SECTION EXL
EXTERIOR LIGHTING SYSTEM

CONTENTS

LED HEADLAMP

PRECAUTION

PRECAUTIONS

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

INFOID:0000000010260774

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. 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:

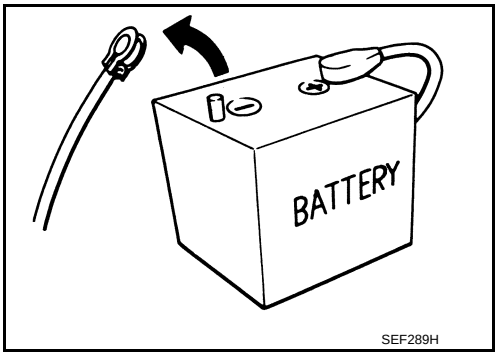
Always observe the following items for preventing accidental activation.

- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, 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 ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.**

Precautions for Removing Battery Terminal

INFOID:0000000010260775

- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.
  NOTE:
  ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.
- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch.
  NOTE:
  If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.



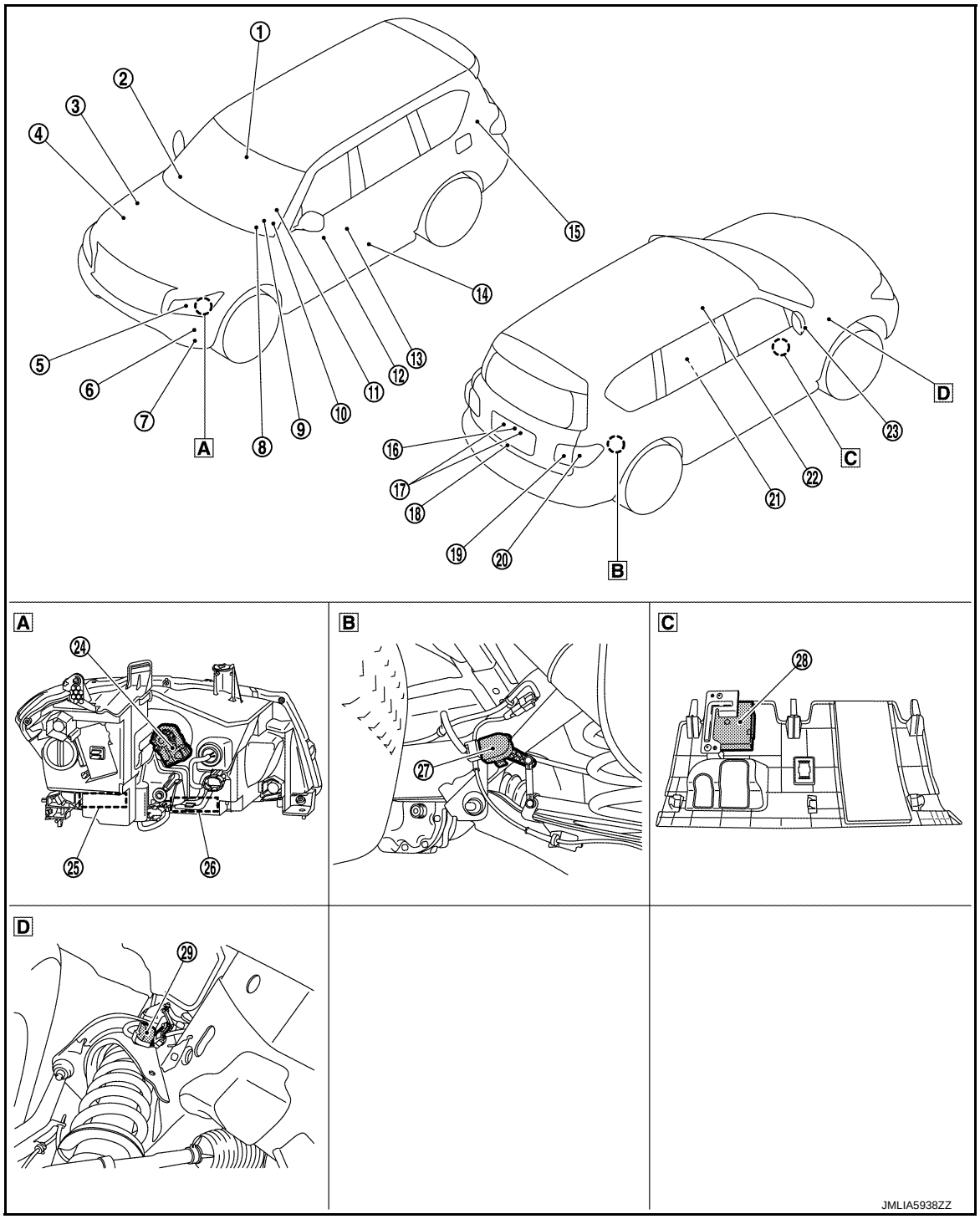
- After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC.
  NOTE:
  The removal of 12V battery may cause a DTC detection error.

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000011509645



A Front combination lamp (back)

B Rear suspension member (RH)

C View with instrument lower cover removed

D Front suspension arm (RH)

No.	Component		Function
①	Inside mirror assembly	Ambient light sensor	Refer to EXL-10, "Inside Mirror Assembly".
		Image sensor	
		High beam assist control module	
②	Optical sensor		Refer to EXL-11, "Optical Sensor".
③	IPDM E/R		• Controls the integrated relay and daytime running light relay, and supplies voltage to the load according to the request from BCM via CAN communication. • IPDM E/R transmits low beam status signal to AFS control unit via CAN communication. • Refer to PCS-4, "Component Parts Location" for detailed installation location.
④	ECM		• ECM transmits engine status signal to BCM via CAN communication. • ECM transmits engine speed signal to AFS control unit via CAN communication. • Refer to EC-23, "Component Parts Location" (for USA and CANADA) or EC-592, "Component Parts Location" (for Mexico) for detailed installation location.
⑤	Front combination lamp	Headlamp (HI) (LED headlamp)	Refer to EXL-173, "Bulb Specifications" and EXL-8, "FRONT COMBINATION LAMP : LED Headlamp".
		Headlamp (LO) (LED headlamp)	
		Parking lamp (Upper side) / Daytime running light (Upper side)	Refer to EXL-173, "Bulb Specifications".
		Parking lamp (Lower side) / Daytime running light (Lower side)	
		Front side marker lamp	
⑥	Front turn signal lamp		Refer to EXL-173, "Bulb Specifications".
⑦	Front fog lamp		Refer to EXL-173, "Bulb Specifications".
⑧	BCM		• Detects each switch condition by the combination switch reading function. • Exterior lamp ON/OFF is judged from each signal, and then a request is transmitted to IPDM E/R (via CAN communication) to turn each relay ON/OFF. • It also transmits a request to the combination meter (via CAN communication) to turn indicator lamp and warning (buzzer) ON/OFF. • Blinks the turn signal lamp and hazard warning lamp according to the each switch condition. • Requests the turn signal indicator lamp blink to the combination meter via CAN communication. • Requests the turn signal operating sound ON to the combination meter via CAN communication. • Refer to BCS-4, "BODY CONTROL SYSTEM : Component Parts Location" for detailed installation location.
⑨	Combination meter		• Turns the indicator lamp and warning (buzzer) ON/OFF according to the request from BCM via CAN communication. • Inputs headlamp warning signal from LED headlamp control module and turns headlamp warning ON. • Blinks the AFS warning lamp according to the request from AFS control unit via CAN communication. • 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. • Combination meter transmits vehicle speed signal to BCM, high beam assist control module and AFS control unit via CAN communication. • Combination meter transmits parking brake switch signal to BCM via CAN communication.

No.	Component		Function
⑩	Combination switch		Refer to BCS-8, "COMBINATION SWITCH READING SYSTEM : System Description".
⑪	Steering angle sensor*1		• Steering angle sensor transmits steering angle signal to AFS control unit via CAN communication. • Refer to BRC-9, "Component Parts Location" for detailed installation location.
⑫	Headlamp aiming switch*2		Refer to EXL-11, "Headlamp Aiming Switch".
⑬	Door request switch		Refer to DLK-13, "DOOR LOCK SYSTEM : Component Description".
⑭	Door switch		Refer to DLK-13, "DOOR LOCK SYSTEM : Component Description".
⑮	Remote keyless entry receiver		Refer to DLK-13, "DOOR LOCK SYSTEM : Component Description".
⑯	Back door opener switch assembly	Back door request switch	Refer to DLK-13, "DOOR LOCK SYSTEM : Component Description".
		Back door opener switch	
⑰	License plate lamp		Refer to EXL-173, "Bulb Specifications".
⑱	Back door lock assembly (Back door switch)		Refer to DLK-13, "DOOR LOCK SYSTEM : Component Description".
⑲	Rear combination lamp (Back door side)	Tail lamp	Refer to EXL-173, "Bulb Specifications".
⑳	Rear combination lamp (Body side)	Stop lamp / Tail lamp	Refer to EXL-173, "Bulb Specifications".
		Rear side marker lamp	
		Rear turn signal lamp	
㉑	Air bag diagnosis sensor unit		• Air bag diagnosis sensor unit transmits air bag signal to BCM. • Refer to SRC-8, "Component Parts Location" for detailed installation location.
㉒	Hazard switch		Refer to EXL-12, "Hazard Switch".
㉓	Side turn signal lamp		Refer to EXL-173, "Bulb Specifications".
㉔	Front combination lamp	Headlamp aiming motor	Refer to EXL-10, "FRONT COMBINATION LAMP : Headlamp Aiming Motor".
㉕		Swivel actuator*1	Refer to EXL-9, "FRONT COMBINATION LAMP : Swivel Actuator".
㉖		LED headlamp control module	Refer to EXL-9, "FRONT COMBINATION LAMP : LED Headlamp Control Module".
㉗	Rear height sensor*1		Refer to EXL-11, "Rear Height Sensor".
㉘	AFS control unit*1		Refer to EXL-11, "AFS Control Unit".
㉙	Front height sensor*1		Refer to EXL-11, "Front Height Sensor".

*1: With active AFS

*2: Without active AFS

FRONT COMBINATION LAMP

FRONT COMBINATION LAMP : LED Headlamp

INFOID:0000000011509646

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.

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 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.**

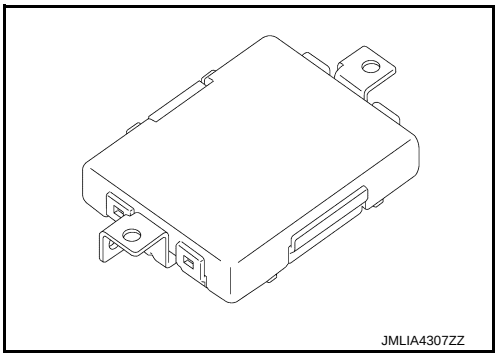
NOTE:

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

FRONT COMBINATION LAMP : LED Headlamp Control Module

INFOID:0000000011509647

- LED headlamp control module is integrated in the front combination lamp and turns the LED headlamp ON according to the request from IPDM E/R.
- Outputs the headlamp warning signal to the combination meter.

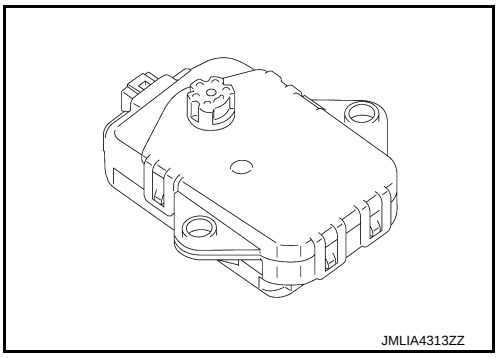


FRONT COMBINATION LAMP : Swivel Actuator

INFOID:0000000011509648

DESCRIPTION

- The swivel actuator is installed in the front combination lamp.
- Swivel actuator consists of the swivel motor for headlamp swivel operation, the swivel position sensor which detects the headlamp swivel angle, and LCU (Local Control Unit) which communicates with AFS control unit via LIN (Local Interconnect Network).



STRICTIRE AND OPERATION

Swivel Motor

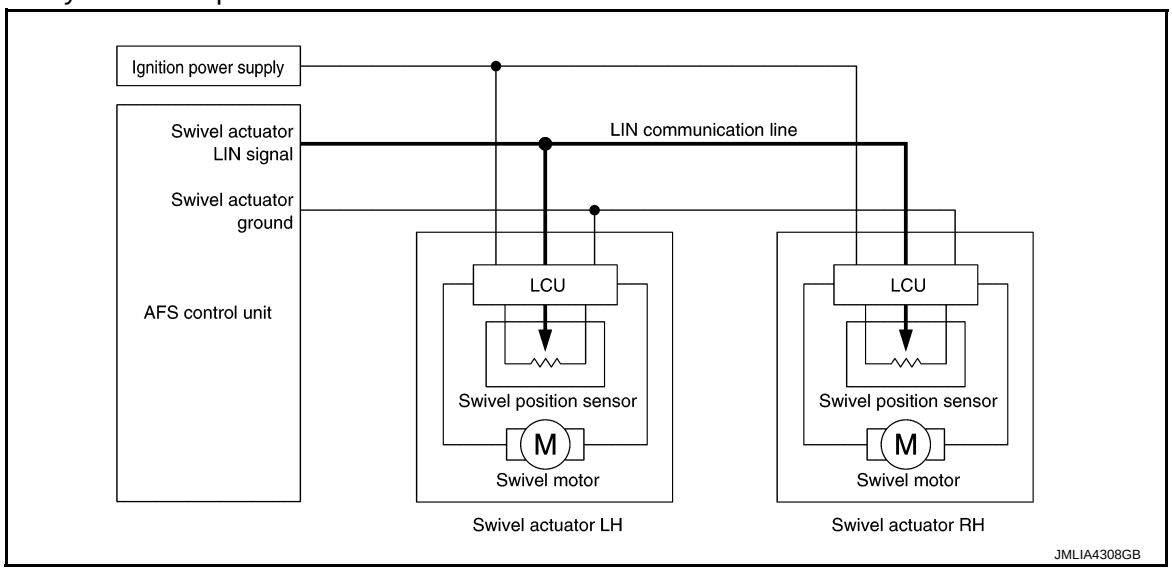
- The swivel motor is the DC motor.
- The swivel motor drives headlamp according to the drive signal from LCU.

Swivel Position Sensor

The swivel position sensor detects the headlamp swivel angle to transmit the swivel position sensor signal to LCU.

LCU (Local Control Unit)

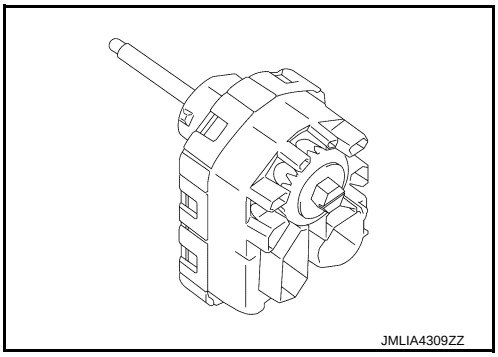
- The LCU is integrated in left and right swivel actuators so as to perform the multiplex communication control (LIN) between left and right swivel actuators in one communication line.
- When each LCU receives a drive signal from AFS control unit, it drives the swivel motor and allows headlamp swivel operation. Also, it sends the swivel position signal of headlight to AFS control unit, which is detected by the swivel position sensor.



FRONT COMBINATION LAMP : Headlamp Aiming Motor

INFOID:0000000011509649

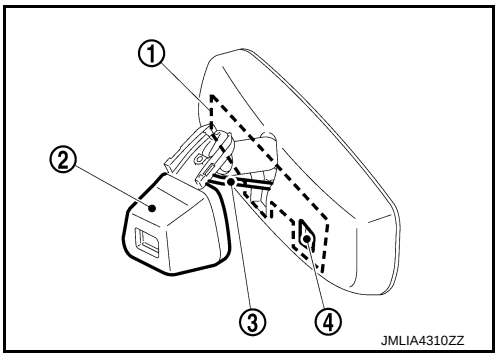
- Headlamp aiming motor is integrated in the front combination lamp.
- Headlamp aiming motor adjusts the headlamp light axis upward and downward according to input drive signal from AFS control unit (with active AFS) or headlamp aiming switch (without active AFS).



Inside Mirror Assembly

INFOID:0000000011509650

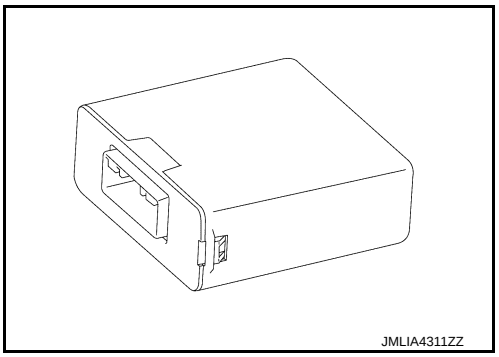
- Inside mirror assembly consists of the ambient light sensor ④ which detects ambient light around the area, the image sensor ② which detects the color, brightness and operation status of the light spot located in front of the vehicle, and the high beam assist control module ① which judges the vehicle status from each signal and determines the recommended beam. Also, the image sensor is linked with the high beam assist control module via communication line ③.
- Self-diagnosis function is integrated in high beam assist control module. Diagnosis of high beam assist system can be performed quickly.



AFS Control Unit

INFOID:0000000011509651

- AFS control unit judges the vehicle condition from each signal. AFS control unit controls AFS control (swivel control) and the headlamp aiming control.
- Self-diagnosis function is integrated in AFS control unit. Diagnosis of AFS can be performed quickly. Also, if AFS control unit detects a specific DTC, the AFS control unit requests the combination meter to blink the AFS warning lamp (via CAN communication).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Front Height Sensor

INFOID:0000000011509652

- Front height sensor is installed in front suspension arm (RH).
- Front height sensor detects the vehicle front height deviation with sensor lever, and transmits the detected value as a front height sensor signal to AFS control unit.

Rear Height Sensor

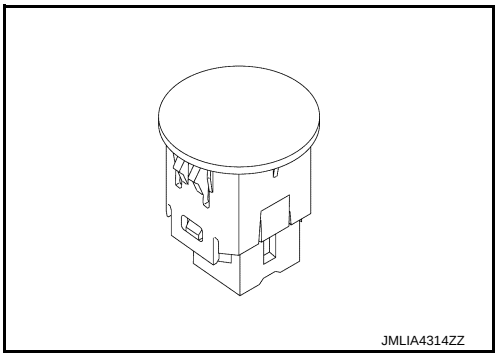
INFOID:0000000011509653

- Rear height sensor is installed in rear suspension member (RH).
- Rear height sensor detects the vehicle rear height deviation with sensor lever, and transmits the detected value as a rear height sensor signal to AFS control unit.

Optical Sensor

INFOID:0000000011509654

Optical sensor converts the outside brightness (lux) to voltage and transmits the optical sensor signal to BCM.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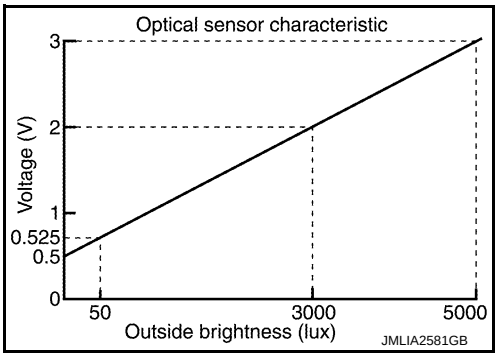

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Headlamp Aiming Switch

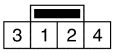
INFOID:0000000011509838

Adjusts height of headlamp aiming.

Hazard Switch

INFOID:0000000011509656

Inputs the hazard switch ON/OFF signal to BCM.



	Switch	OFF	ON
1	Ground		●
2	Hazard switch ON/OFF signal		●
3	Illumination +	●	
		≈	
4	Illumination –	●	

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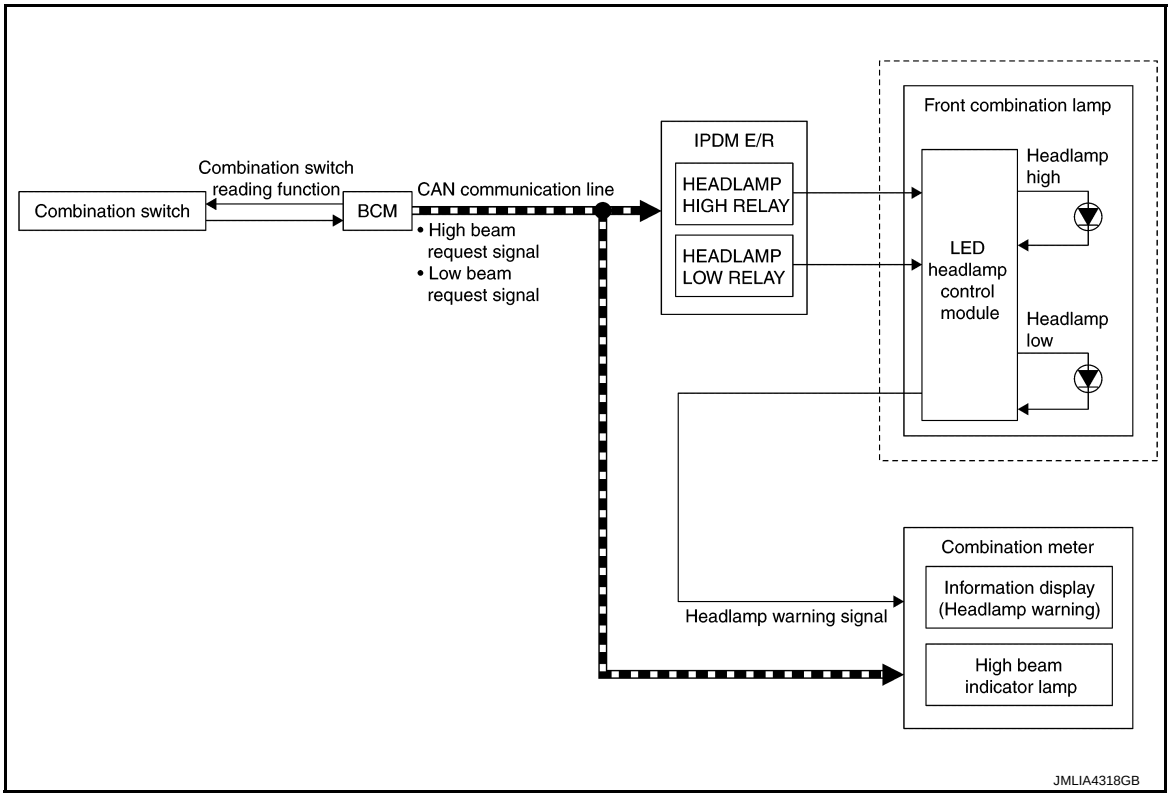
SYSTEM

HEADLAMP SYSTEM

HEADLAMP SYSTEM : System Description

INFOID:0000000011509657

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 (Only when the illumination judgment by auto light system is ON. For details, refer to EXL-14, "AUTO LIGHT SYSTEM : System Description".)
- Lighting switch PASS

- IPDM E/R turns the 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
- Lighting switch HI with the lighting switch AUTO (Only when the illumination judgment by auto light system is ON and the illumination judgment by high beam assist system is ON. For details, refer to EXL-14, "AUTO LIGHT SYSTEM : System Description".)
- Lighting switch PASS

- IPDM E/R turns the integrated headlamp high relay ON according to high beam request signal and supplies power supply to LED headlamp control module.
- LED headlamp control module turns the headlamp (HI) ON according to the power supply from IPDM E/R.
- Combination meter turns the high beam indicator lamp ON according to the high beam request signal.

HEADLAMP WARNING OPERATION

- BCM transmits the low beam request signal to combination meter with CAN communication when headlamp (LO) ON judgment.
- When LED headlamp control module detects a malfunction of headlamp (LO) circuit, headlamp warning signal is output to combination meter.
- When the ignition switch is ON and the low beam request signal is received, if the headlamp warning signal is input, the headlamp warning is displayed on the information display.

NOTE:

When the headlamp warning signal is received, the most likely cause is a malfunction of the following.

- Headlamp (LO) power supply/ground circuit
- Headlamp warning signal circuit
- Front combination lamp
  - LED [Headlamp (LO)]
  - LED headlamp control module
  - Harness

HEADLAMP SYSTEM : Fail-safe

INFOID:0000000011509658

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

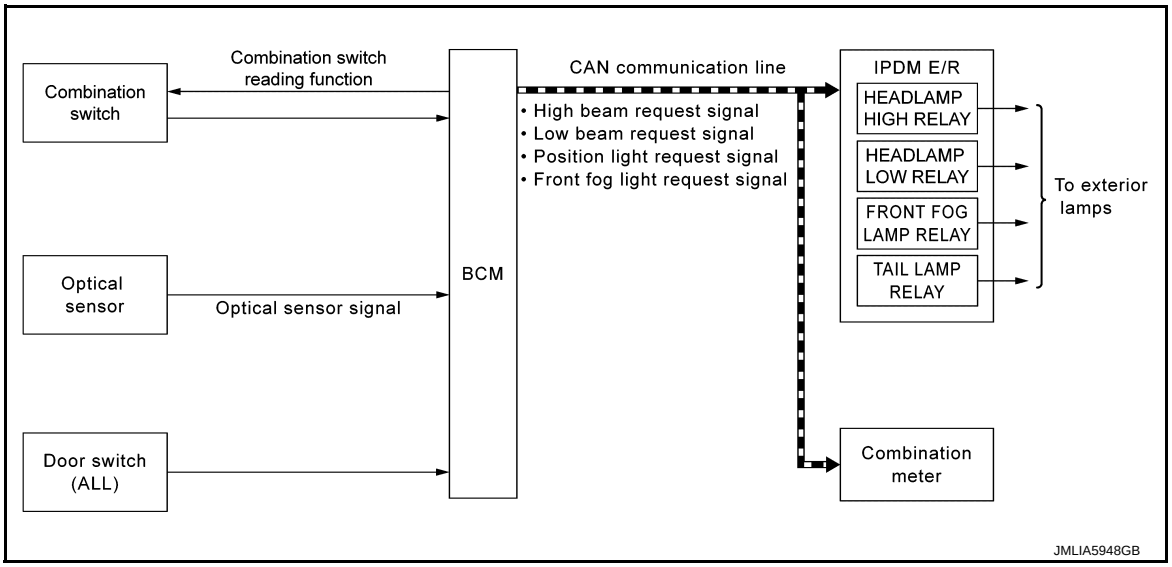
Control part	Fail-safe operation
Headlamp	• Turns ON the headlamp low relay when the ignition switch is turned ON • Turns OFF the headlamp low relay when the ignition switch is turned OFF • Headlamp high relay OFF

AUTO LIGHT SYSTEM

AUTO LIGHT SYSTEM : System Description

INFOID:0000000011509659

SYSTEM DIAGRAM



OUTLINE

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

Control by BCM

- Combination switch reading function
- Auto light function [Standard / twilight lighting function (Except for Canada)]
- Wiper linked auto lighting function (Except for Canada)
- Fog override function (Factory setting is OFF)
- Delay timer function

Control by IPDM E/R
- Relay control function

• Auto light system has the auto light function [Standard / twilight lighting function (Except for Canada)], wiper linked auto lighting function (Except for Canada), fog override function and delay timer function.
- Auto light function automatically turns ON/OFF the exterior lamps*, depending on the outside brightness.
- Wiper linked auto lighting function automatically turns ON/OFF the exterior lamps* when the lighting switch is in the AUTO position, according to a front wiper operation.
- Fog override function turns ON the exterior lamps regardless of outside brightness, when front fog lamp switch is turned from OFF to ON while ignition switch is in ON position and lighting switch is in AUTO position.

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

NOTE:
• Headlamp (HI) depend on the combination switch condition and the illumination judgment of high beam assist system. For details, refer to EXL-16, "HIGH BEAM ASSIST SYSTEM : System Description".
• Front fog lamp depend on the front fog lamp switch condition (Only when the fog override function setting is OFF).
• Front fog lamp does not turn ON when the headlamp (HI) ON condition.

AUTO LIGHT FUNCTION

For Canada, twilight lighting function is not applicable.
• BCM detects the combination switch condition with the combination switch reading function.
• BCM supplies voltage to the optical sensor when the ignition switch is turned ON.
• Optical sensor converts outside brightness (lux) to voltage and transmits the optical sensor signal to BCM.
• When ignition switch is turned ON, BCM detects outside brightness from the optical sensor signal and judges ON/OFF condition of each exterior lamp, depending on the outside brightness condition [standard or twilight (Except for Canada)].
• 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:
• ON/OFF of twilight lighting function can be changed using CONSULT. Refer to EXL-28, "HEADLAMP : CONSULT Function (BCM - HEAD LAMP)".
• As to ON/OFF timing, the sensitivity depends on settings. The settings can be changed using CONSULT. Refer to EXL-28, "HEADLAMP : CONSULT Function (BCM - HEAD LAMP)".

WIPER LINKED AUTO LIGHTING FUNCTION (EXCEPT FOR CANADA)

BCM turns each exterior lamp ON when detecting 4 operations of the front wiper while the light switch is in AUTO position.

NOTE:
• BCM turns OFF the headlamps 3 seconds after the front wiper switch is turned OFF.
• The setting of the wiper linked auto lighting function can be changed using CONSULT. Refer to EXL-28, "HEADLAMP : CONSULT Function (BCM - HEAD LAMP)".

FOG OVERRIDE FUNCTION (FACTORY SETTING IS OFF)

When front fog lamp switch is turned to ON while ignition switch is in ON position and lighting switch is in AUTO position, BCM turns ON exterior lamps* regardless of outside brightness.

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

NOTE:
• Headlamp (HI) depend on the combination switch condition and the illumination judgment of high beam assist system. For details, refer to EXL-16, "HIGH BEAM ASSIST SYSTEM : System Description".
• Front fog lamp does not turn ON when the headlamp (HI) ON condition.
• ON/OFF of fog override function can be changed using CONSULT. Refer to INL-14, "INT LAMP : CONSULT Function (BCM - INT LAMP)".

DELAY TIMER FUNCTION

• BCM turns the headlamp (LO) OFF depending on the vehicle condition with the auto light function when the ignition switch is turned OFF.
- Turns the headlamp (LO) OFF 5 minutes after the ignition switch is turned OFF.

- Turns the headlamp (LO) OFF 5 minutes after detecting that any door opens. (Door switch ON).
- Turns the headlamp (LO) OFF a certain period of time* after closing all doors. (Door switch ON → OFF).

• Delay timer function turns OFF, when the ignition switch is other than OFF or the lighting switch is other than AUTO.

*: The preset time is 45 seconds. The timer operating time can be set by CONSULT. Refer to EXL-28, "HEADLAMP : CONSULT Function (BCM - HEAD LAMP)".

NOTE:

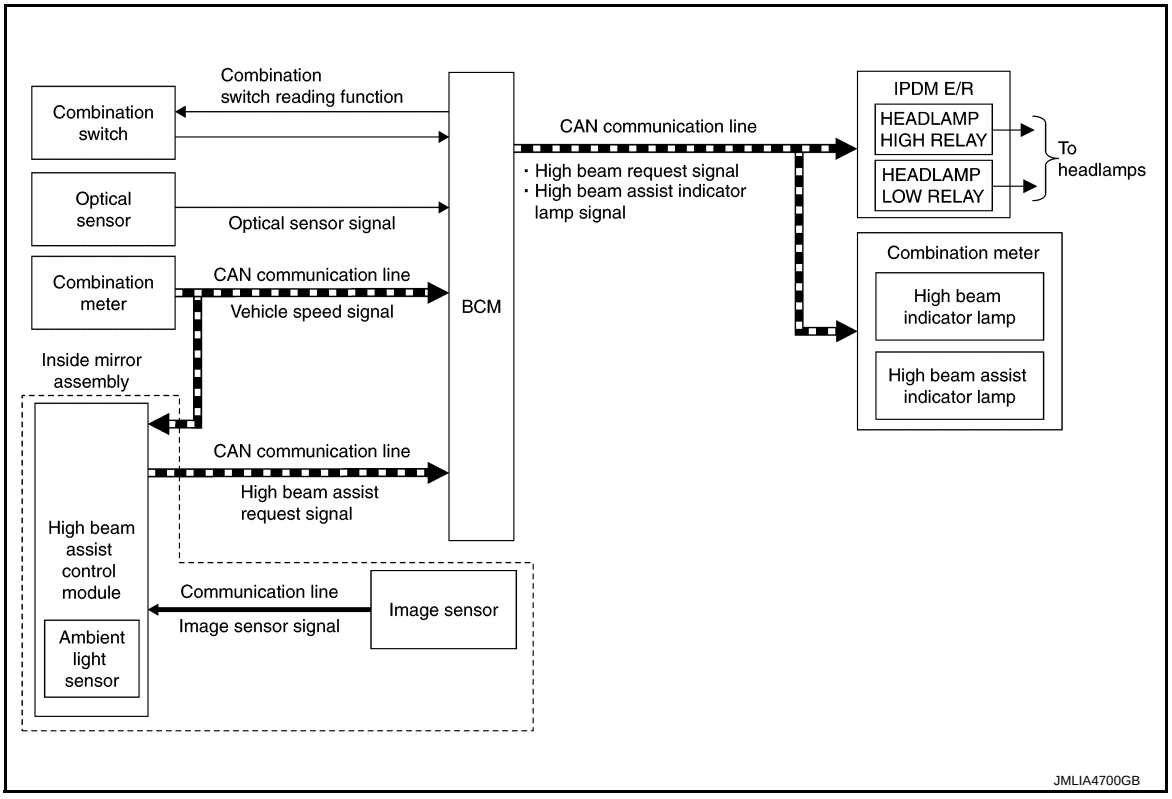
When any position other than the lighting switch AUTO is set, the auto light system function switches to the exterior lamp battery saver function.

HIGH BEAM ASSIST SYSTEM

HIGH BEAM ASSIST SYSTEM : System Description

INFOID:0000000011509660

SYSTEM DIAGRAM



OUTLINE

- High beam assist system is a system that can reduce the driver's switch operation load. The system automatically switches the headlamp to the low beam mode when a vehicle ahead or an oncoming vehicle appears, while driving the vehicle with the headlamps in high beam mode at night.
- When the high beam assist system operation permission conditions are satisfied, the high beam assist indicator lamp in the combination meter turns ON and informs that the high beam assist is in operation.
- High beam assist system is controlled by each function of BCM, high beam assist control module and IPDM E/R.

Control by BCM
- Combination switch reading function
- Auto light function
- High beam assist control function
- Headlamp control function

Control by IPDM E/R
- Relay control function

Control by High Beam Assist Control Module
- High beam assist control function

OPERATION DESCRIPTION

- BCM detects the combination switch condition with the combination switch reading function.
- BCM transmits the high beam assist indicator lamp signal to the combination meter via CAN communication when the high beam assist system operation permission conditions are satisfied.

High beam assist system operation permission conditions

- Lighting switch HI with the lighting switch AUTO and ignition switch ON (Only when the illuminating judgment by auto light function is ON. For details, refer to EXL-14, "AUTO LIGHT SYSTEM : System Description".)
- Combination meter turns the high beam assist indicator lamp ON according to the high beam assist indicator lamp signal.
- High beam assist control module detects the vehicle status and ambient status that are required for high beam assist control with the following signals.
  - Vehicle speed signal (Received from combination meter via CAN communication)
  - Ambient light signal (Input from ambient light sensor integrated in the inside mirror assembly)
  - Image sensor signal (Received from image sensor via communication line)
- High beam assist control module judges the current recommended beam according to the vehicle status and ambient condition, and transmits the high beam assist request signal [headlamp (HI) operation / headlamp (LO) operation] to BCM via CAN communication.
- BCM switches the headlamp (LO) operation / headlamp (HI) operation according to high beam assist request signal while the high beam assist system operation permission conditions are satisfied. For headlamp operation, refer to EXL-13, "HEADLAMP SYSTEM : System Description".

RECOMMENDED BEAM JUDGMENT BY HIGH BEAM ASSIST CONTROL MODULE

Headlamp (HI) Operation Request

High beam assist control module requests the headlamp (HI) operation to BCM when all of following conditions are satisfied.

- Detects the vehicle speed is approx. 35 km/h or more.
- Recognizes the ambient condition is dark.
- Recognizes there is no oncoming vehicle or no vehicle ahead in front of the vehicle.

Headlamp (LO) Operation Request

High beam assist control module requests the headlamp (LO) operation to BCM when either of following conditions is satisfied.

- Detects the vehicle speed is approx. 27 km/h or less.
- Recognizes the ambient condition is bright.
- Recognizes there is oncoming vehicle or vehicle ahead in front of the vehicle.

HIGH BEAM ASSIST SYSTEM : Fail-safe

INFOID:0000000011509661

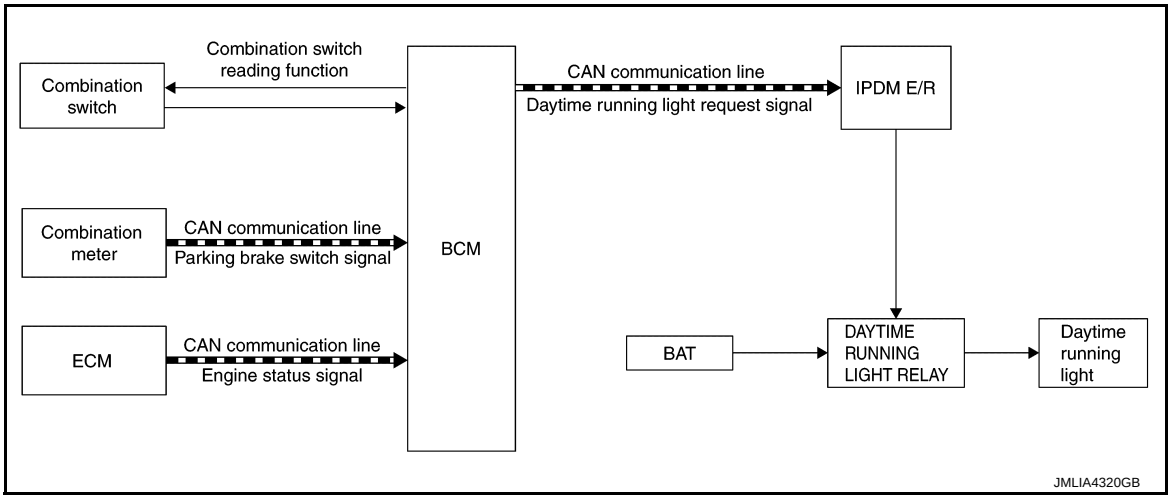
DTC No.	CONSULT screen terms	Fail-safe
B2090-01	HBA CONTROL MODULE	• High beam assist system operation stop • High beam assist indicator lamp OFF
B2090-1C	HBA CONTROL MODULE	
B2090-49	HBA CONTROL MODULE	
B2090-54	HBA CONTROL MODULE	
B2091-01	HBA CONTROL MODULE	
B2091-02	HBA CONTROL MODULE	
B2091-07	HBA CONTROL MODULE	
B2091-55	HBA CONTROL MODULE	
U1000-01	CAN COMM CIRCUIT	
U1010-49	CONTROL UNIT(CAN)	

DAYTIME RUNNING LIGHT SYSTEM

DAYTIME RUNNING LIGHT SYSTEM : System Description

INFOID:0000000011509662

SYSTEM DIAGRAM



OUTLINE

Daytime running light is controlled by daytime running light control function and combination switch reading function of BCM, and relay control function of IPDM E/R.

DAYTIME RUNNING LIGHT OPERATION

- BCM detects the combination switch condition by the combination switch reading function.
- BCM detects vehicle condition depending on the following signals.
- Engine status signal (received from ECM via CAN communication)
- Parking brake switch signal (received from combination meter via CAN communication)
- BCM transmits the daytime running light request signal to IPDM E/R via CAN communication according to the daytime running light ON condition.

Daytime running light ON condition

- Engine running with the parking brake released, and any following conditions are satisfied.
- Lighting switch OFF
- Lighting switch AUTO (Only when the illumination judgment by auto light system is OFF. For details, refer to EXL-14, "AUTO LIGHT SYSTEM : System Description".)
- IPDM E/R turns the daytime running light relay ON, and turns the daytime running light ON according to the daytime running light request signal.

