# LIGHTING SYSTEM


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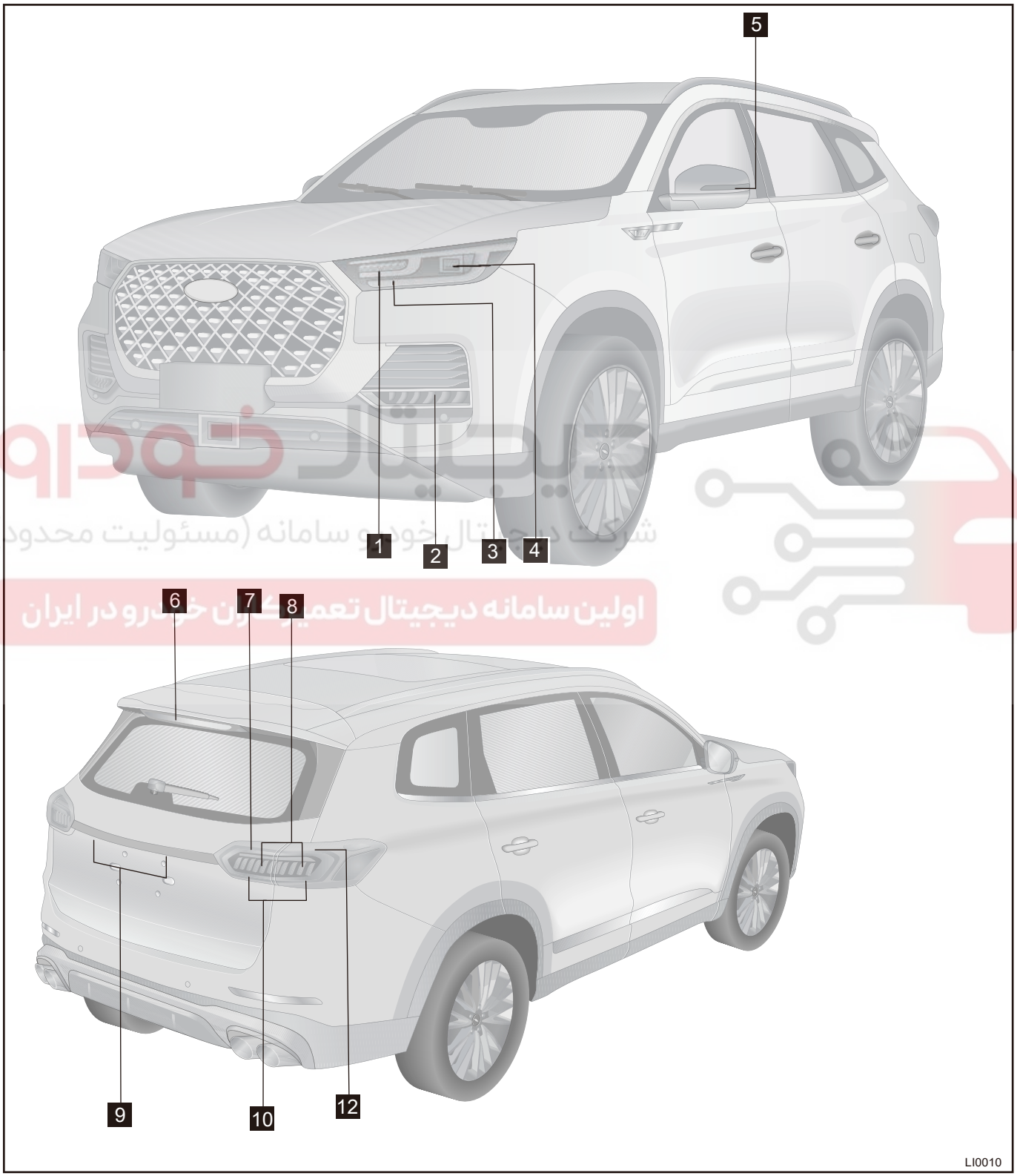
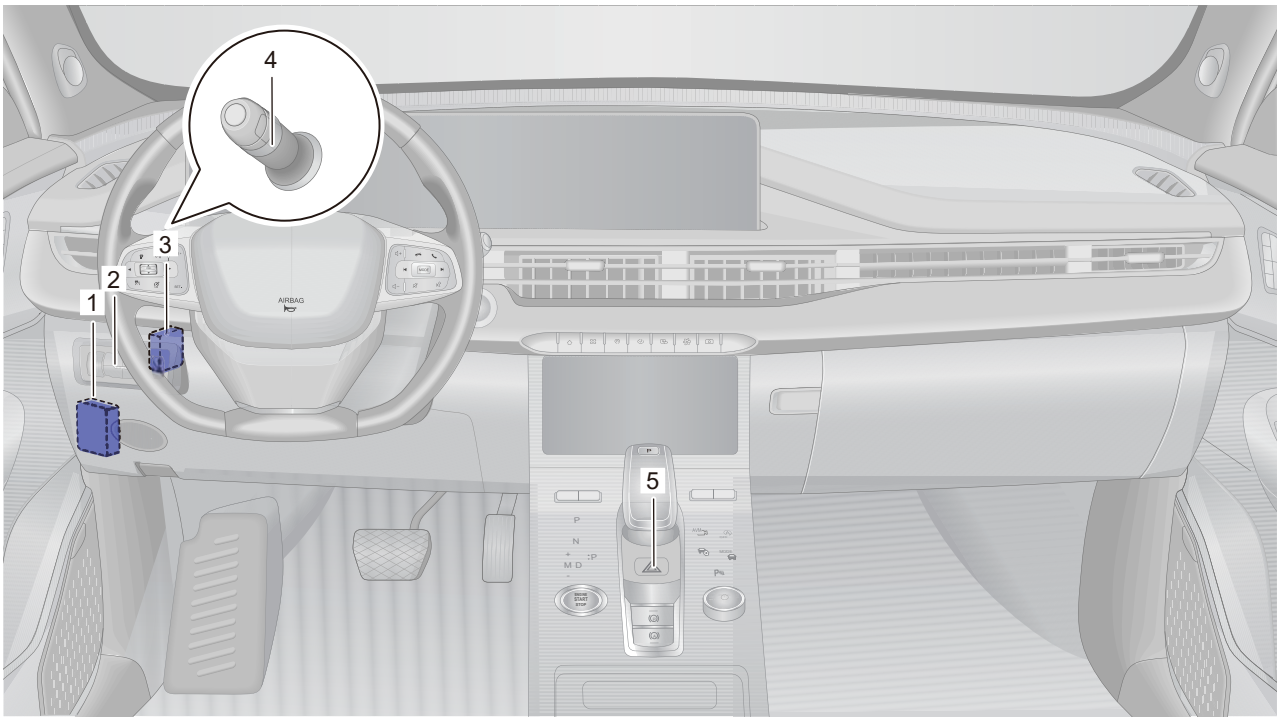
# GENERAL INFORMATION

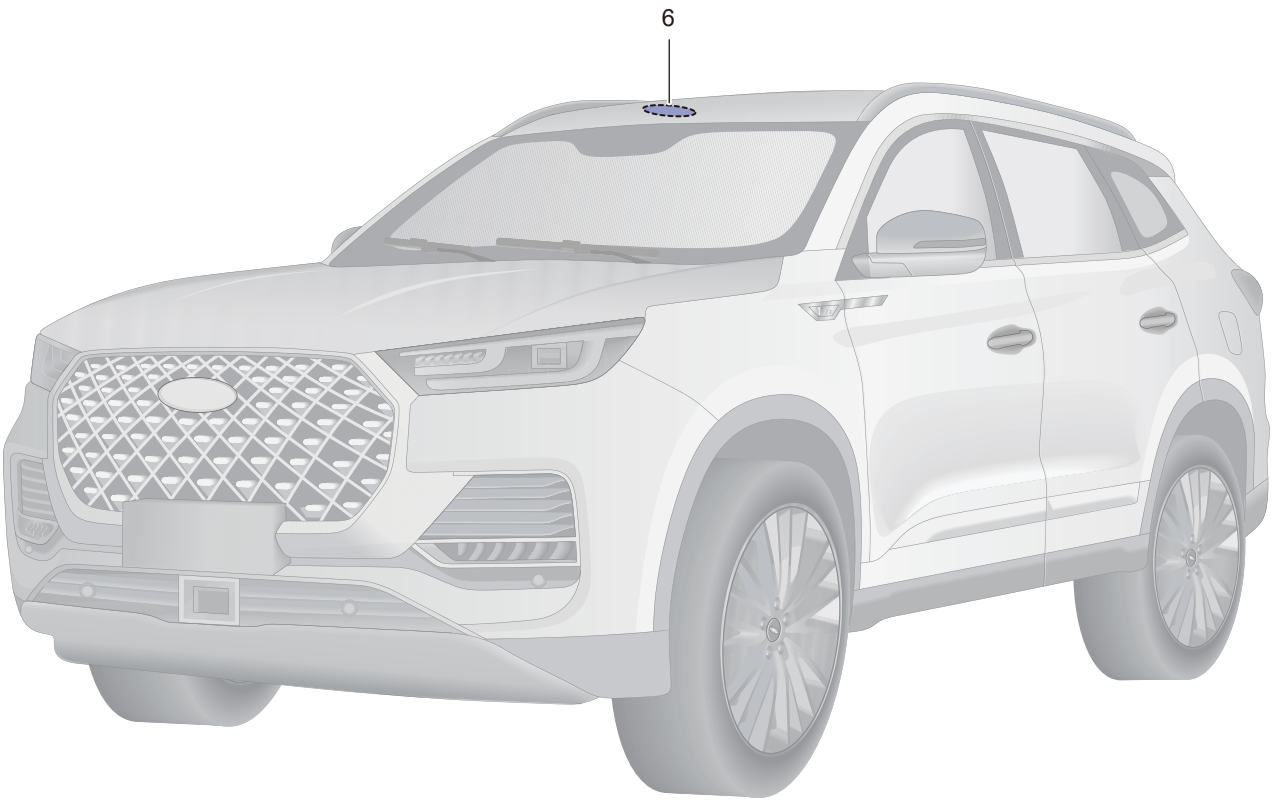
## System Overview

### Description



| | | | |
|---|---|---|---|
| 1 | Turn Signal Light | 2 | Front Fog Light |
| 3 | Position Light / Daytime Running Light | 4 | Low Beam Light / High Beam Light |
| 5 | Side Turn Signal Light | 6 | High Mounted Stop Light |
| 7 | Back-up Light | 8 | Brake Light / Position Light |
| 9 | License Plate Light | 10 | Position Light |
| 11 | Rear Fog Light | 12 | Side Turn Signal Light |

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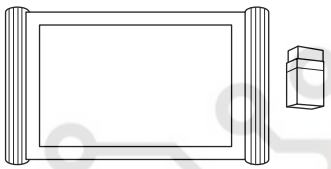
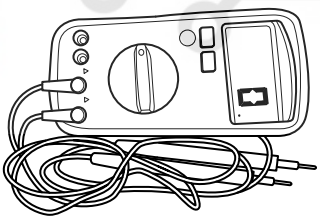
| | | | |
|---|---|---|---|
| 1 | Body Control Module (BCM) | 2 | Headlight Leveling Switch |
| 3 | Instrument Panel Relay Box | 4 | Combination Switch |
| 5 | Hazard Warning Light Switch | 6 | Dome Light Switch |

Lighting system on this model consists of vehicle lighting device and light signal device, which are used for normal operation of vehicle and ensuring safety when driving at night or in fog.Lighting system consists of headlight assembly (including headlight (high beam (auxiliary high beam)/low beam), front position light, turn signal light, daytime running light), side turn signal light, front dome light, foot light and door scuff plate light, instrument panel backlight, rear combination light assembly (including turn signal light, rear position light, brake light), rear fog light (rear fog light and reflector), back-up light, license plate light, high mounted stop light and luggage compartment light. Headlight assembly and rear combination light assembly use semi-closed structure for easy inspection and repair.

## Tools

| Tool Name | Tool Drawing |
|---|---|
| X-431 PAD Diagnostic Tester |  RCH0001006 |
| Digital Multimeter |  RCH0002006 |

## Torque Specifications

| Description | Torque (N•m) |
|---|---|
| Headlight Assembly Fixing Bolt | 3.5 ± 0.5 |
| High Mounted Stop Light Fixing Nut | 2.0 ± 0.5 |
| Rear Fog Light Fixing Screw | 1.5 ± 0.5 |
| Interior Front Dome Light Fixing Screw | 2.5 ± 0.5 |
| Rear Combination Light Movable Part Nut | 3.5 ± 0.5 |
| Rear Tail Light Fixed Part Nut | 1.5 ± 0.5 |

| Description | Torque (N•m) |
|---|---|
| Back Door Ornament Light Fixing Nut | 3.5 ± 0.5 |
| License Plate Light Protector Fixing Screw | 1.5 ± 0.5 |

## Lighting Control Principle

### Turn Signal Light Function

1. Left turn signal light operating conditions: IGN ON; left turn signal light switch is activated.
2. When left turn signal light is operating: The flashing frequency of left turn signal light is 400 ms on and 400 ms off.
   - When left turn signal light is operating: Key is switched from ON to OFF, left turn signal light stops operating and meter stops flashing.
3. When left turn signal light is operating: The corresponding bulb is intact, BCM sends LHTurnLightSts (-Bcan) and the load operating frequency is the same as that of left turn signal light; If the corresponding 21W bulb is damaged, BCM will send LHTurnLightSts and the frequency will be 2 times of normal operating frequency of bulb. No matter whether the bulb is damaged or not, BCM will send DirectionIndLeft (Bcan) signal all the time.
4. Operating conditions for right turn signal light: IGN-ON; right turn signal light switch is activated.
5. When right turn signal light is operating: The load flashing frequency of right turn signal light is 400 ms on and 400 ms off.
   - When right turn signal light is operating: Key is switched from ON to OFF, right turn signal light stops operating and meter stops flashing.
6. When right turn signal light is operating: The corresponding bulb is intact, BCM sends RHTurnsignalSts and the load operating frequency is the same as that of right turn signal light; If the corresponding 21W bulb is damaged, BCM will send RHTurnsignalSts and the frequency will be 2 times of normal operating frequency of bulb. No matter whether the bulb is damaged or not, BCM will send DirectionIndRight signal all the time.
7. When left/right turn signal light is operating: Left/right turn signal light input is deactivated, left/right turn signal light should stop operating immediately.
8. When left/right turn signal light is operating: key is switched from IGN ON to ACC or OFF, and left/right turn signal light stops operating immediately.

### Lane Change Function

1. Operating conditions for left lane change: IGN ON; left turn signal light switch activates shortly (50 ms ~ 1,000 ms).
2. When left lane change is operating: Left turn signal light flashes 3 times at frequency of 400 ms on and 400 ms off.
3. When left lane change is operating: The corresponding bulb is intact, BCM sends LHTurnsignalSts and load operating frequency is the same as that of left turn signal light; If the corresponding 21 W bulb is damaged, BCM will send LHTurnsignalSts and the frequency will be 2 times of that when bulb is intact. No matter whether the bulb is damaged or not, BCM will work and send DirectionIndLeft signals.
4. During left lane change operation: Left turn signal light switch is activated (50 ms～1000 ms) shortly again, and left turn signal light flashes 3 times again.
5. When left lane change is operating: Left turn signal switch remains active (> 1000 ms) and automatically switches to left turn signal light operating logic.
6. When left lane change is operating: key is switched from IGN ON to ACC or OFF, and left turn signal light stops operating immediately.
7. When left lane change is operating: after flashing 3 times, left turn signal light should stop operating immediately.

8. Operating conditions for right lane change: IGN ON; right turn signal light switch activates shortly (50 ms ~ 1,000 ms).
9. When right lane change is operating: Right turn signal light flashes 3 times at frequency of 400 ms on and 400 ms off.
10. When right lane change is operating: The corresponding bulb is intact, BCM sends RHTurnsignalSts and load operating frequency is the same as that of right turn signal light; the corresponding bulb is damaged, BCM will send RHTurnsignalSts and the frequency will be 2 times as that when bulb is intact. No matter whether the bulb is damaged or not, BCM will send DirectionIndRight signal all the time.
11. During right lane change operation: Right turn signal light switch is activated (50 ms ~ 1,000 ms) shortly again, and right turn signal light flashes 3 times again.
12. When right lane change is operating: Right turn signal switch remains active (>1,000 ms) and automatically switches to right turn signal light operating logic.
13. When right lane change is operating: key is switched from IGN ON to ACC or OFF, and right turn signal light stops operating immediately.
14. When right lane change is operating: after flashing 3 times, right turn signal light should stop operating immediately.

