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 Supplemental Restraint (Air Bag) System:

- **Service on or around the air bag system components must be performed only by an authorized SUZUKI dealer. Please observe all WARNINGS, CAUTIONS and "Service Precautions" under "On-Vehicle Service" in SECTION 10B 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 serve 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 unintentional activation of the air bag system.**
- **Do not modify the steering wheel, instrument panel or any other air bag system component. Modifications can adversely affect air bag system performance and lead to injury.**
- **If the vehicle will be exposed to temperatures over 93°C (200°F) (for example, during a paint baking process), remove the air bag system components (air bag (inflator) modules, SDM and seat belt pretensioner (if equipped)) beforehand to avoid component damage or unintended activation of the system.**

FOREWORD

This manual contains procedures for diagnosis, maintenance, adjustments, minor service operations, replacement of components and for disassembly and assembly of major components.

Applicable model: GA413 (4WD model only)

The contents are classified into sections each of which is given a section number as indicated in the Table of Contents on following page. And on the first page of each individual section is an index of that section.
This manual should be kept in a handy place for ready reference of the service work.
Strict observance of the so specified items will enable one to obtain the full performance of the vehicle.

When replacing parts or servicing by disassembling, it is recommended to use SUZUKI genuine parts, tools and service materials (lubricant, 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 vehicle of standard specifications among others. Therefore, note that illustrations may differ from the vehicle being actually serviced.
The right is reserved to make changes at any time without notice.

Related Manual

Manual Name	Manual Number	APPLICABILITY
AIR CONDITIONING BASIC MANUAL	99520-02130-01E	Vehicle equipped with A/C
GA413 SUPPLEMENTARY SERVICE MANUAL	99501-76A10-XXX	Vehicle on and after the VIN below
GA413 SERVICE MANUAL	99500-76A00-XXX	This manual is the base manual for the supplementary service manuals
GA413 WIRING DIAGRAM MANUAL	99512-76A00-015	Vehicle before the VIN below
GA413 WIRING DIAGRAM MANUAL	99512-76A10-015	Vehicle on and after the VIN below

VIN

Van

ⓧJSAFDA32V00126001ⓧ	JS3DA32V⍁14126001	DA32V-126001
ⓧJSAFDA32V10126001ⓧ	JS3DA32V⍁Y4126001	
ⓧJSAFDA32V14126001ⓧ	JS4DA32V⍁14126001	

Truck

ⓧJSAFDA32T00116001ⓧ	JS4DA32T⍁14116001	DA32T-116001
	JS4DA32T⍁Y4116001	

SUZUKI MOTOR CORPORATION

OVERSEAS SERVICE DEPARTMENT

NOTE:
This manual is for GA413 4WD model and contains only the different sections from GA413 Service Manual (99500-76A00-01E).
Therefore, the section(s) not found in this manual, please refer to the related manual(s) described in FOREWORD of this manual accordingly.

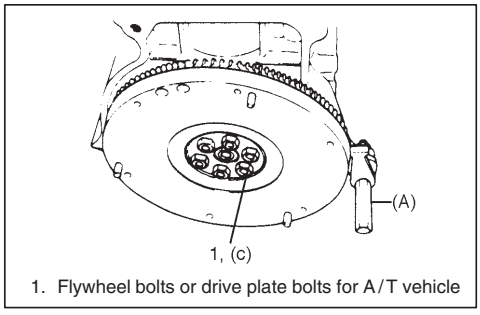
SECTION 0A1

GENERAL INFORMATION

CONTENTS

HOW TO USE THIS MANUAL

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

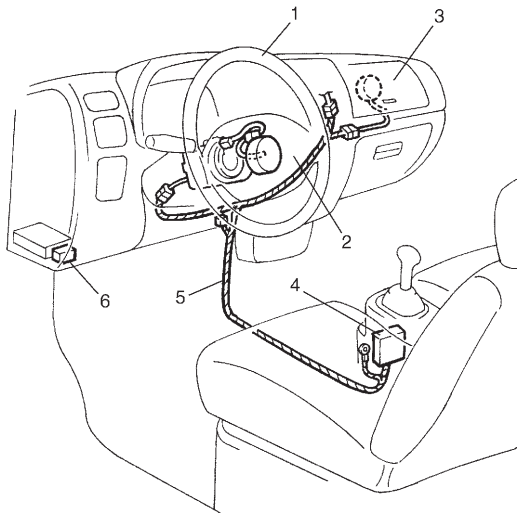


1. Flywheel bolts or drive plate bolts for A/T vehicle

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

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

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



1. Steering wheel
2. Driver air bag (inflator) module
3. Passenger air bag (inflator) module (if equipped)
4. SDM
5. Air bag harness
6. DLC

PRECAUTIONS

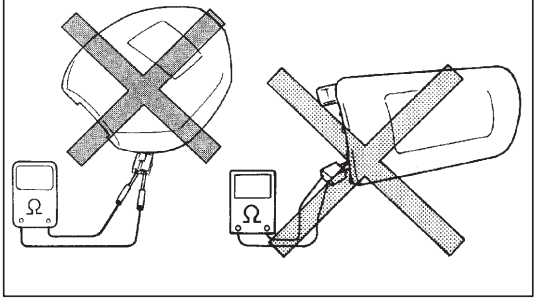
PRECAUTIONS FOR VEHICLE EQUIPPED WITH A SUPPLEMENTAL RESTRAINT (AIR BAG) SYSTEM

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.**

DIAGNOSIS

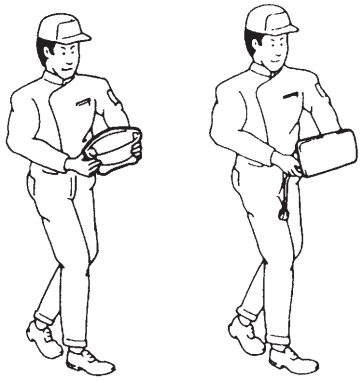
- **When troubleshooting air bag system, be sure to follow DIAGNOSIS in SECTION 10B. Bypassing these procedures may result in extended diagnostic time, incorrect diagnosis, and incorrect parts replacement.**
- **Never use electrical test equipment other than that specified in this manual.**



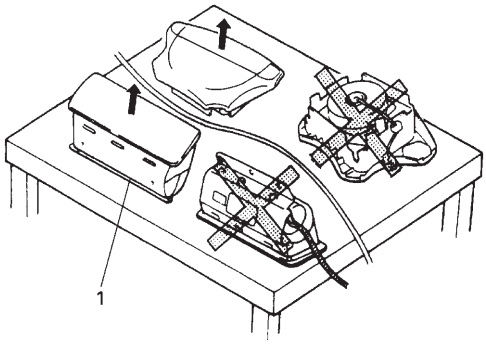
WARNING:

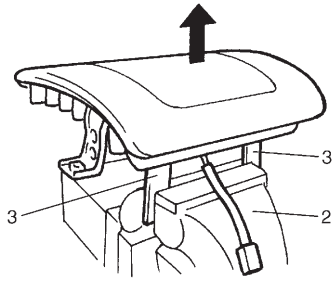
Never attempt to measure the resistance of the air bag (inflator) modules (driver and passenger). It is very dangerous as the electric current from the tester may deploy the air bag.

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



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





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

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 to ensure proper operation of the air bag system.
The SDM could be activated when powered while not rigidly attached to the vehicle which could cause deployment and result in personal injury.

CAUTION:
- **Even when the accident was light enough not to cause air bags to 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) 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 90 cm (3 feet) or more), never attempt disassembly or repair but replace it with a new one.**
- **When grease, cleaning agent, oil, water, etc. has got onto air bag (inflator) modules (driver and passenger), wipe off immediately with a dry cloth.**
- **Air bag wire harness can be identified easily as it is covered with a yellow protection tube. Be very careful when handling it.**
- **When an open in air bag wire harness, damaged wire harness, connector or terminal is found, replace wire harness, connectors and terminals as an assembly.**
- **Do not apply power to the air bag system unless all components are connected or a diagnostic flow table requests it, as this will set a diagnostic trouble code.**
- **Never use air bag system component parts from another vehicle.**

CAUTION:

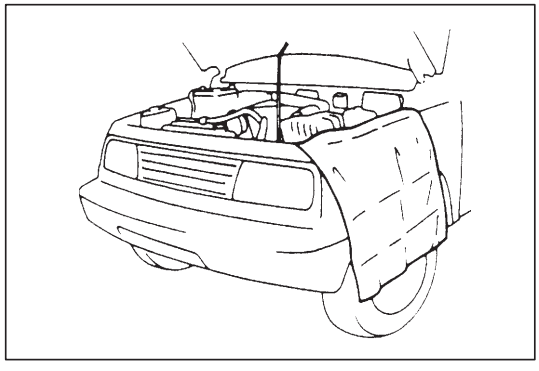
- **When using electric welding, be sure to temporarily disable air bag system. Refer to DISABLING AIR BAG SYSTEM under SERVICE PRECAUTIONS in SECTION 10B.**
- **Never expose air bag system component parts directly to hot air (drying or baking the vehicle after painting) or flames.**
- **WARNING/CAUTION 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 in SECTION 10B.**

GENERAL PRECAUTIONS

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

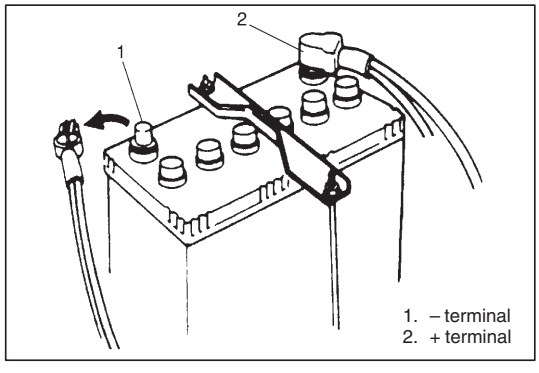
WARNING:

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

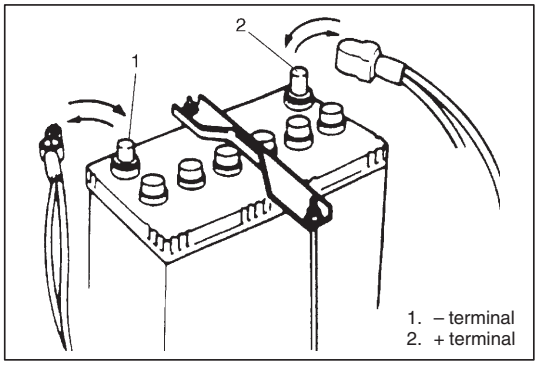


CAUTION:

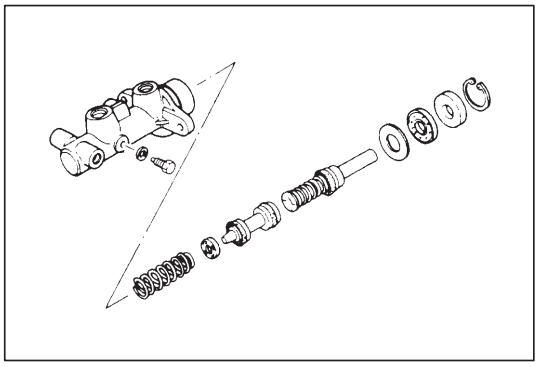
- **Before starting any service work, cover fenders, seats and any other parts that are likely to get scratched or stained during servicing. Also, be aware that what you wear (e.g. buttons) may cause damage to the vehicle's finish.**



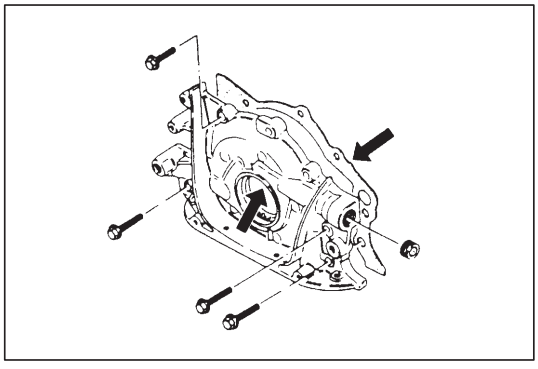
- **When performing service to electrical parts that does not require use of battery power, disconnect the negative cable of the battery.**



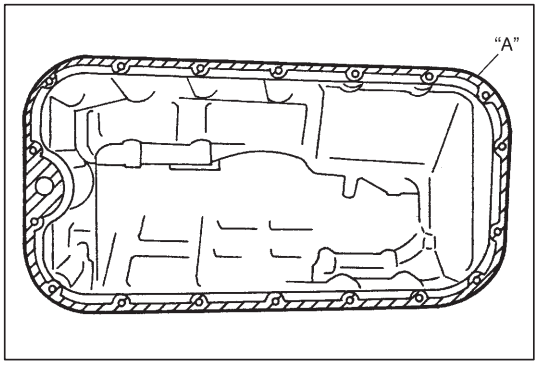
- **When removing the battery, be sure to disconnect the negative cable first and then the positive cable. When reconnecting the battery, connect the positive cable first and then the negative cable, and replace the terminal cover.**



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

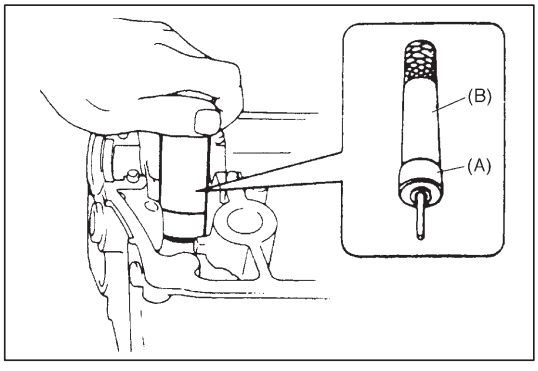


- **Whenever you use oil seals, gaskets, packing, O-rings, locking washers, split pins, self-locking nuts, and certain other parts as specified, be sure to use new ones. Also, before installing new gaskets, packing, etc., be sure to remove any residual material from the mating surfaces.**



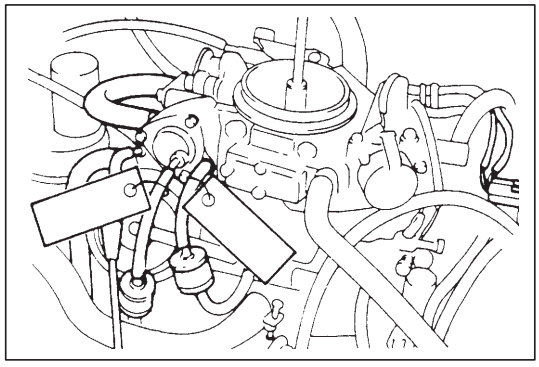
- **Make sure that all parts used in reassembly are perfectly clean.**
- **When use of a certain type of lubricant, bond or sealant is specified, be sure to use the specified type.**

"A": Sealant 99000-31150

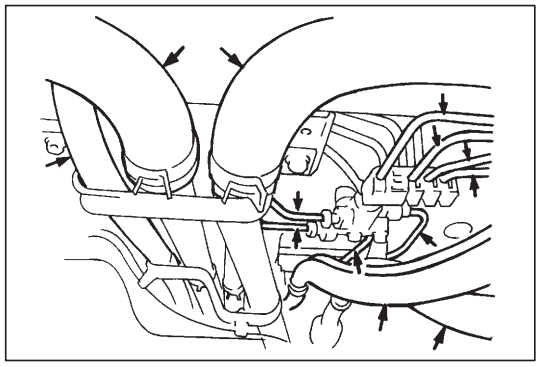


- **Be sure to use special tools when instructed.**

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



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



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

- **Never disconnect the fuel line between the fuel pump and injector without first releasing the fuel pressure, or fuel can be sprayed out under pressure.**

PRECAUTIONS FOR CATALYTIC CONVERTER

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

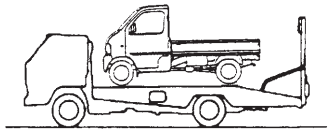
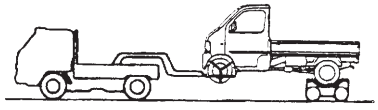
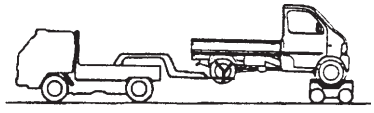
– Conduct a spark test only when necessary, make it as short as possible, and do not open the throttle.

– Conduct engine compression checks within the shortest possible time.

– Avoid situations which can result in engine misfire (e.g. starting the engine when the fuel tank is nearly empty.)

PRECAUTIONS FOR TOWING 4WD VEHICLES

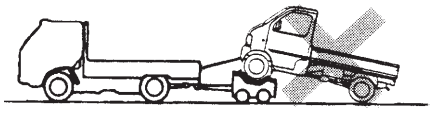
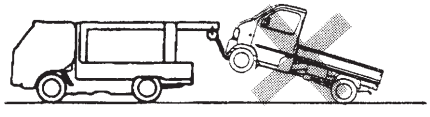
When towing full-time 4WD vehicles, use one of the methods shown below.

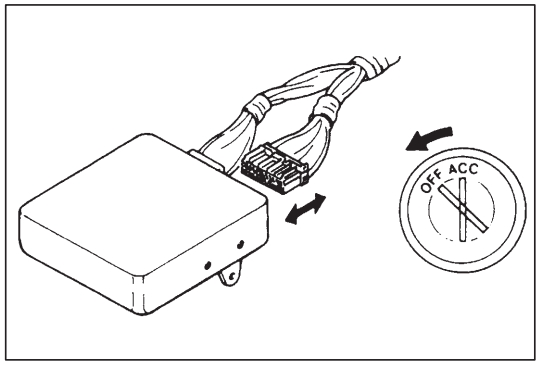
TOWING METHOD	CONDITION
1 Flat Bed Truck 	Parking brake applied.
2 Wheel Lift Type Truck From Front  From Rear 	Parking brake applied.

CAUTION:

- **If vehicle has trouble in the chassis and drive train, use 1 flat bed truck.**
- **Do not use any towing method other than those shown above.**

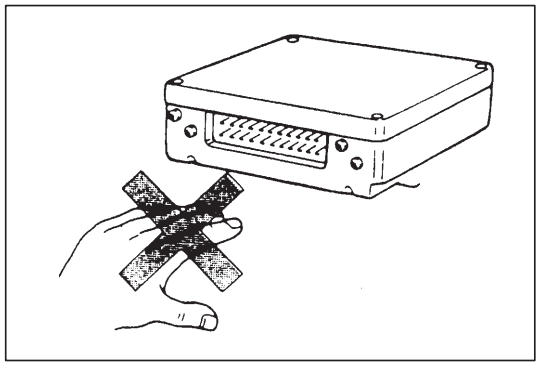
For example, the towing methods shown below are dangerous or damage vehicle, so do not use them.

NO 	● If this towing method is used, either from the front or rear, there is a danger of the drivetrain heating up and causing breakdown, or of the front wheels flying off the dolly. ● Never perform tow the vehicle using a method where the lifted-up wheel cannot rotate.
NO 	● Do not use the sling type towing method, either from the front or rear, as this method causes damage to the body.



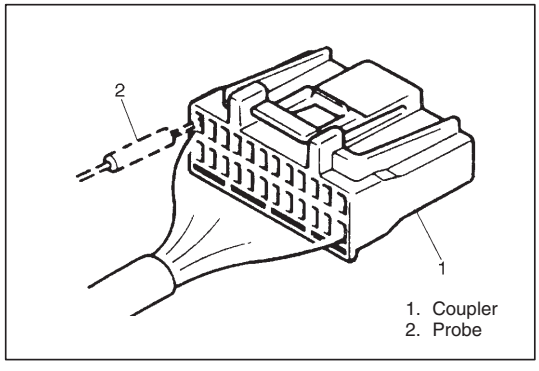
PRECAUTIONS FOR ELECTRICAL CIRCUIT SERVICE

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



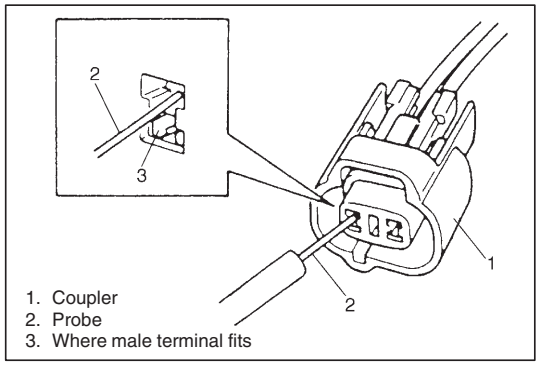
- **Be careful not to touch the electrical terminals of parts which use microcomputers (e.g. electronic control unit like as ECM, PCM, P/S controller, etc.). The static electricity from your body can damage these parts.**

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



1. Coupler
2. Probe

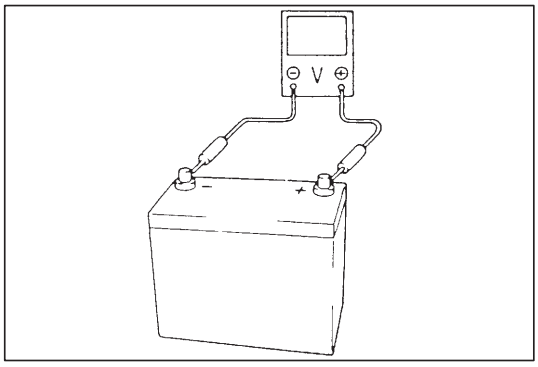
- **When taking measurements at electrical connectors using a tester probe, be sure to insert the probe from the wire harness side (backside) of the connector.**



1. Coupler
2. Probe
3. Where male terminal fits

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

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



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

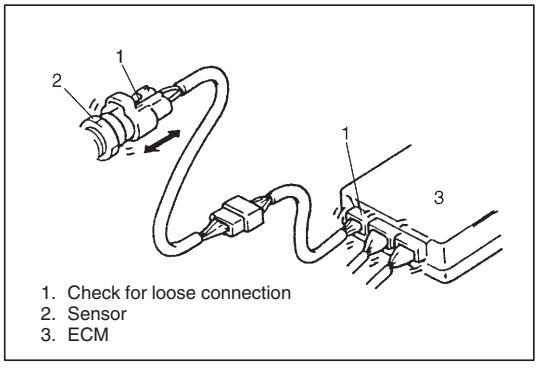
ELECTRICAL CIRCUIT INSPECTION PROCEDURE

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

OPEN CIRCUIT CHECK

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

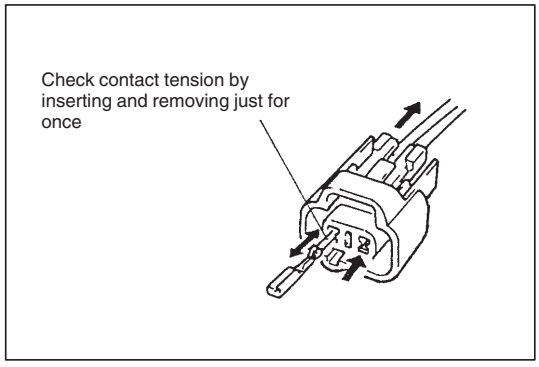
- Loose connection of connector
- Poor contact of terminal (due to dirt, corrosion or rust on it, poor contact tension, entry of foreign object etc.)
- Wire harness being open



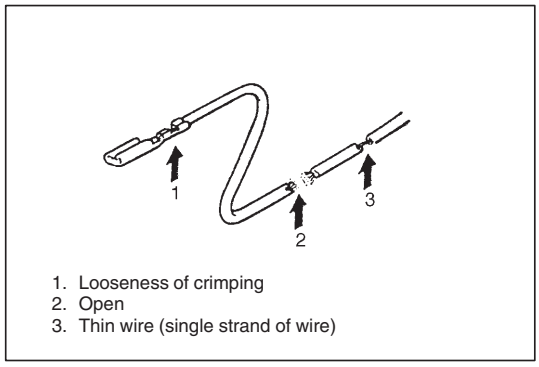
1. Check for loose connection
2. Sensor
3. ECM

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

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

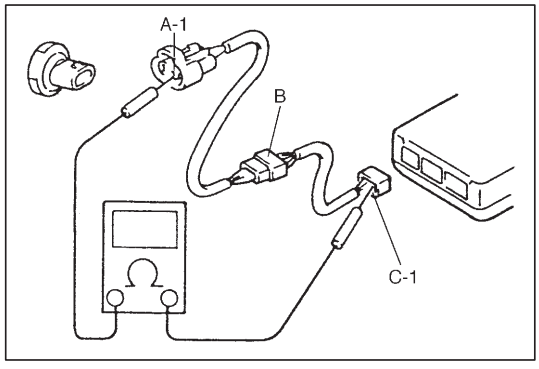


3) Using a test male terminal, check both terminals of the circuit being checked for contact tension of its female terminal.
Check each terminal visually for poor contact (possibly caused by dirt, corrosion, rust entry of foreign object, etc.).
At the same time, check to make sure that each terminal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



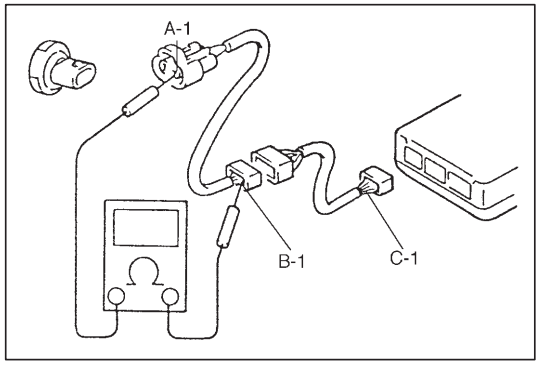
1. Looseness of crimping
2. Open
3. Thin wire (single strand of wire)

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



Continuity check

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

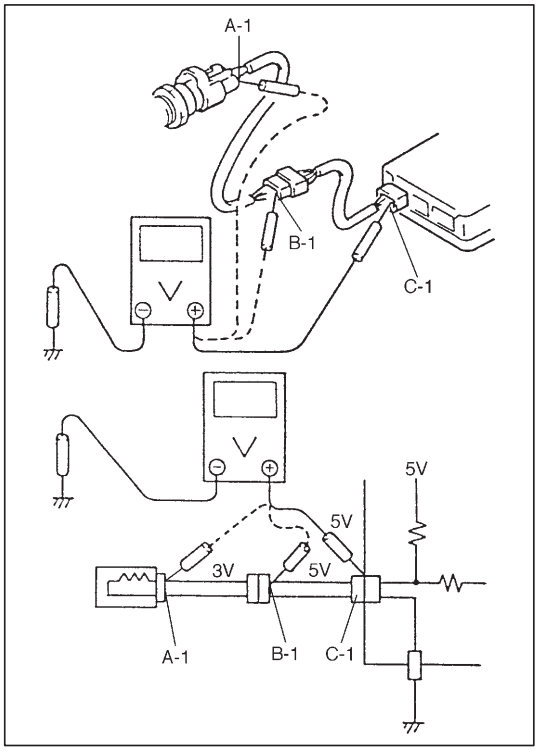


2) Disconnect the connector included in the circuit (connector-B in the figure) and measure resistance between terminals A-1 and B-1.
If no continuity is indicated, that means that the circuit is open between terminals A-1 and B-1. If continuity is indicated, there is an open circuit between terminals B-1 and C-1 or an abnormality in connector-B.

Voltage check

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

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

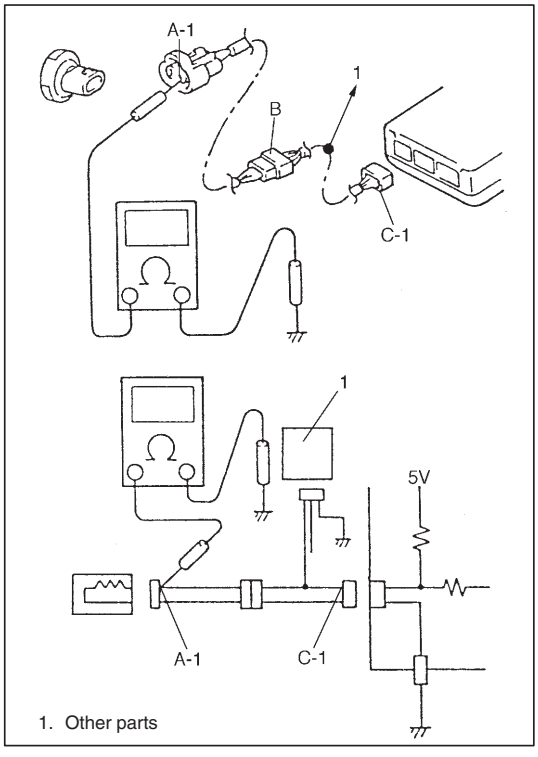


If measurements were taken as shown in the figure and results were as listed below, it means that the circuit is open between terminals B-1 and A-1.

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

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

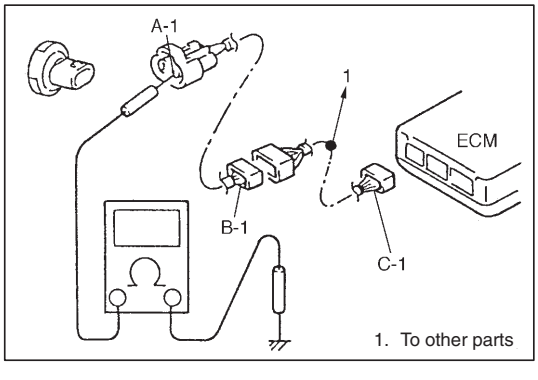
Voltage Between:
C-1 and body ground: Approx. 5V
B-1 and body ground: Approx. 5V
A-1 and body ground: Approx. 3V
2V voltage drop



Short circuit check (wire harness to ground)
1) Disconnect negative cable at battery.
2) Disconnect connectors at both ends of the circuit to be checked.

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

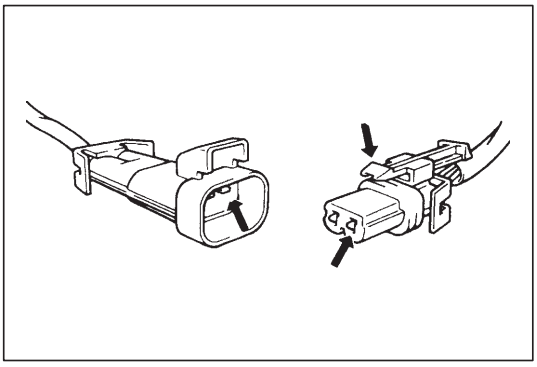
3) Measure resistance between terminal at one end of circuit (A-1 terminal in figure) and body ground. If continuity is indicated, it means that there is a short to ground between terminals A-1 and C-1 of the circuit.



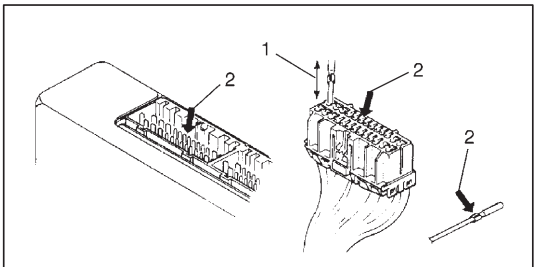
4) Disconnect the connector included in circuit (connector B) and measure resistance between A-1 and body ground.
If continuity is indicated, it means that the circuit is shorted to the ground between terminals A-1 and B-1.

INTERMITTENT AND POOR CONNECTION

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

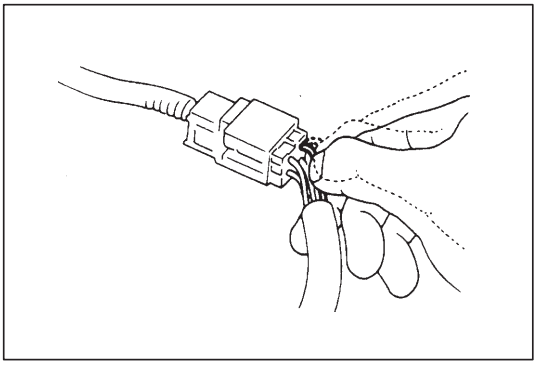


- Poor mating of connector halves, or terminals not fully seated in the connector body (backed out).
- Dirt or corrosion on the terminals. The terminals must be clean and free of any foreign material which could impede proper terminal contact. However, cleaning the terminal with a sand paper or the like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

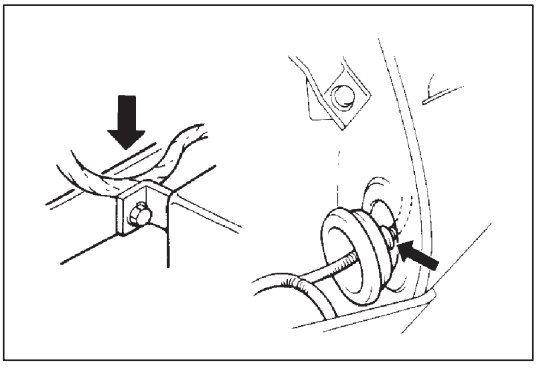


1. Check contact tension by inserting and removing just for once
2. Check each terminal for bend and proper alignment

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



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



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

PRECAUTIONS FOR INSTALLING MOBILE COMMUNICATION EQUIPMENT

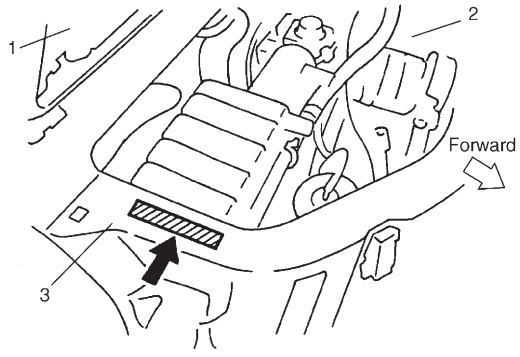
When installing mobile communication equipment such as CB (Citizens-Band)-radio or cellular-telephone, be sure to observe the following precautions.
Failure to follow cautions may adversely affect electronic control system.

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

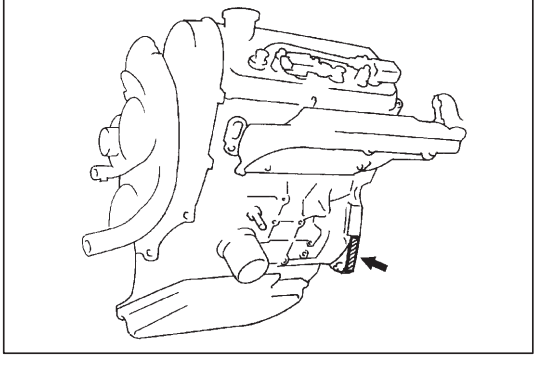
IDENTIFICATION INFORMATION

BODY NUMBER

The vehicle body number is punched on the upper surface of the engine room right side panel located under the seat.



1. Seat
2. Engine compartment
3. Engine room right side panel



ENGINE IDENTIFICATION NUMBER

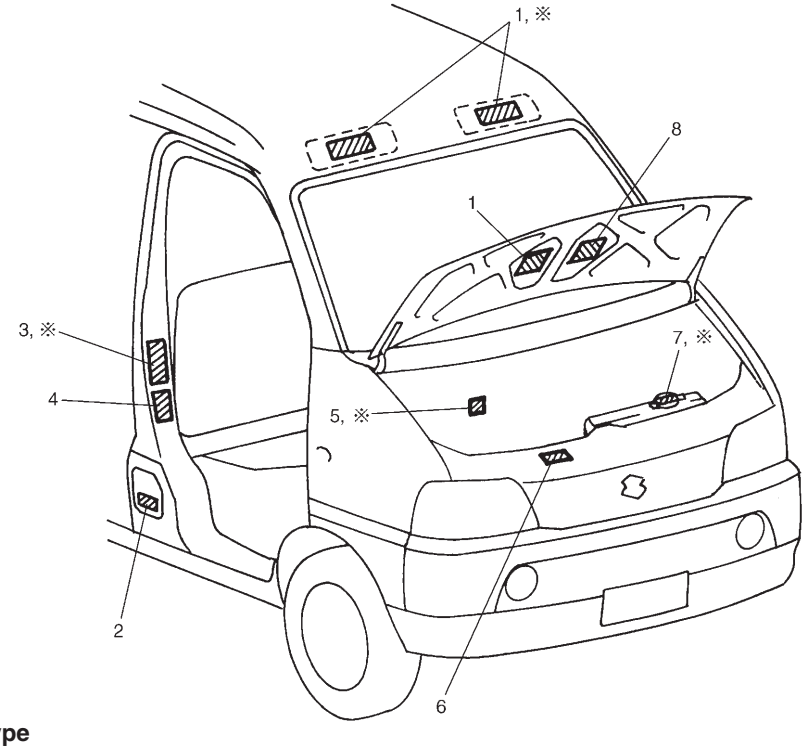
The number is punched on the cylinder block.

WARNING, CAUTION AND INFORMATION LABELS

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

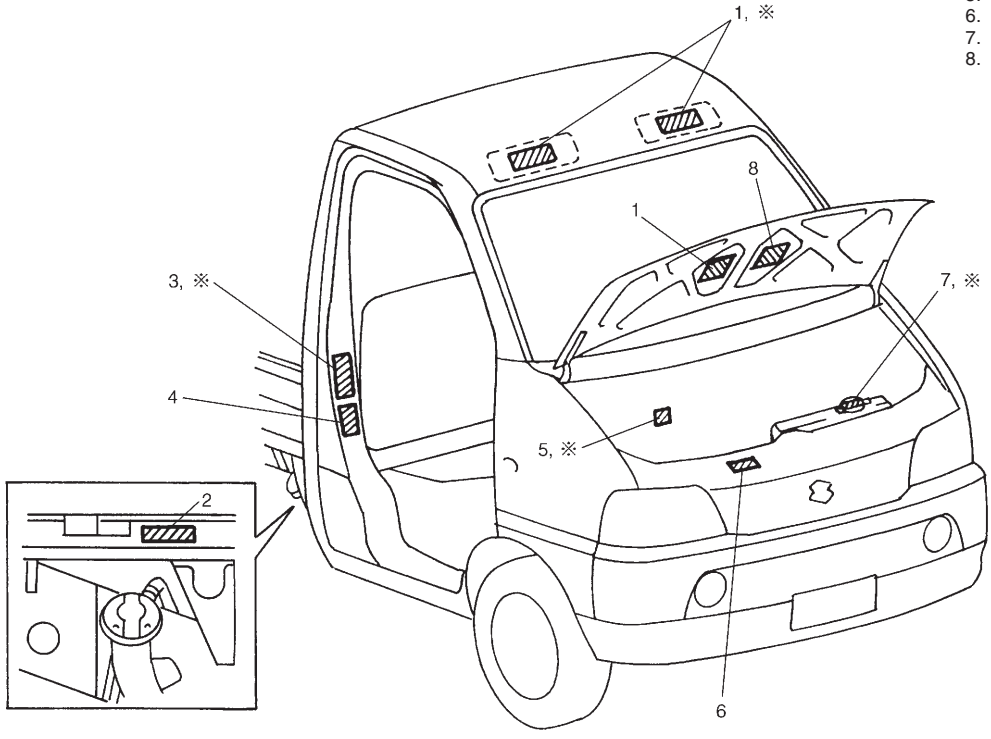
NOTE:
Air bag CAUTION/WARNING labels are attached on the vehicle equipped with air bag system only.

