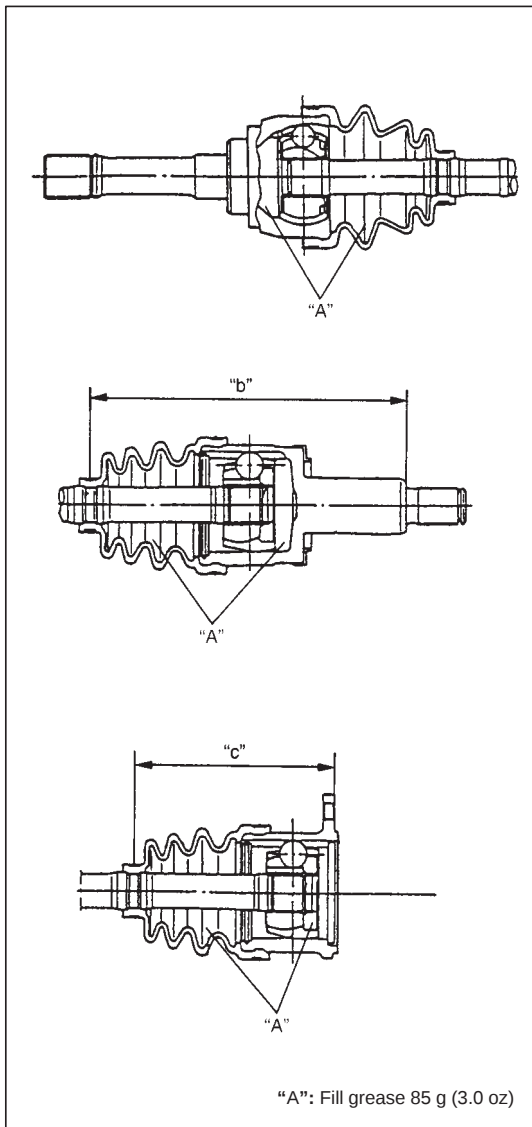
- 7) Apply grease to entire surface of cage.
Use joint grease in tube included in spare part or joint grease (99000-25120).



- 8) Insert cage into outer race and fit circlip into groove of outer race.

CAUTION:

Position opening of circlip "a" so that it will not be lined up with a ball.



- 9) Apply grease to inside of outer race, and fit boot to outer race. Fill up inside of boot with joint grease.

"A": Joint Grease 99000-25120

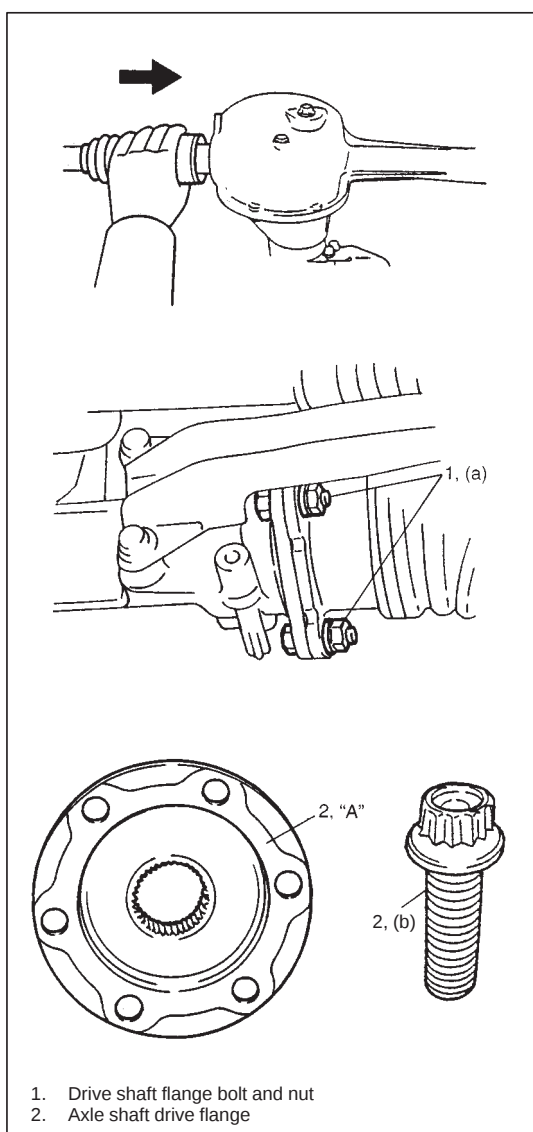
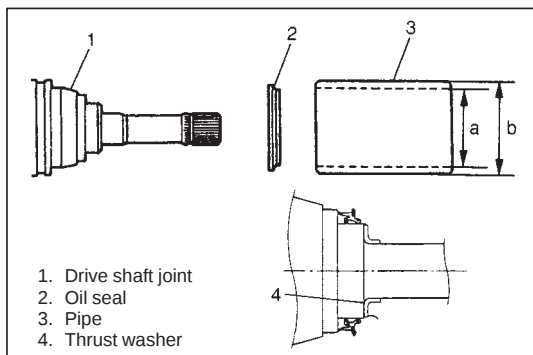
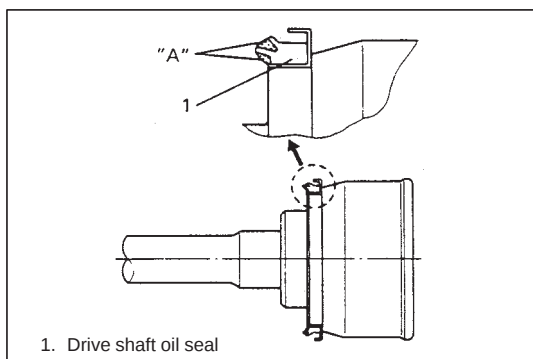
- 10) Fitting boot to outer race, adjust so that measurements "b" and "c" become as indicated in figure.

Length "b": 203.2 – 213.2 mm (8.00 – 8.40 in.)

"c": 125.5 – 135.5 mm (4.94 – 5.33 in.)

Before fixing boot band, insert screwdriver into boot on joint side and allow air to enter boot so that air pressure in boot becomes the same as atmospheric pressure.

- 11) Clamp boot band. Check boots for distortion or dent.



INSTALLATION

Install drive shaft assembly by reversing removal procedure and noting following points.

- Clean front drive shaft oil seal and then apply lithium grease to oil seal and DOJ shaft.

“A”: Grease 99000-25010

- Check oil seal for breakage or deterioration. Replace it as necessary.
- Drive in oil seal until its end contacts stopped surface of drive shaft joint by using a pipe whose inner diameter is 76 mm (2.992 in.) or more and outer diameter is 80 mm (3.150 in.) or less.
- Drive in drive shaft thrust washer.

Diameter “a”: 76 mm (2.992 in.) or more

Diameter “b”: 80 mm (3.150 in.) or less

- RH Side
Push differential side joint by hand until it is positioned by snap ring fitted to its spline.

LH Side

Connect drive shaft flange bolts and nuts.

Tightening Torque

(a): 50 N·m (5.0 kg-m, 36.5 lb-ft)

- When installing axle shaft drive flange to wheel hub, apply sealant to mating surface of axle shaft drive flange.

“A”: Sealant 99000-31090

Tightening Torque

(b): 48 N·m (4.8 kg-m, 35.0 lb-ft)

CAUTION:

- To prevent breakage of boots (wheel side and differential side), be careful not to bring them into contact with other parts when installing drive shaft assembly.
- Do not pull housing of differential side joint. If housing is pulled, it may be detached from drive shaft.
- Apply chassis grease to spline of sliding yoke.

- Fill specified differential gear oil into differential case to specified level.

SECTION 5

BRAKES

WARNING:

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

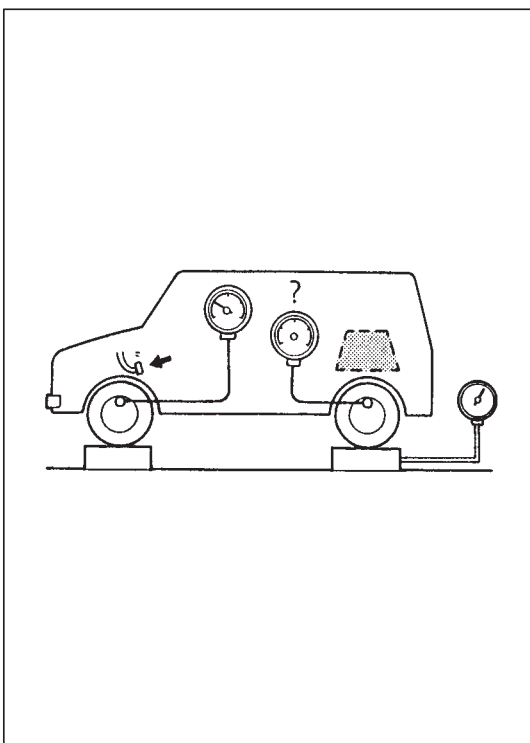
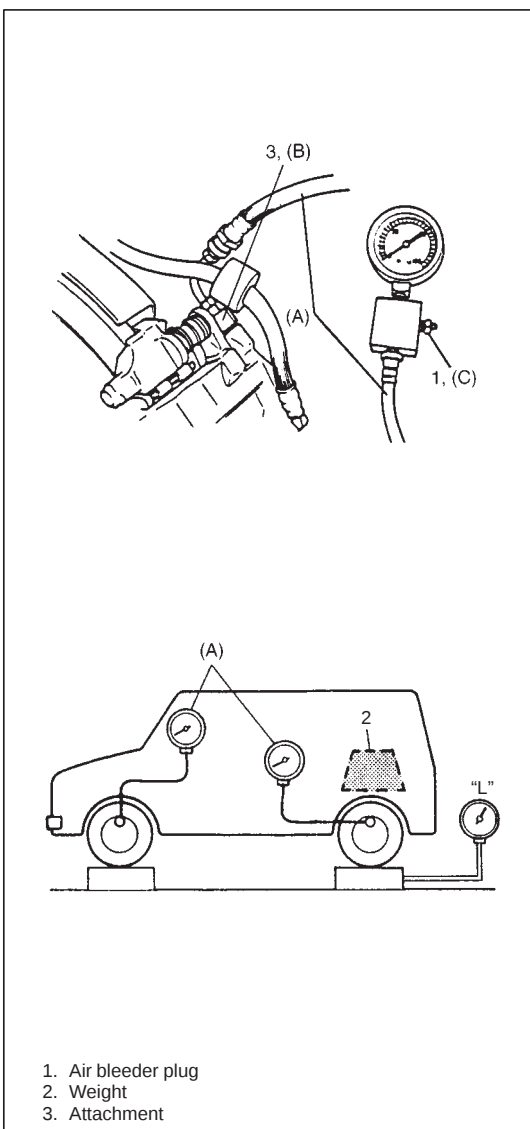
- Service on and around the air bag system components or wiring must be performed only by an authorized SUZUKI dealer. Refer to “Air Bag System Components and Wiring Location View” under “General Description” in air bag system section in order to confirm whether you are performing service on or near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

NOTE:

- When inspecting and servicing vehicle equipped with ABS, be sure to refer to section 5E1 first.
- 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.
- For the descriptions (items) not found in this section, refer to the same section of the Service Manual mentioned in FOREWORD of this manual.

CONTENTS

CHECK AND ADJUSTMENT	5- 2
Fluid Pressure Test	5- 2
TIGHTENING TORQUE SPECIFICATIONS	5- 3



CHECK AND ADJUSTMENT

FLUID PRESSURE TEST(if equipped with LSPV)

Test procedure for LSPV assembly is as follows.

Before testing, confirm the following.

- Fuel tank is filled with fuel fully.
 - Vehicle is equipped with spare tire, tools, jack and jack handle.
- 1) Stop vehicle on level floor and place approximately about 200 kg (441 lbs) weight on rear housing so that rear axle weighs 800 kg (1764 lb).

Rear axle weight "L": 800 kg (1764 lb)

- 2) Install special tool to front and rear brake.

NOTE:

Special tool should be connected to breather of front (driver's side brake) and rear brakes.

Special Tool

Front brake

(A): 09956-02310

(C): 55473-82030 (Air bleeder plug supplied as a spare part)

Rear brake

(A): 09956-02310

(B): 09952-36310

(C): 55473-82030 (Air bleeder plug supplied as a spare part)

NOTE:

Special tool (B) is used instead of thread diameter 10 mm attachment of special tool (A).

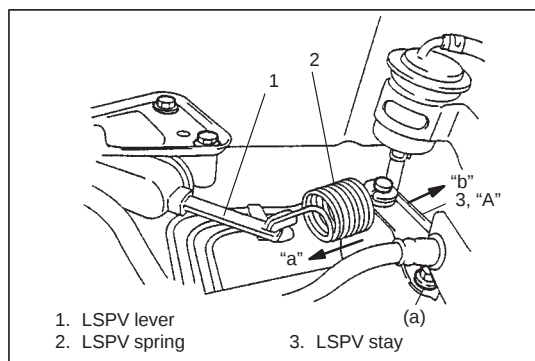
So remove the attachment from (A) and install (B) as shown in figure.

- 3) Depress brake pedal gradually till fluid pressure of front brake becomes as specified below and check corresponding pressure of rear brake then. It should be within specification given below.

Front brake	Rear brake
8,000 kPa 80 kg/cm ² 1,138 psi	6,000 – 7,300 kPa 60 – 73 kg/cm ² 853 – 1,038 psi

As done above, apply 100 kg/cm² pressure to front brake and check that rear brake pressure then is within specification as given below.

Front brake	Rear brake
10,000 kPa 100 kg/cm ² 1,422 psi	6,500 – 8,000 kPa 65 – 80 kg/cm ² 924 – 1,138 psi



- 4) If rear brake pressure is not within specification, adjust it by changing stay "A" position as follows.

Tightening Torque

(a): 23 N·m (2.3 kg-m, 17.0 lb-ft)

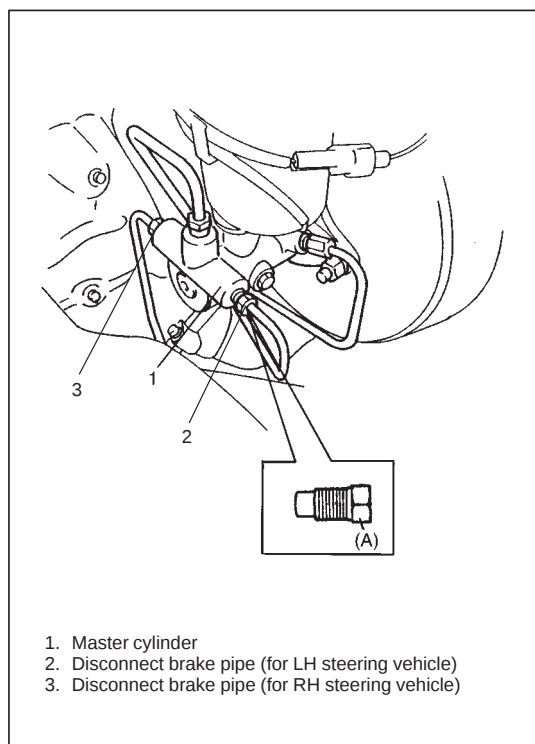
- If rear brake pressure is higher than specification, move stay "A" to direction "a" and if it is lower, to direction "b".
- Repeat steps 3) and 4) until rear brake pressure is within specification.
- After adjustment, be sure to torque nut to specification.

- 5) Disconnect brake pipe (connecting between master cylinder secondary side and 4-way joint) from master cylinder. Tighten plug (special tool) to master cylinder. Depress brake pedal. If rear brake pressure is 95 – 100 kg/cm² when front brake pressure is 100 kg/cm², it means that front fail-safe system functions properly.

Front brake	Rear brake
10000 kPa	9500 – 10000 kPa
100 kg/cm ²	95 – 100 kg/cm ²
1422 psi	1350 – 1422 psi

Special Tool

(A): 09956-02210



- 6) Upon completion of fluid pressure test, bleed brake system and perform brake test.

TIGHTENING TORQUE SPECIFICATIONS

Fastening parts	Tightening torque		
	N·m	kg-m	lb-ft
LSPV mounting bolt	23	2.3	17.0
LSPV stay bolt			

SECTION 5A

BRAKES PIPE/HOSE/MASTER CYLINDER

WARNING:

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

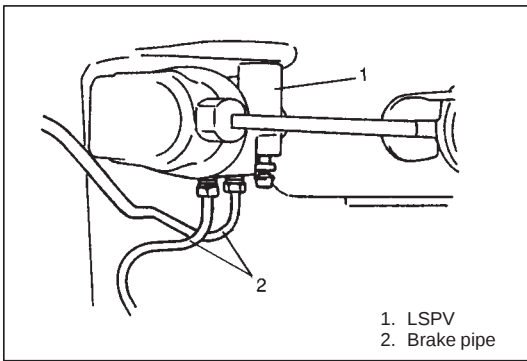
- Service on and around the air bag system components or wiring must be performed only by an authorized SUZUKI dealer. Refer to “Air Bag System Components and Wiring Location View” under “General Description” in air bag system section in order to confirm whether you are performing service on or near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

NOTE:

- 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.
- For the descriptions (items) not found in this section, refer to the same section of the Service Manual mentioned in FOREWORD of this manual.

CONTENTS

ON-VEHICLE SERVICE	5A- 2
LSPV (Load Sensing Proportioning Valve) Assembly	5A- 2
TIGHTENING TORQUE SPECIFICATIONS	5A- 4



ON-VEHICLE SERVICE

LSPV (Load Sensing Proportioning Valve) ASSEMBLY (if equipped)

REMOVAL

- 1) Clean around reservoir cap and take out fluid with syringe or such.
- 2) Hoist vehicle.
- 3) Disconnect brake pipes from LSPV.
- 4) Remove LSPV assembly from vehicle body.

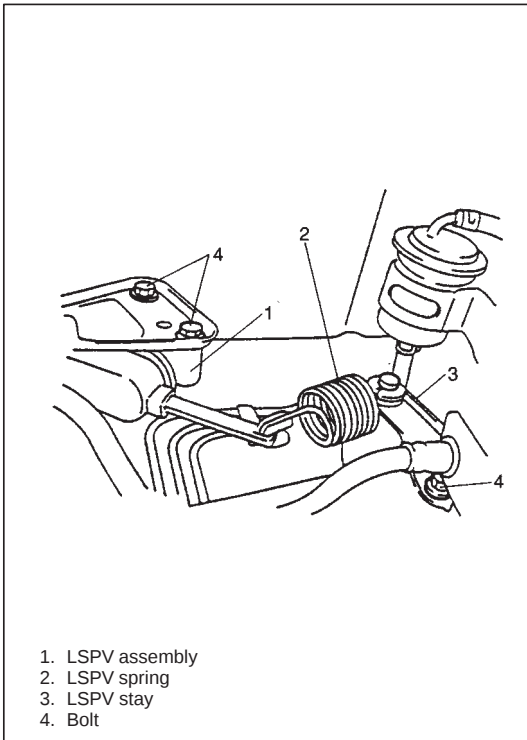
NOTE:

As shown in figure left, LSPV assembly should be removed together with its spring and stay installed or rear axle housing.

- 5) Remove spring and stay from lever.

CAUTION:

- LSPV assembly must not be disassembled. Replace with new one if defective.
- Stopper bolt should not be loosened or tightened.



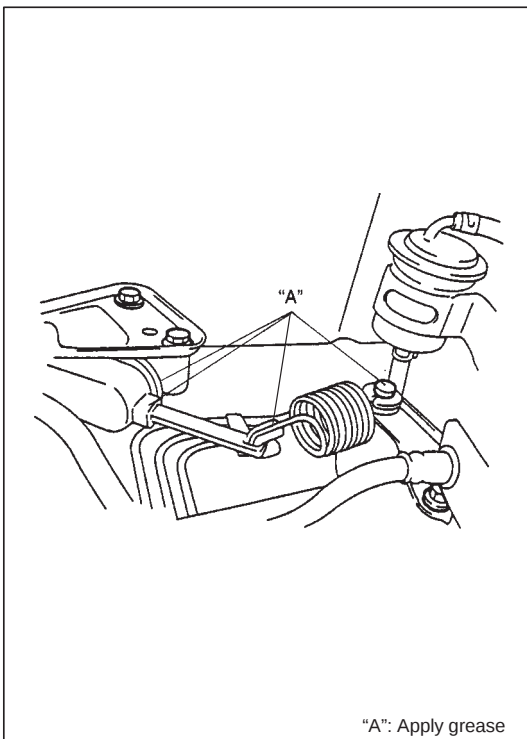
INSTALLATION

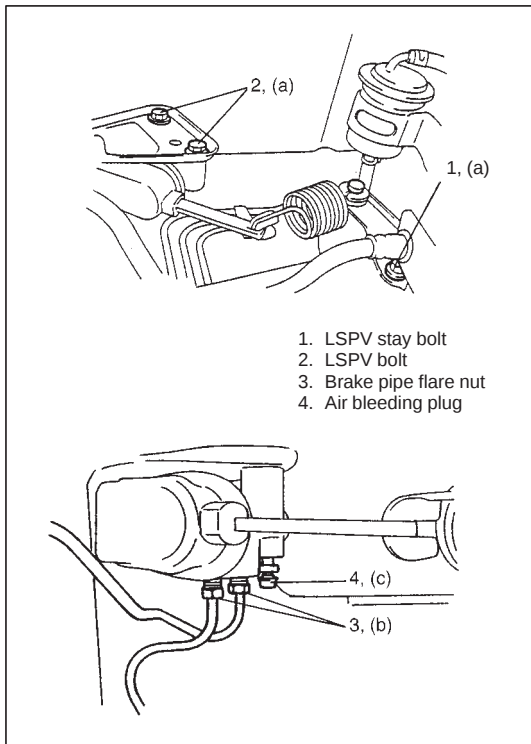
CAUTION:

Refer to above CAUTION.

Install by reversing removal procedure, noting the following.

- 1) Apply multi-purpose grease to upper and lower joint of coil spring.





