

Body Electrical Control System

Precautions

Precautions in Diagnosing Trouble

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- Diagnostic information stored in BCM memory can be cleared as well as checked by using SUZUKI scan tool. Before using scan tool, read its Operator's (Instruction) Manual carefully to have good understanding as to what functions are available and how to use it.
- Be sure to read "Precautions for Electrical Circuit Service in Section 00" before inspection and observe what is written there.
- Communication of ECM, TCM (A/T model), ABS control module, 4WD control module (if equipped), keyless start control module (if equipped), combination meter and BCM is established by CAN (Controller Area Network). For detail of CAN communication for BCM, refer to "CAN Communication System Description". Therefore, handle CAN communication line with care referring to "Precaution for CAN Communication System in Section 00".

General Description

BCM General Description

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The Body electrical Control Module (BCM) is incorporated in junction block. Do not attempt removal of BCM from junction block as it may cause contact failure. The BCM incorporates relays and controllers which are used for the following systems and controls them.

- Power door lock (if equipped)
- Keyless entry (if equipped)
- Door lock function of keyless start system (if equipped)
- Rear wiper
- Combination meter
- Interior light

- Warning buzzer
- Rear end door window defogger and door mirror heater (if equipped)
- Rear end door opener (if equipped)
- Theft deterrent light

Also, the BCM has a function to cause the interior light and open door warning light in the combination meter to turn off when any door is left open for longer than 15 minutes to reduce wasteful battery consumption. In addition, it is possible to check operation of actuator which is controlled by BCM by using the output test function of SUZUKI scan tool to operate actuator simulatively.

CAN Communication System Description

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Refer to "CAN Communication System Description in Section 1A" for CAN communication system description. BCM communication control data with each control module as follows.

BCM Transmission Data

		ECM	Combination Meter	Keyless Start Control Module (if equipped)		
BCM	Transmit	DATA	A/C switch ON signal	○		
			Electric load signal	○		
			Brake fluid level switch signal		○	
			Parking brake switch signal		○	
			Diagnostic trouble code (DTC)		○	
			Illumination ON signal		○	
			Seat belt buckle switch signal		○	
			Charging system signal		○	○
			Engine oil pressure switch signal		○	○
			Door switch status		○	○
			Door lock status			○

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BCM Reception Data

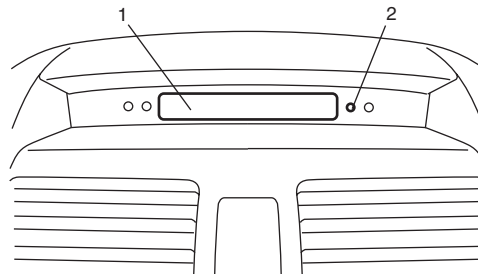
			ECM	TCM (A/T model)	Combination Meter	Keyless Start Control Module (if equipped)	
BCM	← Receive	DATA	Engine speed signal	○			
			Engine coolant temperature signal	○			
			Vehicle speed signal	○			
			Brake pedal switch signal	○			
			A/C compressor clutch signal	○			
			A/C refrigerant pressure signal	○			
			Fuel consumption signal	○			
			Engine type signal	○			
			Transmission range sensor signal		○		
			Combination meter spec signal			○	
			Ignition knob switch signal				○
			Door lock/unlock request signal				○
			Buzzer request signal				○
			Answer back request signal				○

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Theft Deterrent Light

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The information display or clock (1) of this vehicle includes a theft deterrent light (2) for the theft preventive purpose. The BCM makes the theft deterrent light flash at certain intervals after the ignition switch is turned off until it is turned on again. Also, DTCs stored in BCM can be checked by reading the flashing patterns of the theft deterrent light when diagnosing troubles.



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Security Alarm Description (If Equipped)

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Operation

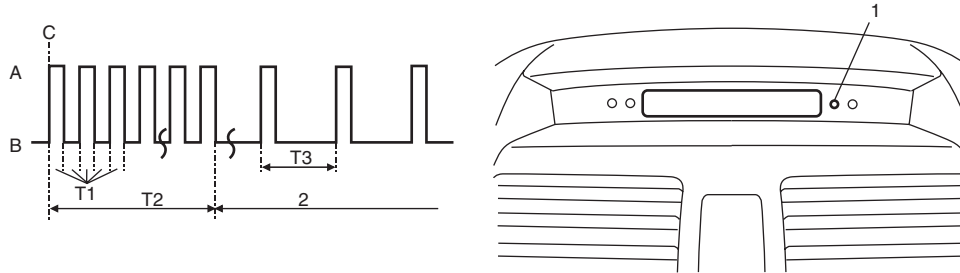
The security alarm system provides a warning of an abnormal condition to those who are around. Its operation is as follows. While the system is in the stand-by mode (when 20 seconds or more elapsed after the door is locked using a keyless entry transmitter or door request switch), BCM monitors door lock status, door switch status and battery power supply voltage. When it detects an abnormal condition (door is unlocked by some way other than using keyless entry transmitter or door request switch and opened or cut off BCM power supply voltage temporarily), it activates the warning buzzer (located in BCM), theft deterrent light, hazard warning relay and horn relay.

The security alarm system has 2 selectable modes.

- A mode: No operation
- B mode: Theft deterrent light blinks, hazard warning lights blink, warning buzzer (located in BCM) sounds and horn sounds

10B-3 Body Electrical Control System:

When “B” mode is selected and the door is locked using keyless entry transmitter or door request switch, the theft deterrent light (1) flashes at 0.1 second interval for 20 seconds and the security alarm system is set to the stand-by mode (2). Once it is set to the stand-by mode, the theft deterrent light blinks at 2 second intervals. When the system is set to stand-by mode and the door is unlocked by some way other than using keyless entry transmitter or door request switch and opened or cut off BCM power supply voltage temporarily, the alarm devices operate according to the selected mode as described above.



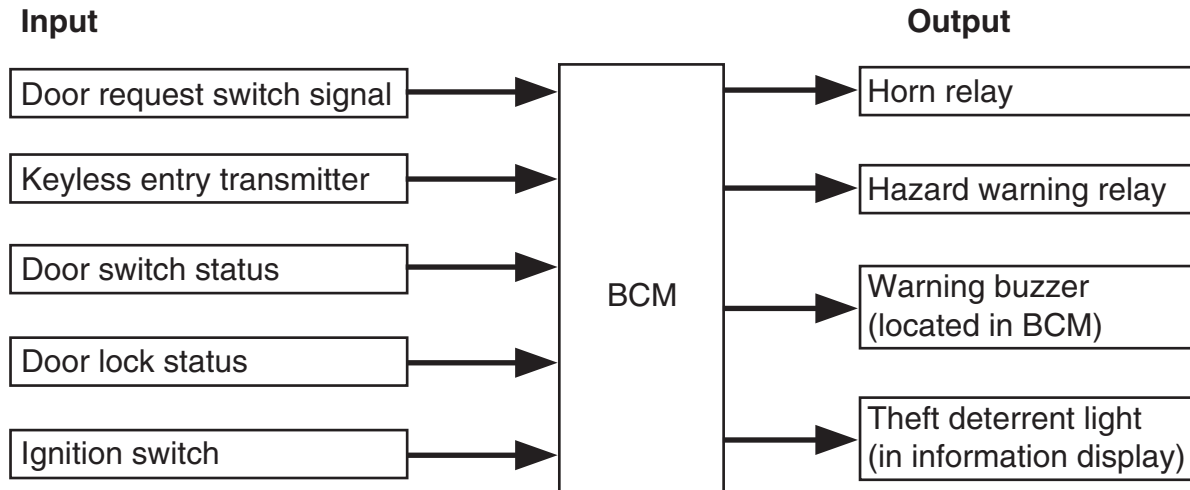
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A: Indicator light turned ON	T1: 0.1 seconds
B: Indicator light turned OFF	T2: 20 seconds
C: When door is locked using keyless entry transmitter or door request switch	T3: 2 seconds

The alarm stops under either of the following conditions.

- Ignition switch is turned ON
 - A certain time has elapsed since the alarm started
- For selection of the mode of the security alarm system, refer to “Security Alarm Mode Selection Procedure (If Equipped)”.

Input / Output Table



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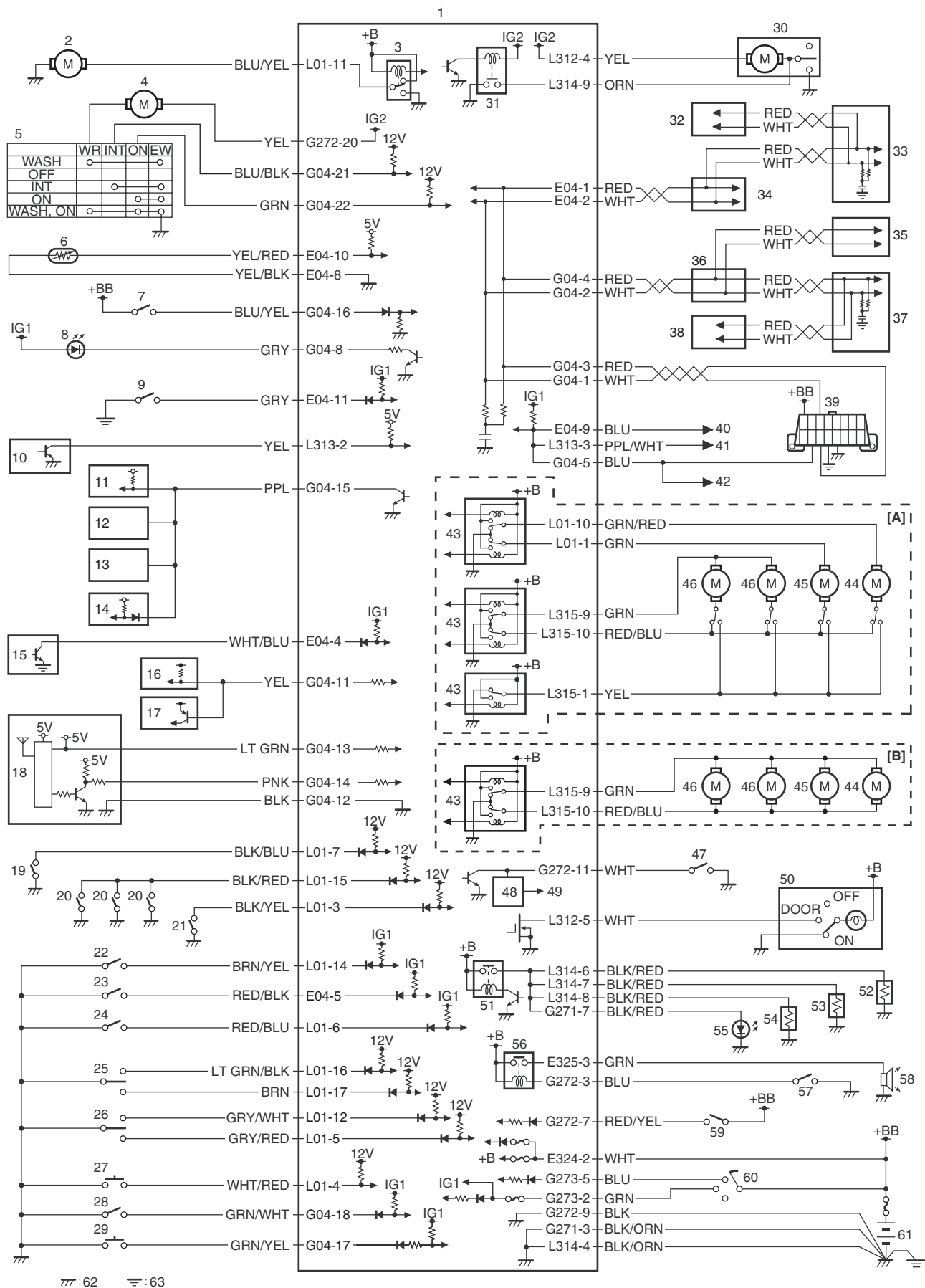
Schematic and Routing Diagram

Body Electrical Control System Wiring Circuit Diagram

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NOTE

This wiring diagram shows circuits related to only BCM, not the entire circuits of BCM and junction block. Refer to “Power Supply Diagram in Section 9A” for wiring circuits other than the figure below.



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[A]: Without security alarm system	21. Rear end door switch	43. Door lock actuator relay (if equipped)
[B]: With security alarm system	22. Driver side seat belt switch	44. Driver side door lock actuator (if equipped)

10B-5 Body Electrical Control System:

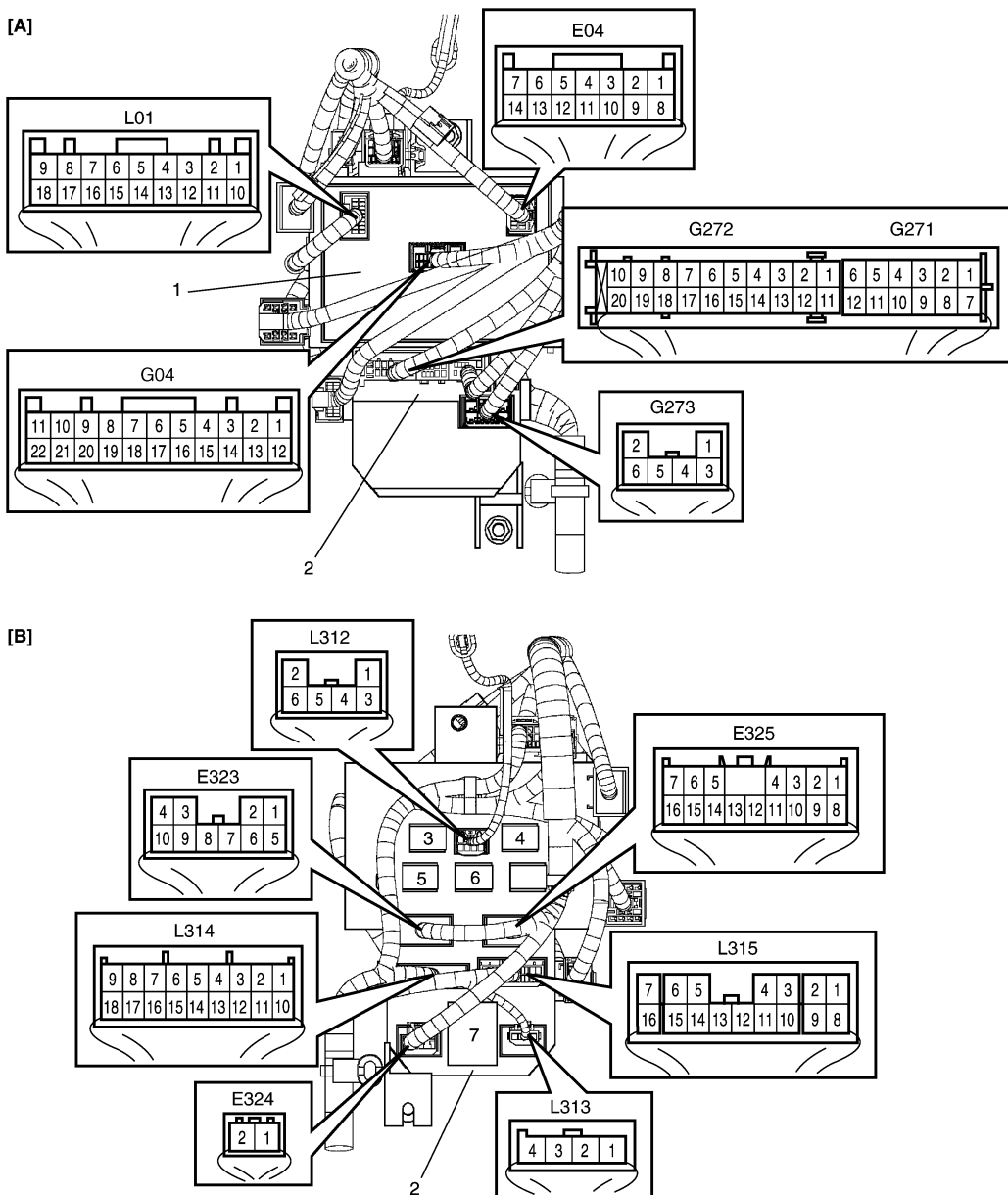
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1. BCM	23. Brake fluid level switch	45. Passenger side door lock actuator (if equipped)
2. Rear end door opener actuator (if equipped)	24. Parking brake switch	46. Rear door lock actuator (if equipped)
3. Rear end door opener relay (if equipped)	25. Door key cylinder switch (included in door lock actuator) (if equipped)	47. Hazard warning switch
4. Rear washer motor	26. Manual door lock switch (if equipped)	48. Turn signal and hazard warning relay
5. Rear wiper and washer switch	27. Rear end door opener switch (if equipped)	49. To turn signal light
6. Outside air temperature sensor (if equipped)	28. A/C switch (if equipped)	50. Interior light
7. Key reminder switch	29. Rear end door window defogger switch	51. Rear end door window defogger relay
8. Theft deterrent light	30. Rear wiper motor	52. Right side door mirror heater (if equipped)
9. Oil pressure switch	31. Rear wiper relay	53. Left side door mirror heater (if equipped)
10. SDM	32. TCM (A/T model)	54. Rear end door window defogger
11. P/S control module	33. ECM	55. Rear end door window defogger indicator light
12. Navigation (if equipped)	34. ABS control module	56. Horn relay
13. Audio unit (if equipped)	35. Keyless start control module (if equipped)	57. Horn switch
14. Headlight leveling control module (if equipped)	36. CAN junction connector	58. Horn
15. Generator	37. Combination meter	59. Lighting switch
16. Information display (if equipped)	38. 4WD control module (if equipped)	60. Ignition switch
17. HVAC control module (if equipped)	39. DLC	61. Battery
18. Keyless entry receiver (if equipped)	40. To ABS control module and P/S control module	62. Body ground
19. Driver side door switch	41. To SDM	63. Engine ground
20. Other than driver side door switch	42. To HVAC control module (if equipped)	

