IMPORTANT

WARNING/CAUTION/NOTE

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

WARNING:

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

CAUTION:

Indicates a potential hazard that could result in vehicle damage.

NOTE:

Indicates special information to make maintenance easier or instructions clearer.

WARNING:

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

WARNING:

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

- **Service on and around the air bag system components or wiring must be performed only by an authorized SUZUKI dealer. Refer to "Air Bag System Components and Wiring Location View" under "General Description" in air bag system section in order to confirm whether you are performing service on or near the air bag system components or wiring. Please observe all WARNINGS and "Service Precautions" under "On-Vehicle Service" in air bag system section before performing service on or around the air bag system components or wiring. Failure to follow WARNINGS could result in unintentional activation of the system or could render the system inoperative. Either of these two conditions may result in severe injury.**
- **If the air bag system and another vehicle system both need repair, Suzuki recommends that the air bag system be repaired first, to help avoid unintended air bag system activation.**
- **Do not modify the steering wheel, instrument panel or any other air bag system component (on or around air bag system components or wiring). Modifications can adversely affect air bag system performance and lead to injury.**
- **If the vehicle will be exposed to temperatures over 93°C (200°F) (for example, during a paint baking process), remove the air bag system components (air bag (inflator) modules, SDM and/or seat belt with pretensioner) beforehand to avoid component damage or unintended activation.**

Foreword

This SUPPLEMENTARY SERVICE MANUAL is a supplement to RB413 SERVICE MANUAL. It has been prepared exclusively for the following applicable model.

Applicable model: RB310/413 of and after the vehicle identification number below.

- TSM MMA93S00 180001
- TSM MMB53S00 180001
- TSM MMA53S00 180001
- TSM MMA53S20 180001

If describes only different service information of the above applicable model as compared with RB413 SERVICE MANUAL. Therefore, whenever servicing the above applicable model, consult this supplement first. And for any section, item or description not found in this supplement, refer to the related service manual below.

When replacing parts or servicing by disassembling, it is recommended to use SUZUKI genuine parts, tools and service materials (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 No.
RB413 SERVICE MANUAL	99500-83E00-01E
RB413 SUPPLEMENTARY SERVICE MANUAL	99501U83E00-01E
RB310 SERVICE MANUAL	99500U83E10-01E
RB310/413 WIRING DIAGRAM MANUAL	99512U83E12-669

MAGYAR SUZUKI CORPORATION

SERVICE DEPARTMENT

Table of Contents

NOTE:

For the screen toned Sections in the above table, refer to the same section of the Related Manuals mentioned in FOREWORD of this manual.

SECTION 0A

GENERAL INFORMATION

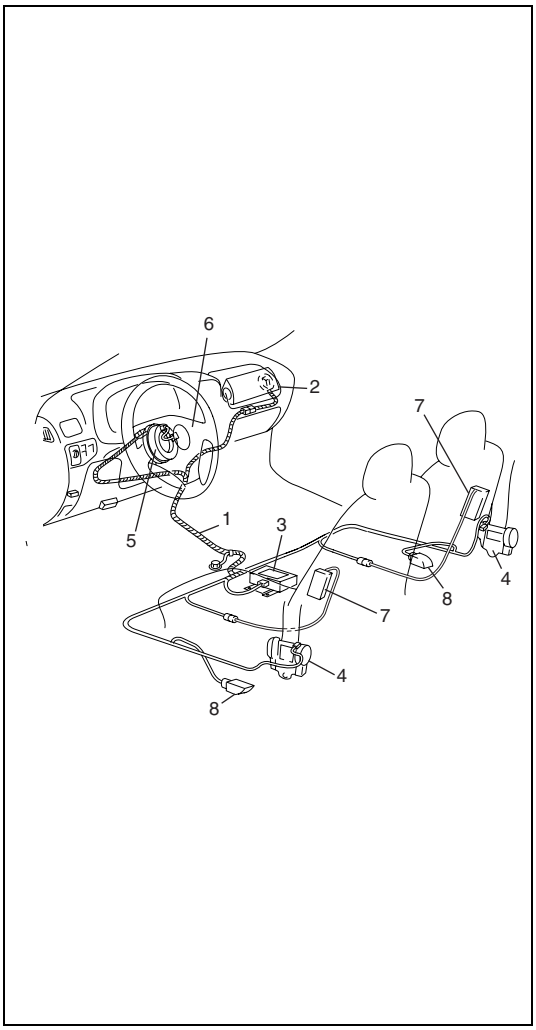
NOTE:

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

CONTENTS

Precautions

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



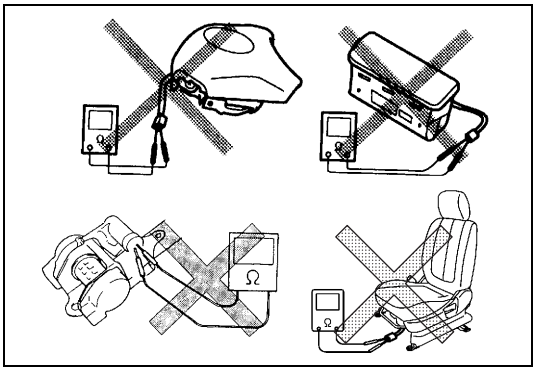
WARNING:

- **The configuration of air bag system parts are as shown in the figure. When it is necessary to service (remove, reinstall and inspect) these parts, be sure to follow procedures described in Section 10B. Failure to follow proper procedures could result in possible air bag system activation, personal injury, damage to parts or air bag system being unable to activate when necessary.**
- **If the air bag system and another vehicle system both need repair, SUZUKI recommends that the air bag system be repaired first, to help avoid unintended air bag system activation.**
- **Do not modify the steering wheel, dashboard, or any other air bag system components. Modifications can adversely affect air bag system performance and lead to injury.**
- **If the vehicle will be exposed to temperatures over 93°C (200°F) (for example, during a paint baking process), remove the air bag system components beforehand to avoid component damage or unintended air bag system activation.**

1. Air bag wire harness (in instrumental panel harness)	5. Contact coil
2. Passenger air bag (inflator) module (if equipped)	6. Driver air bag (inflator) module
3. SDM	7. Side air bag (inflator) module (if equipped)
4. Seat belt pretensioner	8. Side sensor (if equipped)

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.

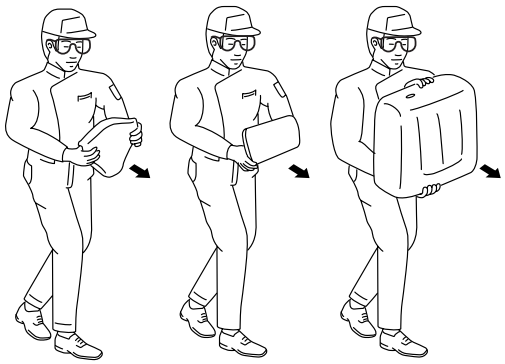


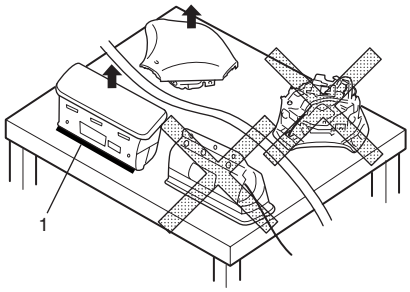
WARNING:

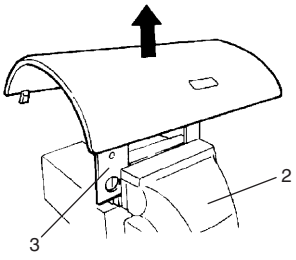
Never attempt to measure the resistance of the air bag (inflator) modules (driver, passenger and side) and seat belt pretensioners (driver and passenger). It is very dangerous as the electric current from the tester may deploy the air bag or activate the pretensioner.

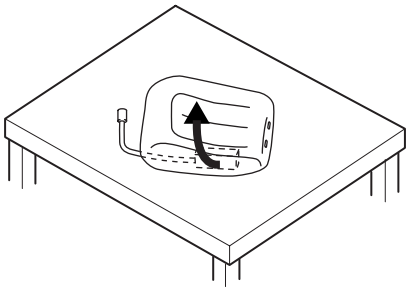
Servicing and handling

[A]









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, Passenger and Side Air Bag (Inflator) Modules

- **For handling and storage of a live air bag (inflator) module, select a place where the ambient temperature below 65°C (150°F), without high humidity and away from electric noise.**
- **When carrying a live air bag (inflator) module, make sure the bag opening is pointed away from you. In case of an accidental deployment, the bag will then deploy with minimal chance of injury. Never carry the air bag (inflator) module by the wires or connector on the underside of the module. When placing a live air bag (inflator) module on a bench or other surface, always face the bag up, away from the surface. As the live passenger air bag (inflator) module must be placed with its bag (trim cover) facing up, place it on the workbench with a slit (1) or use the workbench vise (2) to hold it securely at its lower mounting bracket (3). The front seat back with the live air bag (inflator) module must be placed with its frontal seat cover facing up. It is also prohibited to place anything on top of the trim cover and stack air bag (inflator) modules. This is necessary so that a free space is provided to allow the air bag to expand in the unlikely event of accidental deployment. Otherwise, personal injury may result.**
- **Never dispose of live (undeployed) air bag (inflator) modules (driver, passenger and side). 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.**

[A] :	ALWAYS CARRY AIR BAG (INFLATOR) MODULE WITH TRIM COVER (AIR BAG OPENING) AWAY FROM BODY.
[B] :	ALWAYS PLACE AIR BAG (INFLATOR) MODULE ON WORKBENCH WITH TRIM COVER (AIR BAG OPENING) UP, AWAY FROM LOOSE OBJECTS.
[C] :	ALWAYS PLACE WITH ITS FRONTAL SEAT COVER FACING UP, AWAY FROM LOOSE OBJECTS.

WARNING:

SDM

- **For handling and storage of a SDM, select a place where the ambient temperature below 65°C (150°F), without high humidity and away from electric noise.**
- **During service procedures, be very careful when handling a Sensing and Diagnostic Module (SDM). Never strike or jar the SDM.**
- **Never power up the air bag system when the SDM is not rigidly attached to the vehicle. All SDM and mounting bracket fasteners must be carefully torqued and the arrow must be pointing toward the front of the vehicle to ensure proper operation of the air bag system.**
  The SDM could be activated when powered while not rigidly attached to the vehicle which could cause deployment and result in personal injury.

WARNING:

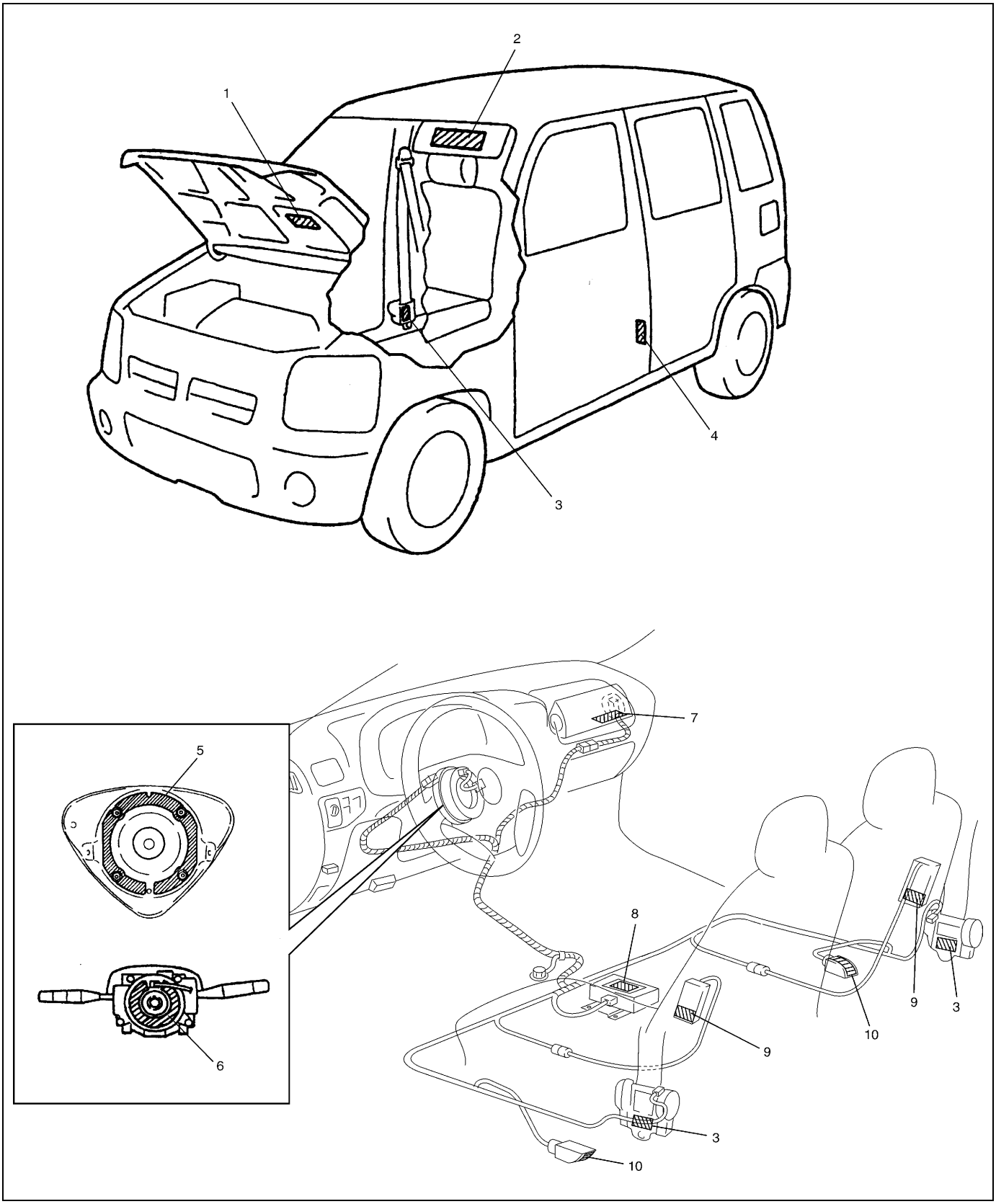
Driver and Passenger Seat Belt Pretensioners :

- **For handling and storage of a live seat belt pretensioner, select a place where the ambient temperature below 65°C (150°F), without high humidity and away from electric noise.**
- **Never carry seat belt pretensioner by webbing.**
- **When placing a live seat belt pretensioner on the workbench or other surface, it is also prohibited to put a seat belt pretensioner on top of another. Otherwise, personal injury may result.**
- **Never dispose of live (inactivated) seat belt pretensioners (drive and passenger). If disposal is necessary, be sure to activate them according to activation procedures described in Section 10B before disposal.**
- **The seat belt pretensioner immediately after activation is very hot. Wait for at least half an hour to cool it off before proceeding the work.**
- **With many service procedures, gloves and safety glasses should be worn to prevent any possible irritation of the skin or eyes.**

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 "REPAIRS AND INSPECTIONS REQUIRED AFTER AN ACCIDENT" in Section 10B as well as when air bag is deployment.**
- **When servicing parts other than air bag system, if shocks may be applied to air bag system component parts, remove those parts beforehand.**
- **When handling the air bag (inflator) modules (driver, passenger and side), seat belt pretensioners (driver and passenger), side sensors or SDM, be careful not to drop it or apply an impact to it. If an excessive impact was applied, never attempt disassembly or repair but replace it with a new one.**
- **When grease, cleaning agent, oil, water, etc. has got onto air bag (inflator) modules (driver, passenger and side) or seat belt pretensioners (drive and passenger), wipe off immediately with a dry cloth.**
- **Air bag wire harness is included in instrument panel wire harness. Air bag wire harness branched off from instrument panel wire harness can be identified easily as it is covered with a yellow protection tube and it has yellow connectors. Be very careful when handling it.**
- **When an open in air bag wire harness, damaged wire harness, connector or terminal is found, replace wire harness, connectors and terminals as an assembly.**
- **Do not apply power to the air bag system unless all components are connected or a diagnostic chart requests it, as this will set a diagnostic trouble code.**
- **Never use air bag system component parts from another vehicle.**
- **When using electric welding, be sure to disconnect all air bag (inflator) module connectors and pretensioner connectors from air bag wire harness respectively.**
- **Never expose air bag system component parts directly to hot air (drying or baking the vehicle after painting) or flames.**
- **WARNING/CAUTION labels are attached on each part of air bag system components. Be sure to follow the instructions.**
- **After vehicle is completely repaired, perform "AIR BAG DIAGNOSTIC SYSTEM CHECK" in Section 10B.**

Warning, Caution and Information Labels



1. Air bag caution label on back side of engine hood	6. Air bag caution label on combination switch and contact coil assembly
2. Air bag caution label on sun visor (for vehicle with air bag system)	7. Air bag caution label on passenger air bag (inflator) module
3. Pretensioner label on seat belt retractor	8. Air bag caution label on SDM
4. Tire information placard	9. Air bag caution label on side air bag (inflator) module
5. Air bag caution label on driver air bag (inflator) module	10. Side sensor caution label

SECTION 0B

MAINTENANCE AND LUBRICATION

WARNING:

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

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

NOTE:

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

CONTENTS

Maintenance Schedule

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 shown in the following table.

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

Severe Condition Code	Maintenance	Maintenance Operation	Maintenance Interval
– B C D – – – –	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
– – C – – – – –	Air cleaner filter*1	I	Every 2,500 km (1,500 miles)
		R	Every 30,000 km (18,000 miles) or 24 months
A B C – E F – H	Spark plugs	R	Every 10,000 km (6,000 miles) or 8 months
– B C D – – – H	Wheel bearings	I	Every 15,000 km (9,000 miles) or 12 months
– B – D E – – H	Drive shafts and propeller shafts (4WD)	I	Every 15,000 km (9,000 miles) or 12 months
– B – – E – – H	Manual transmission oil, transfer oil (4WD A/T) and differential oil (4WD)	R	First: 15,000 km (9,000 miles) or 12 months Second and after: Every 30,000 km (18,000 miles) or 24 months reckoning from ϕ km (ϕ mile) or ϕ months
– B – – E – – H	Automatic transmission fluid	R	Every 30,000 km (18,000 miles) or 24 months
– – CD – – – –	Ventilator air filter *2 (if equipped)	I	Every 15,000 km (9,000 miles) or 12 months
		R	Every 45,000 km (27,000 miles) or 36 months

NOTE:

- **"R" : Replace or change**
- **"I" : Inspect and correct or replace if necessary**
- ***1 : Inspect or replace more frequently if necessary.**
- ***2 : Clean or replace more frequently if the air from the ventilator decreases.**

SECTION 3B1

ELECTRICAL POWER STEERING (EPS) SYSTEM (IF EQUIPPED)

WARNING:

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

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

NOTE:

For this section, refer to the same section of the Service Manual mentioned in FOREWORD of this manual. However, bear the following in mind when checking DTC (Diagnostic Trouble Code).
Be sure to use SUZUKI scan tool whenever checking DTC because this vehicle has no monitor connector for Electrical power steering system and DTC can not be displayed by EPS warning lamp flashing.

SECTION 5E

ANTILOCK BRAKE SYSTEM (ABS)

WARNING:

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

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

NOTE:

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

CONTENTS

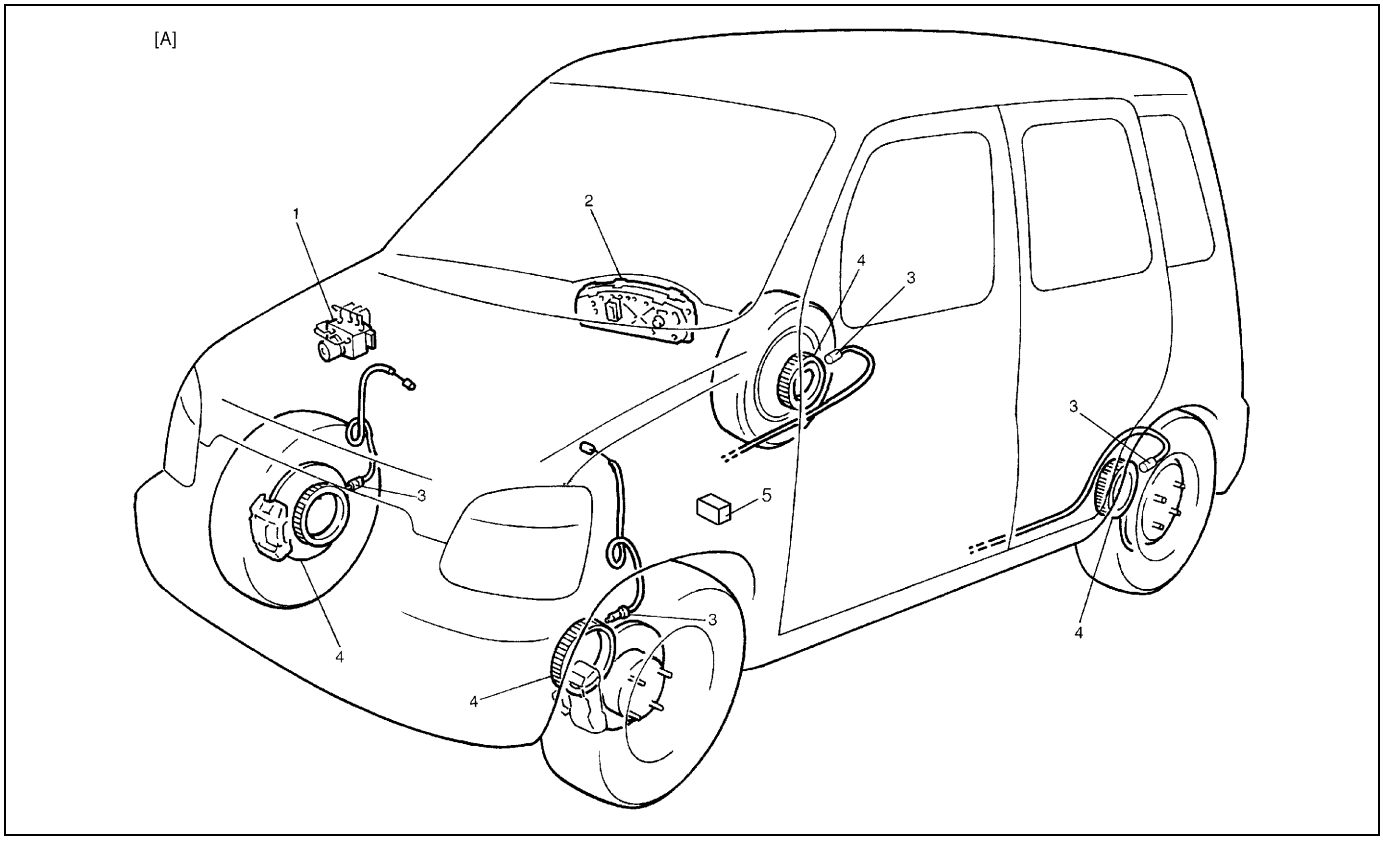
General Description

Components and Parts Location

The ABS (Antilock Brake System) controls the fluid pressure applied to the Wheel cylinder of each brake from the master cylinder so that each wheel is not locked even when hard braking is applied.
This ABS has also the following function.
While braking is applied, but before ABS control becomes effective, braking force is distributed between the front and rear so as to prevent the rear wheels from being locked too early for better stability of the vehicle.
The main component parts of this ABS include the following parts in addition to those of the conventional brake system.

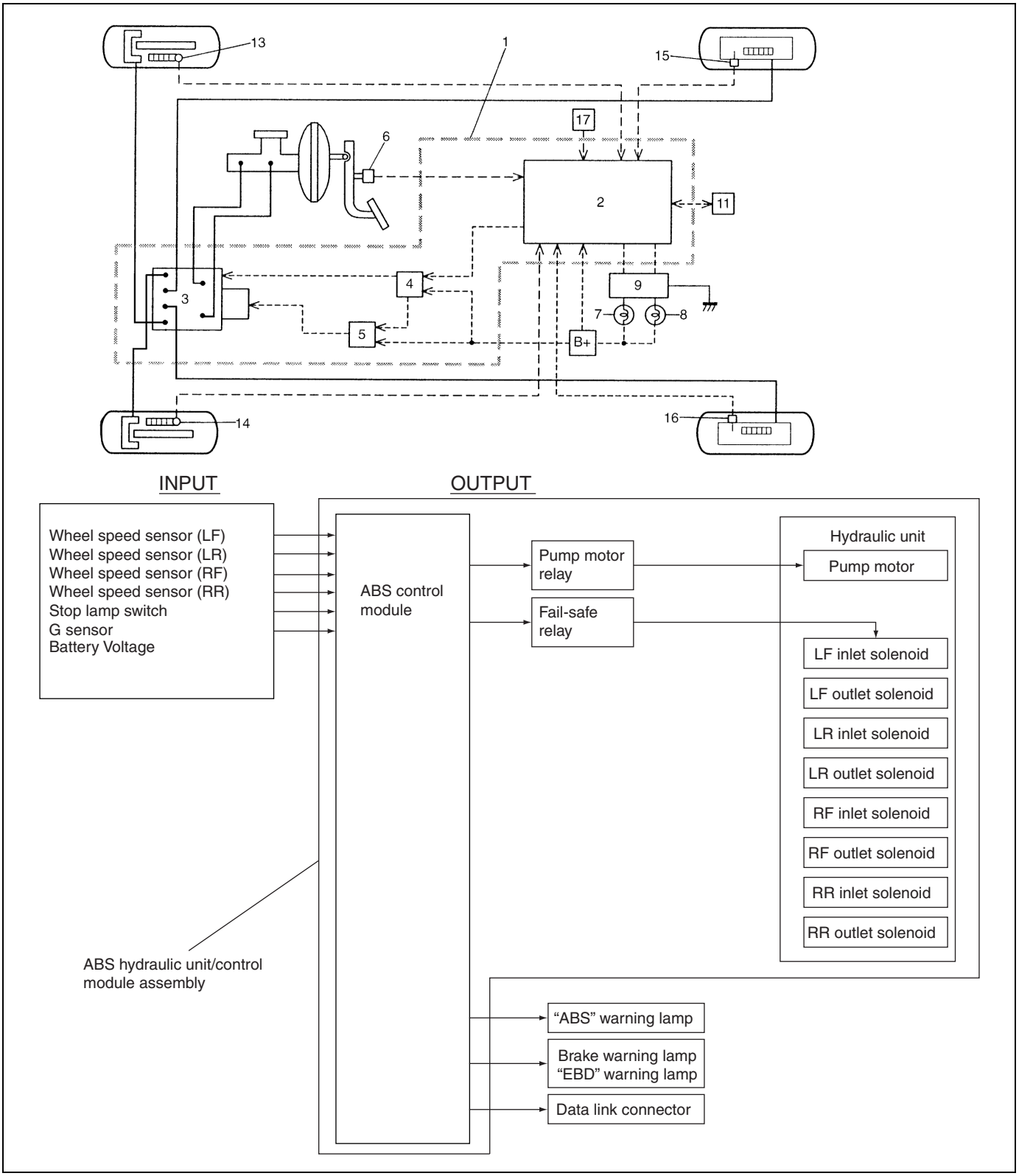
- Wheel speed sensor which senses revolution speed of each wheel and outputs its signal.
- "ABS" warning lamp which lights to inform abnormality when system fails to operate properly.
- ABS hydraulic unit/control module assembly is incorporated ABS control module, ABS hydraulic unit (actuator assembly), fail-safe relay and pump motor relay.
  - ABS control module which sends operation signal to ABS hydraulic unit to control fluid pressure applied to each wheel cylinder based on signal from each wheel speed sensor so as to prevent wheel from locking.
  - ABS hydraulic unit which operates according to signal from ABS control module to control fluid pressure applied to wheel cylinder of each 4 wheels.
  - Fail-safe relay (solenoid valve relay) which supplies power to solenoid valve in ABS hydraulic unit.
  - Pump motor relay which supplies power to pump motor in ABS hydraulic unit.
- G sensor which detects vehicle deceleration speed. (For 4WD model only)

This ABS is equipped with Electronic Brake force Distribution (EBD) system that controls a fluid pressure of rear wheels to best condition, which is the same function as that of proportioning valve, by the signal from wheel sensor independently of change of load due to load capacity and so on. And if the EBD system fails to operate properly, the brake warning lamp lights to inform abnormality.



[A] : LH steering vehicle shown	2. Combination meter	4. Wheel speed sensor ring
1. ABS hydraulic unit/control module assembly	3. Wheel speed sensor	5. G sensor (For 4WD model only)

System Schematic



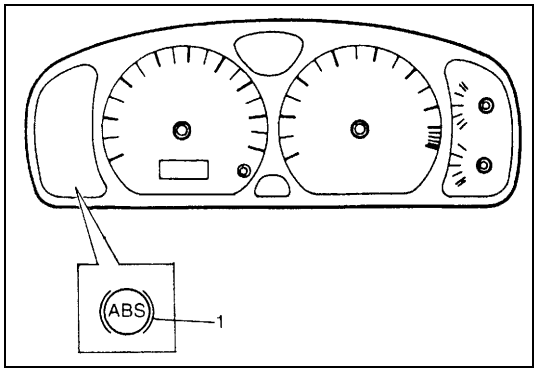
1. ABS hydraulic unit/control module assembly	7. "ABS" warning lamp	13. Wheel speed sensor (Right-front)
2. ABS control module	8. "EBD" warning lamp (Brake warning lamp)	14. Wheel speed sensor (Left-front)
3. ABS hydraulic unit	9. Lamp driver module	15. Wheel speed sensor (Right-rear)
4. Fail safe relay	10. Blank	16. Wheel speed sensor (Left-rear)
5. Pump motor relay	11. Data link connector	17. G sensor (For 4WD model only)
6. Stop lamp switch	12. Blank	

ABS Hydraulic Unit/Control Module Assembly

ABS control module is a component of ABS hydraulic unit/control module assembly and has the following functions.

Self-diagnosis function

ABS control module diagnoses conditions of the system component parts (whether or not there is any abnormality) all the time and indicates the results (warning of abnormality occurrence and DTC) through the ABS warning lamp (1) as described below.

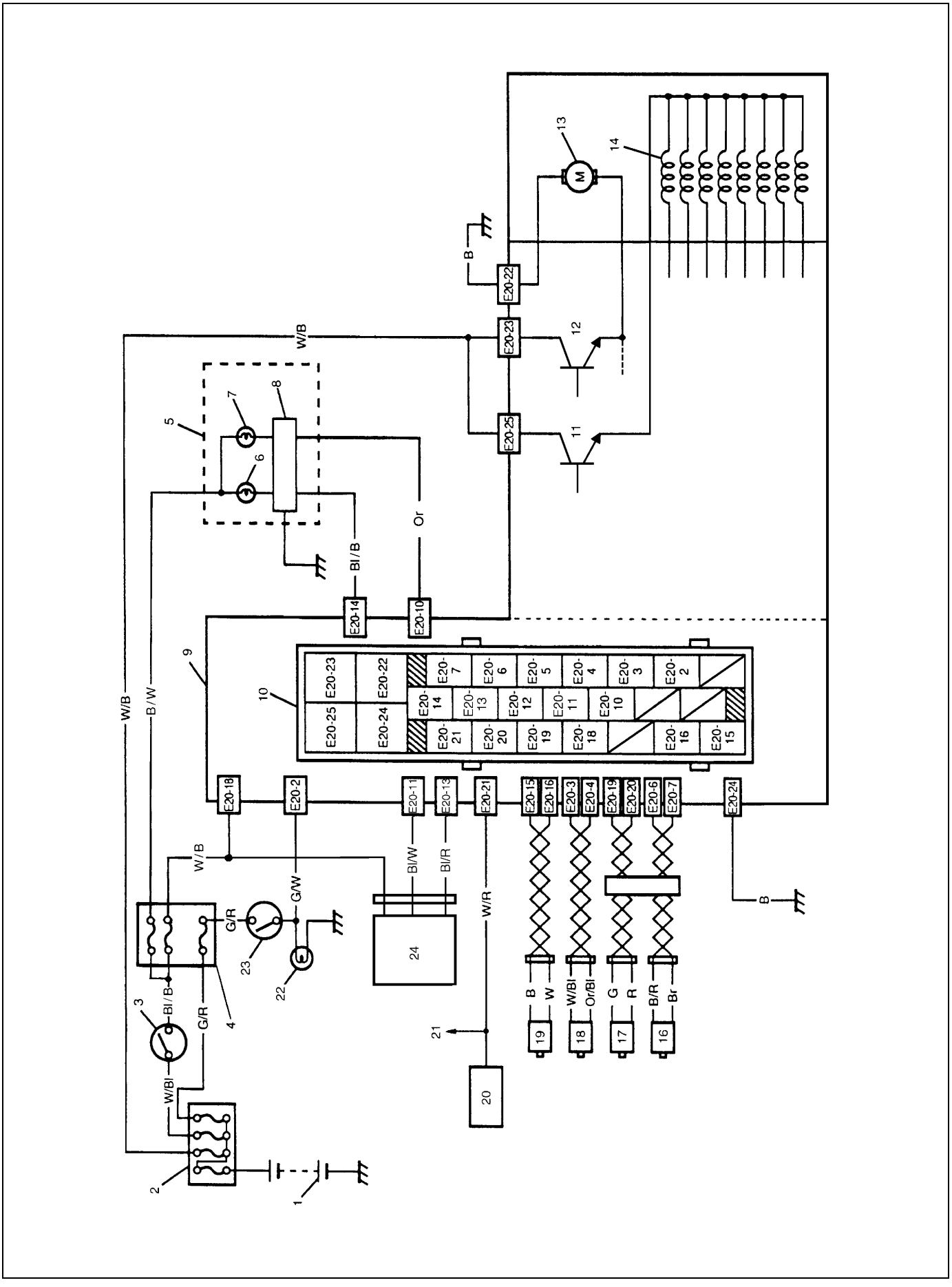


1) When ignition switch is turned ON, ABS warning lamp lights for 2 seconds to check its bulb and circuit.
2) When no abnormality has been detected (the system is in good condition), ABS warning lamp turns OFF after 2 seconds.
3) When an abnormality in the system is detected, ABS warning lamp lights and the area where that abnormality lies is stored in the memory of EEPROM in ABS control module.

Fail-safe function

When an abnormality occurs (an abnormal DTC is detected), ABS control module turns OFF the fail-safe relay which supplies power to ABS hydraulic unit. Thus, with ABS not operating, brakes function just like the brake system of the vehicle without ABS.

System Circuit



1. Battery	9. ABS hydraulic unit/control module assembly	17. Left-rear wheel speed sensor
2. Main fuses	10. Terminal arrangement of ABS hydraulic unit/control module assembly	18. Right-front wheel speed sensor
3. Ignition switch	11. ABS fail-safe relay (Solenoid valve relay)	19. Left-front wheel speed sensor
4. Circuit fuses	12. ABS pump motor relay	20. Data link connector
5. Combination meter	13. Pump motor	21. To ECM, TCM, SDM and P/S control module (if equipped)
6. ABS warning lamp	14. Solenoid valves	22. Stop lamp
7. Brake warning lamp	15. Blank	23. Stop lamp switch
8. Warning lamp driver module (for ABS)	16. Right-rear wheel speed sensor	24. G sensor (For 4WD model only)

Wire color					
B :	Black	Br :	Brown	R :	Red
B/R :	Black/Red	G :	Green	V/W :	Violet/White
B/W :	Black/White	G/R :	Green/Red	W/B :	White/Black
Bl/B :	Blue/Black	G/W :	Green/White	W/Bl :	White/Blue
Bl/R :	Blue/Red	Or :	Orange	W/R :	White/Red
Bl/W :	Blue/White	Or/Bl :	Orange/Blue		

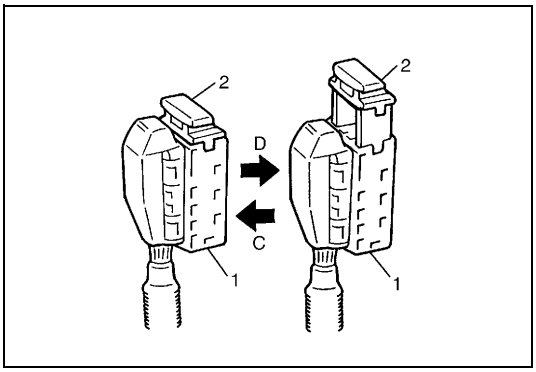
TERMINAL		CIRCUIT
E20	1	–
	2	Stop lamp switch
	3	Right-front wheel speed sensor (+)
	4	Right-front wheel speed sensor (–)
	5	–
	6	Right-rear wheel speed sensor (–)
	7	Right-rear wheel speed sensor (+)
	8	–
	9	–
	10	“EBD” warning lamp (Brake warning lamp)
	11	G sensor (For 4WD model only)
	12	–
	13	Ground (for G sensor) (For 4WD model only)
	14	ABS warning lamp
	15	Left-front wheel speed sensor (+)
	16	Left-front wheel speed sensor (–)
	17	–
	18	Ignition switch
	19	Left-rear wheel speed sensor (+)
	20	Left-rear wheel speed sensor (–)
	21	Data link connector
	22	Ground (for ABS pump motor)
	23	ABS pump motor relay
	24	Ground (for ABS control module)
	25	ABS fail-safe relay

Diagnosis

To ensure that the trouble diagnosis is done accurately and smoothly, observe “PRECAUTIONS IN DIAGNOSING TROUBLES” and follow “ABS DIAGNOSTIC FLOW TABLE”.

Precaution in Diagnosing Troubles

- If the vehicles was operated in any of the following ways, ABS warning lamp may light momentarily but this does not indicate anything abnormal in ABS.
  – The vehicle was driven with parking brake pulled.
  – The vehicle was driven with brake dragging.
  – The vehicle was stuck in mud, sand, etc.
  – Wheel spin occurred while driving.
  – Wheel(s) was rotated while the vehicle was jacked up.
- Be sure to read “PRECAUTIONS FOR ELECTRONIC CIRCUIT SERVICE” in Section 0A before inspection and observe what is written there.
- Be sure to use the trouble diagnosis procedure as described in the flow table. Failure to follow the flow table may result in incorrect diagnosis. (Some other diagnosis trouble code may be stored by mistake in the memory of ABS control module during inspection.)



- When disconnecting ABS hydraulic unit/control module connector (1), pull up lock (2) of connector.
  When connecting, set the connector on ABS hydraulic unit/control module assembly and push the lock (2) down.

D :	Disconnect
C :	Connect

ABS Diagnostic Flow Table

Refer to the following pages for the details of each step.

Step	Action	Yes	No
1	1) Perform “Customer Complaint Analysis”. 2) Perform “Problem Symptom Confirmation”. 3) Perform “Diagnostic Trouble Code Check, Record and Clearance”. Is there any malfunction DTC?	Go to Step 2.	Go to Step 5.
2	1) Perform “DRIVING TEST”. Is trouble symptom identified?	Go to Step 3.	Go to Step 6.
3	1) Check diagnostic trouble code. Is it malfunction code?	Go to Step 4.	Go to Step 5.
4	1) Inspect and repair referring to applicable diagnostic trouble code table in this section. 2) Perform “FINAL CONFIRMATION TEST” after cleared DTC. Does trouble recur?	Go to Step 7.	End.
5	1) Inspect and repair referring to “DIAGNOSIS” in “BRAKES” section. 2) Perform “FINAL CONFIRMATION TEST”.	–	–
6	1) Check intermittent troubles referring to “INTERMITTENT AND POOR CONNECTION” in “GENERAL INFORMATION” section and related circuit of trouble code recorded in Step 2. 2) Perform “FINAL CONFIRMATION TEST” after cleared diagnostic trouble code. Does trouble recur?	Go to Step 7.	End.
7	1) Perform “Diagnostic Trouble Code Check, Record and Clearance”. Is there any malfunction code?	Go to Step 2.	Go to Step 5.

1) MALFUNCTION ANALYSIS

a) Customer Complaint Analysis

Record details of the problem (failure, complaint) and how it occurred as described by the customer.
For this purpose, use of such a questionnaire form as shown below will facilitate collecting information to the point required for proper analysis and diagnosis.

CUSTOMER QUESTIONNAIRE (EXAMPLE)

Customer's name:	Model:	VIN:	
Date of issue:	Date of Reg:	Date of problem:	Mileage:

Problem Symptoms	• ABS warning lamp abnormal: fails to turn on/fails to go off/flashes • Abnormal noise while vehicle is running: from motor, from valve, other_____ • Wheel is locked at braking: • Pump motor does not stop (running): • Braking does not work: • Other:
Frequency of occurrence	• Continuous/Intermittent (times a day, a month)/ other_____
Conditions for Occurrence of Problem	• Vehicle at stop & ignition switch ON: • When starting: at initial start only/at every start/Other_____ • Vehicle speed: while accelerating/while decelerating/at stop/ while turning/while running at constant speed/ other_____ • Road surface condition: Paved road/rough road/snow-covered road/ other_____ • Chain equipment:
Environmental Condition	• Weather: fair/cloudy/rain/snow/other_____ • Temperature: °F (°C)
Diagnostic Trouble Code	• First check: Normal code/malfunction code ( ) • Second check after test drive: Normal code/malfunction code ( )

b) Problem Symptom Confirmation

Check if what the customer claimed in "CUSTOMER QUESTIONNAIRE" is actually found in the vehicle and if that symptom is found, whether it is identified as a failure. (This step should be shared with the customer if possible.) Check warning lamps related to brake system referring to "EBD WARNING LAMP (BRAKE WARNING LAMP) CHECK" and "ABS WARNING LAMP CHECK" in this section.

c) Diagnostic Trouble Code (DTC) Check, Record and Clearance
Perform “DIAGNOSTIC TROUBLE CODE CHECK” procedure in this section, record it and then clear it referring to “DIAGNOSTIC TROUBLE CODE CLEARANCE” in this section.
If the malfunction DTC which was once displayed and then cleared cannot be detected (indicated) again when the ignition switch is turned ON, attempt to diagnose the trouble based on the DTC recorded in this step may mislead the diagnosis or make diagnosing difficult. Proceed to Step 2) to check control module for proper self-diagnosis function.
If the malfunction DTC which was once displayed and then cleared can be detected (indicated) again when ignition switch is turned ON, proceed to Step 3).

2) DRIVING TEST
Test drive the vehicle at 40 km/h for more than a minute and check if any trouble symptom (such as abnormal lighting of ABS warning light) exists.
If the malfunction DTC is confirmed again at ignition switch ON, driving test as described in above is not necessary. Proceed to Step 3).

3) DIAGNOSTIC TROUBLE CODE CHECK
Recheck diagnostic trouble code referring to “DTC CHECK” as shown in the following page.

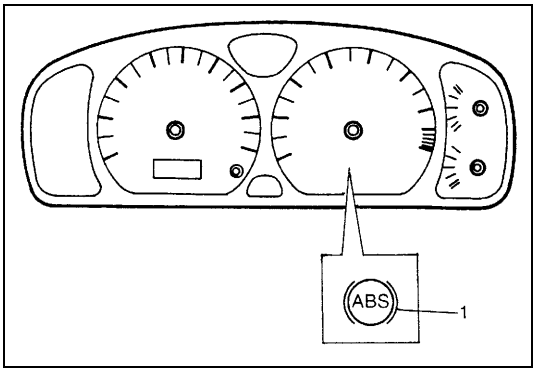
4) DIAGNOSTIC TROUBLE CODE FLOW TABLE
According to Diagnostic flow table for the diagnostic trouble code confirmation in Step 3), locate the cause of the trouble, namely in a sensor, switch, wire harness, connector, actuator assembly or other part and repair or replace faulty parts.

5) “DIAGNOSIS” IN “BRAKES” SECTION
Check the parts or system suspected as a possible cause referring to “DIAGNOSIS” in “BRAKES” section and based on symptoms appearing on the vehicle (symptom obtained through Steps 1)-a, 1)-b and 2) and repair or replace faulty parts, if any).

6) CHECK FOR INTERMITTENT PROBLEM
Check parts where an intermittent trouble is easy to occur (e.g., wire harness, connector, etc.), referring to “INTERMITTENT TROUBLE” in “GENERAL INFORMATION” section and related circuit of trouble code recorded in Step 1)-c.

7) FINAL CONFIRMATION TEST
Confirm that the problem symptom has gone and the ABS is free from any abnormal conditions. If what has been repaired is related to the malfunction DTC, clear the DTC once and perform test driving and confirm that no DTC is indicated.

ABS Warning Lamp Check

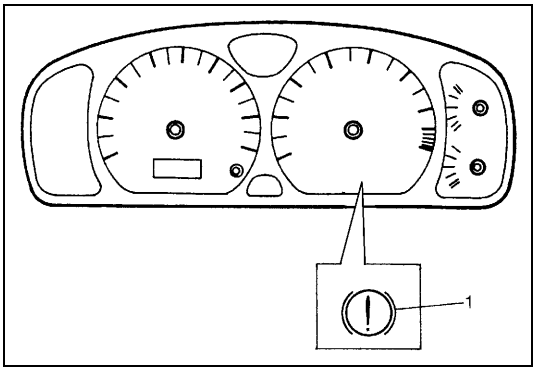


1) Turn ignition switch ON.
2) Check that ABS warning lamp (1) comes ON for about 2 seconds and then goes off.
   If any faulty condition is found, advance to Diagnostic Flow Table-A, B, or C.

EBD Warning Lamp (Brake Warning Lamp) Check

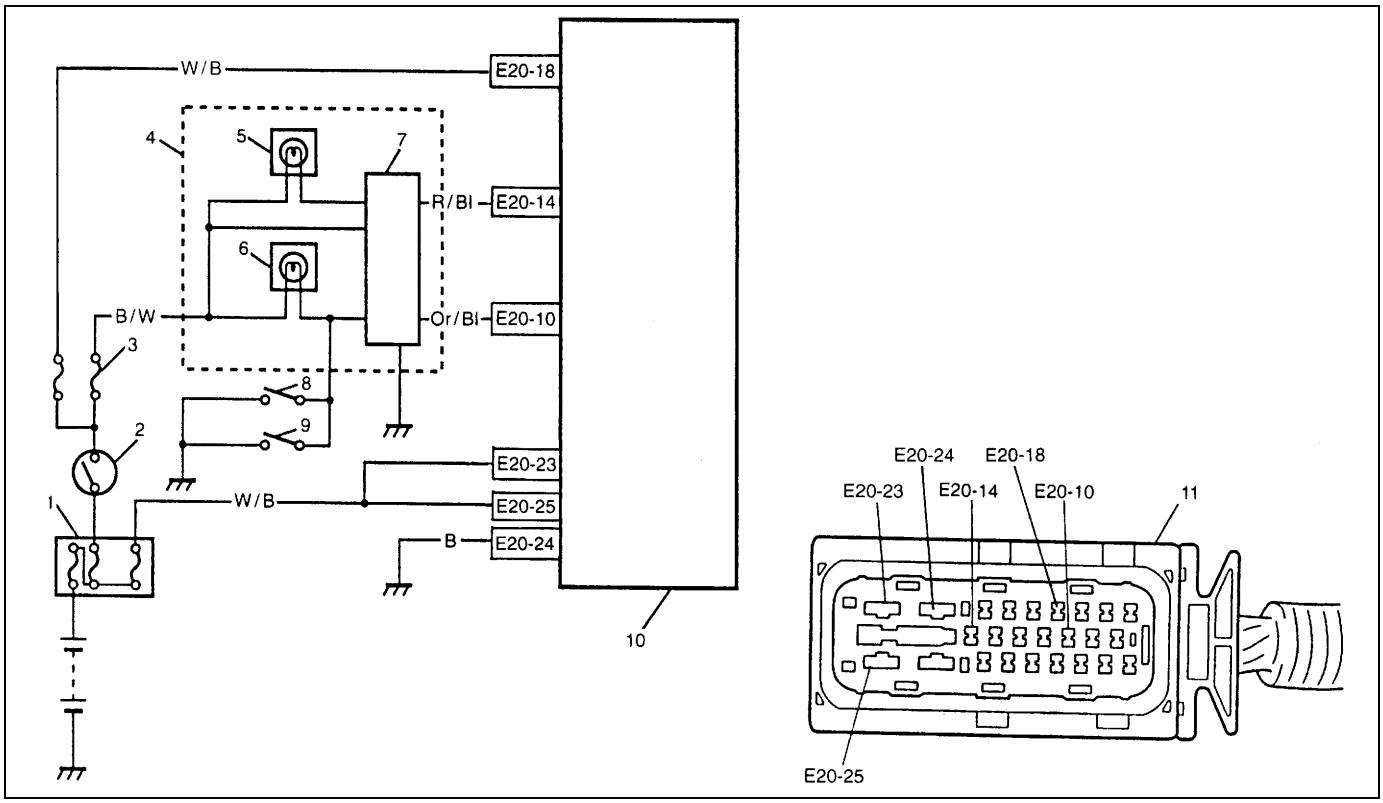
NOTE:

Perform this check on a level place.



1) Turn ignition switch ON with parking brake applied.
2) Check that EBD warning lamp (brake warning lamp) (1) is turned ON.
3) Release parking brake with ignition switch ON and check that EBD warning lamp (brake warning lamp) goes off.
   If it doesn't go off, go to "TABLE-D" in this section.

Table – A ABS Warning Lamp Circuit Check – Lamp Does Not Come "ON" at Ignition Switch ON



1. Main fuse	5. ABS warning lamp	9. Brake fluid level switch
2. Ignition switch	6. Brake warning lamp	10. ABS hydraulic unit/control module assembly
3. Circuit fuse	7. Lamp driver module	11. ABS hydraulic unit/control module connector
4. Combination meter	8. Parking brake switch	

CIRCUIT DESCRIPTION

Operation (ON/OFF) of ABS warning lamp is controlled by ABS control module through lamp driver module in combination meter.

If the Antilock brake system is in good condition, ABS control module turns ABS warning lamp ON at the ignition switch ON, keeps it ON for 2 seconds and then turns it OFF. If an abnormality in the system is detected, ABS warning lamp is turned ON continuously by ABS control module. Also, it is turned ON continuously by lamp driver module when the connector of ABS control module is disconnected.

INSPECTION

Step	Action	Yes	No
1	1) Turn ignition switch ON. Do other warning lamp come ON?	Go to Step 2.	Go to Step 4.
2	1) Disconnect ABS hydraulic unit/control module connector. Does ABS warning lamp light with ignition switch ON?	Substitute a known-good ABS hydraulic unit/control module assembly and recheck.	Go to Step 3.
3	1) Remove combination meter. Is bulb of ABS warning lamp in good condition?	"R/Bl" circuit shorted to ground. If OK, replace combination meter (lamp driver module).	Replace bulb.
4	Is IG fuse in good condition?	Open in "B/W" wire to combination meter or poor connection.	Repair and replace.

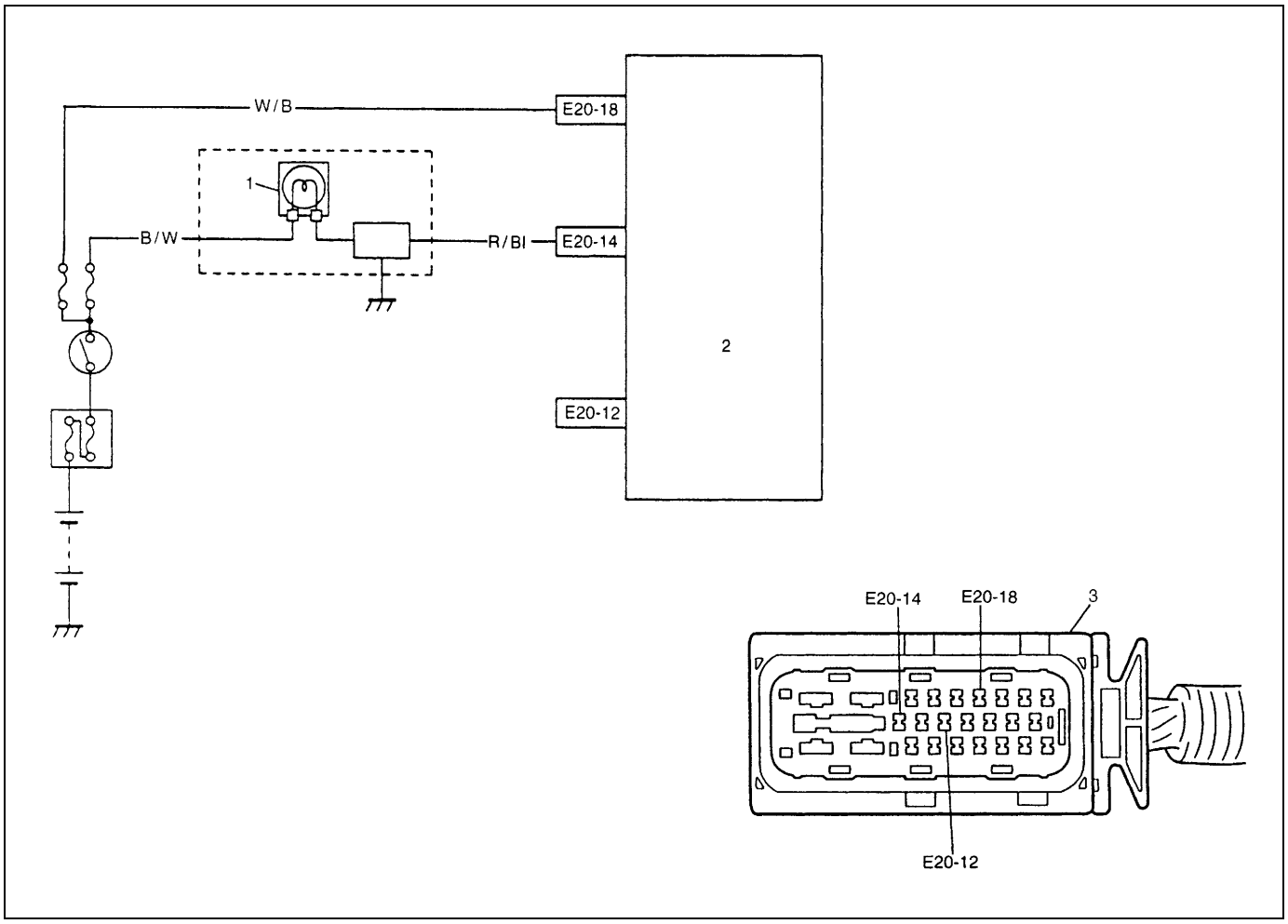
Table – B ABS Warning Lamp Circuit Check – Lamp Comes "ON" Steady

Refer to TABLE – A for System Circuit Diagram and Circuit Description.

INSPECTION

Step	Action	Yes	No
1	Perform diagnostic trouble code check. Is there any DTC (NO CODES on SUZUKI scan tool) exists?	Go to Step 2.	Go to Step 3.
2	Does malfunction DTC exist at Step 1?	Go to Step 7 of "ABS DIAGNOSTIC FLOW TABLE" in this section.	Go to Step 3.
3	1) Disconnect ABS hydraulic unit/control module connector. 2) Check for proper connection to ABS hydraulic unit/control module connector at terminals "E20-14", "E20-18" and "E20-24". 3) If OK then ignition switch ON and measure voltage at terminal "E20-18" of connector. Is it 10 – 14 V?	Go to Step 4.	"W/B" circuit open.
4	1) With ABS hydraulic unit/control module connector disconnected, turn ignition switch ON and light ABS warning lamp. 2) Connect terminal "E20-14" of disconnected connector to ground using service wire. Does ABS warning lamp turn off?	Go to Step 5.	"R/Bl" circuit open. If wire and connection are OK, replace combination meter (lamp driver module).
5	1) Measure resistance from connector terminal "E20-24" to body ground. Is continuity indicated?	Substitute a known-good ABS hydraulic unit/control module assembly and recheck.	"B" circuit open.

Table – C ABS Warning Lamp Circuit Check – The Lamp Flashes Continuously While Ignition Switch is ON



1. "ABS" warning lamp in combination meter	3. ABS hydraulic unit/control module connector
2. ABS hydraulic unit/control module assembly	

INSPECTION

Step	Action	Yes	No
1	1) Check for proper connection to ABS control module at ABS hydraulic unit/control module connector. Is it in good condition?	Substitute a known-good ABS hydraulic unit/control module assembly and recheck.	"E20-12" terminal shorted to ground.

Table – D EBD Warning Lamp (Brake Warning Lamp) Check – Lamp Comes "ON" Steady

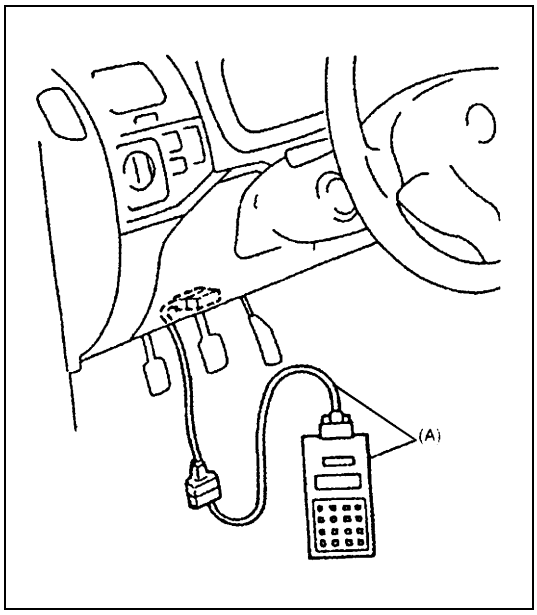
CIRCUIT DESCRIPTION

EBD warning lamp (Brake warning lamp) is controlled by parking brake switch, brake fluid level switch and ABS control module/hydraulic unit assembly through lamp driver module in combination meter. Refer to "TABLE – A" for circuit diagram.

INSPECTION

Step	Action	Yes	No
1	1) Make sure that : • Parking brake is completely released. • Brake fluid level is upper than the minimum level. Are the check results OK?	Go to Step 2.	Release parking brake completely and/or replenish brake fluid.
2	Does "ABS" warning lamp come on?	Perform "TABLE – B" previously outlined.	Go to Step 3.
3	1) Disconnect ABS hydraulic unit/control module connector. 2) Check for proper connection to ABS hydraulic unit/control module connector at terminals "E20-10". 3) If OK, apply chocks to wheels and select gear in neutral position (P range for A/T). 4) Keep brake pedal depressed and start engine. Release parking brake. 5) Connect terminal "E20-10" of disconnected connector to ground using service wire. Does brake warning lamp turn off?	Substitute a known-good ABS hydraulic unit/control module assembly and recheck.	"Or/Bl" circuit open. If wire and connection are OK, replace combination meter.

Diagnostic Trouble Code (DTC) Check (Using SUZUKI Scan Tool)



1) After setting cartridge for ABS to SUZUKI scan tool, connect SUZUKI scan tool to data link connector.

Special tool
(A) : SUZUKI scan tool

2) Turn ignition switch ON.
3) Read DTC according to instructions displayed on SUZUKI scan tool and print it or write it down. Refer to SUZUKI scan tool operator's manual for further details.

NOTE:

If SUZUKI scan tool cannot display DTC, perform "SERIAL DATA LINK CIRCUIT CHECK" described in this section.

4) After completing the check, turn ignition switch off and disconnect SUZUKI scan tool from DLC.

Diagnostic Trouble Code (DTC) Clearance

WARNING:

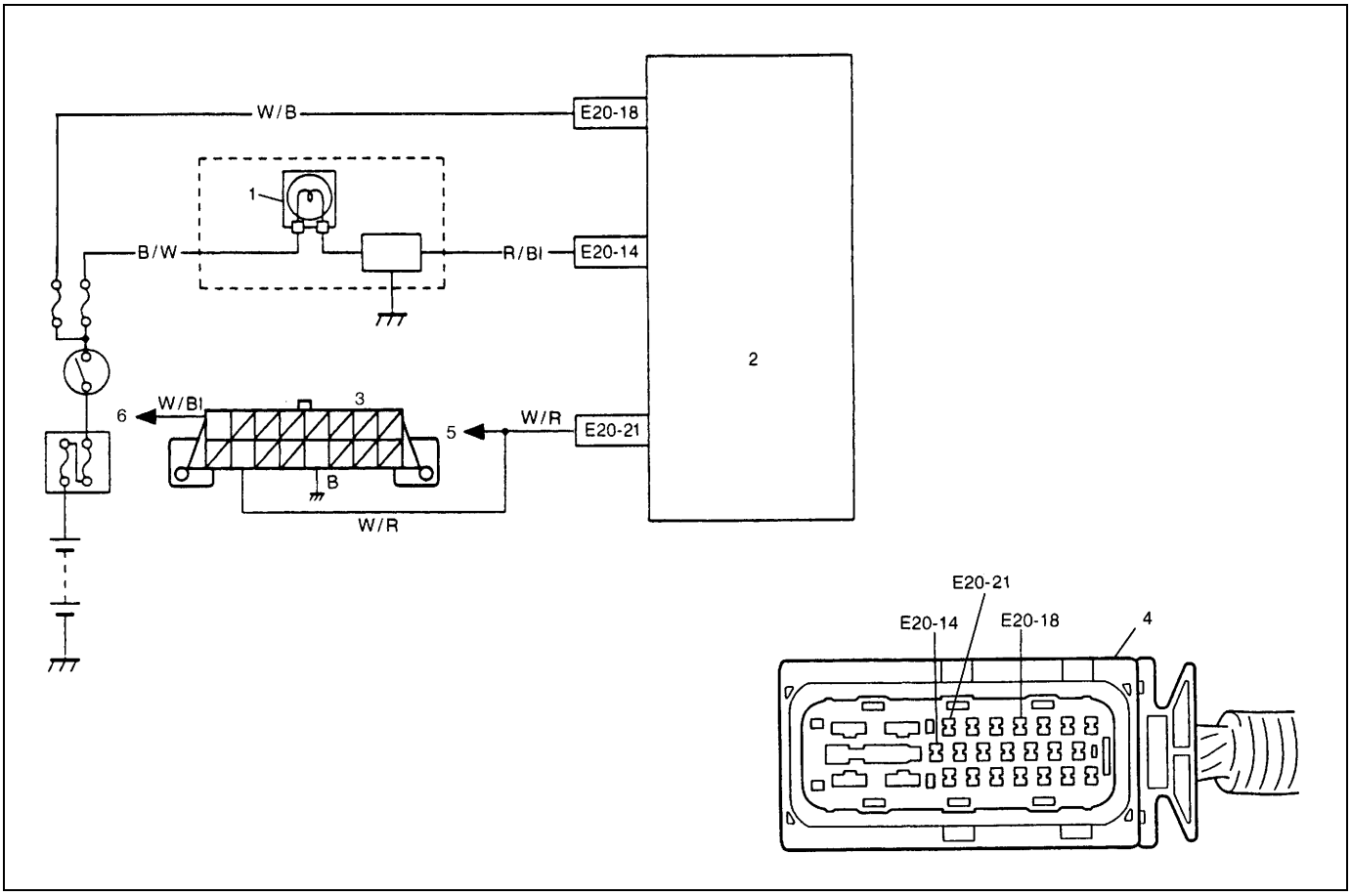
When performing a driving test, select a safe place where there is neither any traffic nor any traffic accident possibility and be very careful during testing to avoid occurrence of an accident.

After repair or replace malfunction part(s), clear all DTCs by performing the following procedure.

1) Connect SUZUKI scan tool to data link connector in the same manner as when making this connection for DTC check.
2) Turn ignition switch ON.
3) Erase DTC according to instructions displayed on scan tool. Refer to scan tool operator's manual for further details.
4) After completing the clearance, turn ignition switch off and disconnect scan tool from data link connector.

Serial Data Link Circuit Check

CAUTION:
Be sure to perform "SYSTEM CHECK FLOW TABLE" before starting diagnosis according to flow table.

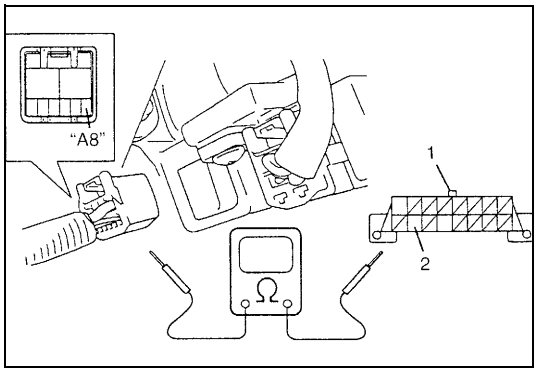


1. "ABS" warning lamp in combination meter	3. Data link connector (DLC)	5. To ECM, TCM, P/S control module and SDM
2. ABS hydraulic unit/control module assembly	4. ABS hydraulic unit/control module connector	6. To main fuse box

INSPECTION

Step	Action	Yes	No
1	Was “ABS DIAGNOSTIC CHECK FLOW TABLE” performed?	Go to Step 2.	Go to “ABS DIAGNOSTIC CHECK FLOW TABLE” in this section.
2	1) Make sure that SUZUKI scan tool is free from malfunction and correct cartridge for ABS is used. 1) Turn ignition switch to OFF position. 2) Check proper connection of SUZUKI scan tool to DLC. Is connection in good condition?	Go to Step 3.	Properly connect SUZUKI scan tool to DLC.
3	1) Check if communication is possible by trying communication with other controller (ECM, TCM, P/S control module or SDM). Is it possible to communicate with other controller?	Go to Step 4.	Repair open in common section of serial data circuit (“W/R” wire circuit) used by all controllers or short to ground or power circuit which has occurred somewhere in serial data circuit (“W/R” wire circuit).
4	1) With ignition switch OFF position, disconnect ABS hydraulic unit/control module connector from ABS hydraulic unit/control module. 2) Check proper connection at “E20-21” (“W/R” wire) terminal for serial data circuit. 3) If OK, then check resistance between “E20-21” (“W/R” wire) terminal and “W/R” wire terminal for serial data circuit in DLC. Is resistance 1 Ω or less?	Substitute a known-good P/S control module and recheck.	Repair high resistance or open in “W/R” wire circuit for ANTI LOCK BRAKE system.

Fig. for Step 4



1. DLC
2. “W/R” wire terminal

Diagnostic Trouble Code (DTC) Table

CAUTION:
Be sure to perform "ABS DIAGNOSTIC FLOW TABLE" before starting diagnosis.

DTC (displayed on SUZUKI scan tool)	DIAGNOSTIC ITEMS	
NO DTC	Normal	
C1013	ABS control module	
C1015	G sensor circuit	
C1021	RF	Wheel speed sensor circuit
C1025	LF	
C1031	RR	
C1035	LR	
C1022	RF	Wheel speed sensor circuit or sensor ring
C1026	LF	
C1032	RR	
C1036	LR	
C1041	RF	Inlet solenoid valve circuit
C1042		Outlet solenoid valve circuit
C1045	LF	Inlet solenoid valve circuit
C1046		Outlet solenoid valve circuit
C1051	RR	Inlet solenoid valve circuit
C1052		Outlet solenoid valve circuit
C1055	LR	Inlet solenoid valve circuit
C1056		Outlet solenoid valve circuit
C1057	Power source	
C1061	ABS pump motor and/or motor relay circuit	
C1063	Fail safe-relay	
C1071	ABS control module	

DTC C1013 – Incorrect ABS Control Module Installed

DESCRIPTION

When abnormal signal is inputted to a no-used terminal of control module while running or incorrect ABS hydraulic unit/control module assembly is installed, this DTC will be set.

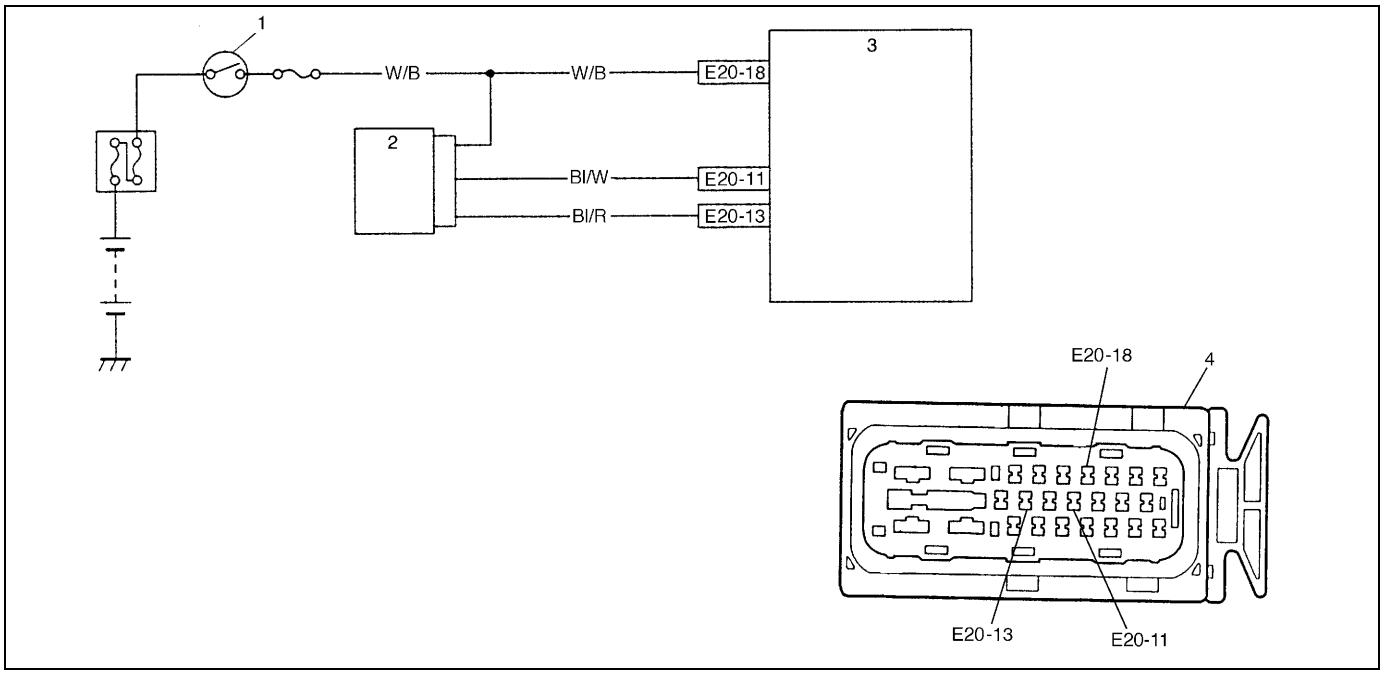
NOTE:

When ABS hydraulic unit/control module assembly for 2WD vehicle is installed to 4WD vehicle, this DTC is set. Before preforming the INSPECTION as shown below, check part number for supply of ABS hydraulic unit/control module assembly referring to parts catalogue.

INSPECTION

1) Ignition switch OFF.
2) Check for proper connection from harness to control module.
3) If OK, substitute an ABS hydraulic unit/control module assembly with correct part number.
4) Recheck system.

DTC C1015 – G Sensor Circuit



1. Ignition switch	3. ABS hydraulic unit/control module assembly
2. G sensor	4. ABS hydraulic unit/control module connector

DESCRIPTION

While a vehicle is at stop or running, if the potential difference between the sensor signal terminal “E20-11” and the sensor ground terminal “E20-13” is not within the specified voltage value, or if the signal voltage while at a stop does not vary from that while running, this DTC is set.
Therefore, this DTC may be set when a vehicle is lifted up and its wheel(s) is turned. In such case, clear the DTC and check again.

NOTE:

When ABS hydraulic unit/control module assembly for 4WD vehicle is installed to 2WD vehicle, this DTC is set. Before preforming the INSPECTION as shown below, check part number for supply of ABS hydraulic unit/control module assembly referring to parts catalogue.

INSPECTION

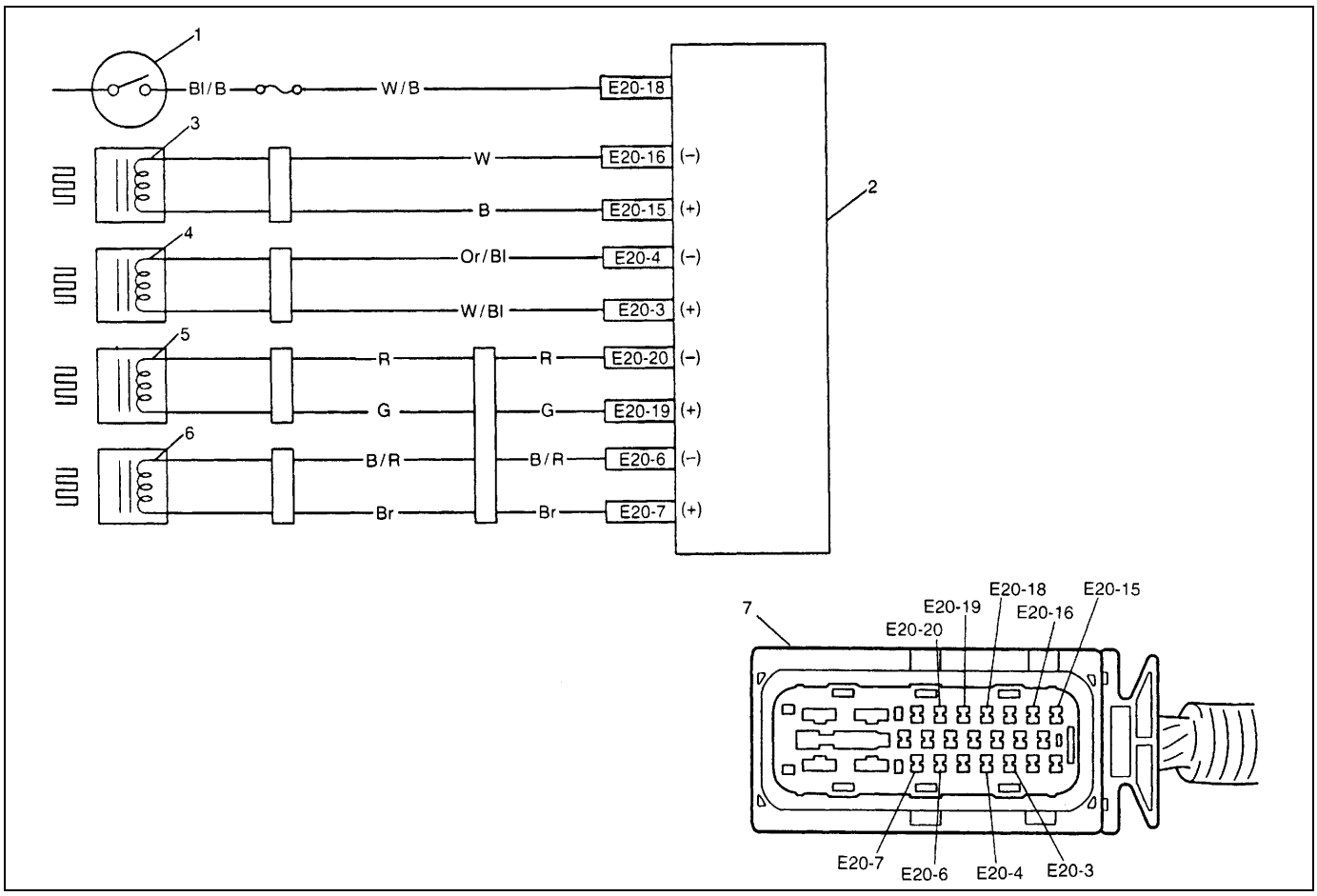
Step	Action	Yes	No
1	Is G sensor installed floor securely?	Go to Step 2.	Tighten sensor or bracket screw securely. If not, using new screw.
2	1) Ignition switch OFF. 2) Remove G sensor with bracket. 3) Check for proper connection to G sensor. 4) If OK then check G sensor referring to INSPECTION of “G SENSOR”. Is it in good condition?	Go to Step 3.	Replace G sensor.
3	1) Disconnect connectors from ABS hydraulic unit/control module assembly and G sensor. 2) Check for proper connection to ABS control module at terminals “E20-11” and “E20-13”. 3) If OK, then turn ignition switch ON and measure voltage between “W/B” terminal of sensor connector and body ground. It is 10 – 14 V?	Go to Step 4.	“W/B” circuit open.
4	Measure voltage between “ORN” terminal of sensor connector and body ground. Is it 0 V?	Go to Step 5.	“ORN” circuit shorted to power circuit.
5	1) Ignition switch OFF. 2) Check that “Bl/W” circuit is free from open or short to ground and “Bl/R” circuit. Is it in good condition?	“Bl/R” circuit open. If circuit is OK, substitute a known-good ABS hydraulic unit/control module assembly.	“Bl/W” circuit open or shorted to ground or “BLK/ORN” circuit.

DTC C1021, DTC C1022 – Right-Front Wheel Speed Sensor Circuit or Sensor Ring

DTC C1025, DTC C1026 – Left-Front Wheel Speed Sensor Circuit or Sensor Ring

DTC C1031, DTC C1032 – Right-Rear Wheel Speed Sensor Circuit or Sensor Ring

DTC C1035, DTC C1036 – Left-Rear Wheel Speed Sensor Circuit or Sensor Ring



1. Ignition switch	4. Right-front wheel speed sensor	7. ABS hydraulic unit/control module connector
2. ABS control module/hydraulic unit assembly	5. Left-rear wheel speed sensor	
3. Left-front wheel speed sensor	6. Right-rear wheel speed sensor	

DESCRIPTION

The ABS control module monitors the voltage at the terminal of each sensor while the ignition switch is ON. When the voltage is not within the specified range, an applicable DTC will be set. Also, when no sensor signal is inputted at starting or while running, an applicable DTC will be set.

NOTE:

When the vehicle was operated in any of the following ways, one of these DTCs may be set even when the sensor is in good condition. If such possibility is suspected, repair the trouble (dragging of brake, etc.) of the vehicle, clear DTC once and then after performing the driving test as described in Step 2 of "ABS DIAGNOSIS FLOW TABLE", check whether or not any abnormality exists.

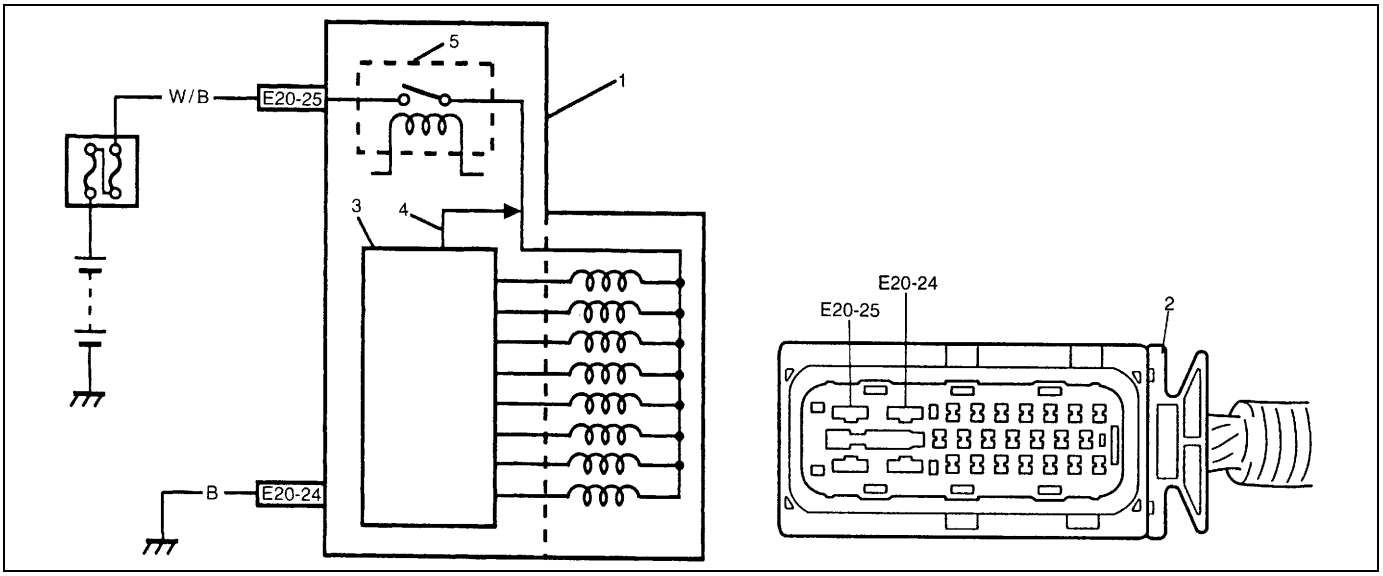
- **The vehicle was driven with parking brake pulled.**
- **The vehicle was driven with brake dragging.**
- **Wheel spin occurred while driving.**
- **Wheel(s) was turned while the vehicle was jacked up.**
- **The vehicle was stuck.**

INSPECTION

Step	Action	Yes	No
1	1) Disconnect applicable ABS wheel speed sensor coupler with ignition switch OFF. 2) Measure resistance between terminals of ABS wheel speed sensor. Refer to "FRONT WHEEL SPEED SENSOR" and/or "REAR WHEEL SPEED SENSOR" in this section. Is measured resistance value as specified?	Go to Step 2.	Replace ABS wheel speed sensor assembly.
2	1) Turn ignition switch OFF. 2) Disconnect ABS hydraulic unit/control module connector. 3) Check for proper connection to ABS control module at each sensor terminal. 4) If OK, then turn ignition switch ON and measure voltage between sensor terminal of module connector and body ground. Is it 0V?	Go to Step 3.	ABS wheel speed sensor circuit shorted to power.
3	1) Turn ignition switch OFF. 2) Connect ABS wheel speed sensor coupler. 3) Measure resistance between the following points. • Both ABS hydraulic unit/control module connector terminals of the corresponding sensor. This check result should be the same as above Step 1. • Either terminal of wheel speed sensor coupler and body ground. This check result should be no continuity. Are both check results OK?	Go to Step 4.	Circuit open or shorted to ground.
4	1) Remove applicable ABS wheel speed sensor. 2) Check sensor for damage or foreign material attached. Is it in good condition?	Go to Step 5.	Clean, repair or replace.
5	Check front and/or rear sensor ring for the following (remove rear drum as necessary) : • Rotor serration (teeth) neither missing nor damaged. • No foreign material being attached. • Rotor not being eccentric. • Wheel bearing free from excessive play. Are they in good condition?	Go to Step 6.	Clean, repair or replace.

