
BODY ELECTRICAL

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45.1 INTERIOR LIGHTING SYSTEM

1 Warnings and Precautions

1.1 Precautions

In order to avoid possible property loss, personal injury or death, always follow the instructions below before repair.

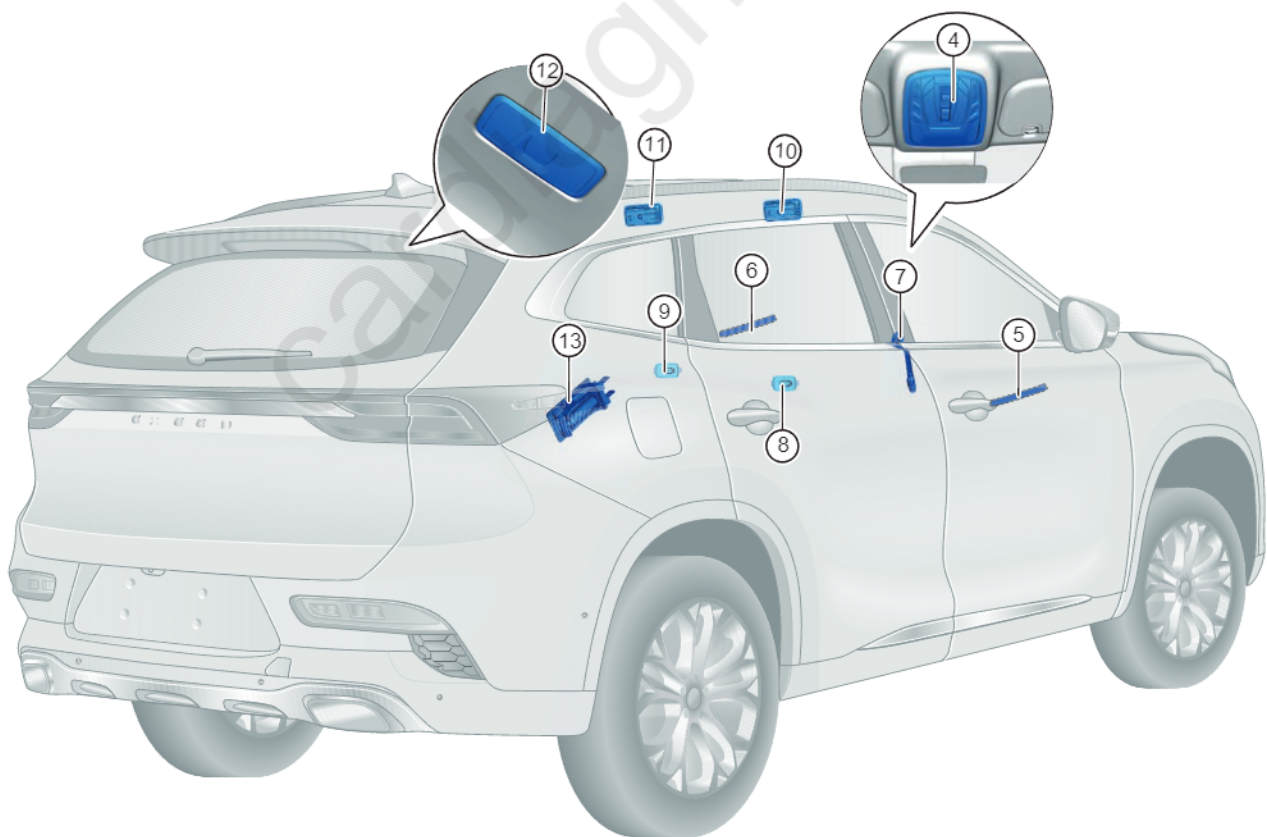
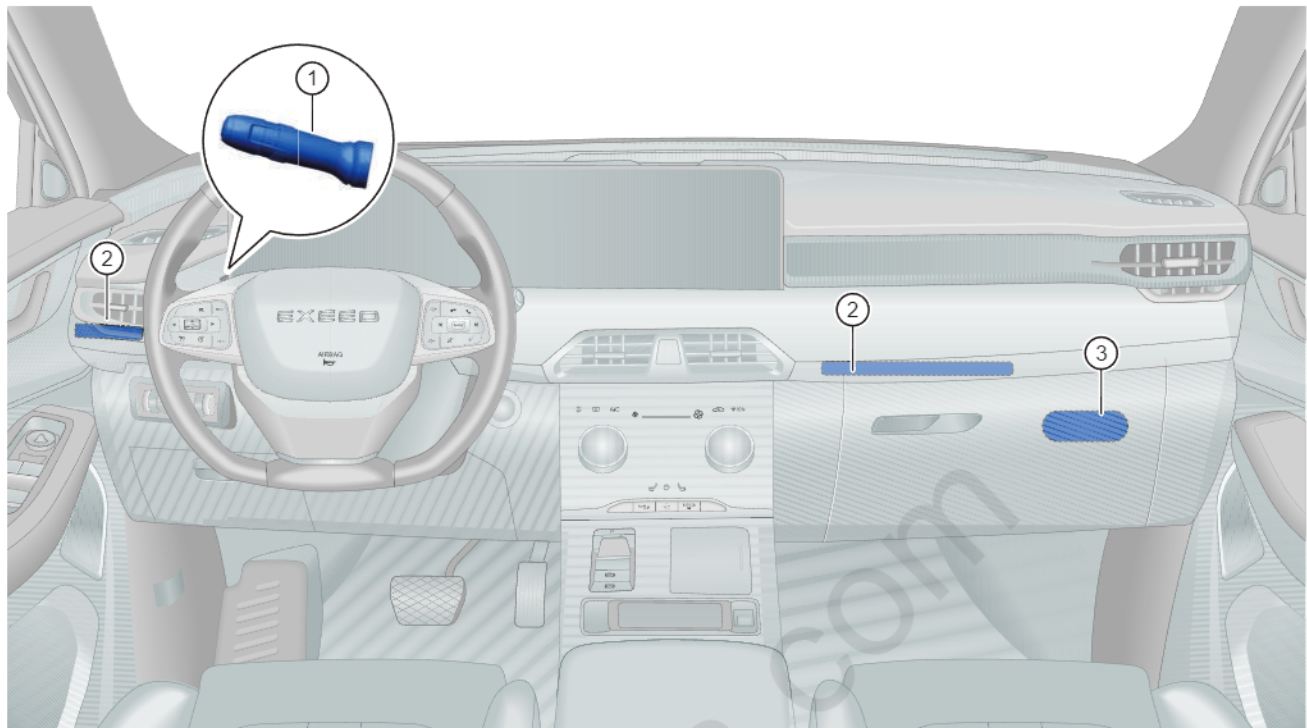
- (1) Be sure to wear safety equipment to prevent accidents, when removing interior lighting appliance.
- (2) Appropriate force should be applied when removing interior lighting appliance. Be careful not to operate roughly.
- (3) Try to prevent interior and body paint surface from being scratched, when removing interior lighting appliance.