Connector Layout Diagram of BCM and Junction Block

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BCM and Junction Block Connectors (Viewed from Harness Side)



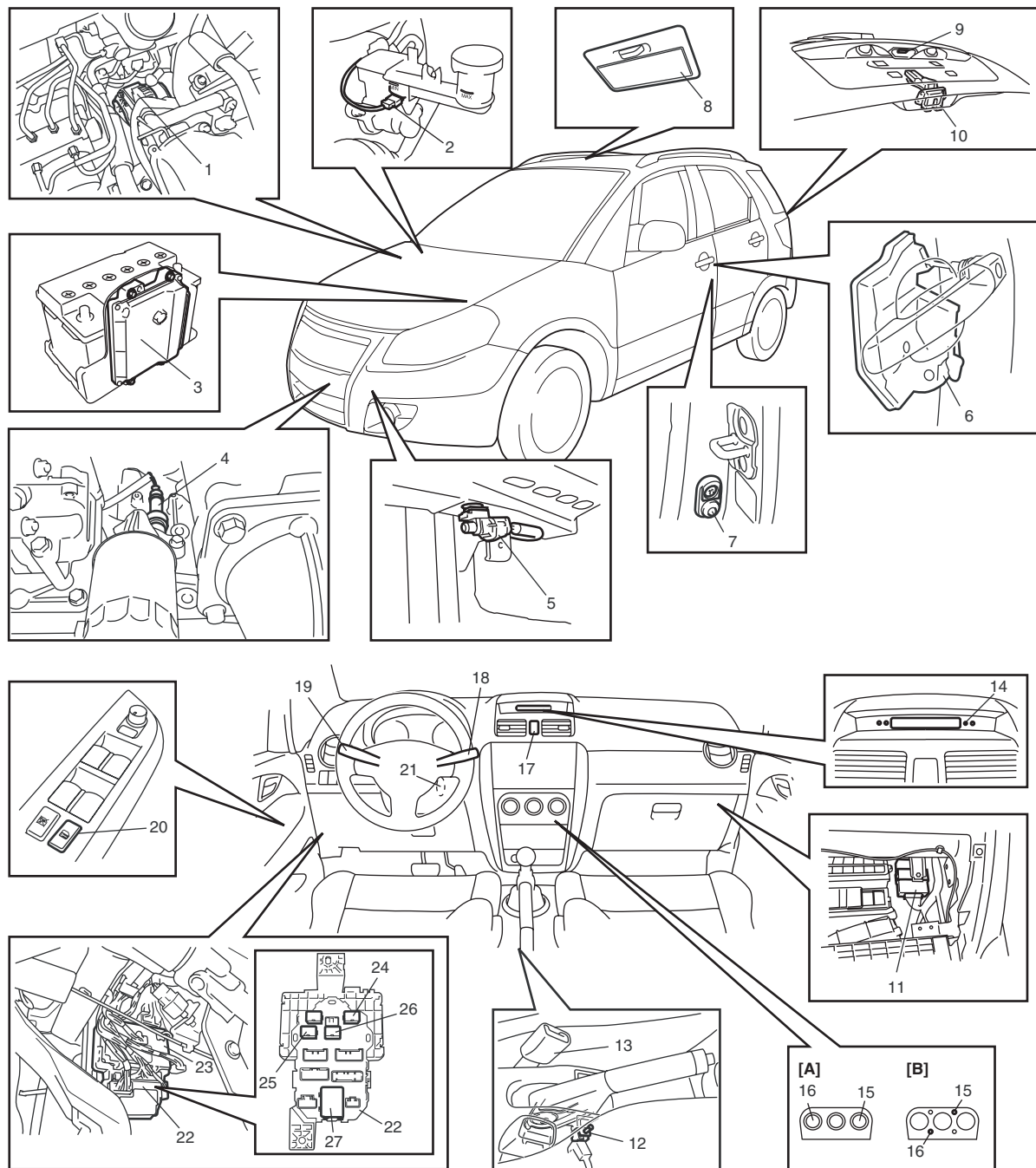
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[A]: Junction block (viewed from BCM side)	2. Junction block	5. Rear wiper relay
[B]: Junction block (viewed from relay side)	3. Blower motor relay	6. Rear end door window defogger relay
1. BCM	4. Horn relay	7. Turn signal and hazard warning relay

Component Location

BCM and Related System Component Location

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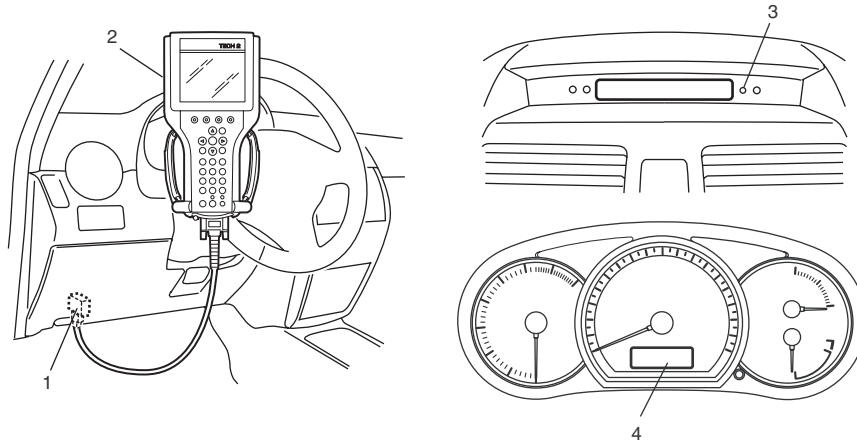
[A]: Auto A/C	9. Rear end door opener switch (if equipped)	19. Lighting switch
[B]: Manual A/C	10. Rear end door opener actuator (incorporated in door switch)	20. Manual door lock switch (if equipped)
1. Generator	11. Keyless entry receiver or keyless start control module (if equipped)	21. Key reminder switch (included in ignition switch)
2. Brake fluid level switch	12. Parking brake switch	22. Junction block
3. ECM	13. Seat belt buckle switch	23. BCM
4. Oil pressure switch	14. Theft deterrent light	24. Horn relay
5. Outside air temperature sensor (if equipped)	15. Rear end door window defogger switch	25. Rear wiper relay
6. Door lock actuator (incorporated in key cylinder switch)	16. A/C switch (if equipped)	26. Rear end door window defogger relay
7. Door switch	17. Hazard warning switch	27. Turn signal and hazard warning relay
8. Interior light	18. Rear wiper switch	

Diagnostic Information and Procedures

BCM Self-Diagnosis Function

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- BCM monitors conditions of the system components and its circuit with ignition switch turned to ON position. When an abnormality in the system occurs, the area where that abnormality lies is stored in the memory of EEPROM in BCM.
- DTC can be checked in either one of following ways.
 - DTC can be checked by SUZUKI scan tool (2) connected to DLC (1).
 - DTC can be read from flashing pattern of Theft deterrent light (3). Also, DTC is displayed on combination meter (4) at the same time.



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BCM Input / Output Table

Control	Input	Output
Power door lock system	<ul style="list-style-type: none"> • Key cylinder switch • Manual door lock switch 	<ul style="list-style-type: none"> • Each door lock actuator
Keyless entry system	<ul style="list-style-type: none"> • Key reminder switch • Keyless entry receiver • Driver side door switch 	<ul style="list-style-type: none"> • Each door lock actuator • Turn signal and hazard warning relay • Interior light
Keyless start system (Door lock function)	<ul style="list-style-type: none"> • Keyless start control module 	<ul style="list-style-type: none"> • Each door lock actuator • Turn signal and hazard warning relay • Interior light
Rear wiper	<ul style="list-style-type: none"> • Rear wiper INT switch • Rear wiper LO switch 	<ul style="list-style-type: none"> • Rear wiper relay
Combination meter	<ul style="list-style-type: none"> • Tail light switch • Oil pressure switch • Parking brake switch • Driver side seat belt switch • Brake fluid level switch • Generator • Each door switch 	<ul style="list-style-type: none"> • Combination meter
Interior light	<ul style="list-style-type: none"> • Each door switch • Key reminder switch 	<ul style="list-style-type: none"> • Interior light
Warning buzzer	<ul style="list-style-type: none"> • Key reminder switch • Tail light switch • Driver side door switch • Keyless start control module (if equipped) • TCM (reverse signal) (if equipped) 	<ul style="list-style-type: none"> • Warning buzzer (located in BCM)

Control	Input	Output
Rear end door window defogger	<ul style="list-style-type: none"> • Rear end door window defogger switch • Generator 	<ul style="list-style-type: none"> • Rear end door window defogger relay
Rear end door opener	<ul style="list-style-type: none"> • Manual door lock switch (unlock signal) • Key cylinder switch (unlock signal) • Keyless entry transmitter (unlock signal) • Rear end door opener switch 	<ul style="list-style-type: none"> • Rear end door opener relay
Door lock canceller	<ul style="list-style-type: none"> • SDM (air bag deployment signal) 	<ul style="list-style-type: none"> • Each door lock actuator
Theft deterrent light	<ul style="list-style-type: none"> • Key reminder switch 	<ul style="list-style-type: none"> • Theft deterrent light (located in information display or clock)

Body Electrical Control System Check

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Step	Action	Yes	No
1	☞ Customer complaint analysis 1) Perform customer complaint analysis. <i>Was customer complaint analysis performed?</i>	Go to Step 2.	Perform customer complaint analysis.
2	☞ Problem symptom confirmation 1) Perform problem symptom confirmation. <i>Does trouble recur?</i>	Go to Step 3.	Go to Step 7.
3	☞ DTC check 1) Check DTC. <i>Is it malfunction code?</i>	Go to Step 4.	Go to Step 5.
4	☞ Troubleshooting for DTC 1) Check and repair according to DTC diag. flow. <i>Are check and repair completed?</i>	Go to Step 7.	Check and repair malfunction part(s).
5	☞ Body electrical control system symptom diagnosis 1) Perform check and repair referring to "Symptom Diagnosis" of system having a trouble. <i>Is there faulty condition?</i>	Repair or replace malfunction part(s).	Go to Step 6.
6	☞ Check for intermittent problem 1) Check for intermittent problem. <i>Is there faulty condition?</i>	Repair or replace malfunction part(s).	Go to Step 7.
7	☞ Final confirmation test 1) Clear DTC referring to "DTC Clearance". 2) Check DTC referring to "DTC Check". <i>Is there any DTC?</i>	Go to Step 4.	End.

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 in the figure 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 Reg:	Date of problem:	Mileage:

Problem Symptoms	<ul style="list-style-type: none"> • Power door lock system does not operate • Keyless entry system does not operate • Rear end door window defogger does not operate • Rear wiper does not operate • Rear end door opener does not operate • Warning buzzer does not sound • Interior light does not light • Theft deterrent light does not flush • Other_____
Frequency of Occurrence	<ul style="list-style-type: none"> • Continuous / Intermittent (times a day, a month) / Other_____
Environmental Condition	<ul style="list-style-type: none"> • Weather: Fine / Cloudy / Rain / Snow / Other_____ • Temperature: °C(° F)
Diagnostic Trouble Code	<ul style="list-style-type: none"> • Normal code / Malfunction code ()

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Problem Symptom Confirmation

Check if what the customer claimed in "Customer Questionnaire" is accurately found in the vehicle. If that symptom is found, check whether the symptom is identified as a failure. (This step should be shared with the customer if possible.)

DTC Check

Check DTC stored in BCM memory referring to "DTC Check", record it and then clear it referring to "DTC Clearance". DTC indicates malfunction that occurred in the system but does not indicate whether it exists now or it occurred in the past and the normal condition has been restored now. To check which case applies, clear DTC once and check whether or not any fault exists.

Troubleshooting for DTC

Based on the DTC indicated in Step 3 and referring to applicable DTC flow, locate the cause of the trouble, namely in a sensor, wire harness, connector, BCM or other part and repair or replace faulty parts.

Body Electrical Control System Symptom Diagnosis

Check the parts or system suspected as a possible cause referring to symptom diagnosis of each system.

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 Inspection in Section 00".

Final Confirmation Test

Confirm that the problem symptom has gone and the body electrical control system is free from any abnormal conditions. If what has been repaired is related to the malfunction DTC, check DTC again and confirm that no DTC is indicated.

Scan Tool Data

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Scan tool data	Condition	Normal condition / reference value
Vehicle Speed 	At stop with ignition switch turned ON	0 km/h
Outside air Temp 	Reference value is relative to outside air temperature	-40 °C – 70 °C (-40 °F – 158 °F)
Battery Voltage 	At specified idle speed after warming up	10 – 14 V
Coolant Temp 	At specified idle speed after warming up	80 °C – 100 °C (176 °F – 212 °F)
Engine Speed 	Engine idling with no load applied after warming up	Desired idle speed ± 50 rpm
Fuel Consumption 	At specified idle speed after warming up	0.0 km/l
Key Reminder Sw 	Ignition key inserted in ignition key cylinder	Key in
	Ignition key pulled out from ignition key cylinder	Pulled
Rear Wiper Sw 	Rear wiper switch at ON position and ignition switch turned ON	ON
	Rear wiper switch at INT position and ignition switch turned ON	INT
	Rear wiper switch at OFF position and ignition switch turned ON	OFF
Door key Sw 	Key cylinder switch of driver side door at lock position	LOCK
	Key cylinder switch of driver side door not turned	Neutral
	Key cylinder switch of driver side door at unlock position	Unlock
Door Lock Sw 	Lock side of manual door lock switch pressed	LOCK
	Manual door lock switch not pressed	Neutral
	Unlock side of manual door lock switch pressed	Unlock
Driv Door Sw 	Driver side door open	Open
	Driver side door closed	Close
Pass Door Sw 	Doors other than driver side door open	Open
	Doors other than driver side door closed	Close
Brake Fluid Level 	Brake fluid level at MIN level or higher	Normal
	Brake fluid level lower than MIN level	Low
Parking Brake Sw 	Parking brake lever pulled	ON
	Parking brake lever released	OFF
Rear Defogger Sw 	Rear end door window defogger switch pressed with engine running	ON
	Rear end door window defogger switch not pressed with engine running	OFF
Headlight Sw 	Lighting switch at HEAD position	ON
	Lighting switch at OFF position	OFF
Tail Light Sw 	Lighting switch at HEAD or CLEARANCE position	ON
	Lighting switch at OFF position	OFF
Front Fog Light Sw 	Lighting switch at HEAD position and front fog light switch at ON position	ON
	Lighting switch at HEAD position and front fog light switch at OFF position	OFF
Driv Seat belt Sw 	Driver side seat belt fastened	Fasten
	Driver side seat belt unfastened	Unfasten
Rear end door opener 	Rear end door opener switch pressed	ON
	Rear end door opener switch not pressed	OFF
Charge light 	Engine at stop with ignition switch turned ON	ON
	Engine running	OFF
Oil pressure switch 	Engine at stop with ignition switch turned ON	ON
	Engine running	OFF
A/C Switch 	A/C and ignition switch turned ON	ON
	A/C switch turned OFF	OFF

Scan Tool Data Definitions

Vehicle Speed (km/h, mph): This parameter indicates the vehicle speed computed by ECM.

Outside air Temp (°C, °F): It is detected by outside air temperature sensor.

Battery Voltage (V): This parameter indicates battery positive voltage inputted to BCM.

Coolant Temp (Engine coolant temperature) (°C, °F): It is detected by engine coolant temperature sensor.

Engine Speed (RPM): It is computed by reference pulse signals from CMP sensor.

Fuel Consumption (km/l): This parameter indicates the fuel consumption computed by ECM.

Key Reminder Sw (Key reminder switch) (Pulled / Key in): This parameter indicates the state of the key reminder switch.

Rear Wiper Sw (Rear wiper switch) (ON / INT / OFF): This parameter indicates the state of the rear wiper switch.

Door key Sw (Door key cylinder switch) (Lock / Neutral / Unlock): This parameter indicates the state of the door key cylinder switch.

Door Lock Sw (Manual door lock switch) (Lock / Neutral / Unlock): This parameter indicates the state of the manual door lock switch.

Driv Door Sw (Driver side door switch) (Open / Close): This parameter indicates the state of the driver side door switch.

Pass Door Sw (Other than driver side door switch) (Open / Close): This parameter indicates the state of the door switches other than driver side door switch.

Brake Fluid Level (Low / Normal): Low: Brake fluid level is lower than specified level.

Normal: Brake fluid level is higher than MIN level.