Step	Action	Yes	No
6	1) Install ABS wheel speed sensor to knuckle. 2) Tighten sensor bolt to specified torque and check that there is no clearance between sensor and knuckle. Is it OK?	Go to Step 7.	Replace ABS wheel speed sensor.
7	Referring to “Reference” of “FRONT WHEEL SPEED SENSOR” and/or “Reference” of “REAR WHEEL SPEED SENSOR” in this section, check output voltage or waveform. Is specified voltage and/or waveform obtained?	Substitute a known-good ABS hydraulic unit/control module assembly and recheck.	Replace sensor and recheck.

DTC C1041 – Right-Front Inlet Solenoid Circuit
DTC C1045 – Left-Front Inlet Solenoid Circuit
DTC C1051 – Right-Rear Inlet Solenoid Circuit
DTC C1055 – Left-Rear Inlet Solenoid Circuit
DTC C1042 – Right-Front Outlet Solenoid Circuit
DTC C1046 – Left-Front Outlet Solenoid Circuit
DTC C1052 – Right-Rear Outlet Solenoid Circuit
DTC C1056 – Left-Rear Outlet Solenoid Circuit



1. ABS hydraulic unit/control module assembly	3. ABS control module	5. Fail-safe relay
2. ABS hydraulic unit/control module assembly connector	4. Signal	

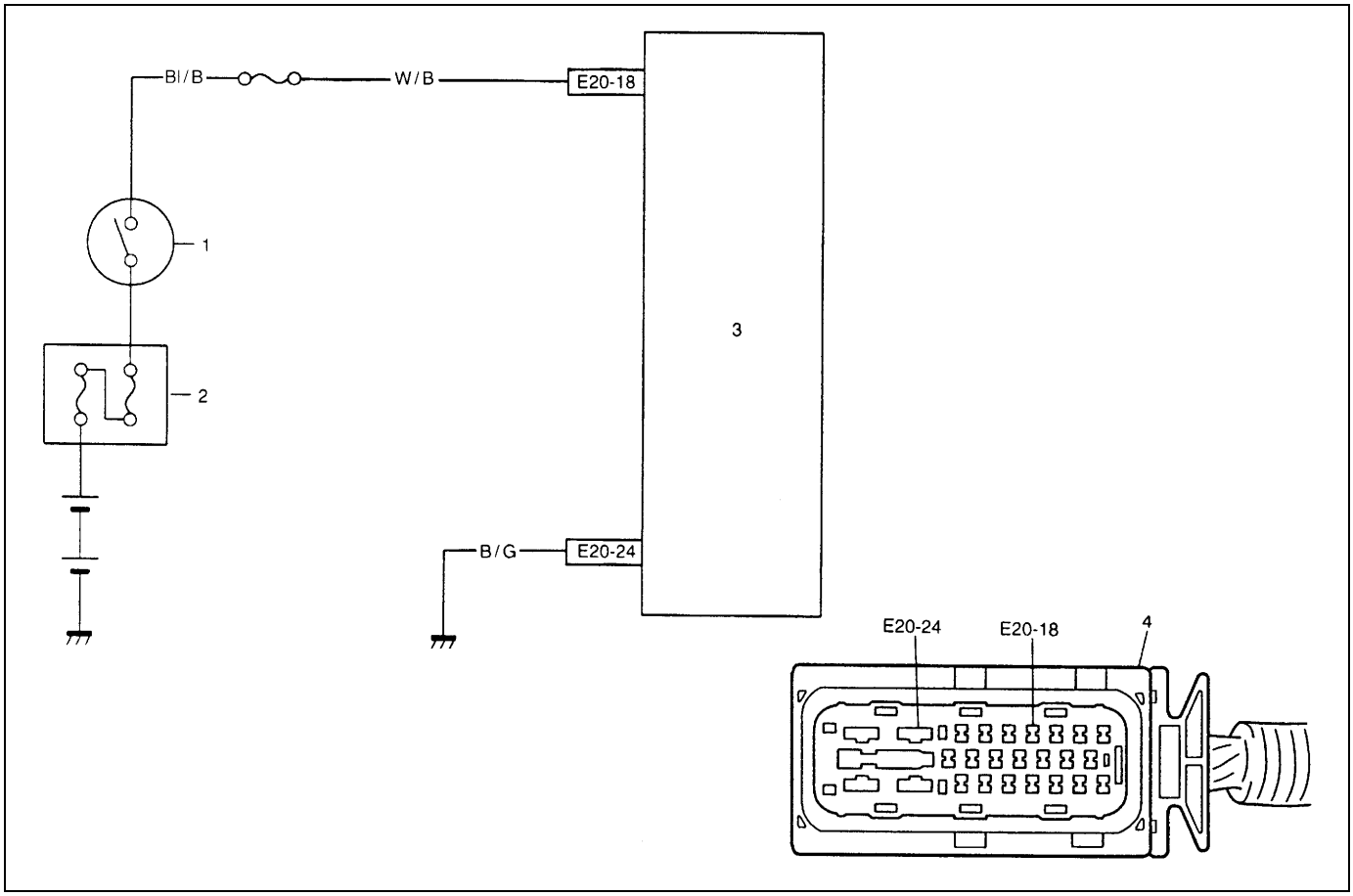
DESCRIPTION

The ABS control module monitors the output from the valve.
When the output of each valve exceeds the specified value compared with the signal sent from ABS control module, this DTC is set.

INSPECTION

Step	Action	Yes	No
1	1) Check solenoid operation referring to item “ABS HYDRAULIC UNIT OPERATION CHECK” in this section. Is it in good condition?	Check terminal “E20-25” connection. If connection is OK, substitute a known-good ABS hydraulic unit/control module assembly and recheck.	Go to Step 2.
2	1) Turn ignition switch to OFF position. 2) Disconnect ABS hydraulic unit/control module connector. 3) Check for proper connection to ABS hydraulic unit/control module connector at terminal “E20-25”. 4) If OK, then measure voltage between terminal “E20-25” of module connector and “E20-24”. Is it 10 – 14 V?	Substitute a known-good ABS hydraulic unit/control module assembly and recheck.	“WHT/BLU” or “BLK” circuit open.

DTC C1057 – Power Source Circuit



1. Ignition switch	3. ABS hydraulic unit/control module assembly
2. Main fuse	4. ABS hydraulic unit/control module connector

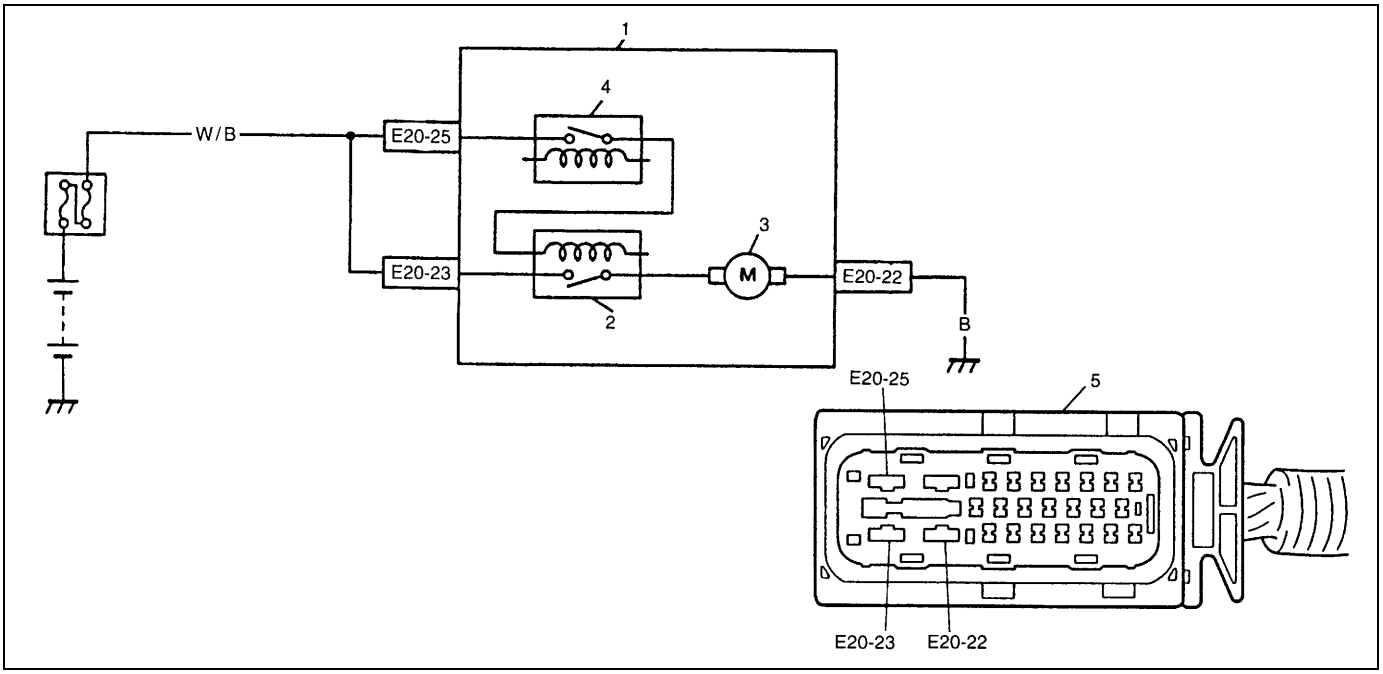
DESCRIPTION

The ABS control module monitors the power source voltage at terminal “E20-18”. When the power source voltage becomes extremely high or low, this DTC will be set. As soon as the voltage rises or lowers to the specified level, the set DTC will be cleared.

INSPECTION

Step	Action	Yes	No
1	1) Connect a voltmeter between battery positive (+) terminal and body ground. 2) Start the engine and measure the maximum voltage when racing the engine. Is it over 18 V?	Check charging system referring to “CHARGING SYSTEM” section.	Go to Step 2.
2	1) Disconnect ABS hydraulic unit/control module connector. 2) Keep the engine idling, measure the voltage between terminal “E20-18” of ABS control module and body ground. Is it always under 9 V?	Check charging system referring to “CHARGING SYSTEM” section. Imperfect short between wire “W/B” and ground.	Poor connection of terminal “E20-18” or “E20-24” of the ABS control module. If the above are in good condition, substitute a known-good ABS hydraulic unit/control module and recheck.

DTC C1061 – ABS Pump Motor Circuit



1. ABS hydraulic unit/control module assembly	3. ABS pump motor	5. ABS hydraulic unit/control module connector
2. ABS pump motor relay	4. ABS fail safe relay	

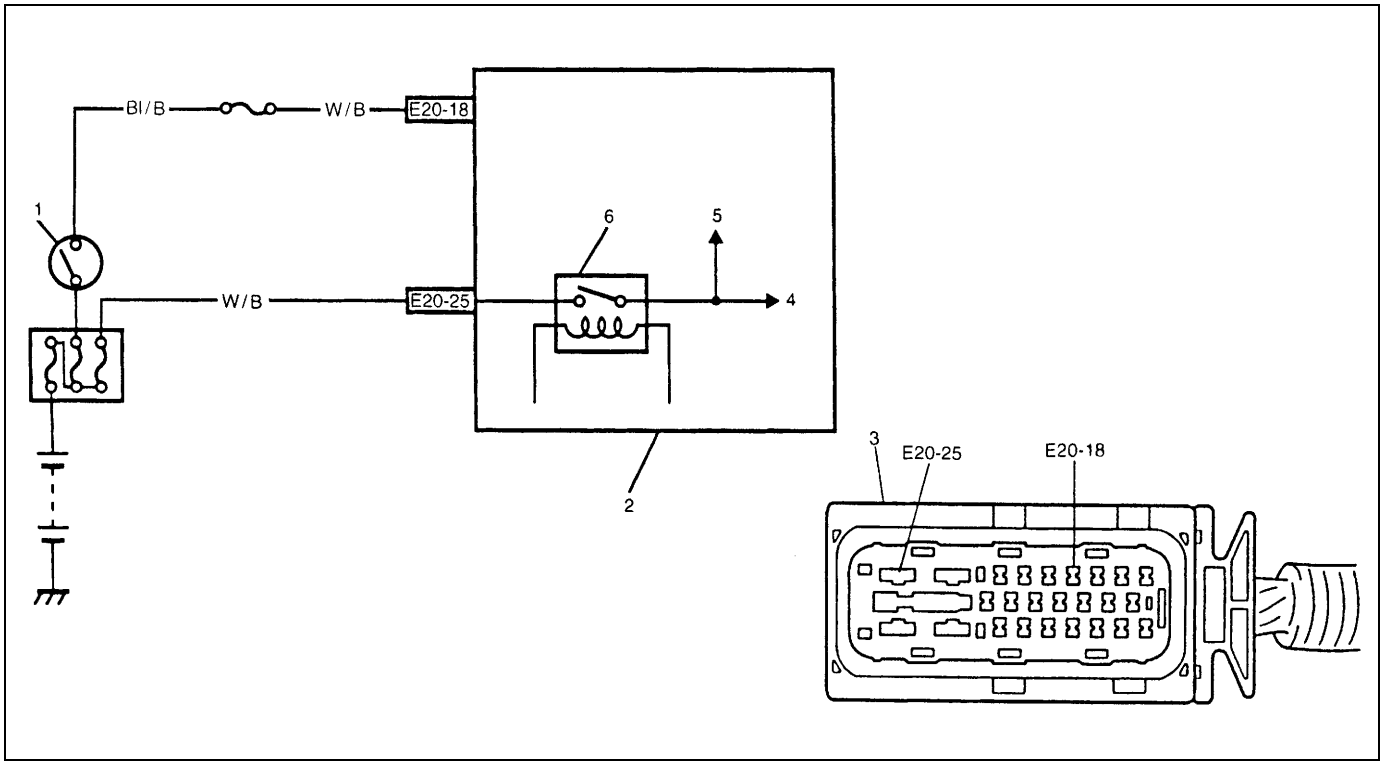
DESCRIPTION

The ABS control module monitors the voltage at monitor terminal of pump motor circuit constantly with the ignition switch turned ON. It sets this DTC when the voltage at the monitor terminal does not become high/low according to ON/OFF commands to the motor relay of the module (does not follow these commands).

INSPECTION

Step	Action	Yes	No
1	1) Check pump motor referring to "ABS HYDRAULIC UNIT OPERATION CHECK" in this section. Is it in good condition?	Check terminals "E20-25" and "E20-23" connection. If connections OK, substitute a known-good ABS hydraulic unit/control module assembly and recheck.	Go to Step 2.
2	1) Turn Ignition switch to OFF position. 2) Disconnect ABS hydraulic unit/control module connector. 3) Check for proper connection to ABS hydraulic unit/control module connector at terminal "E20-23". 4) If OK, then measure voltage between terminal "E20-23" of module connector and body ground. Is it 10 – 14 V?	Go to Step 3.	"W/B" circuit open.
3	Measure resistance between terminal "E20-22" of ABS hydraulic unit/control module connector and body ground. Is it infinite (∞)?	"B" circuit open.	Substitute a known-good ABS hydraulic unit/control module assembly and recheck.

DTC C1063 – ABS Fail-Safe Relay Circuit



1. Ignition switch	3. ABS hydraulic unit/control module connector	5. To pump motor relay
2. ABS hydraulic unit/control module assembly	4. To solenoid valves	6. Fail-safe relay

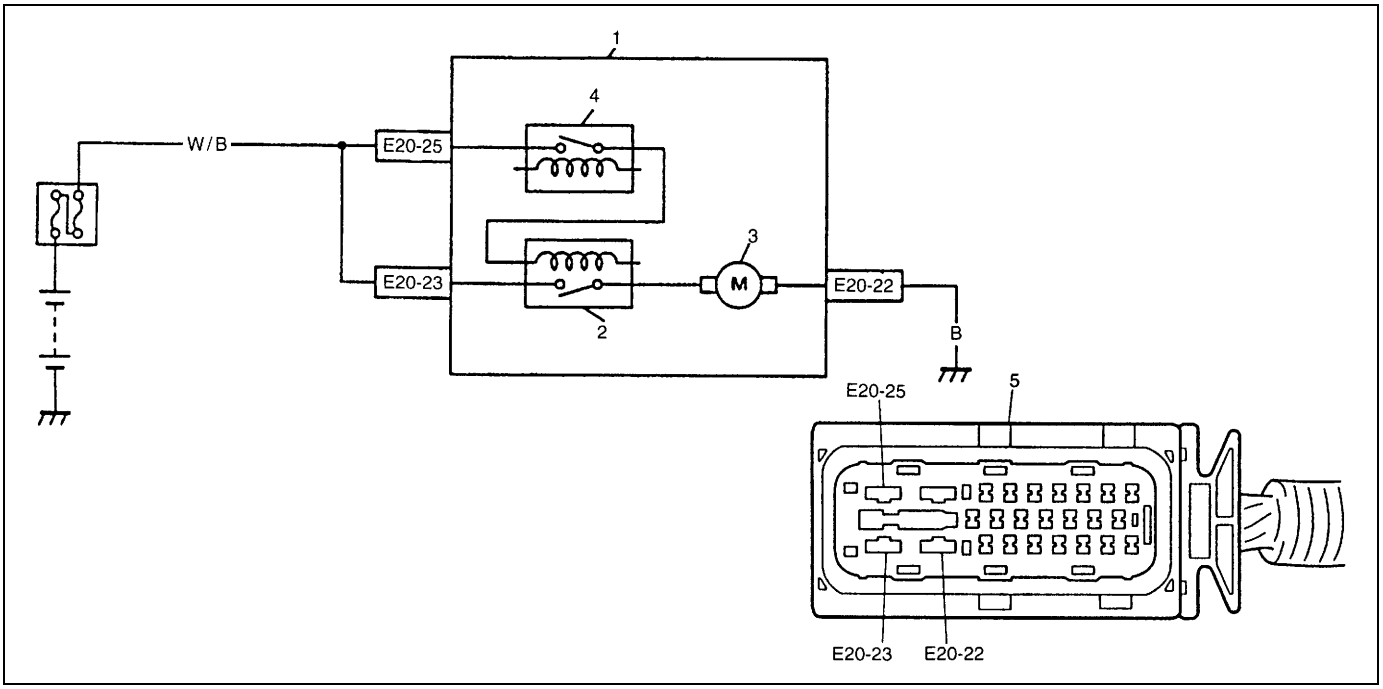
DESCRIPTION

ABS control module monitors the voltage at the terminal of solenoid circuit constantly with ignition switch turned ON. Also, immediately after ignition switch is turned ON, perform initial check as follows.
Switch fail-safe relay in the order of OFF → ON and check if voltage changes to Low → High. If anything faulty is found in the initial check and when the voltage is low with ignition switch turned ON, this DTC will be set.

INSPECTION

Step	Action	Yes	No
1	Check battery voltage. Is it about 11 V or higher?	Go to Step 2.	Check charging system referring to “CHARGING SYSTEM” section.
2	Check ABS main fuse and connection. Is it in good condition?	Go to Step 3.	Repair and/or replace fuse.
3	1) Turn ignition switch to OFF position. 2) Disconnect ABS hydraulic unit/control module connector. 3) Check proper connection to ABS hydraulic unit/control module at terminal “E20-25”. 4) If OK, then measure voltage between connector terminal “E20-25” and body ground. Is it 10 – 14 V?	Substitute a known-good ABS hydraulic unit/control module assembly and recheck.	“W/B” circuit open or short to ground.

DTC C1071 – ABS Control Module



1. ABS hydraulic unit/control module assembly	3. ABS pump motor	5. ABS hydraulic unit/control module connector
2. ABS pump motor relay	4. ABS fail safe relay	

DESCRIPTION

This DTC will be set when an internal malfunction is detected in the ABS control module.

INSPECTION

Step	Action	Yes	No
1	Clear all DTCs and check DTC. Is it DTC C1071?	Go to Step 2.	Could be a temporary malfunction of the ABS control module.
2	1) Check proper connection of ABS hydraulic unit/control module connector. 2) If OK, disconnect ABS hydraulic unit/control module connector and check the followings. • Voltage “E20-25” terminal : 10 – 14 V • Resistance between “E20-22” and body ground : Continuity Are the check result as specified above?	Replace ABS hydraulic unit/control module assembly.	Repair and recheck.

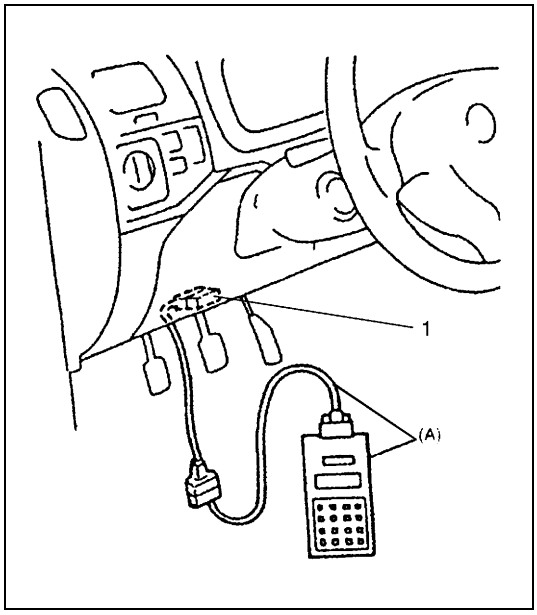
On-Vehicle Service

Precautions

When connector is connected to ABS hydraulic unit/control module assembly, do not disconnect connectors of sensors with ignition switch ON. Then DTC will be set in ABS control module.

ABS Hydraulic Unit Operation Check (Using SUZUKI Scan Tool)

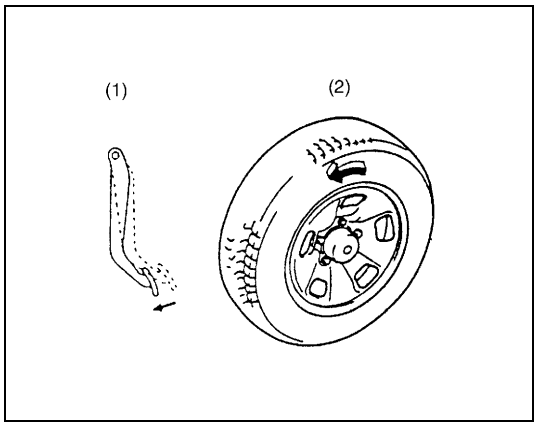
1) Check that basic brake system other than ABS is in good condition.
2) Check that battery voltage is 11 V or higher.
3) Lift up vehicle.
4) Set transmission to neutral and release parking brake.
5) Turn each wheel gradually by hand to check if brake dragging occurs. If it does, correct.



6) Remove steering column hole cover.
7) Connect SUZUKI scan tool to data link connector (DLC) (1) with ignition switch OFF.

Special tool
(A) : SUZUKI scan tool

8) Turn ignition switch to ON position and select menu to "HYDRAULIC CONTROL TEST" under "miscellaneous test" ("MISC. TEST") mode of SUZUKI scan tool.

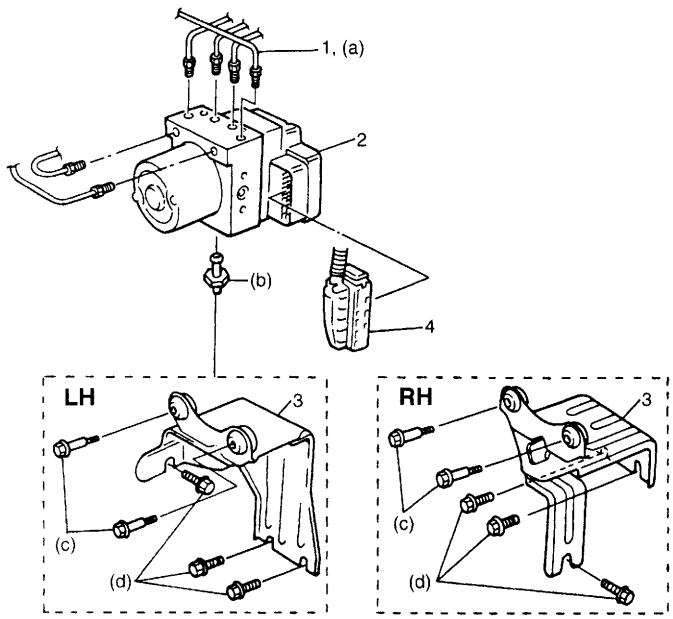


9) Perform the following checks with help of another person.
   Brake pedal (1) should be depressed and then select testing wheel by SUZUKI scan tool and the wheel (2) should be turned by another person's hand. At this time, check that:
   - Operation sound of solenoid is heard and the wheel turns only about 0.5 sec. (Brake force is depressurized).
   - Operation sound of pump motor is heard and pulsation is felt at brake pedal.
10) Check for all 4-wheels condition respectively. If a faulty condition is found, replace hydraulic unit/control module assembly.
11) After completing the check, turn ignition switch to OFF position and disconnect SUZUKI scan tool from DLC.

ABS Hydraulic Unit/Control Module Assembly

CAUTION:

Never disassemble ABS hydraulic unit/control module assembly, loosen blind plug or remove motor. Performing any of these prohibited services will affect original performance of ABS hydraulic unit/ control module assembly.

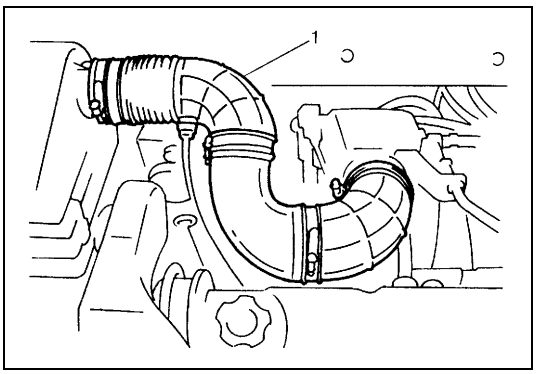


1. Brake pipe	3. Bracket
2. ABS hydraulic unit/control module assembly	4. Connector

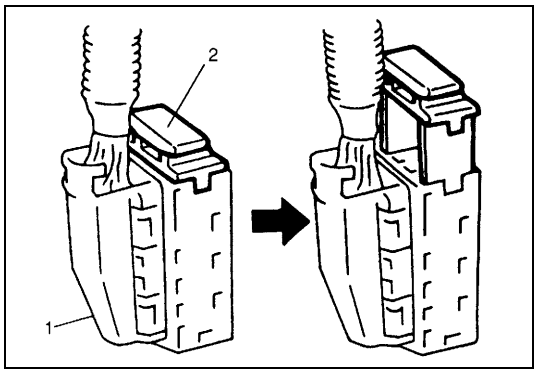
HYDRAULIC UNIT INSPECTION

Check hydraulic unit for fluid leakage.
If any, repair or replace.

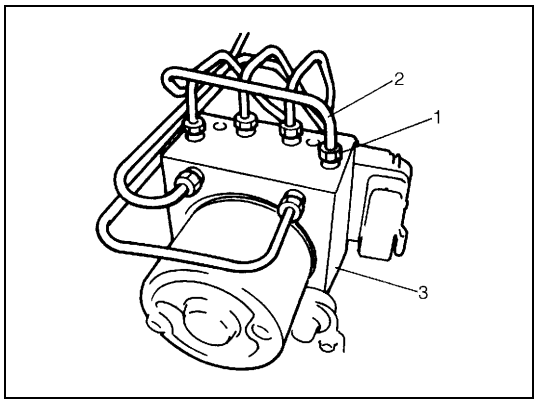
REMOVAL



1) Disconnect negative cable from battery.
2) For LH vehicle, remove air cleaner outlet pipe (1) referring to “Engine Mechanical” section.



3) Disconnect ABS hydraulic unit/control module assembly connector (1) by pulling up lock (2).

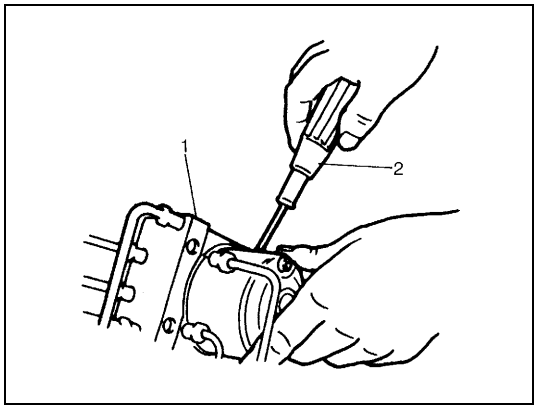


4) Using special tool, loosen flare nuts (1) and disconnect brake pipes (2) from ABS hydraulic unit/control module assembly (3).

Special tool
: 09950-78220

NOTE:

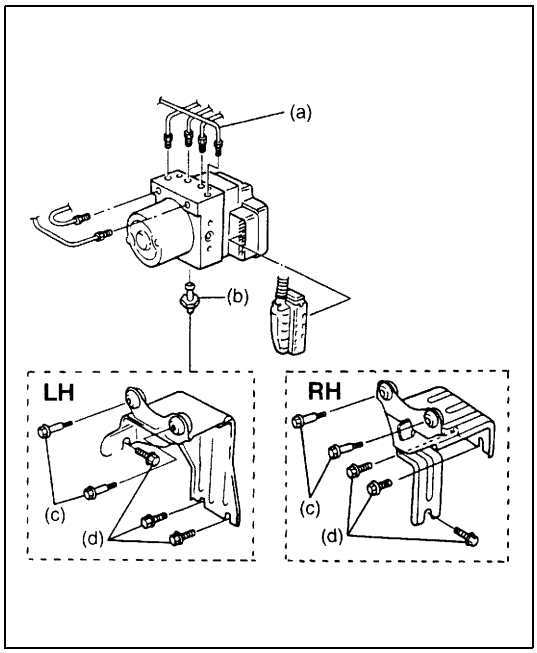
Put bleeder plug cap onto pipe to prevent fluid from spilling. Do not allow brake fluid to get on painted surfaces.



5) Remove two nuts and disconnect take out ABS hydraulic unit/control module assembly (1) from bracket using screwdriver (2).

CAUTION:

- **Do not give an impact to hydraulic unit.**
- **Use care not to allow dust to enter hydraulic unit.**
- **Do not place hydraulic unit on its side or upside down. Handling it in inappropriate way will affect its original performance.**



INSTALLATION

1) Install hydraulic unit by reversing removal procedure.

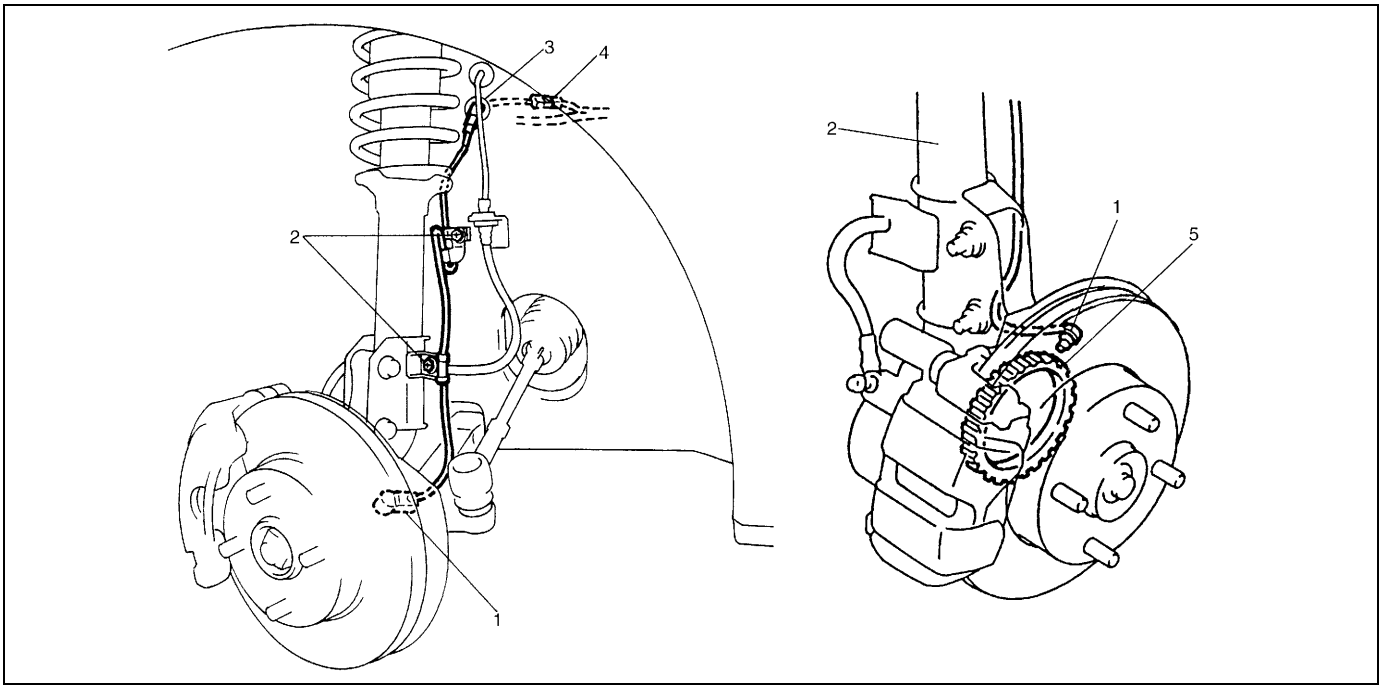
Tightening torque
(a) : 16 N·m (1.6 kg-m, 11.5 lb-ft)
(b) : 9 N·m (0.9 kg-m, 6.5 lb-ft)
(c) : 9 N·m (0.9 kg-m, 6.5 lb-ft)
(d) : 26 N·m (2.6 kg-m, 18.0 lb-ft)

2) Bleed air from brake system referring to “BRAKE” section.
3) Check each installed part for fluid leakage and perform “ABS Hydraulic Unit Operation Check” in this section.

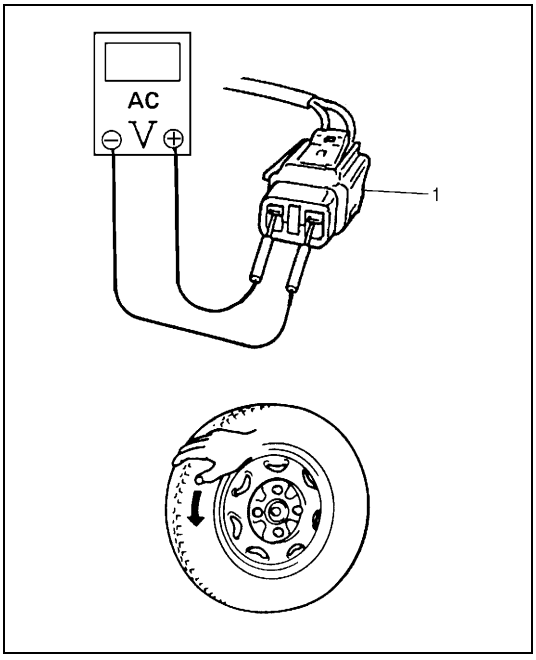
NOTE:

For new ABS hydraulic unit/control module assembly, if “ABS Hydraulic Unit Operation Check” procedure has not been performed, “ABS” warning lamp may flash when ignition switch is turned ON position.

Front Wheel Speed Sensor



1. Left front wheel speed sensor	3. Grommet	5. Sensor ring
2. Clamp bolt	4. Connector	

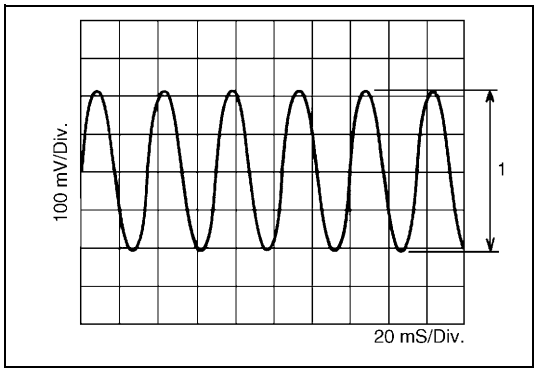


OUTPUT VOLTAGE INSPECTION

1) Turn ignition switch OFF.
2) Hoist vehicle a little.
3) Disconnect wheel speed sensor connector.
4) Disconnect wheel speed sensor grommet from vehicle body.
5) Connect voltmeter between connector (1) terminals.
6) While turning wheel by hand at a speed of approximately 1 full rotation to 1 1/3 rotation per second, check AC voltage of sensor.

Output AC voltage at 1 to 1 1/3 rotation per second
: 100 mV or more

7) If measured voltage is not as specified, check sensor, rotor and their installation conditions.



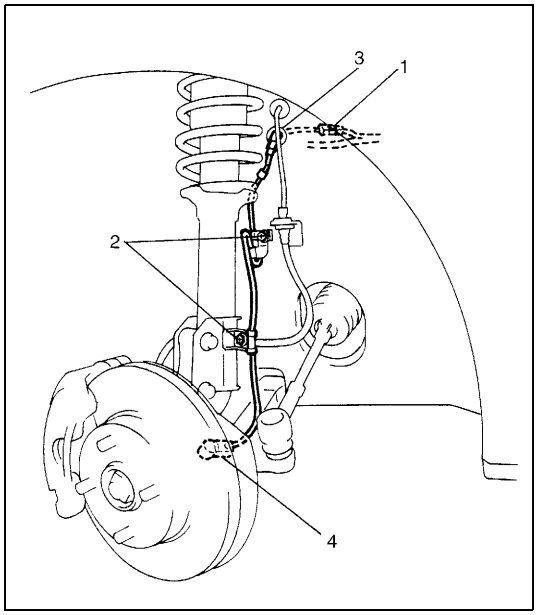
Reference

When using oscilloscope for this check, check if peak-to-peak voltage (1) meets specification and waveform is complete.

Peak-to-peak voltage at 1 to 1 1/3 rotation per second
: 280 mV or more at 43 – 57 Hz

REMOVAL

1) Disconnect negative cable at battery.
2) Disconnect front wheel speed sensor coupler (1).
3) Hoist vehicle and remove wheel.
4) Remove harness clamp bolts (2) and grommet (3).
5) Remove front wheel speed sensor (4) from knuckle.



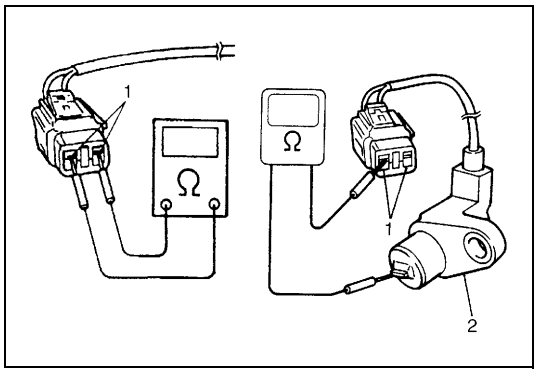
CAUTION:
- **Do not pull wire harness when removing front wheel speed sensor.**
- **Do not cause damage to surface of front wheel speed sensor and do not allow dust, etc. to enter its installation hole.**

SENSOR INSPECTION

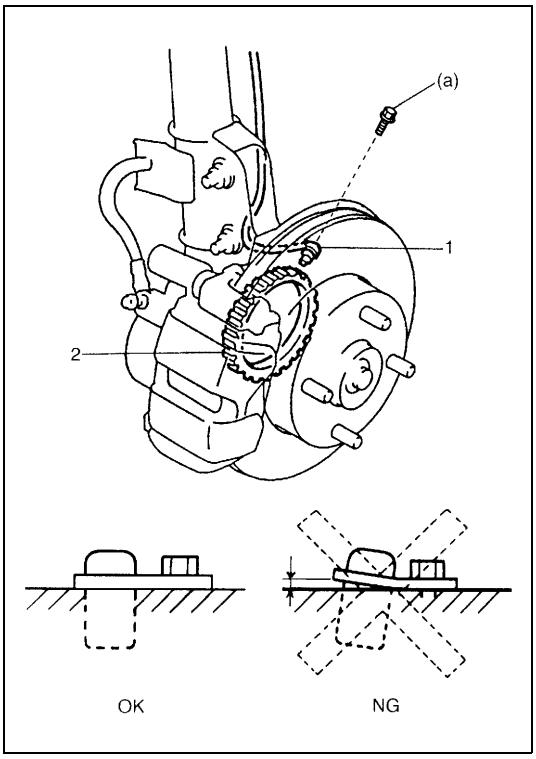
- Check sensor for damage.
- Check sensor for resistance and continuity.

Between both terminals (1) sensor
: 1.2 – 1.6 kΩ at 20°C (68°F)

Between sensor terminal and sensor body (2)
: No continuity



- If the check result is not as specified and any malfunction is found, replace.



INSTALLATION

1) Check that no foreign material is attached to sensor (1) and sensor ring (2).
2) Install it by reversing removal procedure.

Tightening torque
Front wheel speed sensor bolt
(a) : 10 N·m (1.0 kg-m, 7.5 lb-ft)

CAUTION:
Do not pull or twist wire harness more than necessary when installing front wheel speed sensor.

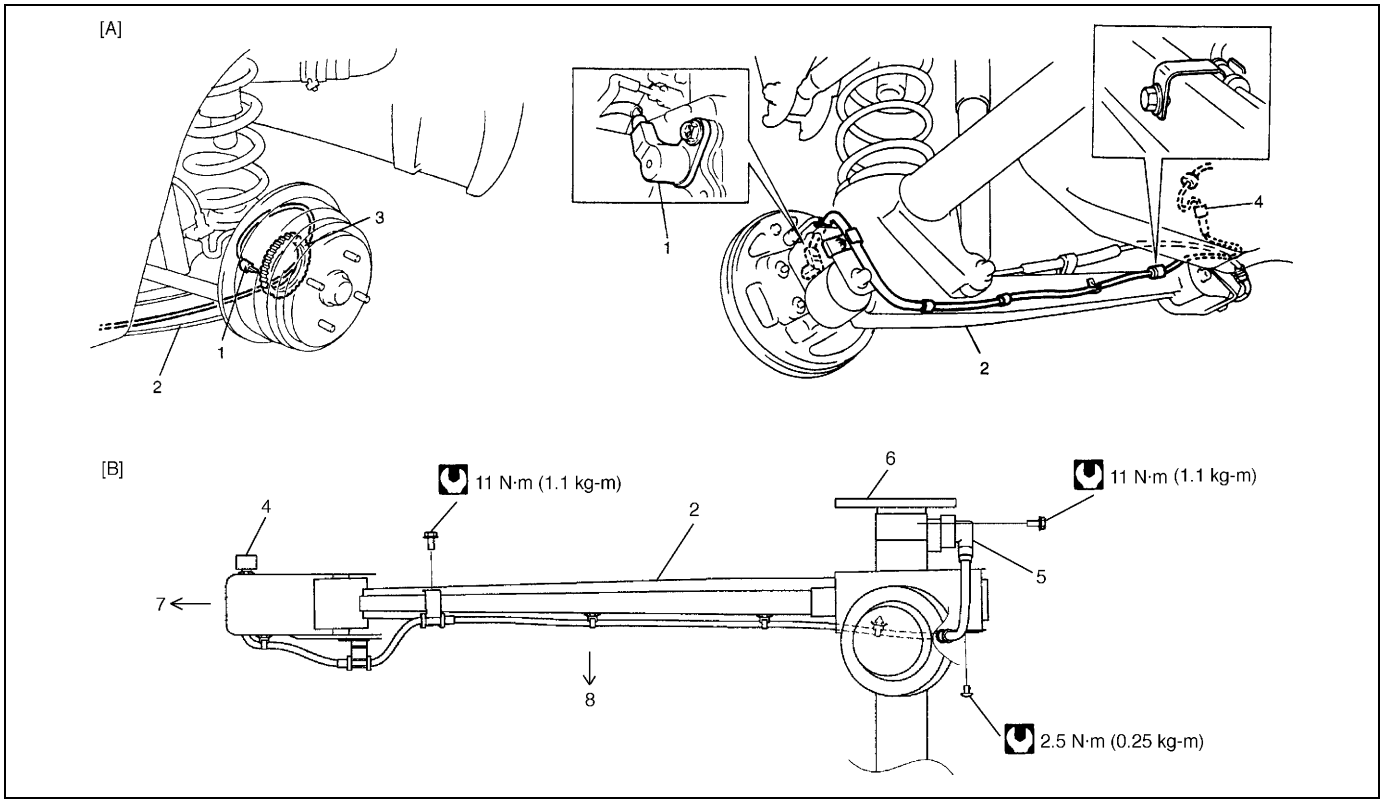
3) Check that there is no clearance between sensor and knuckle.

Front Wheel Speed Sensor Ring

NOTE:
The front wheel sensor ring can not be removed or replaced alone. If front wheel sensor ring needs to be replaced, replace it as a wheel side joint assembly of drive shaft.

For removal and installation of wheel side joint assembly of drive shaft, refer to “FRONT DRIVE SHAFT” section.

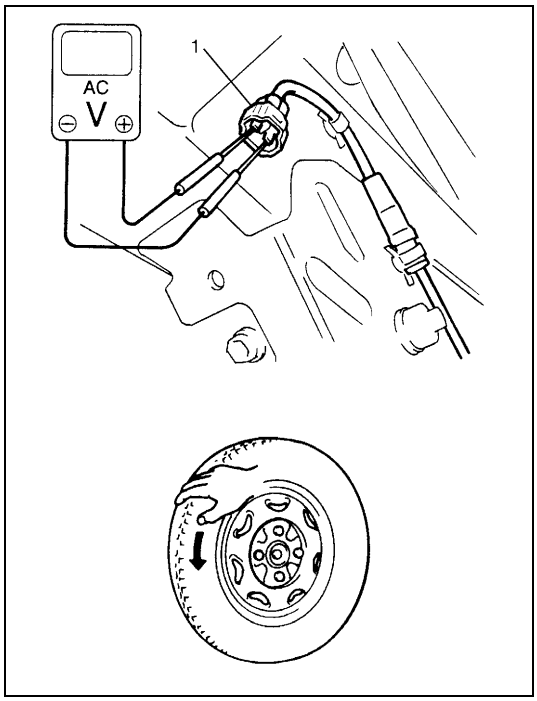
Rear Wheel Speed Sensor



1. Left rear wheel sensor	3. Sensor ring	5. Right rear wheel sensor	7. Forward	[A] : For 2WD
2. Trailing arm	4. Sensor coupler	6. Rear axle housing	8. Vehicle inside	[B] : For 4WD

OUTPUT VOLTAGE INSPECTION

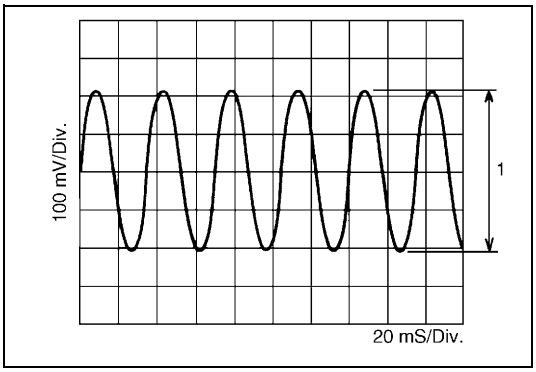
1) Turn ignition switch OFF.
2) Remove rear seat referring to Section 9.
3) Turn over floor carpet.
4) Hoist vehicle.
5) Disconnect connector of wheel speed sensor.



6) Connect voltmeter between connector (1) terminals.
7) While turning wheel at a speed of approximately 1/2 rotation to 1 rotation per second, check AC voltage of sensor.

Output AC voltage at 1 to 1 1/3 rotation per second
100 mV or more

8) If measured voltage is not as specified, check sensor, rotor and their installation conditions.



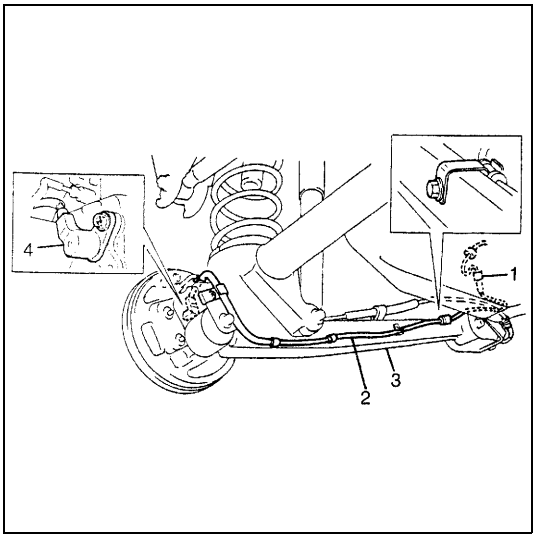
Reference

When using oscilloscope for this check, check if peak-to-peak voltage (1) meets specification and waveform is complete.

Peak-to-peak voltage at 1 to 1 1/3 rotation per second
280 mV or more at 20 Hz

REMOVAL

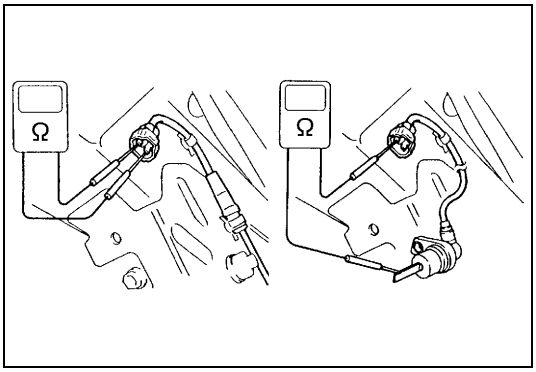
1) Disconnect negative cable from battery.
2) Hoist vehicle.



3) Disconnect rear wheel speed sensor coupler (1).
4) Detach ABS wheel sensor wire harness (2) from suspension frame (3).
   Do not detach clip of rear wheel speed sensor connector from vehicle body unless replacement is necessary.
5) Remove rear wheel speed sensor (4) from rear axle housing.

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

SENSOR INSPECTION



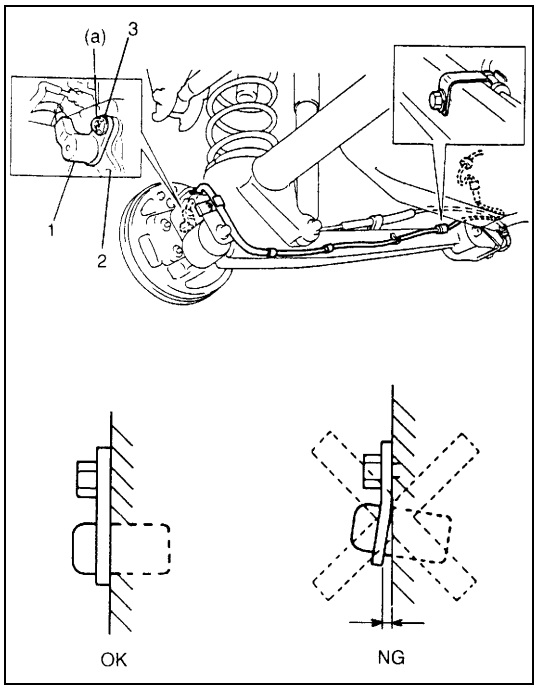
- Check sensor for damage.
- Check sensor for resistance and continuity.

Between both terminals of sensor
2WD vehicle : 0.9 – 1.3 kΩ at 20°C (68°F)
4WD vehicle : 1.2 – 1.6 kΩ at 20°C (68°F)

Between sensor terminal and sensor body
: No continuity

- If the check result is not as specified and any malfunction is found, replace.

INSTALLATION



1) Check that no foreign material is attached to sensor (1) and ring.
2) Reverse removal procedure for installation noting the following.
   - There is another bolt hole (2) that is fit for wheel speed sensor bolt by proper bolt hole (3).
     Be sure to install wheel speed sensor and its bolt at the correct (upper) position as shown in figure.

Tightening torque
(a) : 10 N·m (1.0 kg-m, 7.2 lb-ft)

CAUTION:
Do not pull or twist wire harness more than necessary when installing rear wheel speed sensor.

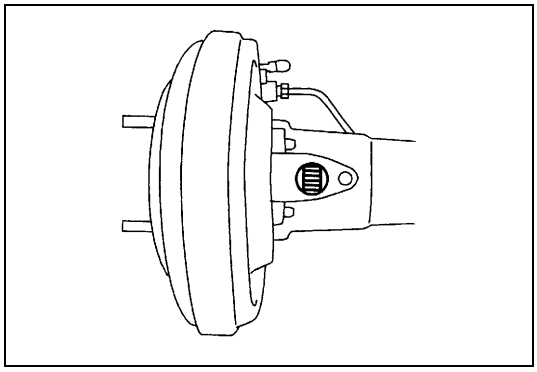
3) Check that there is no clearance between sensor and rear axle shaft.

Rear Wheel Speed Sensor Ring (For 2WD vehicle)

For removal, inspection and installation of rear wheel sensor ring, refer to “BRAKE DRUM” in Section 5C.

Rear Wheel Speed Sensor Ring (For 4WD vehicle)

INSPECTION



- Check rotor serration (teeth) for being missing damaged or deformed.
- Turn wheel and check if rotor rotation is free from eccentricity and looseness.
- Check that no foreign material is attached.
- If any faulty is found, repair or replace.

REMOVAL/INSTALLATION

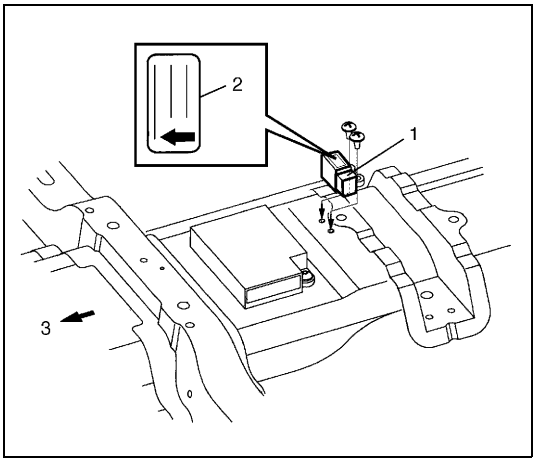
NOTE:
The rear wheel speed sensor ring can not be removed or replaced alone. If rear wheel speed sensor ring needs to be replaced, replace it as a retainer ring of rear axle shaft.

For removal and installation of retainer ring of rear axle shaft, refer to “REAR AXLE SHAFT AND WHEEL BEARING” in Section 3E.

G Sensor (For 4WD Vehicle Only)

REMOVAL

1) Turn ignition switch OFF and disconnect battery negative cable.
2) Remove center console box.

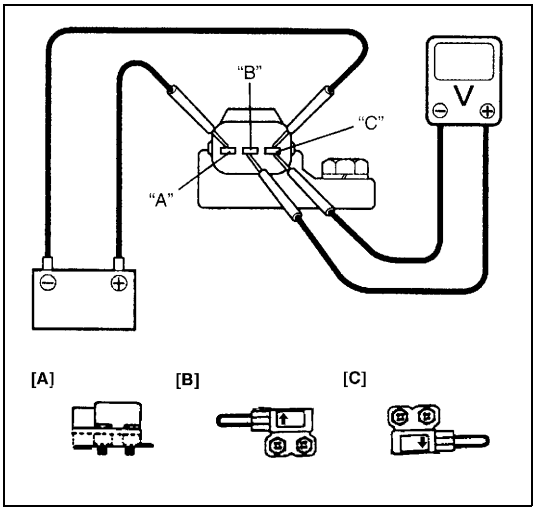


3) Remove G sensor (1) from floor.
4) Disconnect connector from sensor.

CAUTION:
Sensor must not be dropped or shocked. It will affect its original performance.

2.	Label
3.	Forward

INSPECTION



Connect positive cable of 12 volt battery to "A" terminal of sensor and ground cable to "C" terminal. Then using voltmeter, check voltage between "B" terminal and "C" terminal.

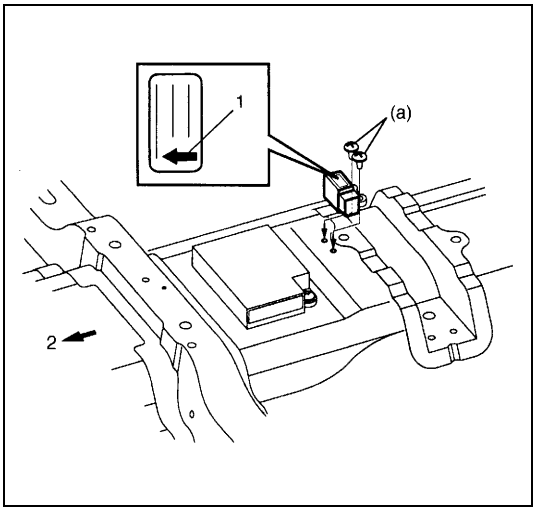
G sensor specification
When placed horizontally : 2 – 3 V
When placed upright with arrow upward : 3 – 4 V
When placed upright with arrow downward : 1 – 2 V

If measured voltage is not as specified, replace sensor.

[A] :	Horizontal
[B] :	Upright with arrow upward
[C] :	Upright with arrow downward

INSTALLATION

1) Connect connector to sensor securely.

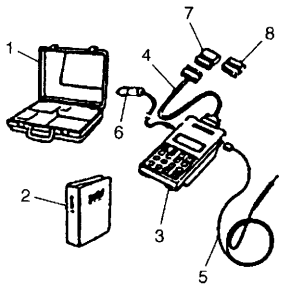
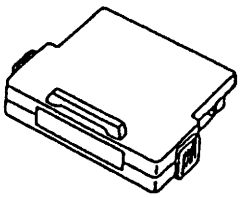
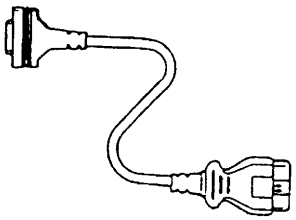
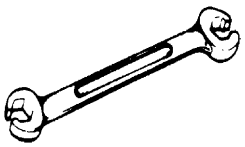
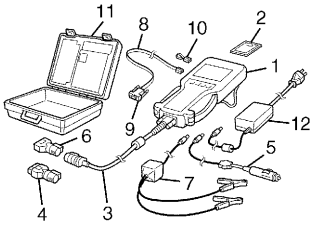


2) Install sensor onto floor so that arrow mark (1) directs vehicle forward (2). Tighten bolts to specified torque.

Tightening torque
G sensor bolt (a) : 3.0 N·m (0.3 kg-m, 2.2 lb-ft)

3) Install rear console box.
4) Connect negative cable at battery.

Special Tool

 09931-76011 Tech 1A kit (SUZUKI scan tool) See NOTE “A” below.	 Mass storage cartridge for Tech 1A	 09931-76030 16/14 pin DLC cable for Tech 1A	 09950-78220 Flare nut wrench (10 mm)
 Tech 2 kit (SUZUKI scan tool) See NOTE “B” below.			

NOTE:

- **“A” : This kit includes the following items and substitutes for the Tech 2 kit.**
  1. Storage case, 2. Operator’s manual, 3. Tech 1A, 4. DLC cable, 5. Test lead/probe, 6. Power source cable, 7. DLC cable adaptor, 8. Self-test adaptor
- **“B” : This kit includes the following items and substitutes for the Tech 1A kit.**
  1. Tech 2, 2. PCMCIA card, 3. DLC cable, 4. SAE 16/19 adapter, 5. Cigarette cable, 6. DLC loopback adapter, 7. Battery power cable, 8. RS232 cable, 9. RS232 adapter, 10. RS232 loopback connector, 11. Storage case, 12. Power supply

SECTION 6

ENGINE

WARNING:

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

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

NOTE:

For this section, refer to the same section of the Service Manual mentioned in FOREWORD of this manual. However, bear the following in mind when checking DTC (Diagnostic Trouble Code).
Be sure to use SUZUKI scan tool whenever checking DTC because this vehicle has no monitor connector for Engine and emission control system and DTC can not be displayed by malfunction indicator lamp (MIL) flashing.

SECTION 6E

ENGINE AND EMISSION CONTROL SYSTEM

WARNING:

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

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

NOTE:

For this section, refer to the same section of the Service Manual mentioned in FOREWORD of this manual. However, bear the following in mind when checking DTC (Diagnostic Trouble Code).
Be sure to use SUZUKI scan tool whenever checking DTC because this vehicle has no monitor connector for Engine and emission control system and DTC can not be displayed by malfunction indicator lamp (MIL) flashing.

SECTION 6F1

IGNITION SYSTEM (ELECTRONIC IGNITION SYSTEM)

WARNING:

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

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

CONTENTS

General description

The ignition system is an electronic (distributorless) ignition system. It consists of the parts as described below and has an electronic ignition control system.

- ECM

It detects the engine and vehicle conditions through the signals from the sensors, determines the most suitable ignition timing and time for electricity to flow to the primary coil and sends a signal to the ignitor (power unit) in the ignition coil assembly.

- Ignition coil assembly (including an ignitor)

The ignition coil assembly has a built-in ignitor which turns ON and OFF the current flow to the primary coil according to the signal from ECM. When the current flow to the primary coil is turned OFF, a high voltage is induced in the secondary coil.

- High tension cords and spark plugs.
- CMP sensor (Camshaft position sensor) and CKP sensor (Crankshaft position sensor)

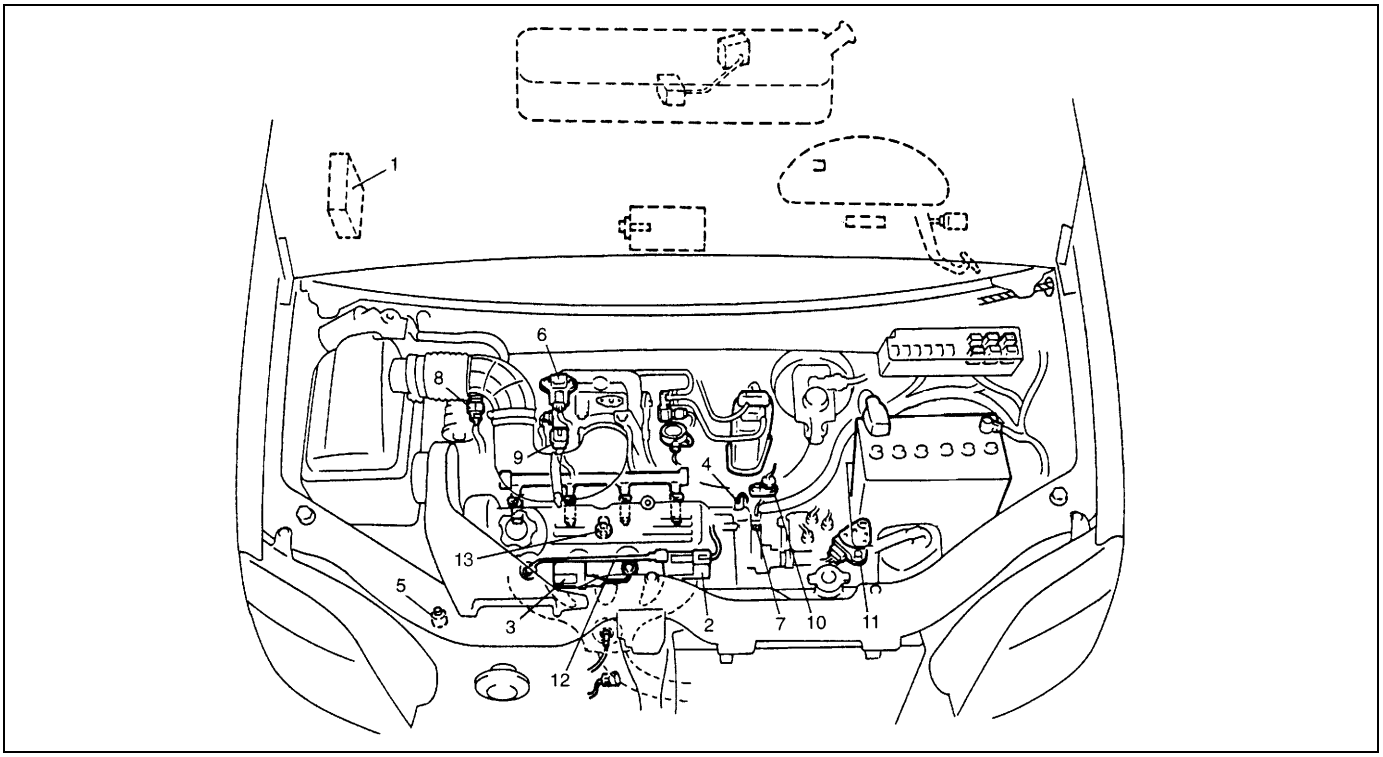
Using signals from these sensors, ECM identifies the specific cylinder whose piston is in the compression stroke and detects the crank angle.

- TP sensor, ECT sensor, MAP sensor and other sensors/switches

Refer to section 6E for details.

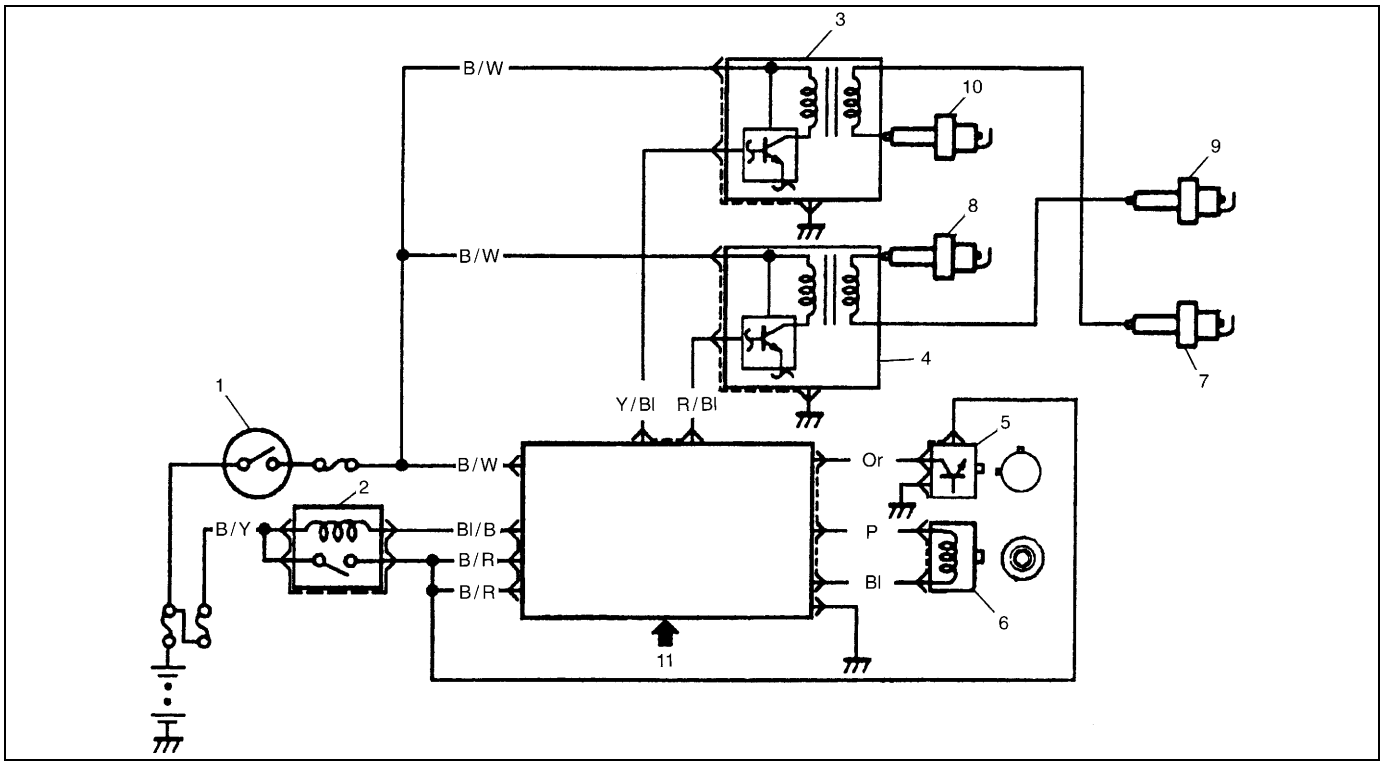
Although this ignition system does not have a distributor, it has two ignition coil assemblies (one is for No.1 and No.4 spark plugs and the other is for No.2 and No.3 spark plugs). When an ignition signal is sent from ECM to the ignitor in the ignition coil assembly for No.1 and No.4 spark plugs, a high voltage is induced in the secondary coil and that passes through the high-tension cords and causes No.1 and No.4 spark plugs to spark simultaneously. Likewise, when an ignition signal is sent to the ignitor in the other ignition coil assembly, No.2 and No.3 spark plugs spark simultaneously.

SYSTEM COMPONENTS



1. ECM	6. MAP sensor	11. Transmission range switch (A/T)
2. Ignition coil assembly for No.1 and No.4 spark plugs	7. ECT sensor	12. High-tension cords
3. Ignition coil assembly for No.2 and No.3 spark plugs	8. IAT sensor	13. Knock sensor
4. CMP sensor	9. TP sensor	
5. CKP sensor	10. VSS	

SYSTEM WIRING DIAGRAM



1. Ignition switch	7. No.1 spark plug
2. Main relay	8. No.2 spark plug
3. Ignition coil assembly for No.1 and No.4 spark plugs	9. No.3 spark plug
4. Ignition coil assembly for No.2 and No.3 spark plugs	10. No.4 spark plug
5. CMP sensor	11. Sensed information (MAP sensor, ECT sensor, IAT sensor, TP sensor, Knock sensor, VSS, Park/ Neutral position signal, Electric load signal, Engine start signal)
6. CKP sensor	

Diagnosis

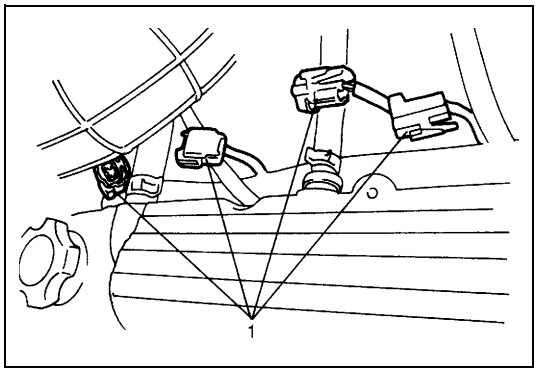
Condition	Possible Cause	Correction
Engine cranks, but will not start or hard to start	No spark	
	Blown fuse for ignition coil	Replace.
	Loose connection or disconnection of lead wire or high-tension cord(s)	Connect securely.
	Faulty high-tension cord(s)	Replace.
	Faulty spark plug(s)	Adjust, clean or replace.
	Faulty ignition coil	Replace ignition coil assembly.
	Faulty CKP sensor or crankshaft timing belt pulley	Clean, tighten or replace.
	Faulty ECM	Replace.
Poor fuel economy or engine performance	Incorrect ignition timing	Check related sensors and crankshaft timing belt pulley.
	Faulty spark plug(s) or high-tension cord(s)	Adjust, clean or replace.
	Faulty ignition coil assembly	Replace.
	Faulty CKP sensor or crankshaft timing belt pulley	Clean, tighten or replace.
	Faulty ECM	Replace.

IGNITION SYSTEM DIAGNOSTIC FLOW TABLE

Step	Action	Yes	No
1	Was “ENGINE DIAG. FLOW TABLE” performed?	Go to Step 2.	Go to “ENGINE DIAG. FLOW TABLE” in section 6.
2	Ignition Spark Test 1) Check all spark plugs for condition and type referring to “Spark Plugs” section. 2) If OK, perform ignition spark test, referring to “Ignition Spark Test” section. Is spark emitted from all spark plugs?	Go to Step 11.	Go to Step 3.
3	Diagnostic Trouble Code (DTC) Check Is DTC stored in ECM?	Go to applicable DTC Diag. Flow Table in section 6.	Go to Step 4.
4	Electrical Connection Check 1) Check ignition coil assemblies and high-tension cords for electrical connection. Are they connected securely?	Go to Step 5.	Connect securely.
5	High-Tension Cords Check 1) Check high-tension cord for resistance referring to “High-Tension Cords” section. Is check result satisfactory?	Go to Step 6.	Replace high-tension cord(s).
6	Ignition Coil Assembly Power Supply and Ground Circuit Check 1) Check ignition coil assembly power supply and ground circuits for open and short. Are circuits in good condition?	Go to Step 7.	Repair or replace.
7	Ignition Coil Assembly Check 1) Check ignition coil for resistance referring to “Ignition Coil Assembly” section. Is check result satisfactory?	Go to Step 8.	Replace ignition coil assembly.
8	Crankshaft Position (CKP) Sensor Check 1) Check crankshaft position sensor referring to Step 3 and 4 of DTC P0335 Diag. Flow Table in section 6. Is check result satisfactory?	Go to Step 9.	Tighten CKP sensor bolt, replace CKP sensor or crankshaft timing belt pulley.
9	Ignition Trigger Signal Circuit Check 1) Check ignition trigger signal wire for open, short and poor connection. Is circuit in good condition?	Go to Step 10.	Repair or replace.
10	A Known-good Ignition Coil Assembly Substitution 1) Substitute a known-good ignition coil assembly and then repeat Step 2. Is check result of Step 2 satisfactory?	Go to Step 11.	Substitute a known-good ECM and then repeat Step 2.
11	Ignition Timing Check 1) Check initial ignition timing and ignition timing advance referring to “Ignition Timing” section. Is check result satisfactory?	System is in good condition.	Check CKP sensor, crankshaft timing belt pulley (signal rotor) and input signals related to this system.

On-vehicle service

Ignition spark test

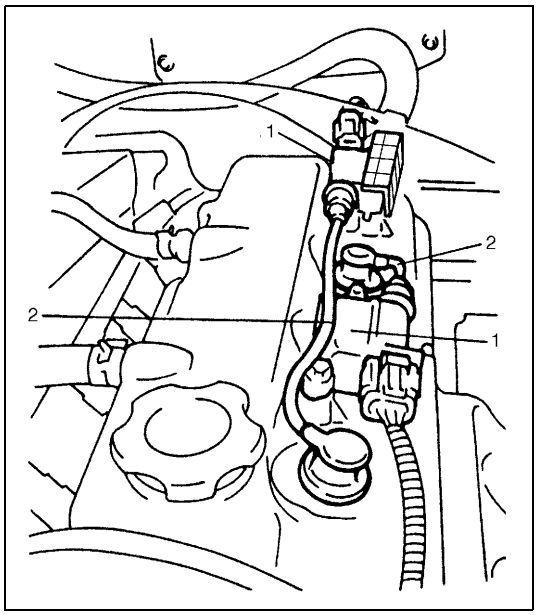


1) Disconnect all injector couplers (1) from injectors.

WARNING:
Without disconnection of injector couplers, combustible gas may come out from spark plug holes during this test and may get ignited in engine room.

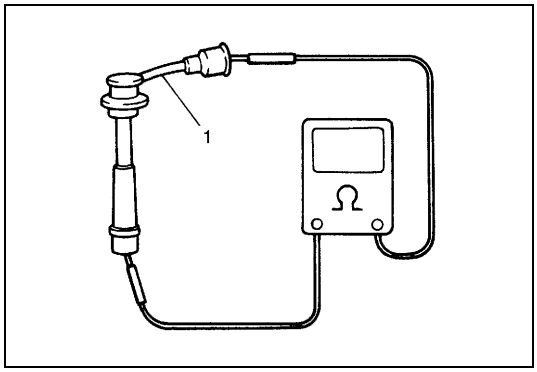
2) Remove spark plug and check it for condition and type referring to “Spark Plugs” in this section.
3) If OK, connect ignition coil coupler to ignition coil assembly and connect spark plug to ignition coil assembly or high-tension cord. Ground spark plug.
4) Crank engine and check if each spark plug sparks.
5) If no spark is emitted, inspect the related parts as described under “Diagnosis” earlier in this section.

High-tension cords



1) Disconnect high-tension cords (2) from ignition coil assemblies (1) while gripping each cap.
2) Pull out high-tension cords from spark plugs while gripping each cap.

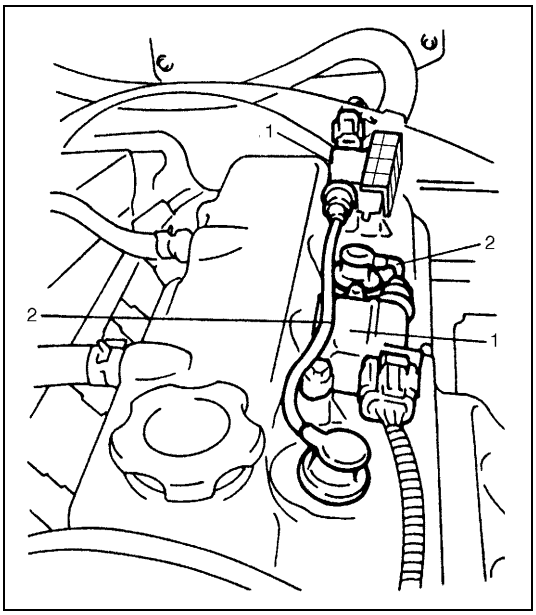
CAUTION:
- **Removal of high-tension cords together with clamps will be recommended so as not to damage their inside wire (resistive conductor).**
- **For the same reason, pull out each connection by gripping cap portion.**



3) Measure resistance of high-tension cord (1) by using ohmmeter.

High-tension cord resistance
: 10 – 22 kΩ/m (3.0 – 6.7 kΩ/ft)

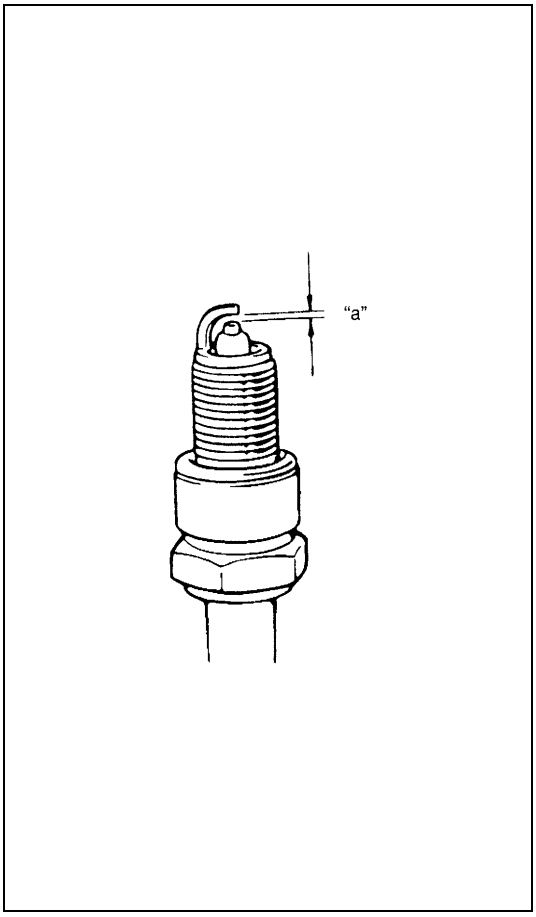
4) If resistance exceeds specification, replace high-tension cord(s).