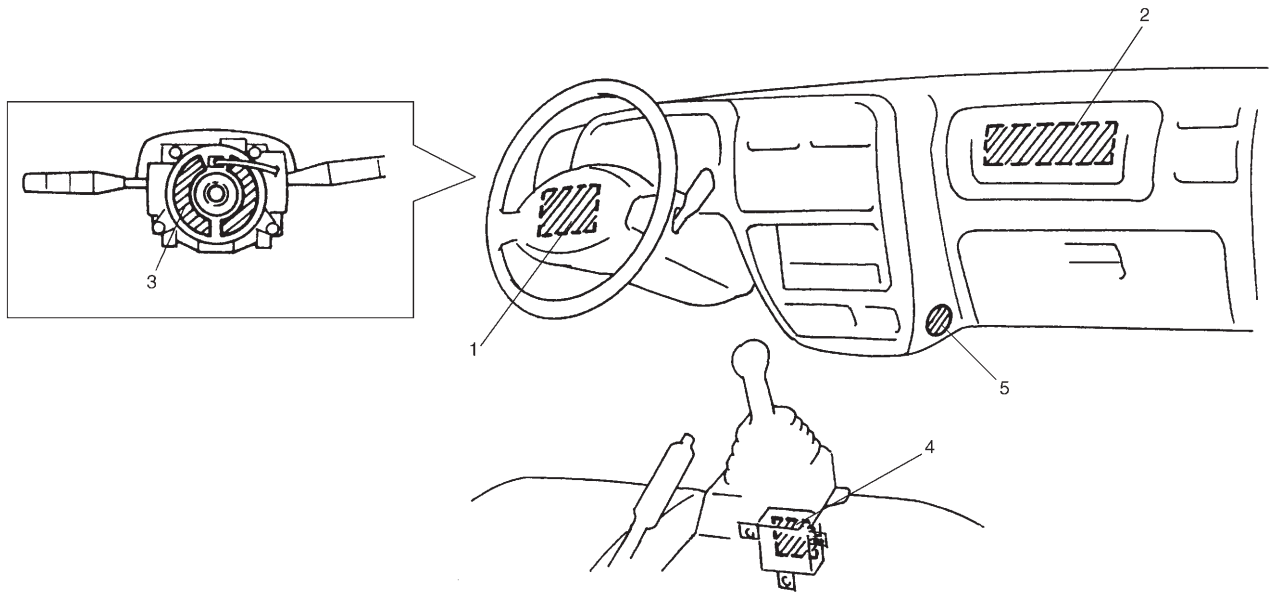
For van type



※ : Attached on the other side of vehicle (LH steering vehicle)
1. Air bag caution label (if equipped)
2. Fuel limitation label (if equipped)
3. Tire placard
4. ID plate
5. LSPV label (if equipped)
6. Cooling fan label
7. Coolant warning label
8. Emission control label (if equipped)

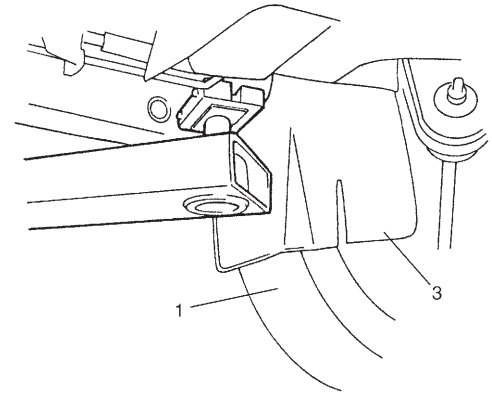
For truck type



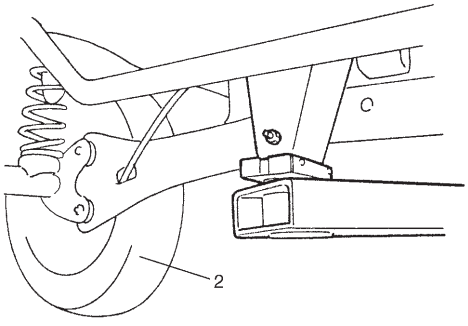


1. Air bag warning label on driver air bag (inflator) module
2. Air bag warning label on passenger air bag (inflator) module
3. Air bag warning label on contact coil and combination assembly
4. Air bag warning label on SDM
5. Child seat warning label

Front



Rear

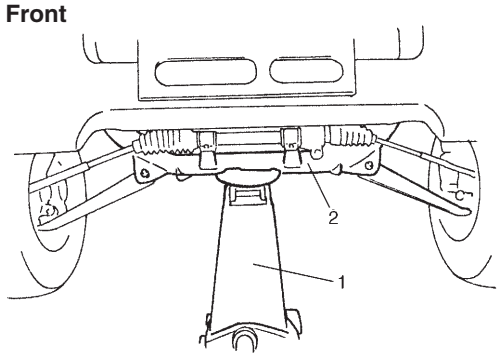


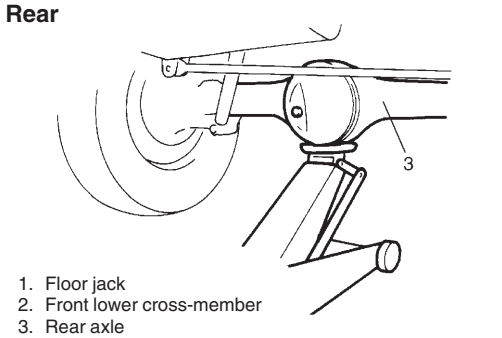
1. Front left tire
2. Rear left tire
3. Mud flap (Remove, if necessary.)

VEHICLE LIFTING POINTS

WARNING:

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

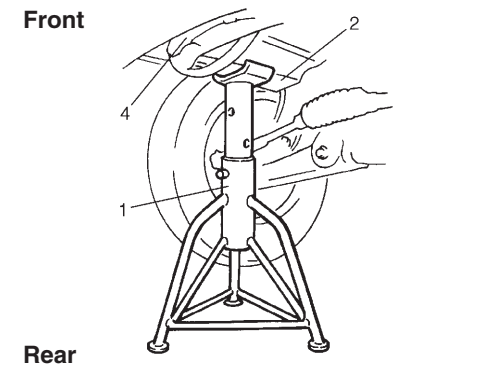


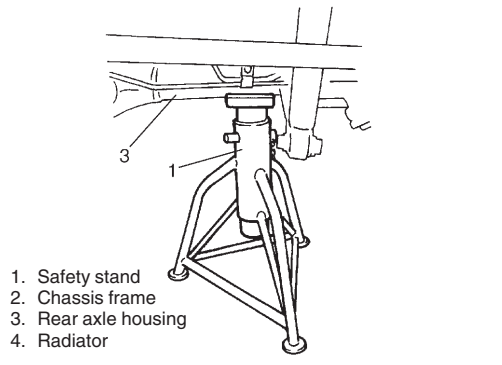


1. Floor jack
2. Front lower cross-member
3. Rear axle

In raising front or rear vehicle end off the floor by jacking, be sure to put the jack against the center portion of the front lower cross-member or rear axle housing.

WARNING:
- **Never apply jack against suspension parts (i.e., stabilizer, etc.) or vehicle floor, or it may get deformed.**
- **If the vehicle to be jacked up only at the front or rear end, be sure to block the wheels on ground in order to ensure safety.**
  After the vehicle is jacked up, be sure to support it on stands. It is extremely dangerous to do any work on the vehicle raised on jack alone.





1. Safety stand
2. Chassis frame
3. Rear axle housing
4. Radiator

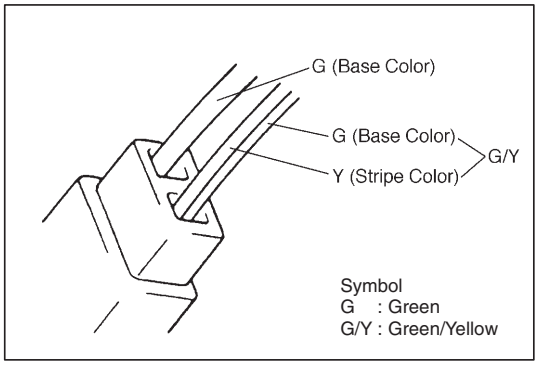
To perform service with either front or rear vehicle end jacked up, be sure to place safety stands under chassis frame (for front side) and rear axle housing (for rear side) so that body is securely supported. And then check to ensure that chassis frame and rear axle housing do not slide on safety stands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

NOTE:
For vehicle equipped with radiator splash guard, remove it before applying safety stand.

Symbol	Wire Color	Symbol	Wire Color
B	Black	Or	Orange
Bl	Blue	R	Red
Br	Brown	W	White
G	Green	Y	Yellow
Gr	Gray	P	Pink
Lbl	Light blue	V	Violet
Lg	Light green		

WIRE COLOR SYMBOLS IN THIS MANUAL

The wire color is abbreviated to the first (or first two) alphabet(s) of each color.



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

ABBREVIATIONS MAY BE USED IN THIS MANUAL

A

ABS	: Anti-lock Brake System
ATDC	: After Top Dead Center
API	: American Petroleum Institute
ATF	: Automatic Transmission Fluid
ALR	: Automatic Locking Retractor
AC	: Alternating Current
A/T	: Automatic Transmission
A/C	: Air Conditioning
ABDC	: After Bottom Dead Center
A/F	: Air Fuel Mixture Ratio
A-ELR	: Automatic-Emergency Locking Retractor

B

B+	: Battery Positive Voltage
BTDC	: Before Top Dead Center
BBDC	: Before Bottom Dead Center

C

CKT	: Circuit
CMP Sensor	: Camshaft Position Sensor (Crank Angle Sensor, CAS)
CO	: Carbon Monoxide
CPP Switch	: Clutch Pedal Position Switch (Clutch Switch, Clutch Start Switch)
CPU	: Central Processing Unit
CRS	: Child Restraint System

D

DC	: Direct Current
DLC	: Data Link Connector (Assembly Line Diag. Link, ALDL, Serial Data Link, SDL)
DOHC	: Double Over Head Camshaft
DOJ	: Double Offset Joint
DRL	: Daytime Running Light
DTC	: Diagnostic Trouble Code (Diagnostic Code)

E

EBCM	: Electronic Brake Control Module, ABS Control Module
ECM	: Engine Control Module
ECT Sensor	: Engine Coolant Temperature Sensor (Water Temp. Sensor, WTS)
EGR	: Exhaust Gas Recirculation
EGRT Sensor	: EGR Temperature Sensor (Recirculated Exhaust Gas Temp. Sensor, REGTS)
EFE Heater	: Early Fuel Evaporation Heater (Positive Temperature Coefficient, PTC Heater)
ELR	: Emergency Locking Retractor
EPS	: Electrical Power Steering
EVAP	: Evaporative Emission
EVAP Canister	: Evaporative Emission Canister (Charcoal Canister)

F

4WD	: 4 Wheel Drive

G

GEN	: Generator
GND	: Ground

H

HC	: Hydrocarbons
HO2S	: Heated Oxygen Sensor

I

- IAC Valve : Idle Air Control Valve (Idle Speed Control Solenoid Valve, ISC Solenoid Valve)
- IAT Sensor : Intake Air Temperature Sensor (Air temperature Sensor, ATS)
- ICM : Immobilizer Control Module
- IG : Ignition
- ISC Actuator : Idle Speed Control Actuator (Motor)

L

- LH : Left Hand
- LSPV : Load Sensing Proportioning Valve

M

- MAF Sensor : Mass Air Flow Sensor (Air Flow Sensor, AFS, Air Flow Meter, AFM)
- MAP Sensor : Manifold Absolute Pressure Sensor (Pressure Sensor, PS)
- Max : Maximum
- MFI : Multiport Fuel Injection (Multipoint Fuel Injection)
- Min : Minimum
- MIL : Malfunction Indicator Lamp (“CHECK ENGINE” Light)
- M/T : Manual Transmission

N

- NOx : Nitrogen Oxides

O

- OBD : On-Board Diagnostic System (Self-Diagnosis Function)
- O/D : Overdrive
- OHC : Over Head Camshaft

P

- PNP : Park/Neutral Position
- P/S : Power Steering
- PSP Switch : Power Steering Pressure Switch (P/S Pressure Switch)
- PCM : Powertrain Control Module
- PCV : Positive Crankcase Ventilation

R

- RH : Right Hand

S

- SAE : Society of Automotive Engineers
- SDM : Sensing and Diagnostic Module (Air bag controller, Air bag control module)
- SFI : Sequential Multiport Fuel Injection
- SOHC : Single Over Head Camshaft

T

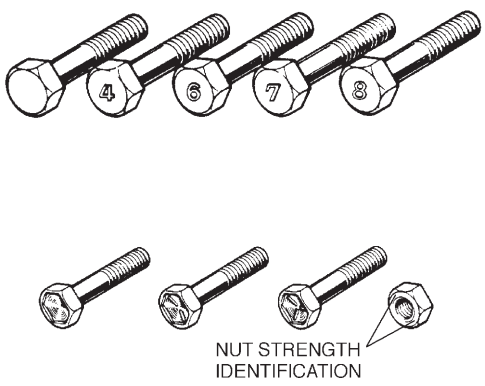
- TBI : Throttle Body Fuel Injection (Single-Point Fuel Injection, SPI)
- TCC : Torque Converter Clutch
- TCM : Transmission Control Module (A/T Controller, A/T Control Module)
- TP Sensor : Throttle Position Sensor
- TVV : Thermal Vacuum Valve (Thermal Vacuum Switching Valve, TVSV, Bimetal Vacuum Switching Valve, BVSV)
- TWC : Three Way Catalytic Converter (Three Way Catalyst)
- 2WD : 2 Wheel Drive

V

- VIN : Vehicle Identification Number
- VSS : Vehicle Speed Sensor

W

- WU-OC : Warm Up Oxidation Catalytic Converter
- WU-TWC : Warm Up Three Way Catalytic Converter



METRIC BOLTS–IDENTIFICATION CLASS NUMBERS OR MARKS CORRESPOND TO BOLT STRENGTH–INCREASING NUMBERS REPRESENT INCREASING STRENGTH.

METRIC INFORMATION

METRIC FASTENERS

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

FASTENER STRENGTH IDENTIFICATION

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

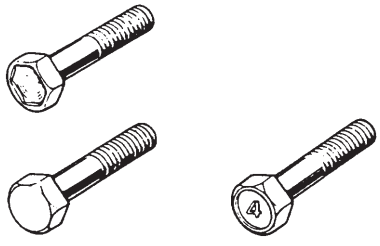
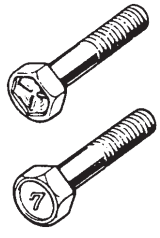
When replacing metric fasteners, be careful to use bolts and nuts of the same strength or greater than the original fasteners (the same number marking or higher). It is likewise important to select replacement fasteners of the correct size. Correct replacement bolts and nuts are available through the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

STANDARD TIGHTENING TORQUE

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

NOTE:

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

STRENGTH / THREAD DIAMETER (mm)	 Conventional bolt / "4T" bolt			 "7T" bolt		
	N·m	kg-m	lb-ft	N·m	kg-m	lb-ft
4	1.5	0.15	1.0	2.3	0.23	2.0
5	3.0	0.30	2.5	4.5	0.45	3.5
6	5.5	0.55	4.0	10	1.0	7.5
8	13	1.3	9.5	23	2.3	17.0
10	29	2.9	21.0	50	5.0	36.5
12	45	4.5	32.5	85	8.5	61.5
14	65	6.5	47.0	135	13.5	98.0
16	105	10.5	76.0	210	21	152.0
18	160	16	116.0	240	24	174.0

SECTION 0B1

MAINTENANCE AND LUBRICATION (4WD)

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 of 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 of 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 negative cable is disconnected from the battery. Otherwise, the system may be activated by reserve energy in the Sensing and Diagnostic Module (SDM).**

CONTENTS

MAINTENANCE SCHEDULE

MAINTENANCE SCHEDULE UNDER NORMAL DRIVING CONDITIONS

Interval: This interval should be judged by odometer reading or months, whichever comes first.		This table includes services as scheduled up to 90,000 km (54,000 miles) mileage. Beyond 90,000 km (54,000 miles), carry out the same services at the same intervals respectively.						
		km (x 1,000)	15	30	45	60	75	90
		miles (x 1,000)	9	18	27	36	45	54
		Months	12	24	36	48	60	72
ENGINE								
1-1. Drive belt	V-belt		I	R	I	R	I	R
	V-rib belt (Flat type)		–	–	I	–	–	R
1-2. Camshaft timing belt			Replace every 100,000 km (60,000 miles).					
1-3. Valve lash (clearance)			–	I	–	I	–	I
1-4. Engine oil and oil filter	Vehicle with HO2S (SG, SH, SJ)		R	R	R	R	R	R
	Vehicle with HO2S (SE, SF), Vehicle without HO2S		Replace every 10,000 km (6,000 miles) or 8 months					
1-5. Engine coolant			–	–	R	–	–	R
1-6. Exhaust pipes and mountings (except catalyst)			–	I	–	I	–	I
IGNITION SYSTEM								
2-1. Spark plugs	When unleaded fuel is used	Vehicle without HO2S	–	R	–	R	–	R
		Vehicle with HO2S	–	–	R	–	–	R
	When leaded fuel is used, refer to SEVERE DRIVING CONDITION schedule.							
FUEL SYSTEM								
3-1. Air cleaner filter element			I	I	R	I	I	R
3-2. Fuel tank			–	–	I	–	–	I
3-3. Fuel lines and connections			–	I	–	I	–	I
3-4. Fuel filter			Replace every 105,000 km (63,000 miles).					
EMISSION CONTROL SYSTEM								
4-1. Crankcase ventilation hoses and connections		Vehicle without HO2S	–	I	–	I	–	I
4-2. PCV valve		Vehicle without HO2S	–	–	I	–	–	I
		Vehicle with HO2S	–	–	–	–	–	I
4-3. Fuel evaporative emission control system		Vehicle without HO2S	–	I	–	I	–	I
		Vehicle with HO2S	–	–	–	–	–	I

NOTES:

"R": Replace or change

"I": Inspect and correct, replace or lubricate if necessary

- ***Item 2-1 SPARK PLUGS: Replace every 50,000 km (30,000 miles) if the local law requires.***
- ***Item 1-2 Camshaft timing belt: This belt may be replaced every 90,000 km (54,000 miles) according to customer's maintenance convenience.***

Interval: This interval should be judged by odometer reading or months, whichever comes first.	This table includes services as scheduled up to 90,000 km (54,000 miles) mileage. Beyond 90,000 km (54,000 miles), carry out the same services at the same intervals respectively.						
	km (x 1,000)	15	30	45	60	75	90
	miles (x 1,000)	9	18	27	36	45	54
	Months	12	24	36	48	60	72
CHASSIS AND BODY							
6- 1. Clutch		–	I	–	I	–	I
6- 2. Brake discs and pads (front)		I	I	I	I	I	I
Brake drums and shoes (rear)		–	I	–	I	–	I
6- 3. Brake hoses and pipes		–	I	–	I	–	I
6- 4. Brake fluid		–	R	–	R	–	R
6- 5. Parking brake lever and cable		*I	–	–	–	–	–
6- 6. Tires		I	I	I	I	I	I
6- 7. Wheel discs		I	I	I	I	I	I
6- 8. Suspension system		–	I	–	I	–	I
6- 9. Manual transmission oil		I	–	R	–	–	R
6-10. Differential oil		*R or I	–	I	–	I	–
6-11. Steering system		–	I	–	I	–	I
6-12. All hinges, latches and locks		–	I	–	I	–	I
6-13 Propeller shaft(s) and drive shaft boots		–	–	I	–	–	I

NOTES:

"R": Replace or change

"I": Inspect and correct, replace or lubricate if necessary

- ***Item 6-5 "*I" should be performed at 15,000 km only.***
- ***Item 6-10 "*R" should be performed at 15,000 km only.***

MAINTENANCE RECOMMENDED UNDER SEVERE DRIVING CONDITIONS

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

SEVERE CONDITION CODE

A – Repeated short trips/Taxi use
B – Driving on rough and/or muddy roads
C – Driving on dusty roads
D – Driving in extremely cold weather and/or salted roads
E – Repeated short trips in extremely cold weather
F – Leaded fuel use
G – —
H – Trailer towing (if admitted)/Full load use

Severe Condition Code	Maintenance	Maintenance Operation	Maintenance Interval
— B C D — — — —	Drive belt (V-rib belt)	I	Every 15,000 km (9,000 miles) or 12 months
		R	Every 45,000 km (27,000 miles) or 36 months
A — C D E F — H	Engine oil and oil filter	R	Every 5,000 km (3,000 miles) or 4 months
A B C — E F — H	Spark plugs	R	Every 10,000 km (6,000 miles) or 8 months
— — C — — — — —	Air cleaner filter element *1	I	Every 2,500 km (1,500 miles)
		R	Every 30,000 km (18,000 miles) or 24 months
— B C D — — — H	Wheel bearings	I	Every 15,000 km (9,000 miles) or 12 months
— B — D E — — H	Propeller shaft/Drive shafts	I	Every 15,000 km (9,000 miles) or 12 months
— B — — E — — H	Transmission (manual) oil	I	Every 15,000 km (9,000 miles) or 12 months
		R	Every 30,000 km (18,000 miles) or 24 months
— B — — — — — —	Suspension bolts and nuts	T	Every 15,000 km (9,000 miles) or 12 months

NOTES:
"I" : Inspect and correct, replace or lubricate if necessary
"R": Replace or change
"T" : Tighten to the specified torque
****1 : Inspect or replace more frequently if necessary.***

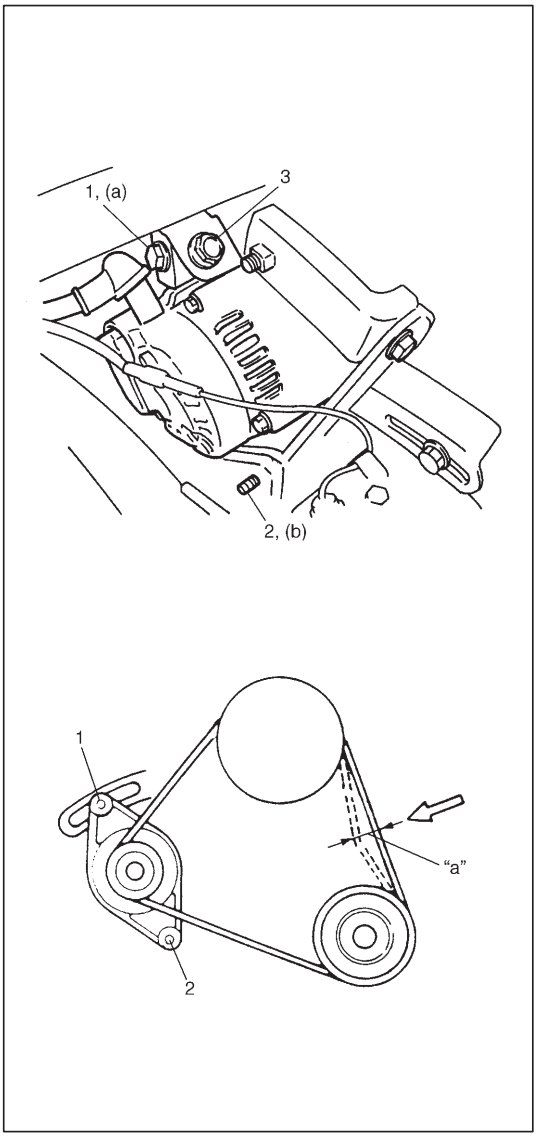
MAINTENANCE SERVICE

ENGINE

ITEM 1-1

Drive Belt Inspection and Replacement

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



Water pump and generator drive belt (V-rib belt)

Inspection

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

   Water pump and generator belt tension
   "a": 6 – 8 mm (0.24 – 0.32 in.) deflection under 100 N (10 kg, 22 lb) pressure

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

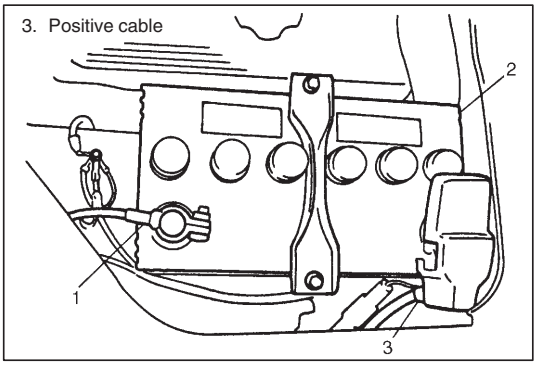
3) If belt is too tight or too loose, adjust it to specification by displacing generator position. For adjustment, tighten or loosen belt adjusting bolt (3) after loosening adjusting bolt (1) and pivot bolt (2).
4) Tighten adjusting bolt (1) and pivot bolt (2) to specified torque.

   Tightening Torque
   (a): 23 N·m (2.3 kg-m, 16.5 lb-ft)
   (b): 50 N·m (5.0 kg-m, 36.5 lb-ft)

5) Connect negative cable to battery.

Replacement

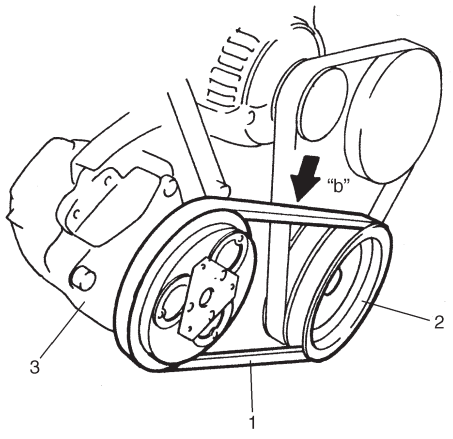
Replace belt. Refer to GENERATOR (WATER PUMP) BELT in SECTION 6H for replacement procedure.



A/C compressor drive belt (V-belt) (if equipped)

Inspection and Replacement

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



1. Drive belt
2. Crankshaft pulley
3. A/C compressor

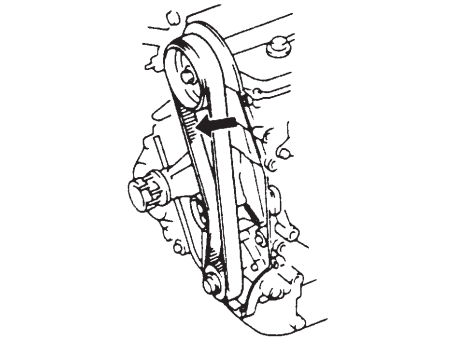
3) Check belt (1) for tension.

A/C compressor drive belt tension
"b": 8 – 9 mm (0.32 – 0.35 in.) deflection under 100 N (10 kg, 22 lb) pressure.

4) If belt tension is out of above specification, adjust it by adjusting compressor position.

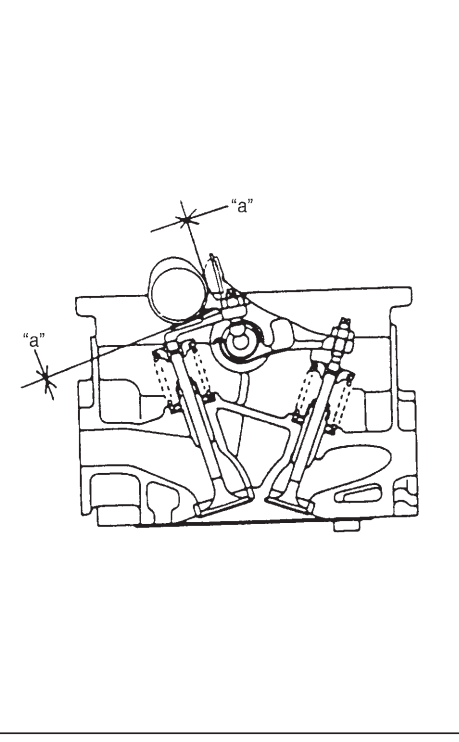
Tightening Torque for compressor mounting bolts
23 N·m (2.3 kg-m, 16.5 lb-ft)

5) Connect negative cable at battery.



ITEM 1-2

Camshaft Timing Belt Replacement
Replace timing belt. Refer to TIMING BELT AND BELT TENSIONER in SECTION 6A.



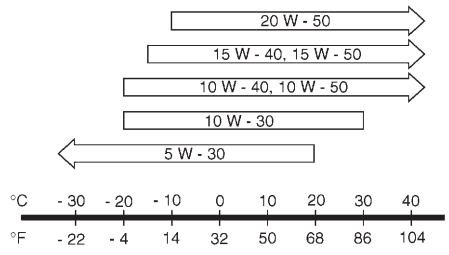
ITEM 1-3

Valve Lash Inspection
1) Remove cylinder head cover.
2) Inspect intake and exhaust valve lash and adjust as necessary. Refer to VALVE LASH (CLEARANCE) in SECTION 6A for valve lash inspection and adjustment procedure.

		When cold (Coolant temperature is 15 – 25°C or 59 – 77°F)	When hot (Coolant temperature is 60 – 68°C or 140 – 154°F)
Valve lash (gap "a") specification	Intake	0.13 – 0.17 mm (0.005 – 0.007 in.)	0.17 – 0.21 mm (0.007 – 0.008 in.)
	Exhaust	0.23 – 0.27 mm (0.009 – 0.011 in.)	0.27 – 0.31 mm (0.011 – 0.012 in.)

3) Install cylinder head cover and tighten bolts to specification. Refer to CYLINDER HEAD COVER in SECTION 6A for the details.

Proper Engine Oil Viscosity Chart



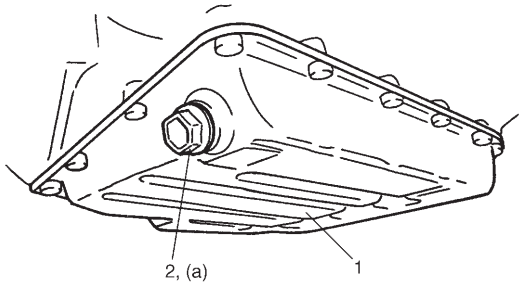
Temperature

ITEM 1-4

Engine Oil and Filter Change

WARNING:
New and used engine oil can be hazardous.
Be sure to read WARNING in GENERAL PRECAUTION in SECTION 0A and observe what in written there.

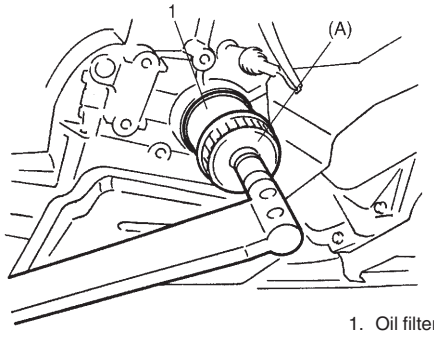
Before draining engine oil, check engine for oil leakage. If any evidence of leakage is found, make sure to correct defective part before proceeding to the following work.



1. Oil pan

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

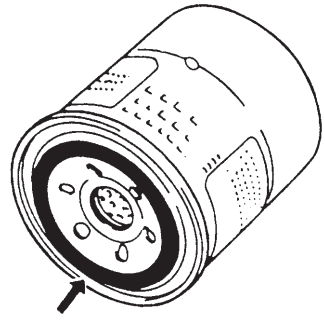
Tightening Torque
(a): 35 N·m (3.5 kg-m, 25.5 lb-ft)



1. Oil filter

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

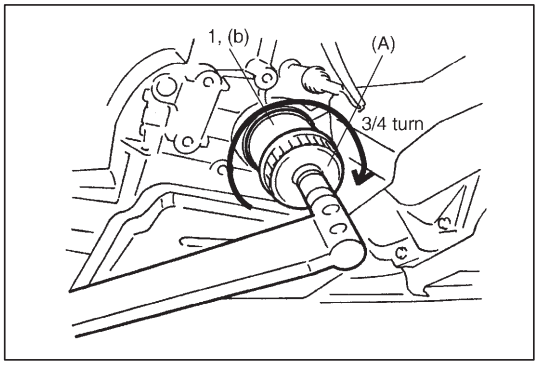
Special Tool
(A): 09915-40611



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

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

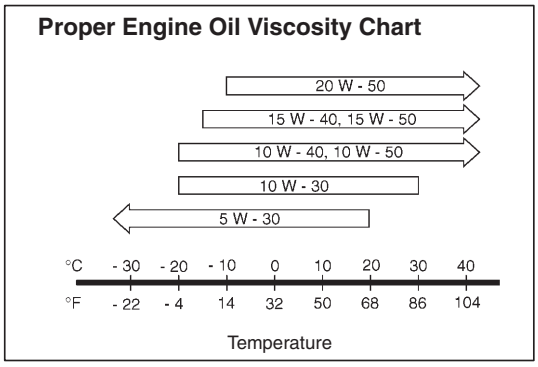
CAUTION:
To tighten oil filter properly, it is important to accurately identify the position at which at filter O-ring first contacts the mounting surface.



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

Special Tool
(A): 09915-40611

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



6) Replenish oil until oil level is brought to FULL level mark on dipstick. (oil pan and oil filter capacity). The filler inlet is at the top of the cylinder head cover.
It is recommended to use engine oil of SE, SF, SG, SH or SJ grade.

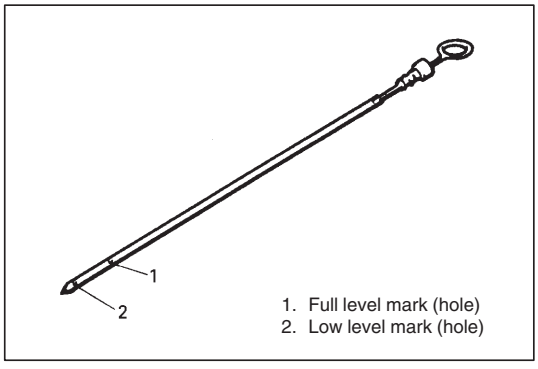
NOTE:
For temperature between –20°C (–4°F) and 30°C (86°F), it is highly recommended to use SAE 10W – 30 oil.

Engine oil capacity

Oil pan capacity	About 4.0 liters (8.5/7.0 US/Imp pt.)
Oil filter capacity	About 0.2 liters (0.4/0.35 US/Imp pt.)
Others	About 0.8 liters (1.7/1.4 US/Imp pt.)
Total	About 5.0 liters (10.6/8.8 US/Imp pt.)

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

7) Check oil filter and drain plug for oil leakage.



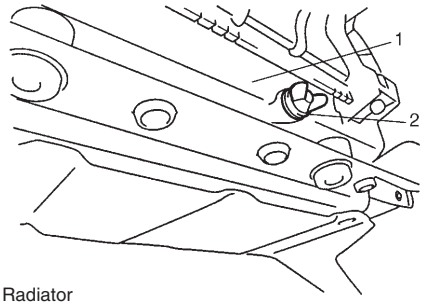
8) Start engine and run it for three minutes. Stop it and wait five minutes before checking oil level. Add oil, as necessary, to bring oil level to FULL level mark on dipstick.

NOTE:
Step 1) – 7) outlined above must be performed with ENGINE NOT RUNNING. For step 8), be sure to have adequate ventilation while engine is running.

ITEM 1-5

Engine Coolant Change

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

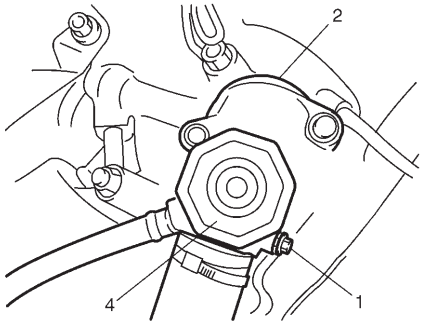


1. Radiator

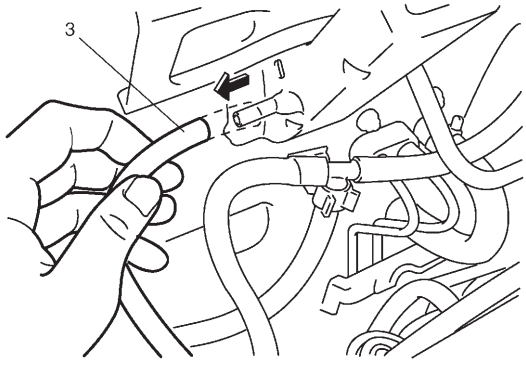
CAUTION:
The cap of thermostat cap must not be removed.

1) Remove radiator cap when engine is cool.
2) Loosen radiator drain plug (2) to drain coolant.
3) Remove reservoir, which is on the side of radiator, and drain.
4) Tighten plug securely. Also reinstall reservoir.

Engine side

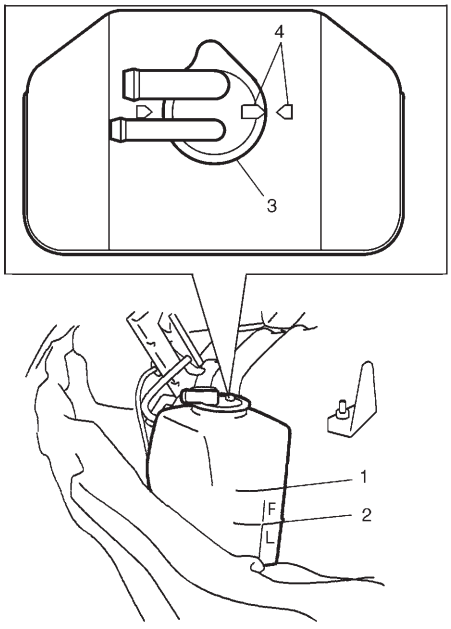


Radiator side



1. Thermostat cap bleeder bolt
2. Thermostat cap
3. Heater breather hose
4. Cap

5) Fill radiator with specified amount of coolant, bleed air from cooling system by disconnecting heater breather hose (3) and loosening thermostat cap breeder bolt (1).
6) Fill reservoir with coolant, install radiator cap and run engine for 2 or 3 minutes at idle. This drives out any air which may still be trapped within cooling system.
7) STOP ENGINE. Add coolant as necessary until coolant level reaches filler throat of radiator when engine cold. Reinstall radiator cap.

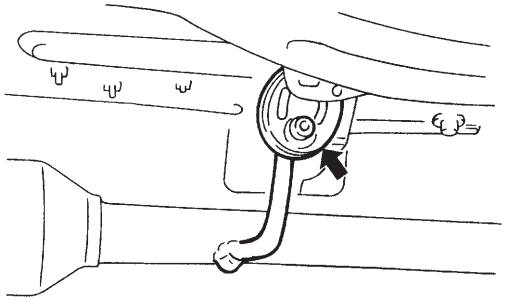


1. Full level mark
2. Low level mark
3. Tank cap
4. Match marks

8) Add coolant to reservoir so that its level aligns with FULL mark (1). Then, reinstall cap aligning arrow marks (4) on reservoir and cap.

NOTE:
When installing reservoir cap, align arrow marks (4) on reservoir and cap.

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



ITEM 1-6

Exhaust Pipes and Mountings Inspection

WARNING:
To avoid danger of being burned, do not touch exhaust system when it is still hot. Any service on exhaust system should be performed when it is cool.

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

- Check rubber mountings for damage, deterioration, and out of position.
- Check exhaust system for leakage, loose connections, dents and damages.
  If bolts or nuts are loose, tighten them to specification.
- Check nearby body areas for damaged, missing, or mispositioned parts, open seams, holes, loose connections or other defects which could permit exhaust fumes to seep into the vehicle.

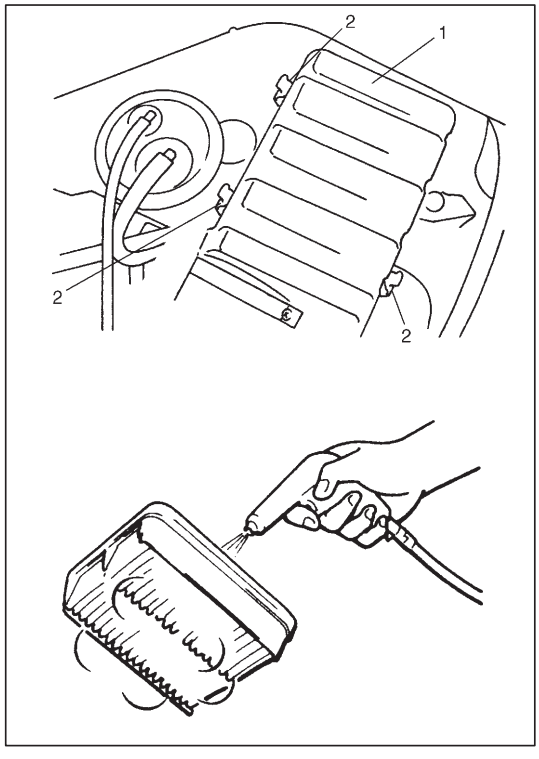
- Make sure that exhaust system components have enough clearance from the underbody to avoid overheating and possible damage to the floor carpet.
- Any defects should be fixed at once.

IGNITION SYSTEM

ITEM 2-1

Spark Plugs Replacement

Replace spark plugs with new ones. Refer to SPARK PLUG in SECTION 6F.



FUEL SYSTEM

ITEM 3-1

Air Cleaner Filter Element

Inspection

1) Remove air cleaner case clamps (2).
2) Take cleaner element out of air cleaner case.
3) Check air cleaner element for dirt. Replace excessively dirty element.
4) Blow off dust by compressed air from air outlet side of element.
5) Install air cleaner element into case.
6) Install air cleaner case cap (1) and clamp it securely.

Replacement

Replace air cleaner element with new one according to above steps 1), 2) and 5), 6).

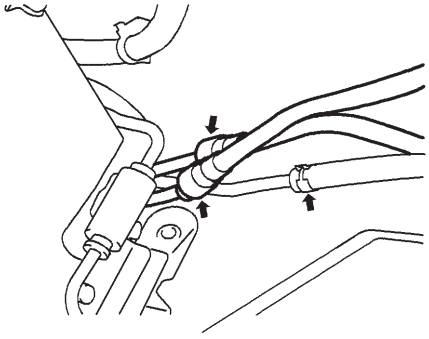
ITEM 3-2

Fuel tank

Inspection

After removing fuel tank, check hoses and pipes connected to fuel tank for leaks, loose connections, deterioration or damage. Also check fuel pump assembly gaskets for leaks, visually inspect fuel tank for leaks and damage.

Replace any damaged or malconditioned parts.

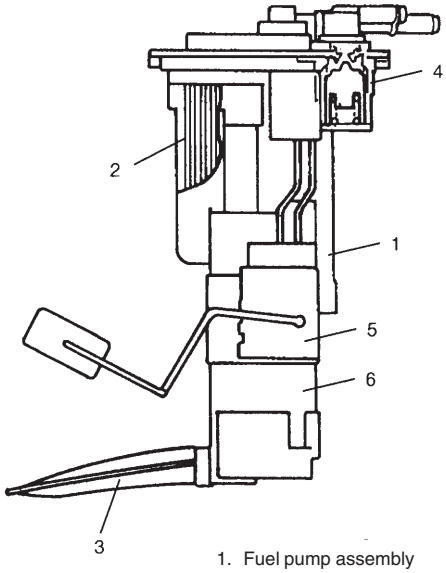


ITEM 3-3

Fuel Lines and Connections

Inspection

1) Visually inspect fuel lines and connections for evidence of fuel leakage, hose cracking and damage. Make sure all clamps are secure.
   Repair leaky joints, if any.
   Replace hoses that are suspected of being cracked.
2) Visually inspect gasket of fuel tank cap. If it is damaged or deteriorated, replace it with new one.