## Hazard Warning Light Function

1. Hazard warning light function activation conditions: Hazard warning light switch is activated when hazard warning light is not activated.
2. When hazard warning light is activated: Flashing frequency of left/right turn signal light and hazard warning light indicator are 400 ms on and 400 ms off.
3. When hazard warning light is activated: The corresponding bulb is intact, BCM sends LHTurnsignalSts and RHTurnsignalSts and load operating frequency is the same as that of turn signal light; If any 21 W bulb is damaged, the flashing frequency of turn signal light CAN signal (LHTurnsignalSts and RHTurnsignalSts) and hazard warning light will be 2 times of that when bulb is intact.
4. When hazard warning light is activated: Hazard warning light switch is activated again and hazard warning light function is turned off; left/right turn signal light stops operating immediately.
5. When ABM sends a collision signal, hazard warning light function should be activated automatically (CAN signal of left/right turn signal light, indicator and turn signal light). Automatically activated hazard warning light function due to collision can be canceled as key is switched to OFF, then to ON or hazard warning light button is pressed.
6. When turn signal light function and hazard warning light function are both effective, BCM should perform the next action.

**Hint:**
In a ignition cycle, BCM responds to one collision signal only.

## Position Light

1. Activation conditions for position light: IGN ON or ACC; position light input or low beam light input is activated.
2. When position light is operating: BCM should send ParkLightSts =1(Bcan).
3. When position light is operating: When position light input and low beam input are deactivated, position light stops operating.
4. When position light is operating: When key is switched to OFF, small light stops operating and sends ParkLightSts=0(Bcan).

## Parking Light

1. Activation conditions for parking light: Key is switched to OFF; position light switch is activated.
2. When parking light is activated: Position light comes on and BCM should send ParkLightSts = 1 (Bcan).
3. When parking light is activated: Position light switch is deactivated and position light is turned off, BCM should send ParkLightSts = 0 (Bcan).

## Low Beam Light

1. Low beam light activation conditions: IGN ON; low beam light switch is activated.
2. When low beam light is activated: BCM sends LowBeamSts=1.
3. When low beam light is activated: When low beam light switch input is canceled, low beam light turns off immediately.
4. When low beam light is activated: When key is turned from IGN ON to ACC or OFF, low beam light turns off immediately.

## Follow me home

1. Light is in manual mode
   a. FMH function activation condition: Flash switch is activated within 2 minutes after key is switched to OFF, and it can be activated again within 2 minutes regardless of whether FMH function is manually turned off or automatically turned off due to overtime.
   b. When FMH function is activated: Low beam light and small light are illuminated, and both LowBeamSts=1 and ParkTailLightSts=1(Bcan) and FMH time FollowMeTime are sent.
   c. When FMH function is activated: Default duration is 30 S. Activating Flash switch again for a short time will increase duration of FMH function by 30 S each time, but no more than 8 times.
   d. When FMH function is activated: Flash switch is activated for 2 seconds, FMH function will be manually turned off - low beam light and position light will turn off immediately and cumulative duration of FMH will be reset.
   e. When FMH function is activated: Key is switched to ACC or IGN ON, FMH function will be turned off - low beam light and position light will turn off immediately and cumulative duration of FMH will be reset.
   f. When FMH function is activated: FMH function will be automatically turned off after set FMH working time is reached: low beam light and position light will turn off immediately.
2. Light is in automatic mode
   a. The vehicle has fortification condition, light combination switch is in AUTO, remote controller lock button is pressed, and BCM receives valid signal sent from rain sensor, and low beam light and position light are automatically turned on for 30s.
   b. After 30 S or ignition key is switched to OFF/ON/ACC or light combination switch is switched from AUTO, low beam light and position light are turned off.

## Lead me to the car

1. Light is in manual mode
   a. Activation condition for LMC function: IGN OFF; FMH is activated in this same ignition cycle (ON->ACC->OFF) and automatically turns off due to timeout; Remote control unlock signal is received; Four doors are closed.
   b. When LMC function is activated: Low beam light and small light are on and send ParkTailLightSts= 1(Bcan).
   c. When LMC function is activated: FMH function cannot be activated, low beam light and small light operate in LMC mode.
   d. When LMC function is activated: Remote control lock signal (four doors are closed) is received, LMC function is turned off - low beam light and position light are off.
   e. When LMC function is activated: Any door is opened, LMC function is turned off – low beam light and small light are off.
   f. When LMC function is activated: Any key is switched to ACC or IGN ON, LMC function is turned off – low beam light and position light are off.
   g. When LMC function is activated: After receiving remote control unlock signal, LMC function delays 60 s (subject to remote control unlock time received)
   h. When LMC function is activated: Longest duration is 60 s, LMC function will turn off automatically after overtime.
2. Light is in automatic mode

a. The key is in OFF, light combination switch is in AUTO, remote controller unlock button is pressed, and BCM receives valid signal sent from rain sensor, and low beam light and position light turn on for 30 seconds.
b. After 30 seconds or ignition key is switched to ACC, low beam light and position light are turned off.
c. When “Lead me to the car” function is activated, if the activation conditions are met again or “Follow me home” function is activated, it counts for 30 seconds again and the light will not flash.

## Automatic Lighting

1. Low beam light and position light turn on if the following conditions are met.
   a. IGN=ON
   b. Light switch is switched to AUTO
   c. LIN valid signal sent from rain sensor is received
2. After automatic lighting is activated, BCM sends low beam light and position light CAN signal to the instrument panel.
3. Low beam lights go out if any condition is met
   a. IGN≠ON
   b. Light switch is switched away from AUTO
   c. Rain sensor LIN signal is invalid
4. Position lights go out if any condition is met.
   a. IGN=ON
   b. After light switch is switched away from AUTO for 2 seconds
   c. After rain sensor LIN signal becomes invalid for 5 seconds

## High Beam Light

1. High beam light operating conditions: IGN ON; low beam lights are in activating status, high beam light switch is activated.
2. When high beam light is operating: High beam lights come on and send HighBeamSts=1.
3. When high beam light is operating: When vehicle cranks, high beam lights temporarily stop operating but CAN data will be sent continuously and resume operation after cranking.
4. When high beam light is operating: When high beam light switch is deactivated, high beam light turns off.
5. When high beam light is operating: When low beam light switch is deactivated, high beam light turns off.
6. When high beam light is operating: When key is turned from IGN ON to ACC or OFF, high beam light turns off.

## Flash Function

1. Flash operating conditions: IGN-ON; Flash switch is activated.
2. When Flash is operating: High beam lights come on and send HighBeamSts=1.
3. When Flash is operating: When vehicle cranks, high beam lights temporarily stop operating, but CAN data will be sent continuously, and resume operation after cranking.
4. When Flash is operating: When Flash switch is deactivated, high beam lights turn off.
5. When Flash is operating: key is switched from IGN ON to ACC or OFF, high beam lights turn off.

## Front Fog Light Control

1. Operating conditions for front fog light: IGN ON; position lights are in activated status, front fog light switch is activated.
2. Front fog light is operating: Front fog light comes on and send FrontFogLightSts=1.
3. Front fog light is operating: Front fog light switch is deactivated, front fog light goes off.
4. Front fog light is operating: Key is switched from IGN ON to ACC or OFF, front fog light goes off.
5. Front fog light is operating: Front fog light goes off and send FrontFogLightSts=0.

## Rear Fog Light Control

1. Operating conditions for rear fog light: IGN-ON; Front fog light or low beam lights are activated; Rear fog light switch is activated.
2. When rear fog light is operating: Rear fog light comes on and send RearFogLightSts=1.
3. When rear fog light is operating: When rear fog light switch is activated again, rear fog light turns off.
4. When rear fog light is operating: key is switched from IGN ON to ACC or OFF, rear fog light is turned off.
5. When rear fog light is operating: When low beam light or front fog light load is turned off, rear fog lights turn off at the same time.

## Daytime Running Light

1. Daytime running light operating conditions: Engine starts; low and high beam lights and front fog lights are not activated.
2. When daytime running light is operating: When engine is stopped, daytime running light function turns off.
3. When daytime running light is operating: The activation of position light, low beam light and front fog light will cause daytime running lights to be turned off.
4. When daytime running light is operating: Flash function does not affect daytime running light operation.

## Battery Save

1. Battery save function remains active during IGN ON or IGN ACC.
2. Battery save function remains active without other wake-up sources within 15 minutes after IGN OFF.
3. Within 15 minutes of battery save timing after key is switched to OFF: Opening any door or luggage compartment door, receiving remote unlock signal, inserting and removing key will reset timing to 15 minutes.

   **Hint:**
   Battery save load includes: Key light, dome light and luggage compartment light.
4. BCM enters sleeping mode after 3 minutes when fortifying is successful.

   **Hint:**
   Battery Save can be woken up by central control unlock or mechanical unlock after Battery Save is turned off.

## Dome Light

1. Key insertion and removal, dome light and key light control:
   a. When key is removed, BCM turns on dome light and key light for 3 minutes (fades in and fades out).
   b. Within 3 minutes of dome light operation: Key insertion does not affect the operation timing of dome light and key light.
   c. Within 3 minutes of dome light operation: When the key is turned to IGN ON, dome light and key light will fade out immediately.
   d. Within 3 minutes of dome light operation: If all doors are closed after any door is opened, dome light and key light continue to work for 8 seconds, and then fade out.
2. Door status, dome light and key light control:
   a. If any of doors is opened and remains open, dome light comes on for 3 minutes (fades in and fades out).
   b. Within 3 minutes of dome light operation: If another door is opened while one door remains open, dome light timing reset - continues to come on for 3 minutes, and then fades out.
   c. Within 3 minutes of dome light operation: When key is turned to ON, all doors are closed, dome light will fade out immediately.
   d. Within 3 minutes of dome light operation: When the key is turned to OFF or ACC and all doors are closed, dome light will fade out after 8 s; if the key is turned to IG ON within 8 s, dome light will fade out immediately.

3. Remote control key, dome light and key light control:
   a. When BCM receives unlock signal from remote controller: No matter what status the door is in, dome light comes on for 15 seconds (fades in and fades out).
   b. Within 15 seconds of dome light operation: When the key is turned to ING ON, the dome light will fade out immediately.
   c. Within 15 s of dome light operation: When RF is fortified successful, dome light will come off immediately.
   d. Within 15 s of dome light operation: When any door is opened, dome light enters into mode 2.
4. Collision signal, dome light and key light control:
   a. With IGN-ON, regardless of door status, if the received collision output is a valid CAN signal sent by airbag controller, BCM will illuminate dome light for 30 minutes. There is no fade-in process, including fade-out process.
   b. Within 30 minutes of dome light illumination: If key is switched to OFF, dome light will fade out immediately.
   c. Within 30 minutes of dome light illumination: If BCM receives RF key lock signal, dome light turns off immediately and there is no fade-out process.

**WARNING**

- Please turn rear dome light switch to door control gear to test above function logic.
- In any of above conditions (key insertion and removal, door status, remote control key) triggers dome light to come on, another event is triggered again, and dome light illumination time is reset.

## 3rd Row Dome Light

1. 3rd row dome light operating conditions: Luggage compartment is opened and luggage compartment light continuously turns on for 15 minutes.
2. 3rd row dome light is operating: Luggage compartment is closed and luggage compartment light turns off immediately.

## Back-up Light Control

1. Operating conditions for back-up light: IGN=ON.
2. When receiving reverse switch signal or CAN signal sent from TCU, BCM turns on backup light.
3. If there is no switch signal and CAN signal, it will turn off back-up light.

## Sudden Braking Hazard Warning Light Alarm Function

1. If the following conditions are met, hazard warning light is activated (left/right turn signal light, indicator light and turn signal light flash):
   a. The key position is in ON position.
   b. CAN signal sent from ESP is received (a signal that requires the light to flash).
2. If any of following conditions is met, stop the hazard warning light (left/right turn signal light, indicator light and turn signal light CAN signal) flashes:
   a. CAN signal sent from ESP is received (a signal that requires the light to stop flashing);
   b. Key position is in OFF position.

**WARNING**

- When hazard warning light of this function is operating, operate hazard warning light switch, this function stops immediately.
- During this operation, BCM receives collision signal and function stops immediately.

## Assist Steering Illumination

1. When following conditions are met for starting of fog light auxiliary lighting function:

a. IGN=ON
b. Turn signal light turns on or steering column is turned by more than 45° (corresponding CAN signal is SteeringAngle)
c. Low beam light is turned on
d. Vehicle speed is lower than 40 km/h

2. Fog light auxiliary lighting function will be turned off when any of the following conditions is met:
   a. IGN=ACC or OFF
   b. Turn signal light turns off and steering column is turned by less than 10° (corresponding CAN signal is SteeringAngle)
   c. Low beam light is turned on
   d. Vehicle speed is more than 40km/h
3. When fog light auxiliary light is activated, meter indicator is not activated.
4. This function can be configured on line.

## Brake Light Control

1. When any of following conditions is met, turn on the brake light function:
   a. When brake switch is pressed, brake switch is a high level self-locking switch.
   b. CAN signal sent from EPB is received (a signal that requires the light to turn on).
   c. CAN signal sent from ESP is received (a signal that required the light to turn on).
2. When brake light function is turned on, left and right brake lights and high mounted stop light turn on at the same time.
3. When all the above conditions are not met, left and right brake lights and high mounted stop light will turn off simultaneously.

## LIN Ambient Light

1. Initial status
   a. After vehicle is off-line and powered on for the first time or battery is powered on again after battery is disconnected from vehicle, ambient light function is set to ON by default, after that, system turns on/off according to DVD settings
2. Ambient light turns on / off
   a. When all the following conditions are met, BCM sends LIN signal TheaterDimmingRequest=01 (ON) (Ambient light turns on). The position light output is in activated condition.
   b. DVD setting is turned on
   c. Position light output is deactivated or DVD setting is OFF, ambient light turns off.
3. Door control logic related to ambient light
   a. When all following conditions are met, BCM sends LIN signal TheaterDimmingRequest=01 (ON) (-ambient light ON)
   b. Position light output is deactivated
   c. Vehicle is in fortifying deactivation mode
   d. Any door is open
   e. DVD setting is turned on
4. Ambient light turns on for 3 minutes
5. Close all doors within 3 minutes after ambient light comes on, and the light turns off after 8 seconds delay
6. Open any other door within 3 minutes after ambient light comes on, and then count again for 3 minutes after last door is opened.
7. With position light output is not activated, if one of following conditions is met, BCM sends LIN signal TheaterDimmingRequest=00 (OFF) immediately (ambient light turns off)
   a. Vehicle enters fortifying mode successfully

b. DVD setting is turned off

8. Ambient light color
   a. Initial status
   b. After the vehicle is powered on first time after leaving production line or powered on after battery is disconnected and reconnected from vehicle, the related driving mode is OFF by default. Then turn on/off according to DVD settings.
   c. When the related driving mode is OFF: Ambient light colour is blue by default, then choose different colour according to DVD settings.
   d. When related driving mode is turned on
   e. In ECO mode, ambient light is green
   f. In Sport mode, ambient light is red
   g. In normal mode, ambient light is blue
9. Ambient light brightness (musical rhythm)
   a. Initial status
   b. When vehicle rolls from the line and powered on for the first time or vehicle battery is powered on again after disconnection, musical rhythm mode default is off.
   c. When musical rhythm mode is off: Ambient light brightness is Level 3, and different levels can be selected according to DVD setting.
   d. When musical rhythm mode is on: According to different brightness level signals sent from IHU, it changes levels from zero with the musical rhythm

# Intelligent Headlight

## Function Description

1. The main function of intelligent headlight control system is the intelligent low/high beam switching. The system can request high beam ON/OFF according to the traffic and environmental factors. If there are no relevant traffic participants in front, the system will activate high beam; With system activated, if there is a meeting or following vehicle or street lighting, high beam will be turned off.

## Control Principle

1. After IGN ON, system switch is turned to ON, and headlight is in AUTO, camera will detect vehicle status, surrounding environment and road condition in front. If IHC opening conditions are met, system will request high beam to be turned ON; When followings, oncomings or vehicles related environment (including the existence of multiple street lights, if external environment brightness is higher than the threshold, etc.) do not meet the IHC open conditions, system will request high beam to be turned off, once the system ON conditions resume, system will follow a certain delay mechanism and send high beam request without interfering with other traffic participants (ECE48 defined vehicles driving in opposite or same directions, ECE50 defined motorbikes driving in opposite or same directions, electric motorcars with light as well as bicycles with light driving in same direction, light size must be more than 150*150 mm and light intensity is greater than 30 cd). The request of low/high beam switching is transmitted to BCM from multi-function front camera via CAN signal, and driver can change lighting state at any time using light rod.