Parking Brake Sw (Parking brake switch) (ON / OFF): ON: Parking brake lever is pulled up.

OFF: Parking lever is released.

Rear Defogger Sw (Rear end door window defogger switch) (ON / OFF): This parameter indicates the state of the rear end door window defogger switch.

Headlight Sw (Headlight switch) (ON / OFF) (Junction block without BCM type): This parameter indicates the state of the lighting switch.

Tail Light Sw (Lighting switch) (ON / OFF): This parameter indicates the state of the lighting switch.

Front Fog Light Sw (Front fog light switch) (ON / OFF) (Junction block without BCM type): This parameter indicates the state of the front fog light switch.

Driv Seatbelt Sw (Driver seat belt switch) (Fasten / Unfasten): This parameter indicates the state of the driver side seat belt buckle switch.

Rear end door opener (Rear end door opener switch) (ON / OFF): This parameter indicates the state of the rear end door opener switch.

Charge light (ON / OFF): This parameter indicates the state of the charge system monitor switch.

Oil pressure switch (ON / OFF): This parameter indicates the state of the oil pressure switch.

A/C Switch (ON / OFF): This parameter indicates the state of the air conditioning switch.

Diagnosis Using Output Test Function of SUZUKI Scan Tool

SUZUKI scan tool has the output test function which can force operation of following actuators and relays of the system controlled by BCM. When a malfunction is found in the system controlled by BCM, execute the output test which enables easy judgment whether the malfunction is on the input side or output side of BCM. For detailed information on operation of SUZUKI scan tool, refer to "SUZUKI Scan Tool Operator's Manual".

Output Teat Item	Controlled Parts
Hazard Warning Light	Turn signal and hazard warning relay
Interior (Dome) Light	Interior (Dome) light (when interior light switch is at DOOR position)
Tail Light*1	Tail light relay
Front Fog Light*1	Front fog light relay (when lighting switch is at HEAD position)
Rear defogger	Rear end door window defogger relay
Dead lock	Each door lock actuator
Rear end door open	Rear end door opener relay
Door	Each door lock actuator
Warning Buzzer	Warning buzzer (in BCM)
Rear wiper	Rear wiper relay
Alarm indicator	Theft deterrent light (in information display or clock)
Horn*2	Horn relay

NOTE

*1: Junction block without BCM type

*2: With security alarm system

DTC Table

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DTC (displayed on SUZUKI scan tool)	DTC (indicated by theft deterrent light)	DTC (displayed on odometer in combination meter)	Detected item	Detecting condition
NO DTC	0000	0000	—	No DTC detected
☞ B1133	1133	b1133	Battery voltage too high	Battery voltage too high
☞ B1141	1141	b1141	Outside air temperature (ambient temperature) sensor circuit open	Sensor output voltage too high
☞ B1142	1142	b1142	Outside air temperature (ambient temperature) sensor circuit short to ground	Sensor output voltage too low
☞ B1150	1150	b1150	Air bag communication circuit malfunction	Air bag communication circuit open or short to ground
☞ B1157	1157	b1157	Air bag deployment signal input	Air bag deployment signal inputted
☞ B1170	1170	b1170	EEPROM access error	Memory error
☞ U0073	0073	U0073	Control module communication bus off	Transmitting and receiving error of BCM for specified time continuously
☞ U0100	0100	U0100	Lost communication with ECM	Receiving error of BCM from ECM for specified time continuously
☞ U0101	0101	U0101	Lost communication with TCM	Receiving error of BCM from TCM for specified time continuously
☞ U0155	0155	U0155	Lost communication with instrument panel cluster (IPC) control module	Receiving error of BCM from combination meter for specified time continuously
☞ U1144	1144	U1144	Lost communication with keyless start control module	Receiving error of BCM from keyless start control module for specified time continuously

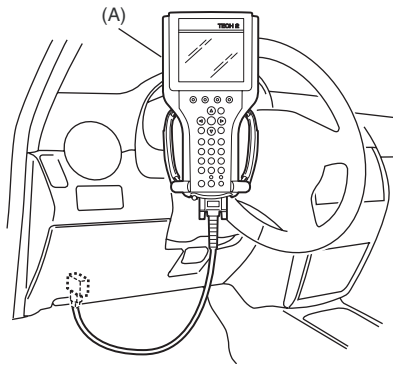
DTC Check

Using SUZUKI Scan Tool

- 1) Prepare SUZUKI scan tool.
- 2) With ignition switch turned OFF, connect it to data link connector (DLC) located on underside of instrument panel of driver's side.

Special tool

(A): SUZUKI scan tool



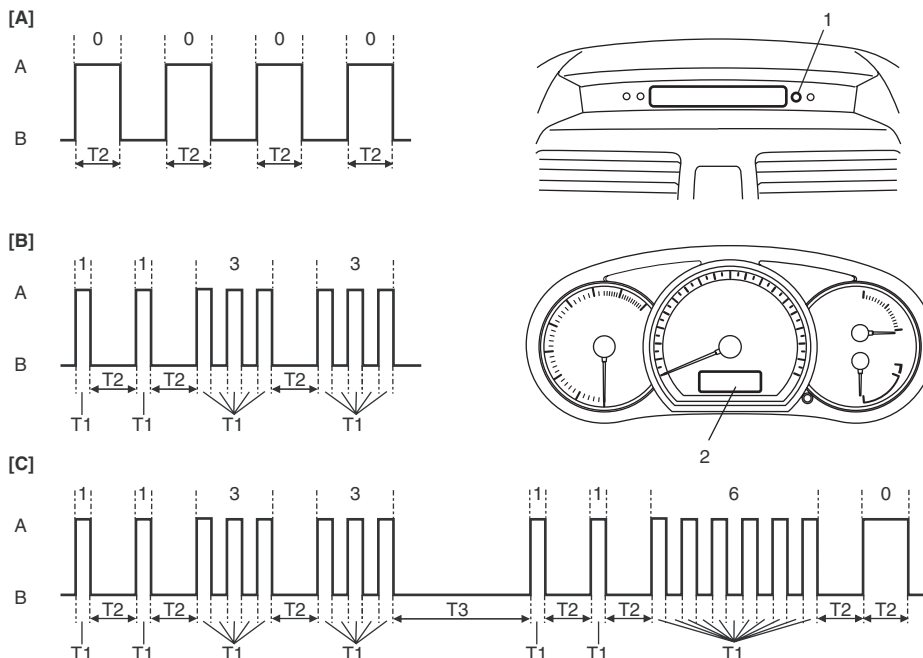
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- 3) Turn ignition switch ON.
- 4) Read DTC according to instructions displayed on SUZUKI scan tool and print it or write it down. Refer to SUZUKI scan tool operator's manual for further details.
If communication between SUZUKI scan tool and BCM is not possible, check if SUZUKI scan tool is communicable by connecting it to BCM in another vehicle. If communication is possible in this case, SUZUKI scan tool is in good condition. Then check data link connector and serial data line (circuit) in the vehicle with which communication was not possible.
- 5) After completing the check, turn ignition switch off and disconnect SUZUKI scan tool from data link connector.

Without Using SUZUKI Scan Tool

- 1) Turn ignition switch to OFF position.
- 2) Perform following Steps a) to d) within 10 seconds after ignition switch is turned ON and engine stops.
 - a) Turn headlight switch to "SMALL" position.
 - b) Turn headlight switch to "OFF" position.
 - c) Repeat Steps a) and b) 2 times.
 - d) Press and release driver side door switch 3 times.

3) Check DTC displayed on odometer of combination meter or read flashing pattern of theft deterrent light which represents DTC as shown in the following example and write it down.
 When more than 2 DTCs are stored in memory, flashing for each DTC starts with the smallest DTC number in increasing order. Also, DTC is indicated repeatedly until the ignition switch is turned OFF.



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[A]: No DTC (No. 0000)	A: Indicator lamp turned ON	T2: 1.0 seconds	2. Odometer
[B]: DTC B1133 (No. 1133)	B: Indicator lamp turned OFF	T3: 3.0 seconds	
[C]: When 2 DTCs are detected	T1: 0.3 seconds	1. Theft deterrent light	

4) After completing the check, turn ignition switch to OFF position.

DTC Clearance

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

Using SUZUKI Scan Tool

- 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 and engine stops.
- 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.

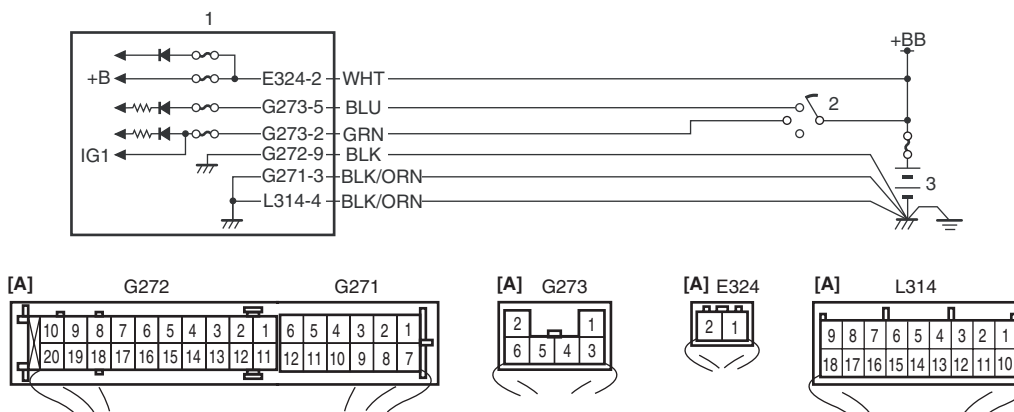
Without Using SUZUKI Scan Tool

- 1) Turn ignition switch to OFF position.
- 2) Perform following Steps a) to d) within 10 seconds after ignition switch is turned ON and engine stops.
 - a) Turn headlight switch to "SMALL" position.
 - b) Turn headlight switch to "OFF" position.
 - c) Repeat Steps a) and b) 3 times.
 - d) Press and release driver side door switch 4 times.
- 3) After completing above Steps, confirm that no malfunction DTC is detected.

BCM Power Circuit and Ground Circuit Check

S6RW0DA204007

Wiring Diagram



[A]: Junction block connector viewed from harness side	2. Ignition switch
1. Junction block	3. Battery

I6RW0CA20006-02

Troubleshooting

Step	Action	Yes	No
1	<p>Fuse check</p> <p>1) Turn ignition switch to OFF position.</p> <p>2) Check circuit fuses for condition.</p> <p><i>Are circuit fuses in good condition?</i></p>	Go to Step 2.	Replace fuse and check for short circuit to ground.
2	<p>Power supply circuit check</p> <p>1) Disconnect connectors from junction block.</p> <p>2) Check for proper connection to junction block connector at terminal "E324-2".</p> <p>3) If OK, then measure voltage between "E324-2" terminal of junction block connector and vehicle body ground.</p> <p><i>Is voltage 10 – 14 V?</i></p>	Go to Step 3.	Repair power supply circuit.
3	<p>Power supply circuit check</p> <p>1) Check for proper connection to junction block connector at terminals "G273-2" and "G273-5".</p> <p>2) If OK, turn ignition switch to ON position.</p> <p>3) Measure voltage between following terminals.</p> <ul style="list-style-type: none"> Between "G273-2" terminal of junction block connector and vehicle body ground Between "G273-5" terminal of junction block connector and vehicle body ground <p><i>Is each voltage 10 – 14 V?</i></p>	Go to Step 4.	Repair power supply circuit.

Step	Action	Yes	No
4	<p>Ground circuit check</p> <p>1) Turn ignition switch to OFF position.</p> <p>2) Check for proper connection to junction block connector at terminals "G271-3", "G272-9" and "L314-4".</p> <p>3) If OK, then measure resistance between following terminals.</p> <ul style="list-style-type: none"> • Between "G271-3" terminal of junction block connector and vehicle body ground • Between "G272-9" terminal of junction block connector and vehicle body ground • Between "L314-4" terminal of junction block connector and vehicle body ground <p><i>Is each resistance 2 Ω or less?</i></p>	BCM power supply circuit and ground circuit are in good condition.	Repair ground circuit.

DTC B1133 (DTC No. 1133): Battery Voltage Too High

S6RW0DA204008

Wiring Diagram

Refer to "BCM Power Circuit and Ground Circuit Check".

DTC Detecting Condition and Possible Cause

DTC detecting condition	Possible cause
Power voltage supplied from battery to BCM is higher than 16V.	<ul style="list-style-type: none"> • Charging system malfunction • BCM malfunction

Flow Test Description

Step 1: Check charging system

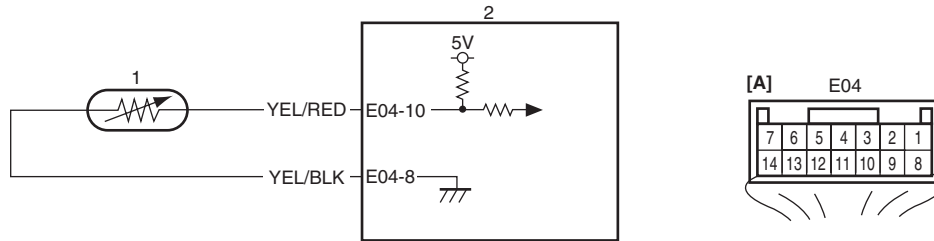
DTC Troubleshooting

Step	Action	Yes	No
1	<p>Charging system operation check</p> <p>1) Check generator for operation referring to "Generator Test (Overcharged Battery Check) in Section 1J".</p> <p><i>Is it in good condition?</i></p>	Substitute a known good BCM (included in junction block) and recheck.	Repair charging system.

**DTC B1141 / DTC B1142 (No. 1141 / No. 1142) Outside Air Temperature (Ambient Temp.) Sensor
 Circuit Malfunction**

S6RW0DA204009

Wiring Diagram



I6RW0CA20007-01

[A]: BCM connector viewed from harness side	2. BCM
1. Outside air temperature sensor	

DTC Detecting Condition and Possible Cause

DTC detecting condition	Possible cause
DTC B1141 (DTC No. 1141): Input signal from outside air temperature sensor is higher than 4.88 V.	<ul style="list-style-type: none"> • Open in outside air temperature sensor circuit • Outside air temperature sensor malfunction • BCM malfunction
DTC B1142 (DTC No. 1142): Input signal from outside air temperature sensor is lower than 0.1 V.	<ul style="list-style-type: none"> • Short in outside air temperature sensor circuit • Outside air temperature sensor malfunction • BCM malfunction

Flow Test Description

Step 1: Check whether malfunction is in outside air temperature sensor.

Step 2: Check outside air temperature sensor circuit.

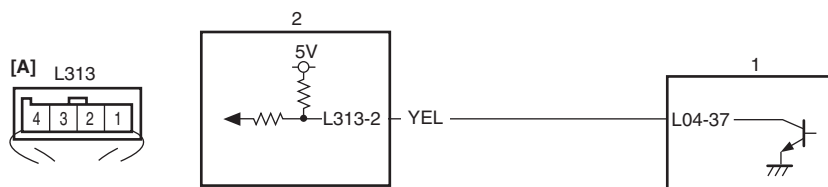
DTC Troubleshooting

Step	Action	Yes	No
1	Outside air temperature sensor check 1) Turn ignition switch to OFF position. 2) Disconnect connector from outside air temperature sensor. 3) Check outside air temperature sensor for resistance referring to "Outside Air Temperature Sensor Inspection (If Equipped) in Section 9C". <i>Is it in good condition?</i>	Go to Step 2.	Replace outside air temperature sensor.
2	Outside air temperature sensor circuit check 1) Disconnect connector from BCM and check for proper terminal connection to BCM connector. 2) If connections are OK, check outside air temperature sensor circuit for open, short and high resistance. <i>Is each circuit in good condition?</i>	Substitute a known-good BCM (included in junction block) and recheck.	Repair circuit.

DTC B1150 (No. 1150): Air Bag Communication Circuit Malfunction

S6RW0DA204010

Wiring Diagram



I6RW0CA20008-01

[A]: Junction block connector viewed from harness side	2. BCM
1. SDM	

DTC Detecting Condition and Possible Cause

DTC detecting condition	Possible cause
After ignition switch is turned ON, abnormal signal is fed from SDM to BCM.	<ul style="list-style-type: none"> • Air bag communication circuit open or short • SDM malfunction • BCM malfunction

Flow Test Description

Step 1: Check air bag communication circuit.

Step 2: Check air bag communication circuit.

DTC Troubleshooting

Step	Action	Yes	No
1	<p>Air bag communication circuit check</p> <ol style="list-style-type: none"> 1) Turn ignition switch to OFF position. 2) Disconnect connectors from junction block and SDM. 3) Check for proper terminal connection to BCM and SDM connectors. 4) If connections are OK, check air bag communication circuit for open, short and high resistance. <p><i>Is circuit in good condition?</i></p>	Go to Step 2.	Repair circuit.
2	<p>Air bag communication circuit check</p> <ol style="list-style-type: none"> 1) Turn ignition switch to OFF position. 2) Connect connectors to junction block. 3) Turn ignition switch to ON position. 4) Measure voltage between "L313-2" terminal of junction block connector and vehicle body ground. <p><i>Is voltage 4 – 6 V?</i></p>	Substitute a known-good SDM and recheck.	Substitute a known-good BCM (included in junction block) and recheck.