5) Install high-tension cords (2) to spark plugs and ignition coil assemblies (1) while gripping each cap.

CAUTION:
- **Never attempt to use metal conductor high-tension cords as replacing parts.**
- **Insert each cap portion fully when installing high-tension cords.**

Spark plugs



1) Pull out high-tension cords by gripping their caps and then remove ignition coil assemblies referring to IGNITION COIL ASSEMBLY in this section.
2) Remove spark plugs.
3) Inspect them for:
   - Electrode wear
   - Carbon deposits
   - Insulator damage
4) If any abnormality is found, adjust air gap, clean with spark plug cleaner or replace them with specified new plugs.

Spark plug air gap
"a" : 1.0 – 1.1 mm (0.040 – 0.043 in.)

Spark plug type
NGK : BKR6E-11
DENSO : K20PR-U11

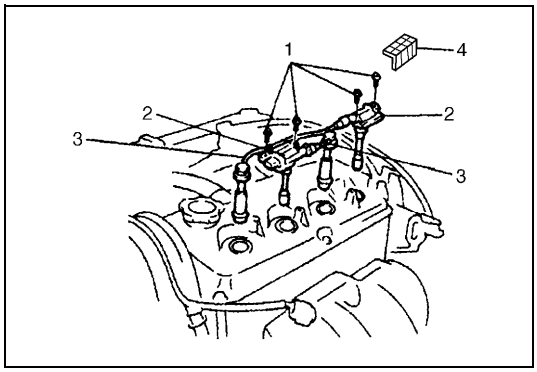
5) Install spark plugs and torque them to specification.

Tightening Torque for spark plug
28 N·m (2.8 kg-m, 20.0 lbft)

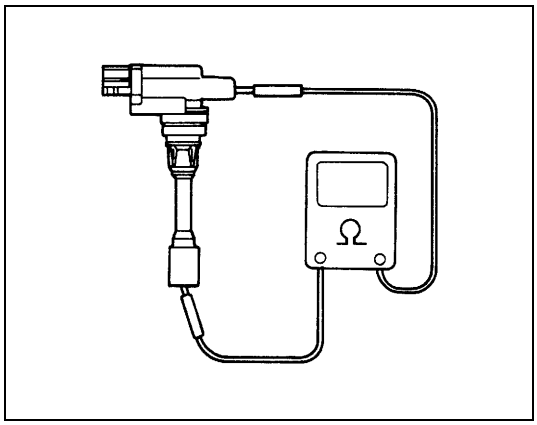
6) Install ignition coil assemblies referring to IGNITION COIL ASSEMBLY in this section.
7) Install high-tension cords securely by gripping their caps.

Ignition coil assembly (including ignitor)

Inspection



1) Disconnect negative cable at battery.
2) Pull out ignition coil cover (4).
3) Disconnect ignition coil coupler.
4) Disconnect high-tension cord (3) from ignition coil assembly (2).
5) Remove ignition coil bolts (1) and then pull out ignition coil assembly.



6) Measure secondary coil for resistance.

Secondary coil resistance
: 8.5 – 11.5 kΩ at 20°C, 68°F

If resistance is out of specification, replace ignition coil assembly.

7) Install ignition coil assembly.
8) Tighten ignition coil bolts, and then connect ignition coil coupler.
9) Install high-tension cord to ignition coil assembly while gripping its cap.
10) Install ignition coil cover certainly to ignition coil assembly.

Crankshaft position sensor (CKP sensor)

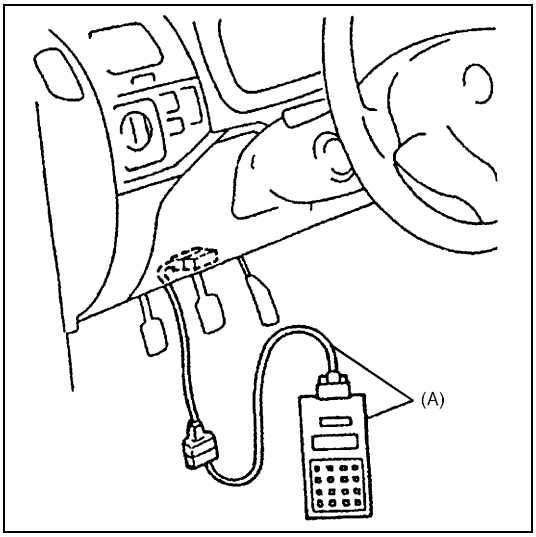
Refer to section 6E for removal, inspection and installation.

Ignition timing

NOTE:

- **Ignition timing is not adjustable. If ignition timing is out of specification, check system related parts.**
- **Before starting engine, place transmission gear shift lever in "Neutral" (shift selector lever to "P" range for A/T model), and set parking brake.**

INSPECTION

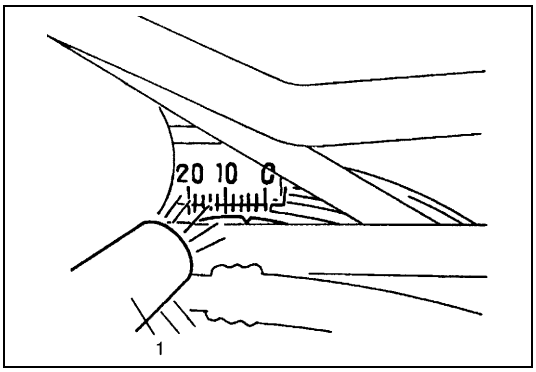


1) Connect SUZUKI scan tool to DLC with ignition switch OFF.

Special tool
(A): SUZUKI scan tool

2) Start engine and warm it up to normal operating temperature.
3) Make sure that all of electrical loads except ignition are switched off.
4) Check to be sure that idle speed is within specification.
(Refer to SECTION 6E)

5) Select “MISC” mode on SUZUKI scan tool and fix ignition timing to initial one.



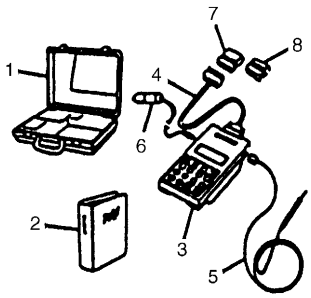
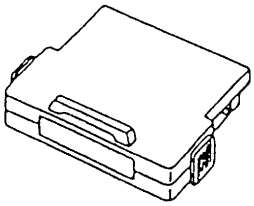
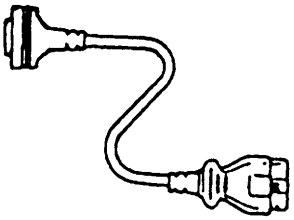
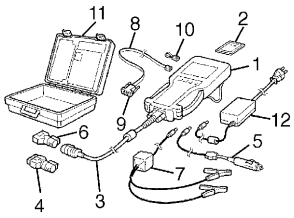
6) Open air cleaner upper case and shift upper case and hose position to observe ignition timing.
7) Using timing light (1), check that ignition timing is within specification.

Initial ignition timing (fixed with SUZUKI scan tool)
: 5 ± 3° BTDC at idle speed

Ignition order
: 1-3-4-2

8) If ignition timing is out of specification, check the followings:
   - CKP sensor
   - Crankshaft timing belt pulley (signal rotor)
   - TP sensor
   - VSS
   - Timing belt cover installation
9) After checking Initial Ignition Timing, release ignition timing fixation by using SUZUKI scan tool.
10) With engine idling (throttle opening at closed position and car stopped), check that ignition timing is about 9°–15° BTDC. (Constant variation within a few degrees from 9°–15° indicates no abnormality but proves operation of electronic timing control system.) Also, check that increasing engine speed advances ignition timing.
    If above check results are not satisfactory, check CKP sensor and ECM.
11) Install air cleaner upper case.

Special tools

			
09931-76011 Tech 1A kit (SUZUKI scan tool) (See NOTE “A”.)	Mass storage cartridge for Tech 1A	09931-76030 16/14 pin DLC adapter for Tech 1A	Tech 2 kit (SUZUKI scan tool) (See NOTE “B”.)

NOTE:

- **“A” : This kit includes the following items and substitutes for the Tech 2 kit.**
  1. Storage case, 2. Operator’s manual, 3. Tech 1A, 4. DLC cable (14/26 pin, 09931-76040), 5. Test lead/probe, 6. Power source cable, 7. DLC cable adaptor, 8. Self-test adaptor
- **“B” : This kit includes the following items and substitutes for the Tech 1A kit.**
  1. Tech 2, 2. PCMCIA card, 2. DLC cable, 4. SAE 16/19 adapter, 5. Cigarette cable, 6. DLC loopback adapter, 7. Battery power cable, 8. RS232 cable, 9. RS232 adapter, 10. RS232 loopback connector, 11. Storage case, 12. Power supply

SECTION 7B

AUTOMATIC TRANSMISSION (4 A/T)

WARNING:

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

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

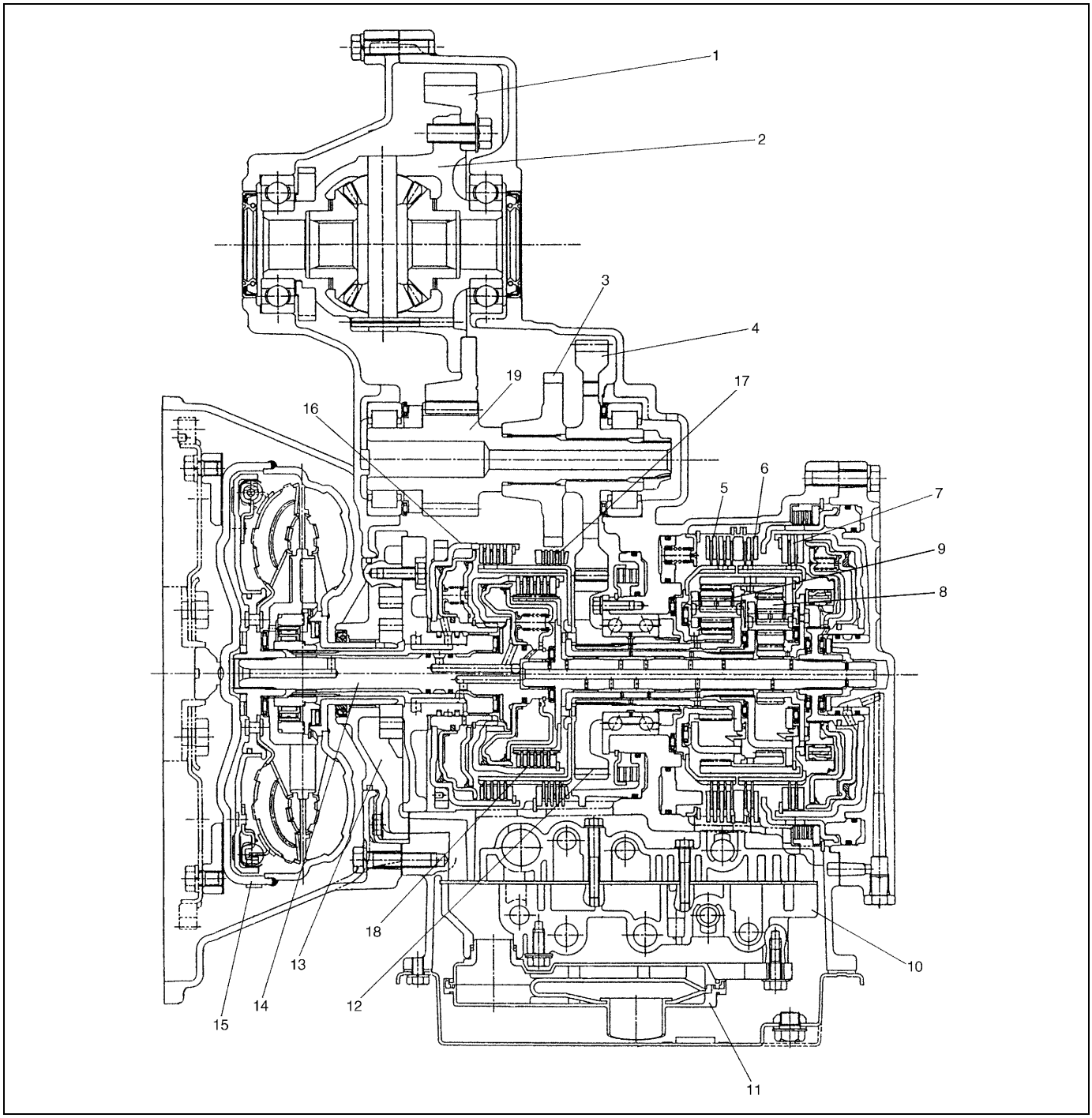
NOTE:

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

CONTENTS

General Description

This automatic transmission is a full automatic type with 3-speed plus overdrive (O/D).
The torque converter is a 3-element, 1-step and 2-phase type equipped with lock-up mechanism. The gear shift device consists of 2 sets of planetary gear units, sets of 3 disc type clutches, 3sets of disc type brakes and one-way clutch. The gear shift is done by selecting one of 6 positions (“P”, “R”, “N”, “D”, “2” and “L”) by means of the select lever installed on the floor. On the shift knob, there is an overdrive (O/D) cut switch which allows shift-up to the overdrive mode and shift-down from the overdrive mode.



1. Final gear	6. Overdrive brake (B0)	11. Oil strainer	16. Front clutch (C2)
2. Differential gear assembly	7. Direct clutch (C0)	12. Counter drive gear (Reduction gear)	17. Reverse brake (B2)
3. Parking gear	8. Rear planetary gear	13. Oil pump	18. Rear clutch (C1)
4. Counter driven gear (Reduction gear)	9. Front planetary gear	14. Input shaft	19. Differential drive pinion shaft
5. 1st and 2nd brake (B1)	10. Valve body assembly	15. Torque converter	

Specifications

Item			Specifications		
Torque converter	Type		3-element, 1-step, 2-phase type		
	Stall torque ratio		1.65 – 1.85		
Oil pump	Type		Internal gear type oil pump		
	Drive system		Engine driven		
Gear change device	Type		Forward 4-step, reverse 1-step planetary gear type		
	Shift position		“P” range	Gear in neutral, output shaft fixed, engine start	
			“R” range	Reverse	
			“N” range	Gear in neutral, engine start	
			“D” range (O/D ON)	Forward 1st ↔ 2nd ↔ 3rd ↔ 4th (O/D) automatic gear change	
			“D” range (O/D OFF)	Forward 1st ↔ 2nd ↔ 3rd ← 4th automatic gear change	
			“2” range	Forward 1st ↔ 2nd ← 3rd automatic gear change	
			“L” range	Forward 1st ← 2nd reduction, and fixed at 1st gear	
	Gear ratio	1st	2.962	Number of teeth	Front sun gear : 34 Rear sun gear : 21 Front pinion gear : 16 Rear pinion gear : 19 Front internal gear : 66 Rear internal gear : 59
		2nd	1.515		
		3rd	1.000		
		4th (overdrive gear)	0.737		
		Reverse (reverse gear	2.809		
	Control elements		Wet type multi-disc clutch ... 3 sets One-way clutch ... 1 set Wet type multi-disc brake ... 3 sets		
	Reduction gear ratio		1.209		
	Final gear ratio (Differential)		3.578		
Lubrication	Lubrication system		Force feed system by oil pump		
Cooling	Cooling system		Water-cooled		
Fluid used			Equivalent of DEXRON®-III		

Functions

NOTE:

For operation of each part, refer to TABLE OF COMPONENT OPERATION.

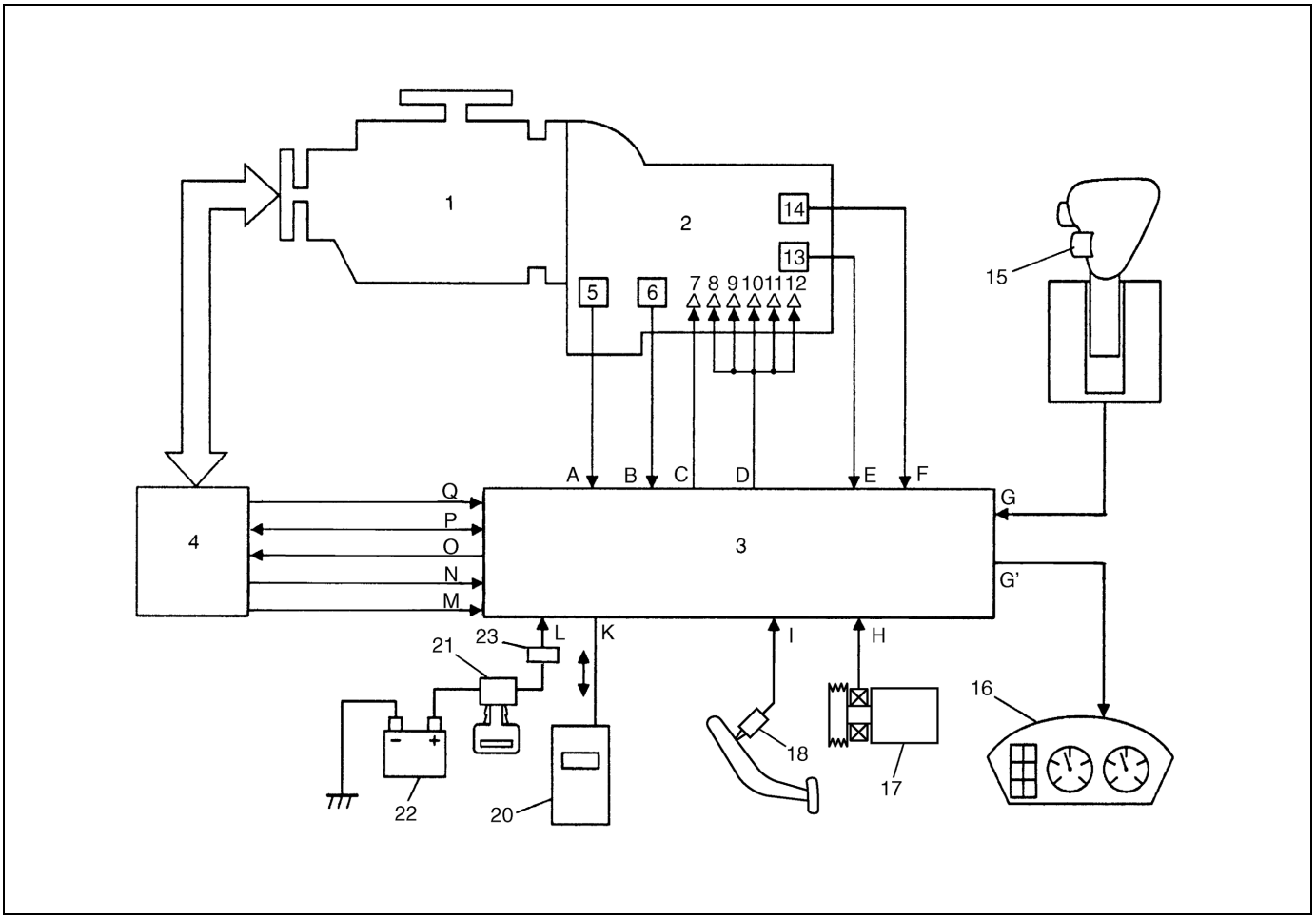
PART NAME	FUNCTION
Rear clutch	Meshes input shaft and rear sun gear through one-way clutch.
Front clutch	Meshes input shaft and front internal gear and rear carrier.
Overdrive brake	Fixes rear sun gear.
1st & 2nd brake	Fixes front sun gear.
Reverse brake	Fixes front internal gear and rear carrier.
Direct clutch	Meshes input shaft and rear sun gear.

Table of Component Operation

Selector position / Gear position / Part		Rear clutch	Front clutch	Overdrive brake	1st & 2nd brake	Reverse brake	Direct clutch	One-way clutch
P		○	×	×	×	×	○	×
R		○	×	×	×	○	○	○
N		○	×	×	×	×	○	×
D	1st	○	×	×	○	×	×	○
	2nd	○	○	×	○	×	×	×
	3rd	○	○	×	×	×	○	×
	4th(O/D)	×	○	○	×	×	○	×
2	1st	○	×	×	○	×	×	○
	2nd	○	○	×	○	×	×	×
L	1st	○	×	×	○	×	○	○

○ :Operating × :Not operating

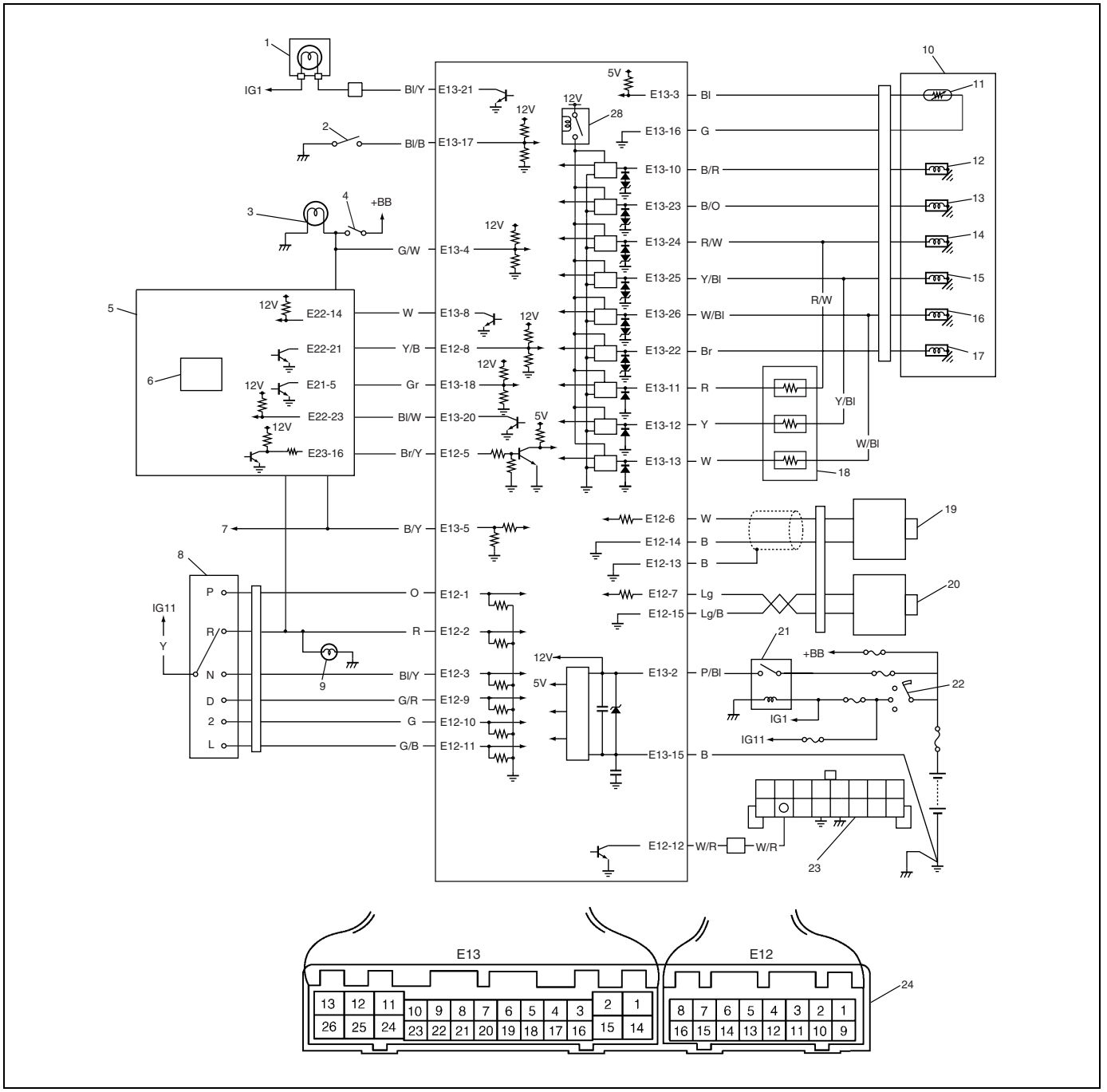
Electronic Shift Control System



1. Engine	15. O/D off switch	F. Range signal
2. Transmission	16. Combination meter (O/D off lamp)	G. O/D off switch signal
3. TCM	17. A/C compressor	G'. O/D off lamp signal
4. ECM	18. Brake lamp switch	H. A/C clutch signal
5. Input shaft speed sensor (Turbine rev. sensor)	19. Blank	I. Brake signal
6. Transmission fluid temperature sensor (A/T fluid temp. sensor)	20. Suzuki scan tool	J. Blank
7. TCC solenoid (Lock-up solenoid)	21. Ignition switch	K. Serial communication with Suzuki scan tool
8. Shift solenoid-A (Shift solenoid No.1)	22. Battery	L. Power supply
9. Shift solenoid-B (Shift solenoid No.2)	23. A/T relay	M. Throttle opening signal
10. Shift solenoid-C (Shift solenoid No.3)	A. Turbine speed signal	N. Engine coolant temp./Barometric pressure signal
11. Shift solenoid-D (Shift solenoid No.4)	B. A/T fluid temp signal	O. Idle up signal
12. Shift solenoid-E (Shift solenoid No.5)	C. TCC (lock-up) control signal	P. A/T failure signal
13. Output shaft speed sensor (A/T VSS)	D. Shift control signal	Q. Engine speed (rev.) signal.
14. Transmission range sensor (Shift switch)	E. A/T output shaft speed signal	

Transmission control module (TCM)

TCM is an electronic circuit component that controls gear shift, idle-up according to the signal from each sensor. Also it has learning control function for performing optimum control. It is a microcomputer consisting of an IC, transistor, diode, etc. It is installed behind glove box.



1. "O/D OFF" lamp	9. Backup lamp	17. TCC (lock-up) solenoid valve
2. O/D off switch	10. A/T	18. Dropping resister
3. Brake light	11. Transmission fluid temperature sensor	19. Output shaft speed sensor
4. Brake light switch	12. Shift solenoid valve-A (No.1)	20. Input shaft speed sensor
5. ECM	13. Shift solenoid valve-B (No.2)	21. A/T relay
6. Barometric pressure sensor	14. Shift solenoid valve-C (No.3)	22. Ignition switch
7. To A/C compressor	15. Shift solenoid valve-D (No.4)	23. Data link connector (DLC)
8. Transmission range sensor	16. Shift solenoid valve-E (No.5)	24. Terminal arrangement of TCM connector (viewed from harness side)

Fail safe function

This function is provided by the safe mechanism that assures safe driveability even when the solenoid valve, sensor or its circuit fails.
The table below shows the fail safe function for each fail condition of sensor, solenoid or its circuit.

Area	Detecting condition	Fail safe function
Input/Turbine speed sensor circuit (DTC P0715)	Input shaft speed sensor signal voltage is too high or too low.	• When vehicle running and in shift change by automatic electronic control, gear is fixed to gear which is going to be selected and lock-up function is turned OFF. • When vehicle running and in no shift change, gear is fixed to gear right before the trouble occurred and lock-up function is turned OFF. • When vehicle is at stop after or during detecting trouble, or in shift change by manual operation while running, gear is fixed as the followings and lock-up function is turned OFF. "P" range → P, "R" range → R, "N" range → N, "D" range → 3rd, "2" range → 2nd, "L" range → 1st
Output shaft speed sensor circuit (DTC P0720)	Output shaft speed sensor signal voltage is too high or too low.	
Shift solenoid (DTC P0753) (DTC P0758) (DTC P0763) (DTC P0768) (DTC P0773)	• Solenoid output voltage is too high although TCM orders solenoid to turn off. • Solenoid output voltage is too low although TCM orders solenoid to turn on.	• When select lever is "P", "R", "N", "D" or "2" range, A/T solenoid power relay is turned OFF and gear is fixed as follows : "P" range → P, "R" range → R, "N" range → N, "D" range → 3rd • When select lever is "2" range, gear is fixed to pre programmed gear position of several patterns as follows : – Malfunction of No.1 solenoid → 3rd – Malfunction of No.2 solenoid → 3rd – Malfunction of No.3 solenoid → 2nd – Malfunction of No.4 solenoid → 1st or 2nd – Malfunction of No.5 solenoid → 2nd or 3rd – Malfunction of 2 or more solenoids → 3rd • When select lever is "L" range, gear is fixed to pre programmed gear position of several patterns as follows : – Malfunction of No.1 solenoid → 3rd – Malfunction of No.2 solenoid → 1st – Malfunction of No.3 solenoid → 2nd – Malfunction of No.4 solenoid → 1st or 2nd – Malfunction of No.5 solenoid →1st – Malfunction of 2 or more solenoids → 3rd
TCC circuit (DTC P0743)		Lock-up function is turned OFF.

Area	Detecting condition	Fail safe function
A/T hardware itself (DTC P0730)	Difference in detected revolution between input shaft speed sensor and output shaft speed sensor is too wide.	"P" range → P, "R" range → R, "N" range → N, "D"/"2"/"L" range "To be controlled as follows : 1) When detecting trouble at first, gear is selected well-suited gear calculated with parameters of each sensor's rev. number and gear position just when the trouble occurred. Lock-up function is turned OFF. 2) If A/T can transmit driving force under the above condition, gear is fixed the selected gear until ignition switch is turned OFF. 3) If A/T can not transmit driving force under the above condition, after once vehicle stop, gear which can transmit drive force is searched one by one until gear is found out. After gear is found out, position of gear is held until ignition switch is turned OFF.
Transmission range sensor circuit (DTC P0705)	No shift switch signal is inputted or two or more shift switch signals are inputted at the same time.	• When vehicle running, shift range position is fixed to shift range position right before the trouble occurred until vehicle stop and lock-up function is turned OFF. • When vehicle is at stop after or during detecting the trouble, gear is fixed as the followings and lock-up function is turned OFF. – When 2 adjoining gear position signals are inputted. "P", "R" range → R, "R", "N" range → R, "N", "D" range → D, "D", "2" range → D, "2", "L" range → 2nd – When 2 or more signals excepting above or no signal are inputted. "P" range → P, "R" range → R, "N" range → N, "D"/"2"/"L" range → 3rd
Transmission fluid temperature sensor circuit (DTC P0710)	• A/T fluid temp. signal input voltage is too low. • A/T fluid temp. signal input voltage does not go down although standard value of engine rev. signal is inputted.	• When detecting circuit open, TCM control as fluid temperature is 100°C (212°F). • Lock-up function is turned OFF.
Engine speed input circuit (DTC P0725)	Inputted engine rev. signal is too low or too high.	• Engine rev. is processed as 4000 rpm. • No compensation or judgement for gear shift control, for which engine rev. is considered, is processed. • Lock-up function is turned OFF.
Engine coolant temp./Barometric pressure signal circuit (DTC P1709)	No or abnormal engine coolant temp. signal is inputted	• No compensation for gear shift control, for which engine coolant temp. and barometric pressure are considered, is processed. • Lock -up function is turned OFF.

Area	Detecting condition	Fail safe function
Throttle position signal circuit (DTC P1700)	No or abnormal throttle opening signal is inputted	• Scheduling of automatic gear shift is performed as throttle valve opening is 0%. • Control of automatic gear shift (i.e. control of oil pressure) is performed as throttle valve opening is 100%. • Coast down shifting is performed when brake is applied and engine rev. is less than 1,500 rpm. • Lock-up function is turned OFF.
Transmission control system electrical (DTC P0702)	Solenoid power supply relay output voltage is too high although TCM orders relay to turn off or relay output voltage is too low although TCM orders relay to turn on.	• When relay shorted, the gear is fixed as the followings and lock-up function is turned OFF. "P" range → P, "R" range → R, "N" range → N, "D" range → 3rd, "2" range → 2nd, "L" range → 1st • When relay open, power supply to all solenoids is cut and the gear is fixed as the followings. Lock-up function is turned OFF. "P" range → P, "R" range → R, "N" range → N, "D"/"2"/"L" range → 3rd
Internal malfunction of TCM (DTC P1702)	Incorrect calculations of checking TCM programmed data indicated.	Power supply to all solenoid is cut and the gear is fixed as follows : "P" range P, "R" range R, "N" range N, "D"/"2"/"L" range "3rd

Operation of shift solenoid valves and TCC solenoid valve

			Solenoid valve					
			A (No.1)	B (No.2)	C (No.3)	D (No.4)	E (No.5)	TCC
Range and gear position	P	Parking	×	×	×	○	×	×
	R	Reverse	×	×	×	×	×	×
	N	Neutral	×	×	×	○	×	×
	D	1st	○	×	×	○	○	×
		2nd	○	×	×	×	○	×
		3rd	×	×	×	×	×	(○)
		4th (O/D)	×	○	○	×	×	(○)
	2	1st	○	×	×	○	○	×
		2nd	○	×	×	×	○	×
	L	1st	○	×	×	○	×	×

○ : ON (Power ON)
× : OFF (Power OFF)
(○) : ON only when lock-up function operates

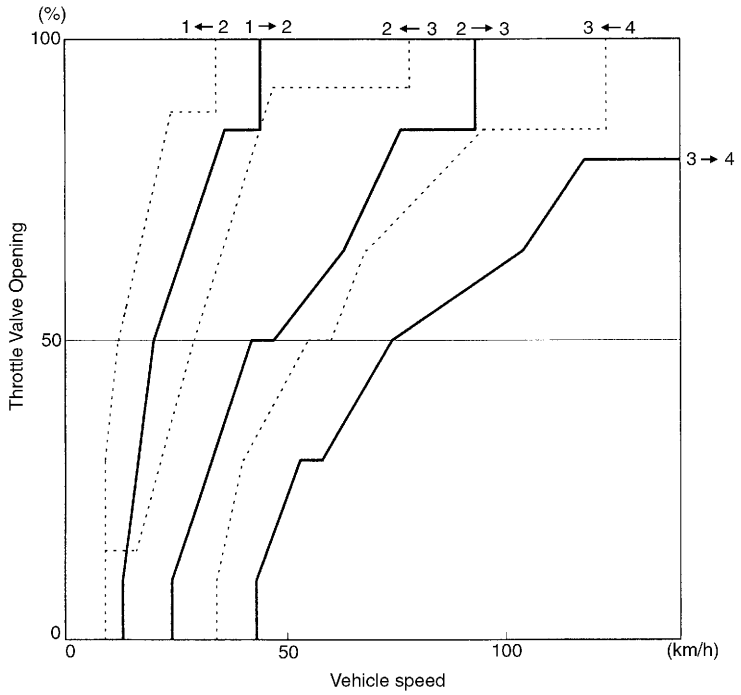
		Solenoid valve					
		A (No.1)	B (No.2)	C (No.3)	D (No.4)	E (No.5)	TCC
Valve status	Power ON	Open	Open	Close	Close	Close	Open
	Power OFF	Close	Close	Open	Open	Open	Close

Automatic gear shift diagram

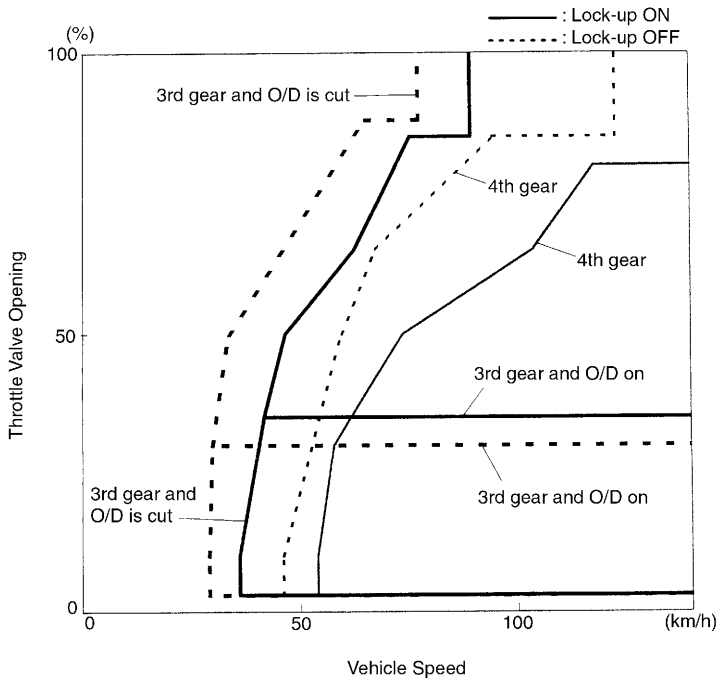
Automatic shift schedule as a result of shift control is shown below.

	Shift					
Throttle opening	1→2	2→3	3→4	4→3	3→2	2→1
Full throttle (km/h)	44	98	–	123	78	34
Closed throttle (km/h)	13	24	43	34	9	9

Gear Shift Diagram



TCC Lock-up Diagram



Diagnosis

This vehicle is equipped with an electronic transmission control system, which controls the automatic shift up and shift down timing, etc. suitably to vehicle driving conditions.
When diagnosing a trouble in the transmission including this system, follow “AUTOMATIC TRANSMISSION DIAGNOSTIC FLOW TABLE” given below to obtain correct result smoothly.

Automatic Transmission Diagnostic Flow Table

NOTE:

For the details of each step, refer to the following pages.

Step	Action	Yes	No
1	Customer Complaint Analysis 1) Perform customer complaint analysis referring to the following page. Was customer complaint analysis performed according to instruction on the following page?	Go to Step 2.	Perform customer complaint analysis.
2	Diagnostic Trouble Code (DTC) Check, Record and Clearance 1) Check for DTC referring to the following page. Is there any DTC(s)?	1) Print DTC or write it down and clear it by referring to “DTC CLEARANCE” in this section. 2) Go to Step 3.	Go to Step 4.
3	Visual Inspection 1) Perform visual inspection referring to the following page. Is there any faulty condition?	1) Repair or replace malfunction part. 2) Go to Step 11.	Go to Step 5.
4	Visual Inspection 1) Perform visual inspection referring to the following page. Is there any faulty condition?		Go to Step 8.
5	Trouble Symptom Confirmation 1) Confirm trouble symptom referring to the following page. Is trouble symptom identified?	Go to Step 6.	Go to Step 7.
6	Rechecking and Record of DTC. 1) Recheck for DTC referring to “DTC CHECK” in this section. Is there any DTC(s)?	Go to Step 9.	Go to Step 8.
7	Rechecking and Record of DTC. 1) Recheck for DTC referring to “DTC CHECK” in this section. Is there any DTC(s)?	Go to Step 9.	Go to Step 10.

Step	Action	Yes	No
8	Automatic Transmission Basic Check and Trouble Diagnosis Table 1) Check and repair according to “A/T BASIC CHECK” and “TROUBLE DIAGNOSIS TABLE” in this section. Are check and repair complete?	Go to Step 11.	1) Check and repair malfunction part(s). 2) Go to Step 11.
9	Troubleshooting for DTC 1) Check and repair according to applicable DTC Diagnostic Flow Table. Are check and repair complete?		
10	Check for Intermittent Problems 1) Check for intermittent problems referring to the following page. Is there any faulty condition?	1) Repair or replace malfunction part(s). 2) Go to Step 11.	Go to Step 11.
11	Final Confirmation Test 1) Clear DTC if any. 2) Perform final confirmation test referring to the following page. Is there any problem symptom, DTC or abnormal condition?	Go to Step 6.	End.

1. Customer Complaint Analysis

Record details of the problem (failure, complaint) and how it occurred as described by the customer. For this purpose, use of such a questionnaire form as shown below will facilitate collecting information to the point required for proper analysis and diagnosis.

CUSTOMER QUESTIONNAIRE (EXAMPLE)

User name:	Model:	VIN:	
Date of issue:	Date Reg.	Date of problem:	Mileage:
DESCRIPTION OF PROBLEM			
Engine does not start		Engine stops	
Vehicle does not move (forward, rearward)		Transmission does not shift (1st, 2nd, 3rd, 4th, Rev) gear	
No lock-up (Lock-up clutch operation)		Automatic shift does not occur	
Shift point too high or too low		Transmission slipping in (1st, 2nd, 3rd, 4th, Rev) gear	
Excessive gear change shock		Other	
VEHICLE/ENVIRONMENTAL CONDITION WHEN PROBLEM OCCURS			
Environmental Condition			
Weather	fair/cloudy/rain/snow/always/other( )		
Temperature	hot/warm/cool/cold/( ) °C/always		
Frequency	always/sometimes (times/ day, month)/only once		
Road	urban/suburb/highway/mountainous (uphill/downhill)/tarmacadam/gravel/other( )		
Vehicle Condition			
Transmission range	(P, R, N, D, 2, L) range/(→) range		
Transmission temp.	cold/warming up phase/warmed up		
Vehicle	at stop/during driving (constant speed/accelerating/decelerating/right hand corner/left hand corner)/other ( )/speed (km/h)		
Engine	Speed (r/min)/throttle opening (idle/about %/full)		
Brake	Apply/Not apply		
"O/D OFF" switch	ON/OFF		
MALFUNCTION INDICATOR LAMP FUNCTION			
always ON/sometimes ON/not on			
Diagnostic trouble code indicated/not indicated			
Diagnostic trouble code recorded			

NOTE:

The above form is a standard sample. It should be modified according to conditions characteristic of each market.

2. Diagnostic Trouble Code (DTC) Check, Record and Clearance

To check DTC, refer to "DTC CHECK" in this section. When a DTC exists, it means existence of a malfunction in the system represented by that code but whether it still exists (current) or it occurred in the past and has gone (history) is unknown. To know it, clear this DTC once (Refer to "DTC CLEARANCE" in this section.), perform test drive and/or "TROUBLE SYMPTOM CONFIRMATION" in this section and then check DTC again as described in "DTC CHECK". Attempt to diagnose the trouble based on the DTC recorded in this step only or failure to clear the DTC in this step may mislead the diagnosis or make diagnosing difficult. Even after checking the DTC with the SUZUKI scan tool, diagnosis should be performed according to this flow chart to check TCM for proper self-diagnosis function.

3 and 4. Visual Inspection

As a preliminary step, perform visual check of the following items that support proper function of the automatic transmission.

INSPECTION ITEM	REFERRING SECTION
• Engine oil ----- level, leakage	Section 0B
• Engine coolant ----- level, leakage	Section 0B
• A/T fluid ----- level, leakage, color	Section 0B
• Battery ----- fluid level, corrosion of terminal	
• A/T fluid hoses ----- disconnection, looseness, deterioration	
• Connectors of electric wire harness ----- disconnection, friction	Section 8
• Fuses ----- burning	Section 8
• Parts ----- installation, bolt ----- looseness	
• Parts ----- deformation	
• Other parts that can be checked visually	
Also add following items at engine start.	
• Indicator, warning lights in combination meter ----- ON (indicating abnormality in system) or OFF	Section 8C
• Other parts that can be checked visually	

5. Trouble Symptom Confirmation

Check if what the customer claimed in "CUSTOMER COMPLAINT ANALYSIS" is actually found in the vehicle and if that symptom is found, whether it is identified as a failure. (This step should be shared with the customer if possible.)

When the symptom is not actually found, possibility is :

- The symptom occurs under certain conditions.
  ----- Retry with the vehicle under different conditions.
- The trouble occurred only temporarily and normal operation has been restored.
  ----- Perform "DTC CHECK" and if the diagnostic trouble code is indicated, inspect according to the flow table for that DTC.

6 and 7. Rechecking and Record of DTC

Refer to "DTC CHECK" in this section.

8. Automatic Transmission Basic Check and Trouble Diagnosis Table

Perform basic automatic transmission check according to the list below first. When the end of the list has been reached, check the part of system suspected as a possible cause referring to “TROUBLE DIAGNOSIS TABLE” and based on symptoms appearing on vehicle (symptoms obtained through steps of customer complaint analysis, trouble symptom confirmation and/or A/T basic check) and repair or replace faulty parts, if any.

AUTOMATIC TRANSMISSION BASIC CHECK LIST

1) Power Supply Voltage Check
   Check that the battery voltage is within 10 – 14 V at engine stop.
2) A/T Fluid Check
   Check A/T fluid level and quality.
3) STALL TEST
   Perform stall test. Refer to “STALL TEST” in this section for details.
4) LINE PRESSURE TEST
   Perform line pressure test. Refer to “LINE PRESSURE TEST” in this section.
5) ROAD TEST
   Perform road test to understand correctly the trouble area.
6) Electrical Harness and Coupler Check
   Check the connection of the harness coupler. Check for the loose connection of the harness, loose connection of the terminals.

9. Diagnostic Trouble Code Flow Table

Based on the DTC indicated in STEP 6 and STEP 7 and referring to “DTC CHECK”, locate the cause of the trouble, namely in a sensor, switch, wire harness, connector, actuator, TCM or other part and repair or replace faulty parts.

10. Check for Intermittent Problem

Check parts where an intermittent trouble is easy to occur (e.g. wire harness, connector, etc.), referring to “INTERMITTENT AND POOR CONNECTION” in Section 0A and related circuit of DTC recorded in Step 2.

11. Final Confirmation Test

Confirm that the problem symptom has gone and the automatic transmission is free from any abnormal conditions. If what has been repaired is related to the malfunction DTC, clear the DTC once and perform test driving and confirm that a normal code is indicated.

Trouble Diagnosis Table

NOTE:

For the inspection of throttle position sensor, refer to "TP SENSOR" in Section 6E.

Trouble diagnosis table-1

Electrical Repair

Condition		Possible Cause	Correction
No up-shift	**1st → 2nd** **2nd → 3rd**	• Output shaft speed sensor or its circuit faulty	Inspect output shaft speed sensor.
		• Shift solenoid -D (No.4) (1st → 2nd), -A (No.1) (1st → 3rd), -E (No.5) (2nd → 3rd), and/or its circuit faulty	Repair or replace.
		• Throttle position sensor or its circuit faulty	Inspect TP sensor.
		• TCM faulty	Replace TCM.
	3rd → 4th	• Output shaft speed sensor or its circuit faulty	Inspect output shaft speed sensor.
		• Shift solenoid -B (No.2), -C (No.3) or its circuit faulty	Repair or replace.
		• O/D CUT switch circuit faulty	Refer to "O/D OFF SWITCH" in this section and/or inspect its circuit.
		• Throttle position sensor or its circuit faulty	Inspect TP sensor.
		• TCM faulty	Replace TCM.
No down-shift	**4th → 3rd** **3rd → 2nd** **2nd →1st**	• Shift solenoid -C (No.3) (4th → 3rd), -D (No.4) (2nd → 1st), -A (No.1) (3rd → 2nd), -B (No.2) (4th → 3rd), -E (No.5) (3rd → 2nd) or its circuit faulty	Repair or replace.
		• Throttle position sensor or its circuit faulty	Inspect TP sensor.
		• TCM fault	Replace TCM.
Shift point too high or too low		• Throttle position sensor, output shaft speed sensor or its circuit faulty	Inspect TP sensor and/or output shaft speed sensor.
Vehicle does not move		• Shift solenoid -A (No.1), -C (No.3), -D (No.4) or its circuit faulty	Repair or replace.
Excessive slip		• Shift solenoid -A (No.1) to -E (No.5) or its circuit faulty	Repair or replace.
Excessive shock at N → D or N → R		• Shift solenoid -A (No.1), -D (No.4), -E (No.5) or its circuit faulty	Repair or replace.
		• ISC circuit	Inspect ISC circuit.
No lock-up or No lock-up OFF		• TCC (lock-up) solenoid valve or its circuit faulty	Repair or replace.
		• Throttle position sensor or its circuit faulty	Refer to "THROTTLE POSITION SENSOR" in Section 6E.
		• Input shaft speed and/or output shaft speed sensor or its circuit faulty.	Refer to "ECT SENSOR" in Section 6E.
		• Abnormal engine rev. signal or its circuit.	Repair or replace.
		• ECM faulty	Inspect ECM.

Trouble diagnosis table-2

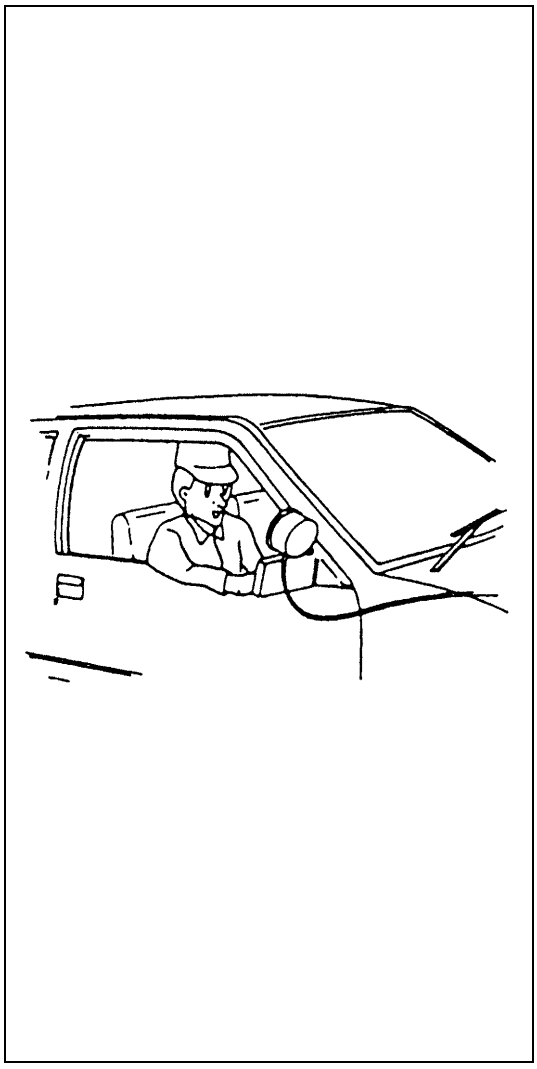
Mechanical Repair

Condition		Possible Cause	Correction
Vehicle does not move at any range		• Manual valve faulty	Clean or replace.
		• Primary regulator valve faulty	Clean or replace.
No gear change	**1st ↔ 2nd**	• Shift solenoid -D (No.4) and/or -E (No.5) stuck	Clean or replace.
	2nd ↔ 3rd	• Shift solenoid -A (No.1), -C (No.3) and/or fail valve No.1 stuck	Clean or replace.
	3rd ↔ 4th	• Shift solenoid -B (No.2), -C (No.3) and/or fail valve No.2 stuck	Clean or replace.
Harsh engagement	**P, N → R**	• Front clutch accumulator faulty	Clean or replace.
	N → D	• 1st & 2nd brake accumulator faulty	Clean or replace.
	1st → 2nd at D range or 2 range	• Front clutch accumulator faulty	Clean or replace.
		• Shift solenoid -D (No.4)	Clean or replace.
	2nd → 3rd at D range	• Direct clutch accumulator faulty	Clean or replace.
		• Shift solenoid -E (No.5)	Clean or replace.
	3rd → 4th at D range	• Overdrive brake accumulator faulty	Clean or replace.
		• Shift solenoid -B (No.2)	Clean or replace.
	All gear change	• Primary regulator valve faulty	Clean or replace.
Excessive slip (low line pressure)		• Primary regulator valve faulty	Clean or replace.
Vehicle does not move at	**1st, 2nd, 3rd and reverse gear**	• Rear clutch faulty	Repair or replace.
	Reverse gear	• Reverse brake faulty	Repair or replace.
	2nd, 3rd and 4th gear	• Front clutch faulty	Repair or replace.
	3rd and 4th gear	• Direct clutch faulty	Repair or replace.
	1st and 2nd gear	• 1st & 2nd brake faulty	Repair or replace.
	4th gear	• Overdrive brake faulty	Repair or replace.
	Any forward and reverse gear	• Parking lock pawl faulty	Repair or replace.
Shock or engine stalls when starting off and stopping		• TCC (lock-up clutch) faulty	Inspect and replace as necessary.
		• TCC (lock-up) solenoid faulty	Clean or replace.
		• Lock-up control valve faulty	Clean or replace.
		• Lock-up signal valve faulty	Clean or replace.
No up-shift	**1st → 2nd**	• Front clutch faulty	Repair or replace.
	2nd → 3rd	• Direct clutch faulty	Repair or replace.
	3rd → 4th	• Overdrive brake faulty	Repair or replace.
No engine braking	**2nd or 3rd gear**	• Front, rear or direct clutch or 1st & 2nd brake faulty	Repair or replace
	L range 1st gear	• Direct clutch or 1st & 2nd brake faulty	Repair or replace.
No lock-up		• Torque converter clutch faulty	Inspect and replace as necessary.
		• Lock-up control valve faulty	Clean or replace.
		• TCC (lock-up) solenoid faulty	Clean or replace.
		• Secondary regulator valve faulty	Clean or replace.
		• Signal valve faulty	Clean or replace.

Stall test

This test is to check overall performance of automatic transmission and engine by measuring stall speed at “D” and “R” ranges. Be sure to perform this test only when transmission fluid is at normal operating temperature and its level is between FULL and LOW marks.

CAUTION:
- **Do not run engine at stall more than 5 seconds continuously, for fluid temperature may rise excessively high.**
- **After performing stall test, be sure to leave engine running at idle for longer than 30 seconds before another stall test.**



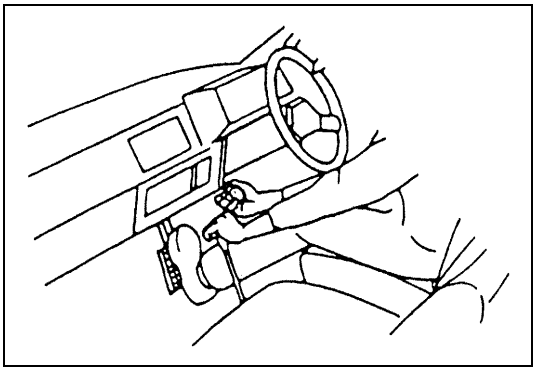
1) Apply parking brake and block wheels.
2) Install tachometer.
3) Start engine with select lever shifted to “P”.
4) Depress brake pedal fully.
5) Shift select lever to “D” and depress accelerator pedal fully while watching tachometer. Read engine rpm quickly when it has become constant (stall speed).
6) Release accelerator pedal immediately after stall speed is checked.
7) In the same way, check stall speed in “R” range.
8) Stall speed should be within following specification.

Stall speed
: 2,700 – 3,100 r/min

Test result	Possible cause
Lower than standard level	• Lack of engine output • Defective torque converter
Higher than standard level in “D” range	• Low line pressure • Malfunctioning 1st & 2nd brake • Malfunctioning rear clutch • Malfunctioning stator one-way clutch
Higher than standard level in “R” range	• Low line pressure • Malfunctioning rear clutch • Malfunctioning reverse brake • Malfunctioning stator one-way clutch • Malfunctioning direct clutch

Time lag test

This test is to check conditions of clutch, reverse brake and fluid pressure. “Time lag” means time elapsed since select lever is shifted with engine idling till shock is felt.



1) With chocks placed in front and behind front and rear wheels respectively, depress brake pedal.
2) Start engine.
3) With stop watch ready, shift select lever from “N” to “D” range and measure time from that moment till shock is felt.
4) Similarly measure time lag by shifting select lever from “N” to “R” range.

Specification for time lag
“N” → “D” : Less than 1.0 sec.
“N” → “R” : Less than 1.2 sec.

NOTE:

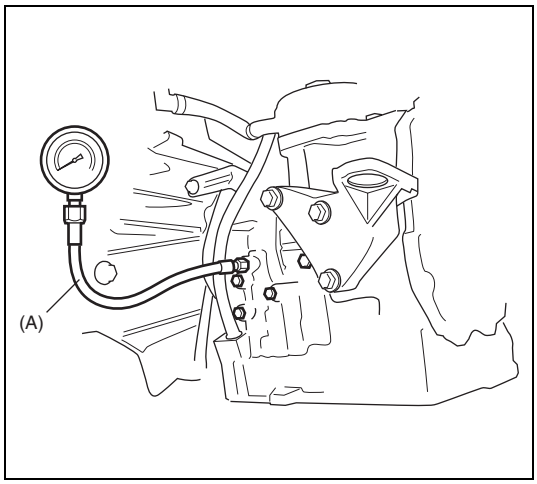
- **Make sure that selector cable is properly adjusted.**
- **When repeating this test, be sure to wait at least minute after select lever is shifted back to “N” range.**
- **Engine should be warmed up fully for this test.**

Test result	Possible cause
When “N” → “D” time lag exceeds specification.	• Low line pressure • Worn rear clutch • Worn 1st & 2nd brake
When “N” → “R” time lag exceeds specification.	• Low line pressure • Worn rear clutch • Worn direct clutch • Worn reverse brake

Line pressure test

Purpose of this test is to check operating conditions of each part by measuring fluid pressure in fluid pressure line.
Line pressure test requires following conditions.

- Automatic fluid is at normal operating temperature (70 – 80°C /158 – 176°F).
- Fluid is filled to proper level (between FULL and LOW on dipstick).



1) Apply parking brake securely and place chocks against wheels.
2) Remove fluid pressure check hole plug bolt.
3) Attach oil pressure gauge to fluid pressure check hole in transmission case.

Special tool
(A) : 09925-37811-001

CAUTION:
After attaching oil pressure gauge, check that no fluid leakage exists.

4) Depress foot brake fully, run engine at idle and stall then check fluid pressure in “D” or “R” range.

CAUTION:
Do not continue running engine at stall speed longer than 5 seconds.

Line pressure

	“D” range	“R” range
At idle speed	**7.6 – 9.2 kg/cm^2** **108.1 – 130.8 psi**	**14.1 – 17.3 kg/cm^2** **200.6 – 246.0 psi**
At stall speed	**7.9 – 9.5 kg/cm^2** **112.4 – 135.0 psi**	**14.4 – 17.6 kg/cm^2** **204.8 – 250.2 psi**

Test result	Possible cause
Line pressure higher than standard level in each range	• Malfunctioning regulator valve
Line pressure lower than standard level in each rang	• Malfunctioning regulator valve • Defective oil pump
Line pressure lower than standard level only in “D” range	• Fluid leakage from “D” range pressure circuit • Fluid leakage from 1st & 2nd brake • Fluid leakage from rear clutch
Line pressure lower than standard level only in “R” range	• Fluid leakage from “R” range pressure circuit • Fluid leakage from rear clutch • Fluid leakage from direct clutch • Fluid leakage from reverse brake

Engine brake test

WARNING:
Before test, make sure that there is no vehicle behind so as to prevent rear-end collision.

1) While driving vehicle in 3rd gear of “D” range, shift select lever down to “2” range and check if engine brake operates.
2) In the same way as in Step 1), check engine brake for operation when select lever is shifted down to “L” range.
3) Engine brake should operate in above test.

Test result	Possible cause
Fails to operate when shifted down to “2” range	• Defective shift switch • 1st & 2nd brake defective • Direct clutch defective
Fails to operate when shifted down to “L” range	

“P” range test

1) Stop vehicle on a slope, shift select lever to “P” range and at the same time apply parking brake.
2) After stopping engine, depress brake pedal and release parking brake.
3) Then, release brake pedal gradually and check that vehicle remains stationary.
4) Depress brake pedal and shift select lever to “N” range.
5) Then, release brake pedal gradually and check that vehicle moves.

WARNING:
Before test, check to make sure no one is around vehicle or down on a slope and keep watchful for safety during test.

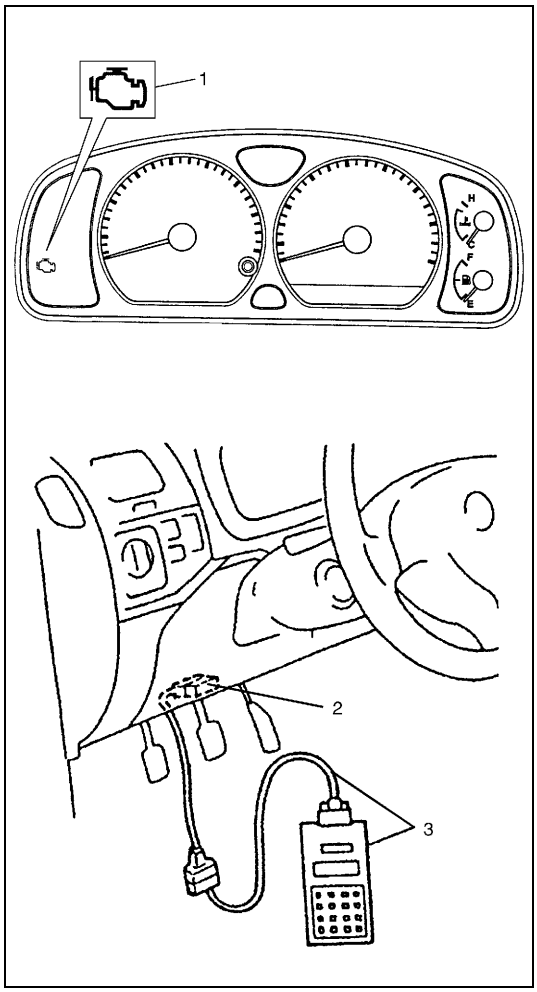
Test result	Possible cause
Vehicle moves at “P” range or remains stationary at “N” range	Defective parking lock pawl or spring

Electronic Control System Diagnosis

TCM has on-board diagnostic system (a system self-diagnosis function). Investigate where the trouble is by referring to “DIAGNOSTIC FLOW TABLE” and “DTC TABLE” in this section.

Precautions in diagnosing troubles

[PRECAUTIONS IN IDENTIFYING DTC]

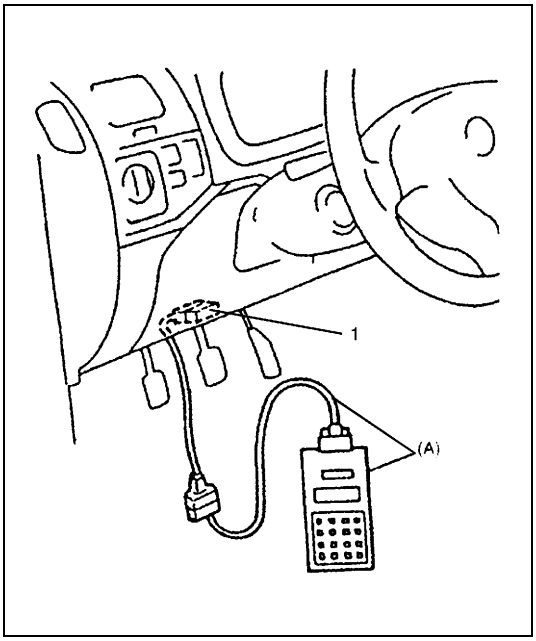


- For vehicle equipped with EGR valve, malfunction indicator lamp (MIL) (1) comes on when TCM detects malfunction of automatic transmission system.
- For vehicle equipped without EGR valve, malfunction indicator lamp (MIL) (1) does not come on although TCM detects malfunction of automatic transmission system.
- Using SUZUKI scan tool (3), diagnostic trouble code (DTC) stored in TCM memory can be checked and cleared as well. Before its use, be sure to read Operator’s (instruction) Manual supplied with it carefully to have good understanding of its functions and usage.
- Be sure to read “PRECAUTIONS FOR ELECTRICAL CIRCUIT SERVICE” in Section 0A before inspection and observe what is written there.
- When replacing TCM with used one, all learned contents which are stored in TCM memory should be erased after the replacement referring to “LEARNING CONTROL INITIALIZATION” in this section.

2. Data link connector (DLC)

[INTERMITTENT TROUBLES] and [NOTES ON SYSTEM CIRCUIT INSPECTION]
Refer to Section 0A.

DTC check

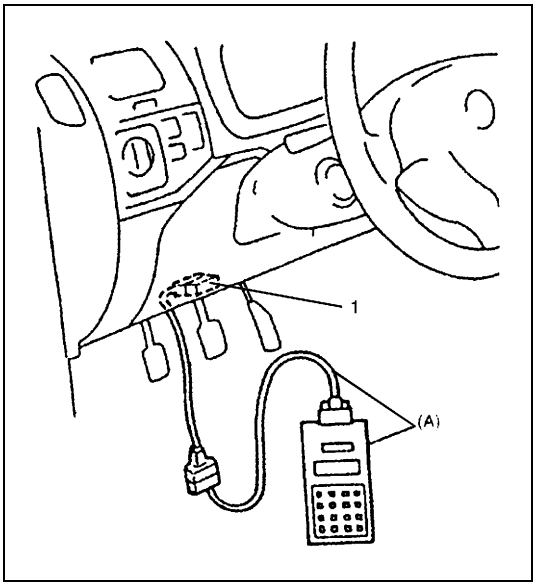


1) Turn ignition switch OFF.
2) Connect SUZUKI scan tool to data link connector (DLC) (1) located on underside of instrument panel at driver's seat side.

Special tool
(A) : SUZUKI scan tool

3) Turn ignition switch ON.
4) Read DTC according to instructions displayed on SUZUKI scan tool and print it or write it down. Refer to SUZUKI scan tool operator's manual for further details.
5) After completing the check, turn ignition switch OFF and disconnect SUZUKI scan tool from data link connector (DLC) (1).

DTC clearance



1) Turn ignition switch OFF.
2) Connect it to data link connector (DLC) (1) located on underside of instrument panel at driver's seat side.

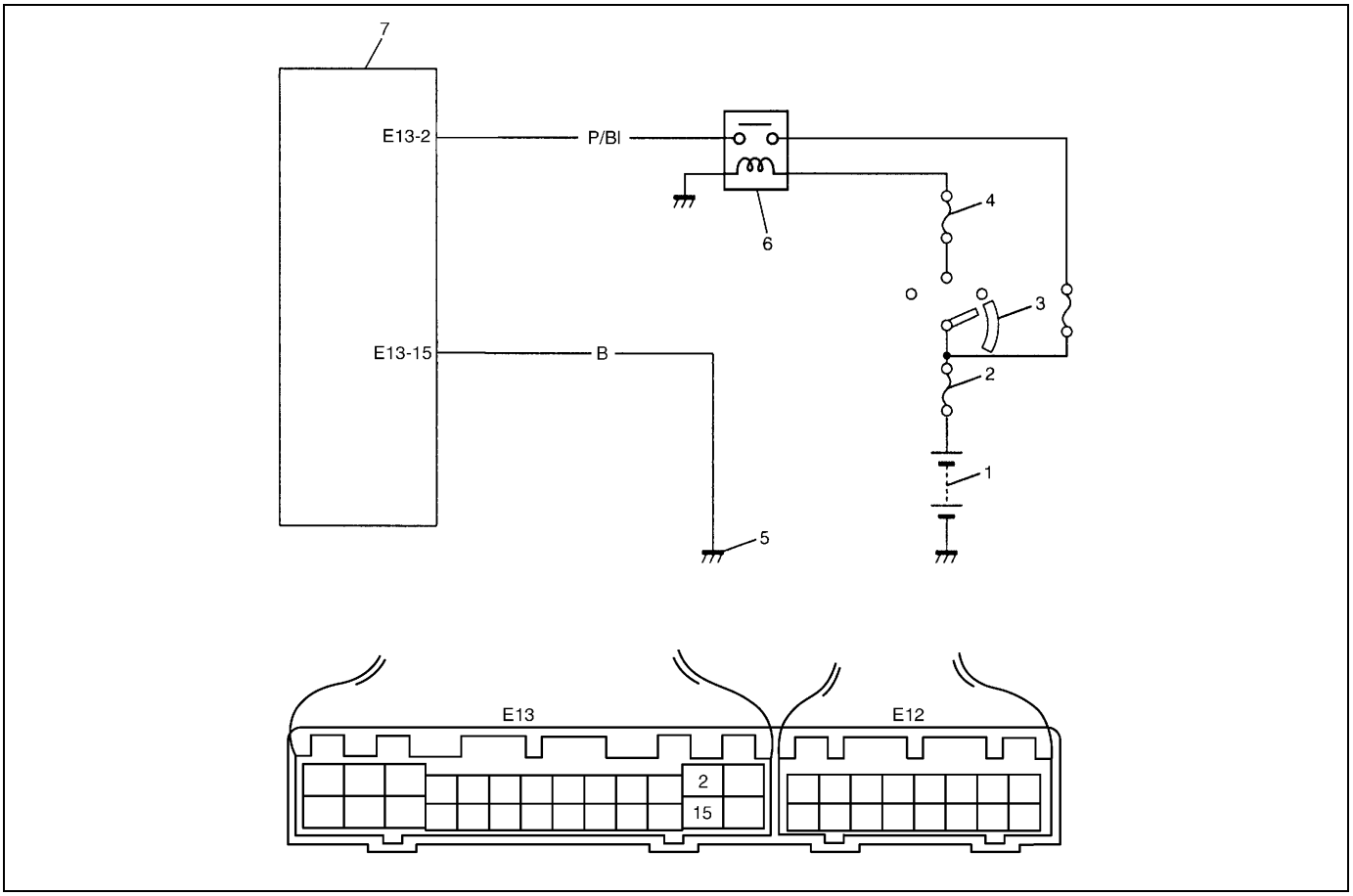
Special tool
(A) : SUZUKI scan tool

3) Turn ignition switch ON.
4) Erase DTC according to instructions displayed on scan tool. Refer to SUZUKI scan tool operator's manual for further details.
5) After completing the clearance, turn ignition switch OFF and disconnect scan tool from data link connector (DLC) (1).

DTC table

DTC NO.	DETECTING ITEMS	MIL	
		Vehicle equipped with EGR valve	Vehicle equipped without EGR valve
P0715	Input/Turbine speed sensor circuit malfunction	1 driving cycle	Not applicable
P0730	Incorrect gear ratio	2 driving cycles	Not applicable
P0753	Shift solenoid-A (No.1) electrical	1 driving cycle	Not applicable
P0758	Shift solenoid-B (No.2) electrical	1 driving cycle	Not applicable
P0763	Shift solenoid-C (No.3) electrical	1 driving cycle	Not applicable
P0768	Shift solenoid-D (No.4) electrical	1 driving cycle	Not applicable
P0773	Shift solenoid-E (No.5) electrical	1 driving cycle	Not applicable
P0743	Torque converter clutch (lock-up) system electrical	1 driving cycle	Not applicable
P0741	Torque converter clutch (lock-up) solenoid performance or stuck off	2 driving cycles	Not applicable
P0720	Output shaft speed sensor circuit malfunction	1 driving cycle	Not applicable
P1700	Throttle position signal input malfunction	1 driving cycle	Not applicable
P0705	Transmission range sensor circuit malfunction	1 driving cycle	Not applicable
P0725	Engine speed input circuit malfunction	2 driving cycles	Not applicable
P0710	Transmission fluid temperature sensor circuit malfunction	2 driving cycles	Not applicable
P1709	Engine coolant temperature signal circuit	1 driving cycle	Not applicable
P0702	Transmission control system electrical	1 driving cycle	Not applicable
P1702	Internal malfunction of TCM		

TCM power and ground circuit check

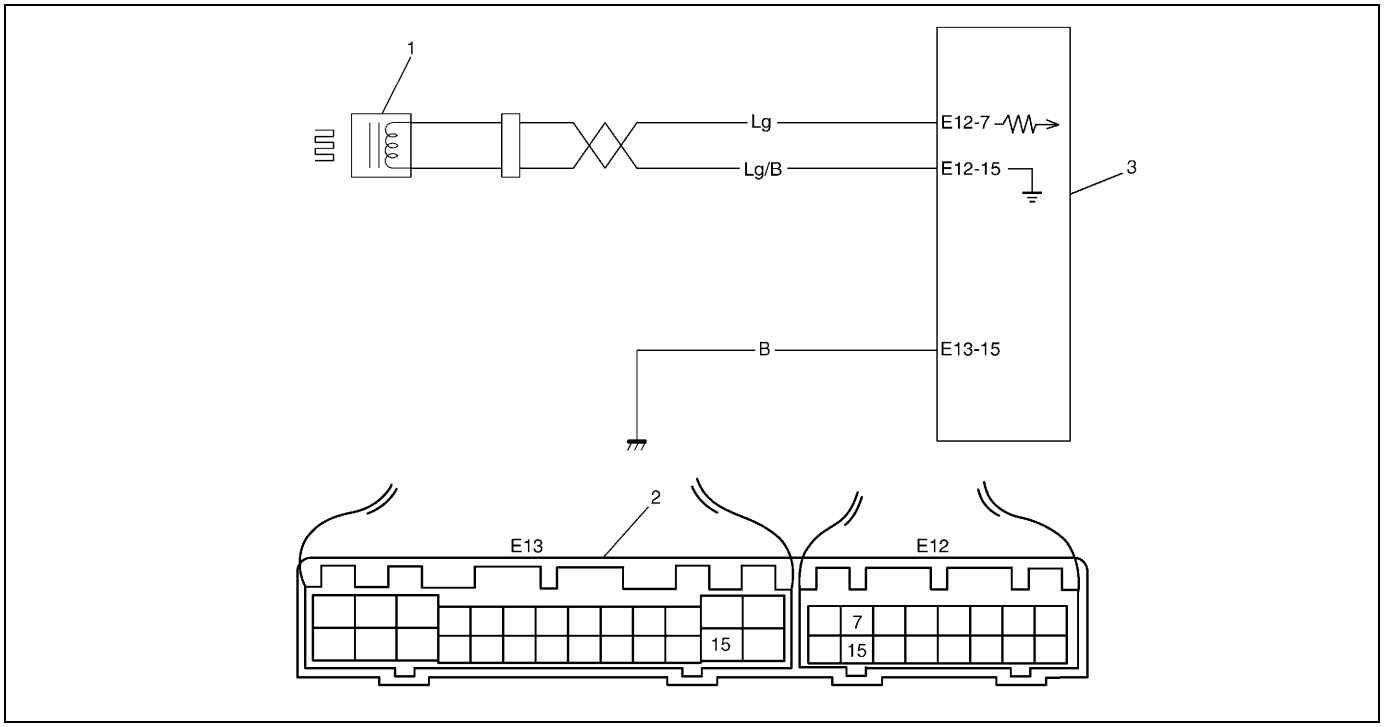


1. Battery	4. Circuit fuse (IG)	7. TCM
2. Main fuse	5. Ground	
3. Ignition switch	6. A/T relay	

DTC DETECTING CONDITION
• Automatic transmission doesn't shift to 1st gear at vehicle start in "D" range.

Step	Action	Yes	No
1	1) Disconnect TCM coupler with ignition switch OFF. 2) Check for proper connection to TCM at "E13-2" terminal. 3) If OK, turn ignition switch ON and check voltage at terminal "E13-2" of disconnected TCM coupler. Is it 10 – 14 V?	Go to Step 2.	"P/Bl" wire open or faulty A/T relay.
2	1) Turn ignition switch OFF. 2) With TCM couplers disconnected, check for proper connection to TCM at "E13-15" terminal. 3) If OK, check resistance between "E13-15" terminal of disconnected TCM coupler and body ground. Is continuity indicated?	TCM power and ground circuits are in good condition.	"B" wire open.

DTC P0715 Input/turbine speed sensor circuit malfunction

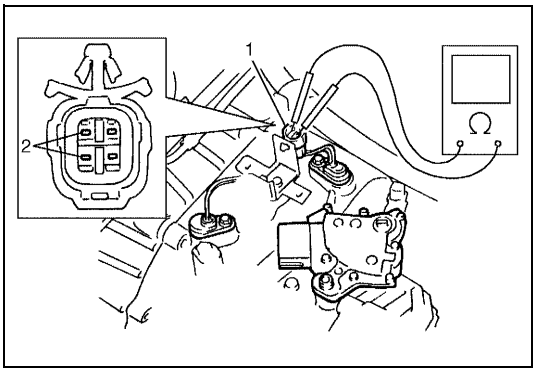


1. Input shaft speed sensor	2. TCM couplers (viewed from harness side)	3. TCM

DTC DETECTING CONDITION
• Input shaft speed sensor signal voltage too high or too low.

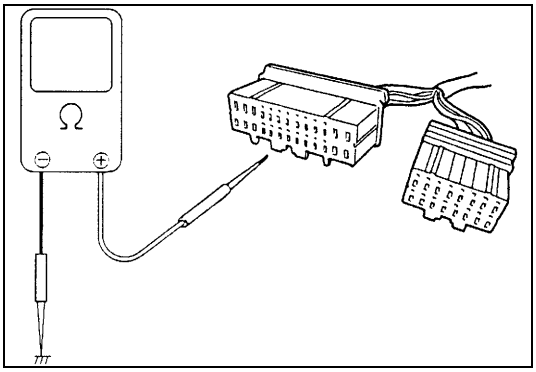
Step	Action	Yes	No
1	Was “AUTOMATIC TRANSMISSION DIAGNOSTIC FLOW TABLE” performed?	Go to Step 2.	Go to “AUTOMATIC TRANSMISSION DIAGNOSTIC FLOW TABLE”.
2	1) Turn ignition switch OFF and disconnect output shaft speed sensor – input shaft speed sensor coupler. 2) Measure resistance between terminals of the disconnected sensor side coupler. Is it 160 – 200 Ω? (See figure.)	Go to Step 3.	Replace input shaft speed sensor.
3	1) Connect output shaft speed sensor - input shaft speed sensor coupler then disconnect TCM couplers. 2) Measure resistance between terminal “E12-7” and “E12-15” of disconnected harness side coupler. Is it 160 – 200 Ω?	Go to Step 4.	“Lg” or “Lg/B” wire open or shorted each other.
4	Measure resistance between terminal “E12-7” (of disconnected harness side coupler) and body ground then terminal “E12-15” (of disconnected harness side coupler) and body ground. Are they about 0 Ω? (See figure.)	Short in between “Lg” wire and ground or “Lg/B” wire and ground.	Poor connection of terminal “E12-7” or “E12-15” of TCM. If all the above are in good condition, substitute a known-good TCM and recheck.

Figure for Step 2

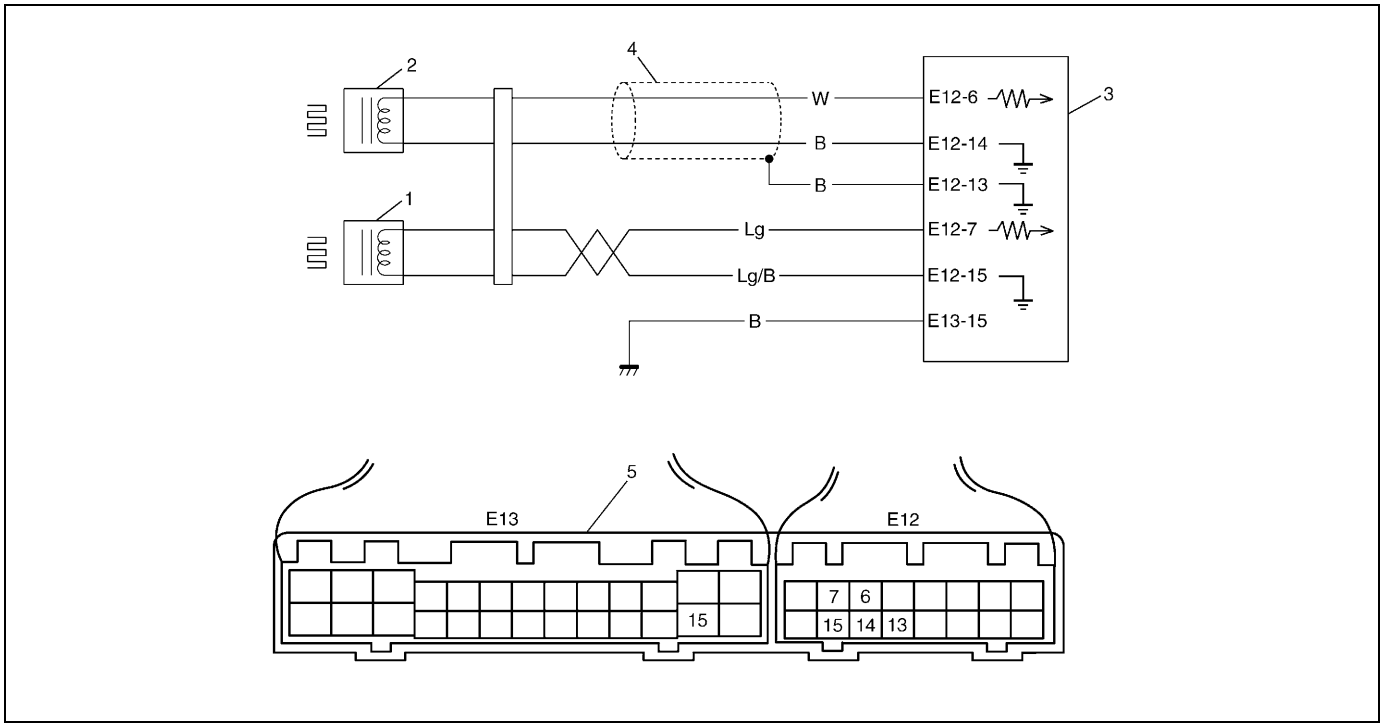


1.	Output shaft speed sensor - Input shaft speed sensor coupler
2.	Input shaft speed sensor terminal

Figure for Step 4



DTC P0730 Incorrect gear ratio



1. Input shaft speed sensor	4. Shield wire
2. Output shaft speed sensor	5. TCM couplers (viewed from harness side)
3. TCM	

DTC DETECTING CONDITION
• Difference in detected revolution between input shaft speed sensor and output shaft speed sensor too wide.