## System operating precondition

1. IGN ON
2. Headlight switch is in AUTO
3. Low beam light turns on automatically
4. BCM judges that all the above conditions are met, then BCM sends corresponding system switch requests according to functional logic. If any condition is not met, it will send HWASW = 0 continuously and system cancels activation requests

## High Beam Light Request Condition

1. IHC function is activated
2. Vehicle speed ⩾ 40 km/h
3. Ambient light ＜ 6 lux
4. There is no related light source ahead
5. If all the above high beam light ON conditions are met and related suppression conditions are not met, the system requests high beam light to be turned on

## Minimum ON Time of High Beam Light

1. To avoid frequent switching between low beam and high beam, it is recommended to follow the following delay strategy when turning on high beam light

If following several traffic conditions are detected, the system will request to use high beam light. After the relevant traffic participants leave the corresponding conditions, there will be a delay in the corresponding light state switching, refer to table below for details.

| Low Beam Light Operation Condition | | | High Beam Light Switching Request Condition | Delay Time |
|---|---|---|---|---|
| Operating Condition | | Operation condition range | | |
| Driving in same direction | Overtaking | < 50 m | The vehicle in front is detected within 50 m of your vehicle and overtook by your vehicle (regardless of left or right); | 4 seconds |
| | Following | < 50 m | The vehicle in front is detected within 50 m of your vehicle and then disappears; | 2 s |
| | Following | 50 - 200 m | The vehicle in front is detected within 50 - 200 m of your vehicle and then disappears; | 3 s |
| | There is a vehicle in front | > 200 m | The vehicle in front is detected within 200 m of your vehicle and then disappears; | 2 s |
| Driving in opposite direction | Meeting | < 50 m | The vehicle in front is detected within 50 m of your vehicle and meets with your vehicle on the left; | 0.5 s |

| Low Beam Light Operation Condition | | | High Beam Light Switching Request Condition | Delay Time |
|---|---|---|---|---|
| Operating Condition | | Operation condition range | | |
| | Driving in opposite direction | 50 - 200 m | The vehicle in front is detected within 50 - 200 m of your vehicle and then disappears; | 2 s |
| | There is a vehicle in front | > 200 m | The vehicle in front is detected within 200 m of your vehicle and then disappears; | 2 s |

## High Beam OFF Request

1. With system turned off, system will send 0x0 signal by default and request high beam light to be turned off.
2. The system will request high beam light to be turned off if following faults occur in multi-function front camera:
   a. Permanent system hardware failure
   b. Temporary system hardware failure
   c. Permanent lighting failure (lighting failure time is more than 45 minutes)
   d. Temporary lighting failure
   e. Overheating protection
   f. Overvoltage
   g. Hot restart
   h. Communication fault
   i. Signal fault
3. The system will request high beam light to be turned off when multi-function front camera detects the following auto-glare status
   a. Heavy fog weather
   b. Fog light is activated
   c. Wiper running speed achieves second level (continue fast signal) or above
4. Road lighting
   a. If three or more street lights (including tunnels) are detected, the system will request high beam light to be turned off. Reflectors on the side of highway are not allowed to be misidentified as lighting sources
5. Ambient brightness
   a. If ambient brightness is too high (ambient light > 12 lux, which is directly obtained from the camera), the system will request high beam light to be turned off.
6. Vehicle speed
   a. The system will request high beam light to be turned off when vehicle speed is lower than 30 km/h (adjustable).
7. Traffic condition
   a. If a traffic participant is detected in front of your vehicle, the system will request high beam light to be turned off.
   b. Signs on the road are not allowed to be misidentified as vehicles driving in opposite or same direction.
8. Other descriptions

a. Auto position: System status light is allowed to be turned on only when system is in Auto position and low beam light ON conditions are met
b. Low beam light status: In Auto position, the system is allowed to be turned on after low beam light comes on automatically
c. High beam OFF request: System can request high beam light to be turned off when any of high beam OFF request condition is met
d. High priority light changing suppression: System does not change the light distribution request of the vehicle's current state under high priority light suppression conditions
e. Low priority light changing suppression: System will maintain the light distribution request of the vehicle's current state under low priority light suppression condition. At this time, if the system is in low beam light state and the conditions of high beam light are met, it is not allowed to switch to the high beam light state; If the system is in high beam light state and the conditions of low beam light are met, it is allowed to switch to low beam light state.
f. High beam request: Under the function activation condition, the system will request high beam to be turned on if all low beam requests and suppression conditions are not met.
g. Priority mechanism: Driver can change light distribution using headlight lever at any time.
h. HC function switch: Multi-function front camera memorizes the IHC function audio setting items. After the next power on, the last memorized switch state will be sent.

# Diagnosis & Testing

## Problem Symptoms Table

**Hint:**
Use symptoms table below to help determine cause of problem. Check each suspected area in sequence. Repair, replace or adjust faulty components as necessary.
Rear combination light fixed part consists of 2 brake light bulbs and 2 position light bulbs. If one damaged bulb and the other does not come on, you need to check the two bulbs simultaneously and contact CHERY service station to check and repair if necessary.

| Symptom | Suspected Area |
|---|---|
| Low beam light does not come on (one side) | Fuse |
| | Headlight bulb |
| | Wire harness or connector |
| Low beam lights do not come on (both sides) | Fuse |
| | Headlight bulb |
| | Combination light switch assembly |
| | Low beam relay |
| | Wire harness or connector |
| | Body Control Module (BCM) |
| High beam light does not come on (one side) | Fuse |
| | Headlight bulb |
| | Wire harness or connector |
| High beam light does not come on (both sides) | Fuse |
| | Headlight bulb |
| | Combination light switch assembly |
| | High beam relay |
| | Wire harness and connector |
| | Body Control Module (BCM) |
| Position light does not come on (one side) | Position light bulb |
| | Wire harness or connector |
| Position lights do not come on (both sides) | Position light bulbs (all) |
| | Wire harness or connector |
| | Combination light switch assembly |
| | Body Control Module (BCM) |

## Daytime Running Light

| Symptom | Suspected Area |
|---|---|
| Daytime running light does not come on | Daytime running light bulb |
| | Wire harness or connector |
| | Body Control Module (BCM) |

## Rear Fog Light

| Symptom | Suspected Area |
|---|---|
| Rear fog light does not come on | Rear fog light bulb |
| | Combination light switch |
| | Wire harness or connector |
| | Body Control Module (BCM) |

## Turn Signal Light And Hazard Warning Light

| Symptom | Suspected Area |
|---|---|
| Hazard warning light and turn signal light do not come on | Bulb |
| | Combination light switch |
| | Wire harness or connector |
| | Body Control Module (BCM) |
| | Hazard warning light switch |
| Hazard warning light does not come on (hazard warning light is normal) | Hazard warning light switch |
| | Wire harness or connector |
| | Body Control Module (BCM) |
| Turn signal light does not come on (hazard warning light is normal) | Combination light switch |
| | Wire harness or connector |
| | Body Control Module (BCM) |

## License Plate Light

| Symptom | Suspected Area |
|---|---|
| License plate light does not come on | License plate light bulb |
| | Combination light switch assembly |
| | Wire harness or connector |
| | Body Control Module (BCM) |

### Luggage Compartment Light

| Symptom | Suspected Area |
|---|---|
| Luggage compartment light does not come on | Luggage compartment light bulb |
| | Luggage compartment lock assembly |
| | Wire harness or connector |
| | Body Control Module (BCM) |

### Brake Light

| Symptom | Suspected Area |
|---|---|
| Brake lights do not come on (all) | Fuse |
| | Brake light bulbs (all) |
| | Brake light switch |
| | Wire harness connector |
| | Body Control Module (BCM) |
| Only one brake light does not come on | Brake light bulb |
| | Wire harness or connector |

### Front Dome Light

| Symptom | Suspected Area |
|---|---|
| Front dome light does not come on | Front dome light bulb |
| | Wire harness or connector |
| | Front dome light assembly |
| | Body Control Module (BCM) |

### Back-up Light

| Symptom | Suspected Area |
|---|---|
| Back-up lights do not come on (all) | Transmission Control Unit (TCU) |
| | Back-up light bulb |
| | Back-up light switch (MT) |
| | Body Control Module (BCM) |
| | Wire harness or connector |
| | Gear switch |

## Diagnostic Help

1. Connect diagnostic tester X-431 3G (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 CD 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.

## 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 wiggling test.
- Look for broken, bent, protruded or corroded terminals.
- Inspect airbag components and mounting areas for damage, foreign matter, etc. that will cause incorrect signals.
- 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.

## 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.

## Diagnostic Trouble Code (DTC) Chart

| DTC | DTC Definition |
|---|---|
| B1001-11 | Left Side Turn Lamp Control Circuit-Circuit Short to Ground |
| B1001-13 | Left Side Turn Lamp Control Circuit-Circuit Open |
| B1002-11 | Right Side Turn Lamp Control Circuit-Circuit Short To Ground |
| B1002-13 | Right Side Turn Lamp Control Circuit-Circuit Open |

| DTC | DTC Definition |
|---|---|
| B1005-11 | Front Park Light Output Control Circuit-Circuit Short to Ground |
| B1005-13 | Front Park Light Output Control Circuit-Circuit Open |
| B1006-11 | Rear Park Light Output Control Circuit-Circuit Short to Ground |
| B1006-13 | Rear Park Light Output Control Circuit-Circuit Open |
| B1008-11 | Rear Fog Control Circuit-Circuit Short to Ground |
| B1008-13 | Rear Fog Control Circuit-Circuit Open |
| B1008-71 | Rear Fog Control Circuit-Actuator Stuck |
| B101E-11 | L-DRL Control Circuit-Circuit Short to Ground |
| B101E-13 | L-DRL Control Circuit-Circuit Open |
| B101F-11 | R-DRL Control Circuit-Circuit Short to Ground |
| B101F-13 | R-DRL Control Circuit-Circuit Open |
| B1035-11 | Brake Light Control Circuit-Circuit Short to Ground |
| B1035-13 | Brake Light Control Circuit-Circuit Open |
| B1036-11 | H-Brake Light Control Circuit-Circuit Short to Ground |
| B1036-13 | H-Brake Light Control Circuit-Circuit Open |
| B1039-11 | NTC Output Circuit / Reversing Lamp Control Circuit-Circuit Short to Ground |
| B1039-13 | NTC Output Circuit / Reversing Lamp Control Circuit-Circuit Open |

## DTC Diagnosis Procedure

| | | |
|---|---|---|
| **DTC** | **B1001-11** | **Left Side Turn Lamp Control Circuit-Circuit Short to Ground** |
| **DTC** | **B1001-13** | **Left Side Turn Lamp Control Circuit-Circuit Open** |

| DTC | DTC Definition | Possible Cause |
|---|---|---|
| B1001-11 | Left Side Turn Lamp Control Circuit-Circuit Short to Ground | • Bulb damaged<br>• Turn signal light switch<br>• Wire harness or connector damaged<br>• BCM |
| B1001-13 | Left Side Turn Lamp Control Circuit-Circuit Open | |

**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 left turn signal light bulb |
|---|---|

Use circuit diagram as a guide to perform the following inspection procedures:

(a) Turn off all electrical equipment and ENGINE START STOP switch.

(b) Disconnect the negative battery cable.

(c) Remove the left turn signal light bulb, and check if left turn signal light bulb filament is blown.

NG → **Replace left turn signal light bulb**

OK

| 2 | Using diagnostic tester to perform active test |
|---|---|

(a) Turn ENGINE START STOP switch to ON.

(b) Connect the diagnostic tester, perform active test for left turn signal light.

NG → **Check actuator circuit wire harness**

OK

| 3 | Check left turn signal light control circuit |
|---|---|

(a) Turn ENGINE START STOP switch to OFF.

(b) Disconnect the negative battery cable.

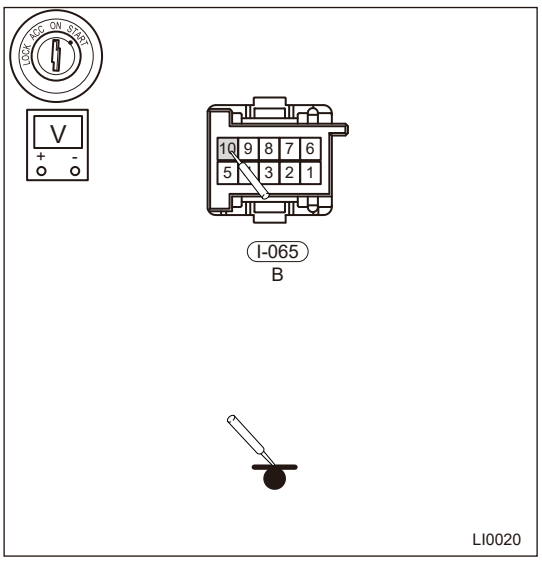
(c) Disconnect the combination switch connector I-065.

(d) Connect the negative battery cable.

(e) Turn ENGINE START STOP switch to ON.

(f) Using a digital multimeter, measure voltage between combination switch connector I-065 (10) and body ground according to table below.

| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| I-065 (10) - Body ground | Always | Not less than 12 V |




NG → **Repair or replace faulty wire harness**

OK

| 4 | Check combination switch control circuit |
|---|---|

(a) Turn ENGINE START STOP switch to OFF.

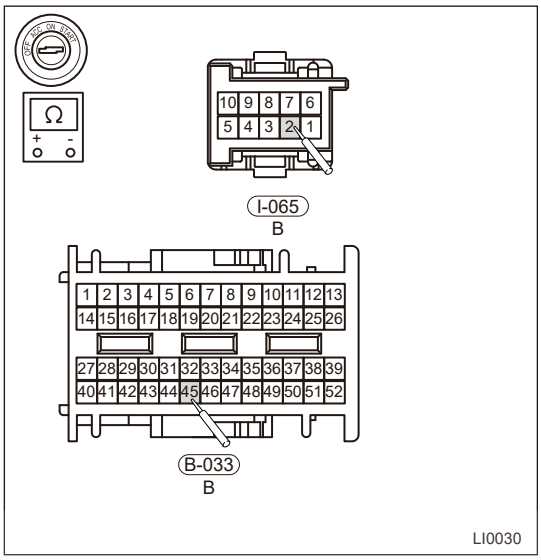
(b) Disconnect the negative battery cable.

(c) Disconnect the body controller connector B-033.

(d) Disconnect the combination switch connector I-065.

(e) Using a digital multimeter, measure if resistance between connectors I-065 (2) and B-033 (1-45) is normal according to table below.

| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| I-065 (2) -B-033 (1 - 45) | Always | ⩽ 1 Ω |




NG → Repair or replace faulty wire harness

OK

| 5 | Check combination switch |
|---|---|

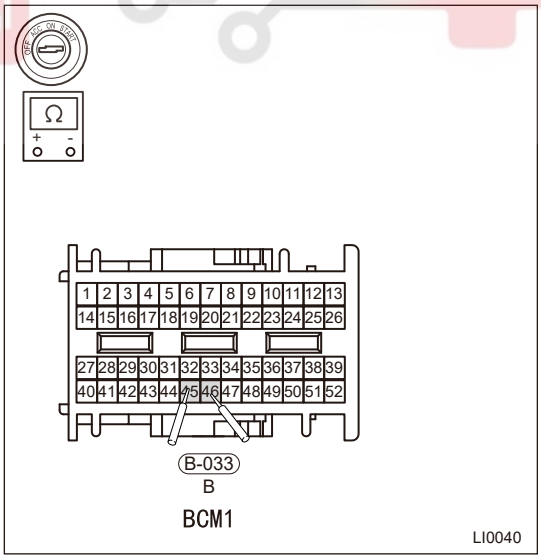
(a) Turn ENGINE START STOP switch to OFF.

(b) Disconnect the negative battery cable.

(c) Disconnect the body controller connector B-033.

(d) Using a digital multimeter, measure if resistance between connectors B-033 (1-46) and B-033 (1-45) when turning on left turn signal light is normal according to table below.

| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| B-033 (1-46) - B-033 (1-45) | Always | 1000 Ω |

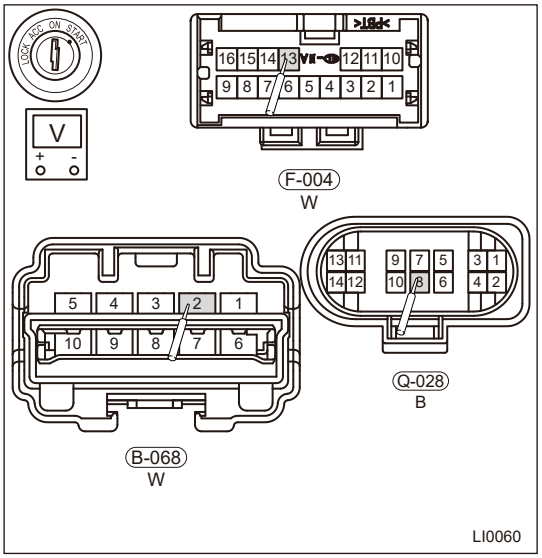



NG → Replace combination switch

OK

| 6 | Check left turn signal light output circuit |
|---|---|

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect left turn signal light connectors Q-028, F-004 and B-068.
(d) Connect the negative battery cable.
(e) Turn ENGINE START STOP switch to ON.
(f) Using a digital multimeter, measure the voltage between left turn signal light connectors Q-028 (8), B-068 (2), F-004 (13) and body ground according to table below.