- 2) Torque each bolt and nut to specification as indicated respectively in figure left.

Tightening Torque

(a): 23 N·m (2.3 kg-m, 17.0 lb-ft)

(b): 16 N·m (1.6 kg-m, 11.5 lb-ft) (brake flare nut)

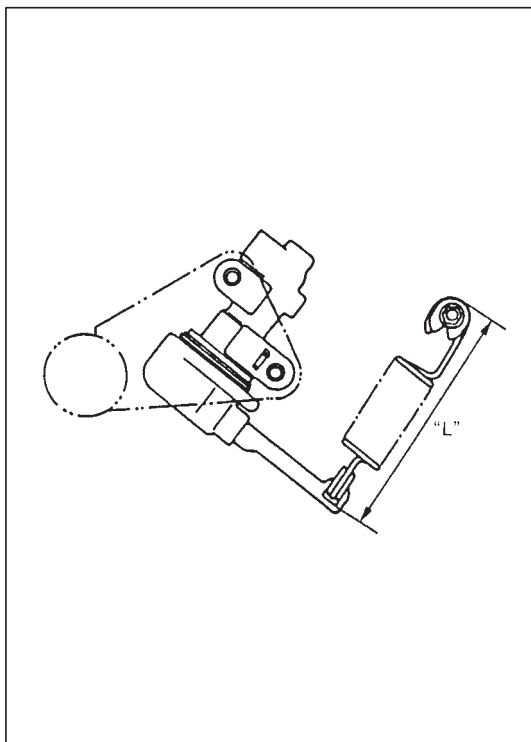
(c): 7.5 N·m (0.75 kg-m, 9.0 lb-ft) (bleeder plug)

- 3) Upon completion of installation, fill reservoir tank with specified fluid and bleed air from brake system.

NOTE:

Make sure to bleed air from LSPV bleeder without failure.

- 4) After bleeding air, check that LSPV is installed properly, referring to following INSPECTION & ADJUSTMENT.



INSPECTION & ADJUSTMENT

Confirm the following before inspection and adjustment.

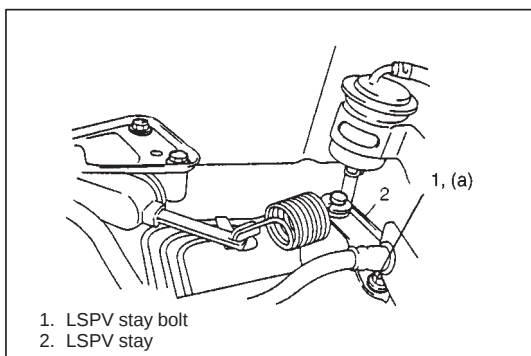
- Fuel tank is filled with fuel fully.
- Vehicle is equipped with spare tire, tools, jack and jack handle.
- Vehicle is free from any other load.

With vehicle in above conditions;

- 1) Place it on level floor.
- 2) Push up LSPV lever with finger till it stops and measure length of coil spring ("L" in below figure) as it is pulled.
- 3) Spring length "L" should be the value specified below.

Spring length (between spring ends)

"L": 103 mm (4.06 in.)



- 4) If it isn't, adjust it to specification by changing stay positions as shown in left figure. After adjustment, tighten bolt to specified torque.

For details, refer to left figure.

Tightening Torque

(a): 23 N·m (2.3 kg-m, 17.0 lb-ft)

NOTE:

Check to make sure that LSPV body and brake pipe joints are free from fluid leakage. Replace defective parts, if any.

TIGHTENING TORQUE SPECIFICATIONS

Fastening parts	Tightening torque		
	N·m	kg-m	lb-ft
LSPV mounting bolt	23	2.3	17.0
LSPV stay bolt			

SECTION 6

ENGINE
(G16/J20/H25 ENGINE)

WARNING:

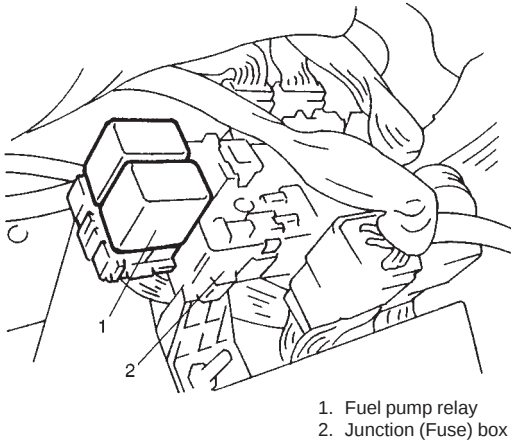
For vehicles equipped with Supplemental Restraint (Air Bag) System:

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

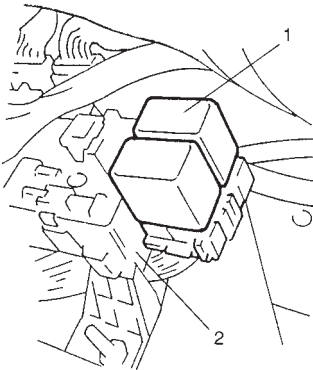
NOTE:
For the description (items) not found in this section, refer to the same section of the Service Manual mentioned in FOREWORD of this manual.

CONTENTS

GENERAL INFORMATION	6- 2
General Information on Engine Service	6- 2
Fuel pressure relief procedure	6- 2

Left hand steering vehicle

1. Fuel pump relay
2. Junction (Fuse) box

Right hand steering vehicle

1. Fuel pump relay
2. Junction (Fuse) box

GENERAL INFORMATION**GENERAL INFORMATION ON ENGINE SERVICE****FUEL PRESSURE RELIEF PROCEDURE****CAUTION:**

This work must not be done when engine is hot. If done so, it may cause adverse effect to catalyst.

After making sure that engine is cold, relief fuel pressure as follows.

- 1) Place transmission gear shift lever in "Neutral" (shift selector lever to "P" range for A/T vehicle), set parking brake, and block drive wheels.
- 2) Remove fuel pump relay from connector.
- 3) Remove fuel filler cap to release fuel vapor pressure in fuel tank and then reinstall it.
- 4) Start engine and run it till it stops for lack of fuel. Repeat cranking engine 2 – 3 times of about 3 seconds each time to dissipate fuel pressure in lines. Fuel connections are now safe for servicing.
- 5) Upon completion of servicing, install fuel pump relay to connector.

SECTION 6E1

ENGINE AND EMISSION CONTROL SYSTEM (SEQUENTIAL MULTIPOINT FUEL INJECTION FOR G16/J20 ENGINE)

WARNING:

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

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

NOTE:

- For the descriptions (items) not found in this section, refer to the same section of the Service Manual mentioned in FOREWORD of this manual.
- Whether the following systems (parts) are used in the particular vehicle or not depends on specifications. Be sure to bear this in mind when performing service work.
 - EGR valve
 - Heated oxygen sensor or CO adjusting resistor
 - Three way catalytic converter

CONTENTS

GENERAL DESCRIPTION	6E1- 2
ELECTRONIC CONTROL SYSTEM	6E1- 2
DIAGNOSIS	6E1- 4
On-Board Diagnostic System	6E1- 4
Precautions in Diagnosing Troubles	6E1- 4
B-1 Fuel Pump Circuit Check	6E1- 5
Inspection of PCM (ECM) and Its Circuit	6E1- 6
ON-VEHICLE SERVICE	6E1- 9
FUEL DELIVERY SYSTEM	6E1- 9
Fuel Injector (Inspection)	6E1- 9
ELECTRONIC CONTROL SYSTEM	6E1-11
Main Relay (Inspection)	6E1-11
Fuel Pump Relay (Inspection)	6E1-12

GENERAL DESCRIPTION

ELECTRONIC CONTROL SYSTEM

The electronic control system consists of 1) various sensors which detect the state of engine and driving conditions, 2) ECM (PCM) which controls various devices according to the signals from the sensors and 3) various controlled devices.

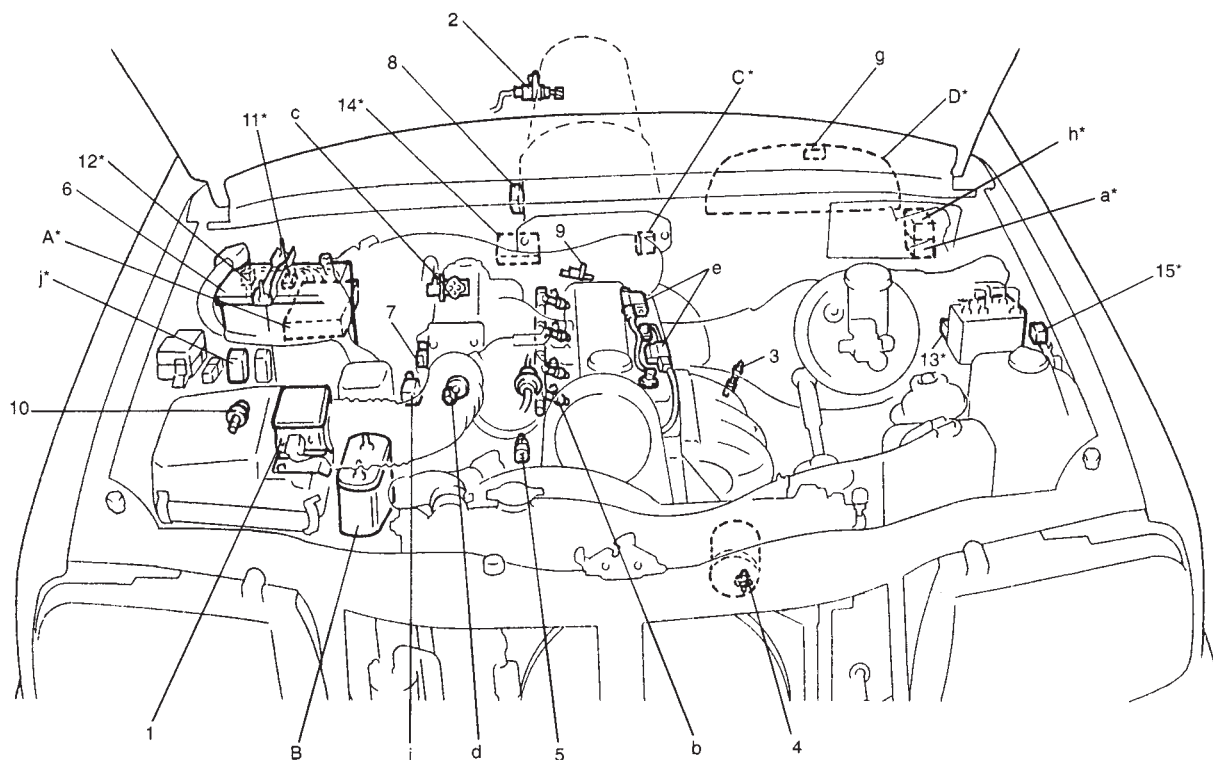
Functionally, it is divided into the following sub systems:

- Fuel injection control system
- Heated oxygen sensor heater control system (if equipped)

- Idle air control system
- Fuel pump control system
- Evaporative emission control system
- Ignition control system
- EGR system (if equipped)

Also, with 4 A/T model, PCM controls A/T.

G16 ENGINE



INFORMATION SENSORS

1. MAF sensor
2. VSS
3. Heated oxygen sensor (if equipped)
4. Power steering pressure switch (if equipped)
5. ECT sensor
6. Battery
7. TP sensor
8. Transmission range switch (A/T only)
9. Camshaft position sensor (CMP sensor)
10. IAT sensor
11. Ignition timing adjusting resistor
12. CO adjusting resistor (if equipped)
13. ABS control module (if equipped)
14. A/C amplifier (if equipped)
15. Monitor connector

CONTROLLED DEVICES

- a : Fuel pump relay
- b : Injectors
- c : EGR valve (if equipped)
- d : Idle air control valve
- e : Ignition coil assemblies
- g : Malfunction indicator lamp ("CHECK ENGINE" light)
- h : Main relay
- i : EVAP canister purge valve
- j : A/C condenser fan motor relay (if equipped)

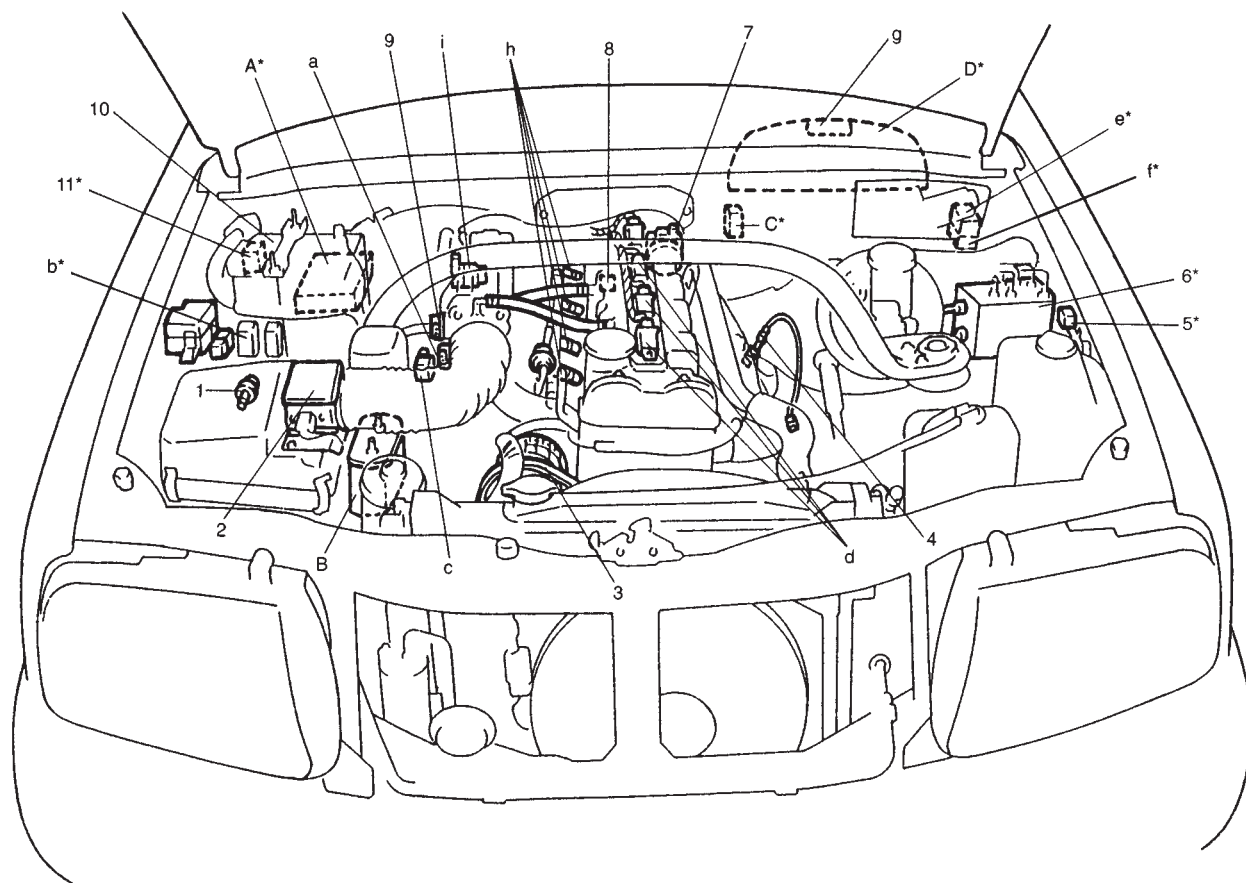
OTHERS

- A : PCM/ECM
- B : EVAP canister
- C : Data link connector
- D : Combination meter

NOTE:

Above figure shows left-hand steering vehicle. For right-hand steering vehicle, parts with (*) are installed at the other side.

J20 ENGINE



INFORMATION SENSORS

1. IAT sensor
2. MAF sensor
3. Power steering pressure switch (if equipped)
4. Heated oxygen sensor (if equipped)
5. Monitor connector
6. ABS control module (if equipped)
7. Camshaft position sensor (CMP sensor)
8. ECT sensor
9. TP sensor
10. Battery
11. CO adjusting resistor (if equipped)

CONTROLLED DEVICES

- a : Idle air control valve
- b : A/C condenser fan motor relay (if equipped)
- c : EVAP canister purge valve
- d : Ignition coil assemblies
- e : Main relay
- f : Fuel pump relay
- g : Malfunction indicator lamp ("CHECK ENGINE" light)
- h : Injectors
- i : EGR valve (if equipped)

OTHERS

- A : ECM (PCM)
- B : EVAP canister
- C : Data link connector
- D : Combination meter

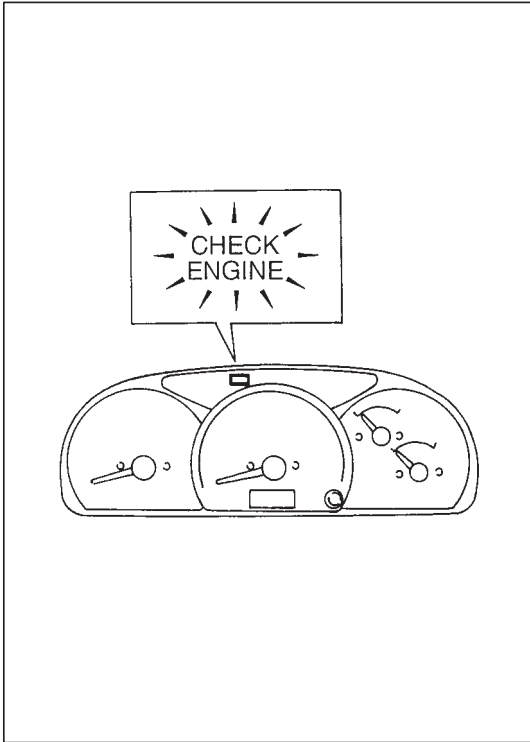
NOTE:

Above figure shows left-hand steering vehicle. For right-hand steering vehicle, parts with (*) are installed at the other side.

DIAGNOSIS

The engine and emission control system in this vehicle are controlled by ECM/PCM. ECM/PCM has an On-Board Diagnostic system which detects a malfunction in this system.

When diagnosing troubles, be sure to have full understanding of the outline of "On-Board Diagnostic System" and each item in "Precaution in Diagnosing Trouble" and execute diagnosis according to "Engine Diagnostic Flow Table" in Section 6.



ON-BOARD DIAGNOSTIC SYSTEM

ECM/PCM performs on-board diagnosis (self-diagnosis) on the system and operates "CHECK ENGINE" lamp (malfunction indicator lamp) as follows.

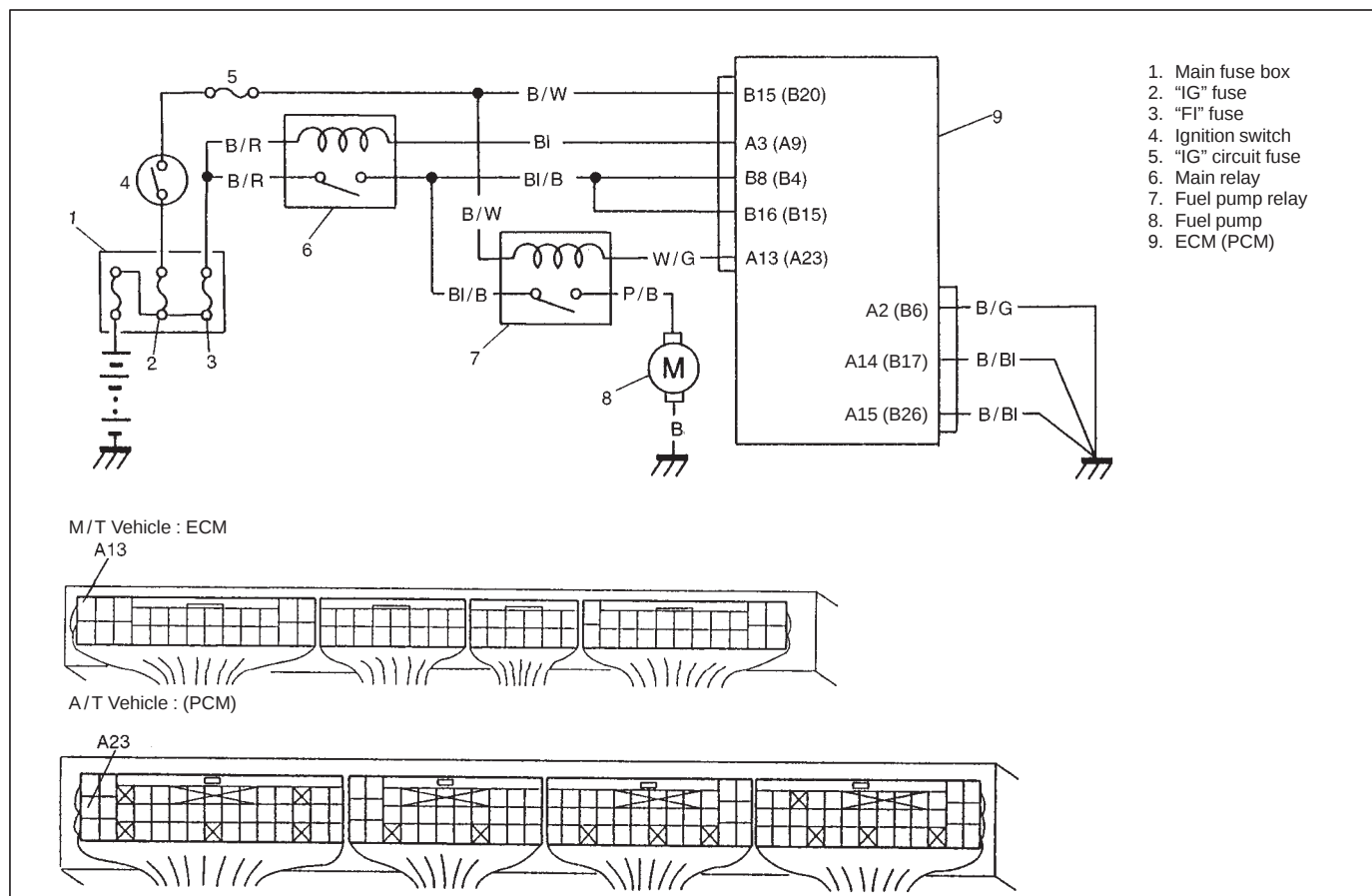
- Malfunction indicator lamp ("CHECK ENGINE" light) lights when the ignition switch is turned ON (but the engine at stop) regardless of the condition of Engine and emission control system. This is only to check the malfunction indicator lamp ("CHECK ENGINE" light) bulb and its circuit.
- If the areas monitored by ECM/PCM is free from any trouble after the engine start (while engine is running), malfunction indicator lamp ("CHECK ENGINE" light) turns OFF.
- When ECM/PCM detects a trouble which has occurred in the areas, it makes malfunction indicator lamp ("CHECK ENGINE" light) turn ON while the engine is running to warn the driver of such occurrence of trouble and at the same time it stores the exact trouble area in ECM/PCM back-up memory.

