SECTION EXL
EXTERIOR LIGHTING SYSTEM

CONTENTS

LED HEADLAMP

PRECAUTION

PRECAUTIONS

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

INFOID:0000000009728081

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the “SRS AIR BAG” and “SEAT BELT” of this Service Manual.

WARNING:

Always observe the following items for preventing accidental activation.

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

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

WARNING:

Always observe the following items for preventing accidental activation.

- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the 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.**

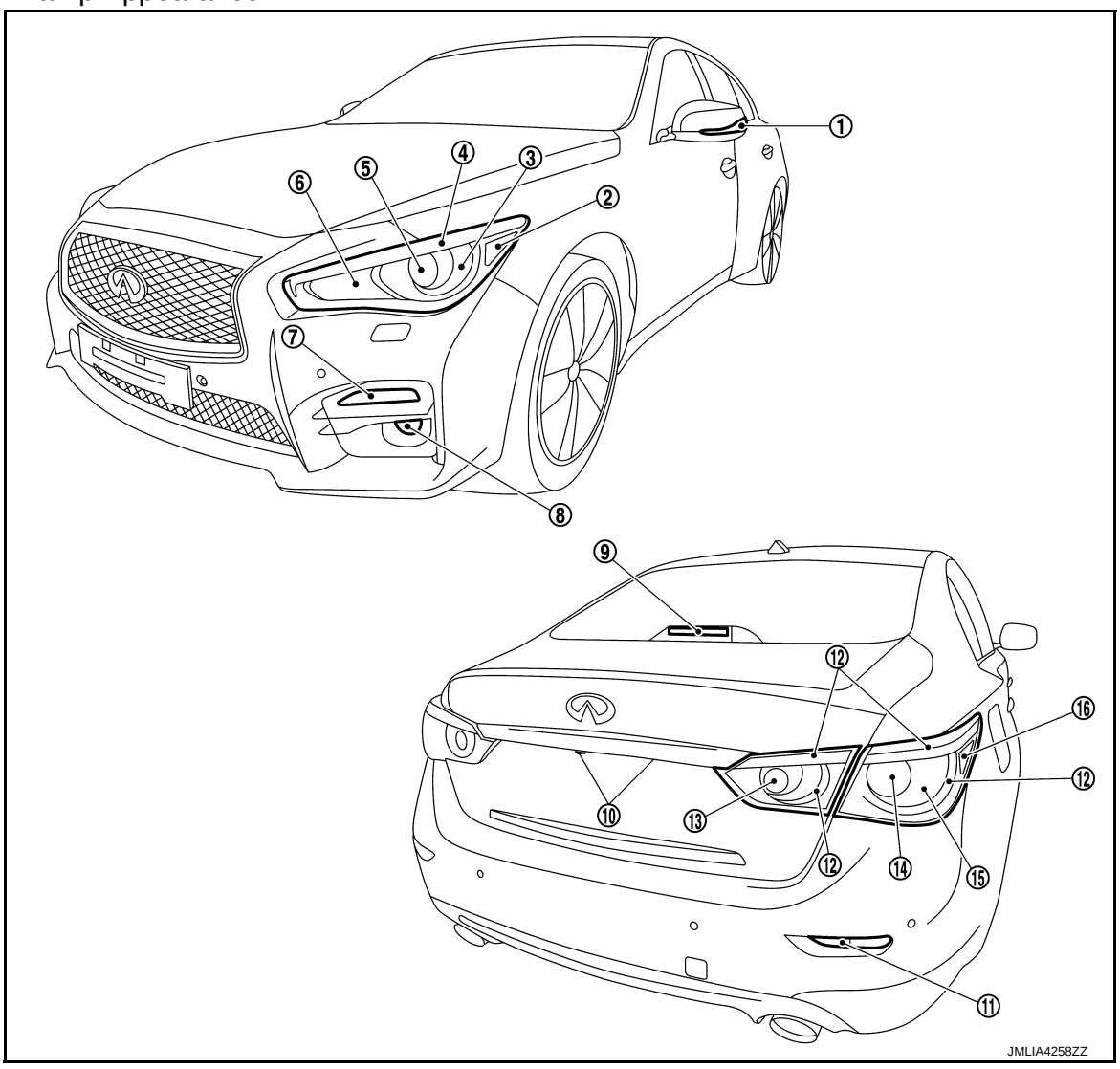
SYSTEM DESCRIPTION

COMPONENT PARTS

Exterior Lamp Appearance and Bulb Specifications

INFOID:0000000009696162

Exterior Lamp Appearance



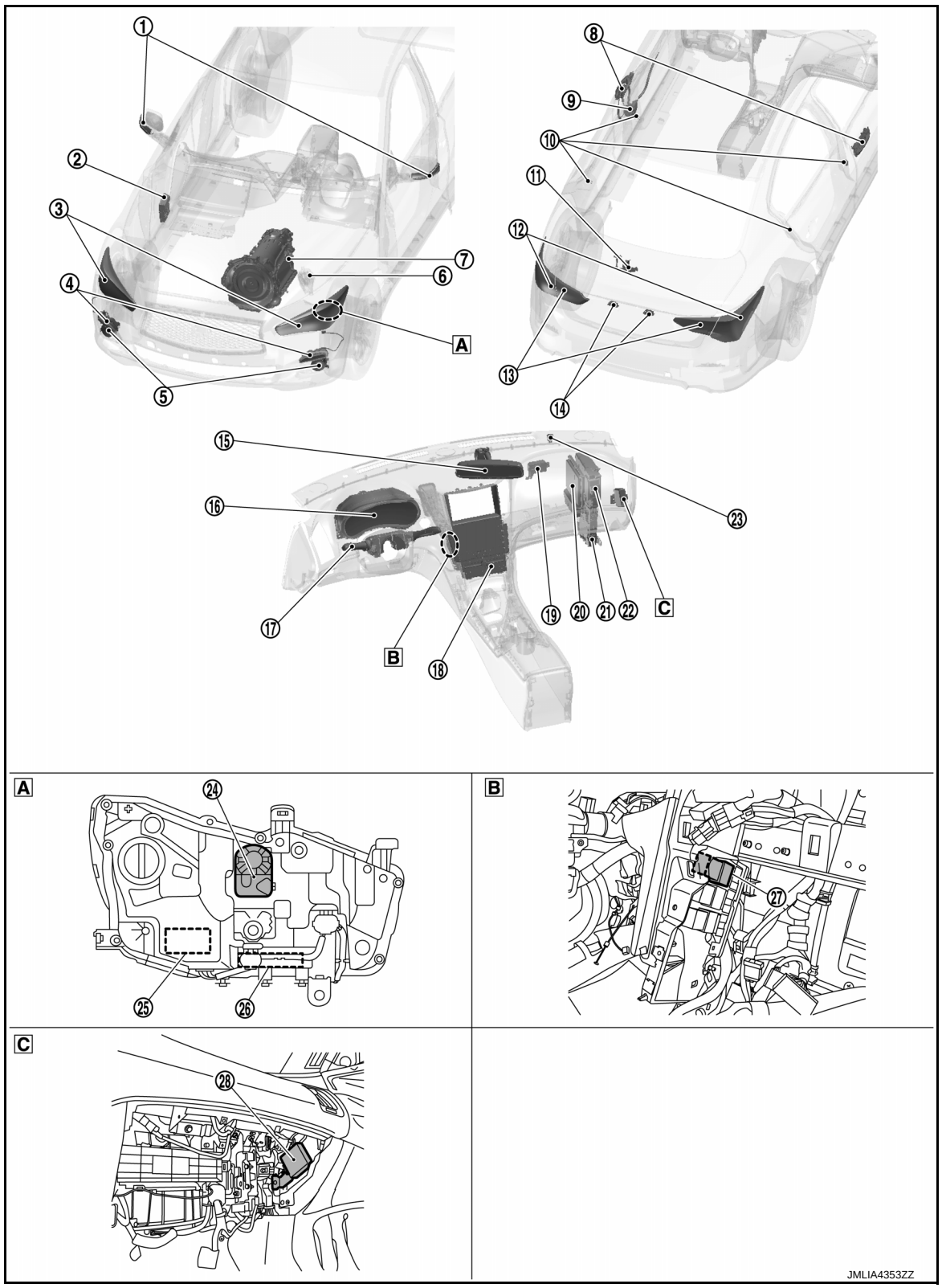
① Side turn signal lamp	② Front side marker lamp	③ Parking lamp (lower side)/ daytime running light (lower side)
④ Parking lamp (upper side)/ daytime running light (upper side)	⑤ Low beam	⑥ High beam
⑦ Front turn signal lamp	⑧ Front fog lamp	⑨ High-mounted stop lamp
⑩ License plate lamp	⑪ Rear reflex reflector	⑫ Tail lamp
⑬ Back-up lamp	⑭ Rear turn signal lamp	⑮ Stop lamp
⑯ Side reflex reflector		

Bulb Specifications

Item		Type	Wattage (W)
Front combination lamp	High beam	LED	23
	Low beam		23
	Parking lamp (lower side)/ daytime running light (lower side)		0.3/7.5
	Parking lamp (upper side)/ daytime running light (upper side)		0.3
	Front side marker lamp		0.3
Front fog lamp		LED	13.5
Front turn signal lamp		LED	10.5
Side turn signal lamp (built in door mirror)		LED	0.3
Rear combination lamp (body side)	Tail lamp	LED	1.9
	Stop lamp	LED	2.1
	Rear turn signal lamp	WY21W	21
Rear combination lamp (trunk lid side)	Tail lamp	LED	1.8
	Back-up lamp	LED	3.1
License plate lamp		W5W	5
High-mounted stop lamp		LED	2.4

Component Parts Location

INFOID:0000000009730119



A Front combination lamp (back)

B View with AV control unit or NAVI control unit removed

C View with glove box removed

No.	Component		Function
①	Side turn signal lamp		Refer to EXL-7, "Exterior Lamp Appearance and Bulb Specifications".
②	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.*1 • Refer to PCS-4, "Component Parts Location" for detailed installation location.
③	Front combination lamp	Headlamp (Low) (LED headlamp)	Refer to EXL-7, "Exterior Lamp Appearance and Bulb Specifications" and EXL-12, "FRONT COMBINATION LAMP : LED Headlamp".
		Headlamp (High) (LED headlamp)	
		Parking lamp (lower side)/daytime running light (lower side)	Refer to EXL-7, "Exterior Lamp Appearance and Bulb Specifications".
		Parking lamp (upper side)/daytime running light (upper side)	
		Side marker lamp	
④	Front turn signal lamp		Refer to EXL-7, "Exterior Lamp Appearance and Bulb Specifications".
⑤	Front fog lamp		Refer to EXL-7, "Exterior Lamp Appearance and Bulb Specifications".
⑥	Daytime running light relay		Supplies the voltage to daytime running light with the controlled by IPDM E/R.
⑦	Transmission assembly	Transmission range switch	Refer to TM-14, "A/T CONTROL SYSTEM : Transmission Range Switch".
		TCM	• Controls the back-up lamp relay and supplies voltage to the back-up lamp. • TCM transmits shift position signal to BCM and AFS control unit*1 via CAN communication. • Refer to TM-12, "A/T CONTROL SYSTEM : Component Parts Location" for detailed installation location.
⑧	Outside handle grip	Door request switch	Refer to DLK-11, "DOOR LOCK SYSTEM : Door Request Switch".
		One touch unlock sensor	Refer to DLK-13, "DOOR LOCK SYSTEM : One Touch Unlock Sensor Assembly".
⑨	Front door lock assembly (Unlock sensor)		Refer to DLK-12, "DOOR LOCK SYSTEM : Front Door Lock Assembly".
⑩	Door switch		Refer to DLK-11, "DOOR LOCK SYSTEM : Door Switch".
⑪	Height sensor*1		Refer to EXL-14, "Height Sensor".
⑫	Rear combination lamp (body side)	Stop lamp/Tail lamp	Refer to EXL-7, "Exterior Lamp Appearance and Bulb Specifications".
		Rear turn signal lamp	
⑬	Rear combination lamp (trunk lid side)	Tail lamp	Refer to EXL-7, "Exterior Lamp Appearance and Bulb Specifications".
		Back-up lamp	
⑭	License plate lamp		Refer to EXL-7, "Exterior Lamp Appearance and Bulb Specifications".
⑮	Inside mirror assembly*2	Ambient light sensor	Refer to EXL-14, "Inside Mirror Assembly".
		Image sensor	
		High beam assist control module	

No.	Component	Function
⑯	Combination meter	• Turns the following indicator lamp and warning (information display/buzzer) ON according to the request from BCM via CAN communication. - High beam indicator lamp - High beam assist indicator lamp*2 - Position lamp indicator lamp - Front fog lamp indicator lamp - Light reminder warning (information display/buzzer) • 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. • Inputs headlamp warning signal from LED headlamp control module and turns headlamp warning ON. • Turns the AFS warning ON according to the request from AFS control unit via CAN communication.*1 • Combination meter transmits vehicle speed signal to BCM, high beam assist control module*2 and AFS control unit*1 via CAN communication. • Combination meter transmits parking brake switch signal to BCM via CAN communication.
⑰	Combination switch (Lighting & turn signal switch)	Refer to BCS-8, "COMBINATION SWITCH READING SYSTEM : System Description".
⑱	Integral switch (Hazard switch)	Refer to EXL-15, "Hazard Switch".
⑲	Remote keyless entry receiver	Refer to DLK-13, "DOOR LOCK SYSTEM : Remote Keyless Entry Receiver".
⑳	ECM	• ECM transmits engine status signal to BCM via CAN communication. • ECM transmits engine speed signal to AFS control unit via CAN communication.*1 • Refer to EC-16, "ENGINE CONTROL SYSTEM : Component Parts Location" for detailed installation location.
㉑	BCM	• Detects each switch condition by the combination switch reading function. • Judges that the exterior lamps are turned ON according to the vehicle condition. • Requests the following relay ON to IPDM E/R via CAN communication. - Headlamp low relay - Headlamp high relay - Daytime running light relay - Tail lamp relay - Front fog lamp relay • Requests the following indicator lamp and warning (information display/buzzer) ON to the combination meter via CAN communication. - High beam indicator lamp - High beam assist indicator lamp*2 - Position lamp indicator lamp - Front fog lamp indicator lamp - Light reminder warning (information display/buzzer) • Judges the outside brightness from the optical sensor signal. • Judges the ON/OFF timing of exterior lamp according to the vehicle condition. • Judges the ON/OFF status of the exterior lamp according to the outside brightness and the vehicle condition. • 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.
㉒	Steering force control module*1	• Steering force control module transmits steering pinion angle signal to AFS control unit via CAN communication. • Refer to STC-35, "Component Parts Location" for detailed installation location.
㉓	Optical sensor	Refer to EXL-15, "Optical Sensor".

No.	Component		Function
㉔	Front combination lamp	Headlamp aiming motor*1	Refer to EXL-14, "FRONT COMBINATION LAMP : Headlamp Aiming Motor".
㉕		Swivel actuator*1	Refer to EXL-13, "FRONT COMBINATION LAMP : Swivel Actuator".
㉖		LED headlamp control module	Refer to EXL-12, "FRONT COMBINATION LAMP : LED Headlamp Control Module".
㉗	Back-up lamp relay		Supplies the voltage to back-up lamp with the controlled by TCM.
㉘	AFS control unit*1		Refer to EXL-14, "AFS Control Unit".

*1: With active AFS

*2: With high beam assist system

FRONT COMBINATION LAMP

FRONT COMBINATION LAMP : LED Headlamp

INFOID:0000000009759914

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.**

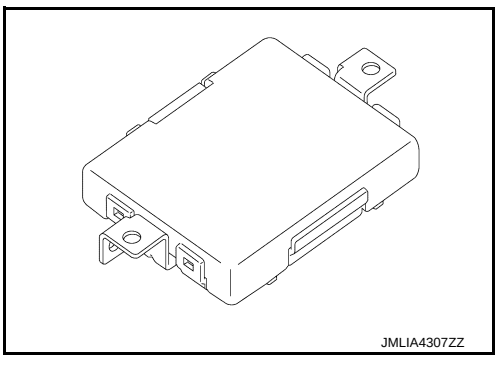
NOTE:

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

FRONT COMBINATION LAMP : LED Headlamp Control Module

INFOID:0000000009728675

- 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.

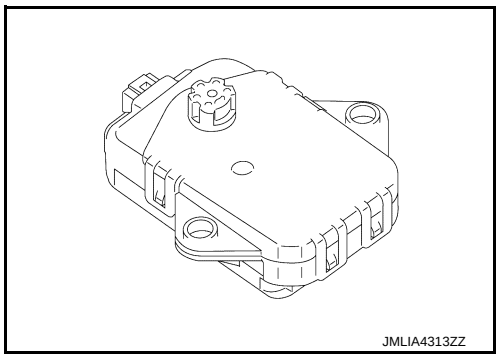


FRONT COMBINATION LAMP : Swivel Actuator

INFOID:0000000009730121

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

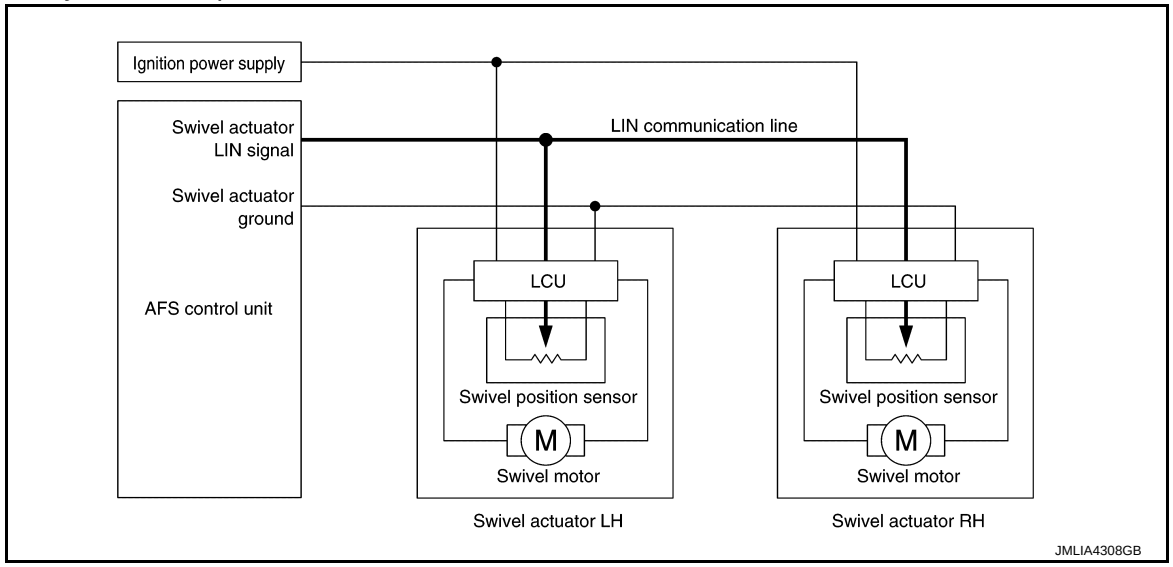
- The swivel motor is the DC motor.
- The swivel motor drives headlamp according to the drive signal from LCU.