2 SYSTEM OVERVIEW

2.1 System Description

Interior lighting system on this model consists of vehicle interior lighting device and light signal device, which are used for normal operation of vehicle and ensures safety when driving at night. Interior lighting system includes front and rear interior dome lights and ambient light.

2.2 System Components Diagram



Z20020

1	Combination Switch	2	Instrument Panel Ambient Light
3	Glove Box Light	4	Front Dome Light
5	Front Right Door Ambient Light	6	Front Left Door Ambient Light
7	Anti-theft Indicator	8	Rear Right Door Opening Warning Light
9	Rear Left Door Opening Warning Light	10	Rear Right Interior Dome Light Assembly
11	Rear Left Interior Dome Light Assembly	12	Rear Interior Dome Light Assembly
13	Luggage Compartment Light		

3 DIAGNOSIS & TEST

3.1 Problem Symptoms Table

⚠ Caution

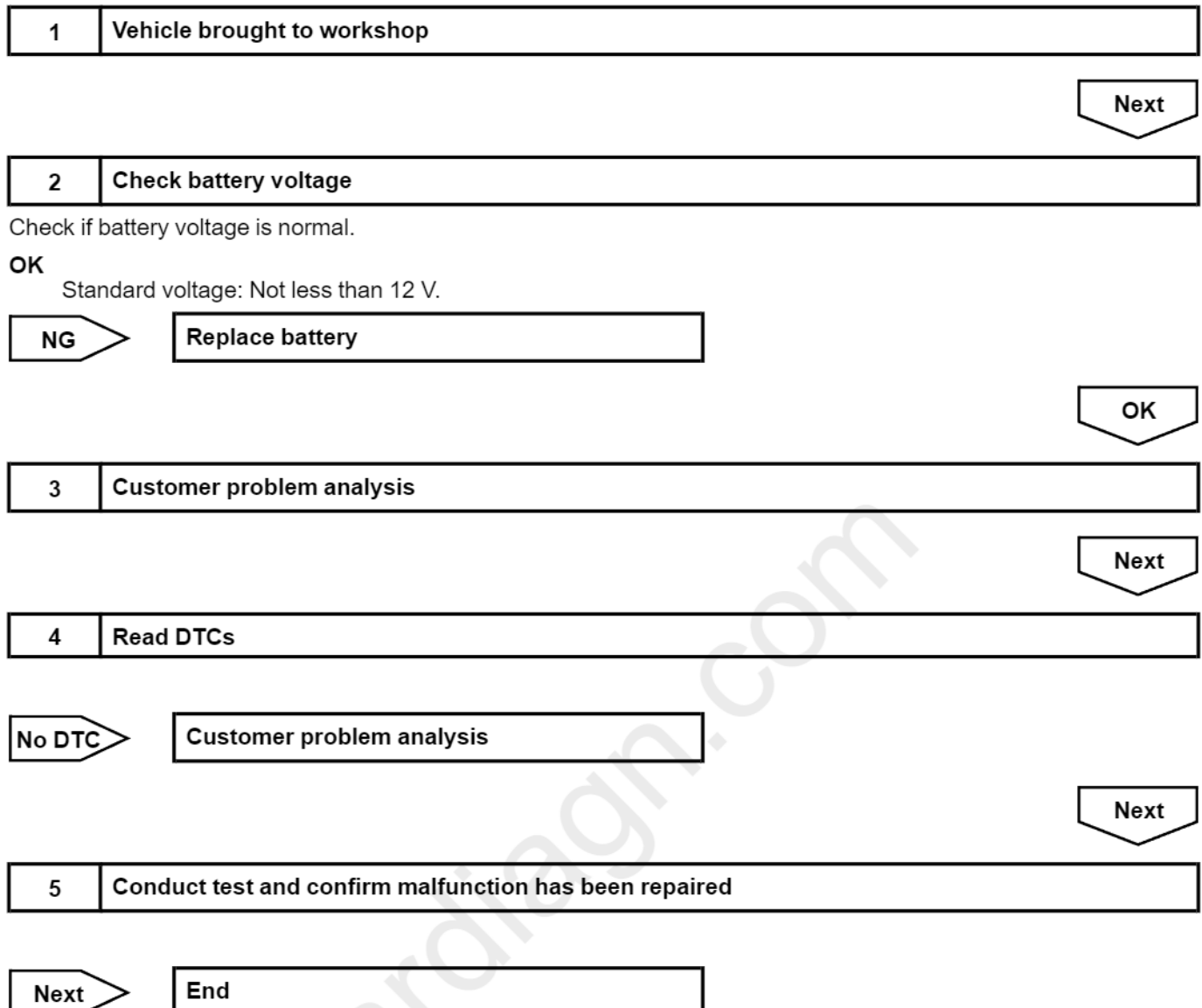
Use symptoms table below to help determine cause of problem. Check each suspected area in sequence. Repair, replace or adjust faulty components as necessary.