DTC B1157 (No. 1157) Air Bag Deployment Signal Input

S6RW0DA204011

Wiring Diagram

Refer to "DTC B1150 (No. 1150): Air Bag Communication Circuit Malfunction".

DTC Detecting Condition and Possible Cause

DTC detecting condition	Possible cause
Air bag deployment signal is fed from SDM to BCM.	<ul style="list-style-type: none"> Air bag component parts BCM malfunction

Flow Test Description

Step 1: Check DTC for SDM.

DTC Troubleshooting

Step	Action	Yes	No
1	DTC check of SDM 1) Check DTC stored in SDM referring to "DTC Check in Section 8B". <i>Is DTC B1021 detected?</i>	Go to "DTC B1021: Front Air Bag Deployment Record in Section 8B".	Substitute a known-good BCM (included in junction block) and recheck.

DTC B1170 (No. 1170): EEPROM Access Error

S6RW0DA204012

DTC Detecting Condition and Possible Cause

DTC detecting condition	Possible cause
Data write error or check sum error.	BCM malfunction

DTC Troubleshooting

NOTE

Before performing steps below, be sure to perform "Body Electrical Control System Check".

- 1) Ignition switch OFF.
- 2) Replace BCM.
- 3) Repeat BCM Check Flow Table.

DTC U0073 (No. 0073): Control Module Communication Bus Off

S6RW0DA204013

Refer to "Troubleshooting for CAN-DTC in Section 1A".

DTC U0100 (No. 0100): Lost Communication with ECM

S6RW0DA204014

Refer to "Troubleshooting for CAN-DTC in Section 1A".

DTC U0101 (No. 0101): Lost Communication with TCM

S6RW0DA204018

Refer to "Troubleshooting for CAN-DTC in Section 1A".

DTC U0155 (No. 0155): Lost Communication with Instrument Panel Cluster (IPC) Control Module

S6RW0DA204015

Refer to "Troubleshooting for CAN-DTC in Section 1A".

DTC U1144 (No. 1144): Lost Communication with Keyless Start Control Module

S6RW0DA204016

Refer to "Troubleshooting for CAN-DTC in Section 1A".

Inspection of BCM and Its Circuits

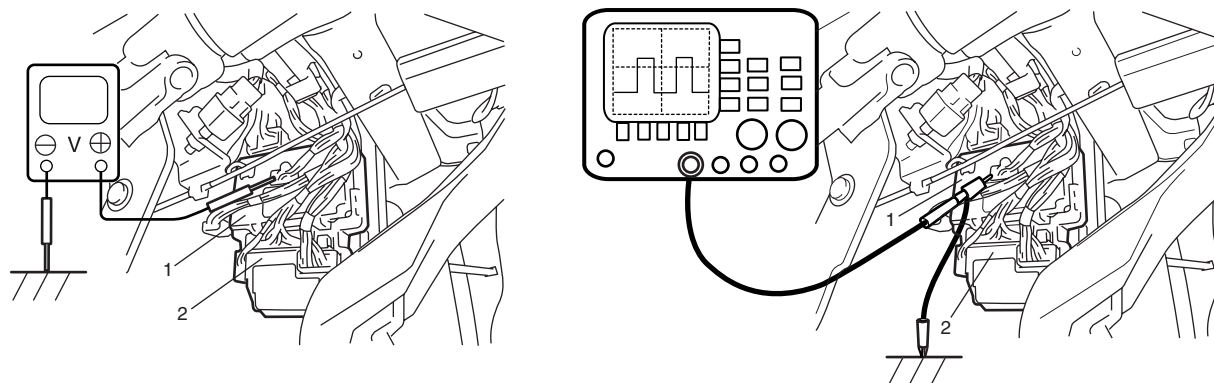
BCM and its circuits can be checked at BCM wiring couplers by measuring voltage and resistance.

⚠ CAUTION

BCM cannot be checked by itself. It is strictly prohibited to connect voltmeter or ohmmeter to BCM with couplers disconnected from it.

Voltage Check

- 1) Disconnect negative cable (–) at battery.
- 2) Remove BCM (included in junction block) referring to “BCM (Included in Junction Block) Removal and Installation”.
- 3) Connect connectors to BCM (1) and junction block (2).
- 4) Check voltage at each terminal number of couplers connected.
 For connector and terminal number, refer to “Connector Layout Diagram of BCM and Junction Block”.



I4RS0AA20030-01

NOTE

- As each terminal voltage is affected by the battery voltage, confirm that it is 11 V or more when ignition switch is ON.
- Voltage with asterisk (*) can not be measured by voltmeter because it is pulse signal. Check it with oscilloscope if necessary.

BCM connector “L01”

Terminal	Circuit	Normal voltage	Condition
L01-1	Passenger side door lock actuator control (Unlock) (if equipped)	10 – 14 V	Unlock signal is output for passenger side door lock actuator
		0 V	Unlock signal is not output for passenger side door lock actuator
L01-2	—	—	—
L01-3	Rear end door switch	10 – 14 V	Rear end door is closed
		0 V	Rear end door is opened
L01-4	Rear end door opener switch (if equipped)	10 – 14 V	Rear end door opener switch is not pushed
		0 V	Rear end door opener switch is pushed
L01-5	Manual door lock switch (Unlock) (if equipped)	10 – 14 V	Manual door lock switch is at any position other than unlock position
		0 V	Manual door lock switch is at unlock position
L01-6	Parking brake switch	*0 – 3 V ↑ ↓	Refer to “Reference waveform No. 1: ”
		0 V	Ignition switch is at ON position and parking brake lever is pulled up
L01-7	Driver side door switch	10 – 14 V	Driver side door is closed
		0 V	Driver side door is opened
L01-8	—	—	—
L01-9	—	—	—

Terminal	Circuit	Normal voltage	Condition
L01-10	Driver side door lock actuator control (Unlock) (if equipped)	10 – 14 V	Unlock signal is output for driver side door lock actuator
		0 V	Unlock signal is not output for driver side door lock actuator
L01-11	Rear end door opener actuator control (if equipped)	0 V	Rear end door actuator motor is not in operation
		10 – 14 V	Rear end door actuator motor is in operation
L01-12	Manual door lock switch (Lock) (if equipped)	10 – 14 V	Manual door lock switch is at any position other than lock position
		0 V	Manual door lock switch is at lock position
L01-13	—	—	—
L01-14	Driver side seat belt switch	*0 – 3 V ↑↓ 10 – 14 V	Refer to “Reference waveform No. 2: ”
		0 V	Ignition switch is at ON position and driver side seat belt is unfastened
L01-15	Door switch (other than driver side door and rear end door)	10 – 14 V	Rear right and left side door and passenger side door are closed
		0 V	Any one of the door is opened (except driver side door and rear end door)
L01-16	Driver side door key cylinder switch (Lock) (if equipped)	10 – 14 V	Driver side door key cylinder switch is at any position other than lock position
		0 V	Driver side door key cylinder switch is at lock position
L01-17	Driver side door key cylinder switch (Unlock) (if equipped)	10 – 14 V	Driver side door key cylinder switch is at any position other than unlock position
		0 V	Driver side door key cylinder switch is at unlock position
L01-18	—	—	—

BCM connector “E04”

Terminal	Circuit	Normal voltage	Condition
E04-1	CAN communication line (high) for ABS control module	*2.5 – 3.6 V	Refer to “Reference waveform No. 3: ”
E04-2	CAN communication line (low) for ABS control module	*1.6 – 2.5 V	
E04-3	—	—	—
E04-4	Generator “L” terminal	10 – 14 V	Engine is running
		0 V	Ignition switch is at ON position
E04-5	Brake fluid level switch	*0 – 3 V ↑↓ 10 – 14 V	Refer to “Reference waveform No. 1: ”
		0 V	Ignition switch is at ON position, parking brake lever is released and brake fluid level is lower than MIN level
E04-6	—	—	—
E04-7	—	—	—
E04-8	Sensor ground for outside air temperature sensor (if equipped)	0 V	—
E04-9	Serial communication line of data link connector for ABS control module	7 – 12 V	Ignition switch is at ON position
E04-10	Outside air temperature sensor (if equipped)	About 1.5 V	Ignition switch is at ON position and outside air temperature approx. 20 °C (68 °F)
E04-11	Oil pressure switch	*3 – 14 V	Refer to “Reference waveform No. 4: ”
		0 V	Ignition switch is at ON position and engine is at stop
E04-12	—	—	—

Terminal	Circuit	Normal voltage	Condition
E04-13	—	—	—
E04-14	—	—	—

BCM connector "G04"

Terminal	Circuit	Normal voltage	Condition
G04-1	CAN communication line (low) for DLC	*1.6 – 2.5 V	Refer to "Reference waveform No. 3: "
G04-2	CAN communication line (low) for each control module	*1.6 – 2.5 V	
G04-3	CAN communication line (high) for DLC	*2.5 – 3.6 V	
G04-4	CAN communication line (high) for each control module	*2.5 – 3.6 V	
G04-5	Serial communication line of data link connector	7 – 12 V	Ignition switch is at ON position
G04-6	—	—	—
G04-7	—	—	—
G04-8	Theft deterrent light	10 – 14 V	Theft deterrent light is not lit up
		0 V	Theft deterrent light is lit up
G04-9	—	—	—
G04-10	—	—	—
G04-11	Serial communication line for information display and HVAC control module (if equipped)	*0 – 1 V ↑↓ 10 – 14 V	Refer to "Reference waveform No. 5: "
G04-12	Ground for keyless entry receiver (if equipped)	0 V	—
G04-13	Power supply for keyless entry receiver (if equipped)	4 – 6 V	Ignition switch is at all positions
G04-14	Signal for keyless entry receiver (if equipped)	*0 – 1 V ↑↓ 4 – 6 V	Refer to "Reference waveform No. 6: "
G04-15	Vehicle speed signal output	*0 – 1 V ↑↓ 4 – 6V	Refer to "Reference waveform No. 7: "
G04-16	Key reminder switch	10 – 14 V	Ignition key is inserted to ignition key cylinder
		0 V	Ignition key is pulled out from ignition key cylinder
G04-17	Rear end door window defogger switch	*3 – 14 V	Refer to "Reference waveform No. 8: "
		0 V	Ignition switch is at ON position and rear end door window defogger switch is pushed
G04-18	A/C switch (if equipped)	*3 – 14 V	Refer to "Reference waveform No. 8: "
		0 V	Ignition switch is at ON position, blower speed selector is at any position other than OFF position and A/C switch is at ON position
G04-19	—	—	—
G04-20	—	—	—
G04-21	Rear wiper INT switch	*0 – 1 V ↑↓ 10 – 14 V	Refer to "Reference waveform No. 9: "
		0 V	Ignition switch is at ON position and rear wiper switch is at INT position
G04-22	Rear wiper low switch	*0 – 1 V ↑↓ 10 – 14 V	Refer to "Reference waveform No. 9: "
		0 V	Ignition switch is at ON position and rear wiper switch is at LOW position

Junction block connector “E324”

Terminal	Circuit	Normal voltage	Condition
E324-2	Backup power source	10 – 14 V	Ignition switch is at all positions

Junction block connector “E325”

Terminal	Circuit	Normal voltage	Condition
E325-3	Horn	10 – 14 V	Horn switch is at ON position
		0 V	Horn switch is at OFF position

Junction block connector “G271”

Terminal	Circuit	Normal voltage	Condition
G271-3	Ground for BCM	0 V	Ignition switch is at all positions
G271-7	Rear end door window defogger indicator light	10 – 14 V	Engine is running and rear end door window defogger indicator light is lit up
		0 V	Engine is running and rear end door window defogger indicator light is not lit up

Junction block connector “G272”

Terminal	Circuit	Normal voltage	Condition
G272-3	Horn switch	10 – 14 V	Horn switch is not pushed
		0 V	Horn switch is pushed
G272-7	Lighting switch	10 – 14 V	Engine is running (with DRL model) or lighting switch is at any position other than OFF position
		0 V	Lighting switch is at OFF position
G272-9	Ground for BCM	0 V	Ignition switch is at all positions
G272-11	Hazard warning switch	10 – 14 V	Hazard warning switch is at OFF position
		0 V	Hazard warning switch is at ON position or lock or unlock button of keyless entry transmitter (answer back control) is pushed

Junction block connector “G273”

Terminal	Circuit	Normal voltage	Condition
G273-2	Power source (IG)	10 – 14 V	Ignition switch is at ON position
		0 V	Ignition switch is at any position other than ON position
G273-5	Power source (ACC)	10 – 14 V	Ignition switch is at ACC or ON position
		0 V	Ignition switch is at any position other than ACC or ON position

Junction block connector “L312”

Terminal	Circuit	Normal voltage	Condition
L312-4	Power supply for rear wiper motor	10 – 14 V	Ignition switch is at ON position
L312-5	Interior light	10 – 14 V	Interior light switch is at DOOR position and interior light is not lit up
		0 V	Interior light switch is at DOOR position and interior light is lit up

Junction block connector “L313”

Terminal	Circuit	Normal voltage	Condition
L313-2	Air bag communication line	*0 – 1 V ↑↓ 4 – 6 V	Refer to “Reference waveform No. 10: ”
L313-3	Serial communication line of data link connector for SDM	7 – 12 V	Ignition switch is at ON position

Junction block connector “L314”

Terminal	Circuit	Normal voltage	Condition
L314-4	Ground for BCM	0 V	Ignition switch is at all positions
L314-6	Right side door mirror heater (if equipped)	10 – 14 V	Engine is running and rear end door window defogger is in operation
		0 V	Engine is running and rear end door window defogger is not in operation
L314-7	Left side door mirror heater (if equipped)	10 – 14 V	Engine is running and rear end door window defogger is in operation
		0 V	Engine is running and rear end door window defogger is not in operation
L314-8	Rear end door window defogger wire	10 – 14 V	Engine is running and rear end door window defogger is in operation
		0 V	Engine is running and rear end door window defogger is not in operation
L314-9	Rear wiper control	10 – 14 V	Ignition switch is at ON position and rear wiper is not in operation
		0 V	Ignition switch is at ON position and rear wiper is in operation

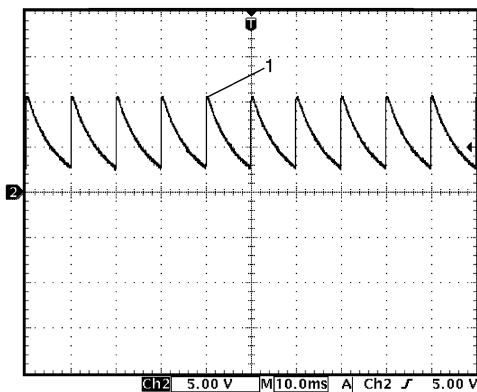
Junction block connector “L315”

Terminal	Circuit	Normal voltage	Condition
L315-1	Door lock actuator control (Dead lock) (if equipped)	10 – 14 V	Driver side key cylinder is turned to lock twice with in 3 seconds
		0 V	Manual door lock switch is at any position other than LOCK position and driver side door key cylinder switch is at any position other than LOCK position
L315-9	Door lock actuator control (Unlock) (if equipped)	10 – 14 V	Unlock signal is output for rear door lock actuator
		0 V	Unlock signal is not output for rear door lock actuator
L315-10	Door lock actuator control (Lock) (if equipped)	10 – 14 V	Lock signal is output for all door lock actuators
		0 V	Lock signal is not output for all door lock actuators

Reference waveform No. 1

Parking brake or brake fluid level switch signal (1)

Measurement terminal	Parking brake switch CH2: "L01-6" to "G271-3" Brake fluid level switch CH2: "E04-5" to "G271-3"
Oscilloscope setting	CH1: 5 V / DIV TIME: 10 ms / DIV
Measurement condition	Parking brake switch: <ul style="list-style-type: none"> Ignition switch is at ON position, parking brake lever is released Brake fluid level switch <ul style="list-style-type: none"> Ignition switch is at ON position, brake fluid level is in normal

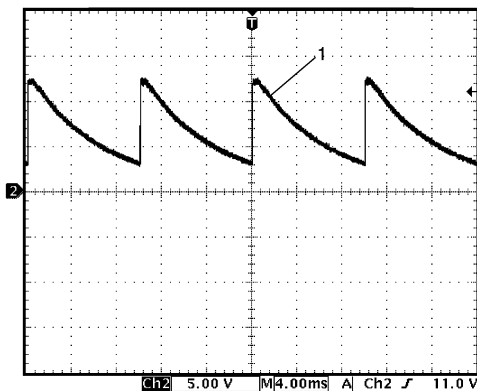


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Reference waveform No. 2

Driver seat belt switch signal (1)

Measurement terminal	CH2: "L01-14" to "G271-3"
Oscilloscope setting	CH2: 5 V/DIV TIME: 4 ms/DIV
Measurement condition	Ignition switch is at ON position and driver side seat belt is fastened