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)

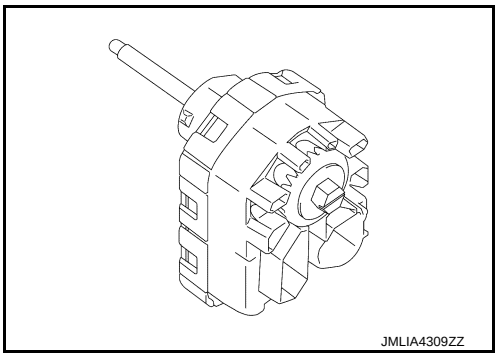
- The LCU is integrated in left and right swivel actuators so as to perform the multiplex communication control (LIN) between left and right swivel actuators in one communication line.
- When each LCU receives a drive signal from AFS control unit, it drives the swivel motor and allows headlamp swivel 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:0000000009730122

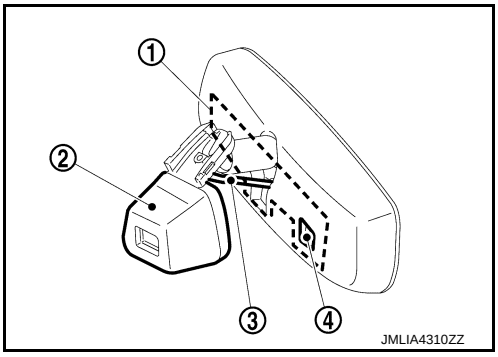
- Headlamp aiming motor is integrated in the front combination lamp.
- Headlamp aiming motor adjusts the headlamp light axis upward and downward according to input drive signal from AFS control unit.



Inside Mirror Assembly

INFOID:0000000009759915

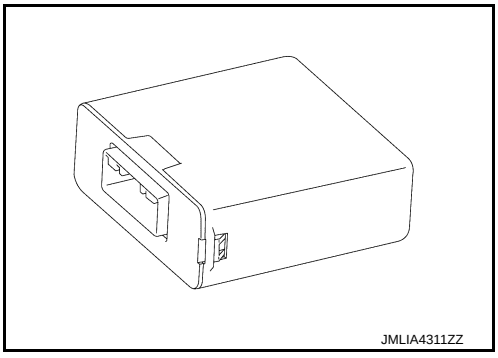
- Inside mirror assembly consists of the ambient light sensor ④ which detects ambient light around the area, the image sensor ② which detects the color, brightness and operation status of the light spot located in front of the vehicle, and the high beam assist control module ① which judges the vehicle 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:0000000009759916

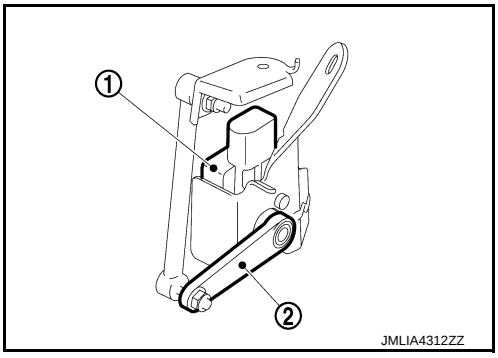
- AFS control unit judges the vehicle condition from each signal. AFS control unit controls AFS control (swivel control) and the headlamp aiming control.
- Self-diagnosis function is integrated in AFS control unit. Diagnosis of AFS can be performed quickly. Also, if AFS control unit detects a specific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



Height Sensor

INFOID:0000000009728679

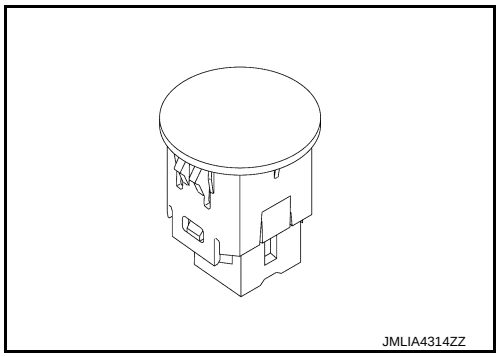
- Height sensor is installed in rear suspension arm.
- Height sensor ① detects the vehicle height deviation with sensor lever ②, and transmits the detected value as a height sensor signal to AFS control unit.

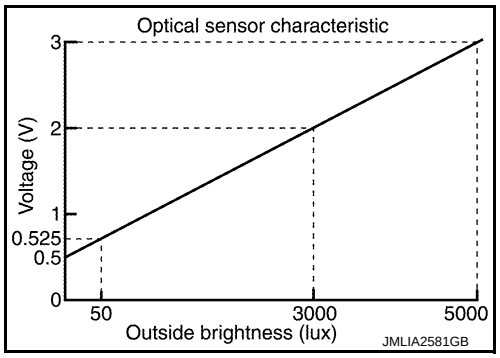


Optical Sensor

INFOID:0000000009728680

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

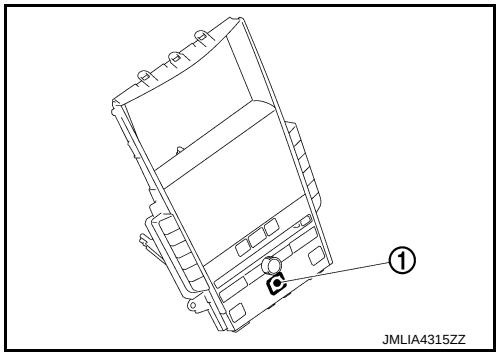




Hazard Switch

INFOID:0000000009728681

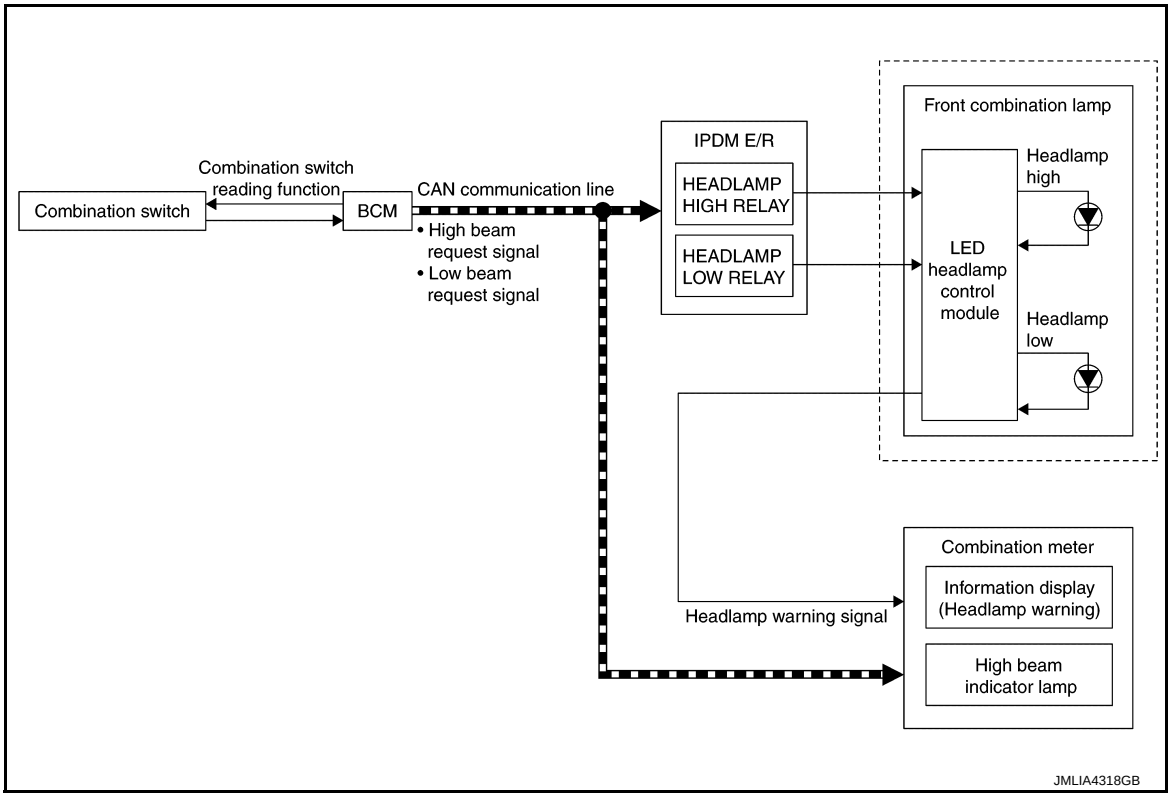
Hazard switch ① is built in to integral switch. Inputs the hazard switch ON/OFF signal to BCM.



SYSTEM
HEADLAMP SYSTEM
HEADLAMP SYSTEM : System Description

INFOID:0000000009676535

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 and the combination meter with CAN communication according to the headlamp (LO) ON condition.

Headlamp (LO) ON condition
- Lighting switch 2ND
- Lighting switch AUTO with the ignition switch ON (Only when the illumination judgment by auto light system is ON. For details, refer to EXL-18, "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 and ignition switch ON (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-18, "AUTO LIGHT SYSTEM : System Description".)
- Lighting switch PASS

- Combination meter turns the high beam indicator lamp ON according to the high beam request signal.

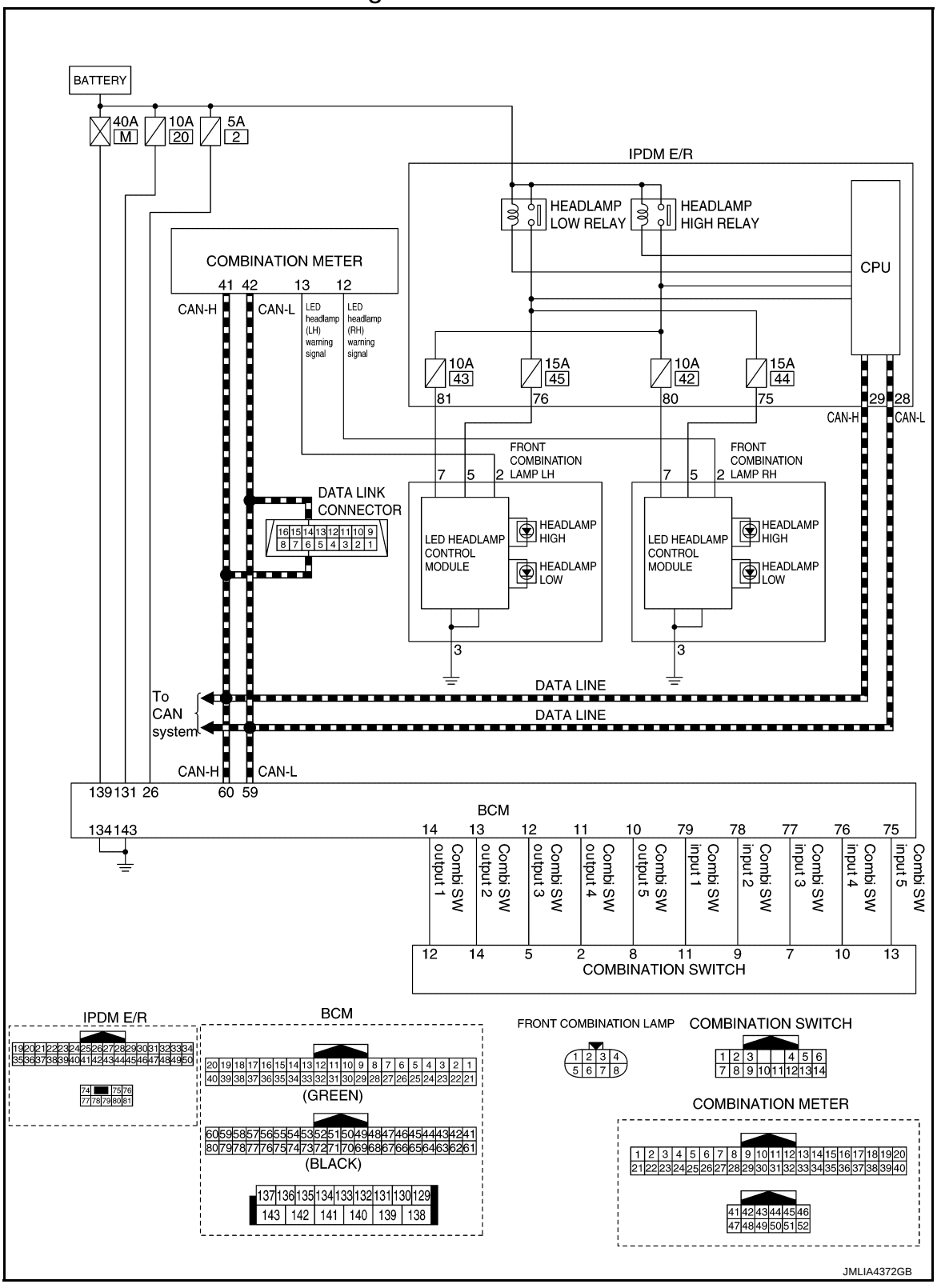
- IPDM E/R turns the integrated headlamp high relay ON according to high beam request signal and supplies power supply to LED headlamp control module.
- LED headlamp control module turns the headlamp (HI) ON according to the power supply from IPDM E/R.

HEADLAMP WARNING OPERATION

Headlamp warning warns the driver that there is a malfunction in LED headlamp system. Refer to EXL-42, "INFORMATION DISPLAY (COMBINATION METER) : Headlamp Warning".

HEADLAMP SYSTEM : Circuit Diagram

INFOID:0000000009676536



HEADLAMP SYSTEM : Fail-safe

INFOID:0000000009676537

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

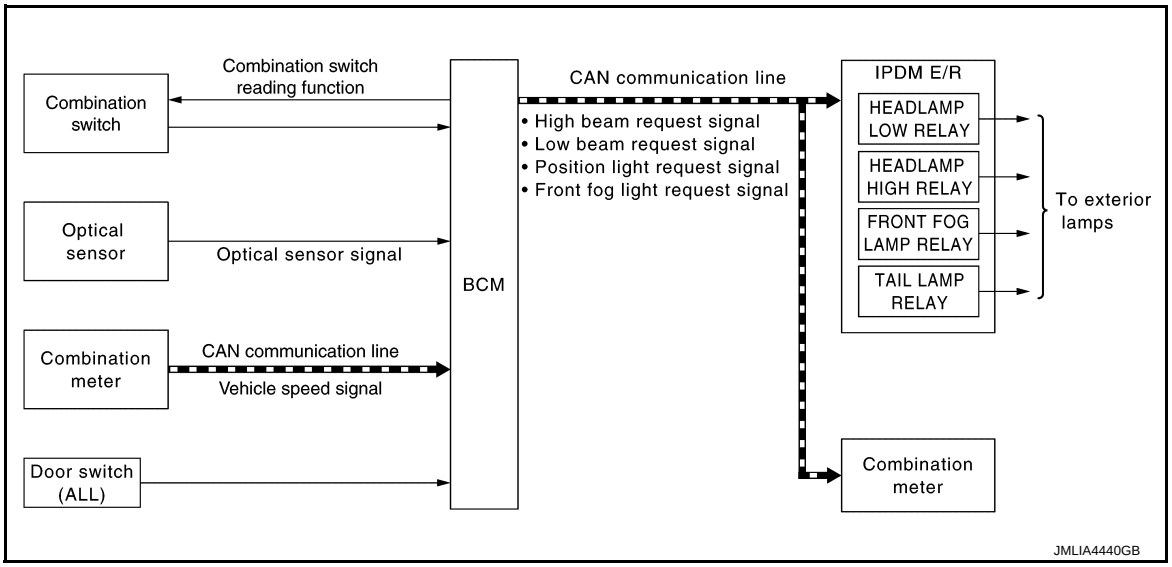
Control part	Fail-safe operation
Headlamp	• Turns ON the headlamp low relay when the ignition switch is turned ON • Turns OFF the headlamp low relay when the ignition switch is turned OFF • Headlamp high relay OFF

AUTO LIGHT SYSTEM

AUTO LIGHT SYSTEM : System Description

INFOID:0000000009676538

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
- Wiper linked auto lighting function
- Front 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 (with twilight lighting function), wiper linked auto lighting 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.
- When auto light system turns the exterior lamps ON with the ignition switch OFF, delay timer function turns the headlamp (LO) OFF, depending on the vehicle condition with the auto light function after a certain period of time.

*: 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-21, "HIGH BEAM ASSIST SYSTEM : System Description".

• Front fog lamp depend on the combination switch condition.

- The settings of the twilight lighting function and the wiper linked auto lighting function can be changed with CONSULT. Refer to EXL-48, "HEADLAMP : CONSULT Function (BCM - HEAD LAMP)".

AUTO LIGHT FUNCTION (WITH TWILIGHT LIGHTING FUNCTION)

Description

- BCM detects the combination switch condition with the combination switch reading function.
- BCM receives the vehicle speed signal from combination meter via CAN communication and detects the vehicle speed and the driving distance.
- 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).
- BCM transmits each request signal to IPDM E/R and combination meter via CAN communication, according to ON/OFF condition by the auto light function.

NOTE:
As to ON/OFF timing, the sensitivity depends on settings. The settings can be changed using CONSULT. Refer to EXL-48, "HEADLAMP : CONSULT Function (BCM - HEAD LAMP)".

WIPER LINKED AUTO LIGHTING FUNCTION

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.

FRONT 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-21, "HIGH BEAM ASSIST SYSTEM : System Description".
- ON/OFF of front fog override function can be changed using CONSULT. Refer to INL-16, "INT LAMP : CONSULT Function (BCM - INT LAMP)".