1. Fuel pump assembly
2. Fuel filter
3. Suction filter (pump filter)
4. Fuel cut valve
5. Fuel sender (level) gauge
6. Fuel pump

ITEM 3-4

Fuel Filter Replacement

WARNING:
This work must be performed in a well ventilated area and away from any open flames (such as gas hot water heaters).

Fuel filter is a part of fuel pump assembly which is installed on fuel tank.

Replace fuel filter with new one periodically. Refer to FUEL PUMP ASSEMBLY in SECTION 6C for proper procedure.

EMISSION CONTROL SYSTEM

ITEM 4-1

Crankcase Ventilation Hoses and Connections Inspection

Refer to following ITEM 4-2 PCV valve inspection.

ITEM 4-2

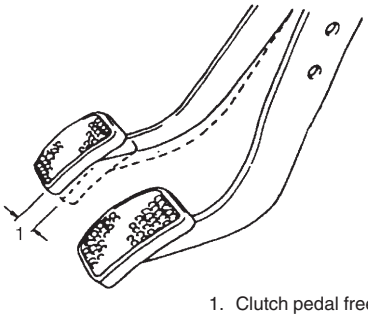
PCV (Positive Crankcase Ventilation) Valve Inspection

Check crankcase ventilation hose and PCV hose for leaks, cracks or clog, and PCV valve for stick or clog. Refer to PCV SYSTEM in SECTION 6E for PCV valve checking procedure.

ITEM 4-3

Fuel Evaporative Emission Control System Inspection

1) Visually inspect hoses for cracks, damage, or excessive bends. Inspect all clamps for damage and proper position.
2) Check EVAP canister for operation and clog. Refer to EVAP EMISSION CONTROL SYSTEM in SECTION 6E.



1. Clutch pedal free travel

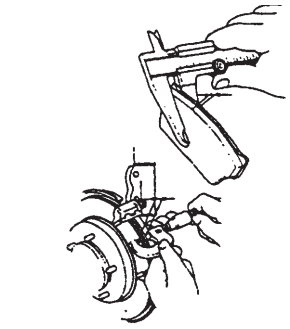
CHASSIS AND BODY

ITEM 6-1

Clutch

Pedal inspection

Check clutch pedal for height and free travel. Refer to CLUTCH PEDAL FREE TRAVEL in SECTION 7C. Adjust or correct if necessary.

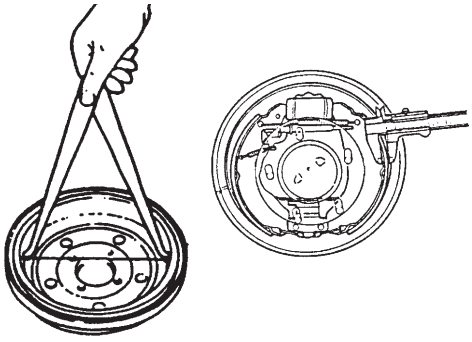


ITEM 6-2

Brake Discs, Pads, Brake Drums and Shoes Inspection

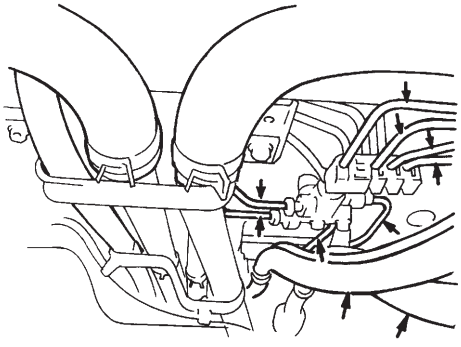
[Brake discs and pads (Front)]

1) Remove wheel and caliper but don't disconnect brake hose from caliper.
2) Check front disc brake pads and discs for excessive wear, damage and deflection. Replace parts as necessary. For details, refer to CHECK AND ADJUSTMENT in SECTION 5.
   Be sure to torque caliper pin bolts to specification.



[Brake drums and shoes (Rear)]

1) Remove wheel and brake drum.
2) Check rear brake drums and brake linings for excessive wear and damage, while wheels and drums are removed. At the same time, check wheel cylinders for leaks. Replace these parts as necessary.
   For details, refer to CHECK AND ADJUSTMENT in SECTION 5.

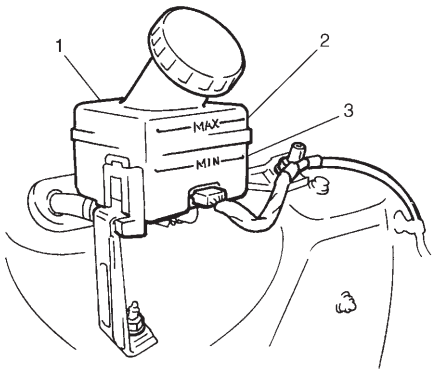


ITEM 6-3

Brake Hoses and Pipes Inspection

Check brake hoses and pipes for proper hookup, leaks, cracks, chafing and other damage.
Replace any of these parts as necessary.

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



1. Reservoir tank
2. Maximum level mark
3. Minimum level mark

ITEM 6-4

Brake Fluid

Inspection

1) Check around master cylinder and reservoir for fluid leakage. If found leaky, correct.
2) Check fluid level.
   If fluid level is lower than the minimum level of reservoir, refilling is necessary. Fill reservoir with specified brake fluid indicated on reservoir cap.
   For the details, refer to BRAKE FLUID LEVEL CHECK in SECTION 5.

CAUTION:
Since brake system of this vehicle is factory-filled with glycol-base brake fluid, do not use or mix different type of fluid when refilling system; otherwise serious damage will occur. Do not use old or used brake fluid, or one taken from unsealed container.

Change

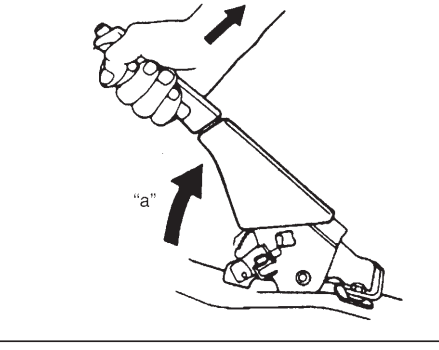
Change brake fluid as follows.
Drain existing fluid from brake system completely, fill system with above recommended fluid and carry out air purge operation.
For air purging procedure, refer to BLEEDING BRAKES in SECTION 5.

ITEM 6-5

Parking Brake Lever and Cable

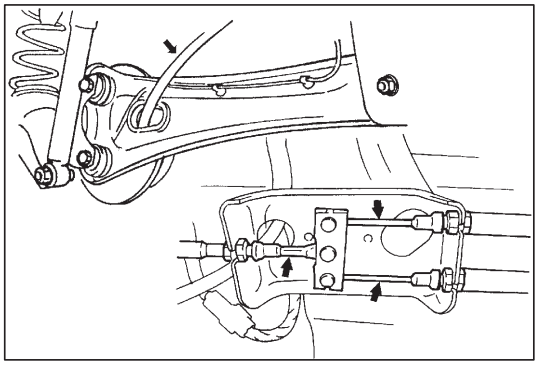
Parking brake lever inspection

1) Check tooth tip of each notch for damage or wear. If any damage or wear is found, replace parking lever.



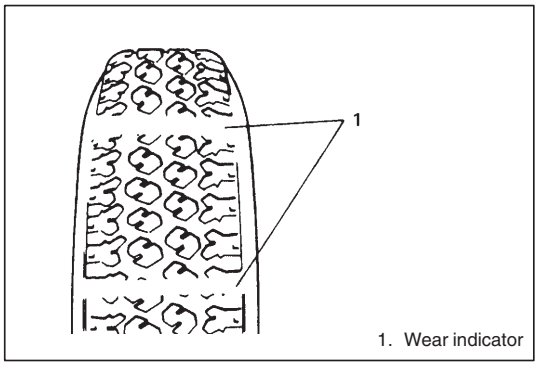
2) Check parking brake lever for proper operation and stroke, and adjust it if necessary.
   For checking and adjusting procedures, refer to PARKING BRAKE CHECK AND ADJUSTMENT in SECTION 5.

"a": Parking brake lever stroke: 4 – 7 notches (with 20 kg (44 lbs) of pull pressure)



Parking brake cable inspection

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



ITEM 6-6

Tires

Inspection and Rotation

1) Check tires for uneven or excessive wear, or damage.
   If defective, replace.
   For the details, refer to TIRE DIAGNOSIS in SECTION 3.

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

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

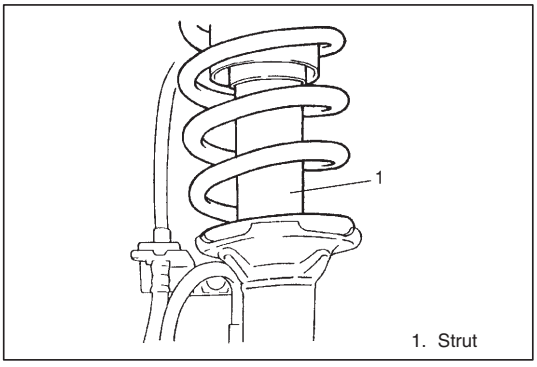
3) Rotate tires.
   For the details, refer to MAINTENANCE AND MINOR ADJUSTMENS in SECTION 3F.

ITEM 6-7

Wheel Discs

Inspection

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



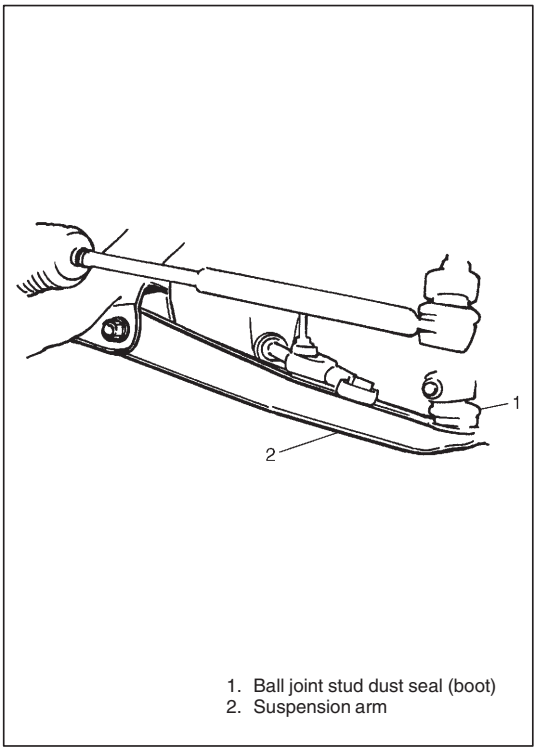
1. Strut

ITEM 6-8

Suspension System

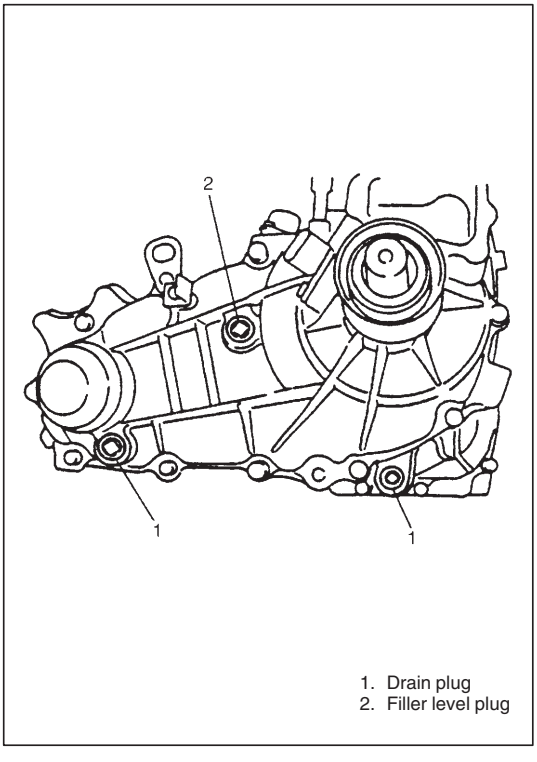
Inspection

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



1. Ball joint stud dust seal (boot)
2. Suspension arm

- Check front and rear suspension systems for damaged, loose or missing parts; also for parts showing signs of wear or lack of lubrication.
  Repair or replace defective parts, if any.
- Check front suspension arm ball joint stud dust seals (1) for leakage, detachment, tear or any other damage.
  Replace defective boot, if any.
- Check suspension bolts and nuts for tightness and retighten them as necessary. Repair or replace defective parts, if any.



1. Drain plug
2. Filler level plug

ITEM 6-9

Manual Transmission Oil

Inspection

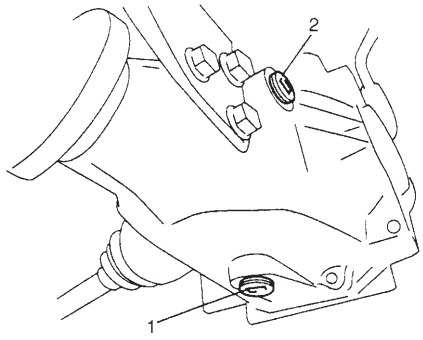
1) Inspect transmission case for evidence of oil leakage.
   Repair leaky point if any.
2) Make sure that vehicle is placed level for oil level check.
3) Remove level plug of transmission.
4) Check oil level.
   Oil level can be checked roughly by means of level plug hole. That is, if oil flows out of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

Change

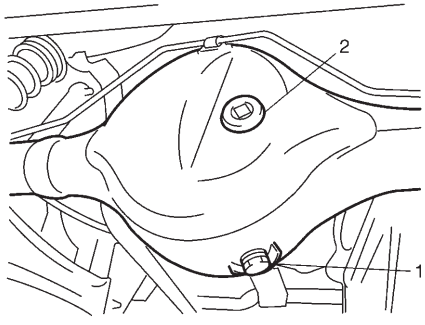
Change transmission oil with new specified oil. Refer to MAINTENANCE SERVICE in SECTION 7A1.

CAUTION:
Specified gear oil must be used for differential.

Front differential



Rear differential



1. Drain plug
2. Oil filler / level plug

ITEM 6-10

Differential Oil

Inspection

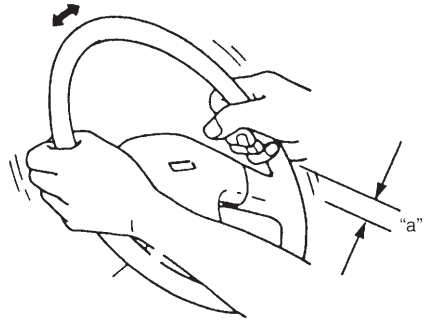
1) Check differential for evidence of oil leakage.
   Repair leaky point if any.
2) Make sure that vehicle is placed level for oil level check.
3) Remove level plug of differential and check oil level.
   Oil level can be checked roughly by means of level plug hole. That is, if oil flows out of level plug hole or if oil level is found up to hole when level plug is removed, oil is properly filled.
   If oil is found insufficient, pour specified amount of specified oil.

   CAUTION:
   Specified gear oil must be used for differential.

4) Tighten level plug to specified torque.
   Refer to OIL CHANGE in SECTION 7E and SECTION 7F.

Change

Change differential oil with new specified oil. Refer to OIL CHANGE in SECTION 7F respectively.



ITEM 6-11

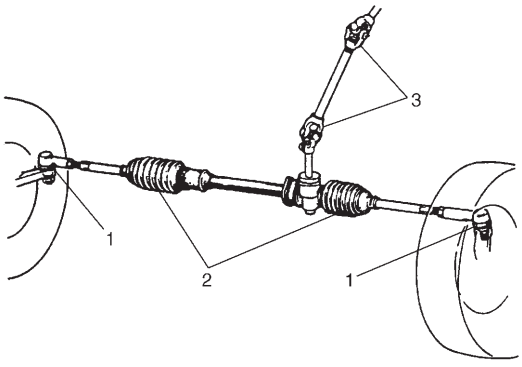
Steering System

Inspection

1) Check steering wheel for play and rattle, holding vehicle in straight forward condition on the ground.

   Steering wheel play "a": 0 – 30 mm (0 – 1.2 in.)

2) Check that steering wheel can be turned fully to the right and left.
   Repair or replace defective parts, if any.

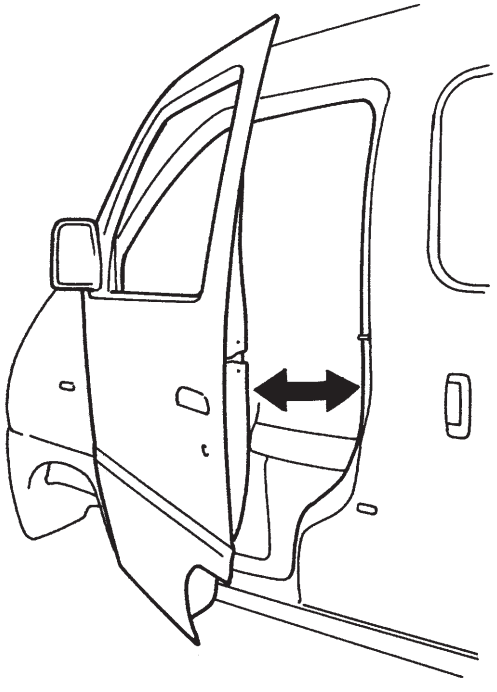


1. Tie-rod end boot
2. Steering gear case boot
3. Universal joint

3) Check universal joints of steering shaft for rattle and damage. If rattle or damage is found, replace defective part with a new one.
4) Check steering linkage for looseness and damage. Repair or replace defective parts, if any.
5) Check bolts and nuts for tightness and retighten them as necessary. Repair or replace defective parts, if any.
   Refer to TIGHTENING TORQUE SPECIFICATION in SECTION 3B and 3C for tightening torque.
6) Check boots of steering linkage and steering gear case for damage (leaks, detachment, tear, etc.). If damage is found, replace defective boot with new one.
7) Check wheel alignment.

NOTE:
For the details of wheel alignment, refer to GENERAL DESCRIPTION in SECTION 3A.

Example: FRONT DOOR



ITEM 6-12

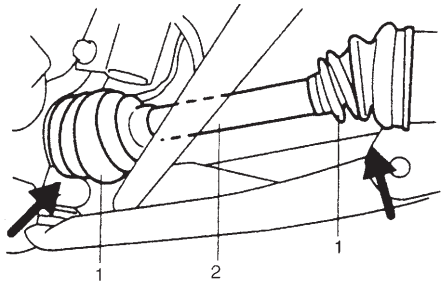
All Hinges, Latches and Locks

Doors

Check that each door of front, rear (slide) and back doors opens and closes smoothly and locks securely when closed.
If any malfunction is found, lubricate hinge and latch or repair door lock system.

Front Hood

Check that secondary latch operates properly (check that secondary latch keeps hood from opening all the way even when pulling hood release handle inside vehicle.) Also check that hood opens and closes smoothly and properly and hood locks securely when closed.
If any malfunction is found, lubricate hinge and latch, or repair hood lock system.

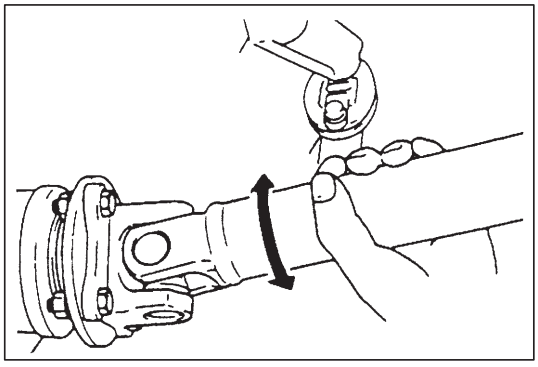


2. Drive shaft

ITEM 6-13

Drive Axle Boot Inspection

Check drive axle boots (wheel side and differential side) (1) for leakage, detachment, tear or any other damage.
Replace boot as necessary.



Propeller Shaft(s) Inspection

1) Check universal joint, constant velocity joint (4WD) and spline of propeller shaft for rattle and damage. If rattle or damage is found, replace defective part with a new one.
2) Check propeller shaft joint bolts for tightness, and retighten them as necessary.
   Refer to Section 4B or 4B1 for tightening torque.

FINAL INSPECTION

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

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

Seat Belt
Inspect belt system including webbing, buckles, latch plates, retractors and anchors for damage or wear.
If "REPLACE BELT" label on front seat belt is visible, replace belt.
Check that seat belt is securely locked.

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

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

Engine Start
Check engine start for readiness.

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

On automatic transmission vehicles, try to start the engine in each select lever position. The starting motor should crank only in "P" (Park) or "N" (Neutral).
On manual transmission vehicles, place the shift lever in "Neutral," depress clutch pedal fully and try to start.

Exhaust System Check
Check for leakage, cracks or loose supports.

Clutch (For Manual Transmission)
Check for the following.
- Clutch is completely released when depressing clutch pedal,
- No slipping clutch occurs when releasing pedal and accelerating.
- Clutch itself is free from any abnormal condition.

Gearshift or Selector Lever (Transmission)
Check gear shift or selector lever for smooth shifting to all positions and for good performance of transmission in any position.
With automatic transmission equipped vehicle, also check that shift indicator indicates properly according to which position selector lever is shifted to.

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

Brake
[Foot brake]
Check the following:
- that brake pedal has proper travel,
- that brake works properly,
- that it is free from noise,
- that braking force is applied equally on all wheels,
- and that brake do not drag.

[Parking brake]
Check that lever has proper travel.

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

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

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

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

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

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

Lights
Check that all lights operate properly.

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

RECOMMENDED FLUIDS AND LUBRICANTS

Engine oil	SE, SF, SG, SH or SJ (Refer to engine oil viscosity chart in ITEM 1-4 of MAINTENANCE SERVICE)
Engine coolant (Ethylene glycol base coolant)	Antifreeze/Anticorrosion coolant (Refer to ITEM 1-5 of MAINTENANCE SERVICE for detail.)
Brake fluid	An equivalent of DOT 3 or SAE J1703 or more
Manual transmission oil	API GL-4 (Refer to MAINTENANCE SERVICE in SECTION 7A1 for detail)
Differential oil	Hypoid gear oil API GL-5 (Refer to OIL CHANGE in SECTION 7E and SECTION 7F for detail.)
Clutch linkage pivot points	Water resistance chassis grease (SUZUKI SUPER GREASE A 99000-25010)
Door hinges	Engine oil or water resistance chassis grease
Hood latch assembly	
Key lock cylinder	Spray lubricant

SECTION 3D1

FRONT SUSPENSION (4WD)

NOTE:

- **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.**

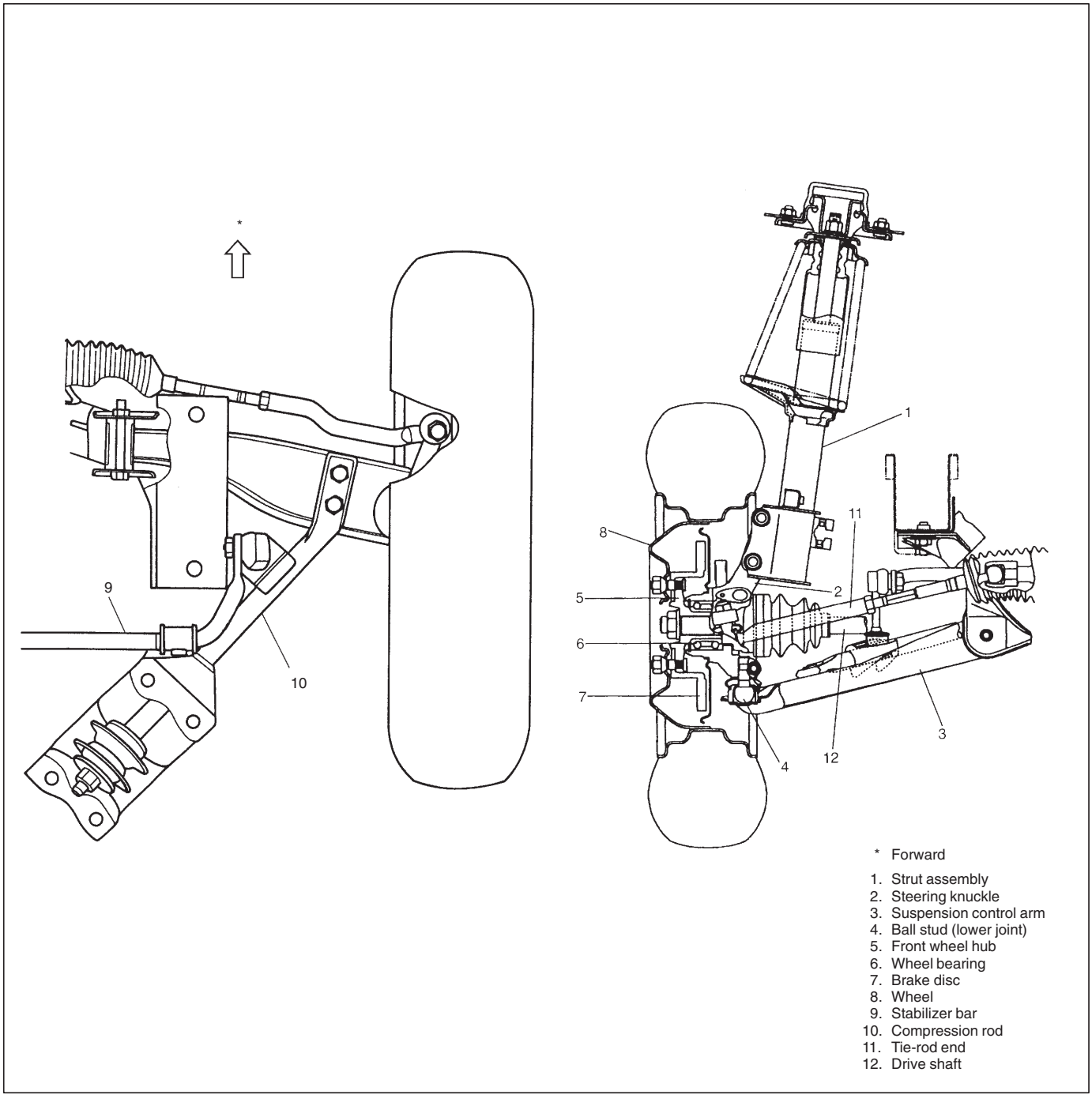
CONTENTS

GENERAL DESCRIPTION

The front suspension is the strut type independent suspension. The upper end of a strut is anchored to the vehicle body by a strut support. The strut and strut support are isolated by a strut rubber support. A strut bearing is also installed a little lower to the strut rubber support.

The lower end of the strut is connected to the upper end of a steering knuckle and lower end of knuckle is attached to the stud of a ball joint which is incorporated in a unit with a suspension control arm. And connected to this steering knuckle is the tie-rod end.

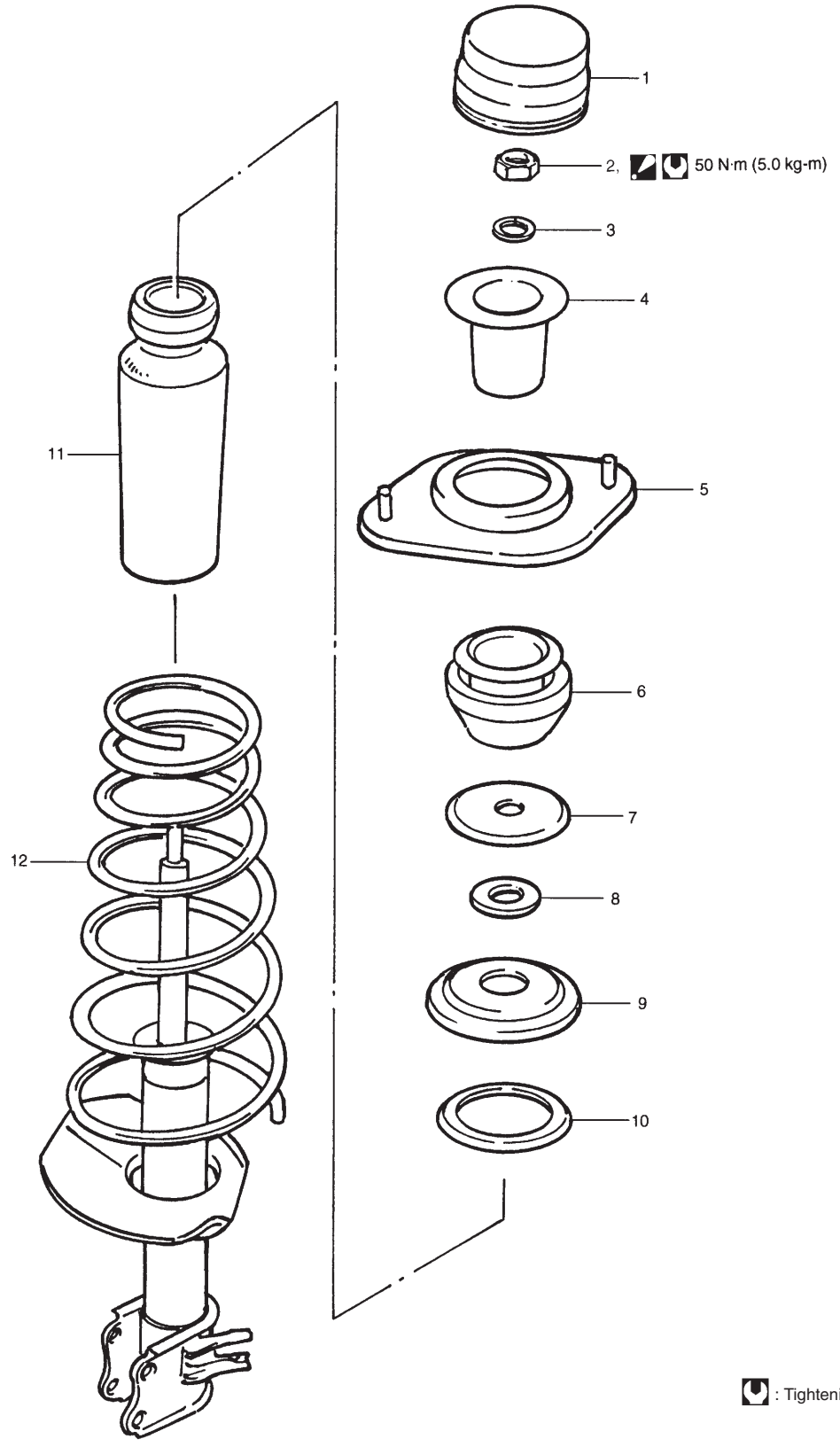
Thus, movement of the steering wheel is transmitted to the tie-rod end and then to the knuckle, eventually causing the wheel and tire to move. In this operation, with the movement of the knuckle, the strut also rotates by means of the strut bearing and lower ball joint.



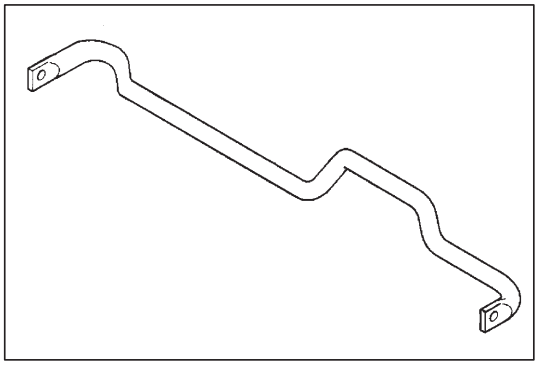
* Forward

1. Strut assembly
2. Steering knuckle
3. Suspension control arm
4. Ball stud (lower joint)
5. Front wheel hub
6. Wheel bearing
7. Brake disc
8. Wheel
9. Stabilizer bar
10. Compression rod
11. Tie-rod end
12. Drive shaft

STRUT ASSEMBLY



1. Strut support cap
2. Strut nut:
   Apply water proof coating (paint or lacquer) all around nut and strut rod screw part
3. Strut lock washer
4. Strut rebound stopper
5. Strut support
6. Strut rubber support
7. Strut bearing seat
8. Strut bearing
9. Spring upper seat
10. Spring seat
11. Bump stopper
12. Coil spring



DIAGNOSIS

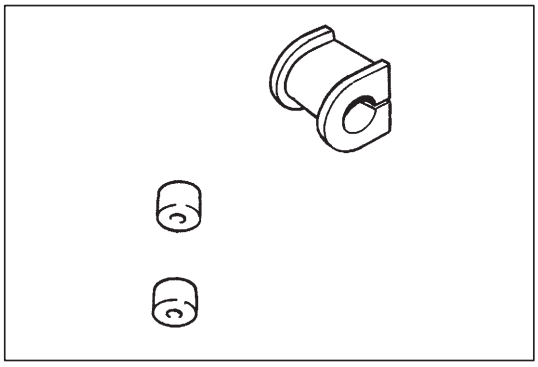
Refer to Section 3.

CHECK AND ADJUSTMENT

STABILIZER BAR AND/OR BUSHING CHECK

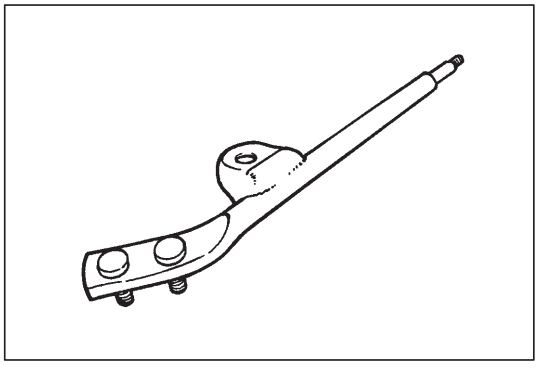
Bar

Inspect for damage or deformation. If defective, replace.



Bushing/Cushion

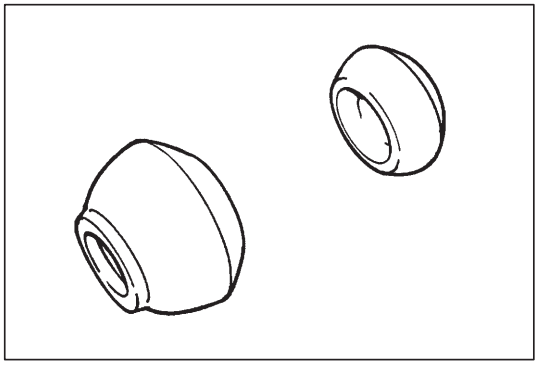
Inspect for damage, wear or deterioration. If defective, replace.



COMPRESSION ROD AND/OR BUSHING CHECK

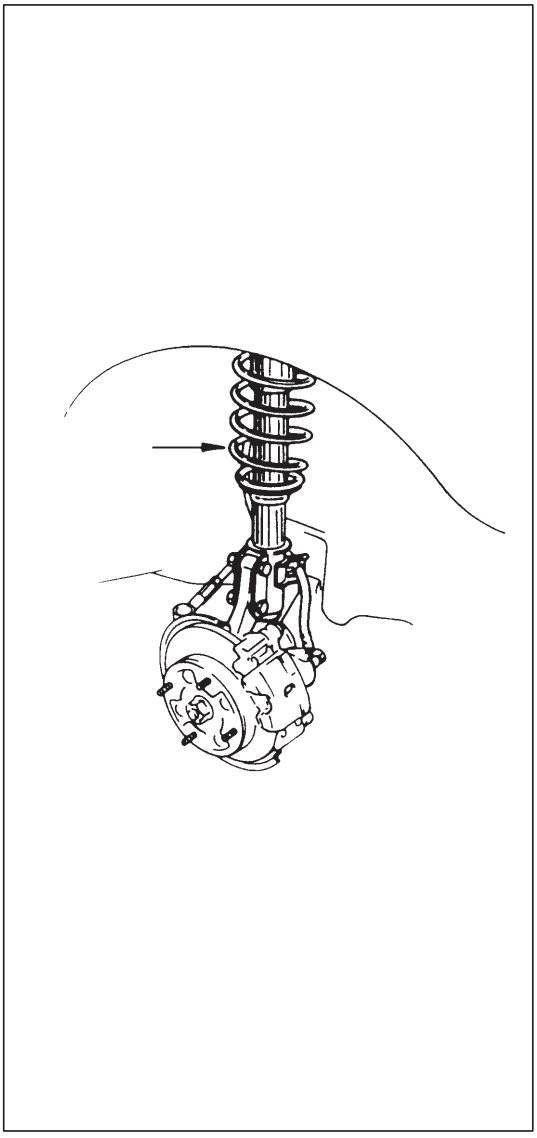
Rod

Inspect for damage or deformation. If defective, replace.



Bushing

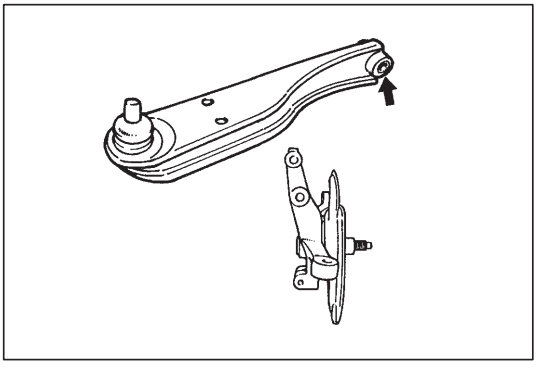
Inspect for damage, wear or deterioration. If defective, replace.



STRUT DAMPER CHECK

1) Inspect strut for oil leakage. If strut is found faulty, replace it as an assembly unit, because it can not be disassembled.
2) Strut function check
   Check and adjust tire pressures as specified on tire placard. Bounce vehicle body three or four times continuously by pushing front end on the side with strut to be checked. Apply the same amount of force at each push and note strut resistance both when pushed and rebounding.
   Also, note how many times vehicle body rebounds before coming to stop after hands are off. Do the same for strut on the other side.
   Compare strut resistance and number of rebound on the right with those on the left. And they must be equal in both. With proper strut, vehicle body should come to stop the moment hands are off or after only one or two small rebounds. If struts are suspected, compare them with known-good vehicle or strut.
3) Inspect for damage or deformation.
4) Inspect bearing for wear, abnormal noise or gripping.
5) Inspect for cracks or deformation in the spring seat.
6) Inspect for deterioration of the bump stopper.
7) Inspect rebound stopper and strut mount for wear, cracks or deformation.

Replace any parts, if found defective.

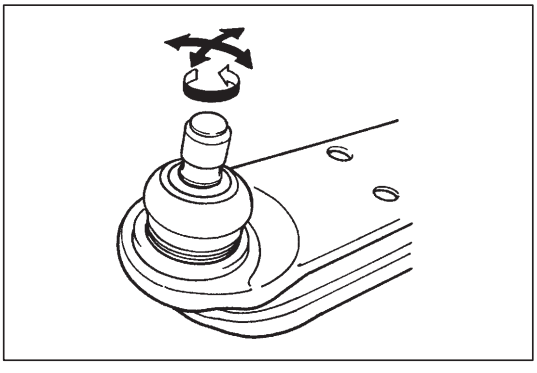


SUSPENSION CONTROL ARM/KNUCKLE CHECK

Inspect for cracks, deformation or damage.

SUSPENSION CONTROL ARM BUSHING CHECK

Inspect for damage, wear or deterioration.

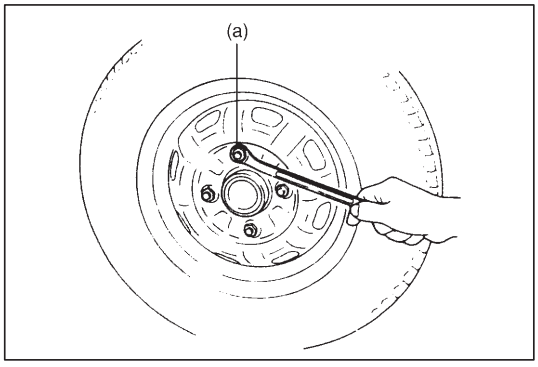


SUSPENSION CONTROL ARM JOINT CHECK

1) Check for smooth rotation.
2) Inspect ball stud for damage.
3) Inspect ball stud boot for tear.
4) Inspect for play in ball joint. If found defective, replace.

NOTE:
Suspension arm and arm joint cannot be separated.

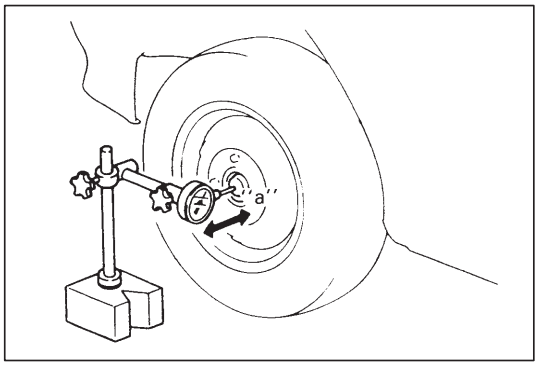
If there is any damage to either, control arm assembly must be replaced as a complete unit.