PRECAUTIONS IN DIAGNOSING TROUBLES

- Before identifying diagnostic trouble code, don't disconnect couplers from ECM/PCM, battery cable from battery, ECM/PCM ground wire harness from engine. Such disconnection will erase memorized trouble in ECM/PCM memory.
- Be sure to read "Precautions for Electrical Circuit Service" in Section 0A before inspection and observe what is written there.
- ECM/PCM replacement

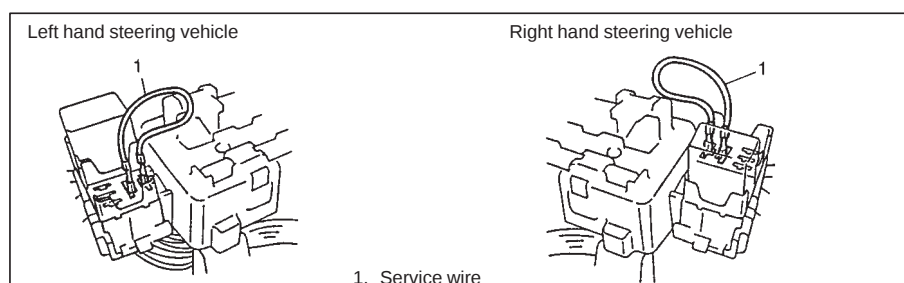
When substituting a known-good ECM/PCM, check for following conditions. Neglecting this check may cause damage to known-good ECM/PCM.

 - Resistance value of all relays, actuators is as specified respectively.
 - TP sensor and fuel tank pressure sensor (if equipped) are in good condition and none of power circuits of these sensors is shorted to ground.

B-1 FUEL PUMP CIRCUIT CHECK

STEP	ACTION	YES	NO
1	Is fuel pump heard to operate 3 seconds after ignition switch ON?	Fuel pump and its circuit are in good condition.	Go to Step 2.
2	1) With ignition switch OFF, remove fuel pump relay from connector. 2) Using service wire, connect two terminals of relay connector as shown in figure. Is fuel pump heard to operate with ignition switch ON?	Go to Step 3.	"P/B" or "B" wire open, poor fuel pump relay-to-coupler connection or faulty fuel pump.
3	1) Check fuel pump relay, referring to p.6E1-12 in this manual. Is it in good condition?	Poor fuel pump relay-to-coupler connection, "W/G" wire open or poor A13 (A23) connection. If wire and connection are OK, substitute a known-good ECM (PCM) and recheck.	Faulty fuel pump relay.

Fig. for Step 2

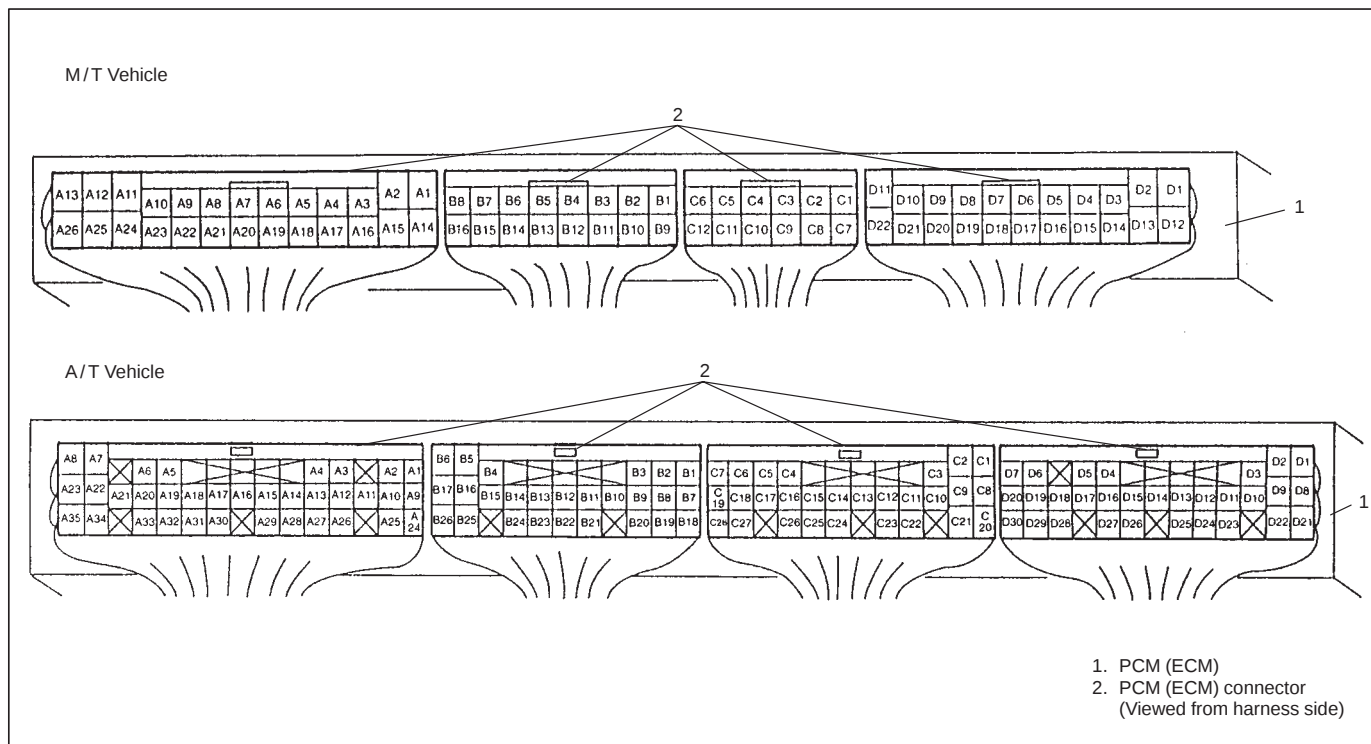


INSPECTION OF PCM (ECM) AND ITS CIRCUITS

PCM (ECM) and its circuits can be checked at PCM (ECM) wiring couplers by measuring voltage and resistance.

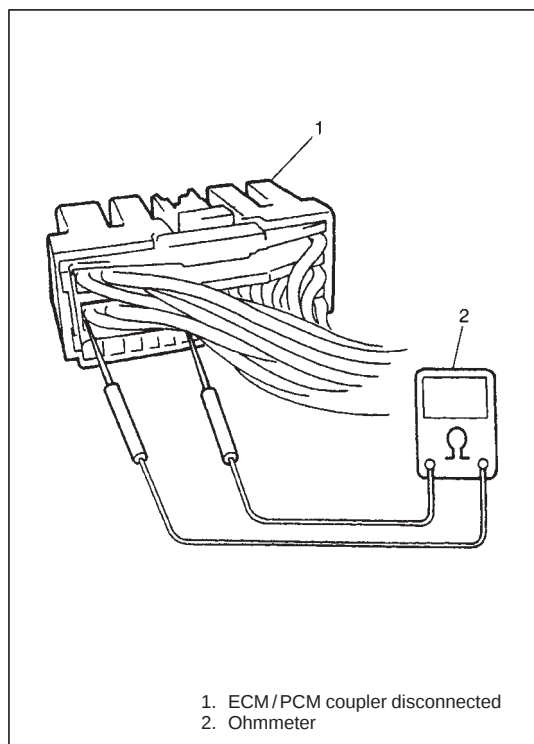
CAUTION:

PCM/ECM cannot be checked by itself. It is strictly prohibited to connect voltmeter or ohmmeter to PCM (ECM) with couplers disconnected from it.



Voltage Check

Refer to the same item of the Service Manual mentioned in Foreword of this manual.



Resistance Check

1) Disconnect couplers from ECM/PCM with ignition switch OFF.

CAUTION:

Never touch terminals of ECM/PCM itself or connect voltmeter or ohmmeter.

2) Check resistance between each pair of terminals of disconnected couplers as listed in following table.

CAUTION:

- Be sure to connect ohmmeter probe from wire harness side of coupler.
- Be sure to turn OFF ignition switch for this check.
- Resistance in table represents that when parts temperature is 20 C (68 F).

M/T VEHICLE

TERMINALS	CIRCUIT	STANDARD RESISTANCE	CONDITION
A3 – A1	Main relay	79 – 95 Ω	—
A13 – B15	Fuel pump relay	79 – 95 Ω	—
A26 – B15	A/C fan motor relay (if equipped)	75 – 110 Ω	Battery disconnected and ignition switch ON
D1 – B8	Fuel injector No.2	13 – 16 Ω	—
D2 – B8	Fuel injector No.1		
D3 – B8	IAC valve (stepper motor coil 2)	35 – 43 Ω	—
D4 – B8	IAC valve (stepper motor coil 1)		
D7 – B8	EGR valve (stepper motor coil 2, if equipped)	20 – 24 Ω	—
D8 – B8	EGR valve (stepper motor coil 1, if equipped)		
D9 – B15	Heater of HO2S (if equipped)	11.7 – 14.3 Ω	—
D12 – B8	Fuel injector No.4	13 – 16 Ω	—
D13 – B8	Fuel injector No.3		
D14 – B8	IAC valve (stepper motor coil 4)	35 – 43 Ω	—
D15 – B8	IAC valve (stepper motor coil 3)		
D18 – B8	EGR valve (stepper motor coil 4, if equipped)	20 – 24 Ω	—
D19 – B8	EGR valve (stepper motor coil 3, if equipped)		
D20 – B8	EVAP canister purge valve	28 – 35 Ω	
A2 – Body ground	Ground	Continuity	
A14 – Body ground	Ground	Continuity	
A15 – Body ground	Ground	Continuity	

A/T VEHICLE

TERMINALS	CIRCUIT	STANDARD RESISTANCE	CONDITION
A9 – A2	Main relay	79 – 95 Ω	—
A22 – B20	A/C fan motor relay (if equipped)	75 – 110 Ω	Battery disconnected and ignition switch ON
A23 – B20	Fuel pump relay	79 – 95 Ω	—
B6 – Body ground	Ground	Continuity	—
B17 – Body ground	Ground	Continuity	—
B26 – Body ground	Ground	Continuity	—
C1 – Body ground	Shift solenoid B	11 – 15 Ω	—
C2 – Body ground	Shift solenoid A		
C8 – Body ground	TCC solenoid		
D1 – B4	Fuel injector No.2	13 – 16 Ω	—
D2 – B4	Fuel injector No.1		
D3 – B4	IAC valve (stepper motor coil 1)	35 – 43 Ω	—
D4 – B20	Heater of HO2S (if equipped)	11.7 – 14.3 Ω	—
D8 – B4	Fuel injector No.4	13 – 16 Ω	—
D9 – B4	Fuel injector No.3		
D10 – B4	IAC valve (stepper motor coil 4)	35 – 43 Ω	—
D11 – B4	IAC valve (stepper motor coil 3)		
D12 – B4	IAC valve (stepper motor coil 2)		
D13 – B4	EGR valve (stepper motor coil 4, if equipped)	20 – 24 Ω	—
D14 – B4	EGR valve (stepper motor coil 3, if equipped)		
D15 – B4	EGR valve (stepper motor coil 2, if equipped)		
D16 – B4	EGR valve (stepper motor coil 1, if equipped)		
D17 – B4	EVAP canister purge valve	28 – 35 Ω	—

ON-VEHICLE SERVICE

FUEL DELIVERY SYSTEM

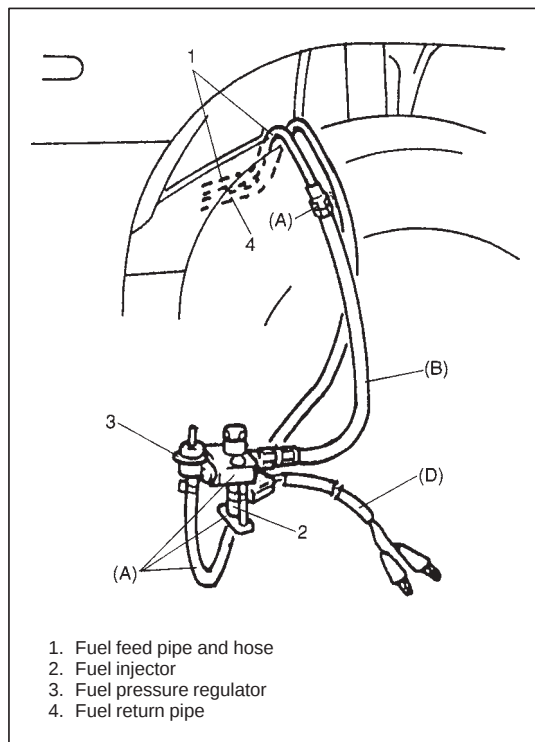
FUEL INJECTOR

Inspection

WARNING:

As fuel is injected in this inspection, perform in a well ventilated area and away from open flames.

Use special care to prevent sparking when connecting and disconnecting test lead to and from battery.



- 1) Install injector and fuel pressure regulator to special tool (injector checking tool).

Special Tool

(A): 09912-58421

- 2) Connect special tools (hoses and attachment) to hose and pipe of vehicle.

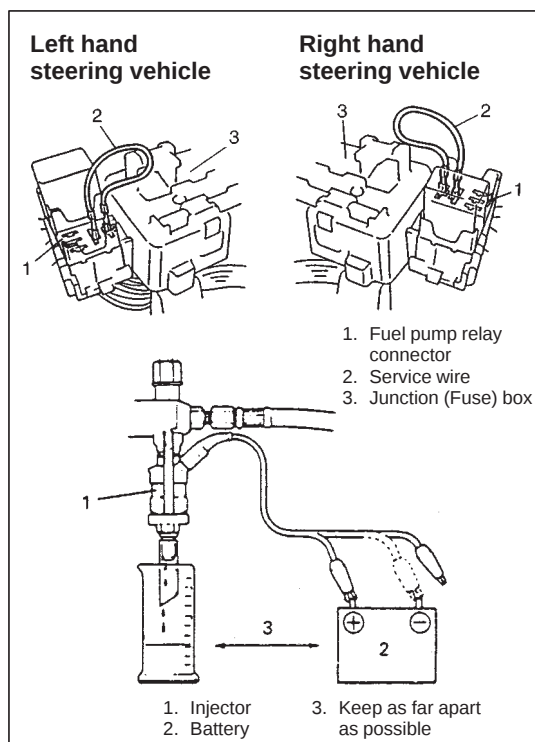
Special Tool

(B): 09912-58431

- 3) Connect special tool (test lead) to injector.

Special Tool

(D): 09930-88530



- 4) Install suitable vinyl tube onto injector nozzle to prevent fuel from splashing out when injecting.
- 5) Put graduated cylinder under injector as shown.
- 6) Remove fuel pump relay.
- 7) To operate fuel pump and apply fuel pressure to injector, using wire harness as thick as the one used for fuel pump circuit, connect two terminals of relay connector as shown in figure.

CAUTION:

Check to make sure that connection is made between correct terminals. Wrong connection can cause damage to PCM (ECM), wire harness, etc.

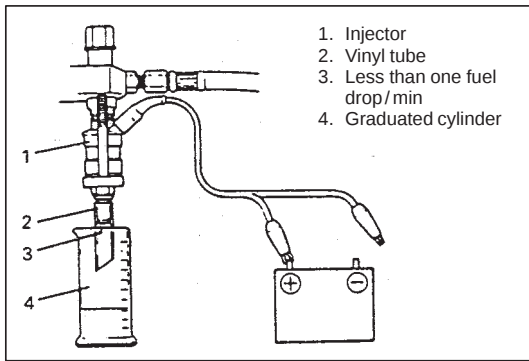
Turn ignition switch ON.

- 8) Apply battery voltage to injector for 15 seconds and measure injected fuel volume with graduated cylinder. Test each injector two or three times. If not within specification, replace injector.

Injected fuel volume:

42 – 52 cc/15 sec. (1.42/1.48 – 1.75/1.83 US/lmp. oz/15 sec.) for G16 engine.

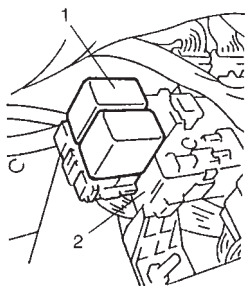
55 – 62 cc/15 sec. (1.94/2.09 – 2.18/2.36 US/lmp. oz/15 sec.) for J20 engine.



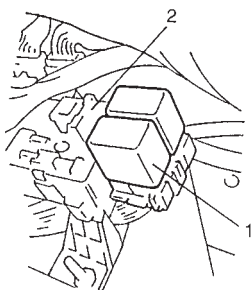
9) Check fuel leakage from injector nozzle. Do not operate injector for this check (but fuel pump should be at work).

If fuel leaks more than the following specifications, replace.

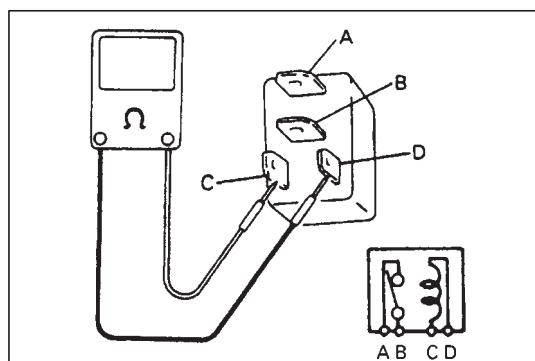
Fuel leakage: Less than 1 drop/min.

Left-hand steering vehicle

1. Main relay
2. Junction (Fuse) box

Right-hand steering vehicle**ELECTRONIC CONTROL SYSTEM****MAIN RELAY****Inspection**

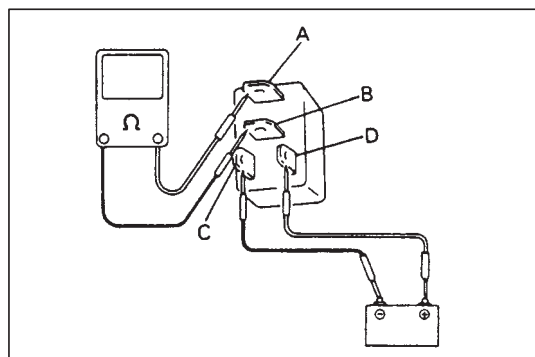
- 1) Disconnect negative cable at battery.
- 2) Remove main relay from connector.



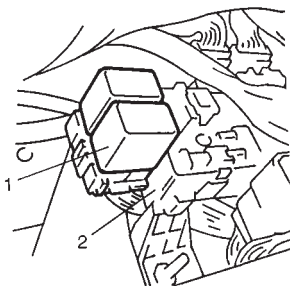
- 3) Check resistance between each two terminals as in table below.

TERMINALS	RESISTANCE
Between A and B	∞ (Infinity)
Between C and D	79 – 95 Ω at 20°C, 68°F

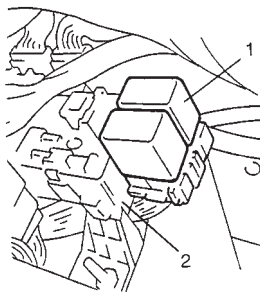
If check results are as specified, proceed to next operation check. If not, replace.



- 4) Check that there is continuity between terminals "A" and "B" when battery is connected to terminals "C" and "D".
If malfunction is found, replace.

Left-hand steering vehicle

- 1. Fuel pump relay
- 2. Junction (Fuse) box

Right-hand steering vehicle**FUEL PUMP RELAY****Inspection**

- 1) Disconnect negative cable at battery.
- 2) Remove fuel pump relay from connector.
- 3) Structure of fuel pump relay is the same as that of main relay.
Check its resistance and operation using the same procedure as that for main relay.
If malfunction is found, replace.

SECTION 6H

CHARGING SYSTEM

WARNING:

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

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

NOTE:

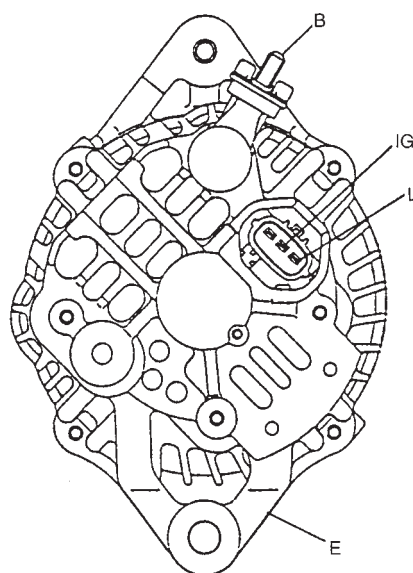
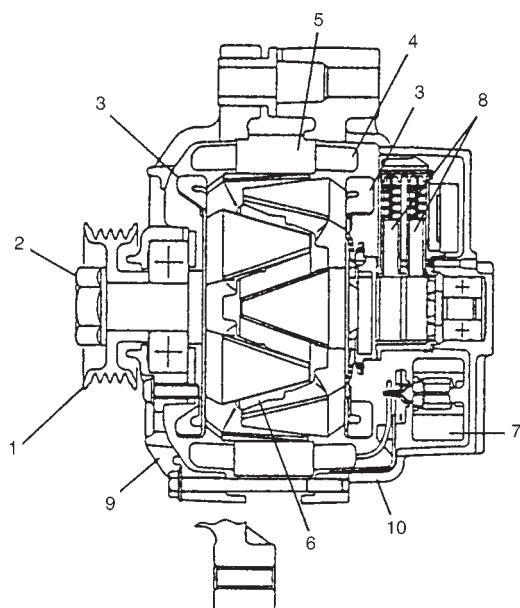
- For the descriptions (items) not found in this section, refer to the same section of the Service Manual mentioned in FOREWORD of this manual.
- As regards items for 70A type generator which are not found in this section of this manual, refer to each item applicable to 60A type generator described in the same section of the Service Manual mentioned in FOREWORD of this manual.

