SECTION EXL
EXTERIOR LIGHTING SYSTEM

CONTENTS

PRECAUTION

PRECAUTIONS

Precaution for Technicians Using Medical Electric

INFOID:0000000007077535

OPERATION PROHIBITION

WARNING:

- **Parts with strong magnet is used in this vehicle.**
- **Technicians using a medical electric device such as pacemaker must never perform operation on the vehicle, as magnetic field can affect the device function by approaching to such parts.**

NORMAL CHARGE PRECAUTION

WARNING:

- **If a technician uses a medical electric device such as an implantable cardiac pacemaker or an implantable cardioverter defibrillator, the possible effects on the devices must be checked with the device manufacturer before starting the charge operation.**
- **As radiated electromagnetic wave generated by on board charger at normal charge operation may effect medical electric devices, a technician using a medical electric device such as implantable cardiac pacemaker or an implantable cardioverter defibrillator must not enter the vehicle compartment (including luggage room) during normal charge operation.**

Precaution at telematics system operation

WARNING:

- **If a technician uses implantable cardiac pacemaker or implantable cardioverter defibrillator (ICD), avoid the device implanted part from approaching within approximately 220 mm (8.66 in) from interior/exterior antenna.**
- **The electromagnetic wave of TCU might affect the function of the implantable cardiac pacemaker or the implantable cardioverter defibrillator (ICD), when using the service, etc.**
- **If a technician uses other medical electric devices than implantable cardiac pacemaker or implantable cardioverter defibrillator(ICD), the electromagnetic wave of TCU might affect the function of the device. The possible effects on the devices must be checked with the device manufacturer before TCU use.**

Precaution at intelligent key system operation

WARNING:

- **If a technician uses implantable cardiac pacemaker or implantable cardioverter defibrillator (ICD), avoid the device implanted part from approaching within approximately 220 mm (8.66 in) from interior/exterior antenna.**
- **The electromagnetic wave of intelligent key might affect the function of the implantable cardiac pacemaker or the implantable cardioverter defibrillator (ICD), at door operation, at each request switch operation, or at engine starting.**
- **If a technician uses other medical electric devices than implantable cardiac pacemaker or implantable cardioverter defibrillator (ICD), the electromagnetic wave of intelligent key might affect the function of the device. The possible effects on the devices must be checked with the device manufacturer before intelligent key use.**

Point to Be Checked Before Starting Maintenance Work

INFOID:0000000007079483

The high voltage system may starts automatically. It is required to check that the timer air conditioner and timer charge (during EVSE connection) are not set before starting maintenance work.
NOTE:
If the timer air conditioner or timer charge (during EVSE connection) is set, the high voltage system starts automatically even when the power switch is in OFF state.

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:0000000007039727

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS

system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the “SRS AIR BAG” and “SEAT BELT” of this Service Manual.

WARNING:

Always observe the following items for preventing accidental activation.

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see “SRS AIR BAG”.**
- **Never use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.**

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

Always observe the following items for preventing accidental activation.

- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the power switch ON, never use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the power switch OFF, disconnect the 12V battery, and wait at least 3 minutes before performing any service.**

Precaution for Removing 12V Battery

INFOID:0000000007070149

When removing the 12V battery, turn ON/OFF the power switch and check that the charging status indicator does not blink. The 12V battery must be removed within one hour after checking the indicator lamp.

NOTE:

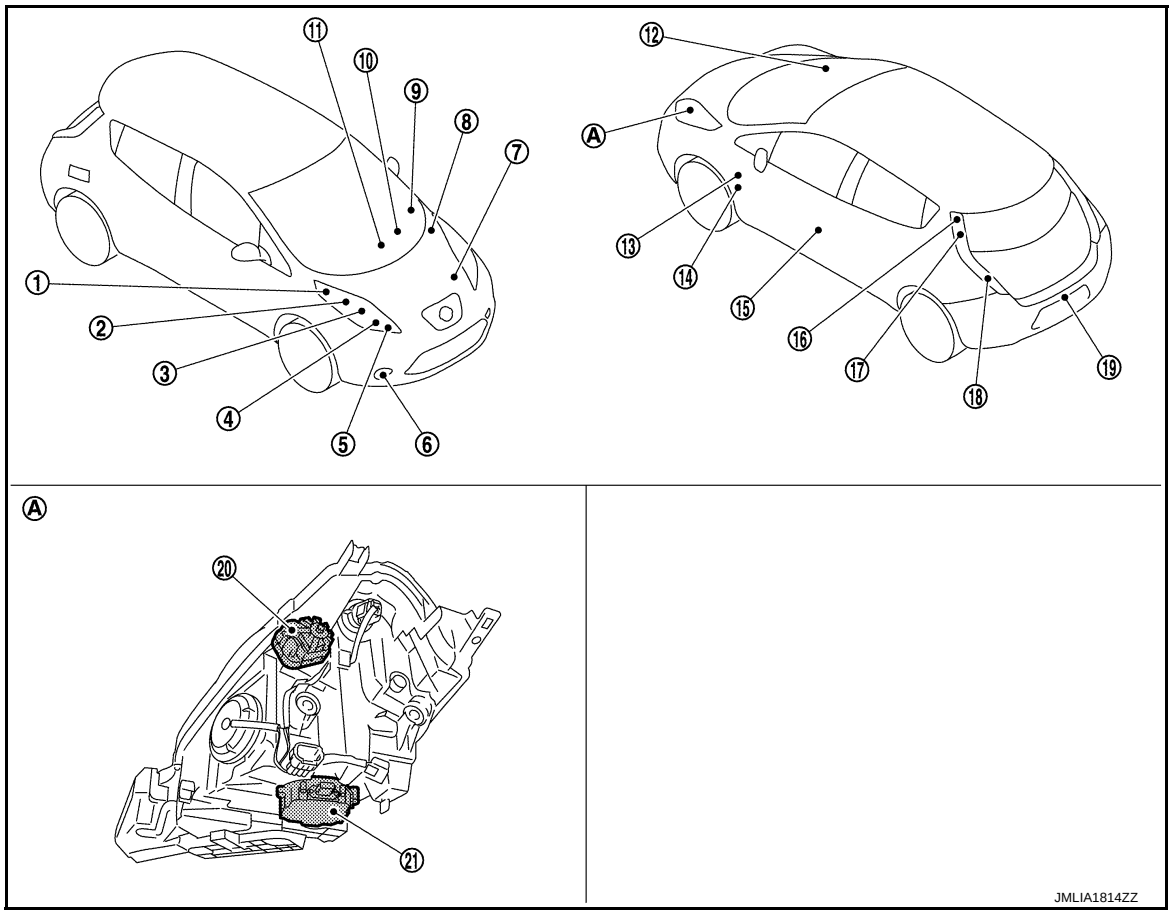
- The automatic 12V battery charge control may start even when the power switch is in OFF state.
- The automatic 12V battery charge control does not start within approximately one hour when the power switch is turned ON/OFF.

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000006893296



A. Front combination lamp (back)

No.	Part	Function
1.	Front side marker lamp	Refer to EXL-8, "Bulb Specifications".
2.	Front turn signal lamp	Refer to EXL-8, "Bulb Specifications".
3.	Headlamp LO (LED headlamp)	Refer to EXL-7, "LED Headlamp".
4.	Headlamp HI	Refer to EXL-8, "Bulb Specifications".
5.	Parking lamp	Refer to EXL-8, "Bulb Specifications".
6.	Front fog lamp	Refer to EXL-8, "Bulb Specifications".
7.	IPDM E/R	• Controls the integrated relay, and supplies voltage to the load according to the request from BCM (via CAN communication). • Refer to PCS-5, "Component Parts Location" for detailed installation location.

No.	Part	Function
8.	BCM	• Detects each switch condition by the combination switch reading function • Judges that the exterior lamps are turned ON according to the vehicle condition • Requests the headlamp relay (HI/LO), tail lamp relay and front fog lamp relay ON to IPDM E/R (via CAN communication) • Requests the high beam indicator lamp, tail lamp indicator lamp and front fog lamp indicator lamp ON to the combination meter (via CAN communication) • Judges the outside brightness from the optical sensor signal. • Judges the ON/OFF timing according to the vehicle condition. • Judges the ON/OFF status of the exterior lamp according to the outside brightness and the vehicle condition. • Refer to BCS-5, "BODY CONTROL SYSTEM : Component Parts Location" for detailed installation location.
9.	Combination switch (Lighting & turn signal switch)	Refer to BCS-7, "COMBINATION SWITCH READING SYSTEM : System Description".
10.	Combination meter	• Blinks the turn signal indicator lamp and outputs the turn signal operating sound with integrated buzzer according to the request from BCM (via CAN communication). • Turns the tail lamp indicator lamp, high beam indicator lamp, front fog lamp indicator lamp and rear fog lamp indicator lamp ON according to the request from BCM (via CAN communication). • Inputs headlamp warning lamp signal from LED headlamp control module and turns headlamp warning lamp ON.
11.	Hazard switch	Inputs the hazard switch ON/OFF signal to BCM.
12.	Optical sensor	Optical sensor converts the outside brightness (lux) to voltage and transmits the optical sensor signal to BCM.
13.	Headlamp aiming switch	Adjusts height of headlamp aiming.
14.	Side turn signal lamp	Refer to EXL-8, "Bulb Specifications".
15.	Front door switch (driver side)	Refer to DLK-12, "Component Parts Location".
16.	Rear side marker lamp	Refer to EXL-8, "Bulb Specifications".
17.	Tail lamp	Refer to EXL-8, "Bulb Specifications".
18.	Rear turn signal lamp	Refer to EXL-8, "Bulb Specifications".
19.	License plate lamp	Refer to EXL-8, "Bulb Specifications".
20.	Headlamp aiming motor	The headlamp levelizer adjusts the headlamp light axis upward and downward with the aiming motor integrated in the front combination lamp.
21.	LED headlamp control module	• Headlamp (LO) circuit is connected to LED headlamp control module integrated in the headlamp. • Headlamp (LO) circuit turns LED headlamp ON. • Outputs the headlamp warning lamp signal to the combination meter.

LED Headlamp

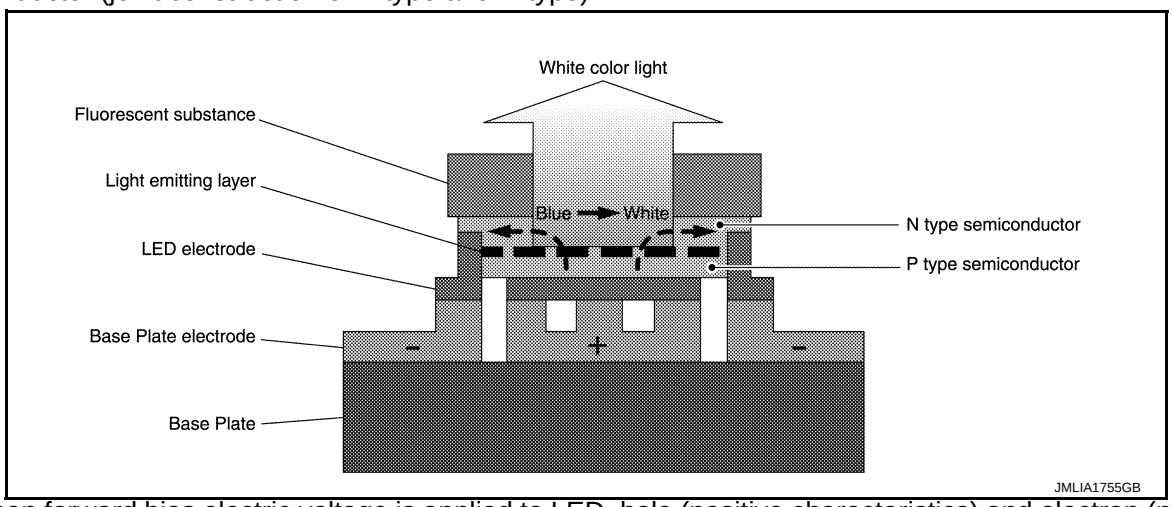
INFOID:0000000006933062

OUTLINE

- Semiconductor device (Light emitting diode: LED), which is illuminated when forward bias electric voltage is applied, is adopted as the source of light instead of halogen bulb or xenon bulb.
- Comparing to halogen headlamp or xenon headlamp, LED headlamp is electrically power saving, durable, and is illuminated in the similar color to the sunlight. Bright, natural, and eye-friendly visibility can be obtained.

ILLUMINATION PRINCIPLE

White LED emits the white light through fluorescent substance on luminescent surface of blue LED using semiconductor (joint construction of P type and N type).



1. When forward bias electric voltage is applied to LED, hole (positive characteristics) and electron (negative characteristics) move toward each electrode, and electric current flows.
2. Hole and electron move inside of semiconductor crystal and are connected (re-connection) again at connecting portion. A part of energies that is produced at this moment is emitted as the light.

PRECAUTIONS FOR TROUBLE DIAGNOSIS

Representative malfunction examples are; “Light does not turn ON”, “Light blinks”, and “Brightness is inadequate.” Such malfunctions, however, occasionally by occur LED control module malfunction or lamp case malfunction. Specify the malfunctioning part with diagnosis procedure.

CAUTION:

- **Never touch the harness, LED headlamp control module, the inside and metal part of lamp when turning the headlamp ON or operating the lighting switch, for preventing electrical shock.**
- **Never work with wet hands, for preventing electrical shock.**
- **Never perform LED headlamp control module circuit diagnosis with a circuit tester or an equivalent.**
- **Temporarily install the headlamps on the vehicle. Always connect power supply to the connector (vehicle side) when checking ON/OFF status.**
- **Disconnect the 12V battery negative terminal before disconnecting the lamp socket connector or the harness connector.**
- **Check for fusing of the fusible link(s), open around connector, short, disconnection if the symptom is caused by electric error.**
- **Always check for deformation or hole of headlamp housing and engagement of bulb cover. Otherwise, water may enter into headlamp because of damage of headlamp housing and contact to LED headlamp control module connector. The normal operation may be inhibited when short circuit to power supply is detected.**

NOTE:

Turn the switch OFF once before turning ON, if the ON/OFF is inoperative.

Bulb Specifications

INFOID:0000000007013455

Item		Type	Wattage (W)
Front combination lamp	Headlamp (HI)	H9 (Halogen)	65
	Headlamp (LO)	LED	—
	Front turn signal lamp	3457NAK (Amber)	21
	Parking lamp	W5W	5
Front side maker lamp		W5W	5
Front fog lamp		H11	55
Side turn signal lamp		WY5W (Amber)	5

Item		Type	Wattage (W)
Rear combination lamp	Stop lamp/Tail lamp	LED	—
	Rear turn signal lamp	WY21W (Amber)	21
	Back-up lamp	W16W	16
	Rear side maker lamp	LED	—
License plate lamp		W5W	5
High-mounted stop lamp		LED	—

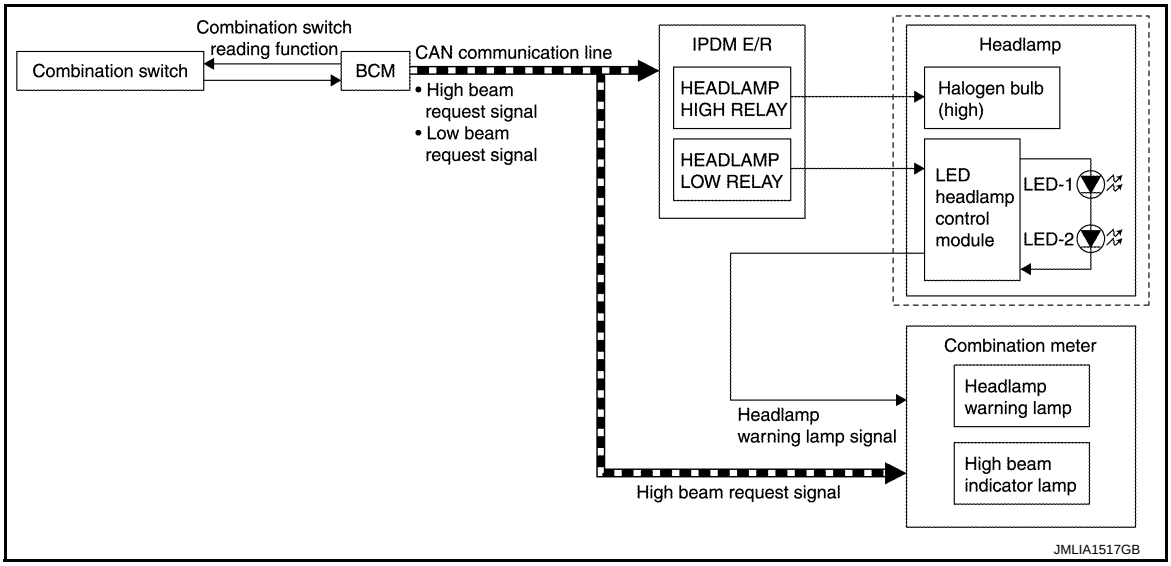
SYSTEM

HEADLAMP SYSTEM

HEADLAMP SYSTEM : System Description

INFOID:0000000006893300

SYSTEM DIAGRAM



OUTLINE

Headlamp is controlled by combination switch reading function and headlamp control function of BCM, and relay control function of IPDM E/R.

HEADLAMP (LO) OPERATION

- BCM detects the combination switch condition with the combination switch reading function.
- BCM transmits the low beam request signal to IPDM E/R with CAN communication according to the headlamp (LO) ON condition.

Headlamp (LO) ON condition
- Lighting switch 2ND
- Lighting switch AUTO (auto light function ON judgment)
- Lighting switch AUTO, with the front fog lamp switch ON and the power switch ON
- Lighting switch PASS

- IPDM E/R turns integrated headlamp low relay ON according to low beam request signal and supplies power supply to LED headlamp control module.
- LED headlamp control module turns the headlamp (LO) ON according to the power supply from IPDM E/R.

HEADLAMP (HI) OPERATION

- BCM transmits the high beam request signal to IPDM E/R and the combination meter with CAN communication according to the headlamp (HI) ON condition.

Headlamp (HI) ON condition
- Lighting switch HI with the lighting switch 2ND or AUTO (auto light function ON judgment)
- Lighting switch PASS
- Lighting switch AUTO, with the front fog lamp switch ON, the power switch ON and lighting switch HI

- Combination meter turns the high beam indicator lamp ON according to the high beam request signal.
- IPDM E/R turns the integrated headlamp high relay ON, and turns the headlamp ON according to the high beam request signal.

HEADLAMP WARNING LAMP OPERATION

- LED headlamp control module outputs the headlamp warning lamp signal to combination meter when the following malfunction is detected.
- LED
- LED headlamp control module
- Circuit between LED headlamp control module and LED.
- Circuit between LED headlamp control module and combination meter.

- Combination meter turns the headlamp warning lamp ON according to the headlamp waning lamp signal inputs.

NOTE:

Headlamp LO may turns ON while headlamp warning lamp is turned ON, because 2 pieces of LED are used so that headlamp may continuously turn ON even if one of LED is not operative.

HEADLAMP SYSTEM : Schematic

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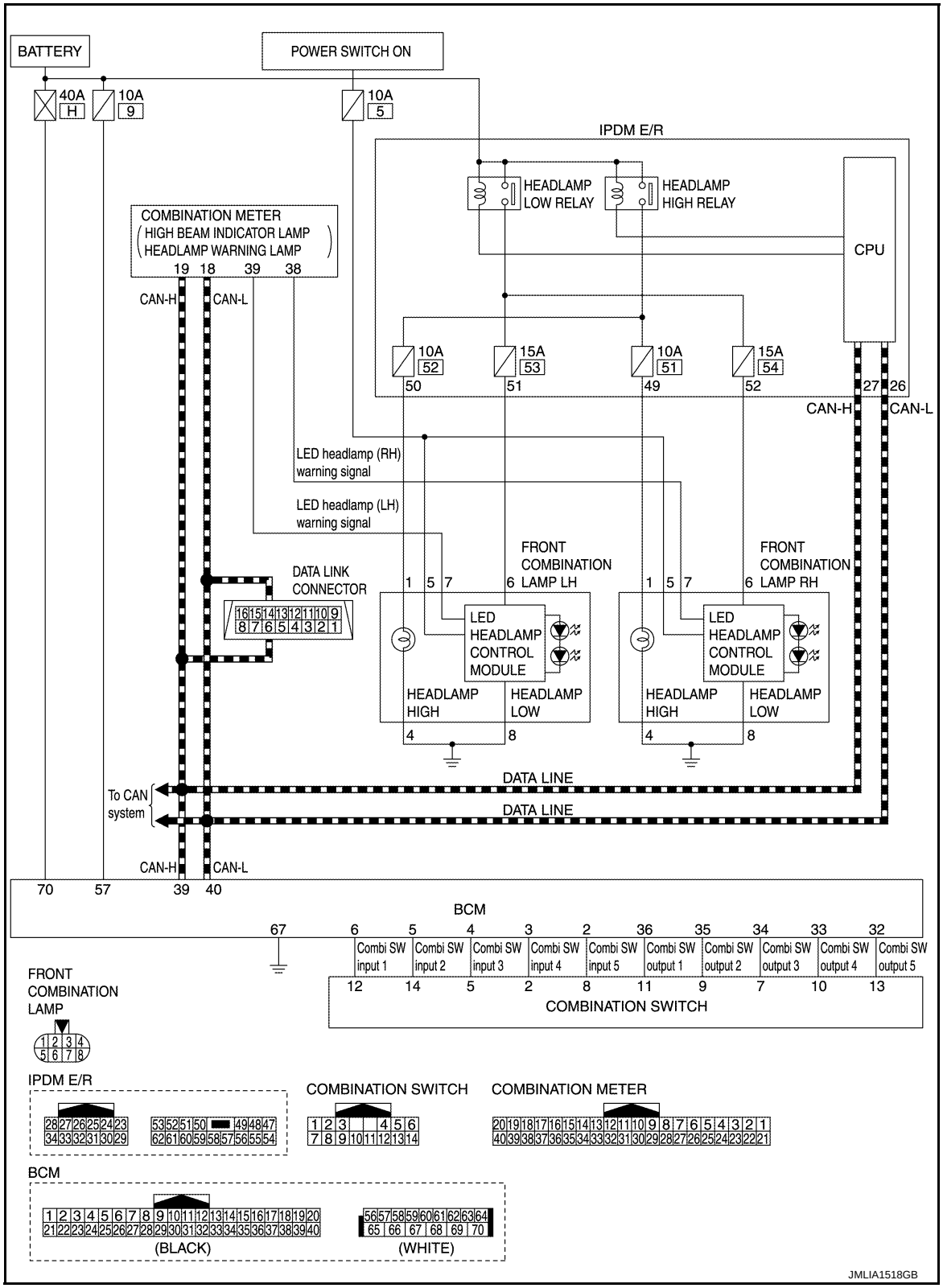


HEADLAMP SYSTEM : Fail-Safe

INFOID:0000000007010674

CAN COMMUNICATION CONTROL

When CAN communication with BCM is impossible, IPDM E/R performs fail-safe control. After CAN communication recovers normally, it also returns to normal control.

If No CAN Communication Is Available With BCM

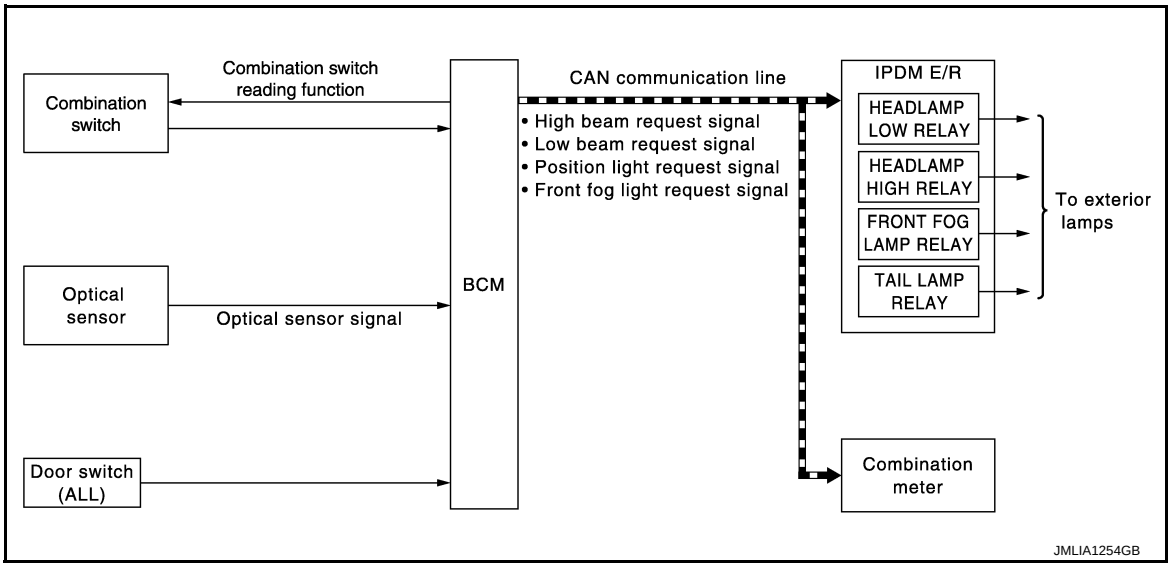
Control part	Fail-safe operation
Headlamp	• Turns ON the headlamp low relay when the power switch is turned ON • Turns OFF the headlamp low relay when the power switch is turned OFF • Headlamp high relay OFF

AUTO LIGHT SYSTEM

AUTO LIGHT SYSTEM : System Description

INFOID:0000000006893444

SYSTEM DIAGRAM



OUTLINE

• Auto light system is controlled by each function of BCM and IPDM E/R.

Control by BCM

- Combination switch reading function
- Headlamp control function
- Auto light function
- Delay timer function
- Wiper linked auto lighting function
- Auto light adjustment system

Control by IPDM E/R

- Relay control function

• Auto light system has the auto light function (with twilight lighting function), wiper linked auto lighting function and delay timer function.

- Auto light function automatically turns ON/OFF the exterior lamps* and each illumination automatically, depending on the outside brightness.
- Wiper linked auto lighting function automatically turns ON/OFF the exterior lamps* and each illumination when the light switch is in the AUTO position, according to a front wiper operation.
- When auto light system turns the exterior lamps ON with the power switch OFF, delay timer function turns the exterior lamps OFF, depending on the vehicle condition with the auto light function after a certain period of time.

*: Headlamp (LO/HI), parking lamp, tail lamp, front fog lamp and side marker lamp (Headlamp HI and front fog lamp depend on the combination switch condition.)

NOTE:

The settings of the twilight lighting function and the wiper linked auto lighting function can be changed with CONSULT. Refer to EXL-25, "HEADLAMP : CONSULT Function (BCM - HEAD LAMP)".

AUTO LIGHT FUNCTION (WITH TWILIGHT LIGHTING FUNCTION)

Description

- BCM detects the combination switch condition with the combination switch reading function.
- BCM supplies voltage to the optical sensor when the power switch is turned ON or ACC.
- Optical sensor converts outside brightness (lux) to voltage and transmits the optical sensor signal to BCM.
- BCM filters outside brightness based on the optical sensor signal and judges outside brightness.
- BCM detects change status of outside brightness according to outside brightness from the optical sensor signal and filtered outside brightness. Based on the change status, BCM judges ON/OFF condition of the exterior lamp.
- BCM transmits each request signal to IPDM E/R and combination meter via CAN communication, according to ON/OFF condition by the auto light function.

NOTE:
As to ON/OFF timing, the sensitivity depends on settings. The settings can be changed with CONSULT. Refer to EXL-25, "HEADLAMP : CONSULT Function (BCM - HEAD LAMP)".

WIPER LINKED AUTO LIGHTING FUNCTION

BCM turns the exterior lamps ON when detecting 4 operations of the front wiper work the light switch in AUTO position.

NOTE:
BCM turns OFF the headlamps 3 seconds after the front wiper switch is turned from ON⇒OFF.

AUTO LIGHT ADJUSTMENT SYSTEM

The auto light adjustment system automatically, dims/brightens the display and combination meter, according to brightness outside the vehicle, when lighting switch 1ST, lighting switch 2ND or lighting switch AUTO is operated. Refer to INL-14, "AUTO LIGHT ADJUSTMENT SYSTEM : System Description".

DELAY TIMER FUNCTION

BCM turns the exterior lamps OFF depending on the vehicle condition with the auto light function when the power switch is turned OFF.