WHEEL DISC, NUT & BEARING CHECK

1) Inspect each wheel disc for dents, distortion and cracks. A disc in badly damaged condition must be replaced.
2) Check wheel nuts for tightness and, as necessary retighten them to specification.

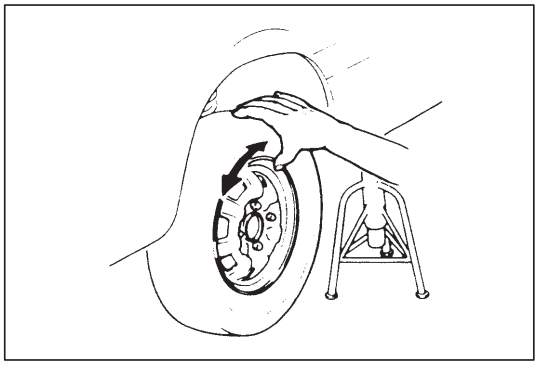
Tightening Torque
(a): 85 N·m (8.5 kg-m, 61.5 lb-ft)



3) Check wheel bearing for wear. When measuring thrust play, apply a dial gauge to wheel hub center after removing wheel center cap from wheel disc.

Thrust play limit "a": 0.1 mm (0.004 in.)

When measurement exceeds the limit, replace wheel hub assembly.



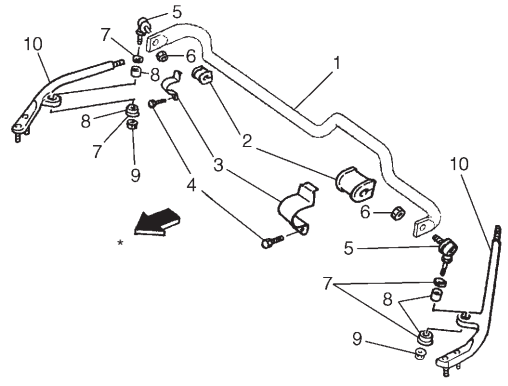
4) By rotating wheel actually, check wheel bearing for noise and smooth rotation. If defective, replace wheel hub assembly.

ON-VEHICLE SERVICE

STABILIZER BAR AND/OR BUSHINGS

REMOVAL

1) Hoist vehicle and allow the front suspension control arms to hang free.
2) Remove stabilizer link nuts (9), washers (7) and cushions (8). When loosening link nut (9), hold stud with a wrench.
3) Remove stabilizer bar mount bushing bracket bolts (4).
4) Remove stabilizer bar (1) and its joints.
5) Remove stabilizer joints (5) from stabilizer bar (1). When loosening joint nut (6), hold stud with a wrench.



* : Forward

1. Stabilizer bar
2. Mount bushing
3. Mount bracket
4. Mount bracket bolt
5. Stabilizer joint
6. Stabilizer joint nut
7. Washer
8. Cushion
9. Stabilizer link nut
10. Compression rod

INSTALLATION

Install in reverse order of removal procedure, noting the following points.

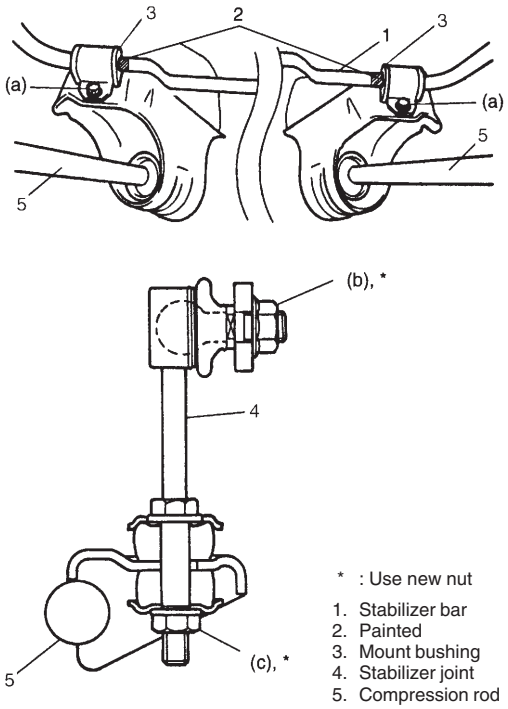
- When installing stabilizer, loosely assemble all components while insuring that stabilizer is centered, side-to-side.

NOTE:
For correct installation of stabilizer bar (1), side-to-side, be sure that color paint (2) on stabilizer bar aligns with mount bushing (3), both right and left, as shown in figure.

- Tighten bolts and nuts to specified torque.

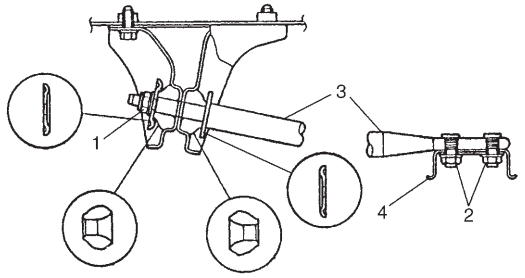
CAUTION:
- **When tightening stabilizer link nut, use care so that cushion is fitted to washer.**
- **Removed stabilizer nuts must be replaced with new ones.**

Tightening Torque
(a): 25 N·m (2.5 kg-m, 18.0 lb-ft)
(b): 50 N·m (5.0 kg-m, 36.5 lb-ft)
(c): 23 N·m (2.3 kg-m, 17.0 lb-ft)



* : Use new nut

1. Stabilizer bar
2. Painted
3. Mount bushing
4. Stabilizer joint
5. Compression rod

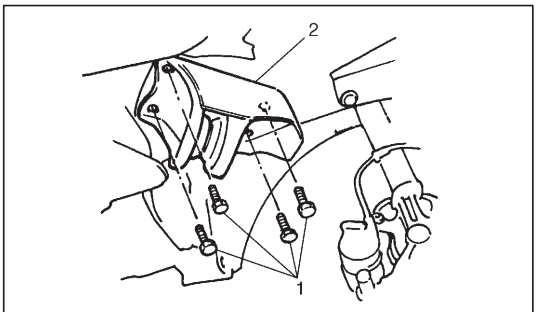


1. Compression rod lock nut
2. Compression rod stud nuts
3. Compression rod
4. Suspension arm

COMPRESSION ROD AND/OR BUSHINGS

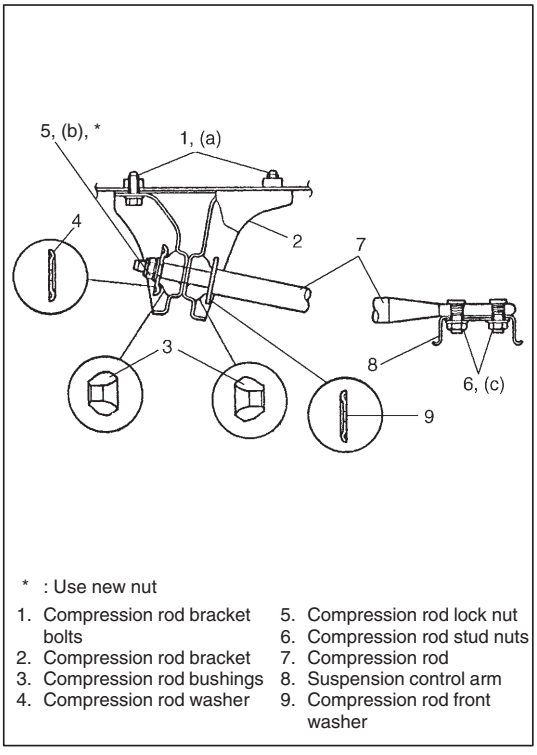
REMOVAL

1) Hoist vehicle, allow front suspension to hang free.
2) Remove stabilizer bar, refer to STABILIZER BAR AND/OR BUSHINGS REMOVAL.
3) Remove compression rod nuts (1, 2).
4) Remove compression rod (3).



1. Compression rod bracket bolts

5) Remove compression rod bracket (2) from vehicle body.



* : Use new nut

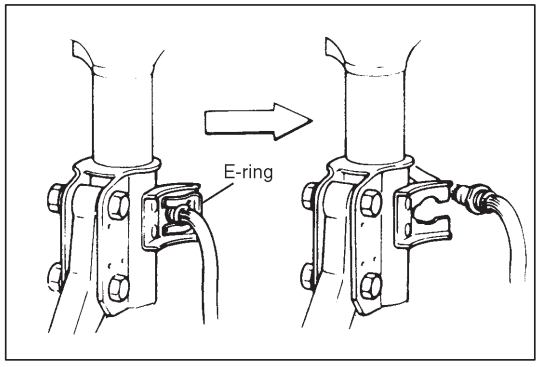
1. Compression rod bracket bolts
2. Compression rod bracket
3. Compression rod bushings
4. Compression rod washer
5. Compression rod lock nut
6. Compression rod stud nuts
7. Compression rod
8. Suspension control arm
9. Compression rod front washer

INSTALLATION

Install in reverse order of removal procedure, noting the following points.

- For correct installation of compression rod bushings and compression rod washers, refer to the left figure.
- Use new compression rod lock nuts.
- Tighten each bolts and nuts to specified torque.

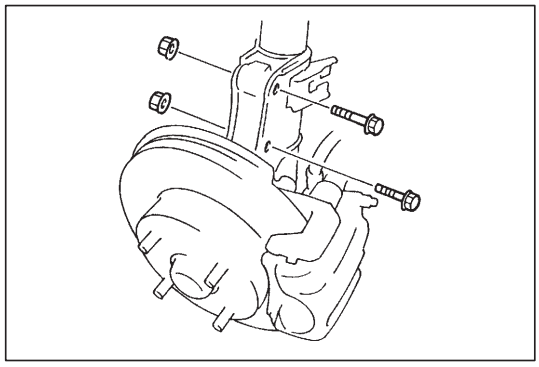
Tightening Torque
(a): 55 N·m (5.5 kg-m, 40.0 lb-ft)
(b): 65 N·m (6.5 kg-m, 47.0 lb-ft)
(c): 95 N·m (9.5 kg-m, 69.0 lb-ft)



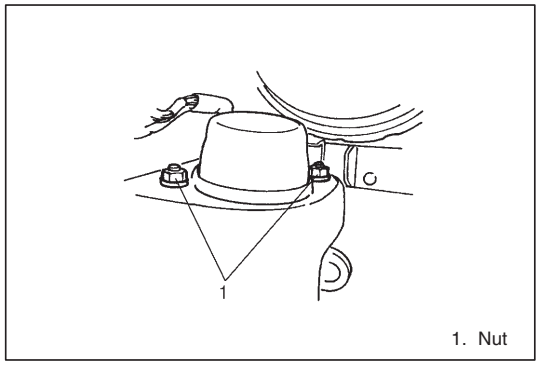
STRUT DAMPER ASSEMBLY

REMOVAL

1) Disconnect negative cable at battery.
2) Hoist vehicle, allowing front suspension to hang free.
3) Remove wheel.
4) Remove E-ring securing brake flexible hose and take brake flexible hose off strut bracket as shown.

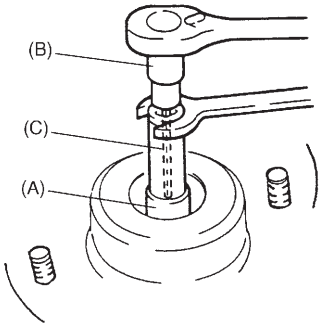


5) Remove wheel speed sensor harness clamp bolt from strut (if equipped with ABS).
6) Remove strut bracket bolts.



1. Nut

7) Remove strut support nuts.
   Hold strut by hand so that it will not fall off.
8) Remove strut assembly.

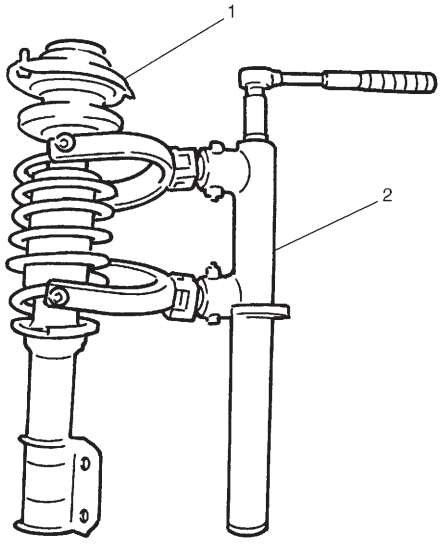


DISASSEMBLY

1) Remove strut support cap and loosen strut nut a little by using special tools.

Special Tool
(A): 09945-26010 (17 mm socket)
(B): 09900-00411 (Socket)
(C): 09900-00414 (6 mm)

NOTE:
When disassembling strut assembly, loosen strut nut a little before compressing strut spring. This will make disassembly easier. Note, however, nut must not be removed at this point.



1. Strut damper assembly
2. Spring compressor

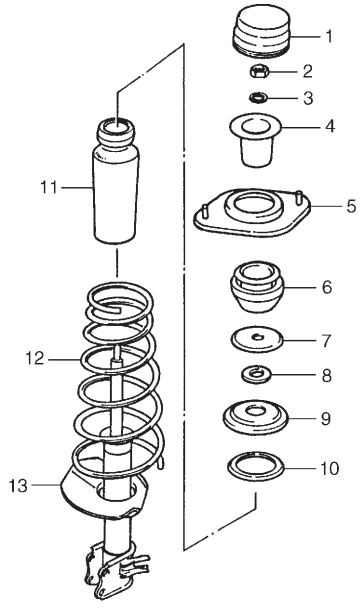
2) Using a spring compressor, compress strut spring till its force pressing the spring seat is released.

CAUTION:
Use a commercially available spring compressor and follow the operation procedure described in the Instruction Manual supplied with the spring compressor.

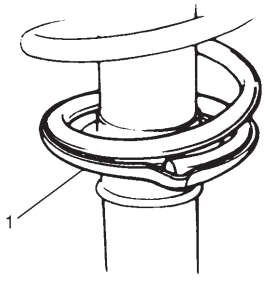
3) While keeping spring compressed with spring compressor, remove strut nut and then disassemble parts.

ASSEMBLY

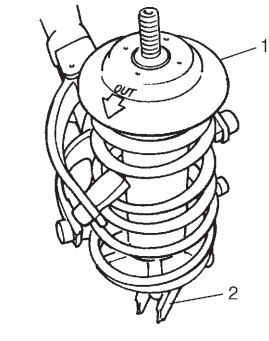
For assembly, reverse disassembly procedure, observing the following instruction.



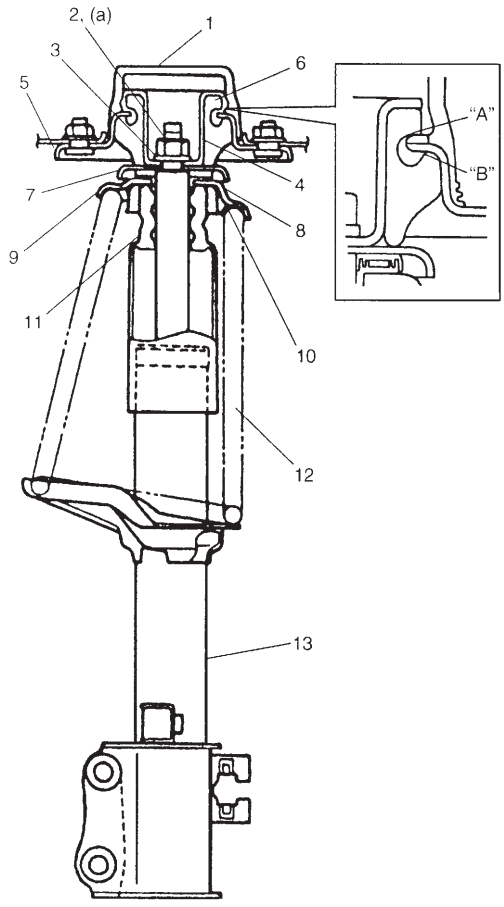
1. Strut support cap
2. Strut nut
3. Strut lock washer
4. Strut rebound stopper
5. Strut support
6. Strut rubber support
7. Strut bearing seat
8. Strut bearing
9. Spring upper seat
10. Spring seat
11. Bump stopper
12. Coil spring
13. Strut assembly



- Mate spring end with stepped part of lower seat (1) as shown.



- With “OUT” mark on spring upper seat (1) and the center of strut bracket (2) aligned, place spring upper seat (1) together with spring (rubber) seat on coil spring.



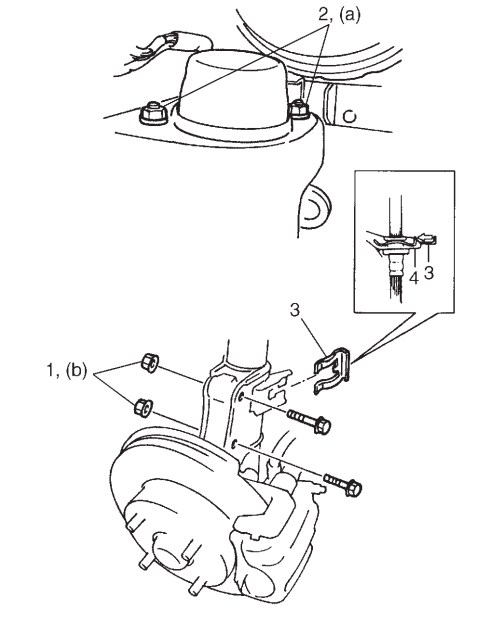
1. Strut support cap
2. Strut nut
3. Strut lock washer
4. Strut rebound stopper
5. Strut support
6. Strut rubber support
7. Strut bearing seat
8. Strut bearing
9. Spring upper seat
10. Spring seat
11. Bump stopper
12. Coil spring
13. Strut assembly

- Install bump stopper (11) onto strut rod. Refer to the left figure for installing direction.
- Clean strut bearing (8) and install it on spring upper seat (9). Refer to figure at left for installing direction.
- Wash bearing seat (7) and install it as shown.
- On bearing seat, install rebound stopper (4), strut support (5) and rubber support (6) in this sequence. Refer to the figure for installing directions. Tighten strut nut (2) to specified torque and then apply water-proof coating (paint or lacquer) all around nut and strut rod screw part.

NOTE:
As shown at the left, have sections "A" and "B" of strut support rubber caught by strut support securely.

Tightening Torque
(a): 50 N·m (5.0 kg-m, 36.5 lb-ft)

- Recheck that stepped part of spring seat (9) and spring end (12) are in place to each other as described.



1. Strut bracket nut
2. Strut support nut
3. E-ring
4. Bracket end surface

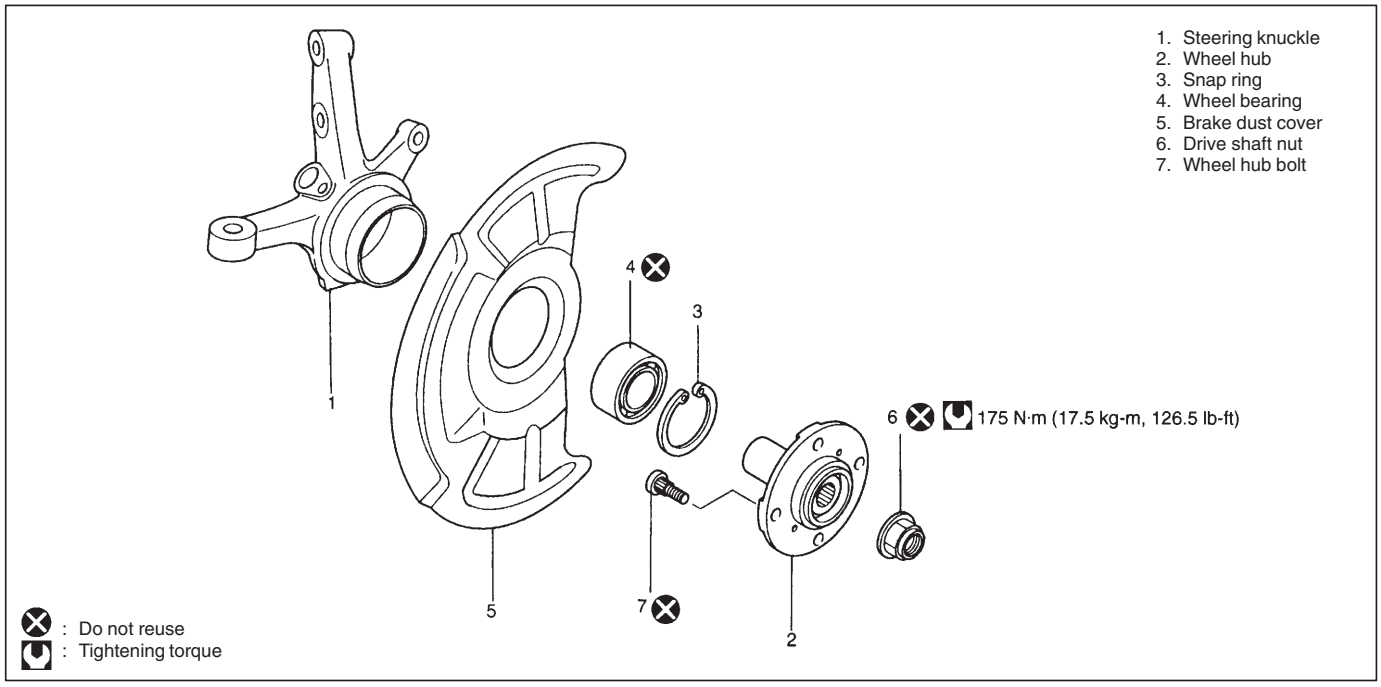
INSTALLATION

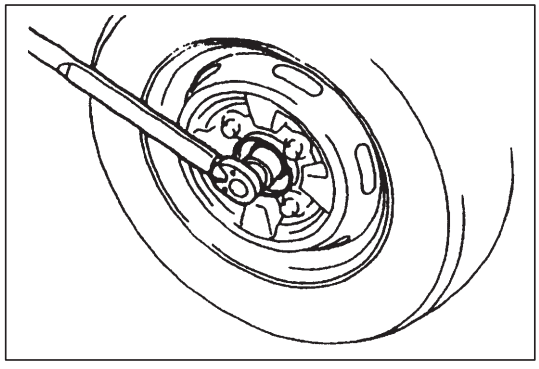
1) Install strut by reversing removal procedure. Insert bolts in such a direction as shown.
2) Torque all fasteners to specification.

Tightening Torque
(a): 73 N·m (7.3 kg-m, 53.0 lb-ft)
(b): 95 N·m (9.5 kg-m, 69.0 lb-ft)

NOTE:
Don't twist brake hose when installing it.
Install E-ring as far as it fits to bracket as shown.

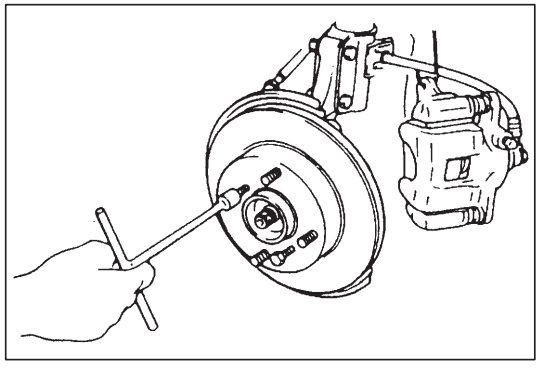
STEERING KNUCKLE AND WHEEL HUB





REMOVAL

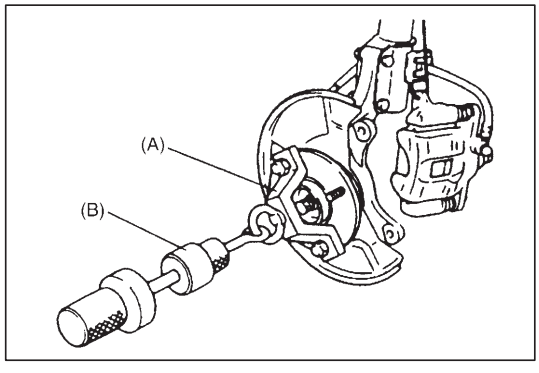
1) Remove drive shaft nut.
2) Hoist vehicle and remove wheel.
   Remove wheel speed sensor for ABS (if equipped).



3) Remove caliper carrier bolts.
4) Remove caliper with carrier.

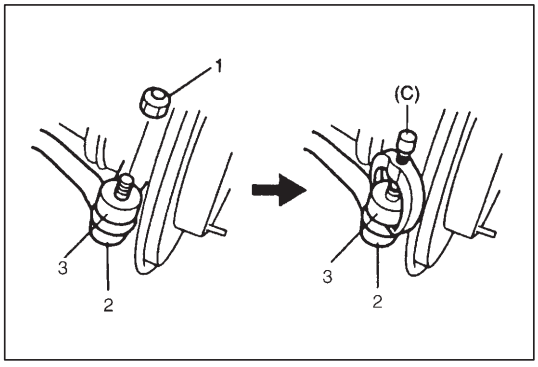
NOTE:
Hang removed caliper with a wire hook of the like so as to prevent brake hose from bending and twisting excessively or being pulled.
Don't operate brake pedal with pads removed.

5) Pull brake disc off by using two 8 mm bolts.



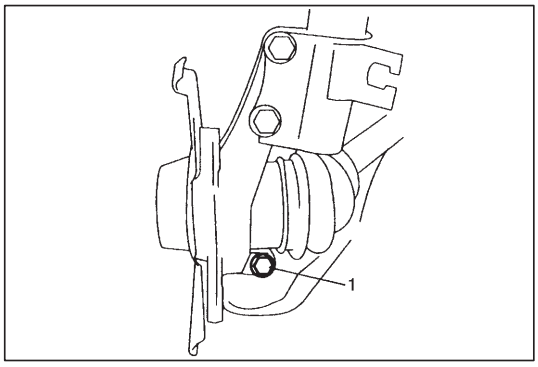
6) Pull out wheel hub with special tools.

Special Tool
(A): 09943-17912
(B): 09942-15511

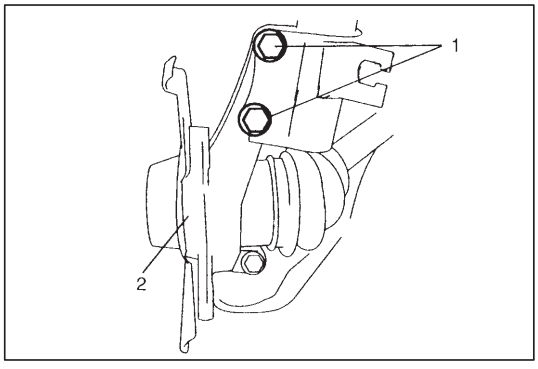


7) Remove nut (1) and disconnect tie-rod end (2) from knuckle (3) with special tool.

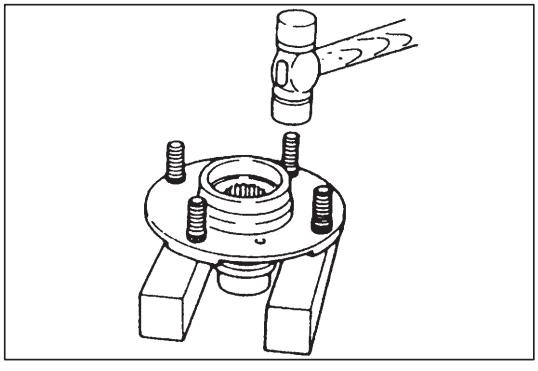
Special Tool
(C): 09913-65210



8) Remove ball stud bolt (1) from knuckle.



9) Remove strut bracket bolts (1).
10) Remove knuckle (2).

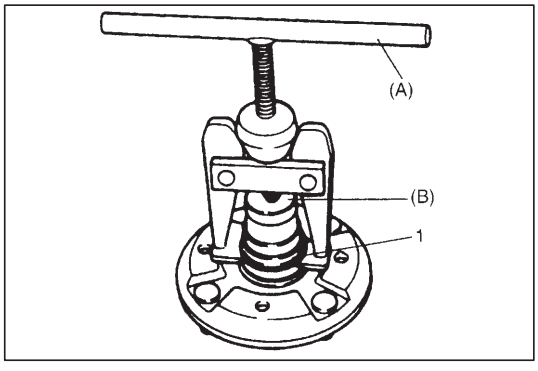


DISASSEMBLY

Wheel Hub

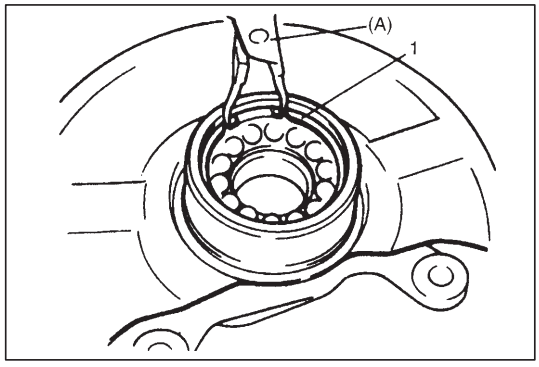
1) Remove hub bolts.

CAUTION:
Never remove bolt unless replacement is necessary.
Be sure to use a new bolt for replacement.



2) Remove wheel bearing inner race (1) using special tool.

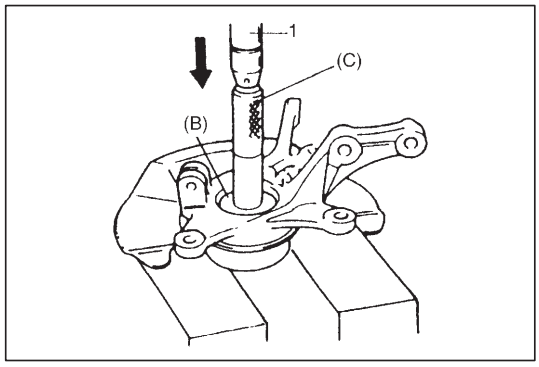
Special Tool
(A): 09913-61110
(B): 09925-88210



Steering Knuckle

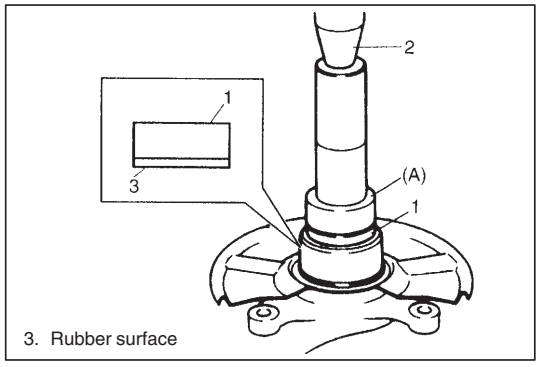
1) Using special tool, remove snap ring (1).

Special Tool
(A): 09900-06108



2) Remove bearing outer race/inner bearing using special tools and hydraulic press (1).

Special Tool
(B): 09924-84510
(C): 09913-75821

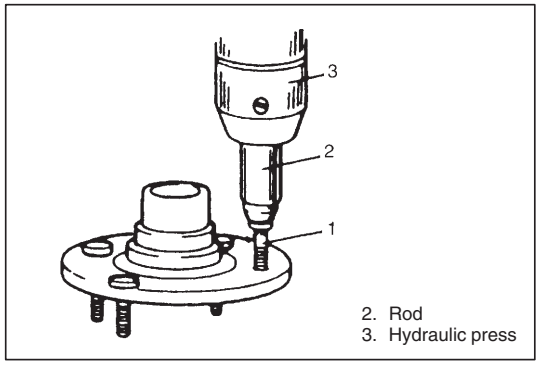


ASSEMBLY AND INSTALLATION

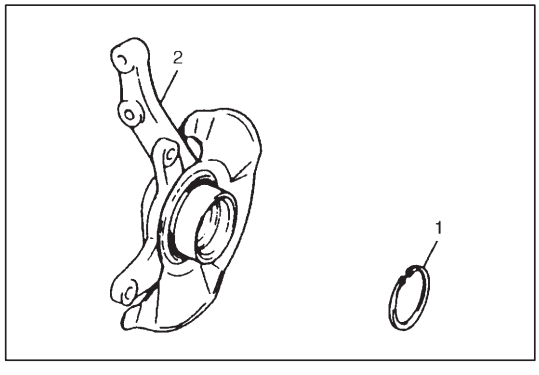
1) Install new wheel bearing (1) using special tool and hydraulic press (2).

Special Tool
(A): 09913-75520

NOTE:
- **Do not reuse wheel bearing.**
- **Note the installing direction of bearing.**

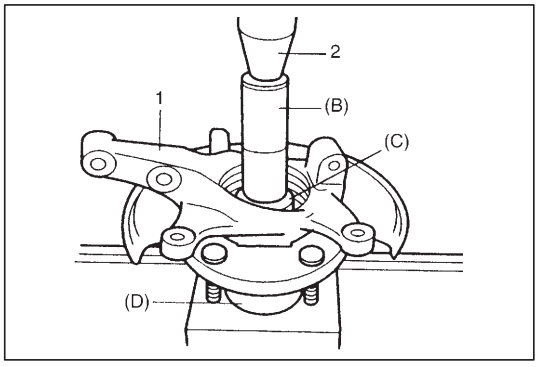


2) Insert new stud bolt (1) in hub hole. Rotate stud slowly to assure serrations are aligned with those made by original bolt.



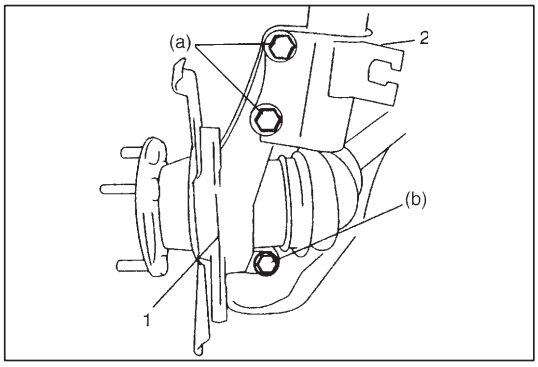
3) Using special tool, install snap ring (1) to knuckle (2).

Special Tool
09900-06108



4) Install wheel hub to knuckle (1) with special tool and hydraulic press (2).

Special Tool
(B): 09924-84510
(C): 09913-75821
(D): 09951-18210

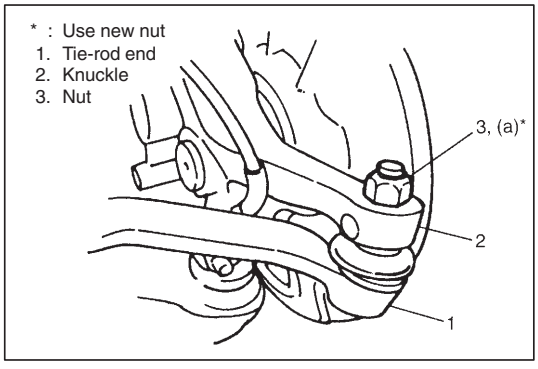


5) Install knuckle (1) to knuckle (2) and tighten strut bracket bolts to specification.

Tightening Torque
(a): 95 N·m (9.5 kg-m, 69.0 lb-ft)

6) Insert ball stud to knuckle (1) and tighten ball stud bolt.

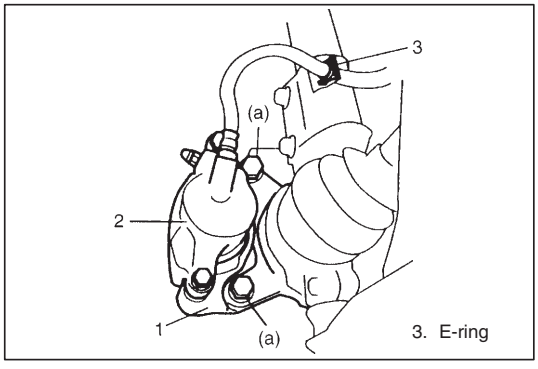
Tightening Torque
(b): 55 N·m (5.5 kg-m, 40.0 lb-ft)



7) Connect tie-rod end to knuckle and tighten new tie-rod end nut to specified torque.

Tightening Torque
(a): 43 N·m (4.3 kg-m, 31.5 lb-ft)

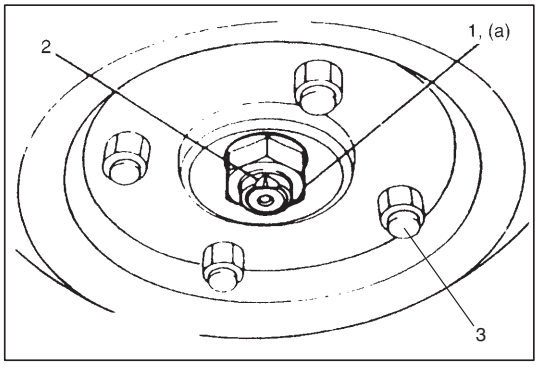
CAUTION:
Removed tie-rod end nut must be replaced with new one.



8) Install brake caliper carrier (1) with caliper (2) and tighten bolts to specification.

Tightening Torque
(a): 85 N·m (8.5 kg-m, 61.5 lb-ft)

9) Install wheel speed sensor for ABS (if equipped).

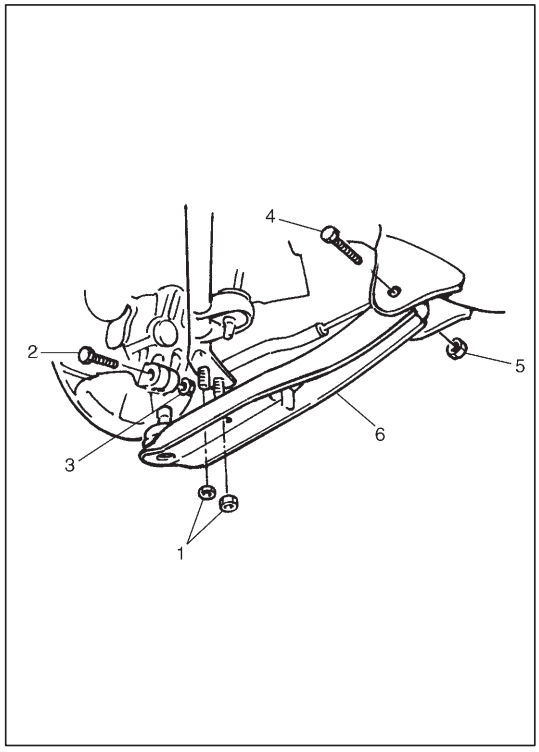


10) Install wheel.

Tightening Torque for wheel nut (3):
85 N·m (8.5 kg-m, 61.5 lb-ft)

11) Tighten drive shaft nut (1) and caulk it (2).

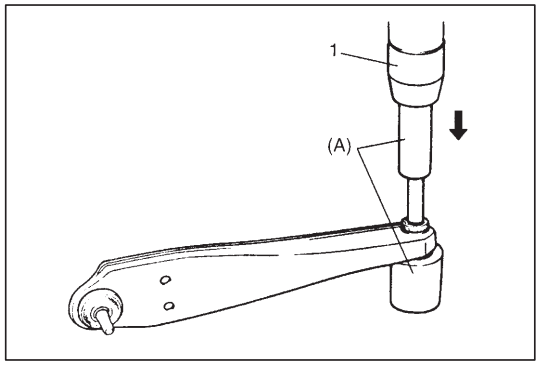
Tightening Torque
(a): 175 N·m (17.5 kg-m, 126.5 lb-ft)



SUSPENSION CONTROL ARM/BUSHING

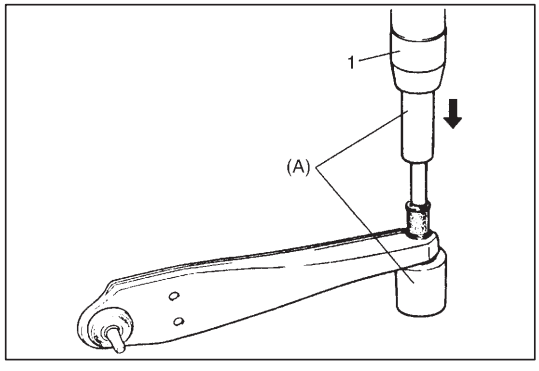
REMOVAL

1) Hoist vehicle and remove wheel.
2) Remove compression rod stud nuts (1) from suspension control arm.
3) Remove ball stud bolt (2) and nut (3).
4) Remove suspension control arm bolt (4) and nut (5).
5) Remove suspension control arm (6).



6) Remove bushing.
   Pull out bushing with special tool and hydraulic press (1) as shown.