Step	Action	Yes	No
1	Check if DTC P0730 displayed with DTC P0715 or DTC P0720. Is DTC P0730 displayed with DTC P0715 or DTC P0720?	Inspect according to DTC P0715 or DTC P0720 flow table first.	Go to Step 2.
2	1) Turn ignition switch OFF and disconnect TCM couplers. 2) Measure resistance between terminal "E12-13" of the disconnected harness side coupler and body ground. Is it about 0 Ω? (See figure.)	Short in between shield portion or "B" wire and ground.	Go to Step 3.
3	Check input shaft speed sensor and output shaft speed sensor referring to each item in this section. Are they OK? (See figure.)	• Broken wire in shield portion or broken "B" wire, or shorted to power source circuit. • Malfunction of A/T itself (over revolving of C0 clutch drum by departing of C0 clutch drum snap ring, clutch slipping, etc.) If all the above are in good condition, substitute a known-good TCM and recheck.	Inspect and replace referring to each item in this section.

Figure for Step 2

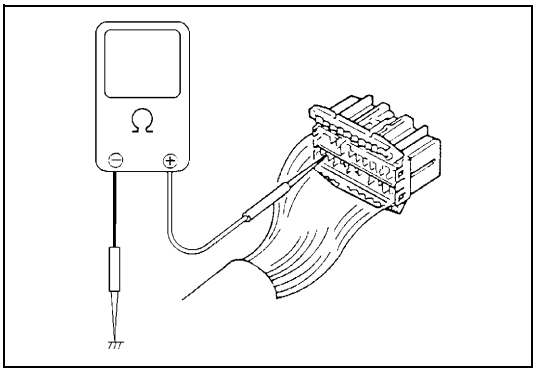
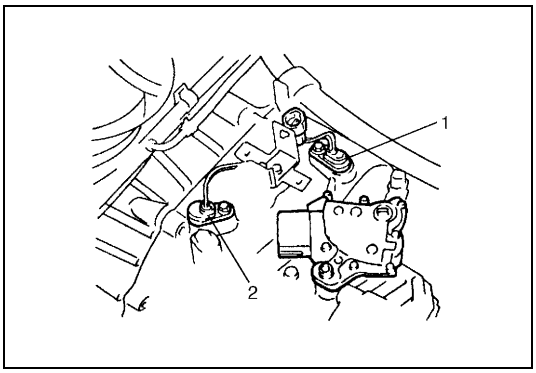
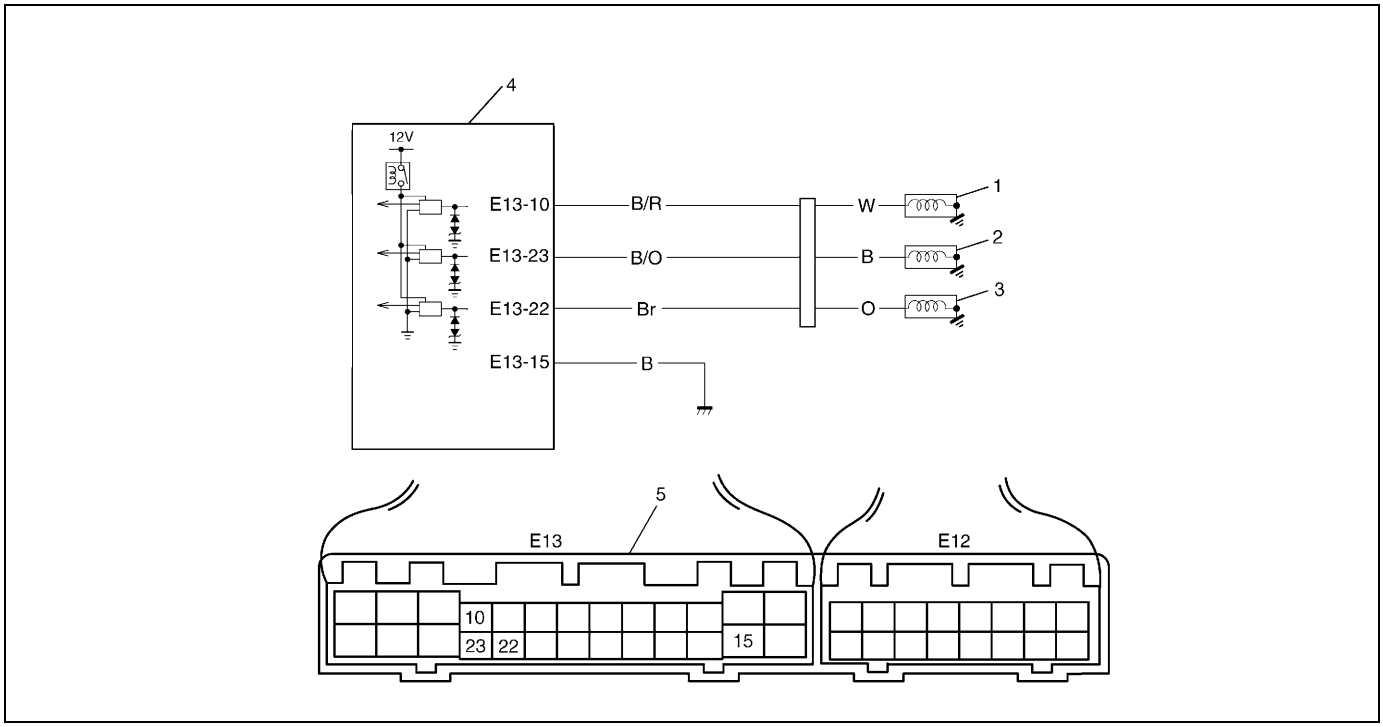


Figure for Step 3



1.	Output shaft speed sensor
2.	Input shaft speed sensor

DTC P0753 Shift solenoid-A (No.1) electrical
DTC P0758 Shift solenoid-B (No.2) electrical
DTC P0743 TCC (lock-up) system electrical



1. Shift solenoid-A (No.1)	4. TCM
2. Shift solenoid-B (No.2)	5. TCM couplers (viewed from harness side)
3. TCC (lock-up) solenoid	

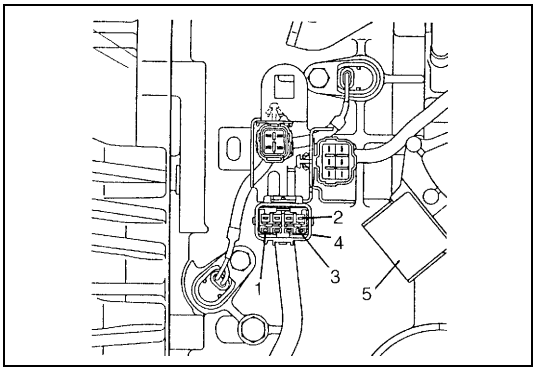
DTC DETECTING CONDITION
• Solenoid output voltage too high although TCM orders solenoid to turn OFF.
• Solenoid output voltage too low although TCM orders solenoid to turn ON.

Step	Action	Yes	No
1	1) Turn ignition switch OFF and disconnect solenoid coupler. 2) Measure the resistance between each solenoid terminal of the solenoid side coupler and transmission ground. Is it 11 – 15 Ω? (See figure.)	Go to Step 2.	• Solenoid lead wire open or shorted to ground. • Malfunction of solenoid.
2	1) Disconnect TCM couplers. 2) Measure the resistance between terminal “E13-10”, “E13-23” or “E13-22” of the disconnected harness side TCM coupler and body ground. Is it about 0 Ω? (See figure.)	“B/R”, “B/O”, or “Br” wire shorted to ground.	Go to Step 3.
3	1) Connect solenoid coupler. 2) Measure the resistance between each solenoid terminal of the disconnected harness side TCM coupler and body ground. Is it 11 – 15 Ω?	Go to Step 4.	“B/R”, “B/O” or “Br” wire open or poor connection of shift solenoid coupler.

Step	Action	Yes	No
4	Turn ignition switch ON then measure voltage between terminal “E13-10”, “E13-23” or “E13-22” of the disconnected harness side TCM coupler and body ground. Is it about 0 V?	Poor connection at terminal “E13-10”, “E13-23” or “E13-22” of TCM. If all the above are in good condition, substitute a known-good TCM and recheck.	“B/R”, “B/O” or “Br” wire or shift solenoid lead wire shorted to power source circuit.

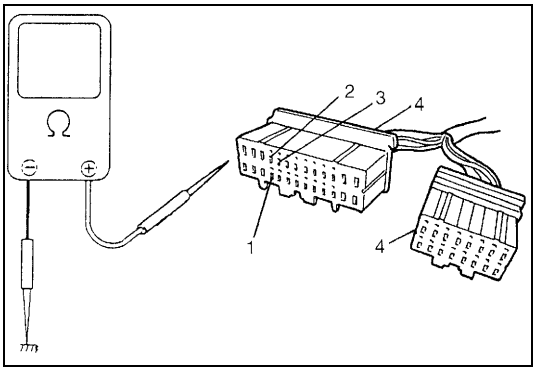
Solenoid	TCM Terminal Number	Lead Wire Color (between TCM and solenoid coupler)
Shift solenoid -A (No.1)	E13-10	B/R
Shift solenoid -B (No.2)	E13-23	B/O
TCC solenoid (Lock-up solenoid)	E13-22	Br

Figure for Step 1



1. Shift solenoid -A (No.1) terminal
2. Shift solenoid -B (No.2) terminal
3. TCC (Lock-up) solenoid terminal
4. Solenoid coupler
5. Transmission range sensor (Shift switch)

Figure for Step 2, 3, 4



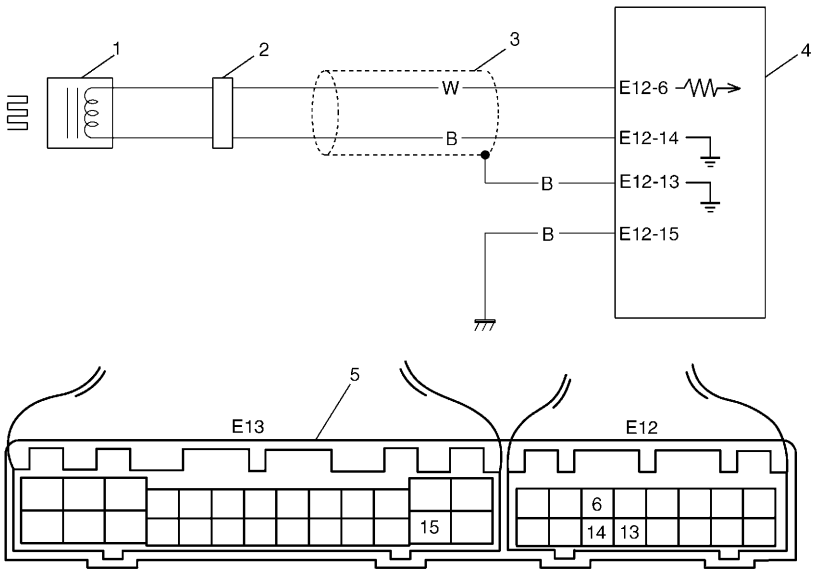
1. “E13-10” terminal
2. “E13-23” terminal
3. “E13-22” terminal
4. TCM couples

DTC P0741 TCC (lock-up) solenoid performance or stuck OFF

Step	Action	Yes	No
1	Was “AUTOMATIC TRANSMISSION DIAGNOSTIC FLOW TABLE” performed?	Go to Step 2.	Go to “AUTOMATIC TRANSMISSION DIAGNOSTIC FLOW TABLE”.
2	Check TCC (lock-up) solenoid referring to “SHIFT SOLENOID VALVES” in this section. Is it in good condition?	Go to Step 3.	Replace TCC (lock-up) solenoid.
3	Check valve body for fluid passage clog, or lock-up control valve, secondary regulator valve or signal valve stuck, referring to “TRANSMISSION UNIT REPAIR OVERHAUL” in this section. Are they in good condition?	Go to Step 4.	Faulty valve body.
4	Substitute a known-good torque converter and recheck. Is it OK?	Torque converter malfunction.	Overhaul and repair automatic transmission.

DTC DETECTING CONDITION
• Difference between turbine rev. and engine rev. too close even though TCM ordered to turn OFF lock-up.
• Difference between turbine rev. and engine rev. too wide even though TCM ordered to turn ON lock-up.

DTC P0720 Output shaft speed sensor circuit malfunction



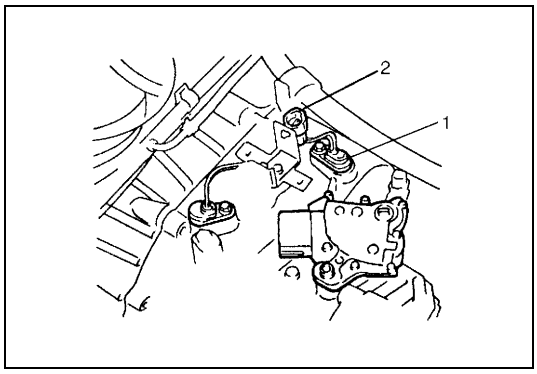
1. Output shaft speed sensor (A/T VSS)	4. TCM
2. Coupler	5. TCM couplers (viewed from harness side)
3. Shield wire	

DTC DETECTING CONDITION
• Output shaft speed sensor signal voltage too high or too low.

Step	Action	Yes	No
1	1) Turn ignition switch OFF and disconnect output shaft speed sensor – input shaft speed sensor coupler. (See figure.) 2) Measure the resistance between terminals of disconnected sensor side coupler. Is it 160 – 200 Ω? (See figure.)	Go to Step 2.	Replace output shaft speed sensor.
2	1) Connect output shaft speed sensor – input shaft speed sensor coupler then disconnect TCM couplers. 2) Measure resistance between terminal “E12-6” and “E12-14” of disconnected harness side coupler. Is it 160 – 200 Ω? (See figure.)	Go to Step 3.	“W” or “B” wire open or shorted each other.

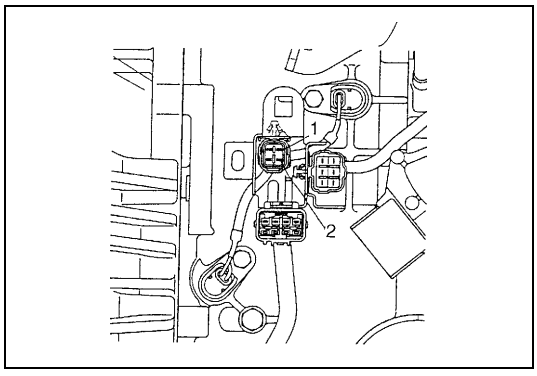
Step	Action	Yes	No
3	1) Disconnect output shaft speed sensor – input shaft speed sensor coupler. (See figure.) 2) Measure resistance between terminal “3” (of disconnected sensor side coupler) and body ground then terminal “4” (of disconnected sensor side coupler) and body ground. Is it about 0 Ω? (See figure.)	Replace output shaft speed sensor.	Go to Step 4.
4	1) Connect output shaft speed sensor coupler. 2) Measure resistance between terminal “E12-6” (of disconnected harness side coupler) and body ground then terminal “E12-14” (of disconnected harness side coupler) and body ground. Is it about 0 Ω? (See figure.)	“W” or “B” wire shorted to ground.	Go to Step 5.
5	Measure resistance between terminal “E12-6” and “E12-13” (of disconnected harness side coupler) then terminal “E12-14” and “E12-13” (of disconnected harness side coupler). Is it about 0 Ω? (See figure.)	“W” wire or “B” wire shorted to shield portion.	Poor connection of terminal “E12-6” or “E12-14” of the TCM. If all the above are in good condition, substitute a known-good TCM and recheck.

Figure for Step 1, 2



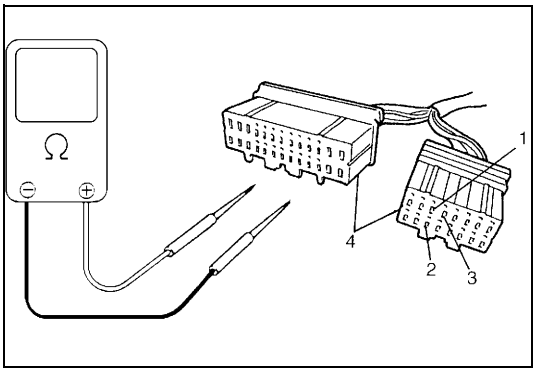
1.	Output shaft speed sensor
2.	Input shaft speed sensor coupler

Figure for Step 2, 3



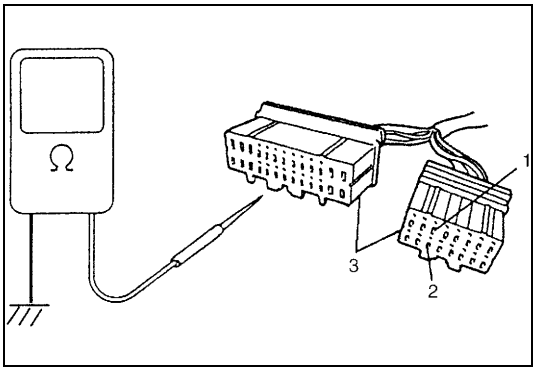
1.	Terminal “3”
2.	Terminal “4”

Figure for Step 2, 5



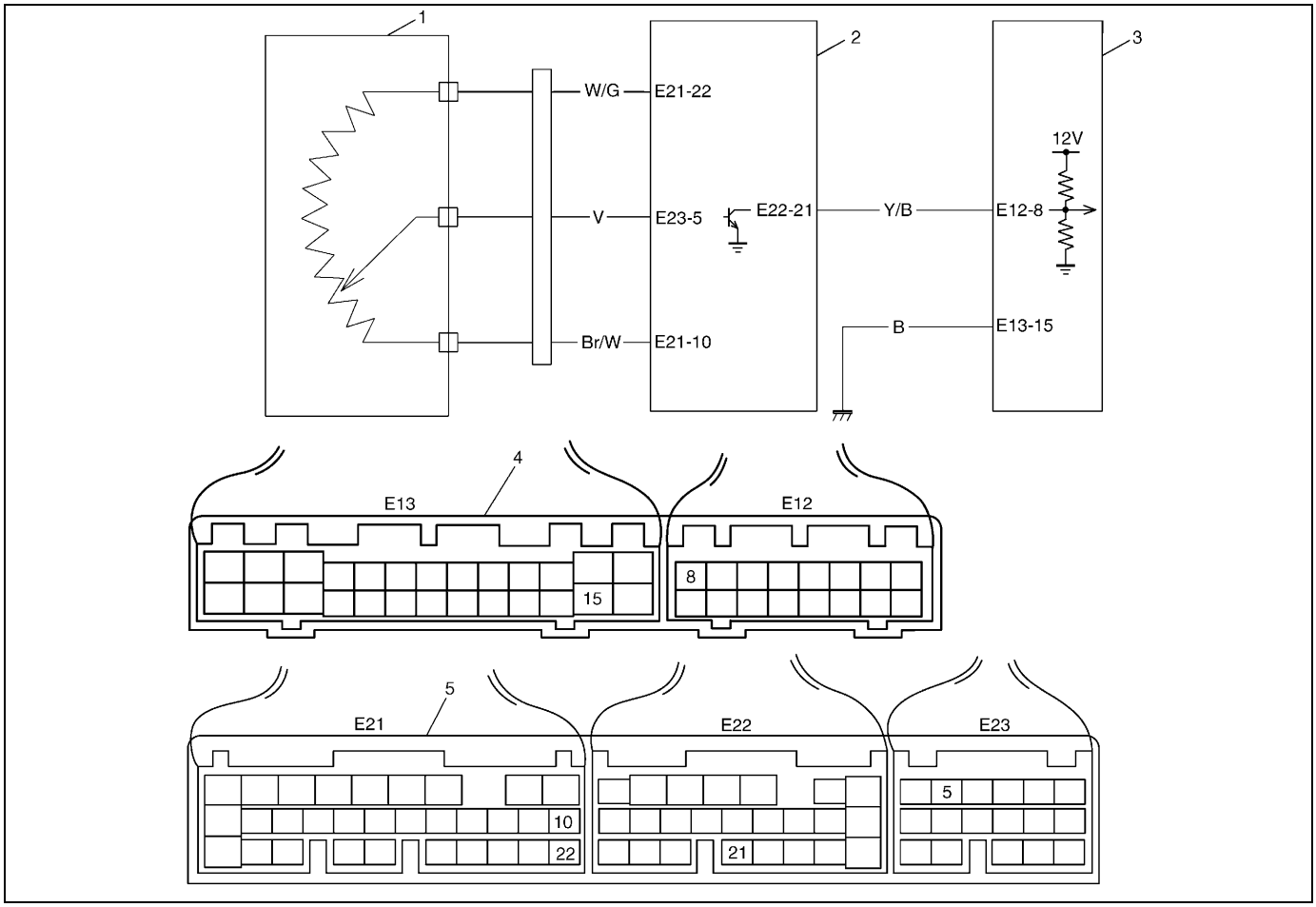
1.	“E12-14” terminal
2.	“E12-6” terminal
3.	“E12-13” terminal
4.	TCM couplers

Figure for Step 4



1.	“E12-14” terminal
2.	“E12-6” terminal
3.	TCM couplers

DTC P1700 Throttle position signal input malfunction



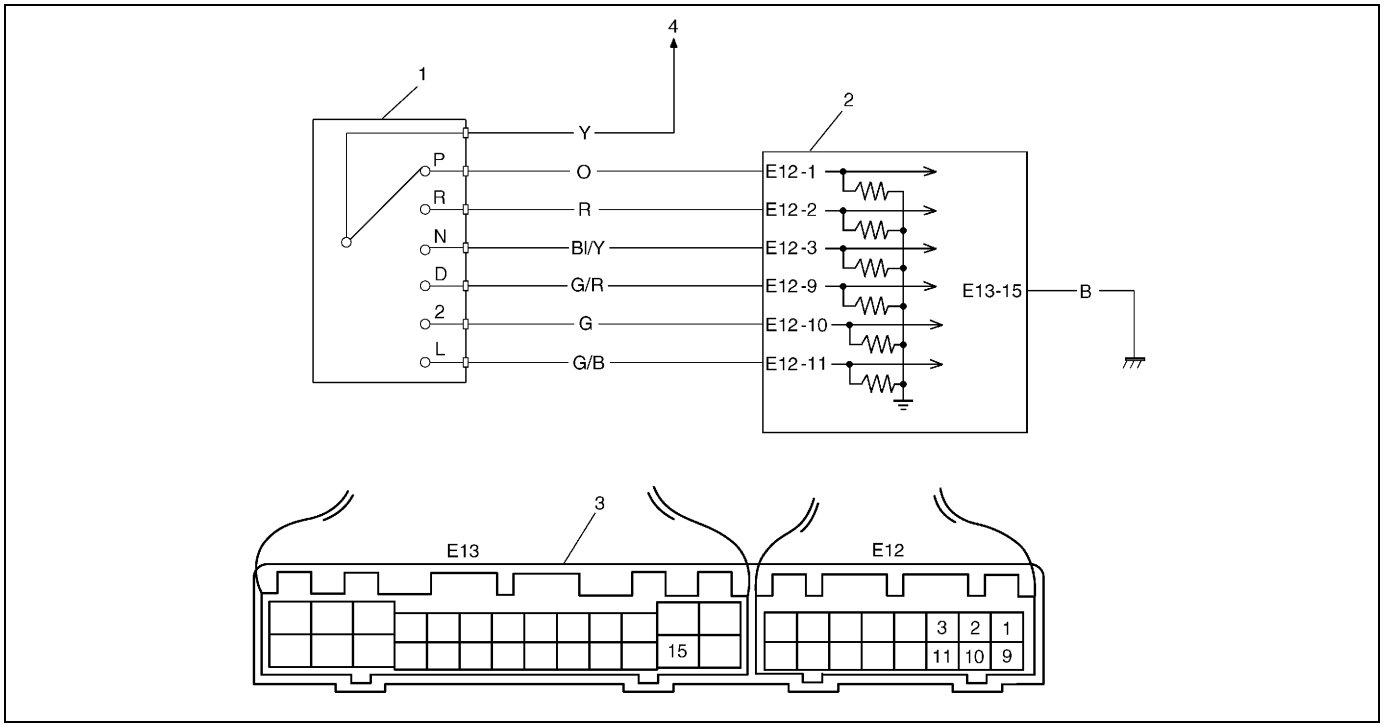
1. Throttle position (TP) sensor	4. TCM couplers (viewed from harness side)
2. ECM	5. ECM couplers (viewed from harness side)
3. TCM	

DTC DETECTING CONDITION
• NO or abnormal throttle opening signal inputted.

Step	Action	Yes	No
1	Check DTC of “ENGINE DIAGNOSIS” referring to Section 6. Is there DTC related to throttle position sensor detected?	Inspect and repair referring to DTC flow table of “ENGINE DIAGNOSIS” in Section 6.	Go to Step 2.
2	1) Check for proper connections of terminal “E12-8” to TCM and terminal “E22-21” to ECM. 2) Turn ignition switch OFF and disconnect TCM and ECM couplers. 3) Check continuity between terminal “E12-8” of disconnected harness side TCM coupler and terminal “E22-21” of disconnected harness side ECM coupler. Is continuity indicated?	Go to Step 3.	“Y/B” wire open.

Step	Action	Yes	No
3	Check continuity between terminal “E12-8” of disconnected harness side TCM coupler and ground. Is continuity indicated?	“Y/B” wire shorted to ground.	Go to Step 4.
4	1) Connect TCM couplers. 2) Turn ignition switch ON. 3) Measure voltage between terminal “E12-8” of connected harness side TCM coupler and ground. Is it 10 – 14 V?	Intermittent trouble or faulty ECM. Check for intermittent referring to “INTERMITTENT AND POOR CONNECTION” in Section 0A. If no trouble found, substitute a known-good ECM and recheck.	Faulty TCM. Substitute a known-good TCM and recheck.

DTC P0705 Transmission range sensor (switch) circuit malfunction



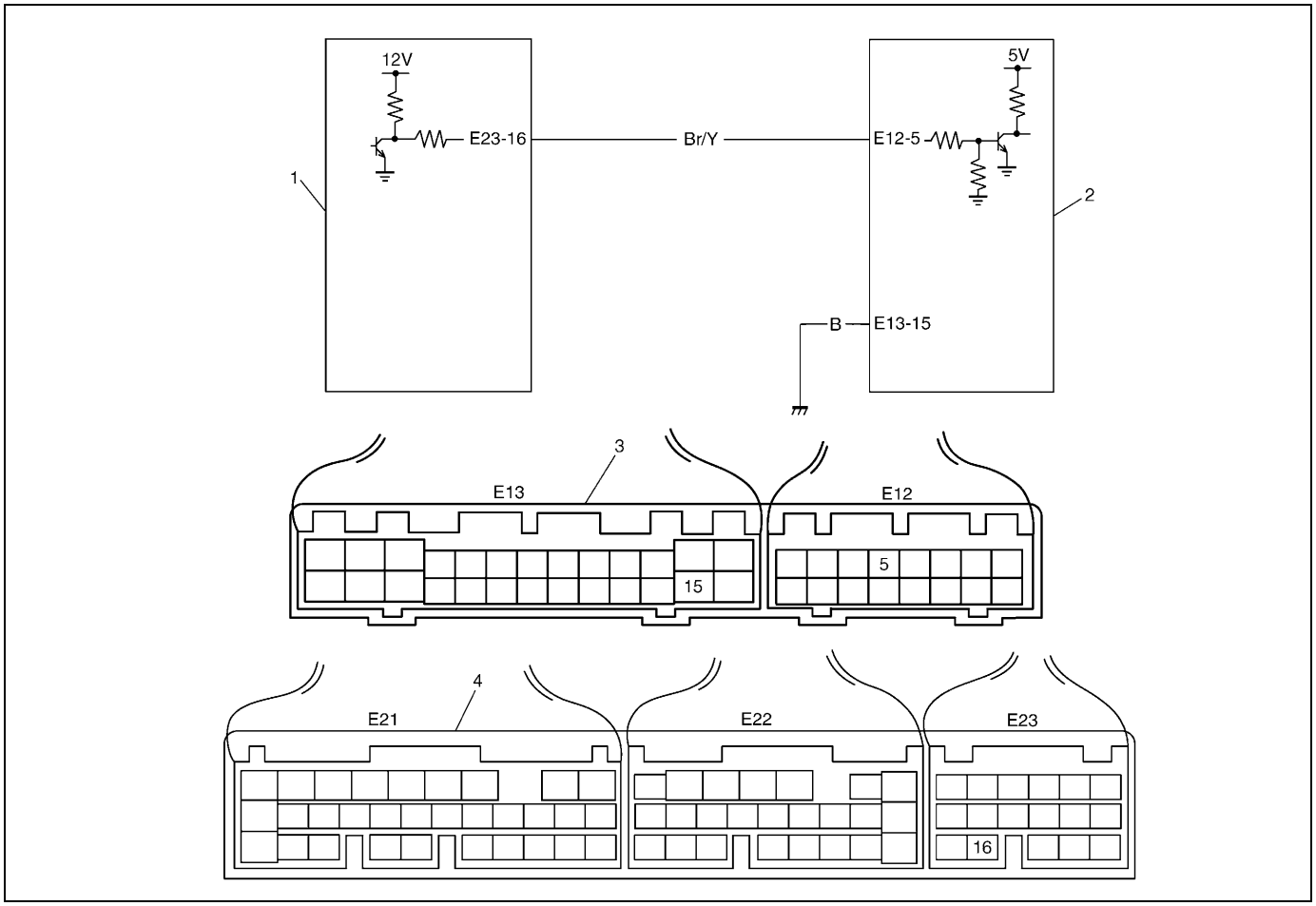
1. Transmission range sensor (shift switch)	3. TCM couplers (viewed from harness side)
2. TCM	4. Power source

DTC DETECTING CONDITION
• No shift switch signal inputted or two or more shift switch signals inputted at the same time.

Step	Action	Yes	No
1	1) Turn ignition switch OFF, disconnect TCM couplers. 2) Turn ignition switch ON, check voltage between terminal “E12-1” and “E13-15” of disconnected harness side TCM coupler. Is it 10 – 14 V at “P” range and 0 V at the other range?	Go to Step 2.	Go to Step 7.
2	While ignition switch ON, check voltage between terminal “E12-2” and “E13-15” of disconnected harness side TCM coupler. Is it 10 – 14 V at “R” range and 0 V at the other range?	Go to Step 3.	Go to Step 7.
3	While ignition switch ON, check voltage between terminal “E12-3” and “E13-15” of disconnected harness side TCM coupler. Is it 10 – 14 V at “N” range and 0 V at the other range?	Go to Step 4.	Go to Step 7.
4	While ignition switch ON, check voltage between terminal “E12-9” and “E13-15” of disconnected harness side TCM coupler. Is it 10 – 14 V at “D” range and 0 V at the other range?	Go to Step 5.	Go to Step 7.

Step	Action	Yes	No
5	While ignition switch ON, check voltage between terminal “E12-10” and “E13-15” of disconnected harness side TCM coupler. Is it 10 – 14 V at “2” range and 0 V at the other range?	Go to Step 6.	Go to Step 7.
6	While ignition switch ON, check voltage between terminal “E12-11” and “E13-15” of disconnected harness side TCM coupler. Is it 10 – 14 V at “L” range and 0 V at the other range?	Intermittent trouble or faulty TCM. Check for intermittent trouble referring to “INTERMITTENT AND POOR CONNECTION” in Section 0B.	Go to Step 7.
7	Check transmission range sensor referring in this section. Is it OK?	Transmission range sensor wire shorted. If wire harnesses are OK, substitute a known-good TCM and recheck.	Replace transmission range sensor.

DTC P0725 Engine speed input circuit malfunction



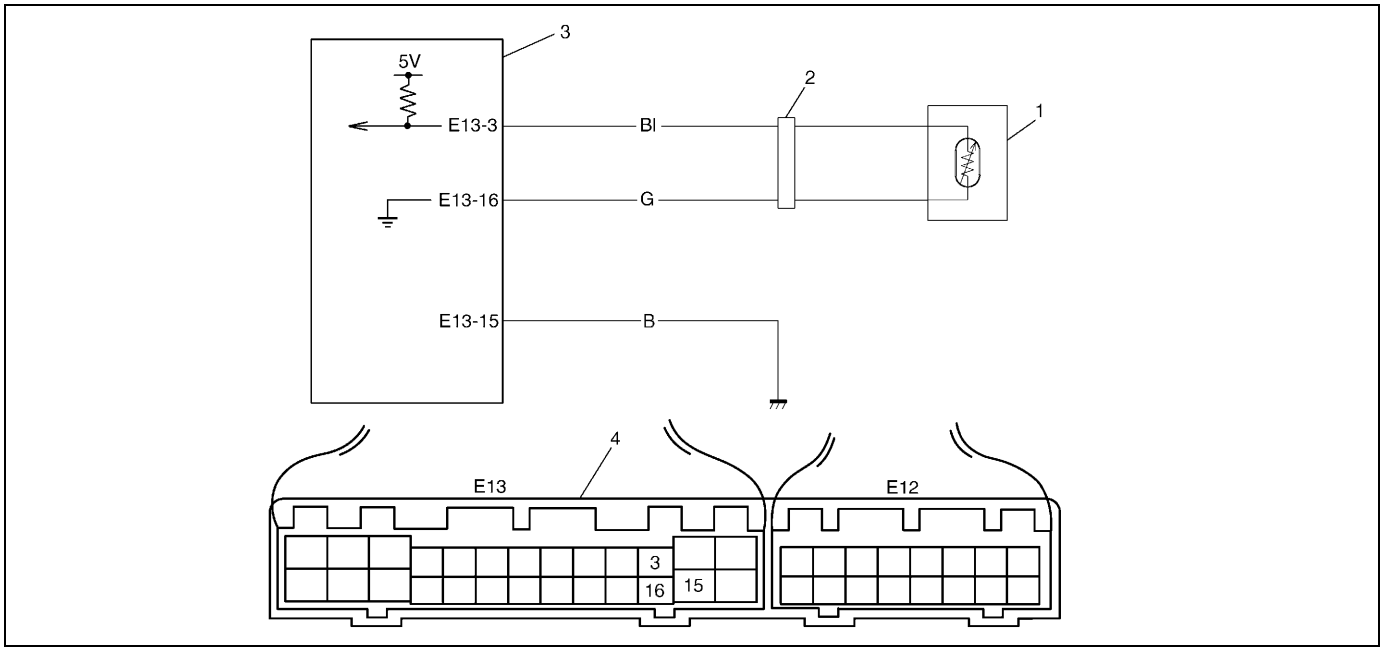
1. ECM	3. TCM couplers (viewed from harness side)
2. TCM	4. ECM couplers (viewed from harness side)

DTC DETECTING CONDITION
• Inputted engine rev. signal too low or too high.

Step	Action	Yes	No
1	Check DTC of “ENGINE DIAGNOSIS” referring to Section 6. Is there DTC related to engine speed sensor?	Inspect and repair referring to DTC flow table of “ENGINE DIAGNOSIS” in Section 6.	Go to Step 2.
2	1) Turn ignition switch OFF and disconnect ECM and TCM couplers. 2) Measure resistance between terminals “E23-16” and “E12-5” of disconnected harness side couplers. Is it about 0 Ω?	Go to Step 3.	“Br/Y” wire open.
3	Measure resistance between terminal “E12-5” of disconnected harness side coupler and body ground. Is it infinity?	Go to Step 4.	“Br/Y” wire shorted to ground.

Step	Action	Yes	No
4	1) Turn ignition switch OFF and connect ECM couplers. 2) Turn ignition switch ON and measure voltage between terminal “E12-5” of disconnected harness side TCM coupler and body ground. Is it 10 – 14 V?	Intermittent trouble or faulty ECM or TCM. Check for intermittent referring to “INTERMITTENT AND POOR CONNECTION” in Section 0A. If no trouble found, substitute a known-good ECM or TCM and recheck.	Faulty ECM. Substitute a known-good ECM and recheck.

DTC P0710 Transmission fluid temperature sensor circuit malfunction



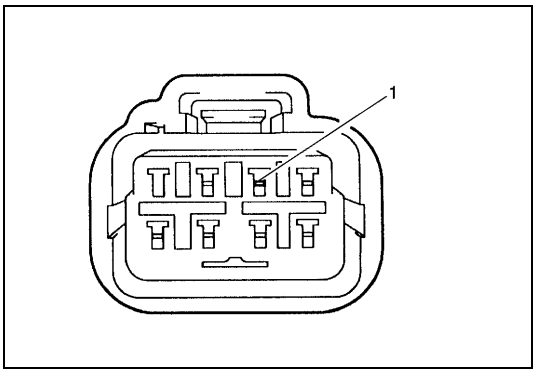
1. Transmission fluid temperature sensor	3. TCM
2. Coupler	4. TCM couplers (viewed from harness side)

DTC DETECTING CONDITION
• A/T fluid temperature signal input voltage too low. • A/T fluid temperature signal input voltage does not go down although standard value of engine revolution signal input.

Step	Action	Yes	No
1	1) Turn ignition switch OFF and disconnect sensor wire harness coupler. 2) Measure resistance between “Bl” wire and “G” wire terminal of sensor side coupler. Is it infinity or 0 Ω?	Faulty transmission fluid temperature sensor. Replace transmission temperature sensor.	Go to Step 2.
2	1) Turn ignition switch OFF and disconnect TCM couplers. 2) Check continuity between terminal “E13-3” of disconnected harness side TCM coupler and ground. Is continuity indicated?	“Bl” wire shorted to ground.	Go to Step 3.
3	1) Connect sensor wire harness coupler. 2) Measure resistance between terminals “E13-3” and “E13-16” of disconnected harness side coupler. Is it about 0 Ω or infinity?	“Bl” or “G” wire open, shorted each other or poor connection of solenoid wire harness coupler.	Go to Step 4.

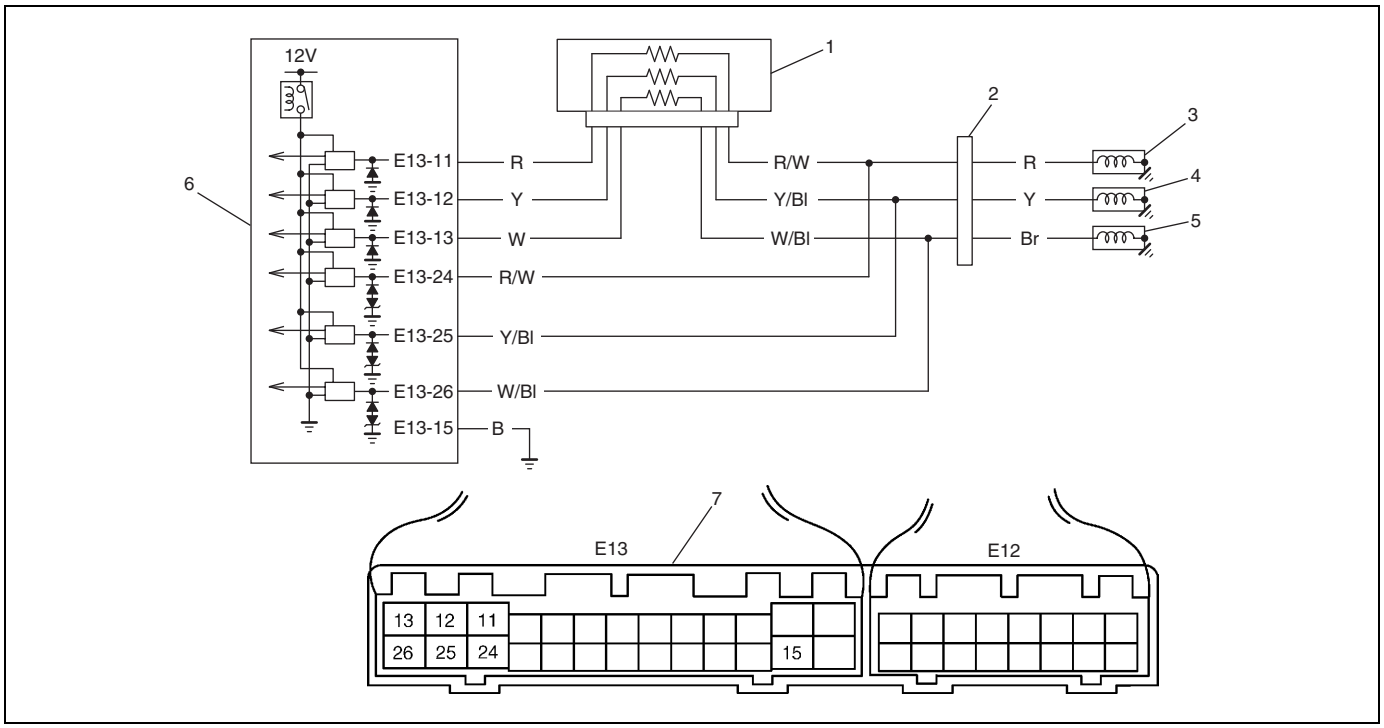
Step	Action	Yes	No
4	1) Connect TCM couplers. 2) Disconnect solenoid wire harness coupler. 3) Turn ignition switch ON then measure voltage between “BI” wire terminal of disconnected harness side coupler and engine ground. (See figure.) Is it 4 – 6 V?	Intermittent trouble or faulty TCM. Check for intermittent referring to “INTERMITTENT AND POOR CONNECTION” in Section 0A. If no trouble found, substitute a known-good TCM and recheck.	“BI” wire shorted to power circuit or poor connection of terminal “E13-3”. If wire and connection are OK, substitute a known-good TCM.

Figure for Step 4



1. “BI” wire terminal

DTC P0763 Shift solenoid-C (No.3) electrical
DTC P0768 Shift solenoid-D (No.4) electrical
DTC P0773 Shift solenoid-E (No.5) electrical



1. Dropping resistor	4. Shift solenoid valve-D (No.4)	7. TCM couplers (viewed from harness side)
2. solenoid coupler	5. Shift solenoid valve-E (No.5)	
3. Shift solenoid valve-C (No.3)	6. TCM	

DTC DETECTING CONDITION
• Solenoid output voltage too high or too low differently from TCM order.

Step	Action	Yes	No
1	1) Turn ignition switch OFF and disconnect solenoid coupler. 2) Measure resistance between terminal of solenoid coupler and transmission ground. (See figure.) Is it 2.0 – 4.0 Ω?	Go to Step 2.	• Solenoid lead wire open or shorted to ground. • Malfunction of solenoid valve.
2	1) Disconnect TCM couplers. 2) Measure resistance between terminal of disconnected body side solenoid coupler and terminal “E13-11”, “E13-12” or “E13-13” of disconnected harness side TCM coupler. (See chart.) Is it 6.5 – 8.5 Ω?	Go to Step 3.	Inspect dropping resister referring to “DROPPING RESISTOR” in this section. If OK, circuit between TCM and dropping resister or dropping resister and solenoid coupler open.
3	Check continuity between terminal “E13-24”, “E13-25” or “E13-26” of disconnected TCM coupler and terminal of disconnected body side solenoid coupler. (See chart.) Is there continuity?	Go to Step 4.	Circuit between TCM and solenoid coupler open.

Step	Action	Yes	No
4	Check continuity between terminal of disconnected body side solenoid coupler and transmission ground with TCM, dropping resister and solenoid couplers disconnected. Is there continuity?	Circuit between TCM and transmission shorted to ground.	Go to Step 5.
5	Check continuity between terminal of disconnected body side dropping resistor coupler and transmission ground. (See chart.) Is there continuity?	Circuit between TCM and dropping resister is shorted to ground.	Intermittent trouble or faulty TCM. Check for intermittent referring to “INTERMITTENT AND POOR CONNECTION” in Section 0A. If no trouble found, substitute a known-good TCM and recheck.

Chart for Step 2

Solenoid	TCM terminal No.	Solenoid coupler lead wire color (body side)
C (No.3)	E13-11	R/W
D (No.4)	E13-12	Y/Bl
E (No.5)	E13-13	W/Bl

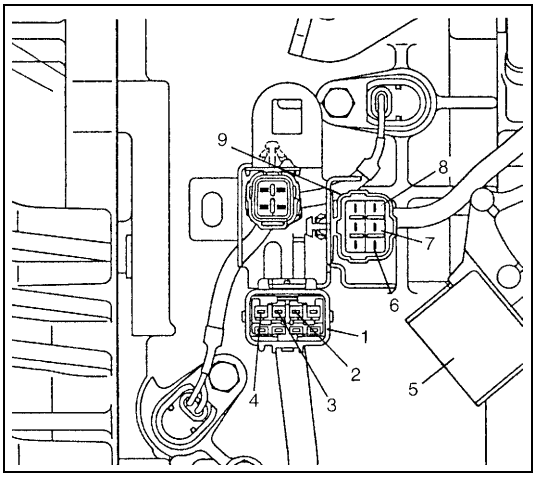
Chart for Step 3

Solenoid	TCM terminal No.	Solenoid coupler lead wire color (body side)
C (No.3)	E13-24	R/W
D (No.4)	E13-25	Y/Bl
E (No.5)	E13-26	W/Bl

Chart for Step 5

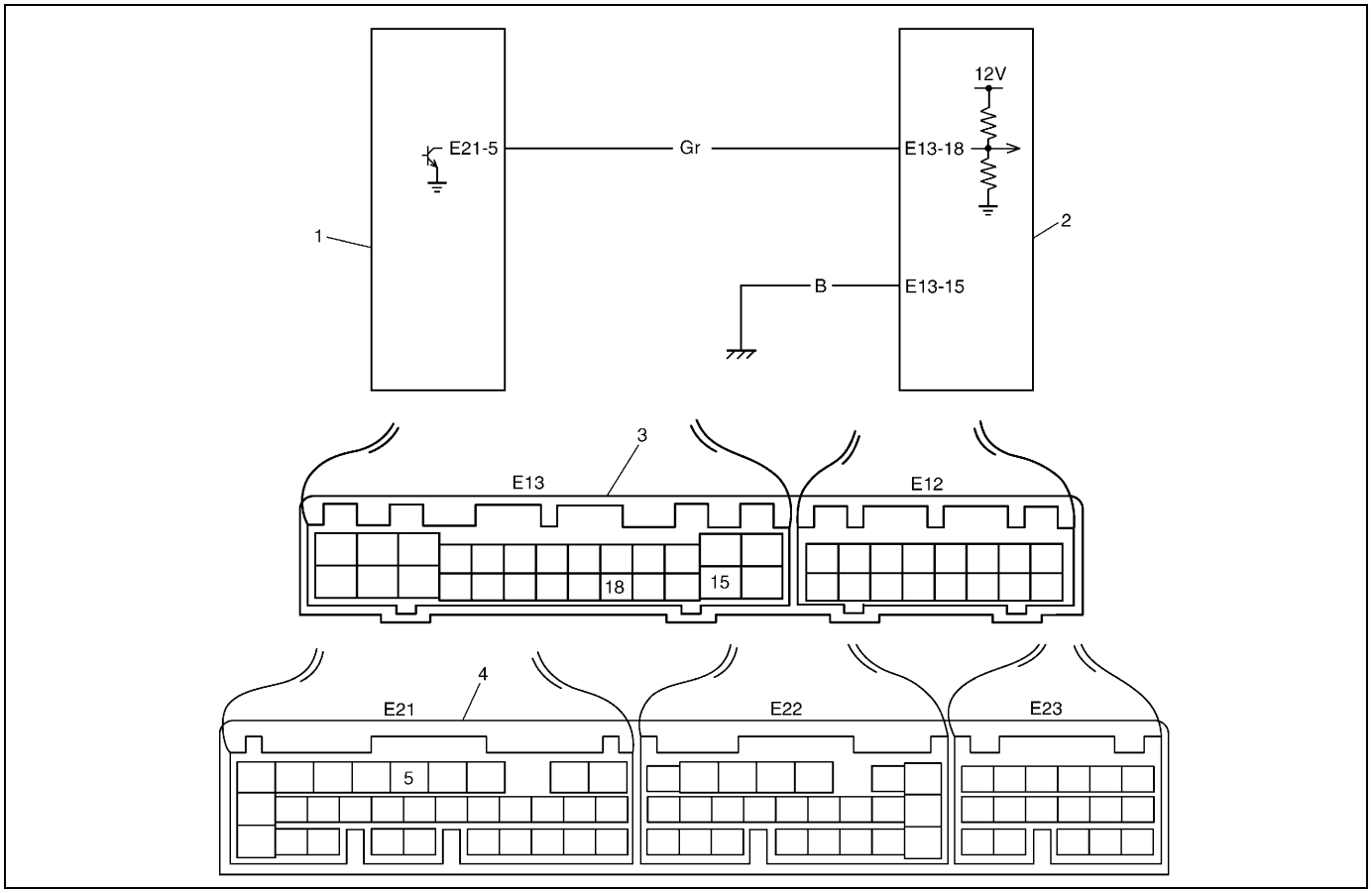
Solenoid	TCM terminal No.	Dropping resistor lead wire color (body side)
C (No.3)	E13-11	R
D (No.4)	E13-12	Y
E (No.5)	E13-13	W

Figure for Step 1 and 5



1. Solenoid coupler
2. Terminal for shift solenoid-C (No.3)
3. Terminal for shift solenoid-D (No.4)
4. Terminal for shift solenoid-E (No.5)
5. Transmission range sensor (Shift switch)
6. Dropping resistor terminal for shift solenoid-C (No.3)
7. Dropping resistor terminal for shift solenoid-D (No.4)
8. Dropping resistor terminal for shift solenoid-E (No.5)
9. Dropping resistor coupler

DTC P1709 Engine coolant temperature/barometric pressure signal circuit

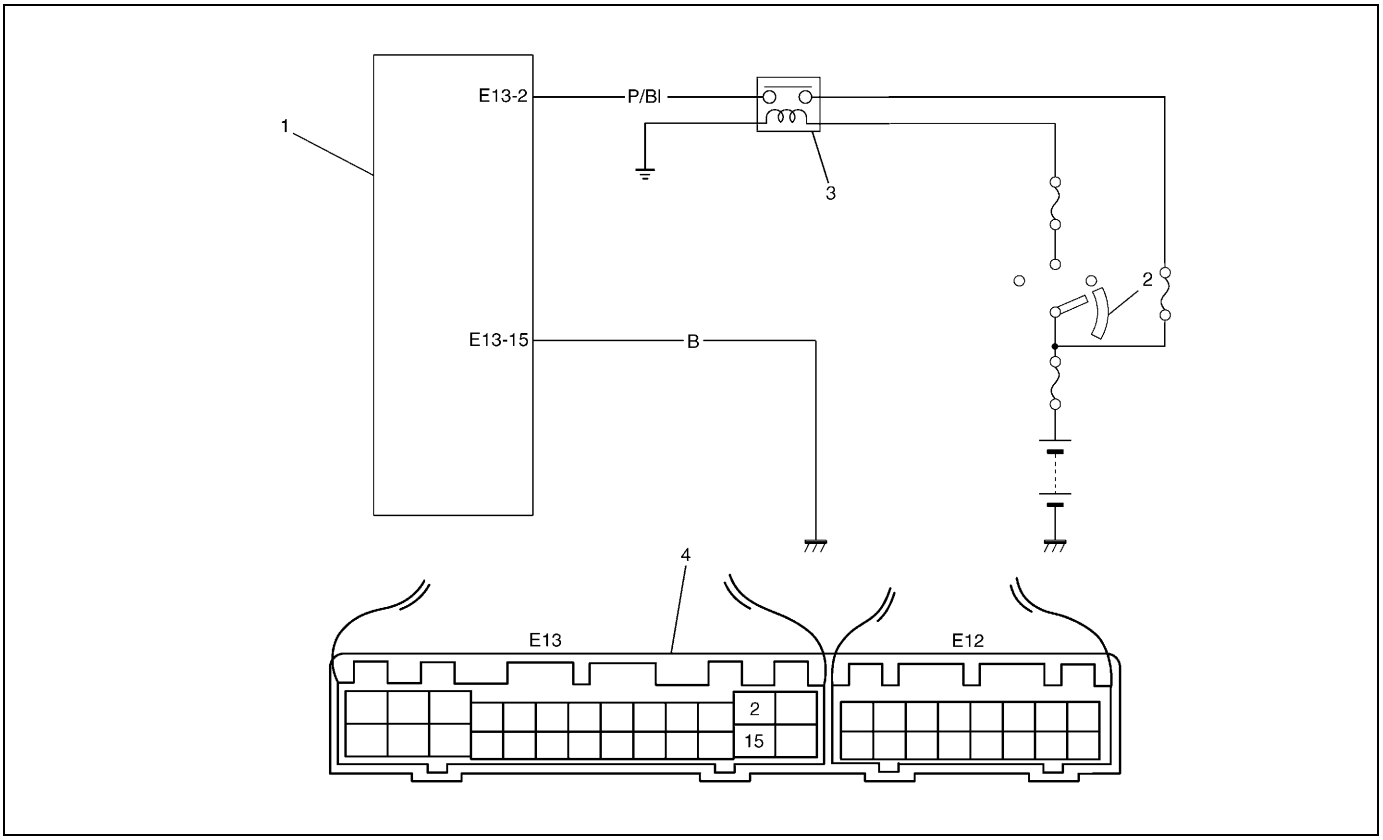


1. ECM	3. TCM couplers (viewed from harness side)
2. TCM	4. ECM couplers (viewed from harness side)

DTC DETECTING CONDITION
• Engine coolant temperature/barometric pressure signal voltage too low although A/T fluid temperature is normal operating temperature and engine revolution is standard.

Step	Action	Yes	No
1	Check DTC referring to “ENGINE DIAGNOSIS” in Section 6. Is any DTC detected?	Inspect and repair referring to DTC flow table in Section 6.	Go to Step 2.
2	1) Turn ignition switch OFF and disconnect TCM and ECM couplers. 2) Check continuity between terminal “E13-18” of disconnected harness side TCM coupler and body ground. Is continuity indicated?	“Gr” wire shorted to ground.	Go to Step 3.
3	Check continuity between terminals “E13-18” and “E21-5” of disconnected harness side couplers. Is continuity indicated?	Go to Step 4.	“Gr” wire open.
4	1) Connect TCM couplers. 2) Turn ignition switch ON and check voltage between terminal “E13-18” and body ground. Is it 0 V?	Substitute a known-good TCM and recheck.	Substitute a know-good ECM and recheck.

DTC P0702/P1702 Transmission control system electrical or internal malfunction of TCM



1. TCM	3. A/T relay
2. Ignition switch	4. TCM couplers (viewed from harness side)

DTC DETECTING CONDITION
• Relay output voltage too high although TCM orders the relay to turn OFF or relay output voltage too low although TCM orders the relay to turn on. • Incorrect calculations of checking TCM programmed data indicated.

Step	Action	Yes	No
1	1) Turn ignition switch ON. 2) Erase all DTCs referring to “HOW TO CLEAR DTC” in this section. 3) Turn ignition switch OFF. 4) Turn ignition switch ON once again and check for any DTC. Is it DTC P1702 or P0702?	Replace TCM.	Could be a temporary malfunction of the TCM.

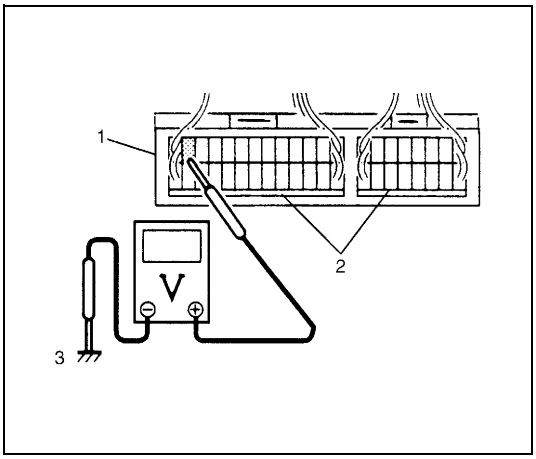
Inspection of TCM and ITS circuits

TCM and its circuits can be checked at TCM wiring couplers by measuring voltage and resistance.

CAUTION:

TCM cannot be checked by itself, it is strictly prohibited to connect voltmeter or ohmmeter to TCM with coupler disconnected from it.

INSPECTION

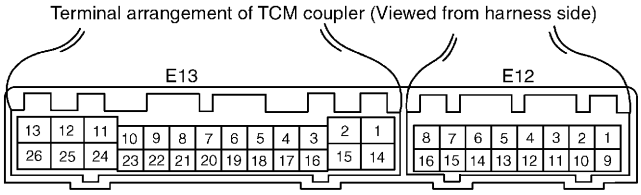


1) Remove TCM from vehicle referring to “TRANSMISSION CONTROL MODULE” in this section.
2) Connect TCM couplers to TCM.
3) Check voltage at each terminal of couplers connected.

NOTE:

As each terminal voltage is affected by the battery voltage, confirm that it is 11 V or more when ignition switch is ON.

1. TCM	3. Body ground
2. Couplers	



TERMINAL		CIRCUIT	STANDARD VOLTAGE	CONDITION
E12	1	Transmission range “P” switch	10 – 14 V	IG switch ON, selector lever at “P” range
			0 – 1 V	IG switch ON, selector lever other than “P” range
	2	Transmission range “R” switch	10 – 14 V	IG switch ON, selector lever at “R” range
			0 – 1 V	IG switch ON, selector lever other than “R” range
	3	Transmission range “N” switch	10 – 14 V	IG switch ON, selector lever at “N” range
			0 – 1 V	IG switch ON, selector lever other than “N” range
	4	Diagnosis switch	10 – 14 V	IG switch ON, diagnosis switch terminal not grounded
	5	Engine speed signal	0 – 1 V	IG switch ON, leaving engine OFF
	6	Output shaft speed sensor(+)	–	–
	7	Input shaft speed sensor(+)	–	–
	8	throttle opening signal	–	–
	9	Transmission range “D” switch	10 – 14 V	IG switch ON, selector lever at “D” range
			0 – 1 V	IG switch ON, selector lever other than “D” range
	10	Transmission range “2” switch	10 – 14 V	IG switch ON, selector lever at “2” range
			0 – 1 V	IG switch ON, selector lever other than “2” range
	11	Transmission range “L” switch	10 – 14 V	IG switch ON, selector lever at “L” range
			0 – 1 V	IG switch ON, selector lever other than “L” range

TERMINAL		CIRCUIT	STANDARD VOLTAGE	CONDITION
E12	12	Serial data link (SUZUKI scan tool)	10 – 14 V	IG switch ON
	13	Output shaft speed sensor shield	–	–
	14	Output shaft speed sensor(–)	–	–
	15	Input shaft speed sensor(–)	–	–
E13	2	IG power source	10 – 14 V	IG switch ON
	3	Transmission temperature sensor	0 – 4.5 V	IG switch ON
	4	Brake switch	10 – 14 V	IG switch ON, brake pedal depressed
	5	A/C compressor	0 – 2 V	A/C OFF
			10 – 14 V	A/C ON
	8	Idle up signal	10 – 14 V	Selector lever at “P” or “N” range
			0 – 1 V	Selector lever other than “P” or “N” range
	10	Shift solenoid-A (No.1)	0 – 1 V	IG switch ON, select lever at “P” range
	11	Shift solenoid-C (Dropping resistor)	0 – 1 V	IG switch ON, select lever at “P” range
	12	Shift solenoid-D (Dropping resistor)	10 – 14 V	IG switch ON, select lever at “P” range
	13	Shift solenoid-E (Dropping resistor)	0 – 1 V	IG switch ON, select lever at “P” range
	15	Ground	–	–
	16	Transmission temperature sensor ground	–	–
	17	O/D off switch	0 – 1 V	IG switch ON, O/D off switch ON
			10 – 14 V	IG switch ON, O/D off switch OFF
	18	Engine coolant temperature/ Barometric pressure signal	–	–
	20	A/T failure serial data	0 – 1 V	IG switch ON
	21	O/D OFF lamp	10 – 14 V	IG switch ON, O/D off switch OFF
			0 – 1 V	IG switch ON, O/D off switch ON
	22	Lock-up solenoid	0 – 1 V	IG switch ON, selector lever at “P” range
	23	Shift solenoid-B (No.2)	0 – 1 V	IG switch ON, selector lever at “P” range
	24	Shift solenoid-C (No.3)	0 – 1 V	IG switch ON, selector lever at “P” range
	25	Shift solenoid-D (No.4)	2.2 – 4.9 V	IG switch ON, selector lever at “P” range
	26	Shift solenoid-E (No.5)	0 – 1 V	IG switch ON, selector lever at “P” range

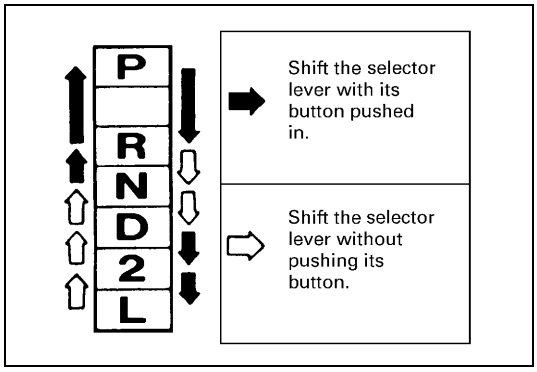
On-Vehicle Service

Maintenance Service

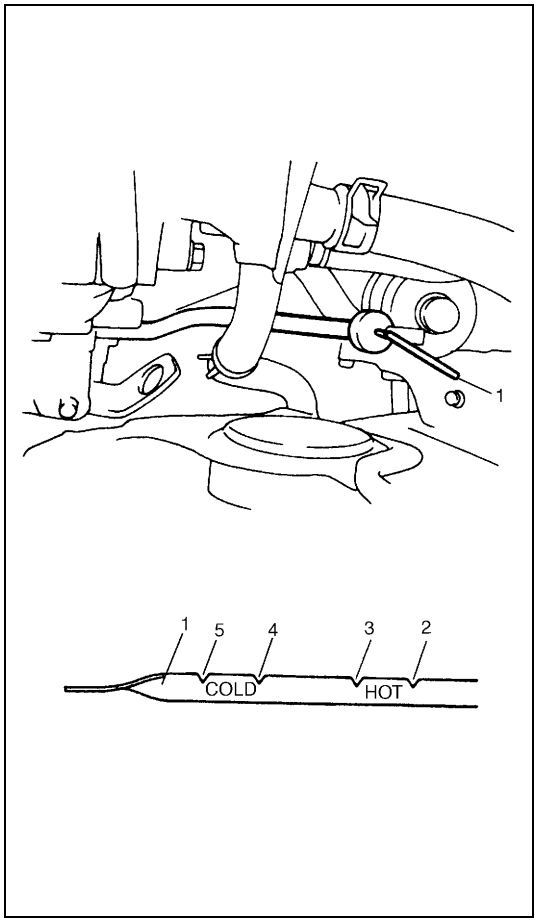
Fluid level at normal operating temperature

INSPECTION

1) Stop vehicle and place it level.
2) Apply parking brake and place chocks against wheels.
3) With selector at P position, start engine.
4) Warm up engine till fluid temperature reaches normal operating temperature (70 – 80°C/158 – 176°F). As a guide to check fluid temperature, warm up engine to normal operating temperature.



5) Keep engine idling and shift selector slowly to L and back to P position.
6) With engine idling, pull out dipstick, wipe it off with a clean cloth and put it back into place.



7) Pull out dipstick (1) again and check fluid level indicated on it. Fluid level should be between FULL HOT and LOW HOT.

   If it is below LOW HOT, add an equivalent of DEXRON®-III up to FULL HOT.

A/T fluid specification

: An equivalent of DEXRON®-III

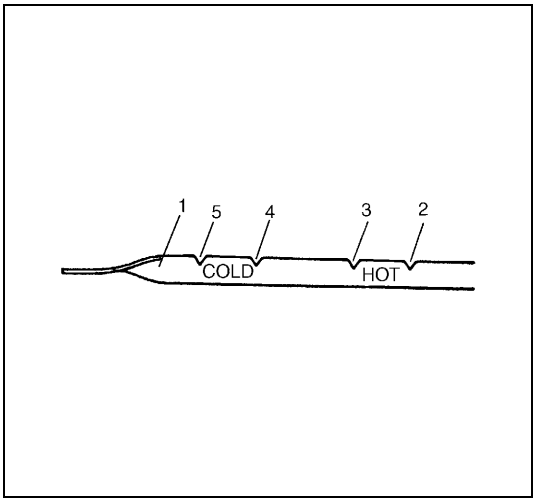
NOTE:

- **DO NOT RACE ENGINE while checking fluid level, even after the engine start.**
- **DO NOT OVERFILL. Overfilling can cause foaming and loss of fluid through breather. Then slippage and transmission failure can result.**
- **Bringing the level from LOW HOT to FULL HOT requires 0.35 liters (0.74/0.62 US/Imp. pt).**
- **If vehicle was driven under high load such as pulling a trailer, fluid level should be checked about half an hour after it is stopped.**

2. “FULL HOT” mark
3. “LOW HOT” mark
4. “FULL COLD” mark
5. “LOW COLD” mark

Fluid level at room temperature

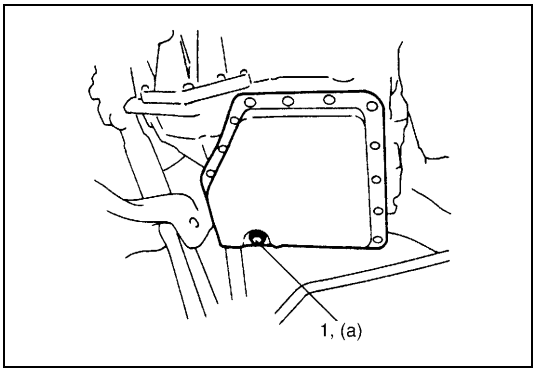
INSPECTION



The fluid level check at room temperature performed after repair or fluid change before test driving is just preparation for level check of normal operation temperature. The checking procedure itself is the same as that described previously. If the fluid level is between FULL COLD and LOW COLD, proceed to test drive. And when the fluid temperature has reached the normal operating temperature, check fluid again and adjust it as necessary.

1. Dipstick
2. “FULL HOT” mark
3. “LOW HOT” mark
4. “FULL COLD” mark
5. “LOW COLD” mark

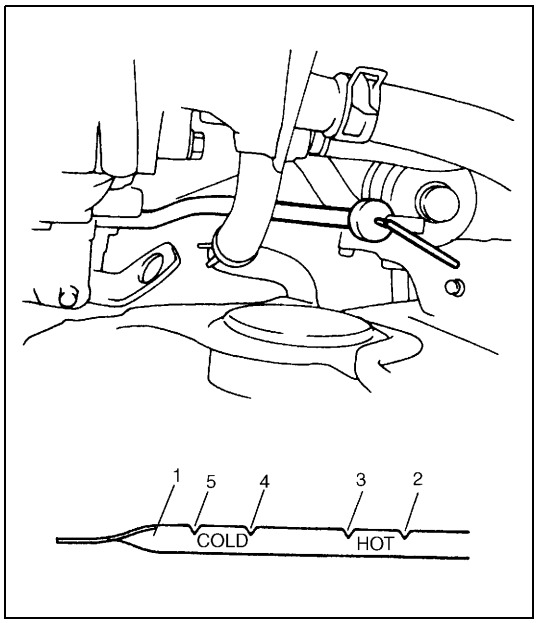
Fluid change



1) Lift up vehicle.
2) When engine has cooled down, remove drain plug (1) from oil pan and drain A/T fluid.
3) Install drain plug.

Tightening torque
A/T fluid drain plug (a) : 23 N·m (2.3 kg-m, 16.5 lb-ft)

4) Lower vehicle and fill proper amount of an equivalent of DEXRON®-III.



5) Check fluid level according to procedure described under "FLUID LEVEL AT NORMAL OPERATING TEMPERATURE.

A/T fluid specification

: An equivalent of DEXRON®-III

A/T fluid capacity
When draining from drain plug hole :
4.0 liters (8.45/7.04 US/Imp. pt.)
When overhauling :
5.1 liters (10.78/8.98 US/Imp. pt.)

1.	Dipstick
2.	"FULL HOT" mark
3.	"LOW HOT" mark
4.	"FULL COLD" mark
5.	"LOW COLD" mark

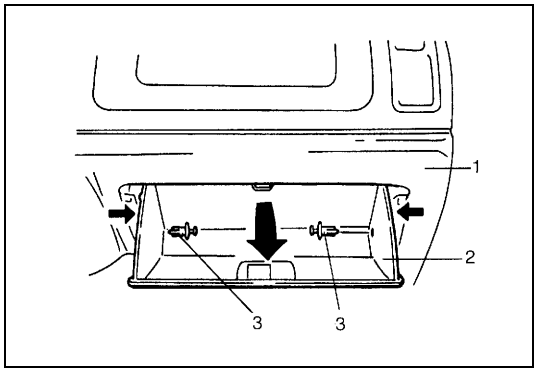
Transmission Control Module (TCM)

CAUTION:
TCM and ECM consist of highly precise parts, so when handling it (or them), be careful not to expose to excessive shock.

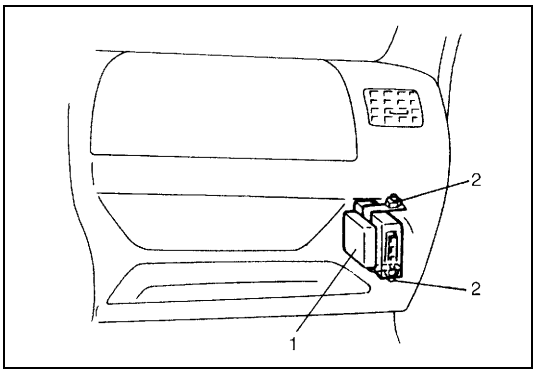
NOTE:
When replacing TCM with used one, all learned contents which are stored in TCM memory should be erased referring to "LEARNING CONTROL INITIALIZATION" in this section.

REMOVAL

1) Disconnect negative cable at battery.
2) If the vehicle is equipped with air bag system, disable air bag system. Refer to "DISABLING AIR BAG SYSTEM" in Section 10B.
3) Remove glove box (2).



1.	Instrument panel
3.	Clip



4) Disconnect couplers from TCM (1).
5) Loosen 2 nuts (2) and remove TCM from vehicle.

INSTALLATION

Reverse removal procedure noting the following.

- Connect ECM and TCM couplers securely.
- If the vehicle is equipped with air bag system, be sure to enable air bag system after TCM and ECM are back in place. Refer to “ENABLING AIR BAG SYSTEM” in Section 10B.

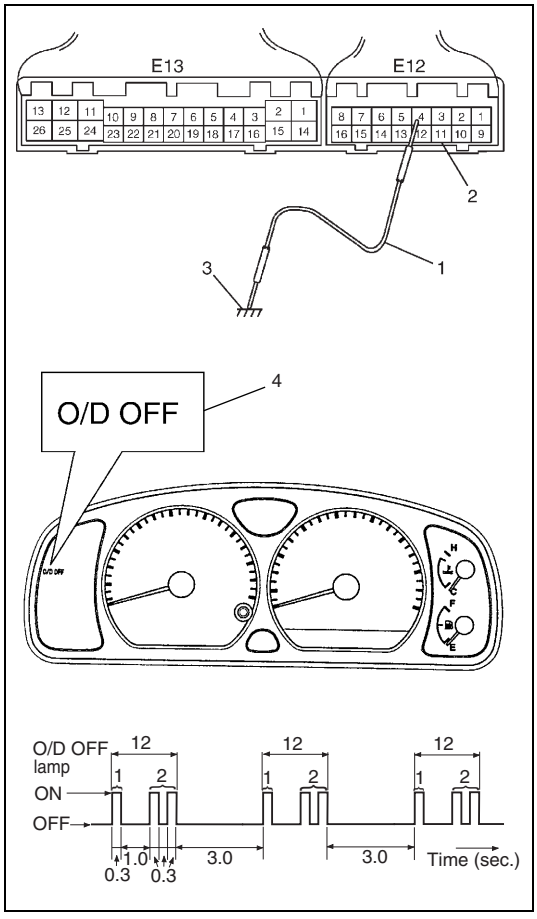
Learning control initialization

When one or more operations such as shown below are performed, all learned contents which are stored in TCM memory should be erased after the operations.

- Replacing transmission with new or used one.
- Repairing transmission partially by replacing any brake component parts with new and/or used brake disc(s), plate(s) and/or flange.
- Repairing transmission partially by replacing any clutch component parts with new and/or used clutch disc(s), plate(s) and/or flange.
- Replacing TCM with used one.

CAUTION:

Be sure to connect service wire to correct terminal. Connection to incorrect terminal may cause damage to TCM.



1) Turn ignition switch ON, leaving engine OFF.
2) Using service wire (1), connect terminal “E12-4” of connected TCM harness side coupler with body ground (3).
3) Shift selector lever from “D” range to “2” range 3 times repeatedly within 10 seconds with terminal “E12-4” kept on connecting to body ground.
4) Check flashing pattern of “O/D OFF” lamp (4) with terminal “E12-4” kept on connecting to body ground and confirm that only 12 pattern is displayed.
   If not, repeat Step 1) to Step 3) and check again.

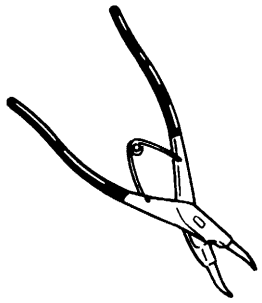
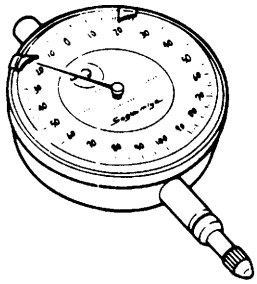
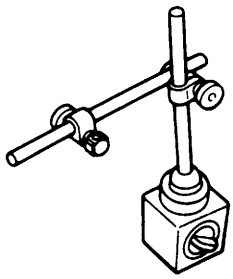
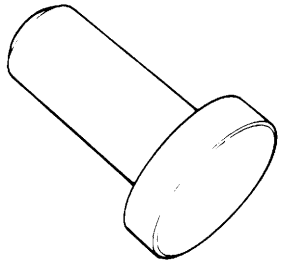
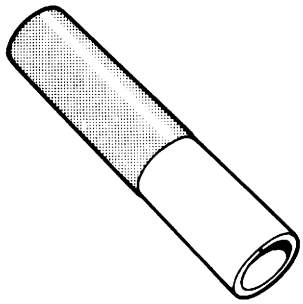
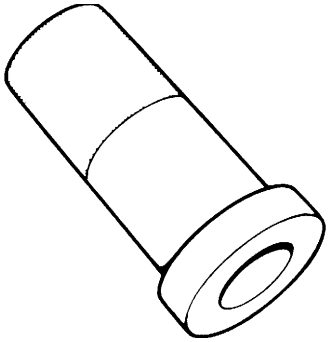
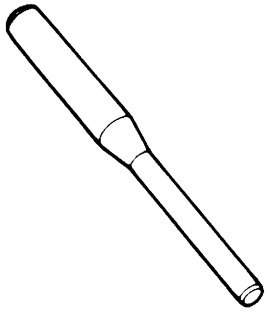
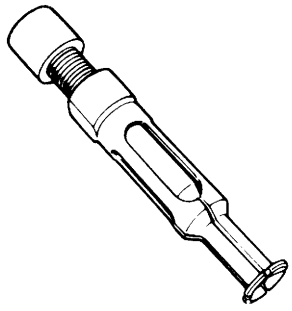
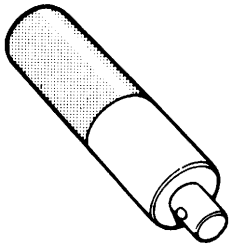
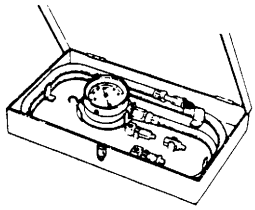
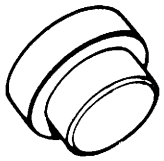
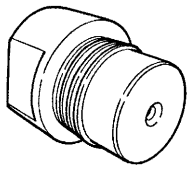
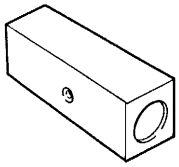
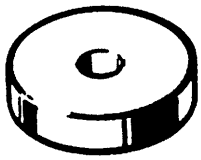
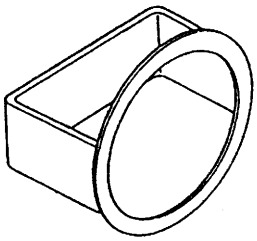
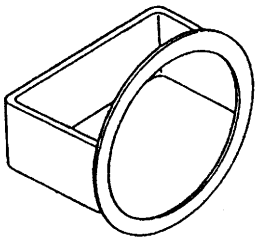
NOTE:

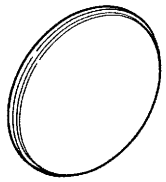
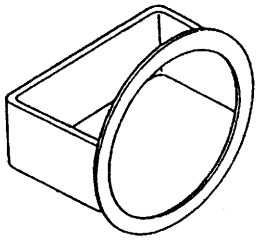
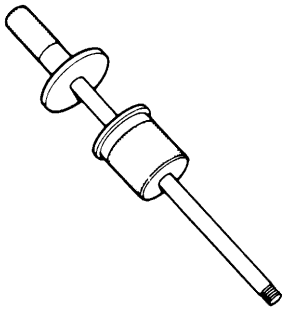
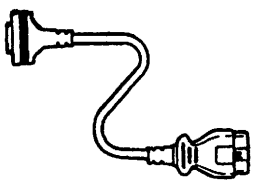
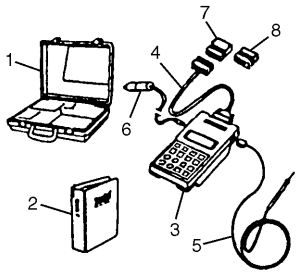
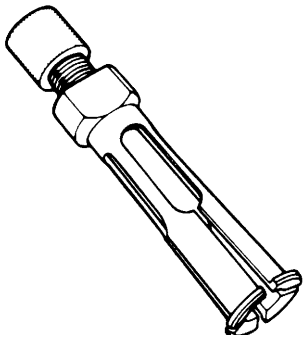
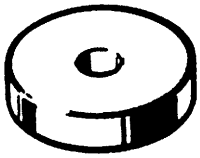
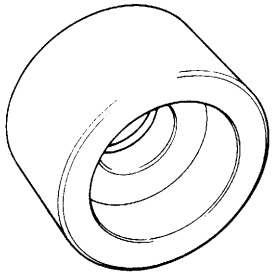
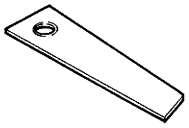
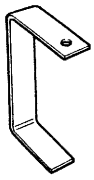
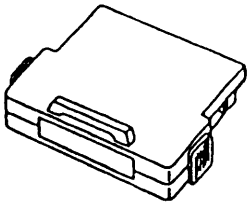
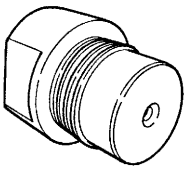
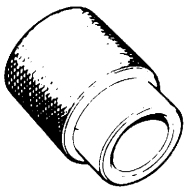
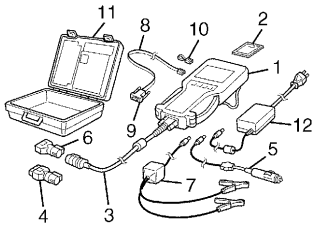
- **“O/D OFF” lamp lights during initializing.**
- **Diagnostic trouble code(s) (DTC(s)) also are erased by performing this initializing procedure.**
- **If initializing is failed, 52 pattern of “O/D OFF” lamp flashing is displayed.**

Tightening Torque Specification

Fastening part	Tightening torque		
	N•m	kg-m	lb-ft
A/T fluid drain plug	23	2.3	16.5
Transmission rage sensor bolt	18	1.8	13.0
Output shaft speed sensor bolt	8	0.8	6.0
Input shaft speed sensor bolt	8	0.8	6.0
Dropping resistor bolts	20	2.0	14.5
Shift solenoid bolts	8	0.8	6.0
Transmission temperature sensor bolt	10	1.0	7.5
Transmission to engine bolts and nut	85	8.5	61.5
Drive plate to torque converter bolts	20	2.0	14.5
Starter motor bolts	23	2.3	16.5
Oil pump cover bolts	10	1.0	7.5
Valve body bolts	5.5	0.55	4.0
Final gear bolts	90	9.0	65.0
Counter drive gear installing bolts	5.5	0.55	4.0
Rear cover bolts	19	1.9	14.0
Control shift lever nuts	30	3.0	22.0
Detent spring bolt	11	1.1	8.0
Parking lock pawl sleeve bolt	19	1.9	14.0
Parking lock pawl bolts	11	1.1	8.0
Oil pump assembly bolts	12	1.2	9.0
Torque converter housing bolts	19	1.9	14.0
Wire-to-solenoid assembly bolt	8	0.8	6.0
Valve body to transmission case bolts	10	1.0	7.5
A/T oil pan bolts	7.5	0.75	5.5
A/T oil cooler bolt	60	6.0	43.5
Vehicle speed sensor bolt	5.5	0.55	4.0
Shift cable bracket bolt	13	1.3	9.5
Connector clamp bracket bolt	8	0.8	6.0
A/T fluid filler tube bolt	19.5	1.95	14.5
Engine mounting LH bracket bolts	55	5.5	40.0

Special Tool

 09900-06108 Snap ring plier (Closing type)	 09900-20606 Dial gauge	 09900-20701 Magnetic stand	 09913-75510 Bearing installer
 09913-80112 Bearing installer	 09913-85210 Bearing installer	 09922-85811 Spring pin remover (6 mm)	 09923-74510 Bearing remover
 09924-74510 Installer handle	 09925-37811-001 Oil pressure gauge	 09925-88210 Bearing puller attachment	 09926-26030 Air installer No.1
 09926-26040 Air installer No.2	 09926-68310 Bearing installer	 09926-96010 Clutch spring compressor	 09926-96020 Clutch spring compressor

 09926-96030 Clutch spring compressor No.7	 09926-96040 Clutch spring compressor No.8	 09930-30102 Sliding shaft	 09931-76030 16/14 pin DLC cable for Tech 1A
 09931-76011 Tech 1A kit (SUZUKI scan tool) (See NOTE “A”.)	 09941-64511 Bearing remover	 09944-68510 Bearing installer	 09951-16060 Bush remover
 09952-06010 Dial gauge plate No.1	 09952-06020 Dial gauge plate No.2	 Mass storage cartridge for Tech 1A	 09926-26050 Air installer No.3
 09940-53111 Oil seal install tool	 Tech 2 kit (SUZUKI scan tool) (See NOTE “B”.)		