CONTENTS

GENERAL DESCRIPTION	6H- 2
GENERATOR [70 A type]	6H- 2
SPECIFICATIONS	6H- 3
BATTERY	6H- 3
GENERATOR	6H- 3

GENERAL DESCRIPTION

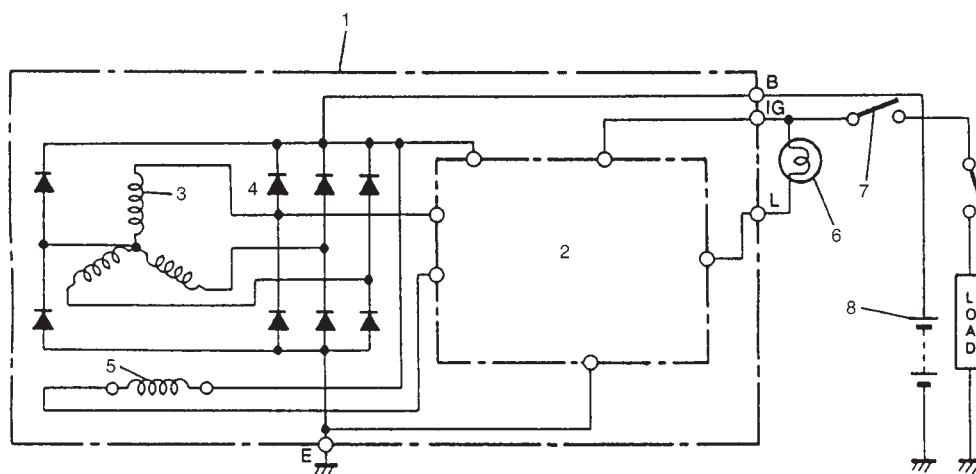
GENERATOR [70 A type]



- 1. Pulley
- 2. Pulley nut
- 3. Rotor fan
- 4. Stator coil
- 5. Stator core

- 6. Field coil
- 7. Regulator
- 8. Brush
- 9. Front housing
- 10. Rear housing

- B : Generator output (Battery terminal)
- E : Ground
- IG : Ignition terminal
- L : Lamp terminal



- 1. Generator with regulator ass'y
- 2. I.C. regulator
- 3. Stator coil
- 4. Diode

- 5. Field coil (rotor coil)
- 6. Charge indicator light
- 7. Main switch
- 8. Battery

SPECIFICATIONS

BATTERY

NOTE:

The battery used in each vehicle is one of the following three types, depending on specification.

Group	GP26R	GP85R
Cold Cranking Ampere (A)	390	550
Load Test (A)	190	220
Rated Capacity (AH/5HR, 12 Volts)	36	48

GENERATOR

NOTE:

The generator used in each vehicle is one of the following two types, depending on specification.

Type	60 A type	70 A type
Rated voltage	12 V	
Nominal output	60 A	70 A
Permissible max. speed	18000 r/min.	
No-load speed	1300 r/min (rpm)	
Setting voltage	14.4 to 15.0 V	
Permissible ambient temperature	−30 to 90°C (−22 to 194°F)	
Polarity	Negative ground	
Rotation	Clockwise viewed from pulley side	

SECTION 7B1

AUTOMATIC TRANSMISSION
(4 A/T)

WARNING:

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

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

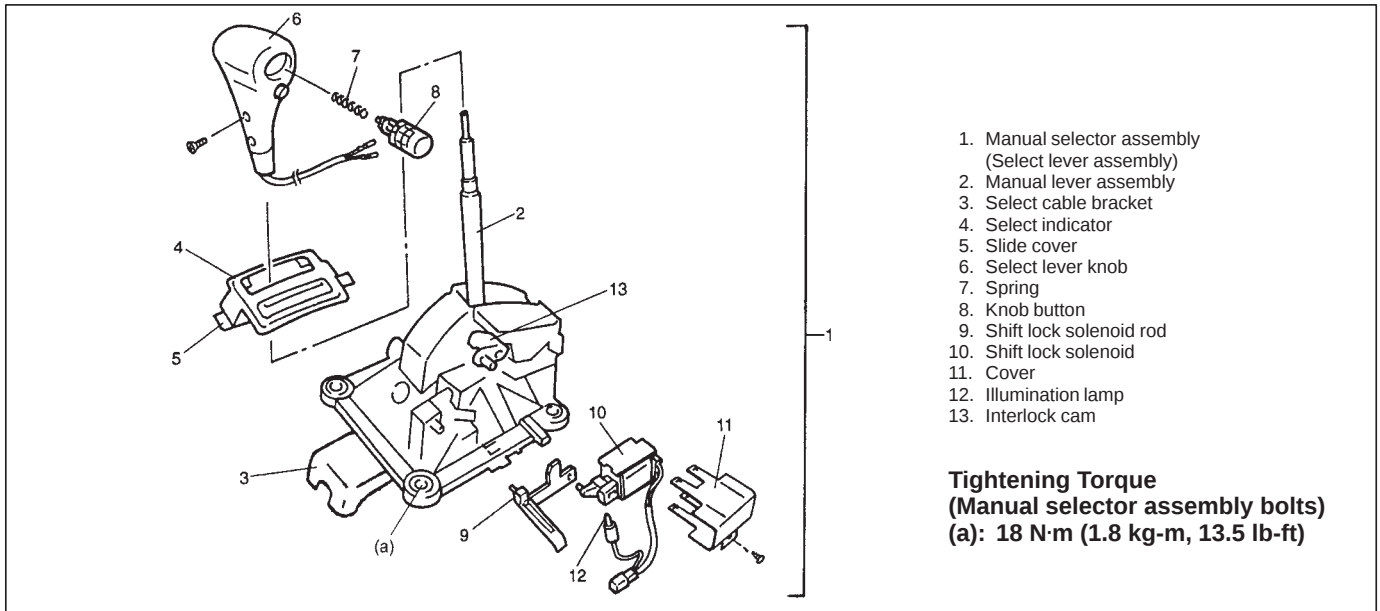
NOTE:
For the descriptions (items) not found in this section, refer to the same section of the Service Manual mentioned in FOREWORD of this manual.

CONTENTS

ON-VEHICLE SERVICE	7B1- 2
Manual Selector Assembly (For LH Vehicle)	7B1- 2
Key Interlock Cable (If Equipped)	7B1- 3

ON-VEHICLE SERVICE

MANUAL SELECTOR ASSEMBLY (FOR LH VEHICLE)



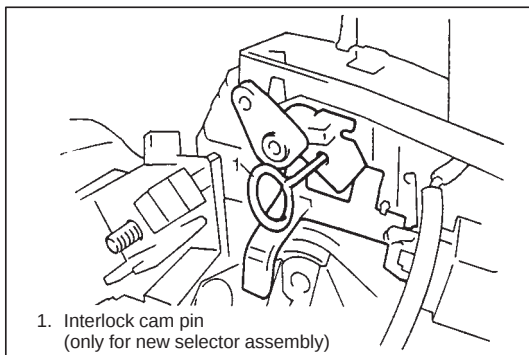
REMOVAL

- 1) Disconnect negative cable at battery.
- 2) Remove console box.
- 3) Disconnect connector for illumination lamp, shift lock solenoid (if equipped) and overdrive OFF switch.
- 4) Disconnect interlock cable from interlock cam of selector assembly (if equipped).
- 5) Remove selector assembly mounting bolts.
- 6) Disconnect select cable from lever of selector assembly.

INSTALLATION

NOTE:

If equipped with brake interlock system, new selector assembly is supplied with held interlock cam at interlock cable connecting position with pin. Remove this pin after connecting interlock cable to interlock cam and tightening cable nut.



Reverse removal procedure to install noting the followings.

- Connect interlock cable end to cam referring to "Interlock Cable Installation" section (if equipped).
- Upon completion of installation, confirm that brake (key) interlock system operates properly (if equipped).

KEY INTERLOCK CABLE (IF EQUIPPED)

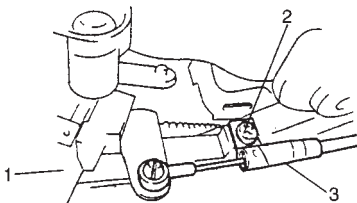
NOTE:

Don't bend interlock cable excessively when removing and installing it, or system will not operate correctly.

Removal

- 1) Disconnect negative (–) cable from battery.
- 2) If equipped with air bag system, disable air bag system.
Refer to "Disabling Air bag System" in Section 10B.
- 3) Remove steering column hole cover.
- 4) Tilt steering column if steering column is adjustable.
If no adjustable, loosen steering column bolts.
- 5) Remove steering column cover.

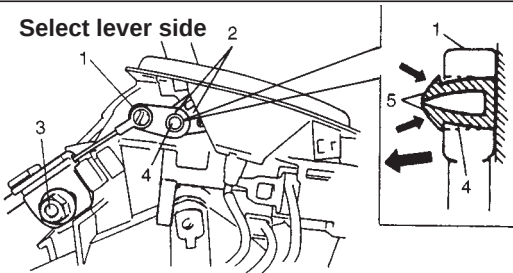
Ignition switch side



1. Ignition switch ass'y
2. Clamp screw
3. Interlock cable

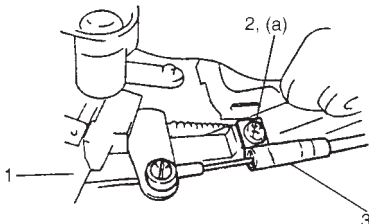
- 6) Remove interlock cable clamp screw located at ignition switch ass'y.
- 7) Remove disconnect interlock cable inner end.
(Ignition switch side.)

Select lever side



1. Inner end of interlock cable
2. Interlock cam
3. Stud bolt
4. Cam boss
5. Claw

- 8) With console box removed, take out interlock cable by loosening lock nuts.
- 9) Detach cable end from interlock cam while pressing claws of interlock cam boss. At this time, be careful not to cause damage to its claws.



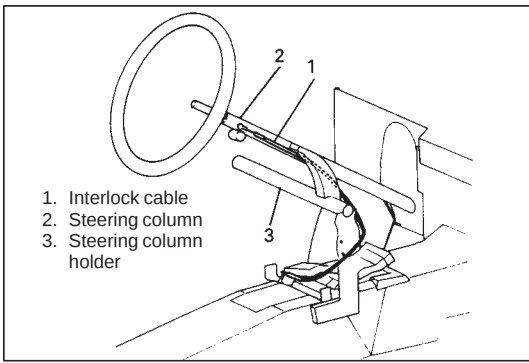
1. Ignition switch ass'y
2. Clamp screw
3. Outer end

Installation

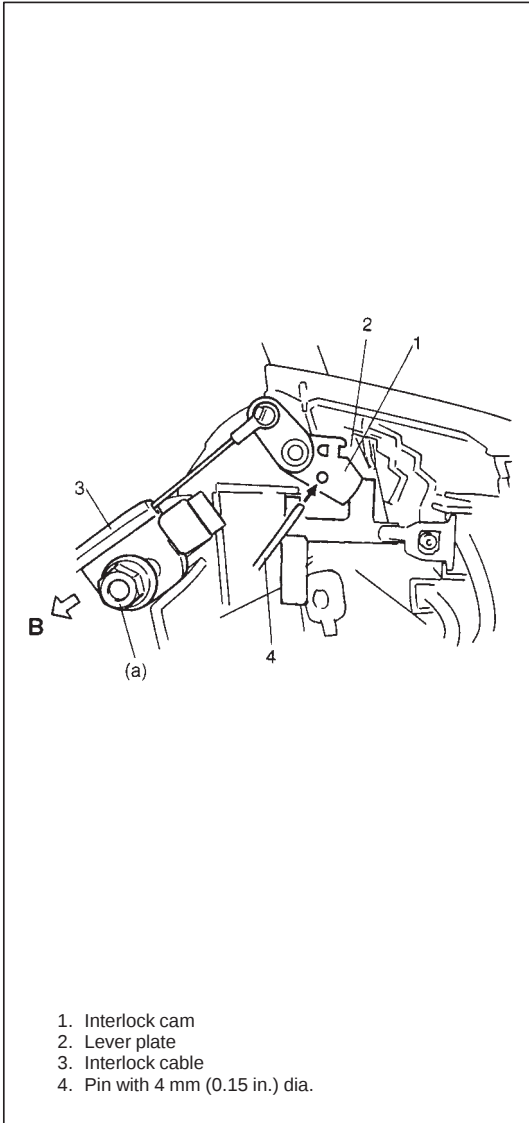
- 1) Shift select lever to "N" range and turn ignition key to "ACC" position.
- 2) Connect inner end of interlock cable to key interlock lever (Ignition switch side).
- 3) Install outer end bracket of interlock cable to ignition switch assembly, and tighten screw to specified torque.

Tightening Torque

(a): 2.2 N·m (0.22 kg-m, 1.5 lb-ft)



4) Pass and connect interlock cable as shown at the left figure.



5) Fix interlock cam by inserting pin with about 4 mm (0.15 in.) dia. into holes of cam and lever plate.

6) Install cable end to interlock cam and stud bolt and after making sure that cable outer is pushed in arrow direction B by leaf spring, tighten mounting nut to specified torque. Remove pin.

Tightening Torque

(a): 13 N·m (1.3 kg·m, 9.5 lb·ft)

7) Turn ignition key to "ACC" position and shift select lever to "N" range, and check for followings.

- When select lever is shifted at "P" range with knob button depressed, ignition key can not be turned from "ACC" to "LOCK" position.
- When knob button is released, ignition key can be turned to "LOCK" position.
- When ignition key is at "LOCK" position, select lever can not be shifted from "P" to any other range.

8) Install console box.

9) Install steering column cover and steering column hole cover.

10) Adjust steering column or tighten steering column bolts.

11) If equipped with air bag system, enable air bag system.

Refer to "Enabling Air bag System" in Section 10B.

SECTION 8B

LIGHTING SYSTEM

WARNING:

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

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

NOTE:

For the descriptions (items) not found in this section, refer to the same section of Service Manual mentioned in FOREWORD of this manual.

CONTENTS

ON-VEHICLE SERVICE	8B- 2
Hazard Relay	8B- 2

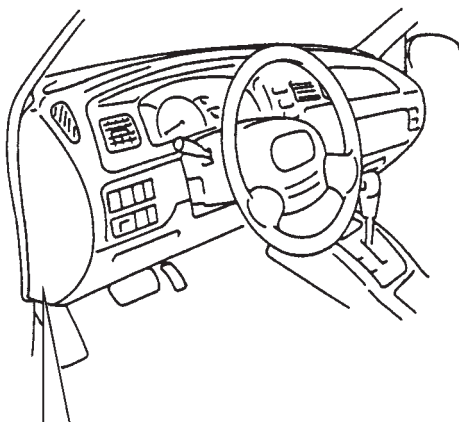
ON-VEHICLE SERVICE

HAZARD RELAY

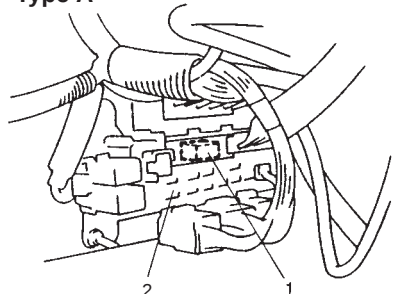
INSPECTION

Connect battery and tester as shown.

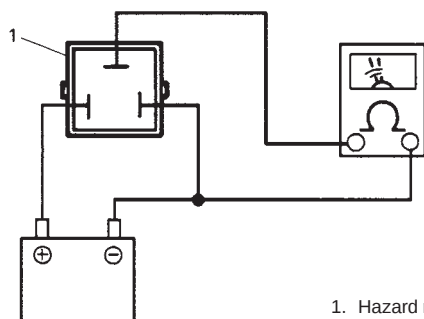
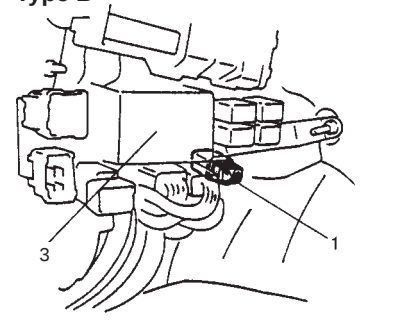
Unless a continued click sound is heard, replace relay.



Type A



Type B



- 1. Hazard relay
- 2. Junction box
- 3. Fuse box

SECTION 8C

INSTRUMENTATION/DRIVER INFORMATION

WARNING:

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

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

NOTE:

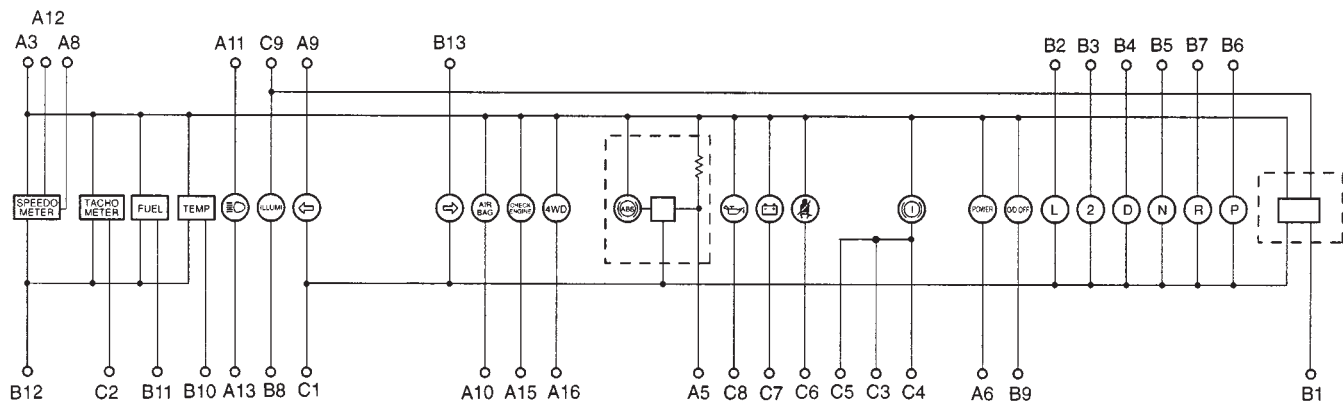
For the descriptions (items) not found in this section, refer to the same section of Service Manual mentioned in FOREWORD of this manual.

CONTENTS

GENERAL DESCRIPTION	8C- 2
Combination Meter	8C- 2

GENERAL DESCRIPTION

COMBINATION METER



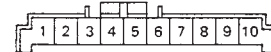
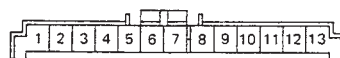
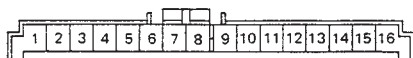
NOTE:

Terminal arrangement of coupler viewed from harness side.

Coupler A

Coupler B

Coupler C



Coupler A

- | | |
|----------------------------------|-------|
| 1. Blank | — |
| 2. Blank | — |
| 3. To ignition switch | B/W |
| 4. Blank | — |
| 5. To ABS control module | Bl/O |
| 6. To PCM (A/T vehicle only) | Gr/Bl |
| 7. Blank | — |
| 8. To VSS | Bl/Y |
| 9. To combination switch | G/R |
| 10. To SDM | Y/G |
| 11. To main fuse | W/Bl |
| 12. To fuse box | W |
| 13. To combination switch | R |
| 14. Blank | — |
| 15. To ECM (PCM for A/T vehicle) | V/Y |
| 16. To 4WD controller | O/B |

Coupler B

- | | |
|---|------|
| 1. To door switch (driver side) | B/Bl |
| 2. To shift switch (A/T vehicle only) L | G/Bl |
| 3. To shift switch (A/T vehicle only) 2 | G/O |
| 4. To shift switch (A/T vehicle only) D | Y/G |
| 5. To shift switch (A/T vehicle only) N | O/Bl |
| 6. To shift switch (A/T vehicle only) P | O/G |
| 7. To shift switch (A/T vehicle only) R | R |
| 8. To ground | B |
| 9. To PCM (A/T vehicle only) | W/B |
| 10. To ECT sensor | Y/W |
| 11. To fuel level gauge | Bl/W |
| 12. To ground | B/Y |
| 13. To combination switch | G/Y |

Coupler C

- | | |
|--------------------------------------|------|
| 1. To ground | B |
| 2. To ECM (PCM for A/T vehicle) | Br |
| 3. To ignition switch | V/R |
| 4. To brake fluid level switch | R/B |
| 5. To parking brake switch | V |
| 6. To seat belt switch (if equipped) | Gr/R |
| 7. To generator | W/R |
| 8. To oil pressure switch | Y/B |
| 9. To combination switch | R/Y |
| 10. Blank | — |

SECTION 8D

WINDOWS, MIRRORS, SECURITY AND LOCKS

WARNING:

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

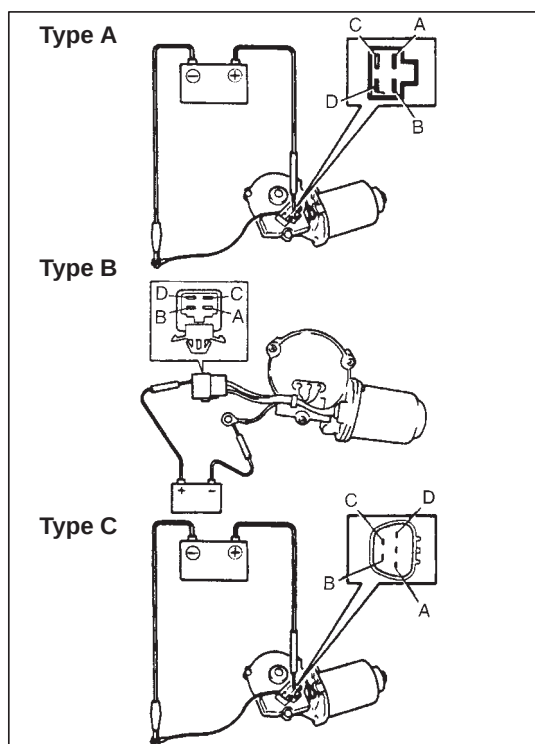
- Service on and around the air bag system components or wiring must be performed only by an authorized SUZUKI dealer. Refer to “Air Bag System Components and Wiring Location View” under “General Description” in air bag system section in order to confirm whether you are performing service on or near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

NOTE:

For the descriptions (items) not found in this section, refer to the same section of Service Manual mentioned in FOREWORD of this manual.