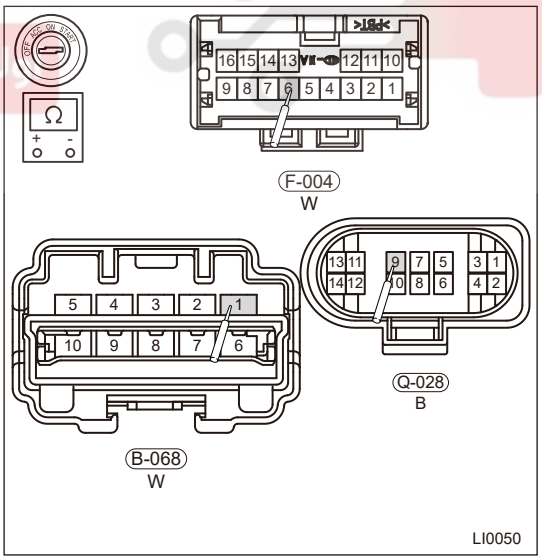

| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| Q-028 (8) - Body ground | Always | Not less than 12 V |
| F-004 (13) - Body ground | | |
| B-068 (2) - Body ground | | |

NG → **Repair or replace faulty wire harness**

OK

| 7 | Check for continuity of output circuit ground |
|---|---|

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect left turn signal light connectors Q-028, F-004 and B-068.
(d) Using a digital multimeter, measure for continuity between left turn signal light connectors Q-028 (9), B-068 (1), F-004 (6) and body ground according to table below.




| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| Q-028 (9) - Body ground | Always | ⩽ 1 Ω |
| F-004 (6) - Body ground | | |
| B-068 (1) - Body ground | | |

NG → **Repair or replace faulty wire harness**

OK

| 8 | Reconfirm DTCs |
|---|---|

(a) Connect diagnostic tester and clear DTCs.
(b) Run the vehicle as specified procedure. The operating way should meet the conditions for corresponding fault diagnosis.
(c) Read the fault information and confirm that the fault has been solved.

NG → **Replace body control module**

OK → **Conduct test and confirm malfunction has been repaired**

| | | |
|---|---|---|
| **DTC** | **B1002-11** | **Right Side Turn Lamp Control Circuit-Circuit Short To Ground** |
| **DTC** | **B1002-13** | **Right Side Turn Lamp Control Circuit-Circuit Open** |

| DTC | DTC Definition | Possible Cause |
|---|---|---|
| B1002-11 | Right Side Turn Lamp Control Circuit-Circuit Short To Ground | • Bulb damaged<br>• Turn signal light switch<br>• Wire harness or connector damaged<br>• BCM |
| B1002-13 | Right Side Turn Lamp Control Circuit-Circuit Open | |

**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 left turn signal light bulb** |

Use circuit diagram as a guide to perform the following inspection procedures:
(a) Turn off all electrical equipment and ENGINE START STOP switch.
(b) Disconnect the negative battery cable.
(c) Remove right turn signal light bulb, and check if right turn signal light bulb filament is blown.

NG → **Replace right turn signal light bulb**

OK →

| | |
|---|---|
| **2** | **Using diagnostic tester to perform active test** |

(a) Turn ENGINE START STOP switch to ON.
(b) Connect the diagnostic tester, perform active test for right turn signal light.

NG → **Check actuator circuit wire harness**

OK

| 3 | **Check control circuit output voltage** |
|---|---|

(a) Turn ENGINE START STOP switch to OFF.

(b) Disconnect the negative battery cable.

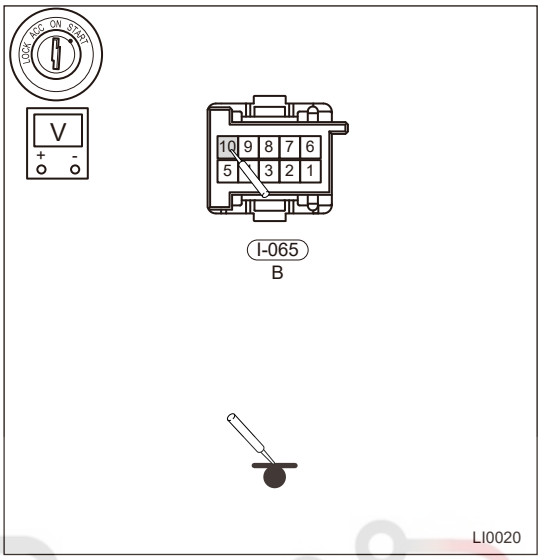
(c) Disconnect the combination switch connector I-065.

(d) Connect the negative battery cable.

(e) Turn ENGINE START STOP switch to ON.

(f) Using a digital multimeter, measure voltage between combination switch connector I-065 (10) and body ground according to table below.

| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| I-065 (10) - Body ground | Always | Not less than 12 V |




NG → **Repair or replace faulty wire harness**

OK

| 4 | **Check combination switch control circuit** |
|---|---|

(a) Turn ENGINE START STOP switch to OFF.

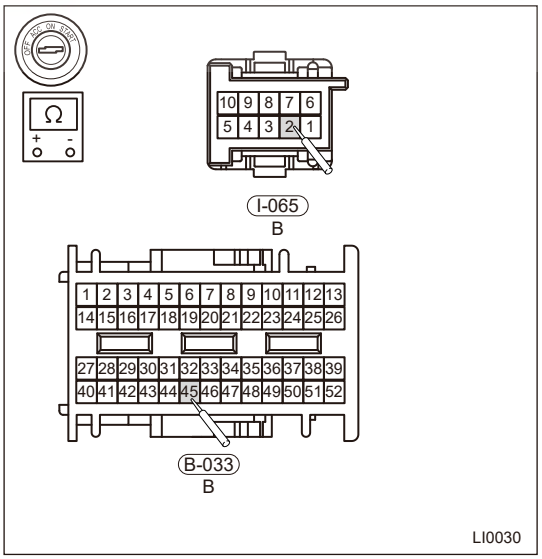
(b) Disconnect the negative battery cable.

(c) Disconnect the body controller connector B-033.

(d) Disconnect the combination switch connector I-065.

(e) Using a digital multimeter, measure if resistance between connectors I-065 (2) and B-033 (1-45) is normal according to table below.

| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| I-065 (2) -B-033 (1 - 45) | Always | ⩽ 1 Ω |




NG → **Repair or replace faulty wire harness**

OK

| 5 | Check combination switch |
|---|---|

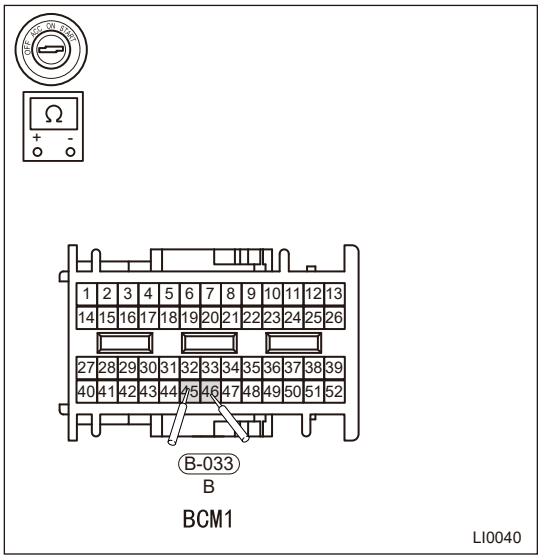
(a) Turn ENGINE START STOP switch to OFF.

(b) Disconnect the negative battery cable.

(c) Disconnect the body controller connector B-033.

(d) Using a digital multimeter, measure if resistance between connectors B-033 (1-46) and B-033 (1-45) when turning on right turn signal light is normal according to table below.

| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| B-033 (1-46) - B-033 (1-45) | Always | 3000 Ω |




NG → **Replace combination switch**

OK

| 6 | Check right turn signal light output circuit |
|---|---|

(a) Turn ENGINE START STOP switch to OFF.

(b) Disconnect the negative battery cable.

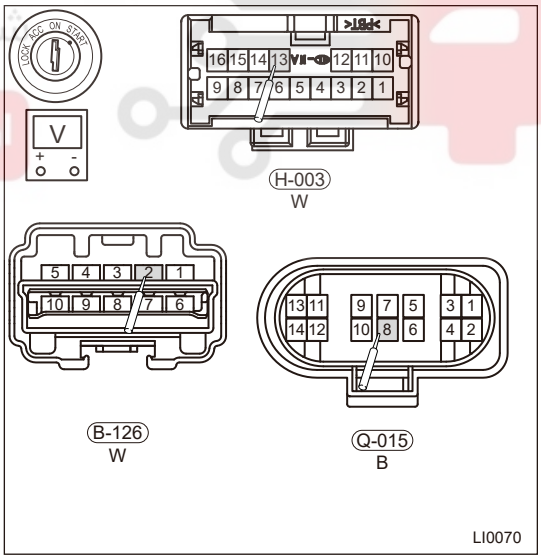
(c) Disconnect the right turn signal light connectors Q-015, H-003, B-126.

(d) Connect the negative battery cable.

(e) Turn ENGINE START STOP switch to ON.

(f) Using a digital multimeter, measure voltage between right turn signal light connectors Q-015 (8), H-126 (2), H-003 (13) and body ground.

| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| Q-015 (8) - Body ground | Always | Not less than 12 V |
| B-126 (2) - Body ground | | |
| H-003 (13) - Body ground | | |

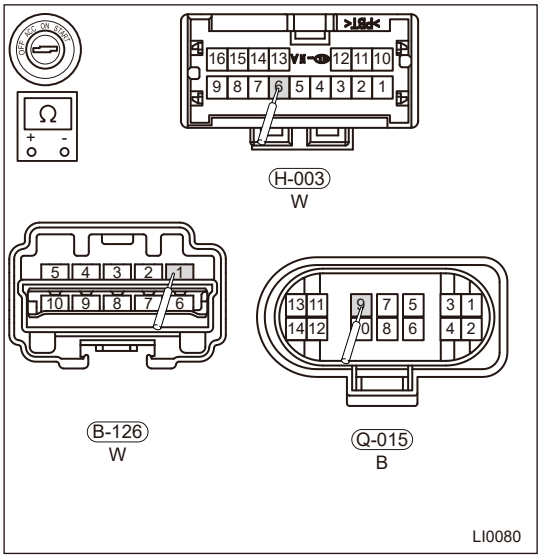



NG → **Repair or replace faulty wire harness**

OK

| 7 | Check for continuity of output circuit ground |
|---|---|

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the right turn signal light connectors Q-015, H-003, B-126.
(d) Using a digital multimeter, measure for continuity between right turn signal light connectors Q-015 (8), H-126 (2), H-003 (13) and body ground.




| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| Q-015 (9) - Body ground | Always | ⩽ 1 Ω |
| B-126 (1) - Body ground | | |
| H-003 (6) - Body ground | | |

NG → **Repair or replace faulty wire harness**

OK →

| 8 | Reconfirm DTCs |
|---|---|

(a) Connect diagnostic tester and clear DTCs.
(b) Run the vehicle as specified procedure. The operating way should meet the conditions for corresponding fault diagnosis.
(c) Read the fault information and confirm that the fault has been solved.

NG → **Replace body control module**

OK → **Conduct test and confirm malfunction has been repaired**

| DTC | B1005-11 | Front Park Light Output Control Circuit-Circuit Short to Ground |
|---|---|---|
| DTC | B1101-15 | Front Park Light Output Control Circuit-Circuit Open |

| DTC | DTC Definition | Possible Cause |
|---|---|---|
| B1005-11 | Front Park Light Output Control Circuit-Circuit Short to Ground | • Wire harness or connector damaged<br>• Bulb damaged<br>• Front position light switch<br>• BCM |
| B1101-15 | Front Park Light Output Control Circuit-Circuit Open | |

**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 front position light bulb** |
|---|---|

Use circuit diagram as a guide to perform the following inspection procedures:

(a) Turn off all electrical equipment and ENGINE START STOP switch.

(b) Disconnect the negative battery cable.

(c) Check if front position light bulb filament is blown.

NG → **Replace the front position light.**

OK →

| 2 | **Check front position light control circuit** |
|---|---|

(a) Turn ENGINE START STOP switch to OFF.

(b) Disconnect the negative battery cable.

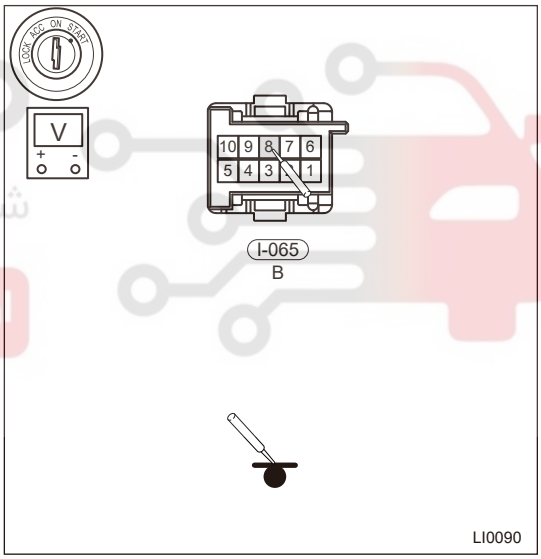
(c) Disconnect the combination switch connector I-065.

(d) Connect the negative battery cable.

(e) Turn ENGINE START STOP switch to ON.

(f) Using a digital multimeter, measure voltage between combination switch connector I-065 (8) and body ground according to table below.

| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| I-065 (8) - Body ground | Always | Not less than 12 V |




NG → **Repair or replace faulty wire harness**

OK →

| 3 | **Check combination switch control circuit** |
|---|---|

(a) Turn ENGINE START STOP switch to OFF.

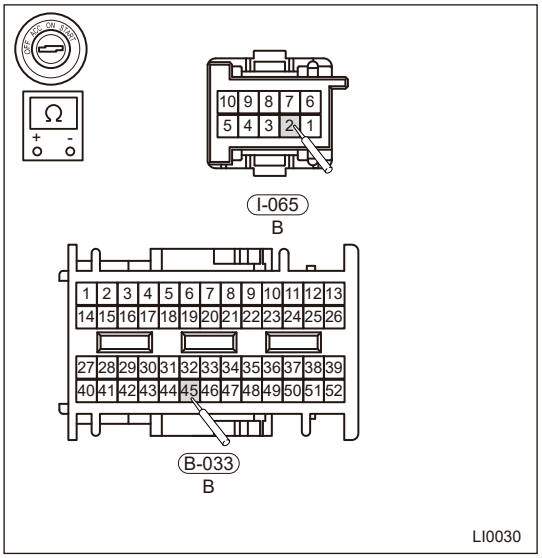
(b) Disconnect the negative battery cable.

(c) Disconnect the body controller connector B-033.

(d) Disconnect the combination switch connector I-065.

(e) Using a digital multimeter, measure if resistance between connectors I-065 (2) and B-033 (1-45) is normal according to table below.

| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| I-065 (2) -B-033 (1 - 45) | Always | < 1 Ω |




NG → **Repair or replace faulty wire harness**

OK

| 4 | Check combination switch |
|---|---|

(a) Turn ENGINE START STOP switch to OFF.

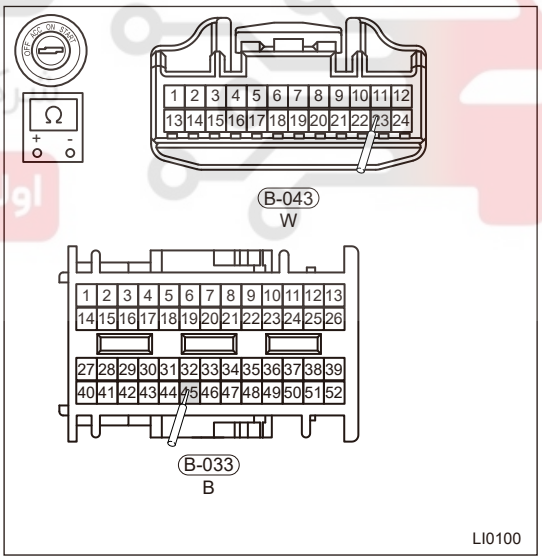
(b) Disconnect the negative battery cable.