DELAY TIMER FUNCTION

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

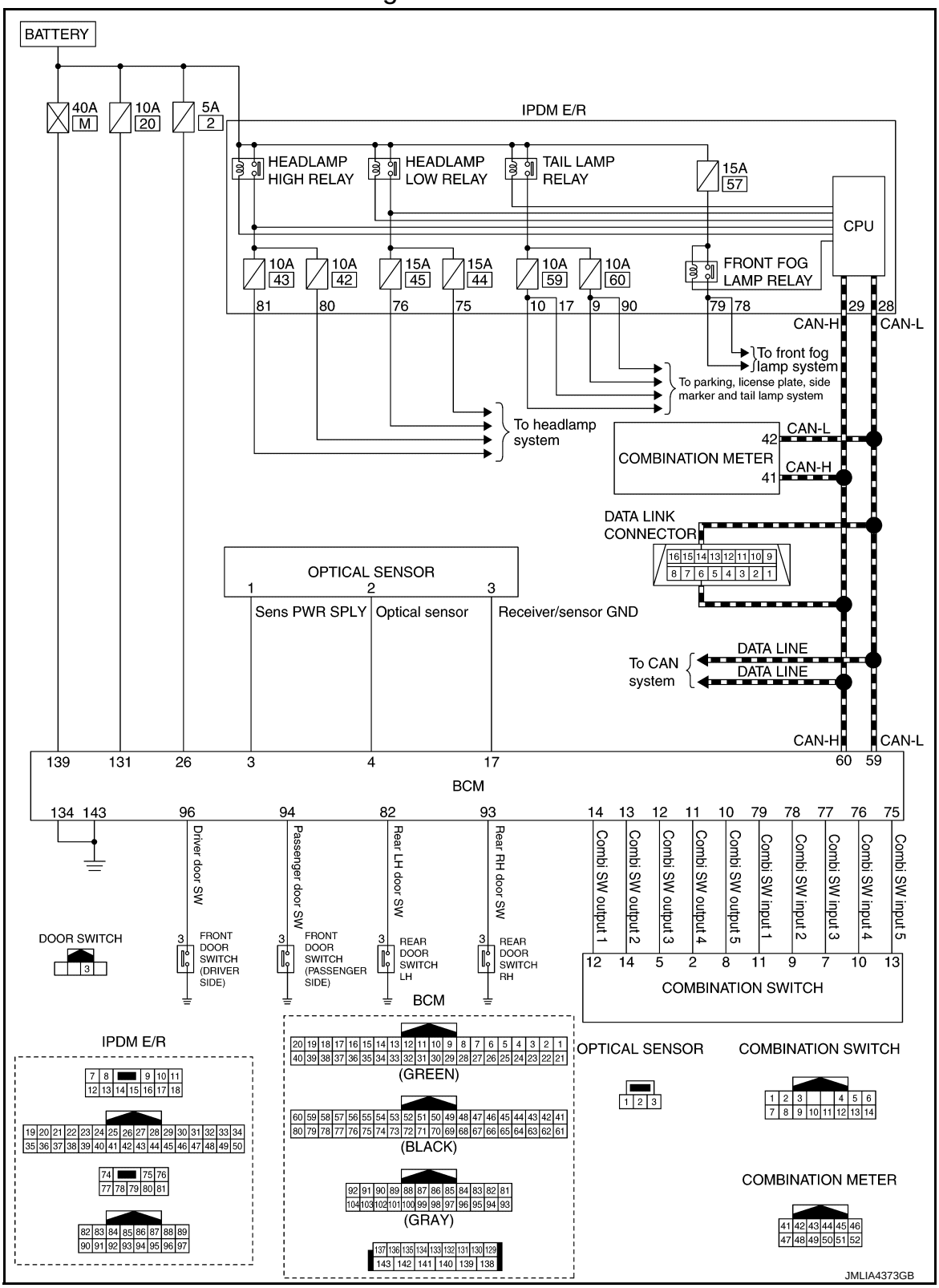
- Turns the exterior lamps OFF 45 seconds after detecting that any door opens. (Door switch ON).
- Turns the exterior lamps OFF a certain period of time* after closing all doors. (Door switch ON → OFF).
- Turns the exterior lamps OFF with the ignition switch ACC/ON or the light switch OFF.

*: The preset time is 45 seconds. The timer operating time can be set by CONSULT. Refer to EXL-48, "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.

AUTO LIGHT SYSTEM : Circuit Diagram

INFOID:0000000009676539

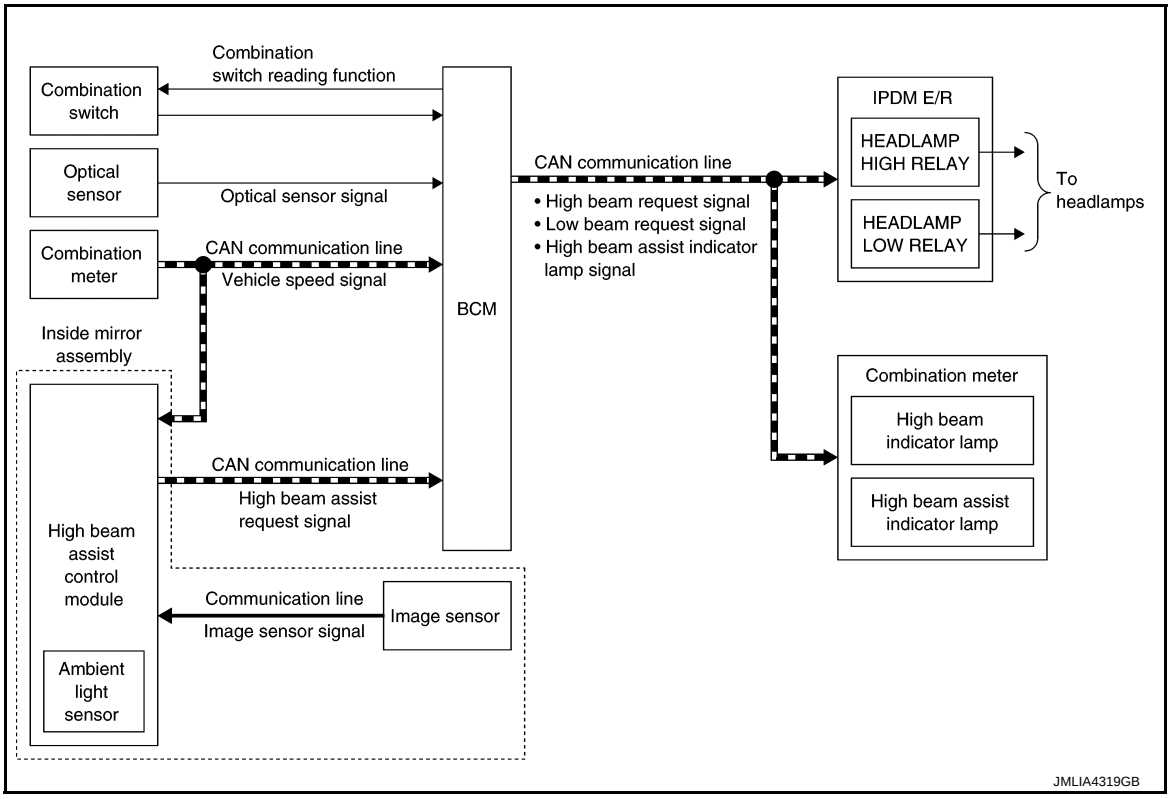


HIGH BEAM ASSIST SYSTEM

HIGH BEAM ASSIST SYSTEM : System Description

INFOID:0000000009728682

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-18, "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-16, "HEADLAMP SYSTEM : System Description".

RECOMMENDED BEAM JUDGMENT BY HIGH ASSIST CONTROL MODULE

Headlamp HI Operation Request

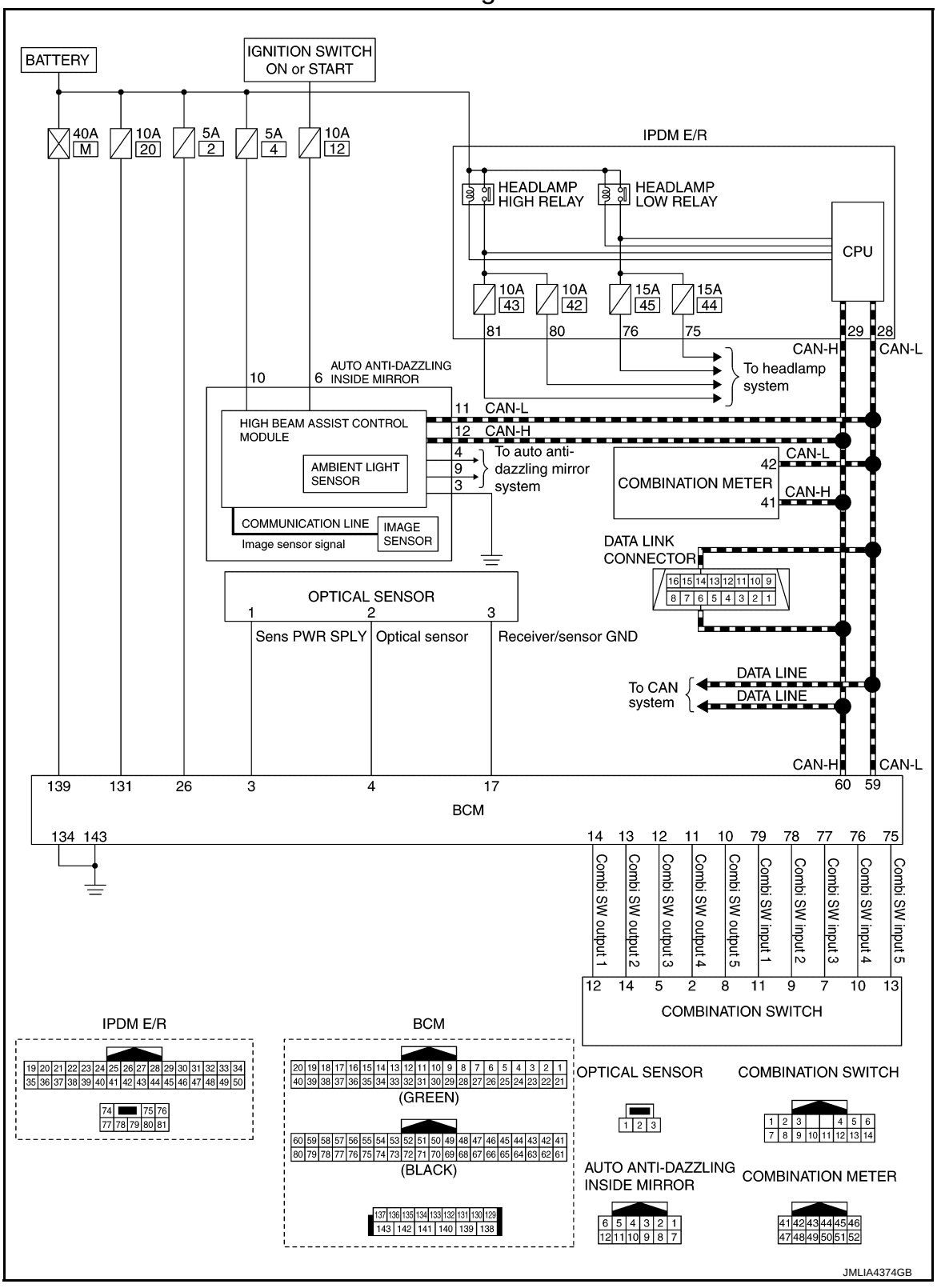
High beam assist control module requests the headlamp HI operation to BCM when all of following conditions are satisfied.
• Detects the vehicle speed is approx. 35 km/h or more.
• Recognizes the ambient condition is dark.
• Recognizes there is no oncoming vehicle or no vehicle ahead in front of the vehicle.

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 : Circuit Diagram

INFOID:0000000009728683



HIGH BEAM ASSIST SYSTEM : Fail-safe

INFOID:0000000009728856

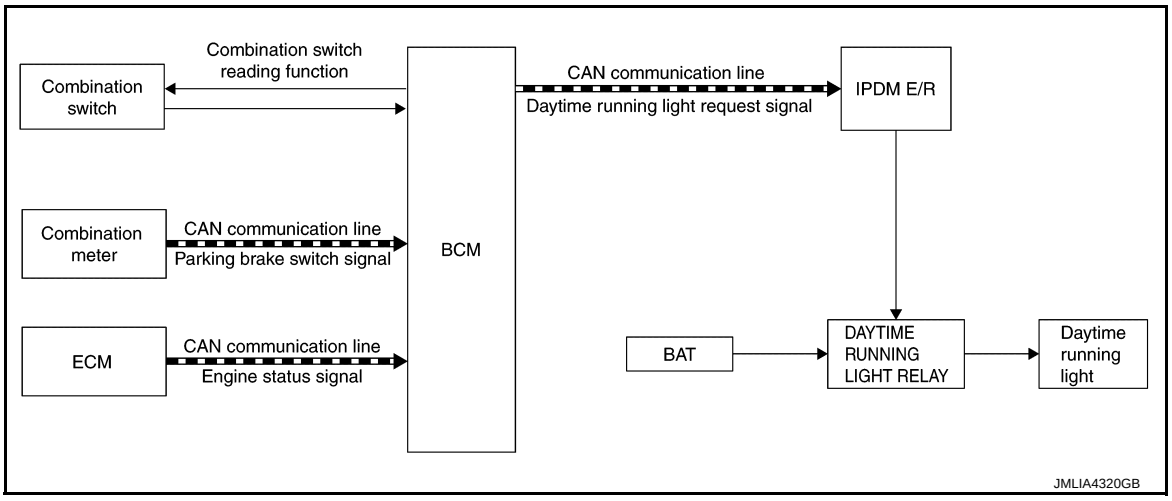
DTC No.	CONSULT screen terms	Fail-safe
B2090-01	HBA CONTROL MODULE	• High beam assist system operation stop • High beam assist indicator lamp OFF
B2090-1C	HBA CONTROL MODULE	
B2090-49	HBA CONTROL MODULE	
B2090-54	HBA CONTROL MODULE	
B2091-01	HBA CONTROL MODULE	
B2091-02	HBA CONTROL MODULE	
B2091-07	HBA 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:0000000009676543

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

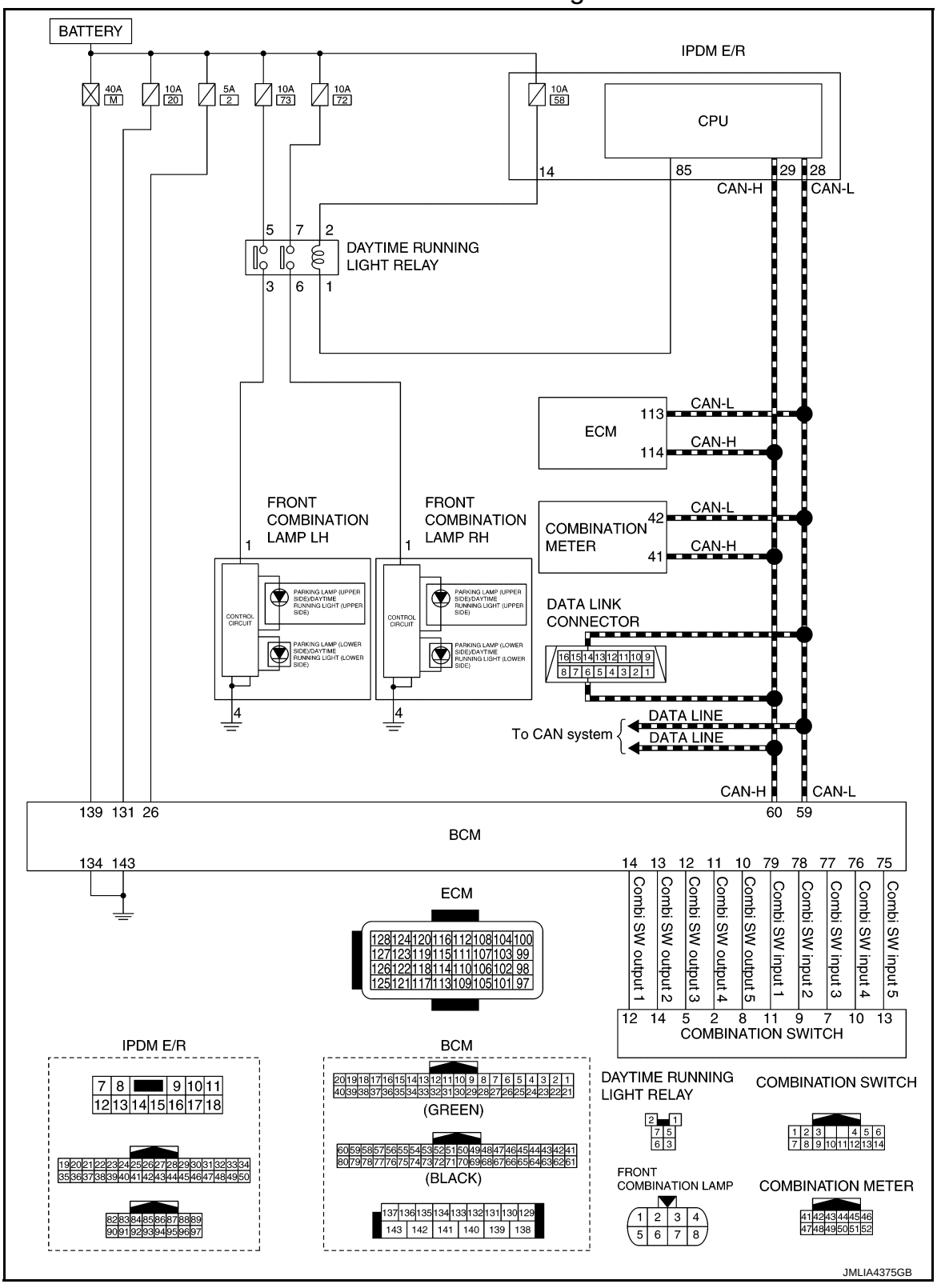
- BCM detects the combination switch condition by the combination switch reading function.
- BCM detects vehicle condition depending on the following signals.
- Engine status signal (received from ECM via CAN communication)
- Parking brake switch signal (received from combination meter via CAN communication)
- 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 is satisfied.
- Lighting switch OFF
- Lighting switch AUTO (Only when the illumination judgment by auto light system is OFF. For details, refer to EXL-18, "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 : Circuit Diagram