NOTE:

- **"A" : This kit includes the following items and substitutes for the Tech 2 kit.**
  1. Storage case, 2. Operator's manual, 3. Tech 1A, 4. DLC cable (14/26 pin, 09931-76040), 5. Test lead/probe, 6. Power source cable, 7. DLC cable adaptor, 8. Self-test adaptor
- **"B" : This kit includes the following items and substitutes for the Tech 1 A kit.**
  1. Tech 2, 2. PCMCIA card, 3. DLC cable, 4. SAE 16/19 adapter, 5. Cigarette cable, 6. DLC loopback adapter, 7. Battery power cable, 8. RS232 cable, 9. RS232 adapter, 10. RS232 loopback connector, 11. Storage case, 12. Power supply

Required Service Material

Material	Recommended SUZUKI product (Part Number)	Use
Automatic transmission fluid	An equivalent of DEXRON®-III	• Automatic transmission • Parts lubrication when installing
Sealant	SUZUKI BOND No. 1215 (99000-31110)	• Case housing star-shaped recess bolts (3 pcs only)
Lithium grease	SUZUKI SUPER GREASE C (99000-25030)	• Retaining parts in place when assembling • Oil seal lips • D-rings • O-rings
	SUZUKI SUPER GREASE A (99000-25010)	• Cable ends • Converter center cup
Thread lock cement	THREAD LOCK 1322 (99000-32110)	• Final gear bolts • Torque converter housing bolts

SECTION 8C

INSTRUMENTATION/DRIVER INFORMATION

WARNING:

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

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

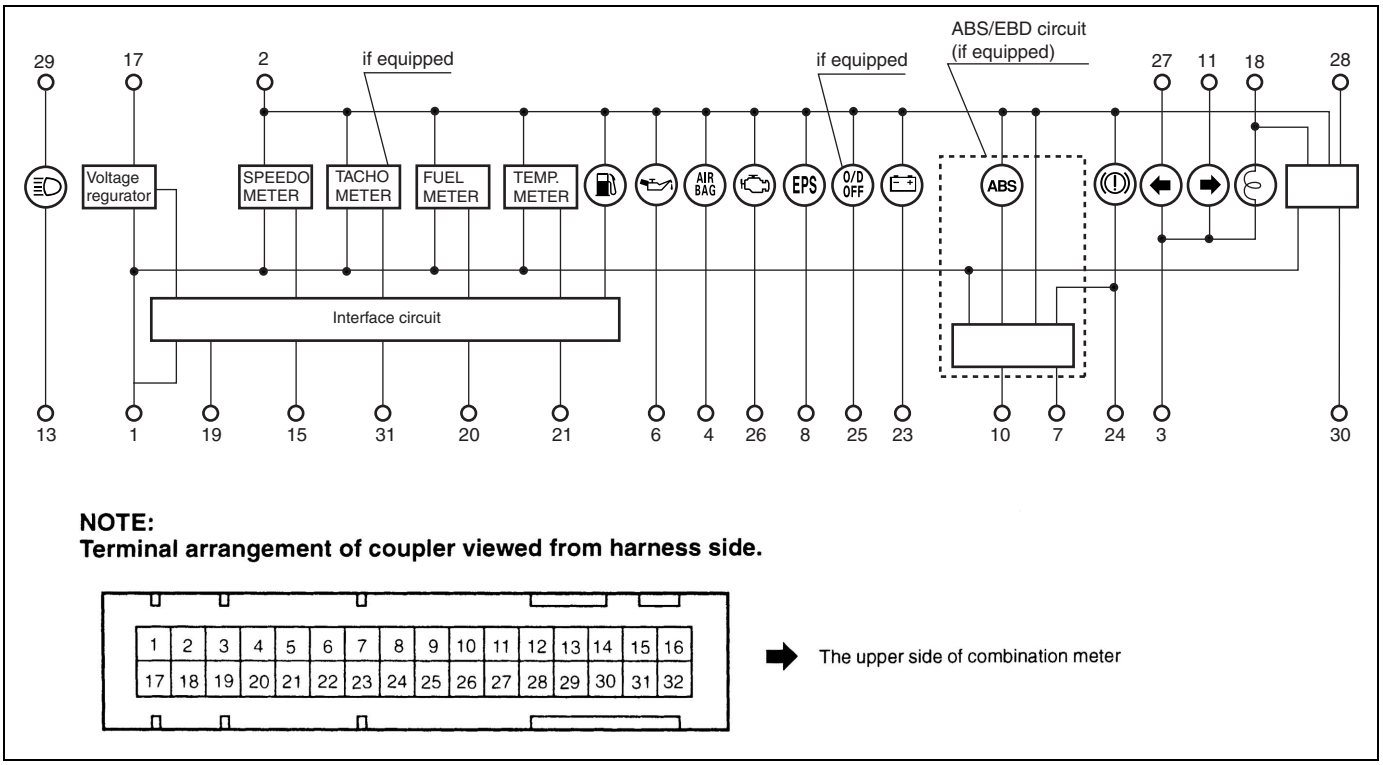
NOTE:

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

CONTENTS

General Description

Combination Meter



NOTE:
Terminal arrangement of coupler viewed from harness side.

➡ The upper side of combination meter

1.	To ground	B	12.	Blank	–	23.	To generator	W/R
2.	To ignition switch	B/W	13.	To dimmer switch	R	24.	To brake fluid level switch and parking brake switch	Y/G
3.	To ground	B	14.	Blank	–	25.	To A/T control module	BI/Y
4.	To SDM	BI	15.	To speed sensor	V	26.	To ECM	V/W
5.	Blank	–	16.	Blank	–	27.	To turn and hazard switch	G/R
6.	To oil pressure switch	Y/B	17.	To positive terminal at battery	W/BI	28.	To ignition switch (ACC)	Y/B
7.	To ABS control module	O	18.	To lighting switch	R/Y	29.	To positive terminal at battery	W/BI
8.	To EPS control module	Gr	19.	To ground	Br	30.	To door switch (driver side)	B/O
9.	Blank	–	20.	To fuel level gauge	Y/R	31.	To ECM	Br/Y
10.	To ABS control module	BI/B	21.	To ECT sensor	W/G	32.	Blank	–
11.	To turn and hazard switch	G/Y	22.	Blank	–			

Diagnosis

Low Fuel Warning Lamp

Condition	Possible Cause	Correction
Low fuel warning light does not come ON after ignition switch turns to ON position	Bulb blown	Check bulb.
	IG METER fuse blown	Check fuse.
	Combination meter internal circuit faulty	Check combination meter.
	Wiring or grounding faulty	Repair.
Low fuel warning light comes ON steady or flashing	Low fuel	Refill fuel.
	Combination meter internal circuit faulty	Check combination meter.
	Fuel gauge unit faulty	Check fuel gauge unit.
	Wiring or grounding faulty	Repair.

On-Vehicle Service

Low Fuel Warning System

OPERATION

This light comes ON for 4 seconds after ignition switch is turned to ON position, and goes out.
However, in insufficient fuel level, this light indicates low fuel level by the following operation.

Low fuel warning light operation :

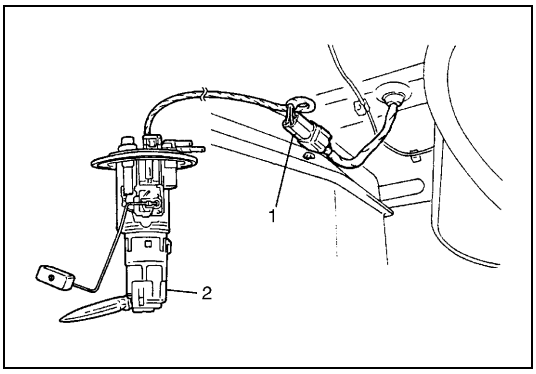
Low fuel warning light operation	Fuel level in fuel tank
OFF	6.0 litre (1.32 gal/Imp) or more
ON	2.9 – 6.0 litre (0.64 – 1.32 gal/Imp)
Flashing	0 – 2.9 litre (0 – 0.64 gal/Imp)

NOTE:

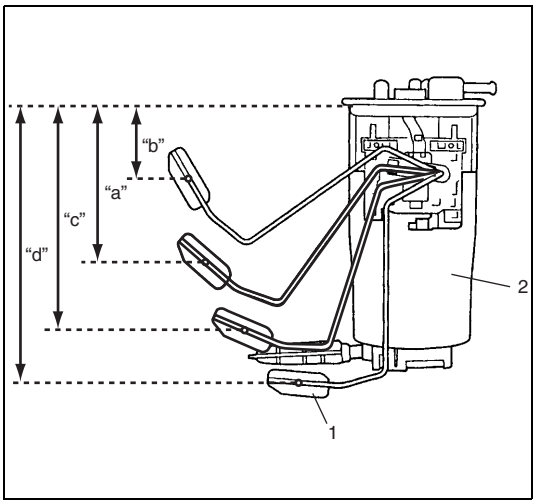
Low fuel warning light turns off until fuel level in fuel tank is more than 10 litre (2.2 gal/Imp) if it is turned ON or flashing once.

SYSTEM INSPECTION

1) Confirm that low fuel warning light comes ON for 4 seconds after ignition switch turned to ON position, and goes out.
2) Remove fuel pump assembly referring to “FUEL TANK” in Section 6C.
3) Check fuel sender gauge referring to “FUEL SENDER GAUGE” under “ON-VEHICLE SERVICE” in this Section.



4) Connect fuel pump connector (1) to fuel pump (2).
5) Connect negative (-) cable to battery.
6) Turn ignition switch to ON position.



7) After 4 seconds, check for low fuel warning lamp operation under the following each float position (1) of fuel pump (2). If faulty condition is found, replace combination meter.

Low fuel warning light operation :

Float position		Low fuel warning light operation
"a"	140 mm (5.50 in.)	OFF
"b"	125 mm (4.70 in.)	OFF if low fuel warning light ON or flashing once
"c"	150 mm (5.90 in.)	ON
"d"	200 mm (7.90 in.)	Flashing

SECTION 8D

WINDOWS, MIRRORS, SECURITY AND LOCKS

WARNING:

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

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

NOTE:

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

CONTENTS

Diagnosis

NOTE:

Fuse name (“ ”) in the table below is shown on the fuse box cover.

Power Door Lock System (If Equipped)

Condition	Possible Cause	Correction
All doors are not locked/unlocked by all of switches	“DOOR LOCK” fuse blown	Replace fuse to check for short.
	Door switch faulty	Replace door switch.
	Power door lock controller faulty	Check system referring to POWER DOOR LOCK SYSTEM CIRCUIT INSPECTION in this section.
	Wiring or grounding faulty	
All doors are not locked/unlocked by only power door lock switch	Power door lock switch faulty	Check switch.
	Wiring harness connected to power door lock switch faulty	Repair.
	Power door lock controller faulty	Check system referring to POWER DOOR LOCK SYSTEM CIRCUIT INSPECTION in this section.
	Wiring or grounding faulty	
All are not locked/ unlocked by only driver side key cylinder switch	Driver side key cylinder switch faulty	Replace key cylinder switch.
	Wiring harness connected to driver side door key cylinder switch faulty	Repair.
	Power door lock controller faulty	Check system referring to POWER DOOR LOCK SYSTEM CIRCUIT INSPECTION in this section.
	Wiring or grounding faulty	
Only one door is not locked/unlocked	Wiring harness connected to applicable door lock actuator faulty	Repair.
	Power door lock actuator faulty	Check actuator.

Keyless Entry System (If Equipped)

NOTE:

Diagnose keyless entry system referring to the following table after confirming that power door lock system is good condition.

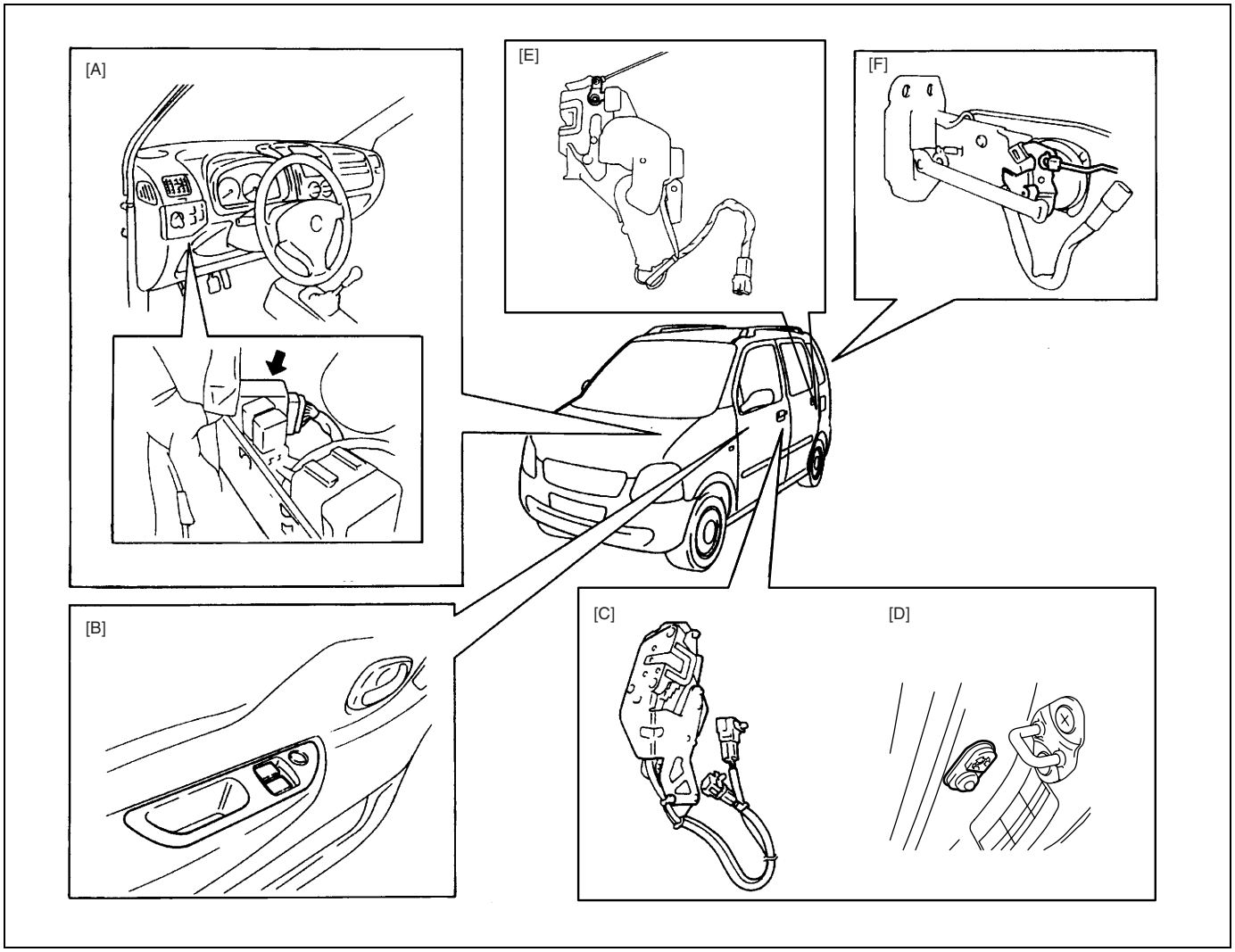
Condition	Possible Cause	Correction
All doors are not locked/ unlocked by only keyless entry transmitter	Transmitter battery dead	Replace battery.
	Transmitter faulty	Replace transmitter.
	Code registration error	Perform code registration.
	Key remainder switch (in ignition switch) faulty	Replace ignition switch.
	Power door lock controller faulty	Replace controller.
	Wiring or grounding faulty	Repair.
Turn signal lights are not flashed when doors are locked/unlocked by keyless entry transmitter	Power door lock controller faulty	Check system referring to KEYLESS ENTRY SYSTEM CIRCUIT INSPECTION in this section.
	Wiring or grounding faulty	

Condition	Possible Cause	Correction
Interior light does not turn ON when doors are unlocked by keyless entry transmitter	Power door lock controller faulty	Check system referring to KEY-LESS ENTRY SYSTEM CIRCUIT INSPECTION in this section.
	Wiring or grounding faulty	

On-Vehicle Service

Power Door Lock System (If Equipped)

Power door lock system component location



[A] : Power door lock controller (the illustration shows LH steering vehicle. And RH steering vehicle is symmetrical.)	[C] : Front door actuator	[E] : Rear door actuator
[B] : Power door lock switch	[D] : Door switch	[F] : Back door actuator

Power door lock system operation inspection

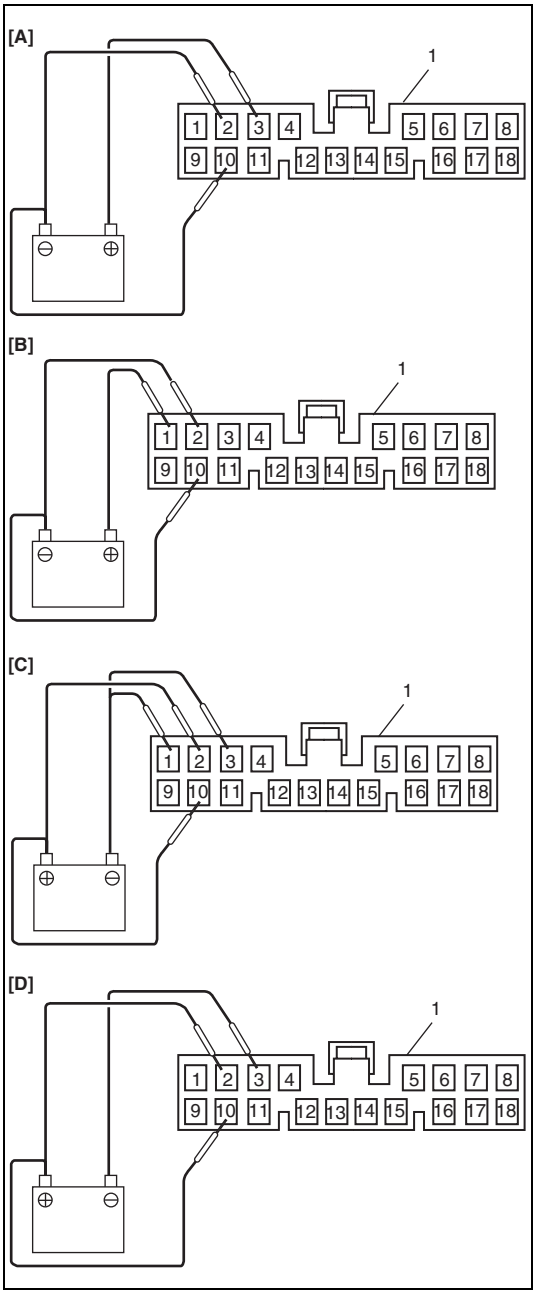
1) Check the following operation:
   a) When the driver side key cylinder is turned LOCK once, check all doors lock.
   b) When the driver side door key cylinder is turned UNLOCK twice, check all doors unlock.

c) For vehicle equipped dead lock system:
When the driver side door key cylinder is turned LOCK twice within 2 seconds, check all doors lock and not pulled up all door lock knobs by hand.

If check result is not satisfied, go to “Power Door Lock System Circuit Inspection” in this section.

Power door lock system circuit inspection

1) Disconnect negative cable at battery.
2) Disconnect door lock controller coupler (1).
3) Confirm that all doors are unlocked. Connect battery positive and negative terminals to door lock controller coupler terminals and check power door lock operation as follows.
If it does not operate as specified, repair applicable circuit or check actuator. If it operates as specified, go to next step.



Power door lock operation for vehicle with dead lock system:

Step	TERMINAL				OPERATION
	G02-1	G02-2	G02-3	G02-10	
1	–	⊖	⊕	⊖	UNLOCK ⟶ LOCK
2	⊕	⊖	–	⊖	LOCK ⟶ DEAD LOCK
3	⊖	⊕	⊖	⊕	DEAD LOCK ⟶ UNLOCK

[A] : Step 1: Lock operation check
[B] : Step 2: Dead lock operation check
[C] : Step 3: Unlock operation check

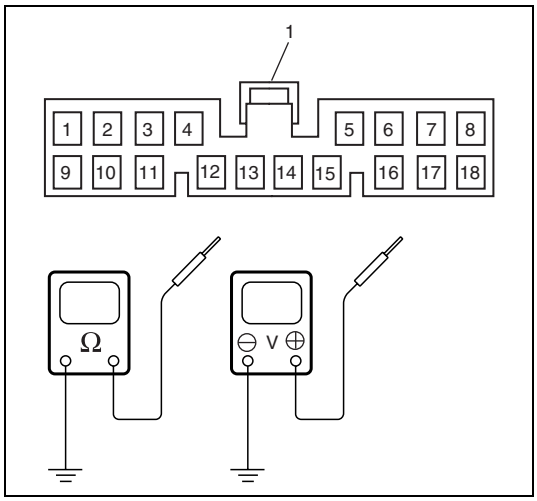
Power door lock operation for vehicle without dead lock system:

Step	TERMINAL			OPERATION
	G02-2	G02-3	G02-10	
1	⊖	⊕	⊖	UNLOCK ⟶ LOCK
2	⊕	⊖	⊕	LOCK ⟶ UNLOCK

[A] : Step 1: Lock operation check
[D] : Step 2: Unlock operation check

1. Power door lock controller coupler “G02”

4) Connect negative cable at battery.



5) Check that the voltage and resistance between the following terminals and body ground are specifications under each conditions.
   If check result is OK, replace door lock controller. If check result is not as specified, repair circuit.

1 : Power door lock controller coupler “G02”

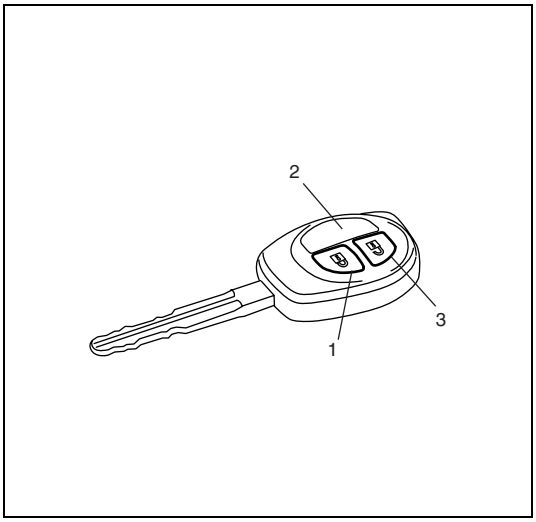
Power door lock system circuit check

Terminal	Wire	Circuit	Specification	Condition
G02-6	WHT	Power door lock switch circuit	Continuity	Power door lock switch is pushing position.
			No continuity	Power door lock switch is free position.
G02-9	WHT/GRN	Main power supply	10 – 14 V	–
G02-11	YEL/BLK	Key remainder circuit	10 – 14 V	Ignition key is in ignition switch.
			0 – 1 V	Ignition key is not in ignition.
G02-12	YEL	Ignition switch circuit	10 – 14 V	Ignition switch is ON position.
			0 – 1 V	Ignition switch is OFF position.
G02-13	WHT/BLK	Driver side key cylinder circuit (UNLOCK signal)	Continuity	Driver side key cylinder is UNLOCK position.
			No continuity	Except the above-mentioned condition.
G02-14	WHT/RED	Driver side key cylinder circuit (LOCK signal)	Continuity	Driver side key cylinder is LOCK position.
			No continuity	Except the above-mentioned condition.
G02-15	BLK/RED	Door switch circuit	0 – 1 V	Driver side, passenger side, rear driver side, rear passenger side or back door is open.
			10 – 14 V	All doors are close.
G02-17	BLK	Ground	0 – 1 V	–

Keyless Entry System (If Equipped)

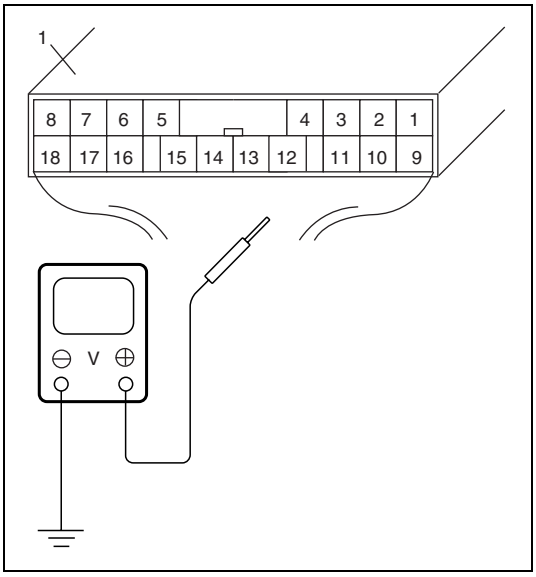
Keyless entry system operation inspection

1) Confirm that power door lock system is good condition.
2) Confirm that all doors are closed and unlocked.



3) Check the following operation:
   a) When pushing “LOCK” button (1) on transmitter (2) once, check all doors lock and hazard waning lights flash once.
   b) When pushing “UNLOCK” button (3) on transmitter (2) twice, check all doors unlock and hazard waning lights flash twice and interior light turn on several seconds with the interior light switch in the middle position.
   c) For vehicle equipped dead lock system:
   When pushing “LOCK” button (1) on transmitter (2) twice within 2 seconds, check all doors lock and not pulled up all door lock knobs by hand.

If check result is not satisfied, go to “Keyless Entry System Circuit Inspection” in this section.



Keyless entry system circuit inspection

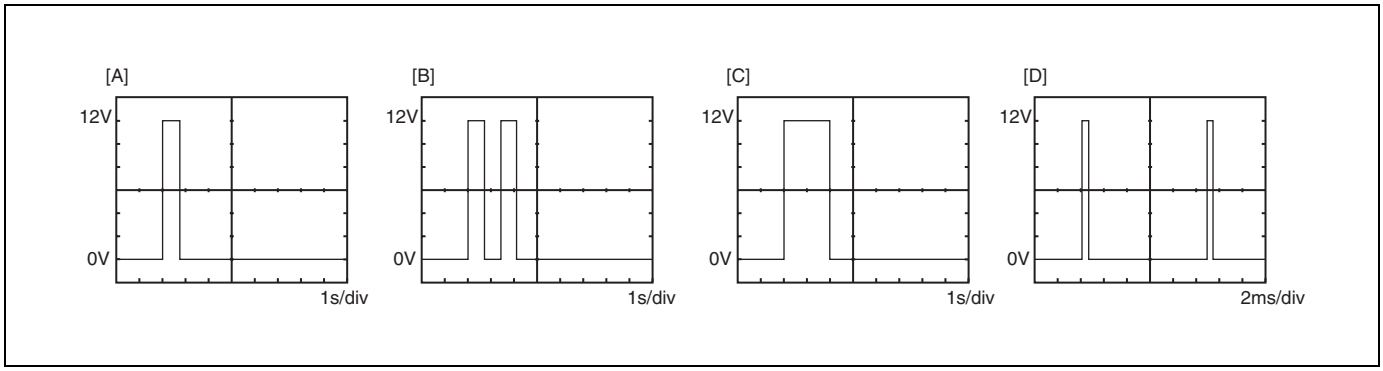
Check that the voltage between the following terminals and body ground are specifications under each conditions.
If check result is not as specified, check applicable circuit.
If circuit is normal, recheck keyless entry system circuit as follows.

1) Substitute a known-good door lock controller.
2) Register key code referring to “Code Registration Procedure” in this section.
3) Recheck keyless entry system circuit.

1. Door lock controller

Keyless entry system circuit check

Terminal	Wire	Circuit	Specification	Condition
G02-7	GRN/YEL	Hazard waning signal circuit (right side)	Figure “A”	Push “LOCK” button on transmitter once.
			Figure “B”	Push “UNLOCKI” button on transmitter once.
			Figure “C”	Push “LOCK” button on transmitter twice within 3 seconds.
G02-8	GRN/RED	Hazard waning signal circuit (left side)	Figure “A”	Push “LOCK” button on transmitter once.
			Figure “B”	Push “UNLOCK” button on transmitter once.
			Figure “C”	Push “LOCK” button on transmitter twice within 3 seconds.
G02-15	BRN/RED	Door switch & interior light circuit	Figure “D”	Fulfill the following conditions. • All door is close. • Interior light switch is middle position. • 20 seconds after pushing “UNLOCK” button on transmitter once

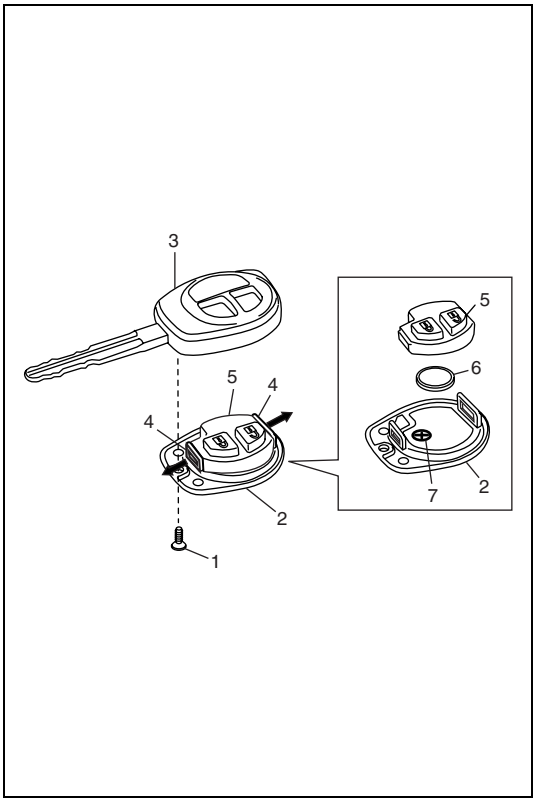


[A] : Figure “A”
[B] : Figure “B”
[C] : Figure “C”
[D] : Figure “D”

Transmitter

REPLACEMENT OF TRANSMITTER BATTERY

If transmitter becomes unreliable, replace transmitter battery as follows.



1) Remove screw (1), and remove cover (2) from ignition key (3).
2) Unhook tabs (4) and remove transmitter (5).
3) Replace battery (lithium disc-type CR1616 or equivalent battery) (6) so its + terminal faces "+" mark (7) on transmitter (5).
4) Set transmitter to cover (2).
5) Install cover (2) to ignition key (3) and tighten screw (1).
6) Make sure that keyless entry system can be operated with transmitter.

CAUTION:
Use care not to allow grease or dirt to be attached on the printed circuit board and the battery.

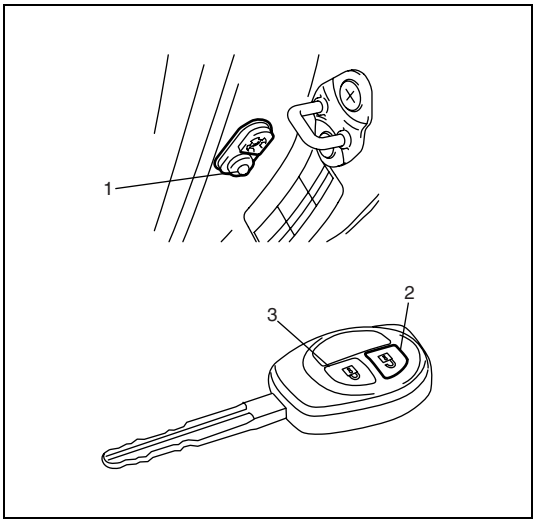
NOTE:

- **To prevent theft, be sure to break the transmitter before discarding it.**
- **Dispose of the used battery properly according to applicable rules or regulations. Do not dispose of lithium batteries with ordinary household trash.**

CODE REGISTRATION PROCEDURE

If transmitter or door lock controller replace new one, register key code as follows.

1) Confirm that all doors are closed and ignition key is out of ignition key cylinder
2) Open driver side door.
3) Turn ignition switch to ON position, and then drawn ignition key from ignition key cylinder within 10 seconds after that.



4) Push and release driver side door switch (1) at 3 times by hand within 20 seconds after removing ignition key from ignition key cylinder.
5) Turn ignition switch to ON position, and then drawn ignition key from ignition key cylinder within 10 seconds after that.
6) Push "UNLOCK" button (2) on transmitter (3) and confirm that all doors are operated from lock to unlock.
   With this, code registration is completed.

NOTE:

- **Three transmitter codes can be registered.**
- **When a new transmitter code is registered, the oldest one will be cleared.**

SECTION 8G

IMMOBILIZER CONTROL SYSTEM

WARNING:

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

- **Service on and around the air bag system components or wiring must be performed only by an authorized SUZUKI dealer. Refer to AIR BAG SYSTEM COMPONENTS AND WIRING LOCATION VIEW under GENERAL DESCRIPTION in air bag section in order to confirm whether you are performing service on or near the air bag system components or wiring. Please observe all WARNING and SERVICE PRECAUTIONS under ON-VEHICLE SERVICE in air bag system section before performing service on or around the air bag system components or wiring. Failure to follow WARNINGS could result in unintentional activation of the system or could render the system inoperative. Either of these two conditions may result in severe injury.**
- **Technical service word must be started at least 90 seconds after the ignition switch is turned to the "LOCK" position and the negative cable is disconnected from the battery.**
  Otherwise, the system may be activated by reserve energy in the Sensing and Diagnostic Module (SDM).

NOTE:

For this section, refer to the same section of the Service Manual mentioned in FOREWORD of this manual. However, bear the following in mind when checking DTC (Diagnostic Trouble Code).
Be sure to use SUZUKI scan tool whenever checking DTC because this vehicle has no monitor connector for Immobilizer control system and DTC can not be displayed by malfunction indicator lamp (MIL) flashing.

CONTENTS

On-Vehicle Service

Registration Procedure of Immobilizer System Components

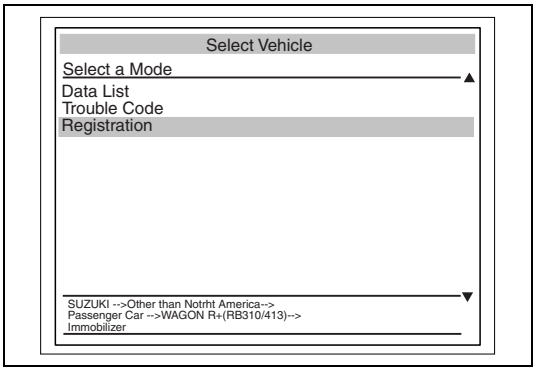
How to register ignition key

[When using Tech 1A]

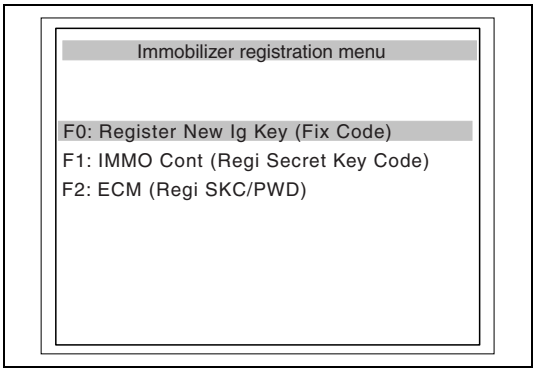
For the procedure, refer to “How to register ignition key” in the same section of the Service manual mentioned in FOREWORD of this manual.

[When using Tech 2]

1) Perform IMMOBILIZER SYSTEM COMPONENTS REGISTRATION FLOW TABLE.
2) Prepare ignition key(s) with built-in trans-ponder(s) to be registered to IMMOBILIZER CONTROL MODULE.



3) Connect Tech 2 to DLC with ignition switch at OFF position. Insert ignition key to be registered into key cylinder and turn ignition switch to ON (II) position.
4) Select vehicle, “immobilizer” and “Registration” at each menu screen.



5) Select “Register New Ig Key (Fix code)” to register fix code from ignition key into immobilizer control module and register secret key code from immobilizer control module into ignition key.
   In case that secret key has already registered in ignition key, only fix code will be registered.

NOTE:

Whether secret key has already registered or not is detected by Tech 2 automatically.
It is not necessary to care for secret key registration of ignition key.
The procedure here after, follow Tech 2 screen and operator’s manual.

Procedure after immobilizer control module replacement

[When using Tech 1A]

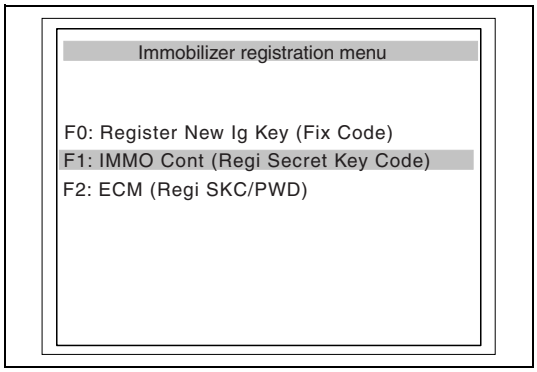
For the procedure, refer to “Procedure after immobilizer control module replacement” in the same section of the Service manual mentioned in FOREWORD of this manual.

[When using Tech 2]

1) Perform IMMOBILIZER SYSTEM COMPONENTS REGISTRATION FLOW TABLE.
2) Connect Tech 2 to DLC with ignition switch at OFF position.
3) Turn ignition switch to ON position.
4) Select “Registration” at mode select screen under Immobilizer.

NOTE:

For operation procedure of scan tool, refer to operator’s manual.



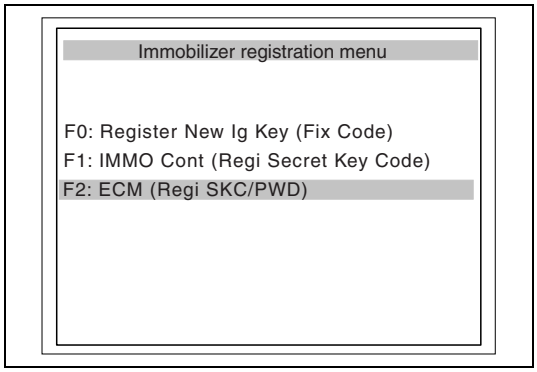
5) Perform immobilizer control module registration by selecting “IMMO Cont (Regi secret key code)”.
6) After completing immobilizer control module registration, register ignition key (fix code) into immobilizer control module by performing “Register New Ig Key (Fix Code)” at Immobilizer Registration Menu.

Procedure after ECM replacement

[When using Tech 1A]

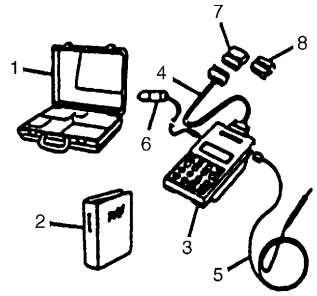
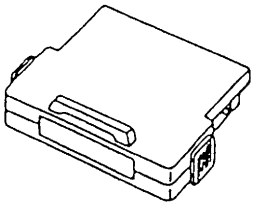
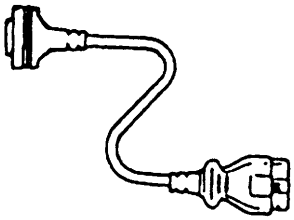
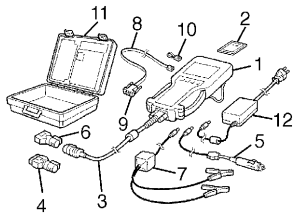
For the procedure, refer to “Procedure after ECM replacement” in the same section of the Service manual mentioned in FOREWORD of this manual.

[When using Tech 2]



1) Perform IMMOBILIZER SYSTEM COMPONENTS REGISTRATION FLOW TABLE.
2) Connect Tech 2 to DLC with ignition switch at OFF position.
3) Turn ignition switch to ON position.
4) Select “ECM (Regi SKC/PWD)” at Immobilizer Registration menu”.

Special Tools

			
09931-76011 Tech 1A kit (SUZUKI scan tool) (See NOTE “A”.)	Mass storage cartridge for Tech 1A	09931-76030 16/14 pin DLC adapter for Tech 1A	Tech 2 kit (SUZUKI scan tool) (See NOTE “B”.)

NOTE:

- **“A” : This kit includes the following items and substitutes for the Tech 2 kit.**
  1. Storage case, 2. Operator’s manual, 3. Tech 1A, 4. DLC cable (14/26 pin, 09931-76040), 5. Test lead/probe, 6. Power source cable, 7. DLC cable adaptor, 8. Self-test adaptor
- **“B” : This kit includes the following items and substitutes for the Tech 1A kit.**
  1. Tech 2, 2. PCMCIA card, 2. DLC cable, 4. SAE 16/19 adapter, 5. Cigarette cable, 6. DLC loopback adapter, 7. Battery power cable, 8. RS232 cable, 9. RS232 adapter, 10. RS232 loopback connector, 11. Storage case, 12. Power supply

SECTION 9

BODY SERVICE

WARNING:

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

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

NOTE:

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

CONTENTS

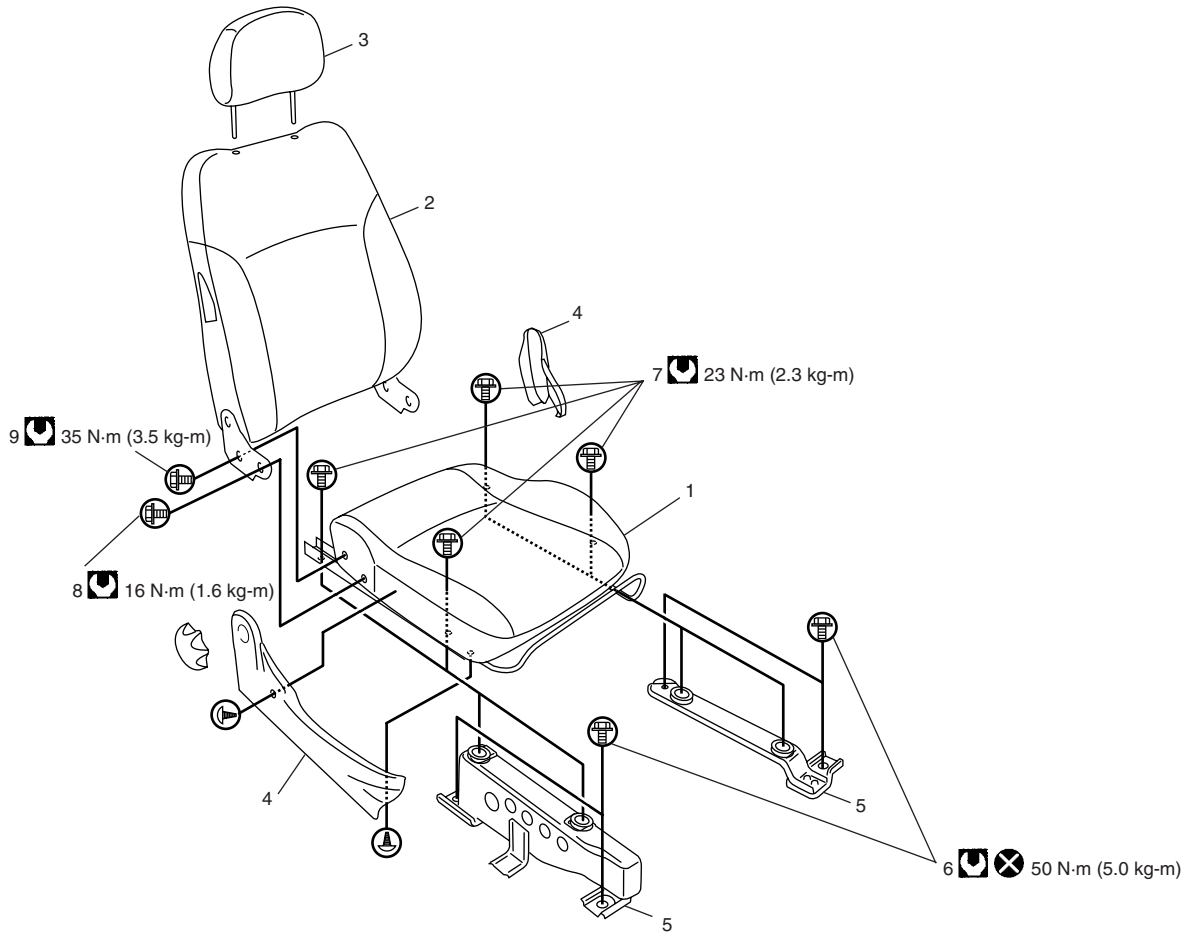
Seats

Front Seat

WARNING:

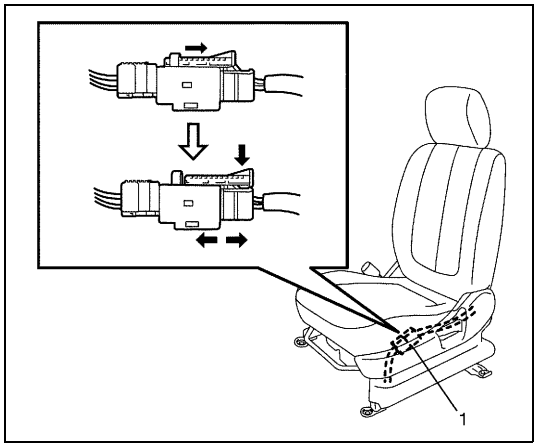
For vehicle equipped with side air bags:

- **Never attempt to disassemble front seat back. Do not remove side air bag (inflator) module from front seat back. If any abnormality is found, be sure to replace front seat back with new one as an assembly.**
- **Be sure to read "SERVICE PRECAUTIONS" in Section 10B before starting to work and observe every precaution during work. Neglecting them may result in personal injury or undeployment of the air bag when necessary.**

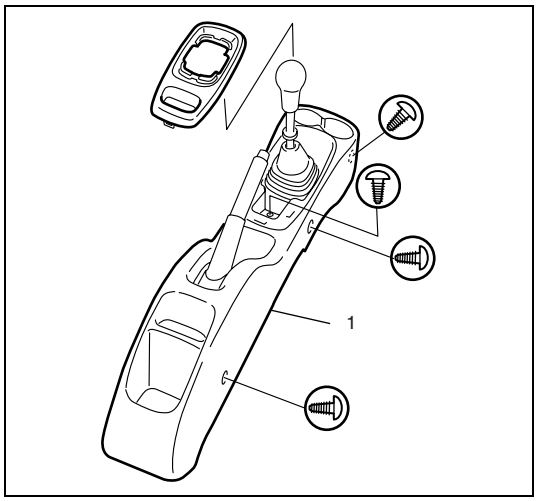


1. Seat cushion	5. Bracket	9. Reclining bolt
2. Seat back	6. Seat adjuster bolt	Tightening torque
3. Head rest	7. Seat cushion bolt	Do not reuse.
4 Cover	8. Reclining bolt	

REMOVAL



1) Disable air bag system referring to “DISABLEING AIR BAG SYSTEM” in Section 10B.
2) Disconnect side air bag coupler (1), if equipped.



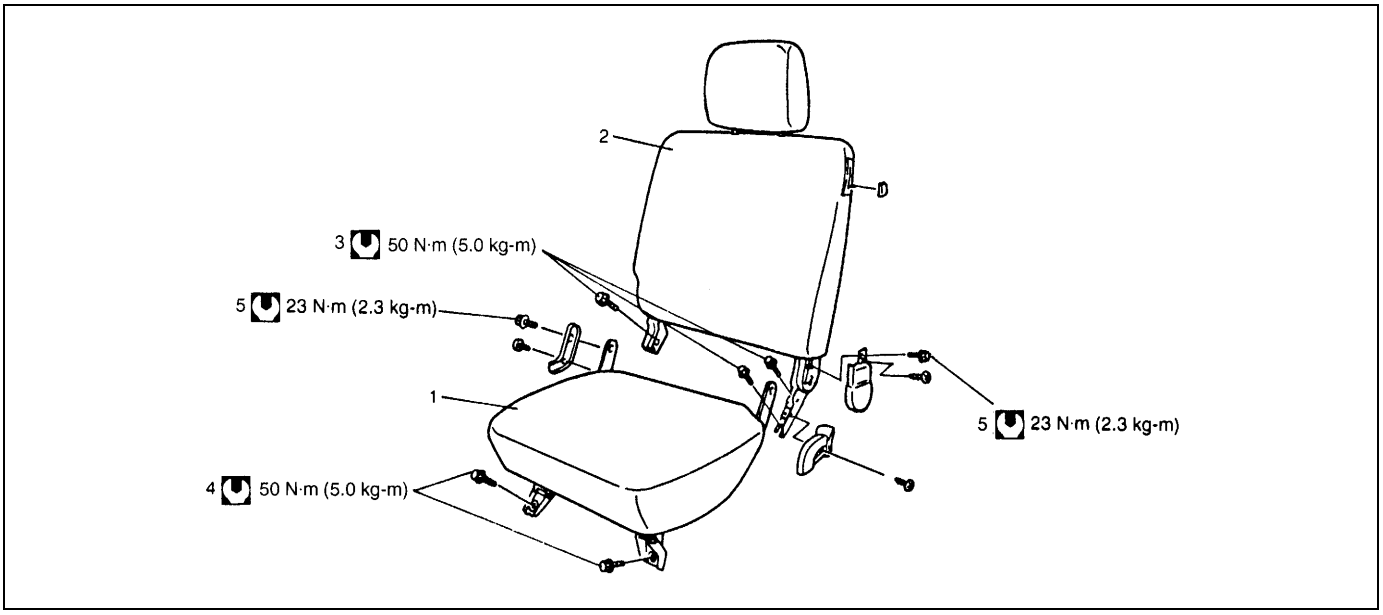
3) Remove center console box (1).

4) Remove 4 mounting bolts to remove front seat from vehicle floor.

INSTALLATION

Reverse removal procedure to install front seat.
Torque mounting bolts to specifications shown in previous figure.

Rear Seat



1. Seat cushion	4. Seat cushion bolt
2. Seat back	5. Folding bolt
3. Seat back bolt	

REMOVAL/INSTALLATION

For removal and Installation of rear seat, refer to above figure.

SECTION 10B

AIR BAG SYSTEM

WARNING:

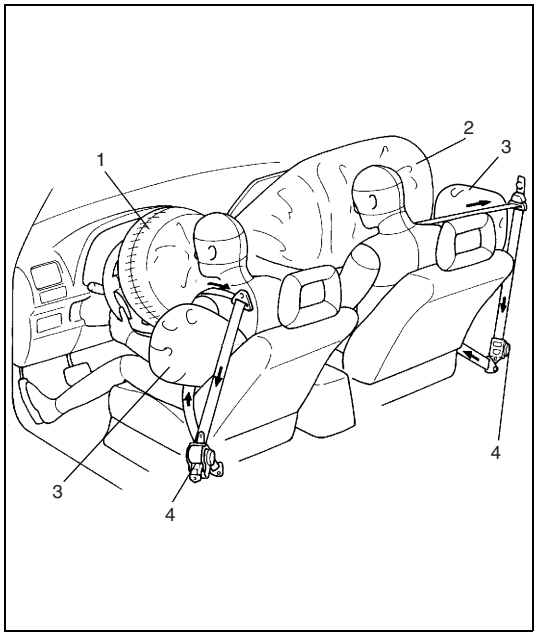
- **Service on or around the air bag system components or wiring must be performed only by an authorized SUZUKI dealer. Please observe all WARNINGS and "Service Precautions" under "On-Vehicle Service" in this section before performing service on or around the air bag system components or wiring. Failure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

CAUTION:

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

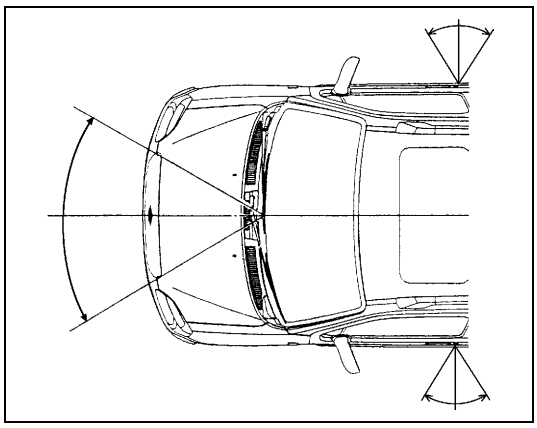
CONTENTS

General Description



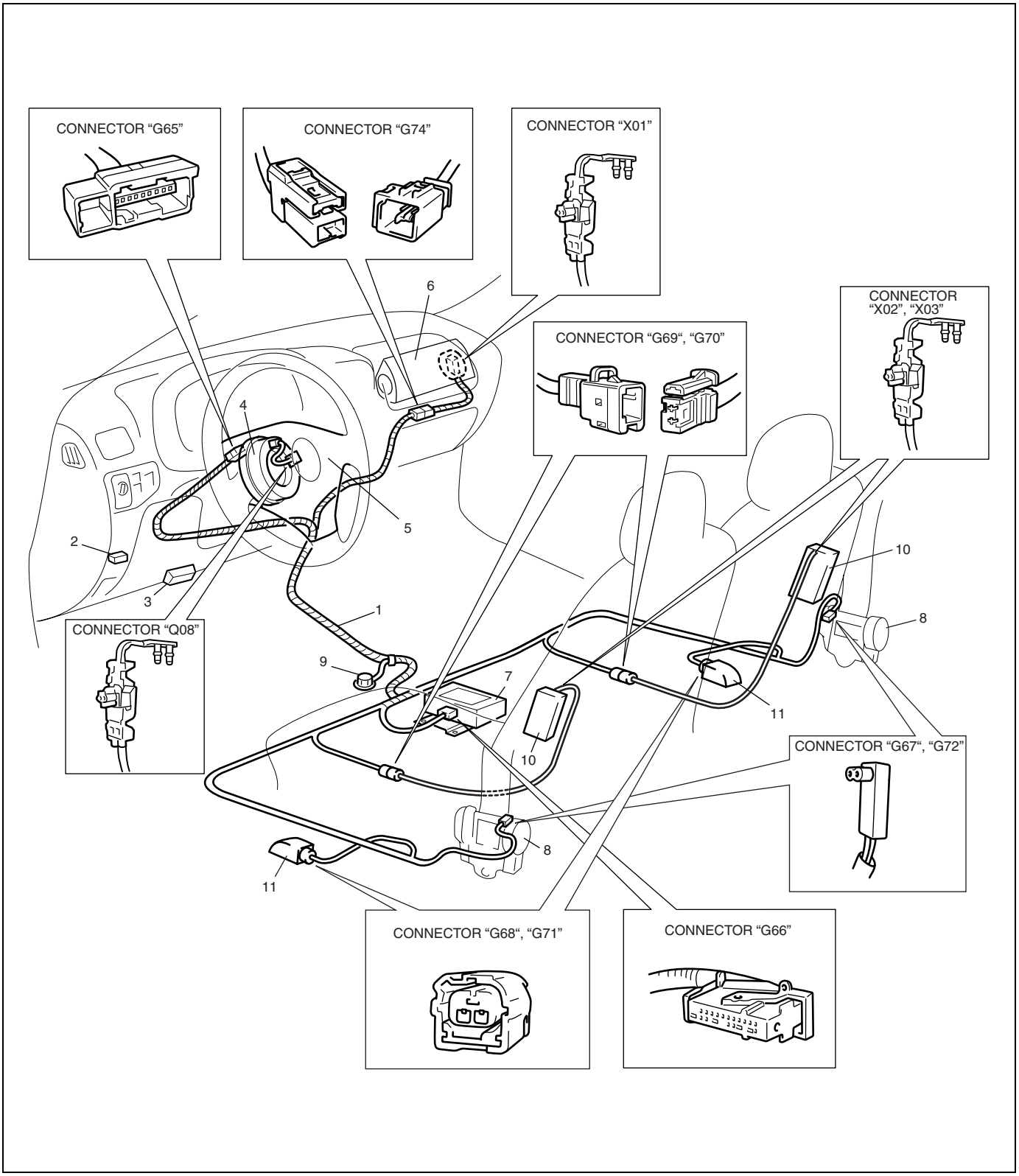
With the air bag system which includes front air bags and side air bags for both the driver's and passenger's sides as well as the seat belt pretensioners, the sag of the seat belt is taken up (for seat belt with pretensioner), the driver air bag (inflator) module is deployed from the center of the steering column and the passenger air bag (inflator) module from the top of the instrument panel in front of the front passenger seat in occurrence of a front collision with an impact larger than a certain set value to supplement protection offered by the driver and front passenger seat belts. Side air bag (inflator) module is deployed from the side of the seat back in occurrence of a sideward collision with an impact larger than a certain set value.

1. Driver side air bag
2. Passenger side air bag
3. Side air bag
4. Seat belt pretensioner



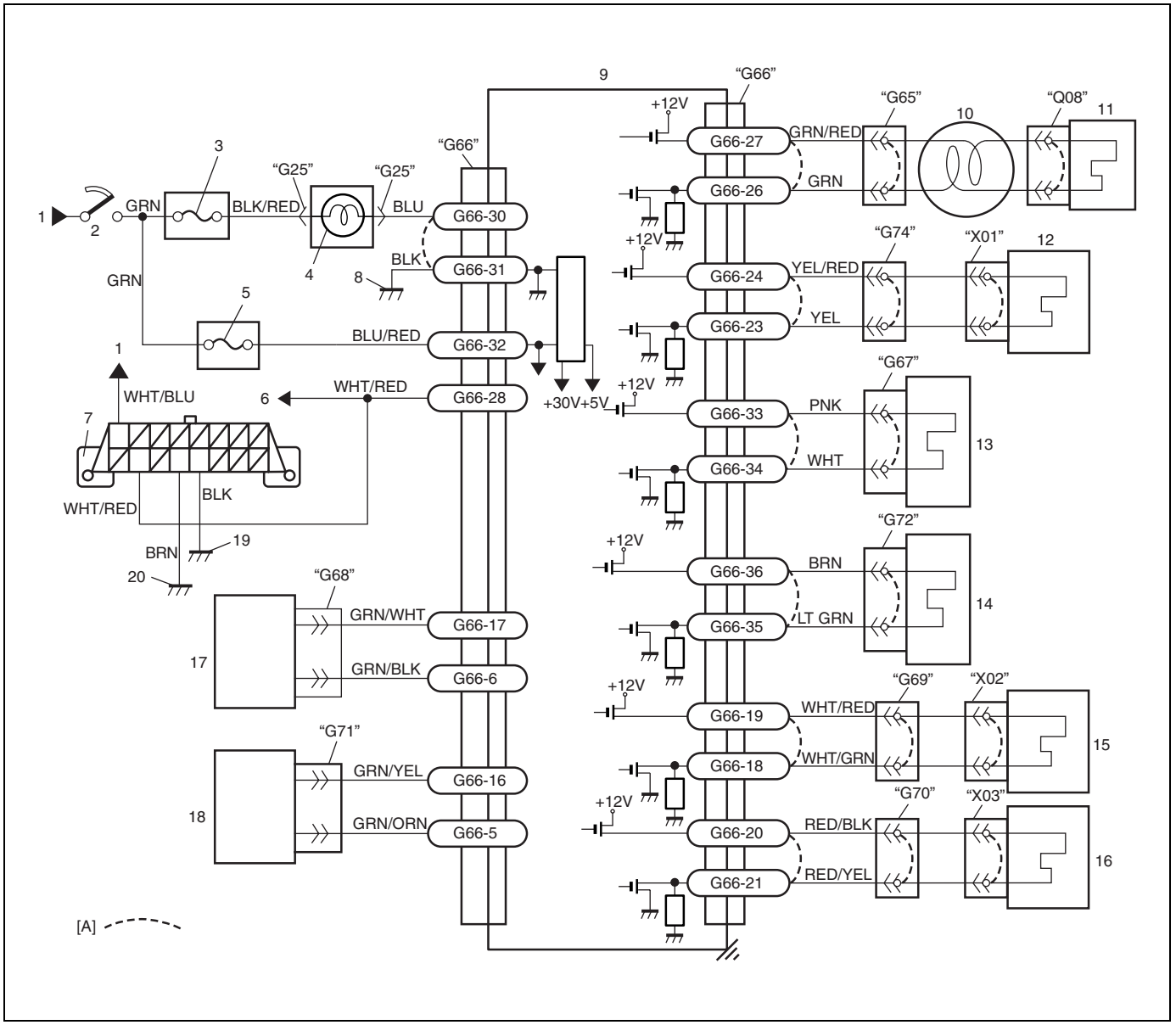
The air bag system is designed to activate only in severe frontal and sideward collisions. It is not designed to activate in rear impacts, rollovers, or minor frontal and sideward collisions, since it would offer no protection in those types of accidents.

System Components and Wiring Location View and Connectors



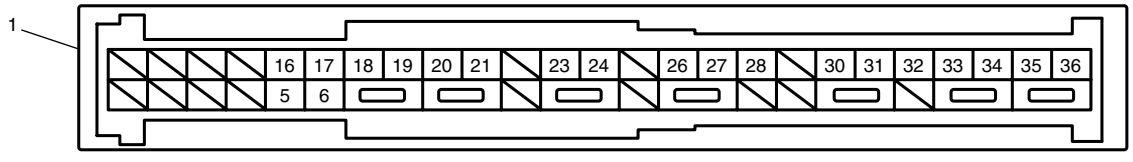
1. Air bag harness (in instrument panel harness)	5. Driver air bag (inflator) module	9. Ground for air bag system
2. "AIR BAG" fuse in circuit fuse box	6. Passenger air bag (inflator) module (if equipped)	10. Side air bag (inflator) module (if equipped)
3. DLC	7. SDM	11. Side Sensor (if equipped)
4. Contact coil assembly	8. Seat belt pretensioner (retractor assembly)	

System Wiring Diagram



[A] : Shorting bar	8. Ground for air bag system	16. Side air bag (inflator) module at passenger side (if equipped)
1. From main fuse	9. SDM	17. Side sensor at driver side (if equipped)
2. Ignition switch	10. Contact coil assembly	18. Side sensor at passenger side (if equipped)
3. "METER" fuse	11. Driver air bag (inflator) module	19. Ground on body
4. "AIR BAG" warning lamp in combination meter	12. Passenger air bag (inflator) module (if equipped)	20. Ground on engine block
5. "AIR BAG" fuse	13. Driver seat belt pretensioner	
6. To ECM and ABS control module (if equipped)	14. Passenger seat belt pretensioner	
7. Data link connector (DLC)	15. Side air bag (inflator) module at driver side (if equipped)	

TERMINAL ARRANGEMENT OF SDM CONNECTOR (VIEWED FROM HARNESS SIDE)



1. SDM connector "G66"

SDM connector “G66”

TERMINAL	CIRCUIT		TERMINAL	CIRCUIT	
G66-1	–		G66-20	Side air bag (inflator) module (passenger side) (if equipped)	High
G66-2	–		G66-21		Low
G66-3	–		G66-22	–	
G66-4	–		G66-23	Passenger air bag (inflator) module (if equipped)	Low
G66-5	Side sensor (passenger side) (if equipped)	Low	G66-24		High
G66-6	Side sensor (driver side) (if equipped)	Low	G66-25	–	
G66-7	–		G66-26	Driver air bag (inflator) module	Low
G66-8	–		G66-27		High
G66-9	–		G66-28	Data link connector (DLC)	
G66-10	–		G66-29	–	
G66-11	–		G66-30	“AIR BAG” warning lamp	
G66-12	–		G66-31	Ground	
G66-13	–		G66-32	Ignition switch (power source)	
G66-14	–		G66-33	Driver pretensioner	High
G66-15	–		G66-34		Low
G66-16	Side sensor (passenger side) (if equipped)	High	G66-35	Passenger pretensioner	Low
G66-17	Side sensor (driver side) (if equipped)	High	G66-36		High
G66-18	Side air bag (inflator) module (driver side) (if equipped)	Low			
G66-19		High			

Diagnosis

WARNING:

To avoid deployment when troubleshooting the air bag system, do not use electrical test equipment such as a battery powered or AC powered voltmeter, ohmmeter, etc., or any type of electrical equipment other than that specified in this manual. Do not use a non-powered probe type tester. Instructions in this manual must be followed carefully, otherwise personal injury may result.

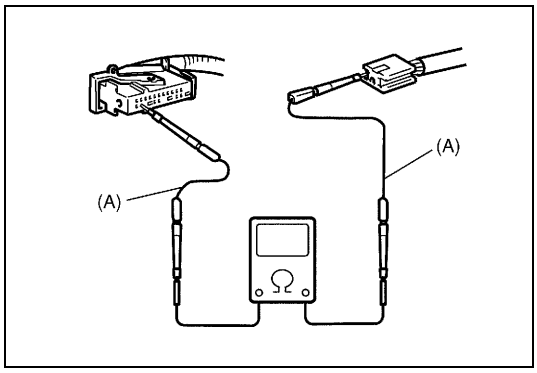
Diagnostic Trouble Code (DTC)

The AIR BAG DIAGNOSTIC SYSTEM CHECK must always be the starting point of any air bag system diagnosis. The AIR BAG DIAGNOSTIC SYSTEM CHECK checks for proper “AIR BAG” warning lamp operation and checks for air bag diagnostic trouble codes (DTCs) using SUZUKI scan tool.

Use of Special Tool

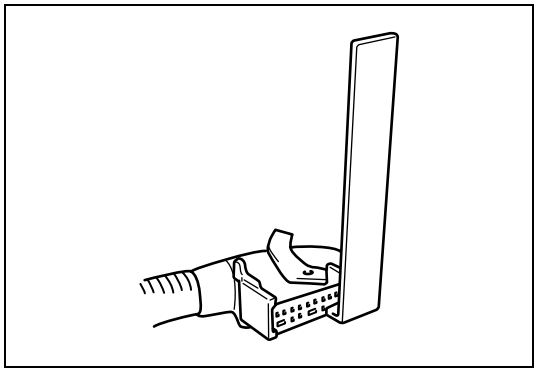
WARNING:
To avoid deployment when troubleshooting the air bag system, do not use electrical test equipment such as a battery powered or AC powered voltmeter, ohmmeter, etc., or any type of electrical equipment other than that specified in this manual. Do not use a non-powered probe type tester. Instructions in this manual must be followed carefully, otherwise personal injury may result.

You should be familiar with the tools listed in this section under the heading SPECIAL TOOLS. You should be able to measure voltage and resistance. You should be familiar with proper use of a scan tool such as Air Bag Driver/Passenger Load Tool, Connector Test Adapter Kit and the Digital Multimeter.



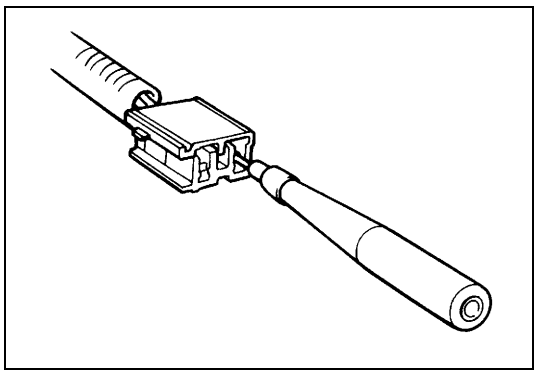
Special tool
(A) : 09932-76010 (Connector Test Adapter Kit)

This must be used whenever a diagnostic procedure requests checking or probing a terminal.
Using the appropriate adapter in the special tool will ensure that no damage to the terminal will occur from the multimeter probe, such as spreading or bending.

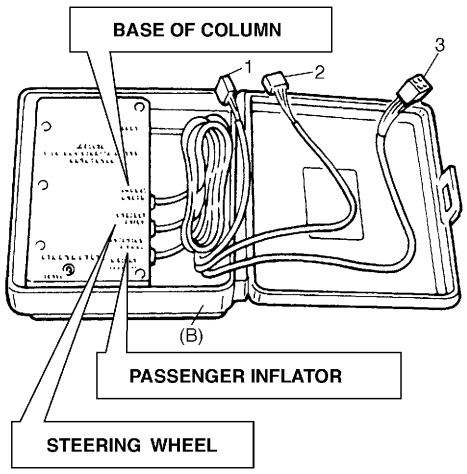


An SDM short bar release tool is included in the connector test adapter kit.

Inserting it into the SDM connector will release the shorting bar.



The adapter will also give an idea of whether contact tension is sufficient, helping to find an open or intermittent open due to poor terminal contact.



Special tool
(B) : 09932-75010 (Air Bag Driver/Passenger Load Tool)

This tool is used only when called for in this section. It is used as a diagnostic aid and safety device to prevent inadvertent air bag (inflator) module deployment.
The load tool has three connectors attached to its case which are electrically functional and serve as resistive load substitutions.
No more than two connectors are used at any time.

One of connectors ("STEERING WHEEL") is used to substitute the load of followings.

- Driver air bag (inflator) module when it is connected at the top of the column to the contact coil assembly.
- Passenger air bag (inflator) module when it is connected to the air bag harness connector in instrument panel harness for passenger air bag (inflator) module.
- Side air bag (inflator) module (driver and passenger side) when it is connected to the instrument panel harness connector for side air bag (inflator) module.
- Each of driver and passenger seat belt pretensioners when it is connected to instrument panel harness connector for driver and passenger seat belt pretensioners.

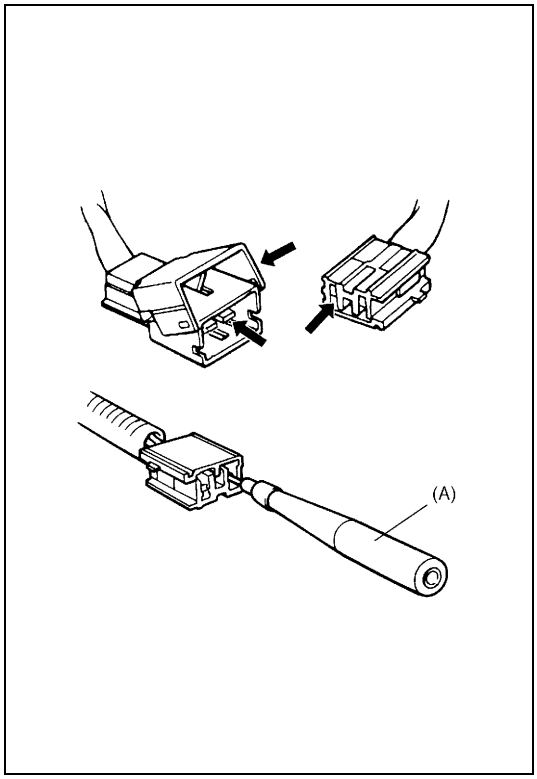
Another connector ("BASE OF COLUMN") is used to substitute the load of the driver air bag (inflator) module and the contact coil assembly when it is connected at the base of the column to the air bag wire harness in instrument panel harness?
The third connector ("PASSENGER INFLATOR") is not used.

By substituting the resistance of the load tool when called for, a determination can be made as to whether an inflator circuit component is causing system malfunction and which component is causing the malfunction.
The load tool should be used only when specifically called for in the diagnostic procedures.

1.	Connector for contact coil and driver air bag (inflator) module (Located near the base of the steering column)
2.	Connector for driver and passenger air bag (inflator) module, side air bag (inflator) module (driver and passenger side) and driver and passenger seat belt pretensioners
3.	Not used

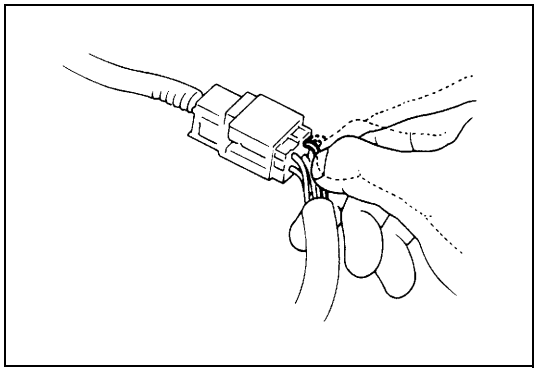
Intermittents and Poor Connections

Most intermittents are caused by faulty electrical connections or wiring. When a check for proper connection is requested in a diagnostic flow table, perform careful check of suspect circuits for:

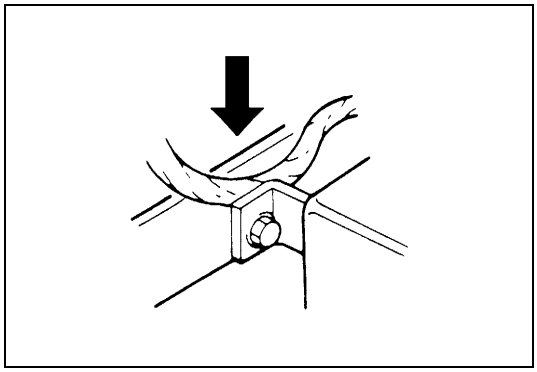


- Check connector for loose connection.
- Poor mating of connector halves, or terminals not fully seated in the connector body (backed out).
- Dirt or corrosion on the terminals. The terminals must be clean and free of any foreign material which could impede proper terminal contact.
  However, cleaning the terminal with a sand paper or the like is prohibited.
- Damaged connector body, exposing the terminals to moisture and dirt, as well as not maintaining proper terminal orientation with the component or mating connector.
- Improperly formed or damaged terminals.
  Check each connector terminal in problem circuits carefully to ensure good contact tension by using the corresponding mating terminal included in the connector test adapter kit (special tool).
  If contact tension is not enough, reform it to increase contact tension or replace.

Special tool
(A) : 09932-76010 (Connector Test Adapter Kit)



- 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, change the wire harness assembly or component parts with new ones.



- Wire insulation which is rubbed through, causing an intermittent short as the bare area touches other wiring or parts of the vehicle.
- Wire broken inside the insulation. This condition could cause a 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, replace as a wire harness assembly.

Air Bag Diagnostic System Check

WARNING:

To avoid deployment when troubleshooting the air bag system, do not use electrical test equipment such as a battery powered or AC powered voltmeter, ohmmeter, etc., or any type of electrical equipment other than that specified in this manual. Do not use a non-powered probe type tester. Instructions in this manual must be followed carefully, otherwise personal injury may result.

CAUTION:

The order in which diagnostic trouble codes are diagnosed is very important. Failure to diagnose the diagnostic trouble codes in the order specified may result in extended diagnostic time, incorrect diagnosis and incorrect parts replacement.

The diagnostic procedures used in this section are designed to find and repair air bag system malfunctions. To get the best results, it is important to use the diagnostic flow tables and follow the sequence listed below.

1) Perform the AIR BAG DIAGNOSTIC SYSTEM CHECK FLOW TABLE.
   (The AIR BAG DIAGNOSTIC SYSTEM CHECK FLOW TABLE must be the starting point of any air bag system diagnosis.
   The AIR BAG DIAGNOSTIC SYSTEM CHECK FLOW TABLE checks for proper “AIR BAG” warning lamp operation through “AIR BAG” warning lamp and whether air bag diagnostic trouble codes exist.)
2) Refer to the proper diagnostic table as directed by the AIR BAG DIAGNOSTIC SYSTEM CHECK FLOW TABLE.
   (The AIR BAG DIAGNOSTIC SYSTEM CHECK FLOW TABLE will lead you to the correct table to diagnose any air bag system malfunctions. Bypassing these procedures may result in extended diagnostic time, incorrect diagnosis and incorrect parts replacement.)
3) Repeat the AIR BAG DIAGNOSTIC SYSTEM CHECK FLOW TABLE after any repair or diagnostic procedures have been performed.
   (Performing the AIR BAG DIAGNOSTIC SYSTEM CHECK FLOW TABLE after all repair or diagnostic procedures will ensure that the repair has been made correctly and that no other malfunctions exist.)

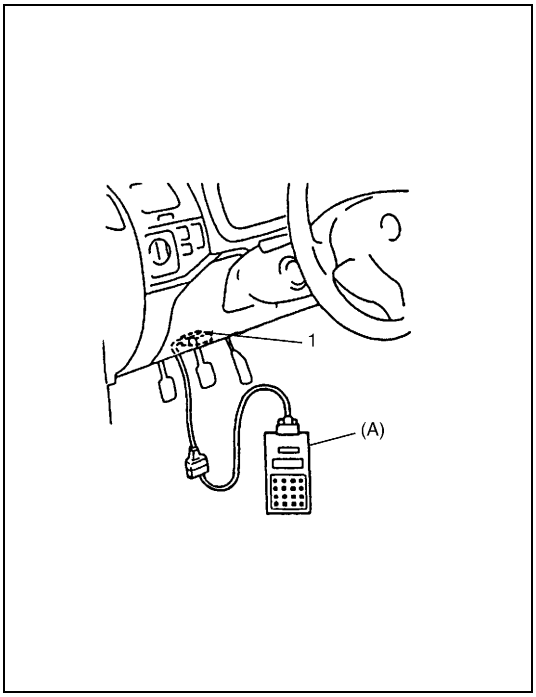
FLOW TABLE TEST DESCRIPTION

STEP 1 : Check that “AIR BAG” warning lamp lights.
STEP 2 : Check that “AIR BAG” warning lamp lights.
STEP 3 : Check that “AIR BAG” warning lamp flashes 6 times after ignition switch is turned ON.
STEP 4 : Check that history codes are in SDM memory.
STEP 5 : Check that current code is in SDM memory.