Current Status	Possible Cause
Interior dome light does not operate	Wire harness or connector
	Dome light
	BCM
Ambient light does not come on	Wire harness or connector
	Combination switch
	Ambient light
	BCM
Vanity mirror light does not come on	Wire harness or connector
	Vanity mirror
	Vanity mirror light
	BCM
Glove box light does not come on	Wire harness or connector
	Glove box
	Glove box light
	BCM
Luggage compartment light does not come on	Wire harness or connector
	Back door lock
	Luggage compartment light
	BCM

3.2 Diagnosis Procedure

Hint:

Use following procedures to troubleshoot the interior lighting system.



3.3 DTC Confirmation Procedure

Confirm that battery voltage is not less than 12 V before performing following procedures.

- (1) Turn ENGINE START STOP switch to LOCK.
- (2) Connect diagnostic tester (the latest software) to diagnostic interface.
- (3) Connect diagnostic tester (the latest software) to diagnostic interface.
- (4) Use the diagnostic tester to record and clear DTCs stored in the blind spot detection system.
- (5) Turn ENGINE START STOP switch to LOCK and wait for a few seconds.
- (6) Turn ENGINE START STOP switch to ON, and then select read DTC.
- (7) If DTC is detected, it indicates current malfunction. Go to inspection procedure - Step 1.
- (8) If no DTC is detected, malfunction indicated by the DTC is intermittent.

3.4 Diagnostic Help

- (1) Connect diagnostic tester X-431 PAD (the latest software) to Data Link Connector (DLC), and make it communicate with vehicle electronic module through data network.
- (2) Confirm that malfunction is current, and carry out diagnostic test and repair procedures.
- (3) If Diagnostic Trouble Code (DTC) cannot be cleared, it indicates that there is a current malfunction.
- (4) Only use a digital multimeter to measure voltage of electronic system.
- (5) Refer to any Technical Bulletin that may apply to this malfunction.

- (6) Visually check related wire harness and connector.
- (7) Check and clean all system grounds related to the latest DTCs.
- (8) If numerous trouble codes are set, refer to circuit diagram and look for any common ground circuit or power supply circuit applied to DTC.

3.5 Intermittent DTC Troubleshooting

If malfunction is intermittent, perform the followings:

- Check if connector is loose.
- Check if wire harness is worn, pierced, pinched or partially broken.
- Monitor diagnostic tester (the latest software) data that is related to this circuit.
- Wiggle related wire harnesses and connectors and observe if signal is interrupt in related circuit.
- If possible, try to duplicate the conditions under which DTC was set.
- Look for data that has changed or DTC to reset during wiggle test.
- Look for broken, bent, protruded or corroded terminals.
- Check and clean all wire harness connectors and ground parts related to DTC.
- If multiple trouble codes were set, refer to circuit diagrams to look for any common ground circuit or power supply circuit applied to DTC.
- Refer to any Technical Bulletin that may apply to this malfunction.

3.6 Ground Inspection

Ground points are very important to the proper operation of circuits. Ground points are often exposed to moisture, dirt and other corrosive environments. Corrosion (rust) may increase load resistance. This situation may change the way in which a circuit operates. Circuits are very sensitive to proper grounding. A loose or corroded ground can seriously affect the control circuit. Check the ground points as follows:

- (1) Remove ground bolt or nut.
- (2) Check all contact surfaces for tarnish, dirt and rust, etc.
- (3) Clean as necessary to ensure that contact is in good condition.
- (4) Reinstall ground bolt or nut securely.
- (5) Check if any additional accessories interfere with ground circuit.
- (6) If several wire harnesses are crimped into one ground terminal, check for proper crimp condition. Make sure that all wire harnesses are clean and securely fastened while providing a proper ground path.

3.7 Diagnostic Trouble Code (DTC) Chart

DTC	DTC Definition	Detection Condition	Possible Cause	Maintenance Advice
B102411	Blue Ambient Light Short to Ground	Output current is more than 4 A (Time of duration is more than 100 MS, the software will detect once every 20MS, and it will be determined after at least 3 consecutive times of detection. The detection will start after 2 seconds since power supply is turned on. Regardless of key position, back-up light will output as long as operating conditions of back-up light are met.) and it is stored as current fault.	Wire harness or load fault	• Check wire harness connector • Check ambient light • Check BCM
B102711	Red Ambient Light Short to Ground			
B102413	Open in Blue Ambient Light			
B102713	Open in Red Ambient Light			

DTC	DTC Definition	Detection Condition	Possible Cause	Maintenance Advice
		once every 20MS, and it will be determined after at least 3 consecutive times of detection. The detection will start after 2 seconds since power supply is turned on. Regardless of key position, back-up light will output as long as operating conditions of back-up light are met.)		
B102A11	Interior Light Power Supply Short to Ground	/	Wire harness or load fault	• Check wire harness connector • Check load • Check BCM
B104211	Background Light Circuit Short to Ground			

3.8 DTC Diagnosis Procedure

■ Ambient light fault

DTC	B102411	Blue Ambient Light Short to Ground
DTC	B102413	Open in Blue Ambient Light
DTC	B102711	Red Ambient Light Short to Ground
DTC	B102713	Open in Red Ambient Light

■ DTC Confirmation Procedure

Confirm that battery voltage is not less than 12 V before performing the following procedures.