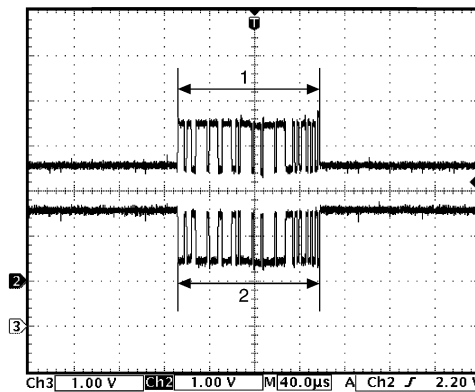


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Reference waveform No. 3

CAN communication signal

Measurement terminal	CAN communication signal for ABS control module CH2: "E04-1" to "G271-3" CH3: "E04-2" to "G271-3" CAN communication signal for DLC CH2: "G04-3" to "G271-3" CH3: "G04-1" to "G271-3" CAN communication signal for each control module CH2: "G04-4" to "G271-3" CH3: "G04-2" to "G271-3"
Oscilloscope setting	CH2: 1 V/DIV CH3: 1 V/DIV TIME: 40 μs/ DIV
Measurement condition	Ignition switch is at ON position



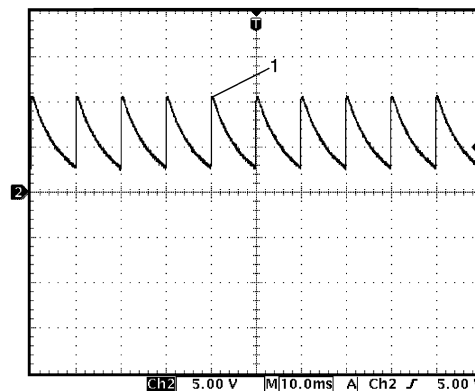
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- | |
|---|
| 1. CAN communication line signal (High) |
| 2. CAN communication line signal (Low) |

Reference waveform No. 4

Oil pressure switch signal (1)

Measurement terminal	CH2: "E04-11" to "G271-3"
Oscilloscope setting	CH2: 5 V / DIV TIME: 10 ms / DIV
Measurement condition	Engine is running and oil pressure is in normal condition

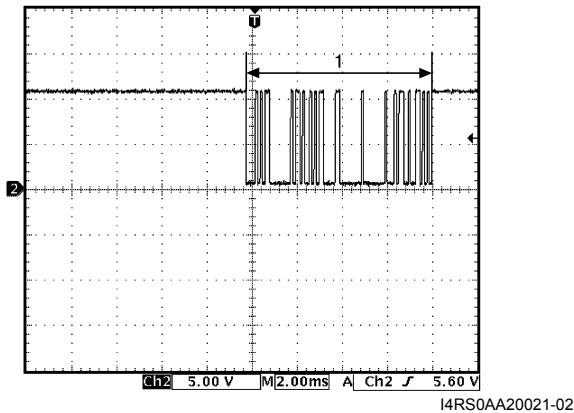


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Reference waveform No. 5

Information display and HVAC control module serial communication signal (1)

Measurement terminal	CH2: "G04-11" to "G271-3"
Oscilloscope setting	CH2: 5 V / DIV TIME: 2 ms / DIV
Measurement condition	Ignition switch is at ON position

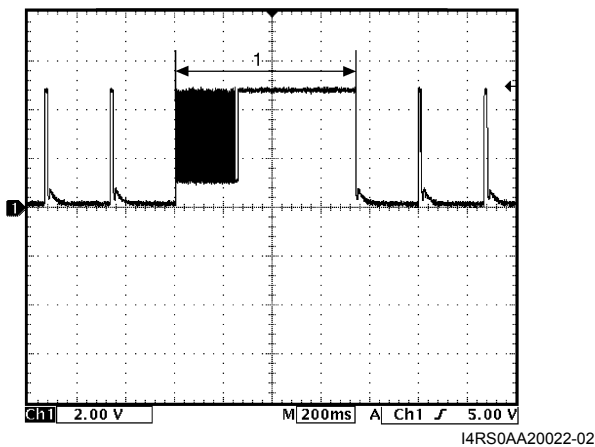


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Reference waveform No. 6

Keyless entry receiver signal (1)

Measurement terminal	CH2: "G04-14" to "G271-3"
Oscilloscope setting	CH2: 2 V / DIV TIME: 200 ms / DIV
Measurement condition	Lock or unlock button of keyless entry transmitter is pushed

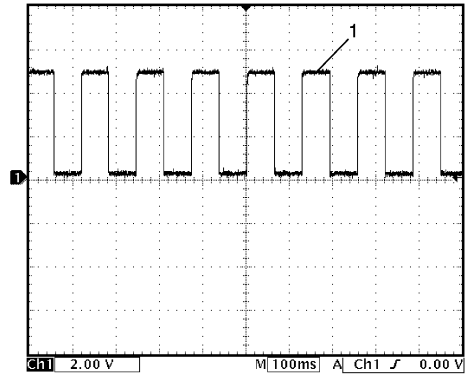


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Reference waveform No. 7

Vehicle speed pulse output signal (1)

Measurement terminal	CH1: "G04-15" to "G271-3"
Oscilloscope setting	CH1: 2 V / DIV TIME: 100 ms / DIV
Measurement condition	Vehicle speed at 10 km/h (6 mph)

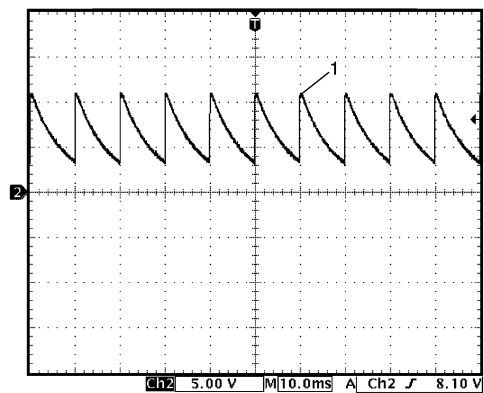


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Reference waveform No. 8

A/C or rear end door window defogger switch signal (1)

Measurement terminal	Rear end door window defogger switch CH2: "G04-17" to "G271-3" A/C switch CH2: "G04-18" to "G271-3"
Oscilloscope setting	CH2: 5 V/DIV TIME: 10 ms/DIV
Measurement condition	Rear end door window defogger switch: <ul style="list-style-type: none"> Ignition switch is at ON position and rear end door window defogger switch is not pushed A/C switch: <ul style="list-style-type: none"> Ignition switch is at ON position, A/C switch or blower speed selector is at OFF position

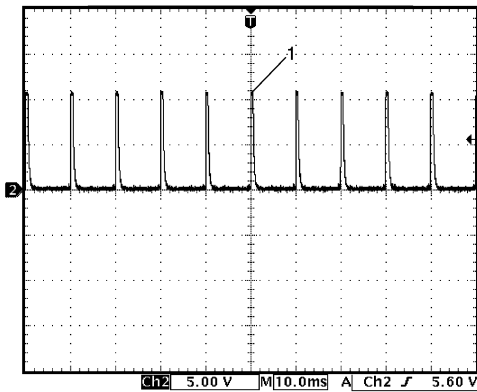


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Reference waveform No. 9

Rear wiper switch signal (1)

Measurement terminal	Rear wiper INT switch CH2: "G04-21" to "G271-3" Rear wiper LOW switch CH2: "G04-22" to "G271-3"
Oscilloscope setting	CH2: 5 V/DIV TIME: 10 ms/DIV
Measurement condition	Rear wiper INT switch: <ul style="list-style-type: none"> Ignition switch is at ON position and rear wiper switch is at any position other than INT position Rear wiper LOW switch: <ul style="list-style-type: none"> Ignition switch is at ON position and rear wiper switch is at any position other than LOW position

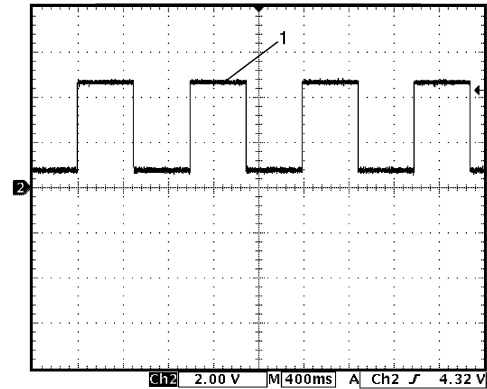


I4RS0AA20024-02

Reference waveform No. 10

SDM communication signal (1)

Measurement terminal	CH2: "L314-2" to "G271-3"
Oscilloscope setting	CH2: 2 V / DIV TIME: 400 ms / DIV
Measurement condition	Ignition switch is at ON position



I4RS0AA20026-02

Repair Instructions

BCM (Included in Junction Block) Removal and Installation

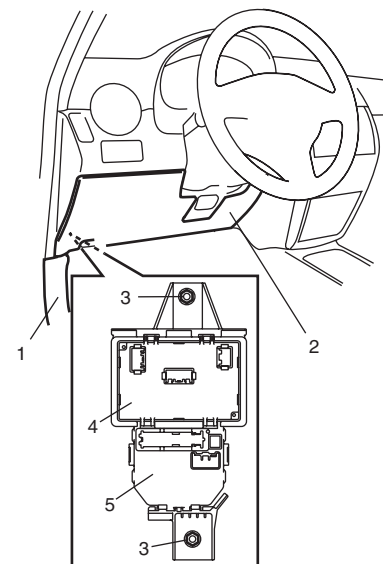
S6RW0DA206001

⚠ CAUTION

**Do not attempt removal of BCM from junction block as it may cause contact failure.
 If there is faulty condition in BCM, replace junction block assembly.**

Removal

- 1) Disconnect negative cable from battery.
- 2) Disable air bag system referring to "Disabling Air Bag System in Section 8B".
- 3) Remove dash side trim (1) and steering column hole cover (2).
- 4) Remove junction block mounting nuts (3).



I5RW0AA20015-01

4. BCM	5. Junction block
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- 5) Disconnect connectors from BCM and junction block.
- 6) Detach wiring harness clamp from junction block.

Installation

Reverse removal procedure for installation, noting following points.

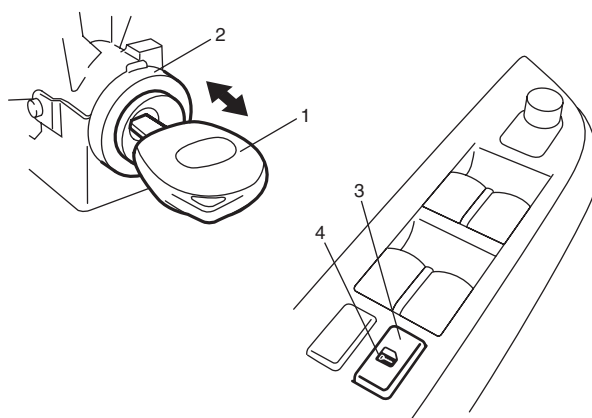
- Connect connectors securely.
- Enable air bag system referring to “Enabling Air Bag System in Section 8B”.
- With keyless entry system (other than keyless start model), if BCM is replaced, register transmitter code into BCM, referring to “Programming Transmitter Code for Keyless Entry System (Other than Keyless Start Model) in Section 9F”.

Security Alarm Mode Selection Procedure (If Equipped)

S6RW0DA206005

Security alarm mode can be selected by performing the following procedure.

- 1) Confirm that all doors are closed, all doors are unlocked and ignition key is inserted in ignition key cylinder.
- 2) Remove ignition key from ignition key cylinder.
- 3) Perform Step a) through e) described below within 15 seconds.
 - a) Insert ignition key (1) in ignition key cylinder (2).
 - b) Remove ignition key from ignition key cylinder.
 - c) Repeat Step a) and b) twice.
 - d) Insert ignition key in ignition key cylinder.
 - e) Push lock side (3) of driver side manual lock switch (4) 3 times.



I7JB01A20007-01

4) When Step 3) is completed, the mode changes to the next one automatically. The warning buzzer (located in BCM) sounds by the number of specified for each mode as follows.

- Changed from A mode to B mode: Buzzer sounds 4 times
- Changed from B mode to A mode: Buzzer sounds once

Outside Air Temperature Sensor Removal and Installation

S6RW0DA206002

For removal and installation, refer to “Outside Air Temperature Sensor Removal and Installation (If Equipped) in Section 9C”.

Outside Air Temperature Sensor Inspection

S6RW0DA206003

For inspection, refer to “Outside Air Temperature Sensor Inspection (If Equipped) in Section 9C”.

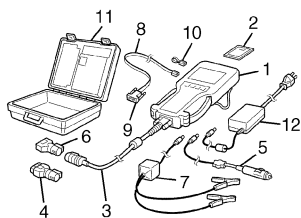
Special Tools and Equipment

Special Tool

S6RW0DA208001

SUZUKI scan tool

This kit includes following items. 1. Tech 2, 2. PCMCIA card, 3. DLC cable, 4. SAE 16/19 adapter, 5. Cigarette cable, 6. DLC loop back adapter, 7. Battery power cable, 8. RS232 cable, 9. RS232 adapter, 10. RS232 loop back connector, 11. Storage case, 12.



Immobilizer Control System

Precautions

Precautions in Diagnosing Troubles

S6RW0DA300001

- Before confirming the diagnostic trouble code (DTC), do not disconnect connector from ECM, battery cable from battery, ground wire harness, or main fuse. Such disconnection will erase DTC stored in ECM.
- DTC stored in ECM memory can be checked as well as cleared by using SUZUKI scan tool. Before using SUZUKI scan tool, read its operator's manual carefully to know how to use it and what functions are available.
- Be sure to read "Precautions for Electrical Circuit Service in Section 00" before inspection.
- Communication of ECM, BCM, ABS control module, TCM (if equipped), 4WD control module (if equipped), keyless start control module (if equipped), combination meter and DLC is established by CAN (Controller Area Network). Therefore, handle CAN communication lines with care referring to "Precaution for CAN Communication System in Section 00". For CAN communication system, refer to description on "CAN Communication System Description in Section 1A".

Precaution in Replacing ECM

S6RW0DA300002

- If ECM is replaced with new or used one without Immobilizer control function, the engine will not be started. In case of the above, check if the newly installed ECM has Immobilizer control function.
- After ECM is replaced with new one or used one, the transponder code in the transponder built in the ignition key has to be registered with ECM. Or, the engine cannot be started up. For the registration procedure, refer to "Procedure after ECM Replacement".

Precaution in Replacing Ignition Key

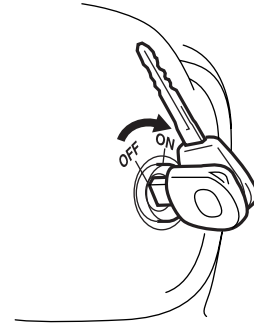
S6RW0DA300003

To register ignition key in case of replacing key(s) and/or making spare key(s), the transponder code in the ignition key is registered with ECM. Or the engine can not be started up. For the registration procedure, refer to "Registration of the Ignition Key".

Precautions in Handling Immobilizer Control System

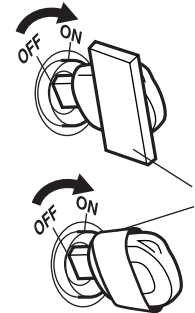
S6RW0DA300004

- Do not turn ON ignition switch with ignition key in contact with another one or quite close to another one. Or, the immobilizer control system may detect some abnormal condition and prevent the engine from starting.



I3RH0AA30001-01

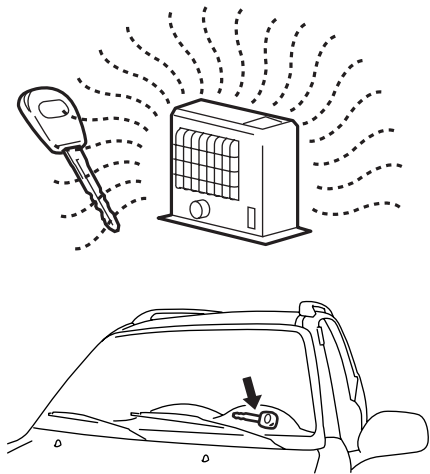
- Do not turn ON ignition switch by using ignition key with any type of metal (1) wrapped its grip or in contact with it. Or, the immobilizer control system may detect some abnormal condition and prevent the engine from starting.



I3RH0AA30002-01

10C-2 Immobilizer Control System:

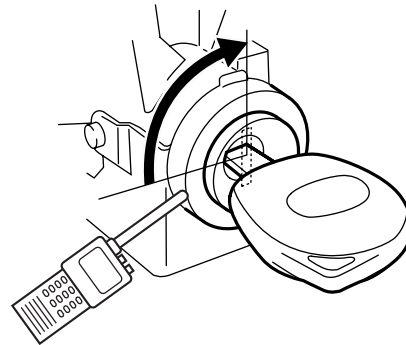
- Do not leave ignition key in a place where temperature is high. High temperature may cause damage to the transponder built in the ignition key.



I3RH0AA30003-01

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- Do not turn ignition switch to ON position by bringing radio antenna close to coil antenna. Or, the immobilizer control system may detect some abnormal condition and prevent the engine from starting.



I3RH0AA30004-01

General Description

Immobilizer Control System Introduction

S6RW0DA301001

The immobilizer control system is an anti-theft device that immobilizes the vehicle. It stops the engine from working and prevents the vehicle from being stolen. It mainly consists of the following components. For immobilizer control system components location, refer to "Immobilizer Control System Components Location".