Air Bag Diagnostic System Check Flow Table

Step	Action	Yes	No
1	1) Make sure that battery voltage is about 11 V or higher. 2) Note “AIR BAG” warning lamp as ignition switch is tuned ON. Does “AIR BAG” warning lamp come ON when ignition switch is tuned ON?	Go to step 2.	Proceed to “AIR BAG” Warning Lamp Does Not Come ON in this section.
2	Does “AIR BAG” warning lamp come ON steady?	Proceed to “AIR BAG” Warning Lamp Comes ON Steady in this section.	Go to step 3.
3	Does “AIR BAG” warning lamp turn OFF, after flashing 6 times?	“AIR BAG” warning lamp circuit is good condition. Go to step 4.	“AIR BAG” warning lamp circuit is good condition. Go to step 5.
4	1) Check DTC using SUZUKI scan tool. Refer to DTC CHECK in this section. Is “NO CODES” displayed on SUZUKI scan tool?	Air bag system is in good condition.	An intermittent trouble has occurred at some place. Check the connector harness, etc. related to the sensed DTC. Refer to INTERMITTENTS AND POOR CONNECTIONS in this section. Then clear DTC (Refer to DTC CLEARANCE in this section.) and repeat this table.
5	1) Check DTC using SUZUKI scan tool. Refer to DTC CHECK in this section. Is “NO CODES” displayed on SUZUKI scan tool?	Substitute a known-good SDM and recheck.	Check and repair according to Flow Table corresponding to that DTC.

DTC Check



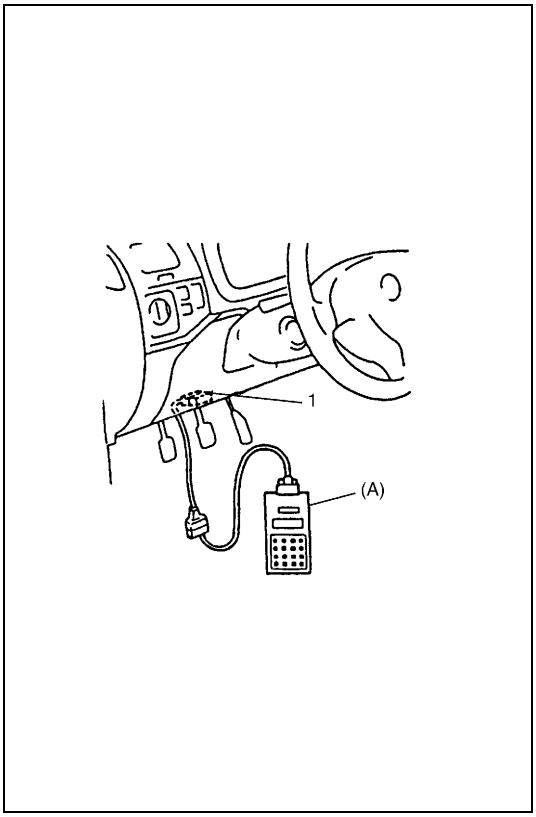
1) Turn ignition switch to OFF position.
2) Connect SUZUKI scan tool to data link connector (DLC) located on underside of instrument panel at driver's seat side.

Special tool
(A) : SUZUKI scan tool

3) Turn ignition switch to ON position.
4) Read DTC according to instructions displayed on SUZUKI scan tool and print it or write it down. Refer to SUZUKI scan tool operator's manual for further details.
   If communication between scan tool and SDM is not possible, proceed to SDM Can not Communicate through the Serial Data Circuit in this section.
5) After completing the check, turn ignition switch to OFF position and disconnect SUZUKI scan tool from data link connector (DLC).

1. Data link connector (DLC)

DTC Clearance



1) Turn ignition switch to OFF position.
2) Connect SUZUKI scan tool to data link connector (DLC) in the same manner as when making this connection for DTC check.

Special tool
(A) : SUZUKI scan tool

3) Turn ignition switch to ON position.
4) Erase DTC according to instructions displayed on SUZUKI scan tool.
   Refer to SUZUKI scan tool operator's manual for further details.
5) After completing the check, turn ignition switch to OFF position and disconnect SUZUKI scan tool from DLC.
6) Perform DTC CHECK and confirm that normal DTC (NO CODES) is displayed and not malfunction DTC.

NOTE:

If DTC B1051, B1058 or B1071 is stored in SDM, it is not possible to clear it.

1. Data link connector (DLC)

DTC Table

DTC	Diagnosis		
–	Normal		–
B1015	Passenger air bag circuit	Resistance high	Diagnose trouble according to diagnostic flow table corresponding to each code No.
B1016		Resistance low	
B1018		Short to ground	
B1019		Short to power circuit	
B1021	Driver air bag circuit	Resistance high	
B1022		Resistance low	
B1024		Short to ground	
B1025		Short to power circuit	
B1031	Power source voltage	Tool high	
B1032		Too low	
B1041	Driver pretensioner circuit	Resistance high	
B1042		Resistance low	
B1043		Short to ground	
B1044		Short to power circuit	
B1045	Passenger pretensioner circuit	Resistance high	
B1046		Resistance low	
B1047		Short to ground	
B1048		Short to power circuit	
B1051	SDM	Frontal crash detected	
B1056		Sideward crash (driver side) detected	
B1057		Sideward crash (passenger side) detected	
B1058		Frontal crash detected (pretensioner activation command outputted)	
B1061	"AIR BAG" warning lamp circuit	Circuit failure	
B1063	Side sensor circuit (driver side)	Short to ground	
B1064		Short to power circuit or open	
B1065	Side sensor circuit (passenger side)	Short to ground	
B1066		Short to power circuit or open	
B1071	SDM	Internal fault	
B1072	Side sensor (driver side)	Internal fault	
B1073	Side sensor circuit (driver side)	Correspondence abnormality	
B1074	Side sensor (passenger side)	Internal fault	
B1075	Side sensor circuit (passenger side)	Correspondence abnormality	

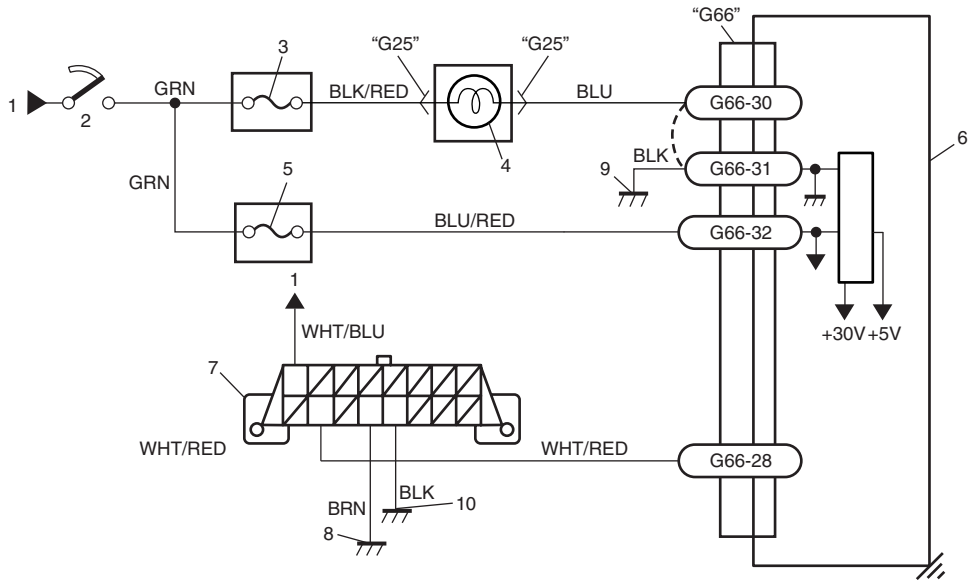
DTC	Diagnosis		
B1081	Side air bag circuit (driver side)	Resistance high	Diagnose trouble according to diagnostic flow table corresponding to each code No.
B1082		Resistance low	
B1083		Short to ground	
B1084		Short to power circuit	
B1085	Side air bag circuit (passenger side)	Resistance high	
B1086		Resistance low	
B1087		Short to ground	
B1088		Short to power circuit	

NOTE:

- **When 2 or more codes are indicated by SUZUKI scan tool (Tech-1A), the lowest numbered code will appear first.**

“AIR BAG” Warning Lamp Comes ON Steady
“AIR BAG” Warning Lamp Does Not Come ON
“AIR BAG” Warning Lamp Flashes

WIRING DIAGRAM



1. From main fuse	5. “AIR BAG” fuse	9. Ground for air bag system
2. Ignition switch	6. SDM	10. Ground on body
3. “METER” fuse	7. DLC	
4. “AIR BAG” warning lamp in combination meter	8. Ground on engine block	

CAUTION:

- **Be sure to perform AIR BAG DIAGNOSTIC SYSTEM CHECK before starting diagnosis according to flow table.**
- **When measurement of resistance or voltage is required in this table, use a specified digital multimeter (refer to SPECIAL TOOL in this section.) along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to INTERMITTENTS AND POOR CONNECTIONS in this section.**
- **If there is open circuit in the air bag wire harness (in instrument panel harness), connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

TABLE TEST DESCRIPTION

"AIR BAG" Warning Lamp Comes ON Steady:

STEP 1 : Check for "AIR BAG" fuse blown.
STEP 2 : Check for loose connection between SDM connector and SDM.
STEP 3 : Check for power supply circuit.
STEP 4 : Check for short circuit between "AIR BAG" warning lamp circuit and ground.

"AIR BAG" Warning Lamp Does Not Come ON:

STEP 1 : Check for combination meter power supply circuit.
STEP 2 : Check for "AIR BAG" warning lamp blown.
STEP 3 : Check for open circuit in "AIR BAG" warning lamp circuit.
STEP 4 : Check for short circuit between "AIR BAG" warning lamp circuit and power supply circuit.

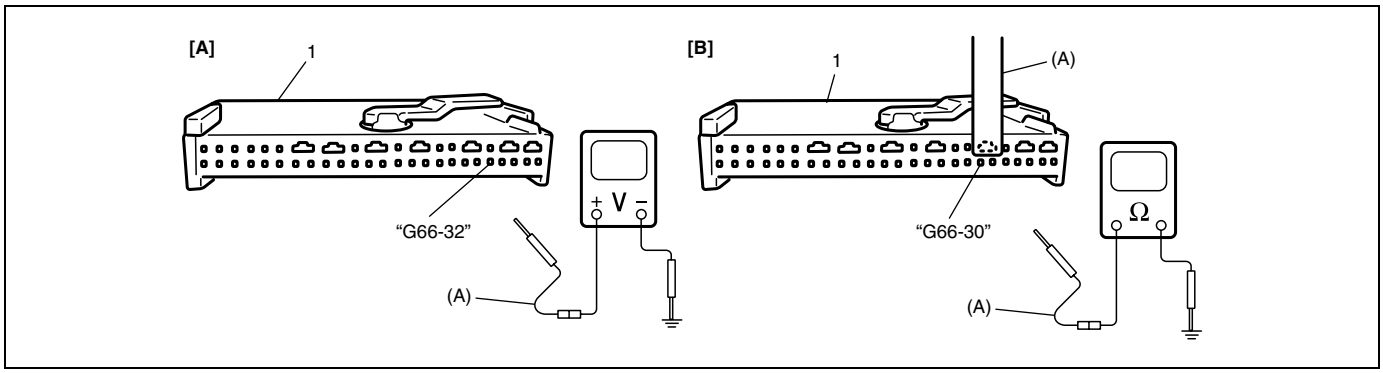
"AIR BAG" Warning Lamp Flashes:

Check for short circuit between SDM terminal and ground.

DIAGNOSTIC FLOW TABLE

"AIR BAG" Warning Lamp Comes ON Steady

Step	Action	Yes	No
1	1) Turn ignition switch to OFF position. 2) Remove and inspect "AIR BAG" fuse. Is fuse good?	Go to step 2.	Clear up short circuit between "BLU/RED" wire and ground. After clearing up, replace "AIR BAG" fuse.
2	1) Check for loose connection between SDM connector "G66" and SDM. Is connection good?	Go to step 3.	Clear up loose connection between SDM connector "G66" and SDM.
3	1) Disconnect SDM connector "G66". 2) Turn ignition switch to ON position. 3) Measure voltage between "G66-32" terminal and body ground. Is it 10 – 14V?	Go to step 4.	Check and clear up the following possible cause. • Open circuit in "BLU/RED" or "GRN" wire. • Short circuit between "GRN" and ground.
4	1) Disconnect "G25" connector from combination meter referring to COMBINATION METER in Section 8. 2) Release shorting bar of "G66-30" terminal inserting release tool (A). 3) Measure resistance between "G66-30" terminal and body ground. Is resistance infinity?	Substitute a known-good SDM and recheck.	Clear up short circuit between "BLU" wire and ground.



[A] : Fig. for Step 3
[B] : Fig. for Step 4
1. SDM connector "G66"

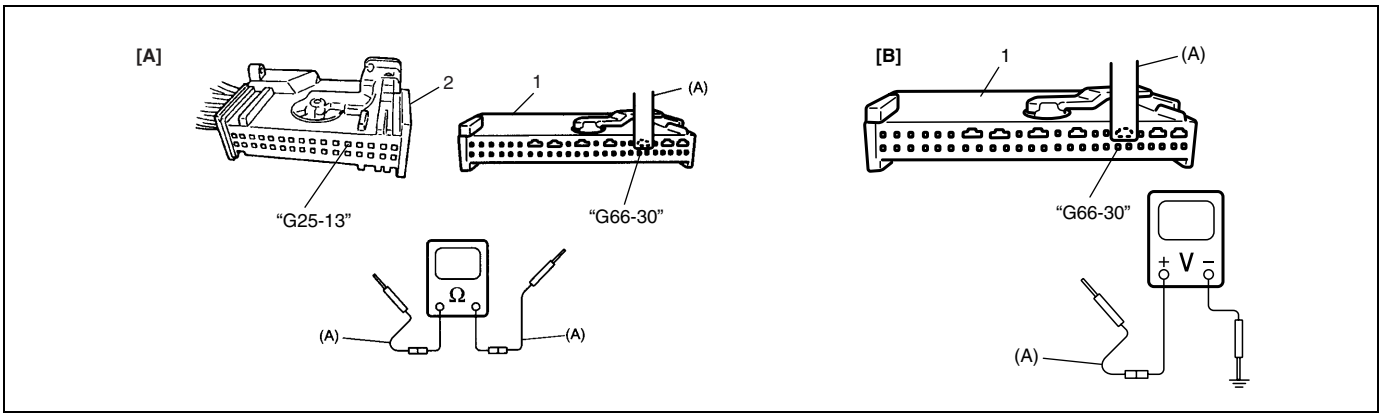
Special tool
(A) : 09932-76010

NOTE:

Upon completion of inspection and repair work, perform the following items.
- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

"AIR BAG" Warning Lamp Does Not Come ON

Step	Action	Yes	No
1	1) Set parking brake. 2) Turn ignition switch to ON position. Does brake system warning light ("BRAKE") come ON?	Go to step 2.	Check and clear up the following possible cause. • Open circuit in "BLK/RED" or "GRN" wire. • Short circuit between "BLK/RED" or "GRN" and ground. • "METER" fuse blown.
2	1) Turn ignition switch to OFF position. 2) Remove combination meter. Refer to COMBINATION METER in Section 8. 3) Remove and inspect "AIR BAG" bulb. Is "AIR BAG" bulb good condition?	Go to step 3.	Replace "AIR BAG" bulb.
3	1) Turn ignition switch to OFF position. 2) Disconnect SDM connector "G66". 3) Release shorting bar of "G66-30" terminal inserting release tool (A). 4) Check continuity between "G25-13" and "G66-30" terminals. Is there any continuity?	Go to step 4.	Clear up open circuit in "BLU" wire.
4	1) With "G25" and "G66" connectors disconnected, turn ignition switch to ON position. 2) Measure voltage between "G66-30" terminal and body ground. Is voltage 0 V?	Substitute a known-good SDM and recheck.	Clear up short circuit between "BLU" wire circuit and power supply circuit.



[A] : Fig. for Step 3	1. SDM connector "G66"
[B] : Fig. for Step 4	2. "G25" connector for combination meter

Special tool
(A) : 09932-76010

NOTE:

Upon completion of inspection and repair work, perform the following items.
- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

"AIR BAG" Warning Lamp Flashes

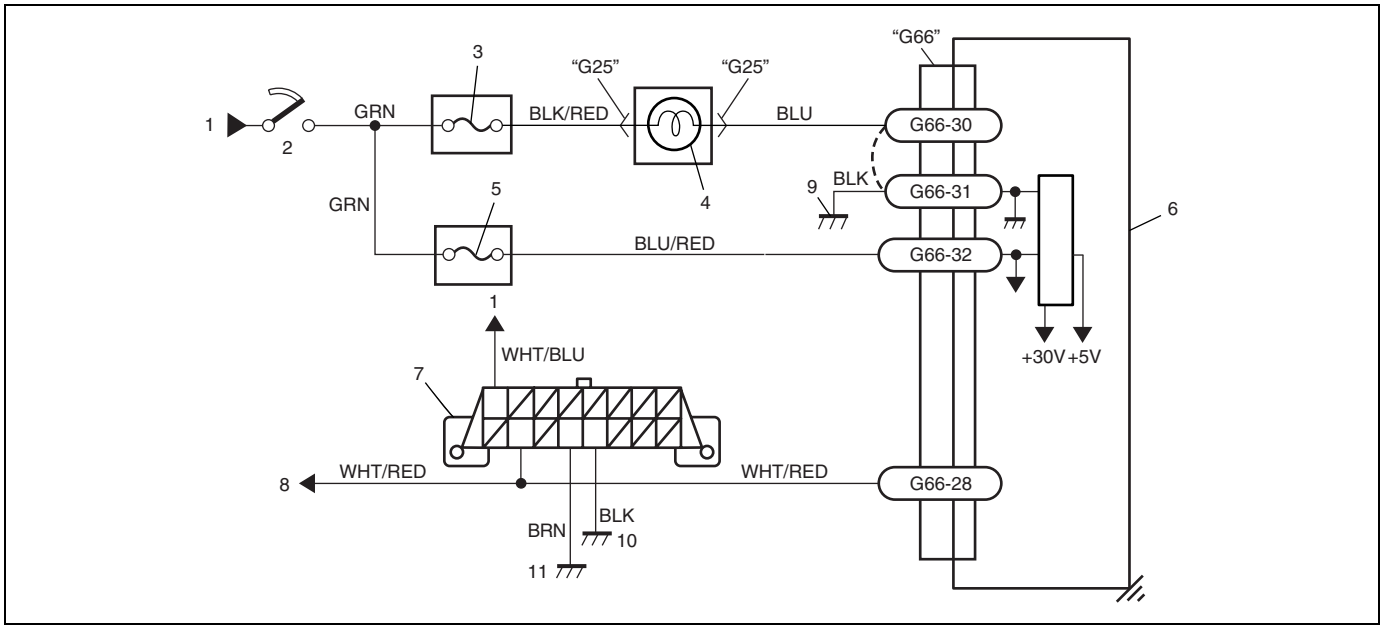
Step	Action	Yes	No
1	1) Check "G66-8" terminal of SDM. Is it shorted to ground terminal or harness?	Clean up terminal.	Substitute a known-good SDM.

NOTE:

Upon completion of inspection and repair work, perform following the items.
- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

SDM Cannot Communicate through the Serial Data Circuit

WIRING DIAGRAM



1. From main fuse	5. "AIR BAG" fuse	9. Ground for air bag system
2. Ignition switch	6. SDM	10. Ground on body
3. "METER" fuse	7. DLC ("G09")	11. Ground on Engine block
4. "AIR BAG" warning lamp in combination meter	8. To ECM, and ABS control module (if equipped)	

CAUTION:

- **Be sure to perform AIR BAG DIAGNOSTIC SYSTEM CHECK before starting diagnosis according to flow table.**
- **When measurement of resistance or voltage is required in this table, use a specified digital multimeter (refer to SPECIAL TOOL in this section.) along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to INTERMITTENTS AND POOR CONNECTIONS in this section.**
- **If there is open circuit in the air bag wire harness (in instrument panel harness), connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

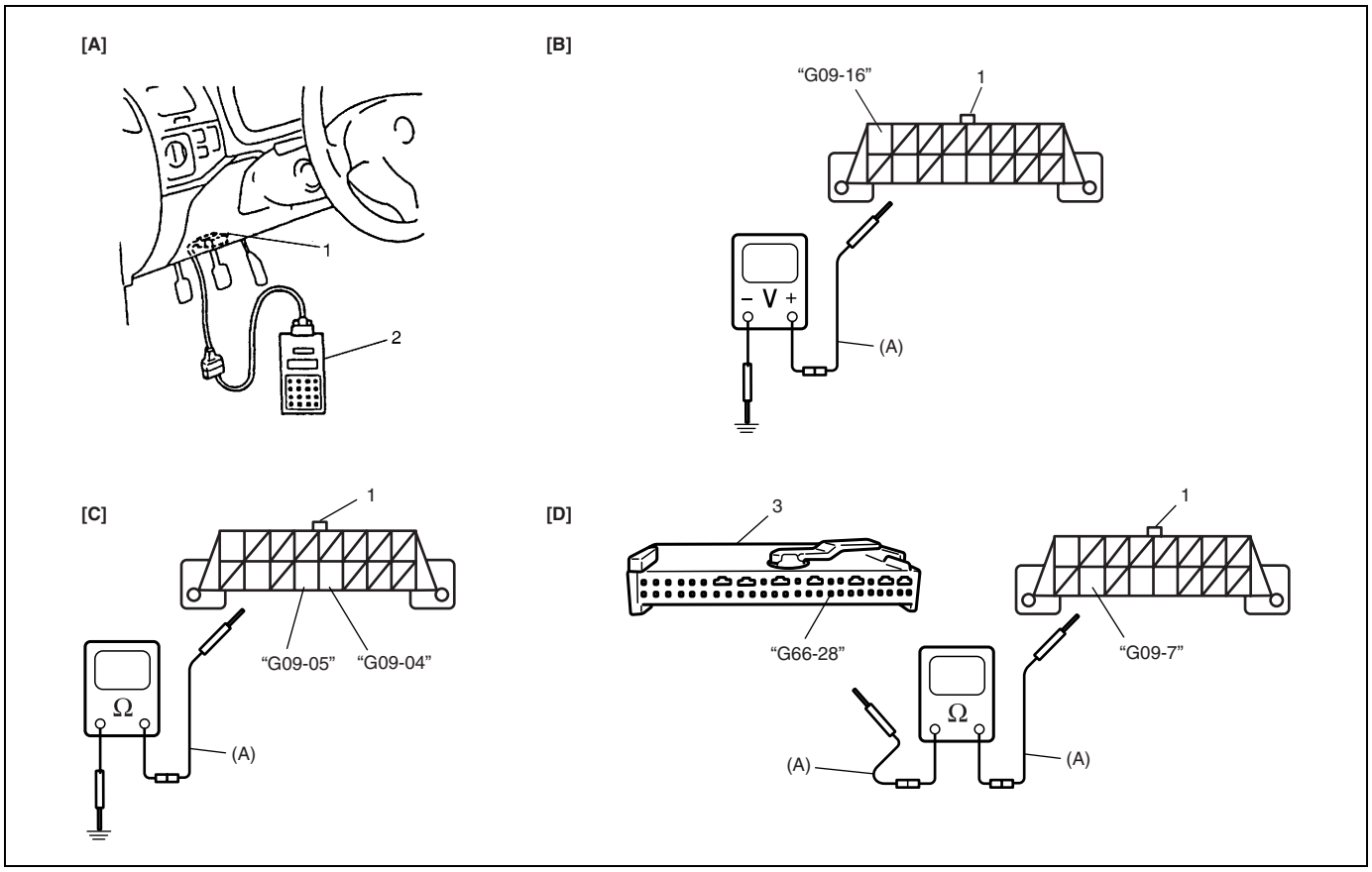
TABLE TEST DESCRIPTION

STEP 1 : An improper connection to the data link connector (DLC) will prevent communications from being established.
STEP 2 : This test checks whether it is possible to communicate with other control module.
STEP 3 : This test checks for an open in serial data power circuit.
STEP 4 : This test checks for an open in serial data ground circuit.
STEP 5 : This test checks for an open in A/B serial data circuit.

DIAGNOSTIC FLOW TABLE

Step	Action	Yes	No
1	1) Make sure that SUZUKI scan tool is free from malfunction and set correctly for air bag system is used. 2) Ignition switch OFF. 3) Check proper connection of SUZUKI scan tool to DLC. Is scan tool connector connected to DLC securely?	Go to step 2.	Properly connect SUZUKI scan tool to DLC.

Step	Action	Yes	No
2	1) Check if communication is possible by trying communication with other control module (ECM or ABS control module (if equipped)). Is it possible to communicate with other control module?	Go to step 3.	Repair open in common section of serial data circuit (“WHT/RED” wire circuit) used by all controllers or short to ground or power circuit which has occurred some-where in serial data circuit (“WHT/RED” wire circuit).
3	1) With ignition switch ON, check voltage between DLC terminal “G09-16” (“WHT/BLU” wire) terminal and body ground. Is voltage 10 – 14 V?	Go to step 4.	Repair open in serial data power circuit (“BLU/WHT” wire circuit).
4	1) Check resistance the following serial data ground circuits. • Between DLC terminal “G09-4” (“BLK” wire) terminal and body ground. • Between DLC terminal “G09-5” (“BRN” wire) terminal and body ground. Are resistances 0 – 1 Ω respectively?	Go to step 5.	Repair open in serial data ground circuit (“BLK” or “BRN” wire circuit).
5	1) With ignition switch OFF, disconnect SDM connector “G66”. 2) Check proper connection at “G66-28” (“WHT/RED” wire) of SDM connector “G66”. 3) If OK, then check resistance between “G66-28” (“WHT/RED”) of SDM connector “G66” and “G09-7” (“WHT/RED”) of DLC “G09”. Is resistance 0 – 1 Ω?	Substitute a known-good SDM and recheck.	Repair high resistance or open in “WHT/RED” wire circuit (between SDM connector terminal “G66-28” and DLC).



[A] : Fig. for Step 1 and 2	1. DLC "G09"
[B] : Fig. for Step 3	2. Scan tool
[C] : Fig. for Step 4	3. SDM connector "G66"
[D] : Fig. for Step 5	

Special tool
(A) : 09932-76010

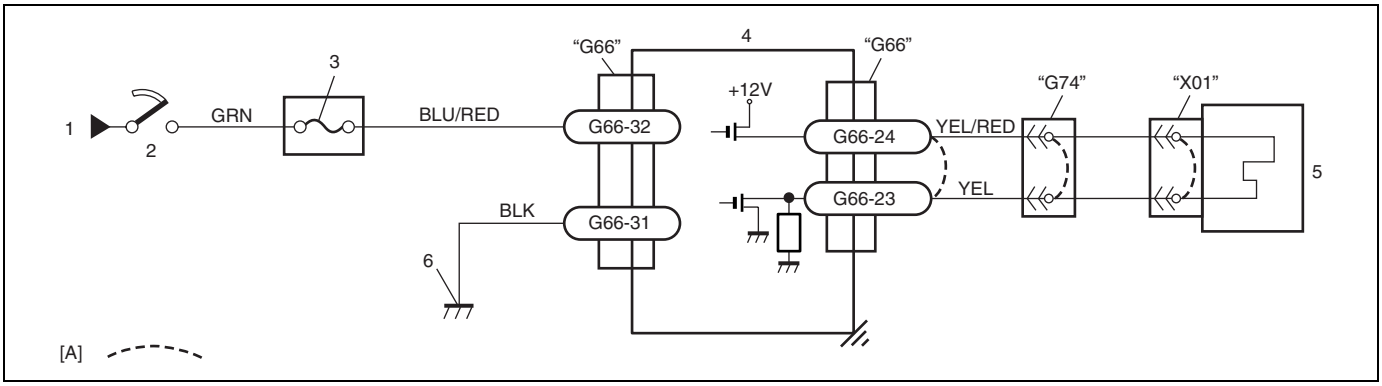
NOTE:

Upon completion of inspection and repair work, perform following items.

- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

DTC B1015 – Passenger Air Bag Initiator Circuit Resistance High
DTC B1016 – Passenger Air Bag Initiator Circuit Resistance Low
DTC B1018 – Passenger Air Bag Initiator Circuit Short to Ground
DTC B1019 – Passenger Air Bag Initiator Circuit Short to Power Circuit

WIRING DIAGRAM



[A]: Shorting bar	2. Ignition switch	4. SDM	6. Ground for air bag system
1. From main fuse	3. "AIR BAG" fuse	5. Passenger air bag (inflator) module	

CAUTION:

- **Be sure to perform AIR BAG DIAGNOSTIC SYSTEM CHECK before starting diagnosis according to flow table.**
- **When measurement of resistance or voltage is required in this table, use a specified digital multimeter (refer to SPECIAL TOOL in this section.) along with a correct terminal adaptor from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to INTERMITTENTS AND POOR CONNECTIONS in this section.**
- **If there is open circuit in the air bag wire harness (in instrument panel harness), connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

DTC WILL SET WHEN

DTC B1015 :

The combined resistance of the passenger air bag (inflator) module, harness wiring and connector terminal contact is above a specified value for specified time.

DTC B1016 :

The combined resistance of the passenger air bag (inflator) module, harness wiring and connector terminal contact is below a specified value for specified time.

DTC B1018 :

The voltage measured at passenger air bag initiator circuit is below a specified value for specified time.

DTC B1019 :

The voltage measured at passenger air bag initiator circuit is above a specified value for specified time.

TABLE TEST DESCRIPTION

DTC B1015, B1016, B1018 or B1019 :

STEP 1 : Check whether malfunction is in passenger air bag (inflator) module.

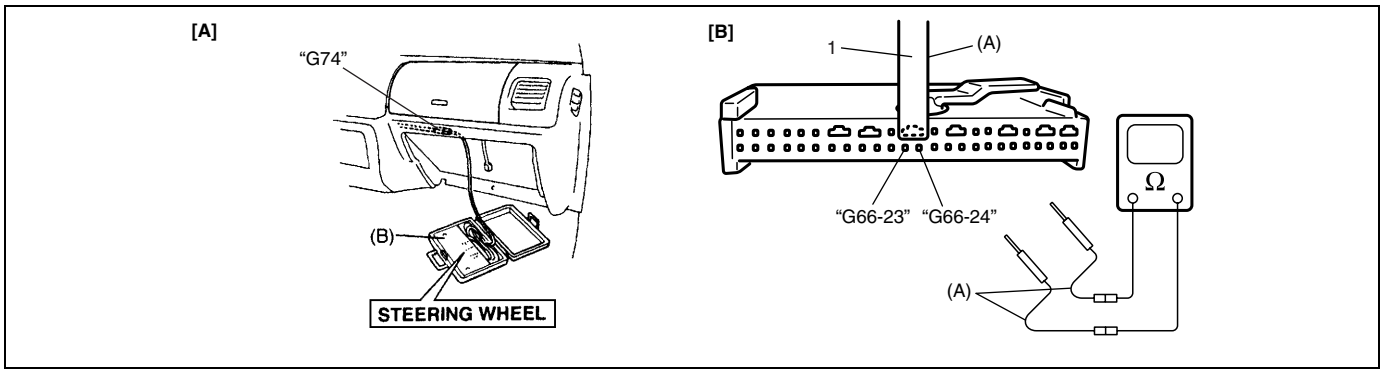
STEP 2 : Check passenger air bag (inflator) module initiator circuit in air bag harness (in instrument panel harness).

STEP 3 : Check passenger air bag (inflator) module initiator circuit in air bag harness (in instrument panel harness). (for DTC B1018 and B1019 only)

DIAGNOSTIC FLOW TABLE

DTC B1015 : Passenger Air Bag Initiator Circuit Resistance High

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect passenger air bag (inflator) module connector “G74” behind the glove box. 2) Check proper connection to passenger air bag (inflator) module at terminals in “G74” connector. 3) If OK, then connect Special Tool (B) to passenger air bag (inflator) module connector “G74” disconnected at the step 1). With ignition switch ON, is DTC B1015 current?	Go to step 2.	Ignition switch OFF. Replace passenger air bag (inflator) module (Refer to PASSENGER AIR BAG (INFLATOR) MODULE in this section).
2	1) With ignition switch OFF, disconnect SDM connector “G66”. 2) Check proper connection to SDM connector “G66“ at terminals “G66-24” and “G66-23”. 3) If OK, release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 4) Measure resistance between “G66-24” and “G66-23” terminals with Special Tool (B) connected to “G74” connector. Is resistance 3.8 Ω or less?	Substitute a known-good SDM and recheck.	Repair high resistance or open in “YEL/RED” or “YEL” wire circuit.



[A] : Fig. for STEP 1 and 2	1. Release tool
[B] : Fig. for STEP 2	2. SDM connector “G66”

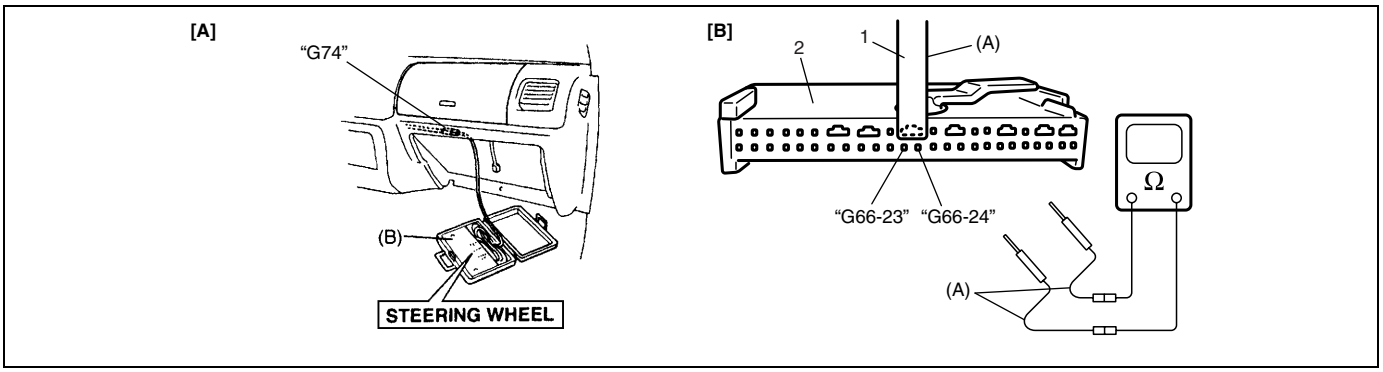
Special tool
(A) : 09932-76010
(B) : 09932-75010

NOTE:

Upon completion of inspection and repair work, perform the following items.
- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear diagnostic trouble codes (Refer to DTC CLEARANCE), if any.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

DTC B1016 : Passenger Air Bag Initiator Circuit Resistance Low

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect passenger air bag (inflator) module connector “G74” behind the glove box. 2) Check proper connection to passenger air bag (inflator) module at terminals in “G74” connector. 3) If OK, then connect Special Tool (B) to passenger air bag (inflator) module connector disconnected at the step 1). With ignition switch ON, is DTC B1016 current?	Go to step 2.	Ignition switch OFF. Replace passenger air bag (inflator) module (Refer to PASSENGER AIR BAG (INFLATOR) MODULE in this section).
2	1) With ignition switch OFF, disconnect SDM connector “G66”. 2) Check proper connection to SDM at terminals “G66-24” and “G66-23”. 3) If OK, release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 4) Measure resistance between “G66-24” and “G66-23” terminals with Special Tool (B) connected to “G74” connector. Is resistance 1.2 Ω or more?	Substitute a known-good SDM and recheck.	Repair short from “YEL/RED” wire circuit to “YEL” wire circuit or from “YEL/RED” or “YEL” wire circuit to other wire circuit.



[A] : Fig. for STEP 1 and 2	1. Release tool
[B] : Fig. for STEP 2	2. SDM connector “G66”

Special tool
(A) : 09932-76010
(B) : 09932-75010

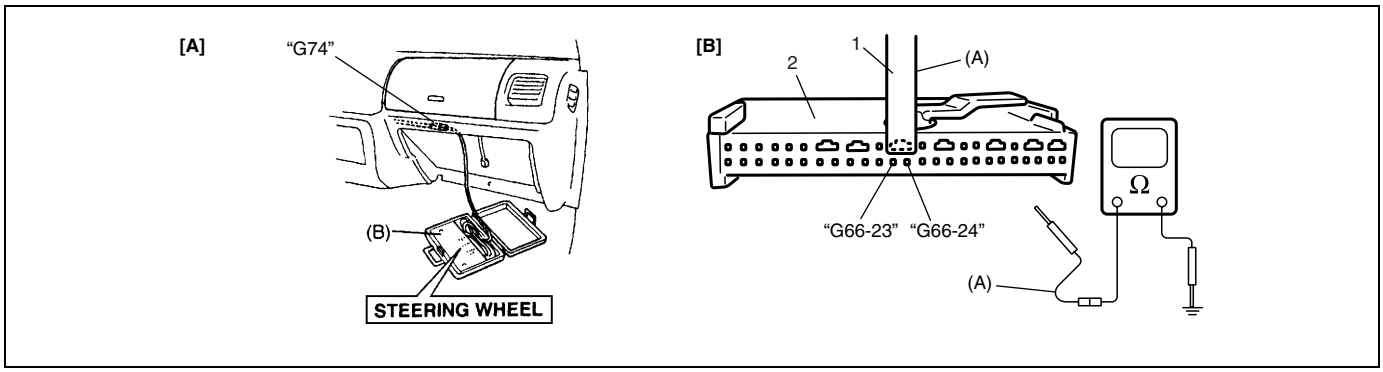
NOTE:

Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear diagnostic trouble codes (Refer to DTC CLEARANCE), if any.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

DTC B1018 : Passenger Air Bag Initiator Circuit Short to Ground

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect passenger air bag (inflator) module connector “G74” behind the glove box. 2) Check proper connection to passenger air bag (inflator) module at terminals in “G74” connector. 3) If OK, then connect Special Tool (B) to passenger air bag (inflator) module connector “G74” disconnected at the step 1). With ignition switch ON, is DTC B1018 current?	Go to step 2.	Ignition switch OFF. Replace passenger air bag (inflator) module (Refer to PASSENGER AIR BAG (INFLATOR) MODULE in this section).
2	1) With ignition switch OFF, disconnect Special Tool (B) from “G74” connector and SDM connector “G66” from SDM respectively. 2) Release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 3) Measure resistance between “G66-24” terminal and body ground. Is resistance infinity?	Go to step 3.	Repair short from “YEL/RED” wire circuit to ground.
3	1) Measure resistance between “G66-23” terminal and body ground. Is resistance infinity?	Substitute a known-good SDM and recheck.	Repair short from “YEL” wire circuit to ground.



[A] : Fig. for STEP 1, 2 and 3	1. Release tool
[B] : Fig. for STEP 2 and 3	2. SDM connector “G66”

Special tool
(A) : 09932-76010
(B) : 09932-75010

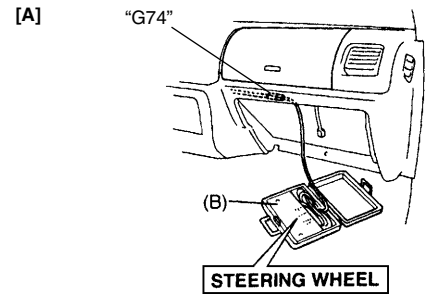
NOTE:

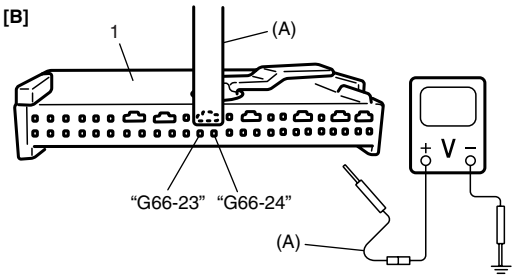
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear diagnostic trouble codes (Refer to DTC CLEARANCE), if any.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

DTC B1019 : Passenger Air Bag Initiator Circuit Short to Power Circuit

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect passenger air bag (inflator) module connector “G74” behind the glove box. 2) Check proper connection to passenger air bag (inflator) module at terminals in “G74” connector. 3) If OK, then connect Special Tool (B) to passenger air bag (inflator) module connector “G74” disconnected at the step 1). With ignition switch ON, is DTC B1019 current?	Go to step 2.	Ignition switch OFF. Replace passenger air bag (inflator) module (Refer to PASSENGER AIR BAG (INFLATOR) MODULE in this section).
2	1) With ignition switch OFF, disconnect Special Tool (B) from “G74” connector and SDM connector “G66” from SDM respectively. 2) Release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 3) Measure voltage from “G66-24” terminal to body ground. With ignition switch ON, is voltage 0 – 1 V?	Go to step 3.	Repair short from “YEL/RED” wire circuit to power circuit.
3	1) Measure voltage from “G66-23” terminal to body ground. With ignition switch ON, is voltage 0 – 1 V?	Substitute a known-good SDM and recheck.	Repair short from “YEL” wire circuit to power circuit.





[A] : Fig. for STEP 1, 2 and 3	1. SDM connector “G66”
[B] : Fig. for STEP 2 and 3	

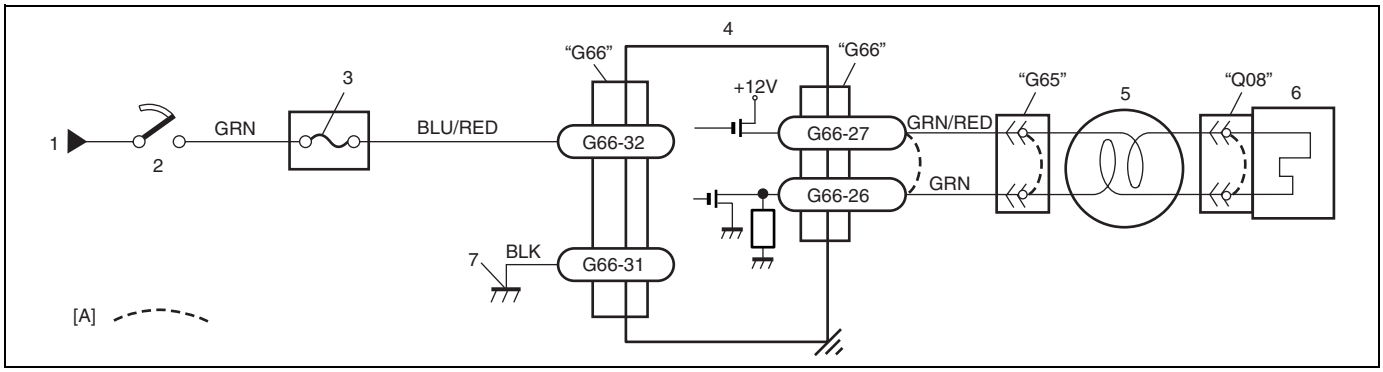
Special tool
(A) : 09932-76010
(B) : 09932-75010

NOTE:

Upon completion of inspection and repair work, perform the following items.
- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear diagnostic trouble codes (Refer to DTC CLEARANCE), if any.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

DTC B1021 – Driver Air Bag Initiator Circuit Resistance High
DTC B1022 – Driver Air Bag Initiator Circuit Resistance Low
DTC B1024 – Driver Air Bag Initiator Circuit Short to Ground
DTC B1025 – Driver Air Bag Initiator Circuit Short to Power Circuit

WIRING DIAGRAM



[A] : Shorting bar	3. "AIR BAG" fuse	6. Driver air bag (inflator) module
1. From main fuse	4. SDM	7. Ground for air bag system
2. Ignition switch	5. Contact coil assembly	

CAUTION:

Be sure to perform AIR BAG DIAGNOSTIC SYSTEM CHECK before starting diagnosis according to flow table.

- **When measurement of resistance or voltage is required in this table, use a specified digital multimeter (refer to SPECIAL TOOL in this section.) along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to INTERMITTENTS AND POOR CONNECTIONS in this section.**
- **If there is open circuit in the air bag wire harness (in instrument panel harness), connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

DTC WILL SET WHEN

DTC B1021 :

The combined resistance of the driver air bag (inflator) module, contact coil assembly, harness wiring and connector terminal contact is above a specified value for specified time.

DTC B1022 :

The combined resistance of the driver air bag (inflator) module, contact coil assembly, harness wiring and connector terminal contact is below a specified value for specified time.

DTC B1024 :

The voltage measured at driver air bag initiator circuit is below a specified value for specified time.

DTC B1025 :

The voltage measured at driver air bag initiator circuit is above a specified value for specified time.

TABLE TEST DESCRIPTION

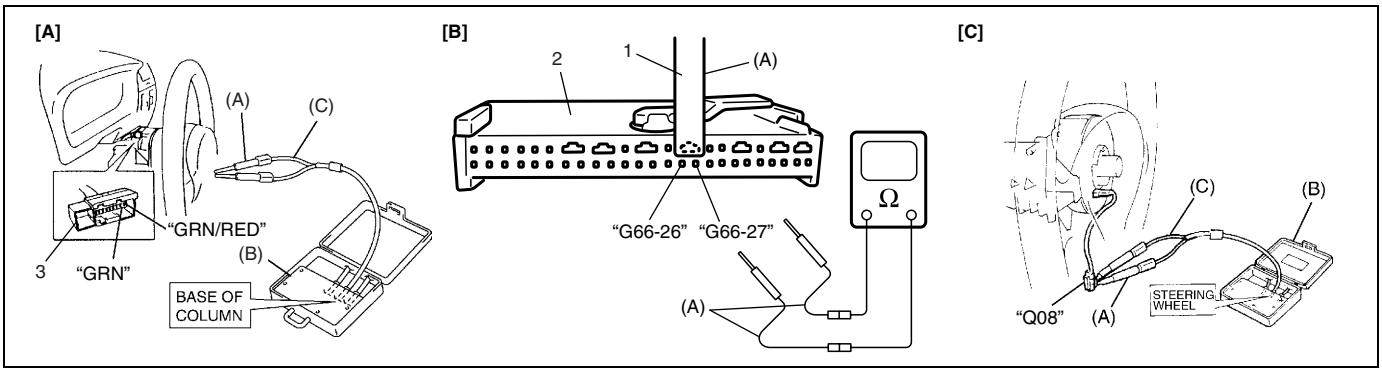
DTC B1021, B1022, B1024 or B1025 :

STEP 1 : Check whether malfunction is in contact coil and driver air bag (inflator) module or the others.
STEP 2 : Check driver air bag (inflator) module initiator circuit in instrument panel harness.
STEP 3 : Check whether malfunction is in contact coil or driver air bag (inflator) module.

DIAGNOSTIC FLOW TABLE

DTC B1021 : Driver Air Bag Initiator Circuit Resistance High

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect contact coil connector “G65” behind steering wheel. 2) Check proper connection to contact coil at terminals in “G65” connector. 3) If OK, then connect Special Tools (B) and (C) to contact coil connector “G65” disconnected at step 1). With ignition switch ON, is DTC B1021 current?	Go to step 2.	Go to step 3.
2	1) With ignition switch OFF, disconnect SDM connector “G66”. 2) Check proper connection to SDM at terminals “G66-27” and “G66-26”. 3) If OK, release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 4) Measure resistance between “G66-27” and “G66-26” terminals with connected Special Tools (B) and (C) to “G65” connector. Is resistance 5.1 Ω or less?	Substitute a known-good SDM and recheck.	Repair high resistance or open in “GRN/RED” or “GRN” wire circuit.
3	1) With ignition switch OFF, disconnect Special Tools (B) and (C) from “G65” connector, then reconnect contact coil connector “G65” as it was. 2) Remove driver air bag (inflator) module from steering wheel (Refer to DRIVER AIR BAG (INFLATOR) MODULE in Section 3C). 3) Check proper connection to driver air bag (inflator) module at terminals in “Q08” connector. 4) If OK, then connect Special Tools (B) and (C) to “Q08” connector. With ignition switch ON, is DTC B1021 current?	Ignition switch OFF. Replace contact coil assembly (Refer to COMBINATION SWITCH/CONTACT COIL AND COMBINATION SWITCH ASSEMBLY in Section 3).	Ignition switch OFF. Replace driver air bag (inflator) module (Refer to DRIVER AIR BAG (INFLATOR) MODULE in Section 3).



[A] : Fig. for STEP 1 and 2	1. Release tool
[B] : Fig. for STEP 2	2. SDM connector “G66”
[C] : Fig. for STEP 3	3. Contact coil connector “G65”

Special tool
(A) : 09932-76010
(B) : 09932-75010
(C) : 09932-78310

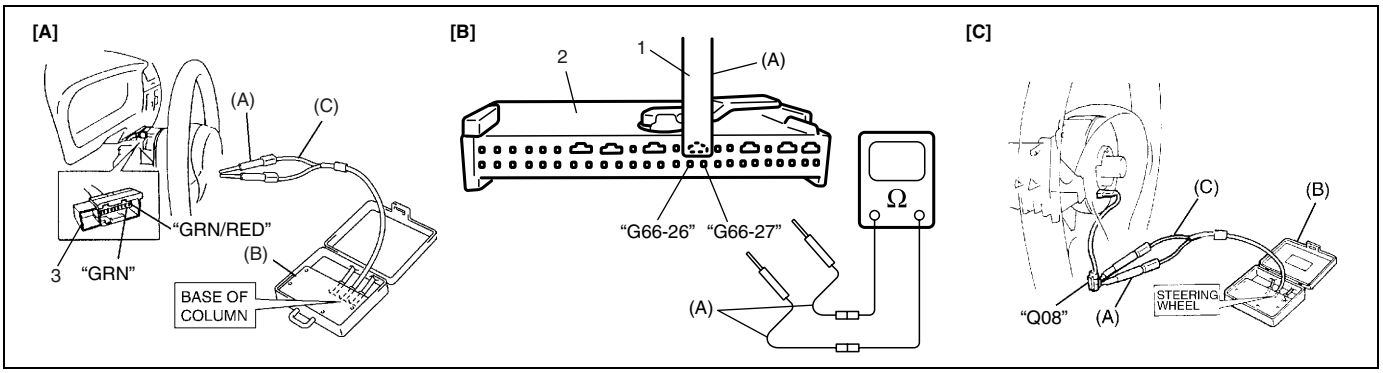
NOTE:

Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear diagnostic trouble codes (Refer to DTC CLEARANCE), if any.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

DTC B1022 : Driver Air Bag Initiator Circuit Resistance Low

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect contact coil connector "G65" behind steering wheel. 2) Check proper connection to contact coil at terminals in "G65" connector. 3) If OK, then connect Special Tools (B) and (C) to contact coil connector "G65" disconnected at step 1). With ignition switch ON, is DTC B1022 current?	Go to step 2.	Go to step 3.
2	1) With ignition switch OFF, disconnect SDM connector "G66". 2) Check proper connection to SDM at terminals "G66-27" and "G66-26". 3) If OK, release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 4) Measure resistance between "G66-27" and "G66-26" terminals with connected Special Tools (B) and (C) to "G65" connector. Is resistance 1.8 Ω or more?	Substitute a known-good SDM and recheck.	Repair short from "GRN/RED" wire circuit to "GRN" wire circuit or from "GRN/RED" or "GRN" wire circuit to other wire circuit.
3	1) With ignition switch OFF, disconnect Special Tools (B) and (C) from "G65" connector, then reconnect contact coil connector "G65" as it was. 2) Remove driver air bag (inflator) module from steering wheel (Refer to DRIVER AIR BAG (INFLATOR) MODULE in Section 3C). 3) Check proper connection to driver air bag (inflator) module at terminals in "Q08" connector. 4) If OK, then connect Special Tools (B) and (C) to "Q08" connector. With ignition switch ON, is DTC B1022 current?	Ignition switch OFF. Replace contact coil assembly (Refer to COMBINATION SWITCH/ CONTACT COIL AND COMBINATION SWITCH ASSEMBLY in Section 3).	Ignition switch OFF. Replace driver air bag (inflator) module (Refer to DRIVER AIR BAG (INFLATOR) MODULE in Section 3).



[A] : Fig. for STEP 1 and 2	1. Release tool
[B] : Fig. for STEP 2	2. SDM connector "G66"
[C] : Fig. for STEP 3	3. Contact coil connector "G65"

Special tool
(A) : 09932-76010
(B) : 09932-75010
(C) : 09932-78310

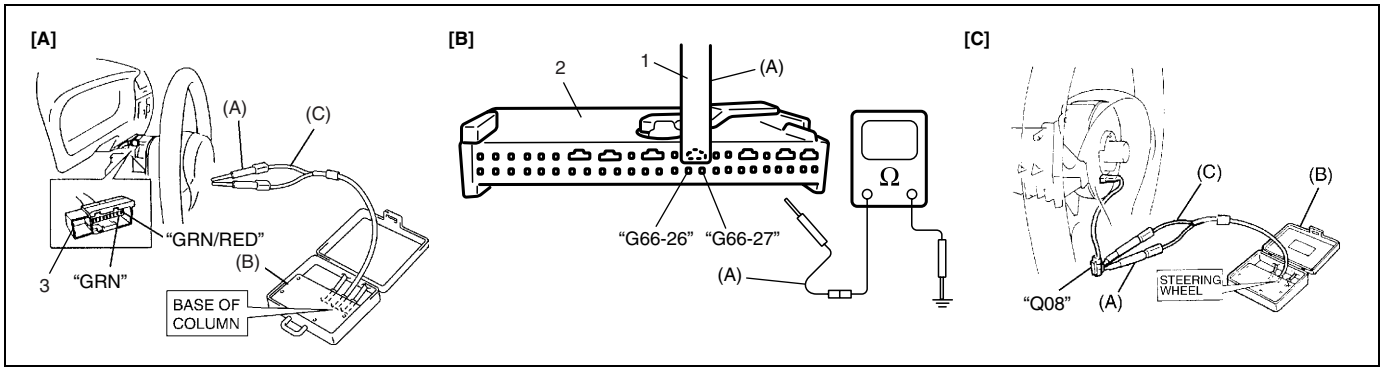
NOTE:

Upon completion of inspection and repair work, perform the following items.
- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear diagnostic trouble codes (Refer to DTC CLEARANCE), if any.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

DTC B1024 : Driver Air Bag Initiator Circuit Short to Ground

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect contact coil connector "G65" behind steering wheel. 2) Check proper connection to contact coil at terminals in "G65" connector. 3) If OK, then connect Special Tool (B) and (C) to contact coil connector "G65" disconnected at step 1). With ignition switch ON, is DTC B1024 current?	Go to step 2.	Go to step 3.
2	1) With ignition switch OFF, disconnect Special Tools (B) and (C) from "G65" connector. 2) Disconnect SDM connector "G66" from SDM. 3) Release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 4) Measure resistance between "G66-27" terminal and body ground and between "G66-26" terminal and body ground. Are they infinity?	Substitute a known-good SDM and recheck.	Repair short from "GRN/RED" or "GRN" wire circuit to ground.

Step	Action	Yes	No
3	1) With ignition switch OFF, disconnect Special Tools (B) and (C) from "G65" connector, then reconnect contact coil connector "G65" as it was. 2) Remove driver air bag (inflator) module from steering wheel (Refer to DRIVER AIR BAG (INFLATOR) MODULE in Section 3C). 3) Check proper connection to driver air bag (inflator) module at terminals in "Q08" connector. 4) If OK, then connect Special Tools (B) and (C) to "Q08" connector. With ignition switch ON, is DTC B1024 current?	Ignition switch OFF. Replace contact coil assembly (Refer to COMBINATION SWITCH/CONTACT COIL AND COMBINATION SWITCH ASSEMBLY in Section 3).	Ignition switch OFF. Replace driver air bag (inflator) module (Refer to DRIVER AIR BAG (INFLATOR) MODULE in Section 3).



[A] : Fig. for STEP 1 and 2	1. Release tool
[B] : Fig. for STEP 2	2. SDM connector "G66"
[C] : Fig. for STEP 3	3. Contact coil connector "G65"

Special tool
(A) : 09932-76010
(B) : 09932-75010
(C) : 09932-78310

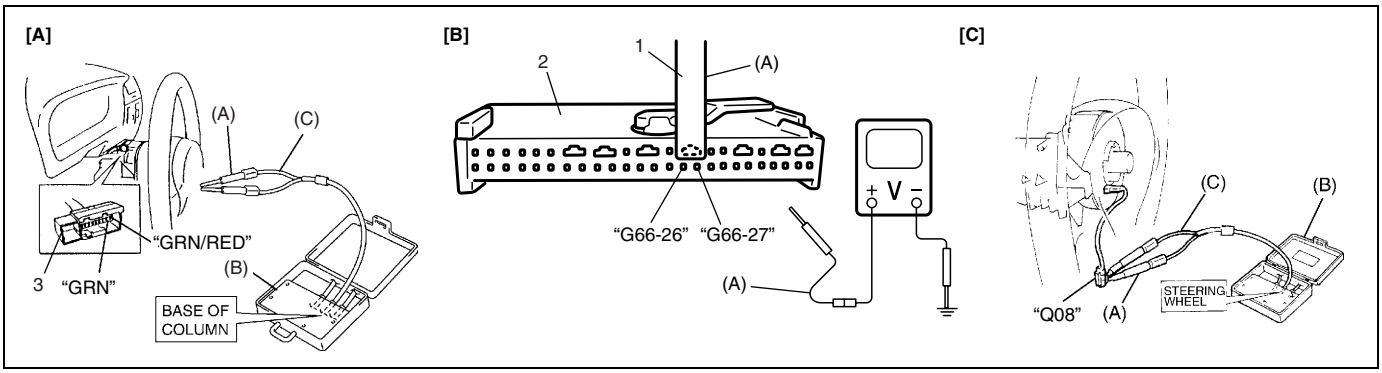
NOTE:

Upon completion of inspection and repair work, perform the following items.
- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear diagnostic trouble codes (Refer to DTC CLEARANCE), if any.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

DTC B1025 : Driver Air Bag Initiator Circuit Short to Power Circuit

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect contact coil connector "G65" behind steering wheel. 2) Check proper connection to contact coil at terminals in "G65" connector. 3) If OK, then connect Special Tools (B) and (C) to contact coil connector "G65" disconnected at step 1). With ignition switch ON, is DTC B1025 current?	Go to step 2.	Go to step 3.

Step	Action	Yes	No
2	1) With ignition switch OFF, disconnect Special Tools (B) and (C) from “G65” connector. 2) Disconnect SDM connector “G66” from SDM. 3) Release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 4) Measure voltage from “G66-27” terminal to body ground and from “G66-26” terminal to body ground. With ignition switch ON, are they 0 – 1V?	Substitute a known-good SDM and recheck.	Repair short from “GRN/RED” or “GRN” wire circuit to power circuit.
3	1) With ignition switch OFF, disconnect Special Tools (B) and (C) from “G65” connector, then reconnect contact coil connector “G65” as it was. 2) Remove driver air bag (inflator) module from steering wheel (Refer to DRIVER AIR BAG (INFLATOR) MODULE in Section 3C). 3) Check proper connection to driver air bag (inflator) module at terminals in “Q08” connector. 4) If OK, then connect Special Tools (B) and (C) to “Q08” connector. With ignition switch ON, is DTC B1025 current?	Ignition switch OFF. Replace contact coil assembly (Refer to COMBINATION SWITCH/ CONTACT COIL AND COMBINATION SWITCH ASSEMBLY in Section 3).	Ignition switch OFF. Replace driver air bag (inflator) module (Refer to DRIVER AIR BAG (INFLATOR) MODULE in Section 3).



[A] : Fig. for STEP 1 and 2	1. Release tool
[B] : Fig. for STEP 2	2. SDM connector “G66”
[C] : Fig. for STEP 3	3. Contact coil connector “G65”

Special tool
(A) : 09932-76010
(B) : 09932-75010
(C) : 09932-78310

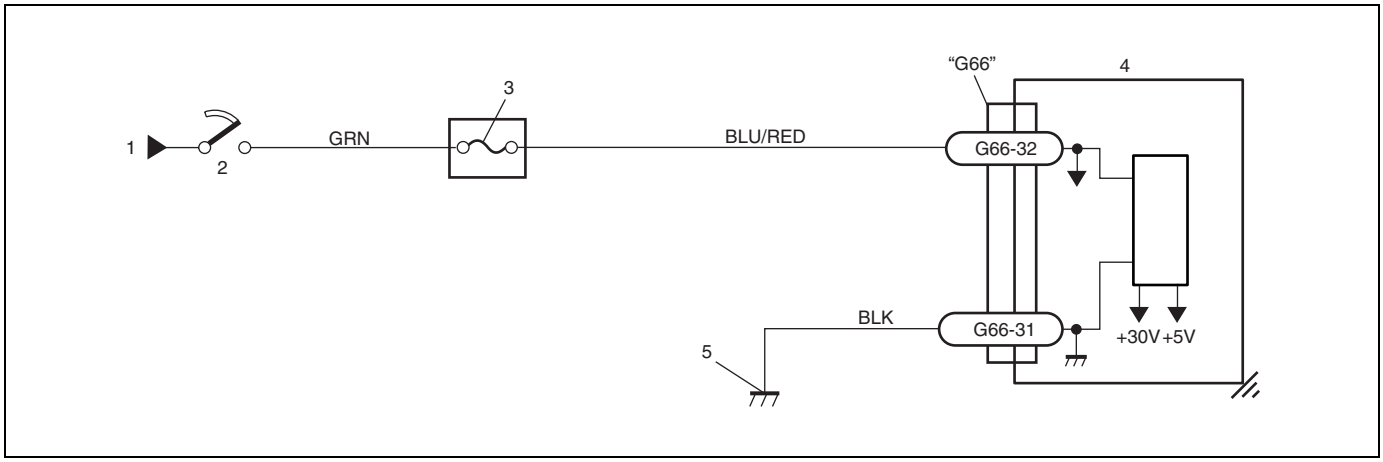
NOTE:

Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear diagnostic trouble codes (Refer to DTC CLEARANCE), if any.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

DTC B1031 – Power Source Voltage High
DTC B1032 – Power Source Voltage Low

WIRING DIAGRAM



1. From main fuse	3. "AIR BAG" fuse	5. Ground for air bag system
2. Ignition switch	4. SDM	

CAUTION:

- **Be sure to perform AIR BAG DIAGNOSTIC SYSTEM CHECK before starting diagnosis according to flow table.**
- **When measurement of resistance or voltage is required in this table, use a specified digital multimeter (refer to SPECIAL TOOL in this section.) along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to INTERMITTENTS AND POOR CONNECTIONS in this section.**
- **If there is open circuit in the air bag wire harness (in instrument panel harness), connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

DTC WILL SET WHEN

DTC B1031 :

The power source voltage to SDM is above specified value for specified time.

DTC B1032 :

The power source voltage is below an approx. 8V for specified time.

TABLE TEST DESCRIPTION

DTC B1031 :

STEP 1 : Check if voltage applied to SDM is within normal range.
STEP 2 : Check if DTC B1031 still exists.

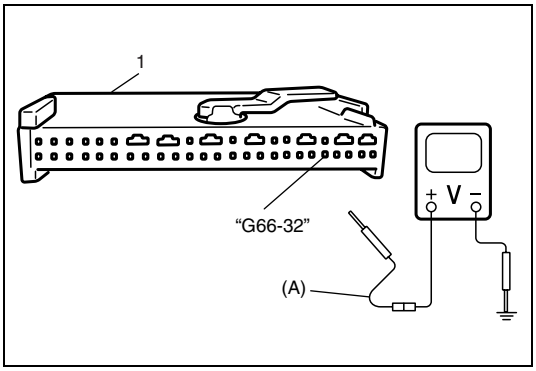
DTC B1032 :

STEP 1 : Check if voltage on battery is within normal range.
STEP 2 : Check if voltage applied to SDM is within normal range.
STEP 3 : Check if DTC B1032 still exists.

DIAGNOSTIC FLOW TABLE

DTC B1031 : Power Source Voltage High

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect SDM connector “G66” 2) Check proper connection to SDM at “G66-32” terminal. 3) If OK, then ignition switch ON, and then check voltage from “G66-32” terminal in SDM connector “G66” to body ground. Is voltage 14 V or less?	Go to step 2.	Check Charging System and repair as necessary. (Refer to DIAGNOSIS in Section 6H.)
2	1) With ignition switch OFF, disconnect SDM connector “G66”. With ignition switch ON, is DTC B1031 current?	Substitute a known-good SDM and recheck.	Check Charging System and repair as necessary. (Refer to DIAGNOSIS in Section 6H.)



1. SDM connector “G66”

Special tool
(A) : 09932-76010

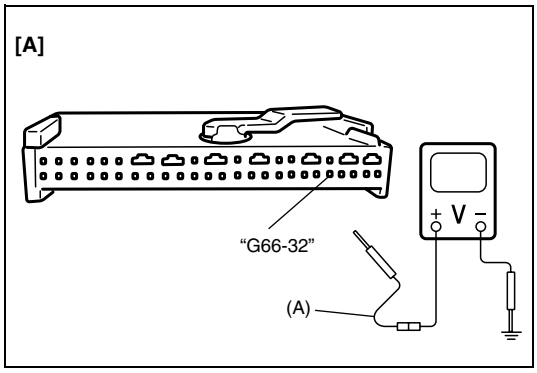
NOTE:

Upon completion of inspection and repair work, perform the following items.
- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear diagnostic trouble codes (Refer to DTC CLEARANCE), if any.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

DTC B1032 : Power Source Voltage Low

Step	Action	Yes	No
1	1) Measure voltage on battery. Is voltage 11 V or more?	Go to Step 2.	Check Charging System and repair as necessary. (Refer to DIAGNOSIS in Section 6H.)

2	1) With ignition switch OFF, disconnect SDM connector “G66”. 2) Check proper connection to SDM at “G66-32” terminal. 3) If OK, then ignition switch ON, and then check voltage from “G66-32” terminal in SDM connector to body ground. Is voltage 8 V or more?	Go to Step 3.	Check Charging System and repair as necessary. (Refer to DIAGNOSIS in Section 6H.)
3	1) With ignition switch OFF, reconnect SDM connector “G66”. With ignition switch ON, is DTC B1032 current?	Substitute a known-good SDM and recheck.	Check Charging System and repair as necessary. (Refer to DIAGNOSIS in Section 6H.)



[A] : Fig. for STEP 2
1. SDM connector “G66”

Special tool
(A) : 09932-76010

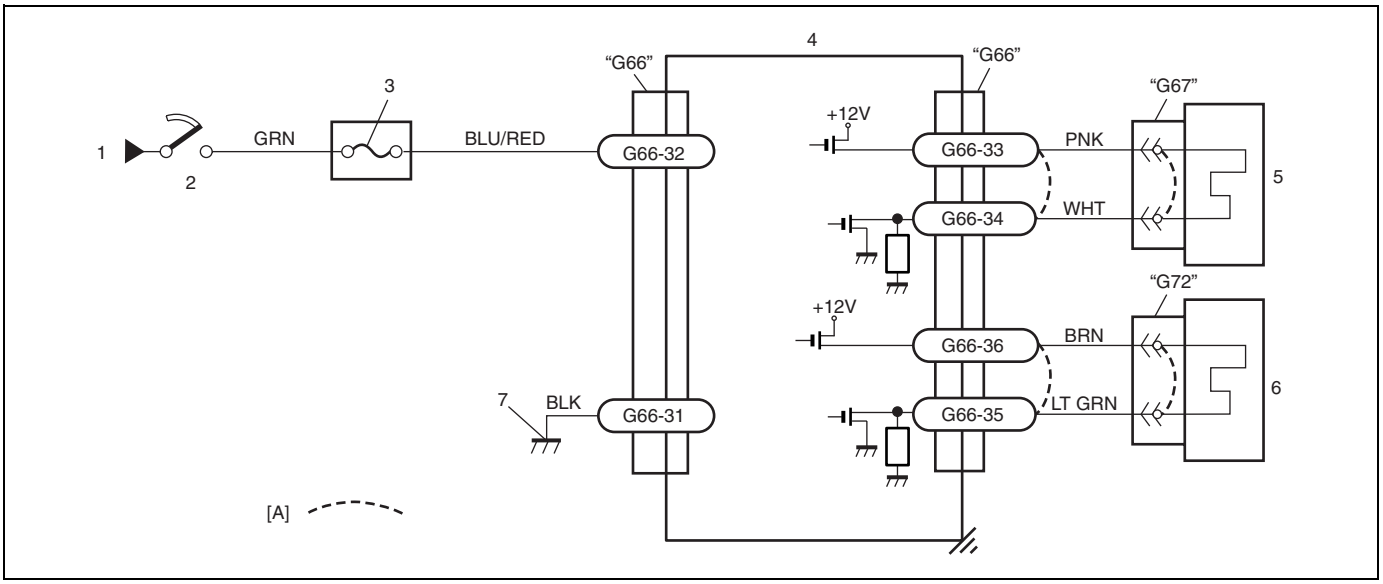
NOTE:

Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear diagnostic trouble codes (Refer to DTC CLEARANCE), if any.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

DTC B1041 – Driver Pretensioner Initiator Circuit Resistance High
DTC B1042 – Driver Pretensioner Initiator Circuit Resistance Low
DTC B1043 – Driver Pretensioner Initiator Circuit Short to Ground
DTC B1044 – Driver Pretensioner Initiator Circuit Short to Power Circuit
DTC B1045 – Passenger Pretensioner Initiator Circuit Resistance High
DTC B1046 – Passenger Pretensioner Initiator Circuit Resistance Low
DTC B1047 – Passenger Pretensioner Initiator Circuit Short to Ground
DTC B1048 – Passenger Pretensioner Initiator Circuit Short to Power Circuit

WIRING DIAGRAM



[A] : Shorting bar	3. "AIR BAG" fuse	6. Passenger seat belt pretensioner
1. From main fuse	4. SDM	7. Ground for air bag system
2. Ignition switch	5. Driver seat belt pretensioner	

CAUTION:

- **Be sure to perform AIR BAG DIAGNOSTIC SYSTEM CHECK before starting diagnosis according to flow table.**
- **When measurement of resistance or voltage is required in this table, use a specified digital multimeter (refer to SPECIAL TOOL in this section.) along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to INTERMITTENTS AND POOR CONNECTIONS in this section.**
- **If there is open circuit in the air bag wire harness (in instrument panel harness), connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

DTC WILL SET WHEN

DTC B1041 or B1045 :

The resistance of driver or passenger seat belt pretensioner initiator circuit is above a specified value for specified time.

DTC B1042 or B1046 :

The resistance of driver or passenger seat belt pretensioner initiator circuit is below a specified value for specified time.

DTC B1043 or B1047 :

The voltage measured at driver or passenger seat belt pretensioner initiator circuit is below a specified value for specified time.

DTC B1044 or B1048 :

The voltage measured at driver or passenger seat belt pretensioner initiator circuit is above a specified value for specified time.

TABLE TEST DESCRIPTION

DTC B1041, B1042, B1043, B1044, B1045, B1046, B1047 or B1048 :

STEP 1 : Check whether malfunction is in seat belt pretensioner.

STEP 2 : Check seat belt pretensioner initiator circuit in instrument panel harness.

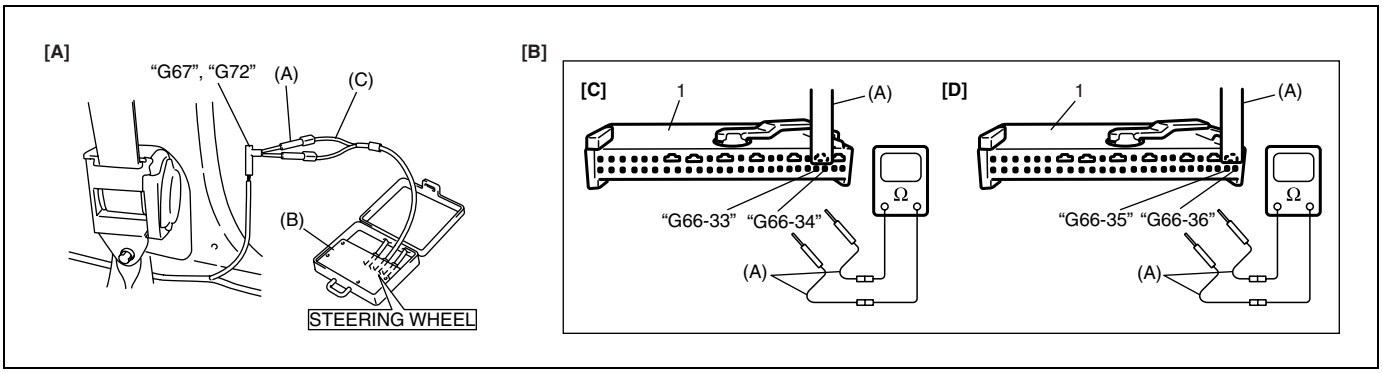
DIAGNOSTIC FLOW TABLE

DTC B1041 : Driver Pretensioner Initiator Circuit Resistance High

DTC B1045 : Passenger Pretensioner Initiator Circuit Resistance High

Step	Action	Yes	No
1	1) With ignition switch OFF, remove center pillar inner garnish of applicable side then disconnect seat belt pretensioner connector “G67” or “G72”. 2) Check proper connection to applicable seat belt pretensioner at terminals in “G67” or “G72” connector. 3) If OK, then connect Special Tools (A), (B) and (C) to seat belt pretensioner connector disconnected at the step 1). With ignition switch ON, is DTC B1041 or B1045 still current?	Go to step 2.	Ignition switch OFF. Replace seat belt pretensioner (Refer to Front Seat Belt in Section 10).

Step	Action	Yes	No
2	1) With ignition switch OFF, disconnect SDM connector “G66”. 2) Check proper connection to SDM at terminals “G66-33” and “G66-34” or “G66-36” and “G66-35”. 3) If OK, release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 4) Measure resistance with connected Special Tools (A), (B) and (C) to applicable seat belt pretensioner in “G67” or “G72” connector. • DTC B1041 : between “G66-33” and “G66-34” terminals. • DTC B1045 : between “G66-36” and “G66-35” terminals. Is resistance 4.1 Ω or less?	Substitute a known-good SDM and recheck.	DTC B1041 : Repair high resistance or open in “PNK” or “WHT” wire circuit. DTC B1045 : Repair high resistance or open in “BRN” or “LT GRN” wire circuit.



[A] :	Fig. for STEP 1 and 2
[B] :	Fig. for STEP 2
[C] :	For DTC B1041
[D] :	For DTC B1045
1.	SDM connector “G66”

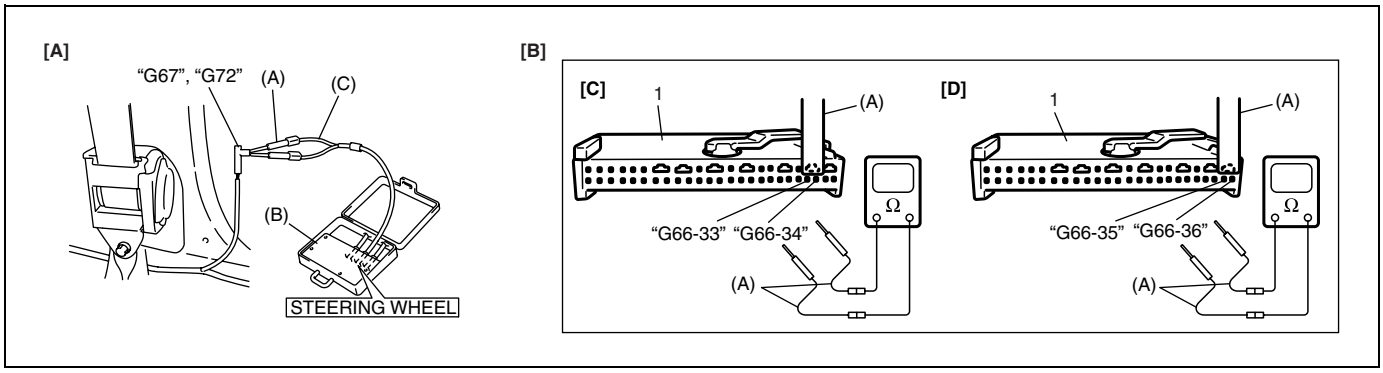
Special tool
(A) : 09932-76010
(B) : 09932-75010
(C) : 09932-78310

NOTE:

Upon completion of inspection and repair work, perform the following items.
- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear diagnostic trouble codes (Refer to DTC CLEARANCE), if any.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

DTC B1042 : Driver Pretensioner Initiator Circuit Resistance Low
DTC B1046 : Passenger Pretensioner Initiator Circuit Resistance Low

Step	Action	Yes	No
1	1) With ignition switch OFF, remove center pillar inner garnish of applicable side then disconnect seat belt pretensioner connector "G67" or "G72". 2) Check proper connection to applicable seat belt pretensioner at terminals in "G67" or "G72" connector. 3) If OK, then connect Special Tools (A), (B) and (C) to seat belt pretensioner connector disconnected at the step 1). With ignition switch ON, is DTC B1042 or B1046 still current?	Go to step 2.	Ignition switch OFF. Replace seat belt pretensioner (Refer to Front Seat Belt in Section 10).
2	1) With ignition switch OFF, disconnect SDM connector "G66". 2) Check proper connection to SDM at terminals "G66-33" and "G66-34" or "G66-36" and "G66-35". 3) If OK, release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 4) Measure resistance with connected Special Tools (A), (B) and (C) to applicable seat belt Pretensioner at terminal in "G67" or "G72" connector. • DTC B1042 : between "G66-33" and "G66-34" terminals. • DTC B1046 : between "G66-36" and "G66-35" terminals. Is resistance 1.3 Ω or more?	Substitute a known-good SDM and recheck.	DTC B1042 : Repair short from "PNK" wire circuit to "WHT" wire circuit, or from "PNK" or "WHT" wire circuit to other wire circuit. DTC B1046 : Repair short from "BRN" wire circuit to "LT GRN" wire circuit, or from "BRN" or "LT GRN" wire circuit to other wire circuit.



[A] :	Fig. for STEP 1 and 2
[B] :	Fig. for STEP 2
[C] :	For DTC B1042
[D] :	For DTC B1046
1.	SDM connector "G66"

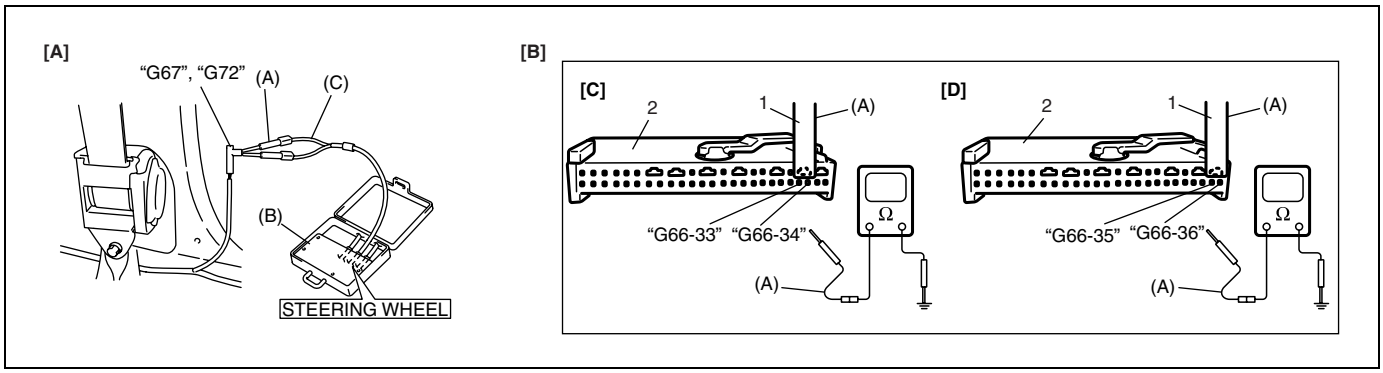
Special tool
(A) : 09932-76010
(B) : 09932-75010
(C) : 09932-78310

NOTE:

Upon completion of inspection and repair work, perform the following items.
- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear diagnostic trouble codes (Refer to DTC CLEARANCE), if any.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

DTC B1043 : Driver Pretensioner Initiator Circuit Short to Ground
DTC B1047 : Passenger Pretensioner Initiator Circuit Short to Ground

Step	Action	Yes	No
1	1) With ignition switch OFF, remove center pillar lower garnish of applicable side then disconnect seat belt pretensioner connector “G67” or “G72”. 2) Check proper connection to applicable seat belt pretensioner at terminals in “G67” or “G72” connector. 3) If OK, then connect Special Tools (A), (B) and (C) to seat belt pretensioner connector disconnected at the step 1. With ignition switch ON, is DTC B1043 or B1047 still current?	Go to step 2.	Ignition switch OFF. Replace seat belt pretensioner (Refer to Front Seat Belt in Section 10).
2	1) With ignition switch OFF, disconnect Special Tools (A), (B) and (C) from “G67” or “G72” connector and SDM connector “G66” from SDM respectively. 2) Release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 3) Measure resistance. • DTC B1043 : between “G66-33” terminal and body ground, and between “G66-34” terminal and body ground. • DTC B1047 : between “G66-36” terminal and body ground, and between “G66-35” terminal and body ground. Is resistance infinity?	Substitute a known-good SDM and recheck.	DTC B1043 : Repair short “PNK” or “WHT” wire circuit to ground. DTC B1047 : Repair short from “BRN” or “LT GRN” wire circuit to ground.