   Special Tool
   (A): 09943-77910

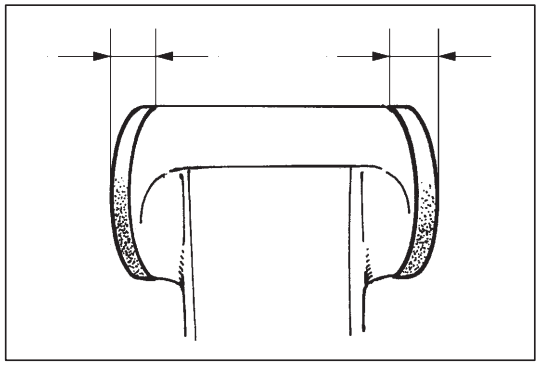


INSTALLATION

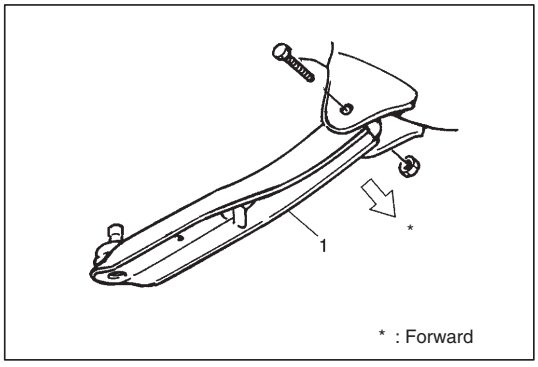
1) Install bushing.

   Special Tool
   (A): 09943-77910

   NOTE:
   - **Before installing bushing, apply soap water on its circumference to facilitate installation.**

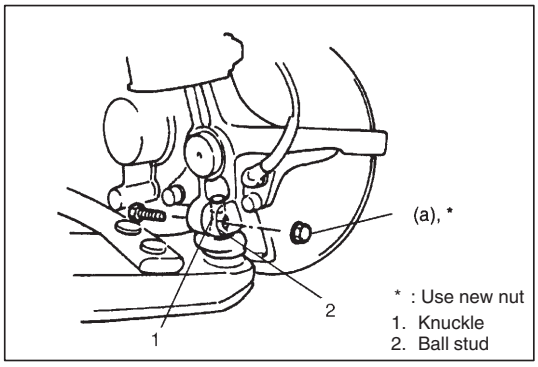


- **When installed, bush should be equal on the right and left of arm as shown.**



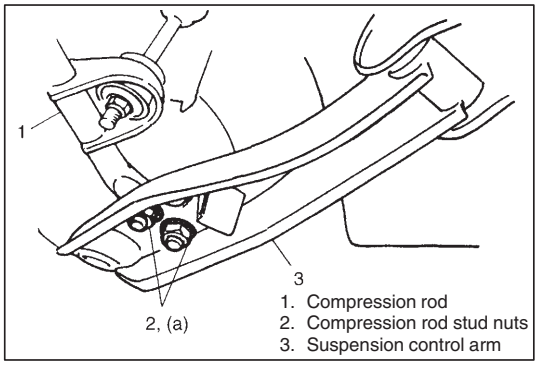
2) Install suspension control arm (1) to suspension frame, referring to left figure for proper installing direction of bolt and nut.

NOTE:
Nut should not be tightened.



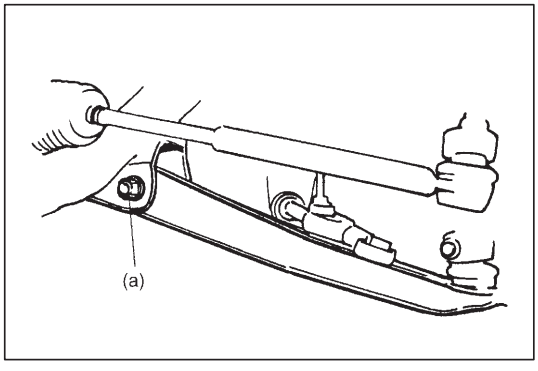
3) Install ball stud (1) to knuckle (2). Align ball stud groove with knuckle bolt hole as shown.
Then drive in ball stud bolt from the direction as shown.
Tighten new ball stud nut to specified torque.

Tightening Torque
(a): 55 N·m (5.5 kg-m, 40.0 lb-ft)



4) Tighten compression rod stud nuts (2) to specified torque.

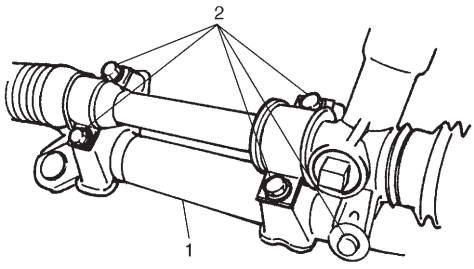
Tightening Torque
(a): 95 N·m (9.5 kg-m, 69.0 lb-ft)



5) Install wheel and tighten wheel nuts to specified torque as previously described.
6) Lower hoist and with in non-loaded condition, tighten suspension control arm nut to specified torque.

Tightening Torque
(a): 68 N·m (6.8 kg-m, 49.5 lb-ft)

7) Check toe setting, adjust as required.

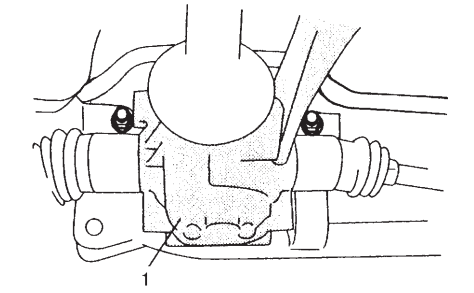


1. Suspension frame
2. Steering gear case mount bolts

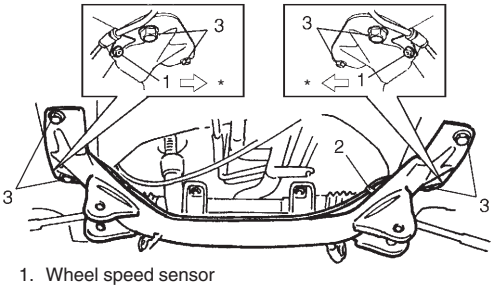
SUSPENSION FRAME

REMOVAL

1) Hoist vehicle and remove wheels.
2) Remove suspension control arms (right & left), refer to Steps 2) to 5) of SUSPENSION CONTROL ARM REMOVAL in this section.
3) Remove steering gear case mount bolts.



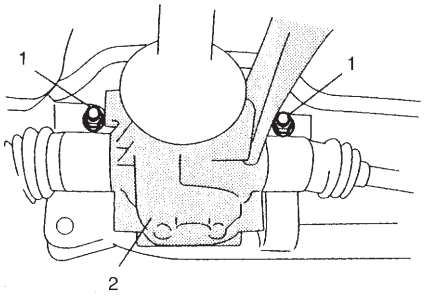
4) Remove front differential (1) with its mountings.
   Refer to SECTION 7E for dismounting front differential.

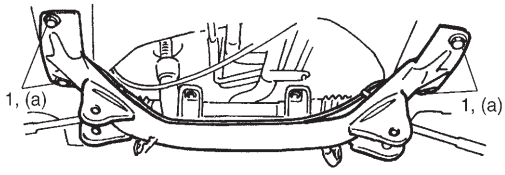


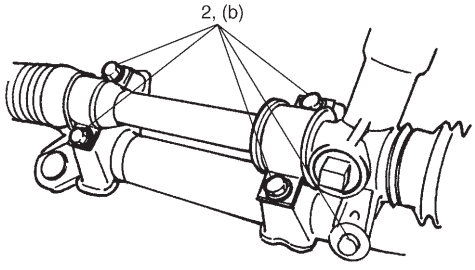
1. Wheel speed sensor harness clamp bolt
2. Wheel speed sensor harness clamp
3. Suspension frame bolts

* : Wheel side

5) Remove wheel speed sensor harness clamp bolts and clamps from suspension frame (if equipped with ABS).
6) Remove suspension frame bolts and suspension frame.







1. Suspension frame bolts
2. Steering gear case bolts

INSTALLATION

1) Install suspension frame and tighten suspension frame bolts to specified torque.

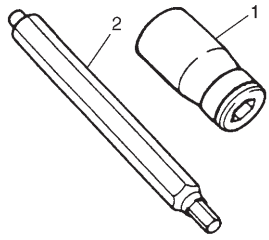
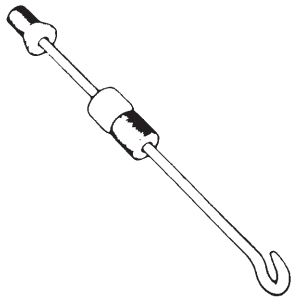
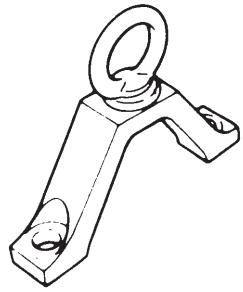
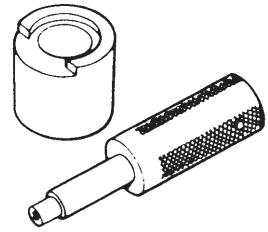
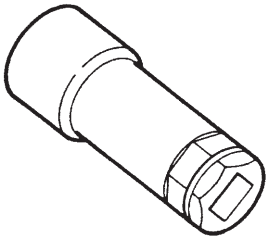
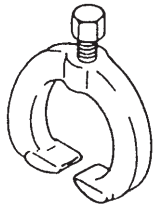
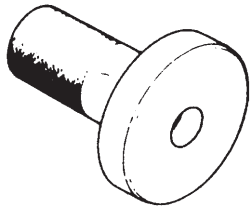
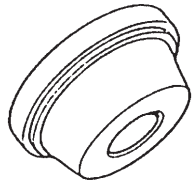
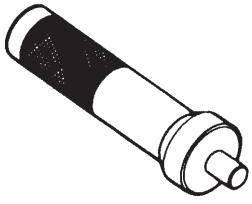
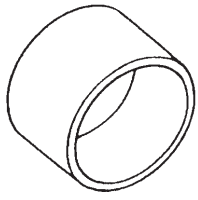
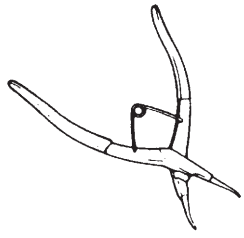
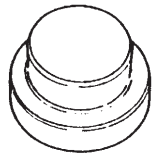
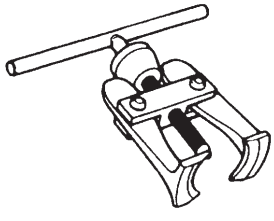
   Tightening Torque
   (a): 95 N·m (9.5 kg-m, 69.0 lb-ft)

2) Install wheel speed sensor harness clamp bolts and clamps to suspension frame (if equipped with ABS).
3) Install front differential referring to SECTION 7E.
4) Install steering gear case mount bolts and tighten bolts to specified torque.

   Tightening Torque
   (b): 25 N·m (2.5 kg-m, 18.0 lb-ft)

5) Install suspension control arms (right & left), refer to Steps 2) to 6) of SUSPENSION CONTROL ARM INSTALLATION in this section.
6) Confirm front end (wheel) alignment, refer to SECTION 3A.

SPECIAL TOOLS

 1. 09900-00411 Hexagon wrench socket 2. 09900-00414 Hexagon wrench bit 6 mm	 09942-15511 Sliding hammer	 09943-17912 Front wheel hub remover (Brake drum remover)	 09943-77910 Front suspension lower arm bush remover
 09945-26010 Socket wrench 17 mm	 09913-65210 Tie-rod end remover	 09913-75520 Bearing installer	 09924-84510 Bearing installer
 09913-75821 Bearing installer attachment	 09951-18210 Bearing installer	 09900-06108 Snap ring plier	 09925-88210 Bearing puller attachment
 09913-61110 Bearing puller			

SECTION 4A

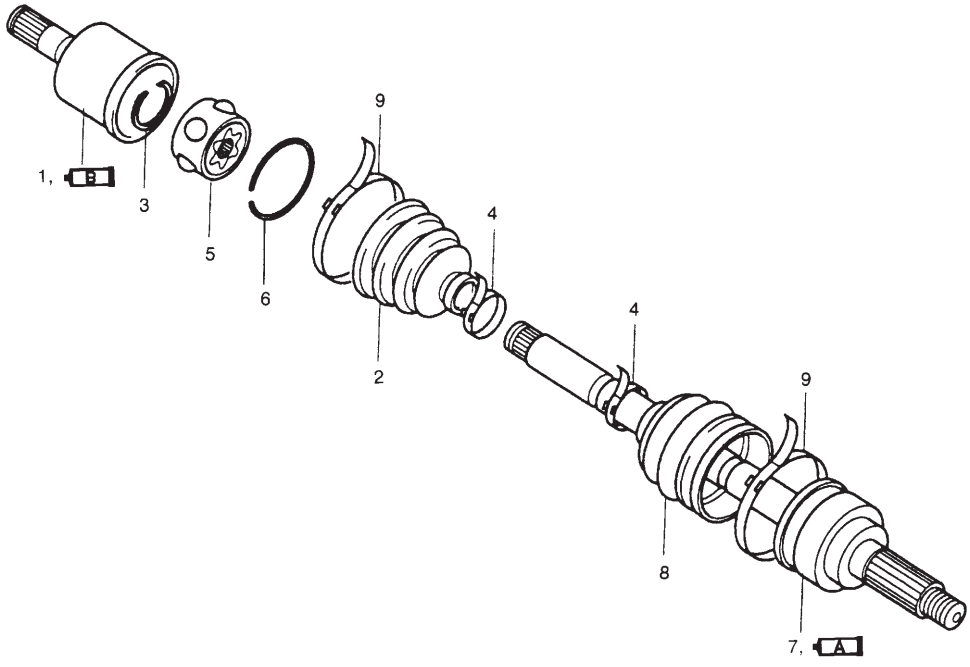
FRONT DRIVE SHAFT

CONTENTS

GENERAL DESCRIPTION

COMPONENT

A constant velocity ball joint is used on the wheel side of front drive shaft and a constant velocity double offset joint (DOJ) on the differential side. The drive shaft can slide through the double offset joint in the extension/contraction direction.

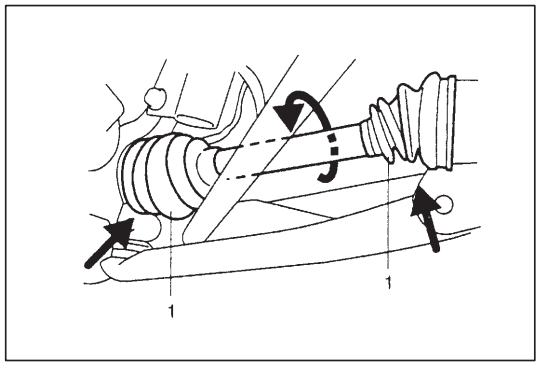


B 1. Differential side joint:
Black grease
(No label tube in spare part) 60 – 80g
2. Boot
3. Snap ring
4. Band
5. Cage
6. Circlip
A 7. Wheel side joint:
Yellow grease
(NTG2218 label tube in spare part) 60 – 80g
8. Boot
9. Band

DIAGNOSIS

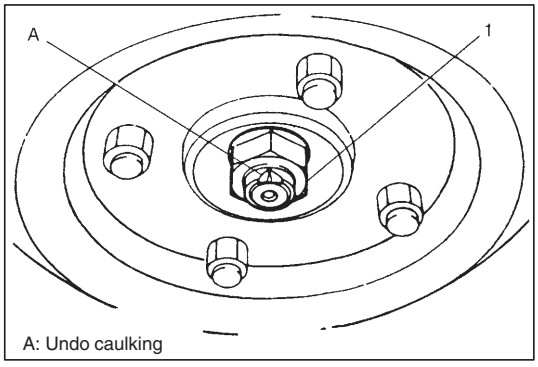
DIAGNOSIS TABLE

Condition	Possible Cause	Correction
Abnormal Noise	Worn or breakage drive shaft joint	Replace.



DRIVE SHAFT BOOT CHECK

Inspect drive shaft boot (1) for tear.
If even a small tear is noted, replace with new one.



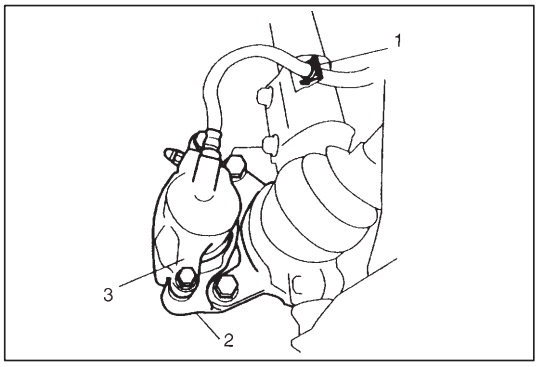
A: Undo caulking

ON-VEHICLE SERVICE

DRIVE SHAFT ASSEMBLY

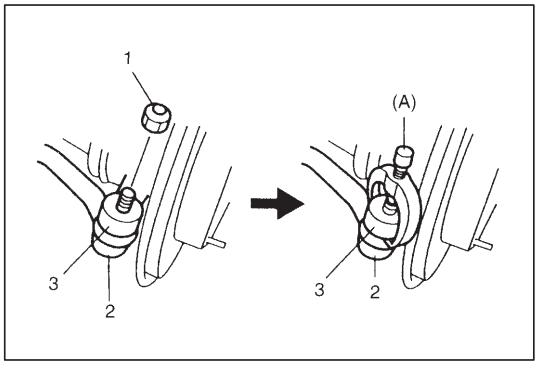
REMOVAL

1) Undo caulking and remove drive shaft nut (1) and washer.
2) Hoist vehicle and remove wheel.
3) Drain front differential oil.



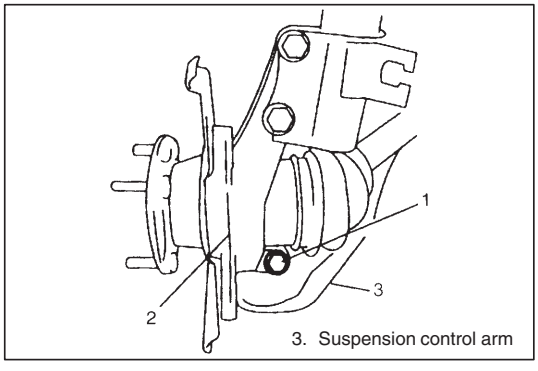
4) Remove E-ring (1).
5) Remove brake caliper carrier (2), with caliper (3).

NOTE:
Hang removed caliper with a wire hook or the like so as to prevent brake hose from bending and twisting excessively or being pulled.
Don't operate brake pedal with pads removed.



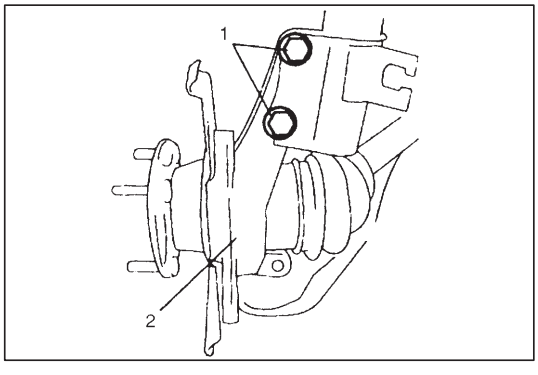
6) Remove tie-rod end nut (1).
7) Disconnect tie-rod end (2) from steering knuckle (3) using special tool.

Special Tool
(A): 09913-65210

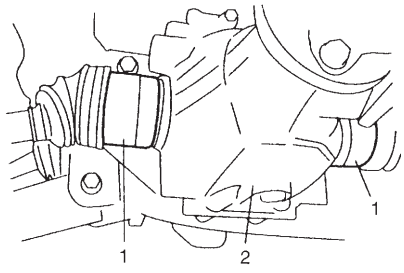


3. Suspension control arm

8) Remove arm joint bolt (1) and disconnect suspension control arm ball stud from steering knuckle (2).



9) Remove strut bracket bolts (1).
10) Remove steering knuckle (2).



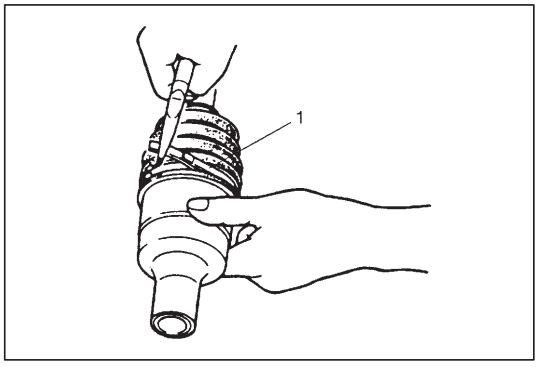
2. Front differential

11) Using large size lever, pull out drive shaft joint (1) so as to release snap ring fitting of joint spline at differential side.

NOTE:
Be careful not to damage differential oil seal.

12) Remove drive shaft assembly.

CAUTION:
To prevent breakage of boots, be careful not to bring them into contact with other parts, when removing drive shaft assembly.



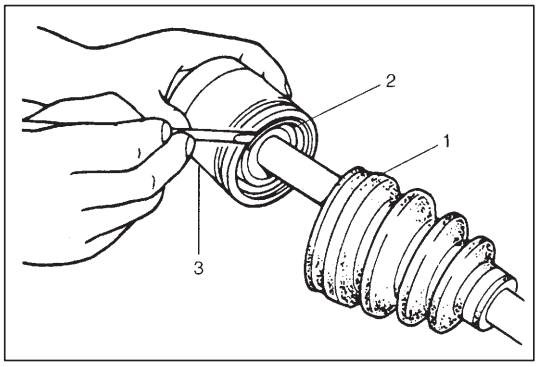
DISASSEMBLY

NOTE:

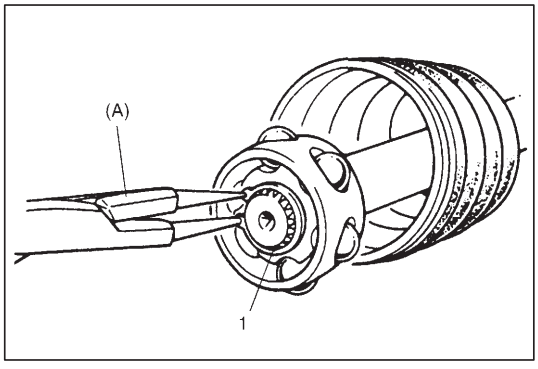
Do not disassemble wheel side joint (outboard joint). If any malcondition is found in any joint, replace it as assembly.

For DOJ type drive shaft (Differential side)

1) Remove boot band (1) of differential side joint.

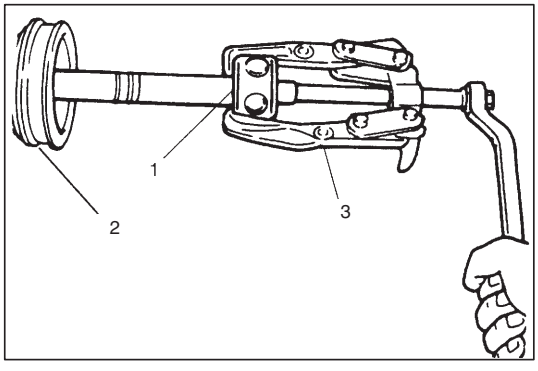


2) Slide boot (1) toward the center of shaft and remove snap ring (2) from outer race, then take shaft out of outer race (3).



3) Wipe off grease and remove circlip (1) used to fix cage by using special tool (A).

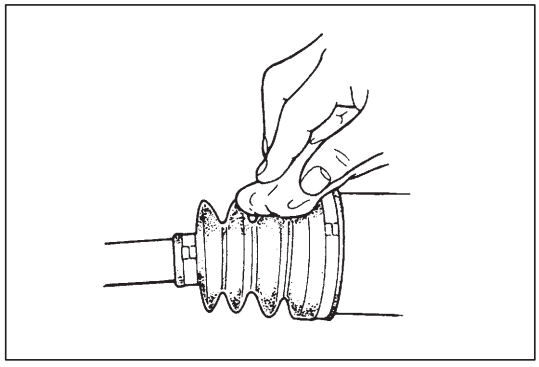
Special Tool
(A): 09900-06107



4) Remove draw away cage (1), and remove boot (2) from shaft. If cage is hard to remove, use puller (3).

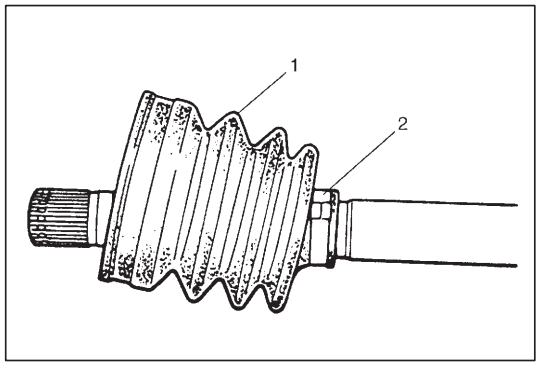
INSPECTION

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

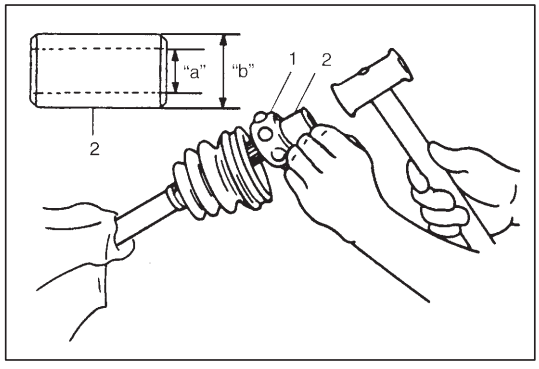


ASSEMBLY

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



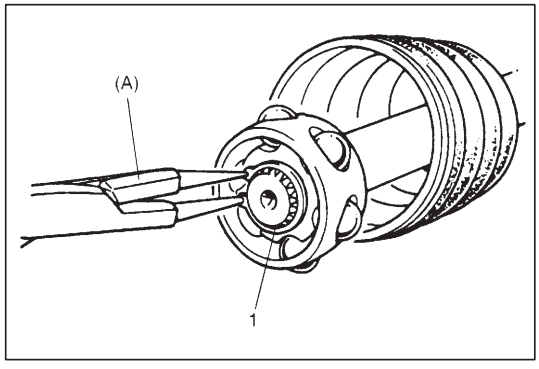
3) Apply grease to wheel side joint. Use yellow grease in tube included in wheel side boot set.
4) Install wheel side boot (1) on shaft, fill up boot inside with grease and then fasten boot (2) with band.



5) Drive in the cage (1) by using a pipe (2) whose inner diameter is 23 mm (0.906 in.) or more and outer diameter is 32 mm (1.260 in.) or less.

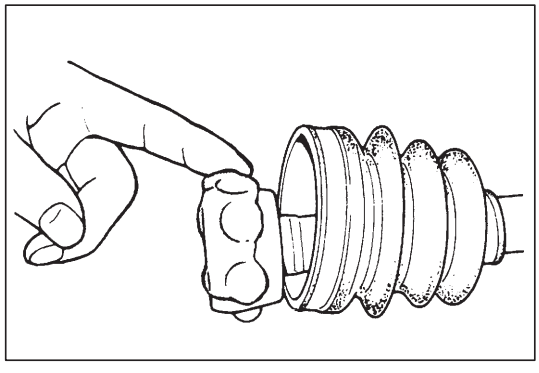
   Diameter "a": 22.5 mm (0.886 in.) or more
   Diameter "b": 30.0 mm (1.181 in.) or less

> **CAUTION:**
> **Install cage directing smaller outside diameter side to wheel side.**

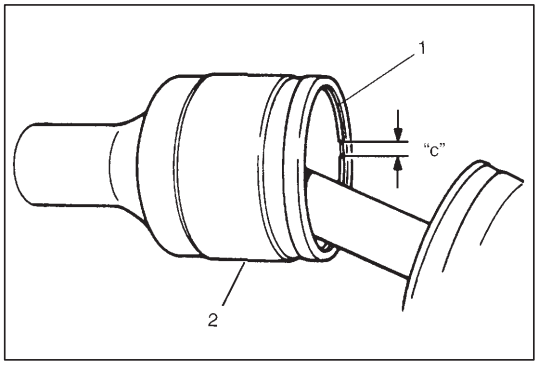


6) Install circlip (1) by using special tool (A).

   Special Tool
   (A): 09900-06107

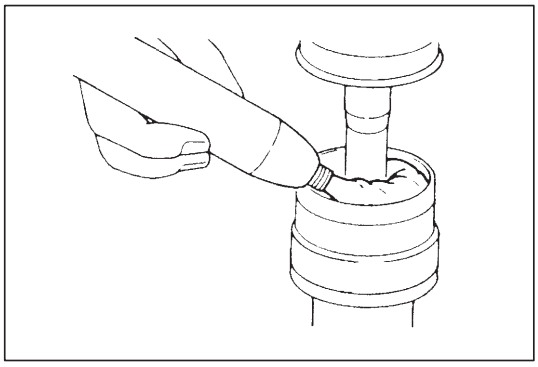


7) Apply grease to entire surface of cage.
   Use black grease in tube included in spare parts.



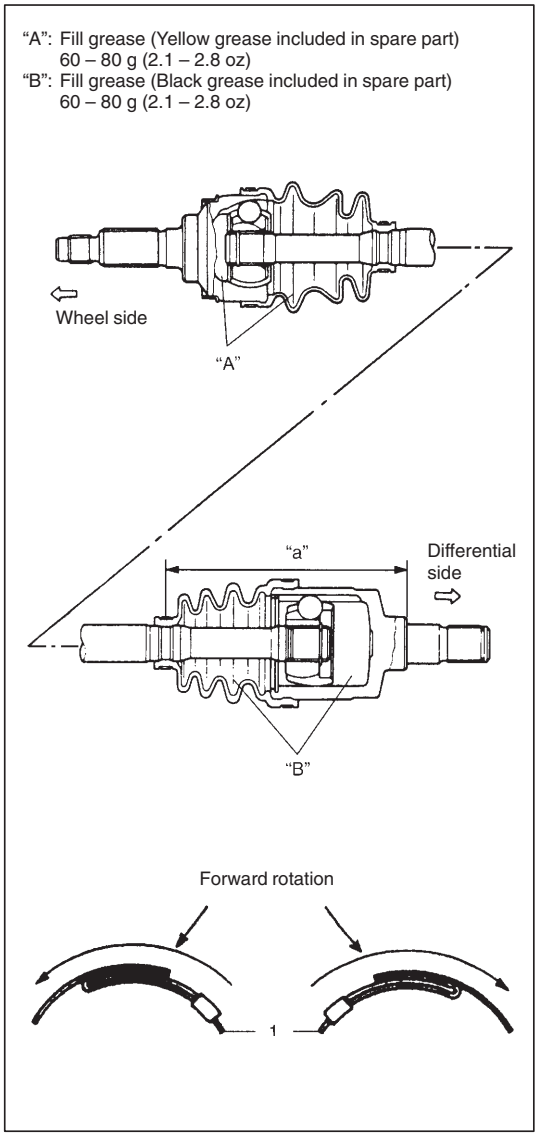
8) Apply grease to inside of outer race.
9) Insert cage into outer race and fit snap ring (1) into groove of outer race (2).

CAUTION:
Position opening of snap ring "c" so that it will not be lined up with a ball.



10) Fill up inside of outer race with grease again and fit boot to outer race.
After fitting boot, insert screwdriver into boot on outer race side and allow air to enter boot so that air pressure in boot becomes the same as atmospheric pressure.

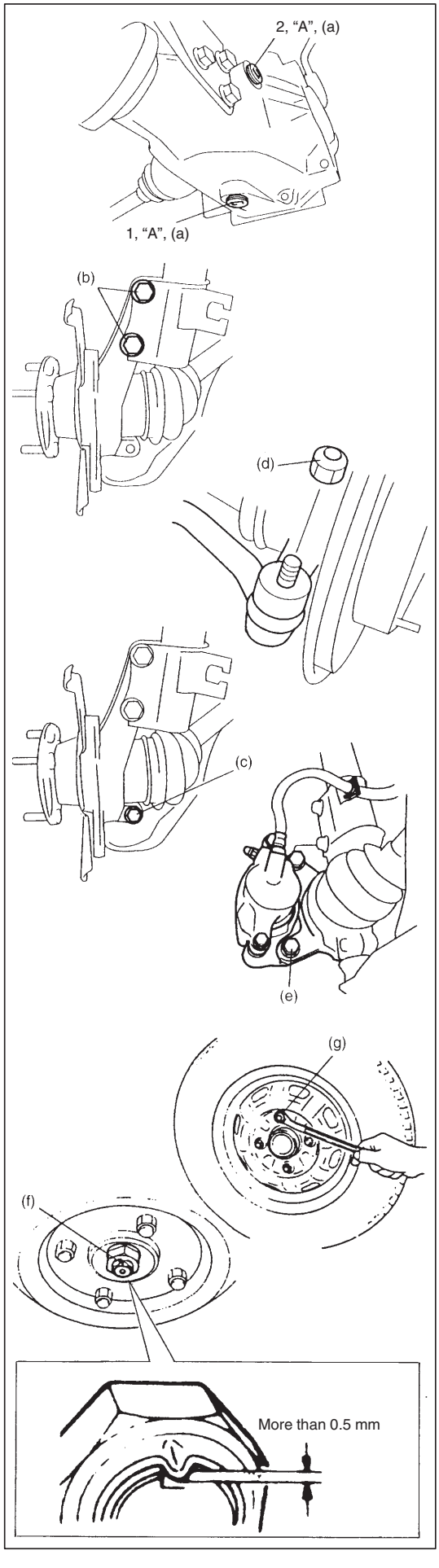
"A": Fill grease (Yellow grease included in spare part)
60 – 80 g (2.1 – 2.8 oz)
"B": Fill grease (Black grease included in spare part)
60 – 80 g (2.1 – 2.8 oz)



11) When fixing boot band, note the direction of band and adjust the boot position so that measurements "d" become as specified.

Length "a": 140.8 – 150.8 mm (5.53 – 5.93 in.)

CAUTION:
- **To prevent any problem caused by washing solution, do not wash joint boots. Degreasing of those parts with cloth is allowed.**
- **To ensure full performance of joint as designed, be sure to distinguish between two types of grease in repair set and apply specified volume to respective joint, i.e. yellow grease to wheel side joint and black one to DOJ.**
- **Bend each boot band against forward rotation.**
- **Do not squeeze or distort boot when fastening it with bands.**
  Such distorted boot may reduce its durability.



INSTALLATION

CAUTION:
- **To avoid excessive expansion of boot and consequential disconnection of joint in boot, do not pull differential side joint housing.**
- **Protect oil seals and boots from any damage, preventing them from unnecessary contact while installing drive shaft.**
- **Do not hit joint boot with hammer. Inserting joint only by hands is allowed.**
- **Make sure that differential side joint is inserted fully and its snap ring is seated as it was.**

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

- Clean front wheel bearing oil seal and then apply grease. Replace it if required.

  Grease: 99000-25010

- Tighten each bolt and nut to the specified torque.

  Tightening Torque
  (a): 23 N·m (2.3 kg-m, 16.5 lb-ft)
  (b): 90 N·m (9.0 kg-m, 65.0 lb-ft)
  (c): 60 N·m (6.0 kg-m, 43.5 lb-ft)
  (d): 43 N·m (4.3 kg-m, 31.5 lb-ft)
  (e): 85 N·m (8.5 kg-m, 61.5 lb-ft)
  (f): 175 N·m (17.5 kg-m, 127.0 lb-ft)
  (g): 85 N·m (8.5 kg-m, 61.5 lb-ft)

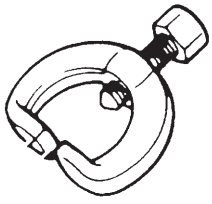
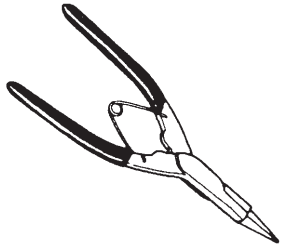
- Apply sealant to drain plug (1) and level/filler plug (2) for front differential and front differential with oil as specified. (Refer to SECTION 7E.)

  "A": Sealant 99000-31110

REQUIRED SERVICE MATERIALS

MATERIALS	RECOMMENDED SUZUKI PRODUCT	USE
Lithium grease	SUZUKI SUPER GREASE A (99000-25010)	Oil seal lips
Sealant	SUZUKI BOND NO. 1215 (99000-31110)	Oil drain and filler plug for manual transmission

SPECIAL TOOLS

	
09913-65210 Tie-rod end remover	09900-06107 Snap ring pliers (Open type)

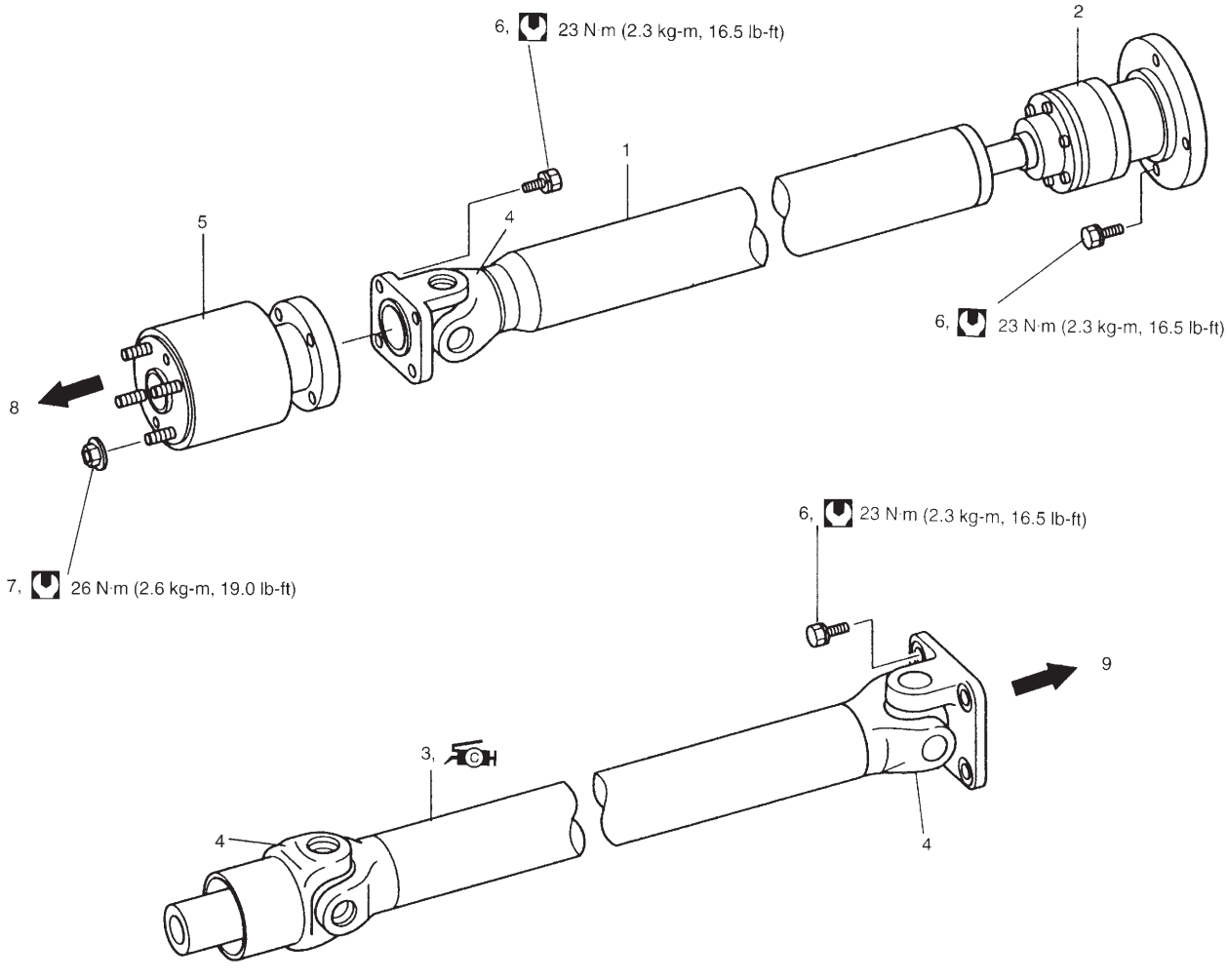
SECTION 4B1

PROPELLER SHAFT (4WD)

CONTENTS

GENERAL DESCRIPTION

The front propeller shaft has a constant velocity joint at its rear end and a universal joint at the other end.
The rear propeller shaft is a three-part combination consisting of a shaft and two universal joints. It is connected to the differential pinion through flanged connection and to the transmission output (main) shaft through a sliding spline joint.
The AXC (axial plunger pump coupling) is equipped at the end of the front propeller shaft for vehicles with externally mounted AXC (if equipped). The AXC acts to automatically distribute the optimum drive force to the front and rear wheels while driving.