DAYTIME RUNNING LIGHT SYSTEM : Fail-safe

INFOID:0000000011509663

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

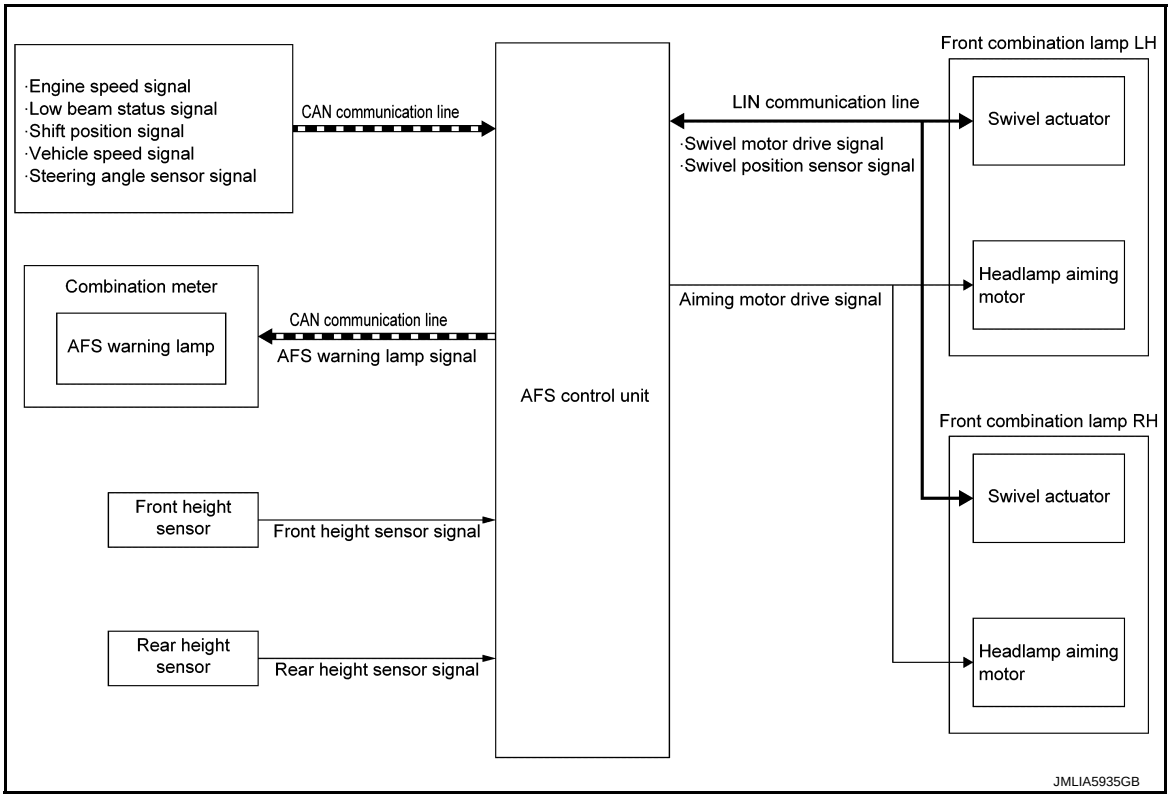
Control part	Fail-safe operation
Daytime running light	Daytime running light relay OFF

ACTIVE ADAPTIVE FRONT-LIGHTING SYSTEM

ACTIVE ADAPTIVE FRONT-LIGHTING SYSTEM : System Description

INFOID:0000000011509664

SYSTEM DIAGRAM



OUTLINE

- AFS (ACTIVE ADAPTIVE FRONT-LIGHTING SYSTEM) is controlled by AFS control unit.
- AFS has AFS control (swivel control) and the headlamp auto aiming control.
  - AFS control swivels the headlamp to the steering direction.
  - Headlamp auto aiming control moves the headlamp light axis up/down according to the vehicle height.

AFS (ADAPTIVE FRONT-LIGHTING SYSTEM)

AFS Control Description

- AFS control unit controls the headlamp when the steering wheel is turned rightward or leftward.
- AFS control unit detects the vehicle condition necessary for AFS control with the following signals.
  - Engine speed signal (received from ECM via CAN communication)
  - Low beam status signal (received from IPDM E/R via CAN communication)
  - Shift position signal (received from TCM via CAN communication)
  - Vehicle speed signal (received from combination meter via CAN communication)
  - Steering angle sensor signal (received from steering angle sensor via CAN communication)
- When the operation conditions are satisfied, AFS control unit controls the swivel angle depending on the steering angle and the vehicle speed.

AFS operation condition

- Engine running
- Swivel actuator initialization completed
- Headlamp ON
- Selector lever position other than P or R
- Vehicle speed approximately 5 km/h (3.11 MPH) or more
  (Left swivel only: Right swivel activates regardless of the vehicle speed.)
  NOTE:
  Swivel does not operate when the vehicle speed is 200 km/h (124.3 MPH) or more.

Swivel Actuator Initialization

- AFS control unit performs the swivel actuator initialization when detecting that the engine starts.
  - Swivels the headlamp to the vehicle-center side until it hits the stopper.

- Returns the swivel angle from the stopper. Completes the initialization with regarding the returned position as the swivel angle 0° (straight-forward position).

Swivel Operation

- AFS control unit transmits the swivel motor drive signal via LIN communication to the swivel actuator when activation conditions are satisfied. And swivels the headlamp.
  - The swivel starts after steering angle approximately 4° or more (depending on the vehicle speed) from straight-forward position.
  - The swivel angle becomes the maximum angle toward the driving direction if the steering angle is approximately 40.3° or more (depending on the vehicle speed). The swivel angle is maintained by shutting off the swivel motor drive signal.
  - The swivel starts, and returns to the swivel angle 0° (straight-forward position) when the steering is returned to the straight-forward position.
- AFS control unit returns the swivel angle to the straight-forward position, and stops the swivel regardless of the steering angle if the operation condition is not satisfied while the swivel angle is not 0°.

AFS warning Lamp

- AFS control unit transmits AFS warning lamp signal to the combination meter via CAN communication while the AFS control unit detects a specific DTC.
- Combination meter blinks the AFS warning lamp (approximately 1 second each) according to the AFS warning lamp signal.

  NOTE:
  - AFS warning lamp is turned ON for 1 second for the AFS warning lamp bulb check when the ignition switch is turned ON. AFS warning lamp is turned OFF within 1 second when the engine starts.
  - Combination meter blinks AFS warning lamp (approximately 1 second each) if AFS warning lamp signal is not received from AFS control unit.

HEADLAMP AUTO AIMING

Headlamp Auto Aiming Control Description

- AFS control unit controls the headlamp light axis height appropriately according to the vehicle height.
- AFS control unit detects the vehicle condition necessary for headlamp auto aiming control with the following signals.
  - Front height sensor signal
  - Rear height sensor signal
  - Engine speed signal (received from ECM via CAN communication)
  - Low beam status signal (received from IPDM E/R via CAN communication)
  - Vehicle speed signal (received from combination meter via CAN communication)
- When the operation conditions are satisfied, AFS control unit transmits the aiming motor drive signal for adjusting the headlamp axis height.

Headlamp auto aiming operation condition

- While the engine running
- Headlamp ON
- Vehicle speed (Control mode is switched according to the driving condition.)

Headlamp Auto Aiming Operation

- AFS control unit calculates the vehicle pitch angle from the front height sensor signal and rear height sensor signal. AFS control unit judges the angle for adjusting the axis gap from the preset position.
- AFS control unit controls the headlamp axis by changing the aiming motor drive signal output according to the vehicle-rearward height when detecting the following vehicle condition. Output is maintained if other condition than following is detected.
  - Engine starts
  - Headlamp is turned ON
  - Vehicle posture becomes stable after changing the vehicle posture change is detected with the headlamp ON and the vehicle stopped
  - Vehicle speed is maintained with the headlamp ON and the vehicle driven

NOTE:

Adjusted axis position may differ from the preset position although the headlamp auto aiming activates properly if the suspension is replaced or worn.

ACTIVE ADAPTIVE FRONT-LIGHTING SYSTEM : Fail-safe

INFOID:0000000011509665

DTC No.	CONSULT screen terms	Fail-safe	
		Swivel operation	Aiming operation
B2008	PARA NOT PROG	Right and left swivel motors stop at the position when DTC is detected	Right and left headlamp aiming motors stop at the position when DTC is detected
B2503	SWIVEL ACTUATOR [RH]	• Right swivel motor stop at the position when DTC is detected • Left swivel motor swivel angle returns to 0° and fixed	The signal, approximately 2 V decreased from the aiming motor drive signal when DTC detected, is output
	SWIVEL ACTUATOR [RH] COMM ERROR	• Right swivel motor stop at the position when DTC is detected or right swivel motor swivel angle returns to 0° and fixed • Left swivel motor swivel angle returns to 0° and fixed	
B2504	SWIVEL ACTUATOR [LH]	• Left swivel motor stop at the position when DTC is detected • Right swivel motor swivel angle returns to 0° and fixed	The signal, approximately 2 V decreased from the aiming motor drive signal when DTC detected, is output
	SWIVEL ACTUATOR [LH] COMM ERROR	• Left swivel motor stop at the position when DTC is detected or left swivel motor swivel angle returns to 0° and fixed • Right swivel motor swivel angle returns to 0° and fixed	
B2513	HI SEN UNUSUAL [FR]	Right and left swivel motor swivel angle returns to 0° and fixed	Right and left headlamp aiming motors stop at the position when DTC is detected
B2514	HI SEN UNUSUAL [RR]	Right and left swivel motor swivel angle returns to 0° and fixed	Right and left headlamp aiming motors stop at the position when DTC is detected
B2516	SHIFT POS SIG[R,P]	Right and left swivel motor swivel angle returns to 0° and fixed	—
B2517	VEHICEL SPEED SIG	Right and left swivel motor swivel angle returns to 0° and fixed	Right and left headlamp aiming motors stop at the position when DTC is detected
B2519	LEVELIZER CALIB	Right and left swivel motor swivel angle returns to 0° and fixed	Right and left headlamp aiming motors fix at the initial aiming position
B2521	ECU CIRC	Right and left swivel motor swivel angle returns to 0° and fixed	Right and left headlamp aiming motors stop at the position when DTC is detected
U0126	ST ANG SEN SIG	Right and left swivel motor swivel angle returns to 0° and fixed	—
U0428	ST ANG SEN CALIB	Right and left swivel motor swivel angle returns to 0° and fixed	—
U1000	CAN COMM CIRCUIT	Right and left swivel motor swivel angle returns to 0° and fixed	Right and left headlamp aiming motors stop at the position when DTC is detected **NOTE:** Only when the vehicle speed signal or the low beam status signal cannot be received
U1010	CONTROL UNIT(CAN)	Right and left swivel motor swivel angle returns to 0° and fixed	Right and left headlamp aiming motors stop at the position when DTC is detected

HEADLAMP AIMING CONTROL (MANUAL)

HEADLAMP AIMING CONTROL (MANUAL) : System Description

INFOID:0000000011509840

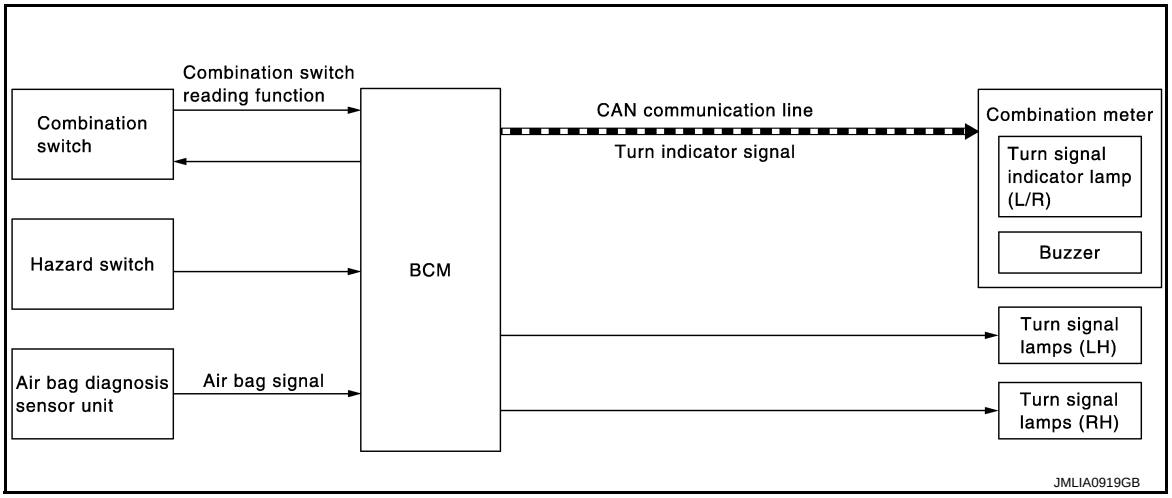
The headlamp levelizer adjusts the headlamp light axis upward and downward with the headlamp aiming motor integrated in the front combination lamp.

TURN SIGNAL AND HAZARD WARNING LAMP SYSTEM

TURN SIGNAL AND HAZARD WARNING LAMP SYSTEM : System Description

INFOID:0000000011509666

SYSTEM DIAGRAM



OUTLINE

Turn signal lamp and 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 ignition 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 circuits when the hazard switch is ON. BCM blinks the hazard warning lamp.

TURN SIGNAL INDICATOR LAMP AND TURN SIGNAL SOUND OPERATION

- BCM transmits the turn indicator signal to the combination meter via 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 indicator signal.

3-TIME FLASHER FUNCTION

- By a short touch of the turn signal lever, BCM blinks the turn signal lamps 3 times in the selected direction.
- Cancels the operation when short touch of the turn signal lever in the reverse direction during the 3-time flasher function operation.

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.

AUTO HAZARD FUNCTION

- Air bag diagnosis sensor unit transmits air bag signal to BCM, when air bag diagnosis sensor unit detects strong impact to the vehicle body while ignition switch is ON.

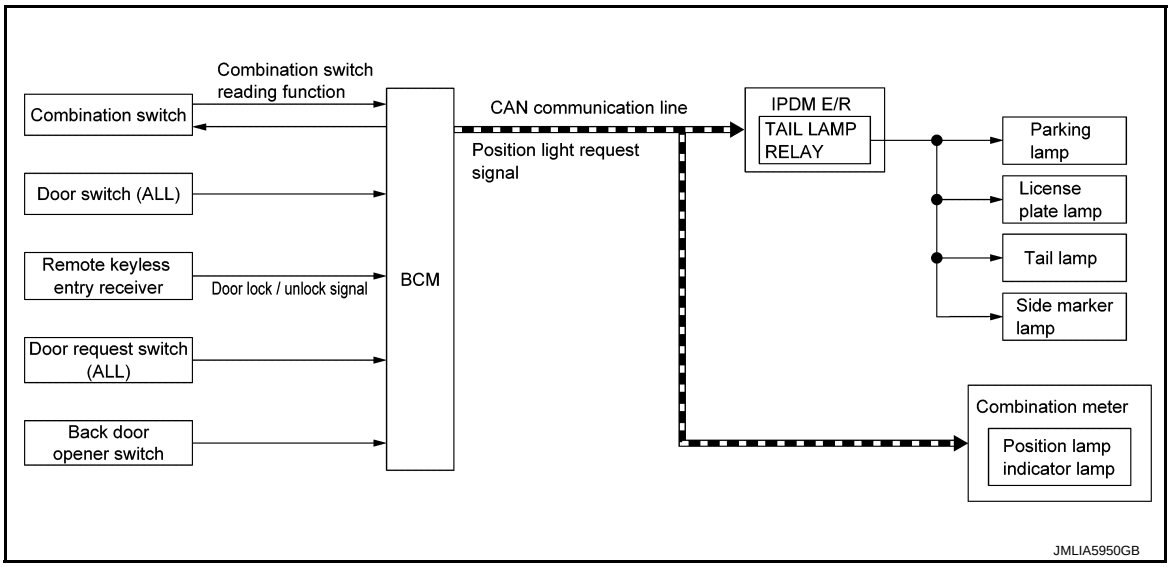
- When air bag signal received from air bag diagnosis sensor unit is detected, BCM supplies voltage to each turn signal lamp system and hazard lamp blinks.

PARKING, LICENSE PLATE, SIDE MARKER AND TAIL LAMP SYSTEM

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

INFOID:0000000011509667

SYSTEM DIAGRAM



OUTLINE

Parking, license plate, side marker and tail lamps are controlled by combination switch reading function and parking, license plate, side marker and tail lamps 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 parking, license plate, side marker and tail lamps ON condition.

Parking, license plate, side marker and tail lamps ON condition (When any of the following conditions are satisfied)

- Lighting switch 1ST
- Lighting switch 2ND
- Lighting switch AUTO (Only when the illumination judgment by auto light system is ON. For details, refer to EXL-14, "AUTO LIGHT SYSTEM : System Description".)

- 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 position lamp indicator lamp ON according to the position light request signal.

NOTE:

Parking lamp (Upper side / Lower side) and daytime running light (Upper side / Lower side) use a common light source. When the parking, license plate, side marker and tail lamps are turned ON while daytime running light is ON, the parking lamp (Lower side) / daytime running light (Lower side) is dimmed.

SIGNATURE LIGHT FUNCTION

Description

The signature light function is a function that turns ON the parking lamp, license plate lamp, side marker lamp and tail lamp for a set period of time when the doors are locked or unlocked from outside the vehicle.

Operation Description

BCM transmits the position light request signal to IPDM E/R and the combination meter via CAN communication according to the signature light function ON condition.

Signature light function operating condition (Operation when doors are unlocked)

- When all of the following conditions are satisfied, the signature light function operates when door unlock operation is performed from outside the vehicle (Intelligent Key, door request switch or back door opener switch).
- Ignition switch: OFF
- Door open/close status: All door close
- Door lock status: All door lock
- When any of the following conditions is satisfied while the signature light function is operating, the signature light function stops.
- Ignition switch: ON
- Since signature light function ON, approx. 30 seconds are passed.
- When door lock operation is performed from outside the vehicle (Intelligent Key or door request switch) or auto door lock function while the signature light function is operating, the system changes to operation when doors are locked.

Signature light function operating condition (Operation when doors are locked)

- When all of the following conditions are satisfied, the signature light function operates when door lock operation is performed from outside the vehicle (Intelligent Key or door request switch) or auto door lock function.
- Ignition switch: OFF
- Door open/close status: All door close
- Door lock status: All door unlock
- When any of the following conditions is satisfied while the signature light function is operating, the signature light function stops.
- Ignition switch: ON
- Since signature light function ON, approx.10 seconds are passed.
- When door unlock operation is performed from outside the vehicle (Intelligent Key, door request switch or back door opener switch) while the signature light function is operating, the system changes to operation when doors are unlocked.

NOTE:
ON/OFF of signature light function can be changed using CONSULT. Refer to DLK-41, "DOOR LOCK : CONSULT Function (BCM - DOOR LOCK)".

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

INFOID:0000000011509668

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

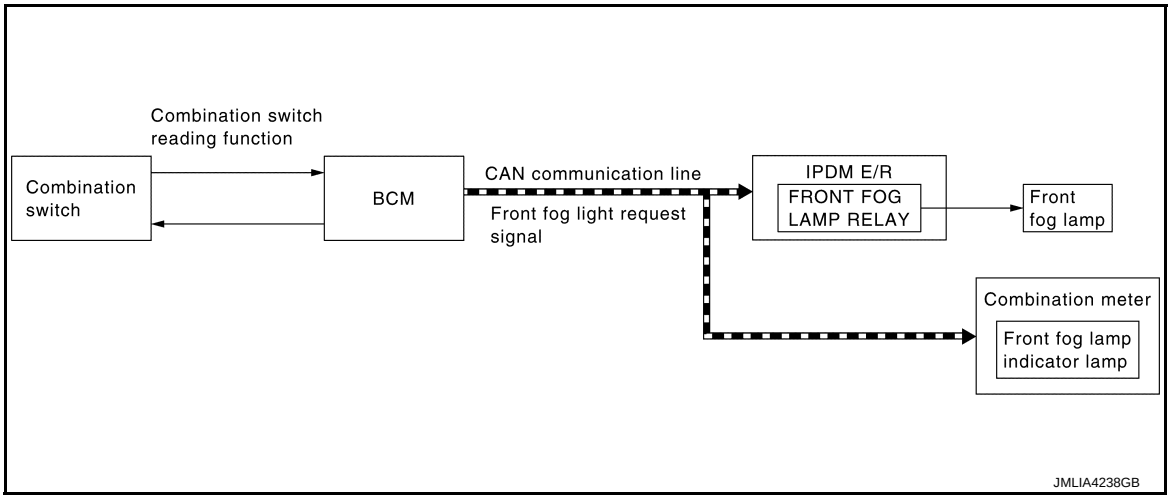
Control part	Fail-safe operation
• Parking lamp • License plate lamp • Side marker lamp • Tail lamp	• Turns ON the tail lamp relay when the ignition switch is turned ON • Turns OFF the tail lamp relay when the ignition switch is turned OFF

FRONT FOG LAMP SYSTEM

FRONT FOG LAMP SYSTEM : System Description

INFOID:0000000011509669

SYSTEM DIAGRAM



OUTLINE

Front fog lamp is controlled by combination switch reading function and 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 light 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 conditions are satisfied. [Except headlamp (HI) ON condition]
- Lighting switch 2ND
- Lighting switch AUTO (Only when the illumination judgment by auto light system is ON. For details, refer to EXL-14, "AUTO LIGHT SYSTEM : System Description".)
- IPDM E/R turns the integrated front fog lamp relay ON, and turns the front fog lamp ON according to the front fog light request signal.
- Combination meter turns the front fog lamp indicator lamp ON according to the front fog light request signal.

FRONT FOG LAMP SYSTEM : Fail-safe

INFOID:0000000011509670

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

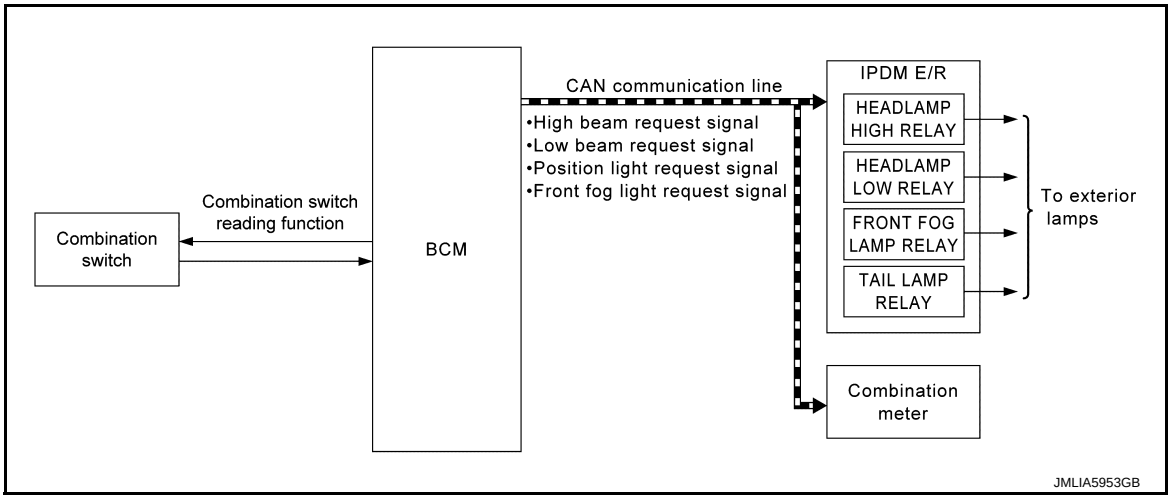
Control part	Fail-safe operation
Front fog lamp	Front fog lamp relay OFF

EXTERIOR LAMP BATTERY SAVER SYSTEM

EXTERIOR LAMP BATTERY SAVER SYSTEM : System Description

INFOID:0000000011509672

SYSTEM DIAGRAM



OUTLINE

- Exterior lamp battery saver system is controlled by combination switch reading function and exterior lamp battery saver function of BCM, and relay control function of IPDM E/R.
- BCM turns the exterior lamp* OFF, according to the vehicle status when ignition switch is turned OFF while exterior lamp is ON, for preventing battery discharge.

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

EXTERIOR LAMP BATTERY SAVER ACTIVATION

- BCM activates the timer and turns the exterior lamp OFF 45 seconds after the ignition switch is turned from ON→OFF with the exterior lamps ON.
- When in any of following conditions (after the exterior lamp battery saver is activated), exterior lamps can be turned ON.

- Ignition switch is turned from OFF→ON
- Lighting switch is changed
- Front fog lamp switch is changed

DIAGNOSIS SYSTEM (BCM)

COMMON ITEM

COMMON ITEM : CONSULT Function (BCM - COMMON ITEM)

INFOID:0000000011540687

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. Refer to BCS-58, "DTC Index".
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 • Engine start system	INTELLIGENT KEY	×	×	×
Combination switch	COMB SW		×	
Body control system	BCM	×		
IVIS	IMMU	×	×	×
Interior room lamp battery saver	BATTERY SAVER	×	×	×
Back door	TRUNK		×	
Vehicle security system	THEFT ALM	×	×	×
RAP system	RETAINED PWR		×	
Signal buffer system	SIGNAL BUFFER		×	×
—	AIR PRESSURE MONITOR*	×	×	×

*: This item is indicated, 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 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 “LOCK”)
	SLEEP>OFF		While turning BCM status from low power consumption mode to normal mode (Power supply position is “OFF”.)
	LOCK>ACC		While turning power supply position from “LOCK” to “ACC”
	ACC>ON		While turning power supply position from “ACC” to “IGN”
	RUN>ACC		While turning power supply position from “RUN” to “ACC” (Vehicle is stopping and selector lever is except P position.)
	CRANK>RUN		While turning power supply position from “CRANKING” to “RUN” (From cranking up the engine to run it)
	RUN>URGENT		While turning power supply position from “RUN“ to “ACC” (Emergency stop operation)
	ACC>OFF		While turning power supply position from “ACC” to “OFF”
	OFF>LOCK		While turning power supply position from “OFF” to “LOCK”
	OFF>ACC		While turning power supply position from “OFF” to “ACC”
	ON>CRANK		While turning power supply position from “IGN” to “CRANKING”
	OFF>SLEEP		While turning BCM status from normal mode (Power supply position is “OFF”.) to low power consumption mode
	LOCK>SLEEP		While turning BCM status from normal mode (Power supply position is “LOCK”.) to low power consumption mode
	LOCK		Power supply position is “LOCK” (Ignition switch OFF with steering is locked.)
	OFF		Power supply position is “OFF” (Ignition switch OFF with steering is unlocked.)
	ACC		Power supply position is “ACC” (Ignition switch ACC)
	ON		Power supply position is “IGN” (Ignition switch ON with engine stopped)
	ENGINE RUN		Power supply position is “RUN” (Ignition switch ON with engine running)
	CRANKING		Power supply position is “CRANKING” (At engine cranking)
IGN Counter	0 - 39	The number of times that ignition 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 ignition switch OFF → ON. • The number is fixed to 39 until the self-diagnosis results are erased if it is over 39.	

HEADLAMP

HEADLAMP : CONSULT Function (BCM - HEAD LAMP)

INFOID:0000000011509674

WORK SUPPORT

Service item	Setting item	Setting
CUSTOM A/LIGHT SETTING	MODE1*2	Normal
	MODE2	More sensitive setting than normal setting (Turns ON earlier than normal operation)
	MODE3	More sensitive setting than MODE2 (Turns ON earlier than MODE2)
	MODE4	Less sensitive setting than normal setting (Turns ON later than normal operation)

Service item	Setting item	Setting	
BATTERY SAVER SET	On*2	With the exterior lamp battery saver function	
	Off	Without the exterior lamp battery saver function	
ILL DELAY SET	MODE1*2	45 sec.	Sets delay timer function timer operation time. (All doors closed)
	MODE2	Without the function	
	MODE3	30 sec.	
	MODE4	60 sec.	
	MODE5	90 sec.	
	MODE6	120 sec.	
	MODE7	150 sec.	
	MODE8	180 sec.	
AUTO LIGHT LOGIC SET*1	MODE1*2	With twilight ON custom & with wiper INT, LO and HI	
	MODE2	With twilight ON custom & with wiper LO and HI	
	MODE3	With twilight ON custom & without	
	MODE4	Without twilight ON custom & with wiper INT, LO and HI	
	MODE5	Without twilight ON custom & with wiper LO and HI	
	MODE6	Without twilight ON custom & without	

*1: For models for Canada, this item cannot be used.
*2: Factory setting

DATA MONITOR

NOTE:
The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

Monitor item [Unit]	Description
PUSH SW [On/Off]	Indicates [On/Off] condition of push-button ignition switch
ENGINE STATE [STOP/STALL/CRANK/RUN]	Indicates [STOP/STALL/CRANK/RUN] condition of engine states
VEH SPEED 1 [km/h]	Display the vehicle speed signal received from combination meter by numerical value [km/h]
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 SW 1 [On/Off]	
HEAD LAMP SW 2 [On/Off]	
PASSING SW [On/Off]	
AUTO LIGHT SW [On/Off]	
FR FOG SW [On/Off]	

Monitor item [Unit]	Description
RR FOG SW [On/Off]	**NOTE:** This item cannot be monitored
DOOR SW-DR [On/Off]	Indicated [On/Off] condition of front door switch (driver side)
DOOR SW-AS [On/Off]	Indicated [On/Off] condition of front door switch (passenger side)
DOOR SW-RR [On/Off]	Indicated [On/Off] condition of rear door switch RH
DOOR SW-RL [On/Off]	Indicated [On/Off] condition of rear door switch LH
DOOR SW-BK [On/Off]	Indicated [On/Off] condition of back door switch
OPTI SEN (DTCT) [V]	The value of outside brightness voltage input from the optical sensor
OPTI SEN (FILT)* [V]	The value of outside brightness voltage filtered by BCM
OPTICAL SENSOR [On/Off/NG]	**NOTE:** This item cannot be monitored

*: For models for Canada, this item cannot be 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 parking, license plate, side marker and tail lamps ON • Transmits the position light request signal to combination meter via CAN communication to turn the position lamp indicator lamp ON
	Off	Stops the position light request signal transmission
HEAD LAMP	HI	• Transmits the high beam request signal to IPDM E/R via CAN communication to turn the headlamp (HI) ON • Transmits the high beam request signal to combination meter via CAN communication to turn the high beam indicator lamp ON
	Low	Transmits the low beam request signal to IPDM E/R via CAN communication to turn the headlamp (LO) ON
	Off	Stops the high beam request signal and low beam request signal transmission
FR FOG LAMP	On	• Transmits the front fog light request signal to IPDM E/R via CAN communication to turn the front fog lamp ON • Transmits the front fog light request signal to combination meter via CAN communication to turn the front fog lamp indicator lamp ON
	Off	Stops the front fog light request signal transmission
RR FOG LAMP	On	**NOTE:** This item cannot be tested
	Off	
DAYTIME RUNNING LIGHT	On	Transmits the daytime running light request signal via CAN communication to turn the daytime running light ON
	Off	Stops the daytime running light request signal transmission
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

FLASHER

FLASHER : CONSULT Function (BCM - FLASHER)

INFOID:0000000011509675

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 door request switch and Intelligent Key
	Unlock Only	With unlocking only	
	Lock/ Unlock*	With locking/unlocking	
	Off	Without the function	

*: Factory setting

DATA MONITOR

NOTE:
The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

Monitor item [Unit]	Description
REQ SW -DR [On/Off]	Indicates [On/Off] condition of door request switch (driver side)
REQ SW -AS [On/Off]	Indicates [On/Off] condition of door request switch (passenger side)
PUSH SW [On/Off]	Indicates [On/Off] condition of push-button ignition 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]	Indicates [On/Off] condition of LOCK signal from Intelligent Key
RKE-UNLOCK [On/Off]	Indicates [On/Off] condition of UNLOCK signal from Intelligent Key
RKE-PANIC [On/Off]	Indicates [On/Off] condition of PANIC button of Intelligent Key

ACTIVE TEST

Test item	Operation	Description
FLASHER	RH	• Outputs voltage to turn the right side turn signal lamps ON • Transmits the turn indicator signal to combination meter via CAN communication to turn the turn signal indicator lamp (RH) ON
	LH	• Outputs voltage to turn the left side turn signal lamps ON • Transmits the turn indicator signal to combination meter via CAN communication to turn the turn signal indicator lamp (LH) ON
	Off	• Stops the voltage to turn the turn signal lamps OFF • Stops the turn indicator signal transmission

DIAGNOSIS SYSTEM (IPDM E/R)

Diagnosis Description

INFOID:0000000011540688

AUTO ACTIVE TEST

Description

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

- Oil pressure warning lamp
- Rear window defogger
- Front wiper (LO, HI)
- Parking lamp
- License plate lamp
- Tail lamp
- Side marker lamp
- Front fog lamp
- Headlamp (LO, HI)
- A/C compressor (magnet clutch)

Operation Procedure

CAUTION:

Never perform auto active test in the following conditions.

- **Engine is running.**
- **CONSULT is connected.**

1. Close the hood and lift the wiper arms from the windshield. (Prevent windshield damage due to wiper operation)
   NOTE:
   When auto active test is performed with hood opened, sprinkle water on windshield beforehand.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON, and within 20 seconds, press the driver door switch 10 times. Then turn the ignition switch OFF.
   CAUTION:
   Close passenger door.
4. Turn the ignition switch ON within 10 seconds. After that the horn sounds once and the auto active test starts.
   CAUTION:
   Engine starts when ignition switch is turned ON while brake pedal is depressed.
5. The oil pressure warning lamp starts blinking when the auto active test starts.
6. After a series of the following operations is repeated 3 times, auto active test is completed.

NOTE:

- When auto active test has to be cancelled halfway through test, turn the ignition switch OFF.
- When auto active test is not activated, door switch may be the cause. Check door switch. Refer to DLK-121, "Component Function Check".

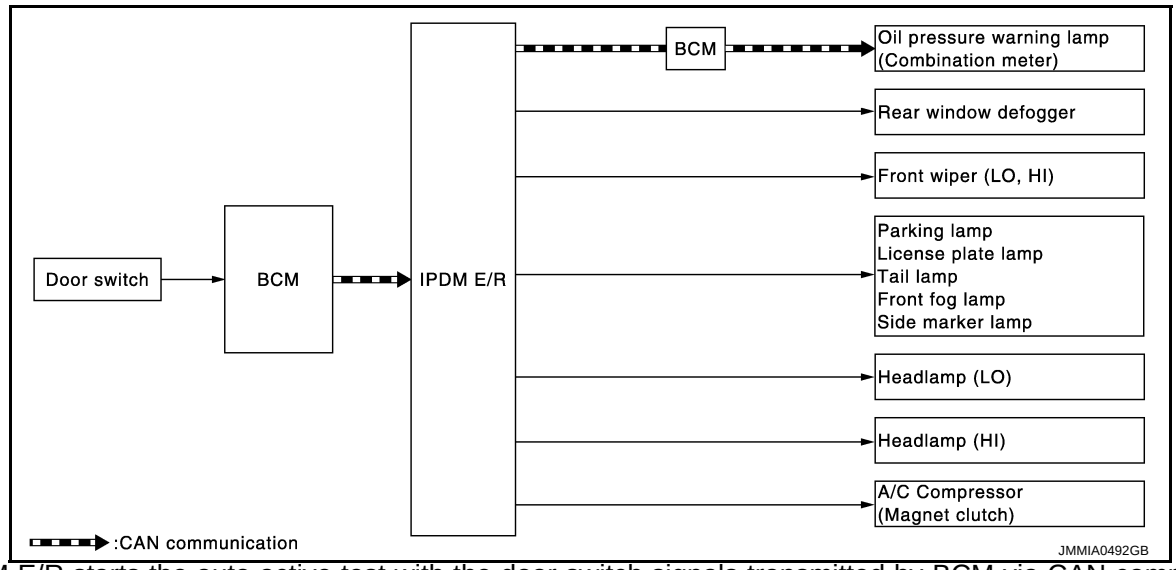
Inspection in Auto Active Test

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

Operation sequence	Inspection location	Operation
1	Oil pressure warning lamp	Blinks continuously during operation of auto active test
2	Rear window defogger	10 seconds
3	Front wiper	LO for 5 seconds → HI for 5 seconds
4	• Parking lamp • License plate lamp • Tail lamp • Side marker lamp • Front fog lamp	10 seconds

Operation sequence	Inspection location	Operation
5	Headlamp	LO for 10 seconds →HI ON ⇔ OFF 5 times
6	A/C compressor (magnet clutch)	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

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 • Side marker lamp • Front fog lamp • Headlamp (HI, LO) • Front wiper (HI, LO)	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
A/C compressor does not operate	Perform auto active test. Does the magnet clutch operate?	YES	• A/C auto amp. signal input circuit • CAN communication signal between A/C auto amp. and ECM • CAN communication signal between ECM and IPDM E/R
		NO	• Magnet clutch • Harness or connector between IPDM E/R and magnet clutch • IPDM E/R

Symptom	Inspection contents		Possible cause
Oil pressure warning lamp does not operate	Perform auto active test. Does the oil pressure warning lamp blink?	YES	• Harness or connector between IPDM E/R and oil pressure switch • Oil pressure switch • IPDM E/R
		NO	• CAN communication signal between IPDM E/R and BCM • CAN communication signal between BCM and combination meter • Combination meter

CONSULT Function (IPDM E/R)

INFOID:0000000011540689

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-22, "DTC Index".

DATA MONITOR

NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

Monitor Item [Unit]	MAIN SIGNALS	Description
RAD FAN REQ [1/2/3/4]	×	Displays the value of the cooling fan speed request signal received from ECM via CAN communication.
AC COMP REQ [Off/On]	×	Displays the status of the A/C compressor request signal received from ECM via CAN communication.
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 ignition switch ON signal received from BCM via CAN communication.

Monitor Item [Unit]	MAIN SIGNALS	Description
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 push-button ignition switch judged by IPDM E/R.
INTER/NP SW [Off/On]		Displays the status of the shift position judged by IPDM E/R.
ST RLY CONT [Off/On]		Displays the status of the starter relay status signal received from BCM via CAN communication.
IHBT RLY -REQ [Off/On]		Displays the status of the starter control relay signal received from BCM via CAN communication.
ST/INHI RLY [Off/ ST ON/INHI ON/UNKWN]		Displays the status of the starter relay and starter control relay judged by IPDM E/R.
DETENT SW [Off/On]		Displays the status of the A/T shift selector (detention switch) 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]		Displays the status of the day time running light request signal received from BCM via CAN communication
OIL P SW [Open/Close]		Displays the status of the oil pressure switch judged by IPDM E/R.
HOOD SW [Off/On]		Displays the status of the hood switch 1 judged by IPDM E/R.
HL WASHER REQ [Off/On]		Displays the status of the headlamp washer request signal received from BCM via CAN communication.
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.
HOOD SW 2 [Off/On]		Displays the status of the hood switch 2 judged by IPDM E/R.

ACTIVE TEST

Test item	Operation	Description
CORNERING LAMP	LH	**NOTE:** This item is indicated, but cannot be tested.
	RH	
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	OFF
	2	Transmits 50% pulse duty signal (PWM signal) to the cooling fan control module.
	3	Transmits 75% pulse duty signal (PWM signal) to the cooling fan control module.
	4	Transmits 100% pulse duty signal (PWM signal) to the cooling fan control module.
HEAD LAMP WASHER	On	Operates the headlamp washer relay for 1 second.

Test item	Operation	Description
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.

*: Operates while the engine is running.

DIAGNOSIS SYSTEM (HIGH BEAM ASSIST CONTROL MODULE)

CONSULT Function (HIGH BEAM ASSIST)

INFOID:0000000011509678

APPLICATION ITEMS

Diagnosis mode	Description
ECU Identification	Allows confirmation of high beam assist control module part number
Self Diagnostic Result	Displays the diagnosis results judged by high beam assist control module
Data Monitor	Displays input/output data for high beam assist control module in real time
Active Test	Transmits a drive signal to the load to check their operation
Configuration	Writes the vehicle specification when replacing high beam assist control module

ECU IDENTIFICATION

Part number of high beam assist control module can be checked.

SELF DIAGNOSTIC RESULT

Self Diagnostic Item

Self diagnostic result that is judged by high beam assist control module can be checked. Refer to EXL-43, "DTC Index".

- When “CRNT” is displayed on self diagnostic result, the system is presently malfunctioning.
- When “PAST” is displayed on self diagnostic result, system malfunction in the past is detected, but the system is presently normal.

FFD (Freeze Frame Data)

The high beam assist control module records the following vehicle condition at the time a particular DTC is detected, and displays on CONSULT.

Monitor item [Unit]	Description
ODO/TRIP METER [km]	Total mileage (Odometer value) of the moment a particular DTC is detected
IGN POWER SUPPLY VOLTAGE [V]	Ignition power supply voltage of the moment a particular DTC is detected
YAW RATE SIGNAL [deg/s]	Yaw rate of the moment a particular DTC is detected
VEHICLE SPEED SIGNAL [km/h]	Vehicle speed of the moment a particular DTC is detected

DATA MONITOR

NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

Monitor item [Value/Unit]	Description
HBA SYSTEM STATUS [ERROR/OK]	Displays the status of the high beam assist system condition signal which the high beam assist control module transmits to BCM via CAN communication • ERROR: Operation prohibited status (DTC detected) • OK: Normal status

Monitor item [Value/Unit]	Description
HIGH BEAM ASSIST REQUEST [NO REQ/LOW/HIGH/NOT RE]	Displays the status of the high beam assist request signal which the high beam assist control module transmits to BCM via CAN communication • NO REQ: Headlamp (HI/LO) operation not requested • LOW: Headlamp (LO) operation requested • HIGH: Headlamp (HI) operation requested • NOT RE: During startup
IMAGE SENSOR TEMP [°C]	Displays the image sensor temperature received from the image sensor

ACTIVE TEST

Test item	Operation	Description
HIGH BEAM ASSIST TEST*	HIGH	Headlamp (HI) operation is performed by transmitting the high beam assist request signal [headlamp (HI) operation request] to BCM via CAN communication
	LOW	Headlamp (LO) operation is performed by transmitting the high beam assist request signal [headlamp (LO) operation request] to BCM via CAN communication

*: Test can only be performed when the high beam assist system operation permission conditions are satisfied.