[A] : Fig. for STEP 1 and 2
[B] : Fig. for STEP 2
[C] : For DTC B1043
[D] : For DTC B1047
1. Release tool
2. SDM connector

Special tool
(A) : 09932-76010
(B) : 09932-75010
(C) : 09932-78310

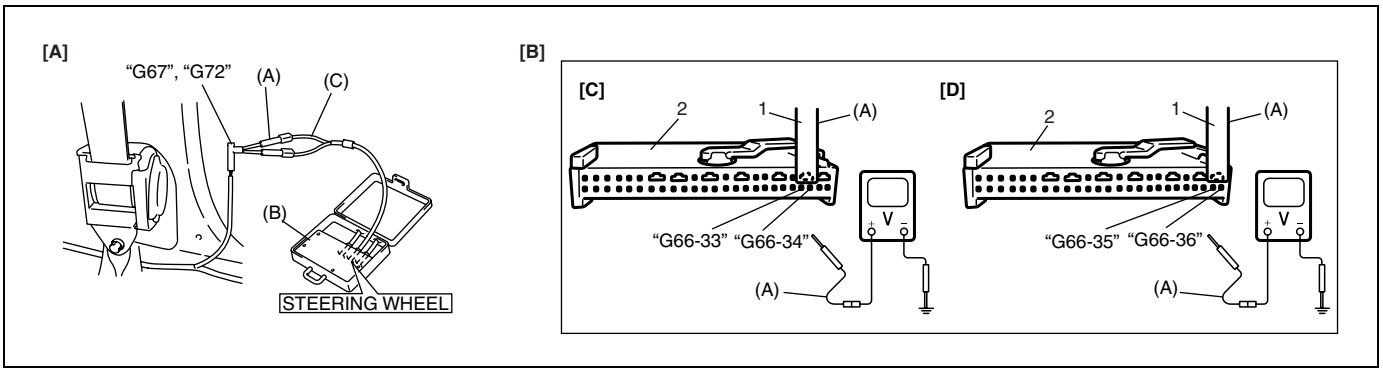
NOTE:

Upon completion of inspection and repair work, perform the following items.
- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear diagnostic trouble codes (Refer to DTC CLEARANCE), if any.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

DTC B1044 : Driver Pretensioner Initiator Circuit Short to Power Circuit
DTC B1048 : Passenger Pretensioner Initiator Circuit Short to Power Circuit

Step	Action	Yes	No
1	1) With ignition switch OFF, remove center pillar lower garnish of applicable side then disconnect seat belt pretensioner connector "G67" or "G72". 2) Check proper connection to applicable seat belt pretensioner at terminals in "G67" or "G72" connector. 3) If OK, then connect Special Tools (A), (B) and (C) to seat belt pretensioner connector disconnected at the step 1). With ignition switch ON, is DTC B1044 or B1048 still current?	Go to step 2.	Ignition switch OFF. Replace seat belt pretensioner (Refer to Front Seat Belt in Section 10).

Step	Action	Yes	No
2	1) With ignition switch OFF, disconnect Special Tools (A) and (B) and (C) from “G67” or “G72” connector. 2) Disconnect SDM connector “G66” from SDM respectively. 3) Release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 4) Measure voltage. • DTC B1044 : between “G66-33” terminal and body ground, and between “G66-34” terminal and body ground. • DTC B1048 : between “G66-36” terminal and body ground, and between “G66-35” terminal and body ground. With ignition switch ON, is voltage 0 – 1 V?	Substitute a known-good SDM and recheck.	DTC B1044 : Repair short “PNK” or “WHT” wire circuit to power circuit. DTC B1048 : Repair short from “BRN” or “LT GRN” wire circuit to power circuit.



[A] :	Fig. for STEP 1 and 2
[B] :	Fig. for STEP 2
[C] :	For DTC B1044
[D] :	For DTC B1048
1.	Release tool
2.	SDM connector “G66”

Special tool
(A) : 09932-76010
(B) : 09932-75010
(C) : 09932-78310

NOTE:

Upon completion of inspection and repair work, perform the following items.
- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear diagnostic trouble codes (Refer to DTC CLEARANCE), if any.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

DTC B1051 – Frontal Crash Detected (System Activation Command Outputted)

CAUTION:
Be sure to perform Air Bag Diagnostic System Check before starting diagnosis according to flow table.

DTC WILL SET WHEN

The SDM detects a frontal crash of sufficient force to warrant activation of the air bag system. (SDM outputs a deployment command.)

TABLE TEST DESCRIPTION

STEP 1 : Check that DTC B1051 has been set although air bag has not been deployed.
STEP 2 : Check that DTC has been set due to failure of SDM.

DIAGNOSTIC FLOW TABLE

Step	Action	Yes	No
1	1) Ignition switch OFF. Has driver air bag (inflator) module deployed?	Replace components and perform inspections as directed in “REPAIRS AND INSPECTIONS REQUIRED AFTER AN ACCIDENT” in this section.	Go to step 2.
2	1) Inspect front of vehicle and undercarriage for signs of impact. Are there signs of impact?	Replace components and perform inspections as directed in “REPAIRS AND INSPECTIONS REQUIRED AFTER AN ACCIDENT” in this section.	Substitute a known-good SDM and recheck.

NOTE:

- **DTC B1051 can never be cleared once it has been set.**
- **Upon completion of inspection and repair work, perform the following items.**
  - **Reconnect all air bag system components, ensure all components are properly mounted.**
  - **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

DTC B1056 – Sideward Crash (Driver Side) Detected (Side Air Bag System Activation Command Outputted)

DTC B1057 – Sideward Crash (Passenger Side) Detected (Side Air Bag System Activation Command Outputted)

CAUTION:
Before starting diagnosis according to flow table, Air Bag Diagnostic System Check.

DTC WILL SET WHEN

DTC B1056 or B1057 :
The SDM detects a sideward crash (driver or passenger side) of sufficient force to warrant activation of the side air bag system (driver or passenger side). (SDM outputs a deployment command.)

TABLE TEST DESCRIPTION

DTC B1056 or B1057 :
STEP 1 : Check that DTC B1056 or B1057 has been set although side air bag (driver or passenger side) has not been deployed.
STEP 2 : Check that DTC has been set due to failure of SDM.

DIAGNOSTIC FLOW TABLE

DTC B1056 : Sideward Crash (Driver Side) Detected (Side Air Bag System Activation Command Outputted)
DTC B1057 : Sideward Crash (Passenger Side) Detected (Side Air Bag System Activation Command Outputted)

Step	Action	Yes	No
1	1) Ignition switch OFF. Has side air bag (inflator) module deployed?	Replace components and perform inspections as directed in “REPAIRS AND INSPECTIONS REQUIRED AFTER AN ACCIDENT” in this section.	Go to step 2.
2	1) Inspect sideward of vehicle and undercarriage for signs of impact. Are there signs of impact?	Replace components and perform inspections as directed in “REPAIRS AND INSPECTIONS REQUIRED AFTER AN ACCIDENT” in this section.	Substitute a known-good SDM and recheck.

NOTE:

Upon completion of inspection and repair work, perform the following items.
- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear diagnostic trouble codes (Refer to DTC CLEARANCE.), if any.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

DTC B1058 – Frontal Crash Detected (Pretensioner Activation Command Outputted)

CAUTION:
Be sure to perform Air Bag Diagnostic System Check before starting diagnosis according to flow table.

DTC WILL SET WHEN

The SDM detects a frontal crash of sufficient force to warrant activation of pretensioner. (SDM outputs a activation command.)

TABLE TEST DESCRIPTION

STEP 1 : Check that DTC B1058 has been set although pretensioner has not been activated.
STEP 2 : Check that DTC has been set due to failure of SDM.

DIAGNOSTIC FLOW TABLE

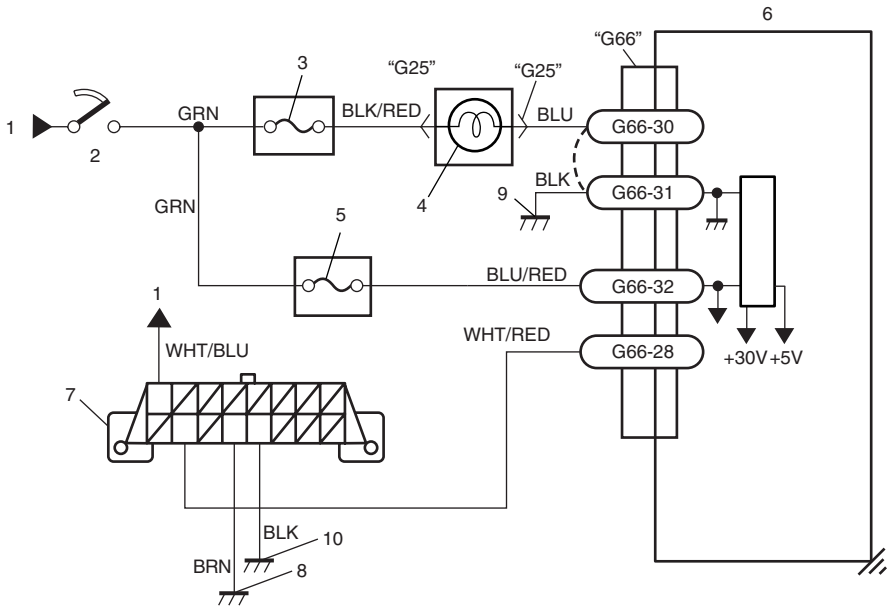
Step	Action	Yes	No
1	1) Ignition switch OFF. Has air bag (inflator) module deployed?	Replace components and perform inspections as directed in “REPAIRS AND INSPECTIONS REQUIRED AFTER AN ACCIDENT” in this section.	Go to step 2.
2	1) Inspect front of vehicle and undercarriage for signs of impact. Are there signs of impact?	Replace components and perform inspections as directed in “REPAIRS AND INSPECTIONS REQUIRED AFTER AN ACCIDENT” in this section.	Substitute a known-good SDM and recheck.

NOTE:

- **DTC B1058 can never be cleared once it has been set.**
- **Upon completion of inspection and repair work, perform the following items.**
  - **Reconnect all air bag system components, ensure all components are properly mounted.**
  - **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

DTC B1061 – “AIR BAG” Warning Lamp Circuit Failure

WIRING DIAGRAM



1. From main fuse	5. “AIR BAG” fuse	9. Ground for air bag system
2. Ignition switch	6. SDM	10. Ground on body
3. “METER” fuse	7. To DLC	
4. “AIR BAG” warning lamp in combination meter	8. Ground on engine block	

CAUTION:

- **Be sure to perform AIR BAG DIAGNOSTIC SYSTEM CHECK before starting diagnosis according to flow table.**
- **When measurement of resistance or voltage is required in this table, use a specified digital multimeter (refer to SPECIAL TOOL in this section.) along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to INTERMITTENTS AND POOR CONNECTIONS in this section.**
- **If there is open circuit in the air bag wire harness (in instrument panel harness), connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

DTC WILL SET WHEN

The voltage at the “AIR BAG” warning lamp circuit terminal “G66-30” does not match the commanded state of the warning lamp driver for specified time.

TABLE TEST DESCRIPTION

STEP 1 : This test rechecks “AIR BAG” warning lamp operation.
STEP 2 : This test rechecks whether an abnormality is in SDM.

DIAGNOSTIC FLOW TABLE

Step	Action	Yes	No
1	1) This DTC is set when there is a trouble in "AIR BAG" warning lamp circuit. Check "AIR BAG" warning lamp circuit referring to AIR BAG DIAGNOSTIC SYSTEM CHECK in this section. Is "AIR BAG" warning lamp circuit in good condition?	Go to step 2.	Repair "AIR BAG" warning lamp circuit.
2	1) Clear DTC (Refer to DTC CLEARANCE in this section.) 2) Check DTC (Refer to DTC CHECK in this section.) Is DTC B1061 set?	Substitute a known-good SDM and recheck.	Recheck air bag system. Refer to AIR BAG DIAGNOSTIC SYSTEM CHECK in this section.

NOTE:

Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear diagnostic trouble codes (Refer to DTC CLEARANCE), if any.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

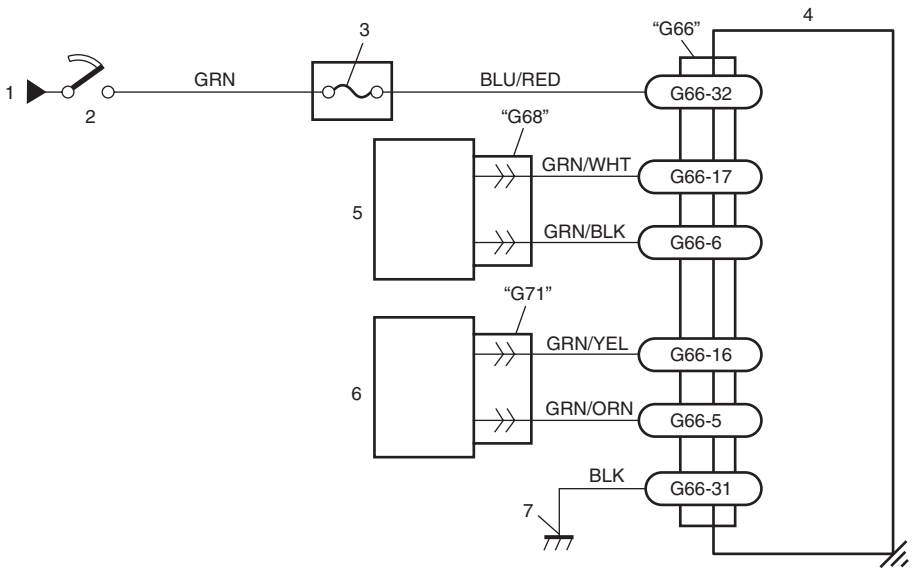
DTC B1063 – Side Sensor (Driver Side) Circuit Short to Ground

DTC B1064 – Side Sensor (Driver Side) Circuit Short to Power Circuit Or Open

DTC B1065 – Side Sensor (Passenger Side) Circuit Short to Ground

DTC B1066 – Side Sensor (Passenger Side) Circuit Short to Power Circuit or Open

WIRING DIAGRAM



1. From main fuse	4. SDM	7. Ground for air bag system
2. Ignition switch	5. Side sensor (driver side)	
3. "AIR BAG" fuse	6. Side sensor (passenger side)	

CAUTION:

- **Be sure to perform AIR BAG DIAGNOSTIC SYSTEM CHECK before starting diagnosis according to flow table.**
- **When measurement of resistance or voltage is required in this table, use a specified digital multimeter (refer to SPECIAL TOOL in this section.) along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to INTERMITTENTS AND POOR CONNECTIONS in this section.**
- **If there is open circuit in the air bag wire harness (in instrument panel harness), connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

DTC WILL SET WHEN

DTC B1063 or B1065 :

The voltage measured at side sensor (driver or passenger side) circuit is below a specified value for specified time.

DTC B1064 or B1066 :

The voltage measured at side sensor (driver or passenger side) circuit is above a specified value for specified time.

TABLE TEST DESCRIPTION

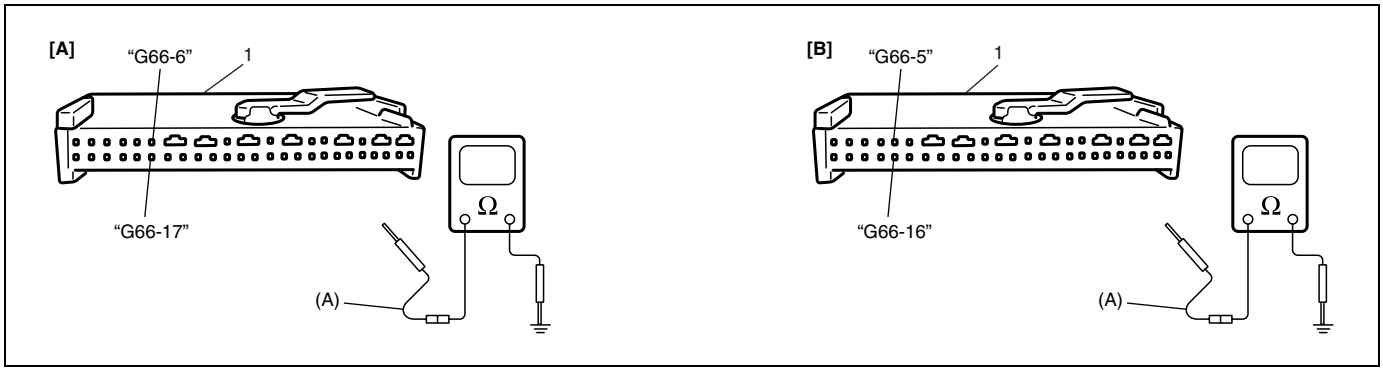
DTC B1063, B1064, B1065 or B1066 :

STEP 1 : Check side sensor (driver or passenger side) circuit in floor harness.
STEP 2 : Check side sensor (driver or passenger side) circuit in floor harness. (for DTC B1064 and B1066 only)

DIAGNOSTIC FLOW TABLE

DTC B1063 : Side Sensor (Driver Side) Circuit Short to Ground
DTC B1065 : Side Sensor (Passenger Side) Circuit Short to Ground

Step	Action	Yes	No
1	1) With ignition switch OFF, remove center pillar lower trim and side sill scuff, then disconnect side sensor connector “G68” or “G71”. 2) Disconnect SDM connector “G66”. 3) Check proper connection to applicable side sensor at terminals in “G68” or “G71” connector. 4) If OK, measure resistance with connected special tool (A). • DTC B1063: between “G66-17” terminal and body ground, and between “G66-6” terminal and body ground. • DTC B1065: between “G66-16” terminal and body ground, and between “G66-5” terminal and body ground. Is resistance infinity?	Substitute a known-good side sensor and/or SDM and recheck.	DTC B1063 : Repair short “GRN/WHT” or “GRN/BLK” wire circuit to ground. DTC B1065 : Repair short “GRN/YEL” or “GRN/ORN” wire circuit to ground.



[A] : Fig. for STEP 1 (DTC B1063)
[B] : Fig. for STEP 1 (DTC B1065)
1. SDM connector “G66”

Special tool
(A) : 09932-76010

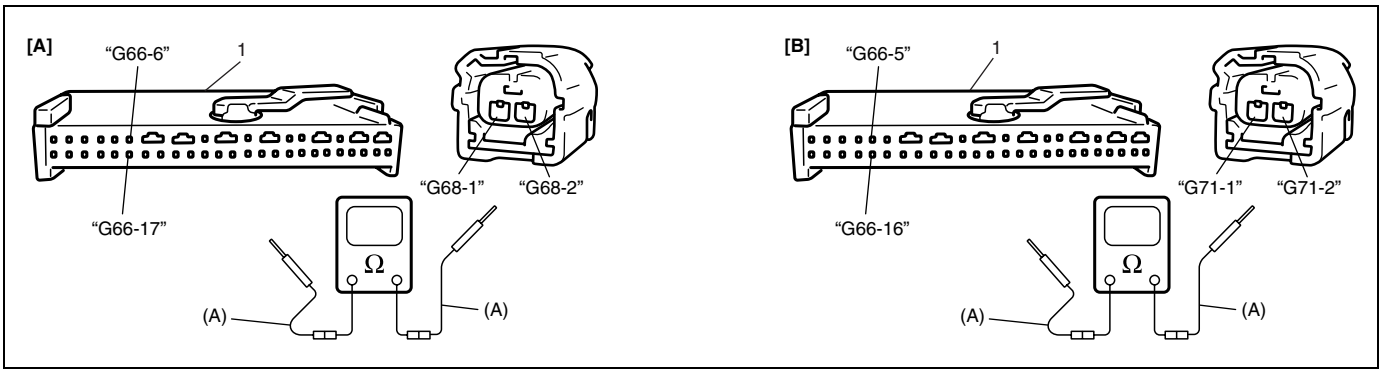
NOTE:

Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear diagnostic trouble code (Refer to DTC CLEARANCE), if any.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

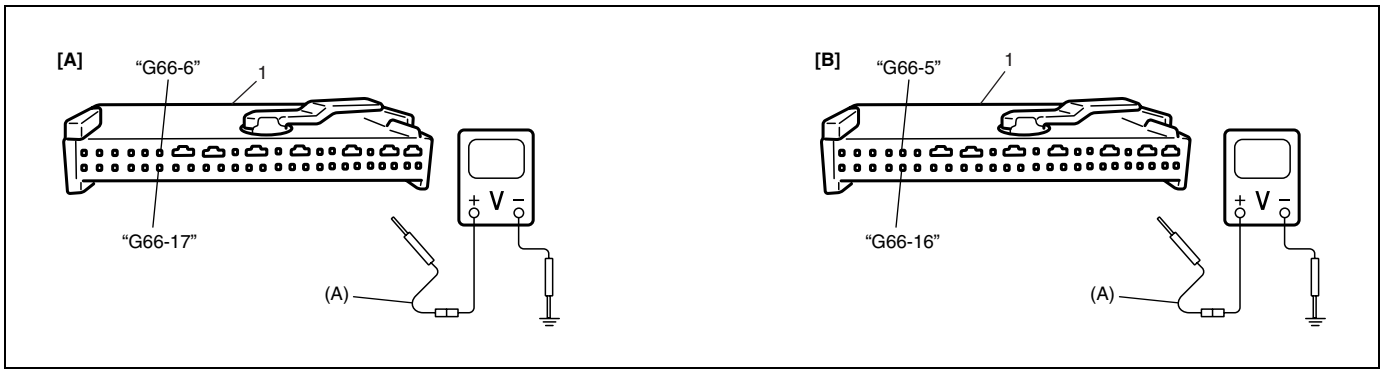
DTC B1064 : Side Sensor (Driver Side) Circuit Short to Power Circuit or Open
DTC B1066 : Side Sensor (Passenger Side) Circuit Short to Power Circuit or Open

Step	Action	Yes	No
1	1) With ignition switch OFF, remove center pillar lower trim and side sill scuff, then disconnect side sensor connector “G68” or “G71”. 2) Disconnect SDM connector “G66”. 3) Check proper connection to applicable side sensor at terminals in “G68” or “G71” connector. 4) If OK, measure resistance with connected special tool (A). • DTC B1064: between “G68-1” and “G66-17” terminals, and between “G68-2” and “G66-6” terminals. • DTC B1066: between “G71-1” and “G66-16” terminals, and between “G71-2” and “G66-5” terminals. Is resistance 0 – 1 Ω?	Got to Step 2.	DTC B1064 Repair open in “GRN/WHT” or “GRN/BLK” wire circuit. DTC B1066 Repair open in “GRN/YEL” or “GRN/ORN” wire circuit.
2	1) Measure voltage with connected special tool (A). • DTC B1064: between “G66-17” terminal and body ground, and between “G66-6” terminal and body ground. • DTC B1066: between “G66-16” terminal and body ground, and between “G66-5” terminal and body ground. With ignition switch ON, is voltage 0 – 1 V?	Substitute a known-good side sensor and/or SDM and recheck.	DTC B1064 : Repair short “GRN/WHT” or “GRN/BLK” wire circuit to power circuit. DTC B1066 : Repair short “GRN/YEL” or “GRN/ORN” wire circuit to power circuit.



[A] : Fig. for STEP 1 (DTC B1064)
[B] : Fig. for STEP 1 (DTC B1066)
1. SDM connector “G66”

Special tool
(A) : 09932-76010



[A] : Fig. for STEP 2 (DTC B1064)
[B] : Fig. for STEP 2 (DTC B1066)
1. SDM connector "G66"

Special tool
(A) : 09932-76010

NOTE:

Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear diagnostic trouble code (Refer to DTC CLEARANCE), if any.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

DTC B1071 – Internal SDM Fault

CAUTION:
Be sure to perform Air Bag Diagnostic System Check before starting diagnosis according to flow table.

DTC WILL SET WHEN

An internal SDM fault is detected by SDM.

NOTE:
DTC B1071 can never be cleared once it has been set.

1) Ignition switch OFF.
2) Replace SDM.
3) Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK.

DTC B1072 – Internal Side Sensor (Driver Side) Fault
DTC B1074 – Internal Side Sensor (Passenger Side) Fault

CAUTION:
Be sure to perform Air Bag Diagnostic System Check before starting diagnosis according to flow table.

DTC WILL SET WHEN

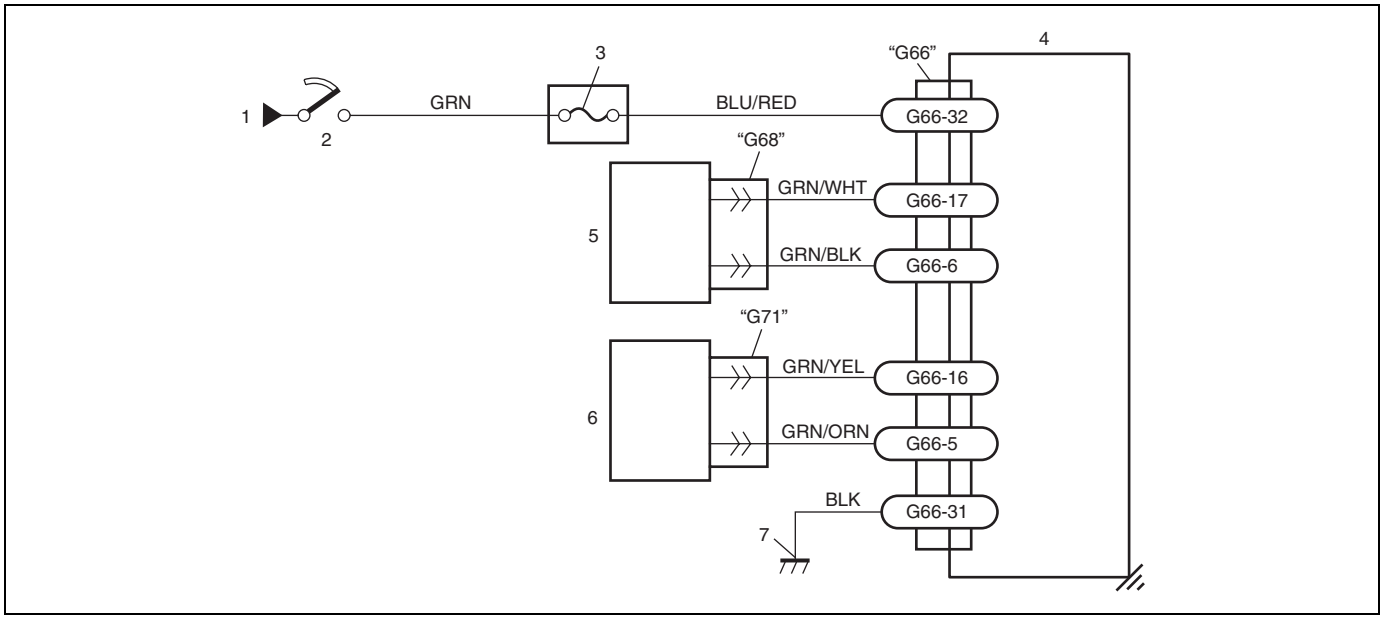
DTC B1072 or B1074 :

SDM receive internal fault signal from side sensor.

1) Ignition switch OFF.
2) Replace side sensor.
3) Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK.

DTC B1073 – Side Sensor (Driver Side) Correspondence Abnormality
DTC B1075 – Side Sensor (Passenger Side) Correspondence Abnormality

WIRING DIAGRAM



1. From main fuse	4. SDM	7. Ground for air bag system
2. Ignition switch	5. Side sensor (driver side)	
3. "AIR BAG" fuse	6. Side sensor (passenger side)	

CAUTION:

- **Be sure to perform AIR BAG DIAGNOSTIC SYSTEM CHECK before starting diagnosis according to flow table.**
- **When measurement of resistance or voltage is required in this table, use a specified digital multimeter (refer to SPECIAL TOOL in this section.) along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to INTERMITTENTS AND POOR CONNECTIONS in this section.**
- **If there is open circuit in the air bag wire harness (in instrument panel harness), connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

DTC WILL SET WHEN

DTC B1073 or B1075 :

Side sensor abnormal signal is detected by SDM.

TABLE TEST DESCRIPTION

DTC B1073 or B1075 :

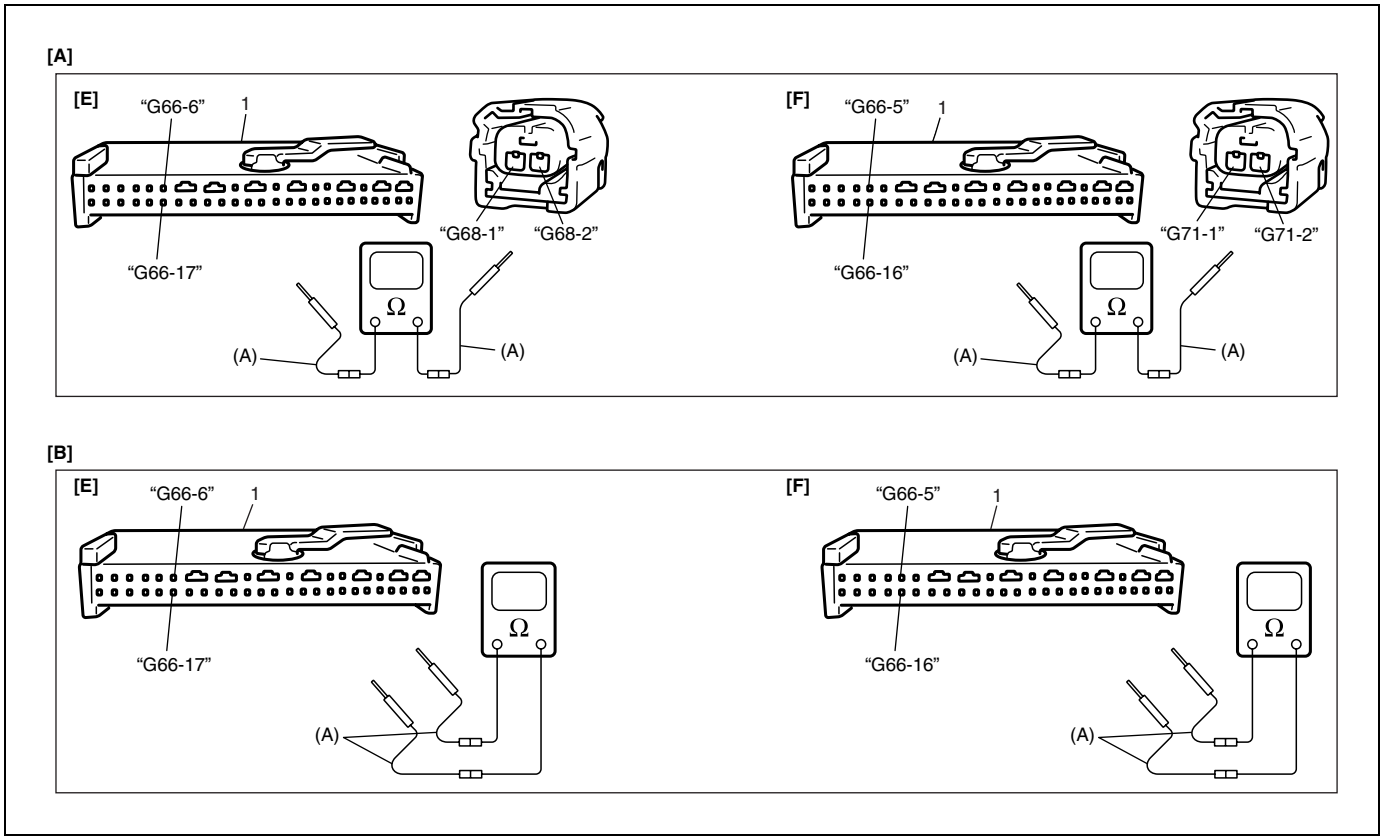
STEP 1 to 4 : Check side sensor circuit in instrument panel harness.

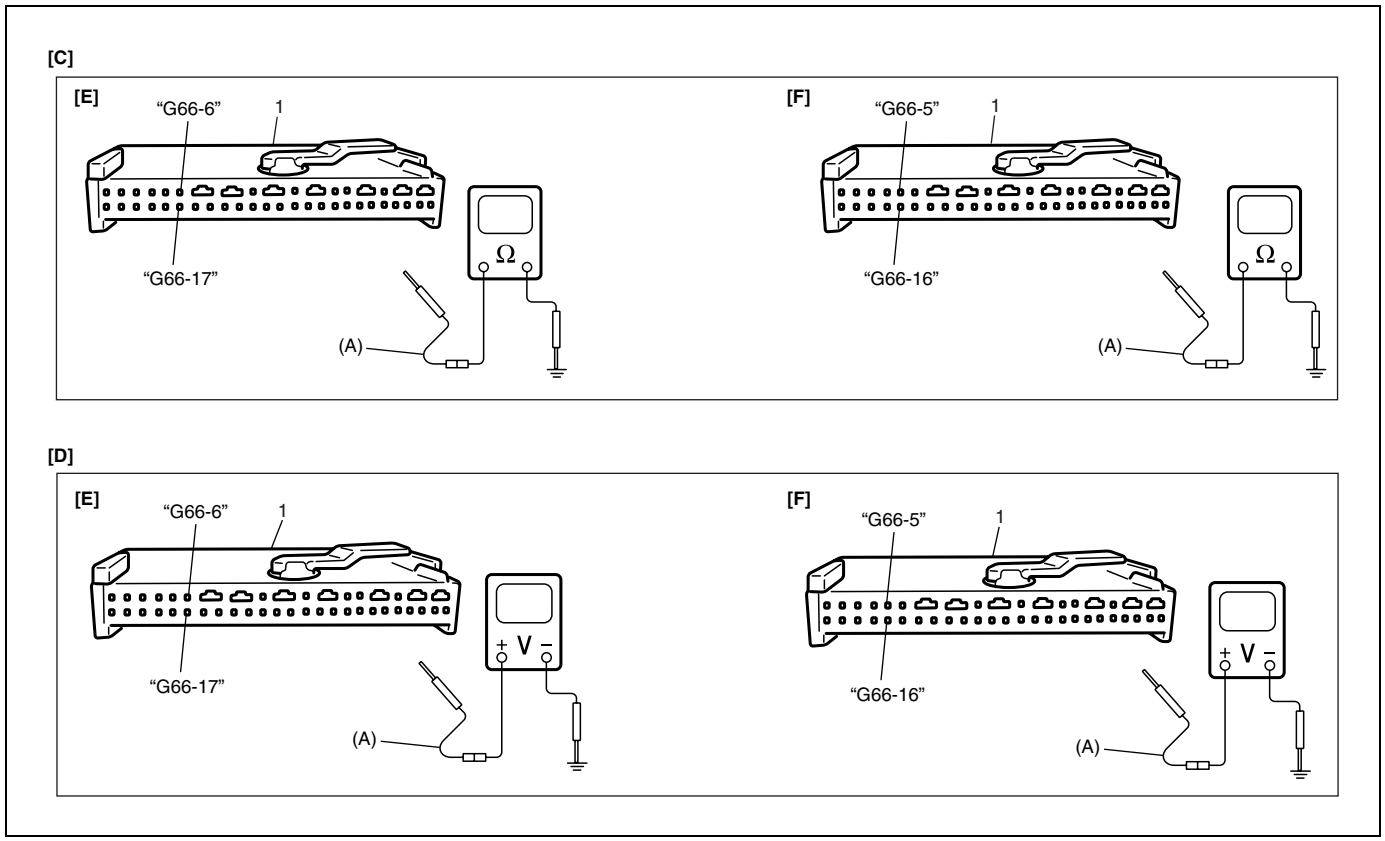
DIAGNOSTIC FLOW TABLE

DTC B1073 : Side Sensor (Driver Side) Correspondence Abnormality
DTC B1075 : Side Sensor (Passenger Side) Correspondence Abnormality

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect SDM connector “G66” and side sensor connector “G68” or “G71”. 2) DTC B1073 : Check proper connection to side sensor at terminals in “G68” connector and to SDM at “G66-17” and “G66-6” terminals in SDM connector “G66”. DTC B1075 : Check proper connection to side sensor at terminals in “G71” connector and to SDM at “G66-16” and “G66-5” terminals in SDM connector “G66”. 3) DTC B1073 : If OK, then measure resistance between “G68-1” and “G66-17” terminals, and between “G68-2” and “G66-6” terminals with connected special tool (A). Is resistance 0 – 1Ω? DTC B1075 : If OK, then measure resistance between “G71-1” and “G66-16” terminals, and between “G71-2” and “G66-5” terminals with connected special tool (A). Is resistance 0 – 1Ω?	Go to step 2.	DTC B1073 : Repair high resistance or open in “GRN/WHT” or “GRN/BLK” wire. DTC B1075 : Repair high resistance or open in “GRN/YEL” or “GRN/ORN” wire.
2	1) DTC B1073 : Measure resistance between “G66-17” and “G66-6” terminals with connected special tool (A). Is resistance infinity? DTC 1075 : Measure resistance between “G66-16” and “G66-5” terminals with connected special tool (A). Is resistance infinity?	Go to step 3.	DTC B1073 : Repair short from “GRN/WHT” wire to “GRN/BLK” wire. DTC B1075 : Repair short from “GRN/YEL” wire to “GRN/ORN” wire.

Step	Action	Yes	No
3	1) DTC B1073 : Measure resistance between “G66-17” terminal and body ground, and between “G66-6” terminal and body ground with connected special tool (A). Is resistance infinity? DTC 1075 : Measure resistance between “G66-16” terminal and body ground, and between “G66-5” terminal and body ground with connected special tool (A). Is resistance infinity?	Go to step 4.	DTC B1073 : Repair short from “GRN/WHT” or “GRN/BLK” wire to body ground. DTC B1075 : Repair short from “GRN/YEL” or “GRN/ORN” wire to body ground.
4	1) DTC B1073 : Measure voltage from “G66-17” and “G66-6” terminals to body ground with connected special tool (A). With ignition switch ON, is voltage 0 – 1V? DTC B1075 : Measure voltage from “G66-16” and “G66-5” terminals to body ground with connected special tool (A). With ignition switch ON, is voltage 0 – 1V?	Substitute a known-good side sensor and/or SDM and recheck.	DTC B1073 : Repair short from “GRN/WHT” or “GRN/BLK” wire to power circuit. DTC B1075 : Repair short from “GRN/YEL” or “GRN/ORN” to power circuit.





[A] : Fig. for STEP 1	[D] : Fig. for STEP 4	1. SDM connector "G66"
[B] : Fig. for STEP 2	[E] : For DTC B1073	
[C] : Fig. for STEP 3	[F] : For DTC B1075	

Special tool
(A) : 09932-76010

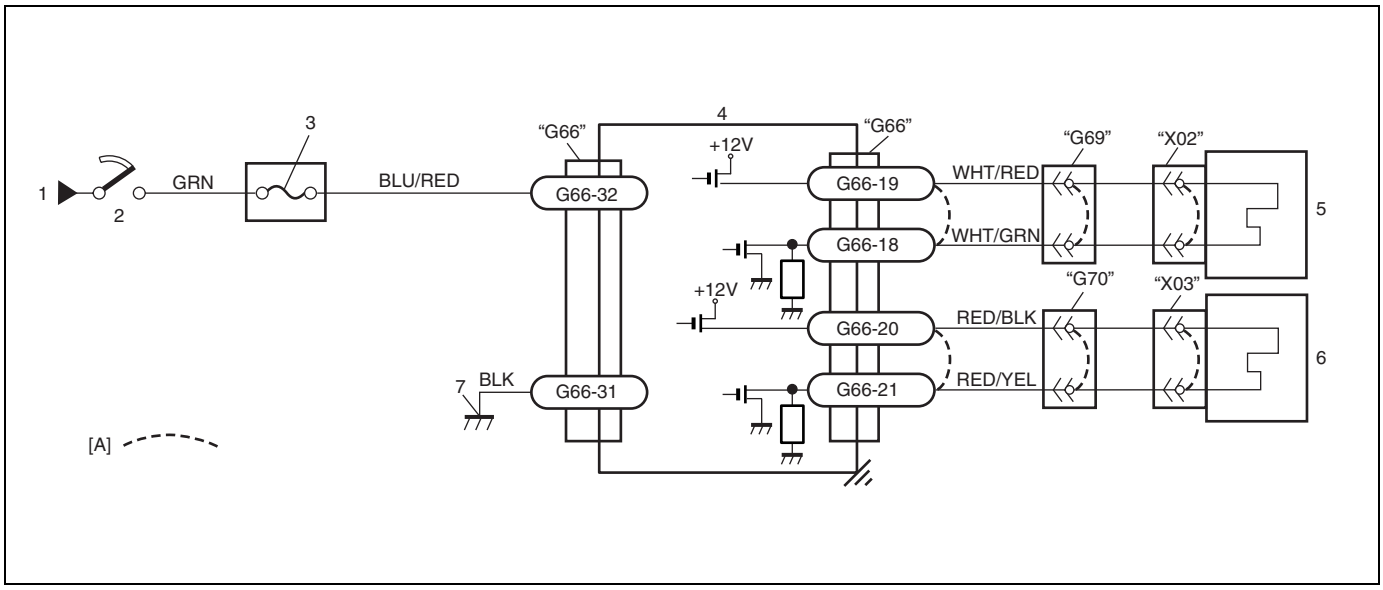
NOTE:

Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear diagnostic trouble code (Refer to DTC CLEARANCE), if any.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

DTC B1081 – Side Air Bag (Driver Side) Intiator Circuit Resistance High
DTC B1082 – Side Air Bag (Driver Side) Intiator Circuit Resistance Low
DTC B1083 – Side Air Bag (Driver Side) Intiator Circuit Short to Ground
DTC B1084 – Side Air Bag (Driver Side) Intiator Circuit Short to Power Circuit
DTC B1085 – Side Air Bag (Passenger Side) Intiator Circuit Resistance High
DTC B1086 – Side Air Bag (Passenger Side) Intiator Circuit Resistance Low
DTC B1087 – Side Air Bag (Passenger Side) Intiator Circuit Short to Ground
DTC B1088 – Side Air Bag (Passenger Side) Intiator Circuit Short to Power Circuit

WIRING DIAGRAM



[A] : Shorting bar	2. Ignition switch	4. SDM	6. Side air bag (passenger side) (inflator) module
1. From main fuse	3. "AIR BAG" fuse	5. Side air bag (driver side) (inflator) module	7. Ground for air bag system

CAUTION:

- **Be sure to perform AIR BAG DIAGNOSTIC SYSTEM CHECK before starting diagnosis according to flow table.**
- **When measurement of resistance or voltage is required in this table, use a specified digital multimeter (refer to SPECIAL TOOL in this section.) along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to INTERMITTENTS AND POOR CONNECTIONS in this section.**
- **If there is open circuit in the air bag wire harness (in instrument panel harness), connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

DTC WILL SET WHEN

DTC B1081 or B1085 :

The combined resistance of the side air bag (inflator) module (driver or passenger side), harness wiring and connector terminal contact is above a specified value for specified time.

DTC B1082 or B1086 :

The combined resistance of the side air bag (inflator) module (driver or passenger side), harness wiring and connector terminal contact is below a specified value for specified time.

DTC B1083 or B1087 :

The voltage measured at side air bag (driver or passenger side) initiator circuit is below a specified value for specified time.

DTC B1084 or B1088 :

The voltage measured at side air bag (driver or passenger side) initiator circuit is below a specified value for specified time.

TABLE TEST DESCRIPTION

DTC B1081, B1082, B1083, B1084, B1085, B1086, B1087,or B1088 :

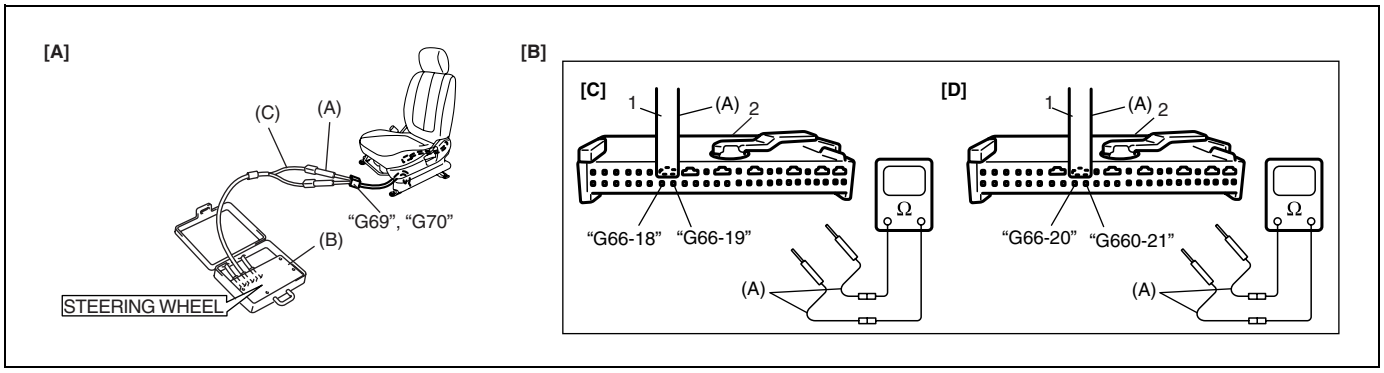
STEP 1 : Check whether malfunction is in side air bag (inflator) module.
STEP 2 : Check side air bag initiator circuit in instrument panel harness.

DIAGNOSTIC FLOW TABLE

DTC B1081 : Side Air Bag (Driver Side) Initiator Circuit Resistance High
DTC B1085 : Side Air Bag (Passenger Side) Initiator Circuit Resistance High

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect side air bag (inflator) module connector “G69” or “G70” under front seat cushion. 2) Check proper connection to applicable side air bag (inflator) module at terminals in “G69” or “G70” connector. 3) If OK, then connect Special tools (B) and (C) to side air bag (inflator) module connector “G69” or “G70” disconnected at the step 1). With ignition switch ON, is DTC B1081 or B1085 still current?	Go to step 2.	Ignition switch OFF. Replace applicable front seat back referring to “FRONT SEAT” in Section 9.

Step	Action	Yes	No
2	1) With ignition switch OFF, disconnect SDM connector “G66”. 2) Check proper connection to SDM at terminals “G66-19” and “G66-18” or “G66-20” and “G66-21”. 3) If OK, release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 4) Measure resistance with connected Special Tools (A), (B) and (C) to applicable side air bag in “G69” or “G70” connector. • DTC B1081 : between “G66-19” and “G66-18” terminals. • DTC B1085 : between “G66-20” and “G66-21” terminals. Is resistance 2.6 Ω or less?	Substitute a known-good SDM and recheck.	DTC B1081 : Repair high resistance or open in “WHT/RED” or “WHT/GRN” wire circuit. DTC B1085 : Repair high resistance or open in “RED/BLK” or “RED/YEL” wire circuit.



[A] : Fig. for STEP 1 and 2
[B] : Fig. for STEP 2
[C] : For DTC B1081
[D] : For DTC B1085
1. Release tool
2. SDM connector “G66”

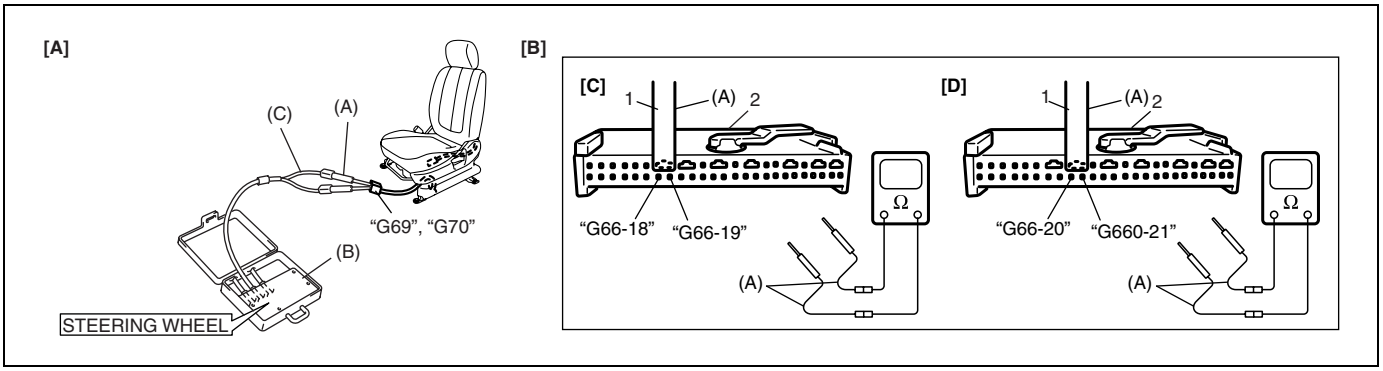
Special tool
(A) : 09932-76010
(B) : 09932-75010
(C) : 09932-78310

NOTE:

Upon completion of inspection and repair work, perform the following items.
- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear diagnostic trouble code (Refer to DTC CLEARANCE), if any.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

DTC B1082 : Side Air Bag (Driver Side) Initiator Circuit Resistance Low
DTC B1086 : Side Air Bag (Passenger Side) Initiator Circuit Resistance Low

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect side air bag (inflator) module connector “G69” or “G70” under front seat cushion. 2) Check proper connection to applicable side air bag (inflator) module at terminals in “G69” or “G70” connector. 3) If OK, then connect Special tools (B) and (C) to side air bag (inflator) module connector “G69” or “G70” disconnected at the step 1. With ignition switch ON, is DTC B1082 or B1086 still current?	Go to step 2.	Ignition switch OFF. Replace applicable front seat back referring to “FRONT SEAT” in Section 9.
2	1) With ignition switch OFF, disconnect SDM connector “G66”. 2) Check proper connection to SDM at terminals “G66-19” and “G66-18” or “G66-20” and “G66-21”. 3) If OK, release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 4) Measure resistance with connected Special Tools (A), (B) and (C) to applicable side air bag in “G69” or “G70” connector. • DTC B1082 : between “G66-19” and “G66-18” terminals. • DTC B1086 : between “G66-20” and “G66-21” terminals. Is resistance 2.2 Ω or more?	Substitute a known-good SDM and recheck.	DTC B1082 : Repair short from “WHT/RED” wire circuit to “WHT/GRN” wire circuit or from “WHT/RED” or “WHT/GRN” wire circuit to other wire circuit. DTC B1086 : Repair short from “RED/BLK” wire circuit to “RED/YEL” wire circuit or from “RED/BLK” or “RED/YEL” wire circuit to other wire circuit.



[A] : Fig. for STEP 1 and 2
[B] : Fig. for STEP 2
[C] : For DTC B1082
[D] : For DTC B1086
1. Release tool
2. SDM connector “G66”

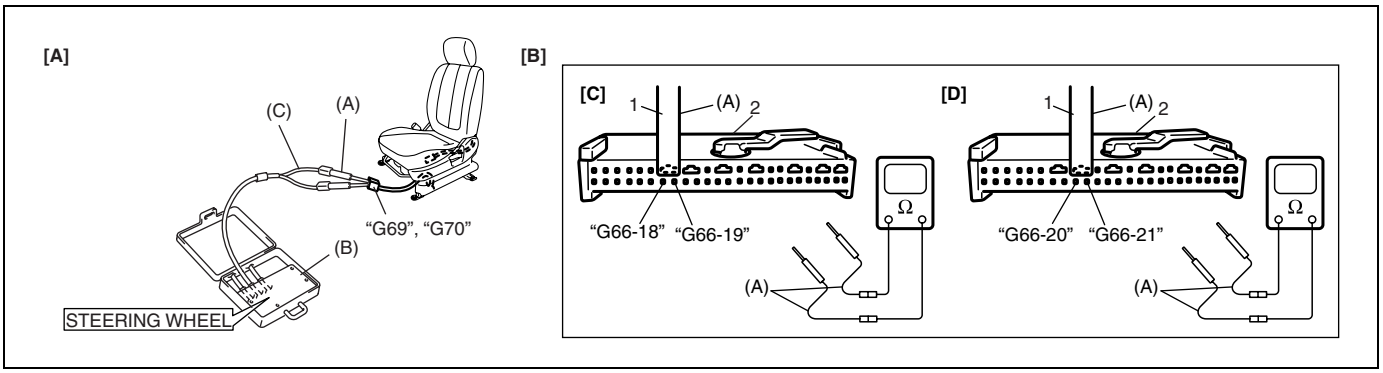
Special tool
(A) : 09932-76010
(B) : 09932-75010
(C) : 09932-78310

NOTE:

Upon completion of inspection and repair work, perform the following items.
- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear diagnostic trouble code (Refer to DTC CLEARANCE), if any.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

DTC B1083 : Side Air Bag (Driver Side) Initiator Circuit Short to Ground
DTC B1087 : Side Air Bag (Passenger Side) Initiator Circuit Short to Ground

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect side air bag (inflator) module connector “G69” or “G70” under front seat cushion. 2) Check proper connection to applicable side air bag (inflator) module at terminals in “G69” or “G70” connector. 3) If OK, then connect Special Tools (B) and (C) to side air bag (inflator) module connector “G69” or “G70” disconnected at the step 1). With ignition switch ON, is DTC B1083 or B1087 still current?	Go to step 2.	Ignition switch OFF. Replace applicable front seat back referring to “FRONT SEAT” in Section 9.
2	1) With ignition switch OFF, disconnect Special Tools (B) and (C) from “G69” or “G70” connector and SDM connector “G66” from SDM respectively. 2) Release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 3) Measure resistance with connected Special tool (A). • DTC B1083 : between “G66-19” terminal and body ground, and between “G66-18” terminal and body ground. • DTC B1087 : between “G66-20” terminal and body ground, and between “G66-21” terminal and body ground. Is resistance infinity?	Substitute a known-good SDM and recheck.	DTC B1083 : Repair short from “WHT/RED” or “WHT/GRN” wire circuit to ground. DTC B1087: Repair short from “RED/BLK” or “RED/YEL” wire circuit to ground.



[A] : Fig. for STEP 1 and 2
[B] : Fig. for STEP 2
[C] : For DTC B1083
[D] : For DTC B1087
1. Release tool
2. SDM connector "G66"

Special tool
(A) : 09932-76010
(B) : 09932-75010
(C) : 09932-78310

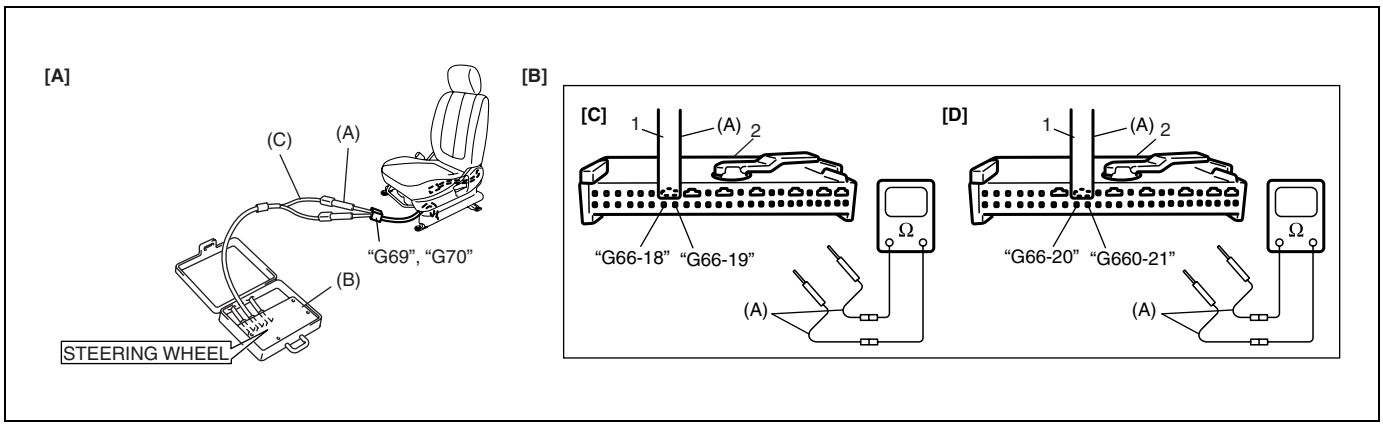
NOTE:

Upon completion of inspection and repair work, perform the following items.
- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear diagnostic trouble code (Refer to DTC CLEARANCE), if any.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

DTC B1084 : Side Air Bag (Driver Side) Initiator Circuit Short to Power Circuit
DTC B1088 : Side Air Bag (Passenger Side) Initiator Circuit Short to Power Circuit

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect side air bag (inflator) module connector "G69" or "G70" under front seat cushion. 2) Check proper connection to applicable side air bag (inflator) module at terminals in "G69" or "G70" connector. 3) If OK, then connect Special Tools (B) and (C) to side air bag (inflator) module connector disconnected at the step 1). With ignition switch ON, is DTC B1084 or B1088 still current?	Go to step 2.	Ignition switch OFF. Replace applicable front seat referring to "FRONT SEAT" in Section 9.

Step	Action	Yes	No
2	1) With ignition switch OFF, disconnect Special Tools (B) and (C) from “G69” or “G70” connector. 2) Disconnect SDM connector “G66” from SDM respectively. 3) Release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 4) Measure voltage with connected Special Tool (A). • DTC B1084 : between “G66-19” terminal and body ground, and between “G66-18” terminal and body ground. • DTC B1088 : between “G66-20” terminal and body ground, and between “G66-21” terminal and body ground. With ignition switch ON, is voltage 0 – 1V?	Substitute a known-good SDM and recheck.	DTC B1084 : Repair short from “WHT/RED” or “WHT/GRN” wire circuit to ground. DTC B1088 : Repair short from “RED/BLK” or “RED/YEL” wire circuit to power circuit.



[A] : Fig. for STEP 1 and 2
[B] : Fig. for STEP 2
[C] : For DTC B1084
[D] : For DTC B1088
1. Release tool
2. SDM connector “G66”

Special tool
(A) : 09932-76010
(B) : 09932-75010
(C) : 09932-78310

NOTE:

Upon completion of inspection and repair work, perform the following items.
- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear diagnostic trouble code (Refer to DTC CLEARANCE), if any.**
- **Repeat AIR BAG DIAGNOSTIC SYSTEM CHECK to confirm that the trouble has been corrected.**

On-Vehicle Service

Service Precautions

Service and diagnosis

WARNING/CAUTION labels are attached on each part of air bag system components (SDM, air bag (inflator) modules and seat belt pretensioners). Be sure to follow the instructions.

WARNING:

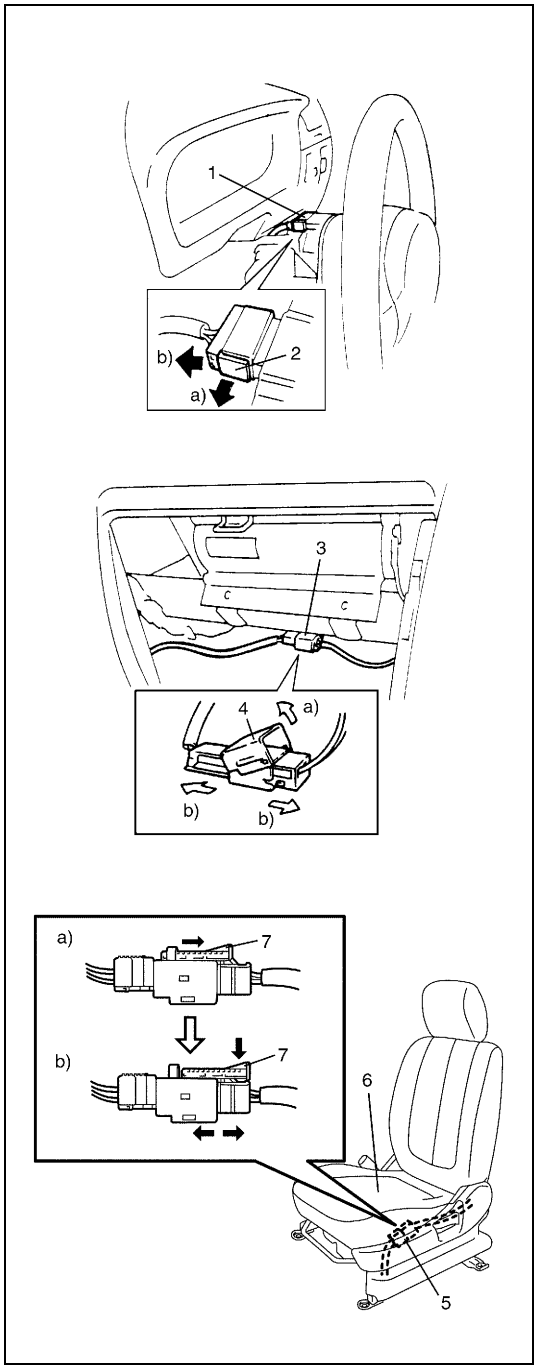
- **If the air bag system and another vehicle system both need repair, Suzuki recommends that the air bag system be repaired first, to help avoid unintended air bag system activation.**
- **Do not modify the steering wheel, dashboard or any other on or around air bag system components. Modifications can adversely affect air bag system performance and lead to injury.**
- **Failure to follow procedures could result in possible air bag system activation, personal injury or unneeded air bag system repairs.**

- Many of service procedures require disconnection of “AIR BAG” fuse and air bag (inflator) module(s) (driver, passenger and side air bag (inflator) modules and seat belt pretensioners) from initiator circuit to avoid an accidental deployment.
- Do not apply power to the air bag system unless all components are connected or a diagnostic chart requests it, as this will set a diagnostic trouble code (DTC).
- The “AIR BAG DIAGNOSTIC SYSTEM CHECK” must be the starting point of any air bag diagnostics. The “AIR BAG DIAGNOSTIC SYSTEM CHECK” will verify proper “AIR BAG” warning lamp operation and will lead you to the correct table to diagnose any air bag malfunctions. Bypassing these procedures may result in extended diagnostic time, incorrect diagnosis, and incorrect parts replacements.
- Never use air bag component parts from another vehicle.
- 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 system activation.
- When handling the air bag (inflator) modules (driver, passenger and side of driver and passenger), seat belt pretensioners (driver and passenger), side sensors or SDM, be careful not to drop it or apply an impact to it. If an excessive impact was applied (e.g., side sensors are dropped, SDM is dropped, air bag (inflator) module is dropped from a height of 90 cm (3 ft) or more, seat belt pretensioner (retractor assembly) is dropped from a height of 30 cm (1 ft) or more), never attempt disassembly or repair but replace it with a new one.
- When using electric welding, be sure to disconnect air bag (inflator) module connectors (driver, passenger and side of driver and passenger) and seat belt pretensioner connectors (driver and passenger) respectively.
- When applying paint around the air bag system related parts, use care so that the harness or connector will not be exposed to the paint mist.
- Never expose air bag system component parts directly to hot air (drying or baking the vehicle after painting) or flames.

WARNING:

When performing service on or around air bag system components or air bag wiring, follow the procedures listed in the following pages to temporarily disable the air bag system.
Failure to follow procedures could result in possible air bag system activation, personal injury or unneeded air bag system repairs.

Disabling air bag system

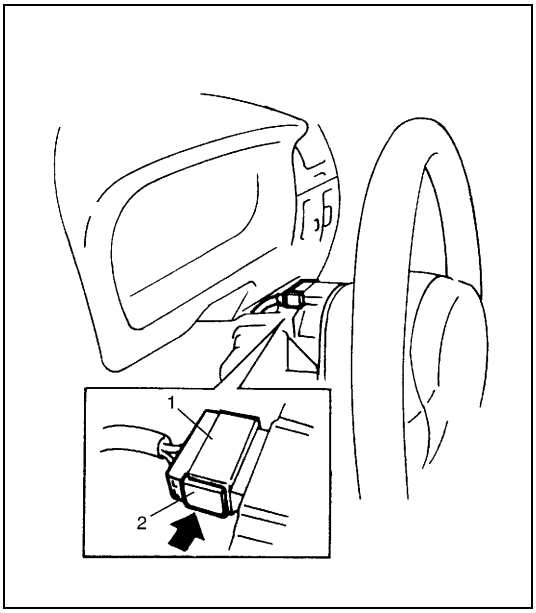


1) Turn steering wheel so that vehicle's wheels (front tires) and pointing straight ahead.
2) Turn ignition switch to “LOCK” position and remove key.
3) Remove “AIR BAG” fuse from circuit fuse box referring to “System Components and Wiring Location View and Connectors” in this section.
4) Remove steering column upper and lower covers.
5) Disconnect connector (1) of contact coil and combination switch assembly as follows.
   a) Release locking of lock lever (2).
   b) After unlocked, disconnect connector.
6) If equipped with passenger air bag (inflator) module, remove glove box and disconnect Yellow connector (3) of passenger air bag (inflator) module.
   a) Release locking of lock lever (4).
   b) After unlocked, disconnect connector.
7) If equipped with side air bag (inflator) module, disconnect Yellow connector (5) of side air bag (inflator) module under front seat cushion (6).
   a) Release locking of lock slider (7).
   b) After unlocked, push down lock slider (7) and disconnect connector.

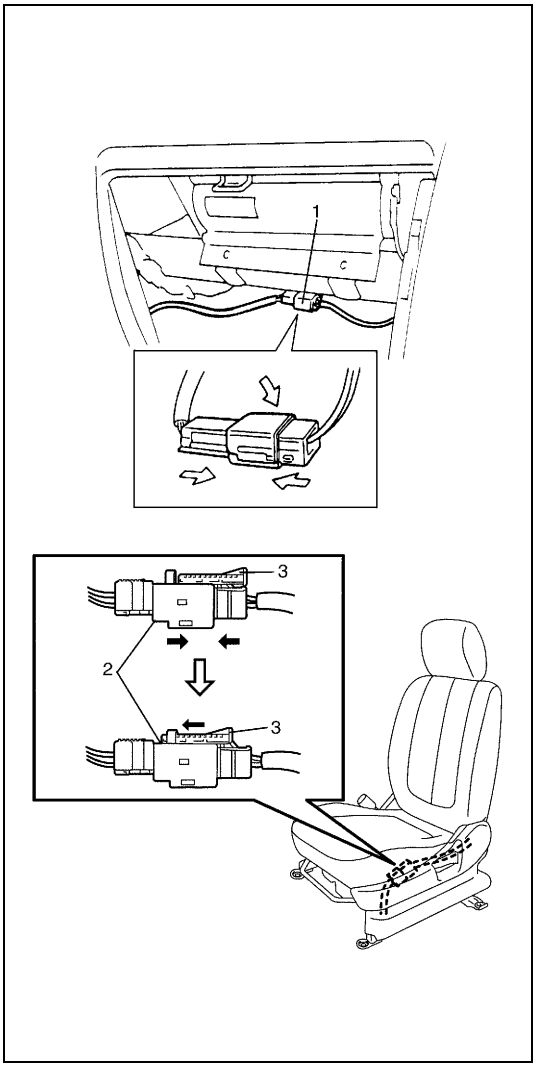
NOTE:

With “AIR BAG” fuse removed and ignition switch ON, “AIR BAG” warning lamp will be ON.
This is normal operation and does not indicate a air bag system malfunction.

Enabling air bag system



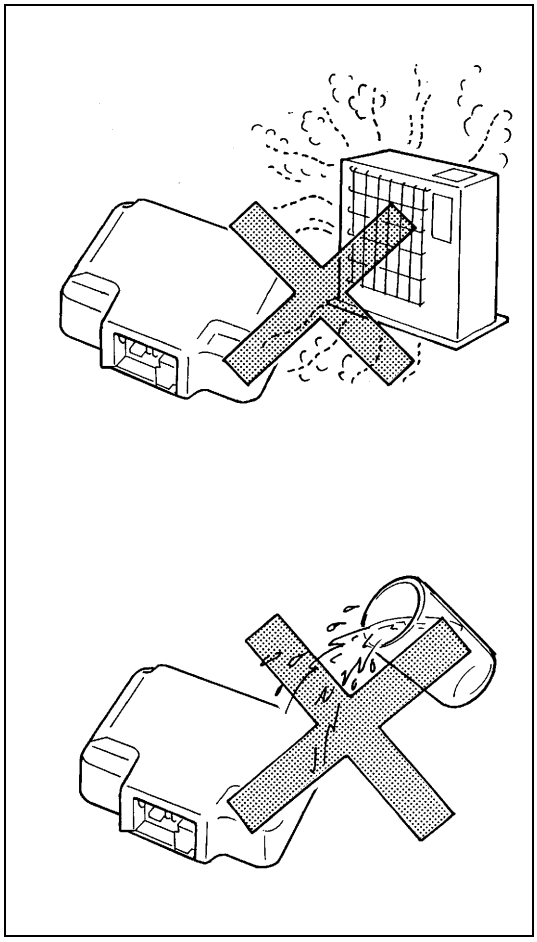
1) Turn ignition switch to “LOCK” position and remove key.
2) Connect contact coil connector (1) and combination switch assembly by pushing lock lever (2) as shown in figure securely.
3) Install steering column upper and lower covers.



4) If equipped with passenger air bag (inflator) module, connect Yellow connector (1) of passenger air bag (inflator) module by pushing connector till click is heard from it.
5) Install glove box.
6) If equipped with side air bag (inflator) module, connect Yellow connector (2) of side air bag (inflator) module, and be sure to lock connector with lock slider (3).
7) Install “AIR BAG” fuse to circuit fuse box.
8) Turn ignition switch to ON position and verify that “AIR BAG” warning lamp flashes 6 times and then turns OFF.
   If it does not operate as described, perform “AIR BAG DIAGNOSTIC SYSTEM CHECK” in this section.

Handling and storage

SDM



WARNING:

Never power up air bag system when SDM is not rigidly attached to the vehicle. Otherwise, personal injury may result.

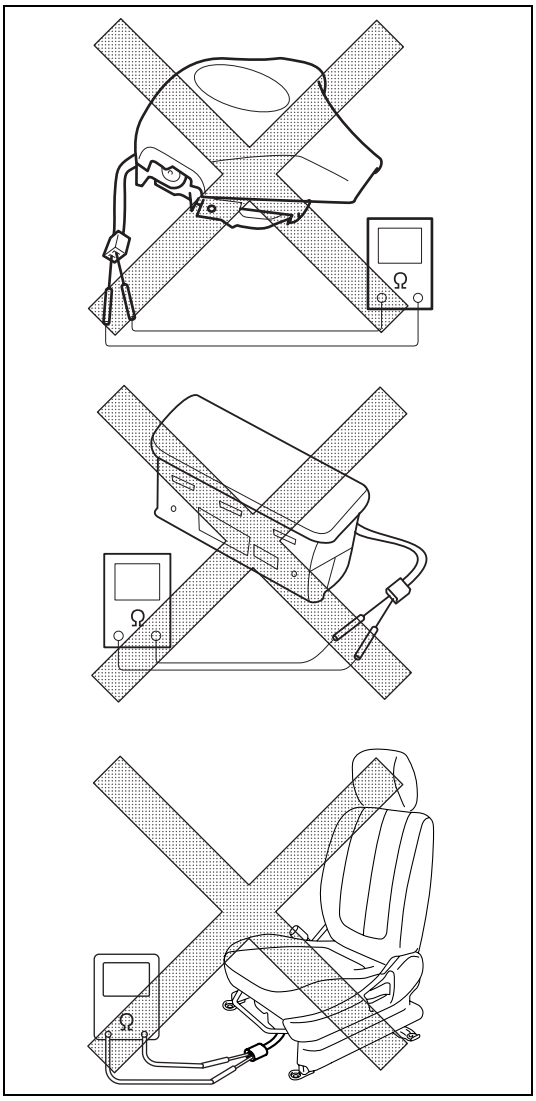
CAUTION:

After detecting one time of such collision as to meet deployment conditions, the SDM must not be used. Refer to "AIR BAG DIAGNOSTIC SYSTEM CHECK" when checking the SDM.

- Never attempt disassembly of SDM.
- When storing SDM, select a place where neither high temperature nor high humidity is anticipated and oil, water and dust are kept off.
- If SDM has been dropped, replace it with a new one.
- If installation part of SDM was damaged, repair that part completely before reinstallation.
- All SDM and mounting bracket fasteners must be carefully torqued and the arrow must be pointed toward the front of the vehicle to ensure proper operation of the air bag system.

LIVE (UNDEPLOYED) AIR BAG (INFLATOR) MODULES

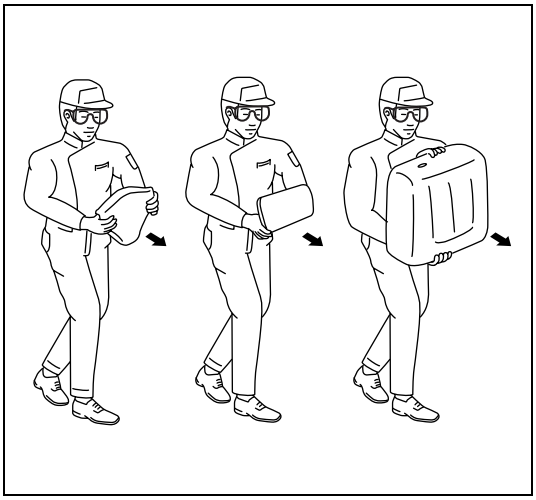
Special care is necessary when handling and storing a live (undeployed) air bag (inflator) modules.
The rapid gas generation produced during deployment of the air bag could cause the air bag (inflator) module, or an object in front of the air bag (inflator) module, to be thrown through the air in the unlikely event of an accidental deployment.



WARNING:

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

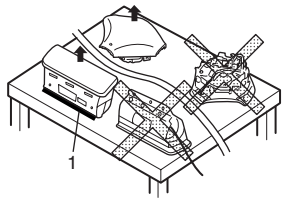
- Never attempt disassembly of the air bag (inflator) modules.
- If any abnormality is found, be sure to replace it with new one as an assembly.
- When an abnormality is noted as existing in the live (undeployed) air bag (inflator) module, be sure to deploy it before discarding it.
- When grease, cleaning agent, oil, water, etc., got on the air bag (inflator) modules (driver, passenger and side of driver and passenger), wipe it off immediately with a dry cloth.
- If air bag (inflator) module was dropped from a height of 90 cm (3 ft) or more, it should be replaced with a new one as an assembly.

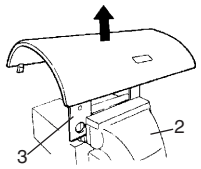


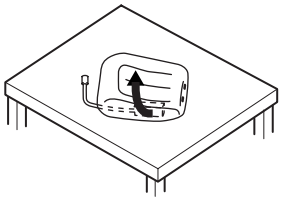
WARNING:

- **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.**

Otherwise, personal injury may result.





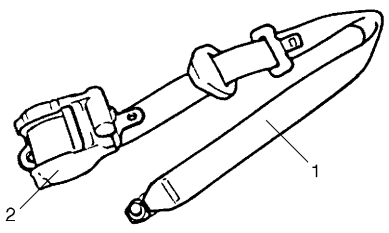


WARNING:

- **For handing and storage of air bag (inflator) module and seat belt pretensioner, select place where ambient temperature below 65°C (150°F), without high humidity and away from electric noise.**
- **Always carry live air bag (inflator) module with trim cover away from you.**
- **When storing live air bag (inflator) module or when leaving live air bag (inflator) module unattended on bench or other surface, always face trim cover up and away from surface. As live passenger air bag (inflator) module must be placed with its trim cover facing up, place it on workbench with slit (1) or use workbench vise (2) to hold it securely at its lower mounting bracket (3).**
- **This is necessary so that free space is provided to allow air bag to expand in the unlikely event of accidental deployment.**
- **Never carry seat belt pretensioner by wire or connector of seat belt pretensioner.**
- **When placing live seat belt pretensioner on workbench or other surface, be sure not to put something on seat belt pretensioner.**

Failure to follow procedures may result in personal injury.

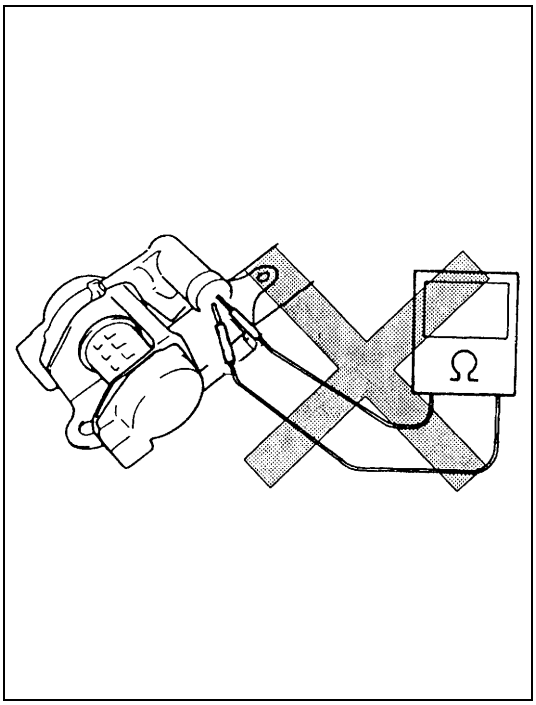
LIVE (INACTIVATED) SEAT BELT PRETENSIONER



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

Also, when the seat belt pretensioners activate, gas is generated and the seat belt (1) is retracted into the retractor assembly (2) quickly.

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



WARNING:

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

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

WARNING:

- **For handling and storage of a live seat belt pretensioner, select a place where the ambient temperature below 65°C (150°F), without high humidity and away from electric noise.**
- **Never carry the seat belt pretensioner by webbing.**
- **When placing live seat belt pretensioner on workbench or other surface, be sure not to put something on seat belt pretensioner.**

Otherwise, personal injury may result.

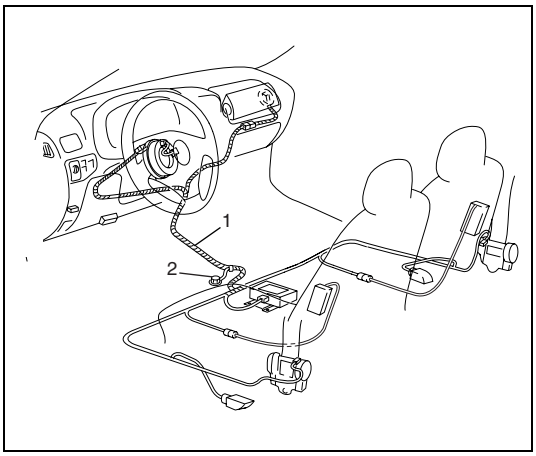
DEPLOYED AIR BAG (INFLATOR) MODULE AND ACTIVATED SEAT BELT PRETENSIONER

WARNING:

- **The air bag (inflator) module and seat belt pretensioner immediately after deployment/activation is very hot. Wait for at least 30 minutes to cool it off before proceeding the work.**
- **Do not apply water, oil, etc. to deployed air bag (inflator) module and to activate seat belt pretensioner.**
- **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.**
- **Wash your hands with mild soap and water after completing the work.**

Refer to the procedure described under “DEPLOYED AIR BAG (INFLATOR) MODULE AND ACTIVATED SEAT BELT PRETENSIONER DISPOSAL” in this section.