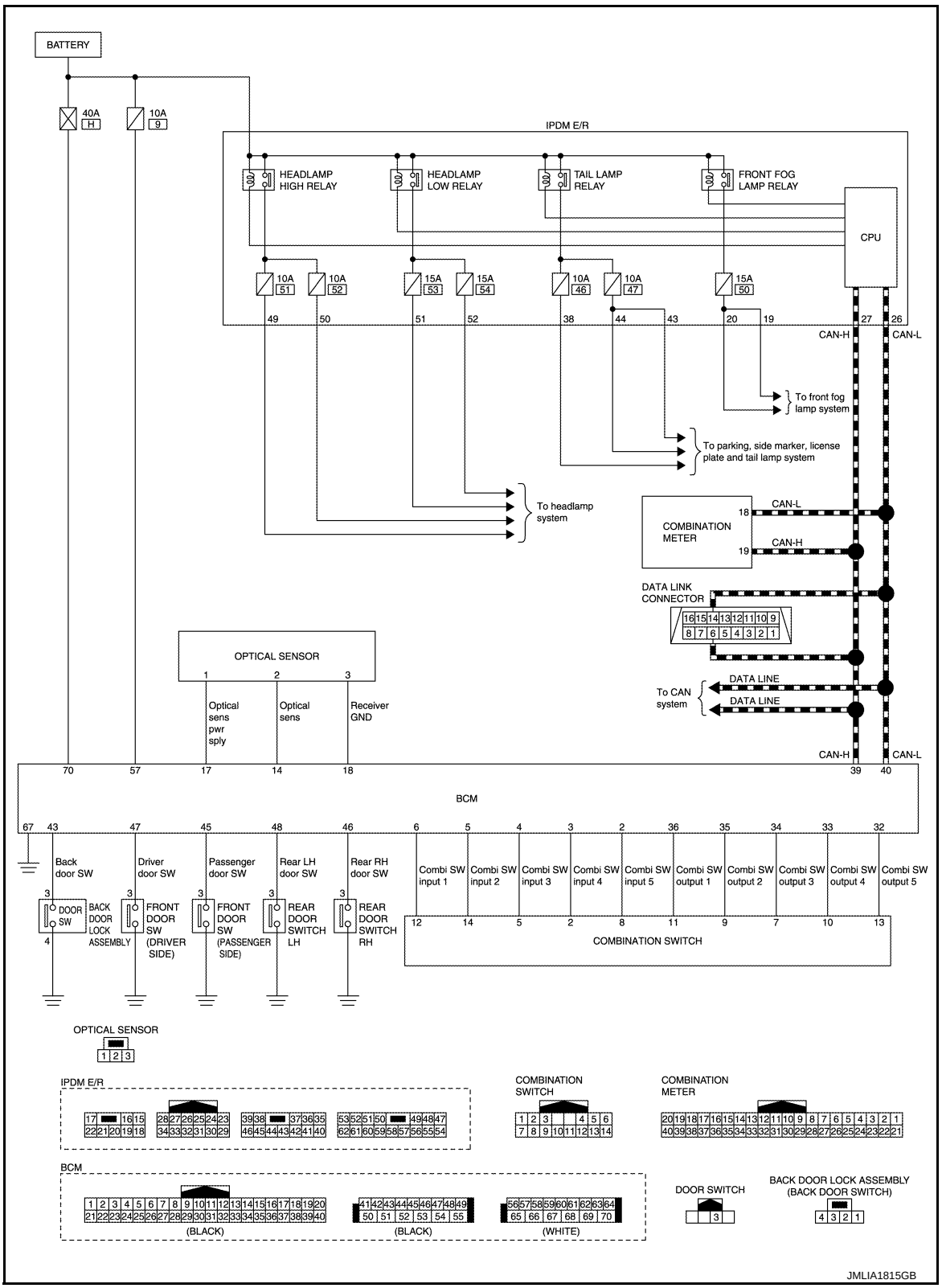
- Turns the exterior lamps OFF 5 minutes after detecting that any door opens. (Door switch ON).
- Turns the exterior lamps OFF a certain period of time* after closing all doors. (Door switch ON→OFF).
- Turns the exterior lamps OFF with the power switch ACC or the light switch OFF.

*: The preset time is 45 seconds. The timer operating time can be set by CONSULT. Refer to EXL-25, "HEADLAMP : CONSULT Function (BCM - HEAD LAMP)".

NOTE:
When any position other than the light switch AUTO is set, the auto light system function switches to the exterior lamp battery saver function.

AUTO LIGHT SYSTEM : Schematic

INFOID:0000000006893624



HEADLAMP AIMING CONTROL (MANUAL)

HEADLAMP AIMING CONTROL (MANUAL) : System Description

INFOID:0000000006893558

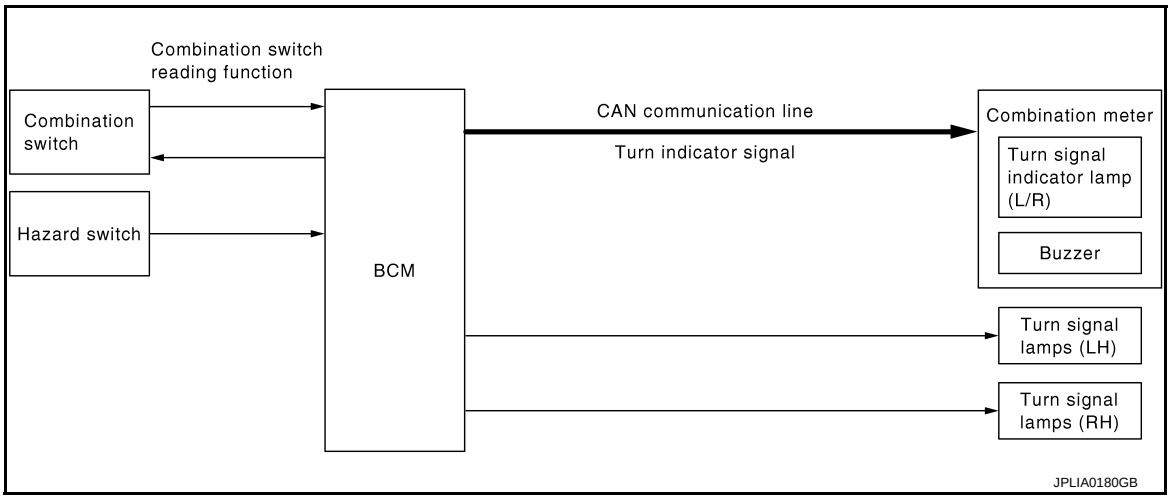
The headlamp levelizer adjusts the headlamp light axis upward and downward with the aiming motor integrated in the front combination lamp.

TURN SIGNAL AND HAZARD WARNING LAMP SYSTEM

TURN SIGNAL AND HAZARD WARNING LAMP SYSTEM : System Description

INFOID:0000000006893310

SYSTEM DIAGRAM



OUTLINE

Turn signal lamp and the hazard warning lamp is controlled by combination switch reading function and the flasher control function of BCM.

TURN SIGNAL LAMP OPERATION

- BCM detects the combination switch condition by the combination switch reading function.
- BCM supplies voltage to the right (left) turn signal lamp circuit when the power switch is ON and the turn signal switch is in the right (left) position. BCM blinks the turn signal lamp.

HAZARD WARNING LAMP OPERATION

BCM supplies voltage to both turn signal lamp circuit when the hazard switch is ON. BCM blinks the hazard warning lamp.

TURN SIGNAL INDICATOR LAMP AND TURN SIGNAL OPERATION

- BCM transmits the turn signal indicator lamp signal to the combination meter using CAN communication while the turn signal lamp and the hazard warning lamp are operating.
- Combination meter outputs the turn signal sound with the integrated buzzer while blinking the turn signal indicator lamp according to the turn signal indicator lamp signal.

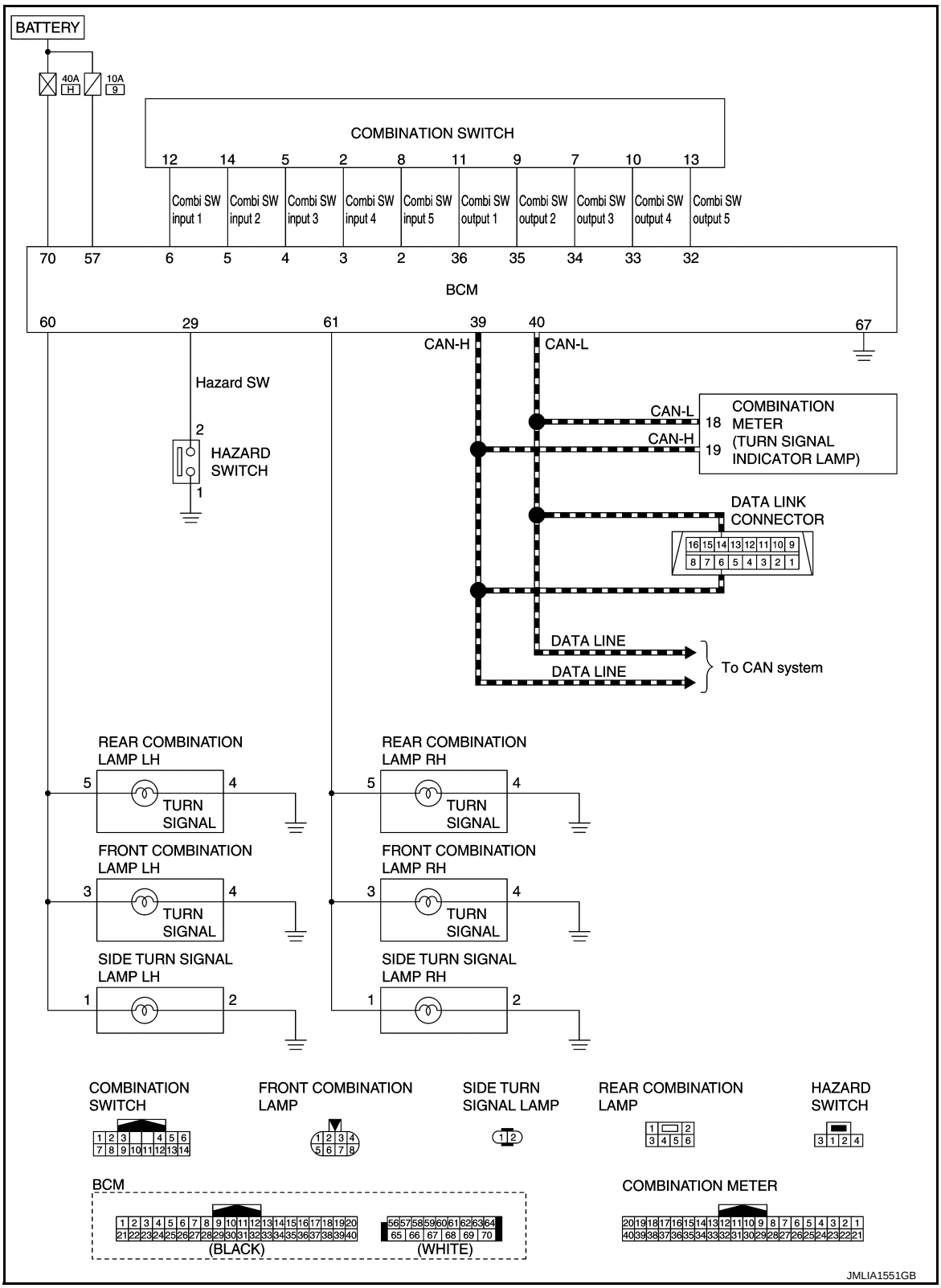
HIGH FLASHER OPERATION

- BCM detects the turn signal lamp circuit status from the current value.
- BCM increases the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp operating.

NOTE:
The blinking speed is normal while operating the hazard warning lamp.

TURN SIGNAL AND HAZARD WARNING LAMP SYSTEM : Schematic

INFOID:0000000006893311



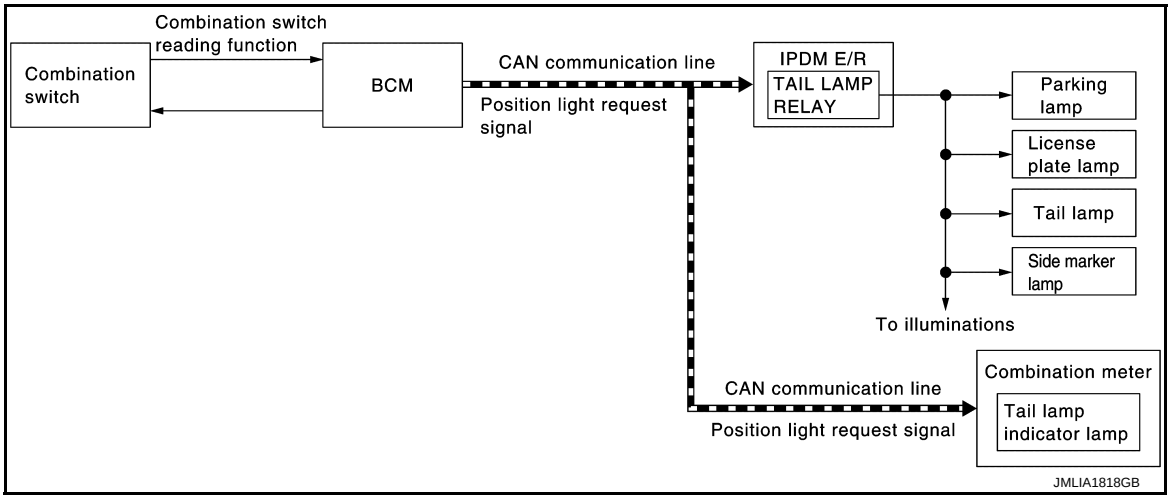
PARKING, LICENSE PLATE, SIDE MARKER AND TAIL LAMP SYSTEM

PARKING, LICENSE PLATE, SIDE MARKER AND TAIL LAMP SYSTEM : System De-

scription

INFOID:0000000006893446

SYSTEM DIAGRAM



OUTLINE

Parking, license plate, side marker and tail lamps are controlled by combination switch reading function and headlamp control function of BCM, and relay control function of IPDM E/R.

PARKING, LICENSE PLATE, SIDE MARKER AND TAIL LAMPS OPERATION

- BCM detects the combination switch condition by the combination switch reading function.
- BCM transmits the position light request signal to IPDM E/R and the combination meter via CAN communication according to the ON/OFF condition of the parking, license plate, side marker and tail lamps.

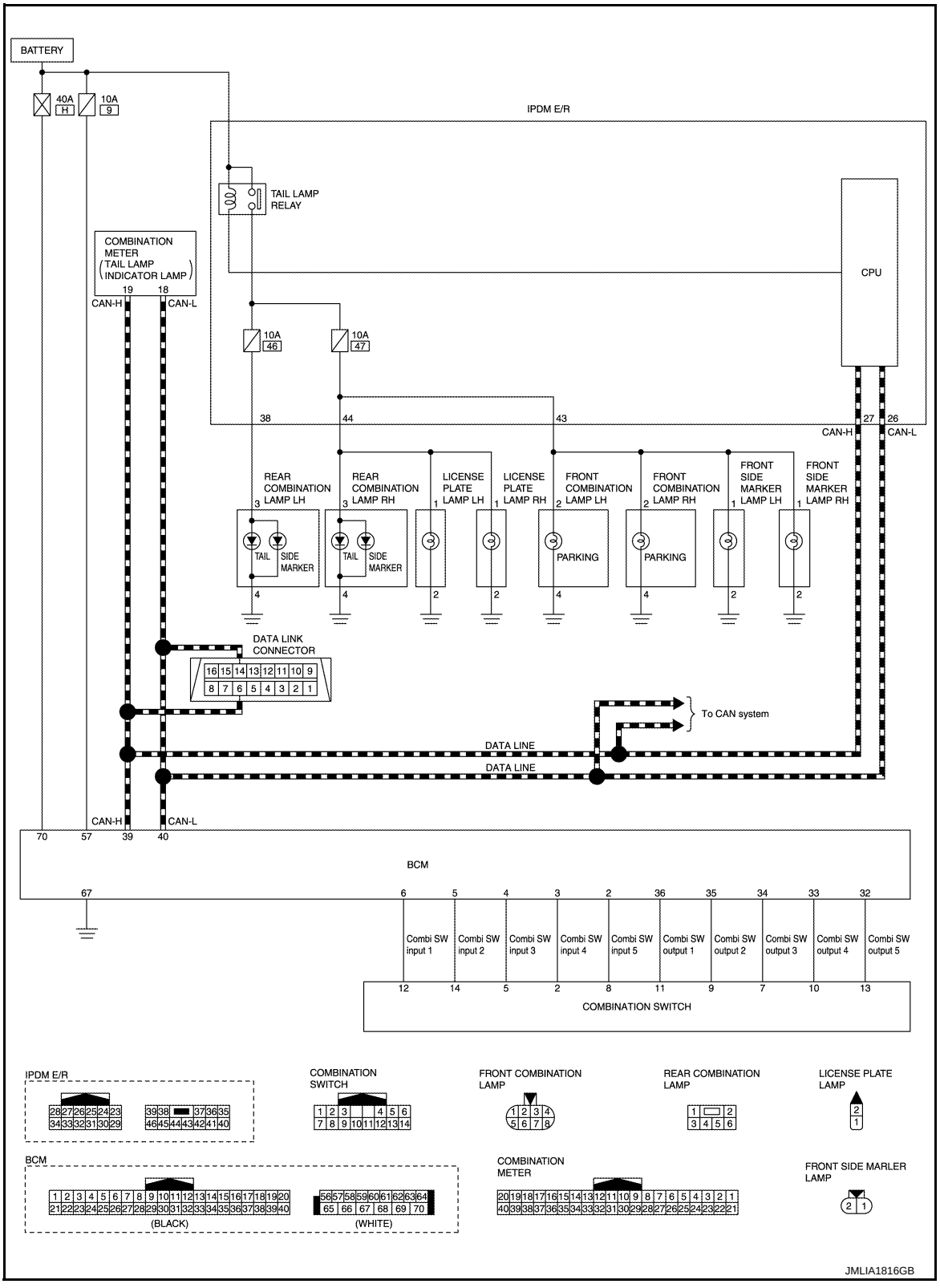
Parking, license plate, side marker and tail lamps ON condition

- Lighting switch 1ST
- Lighting switch 2ND
- Lighting switch AUTO, and the auto light function ON judgment
- Lighting switch AUTO, with the front fog lamp switch ON and the power switch ON

- IPDM E/R turns the integrated tail lamp relay ON and turns the parking, license plate, side marker and tail lamps ON according to the position light request signal.
- Combination meter turns the tail lamp indicator lamp ON according to the position light request signal.

PARKING, LICENSE PLATE, SIDE MARKER AND TAIL LAMP SYSTEM : Schematic

INFOID:0000000006893623



PARKING, LICENSE PLATE, SIDE MARKER AND TAIL LAMP SYSTEM : Fail-Safe

INFOID:0000000007010675

CAN COMMUNICATION CONTROL

When CAN communication with BCM is impossible, IPDM E/R performs fail-safe control. After CAN communication recovers normally, it also returns to normal control.

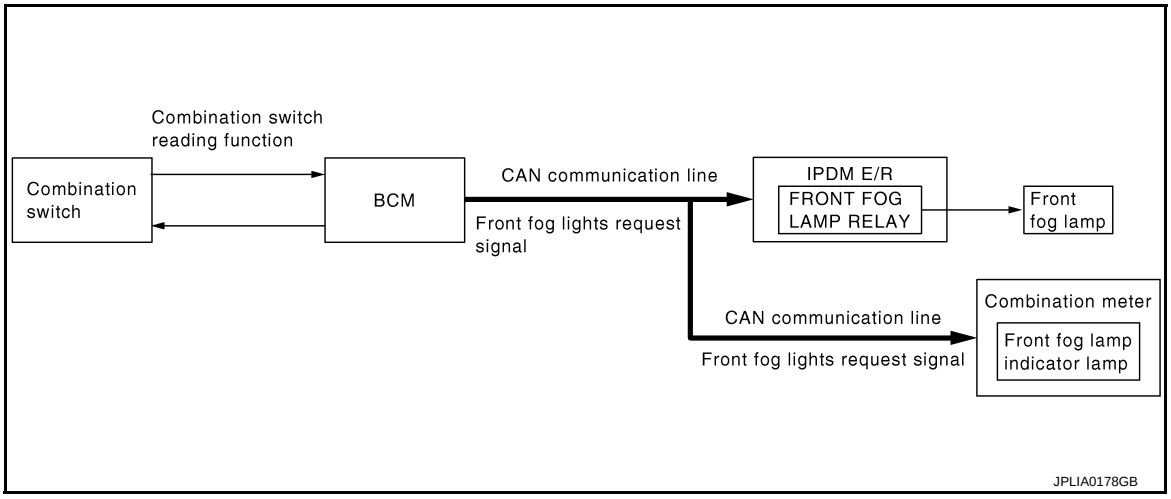
If No CAN Communication Is Available With BCM

Control part	Fail-safe operation
• Parking lamp • License plate lamp • Illumination • Tail lamp • Side marker lamp	• Turns ON the tail lamp relay when the power switch is turned ON • Turns OFF the tail lamp relay when the power switch is turned OFF

FRONT FOG LAMP SYSTEM

FRONT FOG LAMP SYSTEM : System Description

INFOID:0000000006893449



OUTLINE

Front fog lamp is controlled by combination switch reading function, front fog lamp control function of BCM, and relay control function of IPDM E/R.

FRONT FOG LAMP OPERATION

- BCM detects the combination switch condition by the combination switch reading function.
- BCM transmits the front fog lights request signal to IPDM E/R and the combination meter via CAN communication according to the front fog lamp ON condition.

Front fog lamp ON condition

- Front fog lamp switch ON, and any of the following condition is satisfied.(except for the high beam ON)
  - Lighting switch 2ND
  - Lighting switch AUTO and the power switch ON

IPDM E/R turns the integrated front fog lamp relay ON, and turns the front fog lamp ON according to the front fog lights request signal.
Combination meter turns the front fog lamp indicator lamp ON according to the front fog lights request signal.

FRONT FOG LAMP SYSTEM : Schematic

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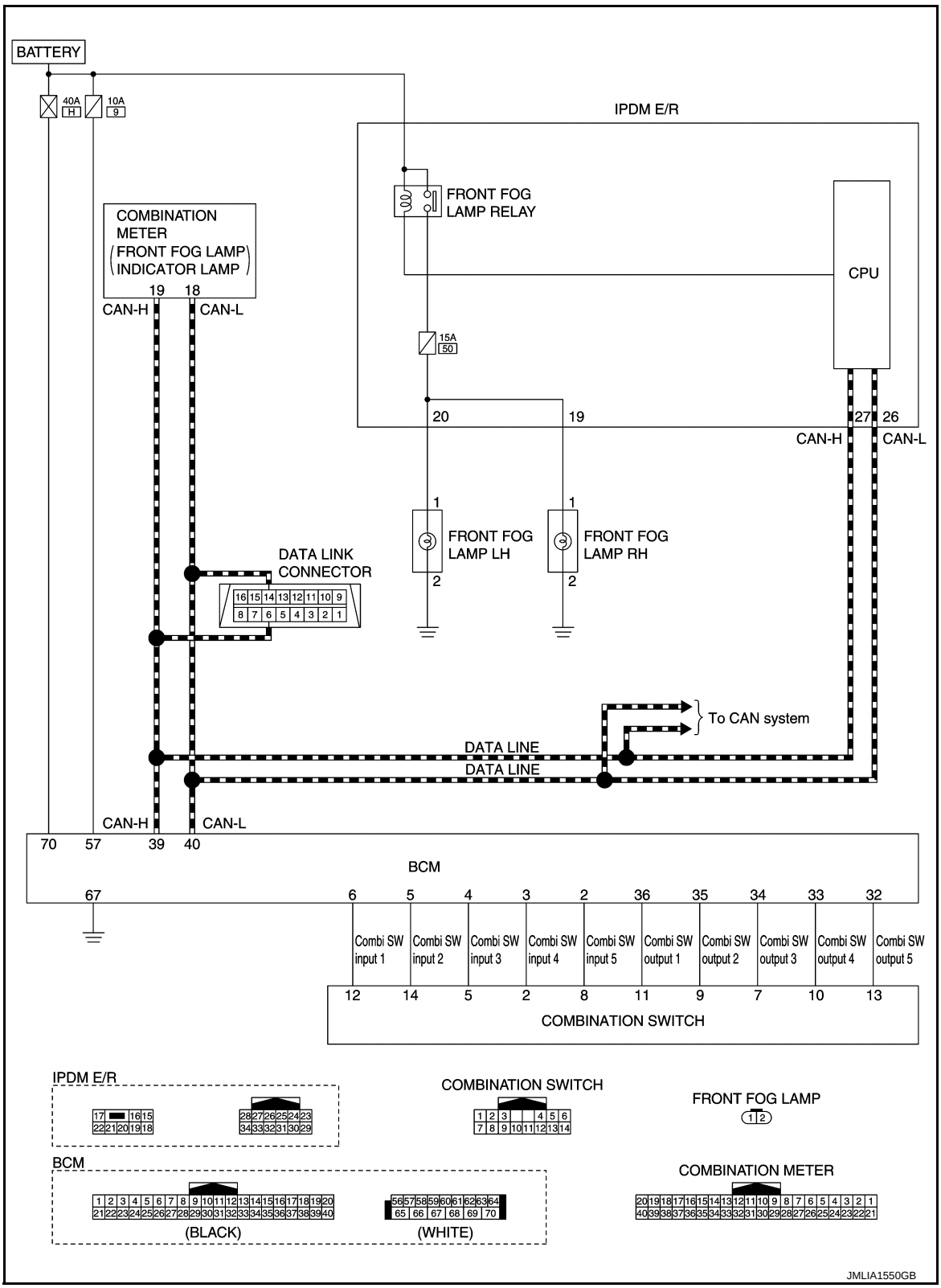


FRONT FOG LAMP SYSTEM : Fail-Safe

INFOID:0000000007010676

CAN COMMUNICATION CONTROL

When CAN communication with BCM is impossible, IPDM E/R performs fail-safe control. After CAN communication recovers normally, it also returns to normal control.

If No CAN Communication Is Available With BCM

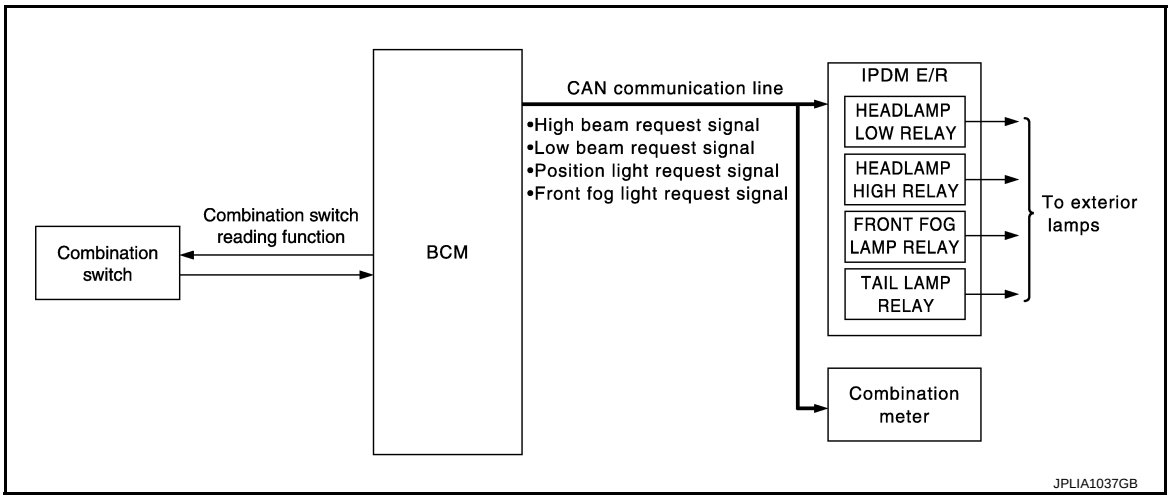
Control part	Fail-safe operation
Front fog lamp	Front fog lamp relay OFF

EXTERIOR LAMP BATTERY SAVER SYSTEM

EXTERIOR LAMP BATTERY SAVER SYSTEM : System Description

INFOID:0000000006893452

SYSTEM DIAGRAM



OUTLINE

- Exterior lamp battery saver system is controlled by each function of BCM and IPDM E/R.

Control by BCM

- Combination switch reading function
- Headlamp control function
- Exterior lamp battery saver function

Control by IPDM E/R

- Relay control function
- BCM turns the exterior lamps* OFF after a period of time to prevent the battery from over-discharge when the power switch is turned OFF with the exterior lamps ON.