(c) Disconnect the body controller connector B-033.

(d) Disconnect the body controller connector B-042.

(e) Using a digital multimeter, measure if resistance between connectors B-043 (2-23) and B-033 (1-45) when turning on position light is normal according to table below.

| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| B-043 (2 - 23) — B-033 (1 - 45) | Always | 3000 Ω |




NG → **Replace combination switch**

OK

| 5 | Check front position light output circuit |
|---|---|

(a) Turn ENGINE START STOP switch to OFF.

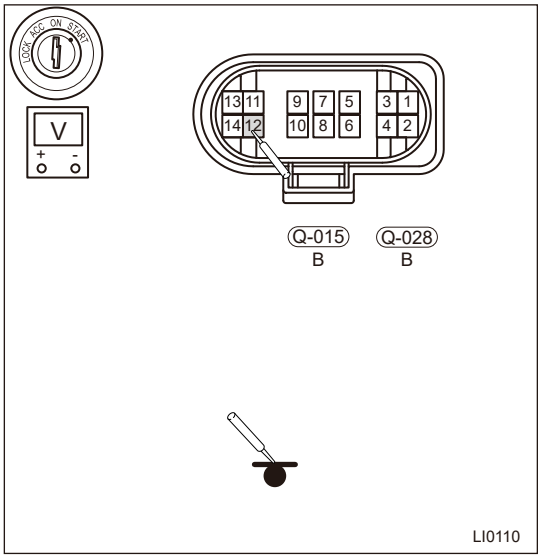
(b) Disconnect the negative battery cable.

(c) Disconnect the front position light connectors Q-015 and Q-028.

(d) Connect the negative battery cable.

(e) Turn ENGINE START STOP switch to ON and turn on position light.

(f) Using a digital multimeter, measure the voltage between front position light connectors Q-015 (12), Q-028 (12) and body ground according to table below.




| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| Q-015 (12) - Body ground | Always | Not less than 12 V |
| Q-028 (12) - Body ground | | |

NG → **Repair or replace faulty wire harness**

OK

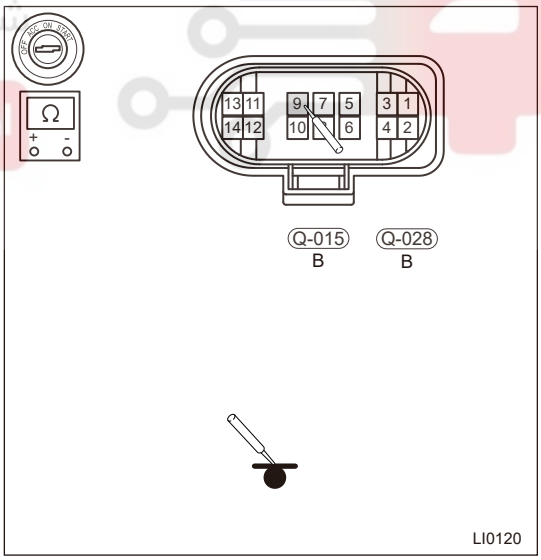
| | |
|---|---|
| 6 | **Check for continuity of output circuit ground** |

(a) Turn ENGINE START STOP switch to OFF.

(b) Disconnect the negative battery cable.

(c) Disconnect the front position light connectors Q-015 and Q-028.

(d) Using a digital multimeter, measure for continuity between front position light connectors Q-015 (9), Q-028 (9) and body ground according to table below.




| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| Q-015 (9) - Body ground | Always | ⩽ 1 Ω |
| Q-028 (9) - Body ground | | |

NG → **Repair or replace faulty wire harness**

OK

| | |
|---|---|
| 7 | **Reconfirm DTCs** |

(a) Connect diagnostic tester and clear DTCs.

(b) Run the vehicle as specified procedure. The operating way should meet the conditions for corresponding fault diagnosis.

(c) Read the fault information and confirm that the fault has been solved.

NG → **Replace body control module**

OK → **Conduct test and confirm malfunction has been repaired**

| | | |
|---|---|---|
| **DTC** | **B1006-11** | **Rear Park Light Output Control Circuit-Circuit Short to Ground** |
| **DTC** | **B1006-13** | **Rear Park Light Output Control Circuit-Circuit Open** |

| DTC | DTC Definition | Possible Cause |
|---|---|---|
| B1006-11 | Rear Park Light Output Control Circuit-Circuit Short to Ground | • Wire harness or connector damaged<br>• Bulb damaged<br>• Position light switch<br>• BCM |
| B1006-13 | Rear Park Light Output Control Circuit-Circuit Open | |

**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 front position light bulb** |

Use circuit diagram as a guide to perform the following inspection procedures:

(a) Turn off all electrical equipment and ENGINE START STOP switch.

(b) Disconnect the negative battery cable.

(c) Remove the rear position light bulb, and check if rear position light bulb is blown.

NG → **Replace rear position light bulb**

OK

| | |
|---|---|
| **2** | **Using diagnostic tester to perform active test** |

(a) Turn ENGINE START STOP switch to ON.

(b) Connect the diagnostic tester, perform active test for rear position light.

NG → **Check actuator circuit wire harness**

OK ↓

| 3 | **Check rear position light control circuit** |
|---|---|

(a) Turn ENGINE START STOP switch to OFF.

(b) Disconnect the negative battery cable.

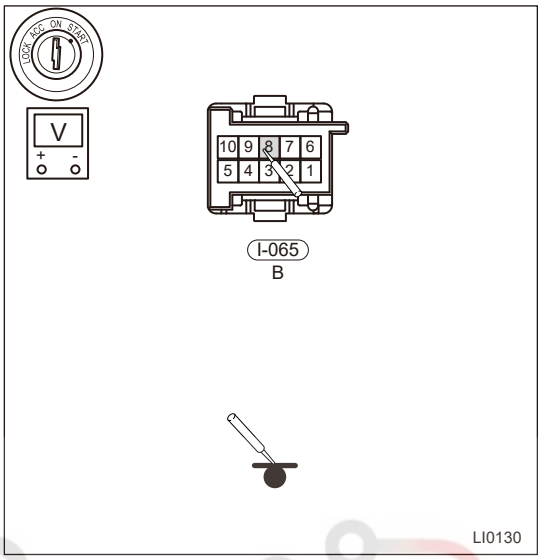
(c) Disconnect the combination switch connector I-065.

(d) Connect the negative battery cable.

(e) Turn ENGINE START STOP switch to ON.

(f) Using a digital multimeter, measure voltage between combination switch connector I-065 (8) and body ground according to table below.

| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| I-065 (8) - Body ground | Always | Not less than 12 V |




NG → **Repair or replace faulty wire harness**

OK ↓

| 4 | **Check combination switch control circuit** |
|---|---|

(a) Turn ENGINE START STOP switch to OFF.

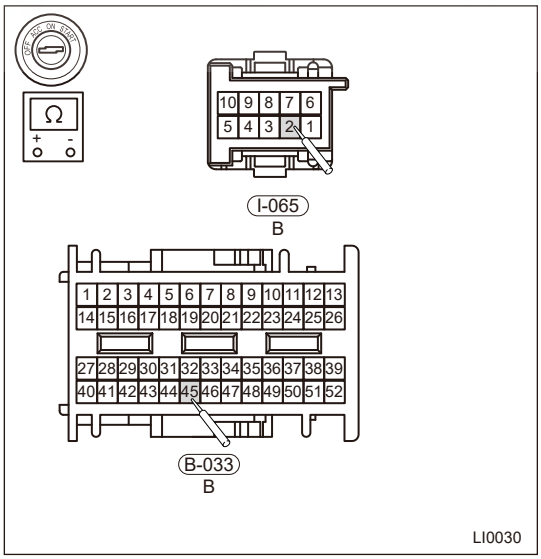
(b) Disconnect the negative battery cable.

(c) Disconnect the body controller connector B-033.

(d) Disconnect the combination switch connector I-065.

(e) Using a digital multimeter, measure if resistance between connectors I-065 (2) and B-033 (1-45) is normal according to table below.

| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| I-065 (2) -B-033 (1 - 45) | Always | ⩽ 1 Ω |




NG → **Repair or replace faulty wire harness**

OK ↓

| 5 | Check combination switch |
|---|---|

(a) Turn ENGINE START STOP switch to OFF.

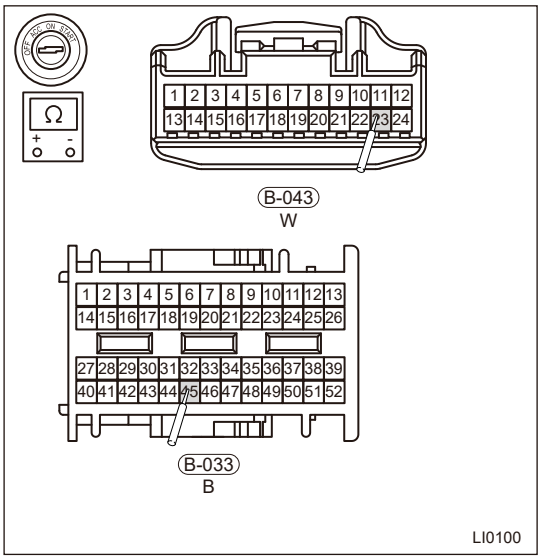
(b) Disconnect the negative battery cable.

(c) Disconnect the body controller connector B-033.

(d) Disconnect the body controller connector B-043.

(e) Using a digital multimeter, measure if resistance between connectors B-043 (2-23) and B-033 (1-45) when turning on position light is normal according to table below.

| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| B-043 (2 - 23) — B-033 (1 - 45) | Always | 3000 Ω |




NG → **Replace combination switch**

OK

| 6 | Check rear position light output circuit |
|---|---|

(a) Turn ENGINE START STOP switch to OFF.

(b) Disconnect the negative battery cable.

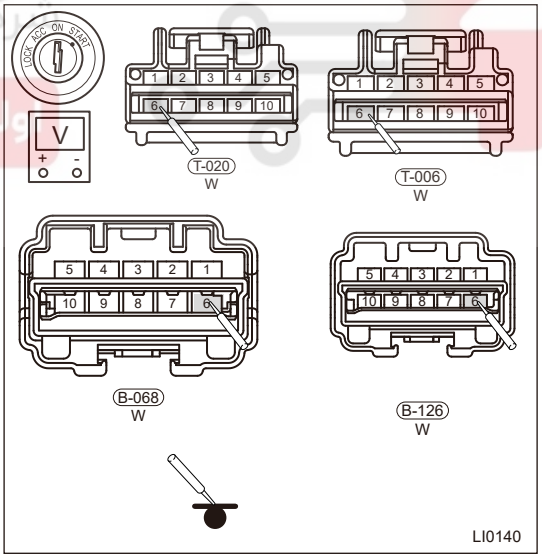
(c) Disconnect rear left combination light (movable part) connector T-006, rear right combination light (movable part) connector T-020, rear left combination light (fixed part) connector B-068, rear right combination light (fixed part) connector B-126.

(d) Connect the negative battery cable.

(e) Turn ENGINE START STOP switch to ON.

(f) Using a digital multimeter, measure voltage between rear position light connectors T-006 (3), T-020 (3), B-068 (3), B-126 (3) and body ground.

| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| T-006 (6) - Body ground | Always | Not less than 12 V |
| T-020 (6) - Body ground | | |
| B-068 (6) - Body ground | | |
| B-126 (6) - Body ground | | |

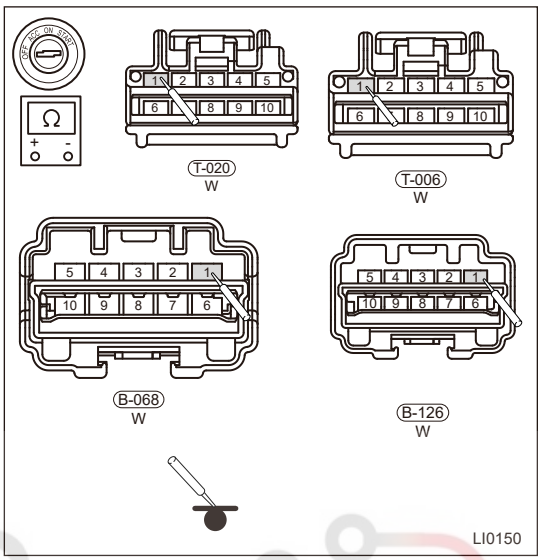


NG → **Repair or replace faulty wire harness**

OK

| 7 | **Check for continuity of output circuit ground** |
|---|---|

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect rear position light connectors B-126, B-068, T-006, T-020.
(d) Using a digital multimeter, measure for continuity between rear position light connectors B-126 (1), B-068 (1), T-006 (1), T-020 (1) and body ground.




| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| B-126 (1) - body ground | Always | ⩽ 1 Ω |
| B-068 (1) - body ground | | |
| T-006 (1) - Body ground | | |
| T-020 (1) - Body ground | | |

NG → **Repair or replace faulty wire harness**

OK

| 8 | **Reconfirm DTCs** |
|---|---|

(a) Connect diagnostic tester and clear DTCs.
(b) Run the vehicle as specified procedure. The operating way should meet the conditions for corresponding fault diagnosis.
(c) Read the fault information and confirm that the fault has been solved.

NG → **Replace body control module**

OK → **Conduct test and confirm malfunction has been repaired**

| | | |
|---|---|---|
| **DTC** | **B1008-11** | **Rear Fog Control Circuit-Circuit Short to Ground** |
| **DTC** | **B1008-13** | **Rear Fog Control Circuit-Circuit Open** |
| **DTC** | **B1008-71** | **Rear Fog Control Circuit-Actuator Stuck** |

| DTC | DTC Definition | Possible Cause |
|---|---|---|
| B1008-11 | Rear Fog Control Circuit-Circuit Short to Ground | • Wire harness or connector damaged<br>• Damaged rear fog light<br>• BCM |
| B1008-13 | Rear Fog Control Circuit-Circuit Open | |
| B1008-71 | Rear Fog Control Circuit-Actuator Stuck | |

**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 rear fog light bulb** |
|---|---|

Use circuit diagram as a guide to perform the following inspection procedures:
(a) Turn off all electrical equipment and ENGINE START STOP switch.
(b) Disconnect the negative battery cable.
(c) Remove the rear fog light bulb, and check if bulb filament is blown.

NG → **Replace rear fog light bulb**

OK ↓

| 2 | **Using diagnostic tester to perform active test** |
|---|---|

(a) Turn ENGINE START STOP switch to ON.
(b) Connect the diagnostic tester, perform active test for rear position light.

NG → **Check actuator circuit wire harness**

OK ↓

| 3 | **Check rear fog light control circuit** |
|---|---|

(a) Turn ENGINE START STOP switch to OFF.

(b) Disconnect the negative battery cable.

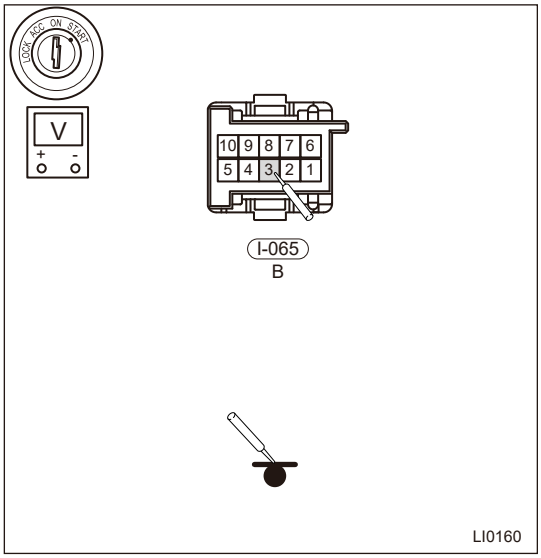
(c) Disconnect the combination switch connector I-065.

(d) Connect the negative battery cable.

(e) Turn ENGINE START STOP switch to ON.

(f) Using a digital multimeter, measure voltage between combination switch connector I-065 (3) and body ground according to table below.

| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| I-065 (3) - Body ground | Always | Not less than 12 V |




NG → **Repair or replace faulty wire harness**

OK

**4 Check combination switch control circuit**

(a) Turn ENGINE START STOP switch to OFF.