AIR BAG WIRE HARNESS AND CONNECTOR IN FLOOR WIRE HARNESS



Air bag wire harness is included in instrument panel harness. The part of coupler side 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 (in floor harness) (1), damaged wire harness, connector or terminal is found, replace wire harness, connectors and terminals as an assembly.
- When installing it, be careful so that the air bag wire harness (in instrument panel harness) (1) is not caught or does not interfere with other parts.
- Make sure air bag system grounding point (2) are clean and grounds are securely fastened for optimum metal-to-metal contact. Poor grounding can cause intermittent problems that are difficult to diagnose.

Disposal

Do not dispose of the live (undeployed) air bag (inflator) modules and the live (inactivated) seat belt pretensioners. When disposal is necessary, be sure to deploy/activate the air bag and seat belt pretensioner according to deployment/activation procedure described in “AIR BAG (INFLATOR) MODULE AND SEAT BELT PRETENSIONER DISPOSAL” in this section.

WARNING:

Failure to follow proper air bag (inflator) module and seat belt pretensioner disposal procedures can result in air bag deployment and pretensioner activation which could cause personal injury. Undeployed air bag (inflator) module and inactivated seat belt pretensioner must not be disposed of through normal refuse channels.

The undeployed air bag (inflator) module and inactivated seat belt pretensioner contain substances that can cause severe illness or personal injury if the sealed container is damaged during disposal.

Repairs and Inspections Required after an Accident

CAUTION:

- **All air bag system components, including the electrical harness (component mounting points), must be inspected after an accident. If any components are damaged or bent, they must be replaced even if air bag system activation did not occur.**
- **Never use air bag system parts from another vehicle.**
- **Do not attempt to service the parts below. Service of these parts is by replacement only.**
  - **– Driver/Passenger/Side air bag (inflator) module, Driver/Passenger seat belt pretensioner**
  - **– SDM**
  - **– Side sensors**
  - **– Contact coil and combination switch assembly**
  - **– Air bag wire harness (in instrument panel wire harness)**
- **Proper operation of the air bag system requires that any repairs to the vehicle structure return it to its original production configuration.**

CAUTION:

After detecting one time of such collision as to meet deployment conditions, the SDM must not be used. Refer to "AIR BAG DIAGNOSTIC SYSTEM CHECK" when checking the SDM.

Accident with deployment/activation - component replacement

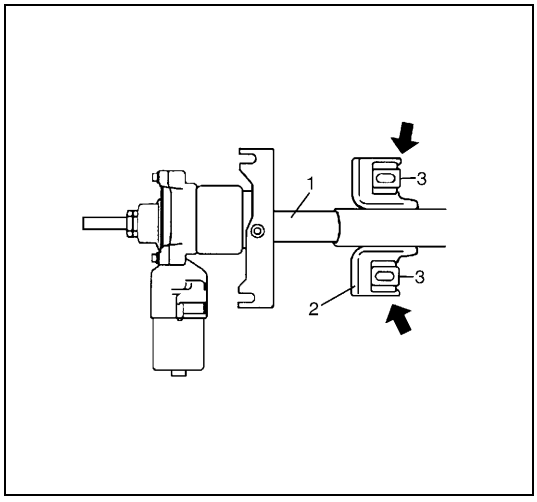
When driver air bag (inflator) module and passenger air bag (inflator) module (if equipped) are deployed, the following components must be replaced.

- Driver air bag (inflator) module and passenger air bag (inflator) module (if equipped)
- Driver and passenger seat belt pretensioners
- SDM

When side air bag (inflator) module (if equipped) is deployed, the following components must be replaced.

- Front seat backs (with side air bag (inflator) module)
- Side sensors
- SDM

Accident with or without deployment/activation - component inspections



Certain air bag system components must be inspected after any crash, whether the air bag system activated or not.

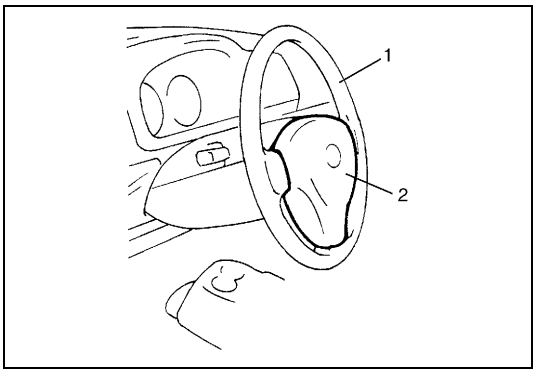
Those components are :

- Steering column (1) and shaft joints
  - – Check for length, damage and bend according to "CHECKING STEERING COLUMN FOR ACCIDENT DAMAGE" in SECTION 3C.

If any faulty condition is found in above checks, replace faulty part.

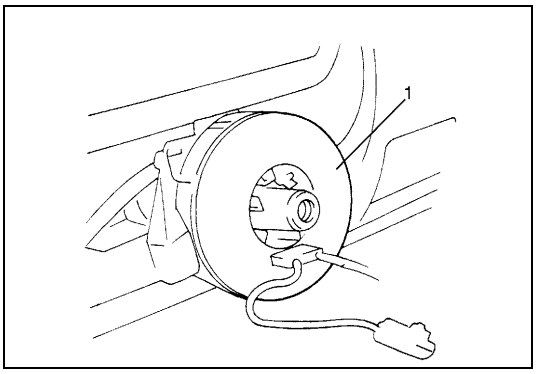
- Steering column bracket (2) and capsules (3)
  - – Check for damage and bent.

If any faulty condition is found in above checks, replace faulty part.



- Steering wheel (1) and driver air bag (inflator) module (2)
  - Check for damage or air bag (inflator) module fitness.
  - Check trim cover (pad surface) for cracks.
  - Check wire harness and connector for damage or tightness.

If any faulty condition is found in above checks, replace faulty part.

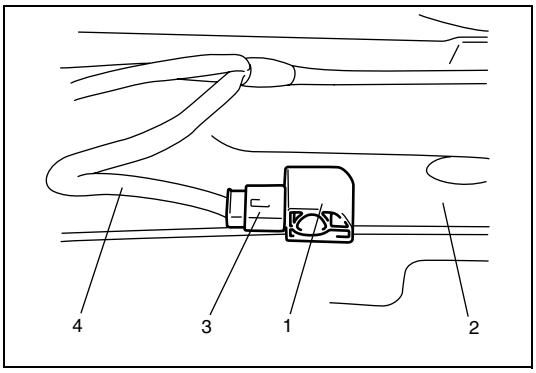


- Contact coil (1) and combination switch assembly
  - Check wire harness and connectors for damage or tightness.
  - Check contact coil case for damage.

If any faulty condition is found in above checks, replace.

- SDM
  - Check for external damage such as deformation, scratch, crack, peeled paint, etc.
  - Check that SDM cannot be installed properly due to a cause in itself.
  - Check that connector or lead wire of SDM has a scorching, melting or damage.
  - Check that connector is connected securely or locked.
  - Check SDM connector and terminals for tightness.
  - Check SDM sets a diagnostic trouble code (Refer to “DTC CHECK” in this section.) and the diagnostic table leads to a malfunctioning SDM.

If any faulty condition is found in above checks, replace.

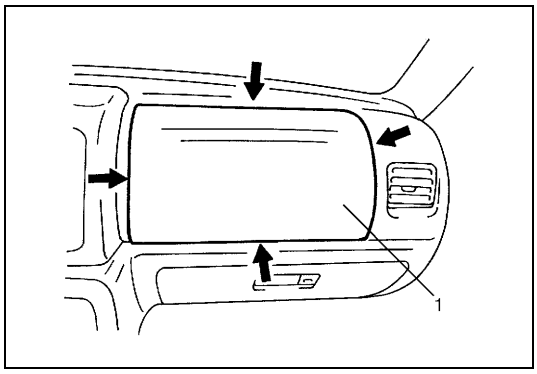


- Side sensors (if equipped)
  - Check sensor (1) and under body (2) for dents, cracks, deformation or rust.
  - Check sensor connector (sensor side and harness side) (3) or sensor lead wire (4) for damage, crack, scorching or melting.

If any faulty condition is found in above checks, replace.

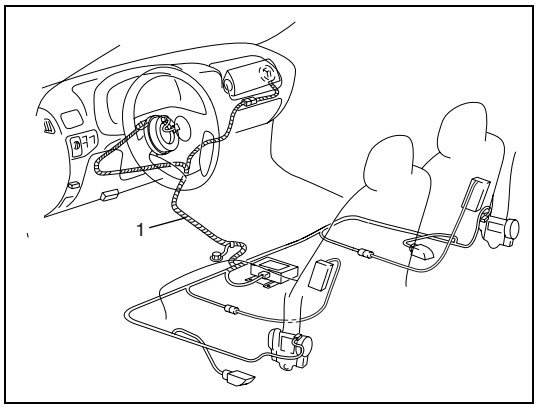
- Instrument panel member and reinforcement
  - Check for any distortion, bending, cracking or other damage.

If any faulty condition is found in above checks, replace.



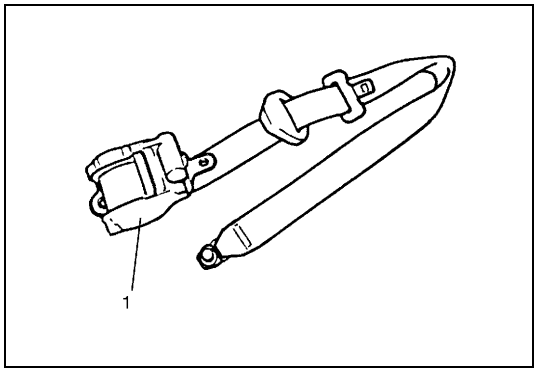
- Passenger air bag (inflator) module (1) (if equipped)
  - Check for dents, cracks, damage or fitness.
  - Check trim cover for cracks or deformities.
  - Check harness and connector for damage or tightness.

If any faulty condition is found in above checks, replace.



- Air bag wire harness (1) and connections
  - Check for damages, deformities or poor connections. (Refer to “INTERMITTENTS AND POOR CONNECTIONS” in this section.)
  - Check wire harness clamps for tightness.

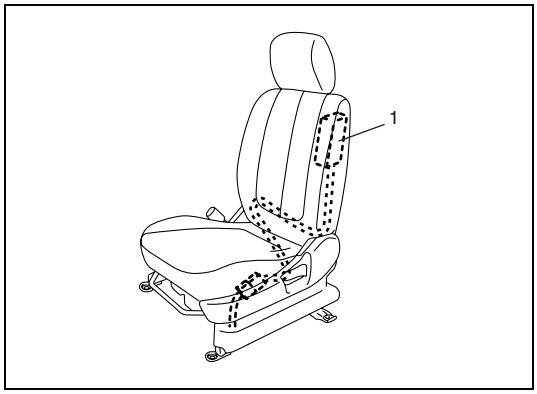
If any faulty condition is found, correct or replace.



- Seat belt pretensioner (1)
  - Check for dents, cracks, damage or fitness
  - Check harness and connector for damage or tightness.

If any faulty condition is found in above checks, replace.

- Seat belts and mounting points
  - Refer to “FRONT SEAT BELT” in Section 10.
- “AIR BAG” warning lamp
  - After vehicle is completely repaired, perform “AIR BAG DIAGNOSTIC SYSTEM CHECK” in this section.



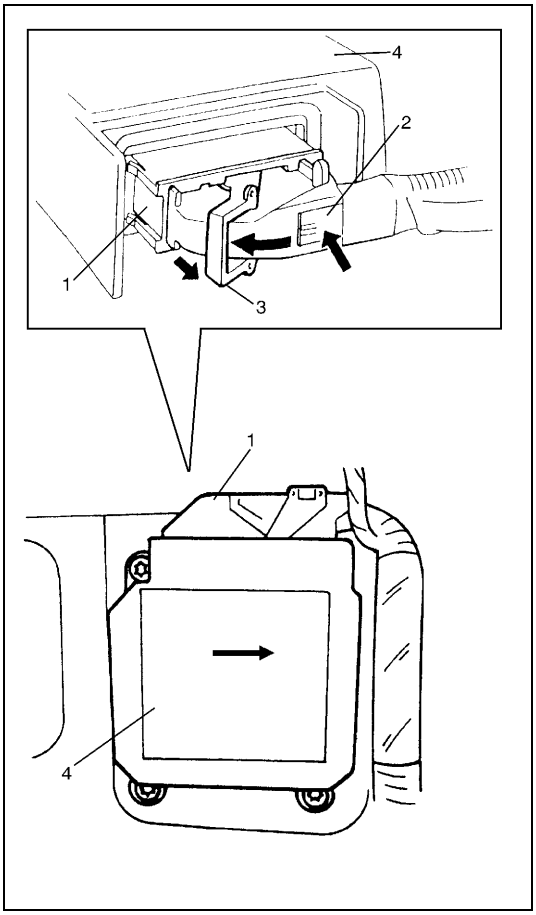
- Front seat (with side air bag (inflator) module (1) (if equipped))
  - Check front seat back for bend or damage.
  - Check front seat back attachment for rattle, looseness and damage
  - Check front seat attachment for rattle, looseness and damage
  - Check for seat reclining and seat sliding operations
  - Check wire harness and connector for damage or tightness

If any faulty condition is found in above checks, replace.

SDM

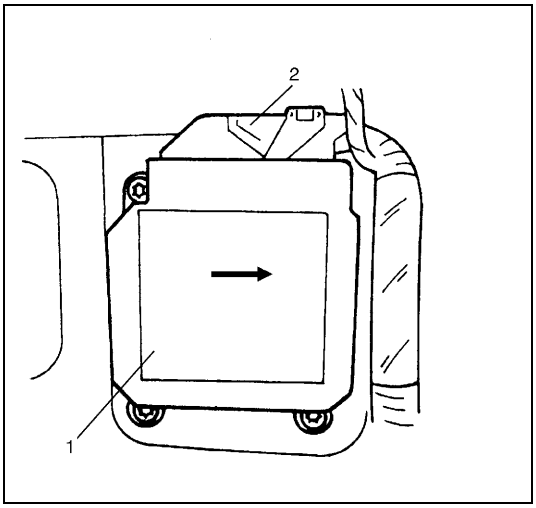
WARNING:
During service procedures, be very careful when handling a Sensing and Diagnostic Module (SDM).
Be sure to read "SERVICE PRECAUTIONS" before starting to work and observe every precaution during work. Neglecting them may result in personal injury or inactivation of the air bag system when necessary.

REMOVAL



1) Disconnect negative cable at battery.
2) Disable air bag system. Refer to "DISABLING AIR BAG SYSTEM" of "SERVICE PRECAUTIONS" in this section.
3) Remove rear console box by removing screws.
4) Release SDM connector locking lever (3) with pushing lock button (2), and then disconnect SDM connector (1) from SDM (4).
5) Remove SDM (4) from vehicle.

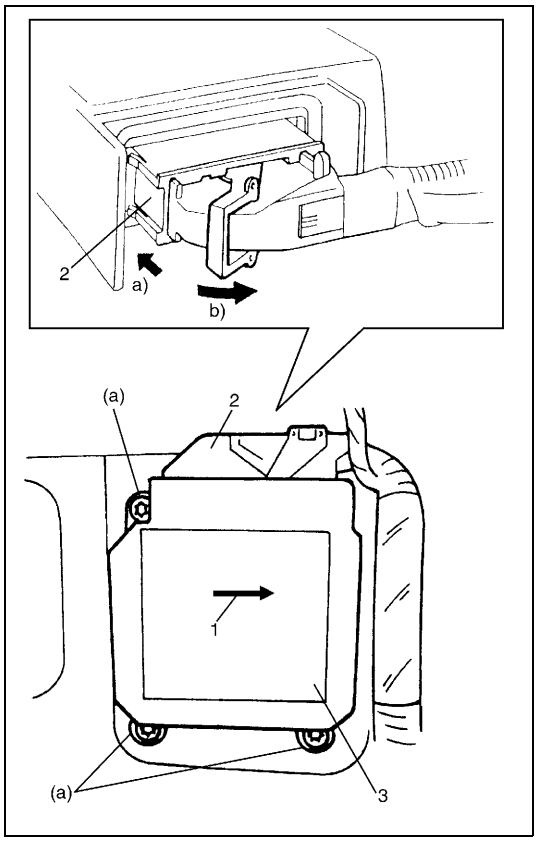
INSPECTION



CAUTION:
- **Do not connect a tester whatever type it may be.**
- **Never repair or disassemble SDM (1).**
- **If SDM has been dropped, or if there are cracks, dents or other defects in the case or plate, replace it with a new one.**

- Check SDM (1) for dents, cracks or deformation.
- Check SDM connector (2) for damage, cracks or lock mechanism.
- Check SDM terminal for bent, corrosion or rust.

If any faulty condition is found in above checks, replace.



INSTALLATION

For installation, reverse removal procedure nothing the following points.

- Check none of the following conditions exists.
  - Bend, scratch, deformity in vehicle body which SDM is mounted.
  - Foreign matters or rusts on mating surface of vehicle body with SDM
- Ensure that arrow (1) on the SDM (3) is pointing toward the front of the vehicle.
- Tighten SDM bolts to specified torque.

Tightening torque
SDM mounting bolt (a) : 7 N·m (0.7 kg-m, 5.0 lb-ft)

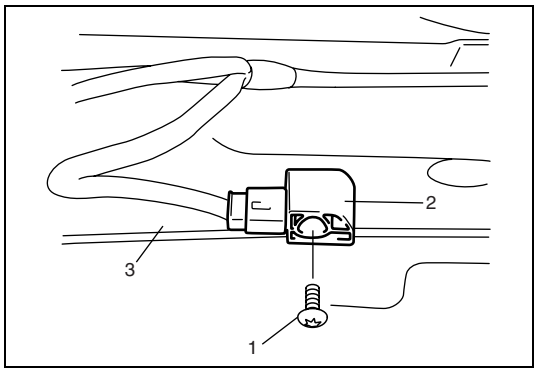
- Connect SDM connector (2) to SDM (3) securely.
- Enable air bag system. Refer to "ENABLING AIR BAG SYSTEM" in this section.

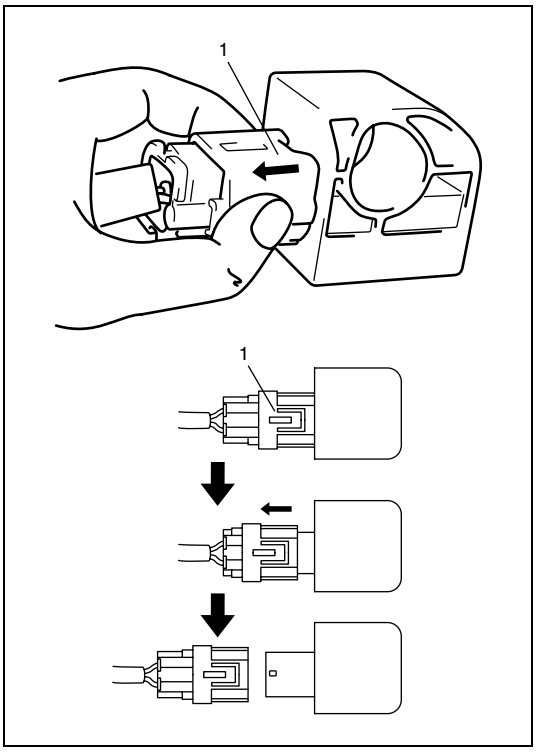
Side Sensor (if equipped)

WARNING:
During service procedures, be very careful when handling a sensor.
- **Never strike or jar a sensor.**
- **Under some circumstance, it could cause improper operation of the air bag system. A sensor bolt must be carefully torqued to assure proper operation.**

REMOVAL

1) Disconnect negative cable at battery.
2) Disable air bag system. Refer to "DISABLING AIR BAG SYSTEM" in this section.
3) Remove center pillar lower trim and side sill scuff.
4) Turn up floor carpet at front seat side.
5) Remove side sensor bolt (1) and side sensor (2) from under body (3).

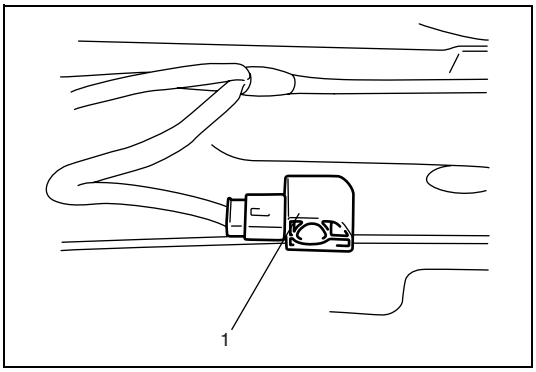




6) Disconnect side sensor connector sliding connector outer (1) as shown.

INSPECTION

CAUTION:
- **Never disassemble side sensor.**
- **Sensor should be replaced when it was dropped from a height of 90 cm (3 ft) or more.**

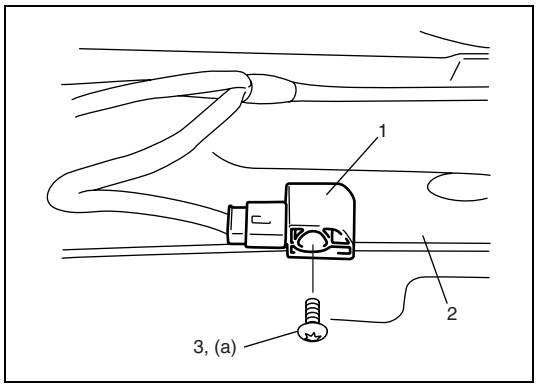


- Check sensor (1) for dents, crack, deformation.
- Check sensor connector (sensor side and harness side), lock mechanism or sensor lead wire for damage, crack, scorching or melting.
- Check connector terminals for bent, corrosion or rust.

If any faulty condition is found in above checks, replace.

INSTALLATION

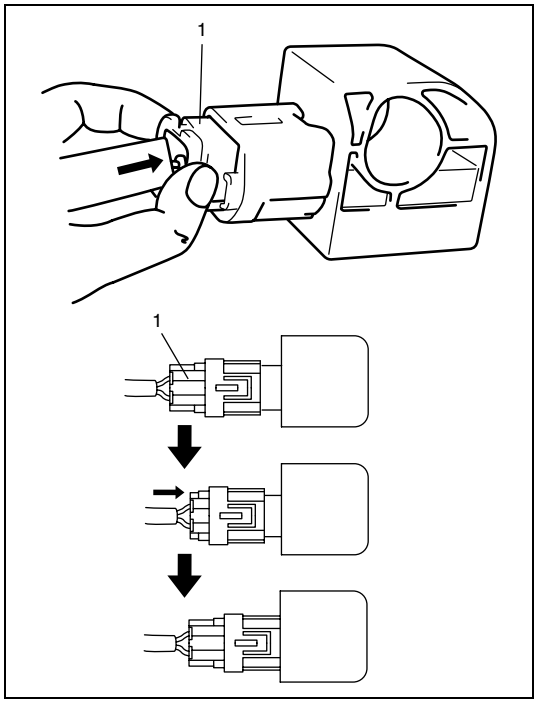
CAUTION:
Proper operation of side sensor requires sensor be rigidly attached to vehicle structure.



1) Check that none of following faulty conditions exists.
   - Bend, deformity or rust of under body.
   - Foreign matter on mating surface of sensor.

2) Install side sensor (1) on under body (2) and tighten side sensor bolt (3) to specified torque.

Tightening torque
Side sensor bolt (a) : 9 N·m (0.9 kg-m, 6.5 lb-ft)



3) Push connector inner (1) until side sensor is connected as shown.

4) Connect negative cable at battery.
5) Enable air bag system. Refer to “ENABLING AIR BAG SYSTEM” in this section.

Seat Belt Pretensioner

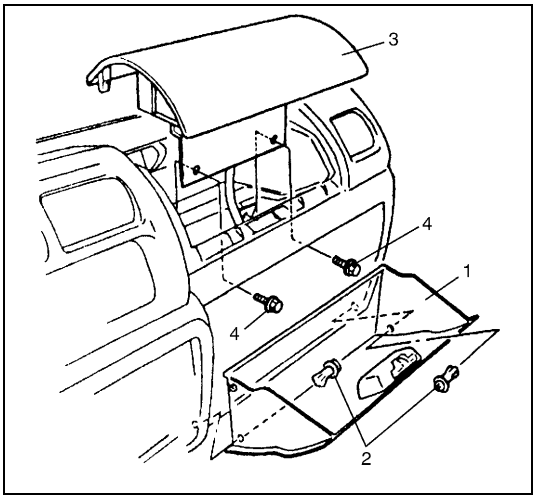
Refer to “FRONT SEAT BELT” in Section 10 for removal, inspection and installation.

Passenger Air Bag (Inflator) Module (if equipped)

WARNING:

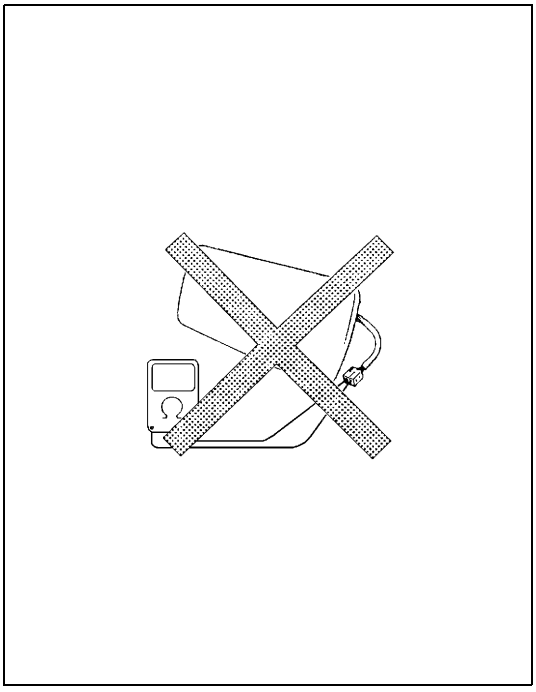
- **Never attempt to disassemble or repair the passenger air bag (inflator) module. If any abnormality is found, be sure to replace it with new one as an assembly.**
- **Be sure to read "SERVICE PRECAUTIONS" before starting to work and observe every precaution during work. Neglecting them may result in personal injury or undeployment of the air bag when necessary.**

REMOVAL



1) Disconnect negative cable at battery.
2) Open glove box (1) and remove clips (2).
3) Press and unhook stoppers and then remove glove box (1).
4) Disable air bag system. Refer to "DISABLING AIR BAG SYSTEM" in this section.
5) Remove passenger air bag (inflator) module attaching bolts (4), and then remove passenger air bag (inflator) module (3) from vehicle.

INSPECTION



WARNING:

Never measure resistance of passenger air bag (inflator) module or disassemble it. Otherwise personal injury may result.

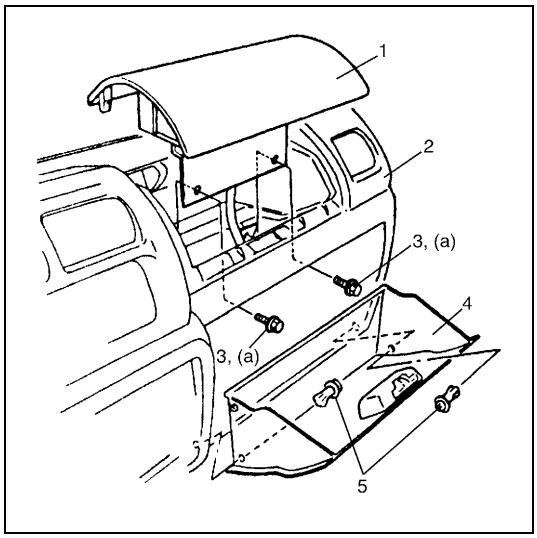
CAUTION:

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

Check air bag (inflator) module appearance visually for following symptoms and if any one of them is applicable, replace with a new one.

- Air bag has deployed.
- There is a crack in trim cover (pad surface).
- Wire harness or connector is damaged.
- Air bag (inflator) module is damaged or a strong impact was applied to it.

INSTALLATION



1) Install passenger air bag (inflator) module (1) to instrument panel (2).
2) Tighten passenger air bag (inflator) module attaching bolts (3) to specified torque.

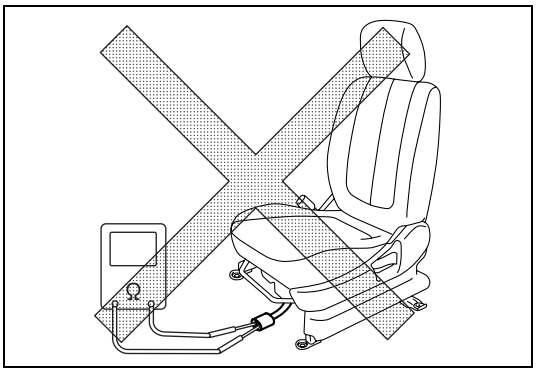
Tightening torque
Passenger air bag (inflator) module mounting bolt
(a) : 23 N·m (2.3 kg-m, 16.5 lb-ft)

3) Set glove box (4) to original position of instrument panel (2) and install clips (5).
4) Connect negative cable to battery.
5) Enable air bag system. Refer to “ENABLING AIR BAG SYSTEM” in this section.

Side Air Bag (Inflator) Module (If Equipped)

WARNING:

- **Never attempt to disassemble front seat back. It is impossible to remove side air bag (inflator) module from front seat back. If any abnormality is found, be sure to replace front seat back with new one as an assembly referring to "FRONT SEAT" in Section 9.**
- **Be sure to read "SERVICE PRECAUTIONS" before starting to work and observe every precaution during work. Neglecting them may result in personal injury or undeployment of the air bag when necessary.**



INSPECTION

WARNING:

Never measure resistance of side air bag (inflator) module or disassemble it. Otherwise personal injury may result.

Check air bag (inflator) module appearance visually for following symptoms and if any one of them is applicable, replace with a new seat back, referring to "FRONT SEAT" in Section 9.

- Air bag has deployed.
- There is a bend or damage in front seat back.
- Wire harness or connector is damaged or tightness.

Driver Air Bag (Inflator) Module

Refer to "DRIVER AIR BAG (INFLATOR) MODULE" in Section 3C for removal, inspection and installation.

Contact Coil and Combination Switch Assembly

Refer to "CONTACT COIL AND COMBINATION SWITCH ASSEMBLY" in Section 3C for removal, inspection and installation.

Seat Belt Pretensioner

Refer to "FRONT SEAT BELT WITH PRETENSIONER" in Section 10 for removal, inspection and installation.

Air Bag (Inflator) Module and Seat Belt Pretensioner Disposal

WARNING:

Failure to follow proper air bag (inflator) module and seat belt pretensioner disposal procedures can result in air bag deployment and pretensioner activation which may cause personal injury.
Do not dispose of live (undeployed) air bag (inflator) modules and seat belt pretensioners. Because undeployed air bag (inflator) module/inactivated seat belt pretensioner must not be disposed of through normal refuse channels.
Undeployed air bag (inflator) module and inactivated seat belt pretensioner contain substances that can cause severe illness or personal injury if sealed container is damaged during disposal.

Air bag (inflator) module/seat belt pretensioner can be deployed/activated inside or outside of vehicle. Deployment/Activation method used depends upon final disposition of vehicle. Review the following instructions in order to determine which will work best in a given situation.

Deployment/Activation Outside of Vehicle :
When you intend to return vehicle to service, deploy air bag (inflator) module(s) or activate seat belt pretensioner(s) outside of vehicle.

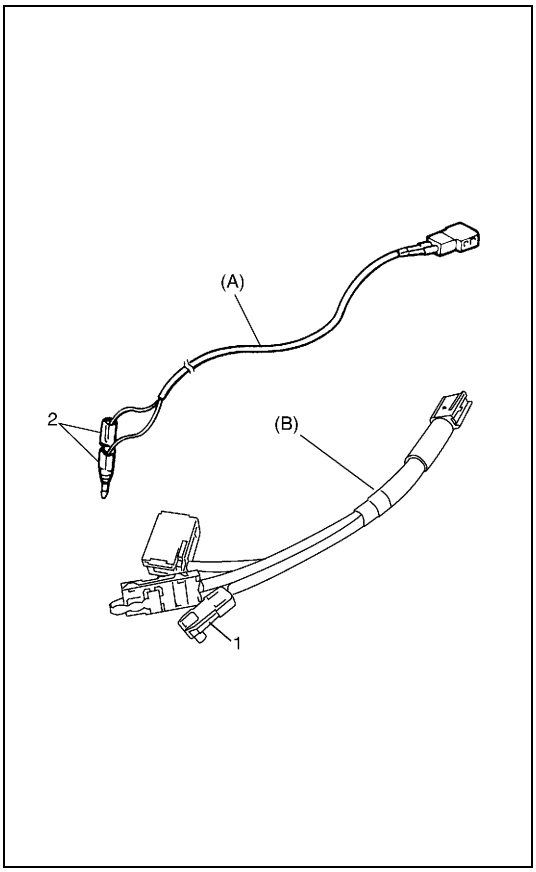
Deployment/Activation Inside of Vehicle :
When vehicle will be destroyed, or salvaged for component parts, deploy air bag modules and/or activate seat belt pretensioners installed on vehicle.

WARNING:

The following precautions must be observed for this work. Failure to observe any of them may result in personal injury.
- **Procedure should be followed strictly as described here.**
- **Be sure to read "SERVICE PRECAUTIONS" beforehand.**
- **To avoid accidental deployment/activation, this work should be performed by no more than one person.**
- **Since smoke is produced when air bag (inflator) module is deployed and pretensioner is activated, select well-ventilated area.**
- **Air bag (inflator) module and seat belt pretensioner will immediately deploy/activate when 12 volts vehicle battery is connected to it. Wear safety glasses throughout this entire deployment/activation and disposal procedure.**
- **Wear suitable ear protection when deploying air bag (inflator) module/activating seat belt pretensioner. Also, advise those who are in area close to deployment/activation site to wear suitable ear protection.**
- **Do not deploy/activate two or more air bag system components (air bag (inflator) modules and seat belt pretensioners) at the same time.**
- **Never connect deployment harness to any 12 volts vehicle battery before connecting deployment harness to air bag (inflator) module and seat belt pretensioner. Deployment harness shall remain shorted and not be connected to 12 volts vehicle battery till you are ready to deploy air bag (inflator) module or activate seat belt pretensioner.**

Deployment/Activation Outside of Vehicle

When you intend to return vehicle to service, deploy air bag (inflator) module(s) or activate seat belt pretensioner(s) outside of vehicle.



1) Turn ignition switch to "LOCK" position and remove key.
2) Wear safety glasses during this deployment/activation procedure.
3) Check that there is no open, short or damage in special tools (deployment harness (A) and adapter cable (B)). If any faulty is found, do not use it and be sure to use new deployment harness.

Special tool
(A) : 09932-75030
(B) : 09932-78320

NOTE:

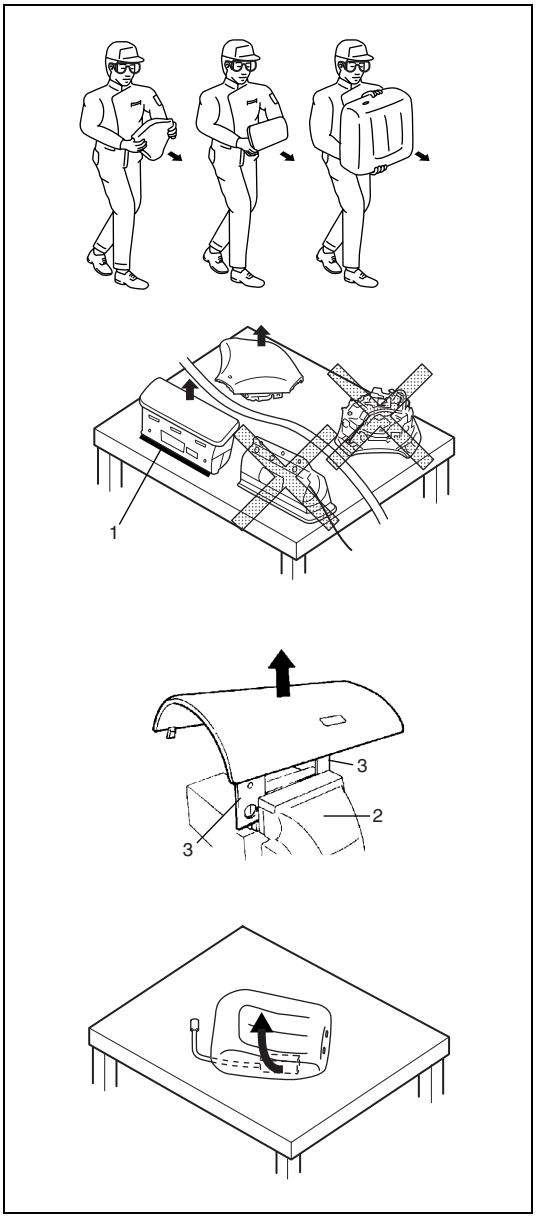
If faulty of seat belt pretensioner connector (1) of adapter cable (B) is found, replace it to spare connector (special tool)

4) Short two deployment harness leads (2) together by fully seating one banana plug into the other.

WARNING:

Deployment harness (A) shall remain shorted and not be connected to 12 volts vehicle battery till you are ready to deploy air bag module or activate seat belt pretensioner.

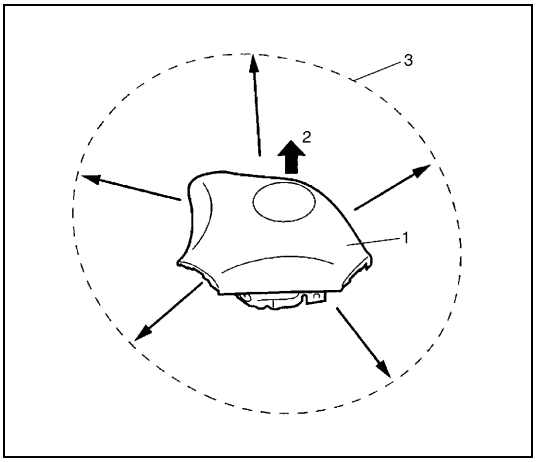
5) Remove air bag (inflator) module(s) or seat belt pretensioner(s) as follows.
   - For driver air bag (inflator) module
     Remove driver air bag (inflator) module from steering wheel referring to "Driver Air Bag (inflator) Module" in Section 3C.
   - For passenger air bag (inflator) module
     Remove passenger air bag (inflator) module from instrument panel referring to "Passenger Air Bag (inflator) Module" in this section.
   - For side air bag (inflator) module
     Remove seat back (side air bag (inflator) module) from front seat referring to "Front Seat and Rear Seat" in Section 9.
   - For seat belt pretensioner
     Remove seat belt pretensioner from vehicle referring to "Front Seat Belt with Pretensioner" in Section 10.



WARNING:

- **For handing and storage of air bag (inflator) module and seat belt pretensioner, select place where ambient temperature below 65°C (150°F), without high humidity and away from electric noise.**
- **Always carry live air bag (inflator) module with trim cover away from you.**
- **When storing live air bag (inflator) module or when leaving live air bag (inflator) module unattended on bench or other surface, always face air trim cover up and away from surface. As live passenger air bag (inflator) module must be placed with its trim cover facing up, place it on workbench with slit (1) or use workbench vise (2) to hold it securely at its lower mounting bracket (3).**
- **This is necessary so that free space is provided to allow air bag to expand in the unlikely event of accidental deployment.**
- **Never carry seat belt pretensioner by webbing.**
- **When placing live seat belt pretensioner on workbench or other surface, be sure not to put something on seat belt pretensioner.**

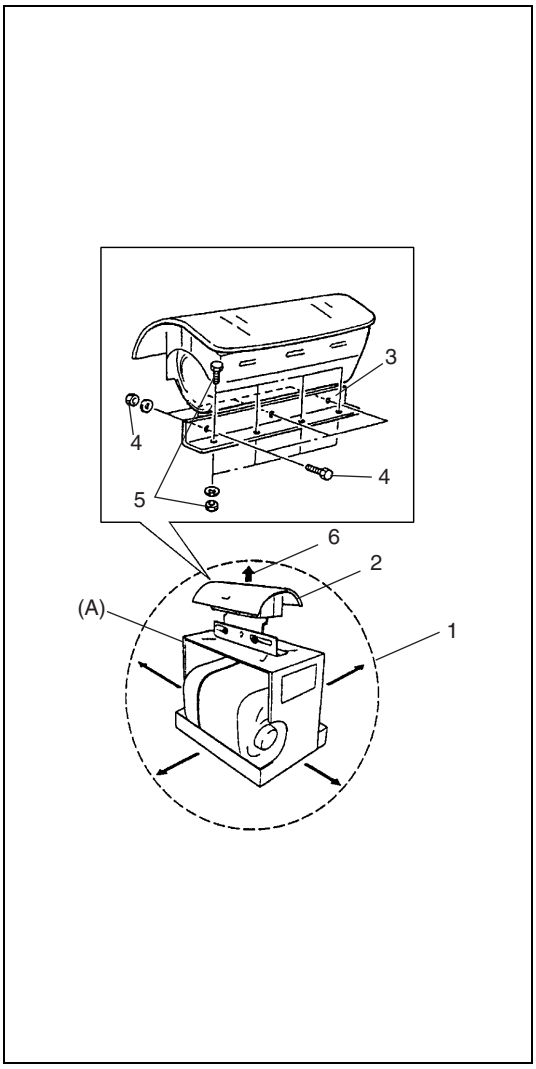
Failure to follow procedures may result in personal injury.



6) Set air bag (inflator) module or seat belt pretensioner as follows.
   - For driver air bag (inflator) module

   a) Clear space (3) on ground about 185 cm (6 ft) in diameter where driver air bag (inflator) module (1) for deployment. Paved, outdoor location where there is no activity is preferred. If outdoor location is not available, space on shop floor where there is no activity and provide sufficient ventilation. Ensure no loose or flammable objects are within deployment area.

   b) Place driver air bag (inflator) module (1) with its vinyl trim cover facing up (2) on ground in step i).



• For passenger air bag (inflator) module

a) Clear space (1) on ground about 185 cm (6 ft) in diameter where passenger air bag (inflator) module for deployment. Paved, outdoor location where there is no activity is preferred. If outdoor location is not available, space on shop floor where there is no activity and provide sufficient ventilation. Ensure no loose or flammable objects are within deployment area.

b) Place deployment fixture (A) on ground in step i).

Special tool
(A) : 09932-75041

c) Fill plastic reservoir in deployment fixture (A) with water or sand. This is necessary to provide sufficient stabilization of fixture during deployment.

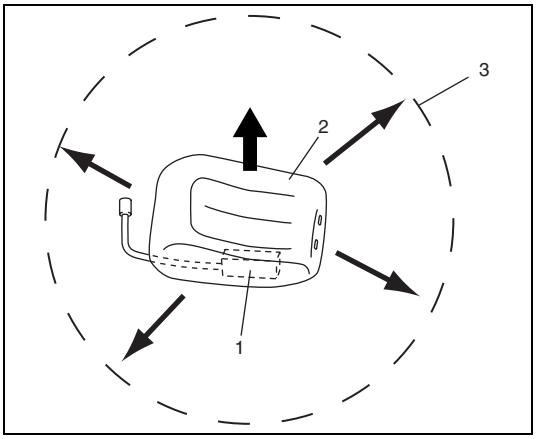
d) Attach passenger air bag (inflator) module (2) in deployment fixture (A) using mounting attachment (3), hold-down bolts & nuts (4) and M8 bolts & nuts (5).

NOTE:

Make sure that deploying direction (6) faces as shown in figure against mounting attachment (3).

CAUTION:

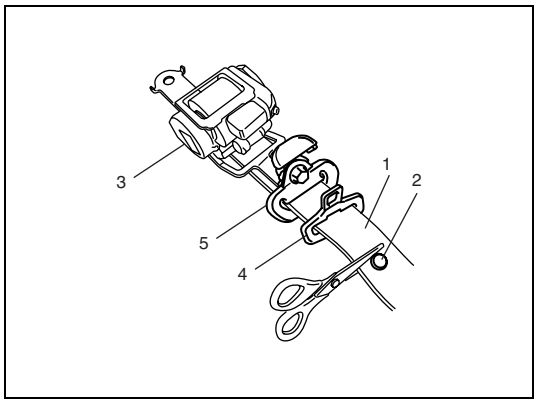
Be sure to use M8 size and 7T strength bolts and nut (5) for fixing passenger air bag (inflator) module (2) to mounting attachment (3).



• For side air bag (inflator) module

a) Clear space (3) on ground about 185 cm (6 ft) in diameter where side air bag (inflator) module (1) for deployment.
Paved, outdoor location where there is no activity is preferred. If outdoor location is not available, space on shop floor where there is no activity and provide sufficient ventilation. Ensure no loose or flammable objects are within deployment area.

b) Place front seat back (2) with side air bag (inflator) module (1) with its frontal seat cover facing up on ground in step i).



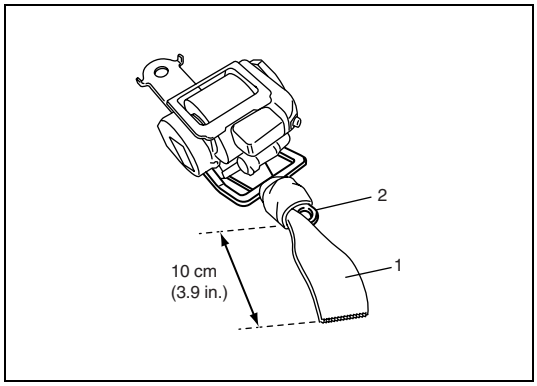
- For seat belt pretensioner

a) Cut webbing (1) at tongue plate stopper (2) of seat belt pretensioner (3) side as shown.

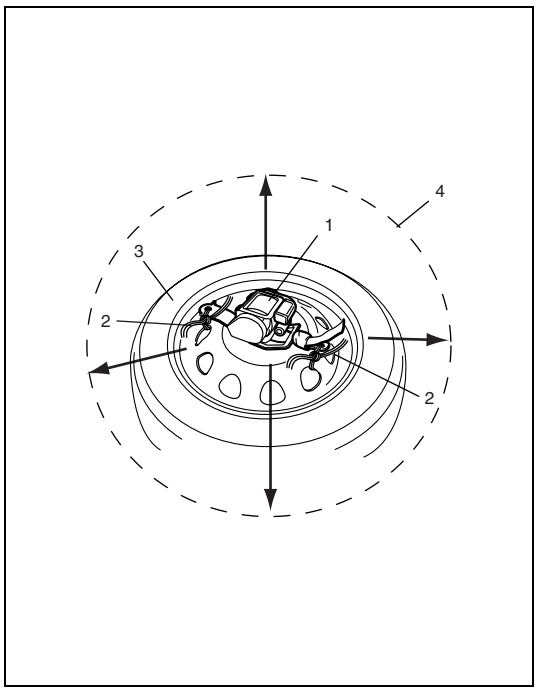
NOTE:

Hold seat belt pretensioner (3) vertically in the same condition as it is installed. Otherwise, webbing can't be pulled out.

b) Remove tongue plate (4) and shoulder anchor (5) from webbing (1).



c) Tie webbing (1) to seat belt pretensioner mounting plate (2) tightly at 10 cm (3.9 in.) from cutting edge as shown.



d) Tie seat belt pretensioner (1) with wire harness (2) to wheel-installed tire (3) as shown.

Wire harness specification:

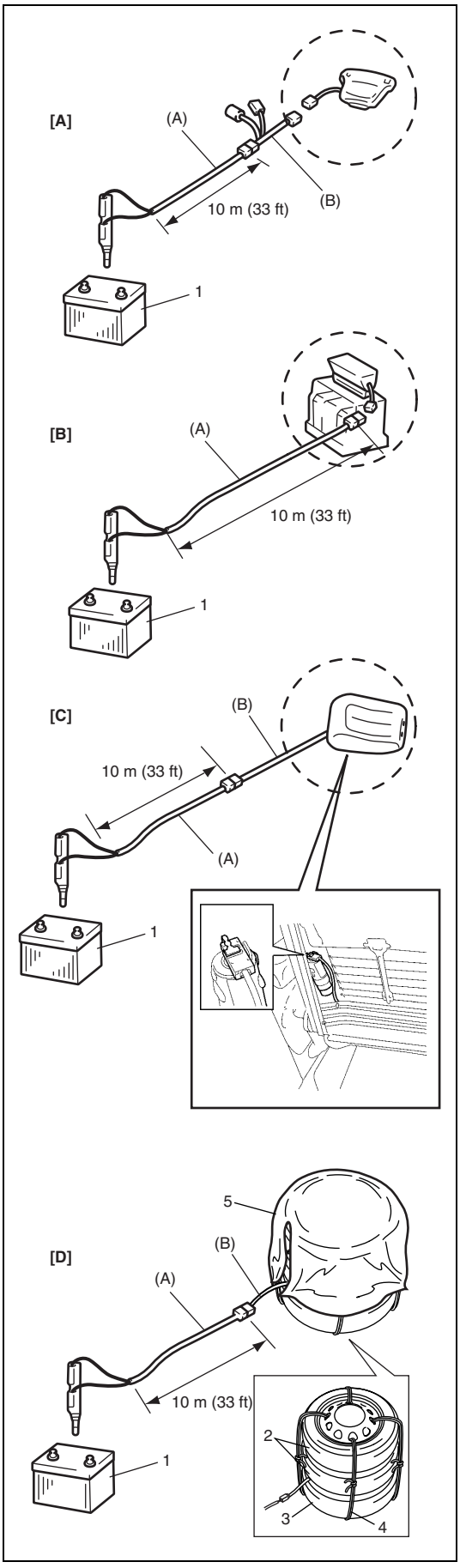
Stripped wire harness section 1.25 mm^2 (0.0019 in.^{2}) or more (Stripped wire harness diameter 1.25 mm (0.05 in.) or more)

NOTE:

Wind wire harness (2) around at least 3 times.

e) Clear space (4) on ground about 185 cm (6 ft) in diameter where seat belt pretensioner (1) is to be activated. Paved, outdoor location where there is no activity is preferred. If outdoor location is not available, space on shop floor where there is no activity and provide sufficient ventilation. Ensure no loose or flammable objects are within activation area.

f) Place wheel-installed tire (3) with seat belt pretensioner (1) on ground in step v).



7) Stretch deployment harness (A) from air bag (inflator) module or seat belt pretensioner to its full length 10 m (33 ft).

Special tool
(A): 09932-75030

8) Place 12 volts vehicle battery (1) near shorted end of deployment harness (A).
9) Verify that area around air bag (inflator) module or seat belt pretensioner is clear of all people and loose or flammable objects.
10) Connect adapter cable (B) as follows.

Special tool
(B): 09932-78320

- For driver air bag (inflator) module :
  Verify that driver air bag (inflator) module is resting with its vinyl trim cover facing up, and connect adapter cable (B) to driver air bag (inflator) module.
- For passenger air bag (inflator) module :
  Verify that passenger air bag (inflator) module is firmly and properly secured on deployment fixture (special tool).
- For side air bag (inflator) module :
  To turn over seat back trim (6) and disconnect side air bag (inflator) module connector (7), then connect adapter cable (B) to side air bag (inflator) module.
- For seat belt pretensioner :

a) Connect adapter cable (B) to seat belt pretensioner.
b) Pile 2 wheel-installed tires (2) on top of tire with seat belt pretensioner (3), and tie them with wire harness (4) as shown.

Wire harness specification:

Stripped wire harness section 1.25 mm^2 (0.0019 in.^{2}) or more (Stripped wire harness diameter 1.25 mm (0.05 in.) or more)

NOTE:

Wind wire harness (4) around at least 2 times.

c) Drape blanket (5) over those tires.

11) Connect adapter cable (B) to deployment harness (A) and lock connector with lock slider or lock lever.

[A]:	For driver air bag (inflator) module
[B]:	For passenger air bag (inflator) module
[C]:	For side air bag (inflator) module
[D]:	For seat belt pretensioner

12) Notify all people in immediate area that you intend to deploy/ activate air bag (inflator) module or seat belt pretensioner.

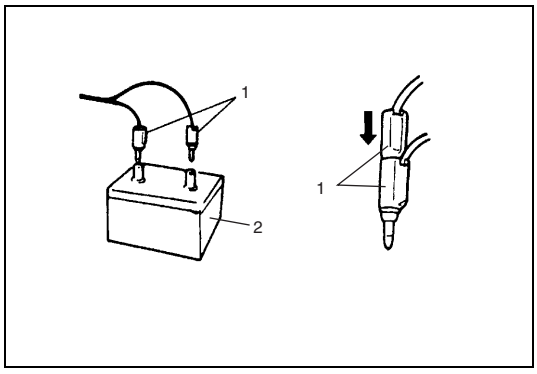
NOTE:

- **When air bag (inflator) module deploys and seat belt pretensioner activates, rapid gas expansion will create substantial report. Wear suitable ear protection. Notify all people in immediate area that you intend to deploy air bag (inflator) module or activate seat belt pretensioner and suitable ear protection should be worn.**
- **When driver air bag (inflator) module deploys, driver air bag (inflator) module may jump about 30 cm (1 ft) vertically. This is normal reaction to force of rapid gas expansion inside of drive air bag (inflator) module.**
- **After air bag (inflator) module has been deployed, surface of air bag (inflator) may contain powdery residue. This powder consists primarily of cornstarch (used to lubricate bag (inflator) as it inflates) and byproducts of chemical reaction.**

WARNING:

- **Do not place deployed air bag (inflator) module and activated seat belt pretensioner near any flammable objects.**
- **Do not apply water, oil, etc. to deployed air bag (inflator) module and activated seat belt pretensioner.**
- **Wait for about 30 minutes before touching any metal surface of air bag (inflater) module or seat belt pretensioner module. Disregarding these precautions may cause fire or personal injury.**

Failure to follow procedures may result in fire or personal injury.

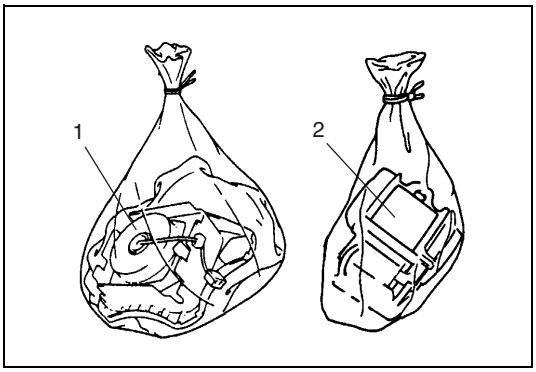


13) Separate two banana plugs (1) on deployment harness.
14) Connect deployment harness to 12 volts vehicle battery (2). This will immediately deploy or activate air bag (inflator) module or seat belt pretensioner.
15) Disconnect deployment harness from 12 volts vehicle battery (2) and short two deployment harness leads together by fully seating one banana plug into the other.
16) In the unlikely event that air bag (inflator) module or seat belt pretensioner did not deploy/activate after following these procedures, proceed immediately with Step 22) through 25). If air bag (inflator) module or seat belt pretensioner did deploy or activate, proceed with Steps 17) through 21).
17) Put on pair of shop gloves to protect your hands from possible irritation and heat when handling deployed air bag (inflator) module or activated seat belt pretensioner.

18) Disconnect adapter cable (special tool) from air bag (inflator) module or seat belt pretensioner as soon as possible. This will prevent adapter cable (special tool) from damage due to possible contact with hot air bag (inflator) module or hot seat belt pretensioner.
19) Check adapter cable connector as follows.
    - For air bag (inflator) module
      Air bag (inflator) module connector of adapter cable (special tool) are designed to be reused. However they should be inspected for damage after deployment. Replace it with new adapter cable (special tool), if necessary.
    - For seat belt pretensioner
      Seat belt pretensioner connector of adapter cable (special tool) should be inspected for damage when seat belt pretensioner is activated. Replace it with spare connector (special tool), if necessary.

NOTE:

Do not reuse faulty seat belt pretensioner connector of adapter cable (special tool) because it can be destroyed by shock when seat belt pretensioner is activated.



20) Dispose of deployed air bag (inflator) module (1) or activated seat belt pretensioner (2) through normal refuse channels after it has cooled for at least 30 minutes and tightly seal air bag (inflator) module (1) or seat belt pretensioner (2) in strong vinyl bag. (Refer to “Deployed Air Bag (Inflator) Module and Activated Seat Belt Pretensioner Disposal” in detail.)
21) Wash your hands with mild soap and water afterward.

NOTE:

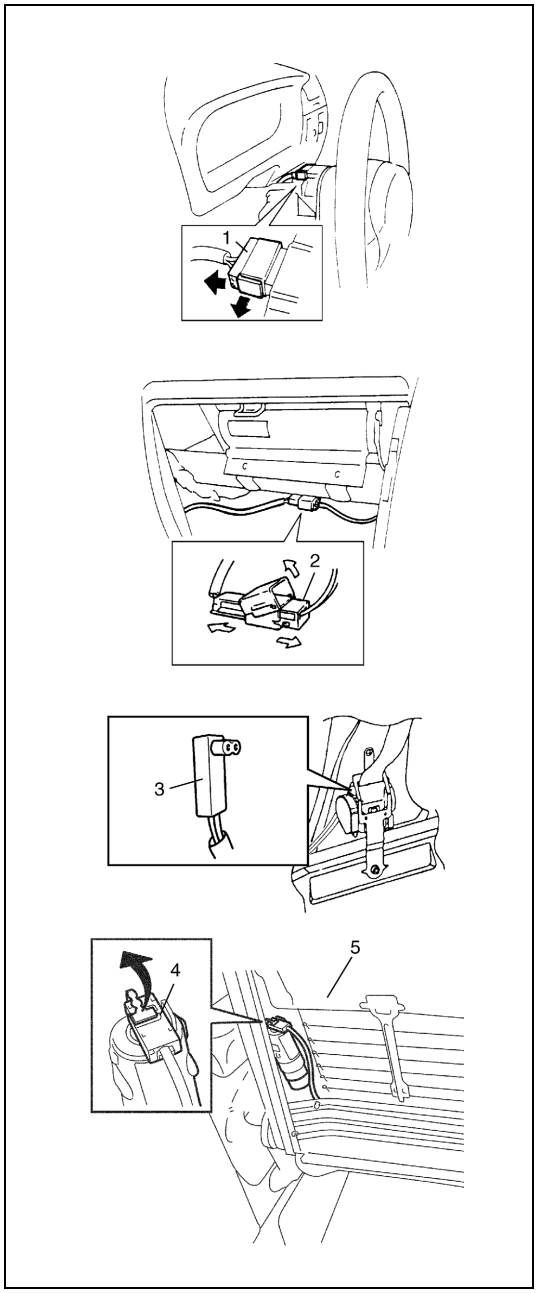
Remaining steps are to be followed in the unlikely event that air bag (inflator) module did not deploy or seat belt pretensioner did not activate.

22) Ensure that deployment harness has been disconnected from 12 volts vehicle battery and that its two banana plugs have been shorted together by fully seating one banana plug into the other.
23) Disconnect deployment harness and adapter cable (special tool) from air bag (inflator) module and seat belt pretensioner.
24) Temporarily store undeployed air bag (inflator) module or inactivated seat belt pretensioner referring to “Service Precautions” for details.
25) Contact your local distributor for further assistance.

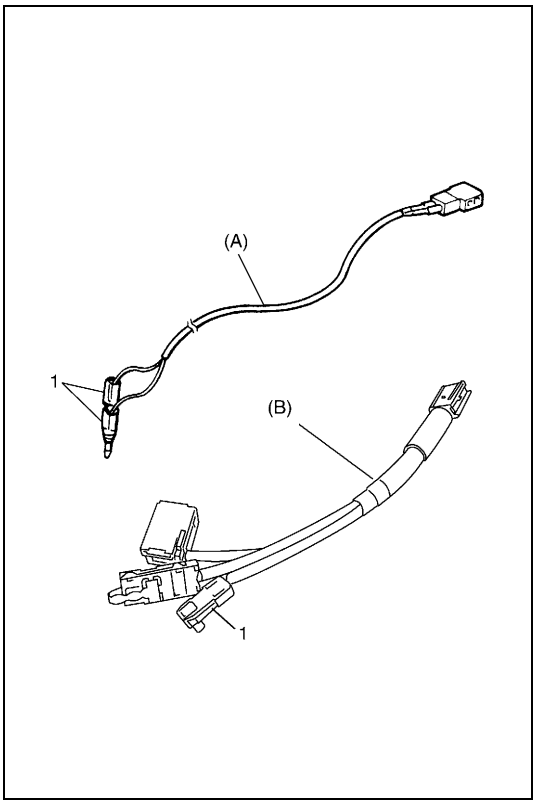
Deployment/Activation Inside of Vehicle

When vehicle will be destroyed, or salvaged for component parts, deploy air bag modules and/or activate seat belt pretensioners installed on vehicle.

1) Turn ignition switch to “LOCK” position, remove key and put on safety glasses.
2) Remove all loose objects from front seats and instrument panel.
3) Disconnect air bag (inflator) module or seat belt pretensioner connector as follows.
   a) For driver air bag (inflator) module
      Remove steering column upper and lower covers, then disconnect contact coil connector (1) located behind steering wheel.
   b) For passenger air bag (inflator) module
      Remove glove box from instrument panel and disconnect passenger air bag (inflator) module connector (2).
   c) For seat belt pretensioner
      Remove both side (driver and passenger side) center pillar lower trims and disconnect seat belt pretensioner connectors (3).
   d) For side air bag (inflator) module
      To turn over driver and passenger side seat back trims (5) and disconnect side air bag (inflator) module connectors (4).
4) Confirm that each air bag (inflator) module/seat belt pretensioner is securely mounted.



[A] :	For driver air bag (inflator) module
[B] :	For passenger air bag (inflator) module
[C] :	For seat belt pretensioner
[D] :	For side air bag (inflator) module



5) Check that there is no open, short or damage in special tools (deployment harness (A) and adapter cable (B)). If any faulty condition is found, do not use it and be sure to use new deployment harness (A) and/or adapter cable (B).

NOTE:

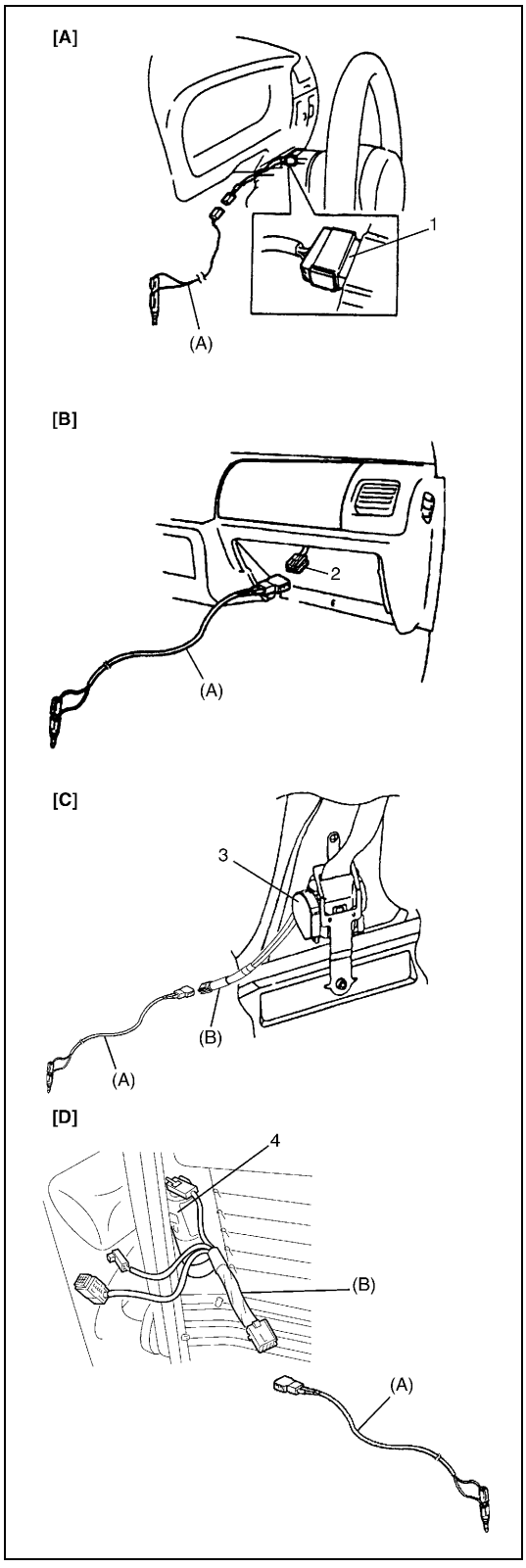
If faulty of seat belt pretensioner connector (1) of adapter cable (B) is found, replace it to spare connector (special tool).

Special tool
(A) : 09932-75030
(B) : 09932-78320

6) Short two deployment harness leads (1) together by fully seating one banana plug into the other.

WARNING:

Deployment harness (A) shall remain shorted and not be connected to 12 volts vehicle battery until you are ready to deploy air bag (inflator) module or activate seat belt pretensioner.

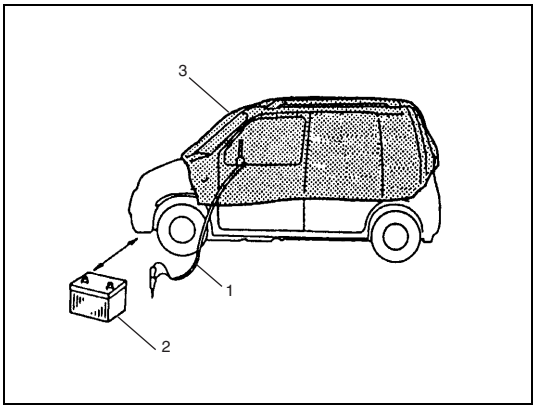


7) Connect deployment harness (A) and/or adapter cable (B) to air bag (inflator) module or seat belt pretensioner as follows.

Special tool
(A) : 09932-75030
(B) : 09932-78320

- For driver air bag (inflator) module
  Connect adapter cable (B) to deployment harness (A) and lock connectors with lock slider.
  Connect adapter cable (B) in series with deployment harness (A) to contact coil connector (1) located behind steering wheel.
- For passenger air bag (inflator) module
  Connect deployment harness (A) to passenger air bag (inflator) module connector (2) till click can be heard.
- For seat belt pretensioner
  Connect adapter cable (B) to deployment harness (A) and lock connectors with lock slider.
  Connect adapter cable (B) in series with deployment harness (A) to seat belt pretensioner (3).
- For side air bag (inflator) module
  Connect adapter cable (B) to deployment harness (A) and lock connector with lock lever.
  Connect adapter cable (B) in series with deployment harness (A) to side air bag (inflator) module (4).

[A] :	For driver air bag (inflator) module
[B] :	For passenger air bag (inflator) module
[C] :	For seat belt pretensioner
[D] :	For side air bag module



8) Route deployment harness (1) out of vehicle.
9) Verify that inside of vehicle and area surrounding vehicle are clear of all people and loose or flammable objects.
10) Stretch deployment harness (1) to its full length 10 m (33 ft).
11) Place 12 volts vehicle battery (2) near shorted end of deployment harness (1).
12) Completely cover windshield area and front door window openings with drop cloth, a blanket or any similar item (3). This reduces possibility of injury due to possible fragmentation of vehicle's glass or interior.

13) Notify all people in immediate area that you intend to deploy/ activate air bag (inflator) module or seat belt pretensioner.

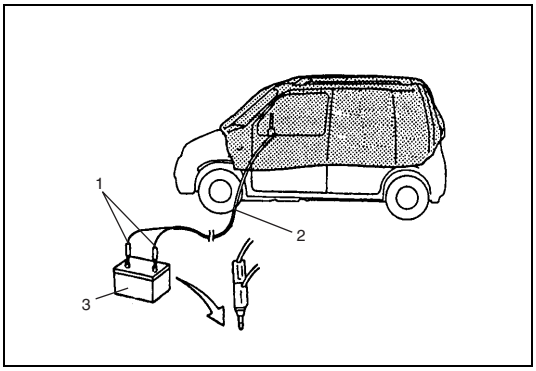
NOTE:

- **When air bag (inflator) module deploys or seat belt pretensioner activates, rapid gas expansion will create substantial report. Wear suitable ear protection. Notify all people in immediate area that you intend to deploy air bag (inflator) module or to activate seat belt pretensioner and suitable ear protection should be worn.**
- **After air bag (inflator) module has been deployed, surface of air bag may contain powdery residue. This powder consists primarily of cornstarch (used to lubricate air bag (inflator) module as it inflates) and by-products of chemical reaction.**

WARNING:

- **Do not place deployed air bag (inflator) module and activated seat belt pretensioner near any flammable objects.**
- **Do not apply water, oil, etc. to deployed air bag (inflator) module and activated seat belt pretensioner.**
- **Wait for about 30 minutes before touching any metal surface of air bag (inflater) module or seat belt pretensioner module. Disregarding these precautions may cause fire or personal injury.**

Failure to follow procedures may result in fire or personal injury.



14) Separate two banana plugs (1) on deployment harness (2).
15) Connect deployment harness (2) to 12 volts vehicle battery (3). This will immediately deploy or activate air bag (inflator) module or seat belt pretensioner.
16) Disconnect deployment harness (2) from 12 volts vehicle battery (3) and short two deployment harness leads together by fully seating one banana plug into the other.

17) Repeat Steps 2) through 16) to deploy/activate air bag (inflator) modules and seat belt pretensioners which has not been deployed/activated, if any.
18) In the unlikely event that air bag (inflator) module and seat belt pretensioner after following these procedures, proceed immediately with Step 24) through 26). If air bag (inflator) module and seat belt pretensioner did deploy/activate, proceed with Steps 19) through 23).
19) Carefully remove drop cloth from vehicle and clean off any fragments or discard it entirely.
20) Put on pair of shop gloves to protect your hands from possible irritation and heat when handling deployed air bag (inflator) module and activated seat belt pretensioner.
21) Disconnect adapter cable (special tool) from air bag (inflator) module or seat belt pretensioner as soon as possible. This will prevent adapter cable (special tool) from damage due to possible contact with hot air bag (inflator) module or hot seat belt pretensioner.
22) Check adapter cable connector as follows.
    - For air bag (inflator) module :
      Air bag (inflator) module connector of adapter cable (special tool) are designed to be reused. However they should be inspected for damage after deployment. Replace it with new deployment harness, if necessary.
    - For seat belt pretensioner :
      Seat belt pretensioner connector of adapter cable (special tool) should be inspected for damage when seat belt pretensioner is activated. Replace it with spare connector (special tool), if necessary.

    NOTE:

    Do not reuse faulty seat belt pretensioner connector of adapter cable (special tool) because it can be destroyed by shock when seat belt pretensioner is activated.

23) With air bag (inflator) modules deployed and seat belt pretensioners activated, vehicle may be scrapped in the same manner as non-air bag system/seat belt pretensioner equipped vehicle.

NOTE:

Remaining steps are to be followed in the unlikely event that air bag (inflator) module did not deploy or seat belt pretensioner did not activate.

24) Remove undeployed air bag (inflator) module(s) and/or inactivated seat belt pretensioner(s) from vehicle as follows.
    - For driver air bag (inflator) module :
      Remove driver air bag (inflator) module from steering wheel referring to “Driver Air Bag (inflator) Module” in Section 3C.

- For passenger air bag (inflator) module :
  Remove passenger air bag (inflator) module from instrument panel referring to “Passenger Air Bag (inflator) Module” in this section.
- For side air bag (inflator) module :
  Remove seat bag (side air bag (inflator) module) from front seat referring to “Front Seat and Rear Seat” in Section 9.
- For seat belt pretensioner :
  Remove seat belt pretensioner from vehicle referring to “Front Seat Belt with Pretensioner” in Section 10.

25) Temporarily store undeployed air bag (inflator) module and/or inactivated seat belt pretensioner referring to “SERVICE PRECAUTIONS” for details.
26) Contact your local distributor for further assistance.

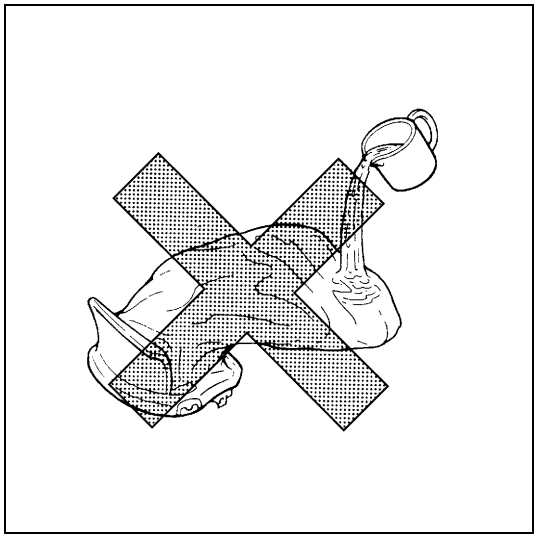
Deployed Air Bag (Inflator) Module and Activated Seat Belt Pretensioner Disposal

WARNING:

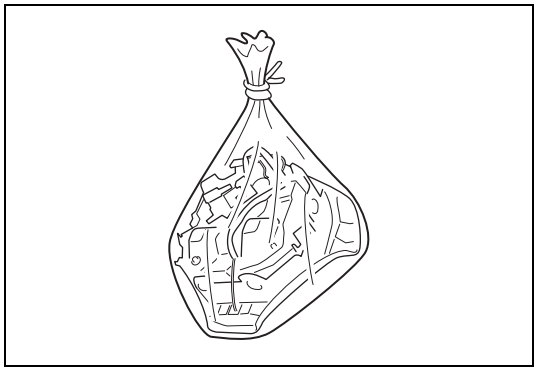
Failure to follow proper air bag (inflator) module and seat belt pretensioner disposal procedures can result in air bag deployment and pretensioner activation which may cause personal injury. Undeployed air bag (inflator) module and inactivated seat belt pretensioner must not be disposed of through normal refuse channels.

Undeployed air bag (inflator) module and inactivated seat belt pretensioner contains substances that can cause severe illness or personal injury if sealed container is damaged during disposal.

Deployed air bag (inflator) module and activated seat belt pretensioner can be disposed of through normal refuse channels just like any other parts. For their disposal, however, following points should be noted.



- Air bag (inflator) module and seat belt pretensioner immediately after deployment/activation is very hot. Wait for 30 minutes to cool it off before handling it.
- Never apply water, oil, etc. to deployed air bag (inflator) module and activated seat belt pretensioner to cool it off and be careful so that water, oil etc. does not get on deployed air bag (inflator) module and activated seat belt pretensioner.
- After air bag (inflator) module has been deployed, surface of air bag may contain a powdery residue. This powder consists primarily of cornstarch (used to lubricate air bag (inflator) module as it inflates) and by-products of chemical reaction. As with many service procedures, you should wear gloves and safety glasses.



- When disposing of deployed air bag (inflator) module and activated seat belt pretensioner, be sure to seal it in a vinyl bag.
- When air bag (inflator) module and seat belt pretensioner have been deployed/activated inside of vehicle which is going to be scrapped, leave them as installed to vehicle.
- Be sure to wash your hands with mild soap and water after handling it.

Tightening Torque Specification

Fastening part	Tightening torque		
	N•m	kg-m	lb-ft
SDM mounting bolt	7	0.7	5.0
Passenger air bag (inflator) module bolt	23	2.3	16.5
Side sensor bolt	9	0.9	6.5

Special Tool

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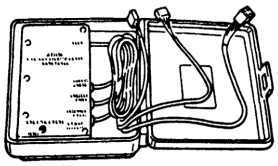
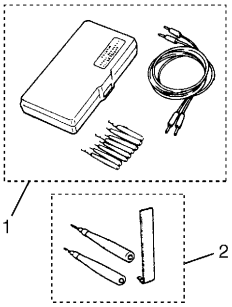
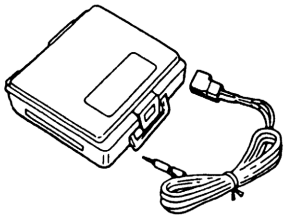
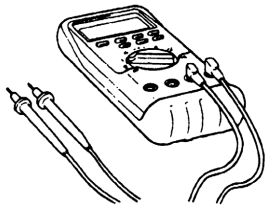
<td> 
09932-75010
Air bag load tool</td>
<td> 
09932-76010
Connector test adapter set (See NOTE “E”.)</td>
<td> 
09932-75031
Air bag deployment harness</td>
<td> 
Digital multimeter (See NOTE “A” and WARNING.)</td>
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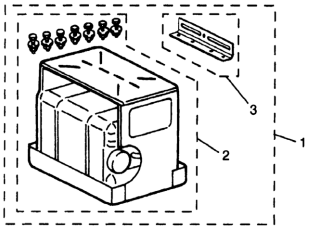
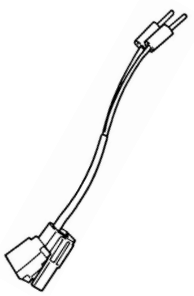
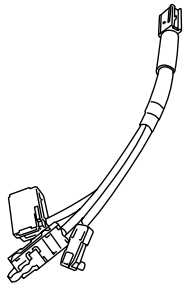
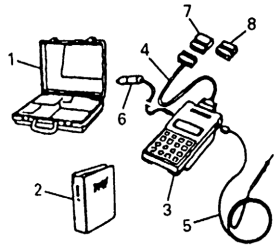
<td> 
09932-75041
Passenger air bag (inflator) module deployment fixture</td>
<td> 
09932-78310
Adapter cable</td>
<td> 
09932-78320
Deployment adapter cable</td>
<td> 
09931-76011
SUZUKI scan tool (Tech 1A) kit (See NOTE “C”.)</td>
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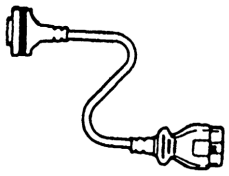
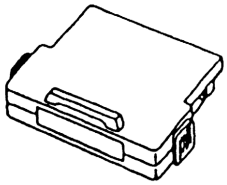
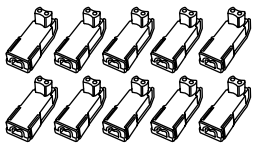
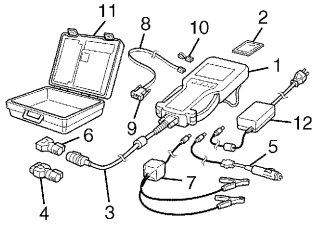
<td> 
09931-76030
16/14 pin DLC cable</td>
<td> 
Mass storage cartridge for Tech 1A</td>
<td> 
09932-75420
Spare connector (See NOTE “D”.)</td>
<td> 
Tech 2 kit (SUZUKI scan tool) (See NOTE “F”.)</td>
</tr>
</table>

WARNING:

Be sure to use the specified digital multimeter. Otherwise, air bag deployment or personal injury may result.

NOTE:

- **"A" : Digital multimeter for which the maximum test current is 10 mA or less at the minimum range of resistance measurement.**
- **"B" : 1. 09932-75041 (PAB deployment fixture) or 2. 09932-75040 (PAB deployment fixture) and 3. 09932-75050 (PAB deployment fixture bracket) PAB : Passenger air bag (inflator) module.**
- **"C" : This kit includes the following items and substitutes for the Tech 2 kit.**
  1. Storage case, 2. Operator's manual, 3. Tech 1A, 4. DLC cable, 5. Test lead/probe, 6. Power source cable, 7. DLC cable adapter, 8. Self-test adapter.
- **"D" : These connector are spare connector for adaptor cable (09932-78320).**
- **"E" : This set includes the following items.**
  1. Connector test adapter kit (09932-75020), 2. Connector test adapter & shorting bar release tool (09932-76020)
- **"F" : This kit includes the following items and substitutes for the Tech 1A kit.**
  1. Tech 2, 2. PCMCIA card, 3. DLC cable, 4. SAE 16/19 adapter, 5. Cigarette cable, 6. DLC loopback adapter, 7. Battery power cable, 8. RS232 cable, 9. RS232 adapter, 10. RS232 loopback connector, 11. Storage case, 12. Power supply

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