CONFIGURATION

The vehicle specification can be written when high beam assist control module is replaced. Refer to EXL-77, "Description".

DIAGNOSIS SYSTEM (AFS CONTROL UNIT)

CONSULT Function (ADAPTIVE LIGHT)

INFOID:0000000011509679

APPLICATION ITEMS

Diagnosis mode	Description
ECU Identification	Allows confirmation of AFS control unit part number
Self Diagnostic Result	Displays the diagnosis results judged by AFS control unit
Work Support	Performs settings on sensors.
Data Monitor	Displays input/output data for AFS control unit in real time
Active Test	Transmits a drive signal to the load to check their operation
Configuration	Writes the vehicle specification when replacing AFS control unit

ECU IDENTIFICATION

Part number of AFS control unit can be checked.

SELF DIAGNOSTIC RESULT

Self Diagnostic Item

Self diagnostic result that is judged by AFS control unit can be checked. Refer to EXL-48, "DTC Index".

- When “CRNT” is displayed on self diagnostic result, the system is presently malfunctioning.
- When “PAST” is displayed on self diagnostic result, system malfunction in the past is detected, but the system is presently normal.

FFD (Freeze Frame Data)

The AFS control unit records the following vehicle condition at the time a particular DTC is detected, and displays on CONSULT.

Monitor item [Unit]	Description
ODO/TRIP METER [km]	Total mileage (Odometer value) of the moment a particular DTC is detected

WORK SUPPORT

Work item	Description
ST ANG SEN ADJUSTMENT*	—
LEVELIZER ADJUSTMENT	Adjusts the height sensor signal (front / rear) output value (AFS control unit recognized) in the unloaded vehicle condition

*: This function is not necessary in the usual service procedure.

DATA MONITOR

NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

Monitor item [Value/Unit]	Description
STR ANGLE SIG [°]	The steering angle value judged by the steering angle sensor signal received from the steering angle sensor via CAN communication
VHCL SPD [km/h]	The vehicle speed signal value from the combination meter via CAN communication
SLCT LVR POSI [P/R/N/D/M]	The selector lever status judged by the shift position signal received from TCM via CAN communication
HEAD LAMP [On/Off]	The headlamp ON/OFF status judged by the low beam status signal received from IPDM E/R via CAN communication

Monitor item [Value/Unit]	Description
AFS SW [On/Off]	**NOTE:** This item is displayed, but cannot be monitored
REVERSE SW [On/Off]	**NOTE:** This item is displayed, but cannot be monitored
HI SEN OTP RR [V]	The rear height sensor signal voltage value input from the rear height sensor
HI SEN OTP FR [V]	The front height sensor signal voltage value input from the front height sensor
LEV ACTR VLTG [%]	The ratio value to the battery voltage generated by the aiming motor signal control value judged by AFS control unit
SWVL SEN LH [°]	The headlamp swivel angle value judged by AFS control unit according to the swivel position sensor signal received from the swivel actuator via LIN communication
SWVL SEN RH [°]	
SWVL ANGLE LH [°]	The swivel angle command value to the swivel motor judged by AFS control unit
SWVL ANGLE RH [°]	
HI SEN INI RR [V]	Rear height sensor signal voltage value at rear height sensor initialization
HI SEN INI FR [V]	Front height sensor signal voltage value at front height sensor initialization
PINION ANGLE [°]	**NOTE:** This item is displayed, but cannot be monitored

ACTIVE TEST

Test item	Operation	Description
LOW BEAM TEST RIGHT	Stop	Swivels the right headlamp to the swivel angle 0°
	Peak	Swivels the right headlamp to the swivel angle approximately 15°
	Origin	Swivels the right headlamp to the swivel angle 0°
LOW BEAM TEST LEFT	Stop	Swivels the left headlamp to the swivel angle 0°
	Peak	Swivels the left headlamp to the swivel angle approximately 15°
	Origin	Swivels the left headlamp to the swivel angle 0°
LEVELIZER TEST	Stop	Moves the headlamp axis to the initial position
	Peak	Moves the headlamp axis to the lowest position
	Origin	Moves the headlamp axis to the initial position

CONFIGURATION

The vehicle specification can be written when AFS control unit is replaced. Refer to EXL-78, "Description".

ECU DIAGNOSIS INFORMATION

BCM, IPDM E/R

List of ECU Reference

INFOID:0000000011509680

ECU	Reference
BCM	BCS-35, "Reference Value"
	BCS-56, "Fail-safe"
	BCS-57, "DTC Inspection Priority Chart"
	BCS-58, "DTC Index"
IPDM E/R	PCS-15, "Reference Value"
	PCS-21, "Fail-safe"
	PCS-22, "DTC Index"

HIGH BEAM ASSIST CONTROL MODULE

Reference Value

INFOID:0000000011509681

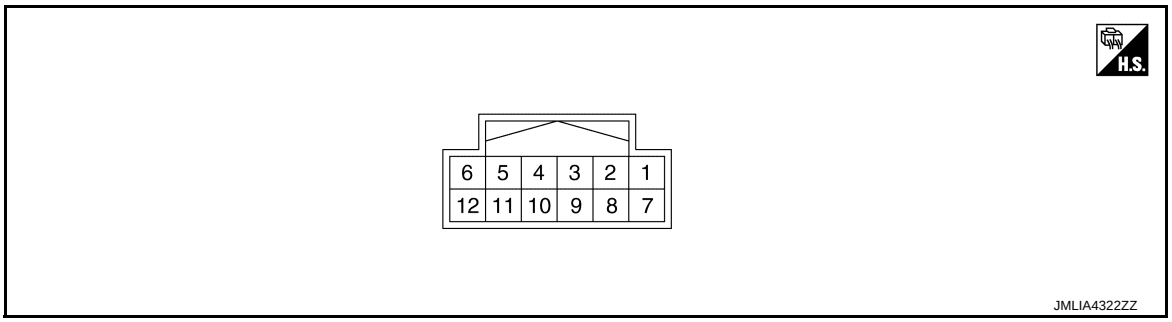
VALUES ON THE DIAGNOSIS TOOL

NOTE:
The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

CONSULT MONITOR ITEM

Monitor item	Condition		Value/Status (Approx.)
HBA SYSTEM STATUS	Ignition switch ON	DTC is detected by the high beam assist control module	ERROR
		Other than the above	OK
HIGH BEAM ASSIST REQUEST	Ignition switch ON	When the high beam assist system operation permission conditions are not satisfied	NO REQ
		During headlamp (LO) operation activated by high beam assist system	LOW
		During headlamp (HI) operation activated by high beam assist system	HIGH
	Immediately after turning the ignition switch ON		NOT RE
IMAGE SENSOR TEMP	Ignition switch ON		Equivalent to in-vehicle temperature

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
3 (B)	Ground	Ground	—	Ignition switch ON		0 V
4* (B/R)	Ground	Auto anti-dazzling outside mirror control signal	Output	Ignition switch ON	Light shines on the inside mirror	1.45 V
					Light does not shine on the inside mirror	0 V
6 (B/R)	Ground	Ignition power supply	Input	Ignition switch	ON	9 – 16 V
					OFF	0 V
9* (B/Y)	Ground	Auto anti-dazzling outside mirror ground	Input	Ignition switch ON		0 V
10 (B/Y)	Ground	Battery power supply	Input	Ignition switch OFF		9 – 16 V

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
11 (B)	Ground	CAN-L	Input/ Output	—	—
12 (B/SB)	Ground	CAN-H	Input/ Output	—	—

*: Except for Mexico

Fail-safe

INFOID:0000000011509682

DTC No.	CONSULT screen terms	Fail-safe
B2090-01	HBA CONTROL MODULE	• High beam assist system operation stop • High beam assist indicator lamp OFF
B2090-1C	HBA CONTROL MODULE	
B2090-49	HBA CONTROL MODULE	
B2090-54	HBA CONTROL MODULE	
B2091-01	HBA CONTROL MODULE	
B2091-02	HBA CONTROL MODULE	
B2091-07	HBA CONTROL MODULE	
B2091-55	HBA CONTROL MODULE	
U1000-01	CAN COMM CIRCUIT	
U1010-49	CONTROL UNIT(CAN)	

DTC Inspection Priority Chart

INFOID:0000000011509683

If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.

Priority	DTC No.	CONSULT screen terms
1	B2090-1C	HBA CONTROL MODULE
2	U1000-01	CAN COMM CIRCUIT
	U1010-49	CONTROL UNIT(CAN)
3	B2090-49	HBA CONTROL MODULE
	B2090-54	HBA CONTROL MODULE
	B2091-55	HBA CONTROL MODULE
4	B2090-01	HBA CONTROL MODULE
	B2091-01	HBA CONTROL MODULE
	B2091-02	HBA CONTROL MODULE
	B2091-07	HBA CONTROL MODULE

DTC Index

INFOID:0000000011509684

×: Applicable

DTC No.	CONSULT screen terms	Fail-safe	Reference
B2090-01	HBA CONTROL MODULE	×	EXL-82, "DTC Description"
B2090-1C	HBA CONTROL MODULE	×	EXL-83, "DTC Description"
B2090-49	HBA CONTROL MODULE	×	EXL-84, "DTC Description"
B2090-54	HBA CONTROL MODULE	×	EXL-85, "DTC Description"
B2091-01	HBA CONTROL MODULE	×	EXL-86, "DTC Description"

DTC No.	CONSULT screen terms	Fail-safe	Reference
B2091-02	HBA CONTROL MODULE	×	EXL-87, "DTC Description"
B2091-07	HBA CONTROL MODULE	×	EXL-88, "DTC Description"
B2091-55	HBA CONTROL MODULE	×	EXL-90, "DTC Description"
U1000-01	CAN COMM CIRCUIT	×	EXL-108, "DTC Description"
U1010-49	CONTROL UNIT(CAN)	×	EXL-110, "DTC Description"

AFS CONTROL UNIT

Reference Value

INFOID:0000000011509685

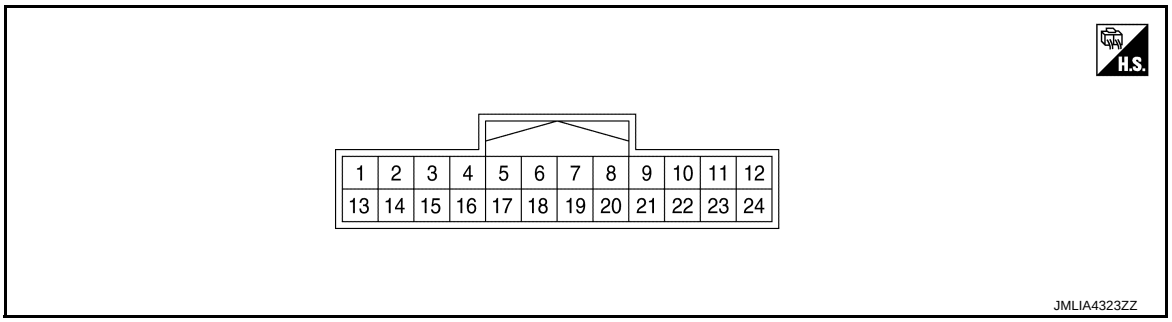
VALUES ON THE DIAGNOSIS TOOL

NOTE:
The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

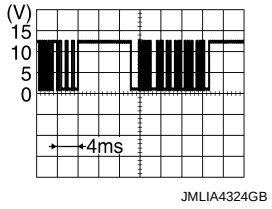
CONSULT MONITOR ITEM

Monitor Item	Condition		Value/Status
STR ANGLE SIG	Steering	Straight-forward	Approx. 0°
		Steering	(–756°) – (756°)
VHCL SPD	Driving at 40 km/h (25 MPH)		40 km/h
SLCT LVR POSI	Selector lever operation	P/R/N/D	P/R/N/D
		Manual shift gate side	M
HEAD LAMP	Headlamp	ON	On
		OFF	Off
AFS SW	**NOTE:** This item is displayed, but cannot be monitored		
REVERSE SW	**NOTE:** This item is displayed, but cannot be monitored		
HI SEN OTP RR	Vehicle rear height	Unloaded vehicle condition	Approx. 3.21 V
		Low	Voltage decreases from the unladen status
HI SEN OTP FR	Vehicle front height	Unloaded vehicle condition	Approx. 3.54 V
		Low	Voltage decreases from the unladen status
LEV ACTR VLTG	Headlamp leveling	Unloaded vehicle condition	Approx. 19.2%
		Low	Value increases from the unladen status
SWVL SEN LH	Left headlamp swivel activation	Standard position	Approx. 0°
		Activation	Positive degree (+°)
SWVL SEN RH	Right headlamp swivel activation	Standard position	Approx. 0°
		Activation	Positive degree (+°)
SWVL ANGLE LH	Left headlamp swivel activation	Standard position	Approx. 0°
		Activation	Positive degree (+°)
SWVL ANGLE RH	Right headlamp swivel activation	Standard position	Approx. 0°
		Activation	Positive degree (+°)
HI SEN INI RR	Ignition switch ON		Approx. 3.21 V
HI SEN INI FR	Ignition switch ON		Approx. 3.54 V
PINION ANGLE	**NOTE:** This item is displayed, but cannot be monitored		

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ output			
1 (L)	Ground	CAN-H	Input/ output	—		—
5 (V)	Ground	Front height sensor signal	Input	Vehicle front height	Unloaded vehicle condition	3.54 V
					Low	Voltage decreases from the unladen status
6 (R/G)	Ground	Rear height sensor signal	Input	Vehicle rear height	Unloaded vehicle condition	3.21 V
					Low	Voltage decreases from the unladen status
8 (GR)	Ground	Swivel actuator LIN signal	Input/ output	Ignition switch ON		
11 (B)	Ground	Ground	—	Ignition switch ON		0 V
12 (GR)	Ground	Ignition power supply	Input	Ignition switch ON		9 – 16 V
13 (P)	Ground	CAN-L	Input/ output	—		—
19 (LG/B)	Ground	Swivel actuator ground	Input	Ignition switch ON		0 V
21 (LG/R)	Ground	Height sensor power supply	Output	Ignition switch ON		4.45 – 6.25 V
22 (SB)	Ground	Aiming motor drive signal	Output	Headlamp leveling	Unloaded vehicle condition	2.4 V
					Low	Voltage increases from the unladen status
23 (B/O)	Ground	Height sensor ground	Input	Ignition switch ON		0 V
24 (GR/L)	Ground	Aiming motor ground	Input	Ignition switch ON		0 V

Fail-safe

INFOID:0000000011509686

DTC No.	CONSULT screen terms	Fail-safe	
		Swivel operation	Aiming operation
B2008	PARA NOT PROG	Right and left swivel motors stop at the position when DTC is detected	Right and left headlamp aiming motors stop at the position when DTC is detected
B2503	SWIVEL ACTUATOR [RH]	• Right swivel motor stop at the position when DTC is detected • Left swivel motor swivel angle returns to 0° and fixed	The signal, approximately 2 V decreased from the aiming motor drive signal when DTC detected, is output
	SWIVEL ACTUATOR [RH] COMM ERROR	• Right swivel motor stop at the position when DTC is detected or right swivel motor swivel angle returns to 0° and fixed • Left swivel motor swivel angle returns to 0° and fixed	
B2504	SWIVEL ACTUATOR [LH]	• Left swivel motor stop at the position when DTC is detected • Right swivel motor swivel angle returns to 0° and fixed	The signal, approximately 2 V decreased from the aiming motor drive signal when DTC detected, is output
	SWIVEL ACTUATOR [LH] COMM ERROR	• Left swivel motor stop at the position when DTC is detected or left swivel motor swivel angle returns to 0° and fixed • Right swivel motor swivel angle returns to 0° and fixed	
B2513	HI SEN UNUSUAL [FR]	Right and left swivel motor swivel angle returns to 0° and fixed	Right and left headlamp aiming motors stop at the position when DTC is detected
B2514	HI SEN UNUSUAL [RR]	Right and left swivel motor swivel angle returns to 0° and fixed	Right and left headlamp aiming motors stop at the position when DTC is detected
B2516	SHIFT POS SIG[R,P]	Right and left swivel motor swivel angle returns to 0° and fixed	—
B2517	VEHICEL SPEED SIG	Right and left swivel motor swivel angle returns to 0° and fixed	Right and left headlamp aiming motors stop at the position when DTC is detected
B2519	LEVELIZER CALIB	Right and left swivel motor swivel angle returns to 0° and fixed	Right and left headlamp aiming motors fix at the initial aiming position
B2521	ECU CIRC	Right and left swivel motor swivel angle returns to 0° and fixed	Right and left headlamp aiming motors stop at the position when DTC is detected
U0126	ST ANG SEN SIG	Right and left swivel motor swivel angle returns to 0° and fixed	—
U0428	ST ANG SEN CALIB	Right and left swivel motor swivel angle returns to 0° and fixed	—
U1000	CAN COMM CIRCUIT	Right and left swivel motor swivel angle returns to 0° and fixed	Right and left headlamp aiming motors stop at the position when DTC is detected **NOTE:** Only when the vehicle speed signal or the low beam status signal cannot be received
U1010	CONTROL UNIT(CAN)	Right and left swivel motor swivel angle returns to 0° and fixed	Right and left headlamp aiming motors stop at the position when DTC is detected

DTC Inspection Priority Chart

INFOID:0000000011509687

If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.

Priority	DTC No.	CONSULT screen terms
1	U1000	CAN COMM CIRCUIT
	U1010	CONTROL UNIT(CAN)
2	B2008	PARA NOT PROG
	B2519	LEVELIZER CALIB
	B2521	ECU CIRC
	U0428	ST ANG SEN CALIB
3	B2503	SWIVEL ACTUATOR [RH]
		SWIVEL ACTUATOR [RH] COMM ERROR
	B2504	SWIVEL ACTUATOR [LH]
		SWIVEL ACTUATOR [LH] COMM ERROR
	B2513	HI SEN UNUSUAL [FR]
	B2514	HI SEN UNUSUAL [RR]
	B2516	SHIFT POS SIG[R,P]
	B2517	VEHICEL SPEED SIG
	U0126	ST ANG SEN SIG

DTC Index

INFOID:0000000011509688

×: Applicable

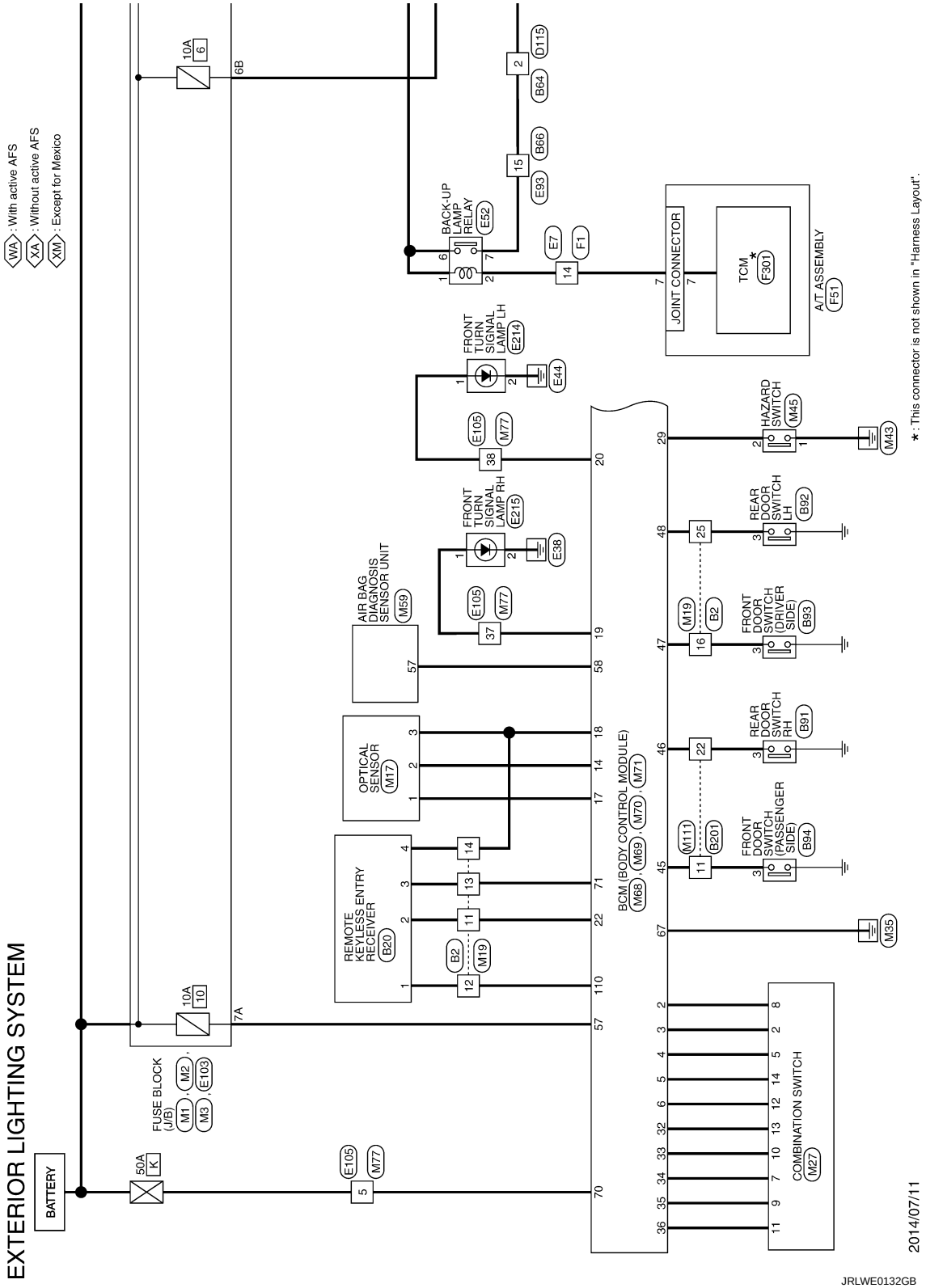
DTC No.	CONSULT screen terms	Fail-safe	AFS warning lamp	Reference
B2008	PARA NOT PROG	×	×	EXL-81, "DTC Description"
B2503	SWIVEL ACTUATOR [RH]	×	×	EXL-91, "DTC Description"
	SWIVEL ACTUATOR [RH] COMM ERROR	×	×	
B2504	SWIVEL ACTUATOR [LH]	×	×	EXL-93, "DTC Description"
	SWIVEL ACTUATOR [LH] COMM ERROR	×	×	
B2513	HI SEN UNUSUAL [FR]	×	—	EXL-95, "DTC Description"
B2514	HI SEN UNUSUAL [RR]	×	—	EXL-98, "DTC Description"
B2516	SHIFT POS SIG[R,P]	×	—	EXL-101, "DTC Description"
B2517	VEHICEL SPEED SIG	×	—	EXL-102, "DTC Description"
B2519	LEVELIZER CALIB	×	—	EXL-103, "DTC Description"
B2521	ECU CIRC	×	—	EXL-104, "DTC Description"
U0126	ST ANG SEN SIG	×	—	EXL-105, "DTC Description"
U0428	ST AND SEN CALIB	×	—	EXL-106, "DTC Description"
U1000	CAN COMM CIRCUIT	×	—	EXL-107, "DTC Description"
U1010	CONTROL UNIT(CAN)	×	—	EXL-109, "DTC Description"

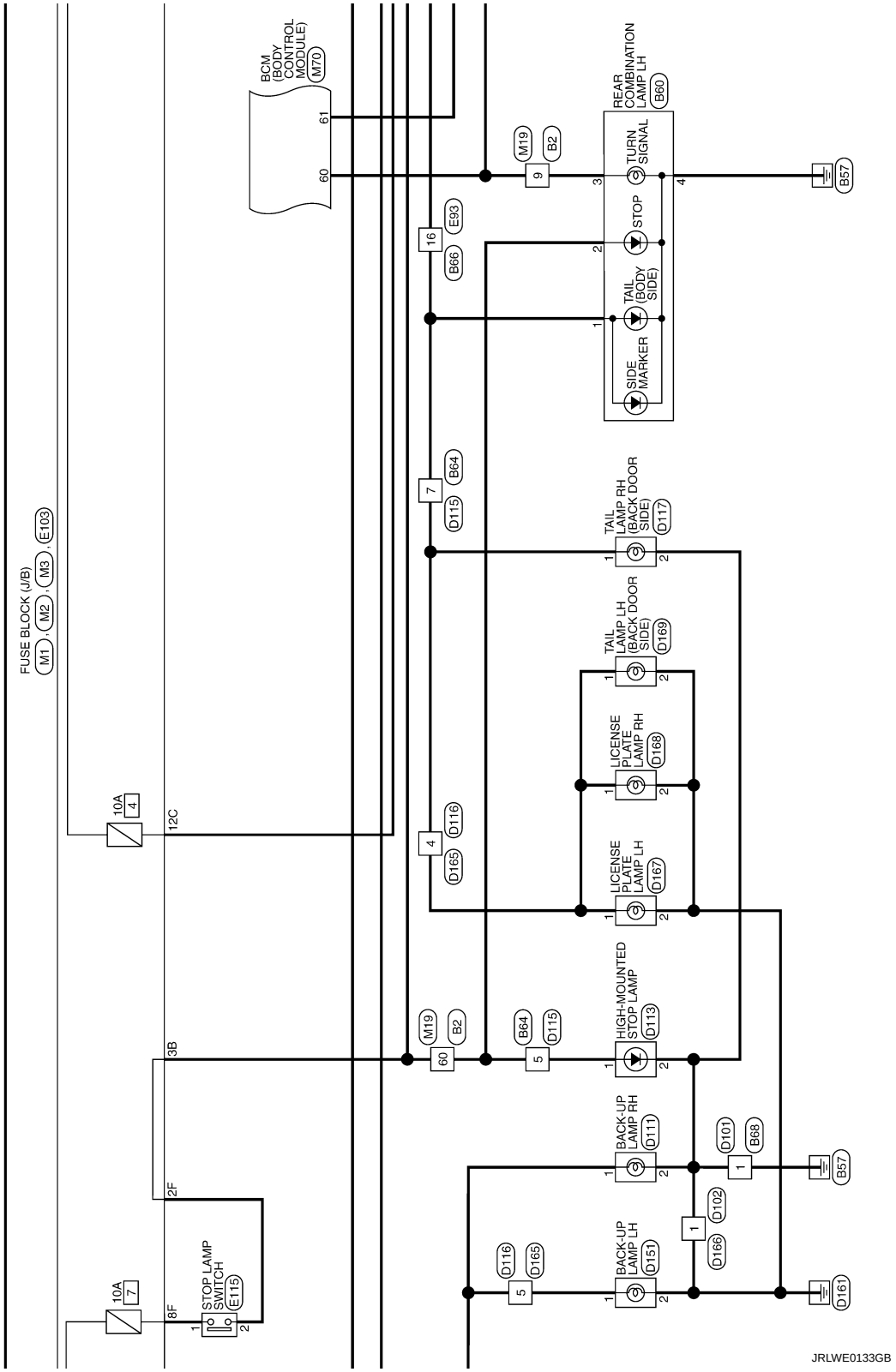
WIRING DIAGRAM

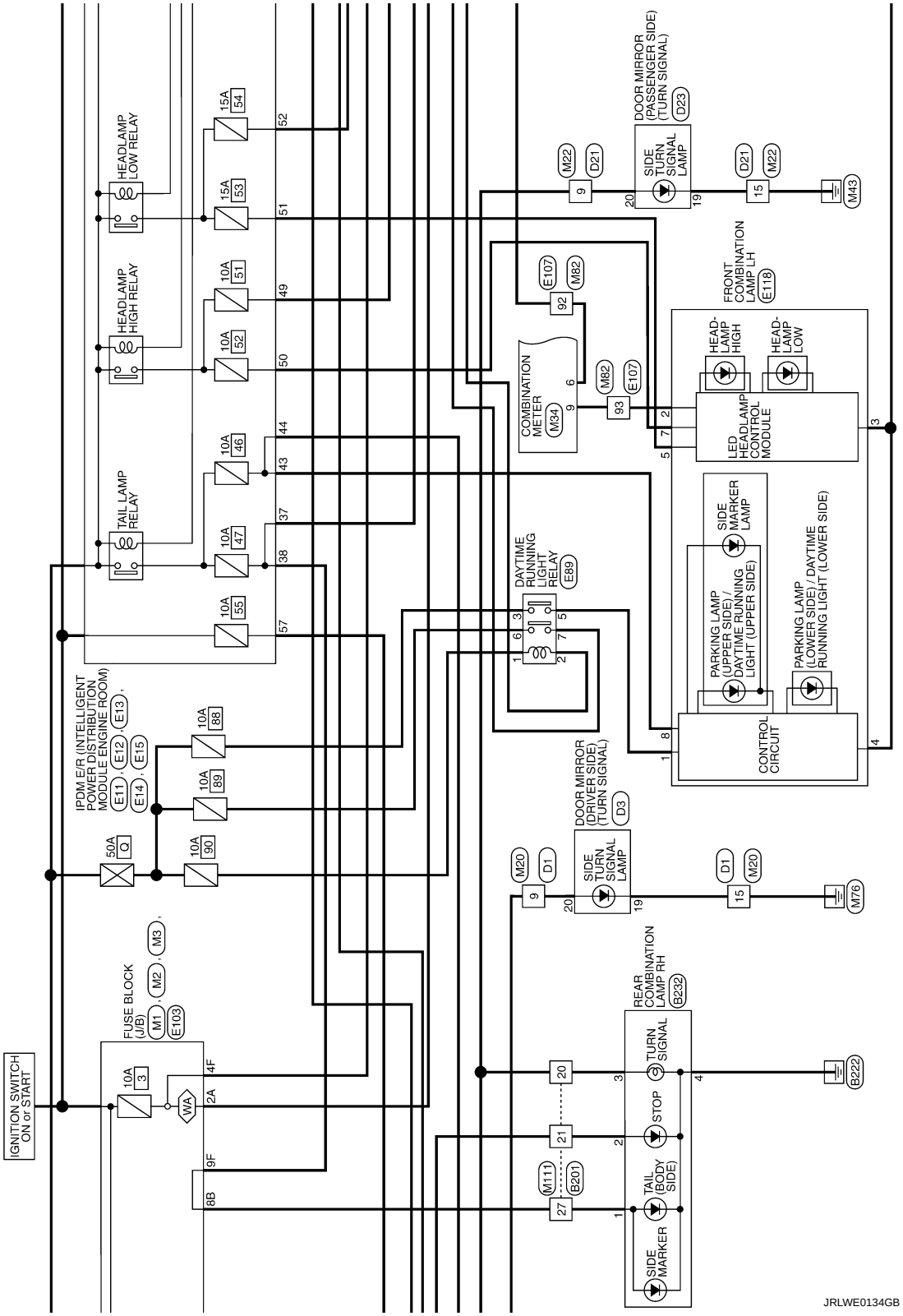
EXTERIOR LIGHTING SYSTEM

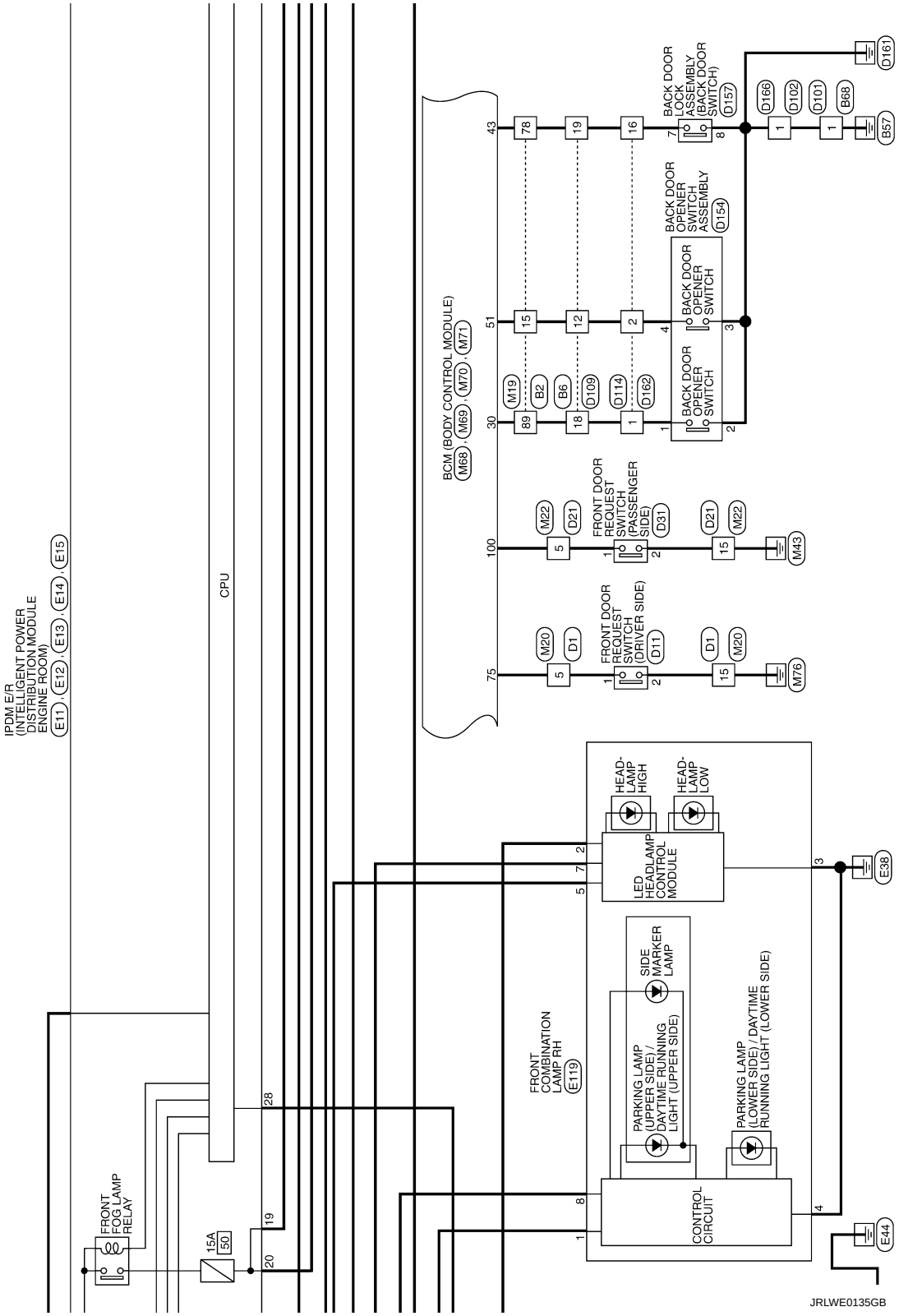
Wiring Diagram

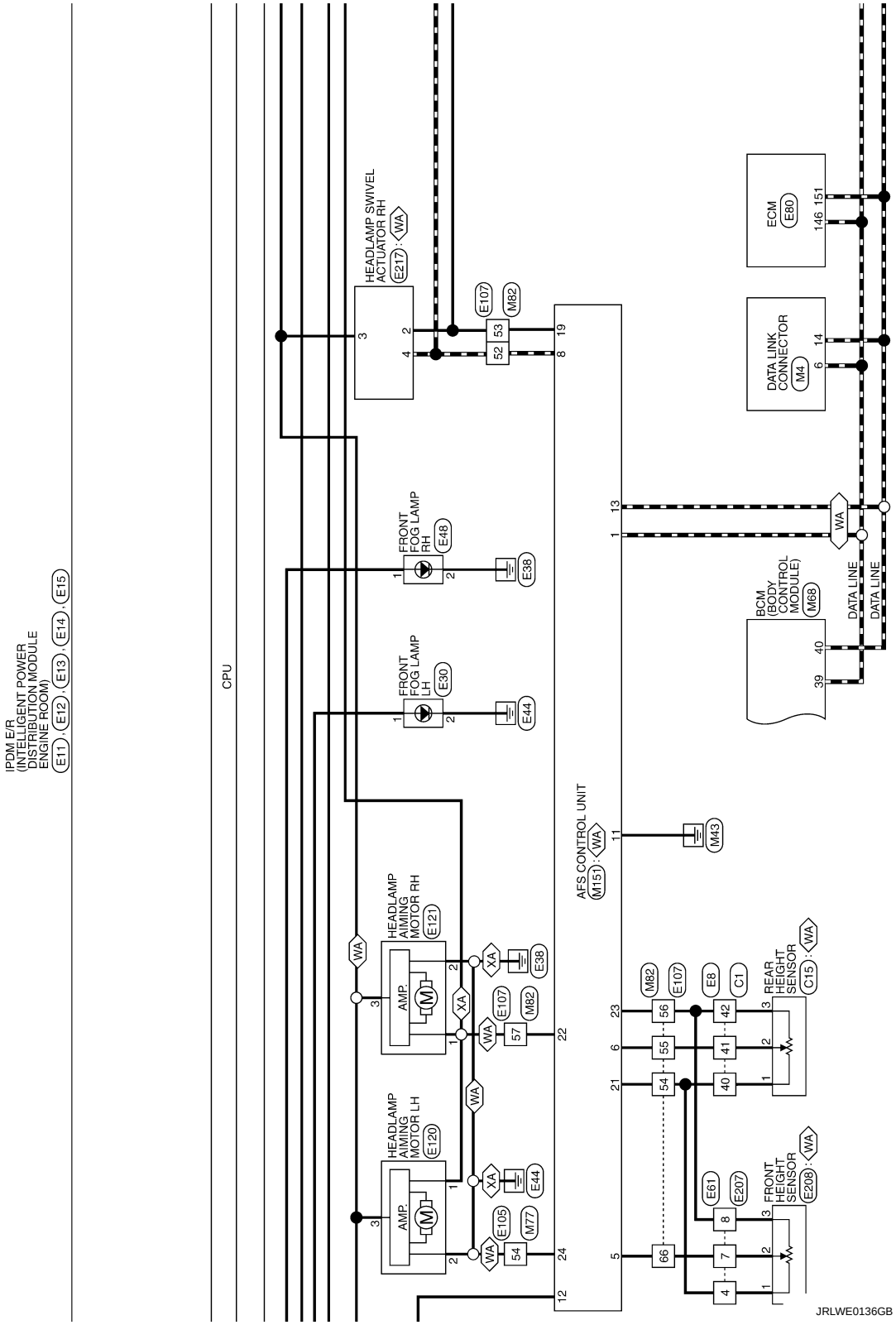
INFOID:0000000011509689

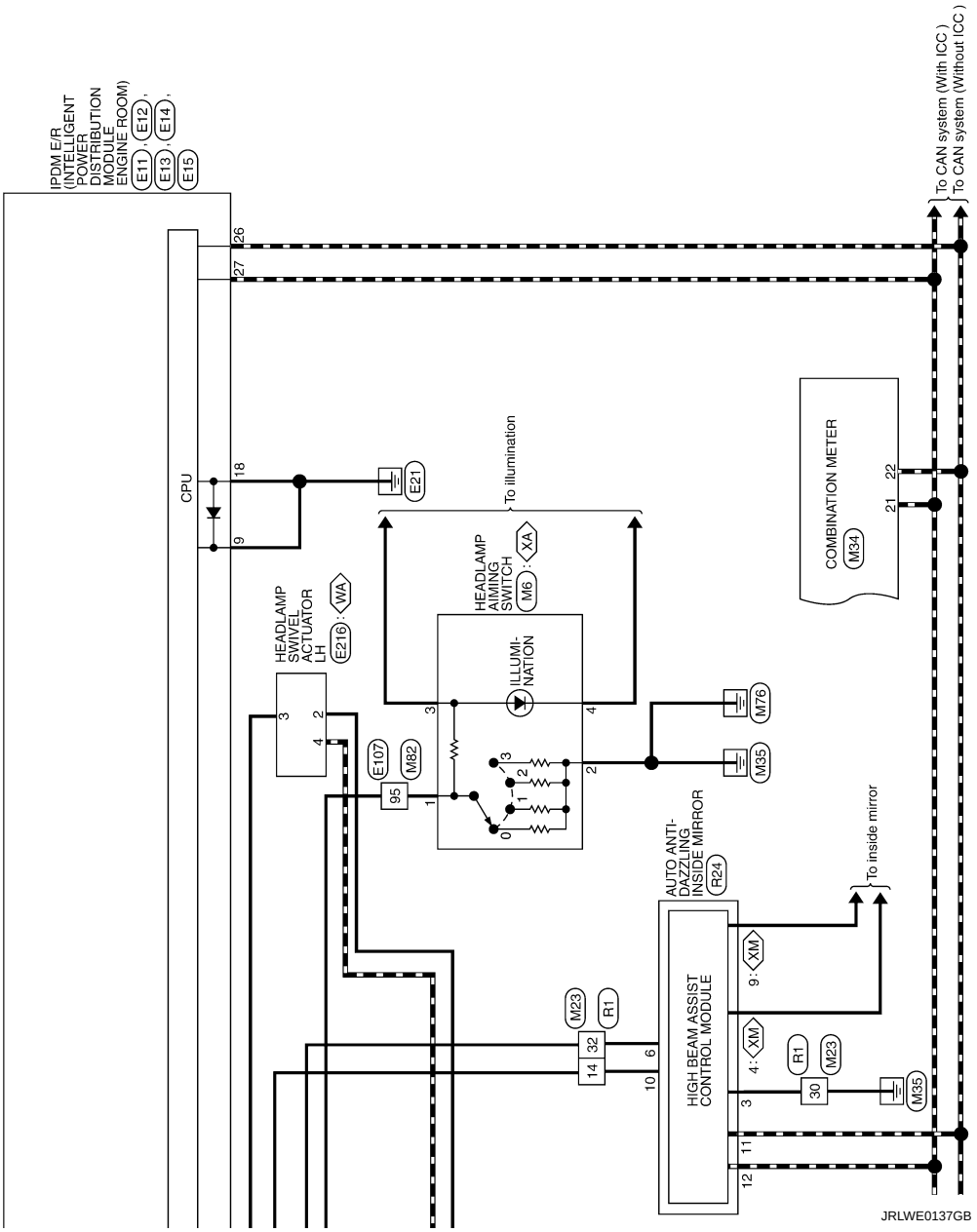



BCM (BODY CONTROL MODULE) M70
61
60
REAR COMBINATION LAMP LH B60
TURN SIGNAL
STOP
TAIL (BODY SIDE)
SIDE MARKER
M19
B2
9
3
4
2
1
B57
16
E93
B66
FUSE BLOCK (J/B) M1, M2, M3, E103
10A 4
12C
7
B64
D115
TAIL LAMP RH (BACK DOOR SIDE) D117
TAIL LAMP LH (BACK DOOR SIDE) D169
LICENSE PLATE LAMP RH D168
LICENSE PLATE LAMP LH D167
4
D116
D165
HIGH-MOUNTED STOP LAMP D113
M19
B2
60
B64
D115
5
3B
BACK-UP LAMP RH D111
D101
B68
1
BACK-UP LAMP LH D151
D102
D166
D116
D165
5
D161
2F
10A 7
8F
STOP LAMP SWITCH E115
JRLWE0133GB