- Turn ENGINE START STOP switch to OFF.
- Connect the diagnostic tester (the latest software).
- Start engine and warm it up, and then read DTC again. If DTC is detected, malfunction is current.
- If DTC is not detected, malfunction is intermittent.

Hint:

When performing circuit diagnosis and test, always refer to the circuit diagram for specific circuit and component information.

1	Check fuse
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- (a) Turn ENGINE START STOP switch to OFF.
 (b) Disconnect the negative battery cable.
 (c) Check for continuity of fuse in instrument panel fuse with a digital multimeter.

NG	Replace fuse
----	--------------

OK

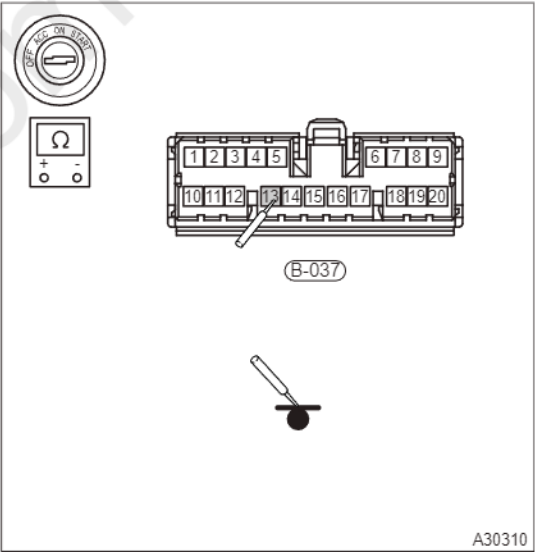
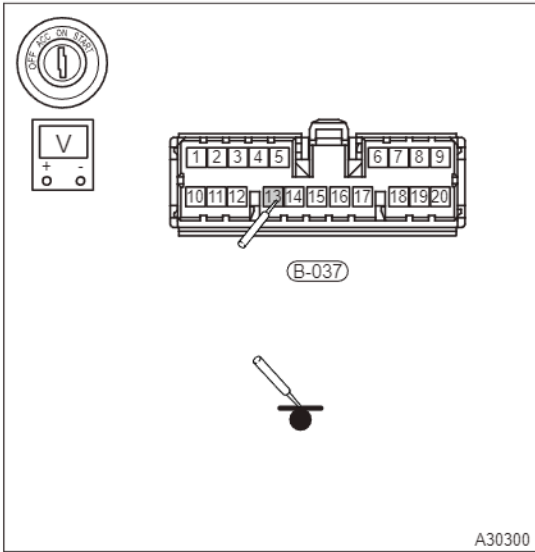
2	Check ambient light power supply wire harness
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- (a) Turn ENGINE START STOP switch to OFF.
- (b) Disconnect the negative battery cable.
- (c) Disconnect the interior wire harness connector B-037.
- (d) Connect the negative battery cable.
- (e) Turn ENGINE START STOP switch to ON.
- (f) Using a digital multimeter, measure voltage between interior wire harness connector B-037 and ground, and detect it with a 21 W test lamp according to table below.

Multimeter Connection	Condition	Specified Condition
B-037 (13) - Body ground	ENGINE START STOP switch "ON"	Not less than 12 V

- (g) Using a digital multimeter, measure resistance between interior wire harness connector B-037 and ground according to table below.

Multimeter Connection	Condition	Specified Condition
B-037 (13) - Body ground	ENGINE START STOP switch "OFF"	∞



NG

Repair or replace related wire harness

OK

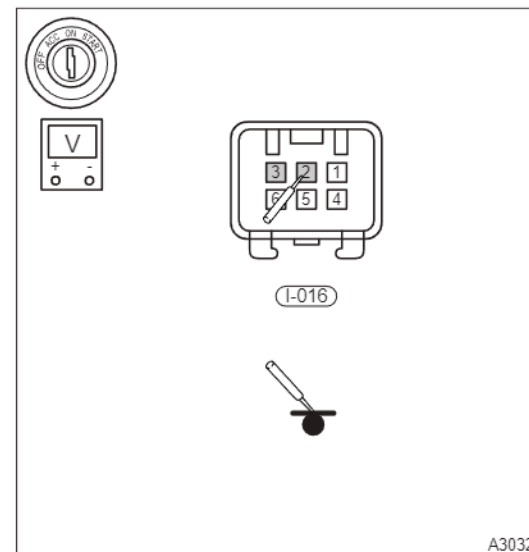
3	Check dual color ambient light output control circuit
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- (a) First, confirm the operating status of left turn signal light.
- (b) If only a certain ambient light is not on, check the output circuit of the ambient light only. Take the instrument panel left dual color ambient light as an example.
- (c) Turn ENGINE START STOP switch to OFF and disconnect the negative battery cable.
- (d) Disconnect the driver side instrument panel ambient light connector I-016.
- (e) Connect the negative battery cable, turn ignition switch to ON, and turn on position light switch.
- (f) Using a multimeter, check output voltage of instrument panel left dual color ambient light according to table below.

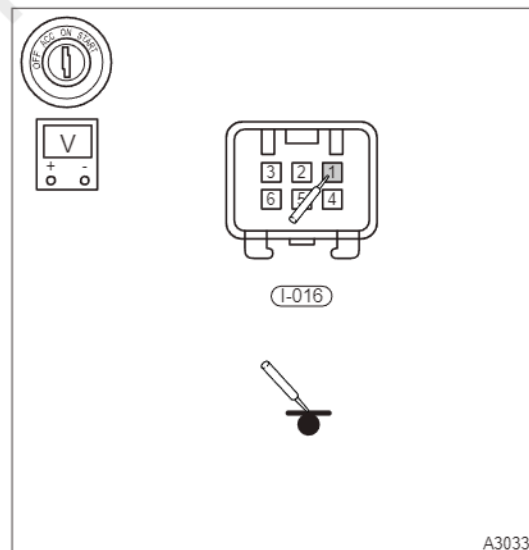
Multimeter Connection	Condition	Specified Condition
I-016 (3) - Body ground	ENGINE START STOP switch "ON"	Indirect 12 V
I-016 (2) - Body ground		

- (g) Using a multimeter, check ground of instrument panel left dual color ambient light according to table below.