INFOID:0000000009676544

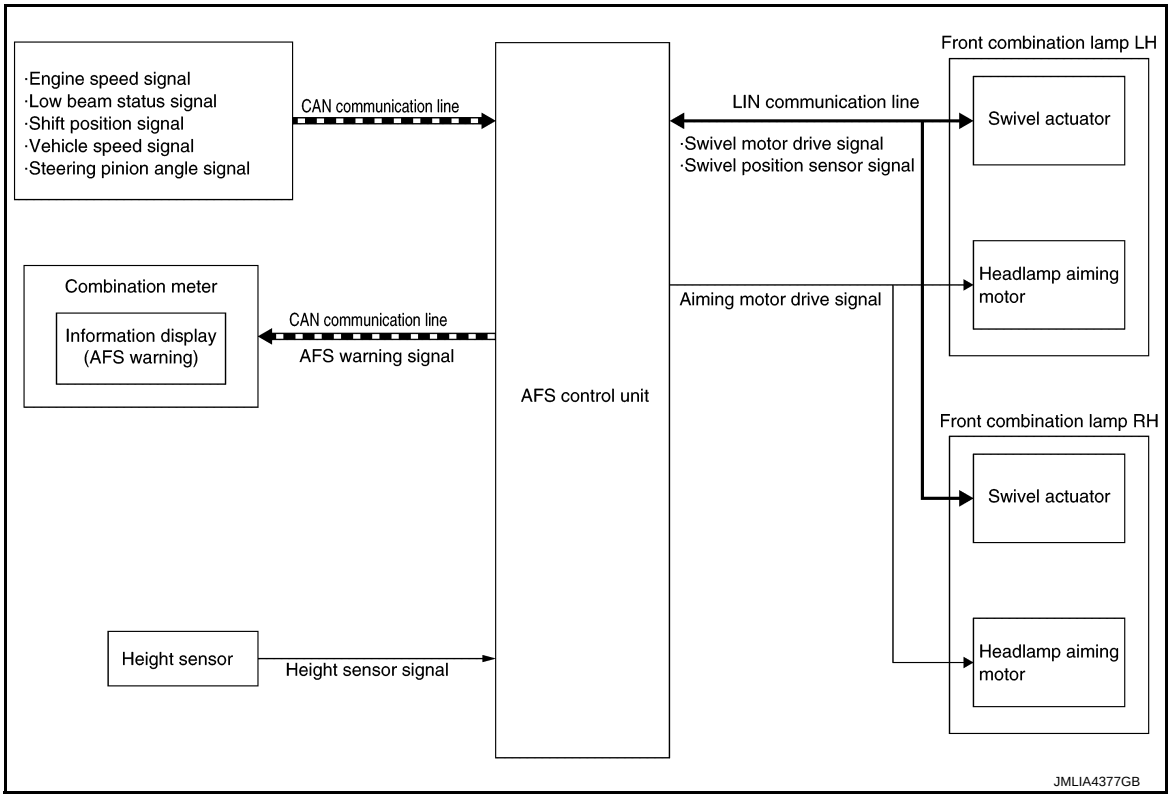


ACTIVE ADAPTIVE FRONT-LIGHTING SYSTEM

ACTIVE ADAPTIVE FRONT-LIGHTING SYSTEM : System Description

INFOID:0000000009728685

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 pinion angle signal (received from steering force control module via CAN communication)
- When the operation conditions are satisfied, AFS control unit controls the swivel angle depending on the steering pinion 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 pinion 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 pinion angle is approximately 37.7° 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 pinion angle if the operation condition is not satisfied while the swivel angle is not 0°.

AFS Warning

- AFS control unit transmits the AFS warning signal (CAN communication) to the combination meter when a specific DTC is detected. For the relation between warning display and DTC, refer to EXL-71, "DTC Index".
- When combination meter receives the AFS warning signal, “AFS warning” pop-up screen appears in the information display.

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.
  - 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

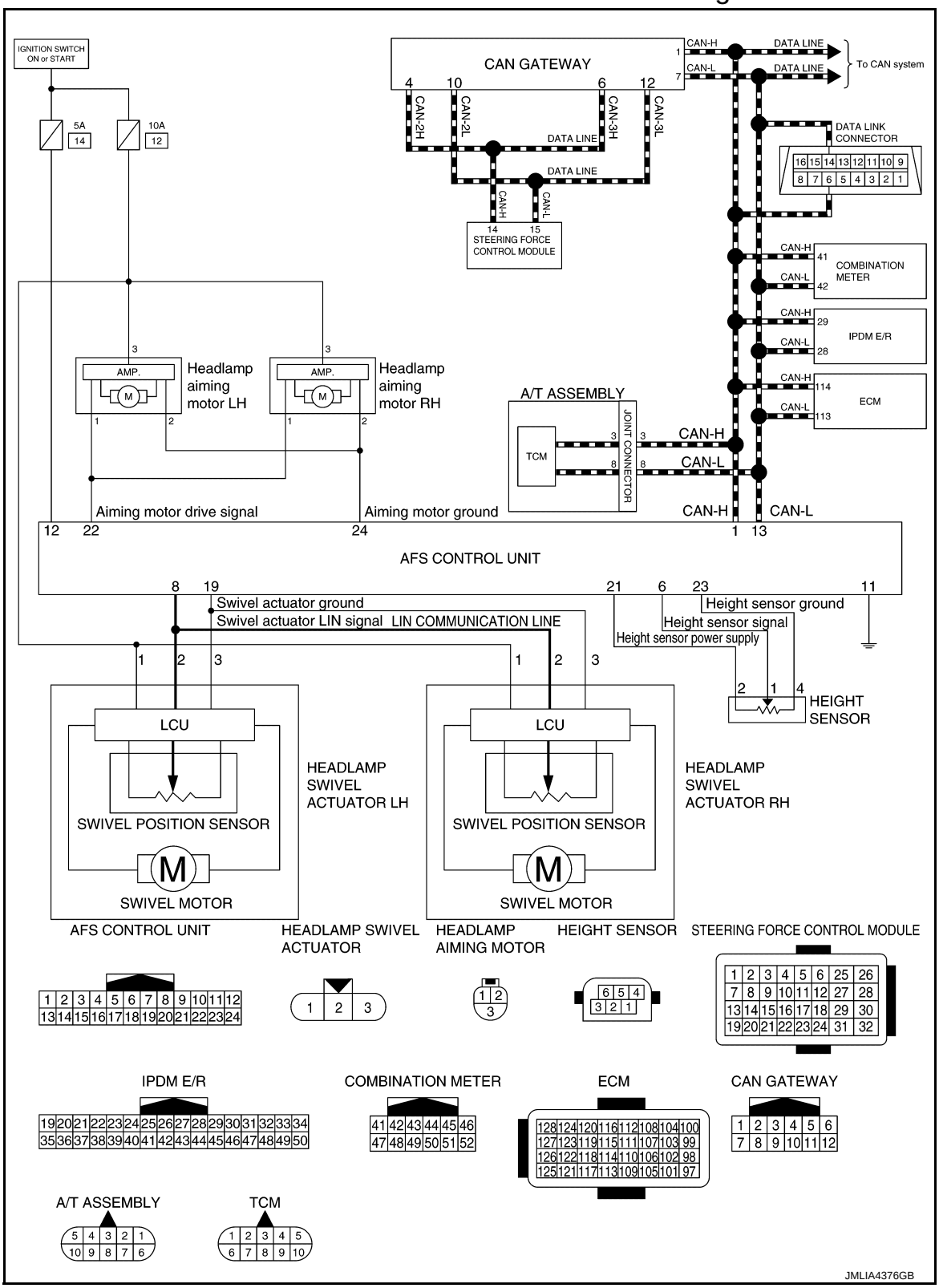
- AFS control unit calculates the vehicle pitch angle from the height sensor signal. AFS control unit judges the angle for adjusting the axis gap from the preset position.
- AFS control unit controls the headlamp axis by changing the aiming motor drive signal output according to the vehicle-rearward 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 : Circuit Diagram

INFOID:0000000009728686



ACTIVE ADAPTIVE FRONT-LIGHTING SYSTEM : Fail-safe

INFOID:0000000009728858

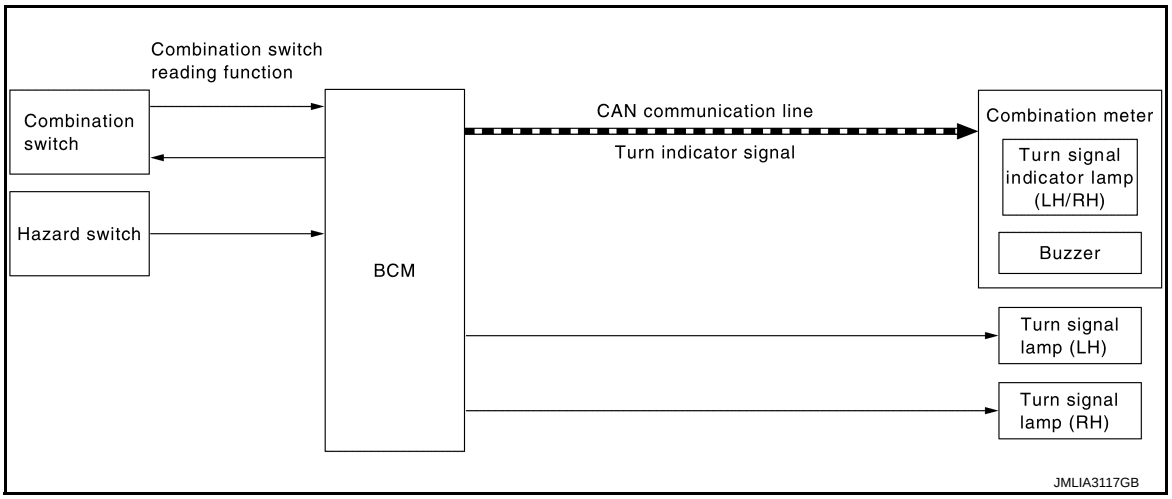
DTC No.	CONSULT screen terms	Fail-safe	
		Swivel operation	Aiming operation
B2008	PARA NOT PROG	Right and left swivel motors stop at the position when DTC is detected	Right and left headlamp aiming motors stop at the position when DTC is detected
B2503	SWIVEL ACTUATOR [RH]	• Right swivel motor stop at 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	
B2512	4WAS SIG	Right and left swivel motor swivel angle returns to 0° and fixed	—
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 stop at the position when DTC is detected
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
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

TURN SIGNAL AND HAZARD WARNING LAMP SYSTEM

TURN SIGNAL AND HAZARD WARNING LAMP SYSTEM : System Description

INFOID:0000000009676551

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 OPERATION

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

NOTE:

ON/OFF of 3-time flasher function can be changed using CONSULT. Refer to EXL-51, "FLASHER : CONSULT Function (BCM - FLASHER)".

HIGH FLASHER OPERATION

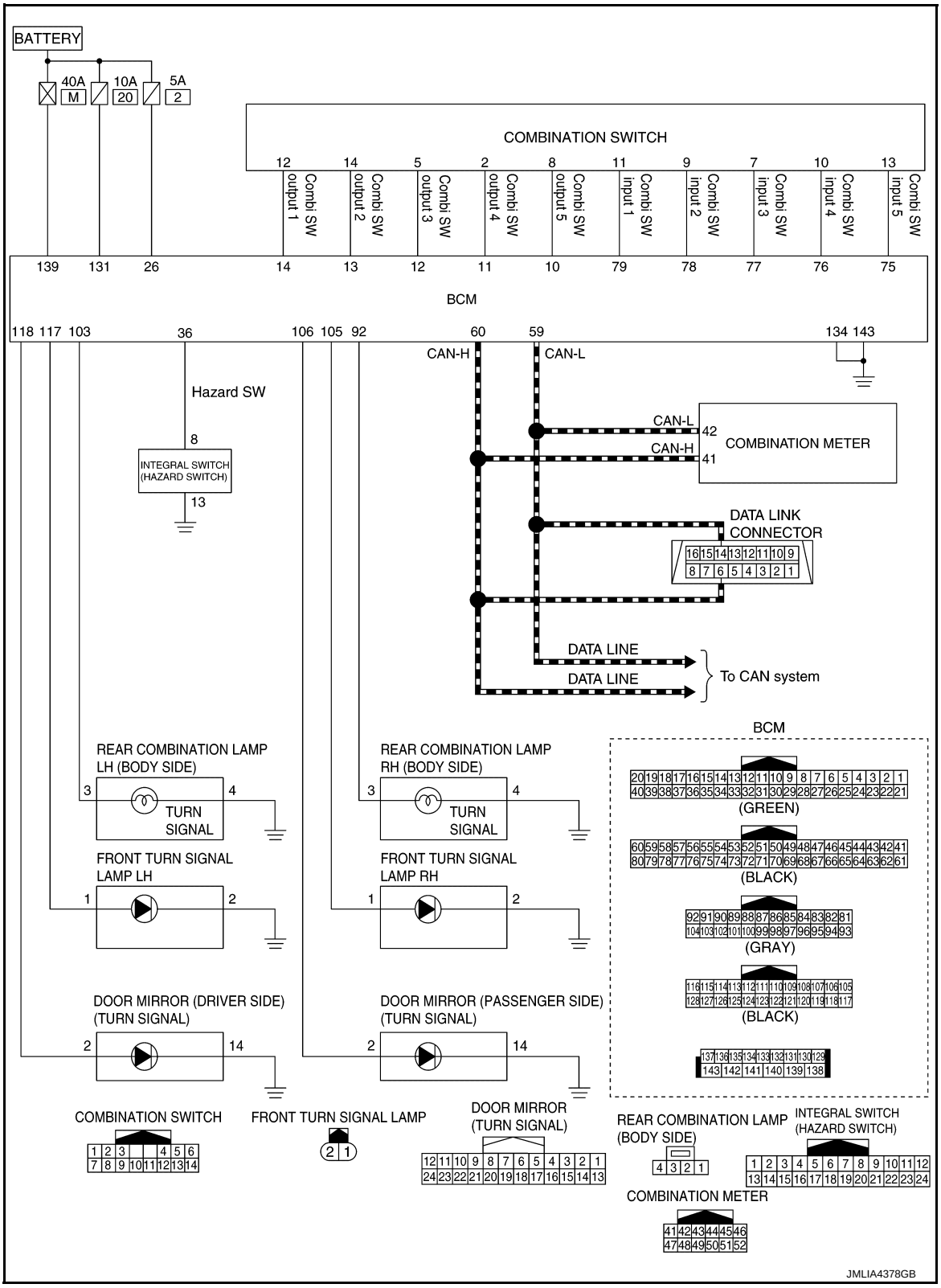
- BCM detects the turn signal lamp circuit status from the current value.
- BCM increases the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp operating.

  NOTE:

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

TURN SIGNAL AND HAZARD WARNING LAMP SYSTEM : Circuit Diagram

INFOID:0000000009676552



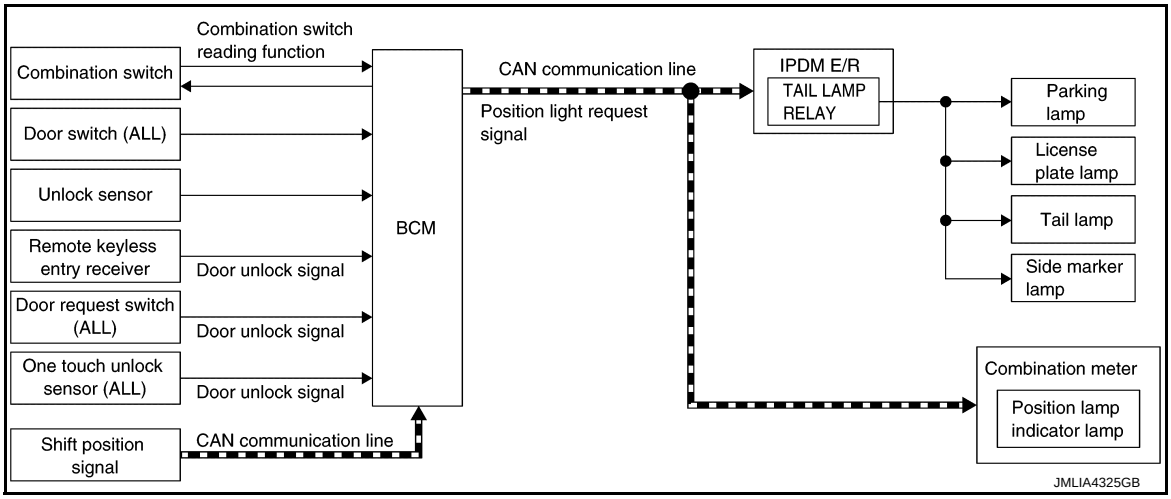
PARKING, LICENSE PLATE, SIDE MARKER AND TAIL LAMP SYSTEM

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

scription

INFOID:0000000009676553

SYSTEM DIAGRAM



OUTLINE

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

- Lighting switch 1ST or 2ND
- Lighting switch AUTO with the ignition switch ON (Only when the illumination judgment by auto light system is ON. For details, refer to EXL-18, "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

Signature light function is a function that turns ON the parking, license plate, side marker and tail lamps for 30 seconds after the doors are unlocked from the status that all doors are locked.

Operation Description

- BCM transmits the position light request signal to IPDM E/R and combination meter via CAN communication when all of following conditions are satisfied.

Signature light function ON condition

- All door CLOSE
- Ignition switch OFF
- Selector lever P
- Door lock status LOCK
- Detects the door unlock signal (remote keyless entry receiver, door request switch, one touch unlock sensor)

- When in any of following conditions, signature light function can be cancelled while signature light function is operating.