IGNITION SWITCH ON or START
FUSE BLOCK (J/B) M1, M2, M3, E103
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) E11, E12, E13, E14, E15
HEADLAMP LOW RELAY
HEADLAMP HIGH RELAY
TAIL LAMP RELAY
DAYTIME RUNNING LIGHT RELAY E89
DOOR MIRROR (PASSENGER SIDE) (TURN SIGNAL) D23
DOOR MIRROR (DRIVER SIDE) (TURN SIGNAL) D3
SIDE TURN SIGNAL LAMP
COMBINATION METER M34
FRONT COMBINATION LAMP LH E118
HEAD-LAMP HIGH
HEAD-LAMP LOW
LED HEADLAMP CONTROL MODULE
SIDE MARKER LAMP
PARKING LAMP (UPPER SIDE) / DAYTIME RUNNING LIGHT (UPPER SIDE)
PARKING LAMP (LOWER SIDE) / DAYTIME RUNNING LIGHT (LOWER SIDE)
CONTROL CIRCUIT
REAR COMBINATION LAMP RH B232
TURN SIGNAL
STOP
TAIL (BODY SIDE)
SIDE MARKER
JRLWE0134GB


IPDM E/R
(INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E11, E12, E13, E14, E15
CPU
BCM (BODY CONTROL MODULE)
M68, M69, M70, M71
FRONT FOG LAMP RELAY
15A 50
FRONT DOOR REQUEST SWITCH (DRIVER SIDE) D11
FRONT DOOR REQUEST SWITCH (PASSENGER SIDE) D31
BACK DOOR OPENER SWITCH
BACK DOOR OPENER SWITCH ASSEMBLY D154
BACK DOOR LOCK ASSEMBLY (BACK DOOR SWITCH) D157
FRONT COMBINATION LAMP RH E119
HEAD-LAMP HIGH
HEAD-LAMP LOW
LED HEADLAMP CONTROL MODULE
SIDE MARKER LAMP
PARKING LAMP (UPPER SIDE) / DAYTIME RUNNING LIGHT (UPPER SIDE)
PARKING LAMP (LOWER SIDE) / DAYTIME RUNNING LIGHT (LOWER SIDE)
CONTROL CIRCUIT
JRLWE0135GB


IPDM E/R
(INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E11, E12, E13, E14, E15
CPU
HEADLAMP SWIVEL ACTUATOR RH
E217 : WA
FRONT FOG LAMP RH
E48
FRONT FOG LAMP LH
E30
HEADLAMP AIMING MOTOR RH
E121
HEADLAMP AIMING MOTOR LH
E120
AMP.
AFS CONTROL UNIT
M153 : WA
ECM
E80
DATA LINK CONNECTOR
M4
BCM (BODY CONTROL MODULE)
M68
DATA LINE
REAR HEIGHT SENSOR
C15 : WA
FRONT HEIGHT SENSOR
E208 : WA
JRLWE0136GB


IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) E11, E12, E13, E14, E15
CPU
26
27
18
9
To CAN system (With ICC)
To CAN system (Without ICC)
E21
To illumination
HEADLAMP AIMING SWITCH M6 : XA
ILLUMI-NATION
HEADLAMP SWIVEL ACTUATOR LH E216 : WA
COMBINATION METER M34
22
21
M76
M35
E107
M82
95
AUTO ANTI-DAZZLING INSIDE MIRROR R24
To inside mirror
HIGH BEAM ASSIST CONTROL MODULE
9 : XM
4 : XM
M23
R1
32
14
6
10
3
11
12
30
M35
JRLWE0137GB

EXTERIOR LIGHTING SYSTEM

Connector No.	B2
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
2	L	–
3	BR	–
5	R/W	–
6	L	–
7	V	–
9	G	–
11	W/B	–
12	BR	–
13	G/R	–
14	B/Y	–
15	W/R	–
16	GR/R	–
18	G/W	–
19	V	–
20	W/G	–
21	B/W	–
22	V	–
24	G	–
25	O	–
26	Y	–
27	L/O	–
28	Y/R	–
29	L	–
30	R	–
31	G/Y	–
32	B/SB	–
33	LG/R	–
34	BR/W	–
35	GR/R	–
36	SB	–
37	LG	–
38	L	–
39	P	–
40	W/G	–
41	O	–
43	V/W	–
44	LG/B	–
46	B	–
47	BR	–
49	GR	–
50	R/B	–
51	W/R	–
52	BR/Y	–
53	O/B	–
54	G/O	–
55	R/B	–
56	LG/R	–
57	GR/R	–
58	Y/G	–
59	V/W	–
60	R	–
63	B	–
64	R	–
65	W	–
66	G	–
67	SHIELD	–
69	LG/B	–
70	P/L	–
71	L	–
72	R	–
77	Y/B	–
78	Y/L	–
79	Y	–
80	W/R	–
81	Y/L	–
84	L/O	–
86	O	–
87	W/R	–
88	O	–
89	W/L	–
90	GR/L	–
91	W	–
92	G	–
94	W/R	–
96	L/W	–
97	R	–
98	V	–
99	L/W	–
100	P/B	–

Connector No.	B6
Connector Name	WIRE TO WIRE
Connector Type	TH24MW-NH

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	W	–
2	R	–
3	B	–
5	LG	–
6	GR	–
7	L/O	–
8	Y	–
9	L	–
10	B/W	–
11	W/G	–
12	W/R	–
13	SHIELD	–
14	G	–
17	BR/Y	–
18	W/L	–
19	Y/L	–
20	G/Y	–
21	L/Y	–
22	L/W	–
23	G/W	–
24	L/R	–

Connector No.	B20
Connector Name	REMOTE KEYLESS ENTRY RECEIVER
Connector Type	TK04FW

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	BR	–
2	W/B	–
3	G/R	–
4	B/Y	–

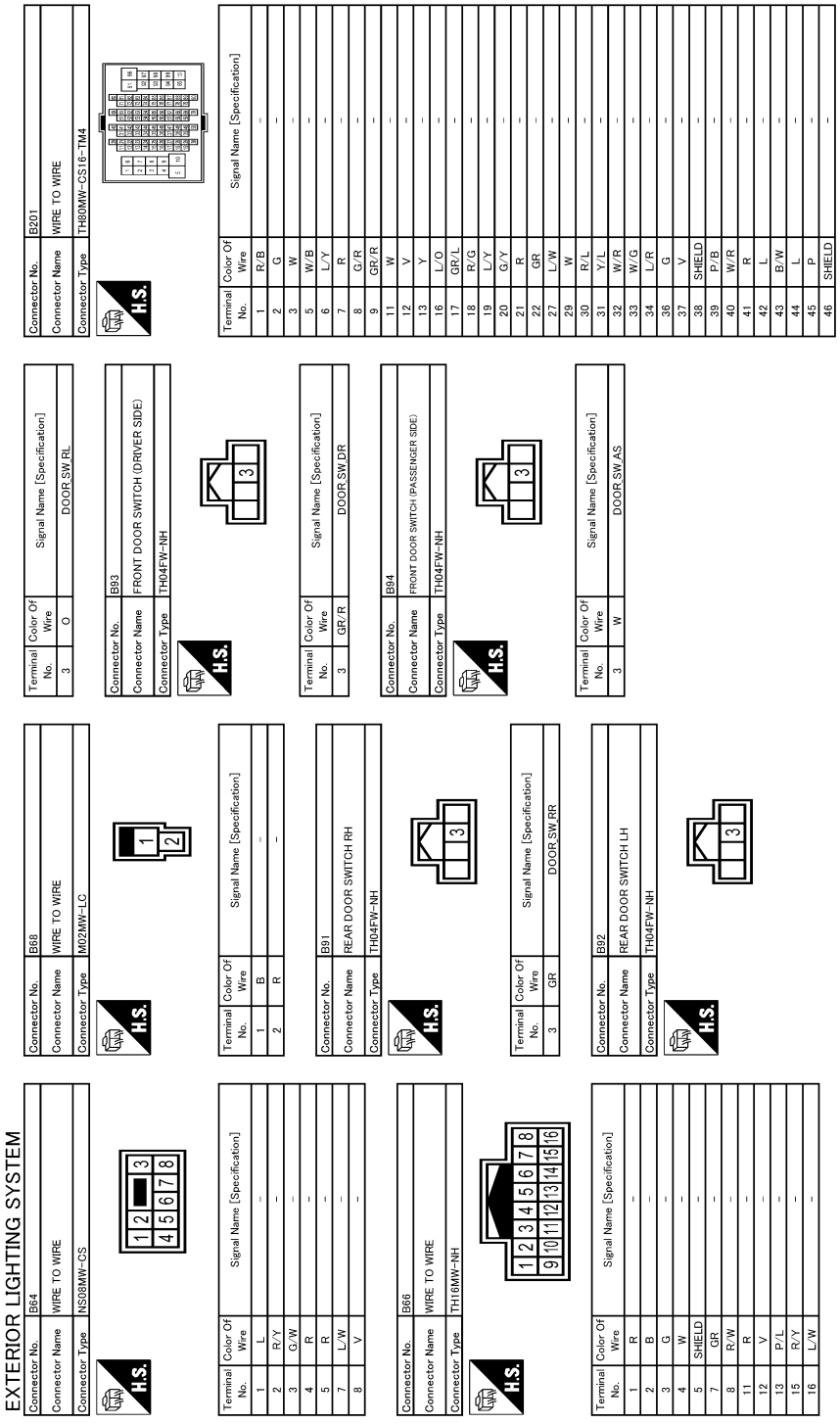
Connector No.	B60
Connector Name	REAR COMBINATION LAMP LH
Connector Type	NS04FW-CS

H.S.

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

JRLWE0138GB

EXTERIOR LIGHTING SYSTEM



JRLWE0139GB

EXTERIOR LIGHTING SYSTEM

47	R	-
48	W	-
49	SHIELD	-
50	V	-
51	L/B	-
52	L/R	-
53	SB	-
54	V/W	-
59	L	-
60	GR	-
61	P/L	-
62	B/SB	-
63	R/Y	-
64	BR	-
70	O	-
71	W	-
72	SHIELD	-
73	B	-
74	R	-
75	G	-
76	Y	-
77	SB	-
78	LG	-
79	R/B	-
90	W/B	-
93	Y	-
94	L	-
95	L/R	-
96	R	-
97	W	-
98	V	-
99	L/W	-
100	W	-

Connector No. B232
Connector Name REAR COMBINATION LAMP RH
Connector Type NS04FW-CS

Terminal No.	Color Of Wire	Signal Name [Specification]
1	L/W	-
2	R	-
3	G/Y	-
4	B	-

Connector No. C1
Connector Name WIRE TO WIRE
Connector Type SAA36FB-RS10-SJZ2

Terminal No.	Color Of Wire	Signal Name [Specification]
1	Y	-
3	SB	-
4	L/Y	-
5	R	-
8	V	-
9	P	-
10	BR/Y	-
11	Y/V	-
12	V/W	-
14	Y/L	-
17	BR	-
18	R/O	-
20	G/W	-
22	L/W	-
23	B	-
24	Y/G	-
25	R	-
26	SB	-
27	R/G	-
28	V	-
29	B	-
40	LG/R	-
41	R/G	-
42	B/R	-

Connector No. C15
Connector Name REAR HEIGHT SENSOR
Connector Type AAZ06FB1

Terminal No.	Color Of Wire	Signal Name [Specification]
1	LG/R	HSV-R
2	R/G	HS-R
3	B/R	HSG-R

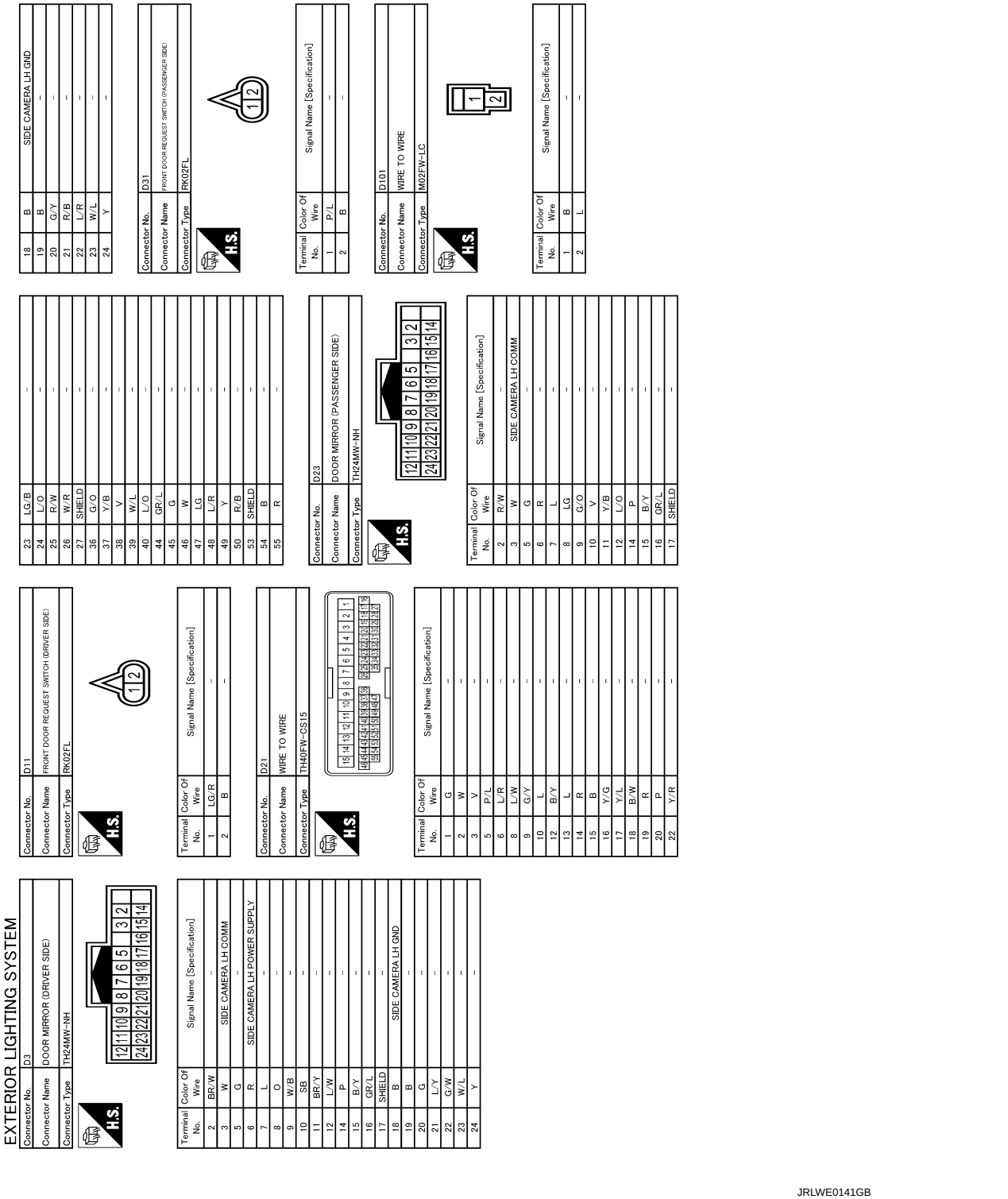
Connector No. D1
Connector Name WIRE TO WIRE
Connector Type TH40FW-CS15

Terminal No.	Color Of Wire	Signal Name [Specification]
1	V	-
2	W	-
3	V	-
4	Y	-
5	LG/R	-
6	BR/W	-
8	V	-
9	G	-
10	L	-
12	B/Y	-
13	Y	-
14	R	-
15	B	-
16	GR/R	-
17	R/W	-
18	B	-
19	R	-

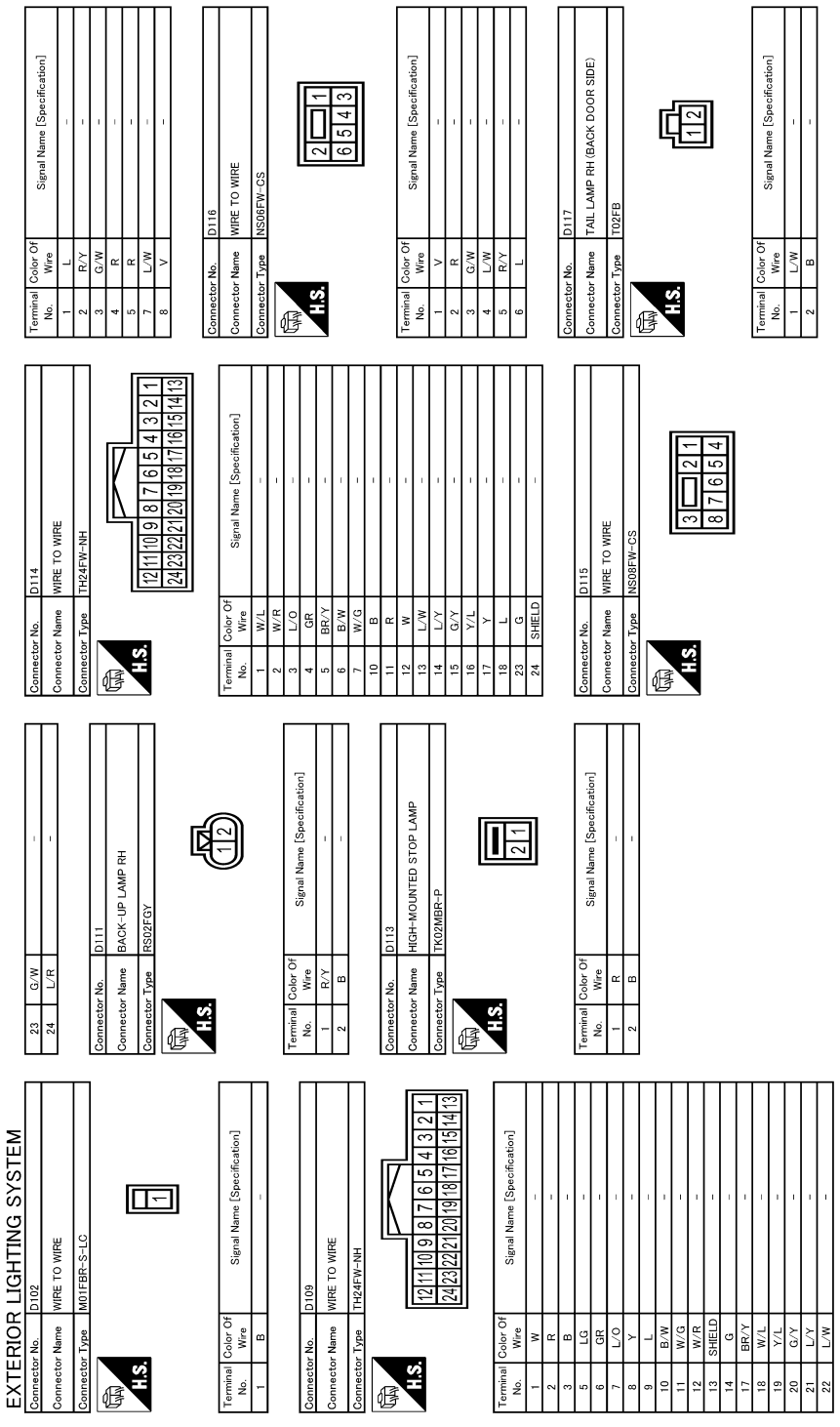
20	P	-
21	SHIELD	-
22	V	-
23	P/B	-
24	L/O	-
25	BR/W	-
26	W/R	-
27	V	-
28	W/G	-
29	Y/G	-
30	O/L	-
31	GR/B	-
32	BR	-
33	V/W	-
34	R	-
35	W	-
36	G/O	-
37	BR/Y	-
38	SB	-
39	W/L	-
40	L/W	-
41	Y/G	-
42	P/L	-
43	LG	-
44	GR/L	-
45	SHIELD	-
46	W	-
47	LG	-
48	G/W	-
49	Y	-
50	L/Y	-
51	GR/R	-
52	LG/B	-
53	G	-
54	B	-
55	R	-

JRLWE0140GB

EXTERIOR LIGHTING SYSTEM

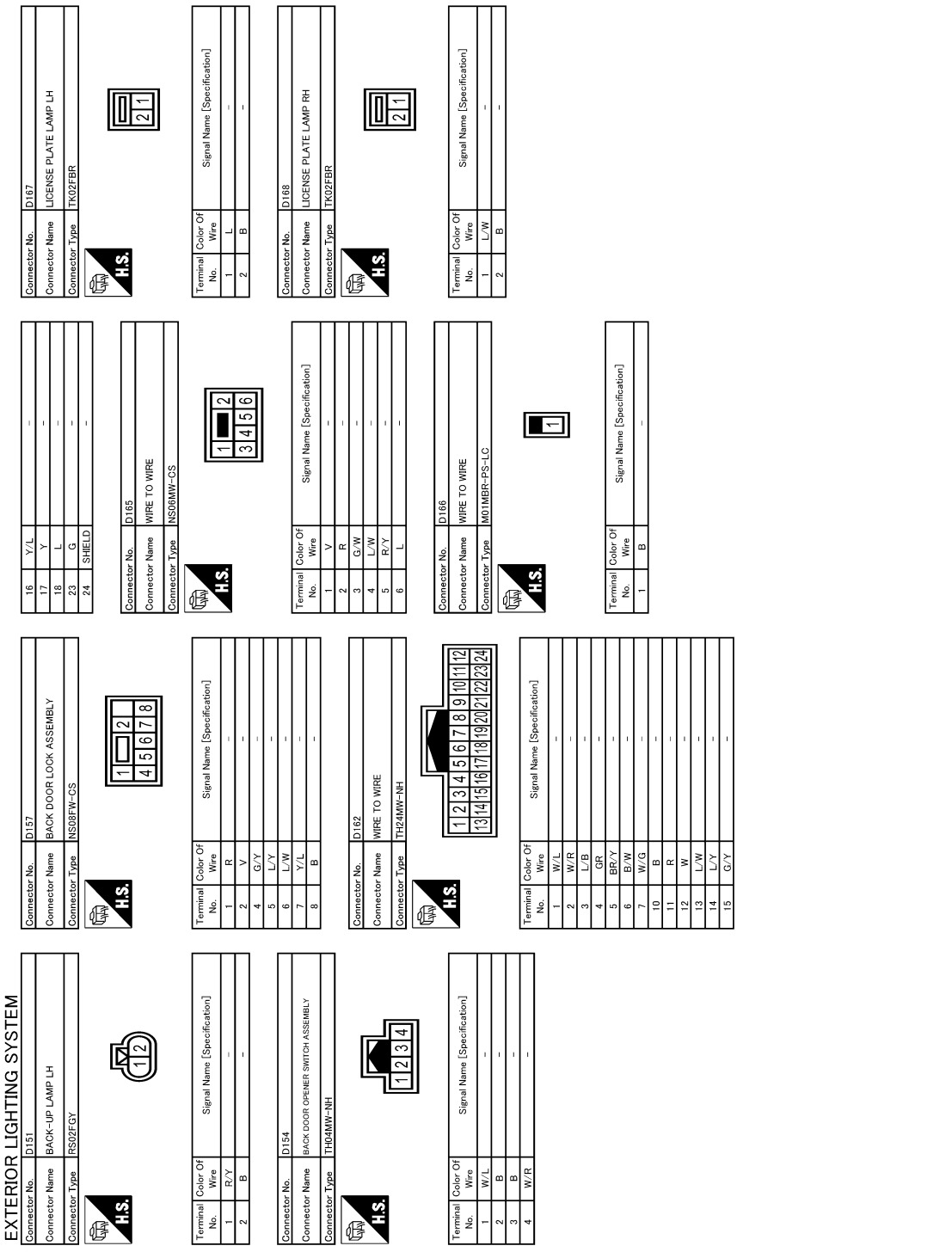


JRLWE0141GB



JRLWE0142GB

EXTERIOR LIGHTING SYSTEM



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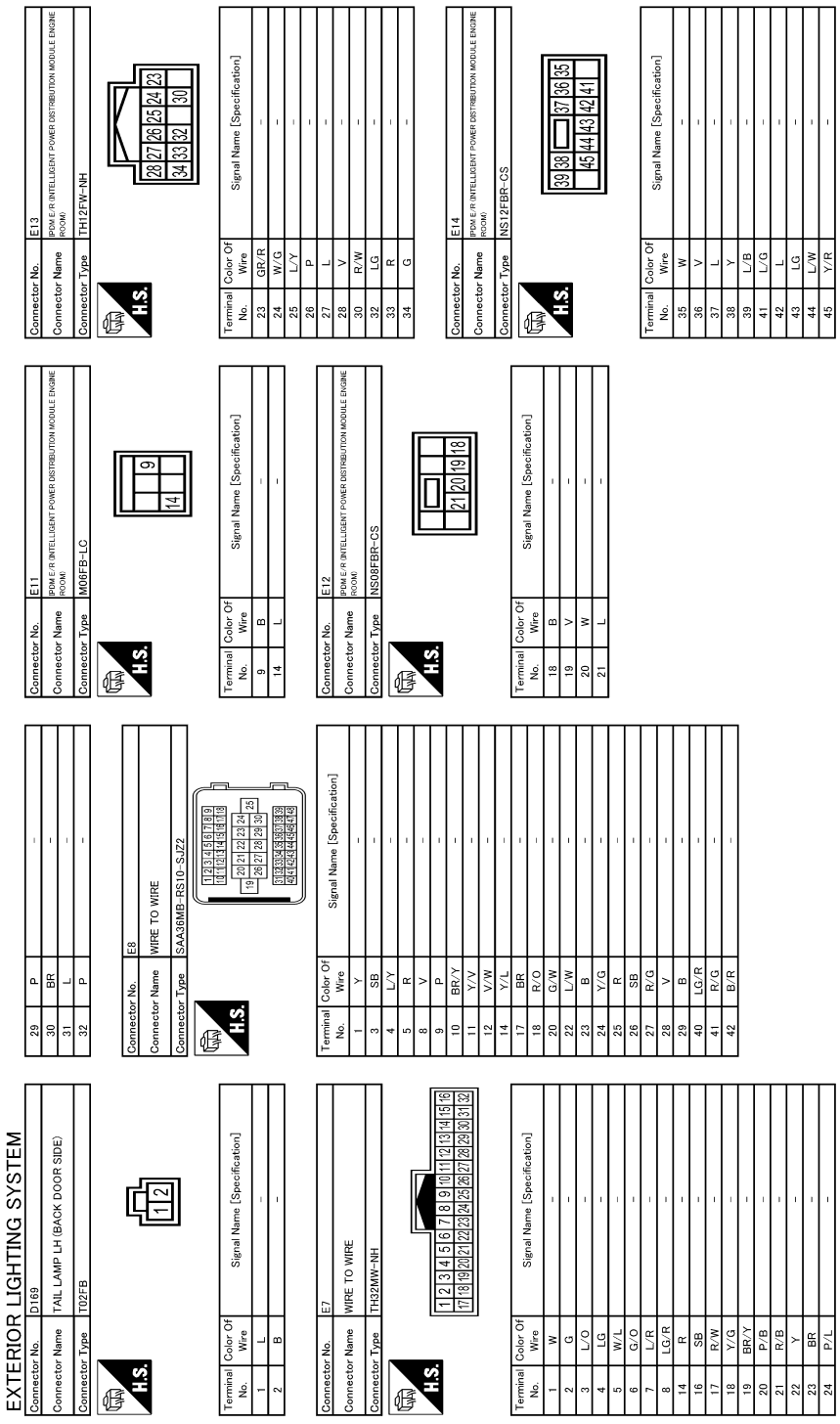
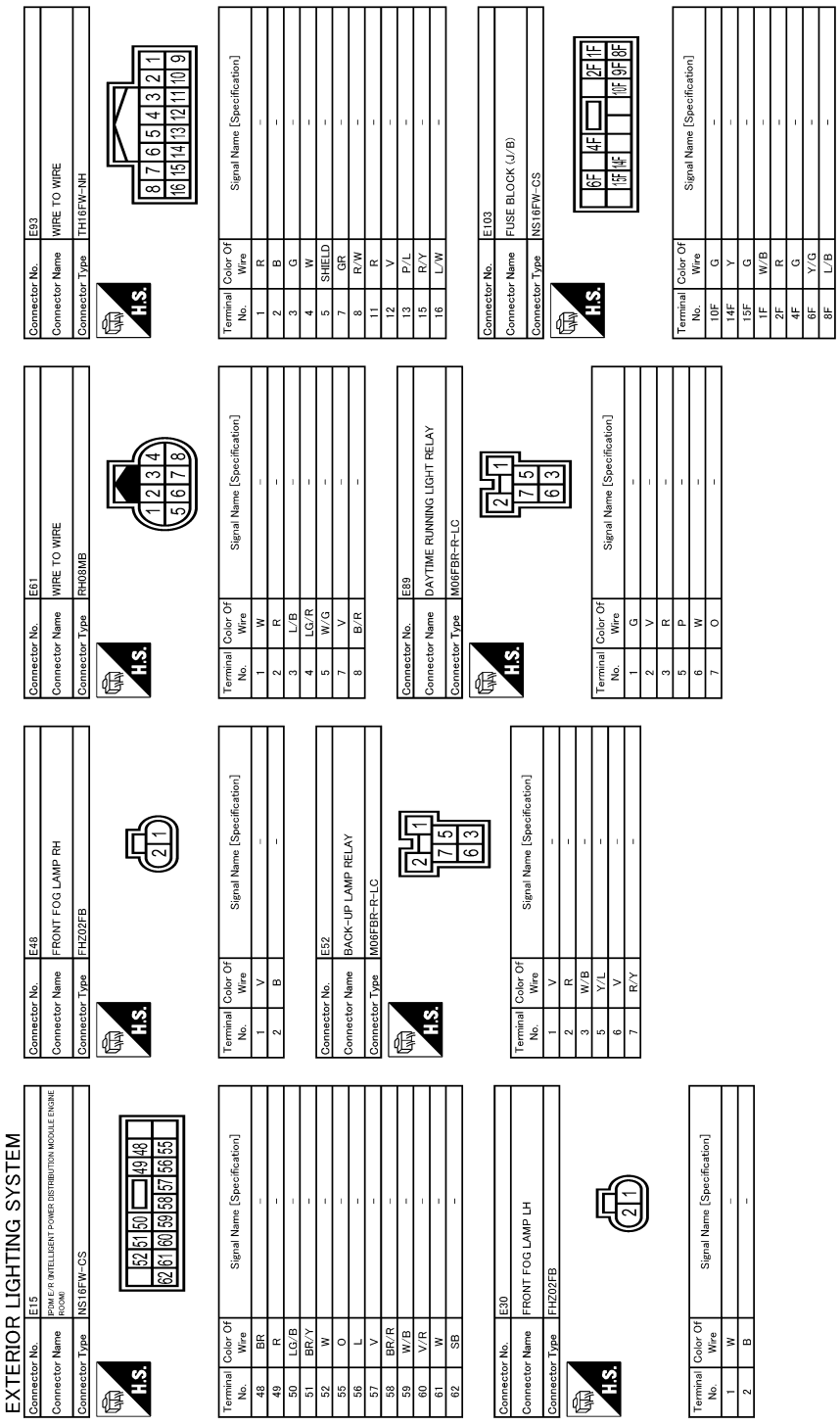


JRLWE0144GB

EXTERIOR LIGHTING SYSTEM



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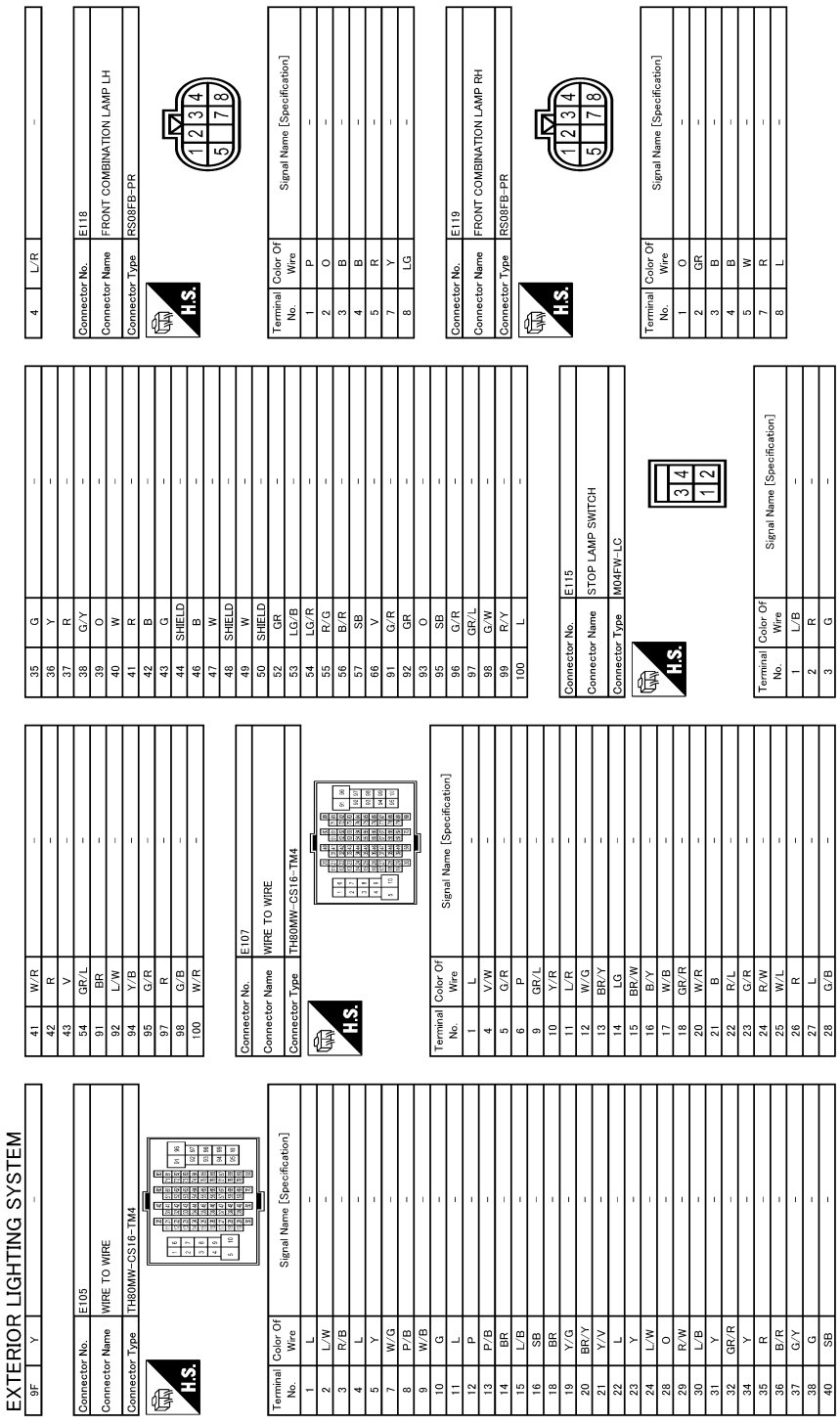
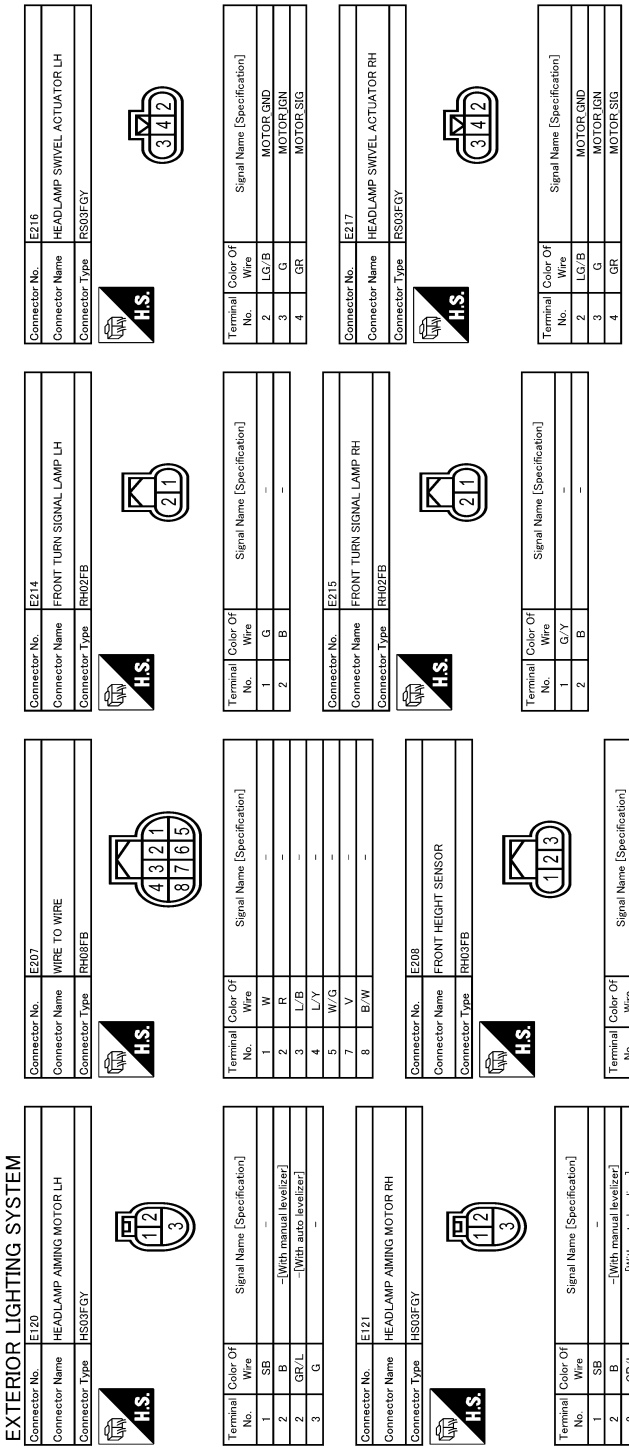


JRLWE0146GB

EXTERIOR LIGHTING SYSTEM



JRLWE0147GB

EXTERIOR LIGHTING SYSTEM

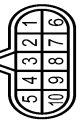
Connector No.	F1
Connector Name	WIRE TO WIRE
Connector Type	TH32FW-NH

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	W	–
2	G	–
3	L/O	–
4	LG	–
5	W/L	–
6	G/O	–
7	L/R	–
8	LG/R	–
14	R	–
16	SB	–
17	R/W	–
18	Y/G	–
19	BR/Y	–
20	P/B	–
21	R/B	–
22	Y	–
23	BR/W	–
24	P/L	–
29	P	–
30	BR	–
31	L	–
32	P	–

Connector No.	F51
Connector Name	A/T ASSEMBLY
Connector Type	RK10FG

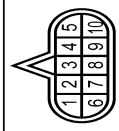
H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	V	IGNITION POWER SUPPLY
2	P	BATTERY POWER SUPPLY
3	L	CAN-H
4	SB	K-LINE
5	B	GROUND
6	V	IGNITION POWER SUPPLY
7	R	BACK-UP LAMP RELAY
8	P	CAN-L
9	BR	STARTER RELAY
10	B	GROUND

Connector No.	F301
Connector Name	TCM
Connector Type	SP10FG

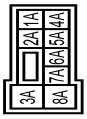
H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	–	IGNITION POWER SUPPLY
2	–	BATTERY POWER SUPPLY
3	–	CAN-H
4	–	K-LINE
5	–	GROUND
6	–	IGNITION POWER SUPPLY
7	–	BACK-UP LAMP RELAY
8	–	CAN-L
9	–	STARTER RELAY
10	–	GROUND

Connector No.	M1
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS06FW-M2

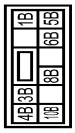
H.S.