*: Headlamp (LO/HI), parking lamp, tail lamp, side marker lamp, license plate lamp and front fog lamp

EXTERIOR LAMP BATTERY SAVER ACTIVATION

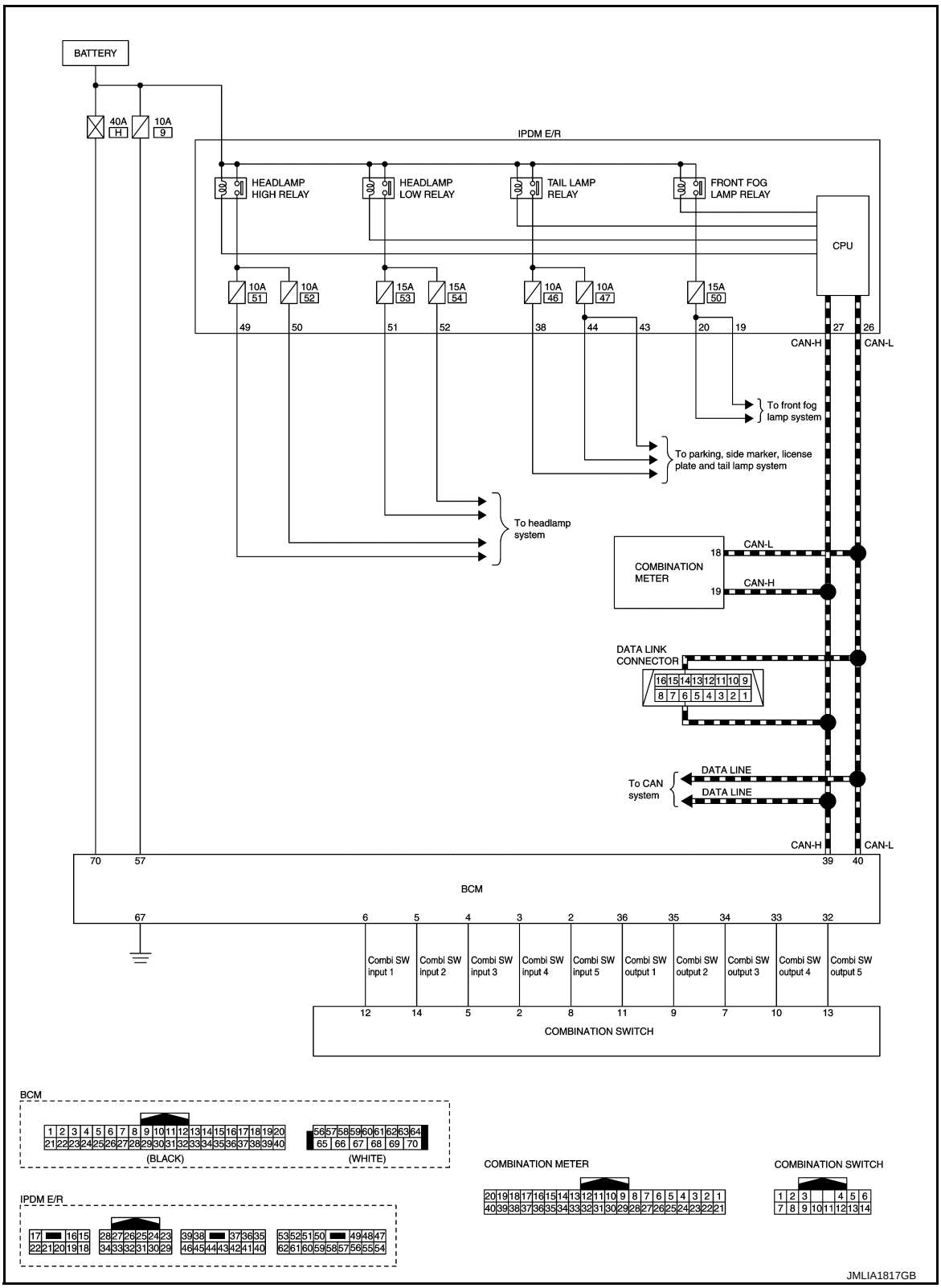
BCM activates the timer and turns the exterior lamp OFF 5 minutes after the power switch is turned from ON → OFF with the exterior lamps ON.

NOTE:

- Headlamp control function turns the exterior lamps ON normally when the power switch is turned ACC or set the vehicle to READY (both before and after the exterior lamp battery saver is turned OFF).
- The timer starts at the time that the lighting switch is turned from OFF → 1ST or 2ND with the exterior lamps OFF.

EXTERIOR LAMP BATTERY SAVER SYSTEM : Schematic

INFOID:0000000006893621



DIAGNOSIS SYSTEM (BCM)
COMMON ITEM
COMMON ITEM : CONSULT Function (BCM - COMMON ITEM)

INFOID:0000000007011115

APPLICATION ITEM
CONSULT performs the following functions via CAN communication with BCM.

Diagnosis mode	Function Description
Work Support	Changes the setting for each system function.
Self Diagnostic Result	Displays the diagnosis results judged by BCM.
CAN Diag Support Monitor	Monitors the reception status of CAN communication viewed from BCM.
Data Monitor	The BCM input/output signals are displayed.
Active Test	The signals used to activate each device are forcibly supplied from BCM.
Ecu Identification	The BCM part number is displayed.
Configuration	• Read and save the vehicle specification. • Write the vehicle specification when replacing BCM.

SYSTEM APPLICATION
BCM can perform the following functions for each system.
NOTE:
It can perform the diagnosis modes except the following for all sub system selection items.

×: Applicable item

System	Sub system selection item	Diagnosis mode		
		Work Support	Data Monitor	Active Test
Door lock	DOOR LOCK	×	×	×
Rear window defogger	REAR DEFOGGER		×	×
Warning chime	BUZZER		×	×
Interior room lamp timer	INT LAMP	×	×	×
Exterior lamp	HEAD LAMP	×	×	×
Wiper and washer	WIPER	×	×	×
Turn signal and hazard warning lamps	FLASHER	×	×	×
—	AIR CONDITONER*		×	×
Intelligent Key system	INTELLIGENT KEY	×	×	×
Combination switch	COMB SW		×	
Body control system	BCM	×		
NVIS - NATS	IMMU	×	×	×
Interior room lamp battery saver	BATTERY SAVER	×	×	×
Back door open	TRUNK		×	
Theft warning alarm	THEFT ALM	×	×	×
RAP system	RETAINED PWR		×	
Signal buffer system	SIGNAL BUFFER		×	×
TPMS	AIR PRESSURE MONITOR	×	×	×

*: This item is displayed, but not used.

FREEZE FRAME DATA (FFD)
The BCM records the following vehicle condition at the time a particular DTC is detected, and displays on CONSULT.

CONSULT screen item	Indication/Unit	Description	
Vehicle Speed	km/h	Vehicle speed of the moment a particular DTC is detected	
Odo/Trip Meter	km	Total mileage (Odometer value) of the moment a particular DTC is detected	
Vehicle Condition	SLEEP>LOCK	Power supply position status of the moment a particular DTC is detected*	While turning BCM status from low power consumption mode to normal mode [Power supply position is OFF (LOCK)]
	SLEEP>OFF		While turning BCM status from low power consumption mode to normal mode [Power supply position is OFF (OFF)]
	LOCK>ACC		While turning power supply position from OFF (LOCK) to ACC
	ACC>ON		While turning power supply position from ACC to ON
	RUN>ACC		While turning power supply position from READY (RUN) to ACC (Except emergency stop operation)
	CRANK>RUN		While turning power supply position from READY (CRANK) to READY (RUN)
	RUN>URGENT		While turning power supply position from READY (RUN) to ACC (Emergency stop operation)
	ACC>OFF		While turning power supply position from ACC to OFF (OFF)
	OFF>LOCK		While turning power supply position from OFF (OFF) to OFF (LOCK)
	OFF>ACC		While turning power supply position from OFF (OFF) to ACC
	ON>CRANK		While turning power supply position from ON to READY (CRANK)
	OFF>SLEEP		While turning BCM status from normal mode [Power supply position is OFF (OFF)] to low power consumption mode
	LOCK>SLEEP		While turning BCM status from normal mode [Power supply position is OFF (LOCK)] to low power consumption mode
	LOCK		Power supply position is OFF (LOCK)
	OFF		Power supply position is OFF (OFF)
	ACC		Power supply position is ACC
	ON		Power supply position is ON
	ENGINE RUN		Power supply position is READY (RUN)
	CRANKING		Power supply position is READY (CRANK)
IGN Counter	0 - 39	The number of times that power switch is turned ON after DTC is detected • The number is 0 when a malfunction is detected now. • The number increases like 1 → 2 → 3...38 → 39 after returning to the normal condition whenever power switch OFF → ON. • The number is fixed to 39 until the self-diagnosis results are erased if it is over 39.	

NOTE:

*: Refer to the following for details of the power supply position.

- OFF (OFF, LOCK): Power switch OFF
- ACC: Power switch ACC
- ON: Power switch ON
- READY (CRANK): Shifting to vehicle condition READY (Transmitting the READY signal from BCM to VCM)
- READY (RUN): Vehicle condition READY

Power supply position shifts to “OFF (LOCK)” from “OFF (OFF)”, when power switch is in the OFF position, shift position is in the P position, and any of the following conditions are met.

- Closing door
- Opening door
- Door is locked using door request switch
- Door is locked using Intelligent Key

The power supply position shifts to “ACC” when the power switch (push switch) is pushed at “OFF (LOCK)”.

HEADLAMP

HEADLAMP : CONSULT Function (BCM - HEAD LAMP)

INFOID:0000000006893454

WORK SUPPORT

Service item	Setting item	Setting	
CUSTOM A/LIGHT SETTING*1	MODE 1*2	Normal	
	MODE 2	More sensitive setting than normal setting (Turns ON earlier than normal operation)	
	MODE 3	More sensitive setting than MODE 2 (Turns ON earlier than MODE 2)	
	MODE 4	Less sensitive setting than normal setting (Turns ON later than normal operation)	
BATTERY SAVER SET	On*2	With the exterior lamp battery saver function	
	Off	Without the exterior lamp battery saver function	
ILL DELAY SET*1	MODE 1*2	45 sec.	Sets delay timer function timer operation time (All doors closed)
	MODE 2	Without the function	
	MODE 3	30 sec.	
	MODE 4	60 sec.	
	MODE 5	90 sec.	
	MODE 6	120 sec.	
	MODE 7	150 sec.	
	MODE 8	180 sec.	
AUTO LIGHT LOGIC SET*1	MODE 1*2	With twilight ON custom & with wiper INT, LO and HI	
	MODE 2	With twilight ON custom & with wiper LO and HI	
	MODE 3	With twilight ON custom & without	
	MODE 4	Without twilight ON custom & with wiper INT, LO and HI	
	MODE 5	Without twilight ON custom & with wiper LO and HI	
	MODE 6	Without twilight ON custom & without	

*1: For models without auto light system, this item is displayed but is not operated.
*2: Factory setting

DATA MONITOR

Monitor item [Unit]	Description
PUSH SW [On/Off]	The switch status input from power switch
ENGINE STATE [Stop/Stall/Crank/Run]	The traction motor status received from VCM via CAN communication
VEH SPEED 1 [km/h]	The value of the vehicle speed received from combination meter via CAN communication

Monitor item [Unit]	Description
TURN SIGNAL R [On/Off]	Each switch status that BCM judges from the combination switch reading function
TURN SIGNAL L [On/Off]	
TAIL LAMP SW [On/Off]	
HI BEAM SW [On/Off]	
HEAD LAMP SW1 [On/Off]	
HEAD LAMP SW2 [On/Off]	
PASSING SW [On/Off]	
AUTO LIGHT SW*1 [On/Off]	
FR FOG SW*2 [On/Off]	
DOOR SW-DR [On/Off]	The switch status input from front door switch (driver side)
DOOR SW-AS [On/Off]	The switch status input from front door switch (passenger side)
DOOR SW-RR [On/Off]	The switch status input from rear door switch RH
DOOR SW- RL [On/Off]	The switch status input from rear door switch LH
DOOR SW-BK [On/Off]	The switch status input from back door switch
OPTICAL SENSOR [On/Off/NG]	**NOTE:** This item is indicated, but can not monitored
OPTI SEN (DTCT)*1 [V]	The value of outside brightness voltage input from the optical sensor
OPTI SEN (FILT)*1 [V]	The value of outside brightness voltage filtered by BCM

*1: For models without auto light system, this item is not displayed.
*2: For models without front fog lamp, this item is displayed but is not monitored.

ACTIVE TEST

Test item	Operation	Description
TAIL LAMP	On	Transmits the position light request signal to IPDM E/R via CAN communication to turn the tail lamp ON
	Off	Stops the tail lamp request signal transmission
HEAD LAMP	Hi	Transmits the high beam request signal via CAN communication to turn the headlamp (HI)
	Lo	Transmits the low beam request signal via CAN communication to turn the headlamp (LO)
	Off	Stops the high & low beam request signal transmission
FR FOG LAMP*	On	Transmits the front fog lights request signal to IPDM E/R via CAN communication to turn the front fog lamp ON
	Off	Stops the front light request signal transmission

Test item	Operation	Description
ILL DIM SIGNAL	On	• Transmits the dimmer signal to combination meter via CAN communication and dims combination meter • Transmits the dimmer signal to AV control unit and dims display
	Off	Stops the dimmer signal transmission

*: For models without front fog lamp, this item is displayed but is not tested.

FLASHER

FLASHER : CONSULT Function (BCM - FLASHER)

INFOID:0000000006893455

WORK SUPPORT

Service item	Setting item	Setting	
HAZARD ANSWER BACK	Lock Only	With locking only	Sets the hazard warning lamp answer back function when the door is lock/unlock with the request switch or the Intelligent Key.
	Unlk Only	With unlocking only	
	Lock&Unlk*	With locking/unlocking	
	Off	Without the function	

*: Factory setting

DATA MONITOR

Monitor item [Unit]	Description
REQ SW-DR [On/Off]	The switch status input from the request switch (driver side)
REQ SW-AS [On/Off]	The switch status input from the request switch (passenger side)
PUSH SW [On/Off]	The switch status input from the power switch
TURN SIGNAL R [On/Off]	Each switch status that BCM detects from the combination switch reading function
TURN SIGNAL L [On/Off]	
HAZARD SW [On/Off]	The switch status input from the hazard switch
RKE-LOCK [On/Off]	Lock signal status received from the remote keyless entry receiver
RKE-UNLOCK [On/Off]	Unlock signal status received from the remote keyless entry receiver
RKE-PANIC [On/Off]	Panic alarm signal status received from the remote keyless entry receiver

ACTIVE TEST

Test item	Operation	Description
FLASHER	RH	Outputs the voltage to blink the right side turn signal lamps
	LH	Outputs the voltage to blink the left side turn signal lamps
	Off	Stops the voltage to turn the turn signal lamps OFF

DIAGNOSIS SYSTEM (IPDM E/R)

Diagnosis Description

INFOID:0000000007011116

AUTO ACTIVE TEST

Description

In auto active test mode, the IPDM E/R sends a drive signal to the following systems to check their operation.

- Rear window defogger
- Front wiper motor
- Parking lamp
- License plate lamp
- Tail lamp
- Front fog lamp
- Headlamp (LO, HI)

Operation Procedure

NOTE:

Never perform auto active test in the following conditions.

- CONSULT is connected.
- Passenger door is open.

1. Turn the power switch OFF.
2. Turn the power switch ON, and within 20 seconds, press the driver door switch 10 times. Then turn the power switch OFF.
3. Turn the power switch ON within 10 seconds. After that the horn sounds once and the auto active test starts.
   NOTE:
   Never depress brake pedal while operating power switch so that auto active test is not activated.
4. After a series of the following operations is repeated 3 times, auto active test is completed.

NOTE:

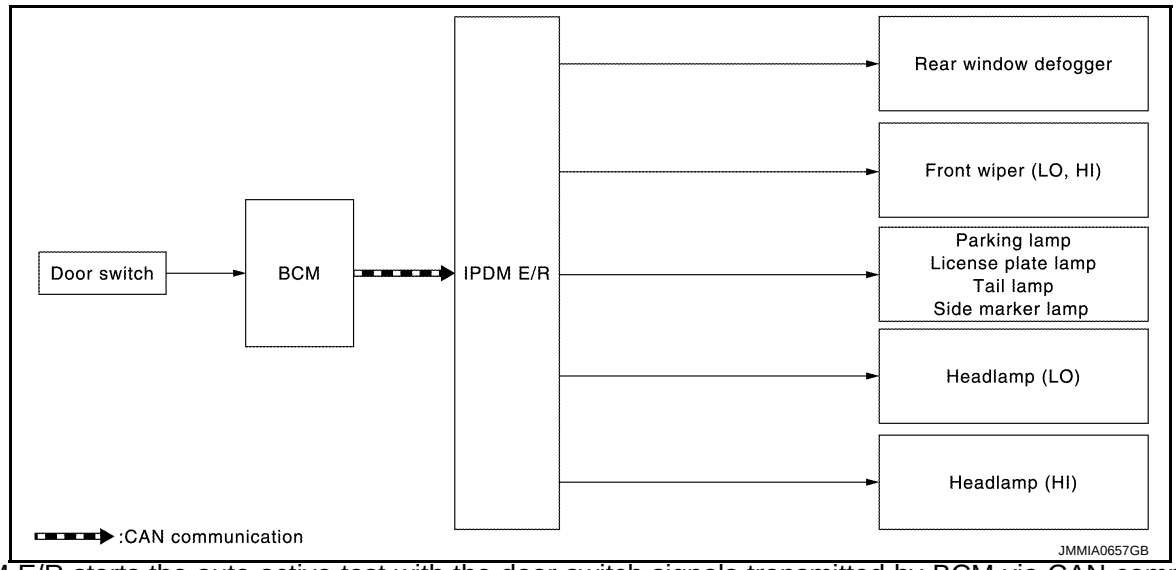
- When auto active test mode has to be cancelled halfway through test, turn the power switch OFF.
- When auto active test is not activated, door switch may be the cause. Check door switch. Refer to DLK-92, "Component Function Check".

Inspection in Auto Active Test Mode

When auto active test mode is actuated, the following operation sequence is repeated 3 times.

Operation sequence	Inspection location	Operation
1	Rear window defogger	10 seconds
2	Front wiper motor	LO for 5 seconds → HI for 5 seconds
3	• Parking lamp • License plate lamp • Tail lamp • Front fog lamp • Side marker lamp	10 seconds
4	Headlamp	LO for 10 seconds →HI ON ⇔ OFF 5 times

Concept of auto active test



- IPDM E/R starts the auto active test with the door switch signals transmitted by BCM via CAN communication. Therefore, the CAN communication line between IPDM E/R and BCM is considered normal if the auto active test starts successfully.
- The auto active test facilitates troubleshooting if any systems controlled by IPDM E/R cannot be operated.

Diagnosis chart in auto active test mode

Symptom	Inspection contents		Possible cause
Rear window defogger does not operate	Perform auto active test. Does the rear window defogger operate?	YES	BCM signal input circuit
		NO	• Rear window defogger • Rear window defogger ground circuit • Harness or connector between IPDM E/R and rear window defogger • IPDM E/R
Any of the following components do not operate • Parking lamp • License plate lamp • Tail lamp • Front fog lamp • Headlamp (HI, LO) • Side marker lamp • Front wiper motor	Perform auto active test. Does the applicable system operate?	YES	BCM signal input circuit
		NO	• Lamp or motor • Lamp or motor ground circuit • Harness or connector between IPDM E/R and applicable system • IPDM E/R

CONSULT Function (IPDM E/R)

INFOID:0000000007011117

APPLICATION ITEM

CONSULT performs the following functions via CAN communication with IPDM E/R.

Diagnosis mode	Description
Ecu Identification	Allows confirmation of IPDM E/R part number.
Self Diagnostic Result	Displays the diagnosis results judged by IPDM E/R.
Data Monitor	Displays the real-time input/output data from IPDM E/R input/output data.
Active Test	IPDM E/R can provide a drive signal to electronic components to check their operations.
CAN Diag Support Monitor	The results of transmit/receive diagnosis of CAN communication can be read.

SELF DIAGNOSTIC RESULT

Refer to PCS-18, "DTC Index".

DATA MONITOR

Monitor item

Monitor Item [Unit]	MAIN SIGNALS	Description
AC COMP REQ [Off/On]	×	**NOTE:** The item is indicated, but not monitored.
TAIL&CLR REQ [Off/On]	×	Displays the status of the position light request signal received from BCM via CAN communication.
HL LO REQ [Off/On]	×	Displays the status of the low beam request signal received from BCM via CAN communication.
HL HI REQ [Off/On]	×	Displays the status of the high beam request signal received from BCM via CAN communication.
FR FOG REQ [Off/On]	×	Displays the status of the front fog light request signal received from BCM via CAN communication.
FR WIP REQ [Stop/1LOW/Low/Hi]	×	Displays the status of the front wiper request signal received from BCM via CAN communication.
WIP AUTO STOP [STOP P/ACT P]	×	Displays the status of the front wiper auto stop signal judged by IPDM E/R.
WIP PROT [Off/BLOCK]	×	Displays the status of the front wiper fail-safe operation judged by IPDM E/R.
IGN RLY1 -REQ [Off/On]		Displays the status of the power switch ON signal received from BCM via CAN communication.
IGN RLY [Off/On]	×	Displays the status of the ignition relay judged by IPDM E/R.
PUSH SW [Off/On]		Displays the status of the power switch judged by IPDM E/R.
INTER/NP SW [Off/On]		**NOTE:** The item is indicated, but not monitored.
ST RLY CONT [Off/On]		**NOTE:** The item is indicated, but not monitored.
IHBT RLY -REQ [Off/On]		**NOTE:** The item is indicated, but not monitored.
ST/INHI RLY [Off/ ST ON/INHI ON/UNKWN]		**NOTE:** The item is indicated, but not monitored.
DETENT SW [Off/On]		Displays the status of the P position signal judged by IPDM E/R.
S/L RLY -REQ [Off/On]		**NOTE:** The item is indicated, but not monitored.
S/L STATE [LOCK/UNLK/UNKWN]		**NOTE:** The item is indicated, but not monitored.
DTRL REQ [Off/On]		**NOTE:** The item is indicated, but not monitored.
OIL P SW [Open/Close]		**NOTE:** The item is indicated, but not monitored.
HOOD SW [Off/On]		Displays the status of the hood switch judged by IPDM E/R.
HL WASHER REQ [Off/On]		**NOTE:** The item is indicated, but not monitored.
THFT HRN REQ [Off/On]		Displays the status of the theft warning horn request signal received from BCM via CAN communication.
HORN CHIRP [Off/On]		Displays the status of the horn reminder signal received from BCM via CAN communication.

ACTIVE TEST

Test item

Test item	Operation	Description
HORN	On	Operates horn relay for 20 ms.
REAR DEFOGGER	Off	OFF
	On	Operates the rear window defogger relay.
FRONT WIPER	Off	OFF
	Lo	Operates the front wiper relay.
	Hi	Operates the front wiper relay and front wiper high relay.
MOTOR FAN	1	**NOTE:** This item is indicated, but cannot be tested.
	2	
	3	
	4	
HEAD LAMP WASHER	On	**NOTE:** This item is indicated, but cannot be tested.
EXTERNAL LAMPS	Off	OFF
	TAIL	Operates the tail lamp relay.
	Lo	Operates the headlamp low relay.
	Hi	Operates the headlamp low relay and ON/OFF the headlamp high relay at 1 second intervals.
	Fog	Operates the front fog lamp relay.

ECU DIAGNOSIS INFORMATION

BCM, IPDM E/R

List of ECU Reference

INFOID:0000000006893328

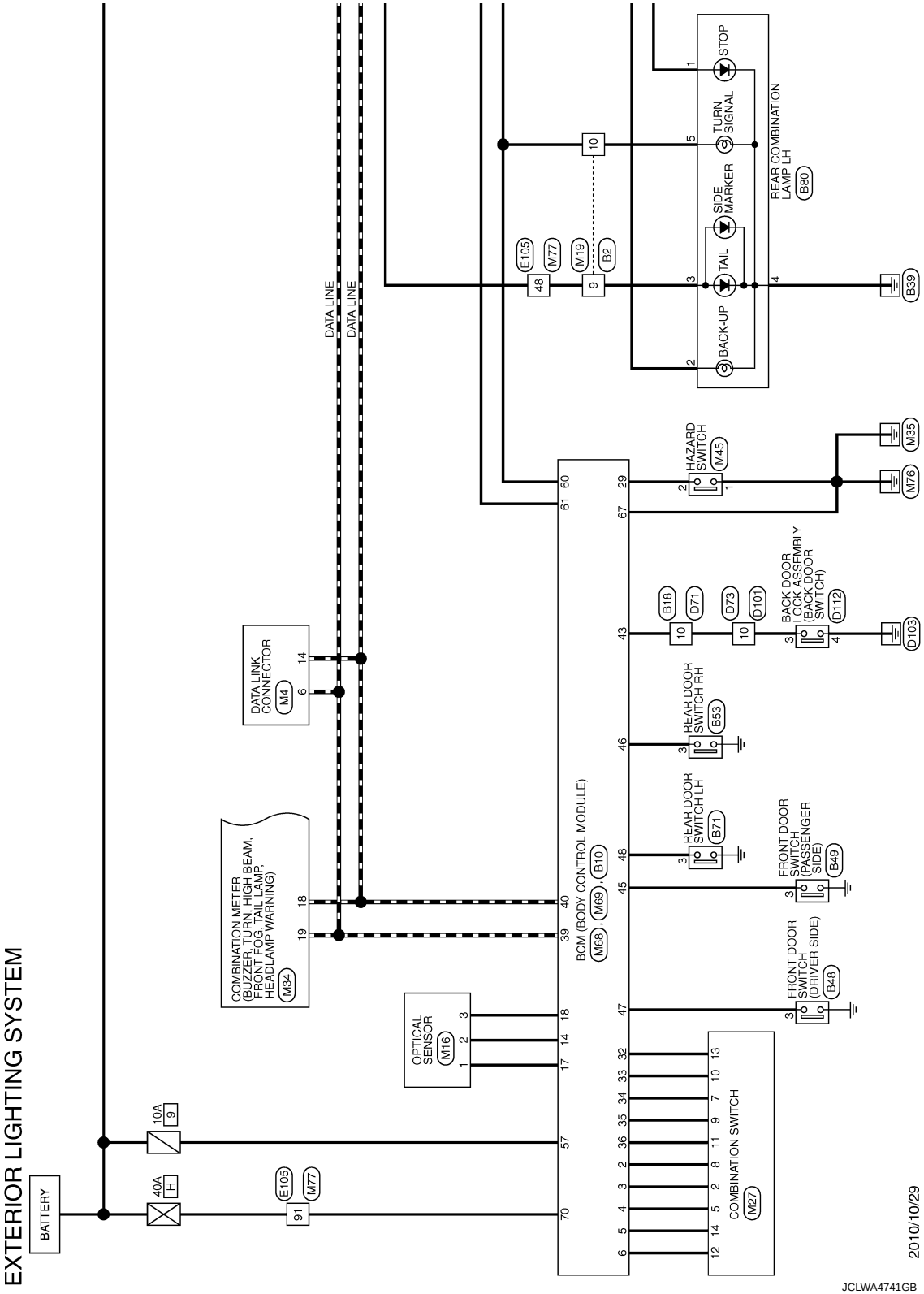
ECU	Reference
BCM	BCS-32, "Reference Value"
	BCS-52, "Fail-safe"
	BCS-53, "DTC Inspection Priority Chart"
	BCS-54, "DTC Index"
IPDM E/R	PCS-14, "Reference Value"
	PCS-17, "Fail-Safe"
	PCS-18, "DTC Index"