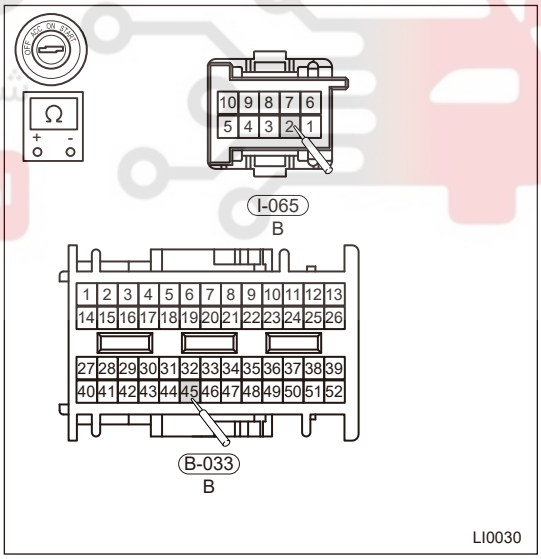
(b) Disconnect the negative battery cable.

(c) Disconnect the body controller connector B-033.

(d) Disconnect the combination switch connector I-010.

(e) Using a digital multimeter, measure if resistance between connectors I-065 (2) and B-033 (1-45) is normal according to table below.

| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| I-065 (2) -B-033 (1 - 45) | Always | ⩽ 1 Ω |




NG → **Repair or replace faulty wire harness**

OK

**5 Check combination switch**

(a) Turn ENGINE START STOP switch to OFF.

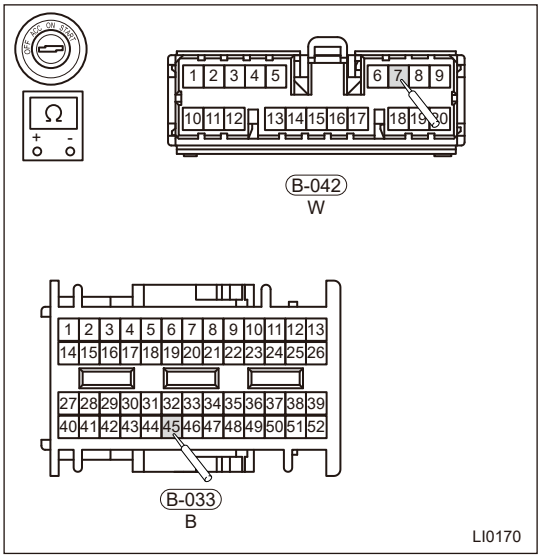
(b) Disconnect the negative battery cable.

(c) Disconnect the body controller connector B-033.

(d) Disconnect the body controller connector B-042.

(e) Using a digital multimeter, measure if resistance between connectors B -042 (5-07) and B-033 (1-45) when turning on fog light is normal according to table below.

| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| B-042 (5-07) — B-033 (1 - 45) | Always | ⩽ 1 Ω |




NG → **Replace combination switch**

OK

| 6 | Check rear fog light output circuit |
|---|---|

(a) Turn ENGINE START STOP switch to OFF.

(b) Disconnect the negative battery cable.

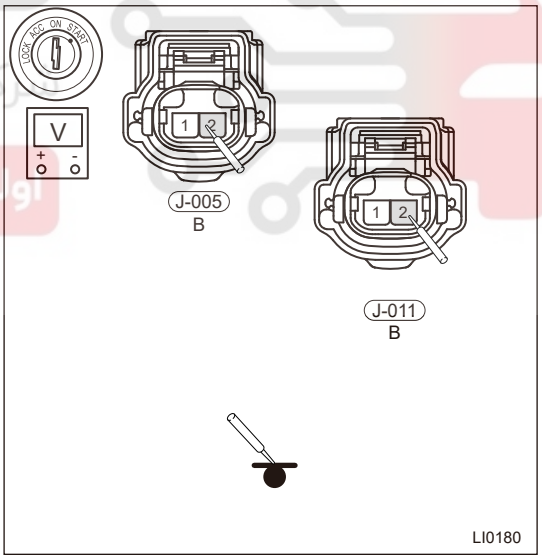
(c) Disconnect the rear fog light connectors J-011 and J-005.

(d) Connect the negative battery cable.

(e) Turn ENGINE START STOP switch to ON.

(f) Using a digital multimeter, measure voltage between rear fog light connector J-011 (2), J-005 (2) and body ground according to table below.

| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| J-011 (2) - Body ground | Always | Not less than 12 V |
| J-005 (2) - Body ground | | |




NG → **Repair or replace faulty wire harness**

OK

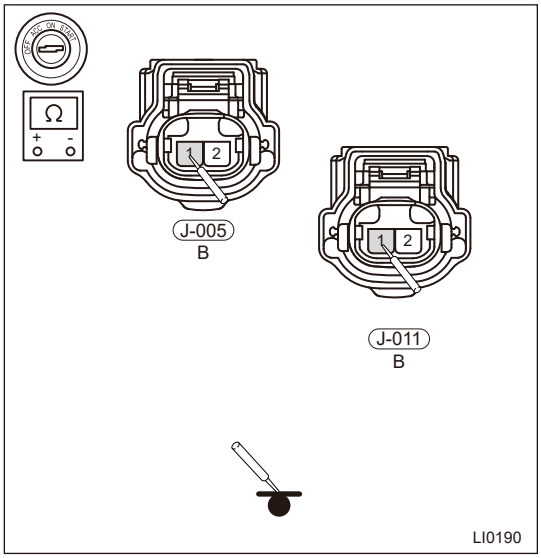
| 7 | Check for continuity of output circuit ground |
|---|---|

(a) Turn ENGINE START STOP switch to OFF.

(b) Disconnect the negative battery cable.

(c) Disconnect the rear fog light connectors J-011 and J-005.

(d) Using a digital multimeter, check for continuity between rear fog light connectors J-011 (1), J-005 (1) and body ground according to table below.




| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| J-011 (1) - Body ground | Always | ⩽ 1 Ω |
| J-005 (1) - body ground | | |

NG → **Repair or replace faulty wire harness**

OK

| 8 | Reconfirm DTCs |
|---|---|

(a) Connect diagnostic tester and clear DTCs.

(b) Run the vehicle as specified procedure. The operating way should meet the conditions for corresponding fault diagnosis.

(c) Read the fault information and confirm that the fault has been solved.

NG → **Replace body control module**

OK → **Conduct test and confirm malfunction has been repaired**

| DTC | B101E-11 | L-DRL Control Circuit-Circuit Short to Ground |
|---|---|---|
| DTC | B101E-13 | L-DRL Control Circuit-Circuit Open |
| DTC | B101F-11 | R-DRL Control Circuit-Circuit Short to Ground |
| DTC | B101F-13 | R-DRL Control Circuit-Circuit Open |

| DTC | DTC Definition | Possible Cause |
|---|---|---|
| B101E-11 | L-DRL Control Circuit-Circuit Short to Ground | • Wire harness or connector damaged<br>• Daytime running light damaged<br>• BCM |
| B101E-13 | L-DRL Control Circuit-Circuit Open | |
| B101F-11 | R-DRL Control Circuit-Circuit Short to Ground | |
| B101F-13 | R-DRL Control Circuit-Circuit Open | |

**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 for output voltage of daytime running light** |
|---|---|

Use circuit diagram as a guide to perform the following inspection procedures:

(a) Turn ENGINE START STOP switch to OFF.

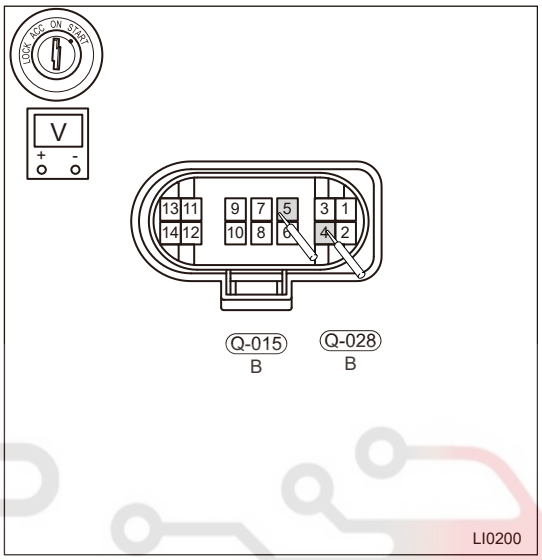
(b) Disconnect the negative battery cable.

(c) Disconnect the daytime running light connectors Q-028 and Q-015.

(d) Connect the negative battery cable.

(e) Turn ENGINE START STOP switch to ON.

(f) Using a digital multimeter, measure voltage between daytime running light connectors Q-028, Q-015 and body ground according to table below.




| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| Q-015 (5) - Q-015 (4) | Always | Not less than 12 V |
| Q-028 (5) - Q-028 (4) | | |

NG → **Replace daytime running light**

OK

| 2 | **Check daytime running light wire harness** |
|---|---|

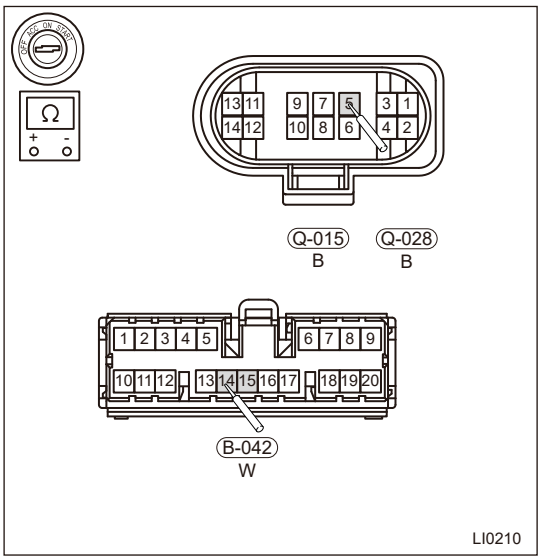
(a) Turn ENGINE START STOP switch to OFF.

(b) Disconnect the negative battery cable.

(c) Disconnect the body controller B-042.

(d) Disconnect the daytime running light connectors Q-015 and Q-028.

(e) Using a digital multimeter, measure the resistance between connectors B-042 (5 - 14), B-042 (5 - 15) and daytime running light connectors Q-015 (5) and Q-028 (5) according to table below.

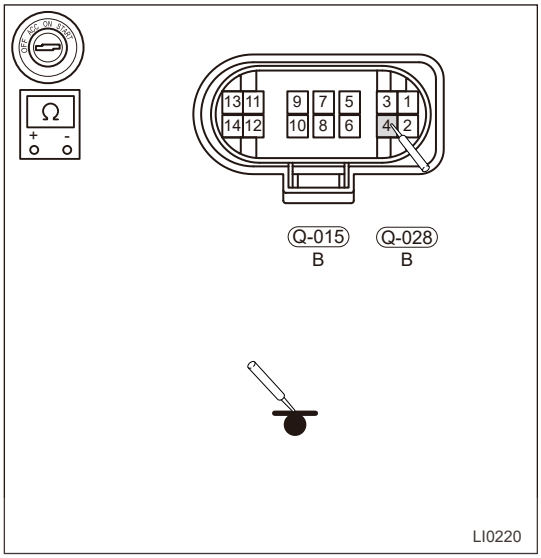



| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| B-042 (5 -14) - Q-028 (5) | Always | ⩽ 1 Ω |

| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| B-042 (5-15) - Q-015 (5) | | |

(f) Using a digital multimeter, measure the resistance between daytime running light connectors Q-015 (1), Q-028 (1) and body ground according to table below.

| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| Q-015 (4) - Body ground | Always | ⩽ 1 Ω |
| Q-028 (4) - Body ground | | |




NG → **Repair or replace faulty wire harness**

OK →

| 3 | Reconfirm DTCs |
|---|---|

(a) Connect diagnostic tester and clear DTCs.

(b) Run the vehicle as specified procedure. The operating way should meet the conditions for corresponding fault diagnosis.

(c) Read the fault information and confirm that the fault has been solved.

NG → **Replace body control module**

OK → **Conduct test and confirm malfunction has been repaired**

| DTC | B1036-11 | H-Brake Light Control Circuit-Circuit Short to Ground |
|---|---|---|
| DTC | B1036-13 | H-Brake Light Control Circuit-Circuit Open |
| DTC | B1035-11 | Brake Light Control Circuit-Circuit Short to Ground |
| DTC | B1035-13 | Brake Light Control Circuit-Circuit Open |

| DTC | DTC Definition | Possible Cause |
|---|---|---|
| B1036-11 | H-Brake Light Control Circuit-Circuit Short to Ground | • Wire harness or connector damaged<br>• Brake light damaged<br>• Brake light switch damaged<br>• Fuse<br>• BCM |
| B1036-13 | H-Brake Light Control Circuit-Circuit Open | |
| B1035-11 | Brake Light Control Circuit-Circuit Short to Ground | |
| B1035-13 | Brake Light Control Circuit-Circuit Open | |

**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** |

Use circuit diagram as a guide to perform the following inspection procedures:

(a) Turn ENGINE START STOP switch to OFF.

(b) Disconnect the negative battery cable.

(c) Remove the fuse EF32 (10A) from engine compartment fuse and relay box.

(d) Check if fuse is blown.

NG → **Replace fuse**

OK

| | |
|---|---|
| **2** | **Check brake light bulb** |

(a) Turn off all electrical equipment and ENGINE START STOP switch.

(b) Disconnect the negative battery cable.

(c) Remove the brake light bulb, and check if bulb filament is blown.

NG → **Replace brake light bulb**

OK

| | |
|---|---|
| **3** | **Check brake switch** |

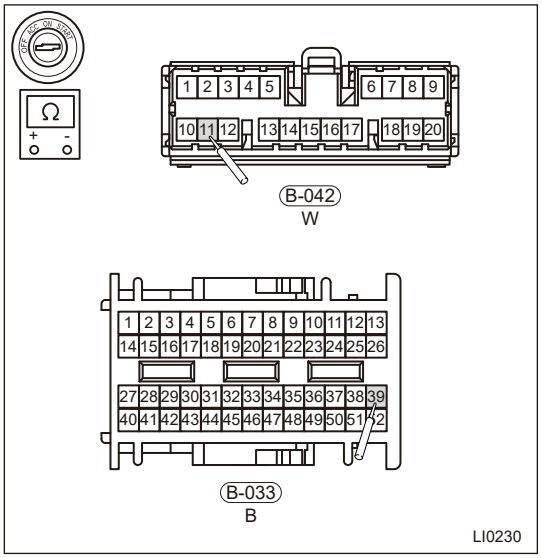
(a) Turn ENGINE START STOP switch to OFF.

(b) Disconnect the negative battery cable.

(c) Disconnect body control module connectors B-033 and B-042.

(d) Using a digital multimeter, measure if resistance between connectors B-033 (1-39) and B-042 (5-11) with brake pedal depressed is normal according to table below.

| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| B-033 (1-39) — B-042 (5-11) | Always | ⩽ 1 Ω |




NG → **Replace brake switch**

OK ↓

| 4 | Using diagnostic tester to perform active test |
|---|---|

(a) Turn ENGINE START STOP switch to ON.

(b) Connect the diagnostic tester, perform active test for brake light.

NG → **Check actuator circuit wire harness**

OK ↓

| 5 | Check brake light control circuit |
|---|---|

(a) Turn ENGINE START STOP switch to OFF.

(b) Disconnect the negative battery cable.

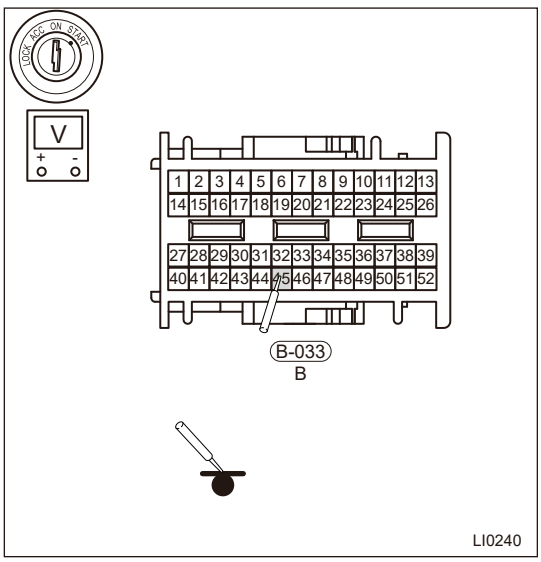
(c) Disconnect the body controller connector B-033.

(d) Connect the negative battery cable.

(e) Turn ENGINE START STOP switch to ON, depress brake pedal.