Multimeter Connection	Condition	Specified Condition
I-016 (1) - Body ground	ENGINE START STOP switch "OFF"	$\leq 1 \Omega$



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A3033

OK

Replace instrument panel left dual color ambient light

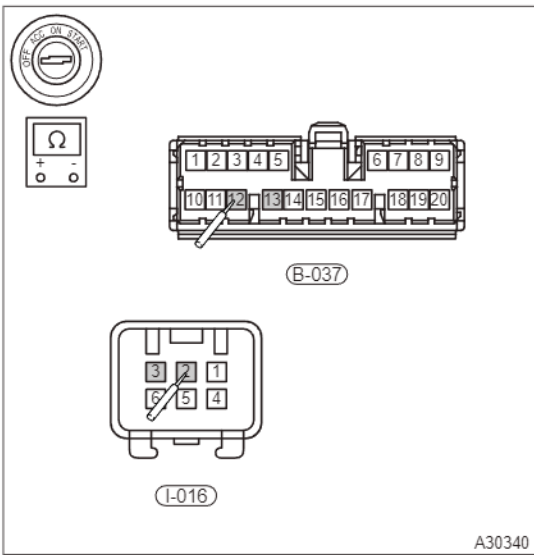
NG

4

Check circuit

- (a) Turn ENGINE START STOP switch to OFF and disconnect the negative battery cable.
- (b) Disconnect the body controller connector B-037.
- (c) Disconnect the instrument panel left dual color ambient light connector I-016.
- (d) Using a digital multimeter, check for normal continuity between connector terminals according to table below.

Multimeter Connection	Condition	Specified Condition
B-037 (13) - I-016 (3)	ENGINE START STOP switch "OFF"	$\leq 1 \Omega$
B-037 (12) - I-016 (2)		



NG

Replace or repair wire harness

OK

5 Reconfirm DTCs

- (a) Connect the negative battery cable.
- (b) Use diagnostic tester to clear DTCs.
- (c) Start the engine.
- (d) Check if the same DTCs are still output.

NG

Replace BCM

OK

System is normal

Interior light fault

DTC	B102A11	Interior Light Power Supply Short to Ground
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DTC Confirmation Procedure

Confirm that battery voltage is not less than 12 V before performing the following procedures.

- Turn ENGINE START STOP switch to OFF.
- Connect the diagnostic tester (the latest software).
- Start engine and warm it up, and then read DTC again. If DTC is detected, malfunction is current.
- If DTC is not detected, malfunction is intermittent.

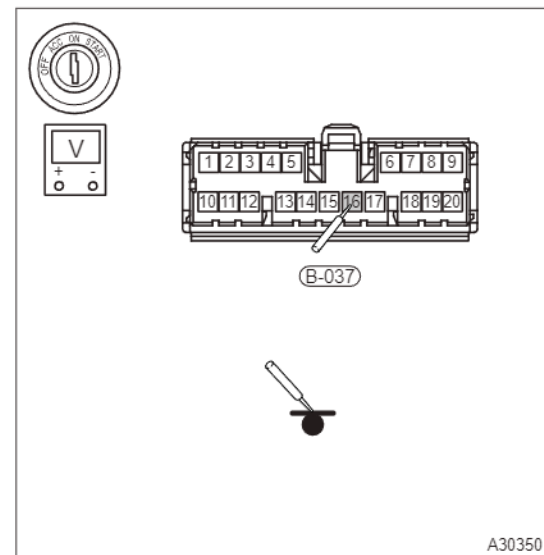
Hint:

When performing circuit diagnosis and test, always refer to the circuit diagram for specific circuit and component information.

1 Check power supply wire harness of interior light

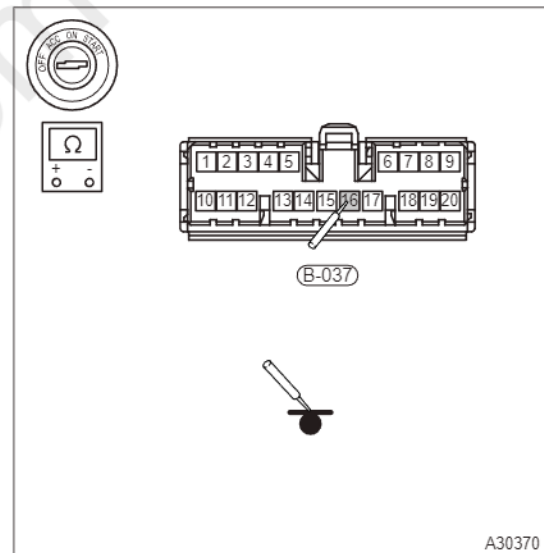
- (a) Turn ENGINE START STOP switch to OFF.
- (b) Disconnect the negative battery cable.
- (c) Disconnect the interior wire harness connector B-037.
- (d) Connect the negative battery cable.
- (e) Turn ENGINE START STOP switch to ON.
- (f) Using a digital multimeter, measure voltage between interior wire harness connector B-037 and ground, and detect it with a 21 W test lamp according to table below.

Multimeter Connection	Condition	Specified Condition
B-037 (16) - Body ground	ENGINE START STOP switch "ON"	Not less than 12 V



- (g) Using a digital multimeter, measure resistance between interior wire harness connector B-037 and ground according to table below.