- ECM
- ICM with the built-in coil antenna
- Ignition key with the built-in transponder

A code called the transponder code is memorized in the transponder. And, the code is registered with ECM. Basically, when the ignition switch is turned ON, ECM reads the code by the coil antenna. Then, if the code in transponder in the ignition key does not match with the one registered with ECM, ECM stops the operation of the fuel injection so as not to start up the engine and turns the immobilizer indicator light ON and OFF using CAN communication lines. (In addition to the above operation, ECM also turns the immobilizer indicator light ON and OFF when some trouble is detected in the keyless start system.)

On-Board Diagnostic System Description (Self-diagnosis Function)

S6RW0DA301002

ECM diagnoses if there is any trouble with the immobilizer control system. The diagnostic information is stored as the diagnostic trouble code (DTC) in ECM. To read the diagnostic information, use SUZUKI scan tool referring to "DTC Check".

With the ignition switch turned ON (but the engine at stop) regardless of the condition of the engine and emission control system, ECM indicates whether there is any trouble with the immobilizer control system or not by either lighting ON or flashing ON and OFF the immobilizer indicator light.

Immobilizer indicator light lights ON:

No trouble exists in the immobilizer control system. (After starting up the engine, the light turns OFF.)

Immobilizer indicator light flashes ON and OFF:

There is some trouble in the immobilizer control system or in the keyless start system. Its diagnostic information is stored in ECM.

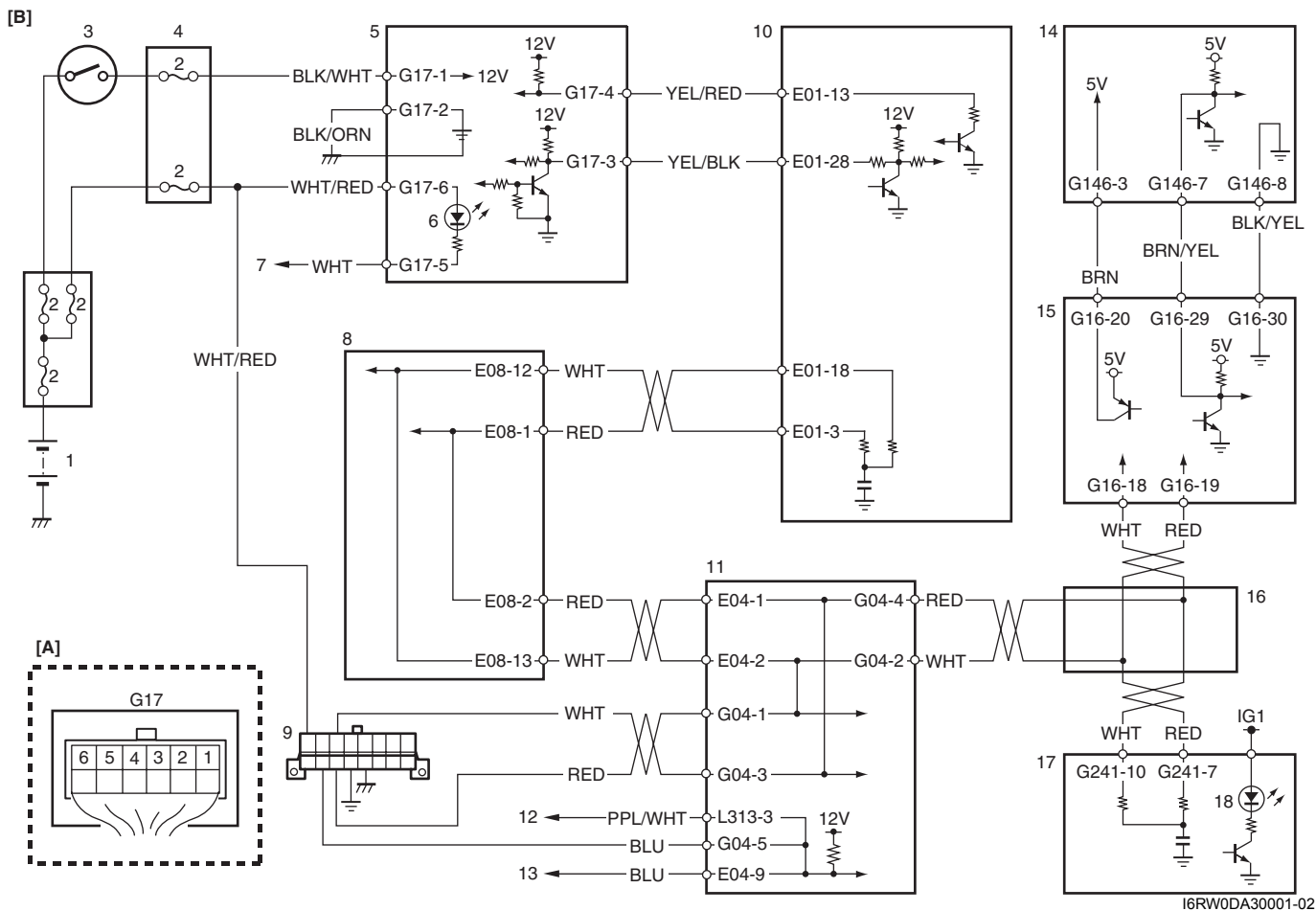
Schematic and Routing Diagram

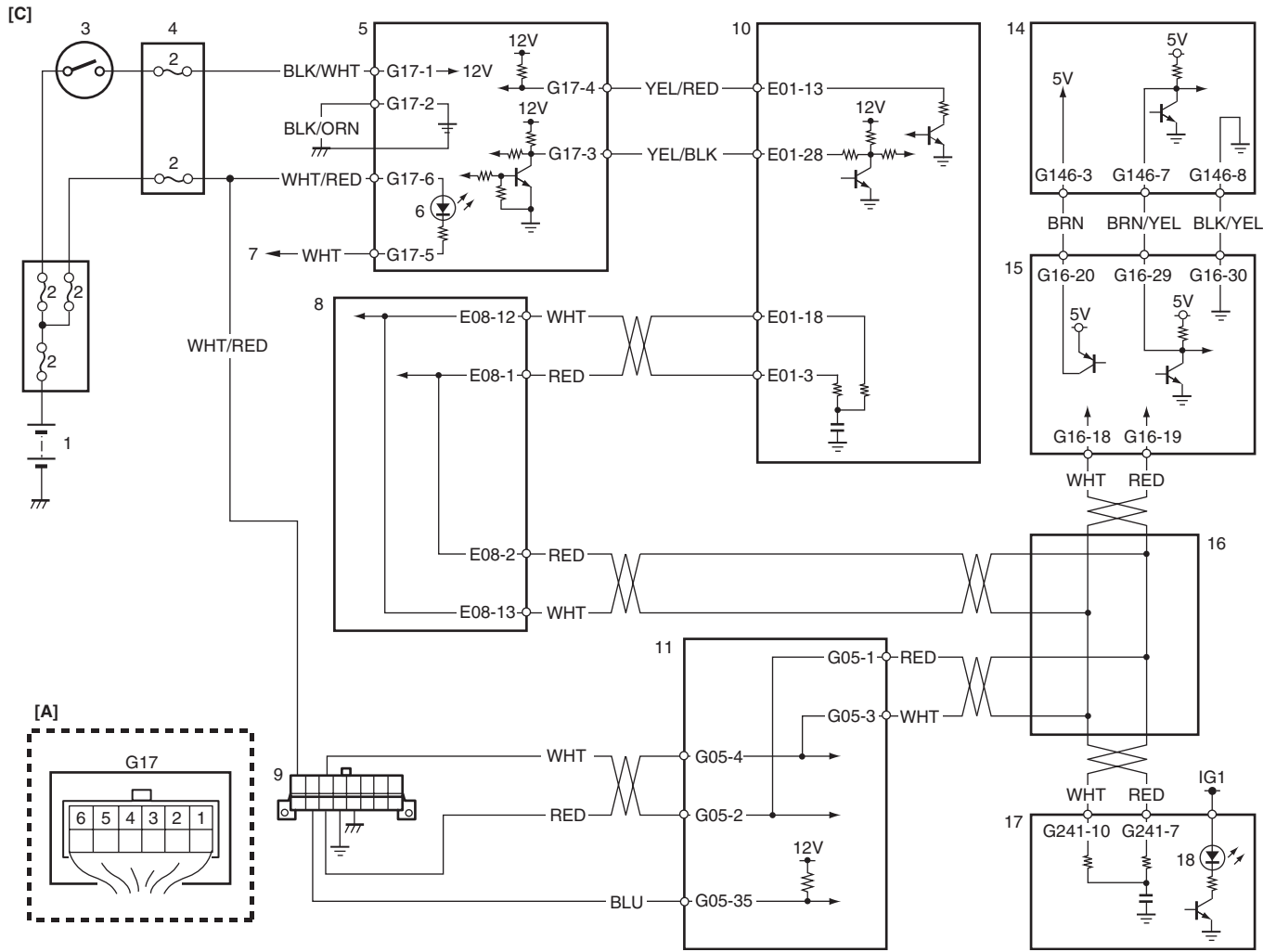
Immobilizer Control System Wiring Circuit Diagram

S6RW0DA302001

NOTE

For more details about power supply circuit, ground wire circuit, and each circuit for ECM, BCM, ABS control module, keyless start control module and combination meter, refer to "System Circuit Diagram in Section 9A".





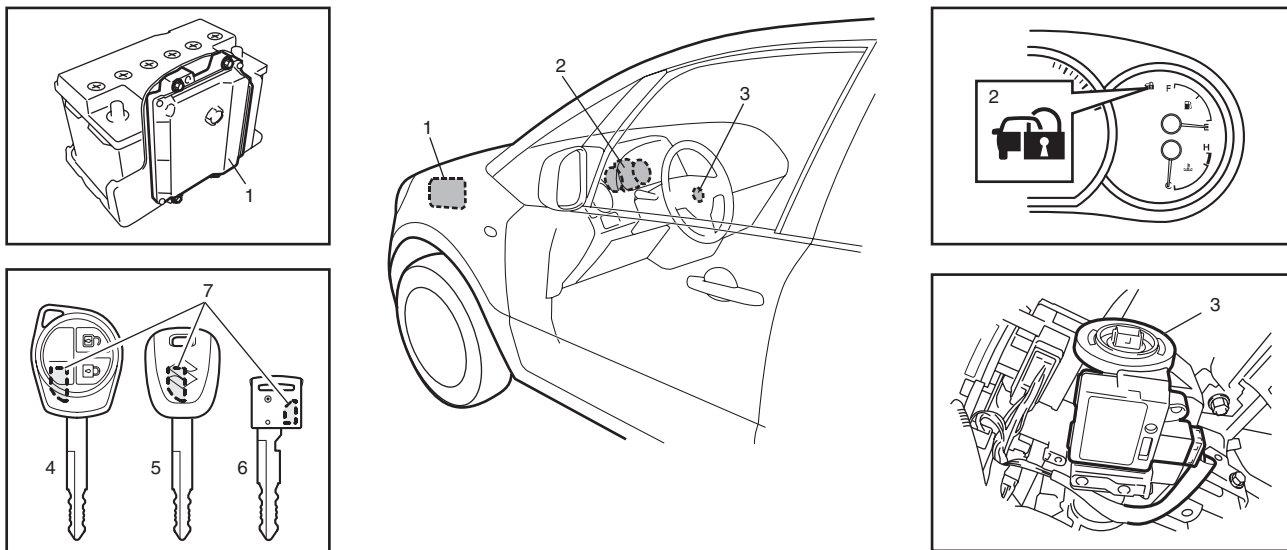
I6RW0DA30002-01

[A]: ICM connector (harness side view)	5. ICM	12. To SDM
[B]: Junction block with BCM type	6. Illumination ring (if equipped)	13. To ABS control module
[C]: Junction block without BCM type	7. To BCM	14. Steering lock unit (keyless start model)
1. Battery	8. ABS control module	15. Keyless start control module (if equipped)
2. Fuse	9. DLC	16. CAN junction connector
3. Ignition switch	10. ECM	17. Combination meter
4. Junction block	11. BCM	18. Immobilizer indicator light

Component Location

Immobilizer Control System Components Location

S6RW0DA303001



I6RW0BA30001-01

1. ECM	5. Ignition key (non keyless entry model)
2. Immobilizer indicator light	6. Ignition key (keyless start model)
3. ICM	7. Transponder
4. Ignition key (keyless entry model)	

Diagnostic Information and Procedures

Immobilizer Control System Check

S6RW0DA304001

Step	Action	Yes	No
1	Immobilizer indicator light check 1) Turn ignition switch to ON position using ignition key. <i>Does immobilizer indicator light come on?</i>	Go to Step 2.	Check if DTC P1636 and/or P1638 are detected by ECM referring to "DTC Check". If detected, go to applicable DTC diag. flow. If not detected, go to "Immobilizer Indicator Light Does Not Come ON with Ignition Switch ON and Engine Stop".
2	Immobilizer indicator light check <i>Does immobilizer indicator light flash on and off continuously in Step 1?</i>	Check ECM for DTC referring to "DTC Check". Then, go to applicable DTC diag. flow.	Go to Step 3.
3	Engine start check 1) Start engine using ignition key. <i>Does engine start?</i>	Go to Step 4.	Go to "Engine and Emission Control System Check in Section 1A".
4	Immobilizer indicator light check 1) Check if immobilizer indicator light remains ON after engine start. <i>Does immobilizer indicator light remains ON after engine start?</i>	Go to "Immobilizer Indicator Light Remains ON after Engine Start".	Immobilizer control system is in good condition. Then, go to "Keyless Start System Check in Section 10E" for keyless start model.

DTC Check

S6RW0DA304002

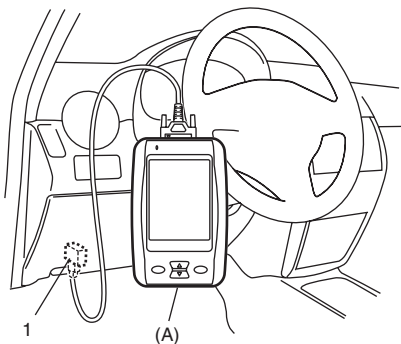
NOTE

To know how to use SUZUKI scan tool in detail, refer to its operator's manual.

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

Special tool

(A): SUZUKI scan tool (SUZUKI-SDT)



I5RW0CA30002-01

- 3) Turn the ignition switch to ON position.
- 4) Read DTC according to instructions displayed on SUZUKI scan tool and print them or write them down. Refer to scan tool operator's manual for details.
If communication between scan tool and ECM is not possible, go to "Troubleshooting for Communication Error with Scan Tool Using CAN in Section 1A".
- 5) After completing the check, turn ignition switch to OFF position, and then disconnect SUZUKI scan tool from DLC.

DTC Clearance

S6RW0DA304003

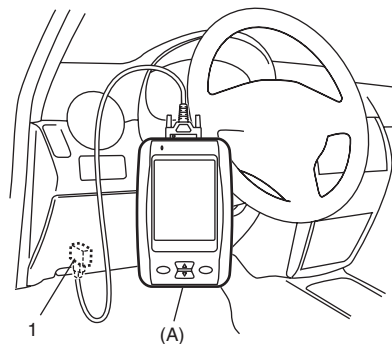
NOTE

To know how to use SUZUKI scan tool in detail, refer to its operator's manual.

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

Special tool

(A): SUZUKI scan tool (SUZUKI-SDT)



I5RW0CA30002-01

- 3) Turn the ignition switch to ON position.
- 4) Clear DTC(s) according to the instructions displayed on SUZUKI scan tool.
- 5) After completing the clearance, turn the ignition switch to OFF position, and then disconnect SUZUKI scan tool from DLC.

DTC Table

S6RW0DA304004

ECM

NOTE

ECM detects DTC. ICM does not.

DTC No.	Detecting Item	Detecting Condition	Immobilizer Indicator Light
P1614	Transponder response error	Transponder code in transponder built in ignition key cannot be read through ICM.	Flash
P1615	Steering lock unit communication error	<ul style="list-style-type: none"> While registering the transponder code in the transponder built in the ignition key in ECM, the keyless start control module sent a signal to ECM indicating that the ID code could not be registered. The ID code could not be registered in the keyless start control module or ECM. 	Flash
P1616	Unregistered keyless start control module	ECM detects different ID codes registered in ECM and keyless start control module.	Flash
P1618	Keyless start control module CAN communication error	Reception error of communication data for keyless start control module is detected for longer than specified time continuously.	Flash
P1621	Immobilizer communication line error	Communication error between ICM and ECM.	Flash
P1622	EEPROM reading / writing error	EEPROM in ECM is corrupted.	Flash
P1623	Unregistered transponder	Transponder code in the transponder built in the ignition key is invalid.	Flash
P1625	Immobilizer antenna error	ICM is faulty.	Flash
P1636	Immobilizer information registration failure	Communication error between ECM and BCM.	No operation
P1638	Immobilizer information mismatched	<ul style="list-style-type: none"> Communication error between ECM and BCM. Wrong ECM or BCM is used. 	No operation

NOTE

If any DTC other than the above DTCs is detected, refer to "DTC Table in Section 1A".

Scan Tool Data

S6RW0DA304005

Suzuki scan tool displays the following data using "Registration Information" mode.