CONTENTS

ON-VEHICLE SERVICE	8D- 2
Windshield Wiper	8D- 2



ON-VEHICLE SERVICE

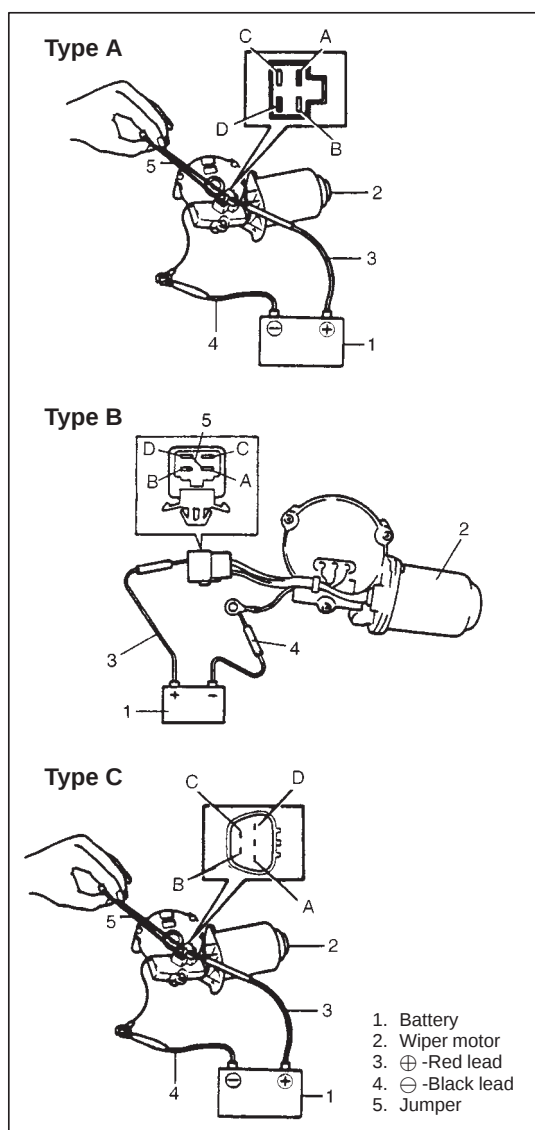
WINDSHIELD WIPER

INSPECTION

Wiper Motor

- 1) As illustrated, use a 12 V battery to connect its (+) terminal to terminal "A", and its (-) terminal to Black lead wire.

If motor rotates at a low revolution speed of 45 to 55 rpm, it is proper. For high speed check, connect battery (+) terminal to terminal "B", and its (-) terminal to Black lead wire. If motor rotates at a high revolution speed of 67 to 83 rpm, it is proper.



- 2) Testing automatic stop action.

- a) Connect 12 V battery (+) terminal to terminal "A" of wiper motor and (-) terminal to Black lead wire and let the motor turn.
- b) Disconnect terminal "A" from battery, and let the motor stop.
- c) Connect terminal "A" and "D" with a jumper wire, and connect terminal "C" to battery (+) terminal. Observe the motor turns once again then stops at a given position.
- d) Repeat a) thru c) several times and inspect if the motor stops at the given position every time.

SECTION 9

BODY SERVICE

WARNING:

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

- Service on and around the air bag system components or wiring must be performed only by an authorized SUZUKI dealer. Refer to “Air Bag System Components and Wiring Location View” under “General Description” in air bag system section in order to confirm whether you are performing service on or near the air bag system components or wiring. Please observe all WARNINGS and “Service Precautions” under “On-Vehicle Service” in air bag system section before performing service on or around the air bag system components or wiring. Failure to follow WARNINGS could result in unintentional activation of the system or could render the system inoperative. Either of these two conditions may result in severe injury.
- Technical service work must be started at least 90 seconds after the ignition switch is turned to the “LOCK” position and the negative cable is disconnected from the battery. Otherwise, the system may be activated by reserve energy in the Sensing and Diagnostic Module (SDM).
- When body servicing, if shock may be applied to air bag system component parts, remove those parts beforehand. (Refer to Section 10B.)

NOTE:

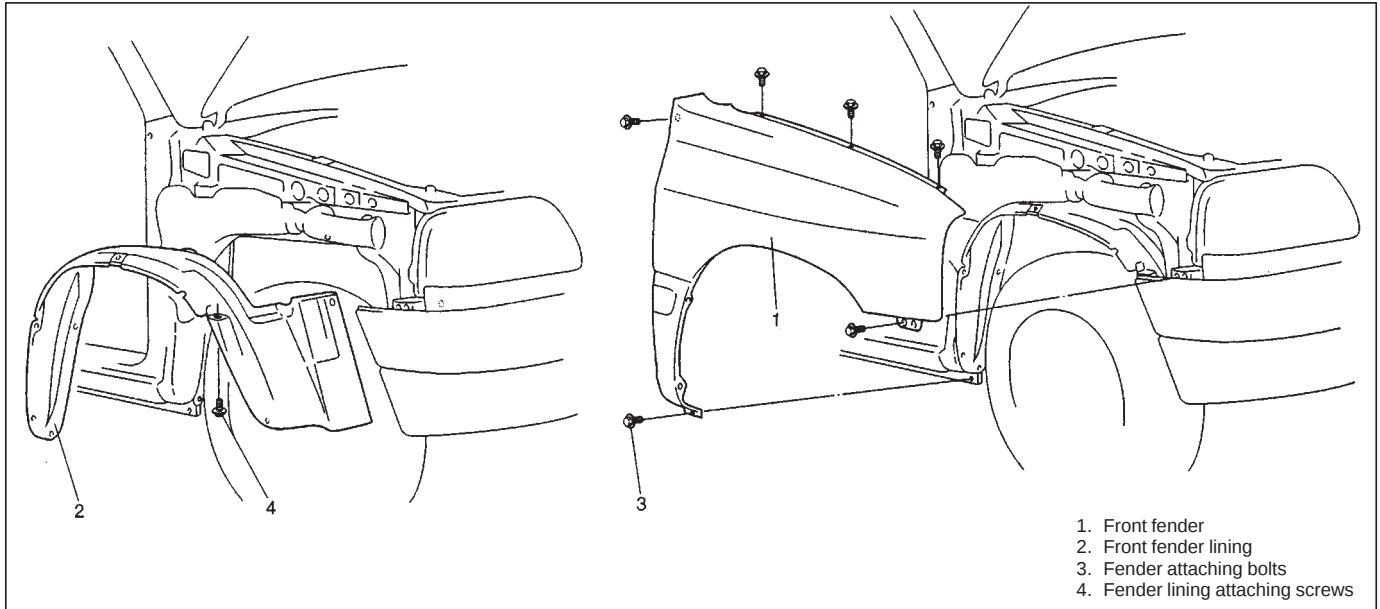
- For the descriptions (items) not found in this section, refer to the same section of Service Manual mentioned in FOREWORD of this manual.
- Fasteners are important attaching parts in that they could affect the performance of vital components and systems, and/or could result in major repair expense. They must be replaced with one of the same part number of with an equivalent part if replacement becomes necessary.
Do not use a replacement part of lesser quality or substitute a design. Torque values must be used as specified during reassembly to assure proper retention of these parts.

CONTENTS

BODY STRUCTURE	9- 2
Front Fender	9- 2
Rear Bumper	9- 3
Body Dimensions	9- 4
SEAT	9- 7
Rear Seat	9- 7
PAINT AND COATINGS	9- 8
Metal Replacement Parts Finishing	9- 8
CONVERTIBLE TOP	9-15
Canvas Top And Topbow Frames	9-15
EXTERIOR AND INTERIOR TRIM	9-16
Floor Carpet	9-16
Roof Trim	9-17

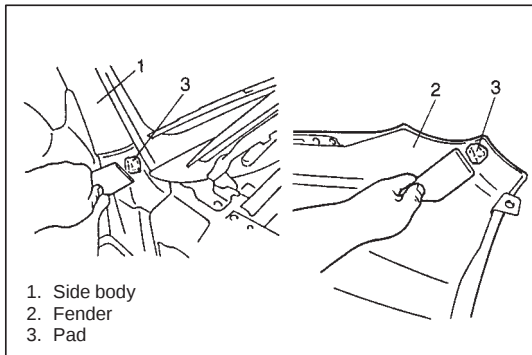
BODY STRUCTURE

FRONT FENDER



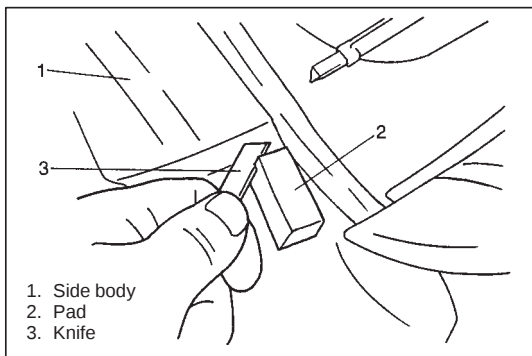
REMOVAL

- 1) Remove front bumper.
- 2) Remove fender splash guard (H25 engine).
- 3) Remove front fender lining.
- 4) Remove front fender.



INSTALLATION

- 1) Remove pad from side body and (or) fender, using care not to damage painted surface.

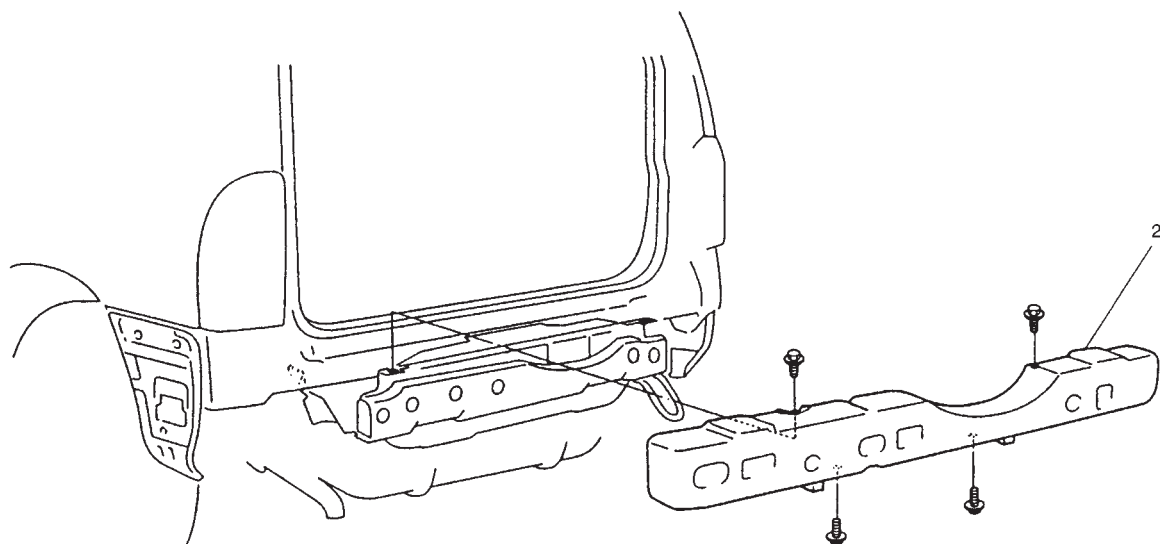
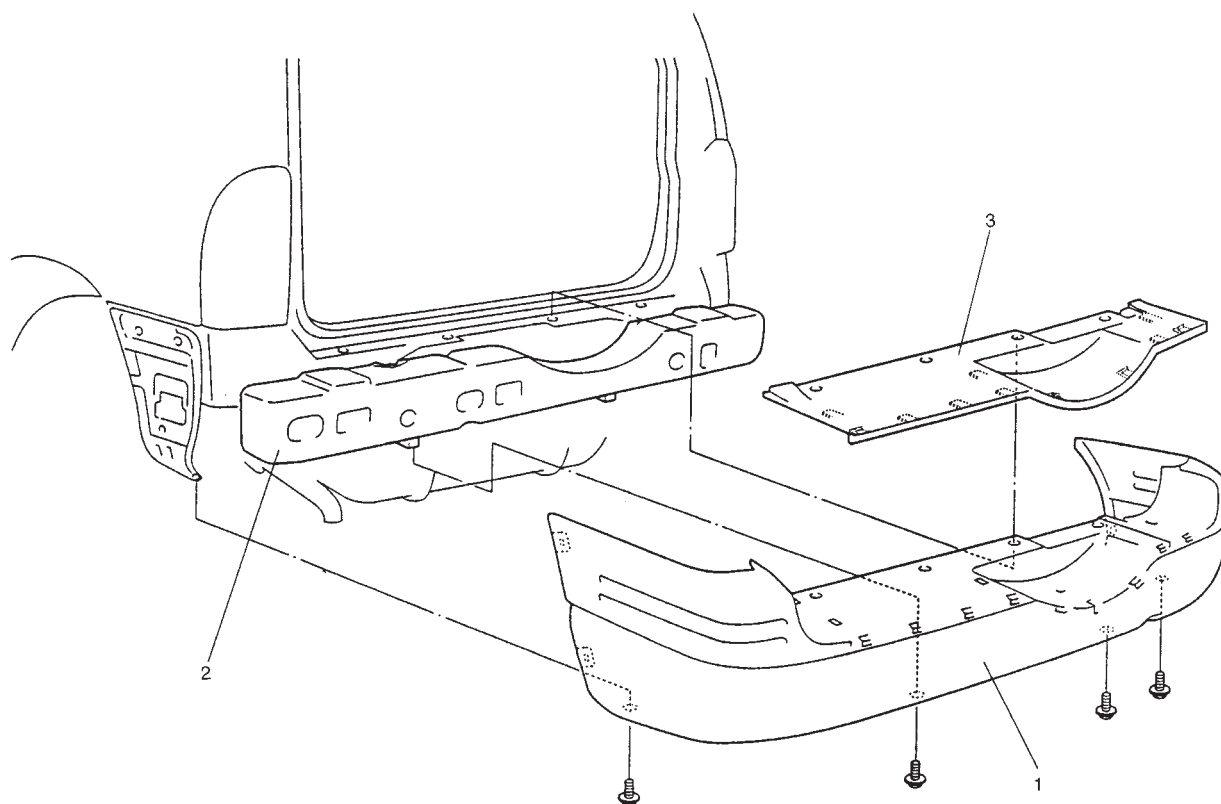


- 2) Attach new pad cutting appropriately size temporarily and adjust height with a knife so that fender becomes flush with side body.
- 3) Reverse removal procedure for installation.

NOTE:

If paint on fender bolt is peeled off, be sure to apply paint again.

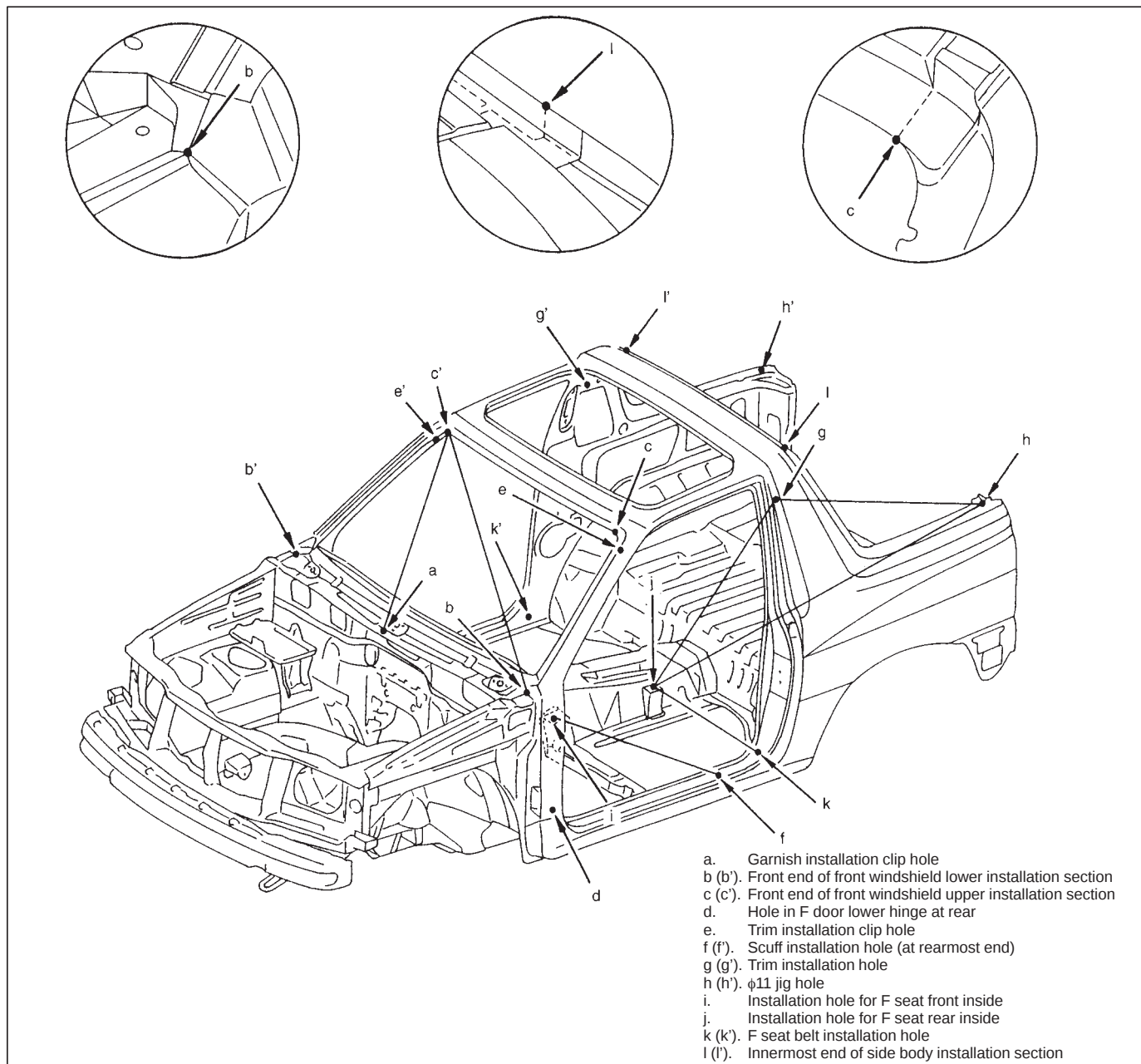
REAR BUMPER



1. Rear bumper
2. Rear bumper member
3. Rear bumper garnish (if equipped)

BODY DIMENSIONS

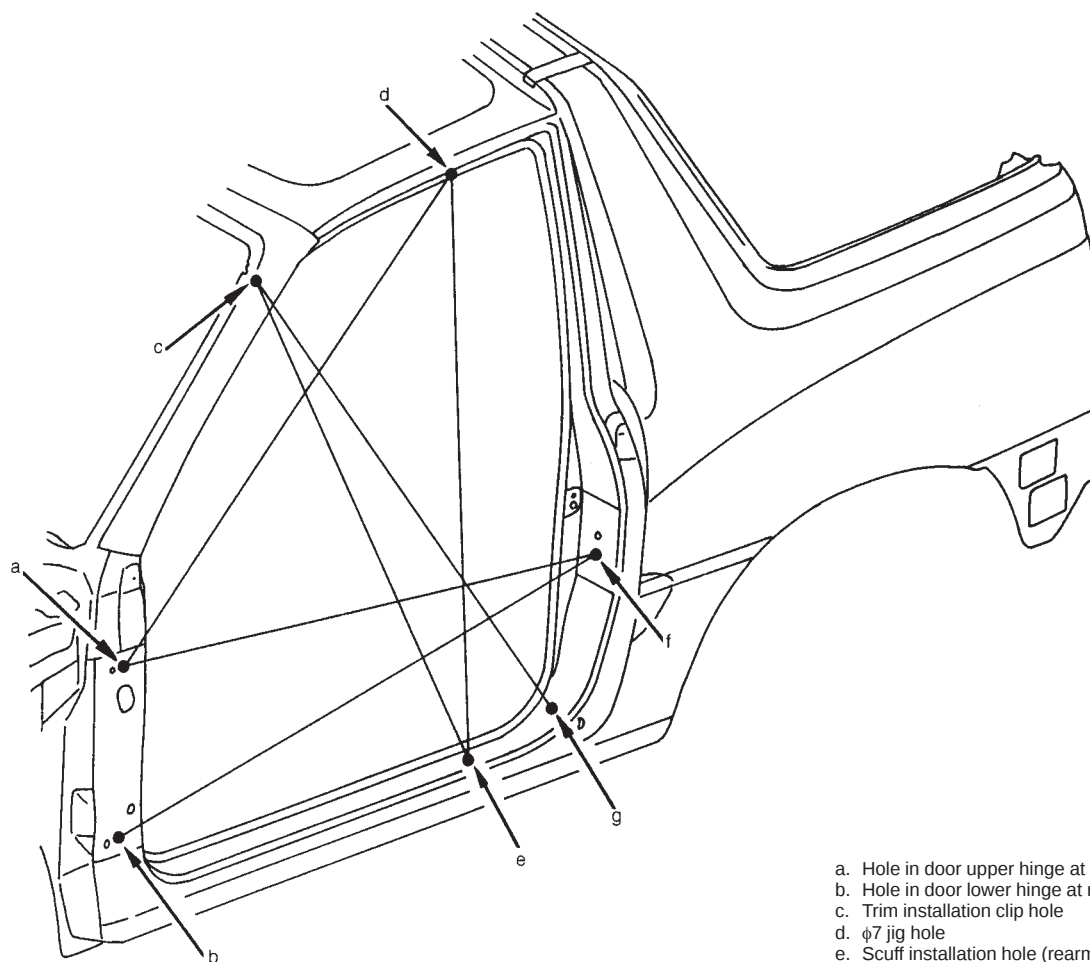
Canvas top model



Hole to hole distance

a – c : 981 mm (38.62 in.)
 b – b' : 1390 mm (54.72 in.)
 b – c' : 1404 mm (55.28 in.)
 c – c' : 1008 mm (39.69 in.)
 e – e' : 1110 mm (43.70 in.)
 e – i : 1036 mm (40.79 in.)
 f – i : 688 mm (27.09 in.)