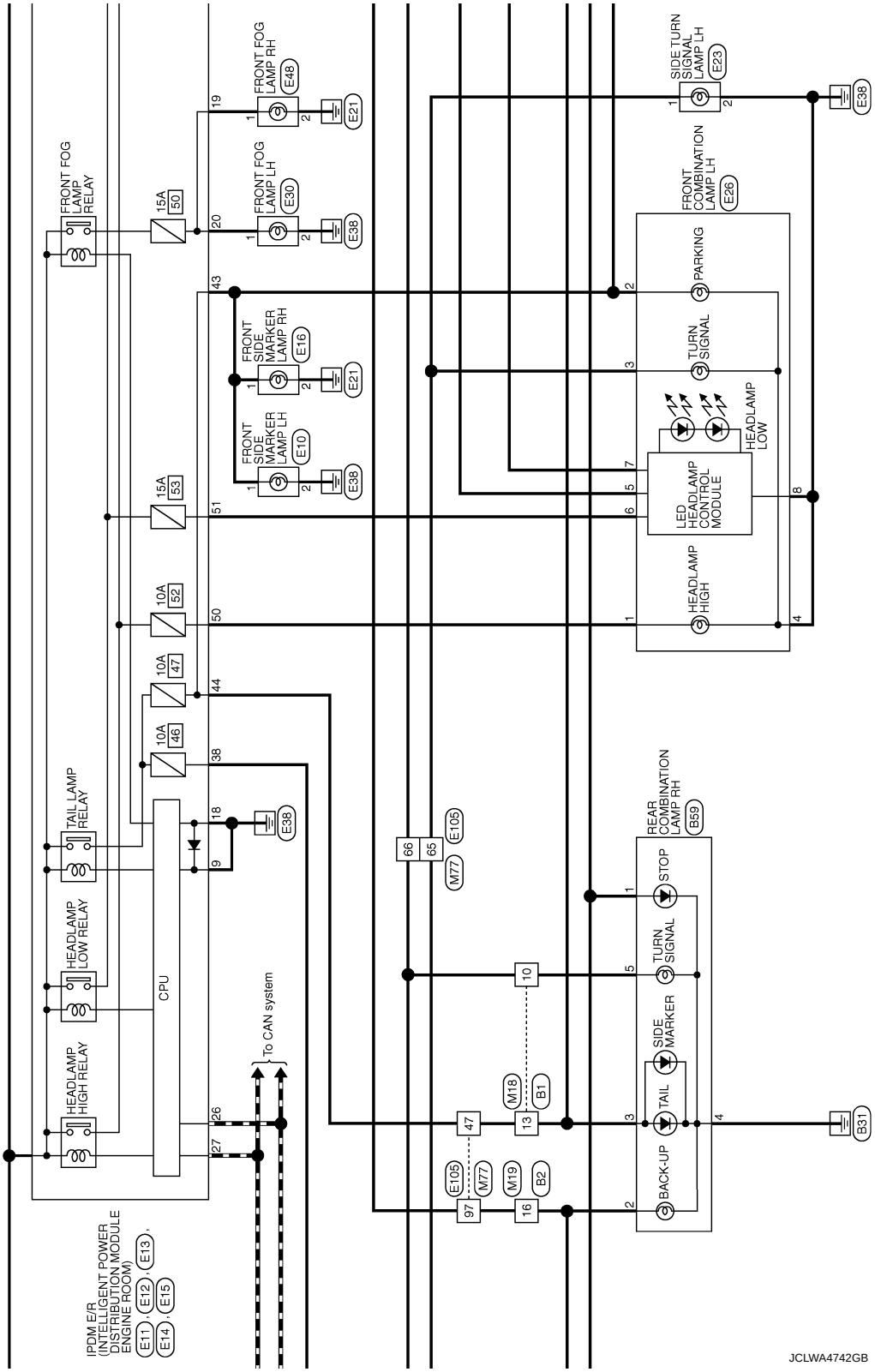
WIRING DIAGRAM

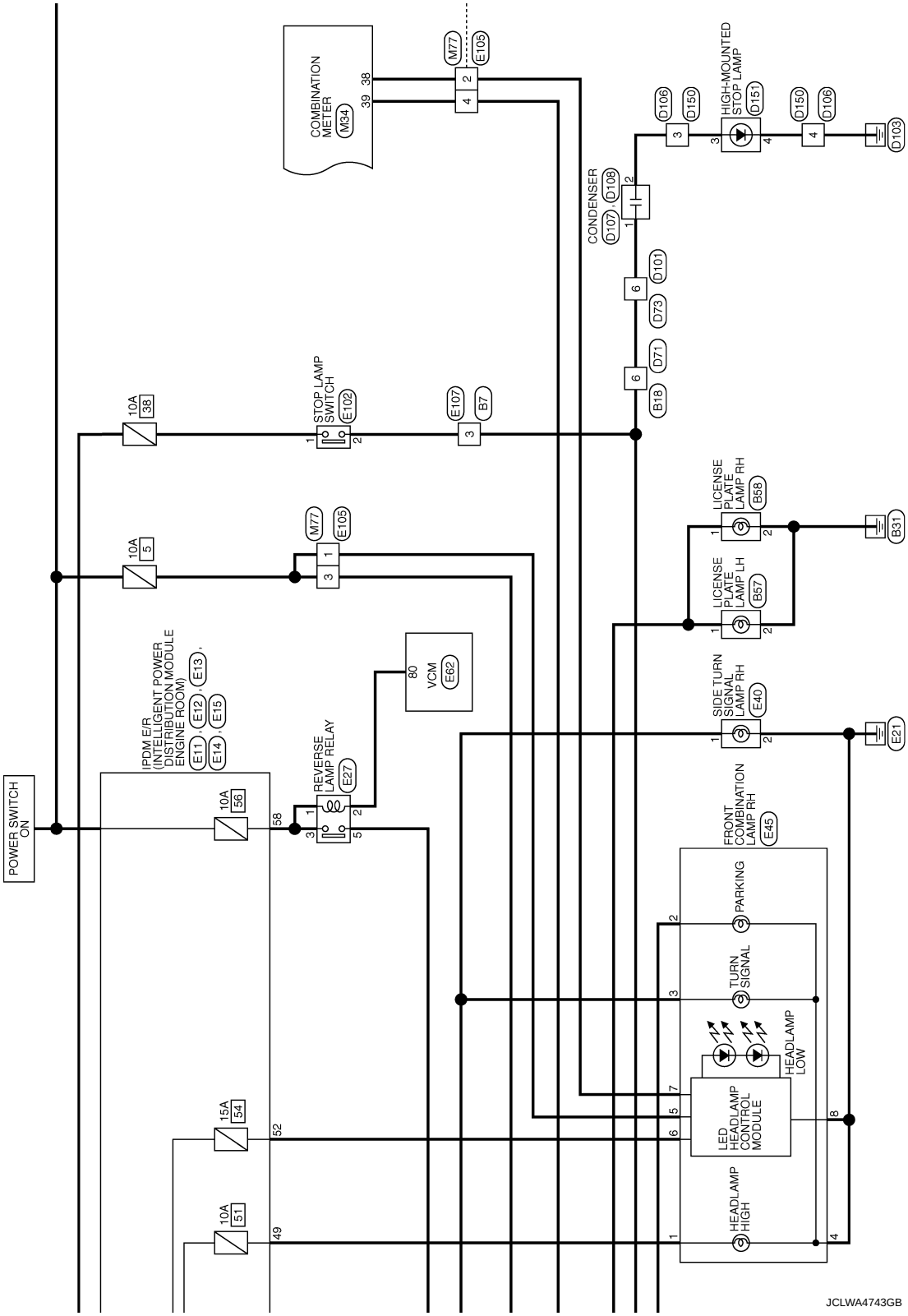
EXTERIOR LIGHTING SYSTEM

Wiring Diagram

INFOID:0000000006893333




FRONT FOG LAMP RELAY
TAIL LAMP RELAY
HEADLAMP LOW RELAY
HEADLAMP HIGH RELAY
15A 50
15A 53
10A 52
10A 47
10A 46
CPU
To CAN system
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E11, E12, E13, E14, E15
FRONT FOG LAMP RH E48
FRONT FOG LAMP LH E30
FRONT SIDE MARKER LAMP RH E16
FRONT SIDE MARKER LAMP LH E10
E21
E38
SIDE TURN SIGNAL LAMP LH E23
FRONT COMBINATION LAMP LH E26
PARKING
TURN SIGNAL
HEADLAMP LOW
LED HEADLAMP CONTROL MODULE
HEADLAMP HIGH
REAR COMBINATION LAMP RH B59
STOP
TURN SIGNAL
SIDE MARKER
TAIL
BACK-UP
B31
E105
M77
M18
B1
M19
B2
JCLWA4742GB


COMBINATION METER
M34
38
39
M77
E105
2
4
HIGH-MOUNTED STOP LAMP
D106
D150
D151
3
4
D103
CONDENSER
D107, D108
1
2
D101
D73
D71
B18
6
10A
38
STOP LAMP SWITCH
E102
E107
B7
10A
5
M77
E105
LICENSE PLATE LAMP RH
B58
B31
LICENSE PLATE LAMP LH
B57
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E11, E12, E13, E14, E15
VCM
E62
80
SIDE TURN SIGNAL LAMP RH
E40
E21
POWER SWITCH ON
10A
56
58
REVERSE LAMP RELAY
E27
FRONT COMBINATION LAMP RH
E45
PARKING
TURN SIGNAL
HEADLAMP LOW
LED HEADLAMP CONTROL MODULE
HEADLAMP HIGH
15A
54
52
10A
51
49
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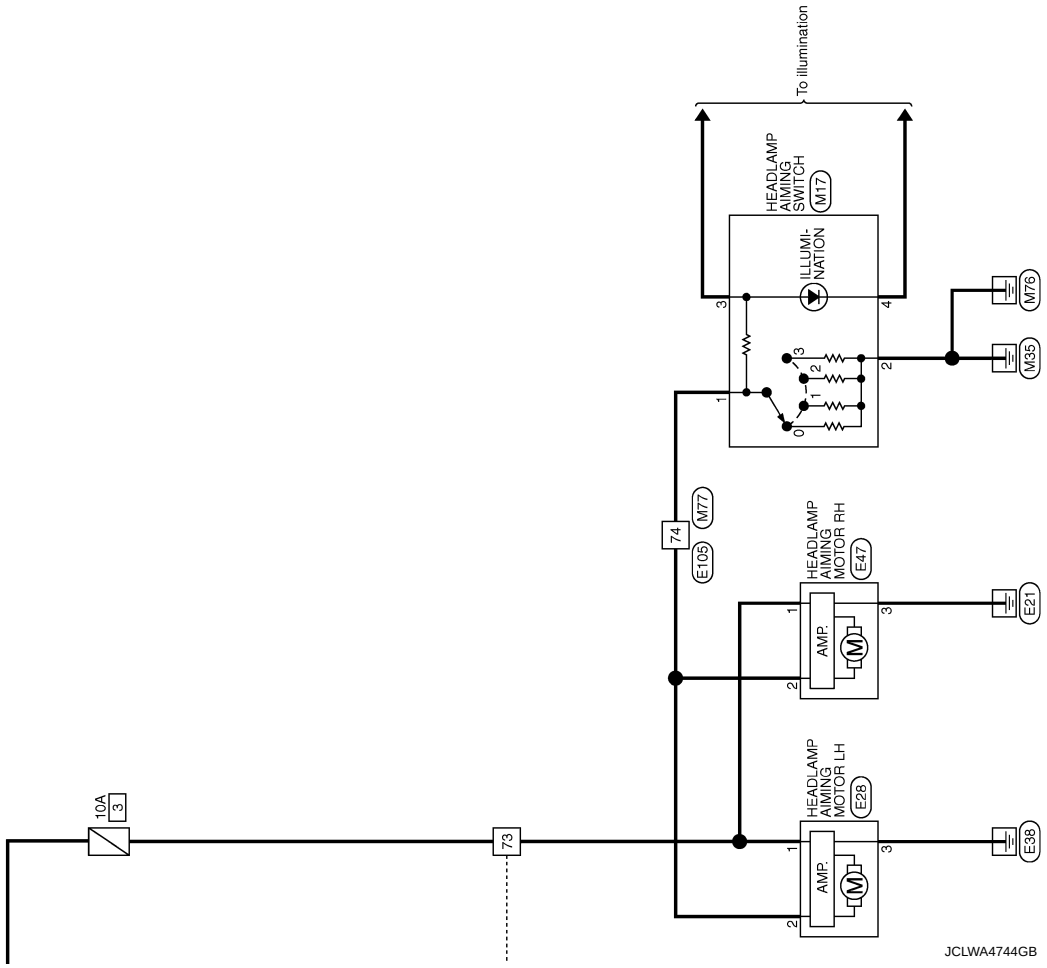
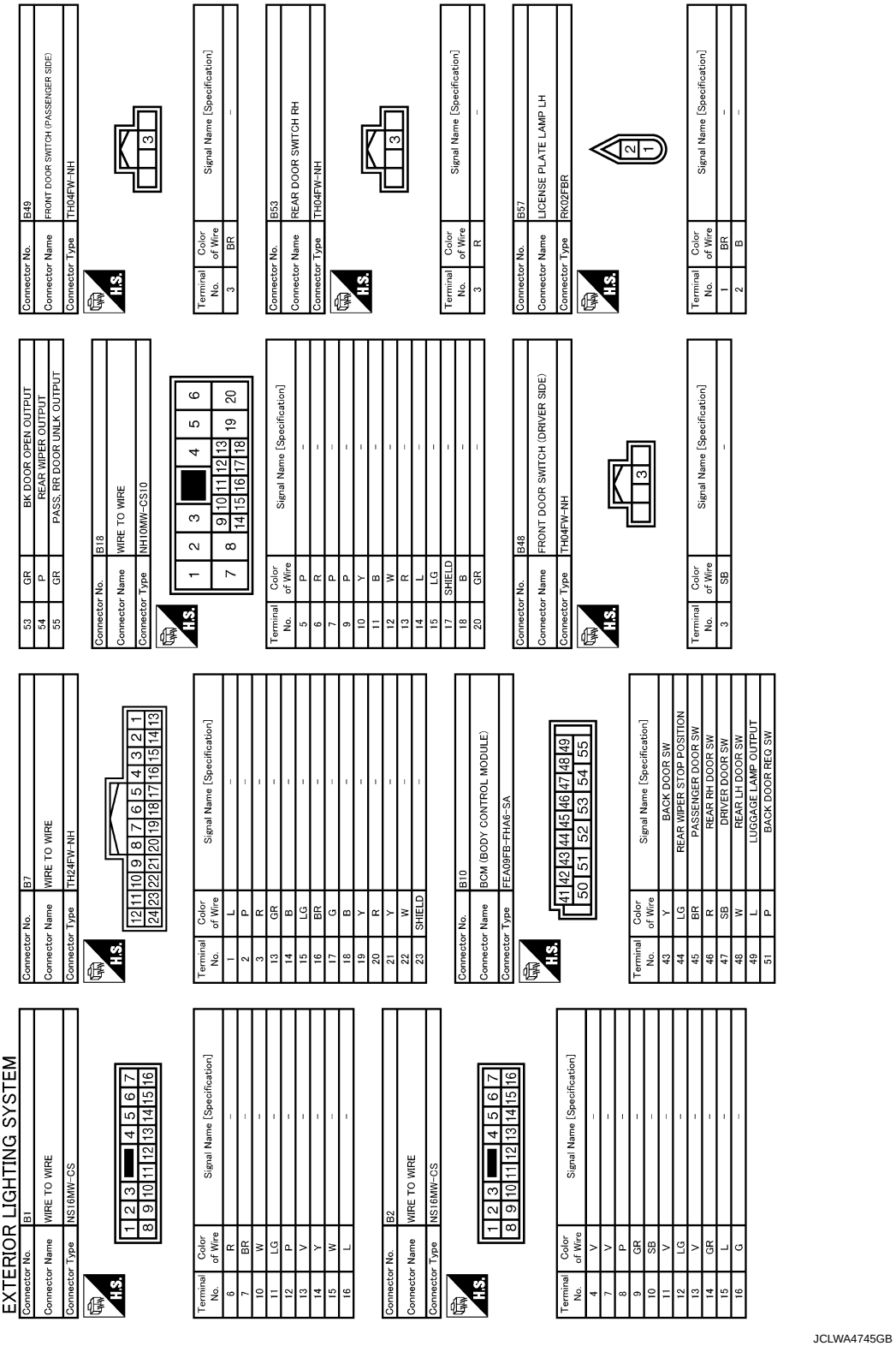

To illumination
HEADLAMP AIMING SWITCH
M17
ILLUMI-NATION
3
4
1
2
0
1
2
3
M76
M35
74
M77
E105
HEADLAMP AIMING MOTOR RH
E47
AMP.
M
1
2
3
E21
HEADLAMP AIMING MOTOR LH
E28
AMP.
M
1
2
3
E38
10A
3
73
JCLWA4744GB

EXTERIOR LIGHTING SYSTEM



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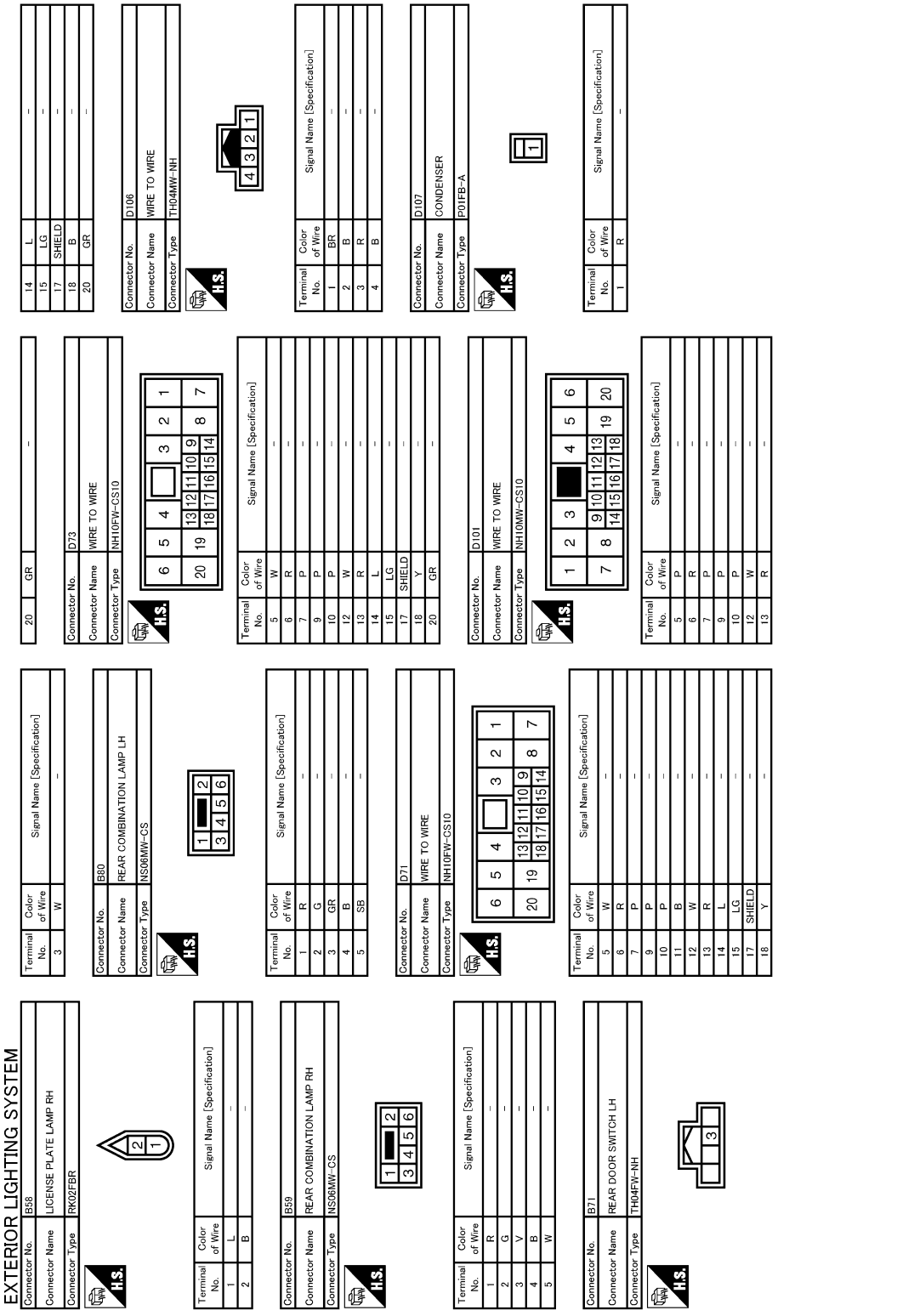
EXTERIOR LIGHTING SYSTEM



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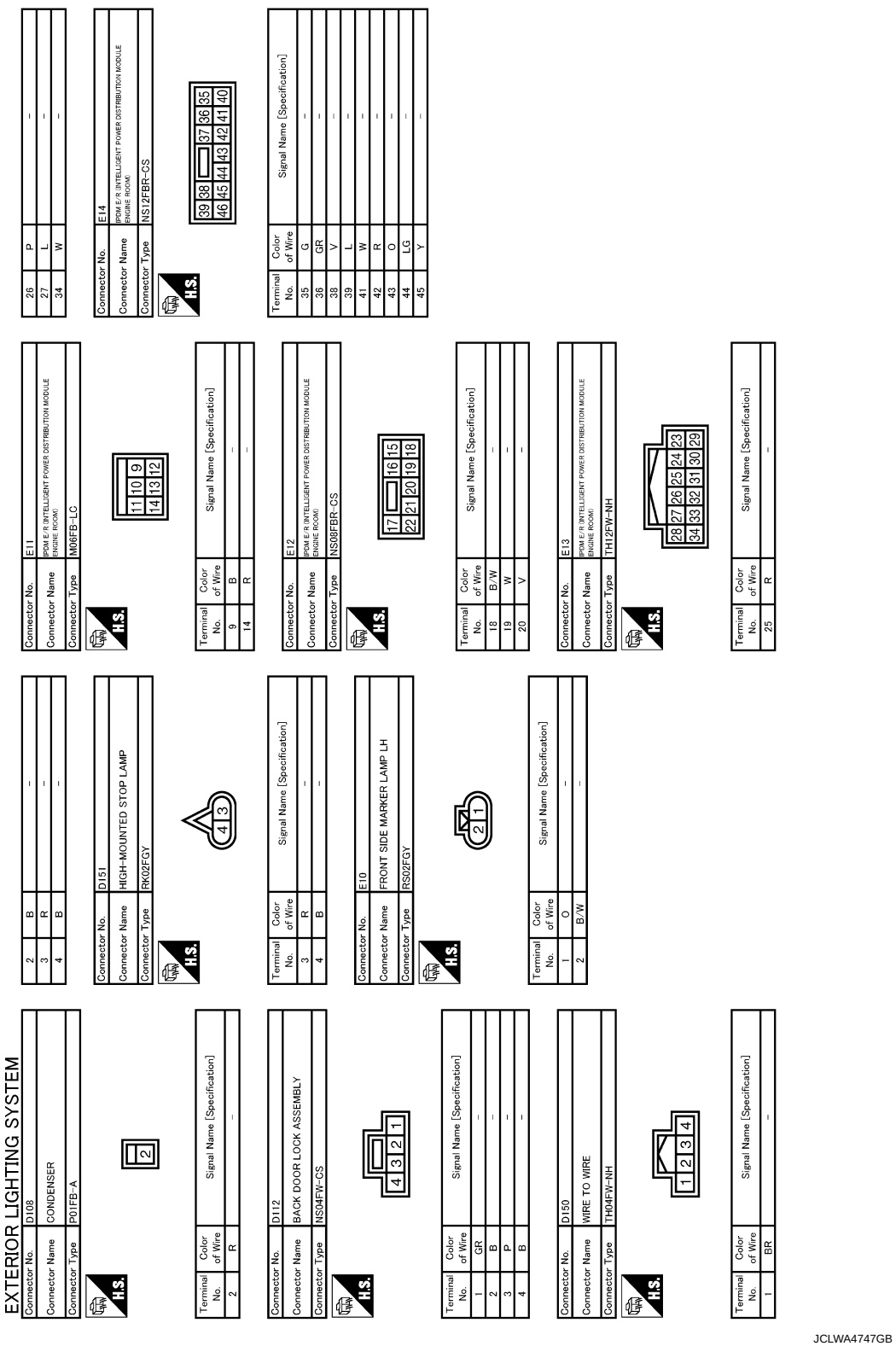

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EXTERIOR LIGHTING SYSTEM

Connector No.	E15
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS16FW-CS

Terminal No.	Color of Wire	Signal Name [Specification]
49	Y	–
50	G	–
51	L	–
52	P	–
55	LG	–
57	R	–
58	O	–
60	GR	–
61	Y	–
62	V	–

Connector No.	E16
Connector Name	FRONT SIDE MARKER LAMP RH
Connector Type	RS02FGY

Terminal No.	Color of Wire	Signal Name [Specification]
1	O	–
2	B/R	–

Connector No.	E23
Connector Name	SIDE TURN SIGNAL LAMP LH
Connector Type	STL02FW

Terminal No.	Color of Wire	Signal Name [Specification]
1	Y	–
2	B/W	–

Connector No.	E26
Connector Name	FRONT COMBINATION LAMP LH
Connector Type	RS08FGY-PR

Terminal No.	Color of Wire	Signal Name [Specification]
1	G	–
2	O	–
3	Y	–
4	B/W	–
5	GR	–
6	L	–
7	LG	–
8	B/W	–

Connector No.	E27
Connector Name	REVERSE LAMP RELAY
Connector Type	MS02FL-M2-LC

Terminal No.	Color of Wire	Signal Name [Specification]
1	O	–
2	SB	–
3	O	–
5	G	–

Connector No.	E28
Connector Name	HEADLAMP AIMING MOTOR LH
Connector Type	RH03FB

Terminal No.	Color of Wire	Signal Name [Specification]
1	R	–
2	L	–
3	B/W	–

Connector No.	E30
Connector Name	FRONT FOG LAMP LH
Connector Type	FH202FB

Terminal No.	Color of Wire	Signal Name [Specification]
1	V	–
2	B/W	–

Connector No.	E40
Connector Name	SIDE TURN SIGNAL LAMP RH
Connector Type	STL02FW

Terminal No.	Color of Wire	Signal Name [Specification]
1	G	–
2	B/R	–

Connector No.	E45
Connector Name	FRONT COMBINATION LAMP RH
Connector Type	RS08FGY-PR

Terminal No.	Color of Wire	Signal Name [Specification]
1	Y	–
2	O	–
3	G	–
4	B/Y	–
5	BR	–
6	P	–
7	R	–
8	B/Y	–

JCLWA4748GB

EXTERIOR LIGHTING SYSTEM

Connector No.	E47
Connector Name	HEADLAMP AIMING MOTOR RH
Connector Type	RH03FB

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
1	R	–
2	L	–
3	B/Y	–

Connector No.	E48
Connector Name	FRONT FOG LAMP RH
Connector Type	FHZ02FB

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
1	W	–
2	B/Y	–

Connector No.	E62
Connector Name	VCM
Connector Type	RH40FBR-R28-L-RH

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
33	L	SENSOR POWER SUPPLY (REFRIGERANT PRESSURE SENSOR)
34	B	REFRIGERANT PRESSURE SENSOR SIGNAL
35	BR	SENSOR GROUND (REFRIGERANT PRESSURE SENSOR)
37	W	SENSOR POWER SUPPLY (ACCELERATOR PEDAL POSITION SENSOR 1)
38	R	ACCELERATOR PEDAL POSITION SENSOR 1 SIGNAL
39	B	SENSOR GROUND (ACCELERATOR PEDAL POSITION SENSOR 1)
40	SHIELD	–
41	R	SENSOR POWER SUPPLY (BATTERY CURRENT SENSOR)
42	Y	BATTERY CURRENT SENSOR SIGNAL
43	L	SENSOR GROUND (BATTERY CURRENT SENSOR)
45	W	SENSOR POWER SUPPLY (ACCELERATOR PEDAL POSITION SENSOR 2)
46	R	ACCELERATOR PEDAL POSITION SENSOR 2 SIGNAL
47	B	SENSOR GROUND (ACCELERATOR PEDAL POSITION SENSOR 2)
48	SHIELD	–
50	L	BATTERY TEMPERATURE SENSOR SIGNAL
51	O	COOLANT TEMPERATURE SENSOR SIGNAL
52	W	SENSOR GROUND (COOLANT TEMPERATURE SENSOR)
57	LG	POWER VOLTAGE VARIABLE CONTROL SIGNAL
59	V	RADIATOR FAN CONTROL SIGNAL
62	G	WATER PUMP 1 ACTIVATION SIGNAL
64	R	WATER PUMP 2 ACTIVATION SIGNAL
67	Y	DC/DC CONVERTER TEMPERATURE SIGNAL
70	W	DC/DC CONVERTER ACTIVATION SIGNAL
73	GR	F/S RELAY
75	W	F/S CHG RELAY
77	LG	F/S RELAY POWER SUPPLY
78	G	M/C RELAY
80	SB	REVERSE LAMP RELAY