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

Connector No.	M2
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS10FW-CS

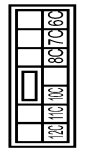
H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
10B	W/B	–
1B	R	–
3B	R	–
4B	B	–
5B	BR	–
6B	Y	–
8B	L/O	–

Connector No.	M3
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS12FW-CS

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
10C	GR	–
11C	R/L	–
12C	GR/L	–
6C	R	–
7C	B	–
8C	W	–

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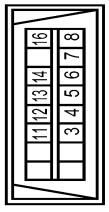
EXTERIOR LIGHTING SYSTEM

Connector No.	M4
Connector Name	DATA LINK CONNECTOR
Connector Type	BD16FW

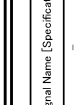
H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
3	LG	–
4	B	–
5	B	–
6	L	–
7	SB	–
8	GR	–
11	SB	–
12	R	–
13	L	–
14	P	–
16	Y	–

Connector No.	M6
Connector Name	HEADLAMP AIMING SWITCH
Connector Type	A04FW

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	SB	–
2	B	–
3	L/O	–
4	B	–

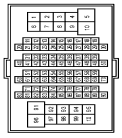
Connector No.	M17
Connector Name	OPTICAL SENSOR
Connector Type	TK03FW

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	Y/G	POWER
2	P/B	OUTPUT
3	B/Y	GND

Connector No.	M19
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
2	L	–
3	BR	–
5	R/W	–
6	L	–
7	V	–
9	G	–
11	W/B	–
12	BR	–
13	G/R	–
14	B/Y	–
15	W/R	–
16	GR/R	–
18	G/W	–
19	V	–
20	W/G	–
21	B/W	–
22	V	–
24	G	–
25	O	–
26	Y	–
27	L	–
28	Y	–
29	L	–
30	R	–
31	G/Y	–
32	B/SB	–
33	LG/R	–
34	BR/W	–
35	GR/R	–
36	SB	–
37	LG	–
38	L	–
39	P	–
40	W/G	–
41	O	–
43	V/W	–
44	LG/B	–
46	B	–
47	BR/W	–
49	GR	–
50	R/B	–
51	W/R	–
52	BR/Y	–
53	O/B	–
54	G/O	–
55	R/B	–
56	LG/R	–
57	GR/R	–
58	Y/G	–
59	V/W	–
60	R	–
63	B	–
64	R	–
65	W	–
66	G	–
67	SHIELD	–
69	LG/B	–
70	P/L	–
71	L	–
72	R	–
77	Y/B	–
78	Y/L	–
79	Y	–
80	W/R	–
81	Y/L	–
84	L/O	–
86	O	–
87	W/R	–
88	O	–
89	W/L	–
90	GR/L	–
91	W	–
92	G	–
94	W/R	–
96	L/W	–
97	R	–
98	V	–
99	L/W	–
100	P/B	–

Connector No.	M20
Connector Name	WIRE TO WIRE
Connector Type	TH40MW-CS15

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	V	–
2	W	–
3	V	–
4	Y	–
5	LG/R	–
6	BR/W	–
8	V	–
9	G	–
10	L	–
12	B/Y	–
13	Y	–
14	R	–
15	B	–
16	GR/R	–
17	V/W	–
18	B	–
19	R	–
20	P	–
21	SHIELD	–
22	V	–
23	P/B	–
24	L/O	–

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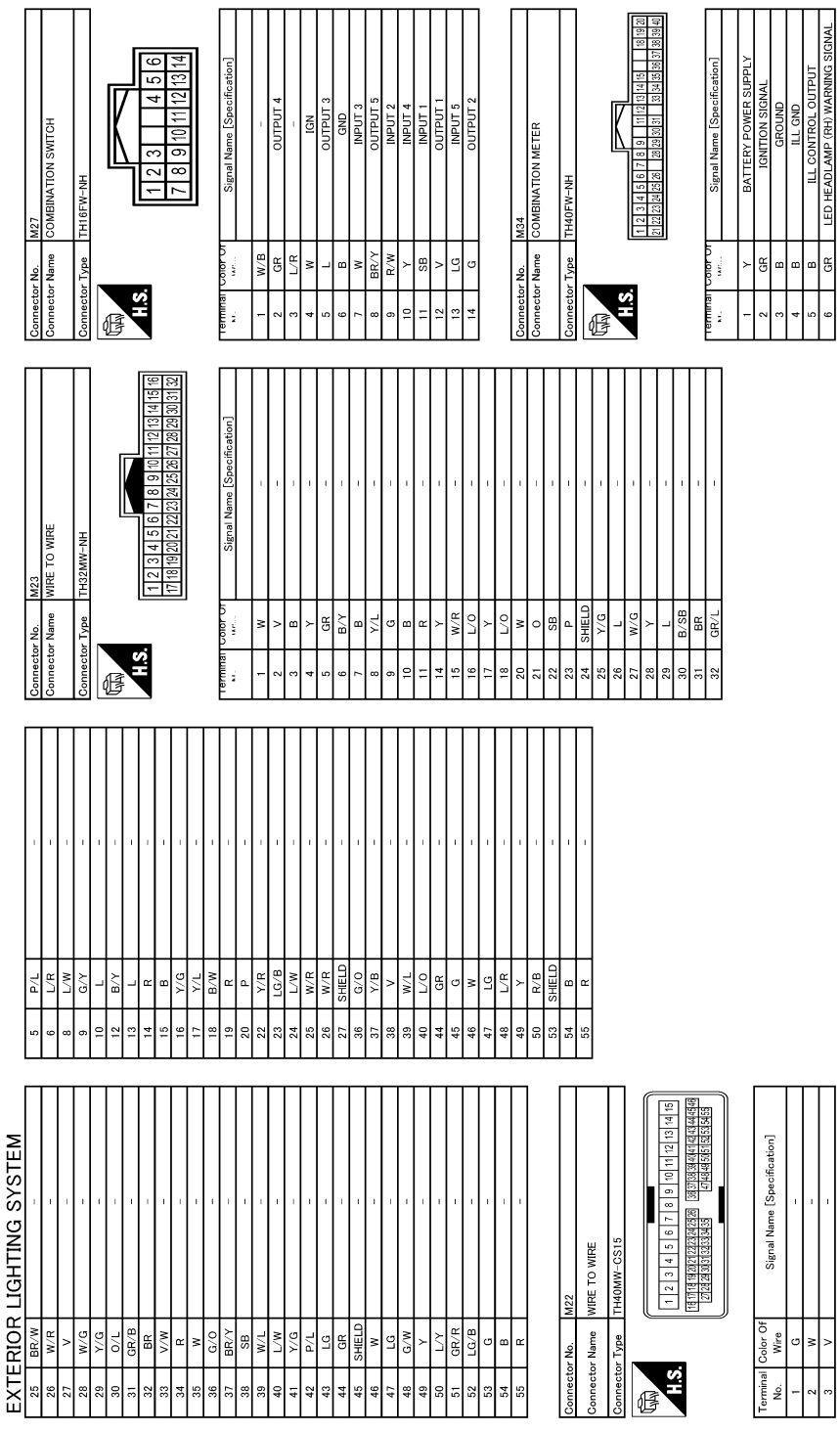

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EXTERIOR LIGHTING SYSTEM

7	R	TOW MODE SIGNAL
8	P/L	TRIP RESET SWITCH SIGNAL
9	O	LED HEADLAMP (LH) WARNING SIGNAL
11	G	ENTER SWITCH SIGNAL
12	O	SELECT SWITCH SIGNAL
13	W/R	ILLUMINATION CONTROL SWITCH SIGNAL (+)
14	R	ILLUMINATION CONTROL SWITCH SIGNAL (−)
15	R/W	AIR BAG SIGNAL
18	W/R	AMBIENT SENSOR SIGNAL
19	V/W	A/C AUTO AMP. CONNECTION RECOGNITION SIGNAL
20	B	AMBIENT SENSOR GROUND
21	L	CAN-H
22	P	CAN-L
23	B	GROUND
24	V	FUEL LEVEL SENSOR GROUND
25	O/L	ALTERNATOR SIGNAL
26	W	PARKING BRAKE SWITCH SIGNAL
28	GR/R	SECURITY SIGNAL
29	BR	WASHER LEVEL SWITCH SIGNAL
30	SB	VEHICLE SPEED SIGNAL (2- PULSE)
31	BR/W	VEHICLE SPEED SIGNAL (8- PULSE)
33	W	SNOW MODE SIGNAL
34	BR/Y	FUEL LEVEL SENSOR SIGNAL
35	O/B	SEAT BELT BUCKLE SWITCH SIGNAL (DRIVER SIDE)
36	G/Y	PASSENGER SEAT BELT WARNING SIGNAL
37	R/Y	NON-MANUAL MODE SIGNAL
38	L/W	MANUAL MODE SHIFT DOWN SIGNAL
39	Y/B	MANUAL MODE SHIFT UP SIGNAL
40	G/W	MANUAL MODE SIGNAL

Connector No.	M45
Connector Name	HAZARD SWITCH
Connector Type	TK04FW

H.S.

Terminal No.	Color Of Wire	Signal Name
1	B	–
2	W	–
3	L/O	–
4	B	–

Connector No.	M59
Connector Name	AIR BAG DIAGNOSIS SENSOR UNIT
Connector Type	NH28FY-EX

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	R/L	IGN
2	B	GND
3	Y	DR1 (+)
4	Y/R	DR1 (−) DR2 (−)
6	Y/L	AS1 (−)
7	Y/B	AS1 (−)
8	B/Y	AS 2 (+)
9	Y	AS 2 (−)
18	O	EGZS (+)
19	W	EGZS (−)
22	SHIELD	GND
23	R/W	AIRBAG W/L
24	G/Y	SEATBELT W/L
25	R	CUTOFF TELLTALE
51	Y/G	SIDE SES2 RH+
52	Y/L	SIDE SENS2 RH-
53	W	SIDE SENS2 LH+
54	R	SIDE SENS2 LH-
57	R/W	DEPLOYMENT INFORMATION
59	L	CAN-H
60	R	CAN LO

Connector No.	M68
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FB-NH

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
2	BR/Y	COMBI SW INPUT 5
3	GR	COMBI SW INPUT 4
4	L	COMBI SW INPUT 3
5	G	COMBI SW INPUT 2
6	V	COMBI SW INPUT 1
8	V	POWER WINDOW SW COMM
9	R	STOP LAMP SW 1
11	R	RAIN SENSOR SERIAL LINK
14	P/B	OPTICAL SENSOR
16	L/O	DIMMER SIGNAL
17	Y/G	SENSOR PWR SPLY
18	B/Y	RECEIVER/ SENSOR GND
19	G/Y	TURN SIG RH OUTPUT (FRONT)
20	G	TURN SIG LH OUTPUT (FRONT)
21	P	NATS ANT AMP.
22	W/B	KYLS ENT RECEIVER RSSI
23	GR/R	SEGURITY IND CONT
24	SB	DONGLE LINK
25	LG/R	NATS ANT AMP.
26	O	INTELLIGENT KEY IDENTIFICATION
29	W	HAZARD SW
30	W/L	BK DOOR OPNR SW
31	W/G	DR DOOR UNLOCK SENSOR
32	LG	COMBI SW OUTPUT 5
33	Y	COMBI SW OUTPUT 4
34	W	COMBI SW OUTPUT 3
35	R/W	COMBI SW OUTPUT 2
36	SB	COMBI SW OUTPUT 1
37	G/Y	SHIFT P
39	L	CAN-H
40	P	CAN-L

Connector No.	M69
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FEA09FB-FHA6-SA

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
43	Y/L	BK DOOR SW
44	G/W	REAR WIPER STOP POSITION
45	W	PASSENGER DOOR SW
46	GR	REAR RH DOOR SW
47	GR/R	DRIVER DOOR SW
48	O	REAR LH DOOR SW
49	BR/Y	LUGGAGE ROOM LAMP CONT
50	B/Y	REMOTE ENGINE START
51	W/R	BACK DOOR REQ SW
54	L	REAR WIPER OUTPUT
55	G	REAR DOOR UNLK OUTPUT

Connector No.	M70
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FEA09FW-FHA6-SA

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
56	W/R	INT ROOM LAMP PWR SPLY
57	LG	BAT (FUSE)
58	R/W	SHOCK DETECT SENS
59	G	PASSENGER DOOR UNLK OUTPUT
60	G	TURN SIG LH OUTPUT (SIDE, REAR)
61	G/Y	TURN SIG RH OUTPUT (SIDE, REAR)
62	R	STEP LAMP CONT
63	BR	ROOM LAMP TIMER CONT
64	GR/R	CRANKING REQUEST

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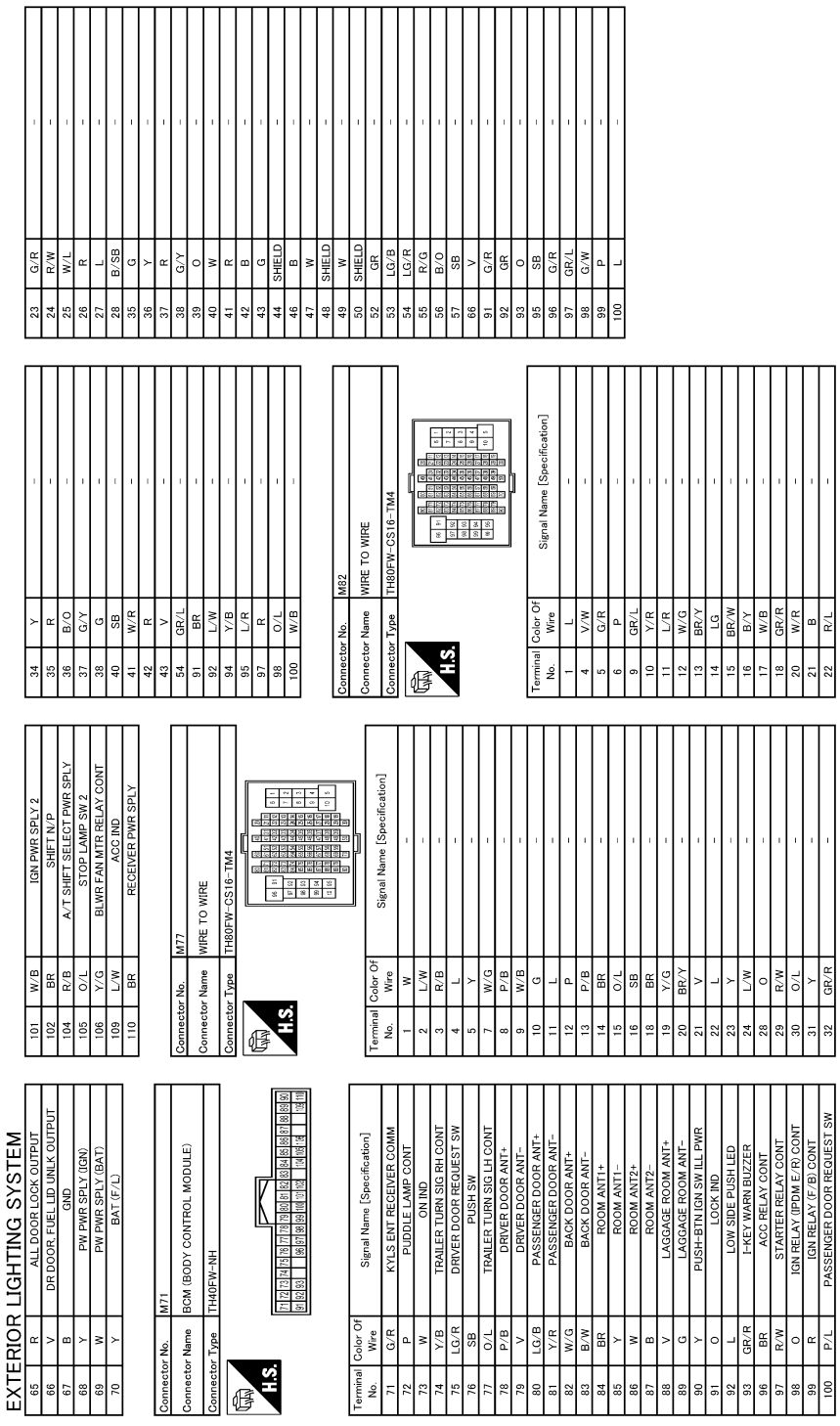
EXTERIOR LIGHTING SYSTEM



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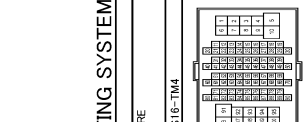
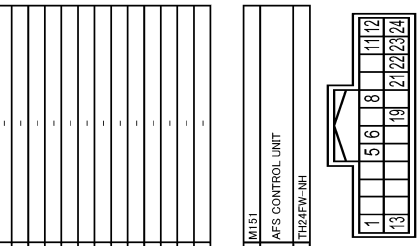
EXTERIOR LIGHTING SYSTEM

Connector No.	M111
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4



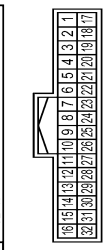
Terminal No.	Color Of Wire	Signal Name [Specification]
1	R/B	–
2	G	–
3	W/R	–
5	W/B	–
6	L/Y	–
7	R	–
8	G/R	–
9	GR/R	–
11	W	–
12	V	–
13	Y	–
16	L/O	–
17	GR/L	–
18	R/G	–
19	L/Y	–
20	G/Y	–
21	R	–
22	GR	–
27	L/O	–
29	SB	–
30	R/L	–
31	Y/L	–
32	W/R	–
33	W/G	–
34	L/R	–
36	G	–
37	V	–
38	SHIELD	–
39	P/B	–
40	W/R	–
41	R	–
42	L/W	–
43	B/W	–
44	L	–
45	P	–
46	SHIELD	–
47	R	–
48	W	–
49	SHIELD	–
50	V	–
51	O/L	–
52	L/R	–
53	SB	–
54	V/W	–
59	L	–
60	GR	–
61	P/L	–
62	B/SB	–
63	R/Y	–
64	BR	–
70	O	–
71	W	–
72	SHIELD	–
73	B	–
74	R	–
75	G	–
76	Y	–
77	SB	–
78	LG	–
79	R/B	–
90	W/B	–
93	Y	–
94	L	–
95	L/R	–
96	R	–
97	W	–
98	V	–
99	L/W	–
100	W	–

Connector No.	M151
Connector Name	AFS CONTROL UNIT
Connector Type	TH24FW-NH



Terminal No.	Color Of Wire	Signal Name [Specification]
1	L	CAN H
5	V	FRONT HEIGHT SENSOR SIGNAL
6	R/G	REAR HEIGHT SENSOR SIGNAL
8	GR	SWIVEL ACTUATOR LIN SIGNAL
11	B	GROUND
12	GR	IGNITION POWER SUPPLY
13	P	CAN-L
19	LG/B	SWIVEL ACTUATOR GROUND
21	LG/R	HEIGHT SENSOR POWER SUPPLY
22	SB	AIMING MOTOR DRIVE SIGNAL
23	B/O	HEIGHT SENSOR GROUND
24	GR/L	AIMING MOTOR GROUND

Connector No.	R1
Connector Name	WIRE TO WIRE
Connector Type	TH32FW-NH



Terminal No.	Color Of Wire	Signal Name [Specification]
1	W	–
2	V	–
3	B	–
4	Y	–
5	B/R	–
6	B/Y	–
7	B	–
8	Y/L	–
9	G	–
10	B	–
11	R	–
14	B/Y	–
15	W/R	–
16	L/O	–
17	Y	–
18	L/O	–
20	W	–
21	O	–
22	SB	–
23	B	–
24	SHIELD	–
25	Y/G	–
26	B/SB	–
27	W/G	–
28	Y	–
29	L	–
30	B/SB	–
31	BR	–
32	B/R	–

Connector No.	R24
Connector Name	AUTO ANTI-DAZZLING INSIDE MIRROR
Connector Type	TH12FW-NH-B

Terminal No.	Color Of Wire	Signal Name [Specification]
3	B	GROUND
4	B/R	AUTO ANTI-DAZZLING OUTSIDE MIRROR CONTROL SIGNAL
6	B/R	IGNITION POWER SUPPLY
9	B/Y	AUTO ANTI-DAZZLING OUTSIDE MIRROR GROUND
10	B/Y	BATTERY POWER SUPPLY
11	B	CAN-L
12	B/SB	CAN-H

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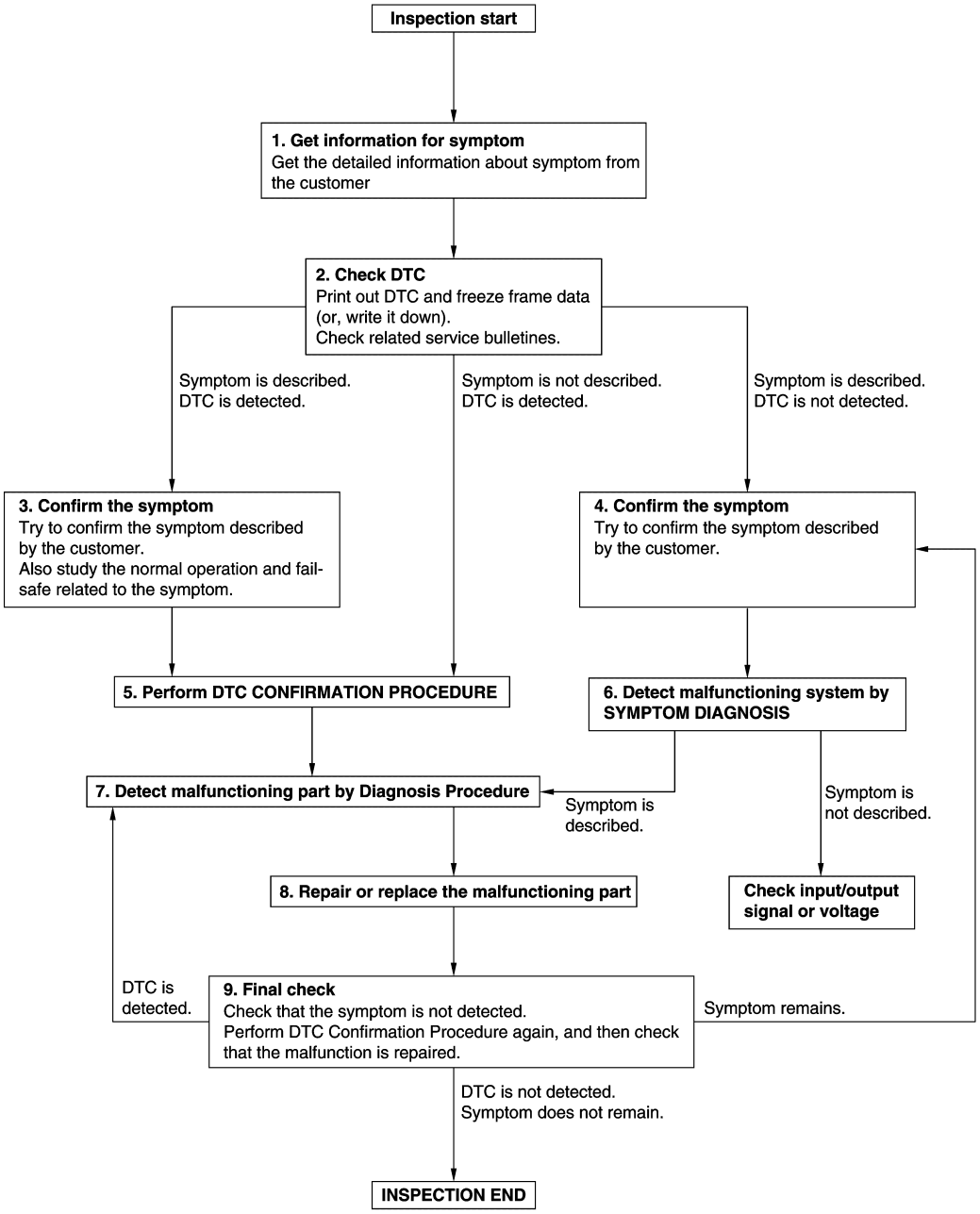
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:0000000011509690

OVERALL SEQUENCE



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DETAILED FLOW

1.GET INFORMATION FOR SYMPTOM

1. Get detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurs).
2. Check operation condition of the function that is malfunctioning.

>> GO TO 2.

2.CHECK DTC

1. Check DTC.
2. Perform the following procedure if DTC is detected.

- Record DTC and freeze frame data (Print them out using CONSULT.)
- Erase DTC.
- Study the relationship between the cause detected by DTC and the symptom described by the customer.

3. Check related service bulletins for information.

Are any symptoms described and any DTC detected?

Symptom is described, DTC is detected>>GO TO 3.
Symptom is described, DTC is not detected>>GO TO 4.
Symptom is not described, DTC is detected>>GO TO 5.

3.CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer.
Also study the normal operation and fail-safe related to the symptom.
Verify relation between the symptom and the condition when the symptom is detected.

>> GO TO 5.

4.CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer.
Verify relation between the symptom and the condition when the symptom is detected.

>> GO TO 6.

5.PERFORM DTC CONFIRMATION PROCEDURE

Perform DTC CONFIRMATION PROCEDURE for the detected DTC, and then check that DTC is detected again. At this time, always connect CONSULT to the vehicle, and check self diagnostic results in real time.
If two or more DTCs are detected, refer to DTC INSPECTION PRIORITY CHART, and determine trouble diagnosis order.

NOTE:

- Freeze frame data is useful if the DTC is not detected.
- Perform Component Function Check if DTC CONFIRMATION PROCEDURE is not included on Service Manual. This simplified check procedure is an effective alternative though DTC cannot be detected during this check.
  If the result of Component Function Check is NG, it is the same as the detection of DTC by DTC CONFIRMATION PROCEDURE.

Is DTC detected?

YES >> GO TO 7.
NO >> Check according to GI-43, "Intermittent Incident".

6.DETECT MALFUNCTIONING SYSTEM BY SYMPTOM DIAGNOSIS

Detect malfunctioning system according to SYMPTOM DIAGNOSIS based on the confirmed symptom in step 4, and determine the trouble diagnosis order based on possible causes and symptom.

Is the symptom described?

YES >> GO TO 7.
NO >> Monitor input data from related sensors or check voltage of related module terminals using CONSULT.

7.DETECT MALFUNCTIONING PART BY DIAGNOSIS PROCEDURE

Inspect according to Diagnosis Procedure of the system.

Is malfunctioning part detected?

YES >> GO TO 8.
NO >> Check according to GI-43, "Intermittent Incident".

8. REPAIR OR REPLACE THE MALFUNCTIONING PART

1. Repair or replace the malfunctioning part.
2. Reconnect parts or connectors disconnected during Diagnosis Procedure again after repair and replacement.
3. Check DTC. If DTC is detected, erase it.

>> GO TO 9.

9. FINAL CHECK

When DTC is detected in step 2, perform DTC CONFIRMATION PROCEDURE again, and then check that the malfunction is repaired securely.
When symptom is described by the customer, refer to confirmed symptom in step 3 or 4, and check that the symptom is not detected.

Is DTC detected and does symptom remain?

YES-1 >> DTC is detected: GO TO 7.
YES-2 >> Symptom remains: GO TO 4.
NO >> Before returning the vehicle to the customer, always erase DTC.

LED HEADLAMP OPERATION INSPECTION

Work Procedure

INFOID:0000000011509691

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-142, "Symptom Table".

ADDITIONAL SERVICE WHEN REPLACING HIGH BEAM ASSIST CONTROL MODULE

Description

INFOID:0000000011509692

BEFORE REPLACEMENT

When replacing high beam assist control module, save or print current vehicle specification with CONSULT “Configuration” before replacement.

NOTE:

If “READ CONFIGURATION” can not be used, use the “WRITE CONFIGURATION - Manual selection” after replacing high beam assist control module.

AFTER REPLACEMENT

CAUTION:

- **When replacing high beam assist control module, always perform “WRITE CONFIGURATION” with CONSULT. Or not doing so, high beam assist control module control function does not operate normally.**
- **Complete the procedure of “WRITE CONFIGURATION” in order.**

Work Procedure

INFOID:0000000011509693

1.SAVING VEHICLE SPECIFICATION

CONSULT Configuration

Perform “READ CONFIGURATION” to save or print current vehicle specification. Refer to EXL-77, "Description".

NOTE:

If “READ CONFIGURATION” can not be used, use the “WRITE CONFIGURATION - Manual selection” after replacing high beam assist control module.

>> GO TO 2.

2.REPLACE HIGH BEAM ASSIST CONTROL MODULE

Replace inside mirror assembly (high beam assist control module). Refer to MIR-34, "Removal and Installation".

>> GO TO 3.

3.WRITING VEHICLE SPECIFICATION

CONSULT Configuration

Perform “WRITE CONFIGURATION” to write vehicle specification. Refer to EXL-77, "Work Procedure".

>> WORK END

ADDITIONAL SERVICE WHEN REPLACING AFS CONTROL UNIT

Description

INFOID:0000000011509694

BEFORE REPLACEMENT

When replacing AFS control unit, save or print current vehicle specification with CONSULT “Configuration” before replacement.

NOTE:

If “READ CONFIGURATION” can not be used, use the “WRITE CONFIGURATION - Manual selection” after replacing AFS control unit.

AFTER REPLACEMENT

CAUTION:

- **When replacing AFS control unit, always perform “WRITE CONFIGURATION” with CONSULT. Or not doing so, AFS control unit control function does not operate normally.**
- **Complete the procedure of “WRITE CONFIGURATION” in order.**
- **Configuration is different for each vehicle model. Confirm configuration of each vehicle model.**
- **If you set incorrect “WRITE CONFIGURATION”, incidents might occur.**
- **Perform “SENSOR INITIALIZE” with CONSULT when replacing the AFS control unit.**

Work Procedure

INFOID:0000000011509695

1. SAVING VEHICLE SPECIFICATION

CONSULT Configuration

Perform “READ CONFIGURATION” to save or print current vehicle specification. Refer to EXL-78, "Description".

NOTE:

If “READ CONFIGURATION” can not be used, use the “WRITE CONFIGURATION - Manual selection” after replacing AFS control unit.

>> GO TO 2.

2. REPLACE AFS CONTROL UNIT

Replace AFS control unit. Refer to EXL-163, "Removal and Installation".

>> GO TO 3.

3. WRITING VEHICLE SPECIFICATION

CONSULT Configuration

Perform “WRITE CONFIGURATION - Config file” or “WRITE CONFIGURATION - Manual selection” to write vehicle specification. Refer to EXL-78, "Work Procedure".

>> GO TO 4.

4. SENSOR INITIALIZE

CONSULT Work Support

Perform “SENSOR INITIALIZE”. Refer to EXL-80, "Work Procedure".

>> WORK END

CONFIGURATION (HIGH BEAM ASSIST CONTROL MODULE)

Description

INFOID:0000000011509696

Vehicle specification needs to be written with CONSULT because it is not written after replacing high beam assist control module.
Configuration has three functions as follows.

Function	Description
READ CONFIGURATION	• Reads the vehicle configuration of current high beam assist control module. • Saves the read vehicle configuration.
WRITE CONFIGURATION - Manual selection	Writes the vehicle configuration with manual selection.
WRITE CONFIGURATION - Config file	Writes the vehicle configuration with saved data.

CAUTION:

- **When replacing high beam assist control module, always perform “WRITE CONFIGURATION” with CONSULT. Or not doing so, high beam assist control module control function does not operate normally.**
- **Complete the procedure of “WRITE CONFIGURATION” in order.**

Work Procedure

INFOID:0000000011509697

1.WRITING MODE SELECTION

CONSULT Configuration
1. Turn ignition switch ON.
2. Select “Configuration” mode of “HIGH BEAM ASSIST” using CONSULT.

When writing saved data>>GO TO 2.
When writing manually>>GO TO 3.

2.PERFORM “WRITE CONFIGURATION - CONFIG FILE”

CONSULT Configuration
Perform “WRITE CONFIGURATION - Config file”.

>> WORK END

3.PERFORM “WRITE CONFIGURATION - MANUAL SELECTION”

CONSULT Configuration
1. Select "WRITE CONFIGURATION - Manual selection".
2. Select "SETTING".
3. When “COMMAND FINISHED”, touch “End”.

>> WORK END

CONFIGURATION (AFS CONTROL UNIT)

Description

INFOID:0000000011509698

Vehicle specification needs to be written with CONSULT because it is not written after replacing AFS control unit.
Configuration has three functions as follows.

Function	Description
READ CONFIGURATION	• Reads the vehicle configuration of current AFS control unit. • Saves the read vehicle configuration.
WRITE CONFIGURATION - Manual selection	Writes the vehicle configuration with manual selection.
WRITE CONFIGURATION - Config file	Writes the vehicle configuration with saved data.

CAUTION:
- **When replacing AFS control unit, always perform “WRITE CONFIGURATION” with CONSULT. Or not doing so, AFS control unit control function does not operate normally.**
- **Complete the procedure of “WRITE CONFIGURATION” in order.**
- **Configuration is different for each vehicle model. Confirm configuration of each vehicle model.**
- **If you set incorrect “WRITE CONFIGURATION”, incidents might occur.**

Work Procedure

INFOID:0000000011509699

1.WRITING MODE SELECTION

CONSULT Configuration
1. Turn ignition switch ON.
2. Select “Configuration” mode of “ADAPTIVE LIGHT” using CONSULT.

When writing saved data>>GO TO 2.
When writing manually>>GO TO 3.

2.PERFORM “WRITE CONFIGURATION - CONFIG FILE”

CONSULT Configuration
Perform “WRITE CONFIGURATION - Config file”.

>> WORK END

3.PERFORM “WRITE CONFIGURATION - MANUAL SELECTION”

CONSULT Configuration
1. Select "WRITE CONFIGURATION - Manual selection".
2. Identify the correct model and configuration list. Refer to EXL-79, "Configuration list".
3. Confirm and/or change setting value for each item.
   CAUTION:
   Thoroughly read and understand the vehicle specification. ECU control may not operate normally if the setting is not correct.
   NOTE:
   If items are not displayed, touch “SETTING”. Refer to EXL-79, "Configuration list" for written items and setting value.
4. Select "SETTING".
   CAUTION:
   Make sure to select “SETTING” even if the indicated configuration of brand new AFS control unit is same as the desirable configuration. If not, configuration which is set automatically by selecting vehicle model can not be memorized.
5. When "COMMAND FINISHED", touch "End".

>> WORK END

Configuration list

INFOID:0000000011509700

CAUTION:

Thoroughly read and understand the vehicle specification. ECU control may not operate normally if the setting is not correct.

SETTING ITEM		NOTE
Items	Setting value	
HANDLE	LHD	—

SENSOR INITIALIZE

Description

INFOID:0000000011509701

Perform the sensor initialize when the following operation is performed.
- Replacing AFS control unit
- Removing, installing or replacing front height sensor / rear height sensor
- Adjusting, removing, installing or replacing suspension components

Work Procedure

INFOID:0000000011509702

1.VEHICLE CONDITION CHECK

1. Park the vehicle in the straight-forward position.
2. Unload the vehicle (no passenger aboard).

>> GO TO 2.

2.SENSOR INITIALIZE

With CONSULT
1. Turn ignition switch ON.
2. Select “LEVELIZER ADJUSTMENT” in “Work Support” mode of “ADAPTIVE LIGHT” using CONSULT.
3. Touch "Start".
4. When "INITIALISE COMPLETE", touch "End".
   NOTE:
   If "INITIALISE NOT DONE" is indicated, AFS control unit detects that the front height sensor signal or rear height sensor signal changes. The sensor initialize is cancelled. In this case, turn the ignition switch OFF to prevent the vehicle from the height change. Perform the sensor initialize again.

Is the sensor initialize completed?

YES >> GO TO 3.
NO >> Perform the sensor initialize again.

3.SELF DIAGNOSTIC RESULT CHECK

With CONSULT
1. Select “Self Diagnostic Result” mode of “ADAPTIVE LIGHT” using CONSULT.
2. Check DTC.

Is DTC detected?

YES >> GO TO 2.
NO >> WORK END

DTC/CIRCUIT DIAGNOSIS

B2008 PARA NOT PROG

DTC Description

INFOID:0000000011509703

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
B2008	PARA NOT PROG (Parameter not programmed)	Vehicle specification is not written in AFS control unit when the ignition switch is turned ON

POSSIBLE CAUSE

Configuration is not completed

FAIL-SAFE

Fail-safe	
Swivel operation	Aiming operation
Right and left swivel motors stop at the position when DTC is detected	Right and left headlamp aiming motors stop at the position when DTC is detected

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “ADAPTIVE LIGHT” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to EXL-81, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-43, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000011509704

1. PERFORM CONFIGURATION

Perform configuration. Refer to EXL-78, "Work Procedure".

>> INSPECTION END

B2090-01 HIGH BEAM ASSIST CONTROL MODULE [AMBIENT LIGHT SENSOR]

DTC Description

INFOID:0000000011509705

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
B2090-01	HBA CONTROL MODULE (High beam assist control module)	Ambient light sensor malfunction status continues for 2 seconds or more when the ignition switch is turned ON

POSSIBLE CAUSE

Ambient light sensor

FAIL-SAFE

- High beam assist system operation stop
- High beam assist indicator lamp OFF

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 2 seconds.
2. Select “Self Diagnostic Result” mode of “HIGH BEAM ASSIST” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to EXL-82, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-43, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000011509706

1. REPLACE HIGH BEAM ASSIST CONTROL MODULE

Replace inside mirror assembly (high beam assist control module). Refer to MIR-34, "Removal and Installation".

>> INSPECTION END

B2090-1C HIGH BEAM ASSIST CONTROL MODULE [IGNITION POWER SUPPLY VOLT]

DTC Description

INFOID:0000000011509707

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
B2090-1C	HBA CONTROL MODULE (High beam assist control module)	Ignition power supply voltage supplied to the high beam assist control module is 16 V or more or 9 V or less and this condition continues for 2 seconds or more when the ignition switch is turned ON

POSSIBLE CAUSE

- Fuse
- Harness or connectors
- High beam assist control module

FAIL-SAFE

- High beam assist system operation stop
- High beam assist indicator lamp OFF

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON and wait at least 2 seconds.
2. Select “Self Diagnostic Result” mode of “HIGH BEAM ASSIST” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to EXL-83, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-43, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000011509708

1.CHECK POWER SUPPLY CIRCUIT

Check high beam assist control module power supply circuit. Refer to EXL-111, "HIGH BEAM ASSIST CONTROL MODULE : Diagnosis Procedure".

Is the inspection result normal?

YES >> Replace inside mirror assembly (high beam assist control module). Refer to MIR-34, "Removal and Installation".
NO >> Repair the malfunctioning part.

B2090-49 HIGH BEAM ASSIST CONTROL MODULE [EEPROM ERROR]

DTC Description

INFOID:0000000011509709

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
B2090-49	HBA CONTROL MODULE (High beam assist control module)	EEPROM malfunction status in the high beam assist control module continues for 2 seconds or more when the ignition switch is turned ON

POSSIBLE CAUSE

High beam assist control module

FAIL-SAFE

- High beam assist system operation stop
- High beam assist indicator lamp OFF

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 2 seconds.
2. Select “Self Diagnostic Result” mode of “HIGH BEAM ASSIST” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to EXL-84, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-43, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000011509710

1.REPLACE HIGH BEAM ASSIST CONTROL MODULE

Replace inside mirror assembly (high beam assist control module). Refer to MIR-34, "Removal and Installation".