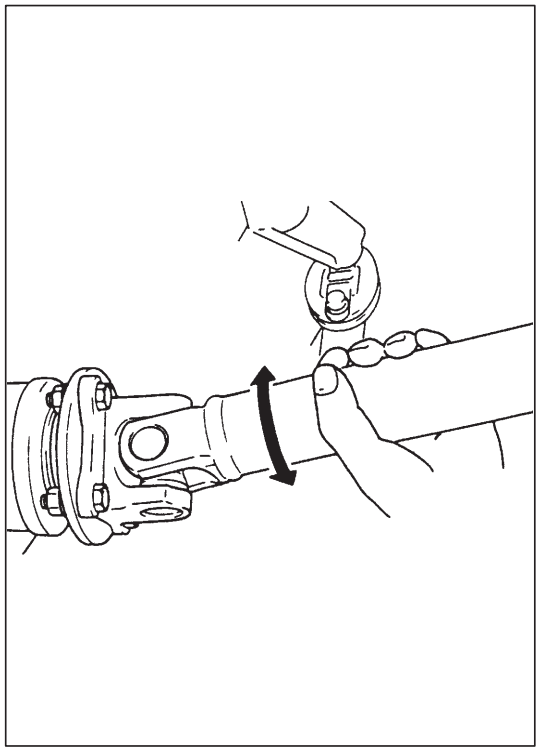
1. Front propeller shaft
2. Constant velocity joint
3. Rear propeller shaft:
   Apply grease (99000-25030)
   to spline part of propeller shaft.
4. Universal joint
5. AXC (axial plunger pump coupling)
   (if equipped)
6. Bolt
7. Nut
8. To front differential
9. To rear differential

: Tightening Torque

DIAGNOSIS

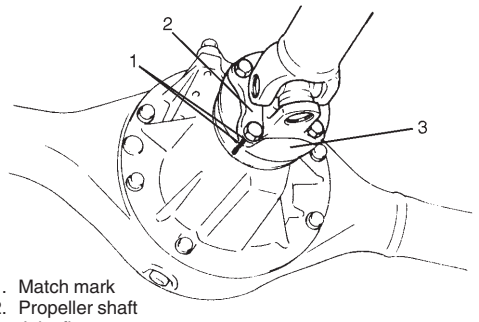
DIAGNOSIS TABLE

Condition	Possible Cause	Correction
Abnormal noise	● Loosen universal joint bolt. ● Spider bearing worn out or stuck. ● Worn spider.	Tighten universal joint bolt. Replace propeller shaft. Replace propeller shaft.
Vibration	● Deformed propeller shaft.	Replace propeller shaft.



PROPELLER SHAFT JOINT CHECK

If universal joints or constant velocity joint are suspected of producing chattering or rattling noise, inspect them for wear or breakage of boot. Check to see if cross spider rattles in yokes or if splines are worn down and replace propeller shaft with new one.
Noise coming from universal joint can be easily distinguished from other noises because rhythm of chattering or rattling is in step with cruising speed. Noise is pronounced particularly on standing start or in coasting condition (when braking effect of engine is showing in the drive line).



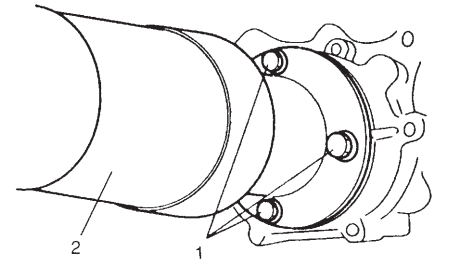
1. Match mark
2. Propeller shaft
3. Joint flange

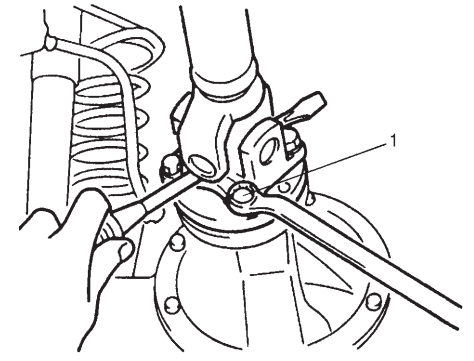
ON-VEHICLE SERVICE

PROPELLER SHAFT

REMOVAL

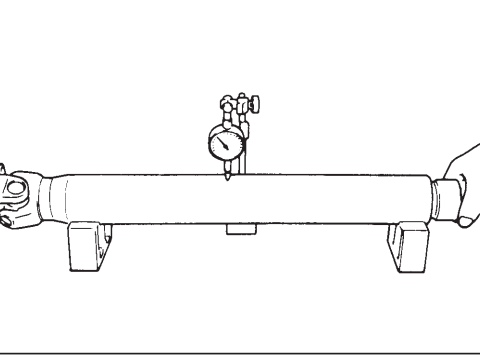
1) Hoist vehicle.
2) Drain transmission oil.
3) Before removing propeller shafts, give match marks (1) on each joint flange and propeller shaft as shown.





2. AXC (if equipped)

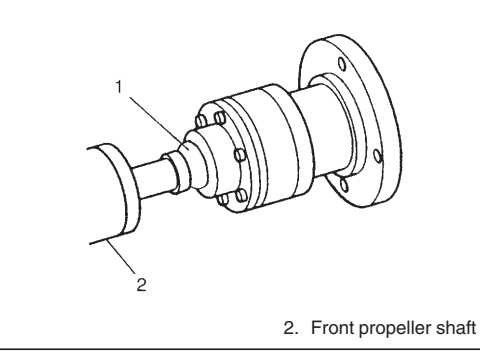
4) Loosen propeller shaft bolts (1).
5) Remove propeller shafts.



INSPECTION

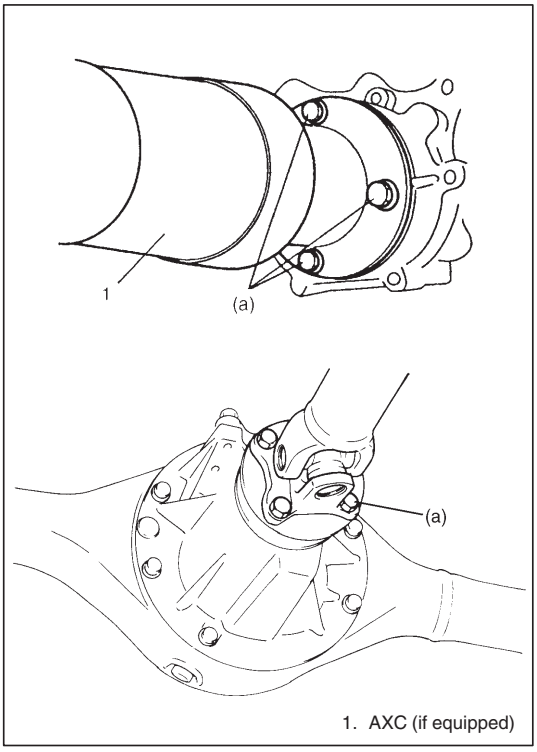
Inspect propeller shaft and flange yoke for damage, and propeller shaft for runout.
If damage is found or shaft runout exceeds its limit, replace.

Runout limit: 0.7 mm (0.028 in.)



2. Front propeller shaft

- Inspect constant velocity joint boot (1) for tear.
  If found, replace front propeller shaft.



1. AXC (if equipped)

INSTALLATION

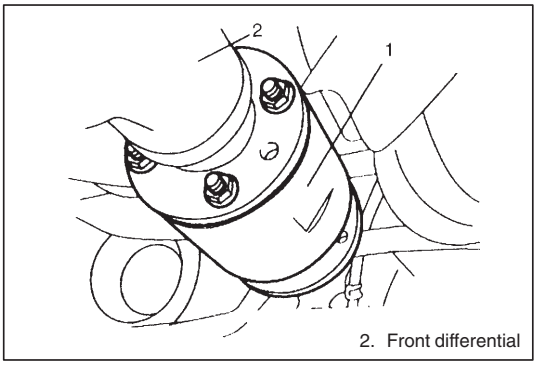
Install propeller shaft reversing removal procedure noting following points:

- When installing propeller shaft, align the match marks. Otherwise, vibration may occur during driving.
- Use following specification to torque each joint flange.

Tightening Torque
(a): 23 N·m (2.3 kg-m, 16.6 lb-ft)

- Apply grease to spline part of propeller shaft and transmission output shaft.

NOTE:
If transmission oil was drained for propeller shaft removal, pour specified gear oil into transmission case to specified level.

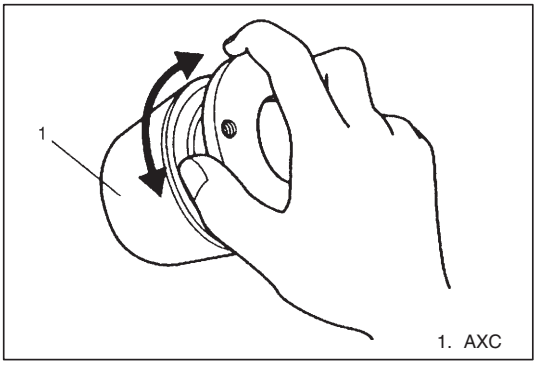


2. Front differential

AXC (Axial Plunger Pump Coupling) (if equipped)

REMOVAL

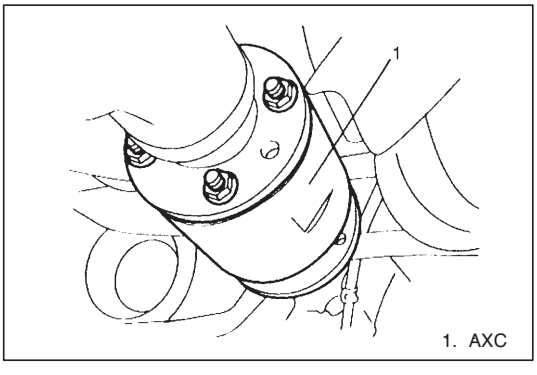
1) Hoist vehicle.
2) Before removing AXC, give match marks on each joint flange.
3) Remove AXC (1) by removing bolts and nuts fastening AXC.



1. AXC

INSPECTION

Check AXC for rotation.
AXC can be rotated by hand but it is heavy.
If it can be rotated lightly by hand, or can not be rotated, replace AXC.



1. AXC

INSTALLATION

Reverse removal procedure for installation.

Tightening Torque for AXC Bolts and Nuts
Bolts: 23 N·m (2.3 kg-m, 16.5 lb-ft)
Nuts: 26 N·m (2.6 kg-m, 19.0 lb-ft)

REQUIRED SERVICE MATERIAL

MATERIAL	RECOMMENDED SUZUKI PRODUCT	USE
Lithium grease	SUPER GREASE C (99000-25030)	To apply to spline part of propeller shaft.

SECTION 7A1

MANUAL TRANSMISSION (4WD)

CONTENTS

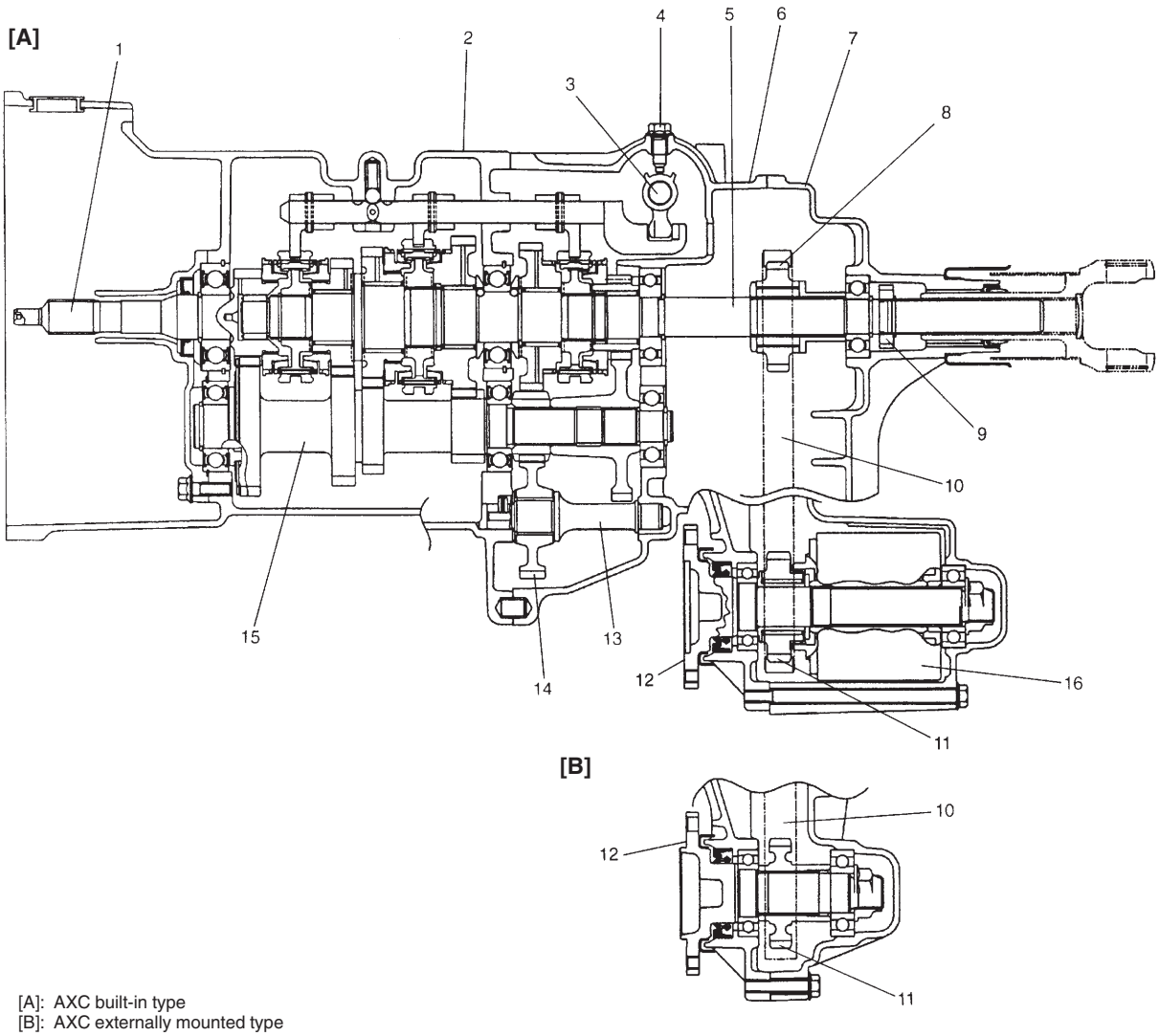
NOTE:
For the descriptions (items) not found in this section, refer to SECTION 7A of GA413 SERVICE MANUAL described in FOREWORD of this manual.

GENERAL DESCRIPTION

There are two types of the manual transmission for full-time 4WD vehicles depending on the mounting location of the AXC (Axial Plunger Pump Coupling). One type is a built-in type which the AXC is built in transfer case, and the other type is an external type which the AXC is installed between the front differential and the front propeller shaft. The AXC acts to automatically distribute the optimum drive force to the front and rear wheels while driving. In addition, the built-in type AXC has two particular functions. The auto lock-up mechanism activates to automatically render both the front and rear wheels in a rigid condition when a specified transfer torque is achieved. The automatic torque variable mechanism automatically switches the torque to be generated among two different steps in response to changes in vehicle speed.

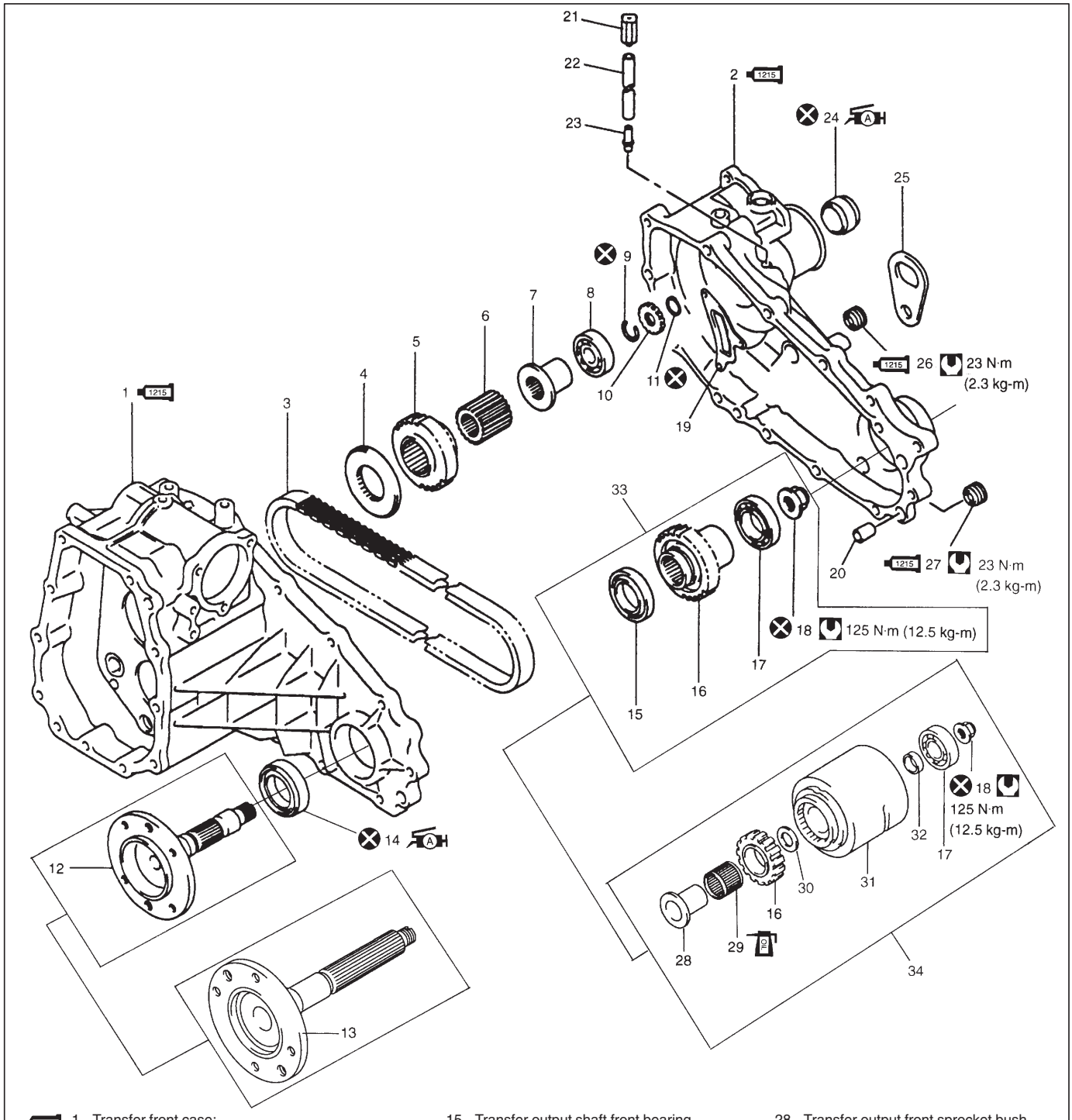
PRECAUTION FOR TOWING FULL-TIME 4WD VEHICLE

When towing full-time 4WD vehicle, be sure to use the method described in SECTION 0A1.



[A]: AXC built-in type
[B]: AXC externally mounted type

1. Input shaft
2. Transmission case
3. Gear shift & select shaft assembly
4. Gear shift guide bolt
5. Main shaft
6. Transfer front case
7. Transfer rear case
8. Front drive sprocket
9. Speedometer sensor rotor
10. Front drive chain
11. Transfer output front sprocket
12. Transfer output front shaft
13. Reverse gear shaft
14. Reverse idler gear
15. Countershaft
16. AXC (Axial Plunger Pump Coupling)



1215 1. Transfer front case:
Apply sealant 99000-31110 to mating surface of front case.

1215 2. Transfer rear case:
Apply sealant 99000-31110 to mating surface of rear case.

3. Front drive chain
4. Transfer sprocket washer
5. Front drive sprocket
6. Transfer sprocket bush
7. Transfer sprocket spacer
8. Transfer output rear bearing
9. Circlip
10. Speedometer sensor rotor
11. Circlip
12. Transfer output front shaft (AXC extermally mounted type)
13. Transfer output front shaft (AXC built-in type)

A 14. Transfer front case oil seal:
Apply SUZUKI SUPER GREASE A 99000-25010 to mating surface of oil seal lip.

15. Transfer output shaft front bearing
16. Transfer output front sprocket
17. Transfer output shaft rear bearing

18. Transfer output front shaft nut:
After tightening to specified torque, caulk nut securely.

19. Transfer rear case oil plate
20. Knock pin
21. Breather plug
22. Breather hose
23. Breather union

A 24. Transfer rear case oil seal:
Apply SUZUKI SUPER GREASE A 99000-25010 to mating surface of oil seal lip.

25. Engine hook

1215 26. Oil filler plug:
Apply sealant 99000-31110 to thread of filler plug.

1215 27. Oil drain plug:
Apply sealant 99000-31110 to thread of drain plug.

28. Transfer output front sprocket bush
29. Transfer front sprocket needle bearing
30. Transfer output front sprocket washer
31. AXC (Axial Plunger Pump Coupling)
32. Transfer output front shaft spacer
33. AXC externally mounted type
34. AXC built-in type

: Tightening Torque
: Do not reuse
LO : Apply transmission oil

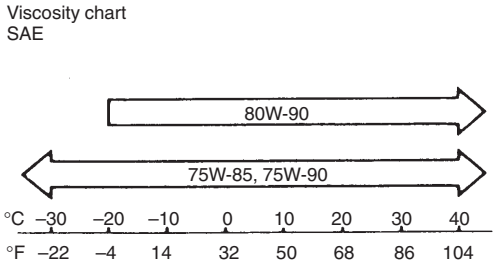
ON-VEHICLE SERVICE

MAINTENANCE SERVICE

OIL CHANGE

The transfer oil is used as manual transmission oil as well.

1) Before changing or inspecting oil, be sure to stop engine and lift vehicle horizontally.
2) With vehicle lifted up, check oil level and leakage. If leakage exists, correct or repair it.



3) Remove 2 drain plugs (1) drain old oil. Then torque drain plug as specified below after applying sealant to their thread.

"A": Sealant 99000-31110

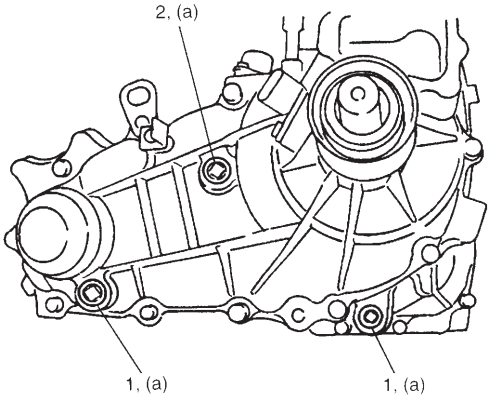
Tightening Torque
(a): 23 N·m (2.3 kg-m, 17.0 lb-ft)

4) Fill new specified oil as shown below by specified amount (roughly up to level hole).

NOTE:
- **It is highly recommended to use SAE 75W-90 gear oil.**
- **Whenever vehicle is hoisted for any service work other than oil change, also be sure to check for oil leakage.**
- **If water or rust is mixed in drained oil, be sure to check breather of transmission.**

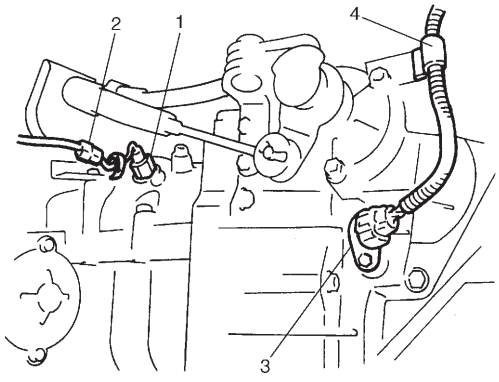
Gear Oil Specification
Oil grade: API GL-4
Viscosity: SAE 75W-85, 75W-90 or 80W-90

Oil Capacity:
AXC externally mounted type transmission:
3.5 liters (7.40/6.16 US/Imp. pt)
AXC built-in type transmission:
3.7 liters (7.90/6.51 US/Imp. pt)



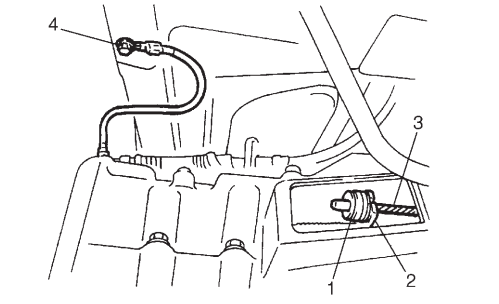
5) Torque level/filler plug (2) in the same manner as drain plug.

DISMOUNTING



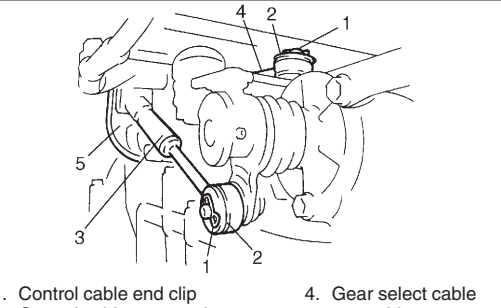
1. Back-up light switch
2. Back-up light switch coupler
3. Speed sensor
4. Clamp

1) Disconnect negative (–) cable from battery terminals and hoist vehicle.
2) Disconnect back-up light switch lead wire at coupler.
3) Disconnect Black/Yellow lead wire and positive (+) cord from starting motor. Remove starting motor from transmission case.
4) Disconnect coupler from speed sensor and free its harness from transmissions.
5) Remove drain plugs to drain oil in transmission.



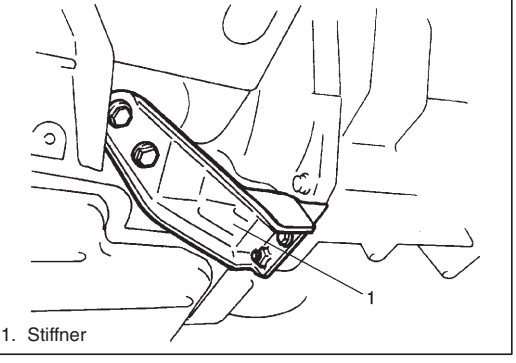
1. Clutch cable end
2. Clutch release fork
3. Clutch cable
4. Ground cable bolt

6) Remove transmission upper case cap and take off clutch cable end from clutch release fork. Disconnect clutch cable assembly from transmission.
7) Remove body ground cable bolt.



1. Control cable end clip
2. Control cable rear washer
3. Gear shift control cable assembly
4. Gear select cable assembly
5. Control cable bracket

8) Remove control cable end clips and washers, and then disconnect gear shift cable and select cable from each lever.
9) Remove gear shift and select control cables from bracket.



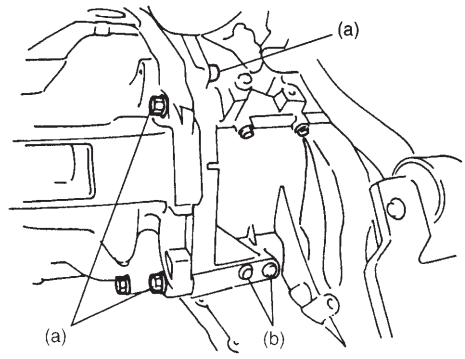
1. Stiffner

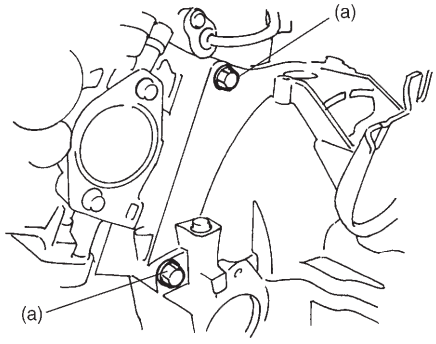
10) Remove front and rear propeller shafts referring to “PROPELLER SHAFTS” section.
11) With transmission supported on jack, remove stiffner.

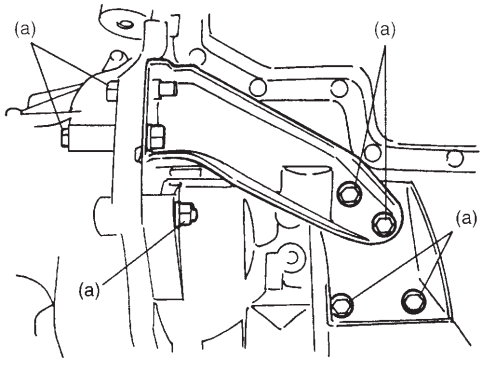
12) Remove bolts and nuts fastening engine cylinder block and transmission case.

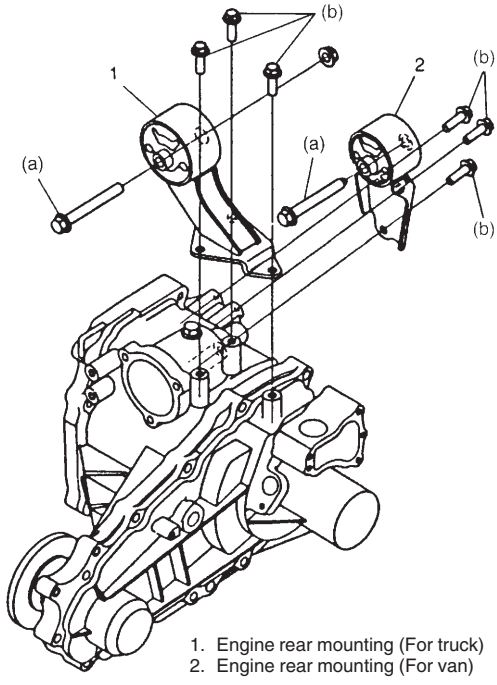
NOTE:
Before starting to remove transmission, check around once again to be sure that there is no connection left undone.

13) Remove transmission rear mounting bolt & nut from chassis.
14) Separate transmission from engine and remove clutch housing upper and lower plates.
15) Take down transmission.









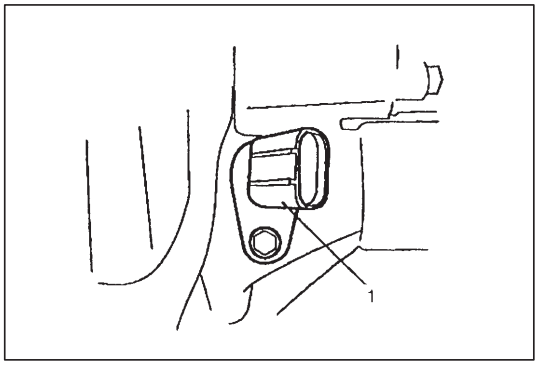
1. Engine rear mounting (For truck)
2. Engine rear mounting (For van)

REMOUNTING

For remounting, reverse dismounting procedure.
Use specified torques as given below.

Tightening Torque
(a): 55 N·m (5.5 kg-m, 40.0 lb-ft)
(b): 25 N·m (2.5 kg-m, 18.0 lb-ft)

NOTE:
- **To facilitate remounting, install rear mounting to transmission after inserting input shaft into clutch disc.**
- **For tightening torque of starting motor bolts, refer to Section 6G.**
- **Refill specified amount of gear oil as previously outlined.**
- **After connecting clutch cable, be sure to adjust its play properly (refer to "CLUTCH" section).**
- **Press-fit engine rear mounting bush to bracket as shown in figure, if removed.**
- **Install propeller shafts referring to "PROPELLER SHAFT" section.**

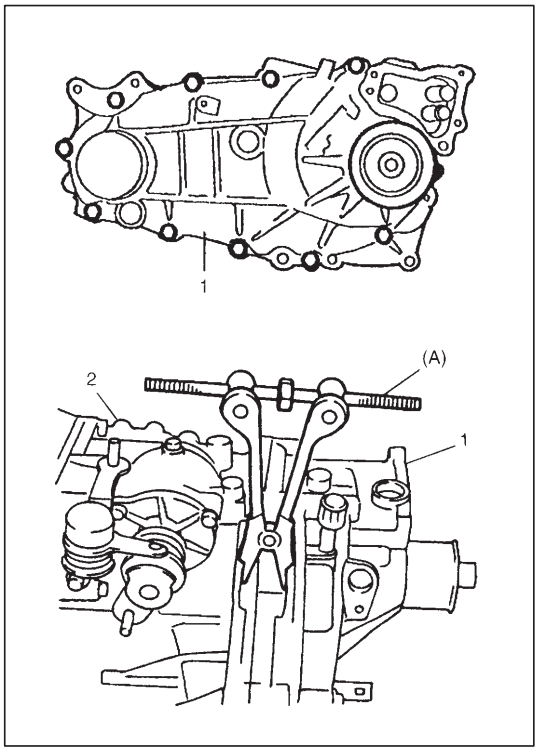


UNIT REPAIR OVERHAUL

TRANSFER CASE

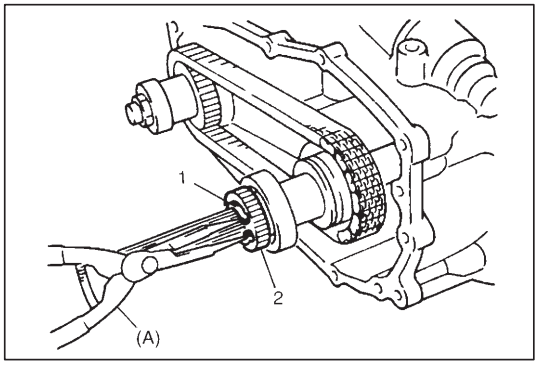
Disassembly

1) Remove engine rear mounting.
2) Remove speed sensor (1).



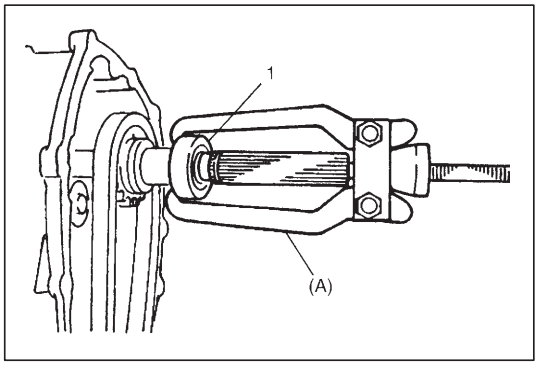
3) Remove bolts and separate transfer rear case (1) from transfer front case (2) using special tool.

Special Tool
(A): 09912-34510



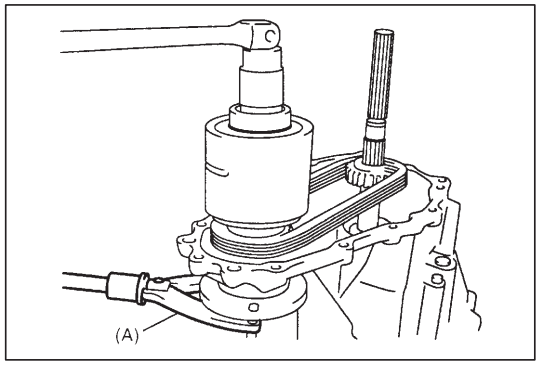
4) Using special tool, remove circlip (1) and then speedometer sensor rotor (2).

Special Tool
(A): 09900-06107



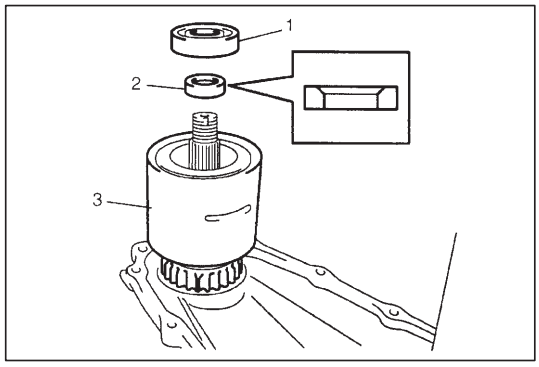
5) Remove circlip and then output shaft rear bearing (1) by using special tool.

Special Tool
(A): 09913-65135

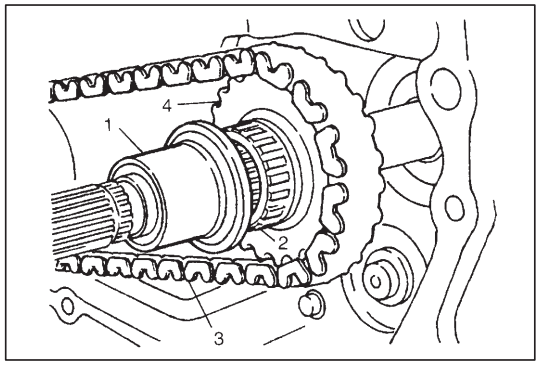


6) For AXC built-in type:
Uncaulk and remove output front shaft nut by using special tool.

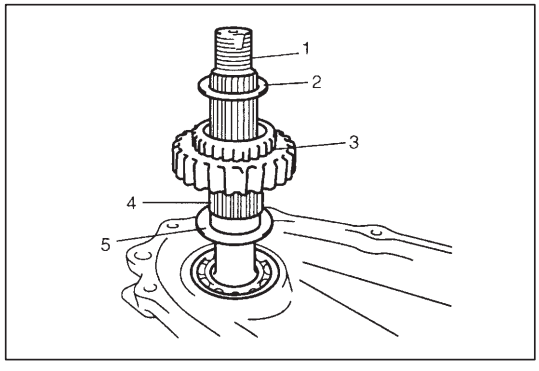
Special Tool
(A): 09930-40113



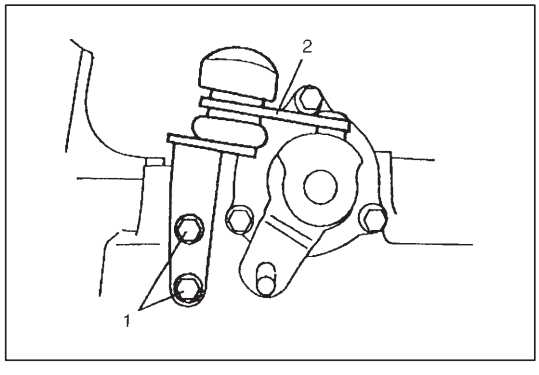
7) For AXC built-in type:
Remove output front shaft rear bearing (1), output front shaft spacer (2), and AXC (3).



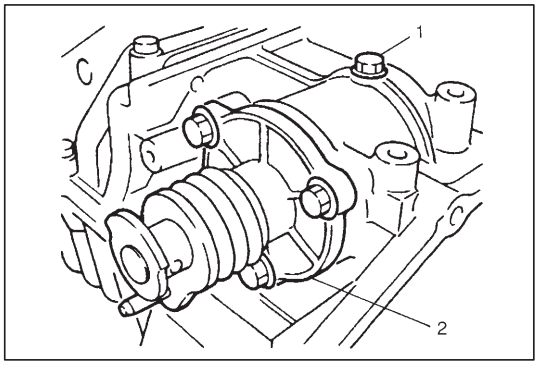
8) Remove sprocket spacer (1), then push out and remove sprocket bush (2).
9) Remove drive chain (3) and front drive sprocket (4).



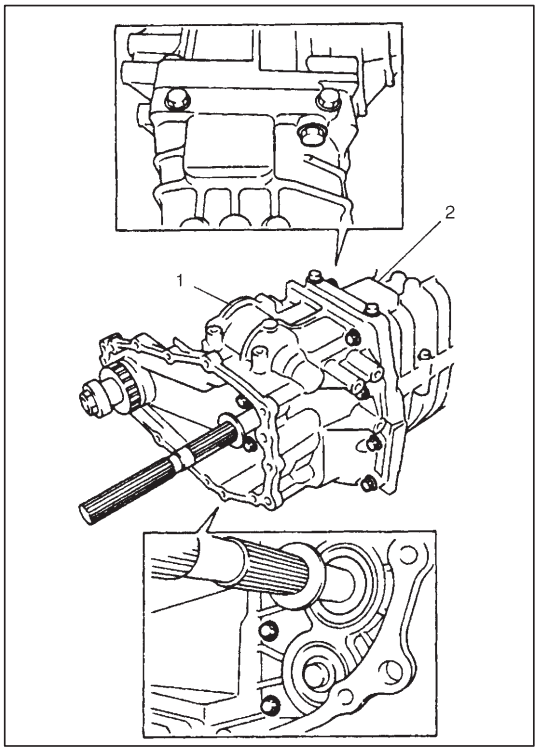
10) For AXC built-in type:
Remove output front sprocket washer (2), output front sprocket (3), sprocket needle bearing (4) and output sprocket bush (5) from output front shaft (1).



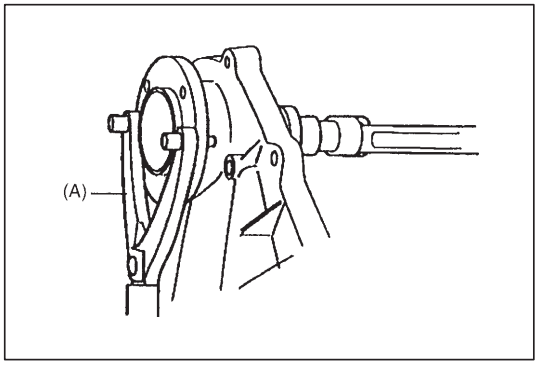
11) Remove bolts (1) and then gear select lever (2).



12) Remove gear shift guide bolt (1) and 3 bolts and disconnect gear shift and select shaft assembly (2).