Connector No.	E102
Connector Name	STOP LAMP SWITCH
Connector Type	M04FW-LC

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
1	W	–
2	SB	–
3	LG	–
4	P	–

Connector No.	E105
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
1	BR	–
2	R	–
3	GR	–
4	LG	–
6	W	–
7	V	–
8	P	–
9	G	–
10	R	–
11	O	–
12	W	–
13	B	–
14	Y	–
15	BR	–
16	LG	–
17	L	–
19	G	–
20	V	–
21	P	–
22	LG	–
23	GR	–
24	L	–
25	R	–
26	SB	–
27	B	–
29	BR	–
30	W	–
31	V	–
32	LG	–
33	O	–
34	L	–
35	BR	–
38	SB	–
39	GR	–
40	Y	–
41	R	–
42	W	–
43	SB	–
44	GR	–
45	G	–
46	P	–
47	LG	–
48	V	–
49	G	–
50	L	–
51	W	–
54	P	–
55	O	–
56	Y	–
57	P	–
58	LG	–
60	LG	–
61	GR	–
62	BR	–
64	R	–
65	Y	–
66	G	–
67	V	–
68	W	–
69	SB	–
71	Y	–
72	L	–
73	R	–
74	L	–
75	V	–
76	P	–
80	O	–
81	L	–
82	SB	–
83	G	–
84	BR	–
85	LG	–
86	GR	–
88	B	–
89	W	–
90	SHIELD	–
91	Y	–
92	BR	–
93	W	–
94	R	–
95	V	–
96	P	–
97	G	–
98	SB	–
99	O	–

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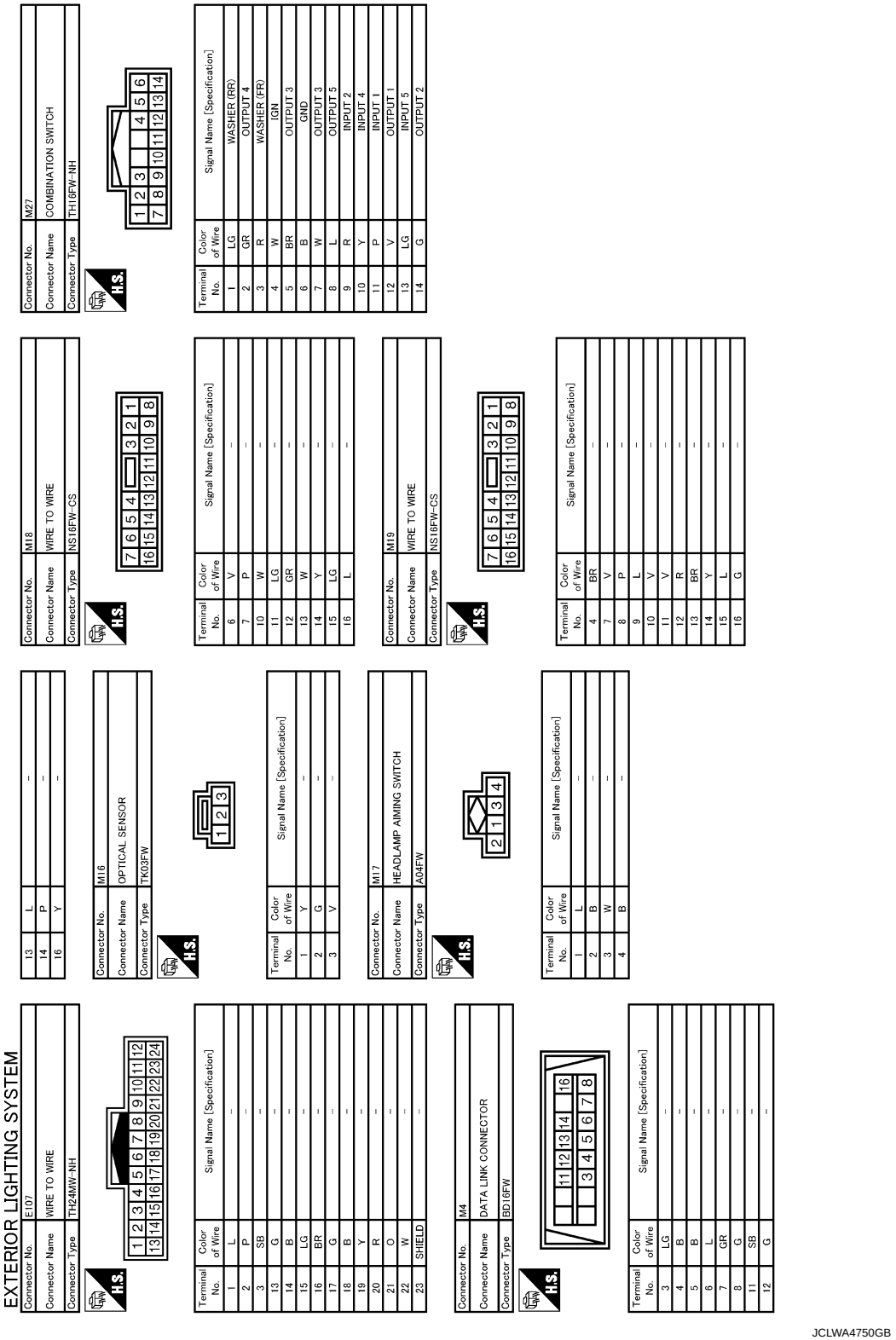
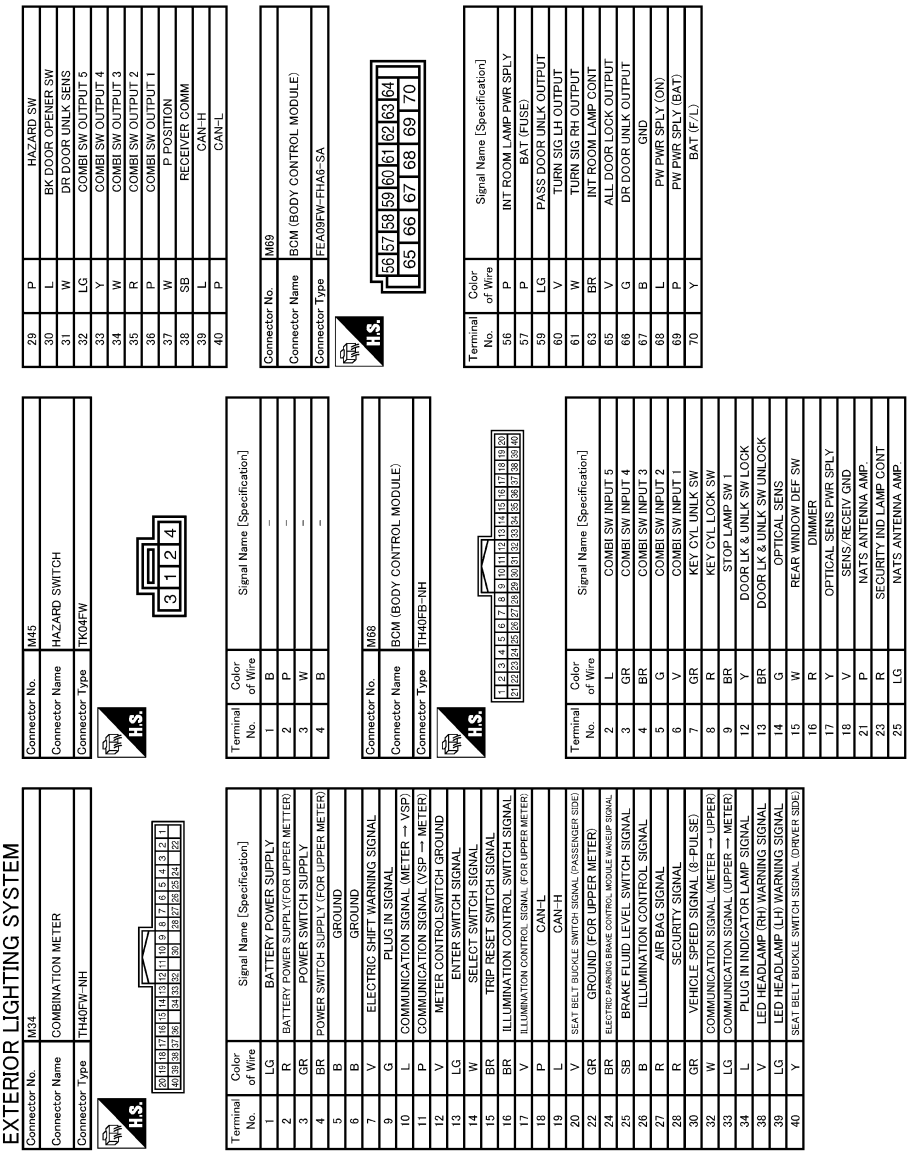


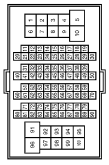
JCLWA4750GB



JCLWA4751GB

EXTERIOR LIGHTING SYSTEM

Connector No.	M77
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4



Terminal No.	Color of Wire	Signal Name [Specification]
1	GR	–
2	V	–
3	GR	–
4	LG	–
6	W	–
7	V	–
8	P	–
9	SB	–
10	L	–
11	LG	–
12	W	–
13	R	–
14	Y	–
15	R	–
16	GR	–
17	BR	–
19	G	–
20	G	–
21	P	–
22	LG	–
23	GR	–
24	L	–
25	V	–
26	W	–
27	L	–
29	V	–
30	W	–
31	SB	–
32	LG	–
33	V	–
34	L	–
35	SB	–
38	LG	–
39	GR	–
40	Y	–
41	R	–
42	W	–
43	SB	–
44	GR	–
45	P	–
46	R	–
47	W	–
48	L	–
49	G	–
50	L	–
51	L	–
54	W	–
55	G	–
56	BR	–
57	P	–
58	R	–
60	Y	–
61	GR	–
62	SB	–
64	G	–
65	V	–
66	P	–
67	Y	–
68	P	–
69	BR	–
71	Y	–
72	L	–
73	G	–
74	L	–
75	V	–
76	R	–
80	W	–
81	L	–
82	SB	–
83	R	–
84	BR	–
85	R	–
86	GR	–
88	R	–
89	W	–
90	SHIELD	–
91	Y	–
92	BR	–
93	W	–
94	P	–
95	V	–
96	P	–
97	G	–
98	R	–
99	LG	–

JCLWA4752GB

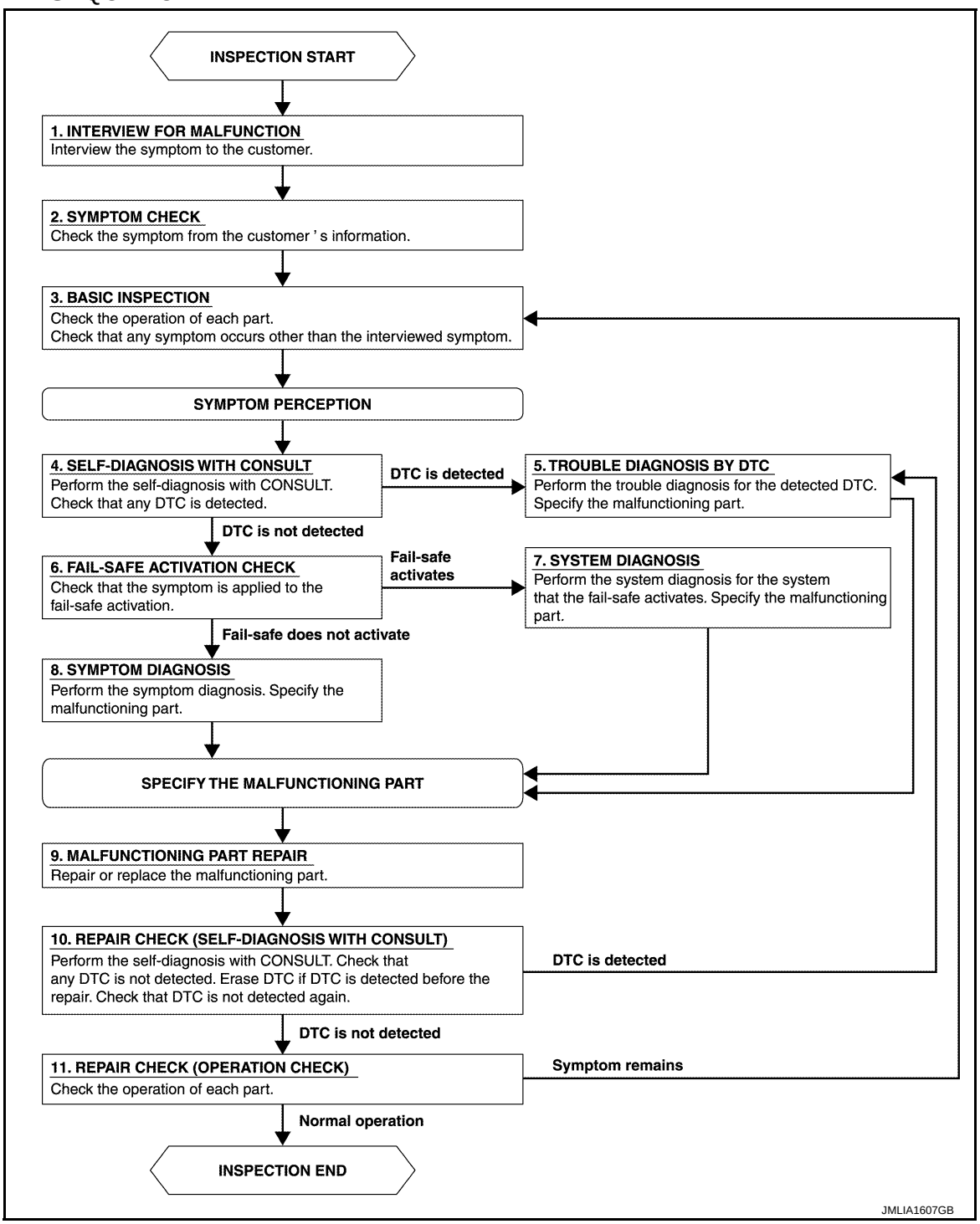
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:0000000006893334

OVERALL SEQUENCE



DETAILED FLOW

1.INTERVIEW FOR MALFUNCTION

Interview the symptom to the customer.

>> GO TO 2.

2.SYMPTOM CHECK

Check the symptom from the customer's information.

>> GO TO 3.

3.BASIC INSPECTION

Check the operation of each part. Check that any symptom occurs other than the interviewed symptom.

>> GO TO 4.

4.SELF-DIAGNOSIS WITH CONSULT

Perform the self-diagnosis with CONSULT. Check that any DTC is detected.

Is any DTC detected?

YES >> GO TO 5.
NO >> GO TO 6.

5.TROUBLE DIAGNOSIS BY DTC

Perform the trouble diagnosis for the detected DTC. Specify the malfunctioning part.

>> GO TO 9.

6.FAIL-SAFE ACTIVATION CHECK

Check that the symptom is applied to the fail-safe activation.

Does the fail-safe activate?

YES >> GO TO 7.
NO >> GO TO 8.

7.SYSTEM DIAGNOSIS

Perform the system diagnosis for the system that the fail-safe activates. Specify the malfunctioning part.

>> GO TO 9.

8.SYMPTOM DIAGNOSIS

Perform the symptom diagnosis. Specify the malfunctioning part.

>> GO TO 9.

9.MALFUNCTION PART REPAIR

Repair or replace the malfunctioning part.

>> GO TO 10.

10.REPAIR CHECK (SELF-DIAGNOSIS WITH CONSULT)

Perform the self-diagnosis with CONSULT. Check that any DTC is not detected. Erase DTC if DTC is detected before the repair. Check that DTC is not detected again.

Is any DTC detected?

YES >> GO TO 5.
NO >> GO TO 11.

11.REPAIR CHECK (OPERATION CHECK)

Check the operation of each part.

Does it operate normally?

YES >> INSPECTION END
NO >> GO TO 3.

LED HEADLAMP OPERATION INSPECTION

Diagnosis Procedure

INFOID:0000000006893341

1.CHECK START

1. In the cool LED status (wait for more than 10 minutes after turning headlamp OFF), turn ON and turn OFF headlamp for the several times. Check that headlamp operates normally each time.
2. In the cool LED status, turn headlamp ON, wait until headlamp enters to the stable status (approximately 5 minutes after turning headlamp ON), and then check that headlamp operates normally without blinking or flickering.
3. In the warm LED status (turn headlamp ON for more than 15 minutes and wait for 1 minute after turning OFF), turn ON and turn OFF headlamp for the several times. Check that headlamp operates normally each time.
4. Turn headlamp ON for approximately 30 minutes, and then check that headlamp operates normally without difference in brightness between LH and RH, blinking or flickering.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Refer to EXL-72, "Symptom Table".

DTC/CIRCUIT DIAGNOSIS

HEADLAMP (HI) CIRCUIT

Component Function Check

INFOID:0000000006905268

1.CHECK HEADLAMP (HI) OPERATION

CONSULT ACTIVE TEST
1. Select “EXTERNAL LAMPS” of IPDM E/R active test item.
2. With operating the test items, check that the headlamp (HI) is turned ON.

Hi : Headlamp (HI) ON
Off : Headlamp (HI) OFF

NOTE:
ON/OFF is repeated 1 second each.

Is the inspection result normal?

YES >> Headlamp (HI) circuit is normal.
NO >> Refer to EXL-48, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006905269

1.CHECK HEADLAMP (HI) OUTPUT VOLTAGE

CONSULT ACTIVE TEST
1. Turn power switch OFF.
2. Disconnect front combination lamp connector.
3. Turn power switch ON.
4. Select “EXTERNAL LAMPS” of IPDM E/R active test item.
5. With operating the test items, check voltage between IPDM E/R harness connector and ground.

(+)			(–)	Test item		Voltage (Approx.)
IPDM E/R						
Connector		Terminal				
RH	E15	49	Ground	EXTERNAL LAMPS	Hi	Battery voltage
					Off	0 V
LH		50			Hi	Battery voltage
					Off	0 V

Is the inspection result normal?

YES >> GO TO 2.
NO >> GO TO 3.

2.CHECK HEADLAMP (HI) OPEN CIRCUIT

1. Turn power switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between IPDM E/R harness connector and front combination lamp harness connector.

IPDM E/R			Front combination lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	E15	49	E45	1	Existed
LH		50	E26		

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace harness.

3.CHECK HEADLAMP (HI) FUSE

1. Turn power switch OFF.
2. Check that the following fuses are not fusing.

Unit	Location	Fuse No.	Capacity
Headlamp HI (RH)	IPDM E/R	#51	10 A
Headlamp HI (LH)		#52	

Is the inspection result normal?

YES >> Replace IPDM E/R.
NO >> GO TO 4.

4.CHECK HEADLAMP HIGH (HI) SHORT CIRCUIT

1. Disconnect IPDM E/R connector.
2. Check continuity between IPDM E/R harness connector and ground.

IPDM E/R			Ground	Continuity
Connector		Terminal		
RH	E15	49		Not existed
LH		50		

Is the inspection result normal?

YES >> Replace fuse. (Replace IPDM E/R if the fuse is fusing again.)
NO >> Repair or replace harness. And then replace the fuse.

5.CHECK HEADLAMP (HI) GROUND OPEN CIRCUIT

1. Turn power switch OFF.
2. Disconnect front combination lamp connector.
3. Check continuity between front combination lamp harness connector and ground.

Front combination lamp			Ground	Continuity
Connector		Terminal		
RH	E45	4		Existed
LH	E26			

Is the inspection result normal?

YES >> Replace headlamp (HI) bulb.
NO >> Repair or replace harness.

HEADLAMP (LO) CIRCUIT

Component Function Check

INFOID:0000000006905270

1.CHECK HEADLAMP (LO) OPERATION

CONSULT ACTIVE TEST
1. Select “EXTERNAL LAMPS” of IPDM E/R active test item.
2. With operating the test items, check that the headlamp (LO) is turned ON.

Lo : Headlamp (LO) ON
Off : Headlamp (LO) OFF

Is the inspection result normal?

YES >> Headlamp (LO) circuit is normal.
NO >> Refer to EXL-50, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006905271

1.CHECK HEADLAMP (LO) OUTPUT VOLTAGE

CONSULT ACTIVE TEST
1. Turn power switch OFF.
2. Disconnect front combination lamp connector.
3. Turn power switch ON.
4. Select “EXTERNAL LAMPS” of IPDM E/R active test item.
5. With operating the test items, check voltage between IPDM E/R harness connector and ground.

(+)			(–)	Test item		Voltage (Approx.)
IPDM E/R						
Connector		Terminal				
RH	E15	52	Ground	EXTERNAL LAMPS	Lo	Battery voltage
					Off	0 V
LH		51			Lo	Battery voltage
					Off	0 V

Is the inspection result normal?

YES >> GO TO 2.
NO >> GO TO 3.

2.CHECK HEADLAMP (LO) OPEN CIRCUIT

1. Turn power switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between IPDM E/R harness connector and front combination lamp harness connector.

IPDM E/R			Front combination lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	E15	52	E45	6	Existed
LH		51	E26		

Is the inspection result normal?

YES >> Perform the LED headlamp diagnosis. Refer to EXL-52, "Diagnosis Procedure".
NO >> Repair or replace harness.

3.CHECK HEADLAMP (LO) FUSE

1. Turn power switch OFF.
2. Check that the following fuses are not fusing.

Unit	Location	Fuse No.	Capacity
Headlamp LO (RH)	IPDM E/R	#54	15 A
Headlamp LO (LH)		#53	

Is the inspection result normal?

YES >> Replace IPDM E/R.
NO >> GO TO 4.

4. CHECK HEADLAMP (LO) SHORT CIRCUIT-1

1. Disconnect IPDM E/R connector.
2. Check continuity between IPDM E/R harness connector and ground.

IPDM E/R			Ground	Continuity
Connector		Terminal		
RH	E15	52		Not existed
LH		51		

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace harness. And then replace the fuse.

5. CHECK HEADLAMP (LO) SHORT CIRCUIT-2

CONSULT ACTIVE TEST

1. Replace fuse.
2. Connect IPDM E/R connector.
3. Turn power switch ON.
4. Select “EXTERNAL LAMPS” of IPDM E/R active test item.
5. Check that fuse is not fusing when Lo button is operated.

Is the inspection result normal?

YES >> GO TO 6.
NO >> Replace IPDM E/R.

6. CHECK HEADLAMP (LO) SHORT CIRCUIT-3

1. Turn power switch OFF.
2. Connect front combination lamp connector.
3. Check that headlamp turns ON when lighting switch is in the 2ND position.

Is the inspection result normal?

YES >> Refer to GI-51, "Intermittent Incident".
NO >> Replace LED headlamp control module.

LED HEADLAMP

Diagnosis Procedure

INFOID:0000000006905272

1.CHECK HEADLAMP (LO) GROUND OPEN CIRCUIT

1. Turn power switch OFF.
2. Disconnect front combination lamp connector.
3. Check continuity between front combination lamp harness connector and ground.

Front combination lamp		Ground	Continuity
Connector		Terminal		
RH	E45	8		Existed
LH	E26		

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace harness.

2.CHECK LED HEAD LAMP CONTROL MODULE

Install the normal LED headlamp control module to the applicable headlamp. Check that the lighting switch is turned ON. Refer to EXL-47, "Diagnosis Procedure".

Is the headlamp turned ON?

YES >> Replace LED headlamp control module.
NO >> GO TO 3.

3.CHECK HEADLAMP

Install the normal headlamp to the applicable headlamp. Check that the headlamp is turned ON. Refer to EXL-47, "Diagnosis Procedure".

Is the headlamp turned ON?

YES >> Replace headlamp.
NO >> LED headlamp is normal. Check headlamp control system.

HEADLAMP WARNING LAMP

Component Function Check

INFOID:0000000006905274

1.CHECK HEADLAMP WARNING LAMP OPERATION

1. Turn power switch OFF.
2. Disconnect front combination lamp connector.
3. Check that headlamp warning lamp on combination meter turns ON when power switch is turned ON.

Is the inspection result normal?

YES >> Headlamp warning lamp is normal.
NO >> Refer to EXL-53, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006905275

1.LED HEADLAMP CONTROL MODULE FUSE

1. Turn power switch OFF.
2. Check that the following fuse is not fusing.

Unit	Fuse No.	Capacity
LED headlamp control module	#5	10 A

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the applicable circuit. And then replace the fuse.

2.CHECK POWER SUPPLY CIRCUIT

1. Disconnect front combination lamp connector.
2. Turn power switch ON.
3. Check voltage between front combination lamp harness connector and ground.

(+)			(–)	Voltage (Approx.)
Front combination lamp				
Connector		Terminal		
RH	E45	5	Ground	Battery voltage
LH	E26			

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace harness.

3.CHECK HEADLAMP WRNING LAMP SIGNAL CIRCUIT

Check voltage between front combination lamp harness connector and ground.

(+)			(–)	Voltage (Approx.)
Front combination lamp				
Connector		Terminal		
RH	E45	7	Ground	Less than 0.5 V
LH	E26			

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace LED head lamp control module

4.CHECK HEADLAMP WRNING LAMP SIGNAL SHORT CIRCUIT

1. Turn power switch OFF.
2. Disconnect combination meter connector.
3. Check continuity between combination meter harness connector and ground.

Combination meter			Ground	Continuity
Connector		Terminal		
RH	M34	38		Not existed
LH		39		

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace harness.

5. CHECK COMBINATION METER

Check combination meter. Refer to MWI-71, "Work flow".

Is the inspection result normal?

YES >> Refer to EXL-76, "Diagnosis Procedure".
NO >> Repair or replace malfunctioning part.

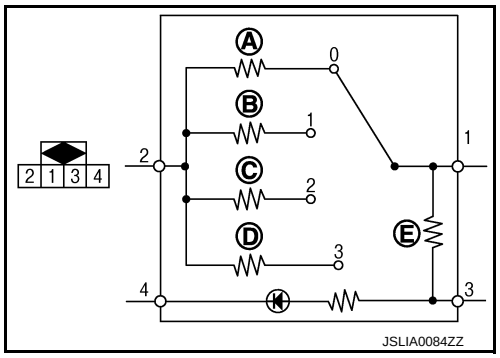
HEADLAMP AIMING SYSTEM (MANUAL)

Component Inspection

INFOID:0000000006893559

1.CHECK HEADLAMP AIMING SWITCH

1. Remove headlamp aiming switch.
2. Check resistance among each headlamp aiming switch terminal.



Headlamp aiming switch			Condition	Resistance (Approx.)
Connector	Terminal		Switch position	
M17	1	2	0	A: 160 Ω
			1	B: 240 Ω
			2	C: 330 Ω
			3	D: 470 Ω
		3	—	E: 390 Ω

Is the inspection result normal?

YES >> Headlamp aiming switch is normal.
NO >> Replace the headlamp aiming switch.

PARKING LAMP CIRCUIT

Component Function Check

INFOID:0000000006905276

1.CHECK PARKING LAMP OPERATION

CONSULT ACTIVE TEST
1. Select “EXTERNAL LAMPS” of IPDM E/R active test item.
2. With operating the test items, check that the parking lamp is turned ON.

TAIL : Parking lamp ON
Off : Parking lamp OFF

Is the inspection result normal?

YES >> Parking lamp circuit is normal.
NO >> Refer to EXL-56, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006905277

1.CHECK PARKING LAMP FUSE

1. Turn power switch OFF.
2. Check that the following fuse is not fusing.

Unit	Location	Fuse No.	Capacity
• Parking lamp • Front side marker lamp • Tail lamp (RH) • License plate lamp	IPDM E/R	#47	10 A

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 2.

2.CHECK PARKING LAMP SHORT CIRCUIT

1. Disconnect the following connectors.
- IPDM E/R
- Front combination lamp
- Front side marker lamp
- Rear combination lamp (RH)
- License plate lamp
2. Check continuity between IPDM E/R harness connector and ground.

IPDM E/R		Ground	Continuity
Connector	Terminal		
E14	43		Not existed
	44		

Is the inspection result normal?

YES >> Replace fuse. (Replace IPDM E/R if fusing is found again.)
NO >> Repair or replace harness. And then replace the fuse.

3.CHECK PARKING LAMP BULB

Check applicable lamp bulb.

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace bulb.

4.CHECK PARKING LAMP OUTPUT VOLTAGE

CONSULT ACTIVE TEST

1. Disconnect front combination lamp connector.
2. Turn power switch ON.
3. Select “EXTERNAL LAMPS” of IPDM E/R active test item.
4. With operating the test items, check voltage between IPDM E/R harness connector and ground.