>> INSPECTION END

B2090-54 HIGH BEAM ASSIST CONTROL MODULE [CPU ERROR]

DTC Description

INFOID:0000000011509711

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
B2090-54	HBA CONTROL MODULE (High beam assist control module)	CPU malfunction status in the high beam assist control module continues for 2 seconds or more when the ignition switch is turned ON

POSSIBLE CAUSE

High beam assist control module

FAIL-SAFE

- High beam assist system operation stop
- High beam assist indicator lamp OFF

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 2 seconds.
2. Select “Self Diagnostic Result” mode of “HIGH BEAM ASSIST” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to EXL-85, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-43, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000011509712

1.REPLACE HIGH BEAM ASSIST CONTROL MODULE

Replace inside mirror assembly (high beam assist control module). Refer to MIR-34, "Removal and Installation".

>> INSPECTION END

B2091-01 HIGH BEAM ASSIST CONTROL MODULE [IMAGE SENSOR COMM ERROR]

DTC Description

INFOID:0000000011509713

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
B2091-01	HBA CONTROL MODULE (High beam assist control module)	Communication signal between the image sensor and the high beam assist control module continues to be in malfunction status for 2 seconds or more when the ignition switch is turned ON

POSSIBLE CAUSE

- Communication line
- Image sensor
- High beam assist control module

FAIL-SAFE

- High beam assist system operation stop
- High beam assist indicator lamp OFF

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON and wait at least 2 seconds.
2. Select “Self Diagnostic Result” mode of “HIGH BEAM ASSIST” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to EXL-90, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-43, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000011509714

1.REPLACE HIGH BEAM ASSIST CONTROL MODULE

Replace inside mirror assembly (high beam assist control module). Refer to MIR-34, "Removal and Installation".

>> INSPECTION END

B2091-02 HIGH BEAM ASSIST CONTROL MODULE [IMAGE SENSOR ANGLE ERROR]

DTC Description

INFOID:0000000011509715

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
B2091-02	HBA CONTROL MODULE (High beam assist control module)	Abnormal angle status of the image sensor continues for 2 seconds or more when the ignition switch is turned ON

POSSIBLE CAUSE

- Position of the vehicle
- Image sensor mounted angle

FAIL-SAFE

- High beam assist system operation stop
- High beam assist indicator lamp OFF

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 2 seconds.
2. Select “Self Diagnostic Result” mode of “HIGH BEAM ASSIST” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to EXL-90, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-43, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000011509716

1.VEHICLE CONDITION CHECK

Unload the vehicle (no passenger aboard).

>> GO TO 2.

2.SELF DIAGNOSTIC RESULT CHECK

With CONSULT

1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “HIGH BEAM ASSIST” using CONSULT.
3. Touch “ERASE”.
4. Turn ignition switch OFF.
5. Perform DTC CONFIRMATION PROCEDURE. Refer to EXL-87, "DTC Description".

Is DTC detected again?

YES >> Replace inside mirror assembly (high beam assist control module). Refer to MIR-34, "Removal and Installation".
NO >> INSPECTION END

B2091-07 HIGH BEAM ASSIST CONTROL MODULE [IMAGE SENSOR]

DTC Description

INFOID:0000000011509717

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
B2091-07	HBA CONTROL MODULE (High beam assist control module)	Detection disabled status of the image sensor for the area in front of vehicle continues for 80 seconds or more when the ignition switch is turned ON

POSSIBLE CAUSE

- Obstacles in front of the image sensor
- Dirt or foreign material adheres to the windshield in front of the image sensor
- Fog or mist form on the windshield in front of the image sensor
- Dirt or foreign material adheres to the lens of the image sensor
- Fog or mist form on the lens of the image sensor
- Cracks on the lens of image sensor
- Image sensor

FAIL-SAFE

- High beam assist system operation stop
- High beam assist indicator lamp OFF

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 80 seconds.
2. Select “Self Diagnostic Result” mode of “HIGH BEAM ASSIST” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to EXL-88, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-43, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000011509718

1.VISUAL CHECK 1

Check that there are no obstacles in front of the image sensor that adversely affect the sensor operation.

Is the windshield free from obstacles?

YES >> GO TO 2.
NO >> Remove the obstacle in front of the image sensor.

2.VISUAL CHECK 2

Check that there is no dirt and foreign material adhering to the windshield in front of the image sensor.

Is the windshield free from dirt and foreign material?

YES >> GO TO 3.
NO >> Remove dirt or foreign material from the windshield in front of the image sensor.

3.VISUAL CHECK 3

Check that there is no fog and mist adhering to the windshield in front of the image sensor.

Is the windshield free from fog and mist?

YES >> GO TO 4.
NO >> Remove fog or mist from the windshield in front of the image sensor.

4.VISUAL CHECK 4

Check that there is no dirt and foreign material adhering on the lens of the image sensor.

Is the windshield free from dirt and foreign material?

YES >> GO TO 5.
NO >> Remove contamination or foreign material from the lens of the image sensor.

5. VISUAL CHECK 5

Check that there is no fog and mist on the lens of the image sensor.

Is the windshield free from fog and mist?

YES >> GO TO 6.
NO >> Remove fog or mist from the lens of the image sensor.

6. VISUAL CHECK 6

Check that there are no cracks on the lens of the image sensor.

Is the lens free from cracks?

YES >> GO TO 7.
NO >> Replace inside mirror assembly (high beam assist control module). Refer to MIR-34, "Removal and Installation".

7. SELF DIAGNOSTIC RESULT CHECK

With CONSULT

1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “HIGH BEAM ASSIST” using CONSULT.
3. Touch “ERASE”.
4. Turn ignition switch OFF.
5. Perform DTC CONFIRMATION PROCEDURE. Refer to EXL-88, "DTC Description".

Is DTC detected again?

YES >> Replace inside mirror assembly (high beam assist control module). Refer to MIR-34, "Removal and Installation".
NO >> INSPECTION END

B2091-55 HIGH BEAM ASSIST CONTROL MODULE [CONFIG NOT PERFORMED]

DTC Description

INFOID:0000000011509719

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
B2091-55	HBA CONTROL MODULE (High beam assist control module)	Vehicle specification is not written in the high beam assist control module when the ignition switch is turned ON

POSSIBLE CAUSE

Configuration is not completed

FAIL-SAFE

- High beam assist system operation stop
- High beam assist indicator lamp OFF

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “HIGH BEAM ASSIST” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to EXL-90, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-43, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000011509720

1.PERFORM CONFIGURATION

Perform configuration. Refer to EXL-77, "Work Procedure".

>> INSPECTION END

B2503 SWIVEL ACTUATOR [RH]

DTC Description

INFOID:0000000011509721

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
B2503	SWIVEL ACTUATOR [RH] (Swivel actuator [Right hand])	• Power supply voltage supplied to the swivel actuator RH is 17.5 V or more or 7.7 V or less and this condition continues for 5 seconds or more when the ignition switch is turned ON • Initialization incomplete status of the swivel actuator (RH) continues for 5 seconds or more when the swivel actuator is initialized • Swivel actuator (RH) does not complete swivel actuator initialization when the vehicle is driven
	SWIVEL ACTUATOR [RH] COMM ERROR (Swivel actuator [Right hand] Communication error)	LIN communication signal malfunction status between AFS control unit and the swivel actuator (RH) continues for 5 seconds or more when the ignition switch is turned ON

POSSIBLE CAUSE

- Harness or connectors
- Swivel actuator RH

FAIL-SAFE

CONSULT screen terms	Fail-safe	
	Swivel operation	Aiming operation
SWIVEL ACTUATOR [RH]	• Right swivel motor stop at the position when DTC is detected • Left swivel motor swivel angle returns to 0° and fixed	The signal, approximately 2 V decreased from the aiming motor drive signal when DTC detected, is output
SWIVEL ACTUATOR [RH] COMM ERROR	• Right swivel motor stop at the position when DTC is detected or right swivel motor swivel angle returns to 0° and fixed • Left swivel motor swivel angle returns to 0° and fixed	

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Start engine and wait at least 5 seconds.
2. Select “Self Diagnostic Result” mode of “ADAPTIVE LIGHT” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to EXL-91, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-43, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000011509722

1.CHECK DTC

Perform each inspection according to the displayed DTC.

Which DTC is displayed?

SWIVEL ACTUATOR [RH] >>GO TO 2.
SWIVEL ACTUATOR [RH] COMM ERROR >>GO TO 4.

2.CHECK SWIVEL ACTUATOR RH POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect headlamp swivel actuator RH connector.
3. Turn ignition switch ON.
4. Check voltage between headlamp swivel actuator RH harness connector and ground.

+		-	Voltage (Approx.)
Headlamp swivel actuator RH			
Connector	Terminal		
E217	3	Ground	Battery voltage

Is the inspection result normal?

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

3. CHECK SWIVEL ACTUATOR RH GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect AFS control unit connector.
3. Check continuity between headlamp swivel actuator RH harness connector and AFS control unit harness connector.

Headlamp swivel actuator RH		AFS control unit		Continuity
Connector	Terminal	Connector	Terminal	
E217	2	M151	19	Existed

Is the inspection result normal?

YES >> Replace front combination lamp RH. Refer to EXL-155, "Removal and Installation".
NO >> Repair or replace harness.

4. CHECK SWIVEL ACTUATOR RH LIN COMMUNICATION SIGNAL CIRCUIT (OPEN)

1. Turn ignition switch OFF.
2. Disconnect headlamp swivel actuator RH connector and AFS control unit connector.
3. Check continuity between headlamp swivel actuator RH harness connector and AFS control unit harness connector.

Headlamp swivel actuator RH		AFS control unit		Continuity
Connector	Terminal	Connector	Terminal	
E217	4	M151	8	Existed

Is the inspection result normal?

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

5. CHECK SWIVEL ACTUATOR RH LIN COMMUNICATION SIGNAL CIRCUIT (SHORT)

Check continuity between headlamp swivel actuator RH harness connector and ground.

Headlamp swivel actuator RH		—	Continuity
Connector	Terminal		
E217	4	Ground	Not existed

Is the inspection result normal?

YES >> Replace front combination lamp RH. Refer to EXL-155, "Removal and Installation".
NO >> Repair or replace harness.

B2504 SWIVEL ACTUATOR [LH]

DTC Description

INFOID:0000000011509723

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
B2504	SWIVEL ACTUATOR [LH] (Swivel actuator [Left hand])	• Power supply voltage supplied to the swivel actuator LH is 17.5 V or more or 7.7 V or less and this condition continues for 5 seconds or more when the ignition switch is turned ON • Initialization incomplete status of the swivel actuator (LH) continues for 5 seconds or more when the swivel actuator is initialized • Swivel actuator (LH) does not complete swivel actuator initialization when the vehicle is driven
	SWIVEL ACTUATOR [LH] COMM ERROR (Swivel actuator [Left hand] Communication error)	LIN communication signal malfunction status between AFS control unit and the swivel actuator (LH) continues for 5 seconds or more when the ignition switch is turned ON

POSSIBLE CAUSE

- Harness or connectors
- Swivel actuator LH

FAIL-SAFE

CONSULT screen terms	Fail-safe	
	Swivel operation	Aiming operation
SWIVEL ACTUATOR [LH]	• Left swivel motor stop at the position when DTC is detected • Right swivel motor swivel angle returns to 0° and fixed	The signal, approximately 2 V decreased from the aiming motor drive signal when DTC detected, is output
SWIVEL ACTUATOR [LH] COMM ERROR	• Left swivel motor stop at the position when DTC is detected or left swivel motor swivel angle returns to 0° and fixed • Right swivel motor swivel angle returns to 0° and fixed	

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Start engine and wait at least 5 seconds.
2. Select “Self Diagnostic Result” mode of “ADAPTIVE LIGHT” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to EXL-93, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-43, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000011509724

1.CHECK DTC

Perform each inspection according to the displayed DTC.

Which DTC is displayed?

SWIVEL ACTUATOR [LH] >>GO TO 2.
SWIVEL ACTUATOR [LH] COMM ERROR >>GO TO 4.

2.CHECK SWIVEL ACTUATOR LH POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect headlamp swivel actuator LH connector.
3. Turn ignition switch ON.
4. Check voltage between headlamp swivel actuator LH harness connector and ground.

+		-	Voltage (Approx.)
Headlamp swivel actuator LH			
Connector	Terminal	Ground	Battery voltage
E216	3		

Is the inspection result normal?

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

3. CHECK SWIVEL ACTUATOR LH GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect AFS control unit connector.
3. Check continuity between headlamp swivel actuator LH harness connector and AFS control unit harness connector.

Headlamp swivel actuator LH		AFS control unit		Continuity
Connector	Terminal	Connector	Terminal	
E216	2	M151	19	Existed

Is the inspection result normal?

YES >> Replace front combination lamp LH. Refer to EXL-155, "Removal and Installation".
NO >> Repair or replace harness.

4. CHECK SWIVEL ACTUATOR LH LIN COMMUNICATION SIGNAL CIRCUIT (OPEN)

1. Turn ignition switch OFF.
2. Disconnect headlamp swivel actuator LH connector and AFS control unit connector.
3. Check continuity between headlamp swivel actuator LH harness connector and AFS control unit harness connector.

Headlamp swivel actuator LH		AFS control unit		Continuity
Connector	Terminal	Connector	Terminal	
E216	4	M151	8	Existed

Is the inspection result normal?

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

5. CHECK SWIVEL ACTUATOR LH LIN COMMUNICATION SIGNAL CIRCUIT (SHORT)

Check continuity between headlamp swivel actuator LH harness connector and ground.

Headlamp swivel actuator LH		—	Continuity
Connector	Terminal		
E216	4	Ground	Not existed

Is the inspection result normal?

YES >> Replace front combination lamp LH. Refer to EXL-155, "Removal and Installation".
NO >> Repair or replace harness.

B2513 HEIGHT SENSOR UNUSUAL [FR]

DTC Description

INFOID:0000000011509725

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
B2513	HI SEN UNUSUAL [FR] (Height sensor unusual [Front])	• Power supply voltage supplied to the front height sensor is 6.25 V or more or 4.45 V or less and this condition continues for 10 seconds or more when the ignition switch is turned ON • Signal voltage from the front height sensor is 4.75 V or more or 1.0 V or less and this condition continues for 10 seconds or more when the ignition switch is turned ON

POSSIBLE CAUSE

- Harness or connectors
- Front height sensor installation condition
- Front height sensor
- AFS control unit

FAIL-SAFE

Fail-safe	
Swivel operation	Aiming operation
Right and left swivel motor swivel angle returns to 0° and fixed	Right and left headlamp aiming motors stop at the position when DTC is detected

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON and wait at least 10 seconds.
2. Select “Self Diagnostic Result” mode of “ADAPTIVE LIGHT” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to EXL-95, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-43, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000011509726

1.CHECK INSTALLATION OF FRONT HEIGHT SENSOR

Check front height sensor is properly installed. Refer to EXL-164, "Exploded View".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts and perform sensor initialize. Refer to EXL-80, "Work Procedure".

2.CHECK FRONT HEIGHT SENSOR SIGNAL

1. Turn ignition switch ON.
2. Check voltage between AFS control unit harness connector and ground.

+		-	Voltage
AFS control unit			
Connector	Terminal		
M151	5	Ground	1.0 – 4.75 V

Is the measurement value within the standard value?

YES >> Replace AFS control unit. Refer to EXL-163, "Removal and Installation".
NO-1 >> Less than the standard value: GO TO 3.
NO-2 >> Higher than the standard value: GO TO 8.

3.CHECK FRONT HEIGHT SENSOR POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect front height sensor connector.
3. Turn ignition switch ON.
4. Check voltage between front height sensor harness connector and ground.

+		-	Voltage
Front height sensor			
Connector	Terminal		
E208	1	Ground	4.45 – 6.25 V

Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 6.

4.CHECK FRONT HEIGHT SENSOR SIGNAL CIRCUIT (OPEN)

1. Turn ignition switch OFF.
2. Disconnect AFS control unit connector.
3. Check continuity between AFS control unit harness connector and front height sensor harness connector.

AFS control unit		Front height sensor		Continuity
Connector	Terminal	Connector	Terminal	
M151	5	E208	2	Existed

Is the inspection result normal?

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

5.CHECK FRONT HEIGHT SENSOR SIGNAL CIRCUIT (SHORT)

Check continuity between AFS control unit harness connector and ground.

AFS control unit		—	Continuity
Connector	Terminal		
M151	5	Ground	Not existed

Is the inspection result normal?

YES >> Replace front height sensor. Refer to EXL-164, "Removal and Installation".
NO >> Repair or replace harness.

6.CHECK FRONT HEIGHT SENSOR POWER SUPPLY CIRCUIT (OPEN)

1. Turn ignition switch OFF.
2. Disconnect AFS control unit connector.
3. Check continuity between AFS control unit harness connector and front height sensor harness connector.

AFS control unit		Front height sensor		Continuity
Connector	Terminal	Connector	Terminal	
M151	21	E208	1	Existed

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair or replace harness.

7.CHECK FRONT HEIGHT SENSOR POWER SUPPLY CIRCUIT (SHORT)

Check continuity between AFS control unit harness connector and ground.

AFS control unit		—	Continuity
Connector	Terminal		
M151	21	Ground	Not existed

Is the inspection result normal?

YES >> Replace AFS control unit. Refer to EXL-163, "Removal and Installation"
NO >> Repair or replace harness.

8.CHECK FRONT HEIGHT SENSOR GROUND

Check voltage between AFS control unit harness connector and ground.

+		-	Voltage (Approx.)
AFS control unit			
Connector	Terminal		
M151	23	Ground	0 V

Is the inspection result normal?

YES >> GO TO 9.
NO >> Replace AFS control unit. Refer to EXL-163, "Removal and Installation"

9.CHECK FRONT HEIGHT SENSOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect AFS control unit connector and front height sensor connector.
3. Check continuity between AFS control unit harness connector and front height sensor harness connector.

AFS control unit		Front height sensor		Continuity
Connector	Terminal	Connector	Terminal	
M151	23	E208	3	Existed

Is the inspection result normal?

YES >> Replace front height sensor. Refer to EXL-164, "Removal and Installation".
NO >> Repair or replace harness.

B2514 HEIGHT SENSOR UNUSUAL [RR]

DTC Description

INFOID:0000000011509727

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
B2514	HI SEN UNUSUAL [RR] (Height sensor unusual [Rear])	• Power supply voltage supplied to the rear height sensor is 6.25 V or more or 4.45 V or less and this condition continues for 10 seconds or more when the ignition switch is turned ON • Signal voltage from the rear height sensor is 4.75 V or more or 1.0 V or less and this condition continues for 10 seconds or more when the ignition switch is turned ON

POSSIBLE CAUSE

- Harness or connectors
- Rear height sensor installation condition
- Rear height sensor
- AFS control unit

FAIL-SAFE

Fail-safe	
Swivel operation	Aiming operation
Right and left swivel motor swivel angle returns to 0° and fixed	Right and left headlamp aiming motors stop at the position when DTC is detected

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON and wait at least 10 seconds.
2. Select “Self Diagnostic Result” mode of “ADAPTIVE LIGHT” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to EXL-98, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-43, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000011509728

1.CHECK INSTALLATION OF REAR HEIGHT SENSOR

Check rear height sensor is properly installed. Refer to EXL-164, "Exploded View".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts and perform sensor initialize. Refer to EXL-80, "Work Procedure".

2.CHECK REAR HEIGHT SENSOR SIGNAL

1. Turn ignition switch ON.
2. Check voltage between AFS control unit harness connector and ground.

+		-	Voltage
AFS control unit			
Connector	Terminal		
M151	6	Ground	1.0 – 4.75 V

Is the measurement value within the standard value?

YES >> Replace AFS control unit. Refer to EXL-163, "Removal and Installation".
NO-1 >> Less than the standard value: GO TO 3.
NO-2 >> Higher than the standard value: GO TO 8.

3.CHECK REAR HEIGHT SENSOR POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect rear height sensor connector.
3. Turn ignition switch ON.
4. Check voltage between rear height sensor harness connector and ground.

+		-	Voltage
Rear height sensor			
Connector	Terminal		
C15	1	Ground	4.45 – 6.25 V

Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 6.

4.CHECK REAR HEIGHT SENSOR SIGNAL CIRCUIT (OPEN)

1. Turn ignition switch OFF.
2. Disconnect AFS control unit connector.
3. Check continuity between AFS control unit harness connector and rear height sensor harness connector.

AFS control unit		Rear height sensor		Continuity
Connector	Terminal	Connector	Terminal	
M151	6	C15	2	Existed

Is the inspection result normal?

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

5.CHECK REAR HEIGHT SENSOR SIGNAL CIRCUIT (SHORT)

Check continuity between AFS control unit harness connector and ground.

AFS control unit		—	Continuity
Connector	Terminal		
M151	6	Ground	Not existed

Is the inspection result normal?

YES >> Replace rear height sensor. Refer to EXL-164, "Removal and Installation".
NO >> Repair or replace harness.

6.CHECK REAR HEIGHT SENSOR POWER SUPPLY CIRCUIT (OPEN)

1. Turn ignition switch OFF.
2. Disconnect AFS control unit connector.
3. Check continuity between AFS control unit harness connector and rear height sensor harness connector.

AFS control unit		Rear height sensor		Continuity
Connector	Terminal	Connector	Terminal	
M151	21	C15	1	Existed

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair or replace harness.

7.CHECK REAR HEIGHT SENSOR POWER SUPPLY CIRCUIT (SHORT)

Check continuity between AFS control unit harness connector and ground.

AFS control unit		—	Continuity
Connector	Terminal		
M151	21	Ground	Not existed

Is the inspection result normal?

YES >> Replace AFS control unit. Refer to EXL-163, "Removal and Installation"
NO >> Repair or replace harness.

8.CHECK REAR HEIGHT SENSOR GROUND

Check voltage between AFS control unit harness connector and ground.

+		-	Voltage (Approx.)
AFS control unit			
Connector	Terminal		
M151	23	Ground	0 V

Is the inspection result normal?

YES >> GO TO 9.
NO >> Replace AFS control unit. Refer to EXL-163, "Removal and Installation"

9.CHECK REAR HEIGHT SENSOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect AFS control unit connector and rear height sensor connector.
3. Check continuity between AFS control unit harness connector and rear height sensor harness connector.

AFS control unit		Rear height sensor		Continuity
Connector	Terminal	Connector	Terminal	
M151	23	C15	3	Existed

Is the inspection result normal?

YES >> Replace rear height sensor. Refer to EXL-164, "Removal and Installation".
NO >> Repair or replace harness.

B2516 SHIFT POSITION SIGNAL [R, P]

DTC Description

INFOID:0000000011509729

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
B2516	SHIFT POS SIG[R,P] (Shift position signal)	Malfunction status of the shift position signal received from TCM continues for 2 seconds or more when the ignition switch is turned ON

POSSIBLE CAUSE

A/T control system

FAIL-SAFE

Fail-safe	
Swivel operation	Aiming operation
Right and left swivel motor swivel angle returns to 0° and fixed	—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 2 seconds.
2. Select “Self Diagnostic Result” mode of “ADAPTIVE LIGHT” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to EXL-101, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-43, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000011509730

1.TCM SELF-DIAGNOSIS

With CONSULT

1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “TRANSMISSION” using CONSULT, and repair or replace malfunctioning parts.
3. Check DTC, and repair or replace malfunctioning parts. Refer to TM-81, "DTC Index".

>> INSPECTION END

B2517 VEHICLE SPEED SIGNAL

DTC Description

INFOID:0000000011509733

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
B2517	VEHICEL SPEED SIG (Speed signal)	Malfunction status of the vehicle speed signal received from the combination meter continues for 2 seconds or more when the ignition switch is turned ON

POSSIBLE CAUSE

Vehicle speed signal

FAIL-SAFE

Fail-safe	
Swivel operation	Aiming operation
Right and left swivel motor swivel angle returns to 0° and fixed	Right and left headlamp aiming motors stop at the position when DTC is detected

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON and wait at least 2 seconds.
2. Select “Self Diagnostic Result” mode of “ADAPTIVE LIGHT” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to EXL-102, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-43, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000011509734

1.COMBINATION METER SELF-DIAGNOSIS

With CONSULT
1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “METER/M&A” using CONSULT, and repair or replace malfunctioning parts.
3. Check DTC, and repair or replace malfunctioning parts. Refer to MWI-45, "DTC Index".

>> INSPECTION END

B2519 LEVELIZER CALIBRATION

DTC Description

INFOID:0000000011509735

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
B2519	LEVELIZER CALIB (Levelizer calibration)	Initialization incomplete status of the height sensor is detected when the ignition switch is turned ON

POSSIBLE CAUSE

Sensor initialize is not completed

FAIL-SAFE

Fail-safe	
Swivel operation	Aiming operation
Right and left swivel motor swivel angle returns to 0° and fixed	Right and left headlamp aiming motors fix at the initial aiming position

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “ADAPTIVE LIGHT” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to EXL-103, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-43, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000011509736

1.SENSOR INITIALIZE

Perform sensor initialize. Refer to EXL-80, "Work Procedure".

>> INSPECTION END

B2521 ECU CIRCUIT

DTC Description

INFOID:0000000011509737

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
B2521	ECU CIRC (ECU)	Internal malfunction of AFS control unit continues for 10 seconds or more when the ignition switch is turned ON

POSSIBLE CAUSE

AFS C/U

FAIL-SAFE

Fail-safe	
Swivel operation	Aiming operation
Right and left swivel motor swivel angle returns to 0° and fixed	Right and left headlamp aiming motors stop at the position when DTC is detected

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON and wait at least 10 seconds.
2. Select “Self Diagnostic Result” mode of “ADAPTIVE LIGHT” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to EXL-104, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-43, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000011509738

1.REPLACE AFS CONTROL UNIT

Replace AFS control unit. Refer to EXL-163, "Removal and Installation".

>> INSPECTION END

U0126 STEERING ANGLE SENSOR SIGNAL

DTC Description

INFOID:0000000011509739

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
U0126	ST ANG SEN SIG [Lost communication with steering angle sensor module]	• Malfunction status of the steering angle signal received from the steering angle sensor continues for 2 seconds or more when the ignition switch is turned ON • Steering angle sensor malfunction signal is received from the steering angle sensor for 2 seconds or more continuously when the ignition switch is turned ON

POSSIBLE CAUSE

Steering angle sensor

FAIL-SAFE

Fail-safe	
Swivel operation	Aiming operation
Right and left swivel motor swivel angle returns to 0° and fixed	—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON and wait at least 2 seconds.
2. Select “Self Diagnostic Result” mode of “ADAPTIVE LIGHT” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to EXL-105, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-43, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000011509740

1.ABS ACTUATOR AND ELECTRICAL UNIT (CONTROL UNIT) SELF-DIAGNOSIS

With CONSULT
1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “ABS” using CONSULT, and repair or replace malfunctioning parts.
3. Check DTC, and repair or replace malfunctioning parts. Refer to BRC-50, "DTC Index".

>> INSPECTION END

U0428 STEERING ANGLE SENSOR CALIBRATION

DTC Description

INFOID:0000000011509741

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
U0428	ST ANG SEN CALIB [Invalid data received from steering angle sensor module]	Steering calibration signal (incomplete status) is received from the steering angle sensor for 2 seconds or more continuously when the ignition switch is turned ON

POSSIBLE CAUSE

Adjustment of steering angle sensor neutral position is not completed

FAIL-SAFE

Fail-safe	
Swivel operation	Aiming operation
Right and left swivel motor swivel angle returns to 0° and fixed	—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON and wait at least 2 seconds.
2. Select “Self Diagnostic Result” mode of “ADAPTIVE LIGHT” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to EXL-106, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-43, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000011509742

1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Perform adjustment of steering angle sensor neutral position. Refer to BRC-62, "Work Procedure".

NOTE:

Perform adjustment of steering angle sensor neutral position on VDC side. VDC may activate incorrectly.

>> INSPECTION END

U1000 CAN COMM CIRCUIT

DTC Description

INFOID:0000000011509743

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
U1000	CAN COMM CIRCUIT (CAN communication)	When AFS control unit does not transmit/receive CAN communication signal continuously for 2 seconds or more

POSSIBLE CAUSE

CAN communication system

FAIL-SAFE

Fail-safe	
Swivel operation	Aiming operation
Right and left swivel motor swivel angle returns to 0° and fixed	Right and left headlamp aiming motors stop at the position when DTC is detected **NOTE:** Only when the vehicle speed signal or the low beam status signal cannot be received

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON and wait at least 2 seconds.
2. Select “Self Diagnostic Result” mode of “ADAPTIVE LIGHT” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to EXL-107, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-43, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000011509744

1.CHECK CAN COMMUNICATION SYSTEM

Perform trouble diagnosis for CAN communication system. Refer to LAN-21, "Trouble Diagnosis Flow Chart".

>> INSPECTION END

U1000-01 CAN COMM CIRCUIT

DTC Description

INFOID:0000000011509745

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
U1000-01	CAN COMM CIRCUIT (CAN comm circuit)	When high beam assist control module does not transmit/receive CAN communication signal continuously for 2 seconds or more

POSSIBLE CAUSE

CAN communication system

FAIL-SAFE

- High beam assist system operation stop
- High beam assist indicator lamp OFF

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 2 seconds.
2. Select “Self Diagnostic Result” mode of “HIGH BEAM ASSIST” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to EXL-108, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-43, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000011509746

1.CHECK CAN COMMUNICATION SYSTEM

Perform trouble diagnosis for CAN communication system. Refer to LAN-21, "Trouble Diagnosis Flow Chart".

>> INSPECTION END

U1010 CONTROL UNIT (CAN)

DTC Description

INFOID:0000000011509747

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
U1010	CONTROL UNIT(CAN) (CAN initial diagnosis abnormal)	AFS control unit detected internal CAN communication circuit malfunction

POSSIBLE CAUSE

AFS control unit

FAIL-SAFE

Fail-safe	
Swivel operation	Aiming operation
Right and left swivel motor swivel angle returns to 0° and fixed	Right and left headlamp aiming motors stop at the position when DTC is detected

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “ADAPTIVE LIGHT” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to EXL-109, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-43, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000011509748

1.REPLACE AFS CONTROL UNIT

Replace AFS control unit. Refer to EXL-163, "Removal and Installation".

>> INSPECTION END

U1010-49 CONTROL UNIT (CAN)

DTC Description

INFOID:0000000011509749

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
U1010-49	CONTROL UNIT(CAN) [Control unit(CAN)]	High beam assist control module detected internal CAN communication circuit malfunction

POSSIBLE CAUSE

High beam assist control module

FAIL-SAFE

- High beam assist system operation stop
- High beam assist indicator lamp OFF

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “HIGH BEAM ASSIST” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to EXL-110, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-43, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000011509750

1.REPLACE HIGH BEAM ASSIST CONTROL MODULE

Replace inside mirror assembly (high beam assist control module). Refer to MIR-34, "Removal and Installation".

>> INSPECTION END

POWER SUPPLY AND GROUND CIRCUIT
HIGH BEAM ASSIST CONTROL MODULE

HIGH BEAM ASSIST CONTROL MODULE : Diagnosis Procedure

INFOID:0000000011509751

1.CHECK FUSE

1. Turn ignition switch OFF.
2. Check that any of the following fuse is fusing

Unit	Location	Fuse No.	Capacity
Auto anti-dazzling inside mirror (High beam assist control module) Battery power supply	Fuse block (J/B)	6	10 A
Auto anti-dazzling inside mirror (High beam assist control module) Ignition power supply		4	

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.

2.CHECK HIGH BEAM ASSIST CONTROL MODULE POWER SUPPLY

1. Disconnect auto anti-dazzling inside mirror connector.
2. Turn ignition switch ON.
3. Check voltage between auto anti-dazzling inside mirror harness connector and ground.

+		-	Voltage
Auto anti-dazzling inside mirror			
Connector	Terminal		
R24	10	Ground	9 – 16 V
	6		

Is the inspection result normal?

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

3.CHECK HIGH BEAM ASSIST CONTROL MODULE GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between auto anti-dazzling inside mirror harness connector and ground.

Auto anti-dazzling inside mirror		—	Continuity
Connector	Terminal		
R24	3	Ground	Existed

Is the inspection result normal?

YES >> Power supply and ground circuit are normal.
NO >> Repair or replace harness.

AFS CONTROL UNIT

AFS CONTROL UNIT : Diagnosis Procedure

INFOID:0000000011509752

1.CHECK FUSE

1. Turn ignition switch OFF.
2. Check that any of the following fuse is fusing

Unit	Location	Fuse No.	Capacity
AFS control unit	Fuse block (J/B)	3	10 A

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.

2.CHECK AFS CONTROL UNIT POWER SUPPLY

1. Disconnect AFS control unit connector.
2. Turn ignition switch ON.
3. Check voltage between AFS control unit harness connector and ground.

+		-	Voltage
AFS control unit			
Connector	Terminal		
M151	12	Ground	9 – 16 V

Is the inspection result normal?

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

3.CHECK AFS CONTROL UNIT GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between AFS control unit harness connector and ground.

AFS control unit		—	Continuity
Connector	Terminal		
M151	11	Ground	Existed

Is the inspection result normal?

YES >> Power supply and ground circuit are normal.
NO >> Repair or replace harness.

HEADLAMP (HI) CIRCUIT

Component Function Check

INFOID:0000000011509753

1.CHECK HEADLAMP (HI) OPERATION

With CONSULT
1. Turn ignition switch ON.
2. Select “EXTERNAL LAMPS” in “Active Test” mode of “IPDM E/R” using CONSULT.
3. With operating the test items, check that the headlamp (HI) blinks.

Hi : Headlamp (HI) blinks (ON/OFF is repeated 1 second each.)
Off : Headlamp (HI) OFF

Without CONSULT
1. Start IPDM E/R auto active test. Refer to PCS-10, "Diagnosis Description".
2. Check that the headlamp (HI) blinks.

Is the inspection result normal?

YES >> Headlamp (HI) circuit is normal.
NO >> Refer to EXL-113, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000011509754

1.CHECK HEADLAMP (HI) FUSE

1. Turn ignition 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 >> GO TO 2.
NO >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.

2.CHECK HEADLAMP (HI) POWER SUPPLY

With CONSULT
1. Turn ignition switch ON.
2. Select “EXTERNAL LAMPS” in “Active Test” mode of “IPDM E/R” using CONSULT.
3. With operating the test items, check voltage between IPDM E/R harness connector and ground.

+			-	Test item		Voltage
IPDM E/R						
Connector		Terminal				
RH	E15	49	Ground	EXTERNAL LAMPS	Hi	9 – 16 V (Repeated 1 second)
					Off	0 – 1 V
LH		50			Hi	9 – 16 V (Repeated 1 second)
					Off	0 – 1 V

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace IPDM E/R. Refer to PCS-34, "Removal and Installation".

3.CHECK HEADLAMP (HI) POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and front combination lamp 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	E119	7	Existed
LH		50	E118		

Is the inspection result normal?

YES >> Perform the LED headlamp diagnosis. Refer to EXL-117, "Diagnosis Procedure".
NO >> Repair or replace harness.

HEADLAMP (LO) CIRCUIT

Component Function Check

INFOID:0000000011509755

1.CHECK HEADLAMP (LO) OPERATION

With CONSULT
1. Turn ignition switch ON.
2. Select “EXTERNAL LAMPS” in “Active Test” mode of “IPDM E/R” using CONSULT.
3. With operating the test items, check that the headlamp (LO) is turned ON.

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

Without CONSULT
1. Start IPDM E/R auto active test. Refer to PCS-10, "Diagnosis Description".
2. Check that the headlamp (LO) is turned ON.

Is the inspection result normal?

YES >> Headlamp (LO) circuit is normal.
NO >> Refer to EXL-115, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000011509756

1.CHECK HEADLAMP (LO) FUSE

1. Turn ignition 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 >> GO TO 2.
NO >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.

2.CHECK HEADLAMP (LO) POWER SUPPLY

With CONSULT
1. Turn ignition switch ON.
2. Select “EXTERNAL LAMPS” in “Active Test” mode of “IPDM E/R” using CONSULT.
3. With operating the test items, check voltage between IPDM E/R harness connector and ground.

+			-	Test item		Voltage
IPDM E/R						
Connector		Terminal				
RH	E15	52	Ground	EXTERNAL LAMPS	Lo	9 – 16 V
					Off	0 – 1 V
LH		51			Lo	9 – 16 V
					Off	0 – 1 V

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace IPDM E/R. Refer to PCS-34, "Removal and Installation".

3.CHECK HEADLAMP (LO) POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and front combination lamp 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	E119	5	Existed
LH		51	E118		

Is the inspection result normal?

YES >> Perform the LED headlamp diagnosis. Refer to EXL-117, "Diagnosis Procedure".
NO >> Repair or replace harness.

LED HEADLAMP

Diagnosis Procedure

INFOID:0000000011509757

1.CHECK HEADLAMP GROUND CIRCUIT

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

Front combination lamp			—	Continuity
Connector		Terminal		
RH	E119	3	Ground	Existed
LH	E118			

Is the inspection result normal?

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

2.CHECK LED HEADLAMP

Install the normal front combination lamp to the applicable headlamp. Check that the headlamp is turned ON. Refer to EXL-74, "Work Procedure".

Is the headlamp turned ON?

YES >> Replace the corresponding front combination lamp. Refer to EXL-155, "Removal and Installation".
NO >> LED headlamp is normal.

HEADLAMP WARNING

Component Function Check

INFOID:0000000011509758

1.CHECK HEADLAMP WARNING OPERATION

1. Turn ignition switch ON.
2. Check that headlamp warning on combination meter is not displayed when lighting switch is turned 2ND.

Is the inspection result normal?

YES >> Headlamp warning is normal.
NO >> Refer to EXL-118, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000011509759

1.CHECK HEADLAMP WARNING SIGNAL CIRCUIT

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

+			-	Voltage (Approx.)
Front combination lamp				
Connector		Terminal		
RH	E119	2	Ground	12 V
LH	E118			

Is the inspection result normal?

YES >> Replace front combination lamp. Refer to EXL-155, "Removal and Installation".
NO >> GO TO 2.

2.CHECK HEADLAMP WARNING SIGNAL CIRCUIT

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

Front combination lamp			Combination meter		Continuity
Connector		Terminal	Connector	Terminal	
RH	E119	2	M34	6	Existed
LH	E118			9	

Is the inspection result normal?

YES >> Replace combination meter. Refer to MWI-88, "Removal and Installation".
NO >> Repair or replace harness.

HEADLAMP LEVELIZER CIRCUIT

Component Function Check

INFOID:0000000011509760

1.CHECK HEADLAMP LEVELIZER OPERATION

With CONSULT
1. Turn ignition switch ON.
2. Turn lighting switch 2ND.
3. Select “LEVELIZER TEST” in “Active Test” mode of “ADAPTIVE LIGHT” using CONSULT.
4. With operating the test item, check light axis operation.

Test item		Light axis operation
LEVELIZER TEST	Peak	Moves the light axis to the lowest position.
	Origin	Moves the light axis to the initial position.

Is the inspection result normal?

YES >> Headlamp levelizer circuit is normal.
NO >> Refer to EXL-119, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000011509761

1.CHECK HEADLAMP AIMING MOTOR POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect headlamp aiming motor connector.
3. Turn ignition switch ON.
4. Check voltage between headlamp aiming motor harness connector and ground.

+			-	Voltage
Headlamp aiming motor				
Connector		Terminal		
RH	E121	3	Ground	Battery voltage
LH	E120			

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector between headlamp aiming motor and fuse.

2.CHECK HEADLAMP AIMING MOTOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between headlamp aiming motor harness connector and ground.

Headlamp aiming motor			—	Continuity
Connector		Terminal		
RH	E121	2	Ground	Existed
LH	E120			

Is the inspection result normal?

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

3.CHECK AIMING MOTOR DRIVE SIGNAL

With CONSULT
1. Reconnect headlamp aiming motor connector.
2. Turn ignition switch ON.
3. Turn lighting switch 2ND.
4. Select “LEVELIZER TEST” in “Active Test” mode of “ADAPTIVE LIGHT” using CONSULT.

5. With operating the test items, check voltage between AFS control unit harness connector and ground.

+		-	Test item		Voltage (Approx.)
AFS control unit					
Connector	Terminal				
M151	22	Ground	LEVELIZER TEST	Peak	9.6 V
				Origin	2.4 V

Is the inspection result normal?

YES >> GO TO 4.
NO-1 >> Fixed at 0 V: GO TO 5.
NO-2 >> Fixed at battery voltage: GO TO 6.

4. CHECK AIMING MOTOR DRIVE SIGNAL CIRCUIT (OPEN)

1. Turn ignition switch OFF.
2. Disconnect AFS control unit connector and headlamp aiming motor connector.
3. Check continuity between AFS control unit harness connector and headlamp aiming motor harness connector.

AFS control unit			Headlamp aiming motor		Continuity
Connector		Terminal	Connector	Terminal	
RH	M151	22	E121	1	Existed
LH			E120		

Is the inspection result normal?

YES >> Replace front combination lamp. Refer to EXL-155, "Removal and Installation".
NO >> Repair or replace harness.