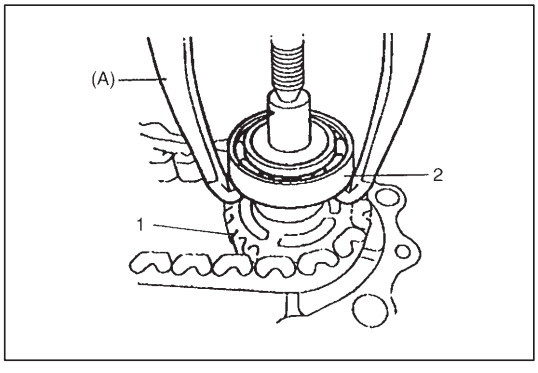


13) Remove all bolts and separate transfer front case (1) from transmission case (2).
When separating transfer front case from transmission case, make sure that reverse idler gear and shaft remain at their original position on transmission case side.



14) For AXC externally mounted type:
Uncaulk and remove output front shaft nut by using special tool.

Special Tool
(A): 09930-40113



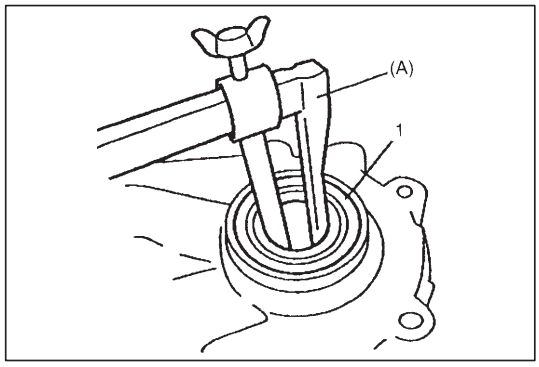
15) For AXC externally mounted type:
Remove output front shaft rear bearing (2) by using special tool.

Special Tool
(A): 09913-65135

16) Remove front drive sprocket (1) by using special tool in the same way as in step (2).

Special Tool
(A): 09913-65135

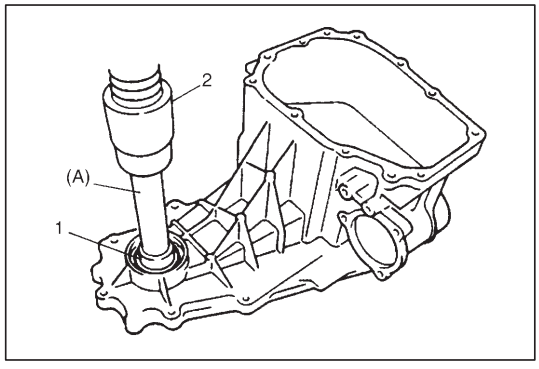
17) Remove output front shaft by using hydraulic press.



18) Remove transfer front case oil seal (1) by using special tool.

Special Tool
(A): 09913-50121

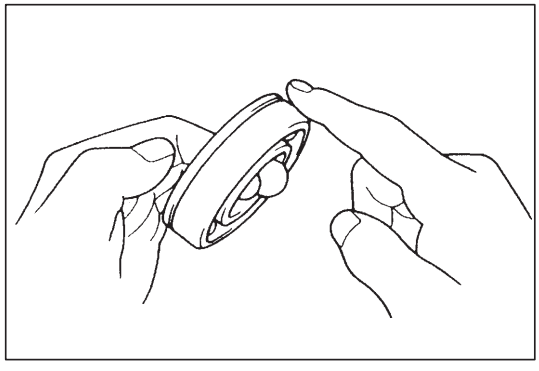
CAUTION:
Be careful not to damage oil seal, if it remains in front case.



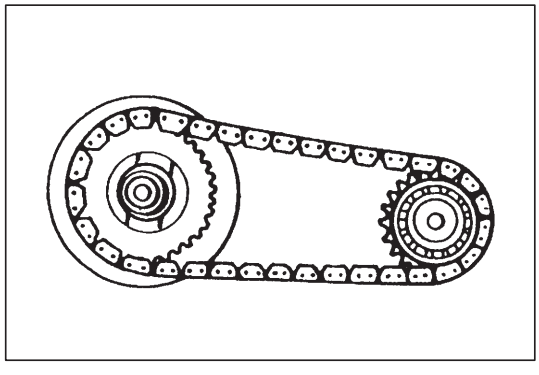
19) Remove output shaft front bearing (1) by using hydraulic press (2) and special tool.

Special Tool
(A): 09913-84510

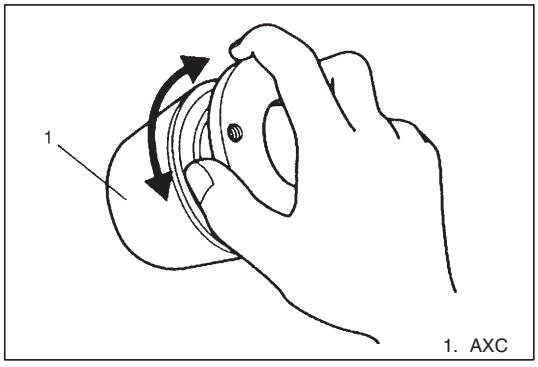
Inspection



- Check each ball bearing for smooth rotation.
  If found abnormal, replace.



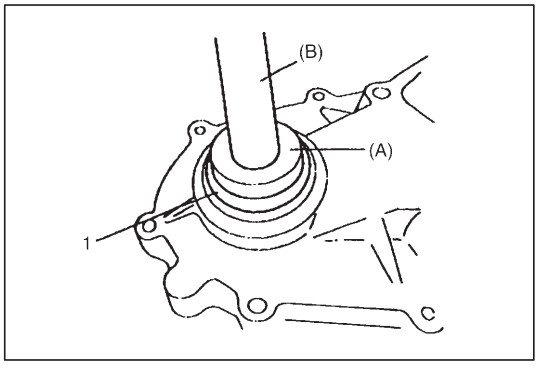
- Check drive chain and sprockets for abnormal wear or damage.
  Replace as required.
- Check oil seal for leakage and its lip for excessive hardness.
  If either is found, replace.
  Also, check corresponding surface of shaft where oil seal lip contacts. Correct or replace as necessary.



- For AXC built-in type:
  Check AXC for rotation.
  AXC can be rotated by hand but it is heavy.
  If it can be rotated lightly by hand, or can not be rotated, replace AXC.

Reassembly

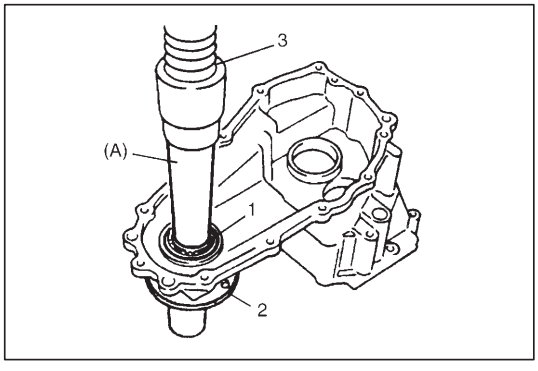
Reverse disassembly procedure for reassembly, noting the following items.



- Apply grease to front case oil seal (1) and install it by using special tools.

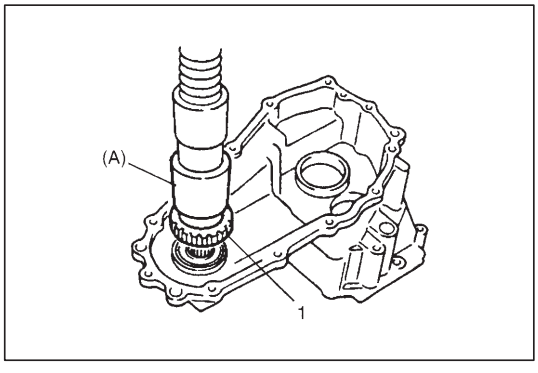
  "A": Grease 99000-25010

  Special Tool
  (A): 09924-84510
  (B): 09913-75821



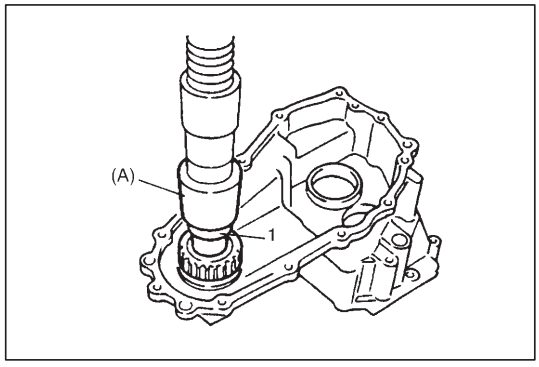
- Install output shaft front bearing (1) to output front shaft (2) becomes flash by using hydraulic press (3) and special tool.

  Special Tool
  (A): 09913-84510 (AXC externally mounted type)
  (A): 09941-74910 (AXC built-in type)



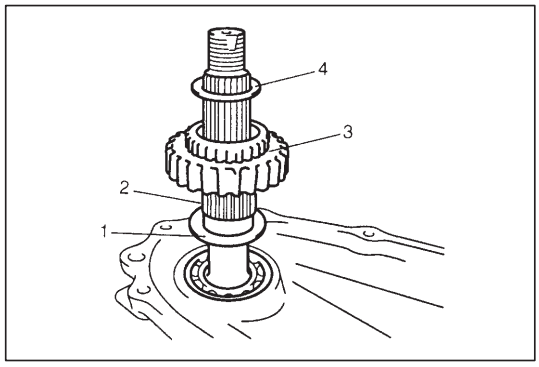
- For AXC externally mounted type:
  Install front drive sprocket (1) to output shaft by using hydraulic press and special tool.

  Special Tool
  (A): 09940-53111

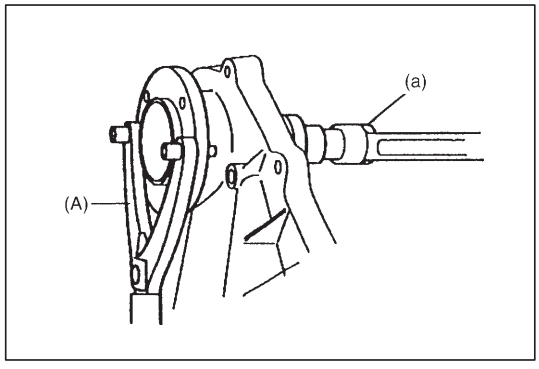


- For AXC externally mounted type:
  Install output shaft rear bearing (1) by using hydraulic press and special tool.

  Special Tool
  (A): 09940-53111



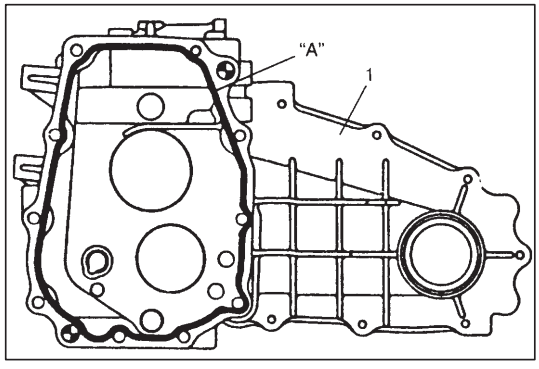
- For AXC built-in type:
  Apply transmission oil to sprocket needle bearing, then install output sprocket bush (1), sprocket needle bearing (2) output front sprocket (3) and output front sprocket washer (4).



- Tighten new output front shaft nut by using special tool.

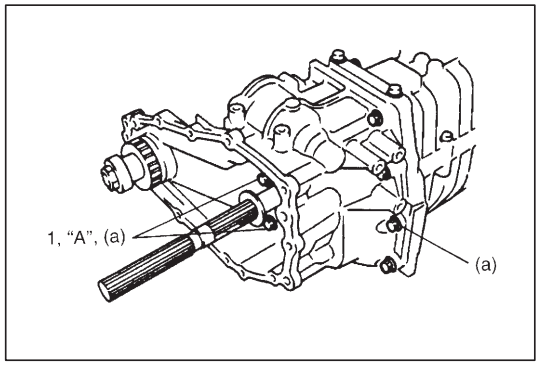
  Tightening Torque
  (a): 125 N·m (12.5 kg-m, 90.5 lb-ft)

  Special Tool
  (A): 09930-40113



- After cleaning mating surfaces of transmission case and transfer front case (1), coat mating surface of front case with sealant evenly and put it over transmission case.

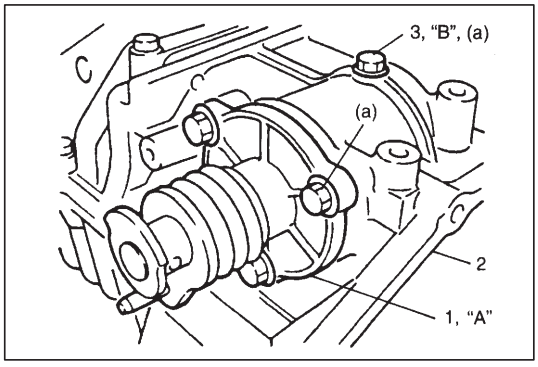
  "A": Sealant 99000-31110



- Apply sealant to 2 bolts (1) as shown in figure and then tighten front case bolts to specified torque.

  "A": Sealant 99000-31110

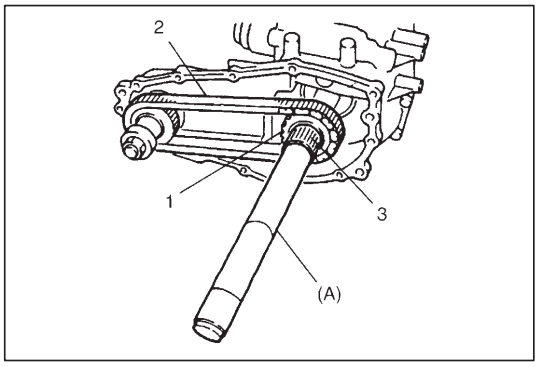
  Tightening Torque
  (a): 23 N·m (2.3 kg-m, 16.5 lb-ft)



- Apply sealant to gear shift guide case (1) and install it to transfer front case (2).
  Apply thread lock cement to gear shift guide bolt (3). Tighten bolts to specified torque.

  "A": Sealant 99000-31110
  "B": Thread lock 99000-32020

  Tightening Torque
  (a): 23 N·m (2.3 kg-m, 16.5 lb-ft)

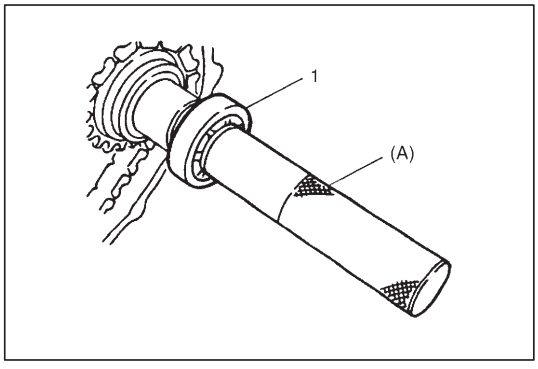


- Install front drive sprocket (1), drive chain (2) and sprocket bush (3).

  NOTE:
  If it is hard to install them, set the 3 parts at the position as shown in figure and drive in sprocket bush lightly by using special tool.

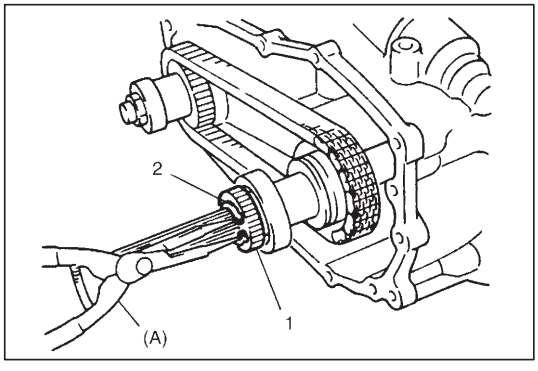
  Special Tool
  (A): 09941-74910

- Install sprocket spacer.



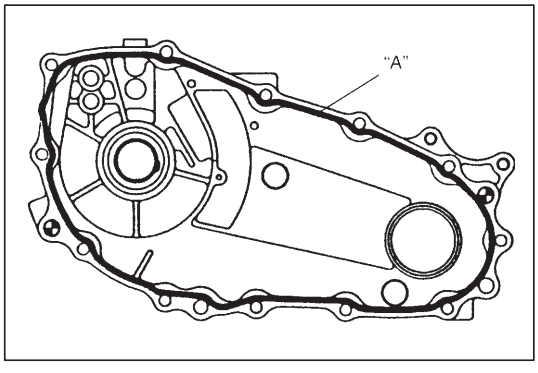
- Using special tool and hammer, install output shaft rear bearing (1) and fit circlip.

  Special Tool
  (A): 09913-80113



- Install speedometer sensor rotor (1) and fit circlip (2) with special tool.

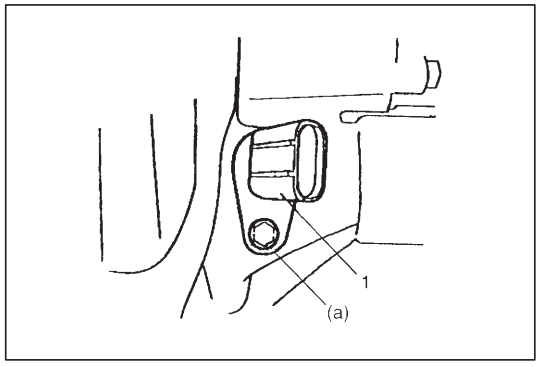
  Special Tool
  (A): 09900-06107



- Clean mating surfaces of both front and rear cases again, apply sealant to mating surface of rear case, and put them together.

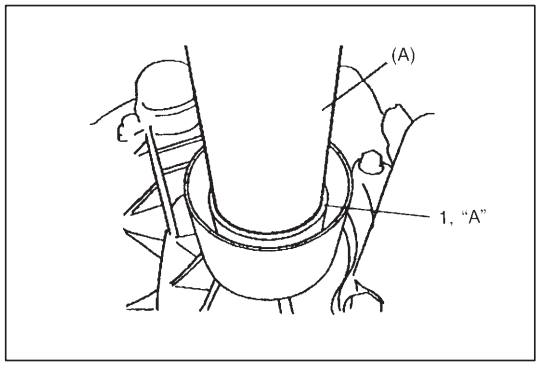
  "A": Sealant 99000-31110

  Tightening torque for rear case bolts:
  23 N·m (2.3 kg-m, 16.5 lb-ft)



● Install speed sensor (1).

Tightening Torque
(a): 10 N·m (1.0 kg-m, 7.5 lb-ft)



● Apply grease to new rear case oil seal (1) and install it by using special tool.

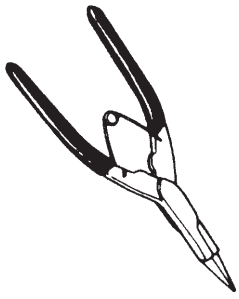
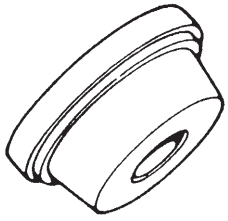
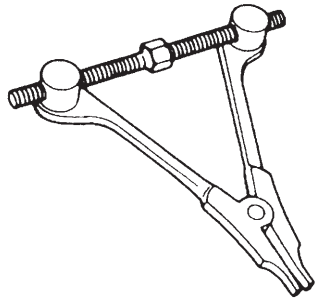
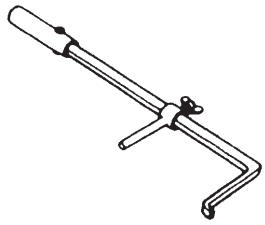
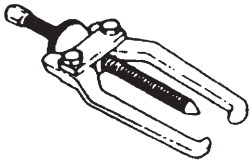
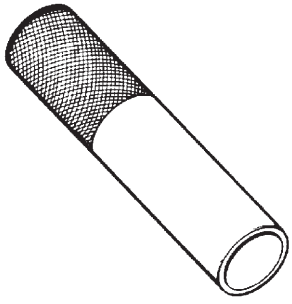
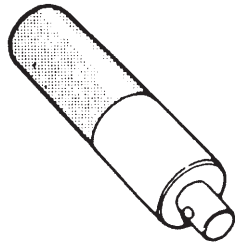
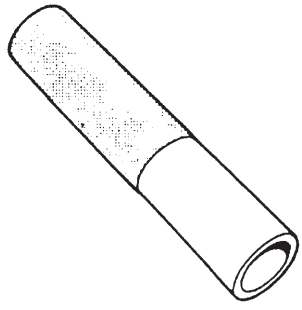
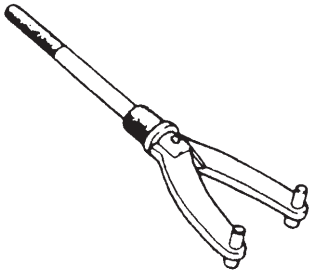
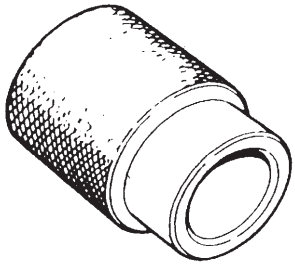
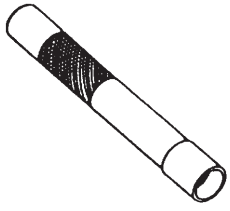
"A": Grease 99000-25010

Special Tool
(A): 09913-84510

REQUIRED SERVICE MATERIALS

MATERIALS	RECOMMENDED SUZUKI PRODUCTS	USE
Lithium grease	SUZUKI SUPER GREASE A (99000-25010)	● Oil seal lips
Sealant	SUZUKI BOND NO.1215 (99000-31110)	● Oil drain and filler plug ● Mating surface of transmission case ● Mating surface of transfer front and rear cases ● Thread of fastening bolts between transmission case and transfer front case ● Mating surface of gear shift guide case
Thread lock cement	THREAD LOCK 1333B (99000-32020)	● Gear shift guide bolt

SPECIAL TOOLS

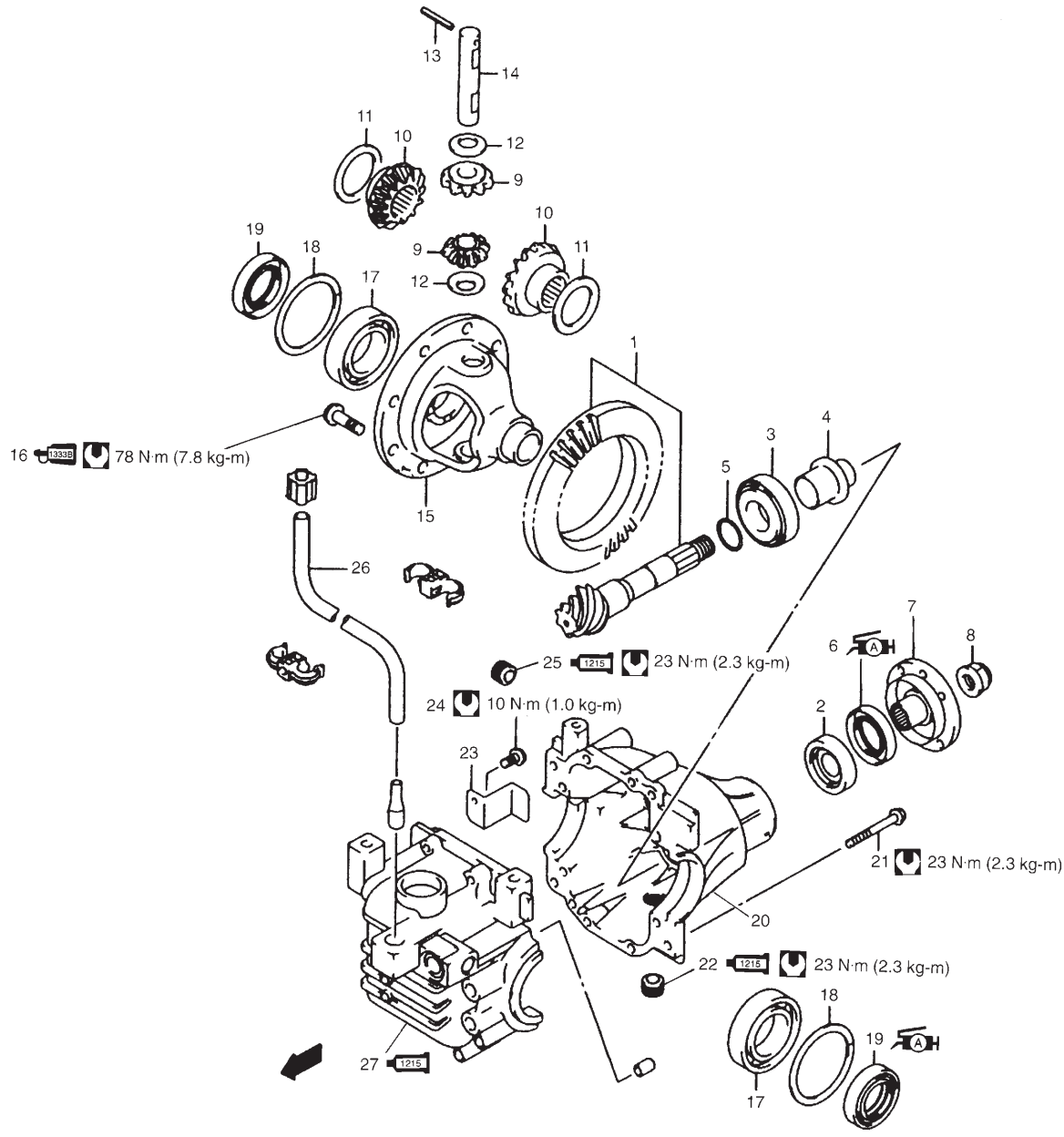
 09900-06107 Snap ring pliers (Opening type)	 09924-84510 Bearing installer adapter	 09912-34510 Separator	 09913-50121 Oil seal remover
 09913-65135 Bearing puller	 09913-84510 Bearing installer	 09913-75821 Install attachment	 09913-80113 Bearing installer
 09930-40113 Flange holder	 09940-53111 Differential side bearing installer	 09941-74910 Bearing installer	

SECTION 7E

DIFFERENTIAL (FRONT)

CONTENTS

GENERAL DESCRIPTION



1. Bevel pinion / gear set
2. Bevel pinion front bearing
3. Bevel pinion rear bearing
4. Bevel pinion spacer
5. Shim
6. Oil Seal: Apply grease 99000-25010 to oil seal lip.
7. Universal joint flange
8. Flange nut
9. Differential pinion
10. Differential gear
11. Thrust washer
12. Washer
13. Spring pin
14. Pinion shaft
15. Differential case
16. Bevel gear bolt: Apply thread lock cement (99000-32020) to thread of bolt.
17. Differential side bearing
18. Shim
19. Differential side oil seal: Apply grease 99000-25010 to oil seal lip.
20. Differential carrier
21. Differential carrier bolt
22. Drain plug: Apply sealant 99000-31110.
23. Oil protect plate
24. Oil protect plate bolt
25. Oil filler / level plug: Apply sealant 99000-31110.
26. Breather hose
27. Front differential cover: Apply sealant (99000-31110) to mating surface of cover.

: Tightening Torque

DIAGNOSIS

Condition	Possible Cause	Correction
Gear noise	● Deteriorated or water mixed lubricant	Repair and replenish
	● Inadequate or insufficient lubricant	Repair and replenish
	● Maladjusted backlash between bevel pinion and gear	Adjust as prescribed
	● Improper tooth contact in the mesh between bevel pinion and gear	Adjust or replace
	● Loose bevel gear securing bolts	Replace or retighten
	● Damaged side gear(s) or side pinion(s)	Replace
Bearing noise	● (Constant noise) Deteriorated or water mixed lubricant	Repair and replenish
	● (Constant noise) Inadequate or insufficient lubricant	Repair and replenish
	● (Noise while coasting) Damaged bearing(s) of bevel pinion	Replace
	● (Noise while turning) Damaged diff. side bearing(s) or axle bearing(s)	Replace
Oil leakage	● Clogged breather plug	Clean
	● Worn or damaged oil seal	Replace
	● Excessive oil	Adjust oil level
	● Loose differential carrier bolts	Replace or retighten

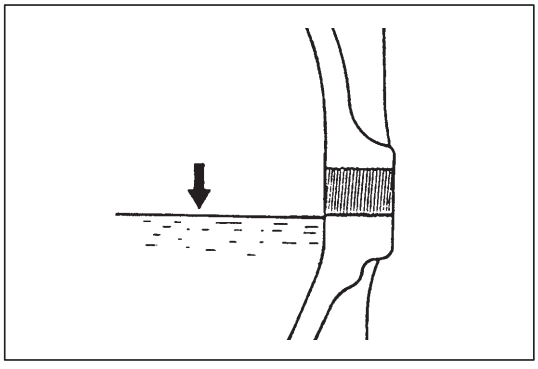
ON VEHICLE SERVICE
MAINTENANCE SERVICE

NOTE:
- **When having driven through water, check immediately if water has entered (if so, oil is cloudy). Water mixed oil must be changed at once.**
- **Whenever vehicle is hoisted for any other service work than oil change, also be sure to check for oil leakage and status of breather hoses.**

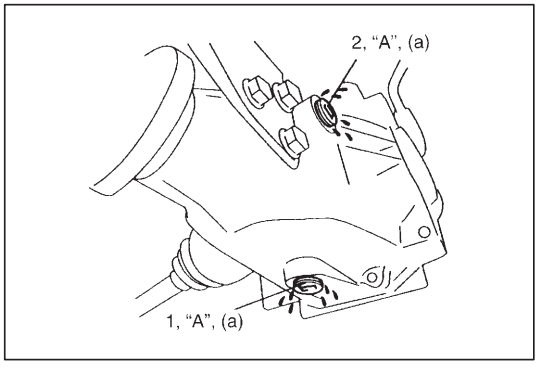
CHANGING OIL

NOTE:
- **Hypoid gear oil must be used for differential.**
- **It is highly recommended to use SAE 80W – 90 viscosity.**

1) Before oil change or inspection, be sure to stop engine and lift up vehicle horizontally.



2) Check oil level and existence of leakage. If leakage is found, correct its cause.
3) Drain old oil and pour proper amount of gear oil as specified below (roughly up to level hole).

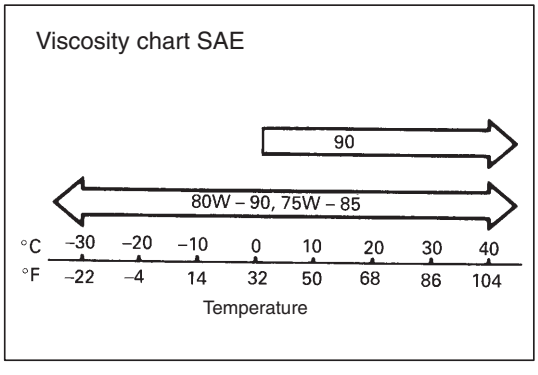


4) Apply sealant to thread of drain plug and torque plug to specification.

   "A": Sealant 99000-31110

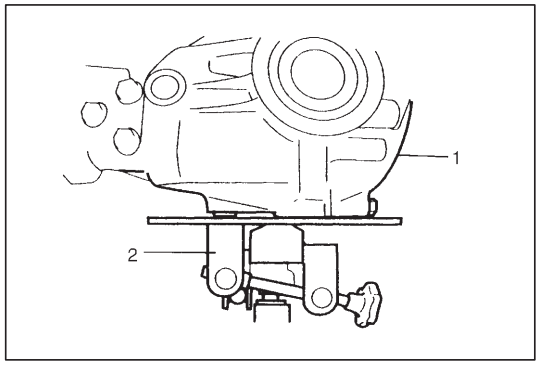
   Tightening Torque
   (a): 23 N·m (2.3 kg-m, 17.0 lb-ft)

5) Apply sealant to thread of level/filler plug and torque it in the same way as drain plug.



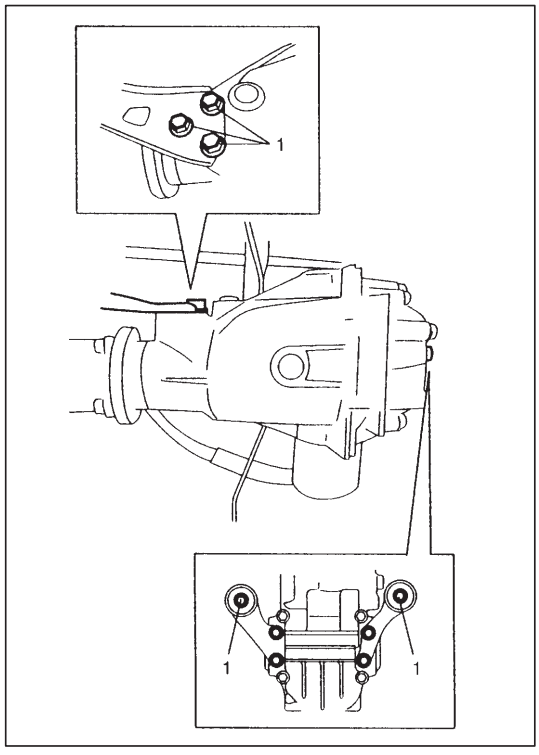
Specified gear oil: Hypoid gear oil API GL-5
SAE 75W – 85, 90 or 80W – 90
For oil viscosity, refer to left chart.

Oil capacity: 0.8 liters (1.7/1.4 US/Imp. pt)

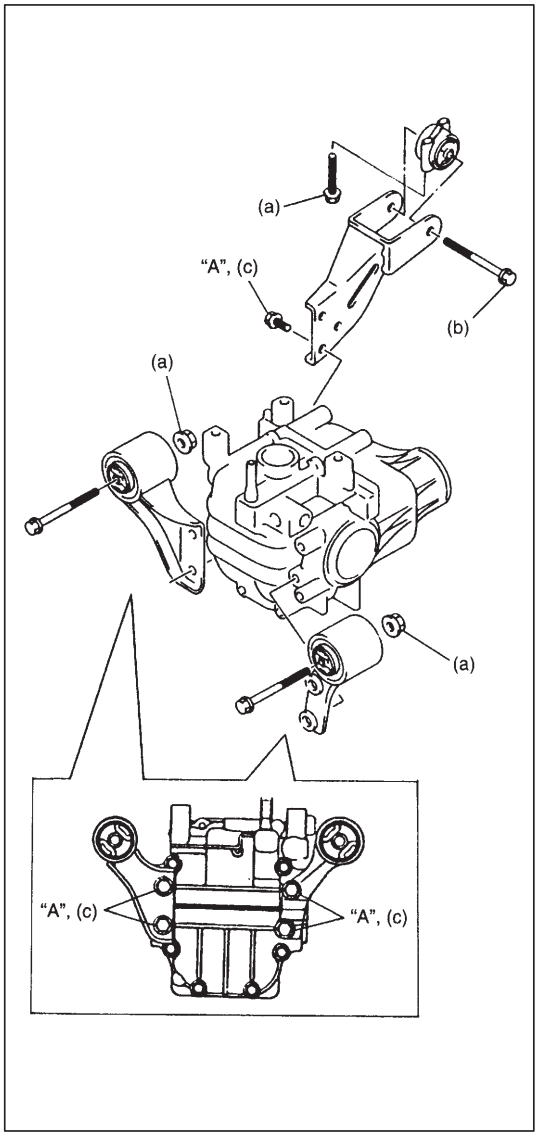


DISMOUNTING

1) Hoist vehicle and drain front differential oil.
2) Remove drive shafts referring to SECTION 4A.
3) Remove front propeller shaft referring to SECTION 4B1.
4) Support front differential (1) on jack (2).



5) Unclamp breather hose.
6) Remove front differential mounting bracket bolts (1) and then front differential assembly.



REMOUNTING

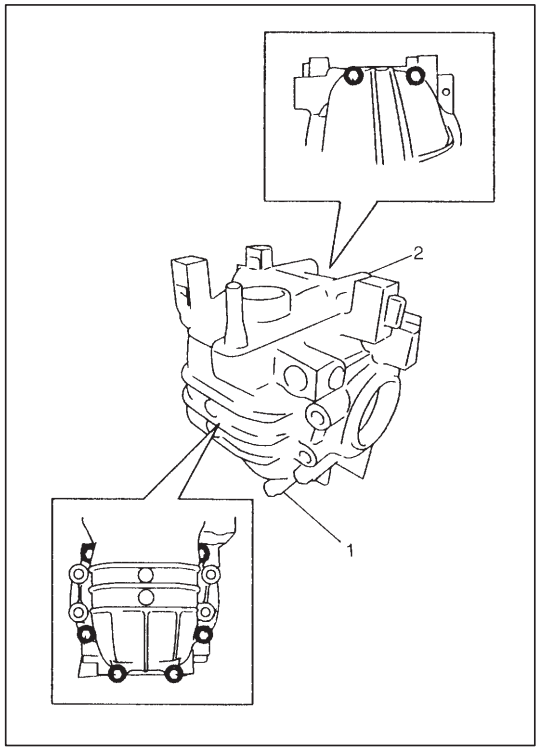
Reverse dismounting procedure for installation.

- Tighten bolts and nuts to specification as shown below.

Apply thread lock cement
"A": Thread lock cement 99000-32020

Tightening Torque
(a): 50 N·m (5.0 kg-m, 36.5 lb-ft)
(b): 55 N·m (5.5 kg-m, 40.0 lb-ft)
(c): 65 N·m (6.5 kg-m, 47.0 lb-ft)

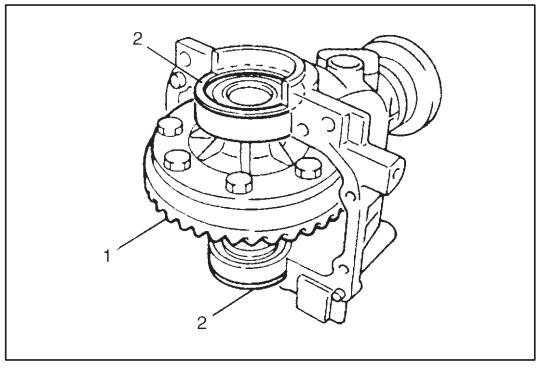
- Clamp breather hose securely.
- Refill differential oil as described on previous page.
- Upon completion of mounting, make sure that there is no oil leakage.



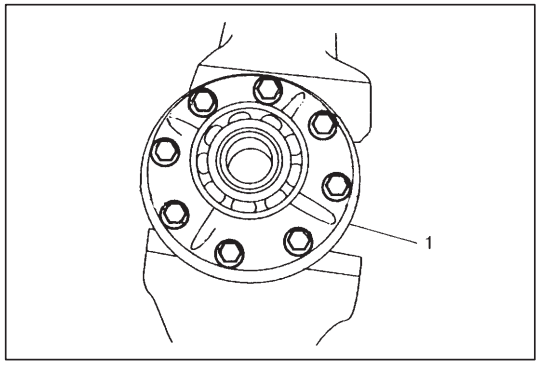
UNIT REPAIR OVERHAUL

DISASSEMBLY

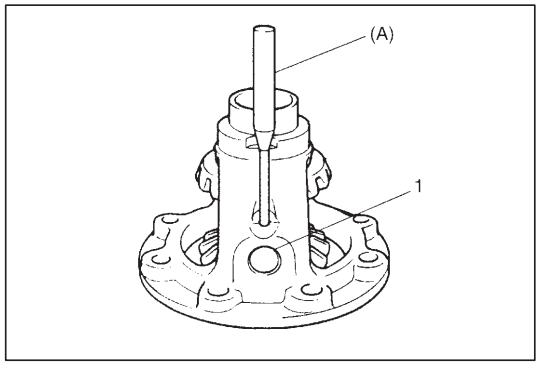
1) Remove differential front cover (1) from differential front carrier (2).
2) Remove differential side output oil seal from differential front cover.



3) Remove differential case assembly (1) and shims (2).

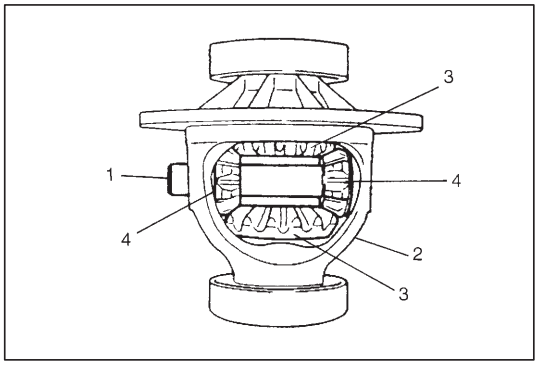


4) Remove drive bevel gear (1).

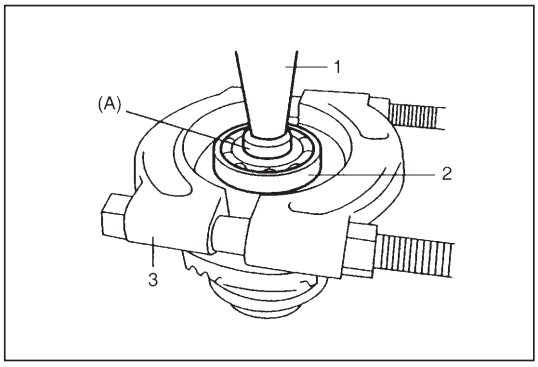


5) Drive out differential pinion shaft pin from differential pinion shaft (1) by using special tool and hammer.