Signature light function OFF condition

- Each door OPEN→All door CLOSE

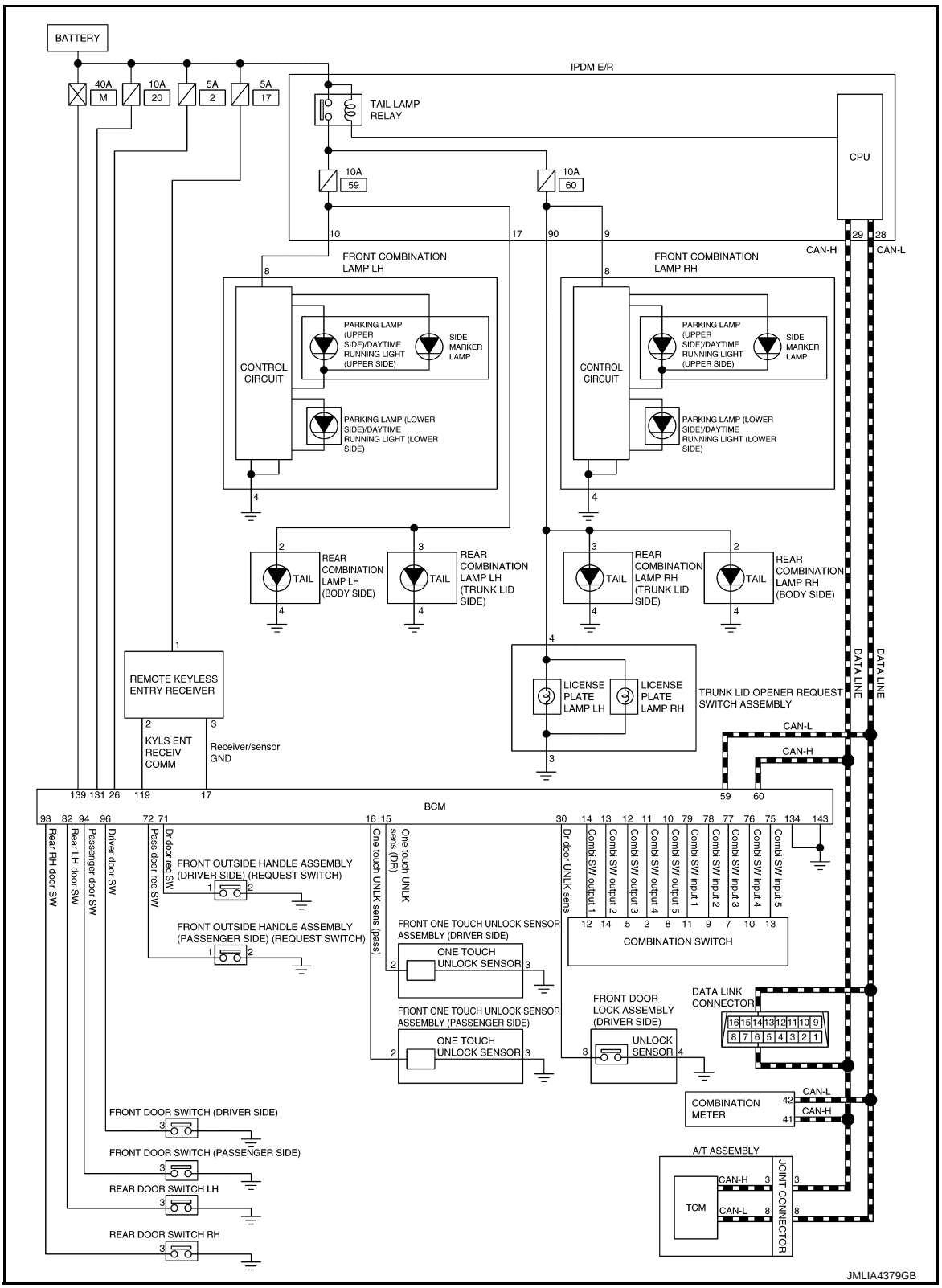
- Ignition switch other than OFF
- Selector lever other than P
- Door lock status UNLOCK→ All door LOCK
- Since signature light function ON, 30 seconds are passed.

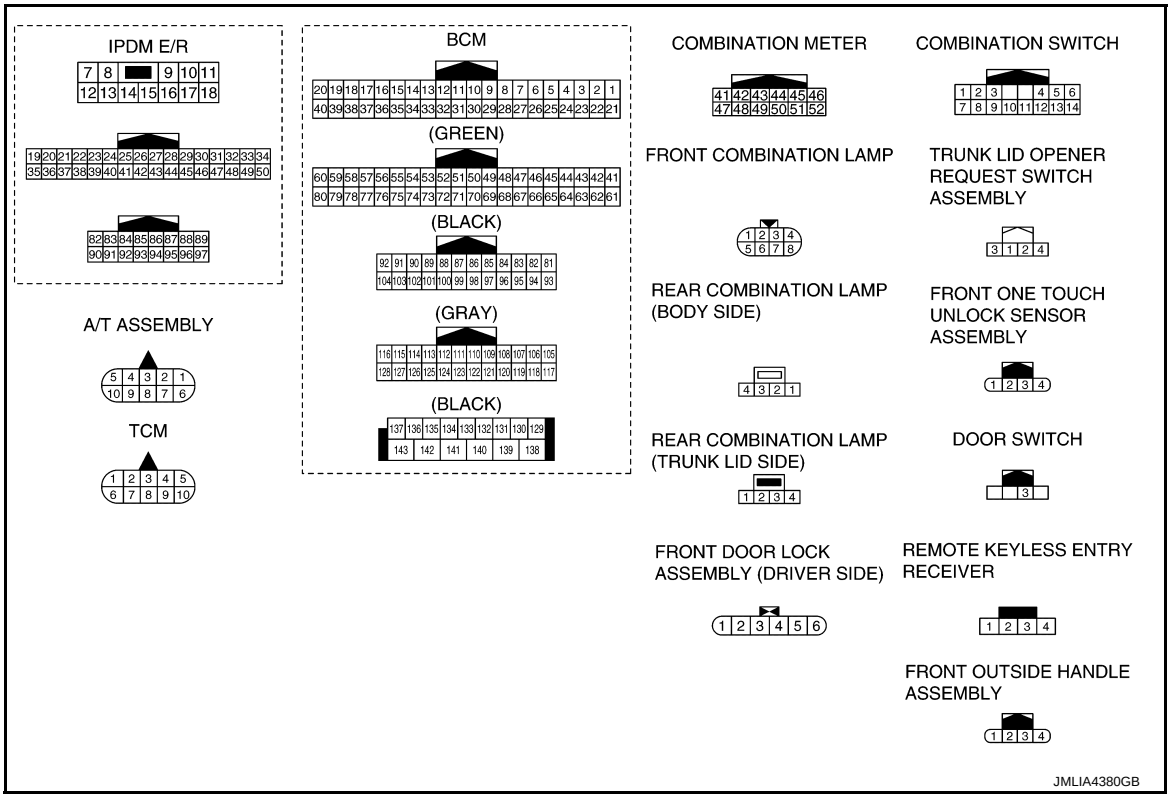
NOTE:
ON/OFF of signature light function can be changed using CONSULT. Refer to EXL-53, "DOOR LOCK : CONSULT Function (BCM - DOOR LOCK)".

PARKING, LICENSE PLATE, SIDE MARKER AND TAIL LAMP SYSTEM : Circuit Dia-

gram

INFOID:0000000009676554





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

INFOID:0000000009676555

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

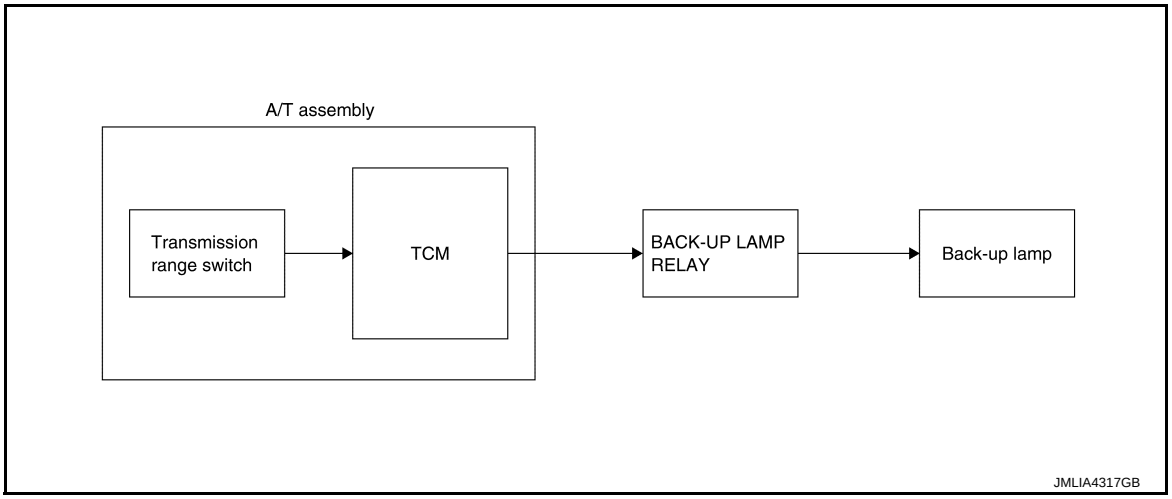
Control part	Fail-safe operation
• Parking lamp • License plate lamp • Side marker lamp • Tail lamp	• Turns ON the tail lamp relay and daytime running light relay when the ignition switch is turned ON • Turns OFF the tail lamp relay and daytime running light relay when the ignition switch is turned OFF

BACK-UP LAMP SYSTEM

BACK-UP LAMP SYSTEM : System Description

INFOID:0000000009728688

SYSTEM DIAGRAM



OUTLINE

Back-up lamp is controlled by back-up lamp control function of TCM.

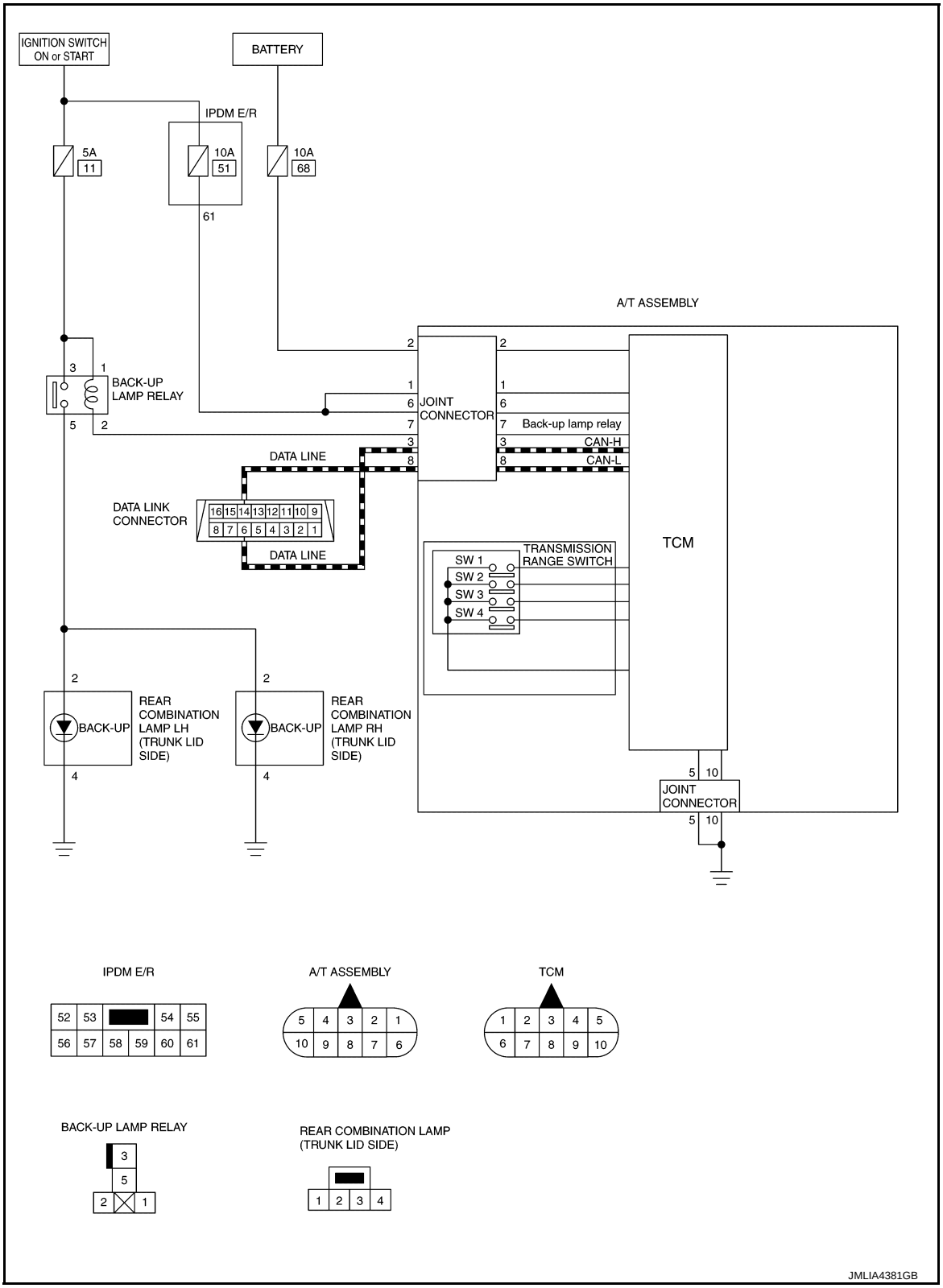
BACK-UP LAMP OPERATION

- TCM detects the selector lever position status from transmission range switch.
- TCM turns the back-up lamp relay ON, and turns the back-up lamp ON according to the back-up lamp ON conditions are satisfied.

Back-up lamp ON condition
- Ignition switch ON
- Selector lever position R

BACK-UP LAMP SYSTEM : Circuit Diagram

INFOID:0000000009728689

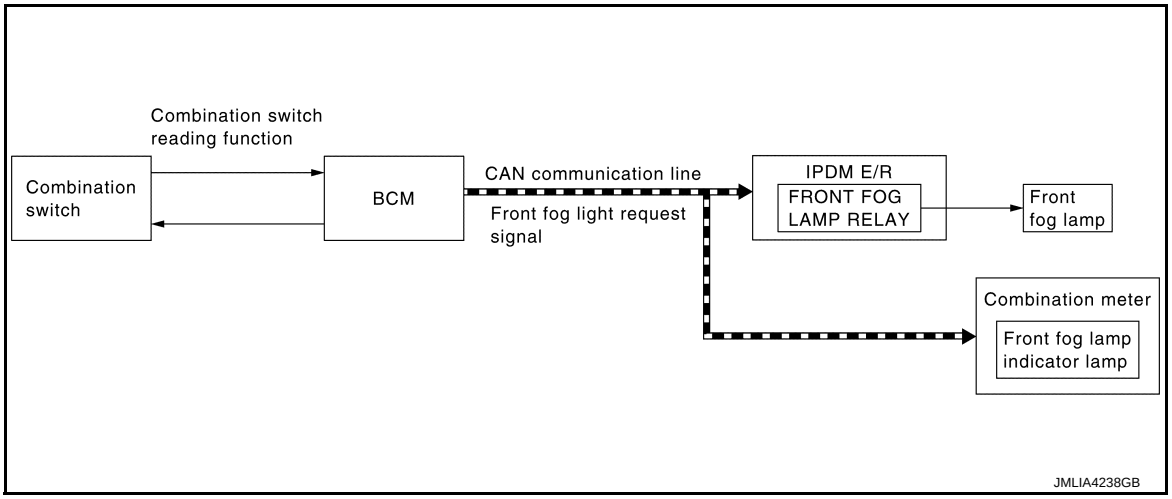


FRONT FOG LAMP SYSTEM

FRONT FOG LAMP SYSTEM : System Description

INFOID:0000000009676558

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

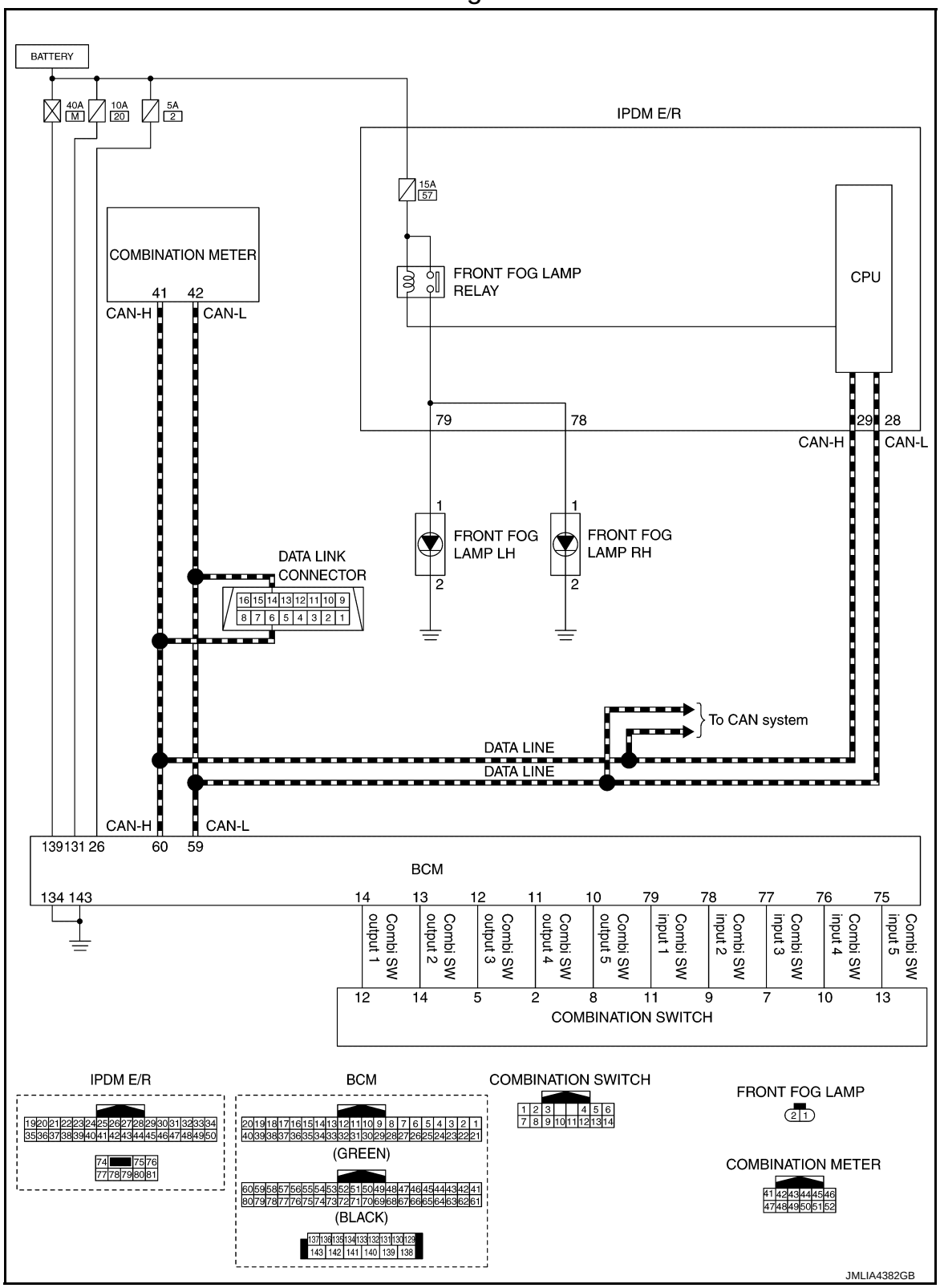
- BCM detects the combination switch condition by the combination switch reading function.
- BCM transmits the front fog light request signal to IPDM E/R and the combination meter via CAN communication according to the front fog lamp ON condition.