(+)		(–)	Test item		Voltage (Approx.)
IPDM E/R					
Connector	Terminal				
E14	43	Ground	EXTERNAL LAMPS	TAIL	Battery voltage
				Off	0 V

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace IPDM E/R.

5.CHECK PARKING LAMP OPEN CIRCUIT

1. Turn power switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between IPDM E/R harness connector and front combination lamp harness connector.

IPDM E/R			Front combination lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	E14	43	E45	2	Existed
LH			E26		

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair or replace harness.

6.CHECK PARKING LAMP GROUND OPEN CIRCUIT

Check continuity between front combination lamp harness connector and ground.

Front combination lamp			Ground	Continuity
Connector		Terminal		
RH	E45	4		Existed
LH	E26			

Is the inspection result normal?

YES >> Check corresponding bulb socket and harness. Repair or replace if necessary.
NO >> Repair or replace harness.

FRONT SIDE MARKER LAMP CIRCUIT

Component Function Check

INFOID:0000000006893554

1.CHECK PARKING LAMP OPERATION

Check that the parking lamp is turned ON.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Check parking lamp circuit. Refer to EXL-56, "Component Function Check".

2.CHECK FRONT SIDE MARKER LAMP OPERATION

CONSULT ACTIVE TEST

1. Select “EXTERNAL LAMPS” of IPDM E/R active test item.
2. With operating the test items, check that the front side marker lamp is turned ON.

TAIL : Front side marker lamp ON
Off : Front side marker lamp OFF

Is the inspection result normal?

YES >> Front side marker lamp circuit is normal.
NO >> Refer to EXL-58, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006893555

1.CHECK FRONT SIDE MARKER LAMP BULB

Check applicable lamp bulb.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace bulb.

2.CHECK FRONT SIDE MARKER LAMP OPEN CIRCUIT

1. Turn power switch OFF.
2. Disconnect IPDM E/R connector and front side marker lamp connector.
3. Check continuity between IPDM E/R harness connector and front side marker lamp harness connector.

IPDM E/R			Front side marker lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	E14	43	E16	1	Existed
LH			E10		

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace harness.

3.CHECK FRONT SIDE MARKER LAMP GROUND OPEN CIRCUIT

Check continuity between front side marker lamp harness connector and ground.

Front side marker lamp			Ground	Continuity
Connector		Terminal		
RH	E16	2		Existed
LH	E10			

Is the inspection result normal?

YES >> Check corresponding bulb socket and harness. Repair or replace if necessary.
NO >> Repair or replace harness.

TAIL LAMP CIRCUIT

Component Function Check

INFOID:0000000006905278

1.CHECK TAIL LAMP OPERATION

CONSULT ACTIVE TEST
1. Select “EXTERNAL LAMPS” of IPDM E/R active test item.
2. With operating the test items, check that the tail lamp is turned ON.

TAIL : Tail Lamp ON
Off : Tail lamp OFF

Is the inspection result normal?

YES >> Tail lamp circuit is normal.
NO >> Refer to EXL-59, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006905279

1.CHECK PARKING LAMP OPERATION

Check that the parking lamp is turned ON.

Is the inspection result normal?

YES-1 [When tail lamp (RH) does not turn ON.]>>GO TO 5.
YES-2 [When tail lamp (LH) does not turn ON.]>>GO TO 2.
NO >> Check parking lamp circuit. Refer to EXL-56, "Component Function Check".

2.CHECK TAIL LAMP (LH) FUSE

1. Turn power switch OFF.
2. Check that the following fuse is not fusing.

Unit	Location	Fuse No.	Capacity
Tail lamp (LH)	IPDM E/R	#46	10 A

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 4.

3.CHECK TAIL LAMP (LH) OUTPUT VOLTAGE

CONSULT ACTIVE TEST
1. Disconnect rear combination lamp (LH) connector.
2. Turn power switch ON.
3. Select “EXTERNAL LAMPS” of IPDM E/R active test item.
4. With operating the test items, check voltage between IPDM E/R harness connector and ground.

(+)		(–)	Test item		Voltage (Approx.)
IPDM E/R					
Connector	Terminal				
E14	38	Ground	EXTERNAL LAMPS	TAIL	Battery voltage
				Off	0 V

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace IPDM E/R.

4.CHECK TAIL LAMP (LH) SHORT CIRCUIT

1. Disconnect IPDM E/R connector and rear combination lamp (LH) connector.
2. Check continuity between IPDM E/R harness connector and ground.

IPDM E/R		Ground	Continuity
Connector	Terminal		
E14	38		Not existed

Is the inspection result normal?

YES >> Replace fuse. (Replace IPDM E/R if fusing is found again.)
NO >> Repair or replace harness. And then replace the fuse.

5.CHECK TAIL LAMP OPEN CIRCUIT

1. Turn power switch OFF.
2. Disconnect IPDM E/R connector and rear combination lamp connector.
3. Check continuity between IPDM E/R harness connector and rear combination lamp harness connector.

IPDM E/R			Rear combination lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	E14	44	B59	3	Existed
LH		38	B80		

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair or replace harness.

6.CHECK TAIL LAMP GROUND OPEN CIRCUIT

Check continuity between rear combination lamp harness connector and ground.

Rear combination lamp			Ground	Continuity
Connector		Terminal		
RH	B59	4		Existed
LH	B80			

Is the inspection result normal?

YES >> Replace rear combination lamp.
NO >> Repair or replace harness.

LICENSE PLATE LAMP CIRCUIT

Component Function Check

INFOID:0000000006905280

1.CHECK TAIL LAMP (RH) OPERATION

Check that the tail lamp (RH) is turned ON.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Check tail lamp circuit. Refer to EXL-59, "Component Function Check".

2.CHECK LICENSE PLATE LAMP OPERATION

CONSULT ACTIVE TEST

1. Select “EXTERNAL LAMPS” of IPDM E/R active test item.
2. With operating the lighting switch, check that the license plate lamp is turned ON.

TAIL : License plate lamp ON
Off : License plate lamp OFF

Is the inspection result normal?

YES >> License plate lamp circuit is normal.
NO >> Refer to EXL-61, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006905281

1.CHECK LICENSE PLATE LAMP BULB

Check the applicable lamp bulb.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace bulb.

2.CHECK LICENSE PLATE LAMP OPEN CIRCUIT

1. Turn power switch OFF.
2. Disconnect IPDM E/R connector and license plate lamp connector.
3. Check continuity between IPDM E/R harness connector and license plate lamp harness connector.

IPDM E/R			License plate lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	E14	44	B58	1	Existed
LH			B57		

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace harness.

3.CHECK LICENSE PLATE LAMP GROUND OPEN CIRCUIT

Check continuity between license plate lamp harness connector and ground.

License plate lamp			Ground	Continuity
Connector		Terminal		
RH	B58	2		Existed
LH	B57			

Is the inspection result normal?

YES >> Check corresponding bulb socket and harness. Repair or replace if necessary.
NO >> Repair or replace harness.

FRONT FOG LAMP CIRCUIT

Component Function Check

INFOID:0000000006905282

1.CHECK FRONT FOG LAMP OPERATION

CONSULT ACTIVE TEST
1. Select “EXTERNAL LAMPS” of IPDM E/R active test item.
2. With operating the test items, check that the front fog lamp is turned ON.

Fog : Front fog lamp ON
Off : Front fog lamp OFF

Is the measurement normal?

YES >> Front fog lamp circuit is normal.
NO >> Refer to EXL-62, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006905283

1.CHECK FRONT FOG LAMP FUSE

1. Turn power switch OFF.
2. Check that the following fuse is not fusing.

Unit	Location	Fuse No.	Capacity
Front fog lamp	IPDM E/R	#50	15 A

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 2.

2.CHECK FRONT FOG LAMP SHORT CIRCUIT

1. Disconnect front fog connector and IPDM E/R connector.
2. Check continuity between IPDM E/R harness connector and ground.

IPDM E/R			Ground	Continuity
Connector		Terminal		
RH	E12	19		Not existed
LH		20		

Is the inspection result normal?

YES >> Replace fuse. (Replace IPDM E/R if the fuse is fusing again.)
NO >> Repair or replace harness. And then replace the fuse.

3.CHECK FRONT FOG LAMP BULB

Check the applicable lamp bulb.

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace bulb.

4.CHECK FRONT FOG LAMP OUTPUT VOLTAGE

CONSULT ACTIVE TEST
1. Disconnect front fog lamp connector.
2. Turn power switch ON.
3. Select “EXTERNAL LAMPS” of IPDM E/R active test item.
4. With operating the test items, check the voltage between IPDM E/R harness connector and ground.

(+)			(–)	Test item		Voltage (Approx.)
IPDM E/R						
Connector		Terminal				
RH	E12	19	Ground	EXTERNAL LAMPS	Fog	Battery voltage
					Off	0 V
LH		20			Fog	Battery voltage
					Off	0 V

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace IPDM E/R.

5.CHECK FRONT FOG LAMP OPEN CIRCUIT

1. Turn power switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between IPDM E/R harness connector and front fog lamp harness connector.

IPDM E/R			Front fog lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	E12	19	E48	1	Existed
LH		20	E30		

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair or replace harness.

6.CHECK FRONT FOG LAMP GROUND CIRCUIT OPEN CIRCUIT

Check continuity between front fog lamp harness connector and ground.

Front fog lamp			Ground	Continuity
Connector		Terminal		
RH	E48	2		Existed
LH	E30			

Is the inspection result normal?

YES >> Refer to GI-51, "Intermittent Incident".
NO >> Repair or replace harness.

TURN SIGNAL LAMP CIRCUIT

Component Function Check

INFOID:0000000006905284

1.CHECK TURN SIGNAL LAMP

CONSULT ACTIVE TEST
1. Select “FLASHER” of BCM (FLASHER) active test item.
2. With operating the test items, check that the turn signal lamps is turned ON.

LH : Turn signal lamps (LH) ON
RH : Turn signal lamps (RH) ON
Off : Turn signal lamps OFF

Is the inspection result normal?

YES >> Turn signal lamp circuit is normal.
NO >> Refer to EXL-64, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006905285

1.CHECK TURN SIGNAL LAMP BULB

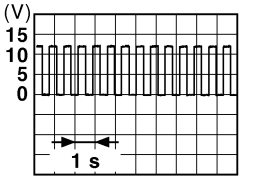
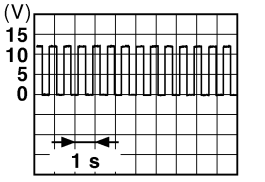
Check the applicable lamp bulb.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace bulb.

2.CHECK TURN SIGNAL LAMP OUTPUT VOLTAGE

1. Turn power switch OFF.
2. Disconnect front combination lamp connector, side turn signal lamp connector and rear combination lamp connector.
3. Turn power switch ON.
4. With operating the turn signal switch, check voltage between BCM harness connector and ground.

(+)			(–)	Condition		Voltage (Approx.)
BCM						
Connector		Terminal				
LH	M69	60	Ground	Turn signal switch	LH	 PKID0926E
					OFF	0 V
RH		61			RH	 PKID0926E
					OFF	0 V

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 4.

3. CHECK TURN SIGNAL LAMP OPEN CIRCUIT

1. Turn power switch OFF.
2. Disconnect BCM connector.
3. Check continuity between BCM harness connector and front combination lamp, side turn signal lamp or rear combination lamp harness connector.

Front turn signal lamp

BCM			Front combination lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	M69	61	E45	3	Existed
LH		60	E26		

Side turn signal lamp

BCM			Side turn signal lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	M69	61	E40	1	Existed
LH		60	E23		

Rear turn signal lamp

BCM			Rear combination lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	M69	61	B59	5	Existed
LH		60	B80		

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace harness.

4. CHECK TURN SIGNAL LAMP SHORT CIRCUIT

Check continuity between BCM harness connector and ground.

BCM			Ground	Continuity
Connector		Terminal		
RH	M69	61		Not existed
LH		60		

Is the inspection result normal?

YES >> Check each bulb socket for internal short circuit, and if check result is normal, replace BCM. Refer to BCS-76, "Removal and Installation".
NO >> Repair or replace harness.

5. CHECK TURN SIGNAL LAMP GROUND OPEN CIRCUIT

Check continuity between BCM harness connector and front combination lamp, side turn signal lamp or rear combination lamp and ground.

Front turn signal lamp

Front combination lamp			Ground	Continuity
Connector		Terminal		
RH	E45	4		Existed
LH	E26			

Side turn signal lamp

Side turn signal lamp			Ground	Continuity
Connector		Terminal		
RH	E40	2		Existed
LH	E23			

Rear turn signal lamp

Rear combination lamp			Ground	Continuity
Connector		Terminal		
RH	B59	4		Existed
LH	B80			

Is the inspection result normal?

YES >> Check corresponding bulb socket and harness. Repair or replace if necessary.
NO >> Repair or replace harness.

OPTICAL SENSOR

Component Function Check

INFOID:0000000006893459

1.CHECK OPTICAL SENSOR SIGNAL BY CONSULT

CONSULT DATA MONITOR
1. Turn power switch ON.
2. Select “OPTISEN (DTCT)” of BCM (HEADLAMP) data monitor item.
3. Turn lighting switch AUTO.
4. With the optical sensor illuminating, check the monitor status.

Monitor item	Condition		Voltage (Approx.)
OPTISEN (DTCT)	Optical sensor	When illuminating	3.1 V or more *
		When shutting off light	0.6 V or less

*: Illuminates the optical sensor. The value may be less than the standard value if brightness is weak.

Is the inspection result normal?

YES >> Optical sensor is normal.
NO >> Refer to EXL-67, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006893460

1.CHECK OPTICAL SENSOR POWER SUPPLY INPUT

1. Turn power switch ON.
2. Turn lighting switch AUTO.
3. Check voltage between optical sensor harness connector and ground.

(+)		(–)	Voltage (Approx.)
Optical sensor			
Connector	Terminal		
M16	1	Ground	5 V

Is the inspection result normal?

YES >> GO TO 2.
NO >> GO TO 4.

2.CHECK OPTICAL SENSOR GROUND INPUT

Check voltage between optical sensor harness connector and ground.

(+)		(–)	Voltage (Approx.)
Optical sensor			
Connector	Terminal		
M16	3	Ground	0 V

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 6.

3.CHECK OPTICAL SENSOR SIGNAL OUTPUT

With illuminating the optical sensor, check voltage between optical sensor harness connector and ground.

(+)		(–)	Condition		Voltage (Approx.)
Optical sensor					
Connector	Terminal				
M16	2	Ground	Optical sensor	When illuminating	3.1 V or more *
				When shutting off light	0.6 V or less

*: Illuminate the optical sensor. The value may be less than the standard if brightness is weak.

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace the optical sensor.

4. CHECK OPTICAL SENSOR OPEN CIRCUIT

1. Turn power switch OFF.
2. Disconnect optical sensor connector and BCM connector.
3. Check continuity between optical sensor harness connector and BCM harness connector.

Optical sensor		BCM		Continuity
Connector	Terminal	Connector	Terminal	
M16	1	M68	17	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace harness.

5. CHECK OPTICAL SENSOR SHORT CIRCUIT

Check continuity between optical sensor harness connector and ground.

Optical sensor		Ground	Continuity
Connector	Terminal		
M16	1		Not existed

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-76, "Removal and Installation".
NO >> Repair or replace harness.

6. CHECK OPTICAL SENSOR GROUND OPEN CIRCUIT

1. Turn power switch OFF.
2. Disconnect optical sensor connector and BCM connector.
3. Check continuity between optical sensor harness connector and BCM harness connector.

Optical sensor		BCM		Continuity
Connector	Terminal	Connector	Terminal	
M16	3	M68	18	Existed

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-76, "Removal and Installation".
NO >> Repair or replace harness.

7. CHECK OPTICAL SENSOR SIGNAL OPEN CIRCUIT

1. Turn power switch OFF.
2. Disconnect optical sensor connector and BCM connector.
3. Check continuity between optical sensor harness connector and BCM harness connector.

Optical sensor		BCM		Continuity
Connector	Terminal	Connector	Terminal	
M16	2	M68	14	Existed

Is the inspection result normal?

YES >> GO TO 8.
NO >> Repair or replace harness.

8. CHECK OPTICAL SENSOR SHORT CIRCUIT

Check continuity between optical sensor harness connector and ground.

Optical sensor		Ground	Continuity
Connector	Terminal		
M16	2		Not existed

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-76, "Removal and Installation".
NO >> Repair or replace harness.

HAZARD SWITCH

Component Function Check

INFOID:0000000006905286

1.CHECK HAZARD SWITCH SIGNAL BY CONSULT

CONSULT DATA MONITOR
1. Turn power switch ON.
2. Select “HAZARD SW” of BCM (FLASHER) data monitor item.
3. With operating the hazard switch, check the monitor status.

Monitor item	Condition		Monitor status
HAZARD SW	Hazard switch	ON	On
		OFF	Off

Is the inspection result normal?

YES >> Hazard switch circuit is normal.
NO >> Refer to EXL-70, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006905287

1.CHECK HAZARD SWITCH SIGNAL INPUT

1. Turn power switch OFF.
2. Disconnect hazard switch connector.
3. Check voltage between hazard switch connector and ground.

(+)		(–)	Voltage (Approx.)
Hazard switch			
Connector	Terminal		
M45	2	Ground	12 V

Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 2.

2.CHECK HAZARD SWITCH SIGNAL OPEN CIRCUIT

1. Disconnect BCM connector.
2. Check continuity between hazard switch harness connector and BCM harness connector.

Hazard switch		BCM		Continuity
Connector	Terminal	Connector	Terminal	
M45	2	M68	29	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace harness.

3.CHECK HAZARD SWITCH SIGNAL SHORT CIRCUIT

Check continuity between hazard switch harness connector and ground.

Hazard switch		Ground	Continuity
Connector	Terminal		
M45	2		Not existed

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-76, "Removal and Installation".
NO >> Repair or replace harness.

4.CHECK HAZARD SWITCH GROUND OPEN CIRCUIT

Check continuity between hazard switch harness connector and ground.

Hazard switch		Ground	Continuity
Connector	Terminal		
M45	1		Existed

Is the inspection result normal?

YES >> Replace hazard switch.
NO >> Repair or replace harness.

SYMPTOM DIAGNOSIS

EXTERIOR LIGHTING SYSTEM SYMPTOMS

Symptom Table

INFOID:0000000006905288

CAUTION:
Perform the self-diagnosis with CONSULT before the symptom diagnosis. Perform the trouble diagnosis if any DTC is detected.

Symptom		Possible cause	Inspection item
Headlamp (HI) is not turned ON.	One side	• Fuse • Halogen bulb (HI) • Harness between IPDM E/R and front combination lamp • Harness between front combination lamp and ground • IPDM E/R	Headlamp (HI) circuit Refer to EXL-48, "Component Function Check".
	Both sides	**Symptom diagnosis** "BOTH SIDE HEADLAMPS (HI) ARE NOT TURNED ON" Refer to EXL-75, "Diagnosis Procedure".	
High beam indicator lamp is not turned ON. [Headlamp (HI) is turned ON.]		Combination meter	• Combination meter Data monitor "HI-BEAM IND" • BCM (HEAD LAMP) Active test "HEADLAMP"
Headlamp (LO) is not turned ON. [Headlamp warning lamp is not turned ON.]	One side	• Fuse • Harness between IPDM E/R and front combination lamp • IPDM E/R • LED headlamp control module	Headlamp (LO) circuit Refer to EXL-50, "Component Function Check".
	Both sides	**Symptom diagnosis** "BOTH SIDE HEADLAMPS (LO) ARE NOT TURNED ON" Refer to EXL-76, "Diagnosis Procedure".	
Head lamp (LO) is not turned ON, or only 1 piece of LED is turned ON. [Headlamp warning lamp is turned ON.]		• Front combination lamp • LED headlamp control module • Harness between front combination lamp and ground	LED headlamp Refer to EXL-52, "Diagnosis Procedure".
Each lamp is not turned ON/OFF using lighting switch AUTO.		• Combination switch • Harness between combination switch and BCM • BCM	Combination switch Refer to BCS-75, "Symptom Table".
		• Optical sensor • Harness between optical sensor and BCM • BCM	Optical sensor Refer to EXL-67, "Component Function Check".
Parking lamp is not turned ON.		• Fuse • Parking lamp bulb • Parking lamp bulb socket • Harness between IPDM E/R and front combination lamp • Harness between front combination lamp and ground • IPDM E/R	Parking lamp circuit Refer to EXL-56, "Component Function Check".
Front side marker lamp is not turned ON.		• Fuse • Front side marker lamp bulb • Front side marker lamp bulb socket • Harness between IPDM E/R and front side marker lamp • Harness between front side marker lamp and ground	Front side marker lamp circuit Refer to EXL-58, "Component Function Check".

Symptom		Possible cause	Inspection item
Tail lamp and rear side marker lamp are not turned ON.		• Fuse • Harness between IPDM E/R and rear combination lamp • Harness between rear combination lamp and ground • Rear combination lamp	Tail lamp circuit Refer to EXL-59, "Component Function Check".
License plate lamp is not turned ON.		• License plate lamp bulb • License plate lamp bulb socket • Harness between IPDM E/R and license plate lamp • Harness between license plate lamp and ground	License plate lamp circuit Refer to EXL-61, "Component Function Check".
Parking lamp, side marker lamp, tail lamp and license plate lamp are not turned OFF.		**Symptom diagnosis** “PARKING, LICENSE PLATE, SIDE MARKER AND TAIL LAMPS ARE NOT TURNED ON” Refer to EXL-77, "Diagnosis Procedure".	
Tail lamp indicator lamp is not turned ON. (Parking lamp, side marker lamp, tail lamp and license plate lamp are turned ON.)		Combination meter	• Combination meter Data monitor “LIGHT IND” • BCM (HEAD LAMP) Active test “TAIL LAMP”
Turn signal lamp does not blink.	Indicator lamp is normal. (Applicable side performs high flasher activation.)	• Turn signal lamp bulb • Turn signal lamp bulb socket • Harness between BCM and each turn signal lamp	Turn signal lamp circuit Refer to EXL-64, "Component Function Check".
	Indicator lamp is included.	• Combination switch • Harness between combination switch and BCM • BCM	Combination switch Refer to BCS-75, "Symptom Table".
Turn signal indicator lamp does not blink. (Turn signal lamp is normal.)	One side	Combination meter	—
	Both sides (Always)	• Turn signal indicator lamp signal • BCM • Combination meter	• Combination meter Data monitor “TURN IND” • BCM (FLASHER) Active test “FLASHER”
	Both sides (Only when activating hazard warning lamp with power switch OFF)	• Combination meter power supply and ground circuit • Combination meter	Combination meter Power supply and ground circuit Refer to MWI-81, "COMBINATION METER : Diagnosis Procedure".
• Hazard warning lamp does not activate. • Hazard warning lamp continues activating. (Turn signal is normal.)		• Hazard switch • Harness between hazard switch and BCM • BCM	Hazard switch Refer to EXL-70, "Component Function Check".
Front fog lamp is not turned ON.	One side	• Front fog lamp bulb • Harness between IPDM E/R and front fog lamp • IPDM E/R	Front fog lamp circuit Refer to EXL-62, "Component Function Check".
	Both sides	**Symptom diagnosis** “BOTH SIDE FRONT FOG LAMPS ARE NOT TURNED ON” Refer to EXL-78, "Diagnosis Procedure".	
Front fog lamp indicator is not turned ON. (Front fog lamp is turned ON.)		Combination meter	• Combination meter Data monitor “FR FOG IND” • BCM (HEAD LAMP) Active test “FR FOG LAMP”

NORMAL OPERATING CONDITION

Description

INFOID:0000000006905289

LED HEADLAMP

- LED brightness and color may slightly change until the temperature becomes stable. This is not malfunction.
- Illumination time lag may occur between right and left. This is not malfunction.
- Brightness may be reduced due to aged deterioration of LED.
- Because of the dummy portion of connecting part of front combination lamp, water may be seemed as if it enters in headlamp after the vehicle is washed or after the rain. But, actually water is not entered in head lamp, and this is not malfunction.

AUTO LIGHT SYSTEM

The headlamp may not be turned ON/OFF immediately after passing dark area or bright area (short tunnel, sky bridge, shadowed area, etc.) while using the auto light system. This is caused by for the control difference. This is normal.

BOTH SIDE HEADLAMPS (HI) ARE NOT TURNED ON

Description

INFOID:0000000006905290

Both side headlamps (HI) are not turned ON when setting to the lighting switch HI or PASS.

Diagnosis Procedure

INFOID:0000000006905291

1.COMBINATION SWITCH INSPECTION

Check combination switch. Refer to BCS-75, "Symptom Table".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace the malfunctioning part.

2.CHECK HEADLAMP (HI) REQUEST SIGNAL INPUT

CONSULT DATA MONITOR
1. Select “HL HI REQ” of IPDM E/R data monitor item.
2. With operating the lighting switch, check the monitor status.

Monitor item	Condition		Monitor status
HL HI REQ	Lighting switch (2ND)	HI or PASS	On
		LO	Off

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace BCM. Refer to BCS-76, "Removal and Installation".

3.HEADLAMP (HI) CIRCUIT INSPECTION

Check headlamp (HI) circuit. Refer to EXL-48, "Component Function Check".

Is the inspection result normal?

YES >> Refer to GI-51, "Intermittent Incident".
NO >> Repair or replace the malfunctioning part.

BOTH SIDE HEADLAMPS (LO) ARE NOT TURNED ON

Description

INFOID:0000000006905292

Both side headlamps (LO) are not turned ON in any condition.

Diagnosis Procedure

INFOID:0000000006905293

1.CHECK COMBINATION SWITCH

Check combination switch. Refer to BCS-75, "Symptom Table".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace the malfunctioning part.

2.CHECK HEADLAMP (LO) REQUEST SIGNAL INPUT

CONSULT DATA MONITOR
1. Select “HL LO REQ” of IPDM E/R data monitor item.
2. With operating the lighting switch, check the monitor status.

Monitor item	Condition		Monitor status
HL LO REQ	Lighting switch	2ND	On
		OFF	Off

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace BCM. Refer to BCS-76, "Removal and Installation".

3.HEADLAMP (LO) CIRCUIT INSPECTION

Check headlamp (LO) circuit. Refer to EXL-50, "Component Function Check".

Is the inspection result normal?

YES >> Refer to GI-51, "Intermittent Incident".
NO >> Repair or replace the malfunctioning part.

PARKING, LICENSE PLATE, SIDE MARKER AND TAIL LAMPS ARE NOT TURNED ON

Description

INFOID:0000000006905294

The parking, license plate, side marker, tail lamps and each illumination are not turned ON in any condition.

Diagnosis Procedure

INFOID:0000000006905295

1.COMBINATION SWITCH INSPECTION

Check combination switch. Refer to BCS-75, "Symptom Table".

Is the combination switch normal?

YES >> GO TO 2.
NO >> Repair or replace the malfunctioning part.

2.CHECK TAIL LAMP RELAY REQUEST SIGNAL INPUT

CONSULT DATA MONITOR

1. Select “TAIL & CLR REQ” of IPDM E/R data monitor item.
2. With operating the lighting switch, check the monitor status.

Monitor item	Condition		Monitor status
TAIL & CLR REQ	Lighting switch	1ST	On
		OFF	Off

Is the inspection result normal?

YES >> Replace IPDM E/R.
NO >> Replace BCM. Refer to BCS-76, "Removal and Installation".

BOTH SIDE FRONT FOG LAMPS ARE NOT TURNED ON

Description

INFOID:0000000006905296

The front fog lamps are not turned ON in any condition.

Diagnosis Procedure

INFOID:0000000006905297

1.CHECK FUSE

Check that the following fuse is not fusing.

Unit	Location	Fuse No.	Capacity
Front fog lamp	IPDM E/R	#50	15 A

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the applicable circuit. And then replace the fuse.

2.COMBINATION SWITCH INSPECTION

Check combination switch. Refer to BCS-75, "Symptom Table".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace the malfunctioning part.

3.CHECK FRONT FOG LAMP REQUEST SIGNAL INPUT

CONSULT DATA MONITOR

1. Select “FR FOG REQ” of IPDM E/R data monitor item.
2. With operating the front fog lamp switch, check the monitor status.

Monitor item	Condition		Monitor status
FR FOG REQ	Front fog lamp switch (With lighting switch 2ND)	ON	On
		OFF	Off

Is the item status normal?

YES >> Replace IPDM E/R.
NO >> Replace BCM. Refer to BCS-76, "Removal and Installation".