Multimeter Connection	Condition	Specified Condition
B-037 (16) - Body ground	ENGINE START STOP switch "OFF"	∞



NG

Repair or replace related wire harness

OK

2

Reconfirm DTCs

- (a) Connect the negative battery cable.
- (b) Use diagnostic tester to clear DTCs.
- (c) Start the engine.
- (d) Check if the same DTCs are still output.

NG

Replace BCM

OK

System operates normally

■ Background light fault

DTC	B104211	Background Light Circuit Short to Ground
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■ DTC Confirmation Procedure

Confirm that battery voltage is not less than 12 V before performing the following procedures.

- Turn ENGINE START STOP switch to OFF.
- Connect the diagnostic tester (the latest software).
- Start engine and warm it up, and then read DTC again. If DTC is detected, malfunction is current.
- If DTC is not detected, malfunction is intermittent.

Hint:

When performing circuit diagnosis and test, always refer to the circuit diagram for specific circuit and component information.

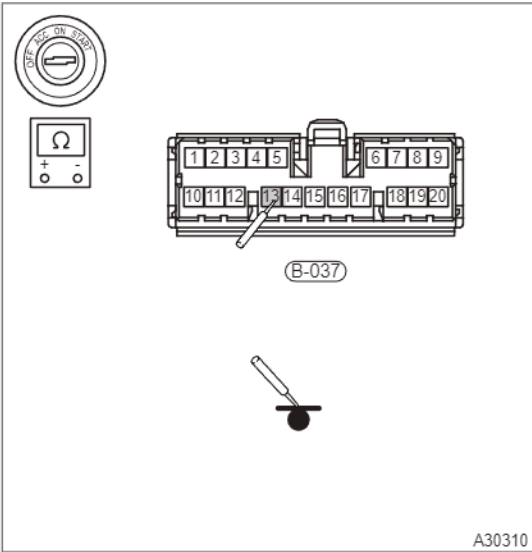
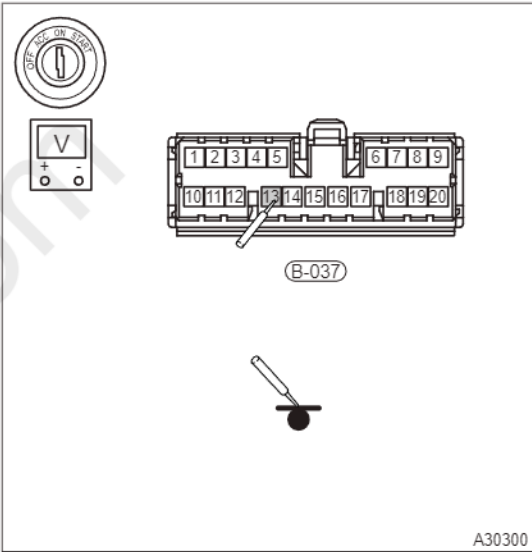
1 Check power supply wire harness of interior light

- (a) Turn ENGINE START STOP switch to OFF.
- (b) Disconnect the negative battery cable.
- (c) Disconnect the interior wire harness connector B-037.
- (d) Connect the negative battery cable.
- (e) Turn ENGINE START STOP switch to ON.
- (f) Using a digital multimeter, measure voltage between interior wire harness connector B-037 and ground, and detect it with a 21 W test lamp according to table below.

Multimeter Connection	Condition	Specified Condition
B-037 (13) - Body ground	ENGINE START STOP switch "ON"	Not less than 12 V

- (g) Using a digital multimeter, measure resistance between interior wire harness connector B-037 and ground according to table below.

Multimeter Connection	Condition	Specified Condition
B-037 (13) - Body ground	ENGINE START STOP switch "OFF"	∞



NG Repair or replace related wire harness

OK

2 Reconfirm DTCs

- (a) Connect the negative battery cable.
- (b) Use diagnostic tester to clear DTCs.
- (c) Start the engine.
- (d) Check if the same DTCs are still output.

NG

Replace BCM

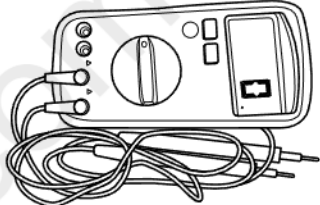
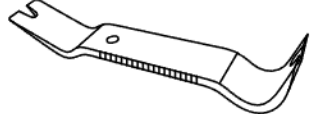
OK

System operates normally

4 ON-VEHICLE SERVICE

4.1 Tools

■ General Tools

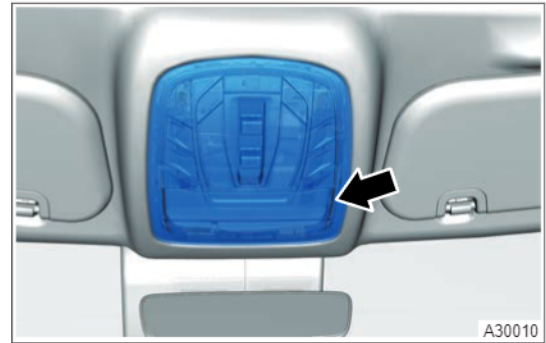
Tool Name	Tool Drawing
Digital Multimeter	 S00002
Diagnostic Tester	 S00001
Interior Crow Plate	 S00020

4.2 Replacement of Front Dome Light Assembly

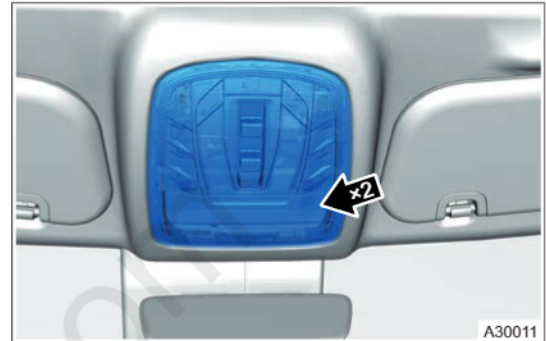
■ Removal

- (1) Turn off all electrical equipment and ENGINE START STOP switch.
- (2) Disconnect the negative battery cable.