Front fog lamp ON condition

- Front fog lamp switch ON, and any of the following conditions is satisfied. [except headlamp (HI) ON condition]
- Lighting switch 2ND
- Lighting switch AUTO with the ignition switch ON (Only when the illumination judgment by auto light system is ON. For details, refer to EXL-18, "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 : Circuit Diagram

INFOID:0000000009676559



FRONT FOG LAMP SYSTEM : Fail-safe

INFOID:0000000009676560

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

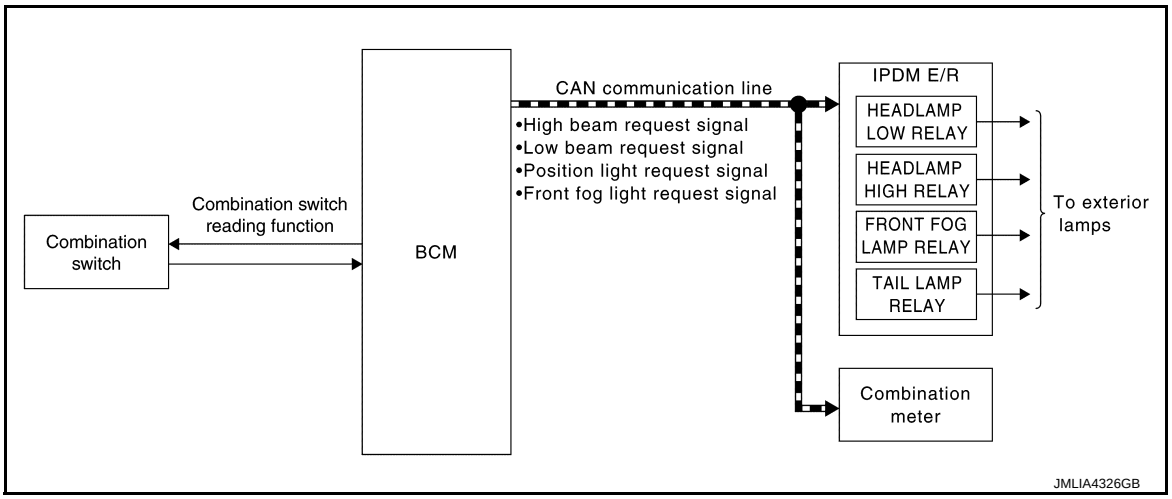
Control part	Fail-safe operation
Front fog lamp	Front fog lamp relay OFF

EXTERIOR LAMP BATTERY SAVER SYSTEM

EXTERIOR LAMP BATTERY SAVER SYSTEM : System Description

INFOID:0000000009676563

SYSTEM DIAGRAM



OUTLINE

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

Control by BCM

- Combination switch reading function
- Exterior lamp battery saver function

Control by IPDM E/R

- Relay control function
- 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

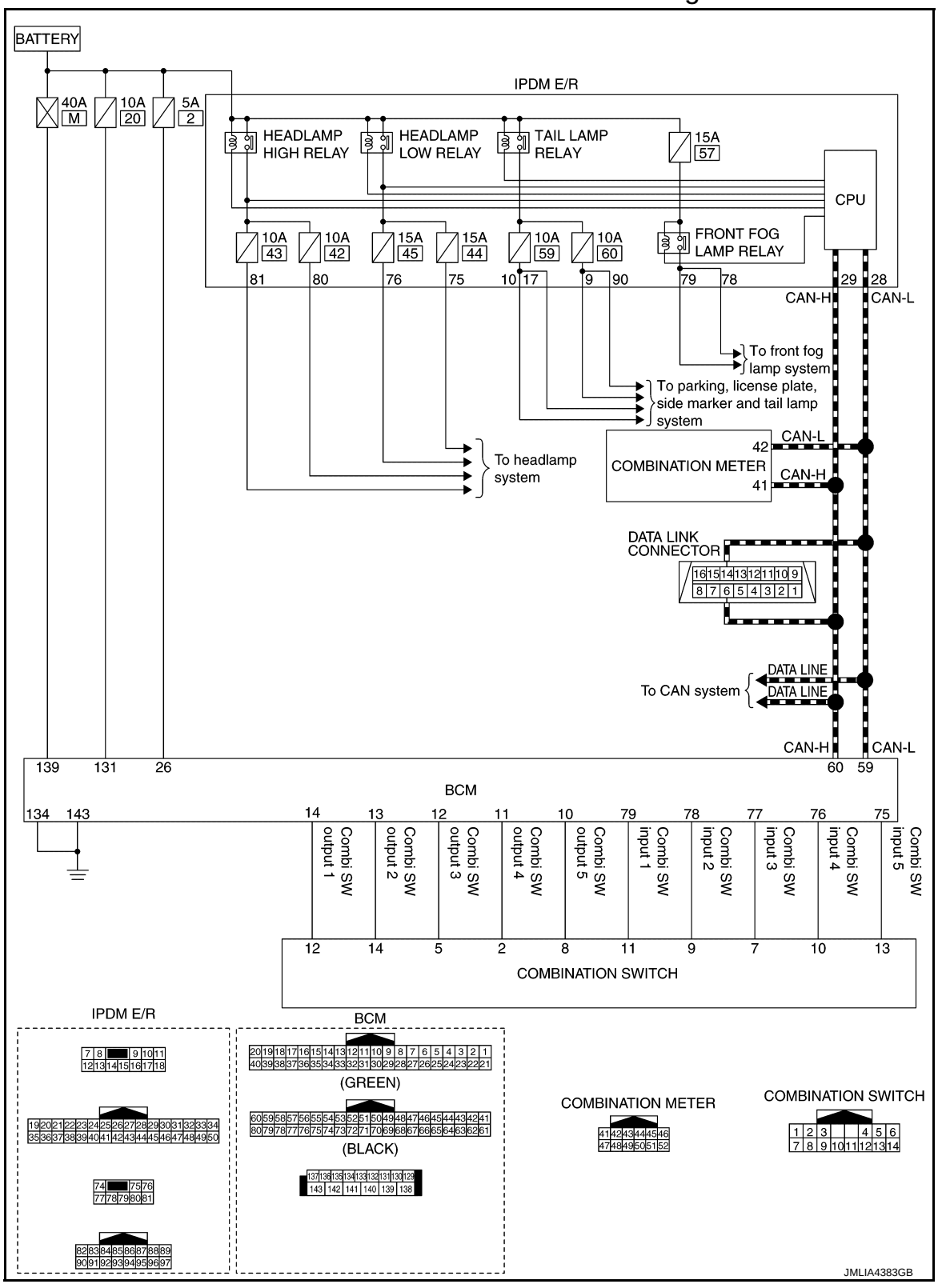
EXTERIOR LAMP BATTERY SAVER ACTIVATION

- 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→ACC/ON
- Lighting switch is changed
- Front fog lamp switch is changed

EXTERIOR LAMP BATTERY SAVER SYSTEM : Circuit Diagram

INFOID:0000000009676564



INFORMATION DISPLAY (COMBINATION METER)

INFORMATION DISPLAY (COMBINATION METER) : AFS Warning

INFOID:0000000009676565

DESIGN/PURPOSE

When AFS control unit detects a specific DTC, the combination meter displays the AFS warning on vehicle information display and warns the driver that inspection and repair are required.

Symbol	Message
—	Adaptive front-lighting system fault

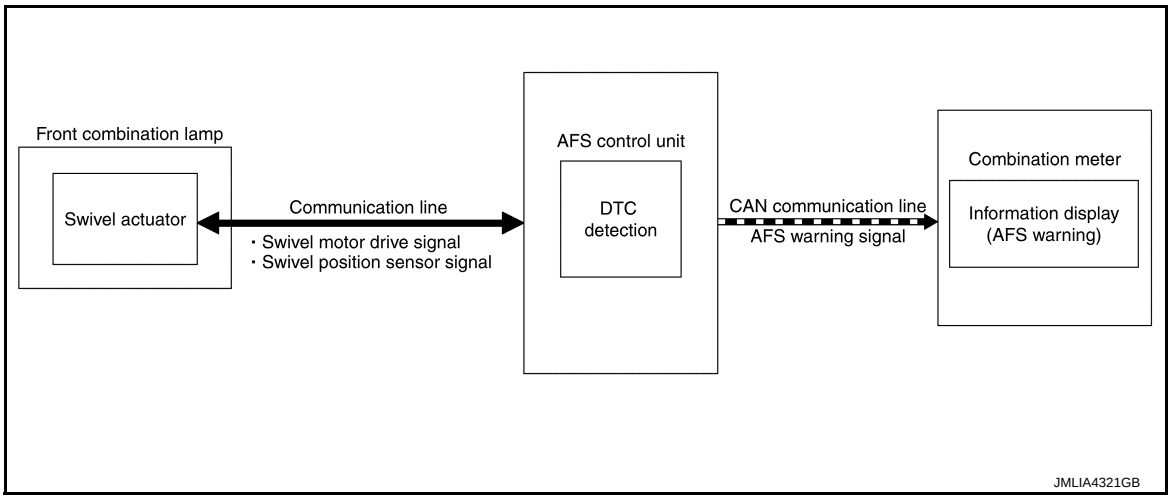
SYNCHRONIZATION WITH MASTER WARNING LAMP

Not applicable

OPERATION AT COMBINATION METER CAN COMMUNICATION CUT-OFF OR UNUSUAL SIGNAL

For actions on CAN communications blackout in the combination meter, refer to MWI-16, "METER SYSTEM : Fail-Safe".

SYSTEM DIAGRAM



SIGNAL PATH

- When the conditions of AFS warning display are satisfied, AFS control unit transmits the AFS warning signal to combination meter via CAN communication.
- When combination meter receives the AFS warning signal, “AFS warning” pop-up screen appears in the information display.

WARNING/INDICATOR OPERATING CONDITION

When all of the following conditions are satisfied.

- Ignition switch ON
- AFS control unit detects a specific DTC

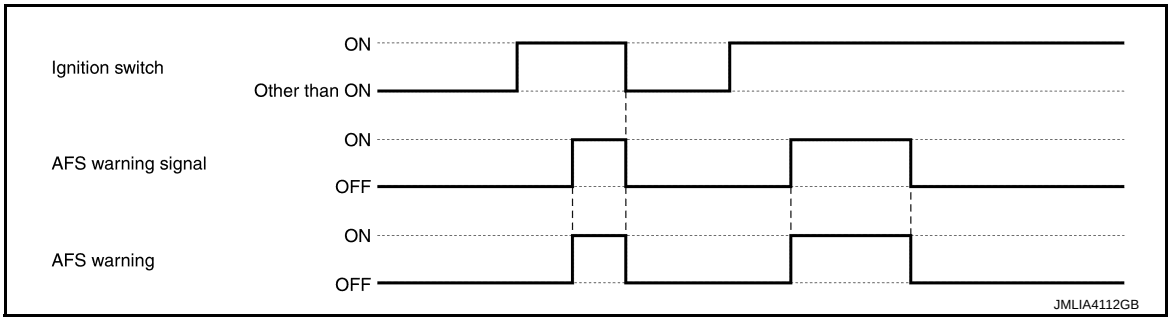
For the relation between warning display and DTC, refer to EXL-71, "DTC Index".

WARNING/INDICATOR CANCEL CONDITION

When any of the following conditions are satisfied.

- Ignition switch OFF
- Erase DTC

TIMING CHART



INFORMATION DISPLAY (COMBINATION METER) : Headlamp Warning

INFOID:0000000009676566

DESIGN/PURPOSE

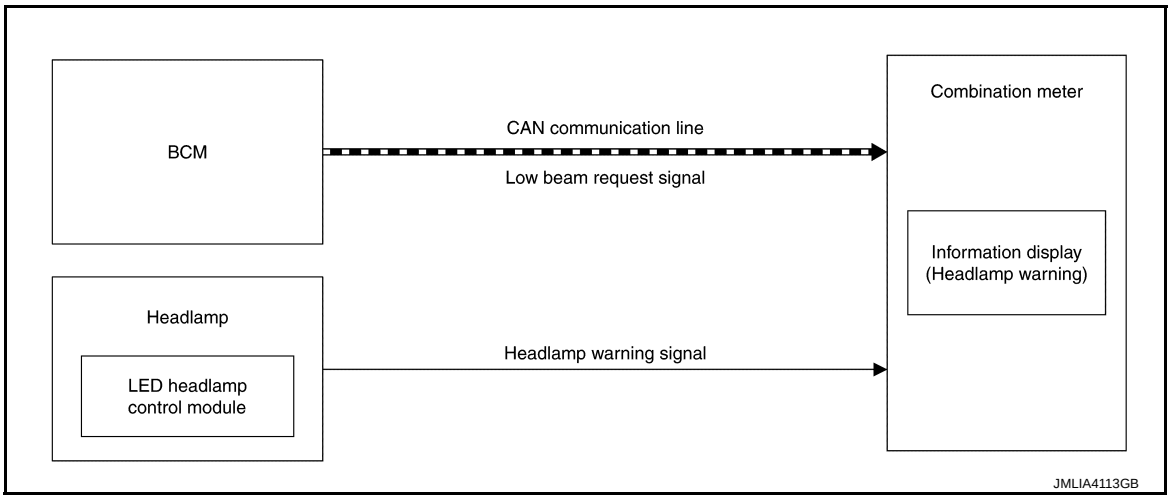
Headlamp warning warns the driver that there is a malfunction in LED headlamp system.

Symbol	Message
—	Headlight System Error See Owner's Manual

SYNCHRONIZATION WITH MASTER WARNING LAMP

Synchronization is applied.
For master warning lamp, refer to MWI-34, "WARNING LAMPS/INDICATOR LAMPS : Master Warning Lamp".

SYSTEM DIAGRAM



SIGNAL PATH

- When LED headlamp control module detects a malfunction, headlamp warning signal is output to combination meter.
- BCM transmits low beam request signal to combination meter via CAN communication when headlamp (LO) ON judgment.
- When combination meter input the headlamp warning signal and receives low beam request signal, “Headlamp warning” pop-up screen appears in the information display.

WARNING/INDICATOR OPERATING CONDITION

When all of the following conditions are satisfied.

- Ignition switch ON
- LED headlamp control module detects a malfunction in the following components when combination meter receives low beam request signal.

- LED
- LED headlamp control module
- Circuit between LED headlamp control module and LED
- Circuit between LED headlamp control module and combination meter

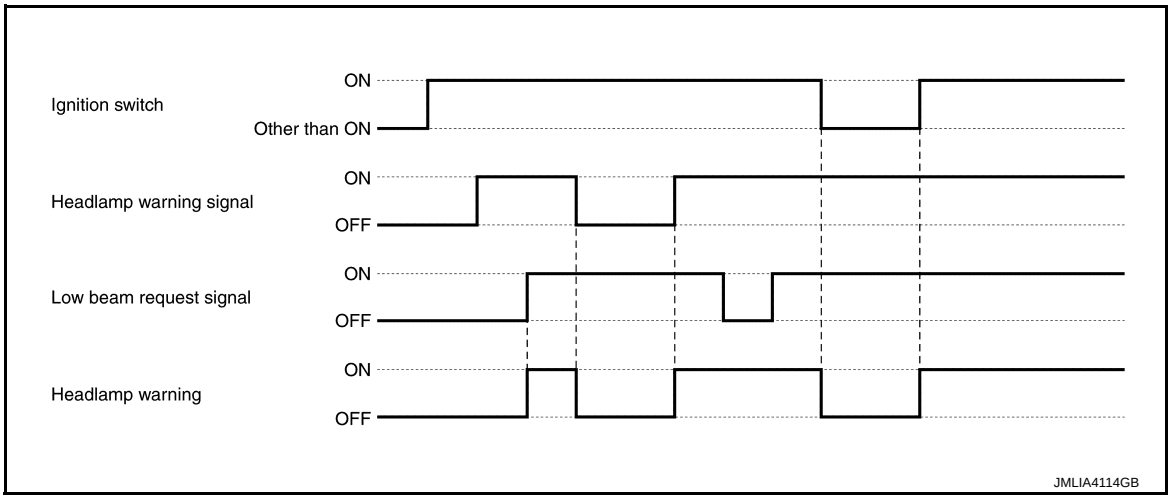
WARNING/INDICATOR CANCEL CONDITION

When any of the following conditions are satisfied.

- Ignition switch OFF
- LED headlamp control module does not detect a malfunction in the following components

- LED
- LED headlamp control module
- Circuit between LED headlamp control module and LED
- Circuit between LED headlamp control module and combination meter

TIMING CHART

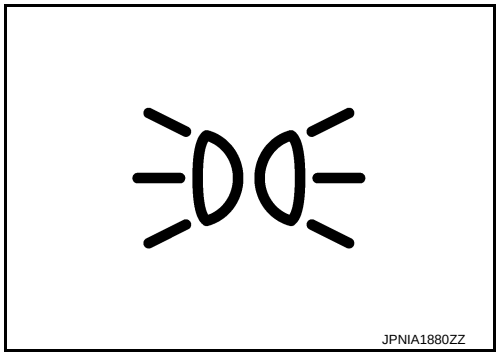


INFORMATION DISPLAY (COMBINATION METER) : Light Reminder Warning (Information Display)

INFOID:0000000009676567

DESIGN/PURPOSE

When the driver is exiting the vehicle while ignition is in any position other than ON and lamps are ON, the light reminder warning (information display) displays a warning in the information display to alert the driver.

Symbol	Message
 JPNIA1880ZZ	Lights are on

SYNCHRONIZATION WITH MASTER WARNING LAMP

Not applicable

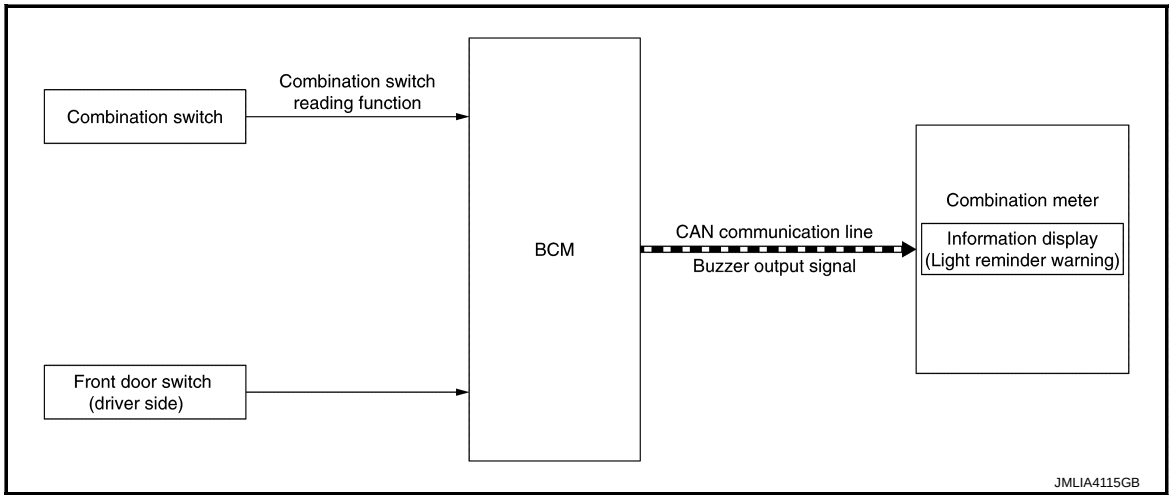
SYNCHRONIZATION WITH WARNING CHIME

Synchronization is applied.
For warning chime, refer to WCS-9, "WARNING CHIME : Light Reminder Warning (Buzzer)".