PERIODIC MAINTENANCE

HEADLAMP AIMING ADJUSTMENT

Description

INFOID:0000000007027265

PREPARATION BEFORE ADJUSTING

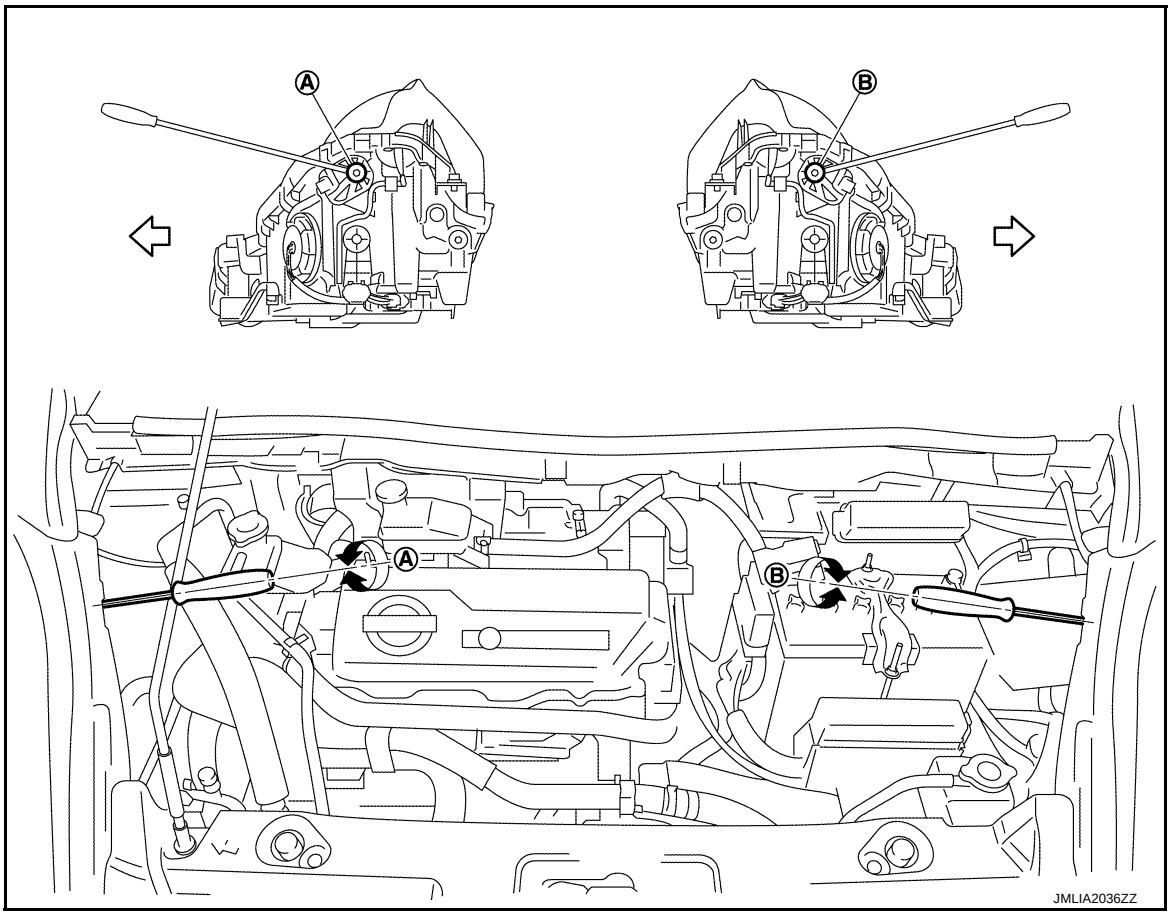
NOTE:

- For details, refer to the regulations in your own country.
- Perform aiming if the vehicle front body has been repaired and/or the headlamp assembly has been replaced.

Before performing aiming adjustment, check the following.

- Adjust the tire pressure to the specification.
- Fill with coolant and each oil.
- Maintain the unloaded vehicle condition. (Remove luggage from the passenger compartment and the trunk room.)
  NOTE:
  Do not remove the on-vehicle tool.
- Wipe out dirt on the headlamp.
  CAUTION:
  Never use organic solvent (thinner, gasoline etc.)
- Ride alone on the driver seat.

AIMING ADJUSTMENT SCREW



A Headlamp RH (UP/DOWN) adjustment screw B. Headlamp LH (UP/DOWN) adjustment screw

⇦ : Vehicle center

Adjustment screw		Screw driver rotation	Facing direction
A	Headlamp RH (UP/DOWN)	Clockwise	DOWN
		Counterclockwise	UP
B	Headlamp LH (UP/DOWN)	Clockwise	DOWN
		Counterclockwise	UP

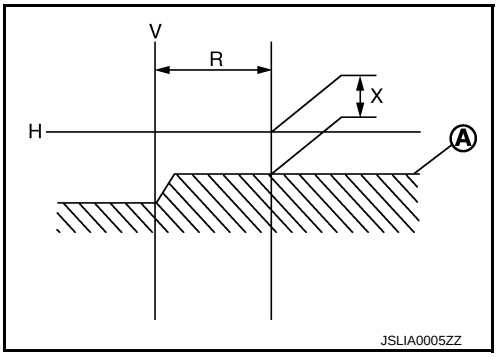
Aiming Adjustment Procedure

INFOID:0000000007027266

1. Place the screen.
   NOTE:
   • Stop the vehicle facing the wall.
   • Place the board on a plain road vertically.
2. Face the vehicle with the screen. Maintain 10 m (32.8 ft) between the headlamp center and the screen.
3. Start the engine. Turn the headlamp (LO) ON.
   NOTE:
   Shut off the headlamp light with the board to prevent from illuminating the adjustment screen.
   CAUTION:
   Never cover the lens surface with a tape etc. The lens is made of resin.
4. Measure the distance (X) between the horizontal center line of headlamp (H) and the cutoff line (A) within the light axis measurement range (R) from the vertical center line ahead of headlamp (V).

Light axis measurement range (R) : 350 ± 175 mm (13.78 ± 6.89 in)

Low beam distribution on the screen

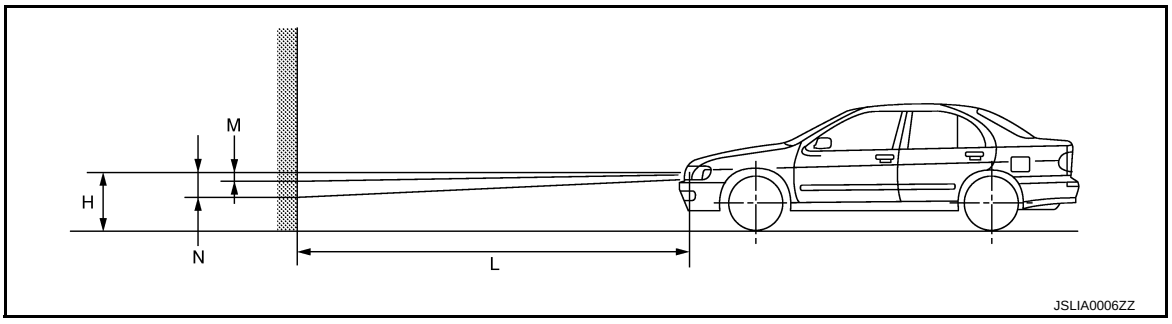


5. Adjust the cutoff line height (X) with the aiming adjustment screw so as to enter in the adjustment range (M–N) according to the horizontal center line of headlamp (H).

unit: mm (in)

Horizontal center line of headlamp (H)	Highest cutoff line height (M)	Lowest cutoff line height (N)
700 (27.56) or less	4 (0.16)	30 (1.18)
701(27.60) – 800 (31.50)	4 (0.16)	30 (1.18)
801 (31.54) or more	17 (0.67)	44 (1.73)

Side view



Distance between the headlamp center and the screen (L) : 10 m (32.8 ft)

FRONT FOG LAMP AIMING ADJUSTMENT

Description

INFOID:0000000007013420

PREPARATION BEFORE ADJUSTING

NOTE:
- For details, refer to the regulations in your own country.
- Perform aiming if the vehicle front body has been repaired and/or the fog lamp assembly has been replaced.

Before performing aiming adjustment, check the following.
- Adjust the tire pressure to the specification.
- Fill with coolant and each oil.
- Maintain the unloaded vehicle condition. (Remove luggage from the passenger compartment and the trunk room.)
  NOTE:
  Do not remove the temporary tire, jack and on-vehicle tool.
- Wipe out dirt on the fog lamp.
  CAUTION:
  Never use organic solvent (thinner, gasoline etc.)
- Ride alone on the driver seat.

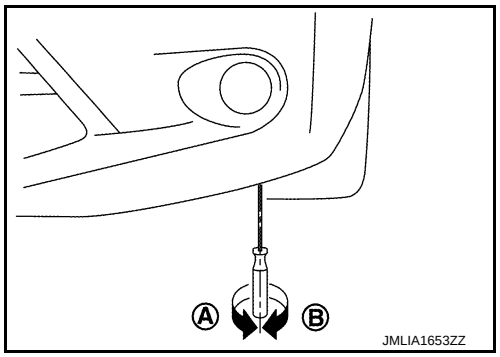
AIMING ADJUSTMENT SCREW

- Turn the aiming adjusting screw for adjustment.

  A: DOWN

  B: UP

- For the position and direction of the adjusting screw, refer to the figure.
  NOTE:
  A screwdriver or hexagonal wrench [6 mm (0.24 in)] can be used for adjustment.

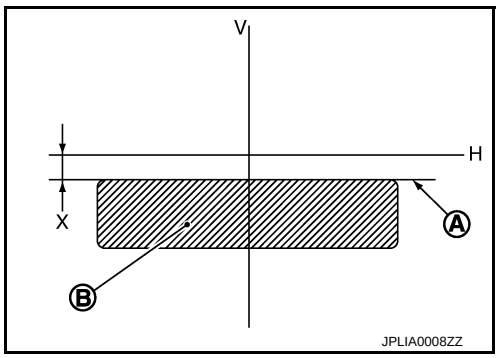


Aiming Adjustment Procedure

INFOID:0000000007013421

1. Place the screen.
   NOTE:
   - Stop the vehicle facing the wall.
   - Place the board on a plain road vertically.
2. Face the vehicle with the screen. Maintain 10 m (32.8 ft) between the front fog lamp center and the screen.
3. Start the motor. Turn the front fog lamp ON.
   NOTE:
   Shut off the headlamp light with the board to prevent from illuminating the adjustment screen.
   CAUTION:
   Never cover the lens surface with a tape etc. The lens is made of resin.
4. Adjust the cutoff line height (A) with the aiming adjustment screw so that the distance (X) between the horizontal center line of front fog lamp (H) and (A) becomes 150 mm (5.906 in).

Front fog lamp light distribution on the screen



A : Cutoff line
B : High illuminance area
H : Horizontal center line of front fog lamp
V : Vertical center line of front fog lamp
X : Cutoff line height

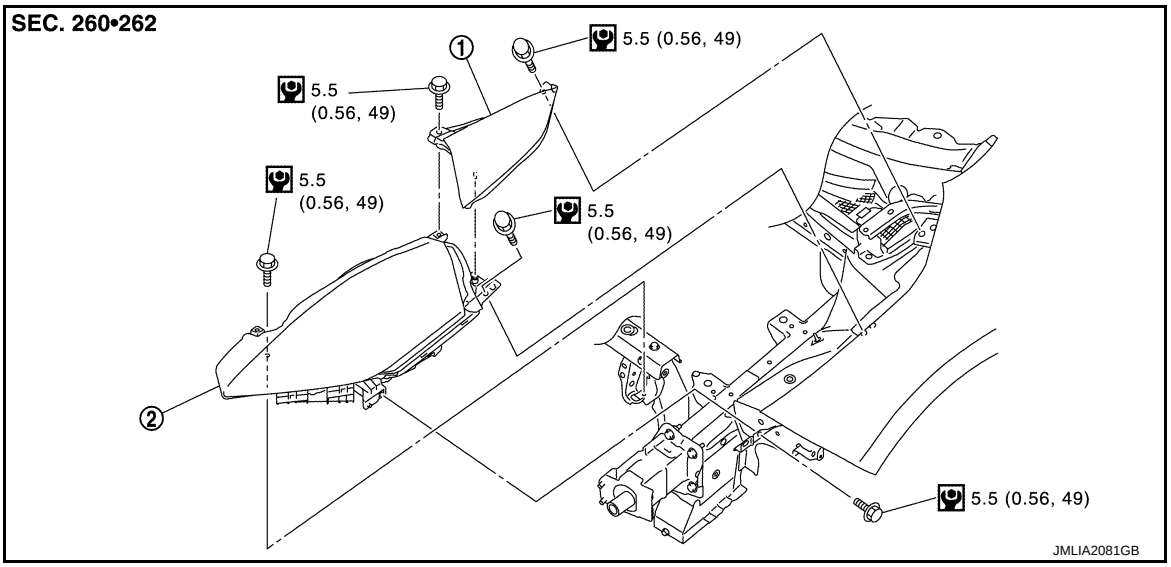
REMOVAL AND INSTALLATION

FRONT COMBINATION LAMP

Exploded View

INFOID:0000000007013422

REMOVAL

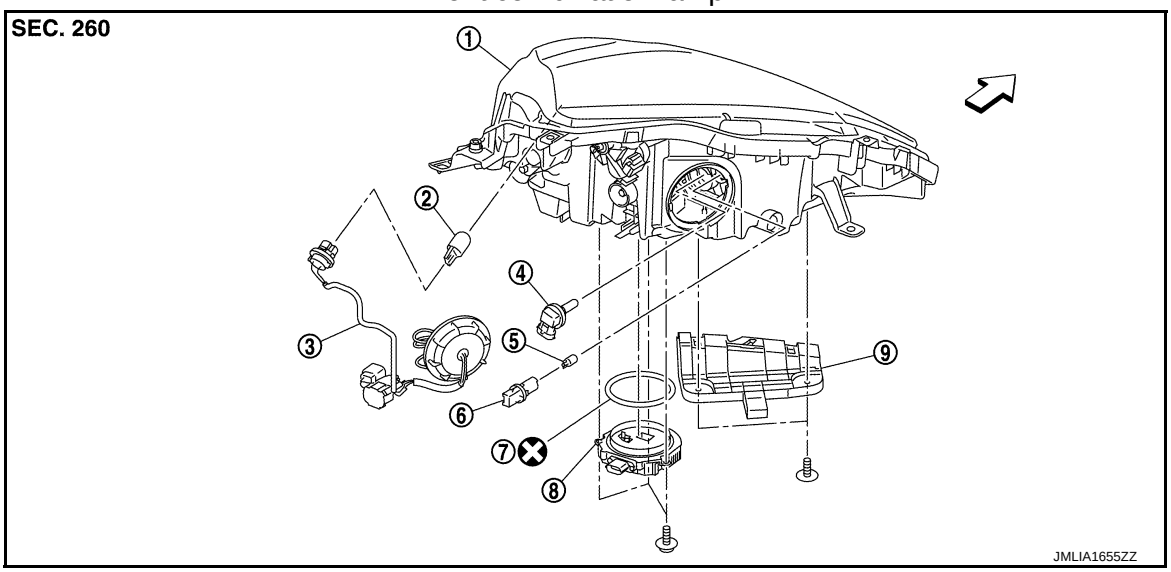


1. Front side maker lamp
2. Front combination lamp A

:N·m (kg-m, in-lb)

DISASSEMBLY

Front combination lamp A



1. Housing assembly
2. Front turn signal lamp bulb
3. Harness
4. Halogen bulb (HI)
5. Parking lamp bulb
6. Parking lamp bulb socket
7. Seal packing
8. LED headlamp control module
9. Bumper bracket

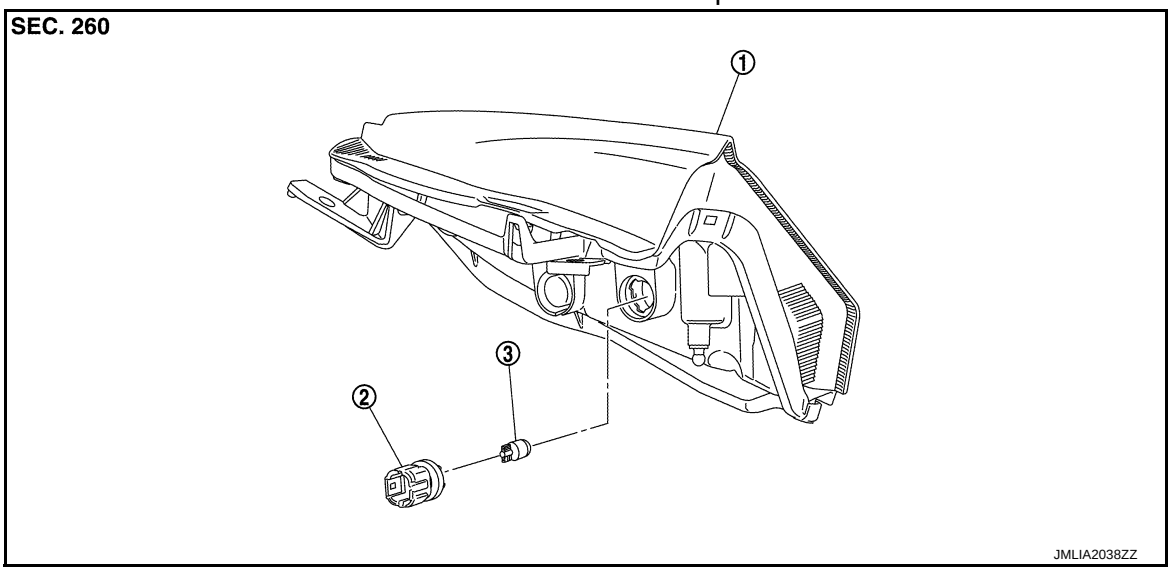
: Always replace after every disassembly.

: Vehicle front

CAUTION:

- **Never disassemble LED headlamp unit assembly.**
- **Replace front combination lamp A, when malfunction LED headlamp unit.**

Front side maker lamp



1. Front side maker lamp housing
2. Front side maker lamp bulb socket
3. Front side maker lamp bulb

Removal and Installation

INFOID:0000000007013423

REMOVAL

CAUTION:

Disconnect the 12V battery negative terminal or remove the fuse to electric leakage.

1. Remove front bumper fascia. Refer to EXT-12, "Removal and Installation".
2. Remove front combination lamp B mounting bolts.
3. Pull up front combination lamp B, and then remove front combination lamp B.
4. Remove front combination lamp A mounting bolts.
5. Pull out front combination lamp A forward the vehicle, and then disconnect the connector before removing front combination lamp A.

INSTALLATION

Note the following item, and then install in the reverse order of removal.

NOTE:

After installation, perform aiming adjustment. Refer to EXL-79, "Description".

Replacement

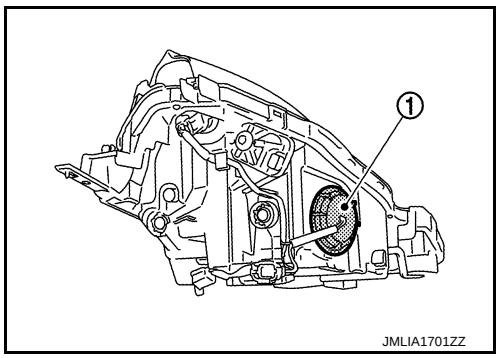
INFOID:0000000007013424

CAUTION:

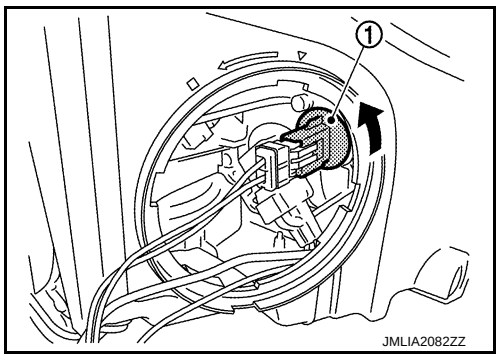
- **Disconnect the 12V battery negative terminal or remove the fuse to electric leakage.**
- **After installing the bulb, install the resin cap and the bulb socket securely for watertightness.**
- **Never touch the glass of bulb directly by hand. Keep grease and other oily matters away from it to prevent damage to the bulb.**
- **Never touch bulb by hand while it is lit or right after being turned off to prevent a burns.**
- **Never leave bulb out of lamp reflector for a long time because dust, moisture smoke, etc. may affect the performance of lamp. When replacing bulb, be sure to replace it with new one.**

PARKING LAMP BULB

1. Rotate resin cap (1) counterclockwise and unlock it.



2. Rotate parking lamp bulb socket (1) counterclockwise and unlock it.



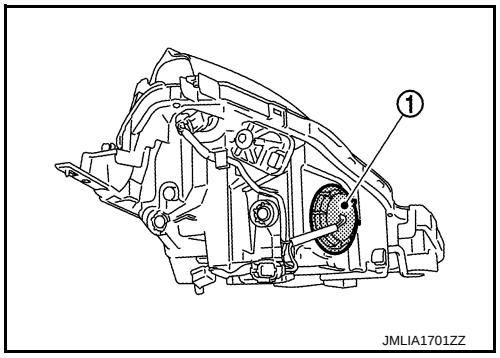
3. Remove parking lamp bulb from bulb socket.

HEADLAMP BULB (LO)

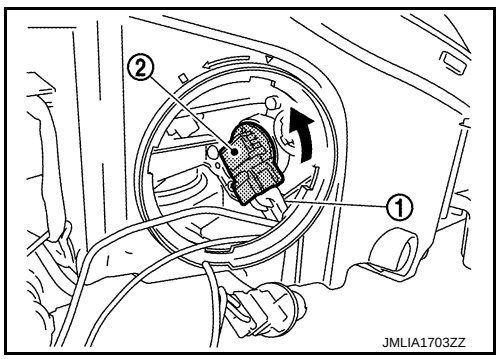
LED is used for headlamp bulb (LO). Always replace front combination lamp assembly as a unit, when bulb is to be replaced because of malfunction.

HEADLAMP BULB (HI)

1. Rotate resin cap (1) counterclockwise and unlock it.



2. Remove parking lamp bulb and socket.
3. Rotate headlamp bulb (HI) (2) counterclockwise and unlock it.
4. Disconnect headlamp bulb (HI) harness connector (1).



5. Remove headlamp bulb (HI) from the headlamp housing assembly.

FRONT TURN SIGNAL LAMP BULB

1. Rotate bulb socket counterclockwise and unlock it.

2. Remove bulb from the bulb socket.

FRONT SIDE MAKER LAMP BULB

1. Rotate bulb socket counterclockwise and unlock it.
2. Remove bulb from the bulb socket.

Disassembly and Assembly

INFOID:0000000007013425

DISASSEMBLY

1. Rotate resin cap counterclockwise and unlock it.
2. Rotate parking lamp bulb socket counterclockwise and unlock it.
3. Disconnect parking lamp harness connector.
4. Rotate headlamp bulb (HI) counterclockwise and unlock it.
5. Disconnect headlamp bulb (HI) harness connector.
6. Rotate turn signal lamp bulb socket counterclockwise and unlock it.
7. Remove turn signal lamp bulb from bulb socket.
8. Remove LED headlamp control module mounting screws.
9. Disconnect LED headlamp control module harness connector, and then remove LED headlamp control module.
10. Remove combination lamp harness connector.

ASSEMBLY

Note the following items, and then assemble in the reverse order of disassembly.

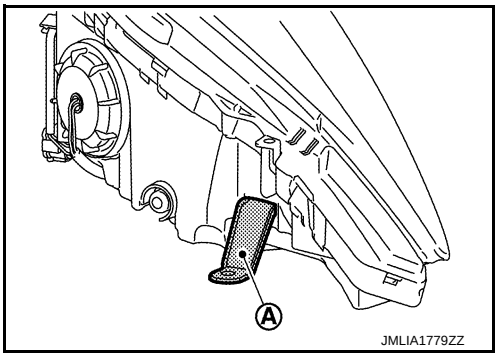
CAUTION:

- **Install LED headlamp control module securely.**
- **Always replace seal packing, when remove/replace LED headlamp control module.**
- **After installing the bulb, install the resin cap and the bulb socket securely for watertightness.**

Installing service bracket

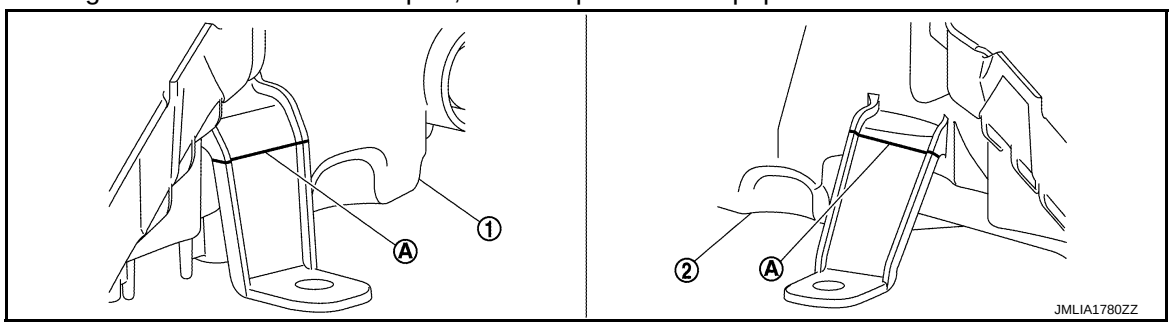
INFOID:0000000007013426

If only installation part (A) as shown in the figure is damaged, and front combination lamp A housing itself is not damaged, repair can be completed easily by installing service brackets.



Removal

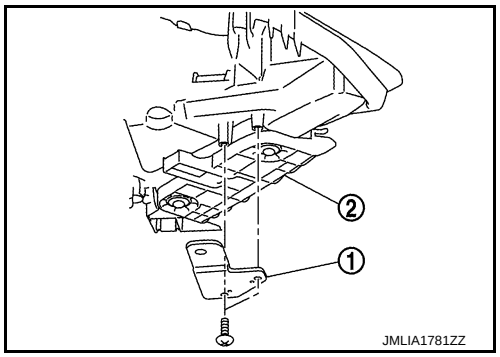
1. Remove front combination lamp A. Refer to EXL-84, "Removal and Installation".
2. Cut damaged section of installation part, then shape with sandpaper.



1. Front combination lamp A RH
2. Front combination lamp A LH
A. Cut line (R end)

Installation

1. Install service bracket (1) to headlamp housing (2) with screws.



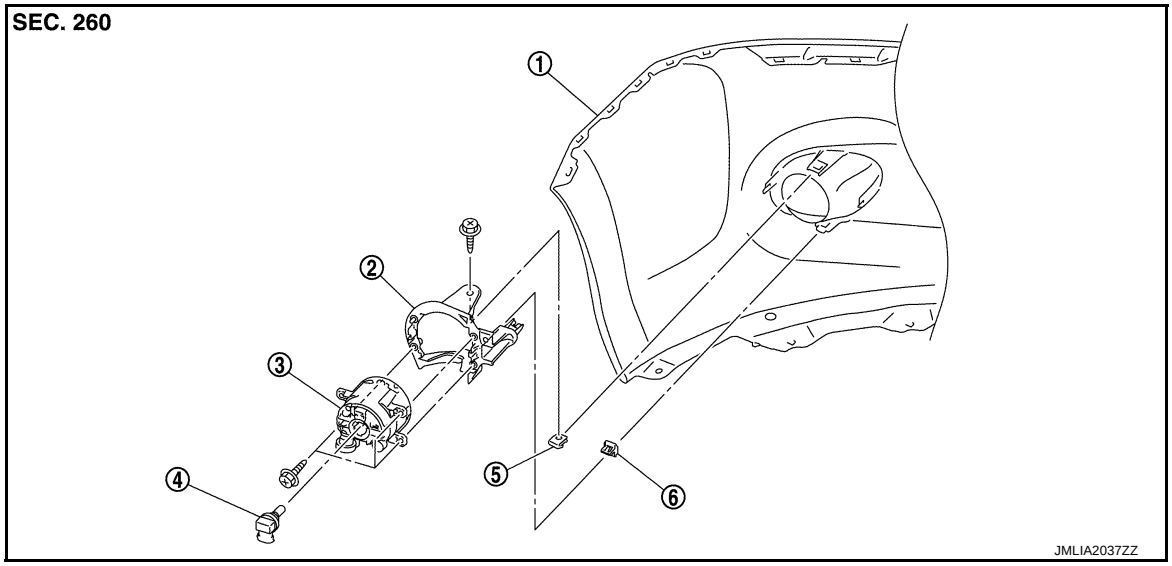
2. Install front combination lamp A to the vehicle.