5. CHECK AIMING MOTOR DRIVE SIGNAL CIRCUIT (SHORT TO GROUND)

1. Turn ignition switch OFF.
2. Disconnect AFS control unit connector and headlamp aiming motor connector.
3. Check continuity between AFS control unit harness connector and ground.

AFS control unit		—	Continuity
Connector	Terminal		
M151	22	Ground	Not existed

Is the inspection result normal?

YES >> Replace AFS control unit. Refer to EXL-163, "Removal and Installation".
NO >> Repair or replace harness.

6. CHECK AIMING MOTOR DRIVE SIGNAL CIRCUIT (SHORT TO BATTERY)

1. Turn ignition switch OFF.
2. Disconnect AFS control unit connector and headlamp aiming motor connector.
3. Check voltage between AFS control unit harness connector and ground.

+		-	Voltage (Approx.)
AFS control unit			
Connector	Terminal		
M151	22	Ground	0 V

Is the inspection result normal?

YES >> Replace AFS control unit. Refer to EXL-163, "Removal and Installation".
NO >> Repair or replace harness.

PARKING LAMP CIRCUIT

Component Function Check

INFOID:0000000011509762

1.CHECK TAIL LAMP OPERATION

Check that the tail lamp is turned ON.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Check tail lamp circuit. Refer to EXL-123, "Component Function Check".

2.CHECK PARKING LAMP OPERATION

With CONSULT
1. Turn ignition switch ON.
2. Select “EXTERNAL LAMPS” in “Active Test” mode of “IPDM E/R” using CONSULT.
3. With operating the test items, check that the parking lamp is turned ON.

TAIL : Parking lamp ON
Off : Parking lamp OFF

Without CONSULT
1. Start IPDM E/R auto active test. Refer to PCS-10, "Diagnosis Description".
2. Check that the parking lamp is turned ON.

Is the inspection result normal?

YES >> Parking lamp circuit is normal.
NO >> Refer to EXL-121, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000011509763

1.CHECK PARKING LAMP POWER SUPPLY

With CONSULT
1. Turn ignition switch ON.
2. Select “EXTERNAL LAMPS” in “Active Test” mode of “IPDM E/R” using CONSULT.
3. With operating the test items, check voltage between IPDM E/R harness connector and ground.

+			-	Test item		Voltage
IPDM E/R						
Connector		Terminal				
RH	E14	37	Ground	EXTERNAL LAMPS	TAIL	9 – 16 V
					Off	0 – 1 V
LH		43			TAIL	9 – 16 V
					Off	0 – 1 V

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace IPDM E/R. Refer to PCS-34, "Removal and Installation".

2.CHECK PARKING LAMP POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and front combination lamp 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	37	E119	8	Existed
LH		43	E118		

Is the inspection result normal?

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

3. CHECK PARKING LAMP GROUND CIRCUIT

Check continuity between front combination lamp harness connector and ground.

Front combination lamp			—	Continuity
Connector		Terminal		
RH	E119	4	Ground	Existed
LH	E118			

Is the inspection result normal?

YES >> Replace the corresponding front combination lamp. Refer to EXL-155, "Removal and Installation".
NO >> Repair or replace harness.

TAIL LAMP CIRCUIT

Component Function Check

INFOID:0000000011509764

1.CHECK TAIL LAMP OPERATION

With CONSULT
1. Turn ignition switch ON.
2. Select “EXTERNAL LAMPS” in “Active Test” mode of “IPDM E/R” using CONSULT.
3. With operating the test items, check that the tail lamp is turned ON.

TAIL : Tail lamp ON
Off : Tail lamp OFF

Without CONSULT
1. Start IPDM E/R auto active test. Refer to PCS-10, "Diagnosis Description".
2. Check that the tail lamp is turned ON.

Is the inspection result normal?

YES >> Tail lamp circuit is normal.
NO >> Refer to EXL-123, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000011509765

1.CHECK FUSE

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

Unit	Location	Fuse No.	Capacity
Parking lamp RH	IPDM E/R	#47	10 A
Front side marker lamp RH			
Tail lamp RH (Body side)			
Rear side marker lamp RH			
Parking lamp LH		#46	
Front side marker lamp LH			
Tail lamp LH (Body side)			
Rear side marker lamp LH			
Tail lamp RH (Back door side)			
Tail lamp LH (Back door side)			
License plate lamp RH			
License plate lamp LH			

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.

2.CHECK TAIL LAMP POWER SUPPLY

With CONSULT
1. Turn ignition switch ON.
2. Select “EXTERNAL LAMPS” in “Active Test” mode of “IPDM E/R” using CONSULT.
3. With operating the test items, check voltage between IPDM E/R harness connector and ground.

Tail lamp (Body side)

+			-	Test item		Voltage
IPDM E/R						
Connector		Terminal				
RH	E14	38	Ground	EXTERNAL LAMPS	TAIL	9 – 16 V
					Off	0 – 1 V
LH		44			TAIL	9 – 16 V
					Off	0 – 1 V

Tail lamp (Back door side)

+		-	Test item		Voltage
IPDM E/R					
Connector	Terminal				
E14	44	Ground	EXTERNAL LAMPS	TAIL	9 – 16 V
				Off	0 – 1 V

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace IPDM E/R. Refer to PCS-34, "Removal and Installation".

3.CHECK TAIL LAMP POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and each tail lamp connector.
3. Check continuity between IPDM E/R harness connector and each tail lamp harness connector.

Tail lamp (Body side)

IPDM E/R			Rear combination lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	E14	38	B232	1	Existed
LH		44	B60		

Tail lamp (Back door side)

IPDM E/R			Tail lamp (Back door side)		Continuity
Connector		Terminal	Connector	Terminal	
RH	E14	44	D117	1	Existed
LH			D169		

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace harness.

4.CHECK TAIL LAMP GROUND CIRCUIT

Check continuity between each tail lamp harness connector and ground.

Tail lamp (Body side)

Rear combination lamp			—	Continuity
Connector		Terminal		
RH	B232	4	Ground	Existed
LH	B60			

Tail lamp (Back door side)

Tail lamp (Back door side)			—	Continuity
Connector		Terminal		
RH	D117	2	Ground	Existed
LH	D169			

Is the inspection result normal?

YES-1 >> Tail lamp (Body side): GO TO 5.
YES-2 >> Tail lamp (Back door side): GO TO 6.
NO >> Repair or replace harness.

5. CHECK TAIL LAMP (BODY SIDE) HARNESS

Check the applicable tail lamp (body side) harness.

Is the inspection result normal?

YES >> Replace the corresponding rear combination lamp (body side). Refer to EXL-166, "Removal and Installation".
NO >> Repair or replace.

6. CHECK TAIL LAMP (BACK DOOR SIDE) BULB

Check the applicable tail lamp (back door side) bulb.

Is the inspection result normal?

YES >> Check the corresponding tail lamp (back door side) bulb socket. Repair or replace if necessary.
NO >> Replace the corresponding tail lamp (back door side) bulb.

LICENSE PLATE LAMP CIRCUIT

Component Function Check

INFOID:0000000011509766

1.CHECK TAIL LAMP OPERATION

Check that the tail lamp is turned ON.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Check tail lamp circuit. Refer to EXL-123, "Component Function Check".

2.CHECK LICENSE PLATE LAMP OPERATION

With CONSULT

1. Turn ignition switch ON.
2. Select “EXTERNAL LAMPS” in “Active Test” mode of “IPDM E/R” using CONSULT.
3. With operating the test items, check that the license plate lamp is turned ON.

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

Without CONSULT

1. Start IPDM E/R auto active test. Refer to PCS-10, "Diagnosis Description".
2. Check that the license plate lamp is turned ON.

Is the inspection result normal?

YES >> License plate lamp circuit is normal.
NO >> Refer to EXL-126, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000011509767

1.CHECK LICENSE PLATE LAMP POWER SUPPLY CIRCUIT

1. Turn ignition 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	D168	1	Existed
LH			D167		

Is the inspection result normal?

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

2.CHECK LICENSE PLATE LAMP GROUND CIRCUIT

Check continuity between license plate lamp harness connector and ground.

License plate lamp			—	Continuity
Connector		Terminal		
RH	D168	2	Ground	Existed
LH	D167			

Is the inspection result normal?

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

3.CHECK LICENSE PLATE LAMP BULB

Check the applicable license plate lamp bulb.

Is the inspection result normal?

YES >> Check the corresponding license plate lamp bulb socket. Repair or replace if necessary.
NO >> Replace the corresponding license plate lamp bulb. Refer to EXL-171, "Replacement".

DAYTIME RUNNING LIGHT CIRCUIT

Component Function Check

INFOID:0000000011509768

1.CHECK DAYTIME RUNNING LIGHT OPERATION

With CONSULT
1. Select “HEAD LAMP” of “BCM” using CONSULT.
2. Select “DAYTIME RUNNING LIGHT” in “Active Test” mode.
3. With operating the test items, check that the daytime running light is turned ON.

On : Daytime running light ON
Off : Daytime running light OFF

Is the inspection result normal?

YES >> Daytime running light circuit is normal.
NO >> Refer to EXL-128, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000011509769

1.CHECK DAYTIME RUNNING LIGHT RELAY FUSES

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

Unit	Fuse No.	Capacity
Daytime running light relay [Switch side (Daytime running light RH)]	#89	10 A
Daytime running light relay [Switch side (Daytime running light LH)]	#88	
Daytime running light relay (Coil side)	#90	

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.

2.CHECK DAYTIME RUNNING LIGHT RELAY POWER SUPPLY

1. Remove daytime running light relay.
2. Check voltage between daytime running light relay harness connector and ground.

+			-	Voltage
Daytime running light relay				
Connector		Terminal		
Switch side (Daytime running light RH)	E89	6	Ground	Battery voltage
Switch side (Daytime running light LH)		3		
Coil side		1		

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check battery power supply circuit. Refer to PG-12, "Wiring Diagram - BATTERY POWER SUPPLY -".

3.CHECK DAYTIME RUNNING LIGHT RELAY

Check daytime running light relay. Refer to EXL-130, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace daytime running light relay.

4. CHECK DAYTIME RUNNING LIGHT RELAY CONTROL SIGNAL

With CONSULT
1. Install daytime running light relay.
2. Turn ignition switch ON.
3. Select “HEAD LAMP” of “BCM” using CONSULT.
4. Select “DAYTIME RUNNING LIGHT” in “Active Test” mode.
5. With operating the test item, check voltage between IPDM E/R harness connector and ground.

+		-	Test item		Voltage
IPDM E/R					
Connector	Terminal				
E13	28	Ground	DAYTIME RUNNING LIGHT	On	0 – 1 V
				Off	9 – 16 V

Is the inspection result normal?

YES >> GO TO 7.
NO-1 >> Fixed at 0 – 1 V: GO TO 6.
NO-2 >> Fixed at 9 – 16 V: GO TO 5.

5. CHECK DAYTIME RUNNING LIGHT REQUEST SIGNAL

With CONSULT
1. Select “DTRL REQ” in “Data Monitor” mode of “IPDM E/R” using CONSULT.
2. With operating the daytime running light ON condition, check the monitor status.

Monitor item	Condition		Monitor status
DTRL REQ	Daytime running light	ON condition	On
		OFF condition	Off

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-34, "Removal and Installation".
NO >> Replace BCM. Refer to BCS-95, "Removal and Installation".

6. CHECK DAYTIME RUNNING LIGHT RELAY CONTROL SIGNAL CIRCUIT

1. Turn ignition switch OFF.
2. Remove daytime running light relay.
3. Disconnect IPDM E/R connector.
4. Check continuity between daytime running light relay harness connector and IPDM E/R harness connector.

Daytime running light relay		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
E89	2	E13	28	Existed

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-34, "Removal and Installation".
NO >> Repair or replace harness.

7. CHECK DAYTIME RUNNING LIGHT POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Remove daytime running light relay.
3. Disconnect front combination lamp connector.
4. Check continuity between daytime running light relay harness connector and front combination lamp harness connector.

Daytime running light relay			Front combination lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	E89	7	E119	1	Existed
LH		5	E118		

Is the inspection result normal?

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

8.CHECK DAYTIME RUNNING LIGHT GROUND CIRCUIT

Check continuity between front combination lamp harness connector and ground.

Front combination lamp			—	Continuity
Connector		Terminal		
RH	E119	4	Ground	Existed
LH	E118			

Is the inspection result normal?

YES >> Replace the corresponding front combination lamp. Refer to EXL-155, "Removal and Installation".
NO >> Repair or replace harness.

Component Inspection

INFOID:0000000011509770

1.CHECK DAYTIME RUNNING LIGHT RELAY

1. Turn ignition switch OFF.
2. Remove daytime running light relay.
3. Apply battery voltage to daytime running light relay between terminals 1 and 2.
4. Check continuity of daytime running light relay terminals.

Daytime running light relay		Condition		Continuity
Terminal				
6	7	Battery voltage	Apply	Existed
			Not apply	Not existed
3	5		Apply	Existed
			Not apply	Not existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace daytime running light relay.

FRONT FOG LAMP CIRCUIT

Component Function Check

INFOID:0000000011509771

1.CHECK FRONT FOG LAMP OPERATION

With CONSULT
1. Turn ignition switch ON.
2. Select “EXTERNAL LAMPS” in “Active Test” mode of “IPDM E/R” using CONSULT.
3. With operating the test items, check that the front fog lamp is turned ON.

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

Without CONSULT
1. Start IPDM E/R auto active test. Refer to PCS-10, "Diagnosis Description".
2. Check that the front fog lamp is turned ON.

Is the measurement normal?

YES >> Front fog lamp circuit is normal.
NO >> Refer to EXL-131, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000011509772

1.CHECK FRONT FOG LAMP FUSE

1. Turn ignition switch OFF.
2. Check that the following fuses are 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 >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.

2.CHECK FRONT FOG LAMP POWER SUPPLY

With CONSULT
1. Turn ignition switch ON.
2. Select “EXTERNAL LAMPS” in “Active Test” mode of “IPDM E/R” using CONSULT.
3. With operating the test items, check the voltage between IPDM E/R harness connector and ground.

+			-	Test item		Voltage
IPDM E/R						
Connector		Terminal				
RH	E12	19	Ground	EXTERNAL LAMPS	Fog	9 – 16 V
					Off	0 – 1 V
LH		20			Fog	9 – 16 V
					Off	0 – 1 V

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace IPDM E/R. Refer to PCS-34, "Removal and Installation".

3.CHECK FRONT FOG LAMP POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and front fog lamp 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 4.
NO >> Repair or replace harness.

4. CHECK FRONT FOG LAMP GROUND CIRCUIT

Check continuity between front fog lamp harness connector and ground.

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

Is the inspection result normal?

YES >> Replace the corresponding front fog lamp. Refer to EXL-158, "Removal and Installation".
NO >> Repair or replace harness.

TURN SIGNAL LAMP CIRCUIT

Component Function Check

INFOID:0000000011509775

1.CHECK TURN SIGNAL LAMP OPERATION

With CONSULT
1. Turn ignition switch ON.
2. Select “FLASHER” of “BCM” using CONSULT.
3. Select “FLASHER” in “Active Test” mode.
4. With operating the test items, check that the turn signal lamps is turned ON.

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

Is the inspection result normal?

YES >> Turn signal lamp circuit is normal.
NO >> Refer to EXL-133, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000011509776

1.CHECK TURN SIGNAL LAMP POWER SUPPLY

With CONSULT
1. Turn ignition switch OFF.
2. Disconnect the following connectors.
- Front turn signal lamp
- Door mirror
- Rear combination lamp
3. Turn ignition switch ON.
4. Select “FLASHER” of “BCM” using CONSULT.
5. Select “FLASHER” in “Active Test” mode.
6. With operating the test items, check voltage between BCM harness connector and ground.

Front turn signal lamp

+			-	Test item		Voltage
BCM						
Connector		Terminal				
RH	M68	19	Ground	FLASHER	RH	9 – 16 V
					Off	0 V
LH		20			LH	9 – 16 V
					Off	0 V

Side turn signal lamp / Rear turn signal lamp

+			-	Test item		Voltage
BCM						
Connector		Terminal				
RH	M70	61	Ground	FLASHER	RH	9 – 16 V
					Off	0 V
LH		60			LH	9 – 16 V
					Off	0 V

Is the inspection result normal?

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

2.CHECK TURN SIGNAL LAMP POWER SUPPLY CIRCUIT (SHORT)

1. Turn ignition switch OFF.
2. Disconnect BCM connector.
3. Check continuity between BCM harness connector and ground.

Front turn signal lamp

BCM			—	Continuity
Connector		Terminal		
RH	M68	19	Ground	Not existed
LH		20		

Side turn signal lamp / Rear turn signal lamp

BCM			—	Continuity
Connector		Terminal		
RH	M70	61	Ground	Not existed
LH		60		

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-95, "Removal and Installation".
NO >> Repair or replace harness.

3.CHECK TURN SIGNAL LAMP POWER SUPPLY CIRCUIT (OPEN)

1. Turn ignition switch OFF.
2. Disconnect BCM connector.
3. Check continuity between BCM harness connector and each turn signal lamp harness connector.

Front turn signal lamp

BCM			Front turn signal lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	M68	19	E215	1	Existed
LH		20	E214		

Side turn signal lamp

BCM			Door mirror		Continuity
Connector		Terminal	Connector	Terminal	
RH	M70	61	D23	20	Existed
LH		60	D3		

Rear turn signal lamp

BCM			Rear combination lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	M70	61	B232	3	Existed
LH		60	B60		

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace harness.

4.CHECK TURN SIGNAL LAMP GROUND CIRCUIT

Check continuity between each turn signal lamp harness connector and ground.

Front turn signal lamp

Front turn signal lamp			—	Continuity
Connector		Terminal		
RH	E215	2	Ground	Existed
LH	E214			

Side turn signal lamp

Door mirror		Terminal	—	Continuity
Connector				
RH	D23	19	Ground	Existed
LH	D3			

Rear turn signal lamp

Rear combination lamp		Terminal	—	Continuity
Connector				
RH	B232	4	Ground	Existed
LH	B60			

Is the inspection result normal?

YES-1 >> Front turn signal lamp: Replace the corresponding front turn signal lamp. Refer to EXL-157, "Removal and Installation".

YES-2 >> Side turn signal lamp: Replace the corresponding side turn signal lamp. Refer to EXL-159, "Removal and Installation".

YES-3 >> Rear turn signal lamp: GO TO 5.

NO >> Repair or replace harness.

5. CHECK REAR TURN SIGNAL LAMP BULB

Check the applicable rear turn signal lamp bulb.

Is the inspection result normal?

YES >> Check the corresponding rear turn signal lamp bulb socket and harness. Repair or replace if necessary.

NO >> Replace the corresponding rear turn signal lamp bulb.

OPTICAL SENSOR

Component Function Check

INFOID:0000000011509777

1.CHECK OPTICAL SENSOR SIGNAL

With CONSULT
1. Turn ignition switch ON.
2. Select “HEAD LAMP” of “BCM” using CONSULT.
3. Select “OPTI SEN (DTCT)” in “Data Monitor” mode.
4. Turn lighting switch AUTO.
5. With the optical sensor illuminating, check the monitor status.

Monitor item	Condition		Voltage (Approx.)
OPTI SEN (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-136, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000011509778

1.CHECK OPTICAL SENSOR POWER SUPPLY

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

+		-	Voltage
Optical sensor			
Connector	Terminal		
M17	1	Ground	4.65 – 5.5 V

Is the inspection result normal?

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

2.CHECK OPTICAL SENSOR GROUND

Check voltage between optical sensor harness connector and ground.

+		-	Voltage
Optical sensor			
Connector	Terminal		
M17	3	Ground	0 V

Is the inspection result normal?

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

3.CHECK OPTICAL SENSOR SIGNAL

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

+		-	Condition		Voltage (Approx.)
Optical sensor					
Connector	Terminal				
M17	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 optical sensor. Refer to EXL-160, "Removal and Installation".

4. CHECK OPTICAL SENSOR POWER SUPPLY CIRCUIT (OPEN)

1. Turn ignition 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	
M17	1	M68	17	Existed

Is the inspection result normal?

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

5. CHECK OPTICAL SENSOR POWER SUPPLY CIRCUIT (SHORT)

Check continuity between optical sensor harness connector and ground.

Optical sensor		—	Continuity
Connector	Terminal		
M17	1	Ground	Not existed

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-95, "Removal and Installation".
NO >> Repair or replace harness.

6. CHECK OPTICAL SENSOR GROUND CIRCUIT

1. Turn ignition 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	
M17	3	M68	18	Existed

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-95, "Removal and Installation".
NO >> Repair or replace harness.

7. CHECK OPTICAL SENSOR SIGNAL CIRCUIT (OPEN)

1. Turn ignition 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	
M17	2	M68	14	Existed

Is the inspection result normal?

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

8. CHECK OPTICAL SENSOR SIGNAL CIRCUIT (SHORT)

Check continuity between optical sensor harness connector and ground.

Optical sensor		—	Continuity
Connector	Terminal		
M17	2	Ground	Not existed

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-95, "Removal and Installation".
NO >> Repair or replace harness.

HAZARD SWITCH

Component Function Check

INFOID:0000000011509781

1.CHECK HAZARD SWITCH SIGNAL

With CONSULT
1. Turn ignition switch ON.
2. Select “FLASHER” of “BCM” using CONSULT.
3. Select “HAZARD SW” in “Data Monitor” mode.
4. 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-139, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000011509782

1.CHECK HAZARD SWITCH SIGNAL

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

+		-	Voltage
Hazard switch			
Connector	Terminal		
M45	2	Ground	9 – 16 V

Is the inspection result normal?

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

2.CHECK HAZARD SWITCH SIGNAL CIRCUIT (OPEN)

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 CIRCUIT (SHORT)

Check continuity between hazard switch harness connector and ground.

Hazard switch		—	Continuity
Connector	Terminal		
M45	2	Ground	Not existed

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-95, "Removal and Installation".

NO >> Repair or replace harness.

4. CHECK HAZARD SWITCH GROUND CIRCUIT

Check continuity between hazard switch harness connector and ground.

Hazard switch		—	Continuity
Connector	Terminal		
M45	1	Ground	Existed

Is the inspection result normal?

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

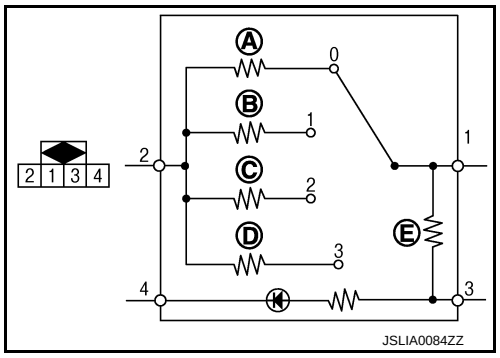
HEADLAMP AIMING SWITCH

Component Inspection

INFOID:0000000011509842

1.CHECK HEADLAMP AIMING SWITCH

1. Turn ignition switch OFF.
2. Remove headlamp aiming switch.
3. Check resistance among each headlamp aiming switch terminals.



Headlamp aiming switch		Condition		Resistance (Approx.)
Terminal				
1	2	Switch position	0	Ⓐ: 100 Ω
			1	Ⓑ: 165 Ω
			2	Ⓒ: 249 Ω
			3	Ⓓ: 365 Ω
	3		—	Ⓔ: 390 Ω

Is the inspection result normal?

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

SYMPTOM DIAGNOSIS

EXTERIOR LIGHTING SYSTEM SYMPTOMS

Symptom Table

INFOID:0000000011509783

NOTE:
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 • Headlamp (HI) power supply circuit • Front combination lamp - LED [Headlamp (HI)] - LED headlamp control module - Harness • IPDM E/R	Headlamp (HI) circuit Refer to EXL-113, "Component Function Check".
	Both sides	**Symptom diagnosis** "BOTH SIDE HEADLAMPS (HI) ARE NOT TURNED ON" Refer to EXL-146, "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 "HEAD LAMP"
Headlamp (LO) is not turned ON	One side	• Fuse • Headlamp (LO) power supply circuit • Front combination lamp - LED [Headlamp (LO)] - LED headlamp control module - Harness • IPDM E/R	Headlamp (LO) circuit Refer to EXL-115, "Component Function Check".
	Both sides	**Symptom diagnosis** "BOTH SIDE HEADLAMPS (LO) ARE NOT TURNED ON" Refer to EXL-147, "Diagnosis Procedure".	
Headlamp (HI) and (LO) is not turned ON		• Headlamp ground circuit • Front combination lamp - LED headlamp control module - Harness	LED headlamp Refer to EXL-117, "Diagnosis Procedure".
Headlamp warning remains ON [Headlamp (LO) is turned ON]		• Headlamp warning signal circuit • Front combination lamp - LED headlamp control module - Harness • Combination meter	Headlamp warning Refer to EXL-118, "Component Function Check".
Each lamp is not turned ON/OFF with lighting switch AUTO		• Combination switch input/output signal circuit • Combination switch • BCM	Combination switch Refer to BCS-93, "Symptom Table".
		• Optical sensor power supply/ground/signal circuit • Optical sensor • BCM	Optical sensor Refer to EXL-136, "Component Function Check".
Parking lamp is not turned ON		• Parking lamp power supply/ground circuit • Front combination lamp - LED (Parking lamp) - Control circuit - Harness • IPDM E/R	Parking lamp circuit Refer to EXL-121, "Component Function Check".

Symptom		Possible cause	Inspection item
Front side marker lamp is not turned ON (Parking lamp is turned ON)		• Front combination lamp - LED (Side marker lamp) - Control circuit - Harness	Replace front combination lamp Refer to EXL-155, "Removal and Installation".
Rear side marker lamp is not turned ON [Tail lamp (body side) is turned ON]		• Rear combination lamp - LED (Side marker lamp) - Harness	Replace rear combination lamp Refer to EXL-166, "Removal and Installation".
Tail lamp is not turned ON	Body side	• Fuse • Tail lamp power supply/ground circuit • Rear combination lamp - LED (Stop lamp / Tail lamp) • Tail lamp harness • IPDM E/R	Tail lamp circuit Refer to EXL-123, "Component Function Check".
	Back door side	• Fuse • Tail lamp power supply/ground circuit • Tail lamp (back door side) bulb • Tail lamp (back door side) bulb socket • IPDM E/R	
License plate lamp is not turned ON		• License plate lamp power supply/ground circuit • License plate lamp bulb • License plate lamp bulb socket	License plate lamp circuit Refer to EXL-126, "Component Function Check".
Parking lamp, license plate lamp, side marker lamp and tail lamp are not turned ON		**Symptom diagnosis** "PARKING, LICENSE PLATE, SIDE MARKER AND TAIL LAMPS ARE NOT TURNED ON" Refer to EXL-148, "Diagnosis Procedure".	
Position lamp indicator lamp is not turned ON (Parking lamp, license plate lamp, side marker lamp and tail lamp are turned ON)		Combination meter	• Combination meter Data monitor "LIGHT IND" • BCM (HEAD LAMP) Active test "TAIL LAMP"
Daytime running light is not turned ON		• Fuse • Daytime running light relay power supply/control signal circuit • Daytime running light relay • Daytime running light power supply/ground circuit • Front combination lamp - LED (Daytime running light) - Control circuit - Harness • IPDM E/R • BCM • ECM • Combination meter	• Daytime running light circuit Refer to EXL-128, "Component Function Check". • BCM (HEAD LAMP) Data monitor "ENGINE STATE" • Combination meter Data monitor "PKB SW"
Front fog lamp is not turned ON	One side	• Fuse • Front fog lamp power supply/ground circuit • Front fog lamp • IPDM E/R	Front fog lamp circuit Refer to EXL-131, "Component Function Check".
	Both sides	**Symptom diagnosis** "BOTH SIDE FRONT FOG LAMPS ARE NOT TURNED ON" Refer to EXL-149, "Diagnosis Procedure".	
Front fog lamp indicator lamp 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"

Symptom		Possible cause	Inspection item
Turn signal lamp does not blink	Indicator lamp is normal (Applicable side performs high flasher activation)	• Front turn signal lamp - Front turn signal lamp power supply/ground circuit - Front turn signal lamp - BCM • Side turn signal lamp - Side turn signal lamp power supply/ground circuit - Side turn signal lamp - BCM • Rear turn signal lamp - Rear turn signal lamp power supply/ground circuit - Rear turn signal lamp bulb - Rear turn signal lamp bulb socket/harness - BCM	Turn signal lamp circuit Refer to EXL-133, "Component Function Check".
	Indicator lamp is included	• Combination switch input/output signal circuit • Combination switch • BCM	Combination switch Refer to BCS-93, "Symptom Table".
Turn signal indicator lamp does not blink (Turn signal lamp is normal)	One side	Combination meter	—
	Both sides (Always)	• Turn indicator signal • BCM • Combination meter	• Combination meter Data monitor “TURN IND” • BCM (FLASHER) Active test “FLASHER”
	Both sides (Only when activating hazard warning lamp with ignition switch OFF)	• Combination meter power supply/ground circuit • Combination meter	Combination meter Power supply and ground circuit Refer to MWI-67, "COMBINATION METER : Diagnosis Procedure".
• Hazard warning lamp does not activate (Turn signal is normal) • Hazard warning lamp continues activating		• Hazard switch signal/ground circuit • Hazard switch • BCM	Hazard switch Refer to EXL-139, "Component Function Check".
Headlamp auto aiming does not activate (AFS is normal)		• Headlamp aiming motor power supply/ground/drive signal circuit • Front combination lamp (Headlamp aiming motor) • AFS control unit	Headlamp levelizer circuit Refer to EXL-119, "Component Function Check".

NORMAL OPERATING CONDITION

Description

INFOID:0000000011509784

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.

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 causes for the control difference. This is normal.

HIGH BEAM ASSIST SYSTEM

When driving while using the high beam assist system, the headlamp beam may not switch or the beam switching timing may vary according to the ambient environment (the condition of the vehicle ahead, the condition of the road, the position of the vehicle, etc.).This is due to control differences and is not a malfunction.

BOTH SIDE HEADLAMPS (HI) ARE NOT TURNED ON

Description

INFOID:0000000011509785

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

Diagnosis Procedure

INFOID:0000000011509786

1.COMBINATION SWITCH INSPECTION

Check combination switch. Refer to BCS-93, "Symptom Table".

Is the inspection result normal?

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

2.CHECK HIGH BEAM REQUEST SIGNAL

With CONSULT

1. Turn ignition switch ON.
2. Select “HL HI REQ” in “Data Monitor” mode of “IPDM E/R” using CONSULT.
3. 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 >> Replace IPDM E/R. Refer to PCS-34, "Removal and Installation".
NO >> Replace BCM. Refer to BCS-95, "Removal and Installation".

BOTH SIDE HEADLAMPS (LO) ARE NOT TURNED ON

Description

INFOID:0000000011509787

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

Diagnosis Procedure

INFOID:0000000011509788

1.COMBINATION SWITCH INSPECTION

Check combination switch. Refer to BCS-93, "Symptom Table".

Is the inspection result normal?

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

2.CHECK LOW BEAM REQUEST SIGNAL

With CONSULT

1. Turn ignition switch ON.
2. Select “HL LO REQ” in “Data Monitor” mode of “IPDM E/R” using CONSULT.
3. 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 >> Replace IPDM E/R. Refer to PCS-34, "Removal and Installation".
NO >> Replace BCM. Refer to BCS-95, "Removal and Installation".

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

Description

INFOID:0000000011509789

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

Diagnosis Procedure

INFOID:0000000011509790

1.COMBINATION SWITCH INSPECTION

Check combination switch. Refer to BCS-93, "Symptom Table".

Is the inspection result normal?

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

2.CHECK POSITION LIGHT REQUEST SIGNAL

With CONSULT

1. Select “TAIL & CLR REQ” in “Data Monitor” mode of “IPDM E/R” using CONSULT.
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. Refer to PCS-34, "Removal and Installation".
NO >> Replace BCM. Refer to BCS-95, "Removal and Installation".

BOTH SIDE FRONT FOG LAMPS ARE NOT TURNED ON

Description

INFOID:0000000011509791

Both side front fog lamps are not turned ON in any condition.

Diagnosis Procedure

INFOID:0000000011509792

1.COMBINATION SWITCH INSPECTION

Check combination switch. Refer to BCS-93, "Symptom Table".

Is the inspection result normal?

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

2.CHECK FRONT FOG LIGHT REQUEST SIGNAL

With CONSULT

1. Turn power switch ON.
2. Select “FR FOG REQ” in “Data Monitor” mode of “IPDM E/R” using CONSULT.
3. 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 1ST)	ON	On
		OFF	Off

Is the inspection result normal?

YES >> Perform the front fog lamp diagnosis. Refer to EXL-131, "Component Function Check".
NO >> Replace BCM. Refer to BCS-95, "Removal and Installation".

PERIODIC MAINTENANCE

HEADLAMP AIMING ADJUSTMENT

Description

INFOID:0000000011510089

PREPARATION BEFORE ADJUSTING

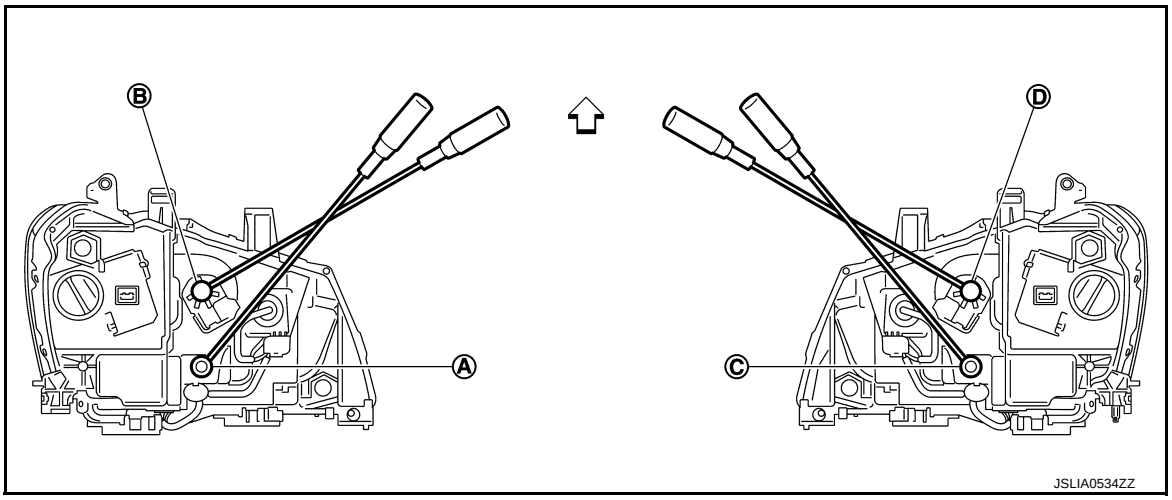
NOTE:

- 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 fuel, engine coolant and each oil.
- Maintain the unloaded vehicle condition. (Remove luggage from the passenger compartment and the luggage room.)
  NOTE:
  Do not remove the temporary tire, jack and 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 LH (INSIDE/OUTSIDE) adjustment screw
B. Headlamp LH (UP/DOWN) adjustment screw
C. Headlamp RH (INSIDE/OUTSIDE) adjustment screw
D. Headlamp RH (UP/DOWN) adjustment screw
⇦ : Vehicle center

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

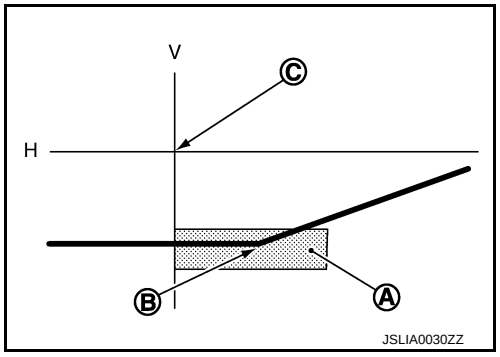
Adjustment screw		Screw driver rotation	Facing direction
D	Headlamp RH (UP/DOWN)	Clockwise	UP
		Counterclockwise	DOWN

Aiming Adjustment Procedure

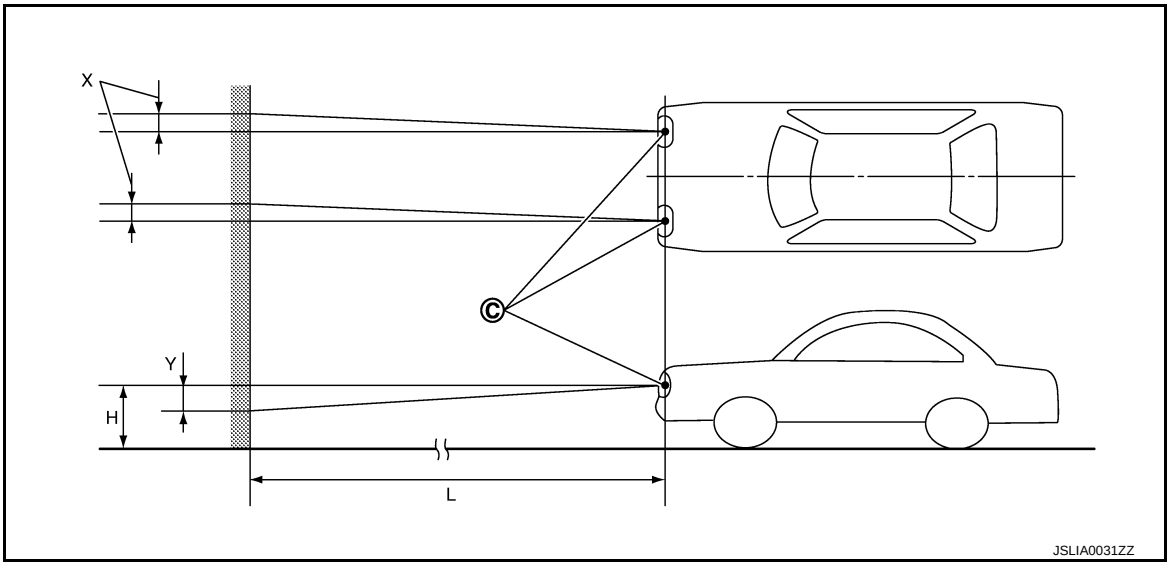
INFOID:0000000011510092

1. Place the screen.
   NOTE:
   - Stop the vehicle at the perpendicular angle to the wall.
   - Set the screen so that it is perpendicular to a level load surface.
2. Face the vehicle squarely toward the screen and make the distance between the headlamp center and the screen 10 m (32.8 ft).
3. Start the engine and illuminate the headlamp (LO).
   NOTE:
   Block light from the headlamp that is not being adjusted with a thick fabric or another object, so that it does not reach the adjustment screen.
   CAUTION:
   Do not cover lens surface with tape, etc. because it is made from plastic.
4. Use the aiming adjustment screw to adjust the elbow point projected by the low beams on the screen, so that it is within the aiming adjustment area.

Low beam distribution on the screen



A. Aiming adjustment area
B. Elbow point
C. Headlamp center
H. Horizontal center line of headlamp
V. Vertical center line of headlamp



C. Vertical center line of headlamp
H. Horizontal center line of headlamp
L. Distance from headlamp center to screen
X. Aiming adjustment area (lateral)
Y. Aiming adjustment area (Vertical)

Distance from headlamp center to screen (L) : 10 m (32.8 ft)

Unit: mm (in)

Aiming adjustment area		
Vertical direction (Y) (Lower side from headlamp center height)		Lateral direction (X) (Right side from headlamp center line)
Highest light axis	105 (4.13)	0 -100 (3.94)
Target light axis	120 (4.72)	
Lowest light axis	135 (5.31)	

FRONT FOG LAMP AIMING ADJUSTMENT

Description

INFOID:0000000011510090

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 fuel, engine 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 headlamp.
  CAUTION:
  Never use organic solvent (thinner, gasoline etc.)
- Ride alone on the driver seat.

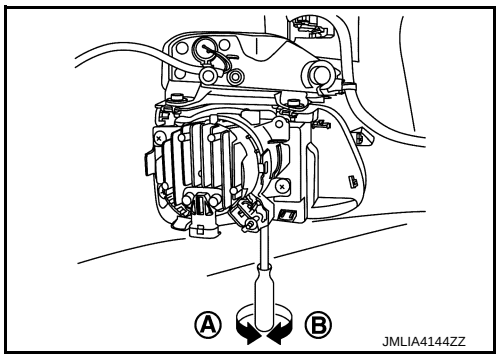
AIMING ADJUSTMENT SCREW

- 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.