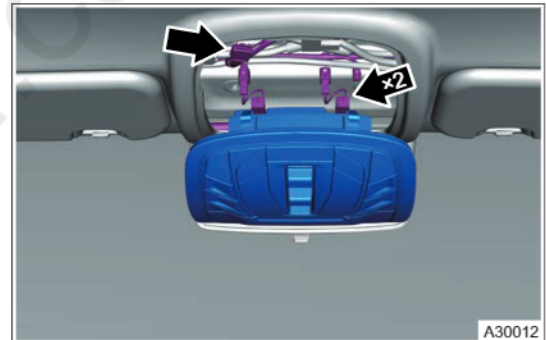
- (3) Open the glasses box on front dome light as shown in illustration.



- (4) Remove 2 fixing screws from front dome light assembly.



- (5) Disconnect front dome light assembly wire harness connector and 2 microphone connectors, and remove interior dome light assembly.



■ Installation

Caution

- Pay attention to wiring harness connection before assembling front dome light assembly to avoid rework.
- The 2 fixing screws of front dome light assembly are hidden in glasses box, pay attention to avoid missing.

- (1) Connect front dome light assembly wire harness connector and 2 microphone connectors, and install interior dome light assembly.

- (2) Install 2 fixing screws of front dome light assembly.

Tightening torque: 2.5 ± 0.5 N·m

- (3) Close the glasses box.

- (4) Connect the negative battery cable.

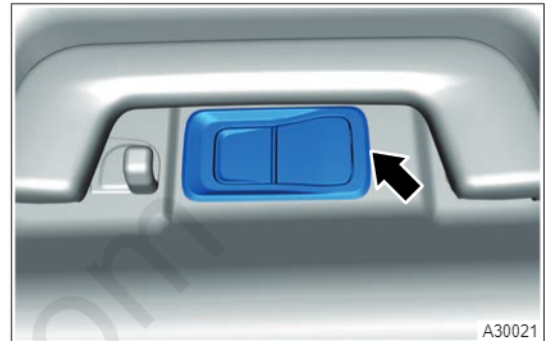
4.3 Replacement of Rear Left Interior Dome Light Assembly

■ Removal

Hint

- Use same operation procedures for rear left interior dome light assembly and rear right interior dome light assembly. Operation procedures listed below are for rear left interior dome light assembly.

- (1) Turn off all electrical equipment and ENGINE START STOP switch.
- (2) Disconnect the negative battery cable.
- (3) Pry off rear left interior dome light assembly with an interior crow plate, disconnect connector and remove rear left interior dome light assembly.



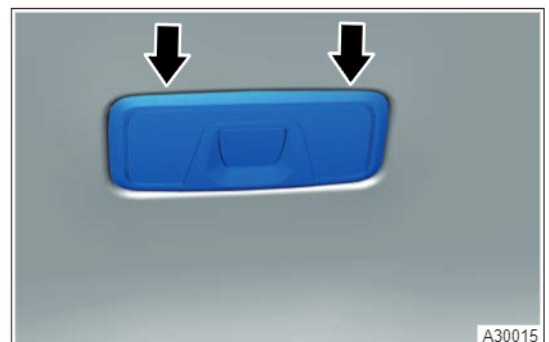
■ Installation

- (1) Connect the rear left interior dome light assembly connector.
- (2) Install the rear left interior dome light assembly.
- (3) Connect the negative battery cable.

4.4 Replacement of Rear Dome Light Assembly

■ Removal

- (1) Turn off all electrical equipment and ENGINE START STOP switch.
- (2) Disconnect the negative battery cable.
- (3) Pry off 2 spring plates from backside with an interior crow plate.



- (4) Unplug dome light connector, and remove rear dome light assembly.

■ Installation

- (1) Connect the dome light connector.
- (2) Install the rear dome light assembly.
- (3) Connect the negative battery cable.

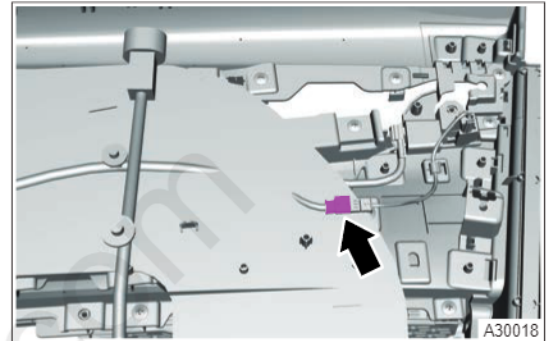
4.5 Replacement of Front Left Door Ambient Light

■ Removal

Caution

- Use same operation procedures for front left door ambient light and front right door ambient light. Operation procedures listed below are for front left door ambient light.

- (1) Turn off all electrical equipment and ENGINE START STOP switch.
- (2) Disconnect the negative battery cable.
- (3) Remove the front left door protector assembly.
- (4) Disconnect front left door ambient light connector from front left door, and detach clip.



- (5) Disconnect front left door ambient light connector from front left door, and detach clip.



- (6) Remove the front left door ambient light.