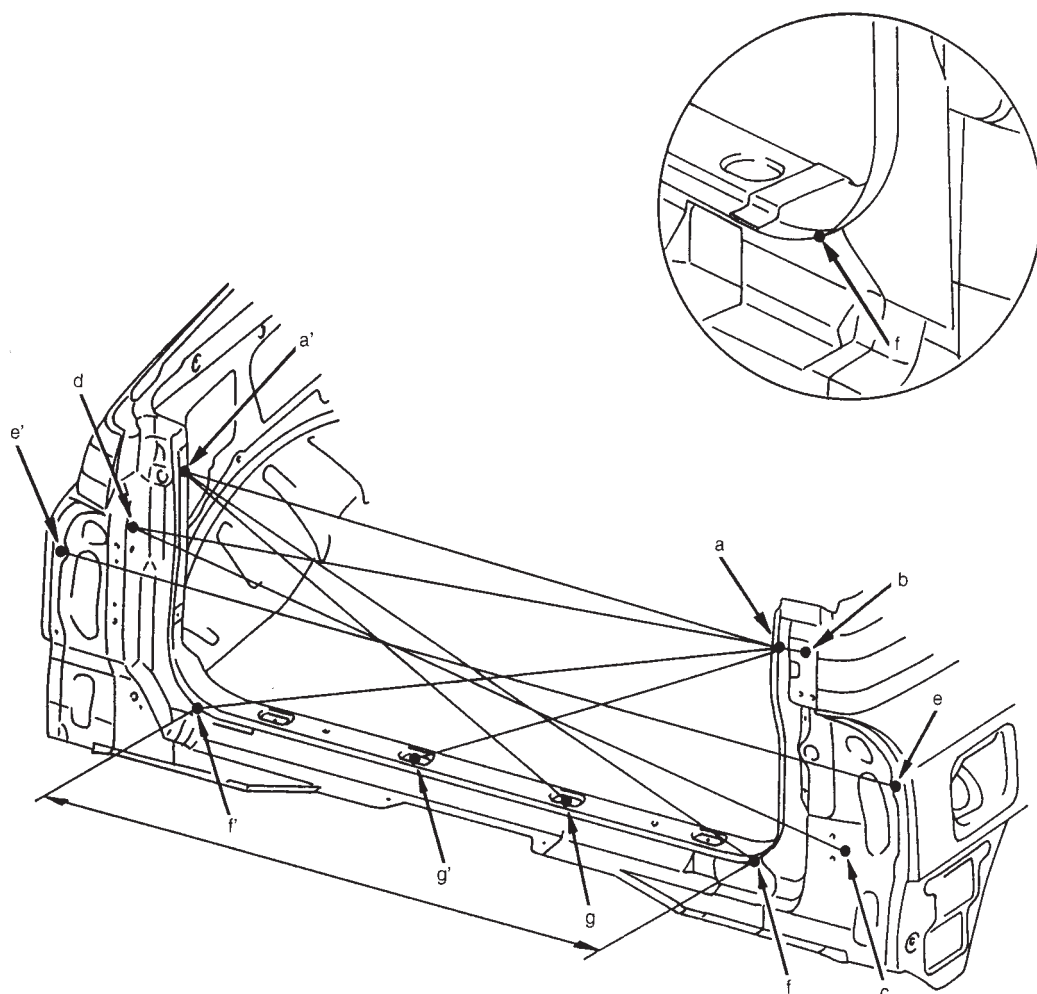
g – g' : 1145 mm (45.08 in.)
 g – h : 1017 mm (40.04 in.)
 g – j : 1078 mm (42.44 in.)
 h – h' : 1338 mm (52.68 in.)
 h – j : 1459 mm (57.44 in.)
 j – k : 548 mm (21.57 in.)
 l – l' : 956 mm (37.64 in.)



- a. Hole in door upper hinge at rear
- b. Hole in door lower hinge at rear
- c. Trim installation clip hole
- d. $\phi 7$ jig hole
- e. Scuff installation hole (rearmost end)
- f. Door striker lower section installation hole
- g. F seat belt installation hole

Hole to hole distance

- a – d : 1154 mm (45.43 in.)
- a – f : 1150 mm (45.28 in.)
- b – f : 1165 mm (45.87 in.)
- c – e : 1142 mm (44.96 in.)
- c – g : 1246 mm (49.06 in.)
- d – e : 1146 mm (45.12 in.)



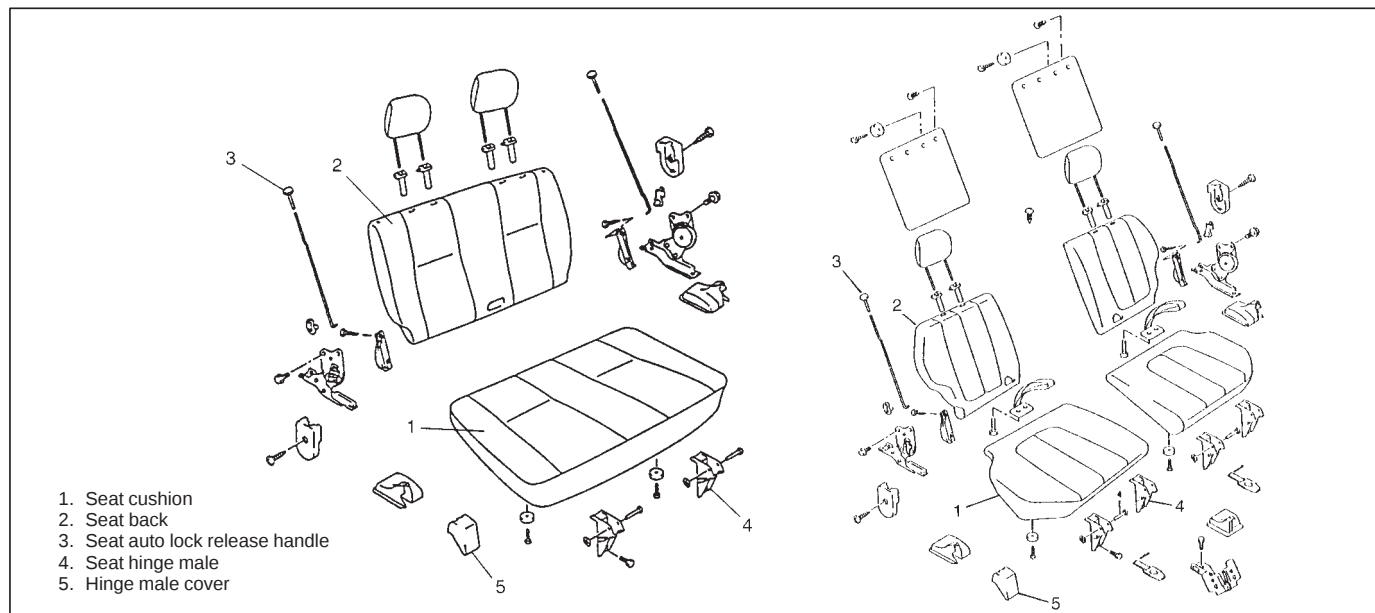
- a (a'). Trim installation clip hole
- b. Installation hole in uppermost part of upper hinge
- c. Installation hole in outside part of lower hinge
- d. Installation hole in uppermost part of rear gate striker
- e (e'). Installation hole in outer upper section of R-COMB R (L) lamp
- f (f'). Innermost end of rear floor tail member installation section
- g (g'). Garnish installation clip hole

Hole to hole distance

- a – a' : 1112 mm (43.78 in.)
- a – f' : 1134 mm (44.65 in.)
- a – g' : 796 mm (31.34 in.)
- a' – f : 1156 mm (45.51 in.)
- a' – g : 824 mm (32.44 in.)
- b – d : 1229 mm (48.39 in.)
- c – d : 1324 mm (52.13 in.)
- e – e' : 1544 mm (60.79 in.)
- f – f' : 1029 mm (40.51 in.)

SEAT

REAR SEAT



REMOVAL

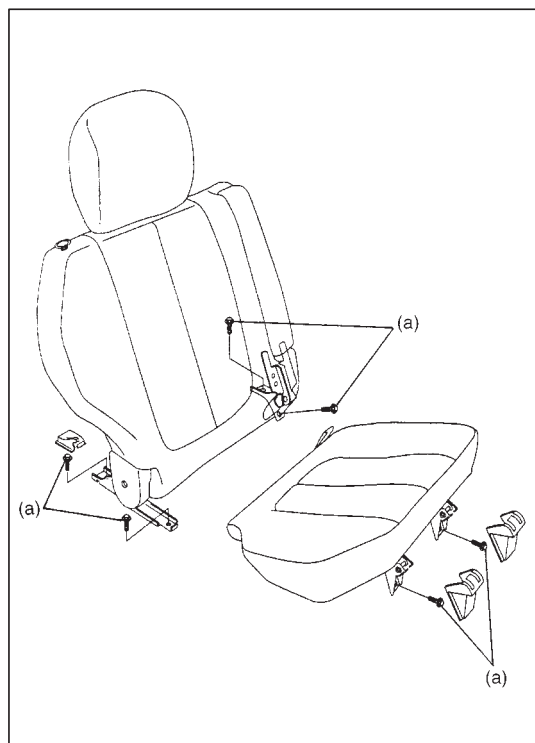
- 1) Remove four mounting bolt to remove seat cushion.
- 2) Remove four mounting bolts to remove seat back.
- 3) Disassemble and repair seat as necessary.

INSTALLATION

Reverse removal procedure to install rear seat.
Torque to specifications, as shown.

Tightening Torque

(a): 35 N·m (3.5 kg-m, 25.5 lb-ft)

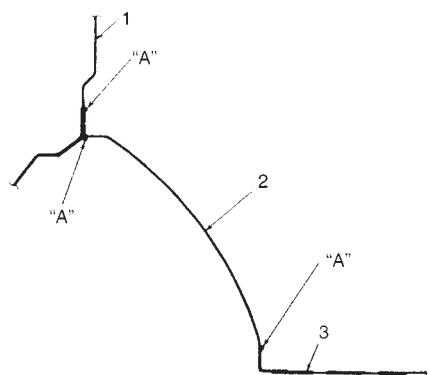
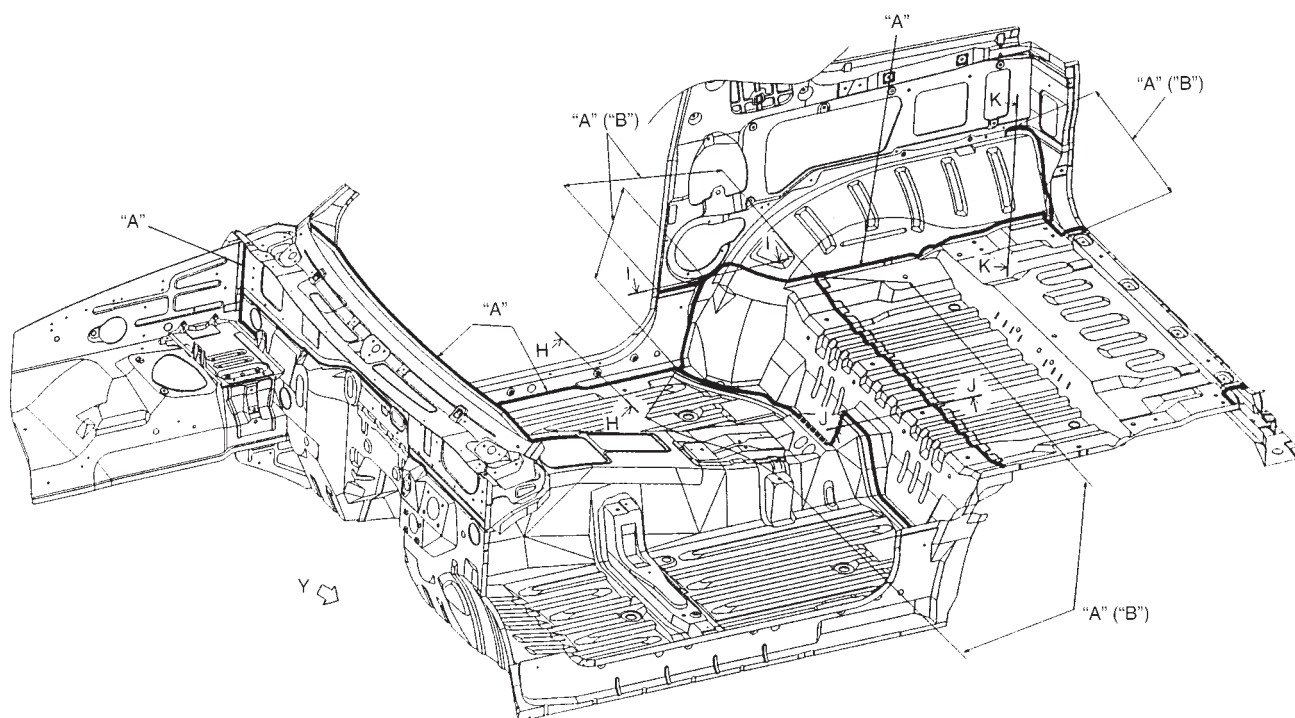


PAINT AND COATING

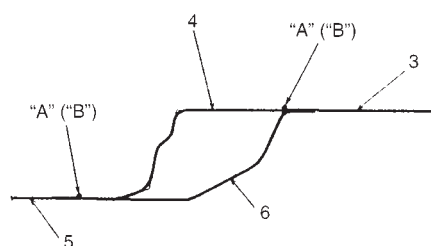
METAL REPLACEMENT PARTS FINISHING

SEALANT APPLICATION AREA

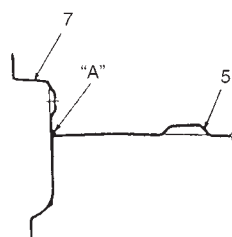
Canvas top model



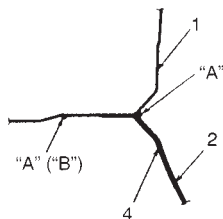
K - K



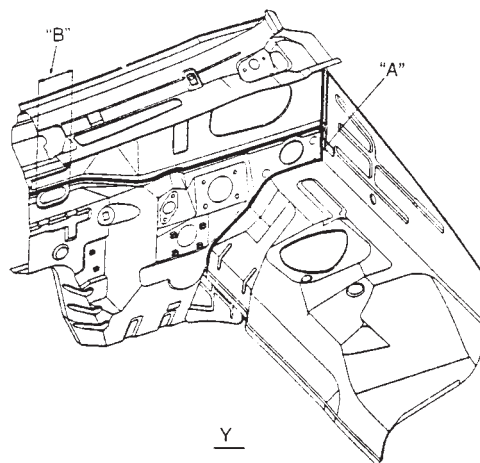
J - J



H - H



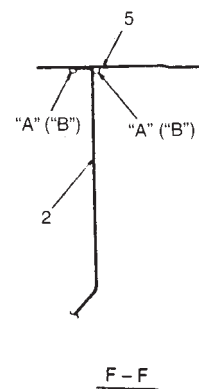
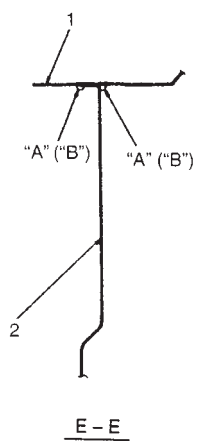
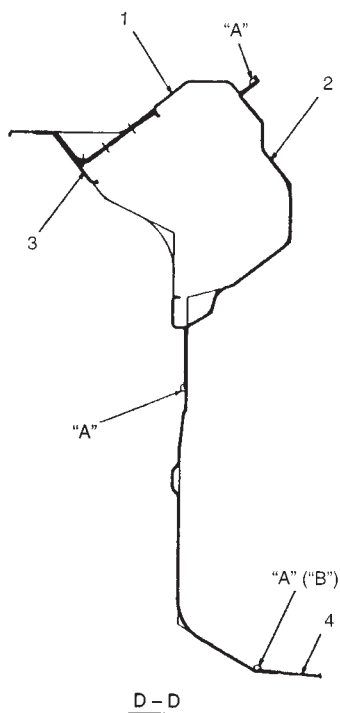
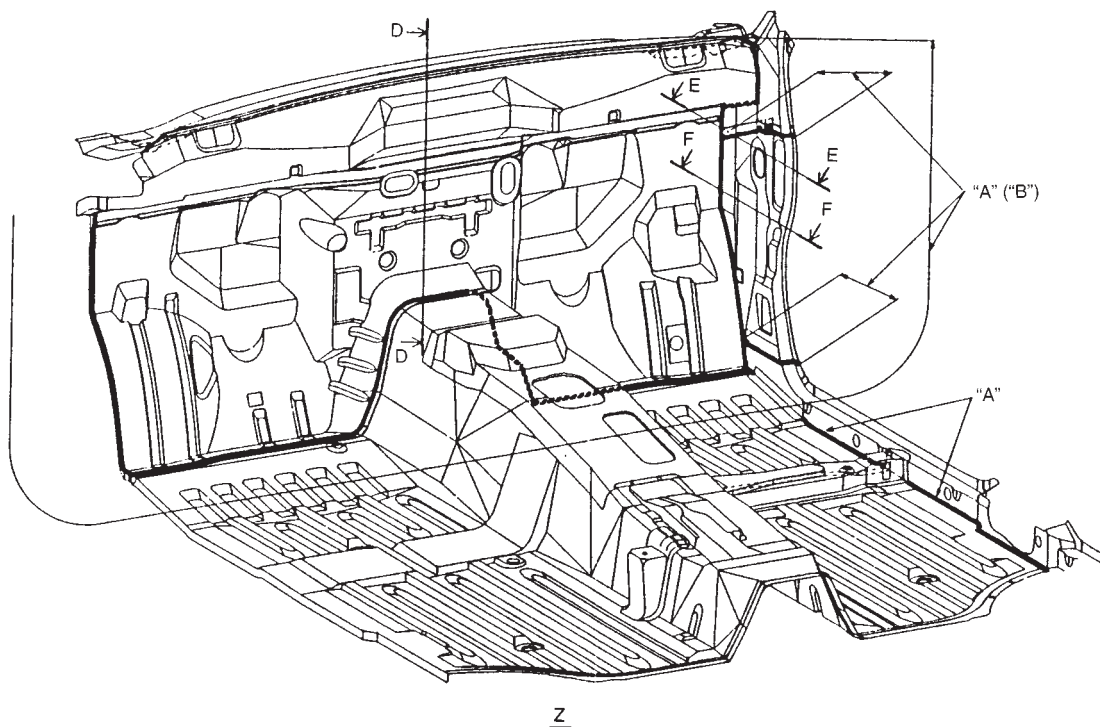
I - I