Scan Tool Data (Registration Information Data)	Vehicle Condition	Normal Data
☞ Component ID	Ignition switch at ON position	****
☞ Keyfree System Code		Registered
☞ Remote Starter Code		Unregistered
☞ Number of the Registered Immobilizer Key		2 Keys
☞ Latest Year for the Key Registration		2006
☞ Latest Month for the Key Registration		June

Scan Tool Data Definitions

Component ID (****)

This parameter indicates the vehicle ID number of four digits used for the Suzuki scan tool.

Keyfree System Code (Keyless start control system ID code, Registered, Unregistered)

Registered: ID code of the keyless start system is registered in the ECM.

Unregistered: ID code of the keyless start system is unregistered in the ECM.

Remote Starter Code (Remote starter control system code, Registered, Unregistered)

Registered: Remote starter system is registered in the ECM.

Unregistered: Remote starter system is unregistered in the ECM.

Number of the Registered Immobilizer Key (0 – 4 keys)

The number of the transponder code in the transponder built in the ignition key that is registered with ECM.

NOTE

A maximum of four transponder codes can be registered with ECM. Therefore, the maximal value should be 4.

Latest Year for the Key Registration (2006 or Later)

The year in which the transponder code in the transponder built in the ignition key is registered with ECM.

Latest Month for the Key Registration (January-December)

The month in which the transponder code in the transponder built in the ignition key is registered with ECM.

Immobilizer Indicator Light Does Not Come ON with Ignition Switch ON and Engine Stop

Wiring Diagram

Refer to "Immobilizer Control System Wiring Circuit Diagram".

Circuit Description

When the ignition switch is turned ON, ECM transmits the indication ON signal to the combination meter to turn ON the immobilizer indicator light in case that there is not any problem with the immobilizer control system. Then, the combination meter turns ON the light. When the engine is started up, ECM transmits the indication OFF signal to the combination meter to turn OFF the light. Then, the combination meter turns OFF the immobilizer indicator light. However, in case that there is some trouble with the immobilizer control system, the immobilizer indicator light flashes ON and OFF when the ignition switch is turned ON.

Troubleshooting

Step	Action	Yes	No
1	Immobilizer indicator light power supply check 1) Turn the ignition switch to ON position. <i>Do other warning lights come ON?</i>	Go to Step 2.	Go to Step 4.
2	DTC check of ECM 1) Check ECM for DTC referring to "DTC Check in Section 1A". <i>Is DTC U0073, U0101, U0121 and/or U0140 detected?</i>	Go to applicable DTC diag. flow.	Go to Step 3.
3	DTC check of BCM 1) Check BCM for DTC referring to "DTC Check in Section 10B". <i>Is DTC U0073, U0100, U0101, U0155 and/or U1144 detected?</i>	Go to applicable DTC diag. flow.	Substitute a known-good combination meter and recheck. If immobilizer indicator light still remains OFF, substitute a known-good ECM and recheck.
4	Fuse check 1) Turn the ignition switch to OFF position. 2) Check fuse for combination meter circuit. <i>Is fuse blown?</i>	Replace blown fuse, and then check for short.	Go to Step 5.
5	Combination meter power supply wire circuit check 1) Remove combination meter referring to "Combination Meter Removal and Installation in Section 9C". 2) Check for proper connection at terminals and wires of combination meter connector. 3) If OK, turn the ignition switch to ON position and measure voltage between power supply terminal of combination meter and vehicle body ground. Refer to "Combination Meter Circuit Diagram in Section 9C". <i>Is it 10 – 14 V?</i>	Go to Step 6.	Repair open in power supply wire circuit.
6	Combination meter ground wire circuit check 1) Turn ignition switch OFF position. 2) Measure resistance between ground terminal of combination meter connector and vehicle body ground. Refer to "Combination Meter Circuit Diagram in Section 9C". <i>Is resistance 1 Ω or less?</i>	Substitute a known-good combination meter and recheck. If still remains OFF, substitute a known-good ECM and recheck.	Repair open or high resistance in ground circuit.

Immobilizer Indicator Light Remains ON after Engine Start

S6RW0DA304007

Wiring Diagram

Refer to "Immobilizer Control System Wiring Circuit Diagram".

Circuit Description

Refer to "Immobilizer Indicator Light Does Not Come ON with Ignition Switch ON and Engine Stop".

Troubleshooting

Step	Action	Yes	No
1	DTC check of ECM 1) Check ECM for DTC referring to "DTC Check in Section 1A". <i>Is DTC detected?</i>	Go to applicable DTC diag. flow.	Go to Step 2.
2	CAN communication circuit check 1) Disconnect connectors from ECM, BCM, ABS control module and combination meter. 2) Check CAN communication circuit for open, short and high resistance. • Between ECM and ABS control module • Between BCM and ABS control module • Between BCM and combination meter <i>Is each CAN communication circuit in good condition?</i>	Substitute a known-good combination meter and recheck. If immobilizer indicator light still remains ON, substitute a known-good ECM and recheck.	Repair circuit.

DTC P1614: Transponder Response Error

S6RW0DA304008

Wiring Diagram

Refer to "Immobilizer Control System Wiring Circuit Diagram".

Detecting Condition and Trouble Area

Detecting Condition	Trouble Area
Transponder code in transponder built in ignition key cannot be read through ICM.	<ul style="list-style-type: none"> • Use of ignition key without transponder • Use of unregistered ignition key • Corruption of transponder in ignition key • ICM • ECM

Troubleshooting

Step	Action	Yes	No
1	<i>Was "Immobilizer Control System Check" performed?</i>	Go to Step 2.	Go to "Immobilizer Control System Check".
2	DTC check of ECM 1) Check if any DTC other than P1614 is detected referring to "DTC Check". <i>Is DTC other than P1614 detected?</i>	Go to applicable DTC diag. flow.	Go to Step 3.
3	Registration of ignition key in use with ECM 1) Register ignition key in use with ECM referring to "Registration of the Ignition Key". <i>Was registration of ignition key completed?</i>	Recheck DTC.	Go to Step 4.
4	Registration of the spare ignition key 1) Register the spare ignition key with ECM referring to "Registration of the Ignition Key". <i>Was registration of spare ignition key completed?</i>	Replace ignition key which can not be registered.	Substitute a known-good ECM and recheck.

DTC P1615: Steering Lock Unit Communication Error

S6RW0DA304009

Wiring Diagram

Refer to "Immobilizer Control System Wiring Circuit Diagram".

Circuit Description

When the transponder code in the ignition key is registered in ECM, the ID code is registered in both ECM and keyless start control module at the same time. This DTC is detected only in case that the ID code cannot be registered in both ECM and keyless start control module when the transponder code in the ignition key is registered in ECM.

NOTE

- Troubleshoot DTC P1618 first if both DTC P1615 and P1618 are detected at the same time.
- After replacing ECM, be sure to register the transponder code in the ignition key with ECM referring to "Registration of the Ignition Key". After replacing the keyless start control module of the vehicle equipped with the keyless start system, be sure to perform "Registration of the Ignition Key".

Detecting Condition and Trouble Area

Detecting Condition	Trouble Area
<ul style="list-style-type: none"> • While registering the transponder code in ECM, the keyless start control module sent a signal to ECM indicating that the ID code could not be registered. • The ID code could not be registered in the keyless start control module or ECM. 	<ul style="list-style-type: none"> • Wire circuits between steering lock unit and keyless start control module • CAN communication circuit • Steering lock unit • Keyless start control module • Combination meter • TCM (if equipped) • 4WD control module (if equipped) • ABS control module • BCM • ECM

Troubleshooting

Step	Action	Yes	No
1	Was "Immobilizer Control System Check" performed?	Go to Step 2.	Go to "Immobilizer Control System Check".
2	Registration of ignition key 1) Register ignition key in use with ECM referring to "Registration of the Ignition Key". Was registration of ignition key completed?	Recheck ECM for DTC. If DTC P1615 is still detected, go to Step 3.	Go to Step 3.
3	DTC check of ECM 1) Check ECM for DTC referring to "DTC Check in Section 1A". Is DTC U0073, U0101, U0121 and/or U0140 detected?	Go to applicable DTC diag. flow.	Go to Step 4.
4	DTC check of keyless start control module 1) Check keyless start control module for DTC referring to "DTC Check in Section 10E". Is DTC detected?	Go to applicable DTC diag. flow.	Go to Step 5.
5	Check for communication circuit between steering lock unit and keyless start control module 1) Check for open, short, and high resistance in steering lock unit circuit. Refer to Step 2 in "DTC No. 11: Communication Error with Steering Lock Unit in Section 10E". Is each circuit in good condition?	Go to Step 6.	Repair malfunction part and recheck.

Step	Action	Yes	No
6	Steering lock unit power supply check 1) Connect keyless start control module connector. 2) With ignition switch at ON position, check power supply terminal voltage of steering lock unit connector. Refer to "Keyless Start Control Module Power and Ground Circuit Check in Section 10E". <i>Is voltage 4 – 6 V?</i>	Replace steering lock unit and recheck.	Substitute a known-good keyless start control module and recheck. If DTC P1615 is still detected, substitute a known-good ECM and recheck.

DTC P1616: Unregistered Keyless Start Control Module

S6RW0DA304010

Wiring Diagram

Refer to "Immobilizer Control System Wiring Circuit Diagram".

Circuit Description

P1616 is detected when ECM detects different ID codes registered in ECM and keyless start control module after turning engine start knob to ON position. Normally, when keyless start control module is replaced with new one, ECM automatically registers the applicable code in keyless start control module after turning ignition switch to ON position. However, when keyless start control module is replaced with used one, ECM does not automatically register the applicable code in keyless start control module even if ignition switch is turned to ON position.

Detecting Condition and Trouble Area

Detecting Condition	Trouble Area
ECM detects different ID codes registered in ECM and keyless start control module.	<ul style="list-style-type: none"> • Keyless start system wire circuit • Keyless start control module • ECM

Troubleshooting

Step	Action	Yes	No
1	<i>Was "Immobilizer Control System Check" performed?</i>	Go to Step 2.	Go to "Immobilizer Control System Check".
2	Registration of the ignition key 1) Register the ignition key with ECM referring to "Registration of the Ignition Key". <i>Was registration of ignition key completed?</i>	Recheck ECM for DTC.	Go to Step 3.
3	DTC check of ECM 1) Check DTC referring to "DTC Check". <i>Is DTC P1618 and/or P1615 detected other than P1616?</i>	Go to DTC P1618 troubleshooting.	Go to DTC P1615 troubleshooting.

DTC P1618: Keyless Start Control Module CAN Communication Error

S6RW0DA304011

Refer to "Troubleshooting for CAN-DTC in Section 1A".

DTC P1621: Immobilizer Communication Line Error

S6RW0DA304012

Wiring Diagram

Refer to "Immobilizer Control System Wiring Circuit Diagram".

Detecting Condition and Trouble Area

Detecting Condition	Trouble Area
Communication error between ICM and ECM.	<ul style="list-style-type: none"> • Related fuse(s) blown • Poor connection at ICM connector • Poor connection at ECM connector • Power supply circuit • Ground circuit • Communication circuits between ICM and ECM • ICM • ECM

Troubleshooting

Step	Action	Yes	No
1	Was "Immobilizer Control System Check" performed?	Go to Step 2.	Go to "Immobilizer Control System Check".
2	Fuse check 1) Check fuse for ICM circuit. <i>Is fuse in good condition?</i>	Replace blown fuse(s) and then, check for short circuit.	Go to Step 3.
3	Voltage check at power and ground terminal 1) Check power and ground terminal voltage of ICM connector referring to "Inspection of ICM and Its Circuit". <i>Is each terminal voltage in good condition?</i>	Go to Step 4.	Repair circuit.
4	ICM and ECM connector check 1) With the ignition switch at OFF position, check intermittent and poor connection of ICM connector and ECM connectors referring to "Intermittent and Poor Connection Inspection in Section 00". <i>Is each connector in good condition?</i>	Go to Step 5.	Repair poor connection.
5	Communication circuit check between ICM and ECM 1) Check for open, short and high resistance in serial communication and clock circuit between ICM and ECM. <i>Is each communication circuit in good condition?</i>	Substitute a known-good ICM and recheck. If DTC P1621 is still detected, substitute a known good ECM and recheck.	Repair circuit.

DTC P1622: EEPROM Reading / Writing Error

S6RW0DA304013

Detecting Condition and Trouble Area

Detecting Condition	Trouble Area
EEPROM in ECM is corrupted.	Internal failure (EEPROM corruption) of ECM

Troubleshooting

- 1) Clear DTC(s) referring to "DTC Clearance".
- 2) Turn the ignition switch to OFF position.
- 3) Check if DTC P1622 is still detected referring to "DTC Check". If still detected, go to the next step. If not, the troubleshooting is completed.
- 4) Replace ECM with new one referring to "Engine Control Module (ECM) Removal and Installation in Section 1C".
- 5) Perform "Procedure after ECM Replacement".

DTC P1623: Unregistered Transponder

S6RW0DA304014

Wiring Diagram

Refer to "Immobilizer Control System Wiring Circuit Diagram".

Detecting Condition and Trouble Area

Detecting Condition	Trouble Area
Transponder code in the transponder built in the ignition key is invalid.	<ul style="list-style-type: none"> • Use of the unregistered ignition key • ICM • ECM

Troubleshooting

Step	Action	Yes	No
1	Was "Immobilizer Control System Check" performed?	Go to Step 2.	Go to "Immobilizer Control System Check".
2	DTC check of ECM 1) Check if any DTC other than P1623 is detected referring to "DTC Check". <i>Is DTC other than P1623 detected?</i>	Go to applicable DTC diag. flow.	Go to Step 3.
3	Registration of unregistered ignition key with ECM 1) Register the unregistered ignition key with ECM referring to "Registration of the Ignition Key". <i>Was registration of ignition key completed?</i>	Recheck DTC.	Go to Step 4.
4	Registration of the spare ignition key 1) Register the spare ignition key referring to "Registration of the Ignition Key". <i>Was registration of spare ignition key completed?</i>	Replace ignition key which cannot be registered.	Substitute a known-good ECM and recheck.

DTC P1625: Immobilizer Antenna Error

S6RW0DA304015

Wiring Diagram

Refer to "Immobilizer Control System Wiring Circuit Diagram".

Detecting Condition and Trouble Area

Detecting Condition	Trouble Area
ICM is faulty.	<ul style="list-style-type: none"> • ICM • ECM

Troubleshooting

Step	Action	Yes	No
1	Was "Immobilizer Control System Check" performed?	Go to Step 2.	Go to "Immobilizer Control System Check".
2	DTC confirmation 1) Clear DTC referring to "DTC Clearance". 2) Turn the ignition switch to OFF position. 3) Check DTC referring to "DTC Check". Is DTC P1625 still detected?	Substitute a known-good ICM and recheck DTC. If DTC P1625 is still detected, substitute a known-good ECM and recheck.	Intermittent trouble. Check for intermittent referring to "Intermittent and Poor Connection Inspection in Section 00".

DTC P1636: Immobilizer Information Registration Failure

S6RW0DA304016

Wiring Diagram

Refer to "Immobilizer Control System Wiring Circuit Diagram".

Detecting Condition and Trouble Area

Detecting Condition	Trouble Area
The registration of the immobilizer control system information in ECM is failed.	<ul style="list-style-type: none"> • CAN communication circuit • Keyless start control module (if equipped) • Combination meter • TCM (A/T model) • 4WD control module (if equipped) • ABS control module • BCM • ECM

Troubleshooting

Step	Action	Yes	No
1	Was "Immobilizer Control System Check" performed?	Go to Step 2.	Go to "Immobilizer Control System Check".
2	DTC check of ECM 1) Check ECM for DTC referring to "DTC Check in Section 1A". Is DTC U0073, U0101, U0121 and/or U0140 detected?	Go to applicable DTC diag. flow.	Go to Step 3.
3	DTC check of BCM 1) Check BCM for DTC referring to "DTC Check in Section 10B". Is DTC U0073, U0100, U0101, U0155 and/or U1144 detected?	Go to applicable DTC diag. flow.	Go to Step 4.

Step	Action	Yes	No
4	<p>CAN communication circuit check</p> <p>1) Disconnect connectors from ECM, BCM and ABS control module.</p> <p>2) Check CAN communication circuit for open, short and high resistance.</p> <ul style="list-style-type: none"> • Between ECM and ABS control module • Between BCM and ABS control module <p><i>Is each CAN communication circuit in good condition?</i></p>	Go to Step 5.	Repair circuit.
5	<p>Replacement of BCM</p> <p>1) Replace BCM with new one referring to “BCM (Included in Junction Block) Removal and Installation in Section 10B”.</p> <p>2) Check ECM for DTC referring to “DTC Check”.</p> <p><i>Is DTC P1636 still detected?</i></p>	Substitute a known-good ECM and recheck.	BCM faulty.

DTC P1638: Immobilizer Information Mismatched

S6RW0DA304017

Wiring Diagram

Refer to “Immobilizer Control System Wiring Circuit Diagram”.