(f) Using a digital multimeter, measure voltage between body controller connector B-033 (1-39) and body ground according to table below.

| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| B-033 (1-39) - Body ground | Always | Not less than 12 V |

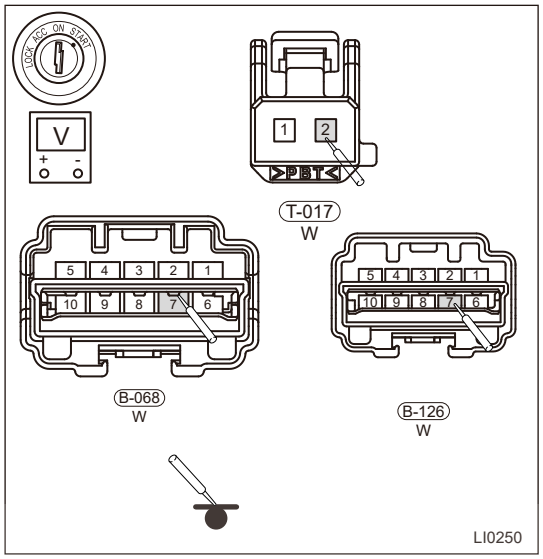



NG → **Repair or replace faulty wire harness**

OK

| 6 | Check brake light output circuit |
|---|---|

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the brake light connectors T-017, B-068 and B-126.
(d) Connect the negative battery cable.
(e) Turn ENGINE START STOP switch to ON.
(f) Using a digital multimeter, measure the voltage between brake light connectors T-017 (2), B-068 (7), B-0126 (7) and body ground according to table below.



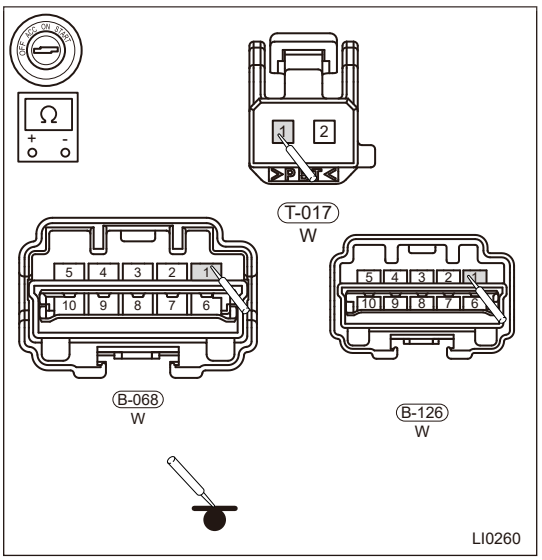

| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| T-017 (2) - Body ground | Always | Not less than 12 V |
| B-068 (7) - Body ground | | |
| B-126 (7) - Body ground | | |

NG → **Repair or replace faulty wire harness**

OK

| 7 | Check for continuity of output circuit ground |
|---|---|

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the brake light connectors T-017, B-068 and B-126.
(d) Using a digital multimeter, check for continuity between brake light connector T-017 (1), B-068 (1), B-0126 (1) and body ground according to table below.




| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| T-017 (1) - Body ground | Always | ⩽ 1 Ω |
| B-068 (1) - Body ground | | |
| B-126 (1) - Body ground | | |

NG → **Repair or replace faulty wire harness**

OK

| | |
|---|---|
| 8 | **Reconfirm DTCs** |

(a) Connect diagnostic tester and clear DTCs.

(b) Run the vehicle as specified procedure. The operating way should meet the conditions for corresponding fault diagnosis.

(c) Read the fault information and confirm that the fault has been solved.

NG → **Replace body control module**

OK → **Conduct test and confirm malfunction has been repaired**

# Diagnostic Information and Steps

| DTC | B1047 62 | RLS Signal Compare Failure |
|---|---|---|

**Description**

| DTC | DTC Definition | Possible Cause |
|---|---|---|
| B1047 62 | RLS Signal Compare Failure | • BCM and BCM software configuration code<br>• Optical Rain Sensor<br>• Wire harness |

**Confirmation Procedure**

Confirm that battery voltage is over 12V before performing following procedures.

- Turn ENGINE START STOP switch to OFF.
- Connect diagnostic tester (the latest software) to diagnostic interface.
- 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.

| 1 | Check rain and light sensor |
|---|---|

(a) Check the vehicle for additional on-board electrical appliances, and disconnect the power to the additional electrical equipment if necessary.

(b) Check rain and light sensor connector for looseness.

NG → **Replace rain and light sensor or reinstall rain and light sensor connector**

OK ↓

| 2 | Check BCM software configuration code |
|---|---|

(c) Contact Chery after-sale department to coordinate the BCM software configuration code of this vehicle.

(d) Turn ENGINE START STOP switch to ON and connect diagnostic tester.

(e) Connect the diagnostic tester to read whether the ECM and CLM configuration codes are correct.

NG → **Write the correct software configuration code**

OK ↓

| 3 | Reconfirm DTCs |
|---|---|

(a) Connect diagnostic tester and clear DTCs.

(b) Run the vehicle as specified procedure. The operating way should meet the conditions for corresponding fault diagnosis.

(c) Read the fault information and confirm that the fault has been solved.

NG → **Replace with a new BCM to check if fault reoccurs.**

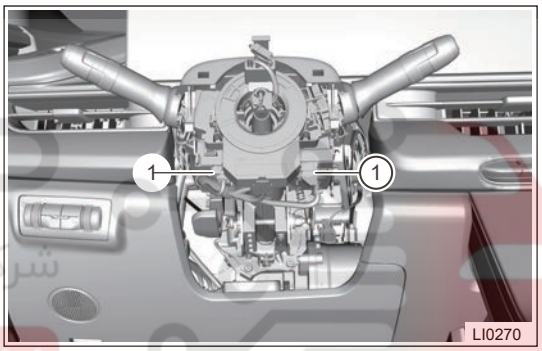
OK → **Conduct test and confirm malfunction has been repaired**

# ON-VEHICLE SERVICE

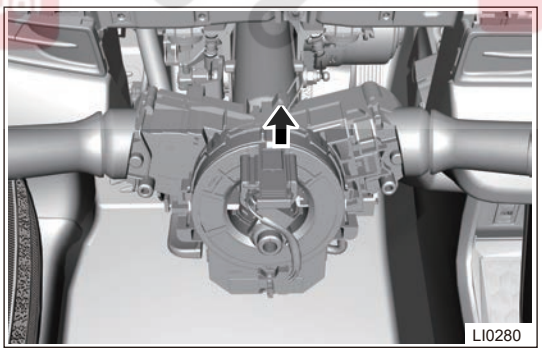
## Combination Light Switch Assembly

### Removal

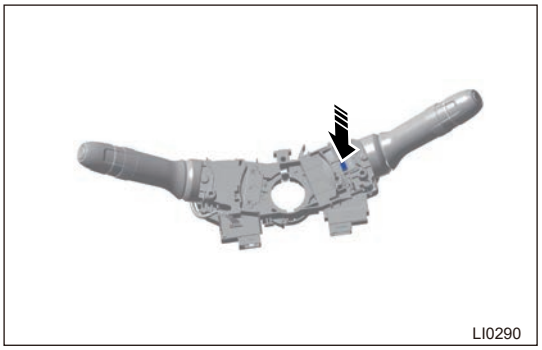
1. Turn off all electrical equipment and ENGINE START STOP switch.
2. Disconnect the negative battery cable
3. Remove the driver airbag
4. Remove the steering wheel.
5. Remove the combination switch cover.
6. Remove the spiral cable assembly.
7. Remove the combination switch assembly.
   a. Disconnect combination light switch connector (1) and wiper switch connector (2).




   b. Loosen combination switch fixing clamp (arrow), pull combination switch outward, then disconnect combination switch from steering column to remove combination switch.



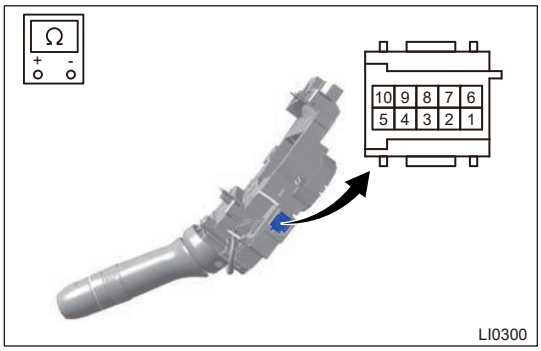

   c. Loosen wiper switch fixing clip (arrow) and remove combination light switch.



## Inspection

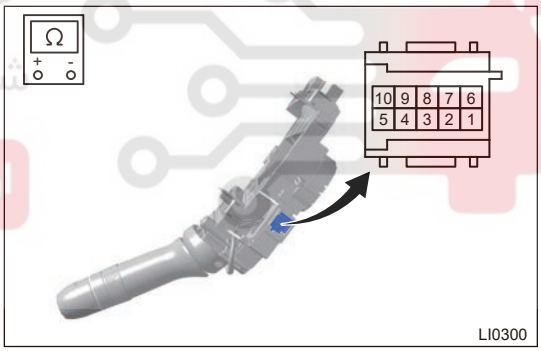
1. Check the combination light switch.

a. Using ohm band of digital multimeter, measure resistance between terminals as shown in table. Combination light switch assembly (position light/low beam light/high beam light switch)




| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| Terminal 8 - Terminal 2 | Switch in OFF position | ∞ |
| Terminal 8 - Terminal 2 | Switch in position light position | 3000 Ω |
| Terminal 8 - Terminal 2 | Switch in low beam position | 1000 Ω |
| Terminal 9 - Terminal 2 | Switch in high beam position | 1000 Ω |
| Terminal 9 - Terminal 2 | Switch in overtaking light position | 3000 Ω |

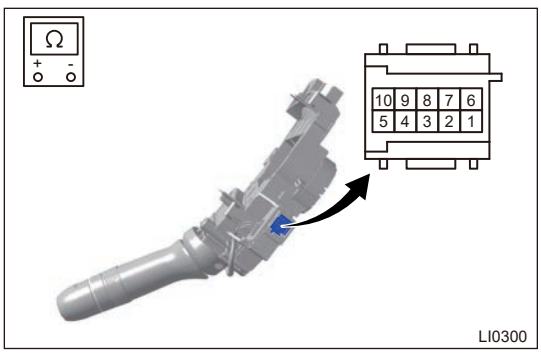
b. Using ohm band of digital multimeter, check for continuity between terminals as shown in table. Combination light switch assembly (rear fog light switch)




| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| Terminal 3 - Terminal 2 | Switch in rear fog light position | ⩽ 1 Ω |
| Terminal 3 - Terminal 2 | Switch in OFF position | ∞ |

If result is not as specified, replace combination light switch assembly.

c. Using ohm band of digital multimeter, measure resistance between terminals as shown in table. Combination light switch assembly (turn signal light switch)




| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| Terminal 10 - Terminal 2 | Switch in left turn position | 1000 Ω |
| Terminal 10 - Terminal 2 | Switch in right turn position | 3000 Ω |

If result is not as specified, replace combination light switch assembly.

### Installation

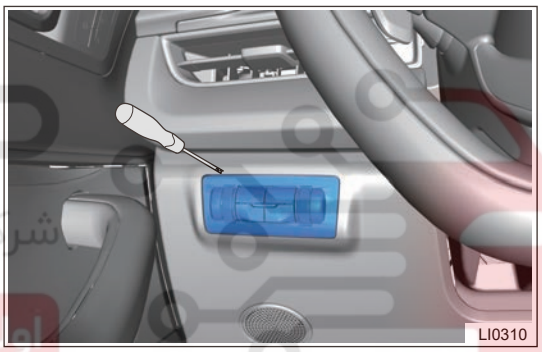
| CAUTION |
| --- |
| • Always install spiral cable correctly according to specified operating instructions.<br>• Check that horn operates normally after installation.<br>• Check SRS warning light after installation, and make sure that supplemental restraint system operates normally. |

1. Installation is in the reverse order of removal.

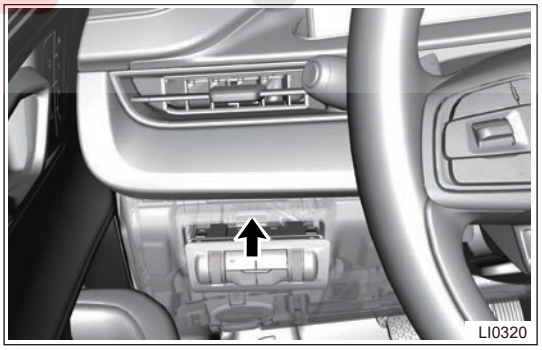
## Headlight Leveling Switch Assembly

### Removal

1. Turn off all electrical equipment and ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the headlight leveling switch assembly.
   a. Using a screwdriver wrapped with protective tape, carefully pry off headlight leveling switch assembly.




   b. Disconnect headlight leveling switch wire harness connector (arrow), and remove headlight leveling switch assembly.

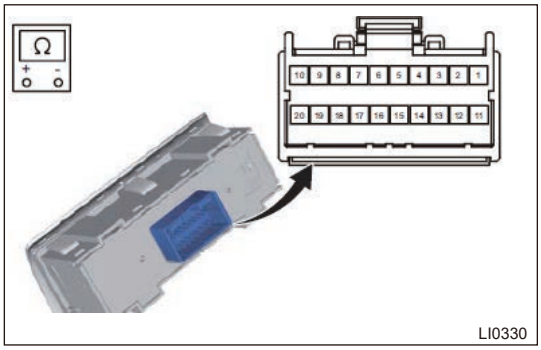



### Inspection

1. Check the headlight leveling switch.

a. Check the resistance of headlight leveling switch.
Standard Condition

| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| Terminal 2 - Terminal 13 | Headlight leveling switch (0 to 3 bands) turned | Resistance value increases gradually |
| Terminal 13 - Terminal 12 | | Resistance value decreases gradually |
| Terminal 2 - Terminal 12 | | Resistance value does not change |




### Installation

1. Installation is in the reverse order of removal.

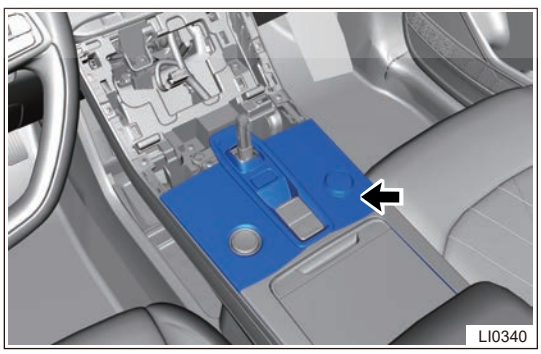
## Warning Light Switch

### Removal

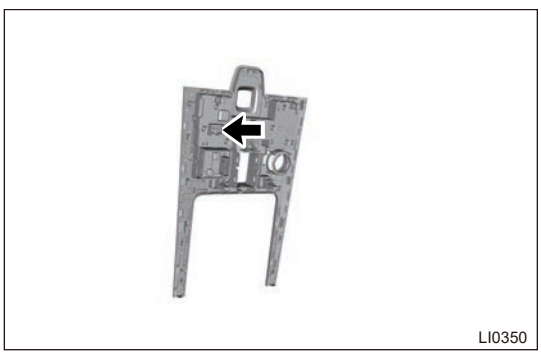
**Hint:**
Warning light switch is installed on the center console switch assembly and it cannot be disassembled.

1. Turn off all electrical equipment and ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the warning light switch.

a. Using an interior crow plate, carefully pry off auxiliary fascia console control panel assembly (arrow).




b. Disconnect wire harness connector (arrow) from warning light switch.



c. Remove the warning light switch.

### Installation

1. Installation is in the reverse order of removal.

## Headlight Assembly

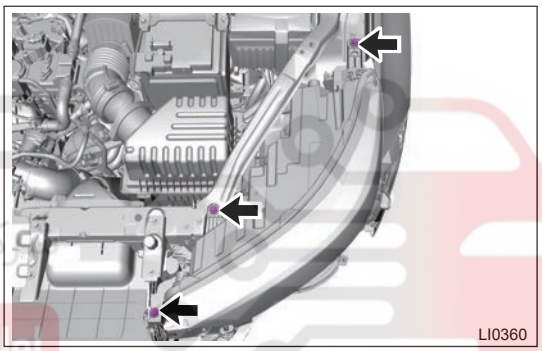
### Removal

**Hint:**
Use same procedures for right headlight assembly and left headlight assembly. Operation procedures listed below are for left headlight assembly.

1. Turn off all electrical equipment and ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the front bumper assembly.
4. Remove the headlight assembly.

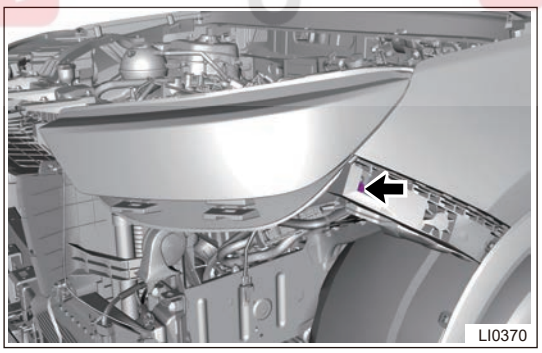
a. Remove 3 fixing bolts from upper part of headlight assembly.