OPERATION AT COMBINATION METER CAN COMMUNICATION CUT-OFF OR UNUSUAL SIGNAL

For actions on CAN communications blackout in the combination meter, refer to WCS-6, "WARNING CHIME SYSTEM : Fail-Safe".

SYSTEM DIAGRAM



SIGNAL PATH

- BCM reads status of combination switch.
- BCM judges light reminder warning (information display) by lighting switch signal and driver door switch (driver side) signal. BCM transmits buzzer output signal to combination meter via CAN communication.
- When combination meter receives the buzzer output signal, “Light reminder warning” pop-up screen appears in the information display.

WARNING/INDICATOR OPERATING CONDITION

When all of the following conditions are satisfied.

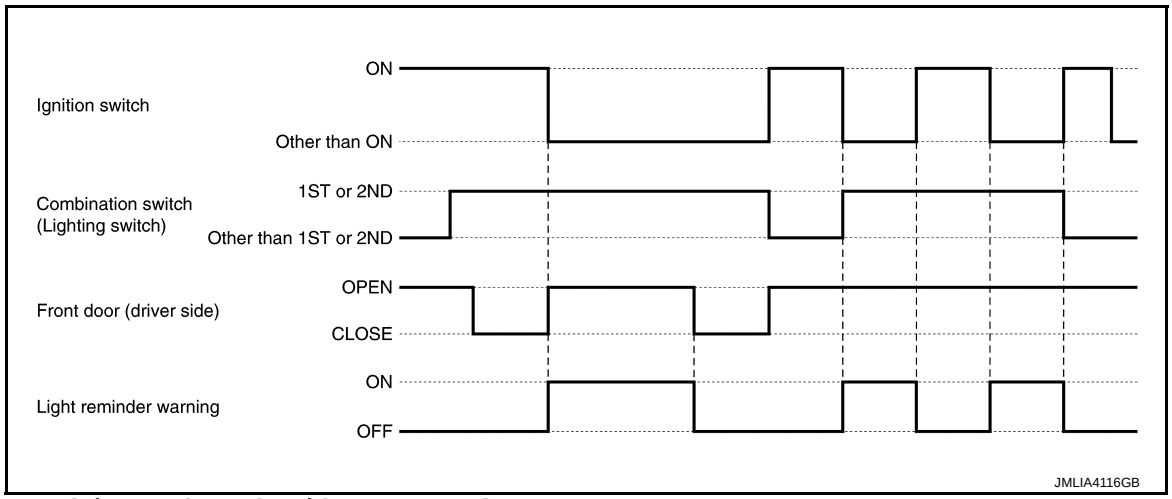
- Ignition other than ON
- Lighting switch 1ST or 2ND
- Front door (driver side) OPEN [front door switch (driver side) ON]

WARNING/INDICATOR CANCEL CONDITION

When any of the following conditions are satisfied.

- Ignition ON
- Lighting switch other than 1ST or 2ND
- Front door (driver side) CLOSE [front door switch (driver side) OFF]

TIMING CHART



WARNING/INDICATOR/CHIME LIST

WARNING/INDICATOR/CHIME LIST : Warning Lamp/Indicator Lamp

INFOID:0000000009676568

Item	Design	Reference
Front fog lamp indicator lamp		For layout, refer to MWI-8, "METER SYSTEM : Design". For function, refer to MWI-27, "WARNING LAMPS/INDICATOR LAMPS : Front Fog Lamp Indicator Lamp".
High beam assist indicator lamp		For layout, refer to MWI-8, "METER SYSTEM : Design". For function, refer to MWI-28, "WARNING LAMPS/INDICATOR LAMPS : High Beam Assist Indicator Lamp".
High beam indicator lamp		For layout, refer to MWI-8, "METER SYSTEM : Design". For function, refer to MWI-29, "WARNING LAMPS/INDICATOR LAMPS : High Beam Indicator Lamp".
Position lamp indicator lamp		For layout, refer to MWI-8, "METER SYSTEM : Design". For function, refer to MWI-37, "WARNING LAMPS/INDICATOR LAMPS : Position Lamp Indicator Lamp".
Turn signal indicator lamp		For layout, refer to MWI-8, "METER SYSTEM : Design". For function, refer to MWI-45, "WARNING LAMPS/INDICATOR LAMPS : Turn Signal Indicator Lamp".

WARNING/INDICATOR/CHIME LIST : Warning Chime

INFOID:0000000009676569

Item	Reference
Light reminder warning (buzzer)	Refer to WCS-9, "WARNING CHIME : Light Reminder Warning (Buzzer)".
Turn signal operation sound warning	Refer to EXL-30, "TURN SIGNAL AND HAZARD WARNING LAMP SYSTEM : System Description".

WARNING/INDICATOR/CHIME LIST : Warning/Indicator (Information Display)

INFOID:0000000009676570

Item	Reference
AFS warning	Refer to EXL-41, "INFORMATION DISPLAY (COMBINATION METER) : AFS Warning".
Headlamp warning	Refer to EXL-42, "INFORMATION DISPLAY (COMBINATION METER) : Headlamp Warning".
Light reminder warning (information display)	Refer to EXL-44, "INFORMATION DISPLAY (COMBINATION METER) : Light Reminder Warning (Information Display)".

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

INFOID:0000000009728867

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

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

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

×: Applicable item

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

*: This item is 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)*
	OFF		Power supply position is “OFF” (Ignition switch OFF)
	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.	

NOTE:
*: Power supply position shifts to “LOCK” from “OFF”, when ignition switch is in the OFF position, selector lever is in the P position, and any of the following conditions are met.
- Closing door
- Opening door
- Door is locked using door request switch
- Door is locked using Intelligent Key

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

HEADLAMP

HEADLAMP : CONSULT Function (BCM - HEAD LAMP)

INFOID:0000000009676572

WORK SUPPORT

Service item	Setting item	Setting	
CUSTOM A/LIGHT SETTING	MODE 1*	Normal	
	MODE 2	More sensitive setting than normal setting. (Turns ON earlier than normal operation.)	
	MODE 3	More sensitive setting than MODE 2. (Turns ON earlier than MODE 2.)	
	MODE 4	Less sensitive setting than normal setting. (Turns ON later than normal operation.)	
ILL DELAY SET	MODE 1*	45 sec.	Sets delay timer function timer operation time. (All doors closed)
	MODE 2	Without delay timer function	
	MODE 3	30 sec.	
	MODE 4	60 sec.	
	MODE 5	90 sec.	
	MODE 6	120 sec.	
	MODE 7	150 sec.	
	MODE 8	180 sec.	
TWILIGHT On	MODE 1	Without twilight function	
	MODE 2*	With twilight ON function	
WIPER LINK	MODE 1	Without wiper link function	
	MODE 2	With wiper LO and HI	
	MODE 3*	With wiper INT, LO and HI	
	MODE 4	**NOTE:** This item is displayed, but cannot be used.	

*: 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]	Indicates [km/h] condition of vehicle speed signal from combination meter

Monitor item [Unit]	Description
TURN SIGNAL R [On/Off]	Each switch status that BCM judges from the combination switch reading function.
TURN SIGNAL L [On/Off]	
TAIL LAMP SW [On/Off]	
HI BEAM SW [On/Off]	
HEAD LAMP SW1 [On/Off]	
HEAD LAMP SW2 [On/Off]	
PASSING SW [On/Off]	
AUTO LIGHT SW [On/Off]	
FR FOG SW [On/Off]	
RR FOG SW [On/Off]	**NOTE:** This item is displayed, but 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]	**NOTE:** This item is displayed, but cannot be monitored.
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 is displayed, but cannot be monitored.

ACTIVE TEST

Test item	Operation	Description
FR FOG LAMP	On	Transmits the front fog light request signal to IPDM E/R using CAN communication to turn the front fog lamp ON.
	Off	Stops the front fog light request signal transmission.
RR FOG LAMP	On	**NOTE:** This item is displayed, but cannot be tested.
	Off	
DAYTIME RUNNING LIGHT	On	Transmits the daytime running light request signal to IPDM E/R using 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 display control unit and dims display.
	Off	Stops the dimmer signal transmission.

FLASHER

FLASHER : CONSULT Function (BCM - FLASHER)

INFOID:0000000009676573

WORK SUPPORT

Service item	Setting item	Setting
3-TIME FLASHER SETTING	On*	With 3-time flasher function
	Off	Without 3-time flasher 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]	Indicated [On/Off] condition of door request switch (driver side)
REQ SW -AS [On/Off]	Indicated [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]	**NOTE:** This item is displayed, but cannot be monitored.

ACTIVE TEST

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

INT LAMP

INT LAMP : CONSULT Function (BCM - INT LAMP)

INFOID:0000000009728868

WORK SUPPORT

Service item	Setting item	Setting
SCENARIO LIGHTING SETTING	On	**NOTE:** Do not use this function since interior room lamp control is changed.
	Off*	
SET I/L D-UNLCK INTCON	On	Without interior room lamp timer function
	Off*	With interior room lamp timer function

Service item	Setting item	Setting
FOG LAMP OVERRIDE	On	With front fog override function
	Off*	Without front fog override 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]	Indicated [On/Off] condition of door request switch (driver side)
REQ SW -AS [On/Off]	Indicated [On/Off] condition of door request switch (passenger side)
REQ SW -RR [On/Off]	**NOTE:** This item is displayed, but cannot be monitored
REQ SW -RL [On/Off]	**NOTE:** This item is displayed, but cannot be monitored
PUSH SW [On/Off]	Indicates [On/Off] condition of push-button ignition switch
UNLK SEN -DR [On/Off]	Indicates [On/Off] condition of driver door UNLOCK status
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]	**NOTE:** This item is displayed, but cannot be monitored
CDL LOCK SW [On/Off]	Indicated [On/Off] condition of lock signal from door lock and unlock switch
CDL UNLOCK SW [On/Off]	Indicated [On/Off] condition of unlock signal from door lock and unlock switch
KEY CYL LK-SW [On/Off]	Indicated [On/Off] condition of lock signal from door key cylinder switch
KEY CYL UN-SW [On/Off]	Indicated [On/Off] condition of unlock signal from door key cylinder switch
TRNK/HAT MNTR [On/Off]	Indicates [On/Off] condition of trunk room lamp 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

ACTIVE TEST

Test item	Operation	Description
INT LAMP	On	Outputs interior room lamp control signal.
	Off	Stops interior room lamp control signal.

Test item	Operation	Description
STEP LAMP TEST	On	Outputs step lamp control signal.
	Off	Stops step lamp control signal.

DOOR LOCK

DOOR LOCK : CONSULT Function (BCM - DOOR LOCK)

INFOID:0000000009728869

BCM CONSULT FUNCTION

CONSULT performs the following functions via CAN communication with BCM.

WORK SUPPORT

Monitor item	Description
DOOR LOCK-UNLOCK SET	Selective unlock function mode can be changed to operation with this mode • On: Operate • Off: Non-operation
AUTO UNLOCK TYPE	Automatic door lock/unlock function (unlock operation) mode can be selected from the following in this mode • MODE1: All doors are unlocked • MODE2: Only driver door is unlocked
AUTO LOCK FUNCTION	Automatic door lock/unlock function (lock operation) mode can be selected from the following in the mode • MODE1: All doors are locked when vehicle speed more than 24 km/h (15 MPH) • MODE2: All doors are locked when shifting the selector lever from P position to other than the P position • MODE3: Non-operation • Off: Non-operation
AUTO UNLOCK FUNCTION	Automatic door lock/unlock function (unlock operation) mode can be selected from the following in this mode • MODE1: All doors are unlocked when the power supply position is changed from ON to OFF • MODE2: All doors are unlocked when shifting the selector lever from any position other than the P to P position • MODE3: Non-operation • Off: Non-operation
SIGNATURE LIGHT SETTING	Signature light function can be changed to operation with this mode • On: Operate • Off: Non-operation

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	Contents
REQ SW -DR	Indicated [On/Off] condition of door request switch (driver side)
REQ SW -AS	Indicated [On/Off] condition of door request switch (passenger side)
REQ SW -BD/TR	Indicated [On/Off] condition of trunk lid opener request switch
DOOR SW-DR	Indicated [On/Off] condition of front door switch (driver side)
DOOR SW-AS	Indicated [On/Off] condition of front door switch (passenger side)
DOOR SW-RR	Indicated [On/Off] condition of rear door switch RH
DOOR SW-RL	Indicated [On/Off] condition of rear door switch LH
DOOR SW-BK	**NOTE:** This item is displayed, but cannot be monitored
CDL LOCK SW	Indicated [On/Off] condition of lock signal from door lock and unlock switch
CDL UNLOCK SW	Indicated [On/Off] condition of unlock signal from door lock and unlock switch

Monitor Item	Contents
KEY CYL LK-SW	Indicated [On/Off] condition of lock signal from door key cylinder switch
KEY CYL UN-SW	Indicated [On/Off] condition of unlock signal from door key cylinder switch
SHOCK SENSOR	**NOTE:** This item is displayed, but cannot be monitored

ACTIVE TEST

Test item	Description
DOOR LOCK	This test is able to check door lock/unlock operation • ALL LOCK: The all door lock actuators are locked. • ALL UNLK: The all door lock actuators are unlocked.

DIAGNOSIS SYSTEM (IPDM E/R)

Diagnosis Description

INFOID:0000000009728870

AUTO ACTIVE TEST

Description

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

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

Operation Procedure

CAUTION:

Wiper arm interferes with hood when wiper is operated while wiper arm is in the raised position. Always perform auto active test without setting wiper arm in the raised position. Always pour water on front windshield glass in advance to auto active test so that damage on front windshield glass surface is prevented.

NOTE:

Never perform auto active test in the following conditions.

- CONSULT is connected
- Passenger door is open

1. Turn the ignition switch OFF.
2. Turn the ignition switch ON, and within 20 seconds, press the driver door switch 10 times. Then turn the ignition switch OFF.
3. Turn the ignition switch ON within 10 seconds. After that the horn sounds once and the auto active test starts.
   NOTE:
   Engine starts when ignition switch is turned ON while brake pedal is depressed.
4. Oil pressure warning lamp starts blinking when the auto active test starts.
5. After a series of the following operations is repeated 3 times, auto active test is completed.

NOTE:

- When auto active test mode has to be cancelled halfway through test, turn the ignition switch OFF.
- When auto active test is not activated, door switch may be the cause. Check door switch. Refer to DLK-111, "Component Function Check".

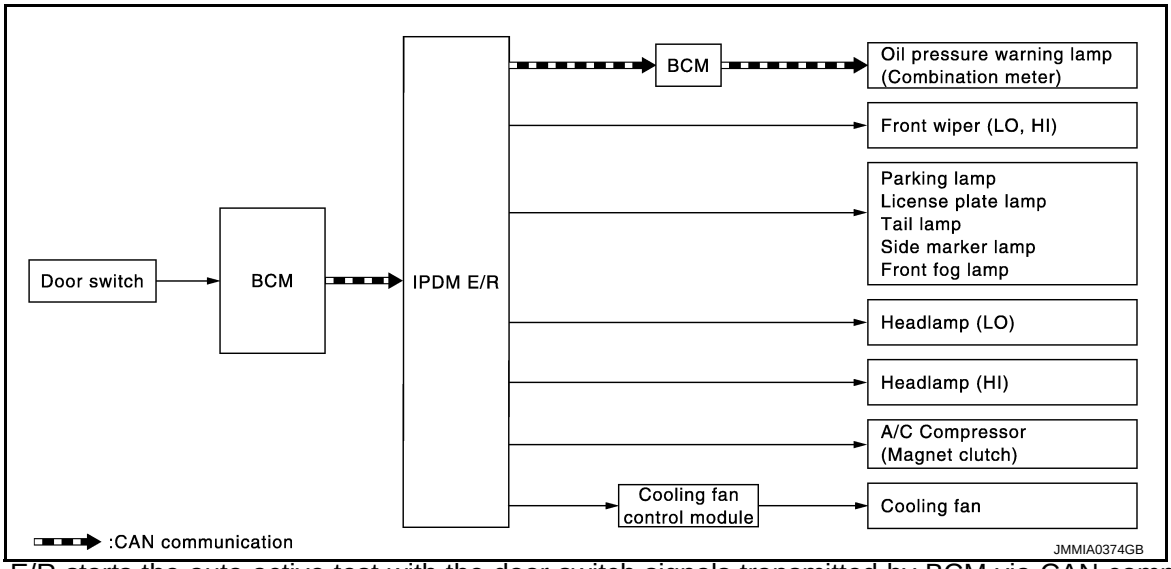
Inspection in Auto Active Test Mode

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

Operation sequence	Inspection location	Operation
1	Oil pressure warning lamp	Blinks continuously during of auto active test
2	Front wiper motor	LO for 5 seconds → HI for 5 seconds
3	• Parking lamp • License plate lamp • Tail lamp • Side marker lamp • Front fog lamp	10 seconds
4	Headlamp	LO for 10 seconds →HI ON ⇔ OFF 5 times
5	A/C compressor (magnet clutch)	ON ⇔ OFF 5 times
6	Cooling fan*	LO for 5 seconds → HI for 5 seconds

*: Outputs duty ratio of 50% for 5 seconds → duty ratio of 100% for 5 seconds on the cooling fan control module.