Detecting Condition and Trouble Area

Detecting Condition	Trouble Area
<ul style="list-style-type: none"> • The immobilizer control system information in ECM and the one in BCM does not match. • The registration of the immobilizer control system information in ECM is failed. 	<ul style="list-style-type: none"> • Use of the wrong ECM • CAN communication circuit • Keyless start control module (if equipped) • Combination meter • TCM (A/T model) • 4WD control module (if equipped) • ABS control module • BCM • ECM

Troubleshooting

Step	Action	Yes	No
1	<p><i>Was “Immobilizer Control System Check” performed?</i></p>	Go to Step 2.	Go to “Immobilizer Control System Check”.
2	<p>DTC confirmation</p> <p>1) Disconnect negative (–) cable from battery for more than 5 seconds.</p> <p>2) Connect negative (–) cable to battery.</p> <p>3) Check if any DTC is detected referring to “DTC Check”.</p> <p><i>Is DTC P1638 still detected?</i></p>	Go to Step 3.	Intermittent trouble. Check for intermittent referring to “Intermittent and Poor Connection Inspection in Section 00”.
3	<p>ECM specification check</p> <p>1) Check ECM part number to see if ECM is applicable to the vehicle in service.</p> <p><i>Is a correct ECM used for the vehicle in service?</i></p>	Go to Step 4.	Replace ECM with the correct one and recheck if DTC P1638 is still detected by ECM.
4	<p>DTC check of ECM</p> <p>1) Check ECM for DTC referring to “DTC Check in Section 1A”.</p> <p><i>Is DTC U0073, U0101, U0121 and/or U0140 detected?</i></p>	Go to applicable DTC diag. flow.	Go to Step 5.

Step	Action	Yes	No
5	DTC check of BCM 1) Check BCM for DTC referring to "DTC Check in Section 10B". <i>Is DTC U0073, U0100, U0101, U0155 and/or U1144 detected?</i>	Go to applicable DTC diag. flow.	Go to Step 6.
6	CAN communication circuit check 1) Disconnect connectors from ECM, BCM and ABS control module. 2) Check CAN communication circuit for open, short and high resistance. <ul style="list-style-type: none"> • Between ECM and ABS control module • Between BCM and ABS control module <i>Is each CAN communication circuit in good condition?</i>	Go to Step 7.	Repair circuit.
7	Replacement of BCM 1) Replace BCM with new one referring to "BCM (Included in Junction Block) Removal and Installation in Section 10B". 2) Check ECM for DTC referring to "DTC Check". <i>Is DTC P1638 still detected?</i>	Substitute a known-good ECM and recheck.	BCM faulty.

Inspection of ICM and Its Circuit

S6RW0DA304018

ICM and its circuit can be checked at ICM wiring connector by measuring voltage.

⚠ CAUTION

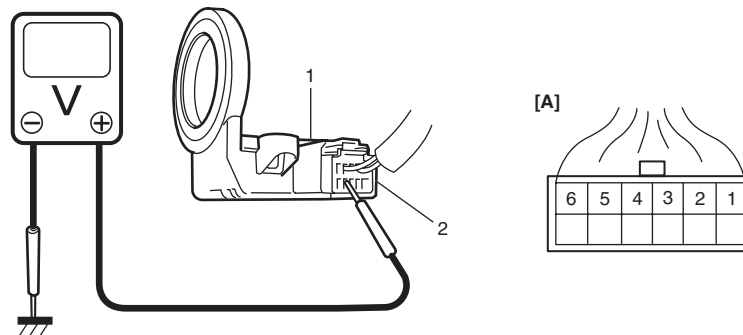
ICM cannot be checked by itself. It is strictly prohibited to connect voltmeter or ohmmeter to ICM with connector disconnected from it.

Voltage Check

- 1) Remove ICM (1) from steering lock assembly or steering lock unit referring to "ICM Removal and Installation".
- 2) Connect ICM connector (2) to ICM.
- 3) Check voltage at each terminal.

NOTE

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

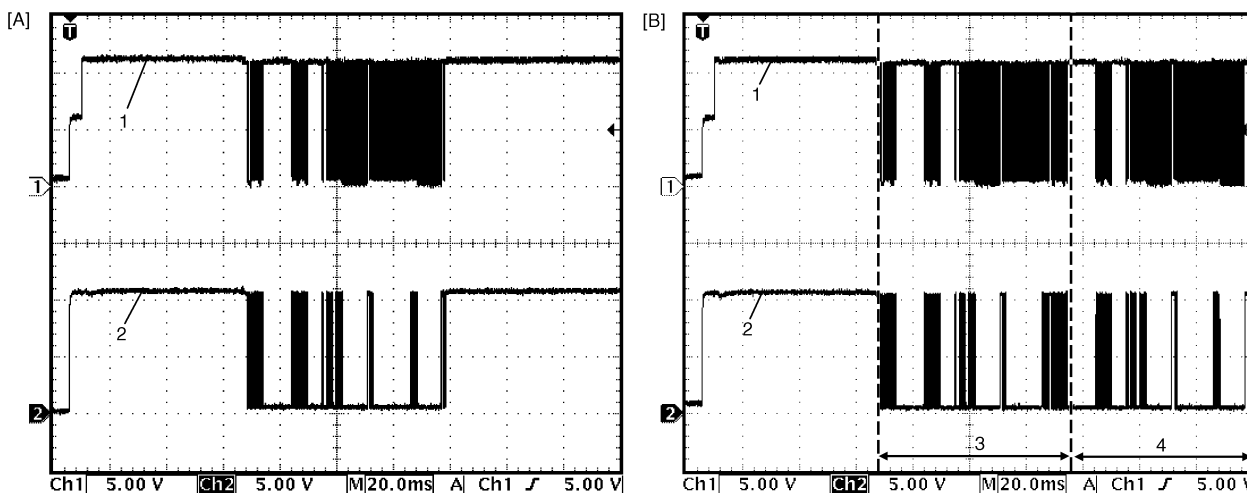


[A]: ICM connector (harness side view)

I6RW0BA30003-01

Terminal	Circuit	Normal Voltage	Condition
G17-1	Power supply	About 12.0 V	Ignition switch at ON position
		0.0 V	Ignition switch at OFF position
G17-2	Ground	0.0 V	—
G17-3	Serial communication line	See the reference waveform.	—
		0.0 V	Ignition switch at OFF position
G17-4	Clock line	See the reference waveform.	—
		0.0 V	Ignition switch at OFF position
G17-5	Illumination ring control (if equipped)	0 V	<ul style="list-style-type: none"> Ignition key not inserted to the key cylinder Door opened
		0 V → 12 V	<ul style="list-style-type: none"> Ignition key at OFF position From the time door is closed to the time interior light faded out completely (As the interior light fades out, the voltage increases.)
		0 V → 12 V	<ul style="list-style-type: none"> Door closed From the ignition switch is turned ON to the time interior light is completely faded out (As the interior light fades out, the voltage increases.)
G17-6	Illumination ring power supply (if equipped)	About 12.0 V	—

Reference Waveform



I6RW0CA30003-01

[A]: The transponder code read successfully at the first try.	2. Clock line
[B]: The transponder code read successfully at the second try.	3. First try
1. Serial communication line	4. Second try

NOTE

When ECM cannot read the transponder code at the first try, ECM tries to read the transponder code repeatedly up to 8 times. The second waveform is the example showing that ECM read the transponder code successfully at the second try.

Measurement terminals	CH1: G17-3 to G17-2 CH2: G17-4 to G17-2
Oscilloscope settings	CH1: 5 V/DIV CH2: 5 V/DIV TIME: 20 ms
Measurement condition	Right after the ignition switch is turned ON, the waveform can be read.

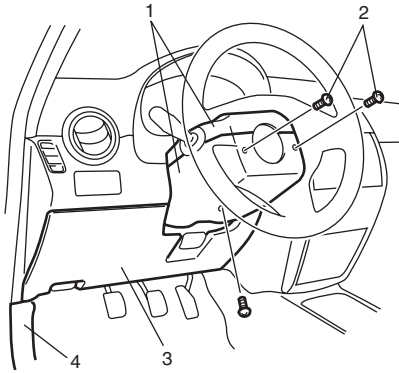
Repair Instructions

ICM Removal and Installation

S6RW0DA306001

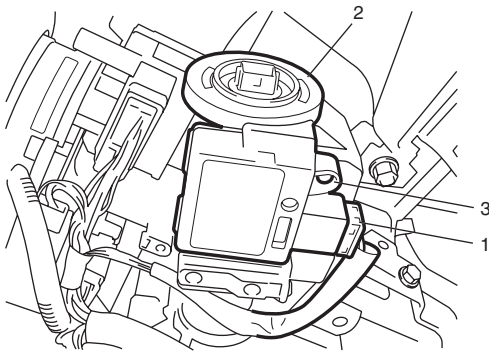
Removal

- 1) Disconnect negative (-) cable at battery.
- 2) Remove dash side trim (4) and steering column hole cover (3).
- 3) Remove steering column covers (1).
Turn steering wheel to access steering column cover screws (2).



I6RW0BA30004-01

- 4) Remove engine start knob (keyless start model).
- 5) Disconnect connector (1) from ICM (2).
- 6) Remove a screw (3) from ICM.



I4RS0BA30007-03

- 7) Remove ICM from steering lock assembly or steering lock unit.

NOTE

The antenna part of ICM is fragile. Therefore, do not add strong power to the part or twist the part.

Installation

Reverse the removal procedure.

Registration of the Ignition Key

S6RW0DA306002

To finish the registration of the ignition key, the transponder code memorized in the transponder built in the ignition key has to be registered with ECM. To register the transponder code with ECM, perform "Immobilizer Key Registration" mode of SUZUKI scan tool referring to "SUZUKI scan tool Operator's Manual".

NOTE

- A maximum of four transponder codes can be registered with ECM.
- At an early part of the registration process, all transponder codes of the ignition keys in use already registered with ECM are cleared. Therefore, before starting the registration, prepare all ignition keys in use in addition to the new ignition key(s) to be registered with ECM.

Procedure after ECM Replacement

S6RW0DA306003

After ECM is replaced with new one or used one, the transponder code in the transponder built in the ignition key has to be registered with ECM. To register transponder code in the ignition key with ECM, perform "Immobilizer Key Registration" mode of SUZUKI scan tool referring to "SUZUKI scan tool Operator's Manual".

NOTE

A maximum of four transponder codes can be registered with ECM.

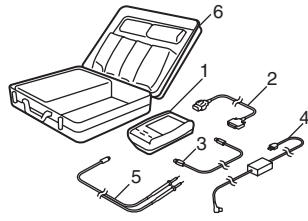
Special Tools and Equipment

Special Tool

S6RW0DA308001

SUZUKI scan tool (SUZUKI-SDT)

—
This kit includes following items. 1. SUZUKI-SDT 2. DLC3 cable 3. USB cable 4. AC/DC power supply 5. Voltage meter probe 6. Storage case



Keyless Start System

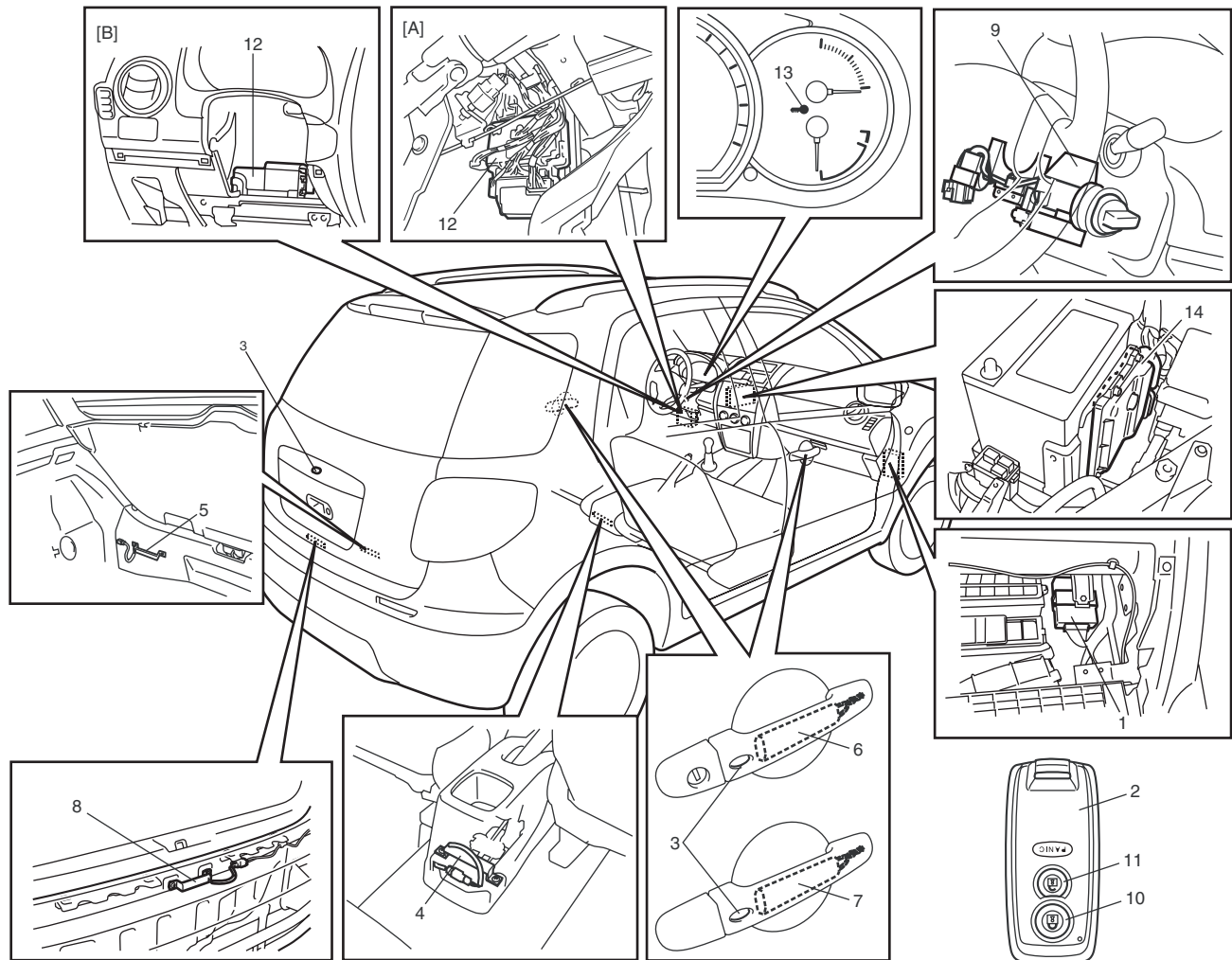
General Description

Keyless Start System Description

S6RW0DA501001

Keyless start system consisting of the parts shown below has three functions as described below.

- **Keyless engine start function:**
 With the remote controller which has been registered in the keyless start control module carried with oneself, the engine can be started without using the ignition key.
- **Door lock function:**
 Pushing the request switch incorporated in the outside handle of the driver side door, passenger side door or rear end door while carrying the remote controller which has been registered in the keyless start control module, doors can be locked or unlocked.
- **Keyless entry system function:**
 It is possible to lock or unlock doors by pushing the lock or unlock button of remote controller.
 The keyless start control module can accept registration of up to four remote controllers.



I6RW0DA50001-01

[A]: Junction block with BCM type	5. Luggage room antenna	11. Unlock button
[B]: Junction block without BCM type	6. Driver side door antenna	12. BCM
1. Keyless start control module	7. Passenger side door antenna	13. Key indicator light
2. Remote controller	8. Rear end door antenna	14. ECM
3. Request switch	9. Steering lock unit	
4. Center antenna	10. Lock button	

Parts and Functions

S6RW0DA501002

Parts	Function
Keyless start control module	<ul style="list-style-type: none"> • Activates each antenna • Verifies ID code of remote controller • Requests steering lock unit to release steering lock • Requests BCM to lock or unlock doors • Controls key indicator light in combination meter • Transmits its ID code to ECM
Remote controller	<ul style="list-style-type: none"> • Receives request signal from each antenna • Transmits ID code and request signal to keyless start control module • Request keyless start control module to lock or unlock doors (keyless entry system function)
Request switch	<ul style="list-style-type: none"> • Requests keyless start control module to activate each antenna
Center antenna	<ul style="list-style-type: none"> • Transmits request signal to remote controller
Luggage room antenna	<ul style="list-style-type: none"> • Transmits request signal to remote controller
Driver side door antenna	<ul style="list-style-type: none"> • Transmits request signal to remote controller
Passenger side door antenna	<ul style="list-style-type: none"> • Transmits request signal to remote controller
Rear end door antenna	<ul style="list-style-type: none"> • Transmits request signal to remote controller
Steering lock unit	<ul style="list-style-type: none"> • Releases steering lock
Unlock button	<ul style="list-style-type: none"> • Transmits door unlock request signal (keyless entry system function)
Lock button	<ul style="list-style-type: none"> • Transmits door lock request signal (keyless entry system function)
BCM	<ul style="list-style-type: none"> • Controls each door lock actuator • Controls warning buzzer • Lights hazard warning light and interior (DOME) light (answer back)
Key indicator light	<ul style="list-style-type: none"> • Indicates operation state of keyless start system (indicates check result of remote controller ID code)
ECM	<ul style="list-style-type: none"> • Checks keyless start control module ID code • Transmits its ID code to keyless start control module • Starts engine