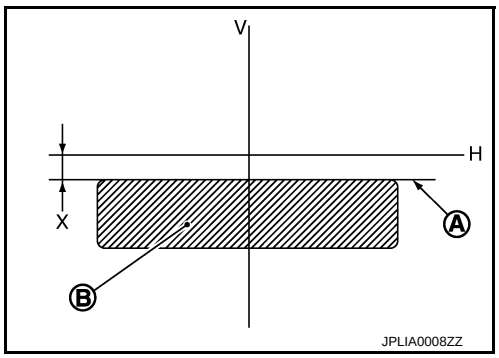


Aiming Adjustment Procedure

INFOID:0000000011510091

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 engine. 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 (5.91 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

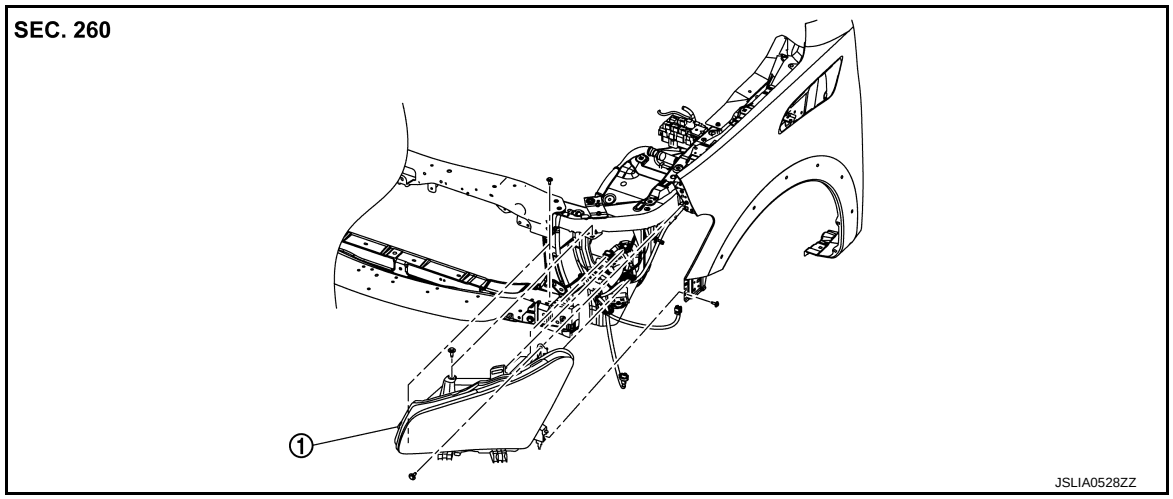
REMOVAL AND INSTALLATION

FRONT COMBINATION LAMP

Exploded View

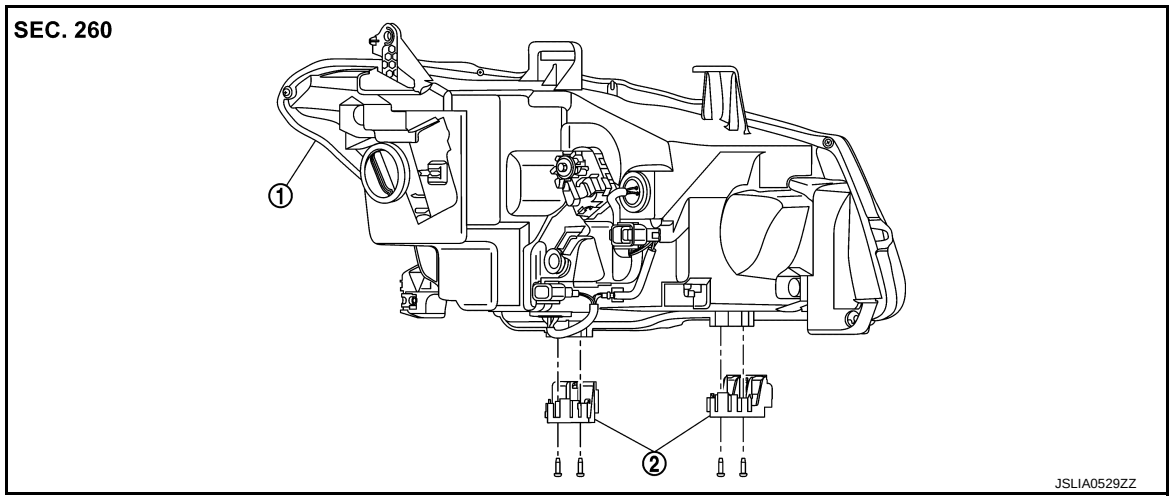
INFOID:0000000011510093

REMOVAL



1. Front combination lamp

DISASSEMBLY



1. Front combination lamp
2. Bumper bracket

Removal and Installation

INFOID:0000000011510094

REMOVAL

CAUTION:

Disconnect the battery negative terminal or remove the fuse.

1. Remove front grille. Refer to EXT-20, "Removal and Installation".
2. Remove front bumper molding. Refer to EXT-13, "Removal and Installation".
3. Remove front bumper fascia. Refer to EXT-13, "Removal and Installation".
4. Remove front combination lamp assembly mounting bolts.
5. Pull out front combination lamp assembly forward the vehicle.
6. Disconnect front combination lamp assembly harness connectors.

7. Remove front combination lamp assembly.

INSTALLATION

Install in the reverse order of removal.

NOTE:

After installation, perform aiming adjustment. Refer to EXL-151, "Aiming Adjustment Procedure".

Replacement

INFOID:0000000011510095

CAUTION:

- **Disconnect the battery negative terminal or remove power circuit fuse when performing the operation for preventing electric leakage. Refer to EXL-5, "Precautions for Removing Battery Terminal".**
- **After installing the bulb, install the bulb socket securely for watertightness.**
- **Never touch the glass of bulb directly by hand. Keep grease and other oily matters away from it. Never touch bulb by hand while it is lit or right after being turned off.**
- **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.**

HEADLAMP BULB

CAUTION:

Replacement of a single part is not possible due to the adoption of LED bulb. for replacement, replace front combination lamp as a set.

Disassembly and Assembly

INFOID:0000000011510096

DISASSEMBLY

1. Remove bumper bracket mounting screws, and then remove bumper bracket from front combination lamp housing.
2. Disconnect front combination lamp harness connectors.

ASSEMBLY

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

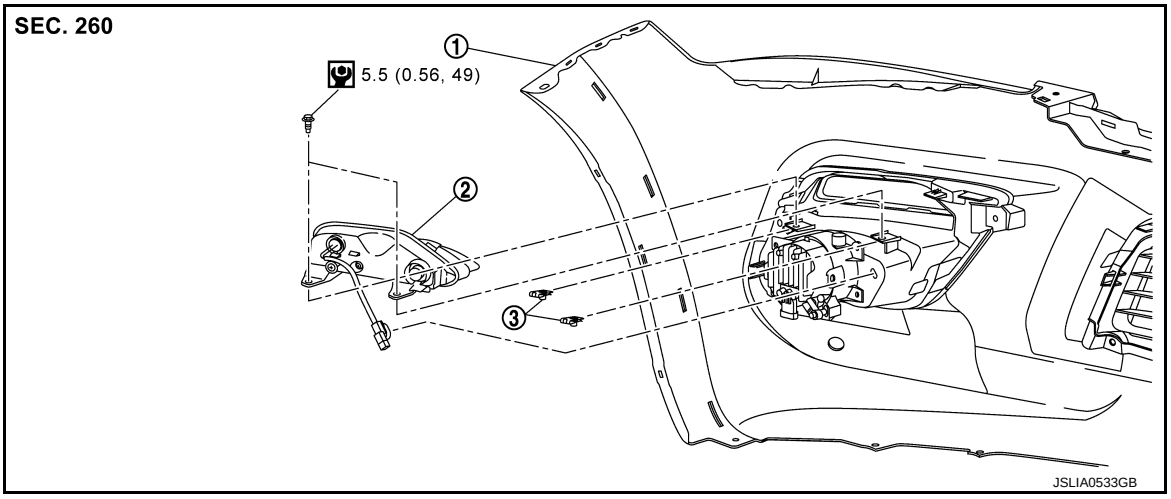
CAUTION:

- **After installation, perform aiming adjustment. Refer to EXL-151, "Aiming Adjustment Procedure".**

FRONT TURN SIGNAL LAMP ASSEMBLY

Exploded View

INFOID:0000000011510097



1. Front bumper
2. Front turn signal lamp assembly
3. U nut

: N·m (kg-m, in-lb)

Removal and Installation

INFOID:0000000011510098

REMOVAL

1. Remove front bumper fascia. Refer to EXT-13, "Removal and Installation".
2. Remove front turn signal lamp assembly mounting bolts.
3. Disconnect front turn signal lamp harness connector.
4. Remove front turn signal lamp assembly from front bumper fascia.

INSTALLATION

Install in the reverse order of removal.

Replacement

INFOID:0000000011510099

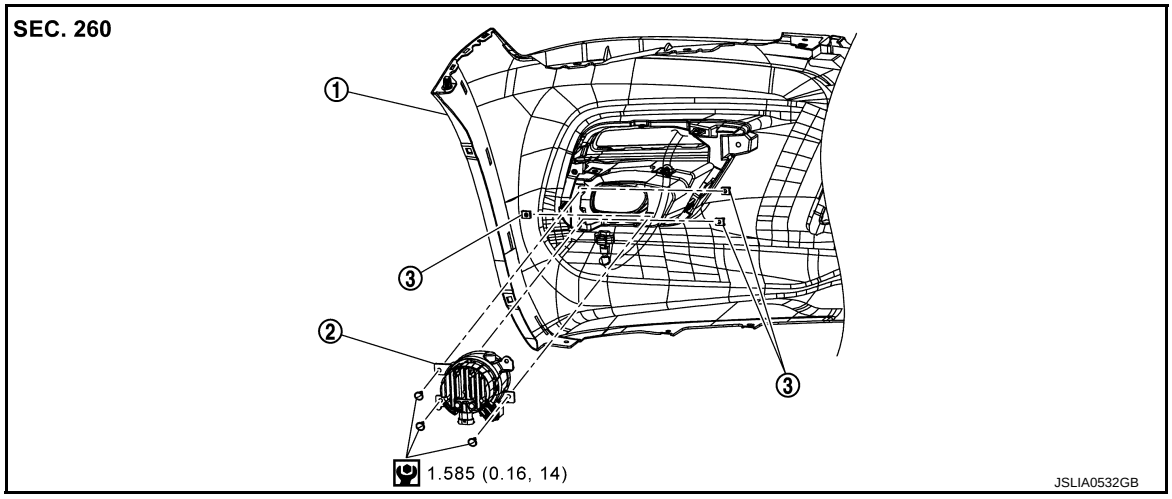
CAUTION:

Replacement of a single part is not possible due to the adoption of LED bulb. For replacement, replace front turn signal lamp assembly as a set.

FRONT FOG LAMP

Exploded View

INFOID:0000000011510100



1. Front bumper
2. Front fog lamp
3. U nut

: N·m (kg-m, in-lb)

Removal and Installation

INFOID:0000000011510101

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

REMOVAL

1. Remove front fender protector. Refer to EXT-24, "FENDER PROTECTOR : Removal and Installation".
2. Disconnect front fog lamp harness connector.
3. Remove front fog lamp fixing screws.
4. Remove front fog lamp from front bumper fascia.

INSTALLATION

Install in the reverse order of removal.

NOTE:
After installation, perform aiming adjustment. Refer to EXL-153, "Description".

Replacement

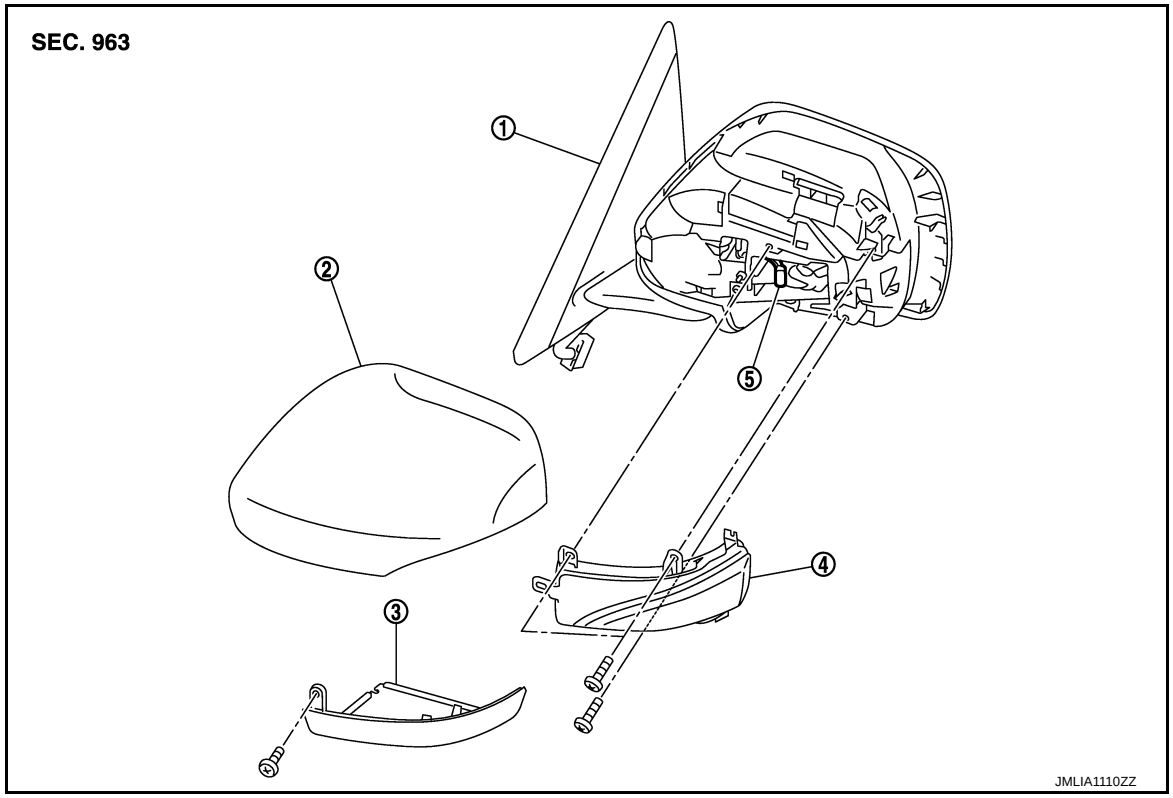
INFOID:0000000011510102

CAUTION:
Replacement of a single part is not possible due to the adoption of LED bulb. For replacement, replace front fog lamp assembly as a set.

SIDE TURN SIGNAL LAMP

Exploded View

INFOID:0000000010260896



1. Door mirror assembly
2. Door mirror cover
3. Side camera finisher
4. Side turn signal lamp housing
5. Side turn signal lamp bulb

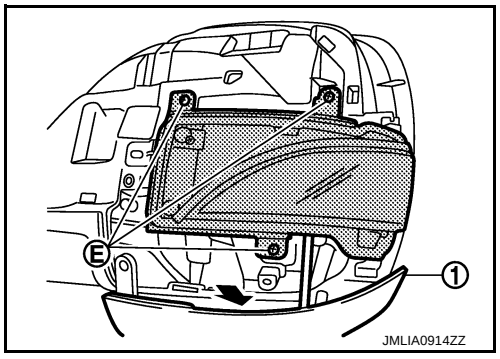
Removal and Installation

INFOID:0000000010260897

CAUTION:
Disconnect battery negative terminal or remove the fuse.

REMOVAL

1. Remove the door mirror. Refer to MIR-36, "DOOR MIRROR ASSEMBLY : Removal and Installation".
2. Remove the glass mirror. Refer to MIR-38, "GLASS MIRROR : Removal and Installation".
3. Remove the side camera finisher. Refer to MIR-36, "DOOR MIRROR ASSEMBLY : Disassembly and Assembly".
4. Remove side turn signal lamp fixing screws (E), and then remove side turn signal lamp (with side turn signal lamp models only).
   NOTE:
   Pull slightly side camera finisher (1) covering side turn signal lamp bottom screw.



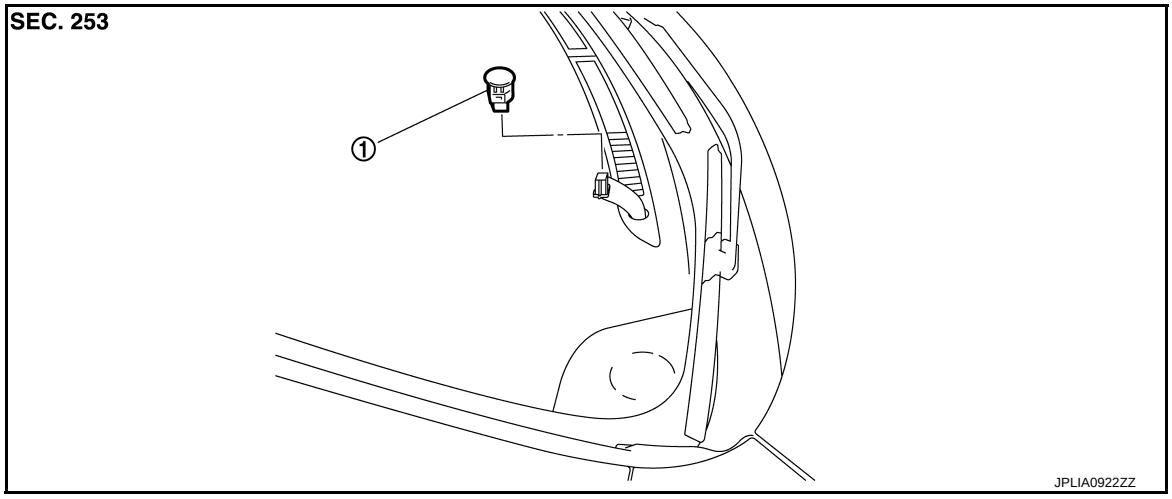
INSTALLATION

Install in the reverse order of removal.

OPTICAL SENSOR

Exploded View

INFOID:0000000010260898



1. Optical sensor

Removal and Installation

INFOID:0000000010260899

REMOVAL

1. Insert an appropriate tool between the optical sensor and the instrument upper panel. Pull out the optical sensor upward.
2. Disconnect optical sensor connector, and then remove optical sensor.

INSTALLATION

Install in the reverse order of removal.

LIGHTING & TURN SIGNAL SWITCH

Exploded View

INFOID:0000000010260900

The lighting & turn signal switch is integrated in the combination switch. BCS-96, "Removal and Installation".

HAZARD SWITCH

Exploded View

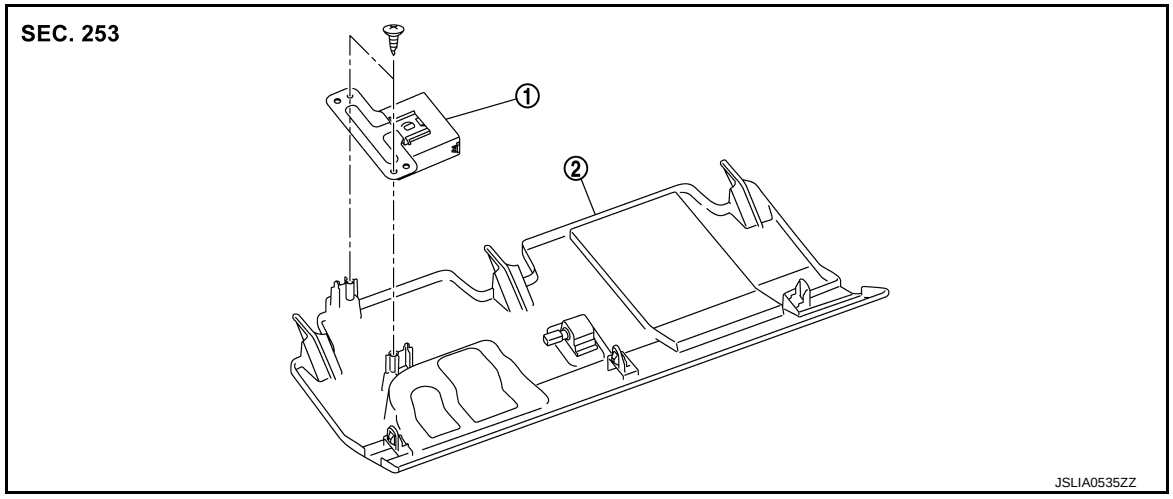
INFOID:0000000010260901

The hazard switch is integrated in the multifunction switch. Refer to AV-297, "Removal and Installation".

AFS CONTROL UNIT

Exploded View

INFOID:0000000010260902



1. AFS control unit
2. Instrument lower cover

Removal and Installation

INFOID:0000000010260903

REMOVAL

1. Remove instrument driver lower panel. Refer to IP-14, "Removal and Installation".
2. Remove AFS control unit mounting bolt.
3. Disconnect AFS control unit connector.
4. Remove AFS control unit.

INSTALLATION

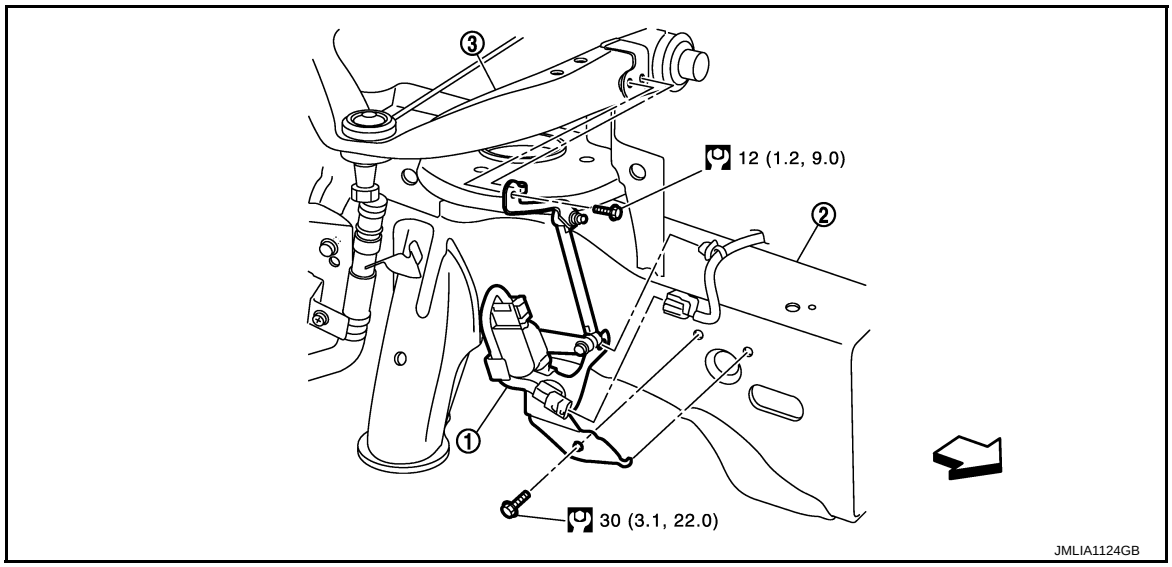
Install in the reverse order of removal.

HEIGHT SENSOR

Exploded View

INFOID:0000000010260904

FRONT HEIGHT SERSOR

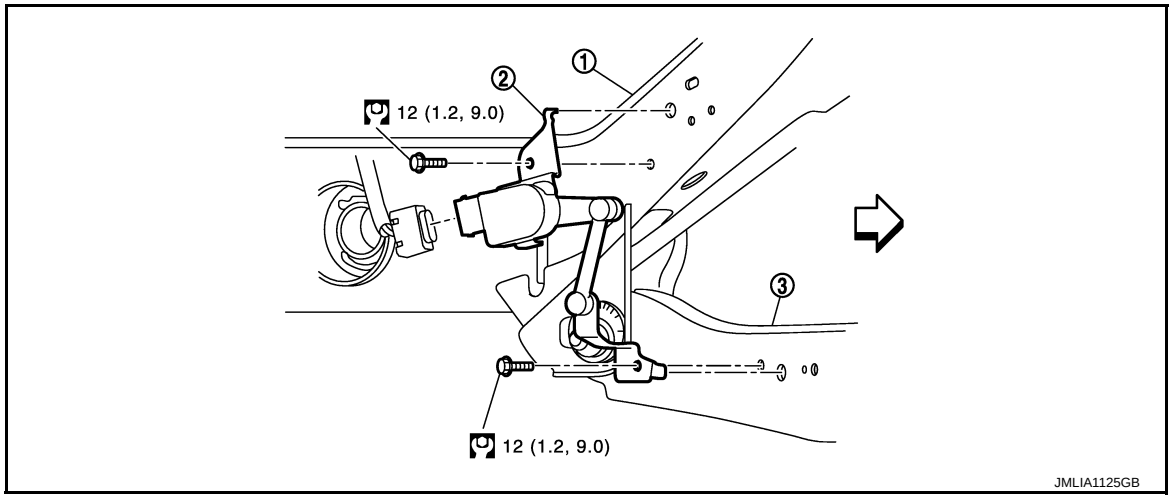


1. Front height sensor
2. Front member side RH
3. Front suspension upper link

⇦ : Vehicle front

: N·m (kg-m, ft-lb)

REAR HEIGHT SENSOR



1. Rear suspension member
2. Rear height sensor
3. Rear suspension lower link

⇦ : Vehicle front

: N·m (kg-m, ft-lb)

Removal and Installation

INFOID:0000000010260905

REMOVAL

Front height sensor

1. Disconnect height sensor connector.

2. Remove height sensor mounting nuts.
3. Remove height sensor.

Rear height sensor

1. Disconnect height sensor connector.
2. Remove height sensor mounting nuts.
3. Remove height sensor.

INSTALLATION

Install in the reverse order of removal.

CAUTION:

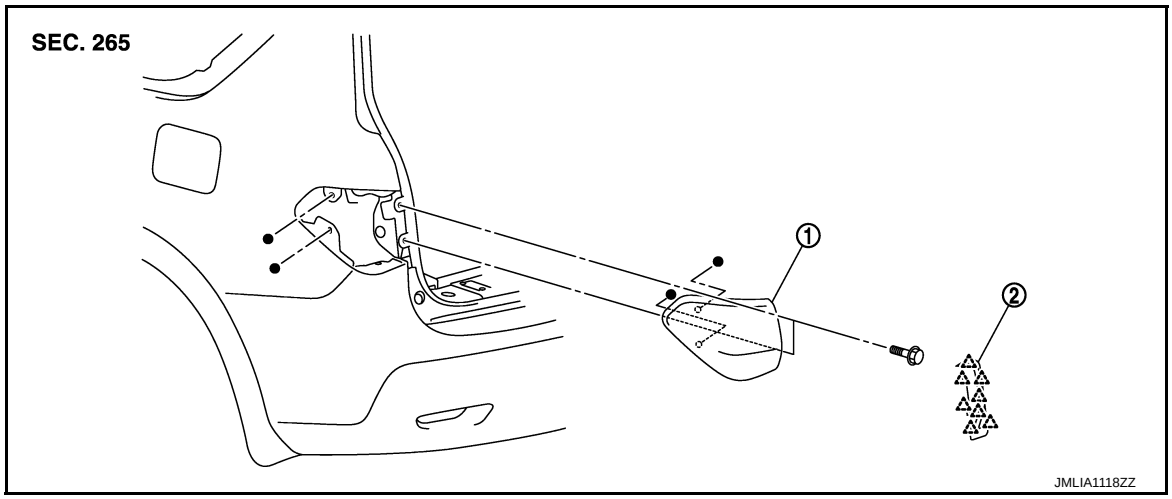
Be sure to perform “SENSOR INITIALIZE” when removing the height sensor. Refer to EXL-80, "Description".

REAR COMBINATION LAMP

Exploded View

INFOID:0000000011514725

REMOVAL

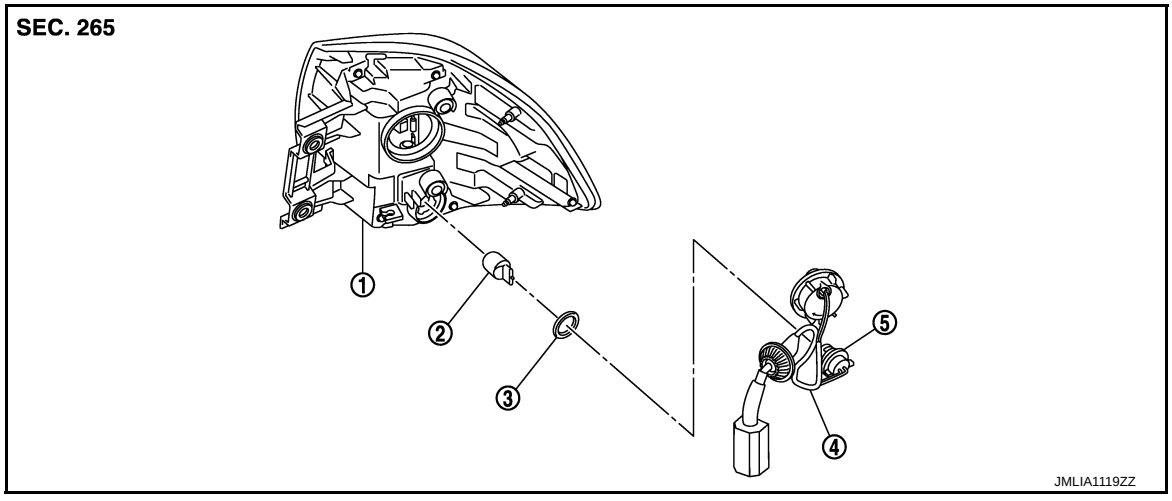


1. Rear combination lamp
2. Rear combination lamp finisher

: Pawl

● : Indicates that the part is connected at points with same symbol in actual vehicle.

DISASSEMBLY



1. Rear combination lamp
2. Rear turn signal bulb
3. Seal packing
4. Rear turn signal bulb socket
5. Rear combination lamp harness

Removal and Installation

INFOID:0000000011514726

CAUTION:
Disconnect the battery negative terminal or remove the fuse.

REMOVAL

1. Remove rear combination lamp finisher.
2. Remove rear combination lamp mounting bolts.
3. Pull rear combination lamp toward vehicle outside.
4. Disconnect rear combination lamp connector.

5. Remove rear combination lamp.

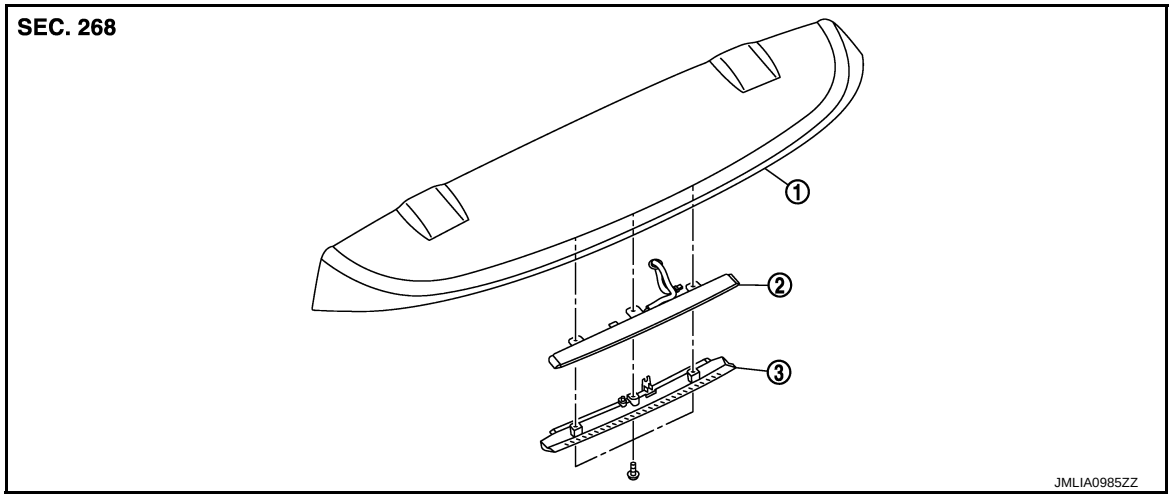
INSTALLATION

Install in the reverse order of removal.

HIGH-MOUNTED STOP LAMP

Exploded View

INFOID:0000000010260908



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

Removal and Installation

INFOID:0000000010260909

REMOVAL

1. Remove rear spoiler. Refer to EXT-42, "Removal and Installation".
2. Remove high-mounted stop lamp mounting screws.
3. Remove high-mounted stop lamp cover, and then remove high-mounted stop lamp.

INSTALLATION

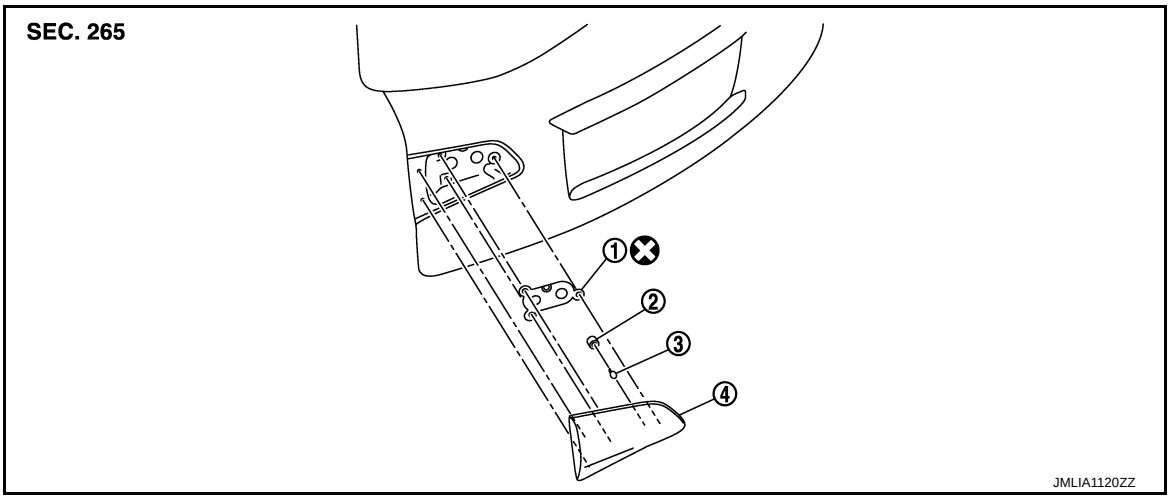
Install in the reverse order of removal.

BACK-UP LAMP

Exploded View

INFOID:0000000011514728

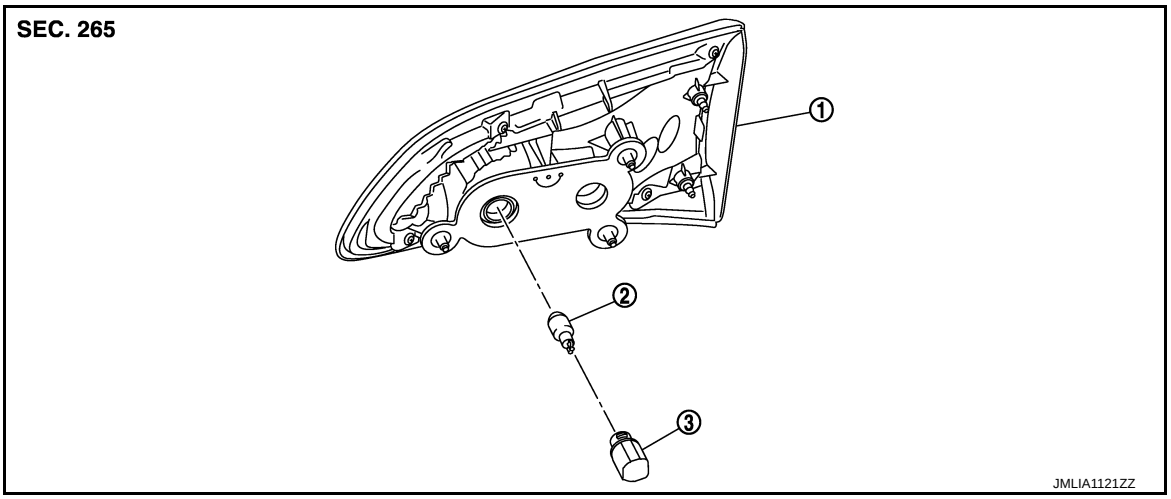
REMOVAL



1. Seal packing
2. Seal packing
3. Back-up lamp bulb socket
4. Back-up lamp bulb
5. Back-up lamp

⊗ : Always replace after every disassembly.

DISASSEMBLY



1. Back-up lamp
2. Back-up lamp bulb
3. Back-up lamp bulb socket

Removal and Installation

INFOID:0000000011514729

CAUTION:
Disconnect the battery negative terminal or remove the fuse.

REMOVAL

1. Remove lamp mask. Refer to INT-39, "Exploded View".
2. Disconnect back-up lamp connector.
3. Remove back-up lamp mounting nuts, and then remove back-up lamp.

INSTALLATION

Install in the reverse order of removal.

Replacement

INFOID:0000000011514730

CAUTION:

- **Disconnect the battery negative terminal or remove the fuse.**
- **Never touch the glass of bulb directly by hand. Keep grease and other oily matters away from it. Never touch bulb by hand while it is lit or right after being turned off.**
- **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.**

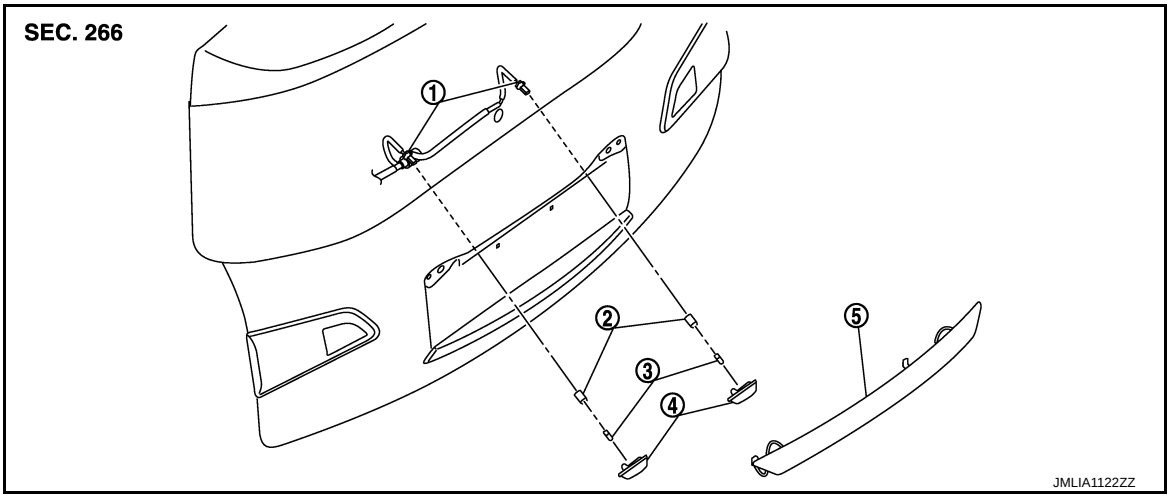
BACK-UP LAMP BULB

1. Remove lamp mask. Refer to INT-39, "Exploded View".
2. Disconnect back-up lamp connector.
3. Turn bulb socket (1) counterclockwise and unlock it.
4. Remove bulb (2) from socket.

LICENSE PLATE LAMP

Exploded View

INFOID:0000000010260913



1. License plate lamp harness
2. License plate lamp bulb socket
3. License plate lamp bulb
4. License plate lamp
5. Back door finisher center upper

Removal and Installation

INFOID:0000000010260914

CAUTION:
Disconnect the battery negative terminal or remove the fuse.

REMOVAL

1. Remove back door trim. Refer to INT-39, "Removal and Installation".
2. Disconnect license plate lamp connector.
3. Remove back door finisher center upper.
4. Remove license plate lamp while pushing a resin clip, and then remove license plate lamp.

INSTALLATION

Install in the reverse order of removal.

Replacement

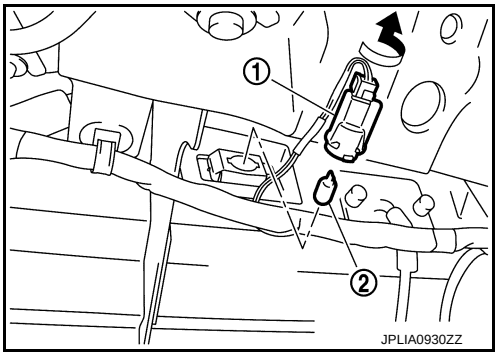
INFOID:0000000010260915

CAUTION:
- **Disconnect the battery negative terminal or remove the fuse.**
- **Never touch the glass of bulb directly by hand. Keep grease and other oily matters away from it. Never touch bulb by hand while it is lit or right after being turned off.**
- **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 back door trim. Refer to INT-39, "Removal and Installation".
2. Disconnect license plate lamp connector.

3. Turn bulb socket (1) counterclockwise and unlock it.
4. Remove bulb (2) from socket.



SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Bulb Specifications

INFOID:0000000011514724

Item		Type	Wattage (W)
Front combination lamp	Headlamp (HI)	LED	—
	Headlamp (LO)		
	Parking lamp		
	Daytime running lamp		
Front fog lamp		LED	—
Front turn signal lamp		LED	—
Side turn signal lamp		Replace as an assembly because it cannot be disassembled.	
Rear combination lamp	Stop lamp/Tail lamp	LED	—
Rear turn signal lamp		WY21W	21
Back-up lamp		W16W	16
License plate lamp		W5W	5
High-mounted stop lamp		LED	—