Y

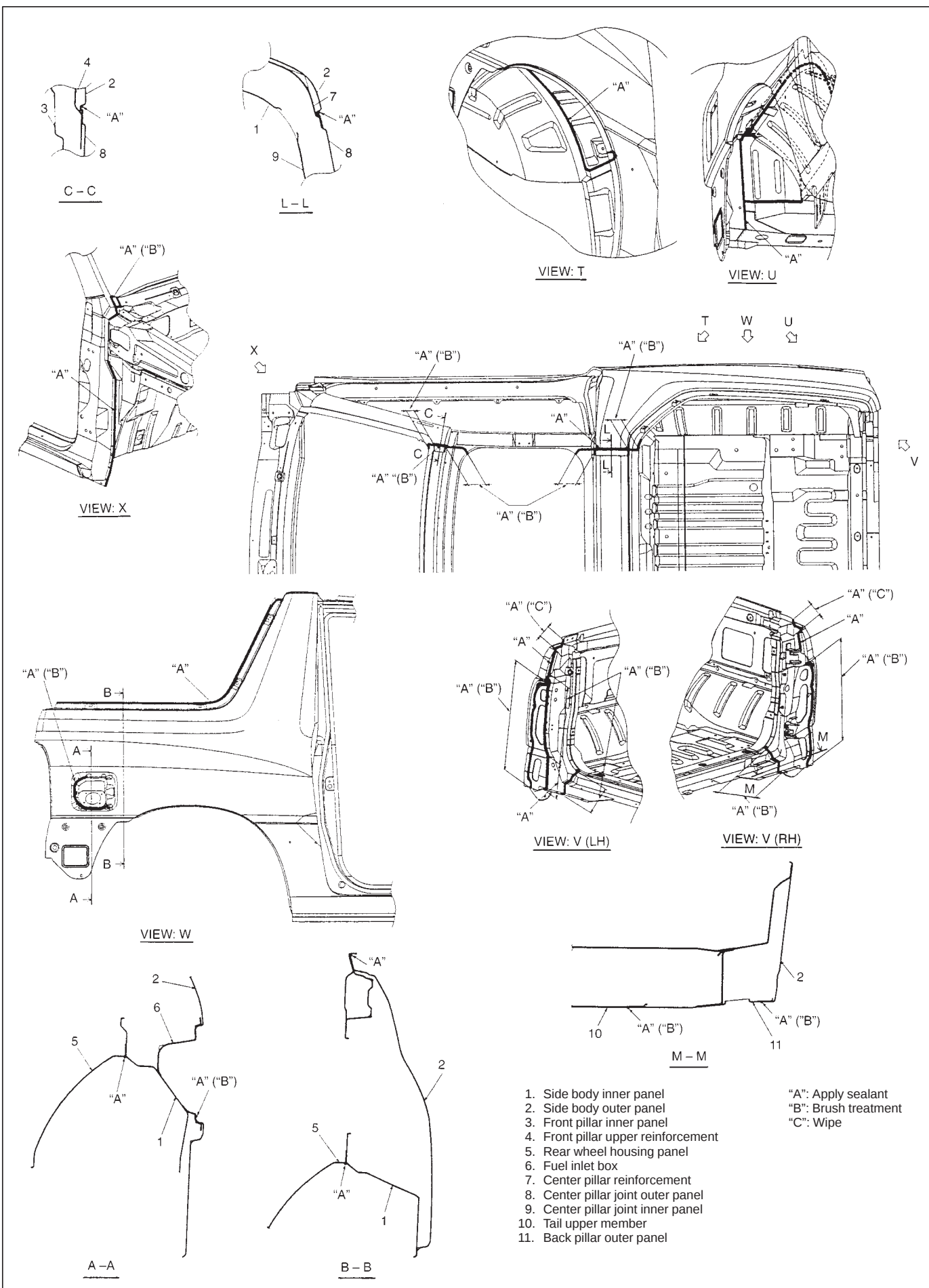
- | | |
|-----------------------------|--------------------------|
| 1. Side body inner panel | 5. Front floor panel |
| 2. Rear wheel housing panel | 6. Center floor member |
| 3. Rear floor panel | 7. Side sill inner panel |
| 4. Center floor panel | |

"A": Apply sealant
 "B": Brush treatment

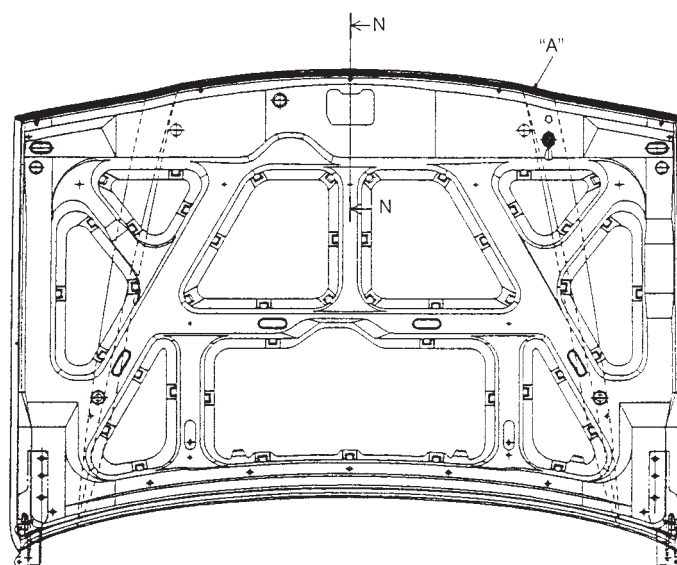
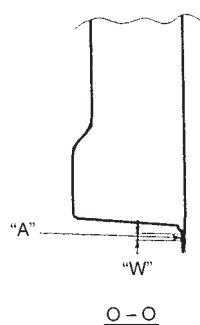
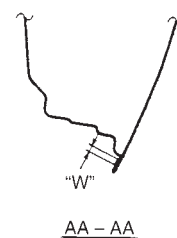
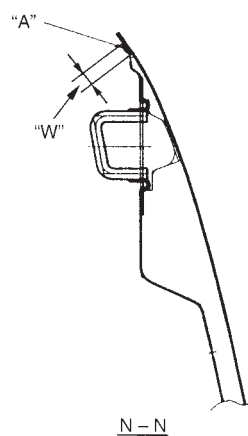
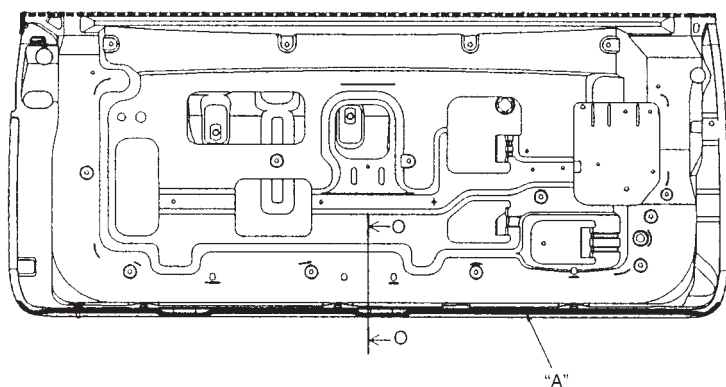
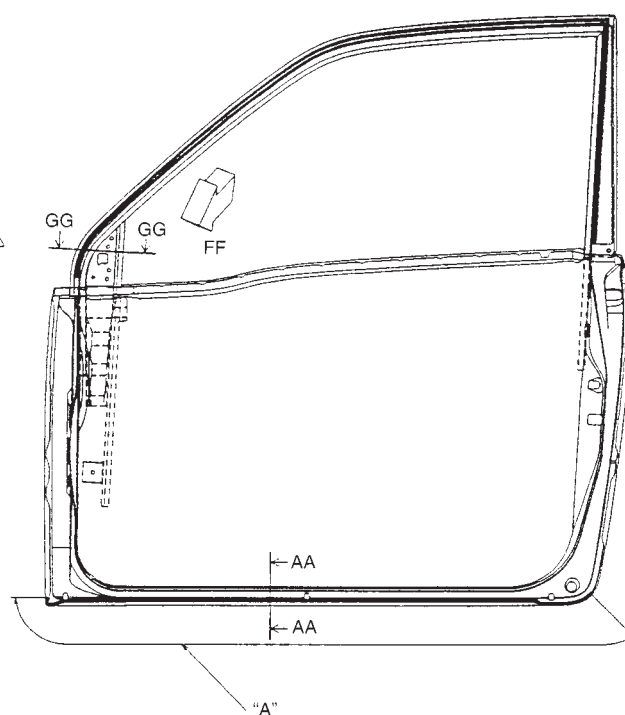
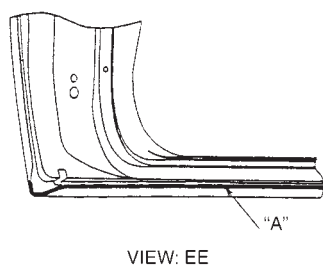
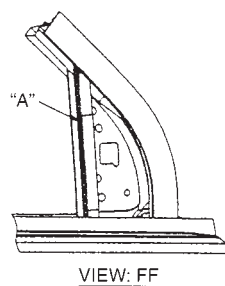
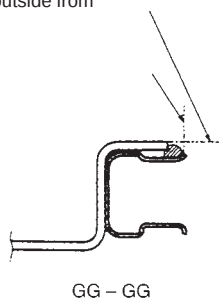


1. Cowl top panel
2. Dash panel
3. Cowl front panel
4. Front floor panel
5. Front pillar inner lower panel

"A": Apply sealant
 "B": Brush treatment



Be free from protrude
of sealant outside from
this line

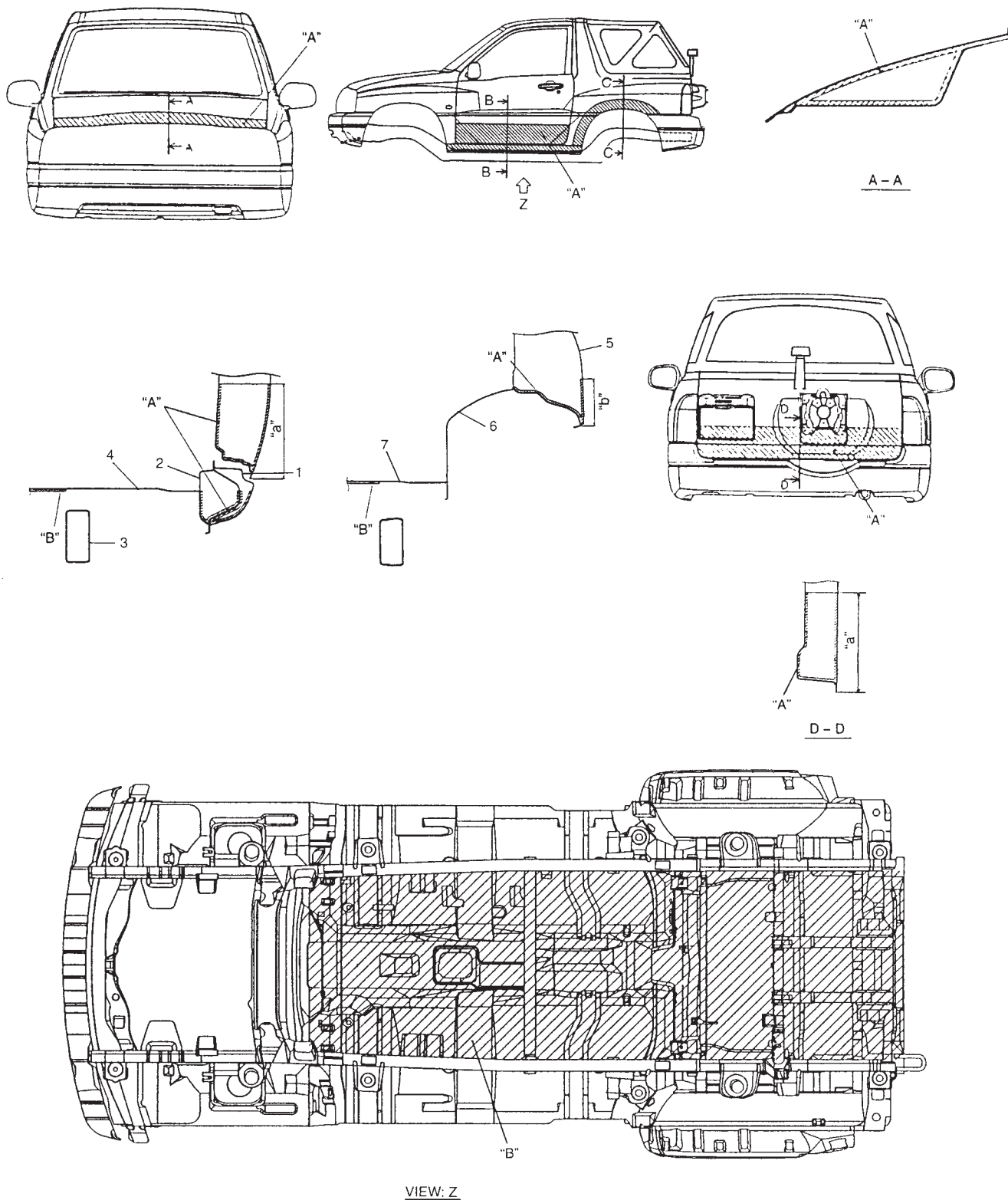


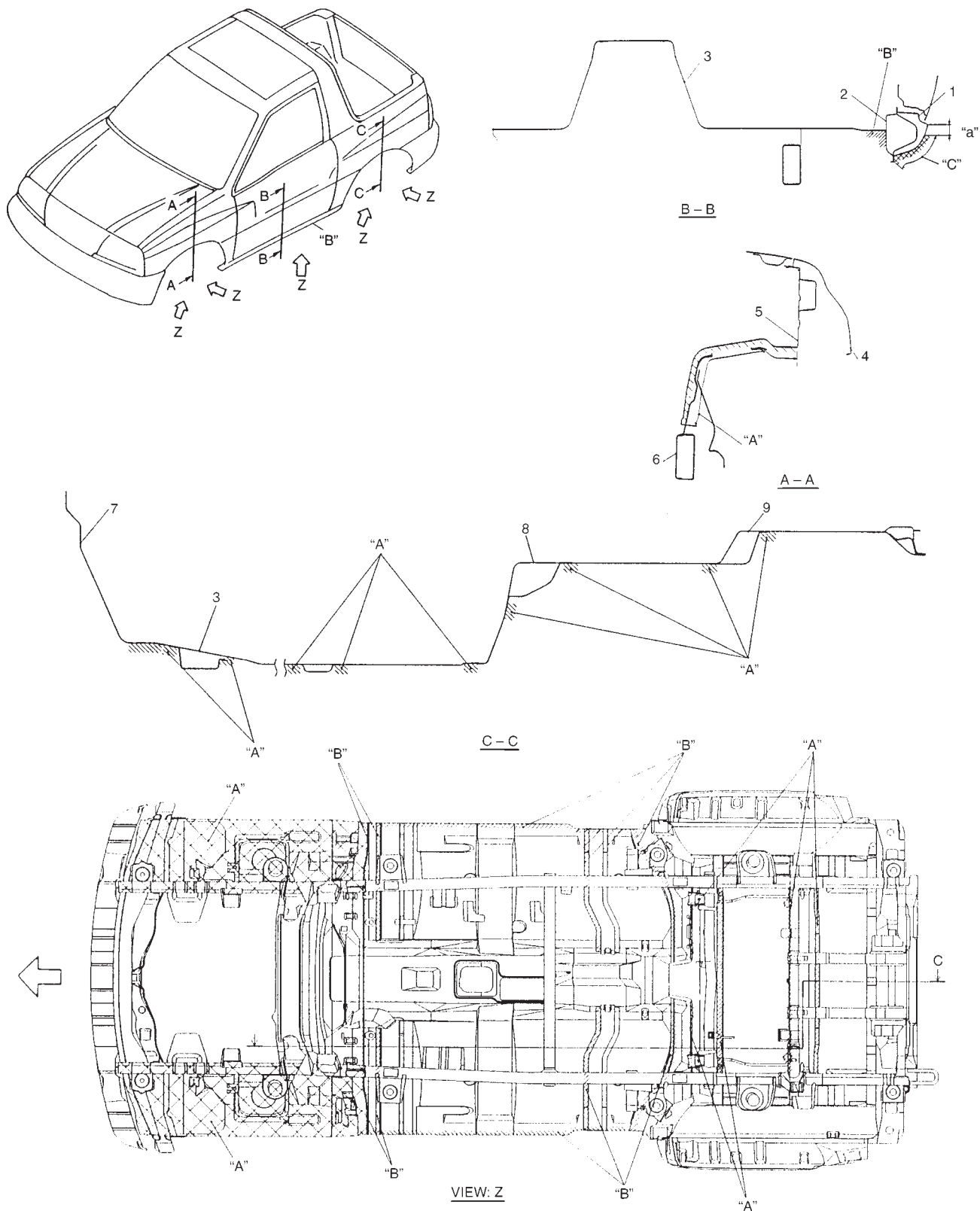
Sealant width "W": more than 5 mm

"A": Apply sealant

UNDERCOATING/ANTI-CORROSION COMPOUND APPLICATION AREA

Canvas top model





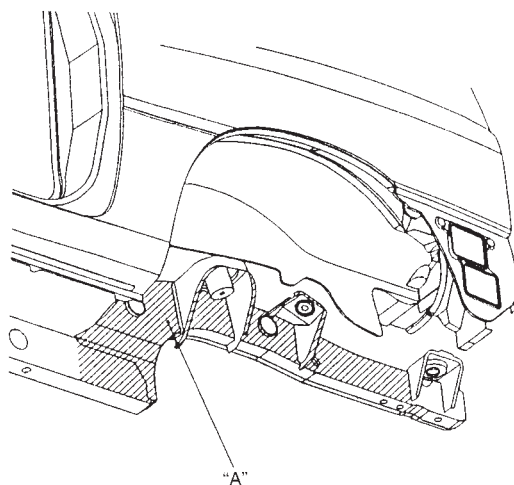
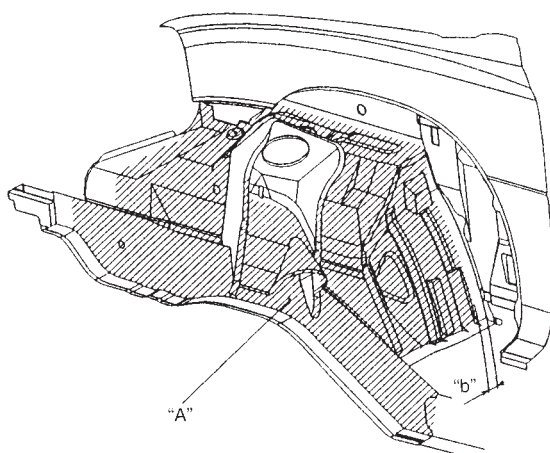
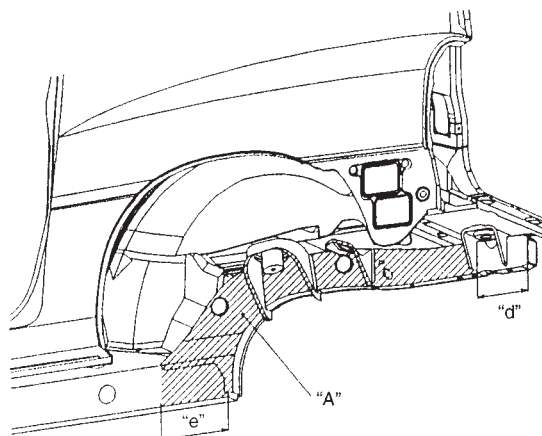
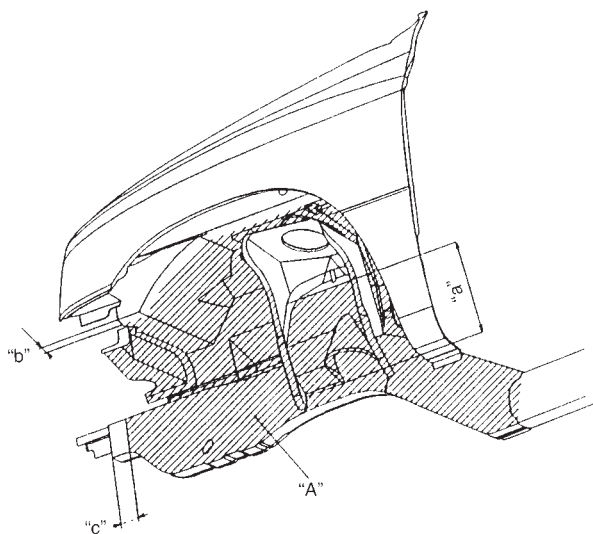
"a": 30 mm (1.18 in.)

"A": Apply undercoating (PVC, 400 µm or more)

"B": Additional applying of under coating
(for 5 door vehicle without splash guard)

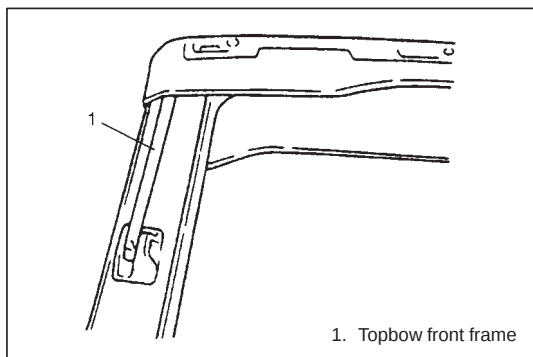
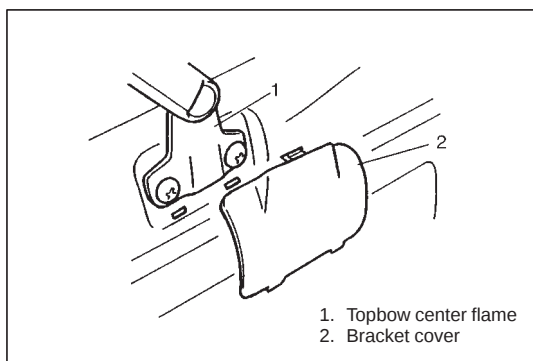
"C": Apply PVC chip resistant material (200 µm or more)

1. Side body outer
2. Side sill inner
3. Main floor
4. Front fender
5. Front wheel housing
6. Frame
7. Dash panel
8. Center floor
9. Rear floor



"a": 240 mm (9.45 in.)
 "b": 20 mm (0.79 in.)
 "c": 40 mm (1.57 in.)
 "d": 134 mm (5.28 in.)
 "e": 177 mm (6.97 in.)