**Tightening Torque**
3.5 ± 0.5 N m

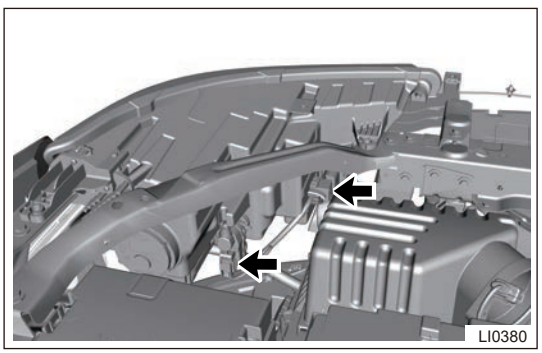



b. Remove 1 fixing bolt (arrow) from lower part of headlight assembly.

**Tightening Torque**
3.5 ± 0.5 N m




c. Disconnect wire harness connector (arrow) from headlight assembly and remove headlight assembly.



### Installation

| CAUTION |
| --- |
| • When installing headlight assembly, make sure headlight assembly is well fitted with hood, front wing and front bumper. Adjust it as necessary. |

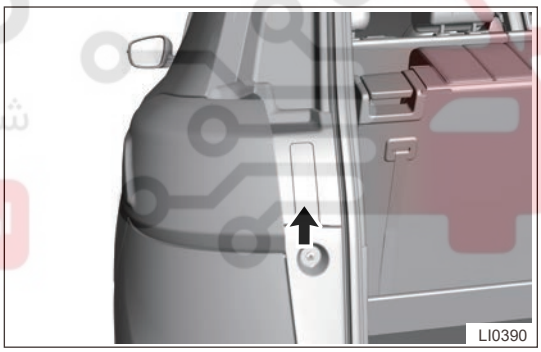
1. Installation is in the reverse order of removal.

## Rear Combination Light Assembly (Fixed Part)

### Removal

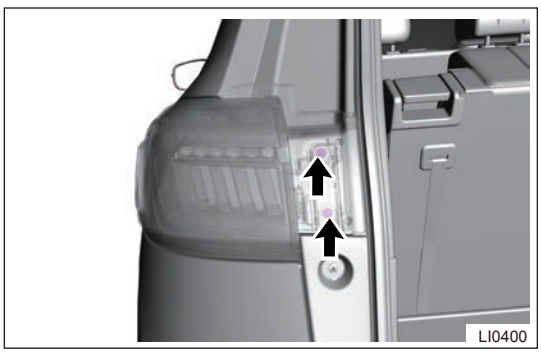
| HINT |
| --- |
| • Use same procedures for rear right combination light assembly (fixed part) and rear left combination light assembly (fixed part).<br>• Procedures listed below are for rear left combination light assembly (fixed part). |

1. Turn off all electrical equipment and ENGINE START STOP switch.
2. Disconnect the negative battery cable
3. Remove the rear combination light assembly (fixed part).
   a. Using a screwdriver wrapped with protective tape, pry off rear left combination light plugs (arrow).




   b. Remove 2 fixing screws from rear left combination light assembly, and disconnect rear left combination light connector.

**Tightening Torque**
1.5 ± 0.5 N m




   c. Remove the rear left combination light assembly (fixed part).

### Installation

| CAUTION |
| --- |
| • When installing rear combination light assembly (fixed part), make sure rear combination light assembly is well fitted with luggage compartment and rear bumper. Adjust it as necessary. |

1. Installation is in the reverse order of removal.

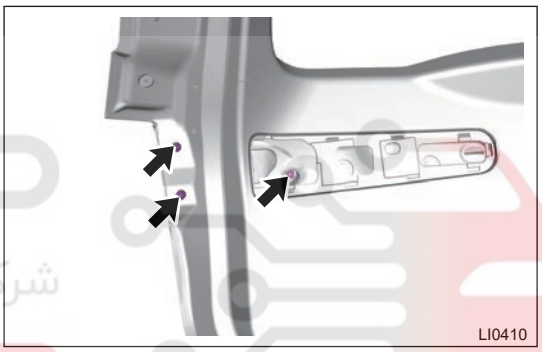
## Rear Combination Light Assembly (Movable Part)

### Removal

| HINT |
| --- |
| • Use same procedures for rear right combination light assembly (movable part) and rear left combination light assembly (movable part).<br>• Operation procedures listed below are for rear left combination light assembly (movable part). |

1. Turn off all electrical equipment and ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the rear combination light assembly (movable part).
   a. Using a screwdriver wrapped with protective tape, pry off plug from back door.
   b. Remove 3 fixing nuts (arrow) from rear left combination light assembly (movable part).

**Tightening Torque**
3.5 ± 0.5 N m




   c. Disconnect wire harness connector from rear combination light assembly (movable part) and remove rear left combination light assembly (movable part).

### Installation

| CAUTION |
| --- |
| • When installing rear combination light assembly (movable part), make sure rear combination light assembly is well fitted with luggage compartment and rear bumper. Adjust it as necessary. |

1. Installation is in the reverse order of removal.

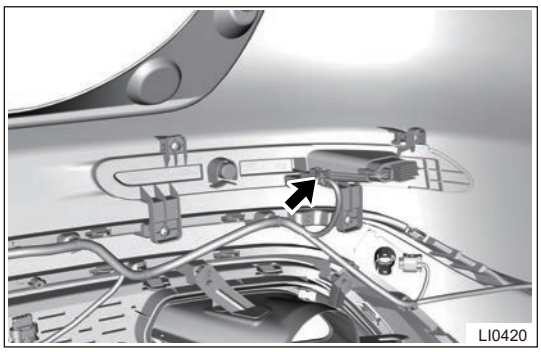
## Rear Fog Light Assembly

### Removal

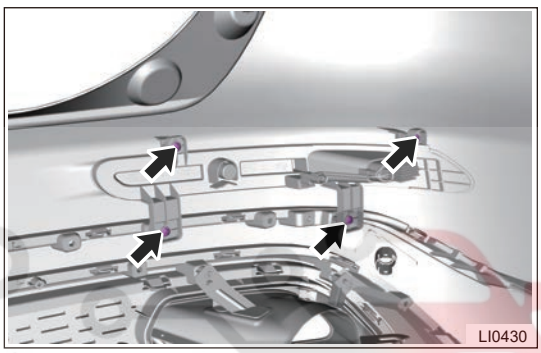
| HINT |
| --- |
| • Use same removal procedures for rear left fog light assembly and rear right fog light assembly.<br>• Removal procedures listed below are for rear left fog light assembly. |

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

3. Raise vehicle on a lift.
4. Remove the rear bumper assembly.
5. Remove the rear left fog light assembly.
   a. Disconnect the left rear fog light connector (arrow).




   b. Remove 4 fixing screws (arrow) from rear left fog light assembly.




**Tightening Torque**
1.5 ± 0.5 N m

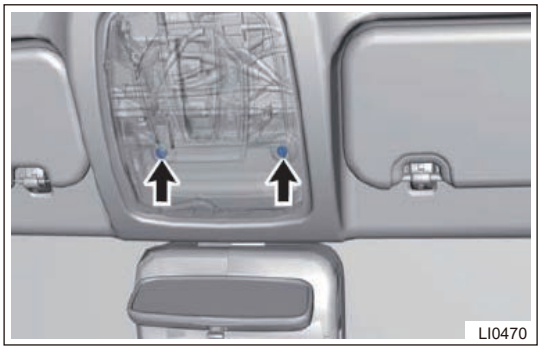
   c. Remove the rear left fog light assembly.

### Installation
1. Installation is in the reverse order of removal.

## Front Dome Light Assembly

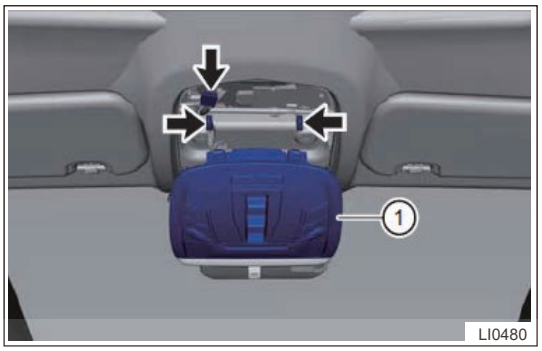
### Removal
1. Turn off all electrical equipment and ENGINE START STOP switch.
2. Disconnect the negative battery cable
3. Remove the front dome light assembly.
   a. Open the glasses box (arrow) on front dome light as shown in illustration.

b. Remove 2 fixing screws (arrow) from front dome light assembly.




**Tightening Torque**
2.5 ± 0.5 N m

c. Disconnect each wire harness connector (arrow) and remove interior dome light assembly (1).




### Installation

1. Installation is in the reverse order of removal.

## Second Row Dome Light

### Removal

| HINT |
| --- |
| • Use same procedures for second row left dome light and second row right dome light. Operation procedures listed below are for second row left dome light. |

1. Turn off all electrical equipment and ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the second row dome light.
   a. Push light towards switch direction with force, remove rear dome light after detaching one side clips.
   b. Disconnect second row dome light connector and remove second row dome light.

### Installation

1. Installation is in the reverse order of removal.

## 3rd Row Dome light

### Removal

1. Turn off all electrical equipment and ENGINE START STOP switch.

2. Disconnect the negative battery cable

3. Remove the 3rd row dome light.
   a. Push light towards front of vehicle with force, remove rear dome light after detaching one side clips.
   b. Disconnect the 3rd row dome light connector and remove 3rd row dome light.

### Installation

1. Installation is in the reverse order of removal.

## Front Door Ambient Light

### Removal

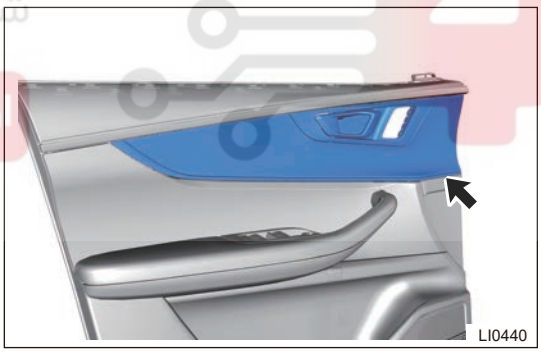
**Hint:**
Use same operation procedures for front left door ambient light and front right door ambient light. Operation procedures listed below are for front left door ambient light.

1. Turn off all electrical equipment and ENGINE START STOP switch.

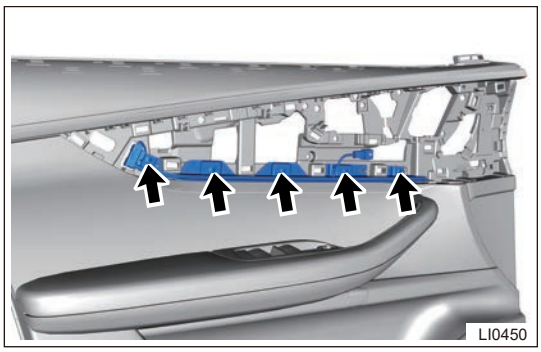
2. Disconnect the negative battery cable.

3. Remove the front door protector assembly.

4. Remove the front left door ambient light.
   a. Pry off protector of front left door upper inner handle switch.




   b. Disconnect connector and remove 5 fixing screws and front left door ambient light.




### Installation

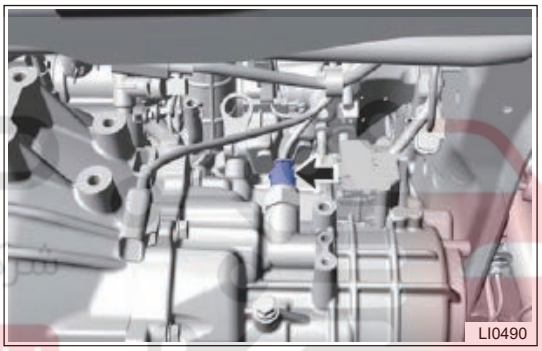
1. Installation is in the reverse order of removal.

# Back-up Light Switch Assembly

## Removal

| CAUTION |
| --- |
| • Be sure to wear necessary safety equipment to prevent accidents, when removing back-up light switch.<br>• Check if safety lock of lift is locked when repairing or inspecting the lifted vehicle. |

1. Turn off all electrical equipment and ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Raise the vehicle with a lift.
4. Remove the engine lower protector.
5. Remove the back-up light switch assembly.
   a. Disconnect wire harness connector (arrow) from back-up light switch assembly.




   b. Remove the back-up light switch assembly.

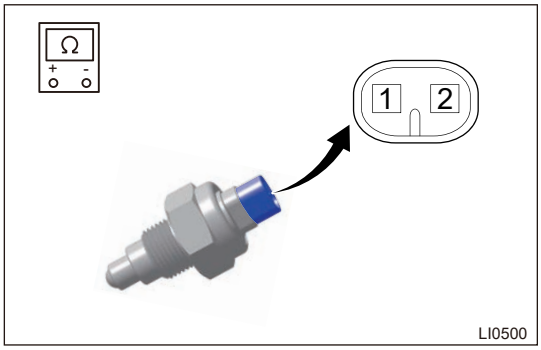
**Tightening Torque**
44 ± 8.8 N m

| CAUTION |
| --- |
| • Transmission oil may flow out when removing back-up light switch assembly. Recycle it with a appropriate tool. |

## Inspection

1. Check the back-up light switch assembly.

a. Using the ohm band of digital multimeter, check for continuity between terminals of back-up light switch assembly as shown in the table.




| Multimeter Connection | Condition | Specified Condition |
|---|---|---|
| Terminal 1 - Terminal 2 | Switch pressed | ⩽ 1 Ω |
| Terminal 1 - Terminal 2 | Switch released | ∞ |

If result is not as specified, replace back-up light switch assembly.

### Installation

| CAUTION |
|---|
| **Before installing back-up light switch assembly, apply thread adhesive on thread to remove transmission oil on contact part between transmission and back-up light switch assembly; then firmly install back-up light switch assembly.** |

1. Installation is in the reverse order of removal.

## License Plate Light Assembly

### Removal

| CAUTION |
|---|
| • Operation steps of right license plate light are same as that of left license plate light. Procedures listed below are for left side. |

1. Open the back door.
2. Turn off all electrical equipment and ENGINE START STOP switch.
3. Disconnect the negative battery cable.
4. Remove the license plate light assembly.

a. Using a screwdriver wrapped with protective tape to pry off left license plate light, disconnect left license plate light connector to remove left license plate light assembly.


b. Remove the left license plate light assembly.

### Installation

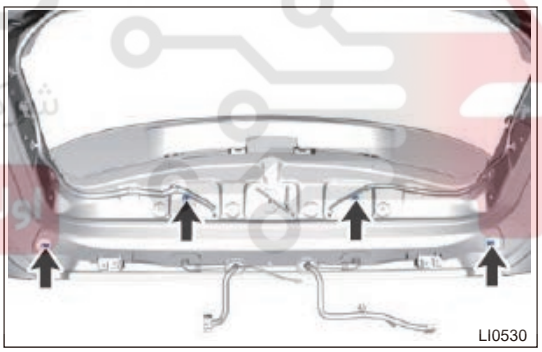
1. Installation is in the reverse order of removal.

# High Mounted Stop Light Assembly

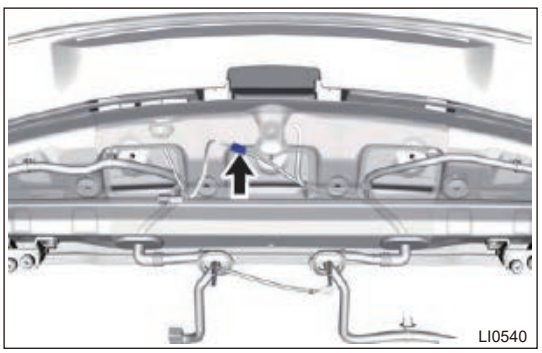
## Removal

1. Open the back door.
2. Turn off all electrical equipment and ENGINE START STOP switch.
3. Disconnect the negative battery cable.
4. Remove back door upper protector assembly.
5. Remove the high mounted stop light assembly.
   a. Remove 2 rubber plugs (arrow) from back door.


   b. Remove 4 spoiler fixing nuts (arrow) from back door.
      **Tightening Torque**
      5 ± 1 N m




   c. Disconnect the high mounted stop light connector (arrow).




   d. Remove rear spoiler plate from back door.

e. Remove 4 fixing screws (arrow) of high mounted stop light from rear spoiler plate, and remove high mounted stop light.

**Tightening Torque**
2 ± 0.5 N m


## Installation

1. Installation is in the reverse order of removal.