Special Tool
(A): 09922-85811

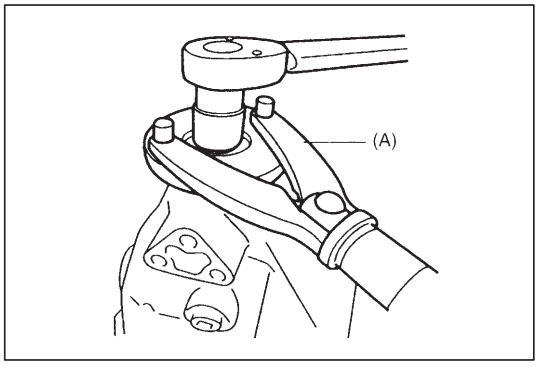


6) Remove differential pinion shaft (1) from differential case (2) and then remove differential gears (3), differential pinions (4) and washers.



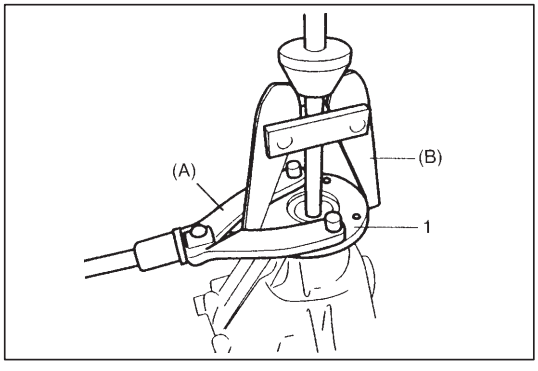
7) Remove differential side bearings (2) by using hydraulic press (1), bearing puller (3) and special tool.

Special Tool
(A): 09925-88210



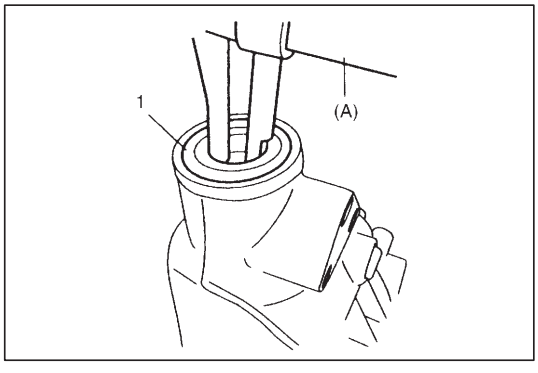
8) Uncaulk drive bevel pinion nut and then remove it by using special tool.

Special Tool
(A): 09930-40113



9) Remove companion flange (1) by using special tools.

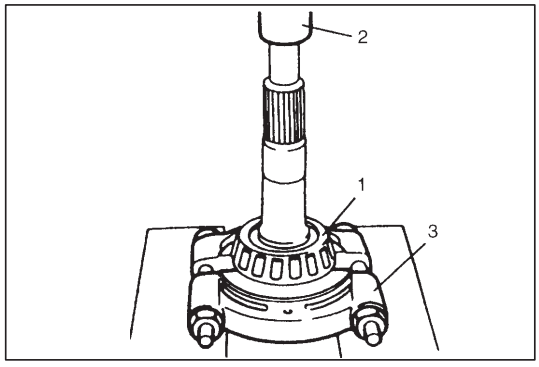
Special Tool
(A): 09940-40113
(B): 09913-60910



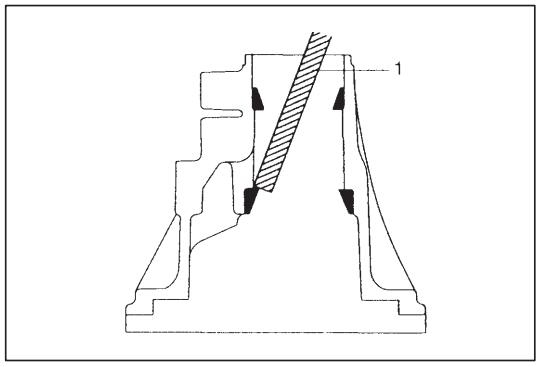
10) Remove oil seal (1) by using special tool and then remove drive bevel pinion front bearing.

Special Tool
(A): 09913-50121

CAUTION:
Be careful not to damage oil seal, if it remains in differential front carrier.



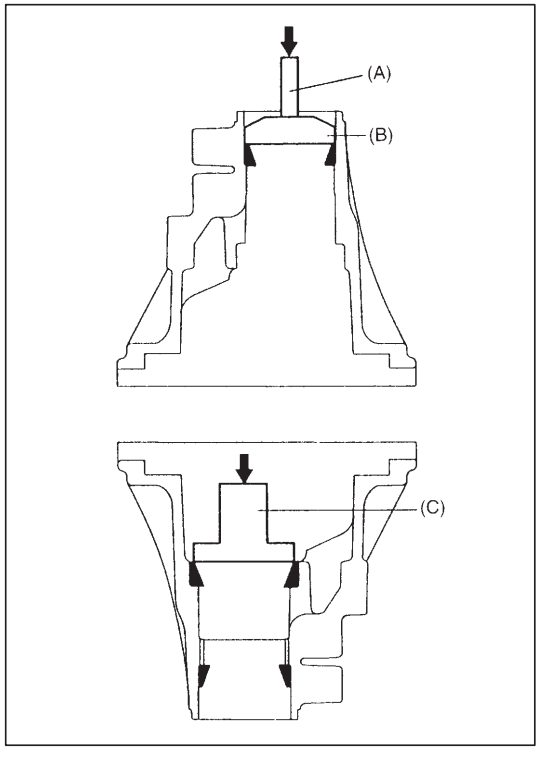
11) Remove drive bevel pinion rear bearing (1) by using hydraulic press (2) and bearing puller (3).



12) Drive out bevel pinion bearing outer races in differential carrier by hammering metal stick (1) applied to them.

INSPECTION

- Check companion flange for wear or damage.
- Check bearings for wear or discoloration.
- Check differential carrier for cracks.
- Check drive bevel pinion and bevel gear for wear or cracks.
- Check side gears, pinion gears and pinion shaft for wear or damage.
- Check side gear spline for wear or damage.



ADJUSTMENT AND REASSEMBLY

Judging from faulty conditions noted before disassembly and what is found through visual check of bearing and gear tooth etc. after disassembly, prepare replacing parts and proceed to reassembly according to procedures as described below.

CAUTION:
- **Bevel gear and pinion must be replaced as a set when either replacement becomes necessary.**
- **When replacing taper roller bearing, replace as inner race & outer race assembly.**

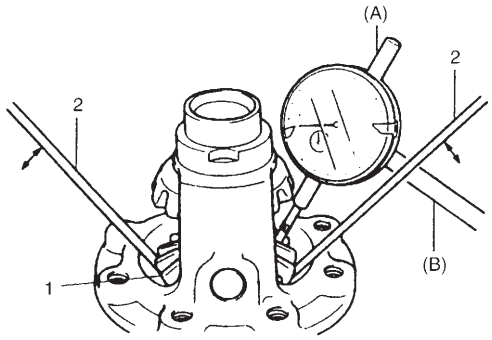
DIFFERENTIAL CARRIER

For press-fitting bevel pinion bearing outer races, use special tools as shown.

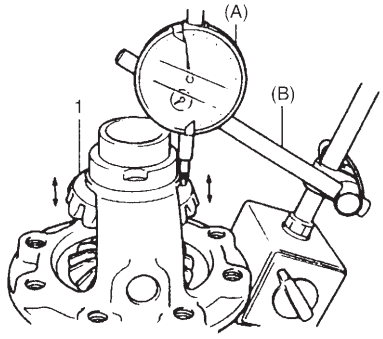
CAUTION:
Perform press-fitting carefully so as not to tilt outer race.

Special Tool
(A): 09913-75821
(B): 09924-84510-004
(C): 09913-75520

Left side



Right side



DIFFERENTIAL CASE

Judging from abnormality noted before disassembly and what is found through visual check of component parts after disassembly, prepare replacing parts and proceed to reassembly. Make sure that all parts are clean.

1) Assemble differential gear (1) and measure thrust play of differential gear as follows.

Special Tool
(A): 09900-20606
(B): 09900-20701

Diff. gear thrust play: 0.05 – 0.37 mm (0.0002 – 0.015 in.)

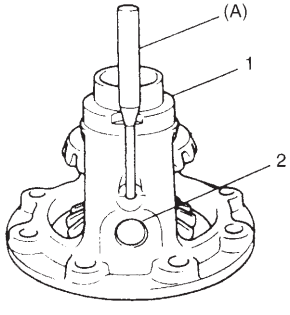
Left Side
- Hold differential assembly with soft jawed vise and apply measuring tip of dial gauge to top surface of gear.
- Using 2 screwdrivers (2), move gear up and down and read movement of dial gauge pointer.

Right Side
- Using similar procedure to above-mentioned procedure, set dial gauge tip to gear (1) shoulder.
- Move gear up and down by hand and read dial gauge.

Special Tool
(A): 09900-20606
(B): 09900-20701

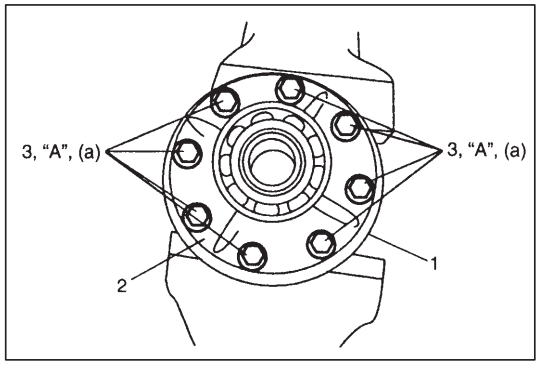
2) If thrust play is out of specification, select suitable thrust washer from among following available size, install it and check again that specified side gear thrust play is obtained.

Available thrust washer thickness	0.9, 0.95, 1.0, 1.05, 1.1, 1.15 and 1.2 mm (0.035, 0.037, 0.039, 0.041, 0.043, 0.045 and 0.047 in.)



3) Drive in spring pin for differential side pinion shaft (2) till it is flush with differential case (1) surface.

Special Tool
(A): 09922-85811

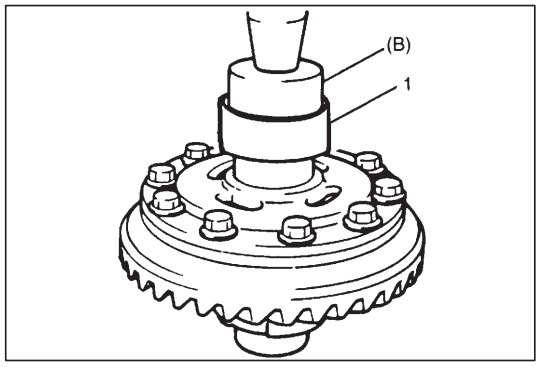


4) Put bevel gear (1) on differential case (2) and fasten them with 8 bolts (3) by tightening them to specified torque.
Use thread lock cement for 8 bolts.

CAUTION:
Use of any other bolts than that specified is prohibited.

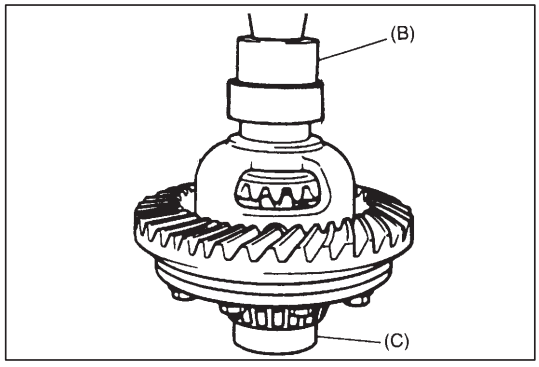
"A": Thread lock cement 99000-32020

Tightening Torque
(a): 78 N·m (7.8 kg-m, 56.5 lb-ft)



5) Press-fit side bearing (1) with special tool and hydraulic press.

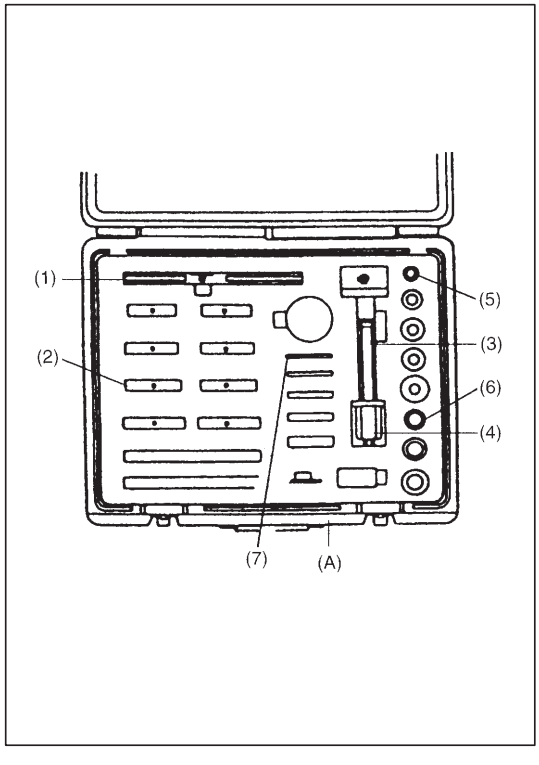
Special tool
(B): 09944-66020



6) Hold bearing press-fitted in step 5) with holder and press-fit side bearing on the other side.

NOTE:
Be sure to use bearing holder for the purpose of protecting lower bearing.

Special Tool
(B): 09944-66020
(C): 09951-16060

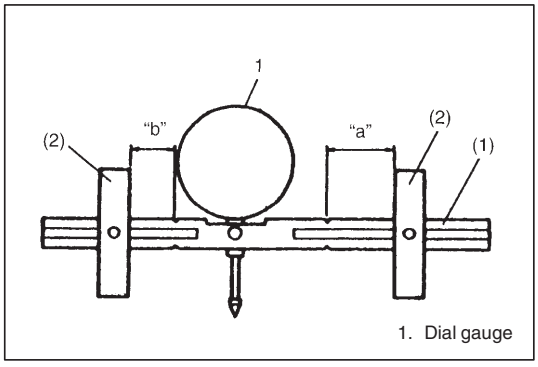


DRIVE BEVEL PINION

To engage bevel pinion and gear correctly, it is prerequired to install bevel pinion to differential carrier properly by using adjusting shim as described on following pages.

1) Prepare special tools.

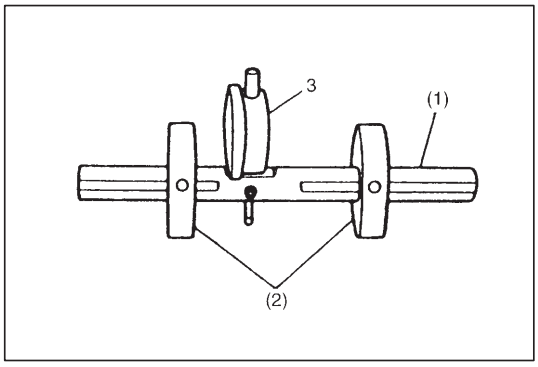
Special Tool
(A): 09922-76110 (Differential adjuster set)
(1): 09922-76120 (Bevel pinion mounting dummy shaft)
(2): 09922-76230 (2 pcs.) (Bevel pinion bearing dummy)
(3): 09922-76140 (Bevel pinion shaft)
(4): 09922-76150 (Bevel pinion nut)
(5): 09922-76350 (Bevel pinion rear collar)
(6): 09922-76430 (Bevel pinion front collar)
(7): 09922-76510 (Bevel pinion gauge block)



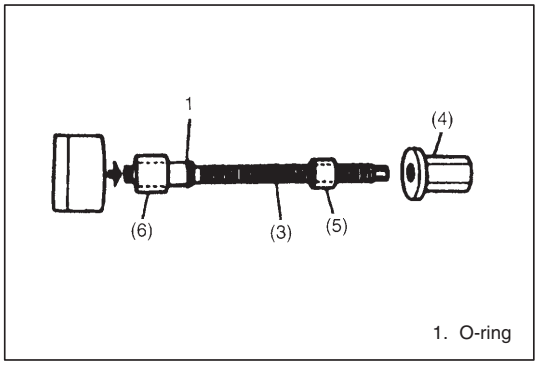
1. Dial gauge

2) Install 2 bevel pinion bearing dummy (special tool (2)) to bevel pinion mounting dummy shaft (special tool (1)) becomes measurements "a" and "b" described below.

Measurement "a": 15 mm (0.59 in.)
"b": 20 mm (0.79 in.)

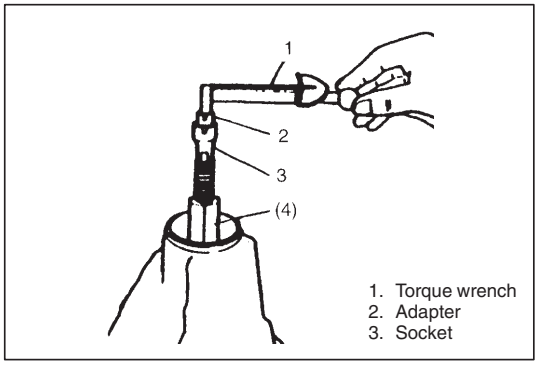


3) Set dial gauge (3) to bevel pinion mounting dummy shaft (special tool (1)) and make 0 (zero) adjustment on surface plate.



1. O-ring

4) Install bevel pinion front (special tool (6)) and rear (special tool (5)) to bevel pinion shaft (special tool (3)).
5) Install drive bevel pinion bearing, after apply gear oil to bearing, and then assemble them to differential front carrier.

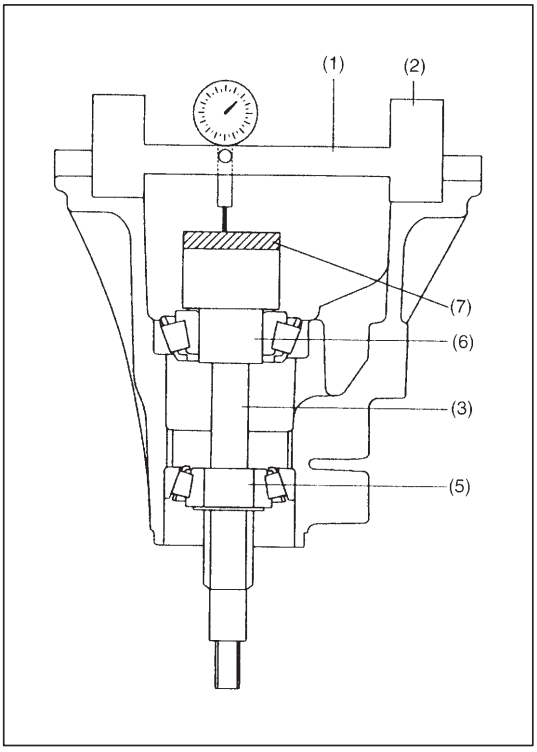


1. Torque wrench
2. Adapter
3. Socket

6) Measure preload of shaft assembly (of special tools above) and tighten bevel pinion nut till measured preload get within specified range below.

Pinion bearing preload: 0.5 – 1.3 N·m
(0.05 – 0.13 kg-m, 0.35 – 0.95 lb-ft)

NOTE:
- **Rotate the shaft (assembly of special tools) more than 15 rotation to settle the shaft with bearings.**
- **On measuring preload, rotate the shaft about 1 rotation per 2 seconds.**



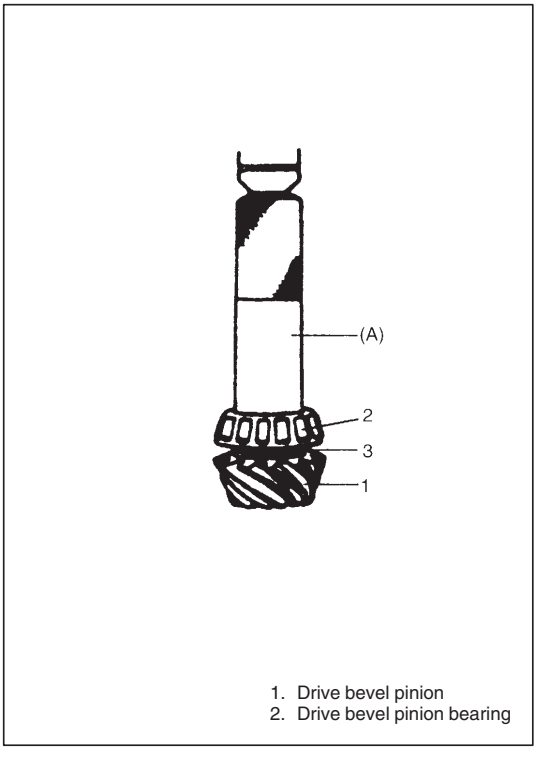
7) Install bevel pinion gauge block (special tool (7)) and then install 0 (zero) adjusted bevel pinion mounting dummy shaft assembly to differential front carrier.
Then read dial gauge.

NOTE:
- **Repeat turning back and force of dummy and measure distance as far as top surface of pinion dummy accurately.**
- **When dial gauge measuring tip extends from 0 (zero) position, pointer turns counterclockwise.**
- **Measured value may exceed 1 mm. Therefore, it is also necessary to know reading of short pointer.**

8) Obtain adjusting shim thickness by using measured value by dial gauge in previous step.

Necessary shim thickness	=	Dial gauge measured value

9) Remove bevel pinion dummy from differential front carrier.

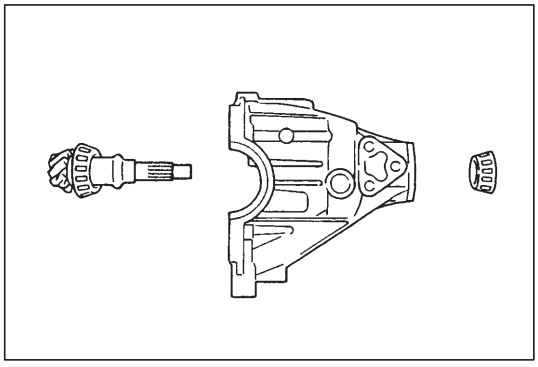


1. Drive bevel pinion
2. Drive bevel pinion bearing

10) Select adjusting shim(s) (3) closest to value from among the following available sizes and put it in place and then press-fit rear bearing.

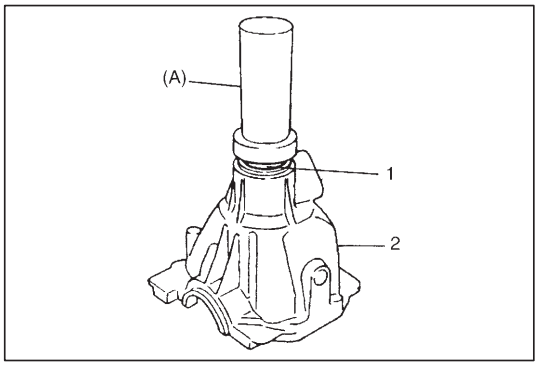
Special Tool
(A): 09941-74910

Available shim thickness	1.15, 1.18, 1.21, 1.24, 1.27, 1.30 and 0.3 mm (0.045, 0.046, 0.048, 0.049, 0.050, 0.051 and 0.012 in.)



11) With new pinion spacer inserted as shown, install front bearing to differential carrier.

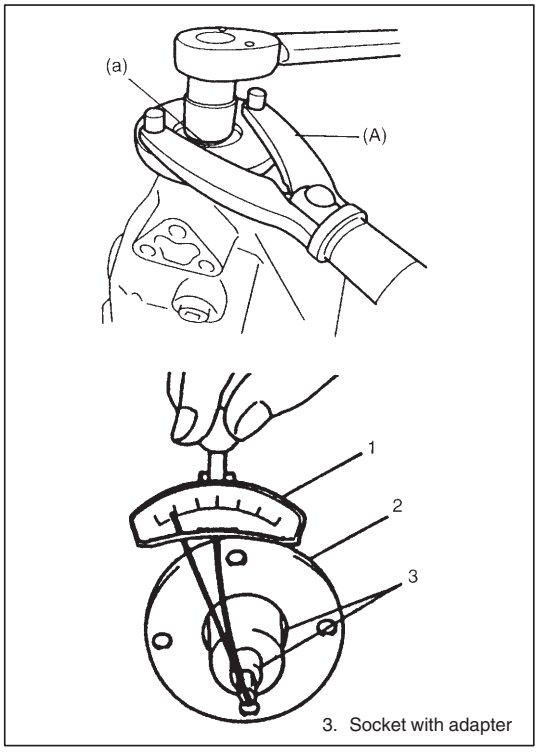
NOTE:
- **Make sure to use new spacer for reinstallation.**
- **Apply oil to bearings.**



12) Drive in oil seal (1) into differential front carrier (2) till it becomes flush with carrier end by using special tool.
Then apply grease to oil seal lip.

Special Tool
(A): 09913-85210

"A": Grease 99000-25010



3. Socket with adapter

13) While tightening flange nut gradually with special tool and power wrench, set preload of pinion to specification.

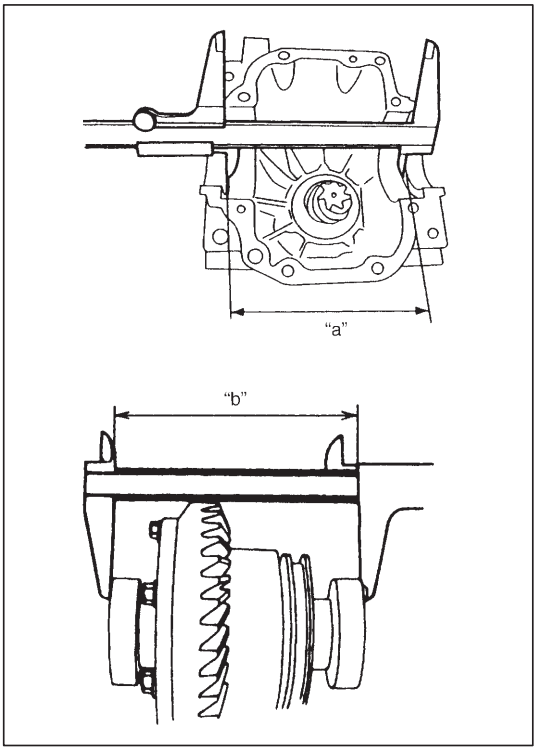
Special Tool
(A): 09930-40113

NOTE:
- **Before taking measurement with torque wrench, check for smooth rotation by hand.**
- **Bearing preload can be measured roughly by rotating companion frange (2) with torque wrench (1) about 1 rotation per 2 seconds.**
- **Be sure to tighten gradually and carefully till specified starting torque is obtained. Turning back overtightened flange nuts should be avoided.**

  Pinion bearing preload: 0.5 – 1.3 N·m
  (5.0 – 13.0 kg-cm, 4.3 – 11.3 lb-in.)

- **As a reference, tightening torque for flange nut should be within following specification.**

  Tightening Torque
  (a): 70 – 250 N·m (7 – 25 kg-m, 50.5 – 181 lb-ft)



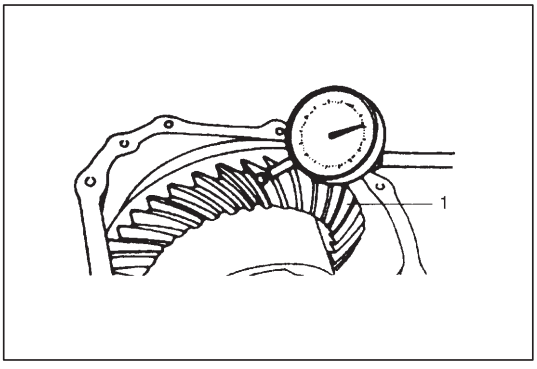
ASSEMBLING UNIT

1) Measure width "a" of differential carrier and "b" of differential gear assembly.
   Then calculate shim thickness.

   Shim thickness = "a" – "b"

2) Select shim from below table and assemble differential gear assembly to front differential carrier.

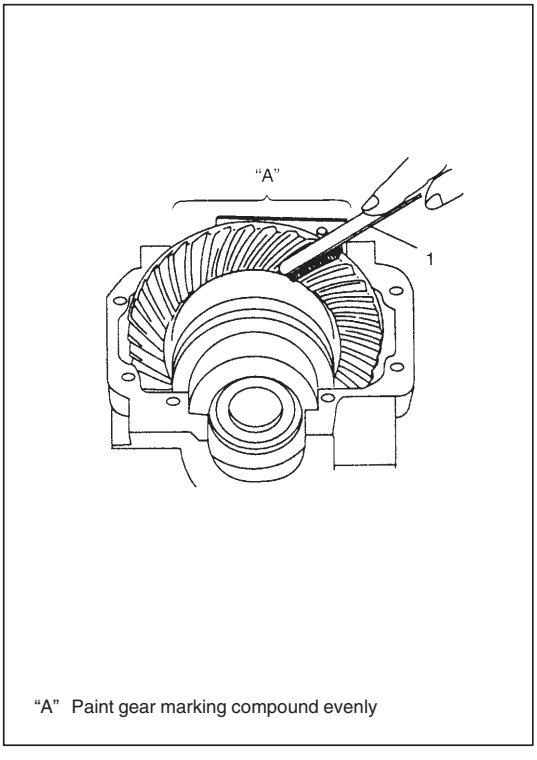
Available shim thickness	2.45, 2.50, 2.55, 2.60, 2.65, 2.70, 2.75, 2.80 and 2.85 mm (0.096, 0.098, 0.100, 0.102, 0.104, 0.106, 0.108, 0.110 and 0.112 in.)



3) Measure backlash of bevel gear (1).
   If it is out of specification, adjust it by replacing right and left shim(s).

   Bevel gear backlash: 0.10 – 0.20 mm (0.0039 – 0.0078 in.)

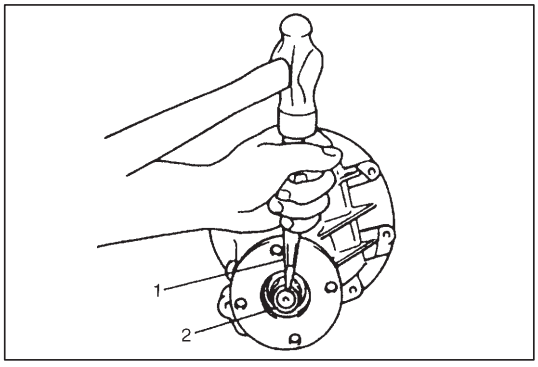
   NOTE:
   - **Be sure to apply measuring tip of dial gauge at right angles to convex side (drive side) of tooth.**
   - **Measure at least 4 points on drive bevel gear periphery.**



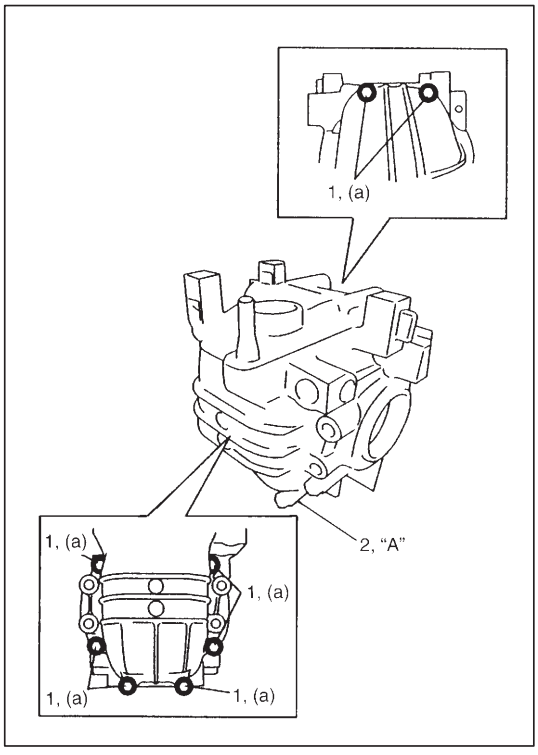
"A" Paint gear marking compound evenly

4) As final step, check gear tooth contact as follows.
   1. After cleaning tooth surface of bevel gears, paint them with gear marking compound evenly by using brush (1) or sponge etc.
   2. Turn gear to bring its painted part in mesh with bevel pinion and turn it back and forth by hand to repeat their contact.
   3. Bring painted part up and check contact pattern, referring to following chart (next page). If contact pattern is not normal, readjust or replace as necessary according to instruction in chart.

   NOTE:
   Be careful not to turn bevel gear more than one full revolution, for it will hinder accurate check.



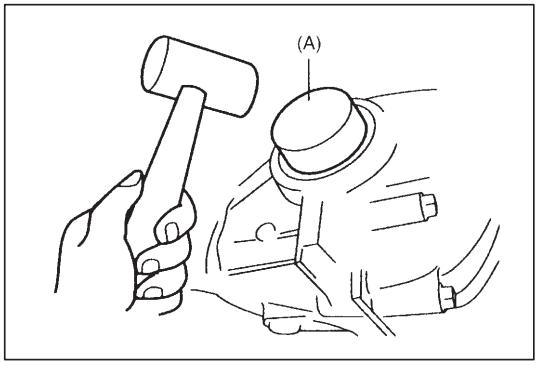
5) Upon completion of gear tooth contact check in step 8), caulk flange nut (2) with caulking tool (1) and hammer.



6) Clean mating surface of both carrier and cover and apply sealant to differential front cover (2).
Then tighten 8 bolts (1) to specified torque.

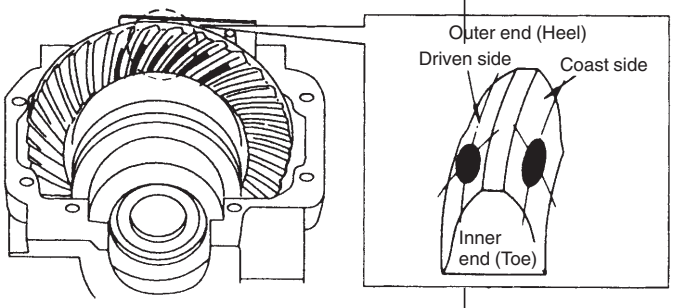
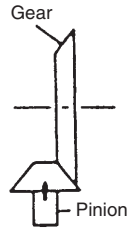
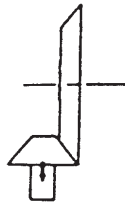
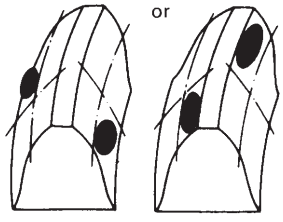
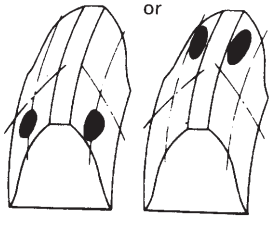
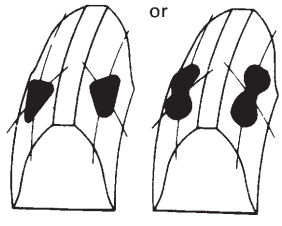
"A": Sealant 99000-31110

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



7) Drive in differential oil seal by using special tool.

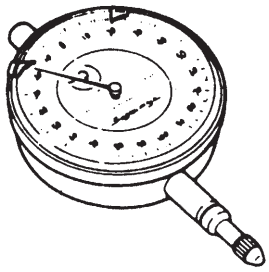
Special Tool
(A): 09944-66020

TOOTH CONTACT PATTERN	DIAGNOSIS AND REMEDY
	NORMAL
	HIGH CONTACT Pinion is positioned too far from the center of driver bevel gear. 1. Increase thickness of pinion height adjusting shim and position pinion closer to gear center. 2. Adjust drive bevel gear backlash to specification. 
	LOW CONTACT Pinion is positioned too close to the center of drive bevel gear. 1. Decrease thickness of pinion height adjusting shim and position pinion farther from gear center. 2. Adjust drive bevel gear backlash to specification. 
	If adjustment is impossible, replace differential carrier.
	1. Check seating of bevel gear or differential case. (Check bevel gear for runout). 2. If adjustment is impossible, replace drive bevel gear & pinion set or differential carrier.
	Replace drive bevel gear & pinion set or differential case.

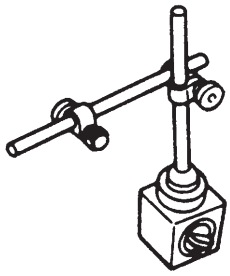
REQUIRED SERVICE MATERIALS

MATERIAL	RECOMMENDED SUZUKI PRODUCT	USE
Thread lock cement	THREAD LOCK CEMENT SUPER 1333B (99000-32020)	Bevel gear bolts
Lithium grease	SUZUKI SUPER GREASE A (99000-25010)	Oil seal lips
Sealant	SUZUKI BOND NO. 1215 (99000-31110)	● Front differential drain and filler plug ● Mating surface of differential housing ● Air inlet union

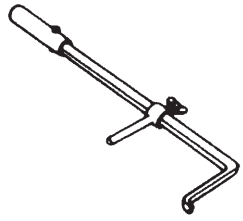
SPECIAL TOOLS



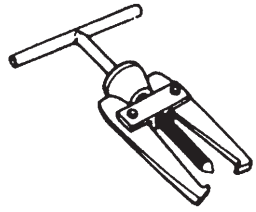
09900-20606
Dial gauge



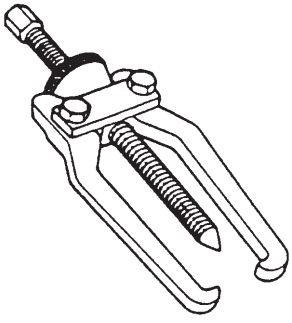
09900-20701
Magnetic stand



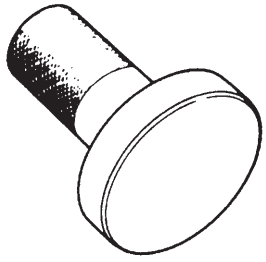
09913-50121
Oil seal remover



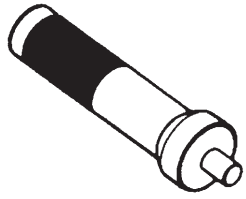
09913-60910
Bearing puller



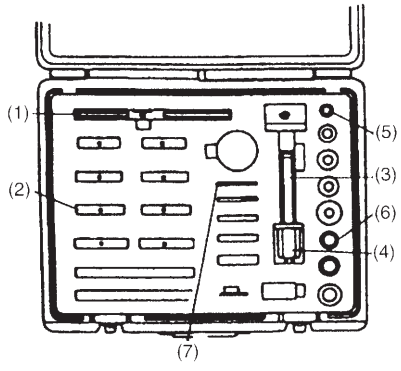
09913-65135
Bearing puller



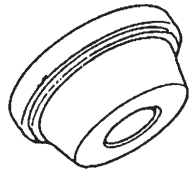
09913-75520
Bearing installer



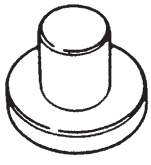
09913-75821
Bearing installer



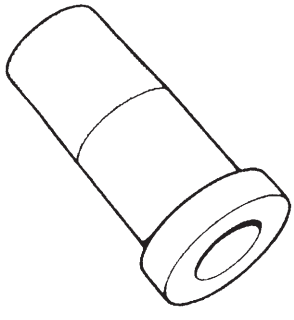
09922-76110
Differential adjuster set
(1) 09922-76120
Bevel pinion mounting dummy shaft
(2) 09922-76230
Bevel pinion bearing dummy
(3) 09922-76140
Bevel pinion shaft
(4) 09922-76150
Bevel pinion nut
(5) 09922-76350
Bevel pinion rear collar
(6) 09922-76430
Bevel pinion front collar
(7) 09922-76510
Bevel pinion gauge block



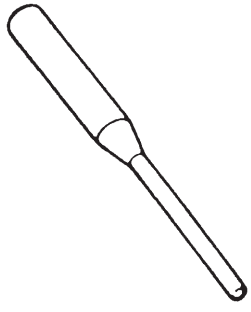
09924-84510-004
Bearing installer adapter



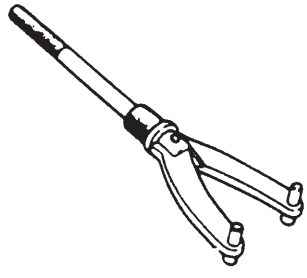
09925-88210
Bearing removing jig



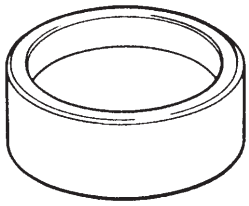
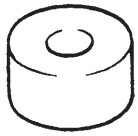
09913-85210
Bearing installer



09922-89810 (3.5 mm)
09922-85811 (4.5 mm)
Spring pin remover



09930-40113
Rotor holder

	
09944-66020 Bearing installer	09951-16060 Lower arm bush remover

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