■ Installation

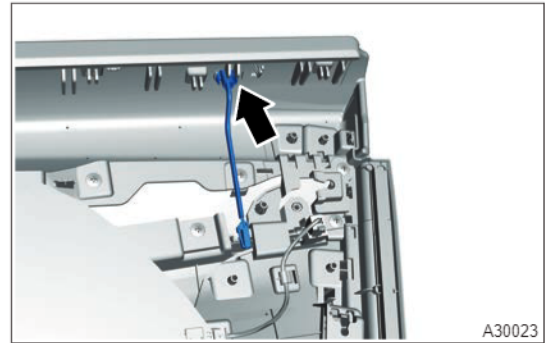
- (1) Install front left door ambient light, and connect 2 connectors of front left door ambient light.
- (2) Install the front left door protector assembly.
- (3) Connect the negative battery cable.

4.6 Replacement of Anti-theft Indicator

■ Removal

- (1) Turn off all electrical equipment and ENGINE START STOP switch.
- (2) Disconnect the negative battery cable.
- (3) Remove the front left door protector assembly.

- (4) Detach fixing clip of anti-theft indicator from front left door.



- (5) Remove the anti-theft indicator.

■ Installation

- (1) Install the anti-theft indicator.
- (2) Install the front left door protector assembly.
- (3) Connect the negative battery cable.

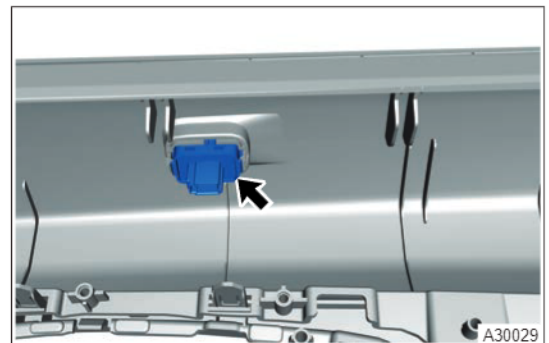
4.7 Replacement of Rear Door Opening Warning Light

■ Removal

Hint

- Use same removal and installation methods for rear right door opening warning light and rear left door opening warning light.
- Operation procedures listed below are for rear left door opening warning light.

- (1) Turn off all electrical equipment and ENGINE START STOP switch.
- (2) Disconnect the negative battery cable.
- (3) Remove the rear left door protector assembly.
- (4) Detach fixing clip of rear left door opening warning light from rear left door.



- (5) Remove the rear left door opening warning light.

■ Installation

- (1) Install the rear left door opening warning light.
- (2) Install the rear left door protector assembly.
- (3) Connect the negative battery cable.

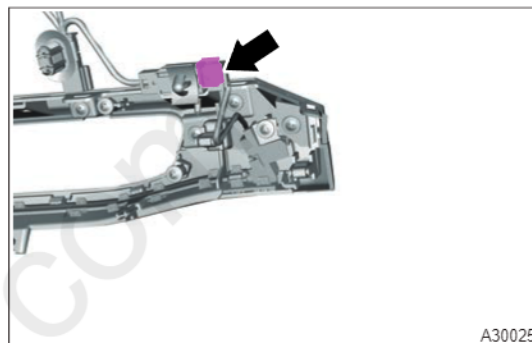
4.8 Replacement of Instrument Panel Ambient Light

■ Removal

Warning

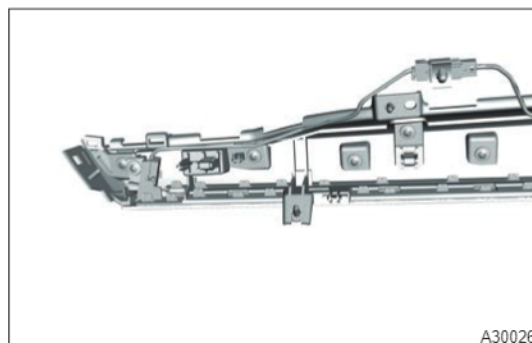
- **Be sure to wear safety equipment to prevent accidents, when removing auxiliary fascia console ambient light.**
- **Appropriate force should be applied, when removing auxiliary fascia console ambient light. Be careful not to operate roughly.**

- (1) Turn off all electrical equipment and ENGINE START STOP switch.
- (2) Disconnect the negative battery cable.
- (3) Remove the right instrument panel trim panel assembly.
- (4) Remove the right instrument panel trim panel assembly ambient light.



A30025

- (5) Remove the right instrument panel trim panel assembly.
- (6) Remove the right instrument panel trim panel assembly ambient light.



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- (7) Remove the left instrument panel trim panel assembly.
- (8) Remove the left instrument panel ambient light.



A30027

■ Installation

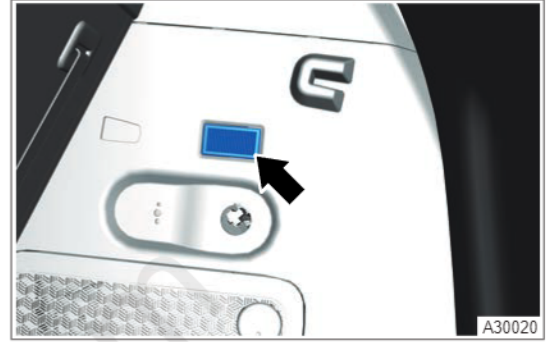
- (1) Install the left instrument panel ambient light.
- (2) Install the right instrument panel trim panel assembly ambient light.

- (3) Install the right instrument panel trim panel assembly ambient light.
- (4) Connect the negative battery cable.

4.9 Replacement of Luggage Compartment Light

■ Removal

- (1) Turn off all electrical equipment and ENGINE START STOP switch.
- (2) Disconnect the negative battery cable.
- (3) Pry off luggage compartment light assembly with an interior crow plate, and disconnect luggage compartment connector.



- (4) Remove the luggage compartment light.

■ Installation

- (1) Connect luggage compartment light connector and install luggage compartment light.
- (2) Connect the negative battery cable.