"A": Black paint



CONVERTIBLE TOP

CANVAS TOP AND TOPBOW FRAMES

Removal

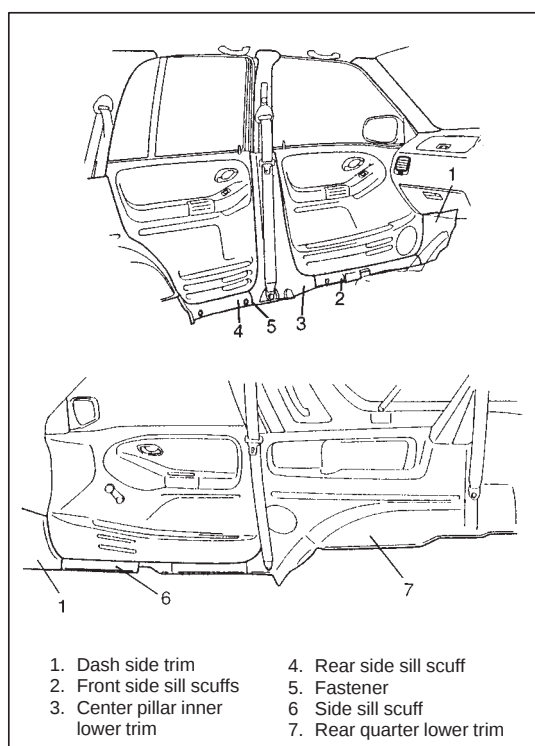
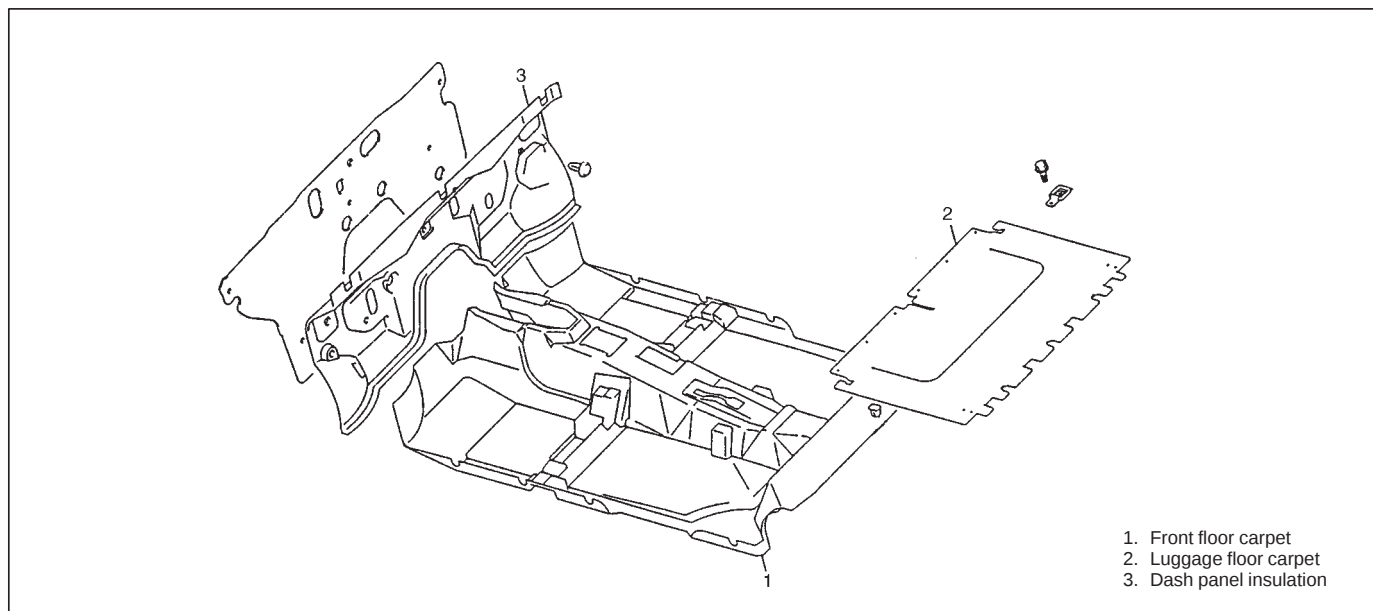
- 1) Open canvas to referring to Owner's Manual.
- 2) Remove fording top and rear canvas top.
- 3) Remove topbow bracket cover.
- 4) Remove topbow center frame.
- 5) Remove topbow front frame.

Installation

Install in reverse order of removal procedure.

EXTERIOR AND INTERIOR TRIM

FLOOR CARPET



FRONT FLOOR CARPET

REMOVAL

- 1) Remove front seats and rear seat cushions.
- 2) Remove seat belt lower anchor bolt.
- 3) Remove dash side trims, front side sill scuffs (5 door and 3 door model), center pillar inner lower rims (5 door and 3 door model), rear side sill scuffs (5 door and 3 door model), side sill scuffs (Canvas top model) and rear quarter lower trim.
- 4) Remove parking brake lever cover, console box and console box front extension.
- 5) Remove front floor carpet.

INSTALLATION

Reverse removal sequence to install front floor carpet, noting following point.

- When tightening seat belt anchor bolt, refer to Section 10A "FRONT SEAT BELT WITHOUT PRITENSIONER" for tightening torque.

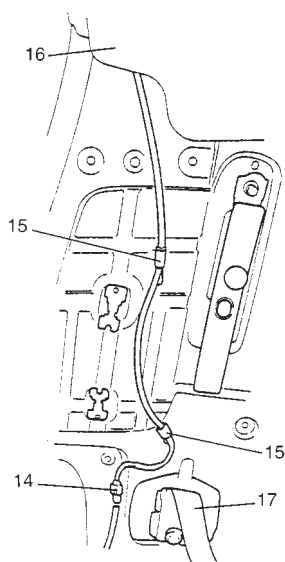
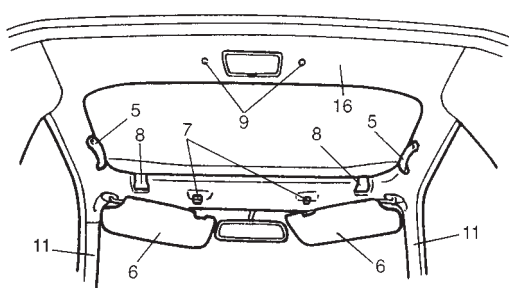
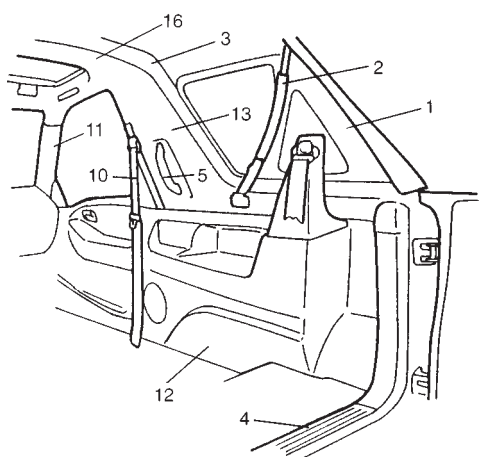
ROOF TRIM

REMOVAL

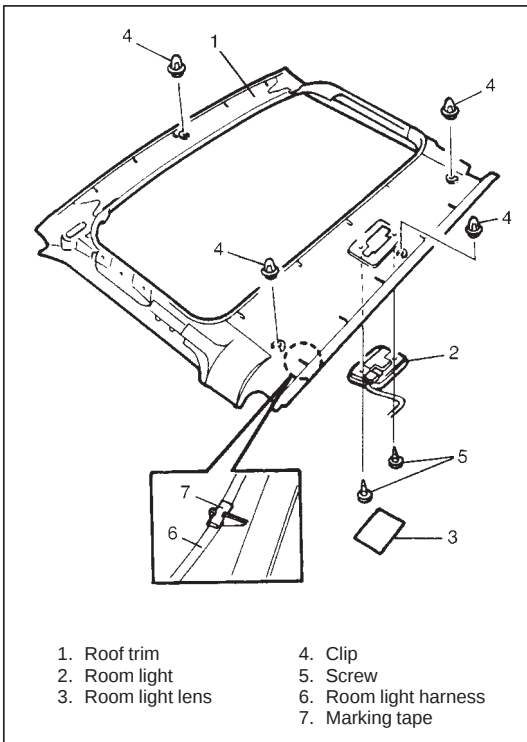
- 1) Remove canvas top
- 2) Remove rear topbow.
- 3) Remove side body garnishes.
- 4) Remove luggage mat end garnish.
- 5) Remove assistant grips.
- 6) Remove sunshade assemblies.
- 7) Remove sunshade hooks.
- 8) Remove front topbow locks.
- 9) Remove canvas top snaps.
- 10) Remove front seat belts.
- 11) Remove front pillar trims.
- 12) Remove rear side inner lower trims.
- 13) Remove rear side inner upper trims.
- 14) Disconnect room light connector and remove room light harness clamp.
- 15) Remove roof trim.

CAUTION:

Be very careful not to separate roof trim consists of 4 components when removing. If disassemble it, it could not be assembled to original unit.



1. Canvas top
2. Rear topbow
3. Side body garnish
4. Luggage mat end garnish
5. Assistant grip
6. Sunshade assembly
7. Sunshade hook
8. Front topbow lock
9. Canvas top snap
10. Front seat belt
11. Front pillar trim
12. Rear side inner lower trim
13. Rear side inner upper trim
14. Room light connector
15. Room light harness clamp
16. Roof trim
17. Left-front seat belt



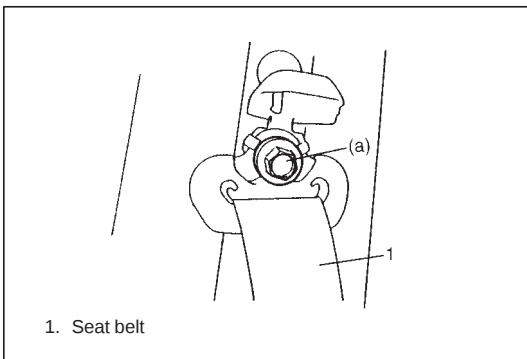
INSTALLATION

- 1) Set room light and clip to roof trim.
- 2) Set room light harness to roof trim with marking tape.

- 3) Reverse removal sequence to install roof trim.

Tightening Torque

(a): 35 N·m (3.5 kg-m, 25.3 lb-ft)



SECTION 10A

SEAT BELT

WARNING:

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

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

CAUTION:

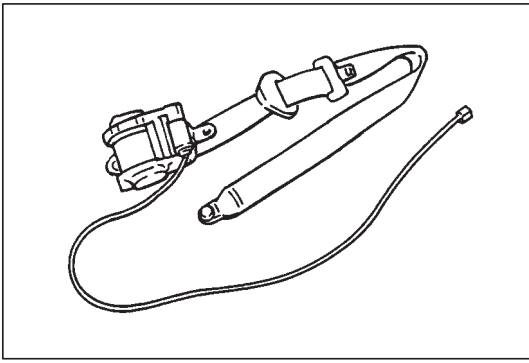
When fasteners are removed, always reinstall them at the same location from which they were removed. If a fastener needs to be replaced, use the correct part number fastener for that application. If the correct part number fastener is not available, a fastener of equal size and strength (or stronger) 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 above procedures are not followed, parts or system damage could result.

NOTE:

- To check whether the vehicle is equipped with a seat belt pretensioner or not, refer to the Owner’s Manual.
- For the descriptions (items) not found in this section, refer to the same section of the Service Manual mentioned in FOREWORD of this manual.

CONTENTS

ON-VEHICLE SERVICE	10A- 2
Service Precautions	10A- 2
Handling and Storage	10A- 2
Front Seat Belt with Pretensioner	10A- 3

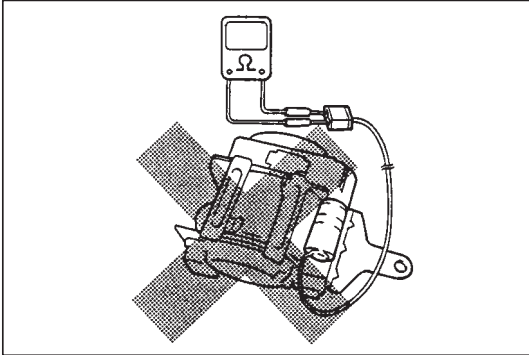


ON-VEHICLE SERVICE

SERVICE PRECAUTIONS HANDLING AND STORAGE

NOTE:

Whether the pretensioner has activated or not can be judged by the sealing tape attached on retractor assembly. If it has been torn by generated gas, the pretensioner has activated.



LIVE (INACTIVATED) SEAT BELT PRETENSIONER

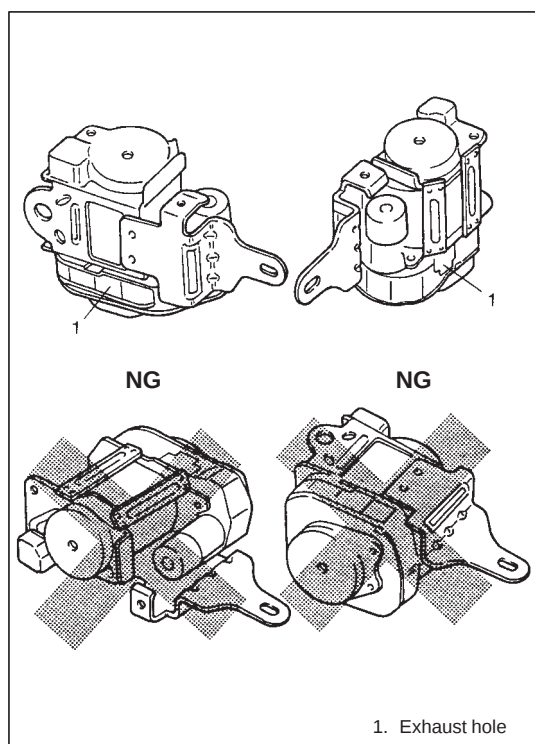
WARNING:

Never attempt to measure the resistance of the pretensioner. It is very dangerous as the electric current from the tester may activate the pretensioner.

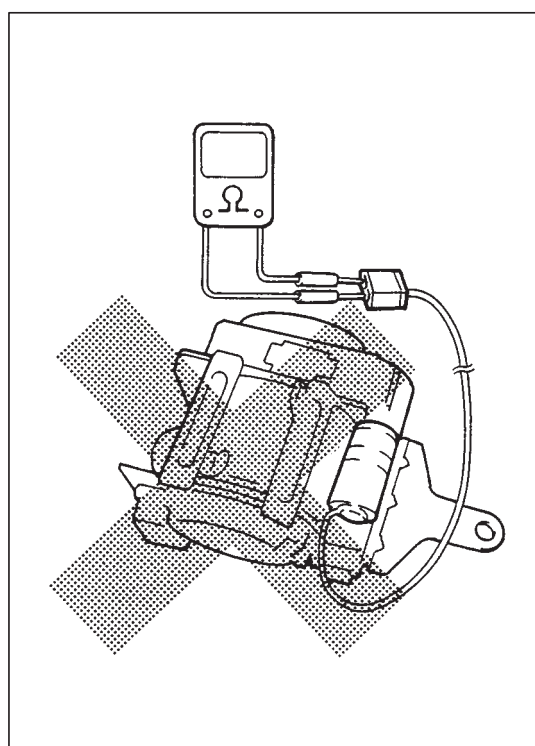
Special care is necessary when handling and storing a live (inactivated) pretensioner.

Also, when the seat belt pretensioners activate, gas is generated and the seat belt is retracted into the retractor quickly. Note, therefore, that if they activate accidentally, the seat belt pretensioners and other object(s) around them may be thrown through the air.

- Never attempt disassembly of the seat belt pretensioner (retractor assembly).
- If any abnormality is found, be sure to replace it with new one as an assembly.
- When an abnormality is noted as existing in the live (inactivated) seat belt pretensioner, be sure to activate it before discarding it. (Refer to "Seat Belt Pretensioners Disposal" in SECTION 10B.)
- When grease, cleaning agent, oil water, etc., got on the seat belt pretensioner (retractor assembly), wipe it off immediately with a dry cloth.
- If seat belt pretensioner (retractor assembly) was dropped from a height of 30 cm (1 ft) or more, it should be replaced.

**WARNING:**

- 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 the seat belt pretensioner by the wires or connector on the underside of the pretensioner.
- When placing a live seat belt pretensioner on the workbench or some place like that, be sure not to lay it with its exhaust hole provided side facing down. It is also prohibited to put something on its face with an exhaust hole or to put a seat belt pretensioner on top of another. Otherwise, personal injury may result.



FRONT SEAT BELT WITH PRETENSIONER INSPECTION

When checking seat belt with pretensioner, use following check items in addition to those specified for seat belt without pretensioner described in the same section of the Service Manual mentioned in FOREWORD of this manual.

WARNING:

Never measure resistance of pretensioner or disassemble it. Otherwise, personal injury may result.

CAUTION:

If seat belt pretensioner (retractor assembly) was dropped from a height of 30 cm (1 ft) or more, it should be replaced.

Check retractor assembly with seat belt pretensioner appearance visually for following symptoms and if any one of them is applicable, replace it with a new one as an assembly.

- Pretensioner has activated.
- There is a crack in seat belt pretensioner (retractor assembly).
- Wire harness or connector is damaged.
- Seat belt pretensioner (retractor assembly) is damaged or a strong impact (e.g., dropping) was applied to it.

SECTION 10B

AIR BAG SYSTEM

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 and “Service Precautions” under “On-Vehicle Service” in this section 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 this section must be followed in the order listed to disable the air bag system temporarily and prevent false diagnostic trouble codes 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.

CAUTION:

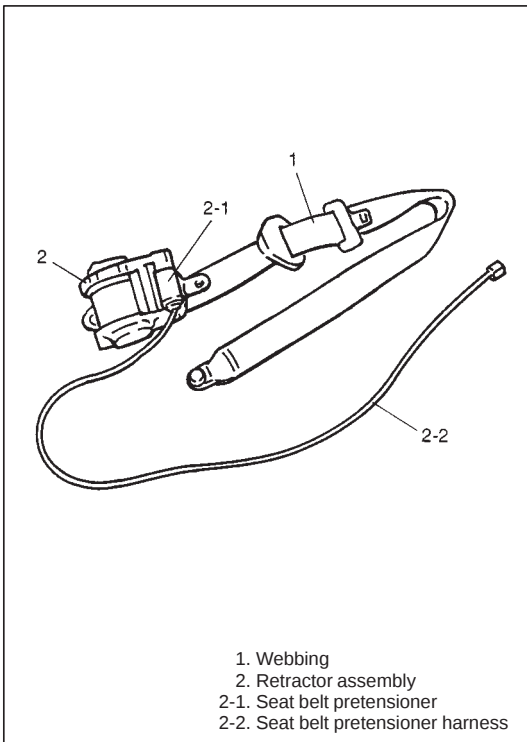
When fasteners are removed, always reinstall them at the same location from which they were removed. If a fastener needs to be replaced, use the correct part number fastener for that application. If the correct part number fastener is not available, a fastener of equal size and strength (or stronger) 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 above conditions are not followed, parts or system damage could result.

NOTE:

For the descriptions (items) not found in this section, refer to the same section of the Service Manual mentioned in FOREWORD of this manual.

CONTENTS

ON-VEHICLE SERVICE	10B- 2
Service Precautions	10B- 2
Handling and Storage	10B- 2



ON-VEHICLE SERVICE

SERVICE PRECAUTIONS

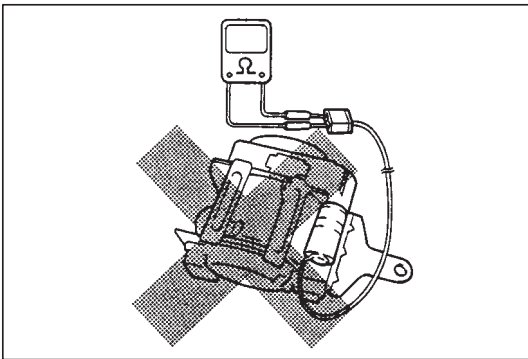
HANDLING AND STORAGE

LIVE (INACTIVATED) SEAT BELT PRETENSIONERS

Special care is necessary when handling and storing a live (inactivated) seat belt pretensioners.

Also, when the seat belt pretensioners activate, gas is generated and the seat belt is retracted into the retractor quickly.

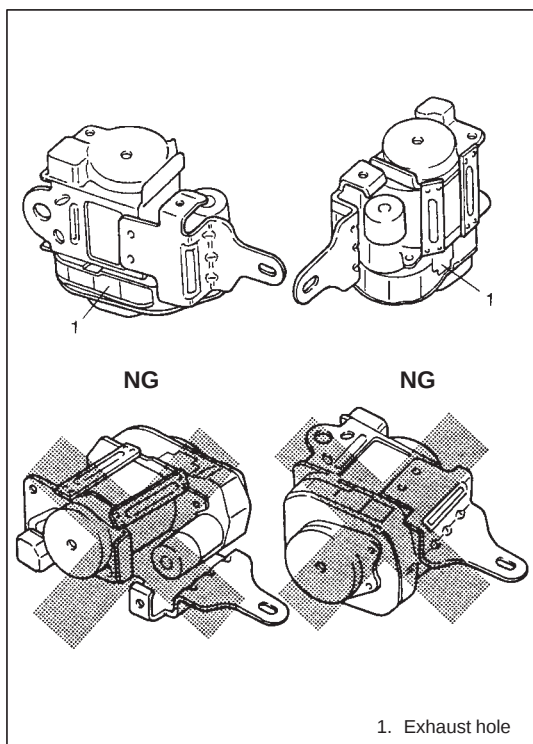
Note, therefore, that if they activate accidentally, the seat belt pretensioners and other object(s) around them may be thrown through the air.



WARNING:

Never attempt to measure the resistance of the seat belt pretensioners. It is very dangerous as the electric current from the tester may activate pretensioner.

- Never attempt to disassemble the seat belt pretensioners (retractor assembly).
- If any abnormality is found, be sure to replace it with new one as an assembly.
- When an abnormality is noted as existing in the live (inactivated) seat belt pretensioner, be sure to activate it before discarding it.
- When grease, cleaning agent oil, water, etc., got on the seat belt pretensioners (retractor assembly), wipe it off immediately with a dry cloth.
- If seat belt pretensioner was dropped from a height of 30 cm (1 ft) or more, it should be replaced with a new one as an assembly.

**WARNING:**

- 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 the seat belt pretensioner by the wires or connector on the underside of the pretensioner.
 - When placing a live seat belt pretensioner on the workbench or some place like that, be sure not to lay it with its exhaust hole provided side facing down. It is also prohibited to put something on its face with an exhaust hole or to put a seat belt pretensioner on top of another.
- Otherwise, personal injury may result.

Prepared by
SUZUKI MOTOR CORPORATION

Overseas Service Department

1st Ed. Sept., 1998

Printed in Japan

Printing: Dec., 1998

124