NOTE:
After installation, perform aiming adjustment. Refer to EXL-79, "Description".

FRONT FOG LAMP

Exploded View

INFOID:0000000007013427



1. Front bumper fascia
2. Front fog lamp bracket
3. Front fog lamp
4. Front fog lamp bulb
5. J nut
6. Metal clip

Removal and Installation

INFOID:0000000007013428

CAUTION:
Disconnect the 12V battery negative terminal or remove the fuse to electric leakage.

REMOVAL

1. Remove the front bumper fascia. Refer to EXT-12, "Removal and Installation".
2. Remove the front fog lamp fixing screws, and then remove front fog lamp.

INSTALLATION

Note the following item, and then install in the reverse order of removal.
NOTE:
After installation, perform aiming adjustment. Refer to EXL-81, "Description"

Replacement

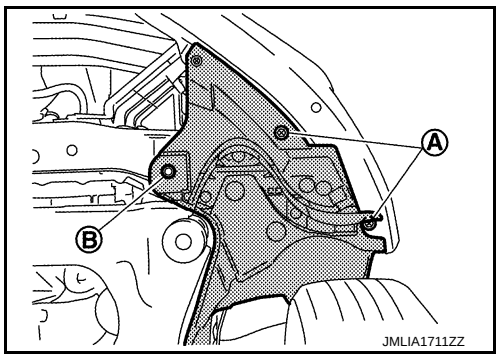
INFOID:0000000007013429

CAUTION:
- **Disconnect the 12V battery negative terminal or remove the fuse to electric leakage.**
- **Never touch the glass of bulb directly by hand. Keep grease and other oily matters away from it to prevent damage to the bulb.**
- **Never touch bulb by hand while it is lit or right after being turned off to prevent a burns.**
- **Never leave bulb out of lamp reflector for a long time because dust, moisture smoke, etc. may affect the performance of lamp. When replacing bulb, be sure to replace it with new one.**

FRONT FOG LAMP BULB

1. Remove front under cover. Refer to EXT-21, "FRONT UNDER COVER : Removal and Installation".

2. Remove front fender protector mounting bolts (A) and clip (B).

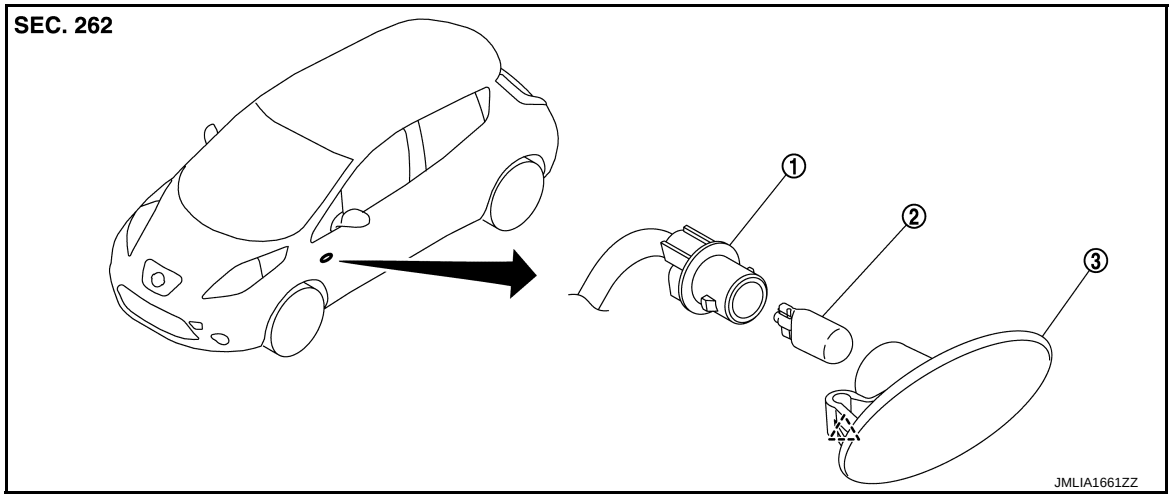


3. Remove front fog lamp bulb connector.
4. Rotate bulb counterclockwise and unlock it.

SIDE TURN SIGNAL LAMP

Exploded View

INFOID:0000000007013430



1. Side turn signal lamp bulb socket
2. Side turn signal lamp bulb
3. Side turn signal lamp housing

: Pawl

Removal and Installation

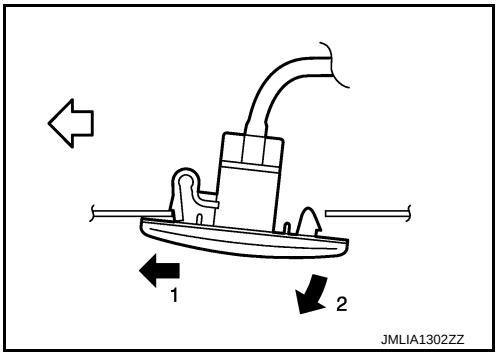
INFOID:0000000007013431

CAUTION:
Disconnect the 12V battery negative terminal or remove the fuse to electric leakage.

REMOVAL

1. Remove the side turn signal lamp in numerical order shown in the figure.
2. Rotate the bulb socket counterclockwise and unlock it.

: Vehicle front (LH side)
: Vehicle rear (RH side)



INSTALLATION
Install in the reverse order of removal.

LIGHTING & TURN SIGNAL SWITCH

Exploded View

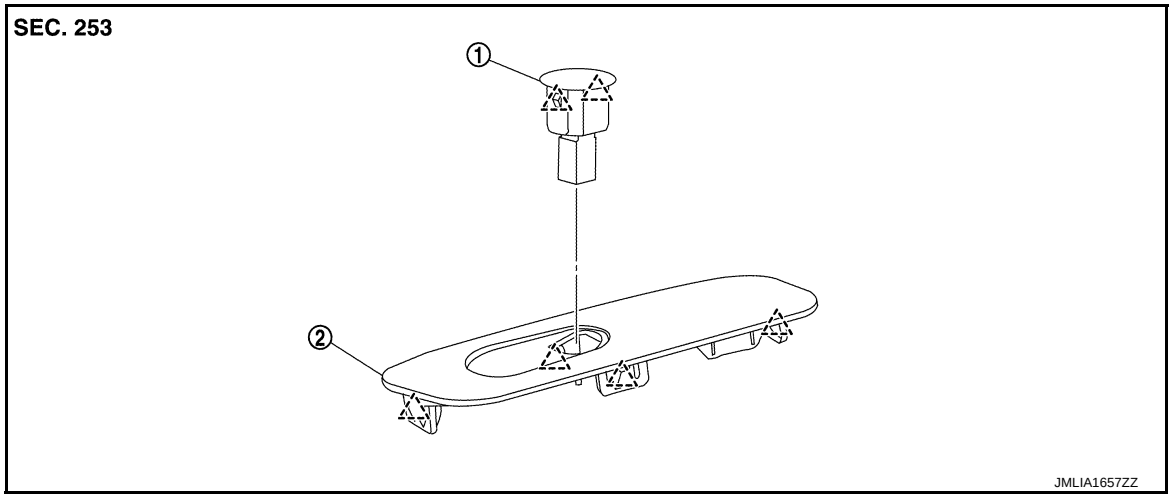
INFOID:0000000007013432

The lighting & turn signal switch is integrated in the combination switch. Refer to BCS-77, "Removal and Installation".

OPTICAL SENSOR

Exploded View

INFOID:0000000007014617



1. Optical sensor
2. Switch panel

: Pawl

Removal and Installation

INFOID:0000000007014618

REMOVAL

1. Insert an appropriate tool between the switch panel and the instrument upper panel. Pull out the optical sensor upward.
2. Disconnect the optical sensor connector.
3. Remove optical sensor from switch panel.

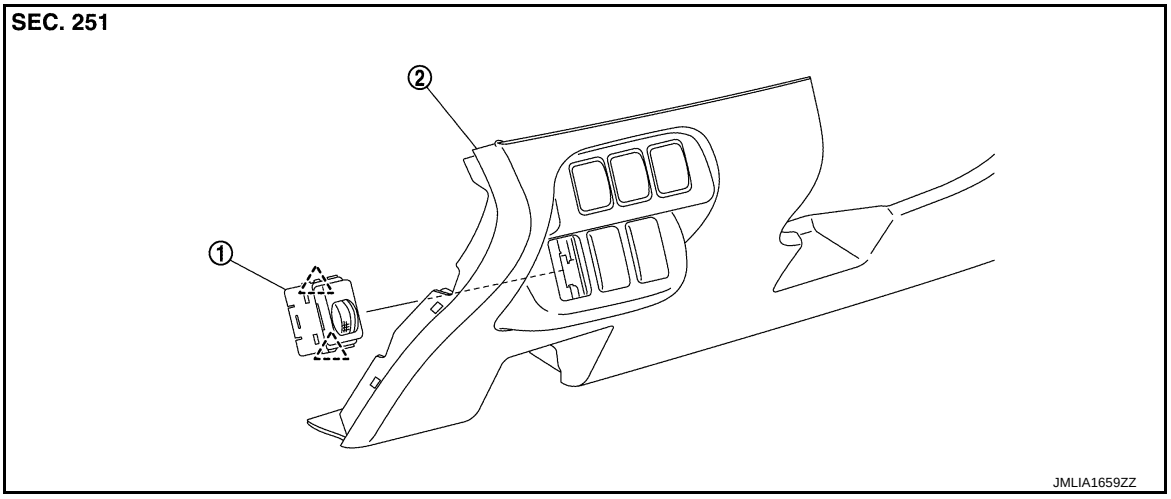
INSTALLATION

Install in the reverse order of removal.

HEADLAMP AIMING SWITCH

Exploded View

INFOID:0000000007013433



1. Headlamp aiming switch
2. Instrument lower panel

: Pawl

Removal and Installation

INFOID:0000000007013434

REMOVAL

1. Remove the instrument lower panel LH. Refer to IP-12, "Exploded View".
2. Disengage the pawls, and then remove the headlamp aiming switch.

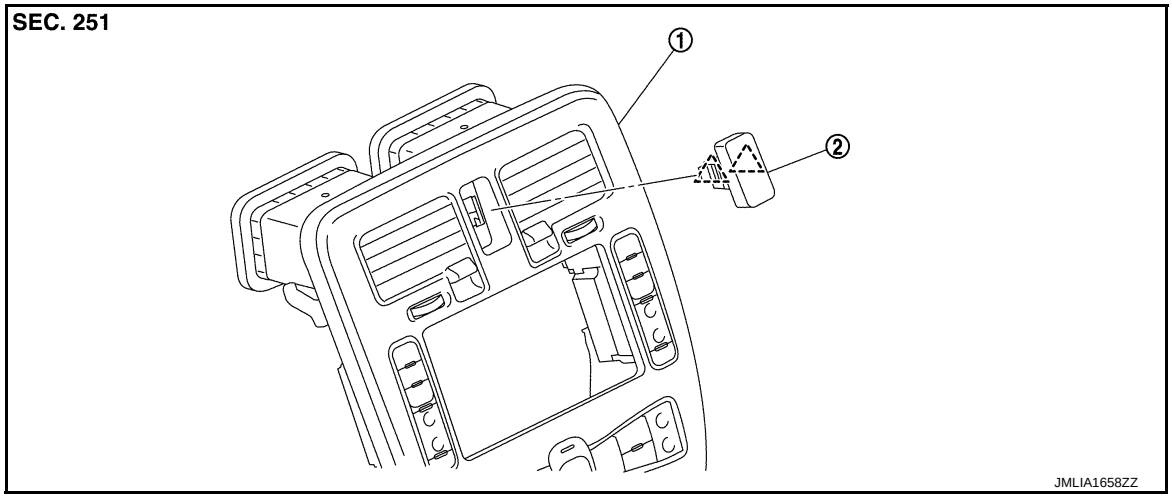
INSTALLATION

Install in the reverse order of removal.

HAZARD SWITCH

Exploded View

INFOID:0000000007013435



1. Cluster lid C
2. Hazard switch

: Pawl

Removal and Installation

INFOID:0000000007013436

REMOVAL

1. Remove cluster lid C. Refer to IP-13, "Removal and Installation".
2. Disengage hazard switch fixing pawls, and then remove hazard switch.

INSTALLATION

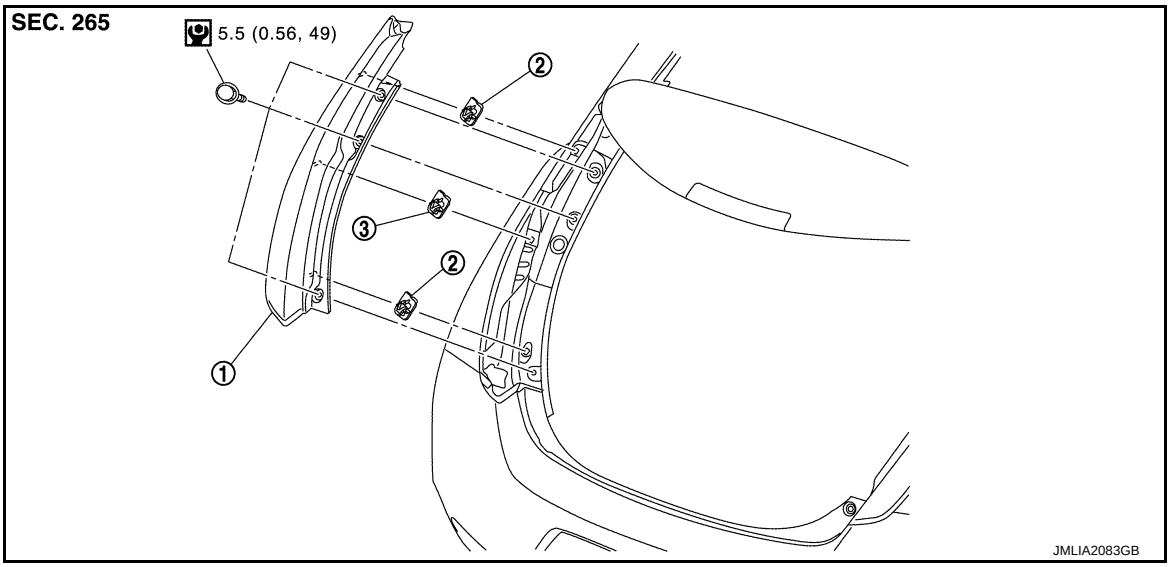
Install in the reverse order of removal.

REAR COMBINATION LAMP

Exploded View

INFOID:0000000007013441

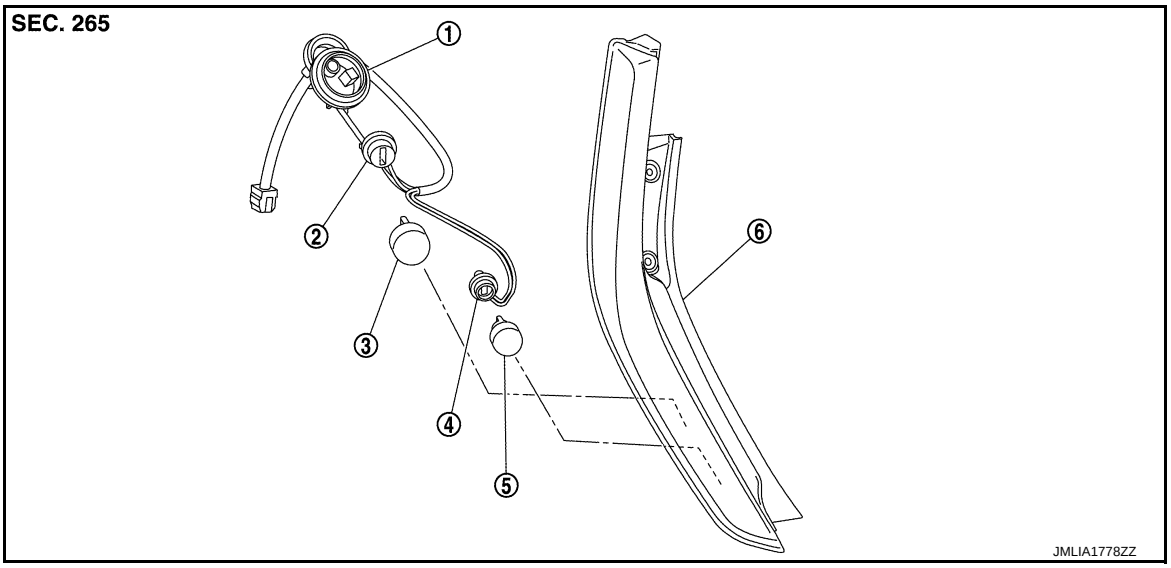
REMOVAL



1. Rear combination lamp
2. Grommet A
3. Grommet B

: N·m (kg-m, in-lb)

DISASSEMBLY



1. Rear combination lamp harness
2. Rear turn signal bulb socket
3. Rear turn signal bulb
4. Buck-up lamp bulb socket
5. Buck-up lamp bulb
6. Rear combination lamp housing assembly

Removal and Installation

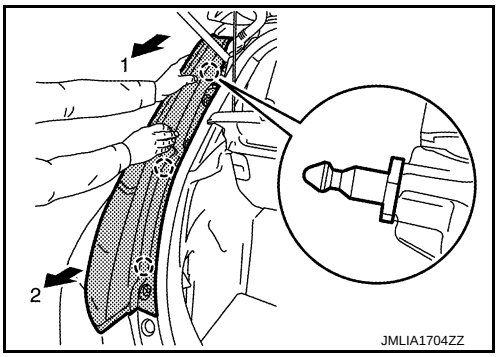
INFOID:0000000007013442

CAUTION:
Disconnect the 12V battery negative terminal or remove the fuse to electric leakage.

REMOVAL

1. Remove luggage side lower finisher. Refer to INT-35, "LUGGAGE SIDE LOWER FINISHER : Removal and Installation".
2. Disconnect rear combination lamp connector.
3. Remove rear combination lamp mounting bolts.
4. Pull rear combination lamp toward vehicle rear side, as shown by the arrow in the figure.

: Clip



5. Remove rear combination lamp.

INSTALLATION

Install in the reverse order of removal.

Replacement

INFOID:0000000007013443

CAUTION:

- **Disconnect the 12V battery negative terminal or remove the fuse to electric leakage.**
- **Never touch the glass of bulb directly by hand. Keep grease and other oily matters away from it to prevent damage to the bulb.**
- **Never touch bulb by hand while it is lit or right after being turned off to prevent a burns.**
- **Never leave bulb out of lamp reflector for a long time because dust, moisture smoke, etc. may affect the performance of lamp. When replacing bulb, be sure to replace it with new one.**

STOP/TAIL LAMP BULB

LED is used for stop/tail lamp bulb. Always replace rear combination lamp assembly as a unit, when bulb is to be replaced because of malfunction.

REAR TURN SIGNAL LAMP BULB

1. Remove rear combination lamp.
2. Rotate bulb socket counterclockwise and unlock it.
3. Remove bulb from the socket.

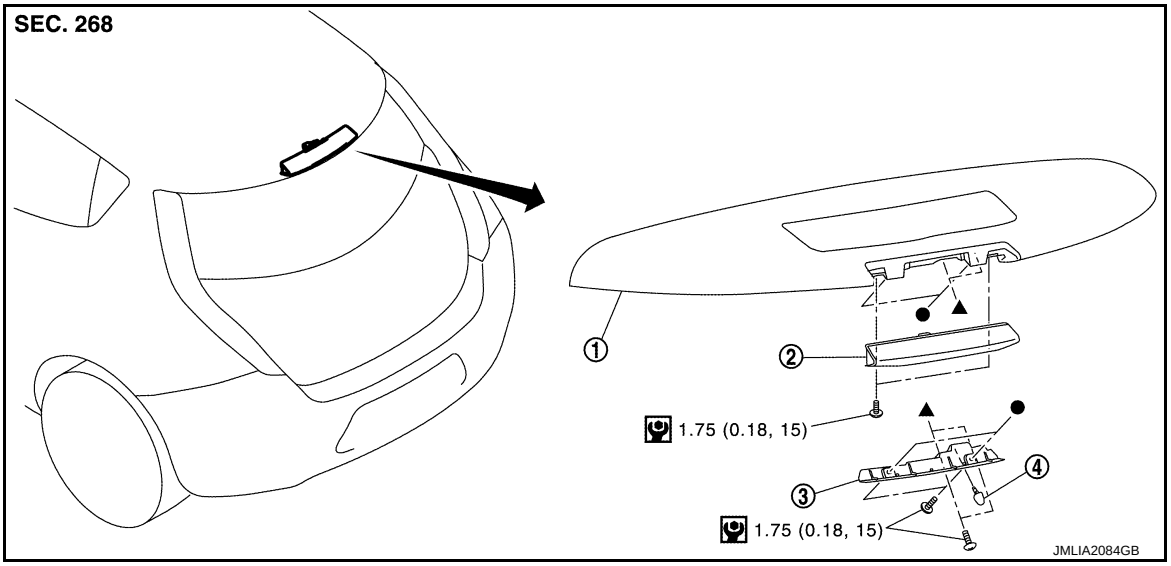
BACK-UP LAMP BULB

1. Remove rear combination lamp.
2. Rotate bulb socket counterclockwise and unlock it.
3. Remove bulb from the socket.

HIGH-MOUNTED STOP LAMP

Exploded View

INFOID:0000000007013444



1. Rear spoiler
2. High-mounted stop lamp
3. High-mounted stop lamp cover
4. Rear washer nozzle

:: N·m (kg-m, in-lb)

Removal and Installation

INFOID:0000000007013445

REMOVAL

1. Remove rear spoiler. Refer to EXT-34, "Removal and Installation".
2. Remove high-mounted stop lamp cover mounting screws, and then remove high-mounted stop lamp cover.
3. Remove high-mounted stop lamp mounting screws.
4. Disconnect high-mounted stop lamp harness connector.
5. Remove high-mounted stop lamp.

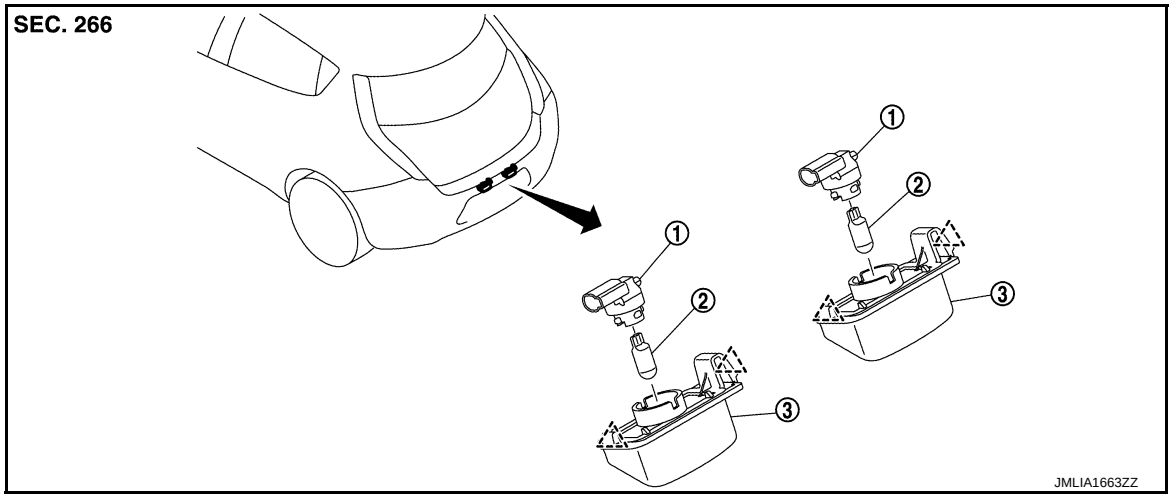
INSTALLATION

Install in the reverse order of removal.

LICENSE PLATE LAMP

Exploded View

INFOID:0000000007013446



1. License plate lamp bulb socket
2. License plate lamp bulb
3. License plate lamp housing

: Pawl

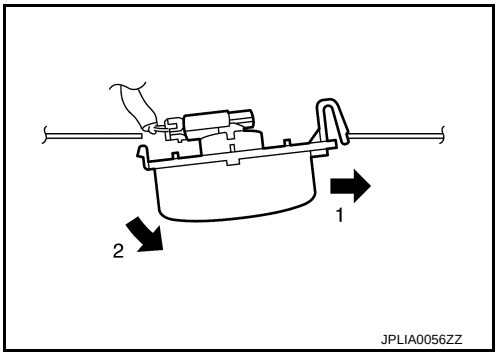
Removal and Installation

INFOID:0000000007013447

CAUTION:
Disconnect the 12V battery negative terminal or remove the fuse to electric leakage.

REMOVAL

1. Remove license plate lamp in numerical order shown in the figure.



2. Disconnect license plate lamp connector, and then remove license plate lamp.

INSTALLATION

Install in the reverse order of removal.

Replacement

INFOID:0000000007013448

CAUTION:
- **Disconnect the 12V battery negative terminal or remove the fuse to electric leakage.**
- **Never touch the glass of bulb directly by hand. Keep grease and other oily matters away from it to prevent damage to the bulb.**
- **Never touch bulb by hand while it is lit or right after being turned off to prevent a burns.**
- **Never leave bulb out of lamp reflector for a long time because dust, moisture smoke, etc. may affect the performance of lamp. When replacing bulb, be sure to replace it with new one.**

LICENSE PLATE LAMP BULB

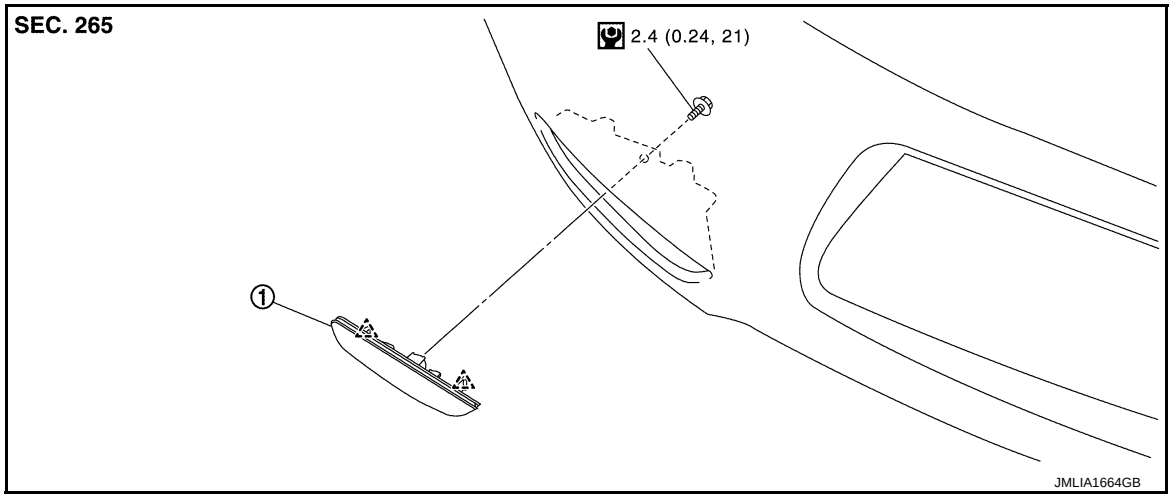
1. Remove license plate lamp.
2. Turn the bulb socket counterclockwise and unlock it.

3. Remove the bulb from the socket.

REAR REFLEX REFLECTOR

Exploded View

INFOID:0000000007013452



1. Reflex refractor

: Pawl

: N·m (kg-m, in-lb)

Removal and Installation

INFOID:0000000007013453

REMOVAL

1. Remove rear bumper fascia. Refer to EXT-15, "Removal and Installation".
2. Remove rear reflex reflector fixing screws and disengage fixing pawls, and then remove rear reflex reflector.

INSTALLATION

Install in the reverse order of removal.

SERVICE DATA AND SPECIFICATIONS (SDS)

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Bulb Specifications

INFOID:0000000007013454

Item		Type	Wattage (W)
Front combination lamp	Headlamp (HI)	H9 (Halogen)	65
	Headlamp (LO)	LED	—
	Front turn signal lamp	3457NAK (Amber)	21
	Parking lamp	W5W	5
Front side maker lamp		W5W	5
Front fog lamp		H11	55
Side turn signal lamp		WY5W (Amber)	5
Rear combination lamp	Stop lamp/Tail lamp	LED	—
	Rear turn signal lamp	WY21W (Amber)	21
	Back-up lamp	W16W	16
	Rear side maker lamp	LED	—
License plate lamp		W5W	5
High-mounted stop lamp		LED	—