Concept of auto active test



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

Diagnosis chart in auto active test mode

Symptom	Inspection contents		Possible cause
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 BCM and IPDM E/R • CAN communication signal between BCM and combination meter • Combination meter
Any of the following components do not operate • Front wiper motor • Parking lamp • License plate lamp • Tail lamp • Side marker lamp • Front fog lamp • Headlamp (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	• ECM signal input circuit • 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
Cooling fan does not operate	Perform auto active test. Does the cooling fan operate?	YES	• ECM signal input circuit • CAN communication signal between ECM and IPDM E/R
		NO	• Harness or connector between IPDM E/R and cooling fan motor • Cooling fan control module • Cooling fan relay 1 • Cooling fan motor • IPDM E/R

CONSULT Function (IPDM E/R)

INFOID:0000000009728871

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 [%]	×	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 stop position 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.
IGN RLY [Off/On]	×	Displays the status of the ignition relay judged by IPDM E/R.

Monitor Item [Unit]	MAIN SIGNALS	Description
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/UNK-WN]		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 daytime 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 judged by IPDM E/R.
HL WASHER REQ [Off/On]		**NOTE:** The item is indicated, but not monitored.
THFT HRN REQ [Off/On]		Displays the status of the theft warning horn request signal received from BCM via CAN communication.
HORN CHIRP [Off/On]		Displays the status of the horn reminder signal received from BCM via CAN communication.
HOOD SW 2 [Off/On]		**NOTE:** The item is indicated, but not monitored.

ACTIVE TEST

Test item	Operation	Description
HORN	On	Operates horn relay for 20 ms.
FRONT WIPER	Off	OFF
	Lo	Operates the front wiper relay.
	Hi	Operates the front wiper relay and front wiper HI/LO relay.
MOTOR FAN	1	OFF
	2	
	3	Operates the cooling fan relay (MID operation).
	4	Operates the cooling fan relay (HI operation).
HEAD LAMP WASHER	On	**NOTE:** The item is indicated, but cannot be tested.

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.

DIAGNOSIS SYSTEM (HIGH BEAM ASSIST CONTROL MODULE)

CONSULT Function (HIGH BEAM ASSIST)

INFOID:0000000009728707

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 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-66, "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-98, "Description".

DIAGNOSIS SYSTEM (AFS CONTROL UNIT)

CONSULT Function (ADAPTIVE LIGHT)

INFOID:0000000009728708

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 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-71, "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 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 [°]	**NOTE:** This item is displayed, but cannot be monitored
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 height sensor signal voltage value input from the height sensor
HI SEN OTP FR [V]	**NOTE:** This item is displayed, but cannot be monitored
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]	Height sensor signal voltage value at height sensor initialization
HI SEN INI FR [V]	**NOTE:** This item is displayed, but cannot be monitored
PINION ANGLE [°]	The steering pinion angle value judged by the steering pinion angle signal received from the steering force control module via CAN communication

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
	MaxPosition	Moves the headlamp axis to the lowest position
	MinPosition	Moves the headlamp axis to the initial position

CONFIGURATION

The vehicle specification can be written when AFS control unit is replaced. Refer to EXL-99, "Description".

ECU DIAGNOSIS INFORMATION

BCM, TCM, IPDM E/R

List of ECU Reference

INFOID:0000000009238725

ECU	Reference
BCM	BCS-35, "Reference Value"
	BCS-60, "Fail-safe"
	BCS-61, "DTC Inspection Priority Chart"
	BCS-62, "DTC Index"
TCM	TM-74, "Reference Value"
	TM-80, "Fail-Safe"
	TM-83, "Protection Control"
	TM-84, "DTC Inspection Priority Chart"
	TM-85, "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:0000000009728714

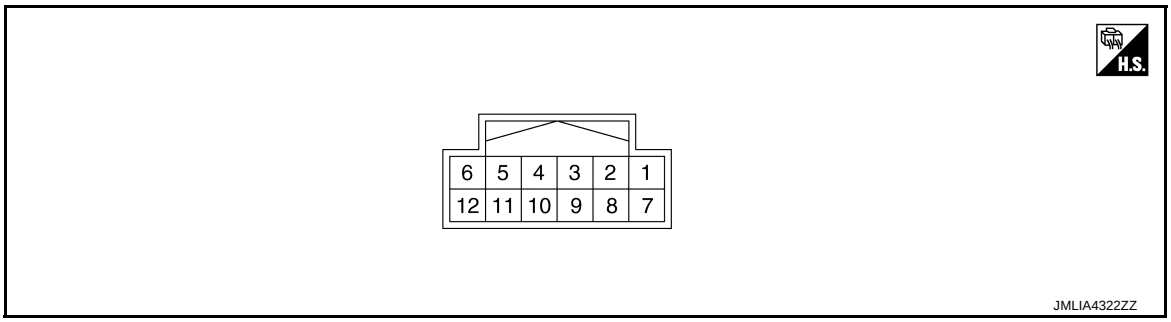
VALUES ON THE DIAGNOSIS TOOL

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 (BG)	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 (GR)	Ground	Ignition power supply	Input	Ignition switch	ON	9 – 16 V
					OFF	0 V
9 (BR)	Ground	Auto anti-dazzling outside mirror ground	Input	Ignition switch ON		0 V
10 (BG)	Ground	Battery power supply	Input	Ignition switch OFF		9 – 16 V

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

Fail-safe

INFOID:0000000009728715

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:0000000009728716

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:0000000009728717

×: Applicable

DTC No.	CONSULT screen terms	Fail-safe	Reference
B2090-01	HBA CONTROL MODULE	×	EXL-103, "DTC Description"
B2090-1C	HBA CONTROL MODULE	×	EXL-104, "DTC Description"
B2090-49	HBA CONTROL MODULE	×	EXL-105, "DTC Description"
B2090-54	HBA CONTROL MODULE	×	EXL-106, "DTC Description"
B2091-01	HBA CONTROL MODULE	×	EXL-107, "DTC Description"
B2091-02	HBA CONTROL MODULE	×	EXL-108, "DTC Description"

DTC No.	CONSULT screen terms	Fail-safe	Reference
B2091-07	HBA CONTROL MODULE	×	EXL-109, "DTC Description"
B2091-55	HBA CONTROL MODULE	×	EXL-111, "DTC Description"
U1000-01	CAN COMM CIRCUIT	×	EXL-125, "DTC Description"
U1010-49	CONTROL UNIT(CAN)	×	EXL-127, "DTC Description"

AFS CONTROL UNIT

Reference Value

INFOID:0000000009728718

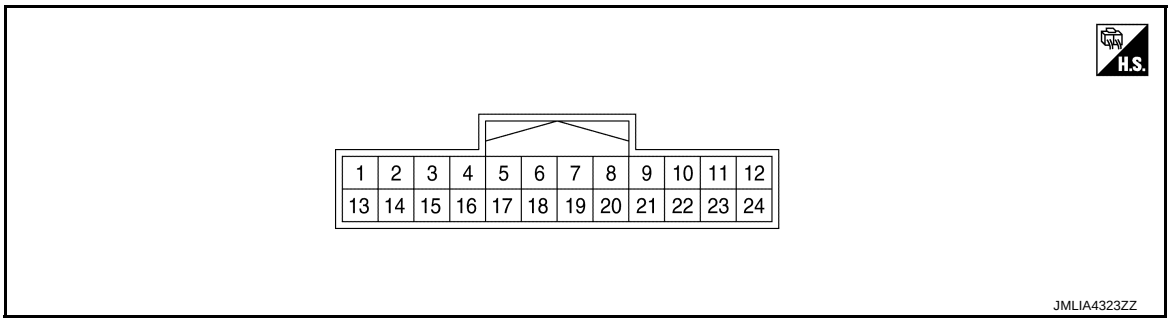
VALUES ON THE DIAGNOSIS TOOL

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

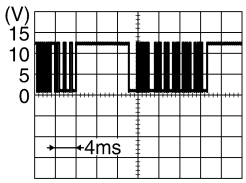
CONSULT MONITOR ITEM

Monitor Item	Condition		Value/Status
STR ANGLE SIG	**NOTE:** This item is displayed, but cannot be monitored		
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. 2.44 V
		Low (Leveling operation downward edge)	Approx. 1.78 V
HI SEN OTP FR	**NOTE:** This item is displayed, but cannot be monitored		
LEV ACTR VLTG	Headlamp leveling	Unloaded vehicle condition	Approx. 30.0%
		Low (Leveling operation downward edge)	Approx. 64.1%
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. 2.44 V
HI SEN INI FR	**NOTE:** This item is displayed, but cannot be monitored		
PINION ANGLE	Steering	Straight-forward	Approx. 0°
		Steering	(−756°) – (756°)

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ output			
1 (L)	Ground	CAN-H	Input/ output	—		—
6 (BR)	Ground	Height sensor signal	Output	Vehicle rear height	Unloaded vehicle condition	2.44 V
					Low (Leveling operation downward edge)	1.78 V
8 (GR)	Ground	Swivel actuator LIN signal	Input/ output	Ignition switch ON		 JMLIA4324GB
11 (B)	Ground	Ground	—	Ignition switch ON		0 V
12 (R)	Ground	Ignition power supply	Input	Ignition switch ON		9 – 16 V
13 (P)	Ground	CAN-L	Input/ output	—		—
19 (P)	Ground	Swivel actuator ground	Input	Ignition switch ON		0 V
21 (LG)	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	3.75 V
					Leveling operation downward edge	8.01 V
23 (GR)	Ground	Height sensor ground	Input	Ignition switch ON		0 V
24 (B)	Ground	Aiming motor ground	Input	Ignition switch ON		0 V

Fail-safe

INFOID:0000000009728719

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	
B2512	4WAS SIG	Right and left swivel motor swivel angle returns to 0° and fixed	—
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 stop at the position when DTC is detected
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
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:0000000009728720

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
3	B2503	SWIVEL ACTUATOR [RH]
		SWIVEL ACTUATOR [RH] COMM ERROR
	B2504	SWIVEL ACTUATOR [LH]
		SWIVEL ACTUATOR [LH] COMM ERROR
	B2512	4WAS SIG
	B2514	HI SEN UNUSUAL [RR]
	B2516	SHIFT POS SIG[R,P]
	B2517	VEHICEL SPEED SIG

DTC Index

INFOID:0000000009728721

×: Applicable

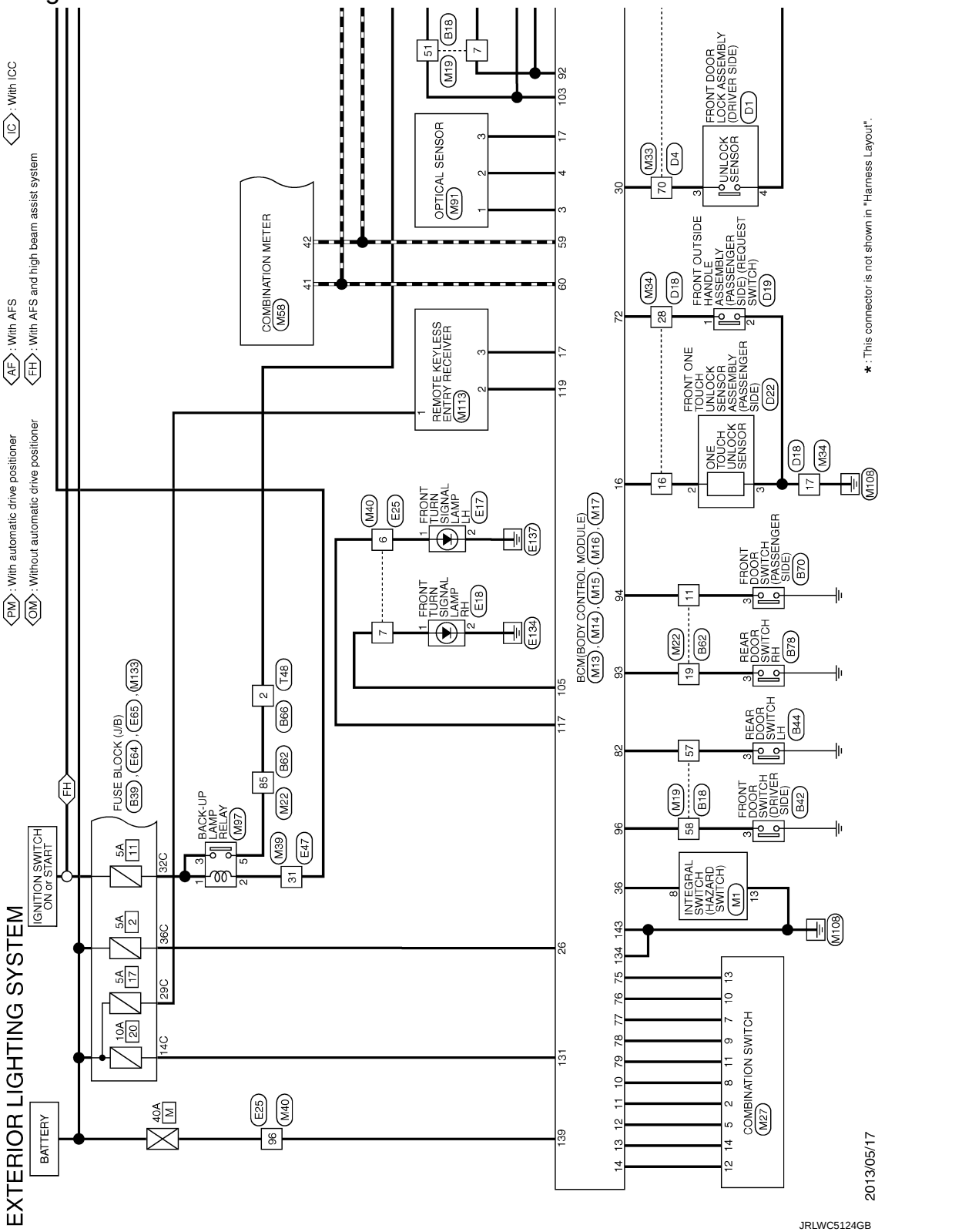
DTC No.	CONSULT screen terms	Fail-safe	AFS warning	Reference
B2008	PARA NOT PROG	×	×	EXL-102, "DTC Description"
B2503	SWIVEL ACTUATOR [RH]	×	×	EXL-112, "DTC Description"
	SWIVEL ACTUATOR [RH] COMM ERROR	×	×	
B2504	SWIVEL ACTUATOR [LH]	×	×	EXL-114, "DTC Description"
	SWIVEL ACTUATOR [LH] COMM ERROR	×	×	
B2512	4WAS SIG	×	—	EXL-116, "DTC Description"
B2514	HI SEN UNUSUAL [RR]	×	—	EXL-117, "DTC Description"
B2516	SHIFT POS SIG[R,P]	×	—	EXL-120, "DTC Description"
B2517	VEHICEL SPEED SIG	×	—	EXL-121, "DTC Description"
B2519	LEVELIZER CALIB	×	—	EXL-122, "DTC Description"
B2521	ECU CIRC	×	—	EXL-123, "DTC Description"
U1000	CAN COMM CIRCUIT	×	—	EXL-124, "DTC Description"
U1010	CONTROL UNIT(CAN)	×	—	EXL-126, "DTC Description"

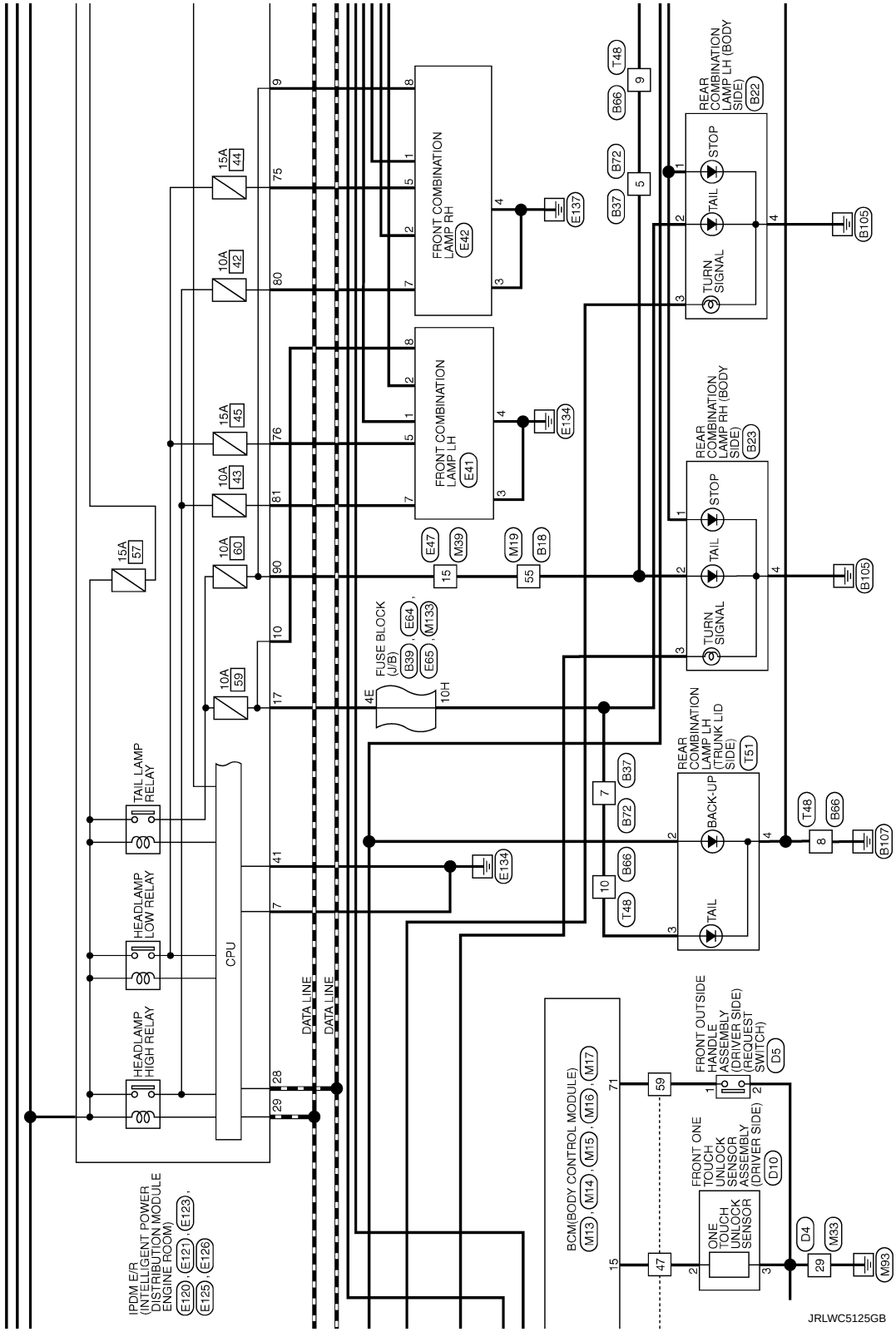
WIRING DIAGRAM

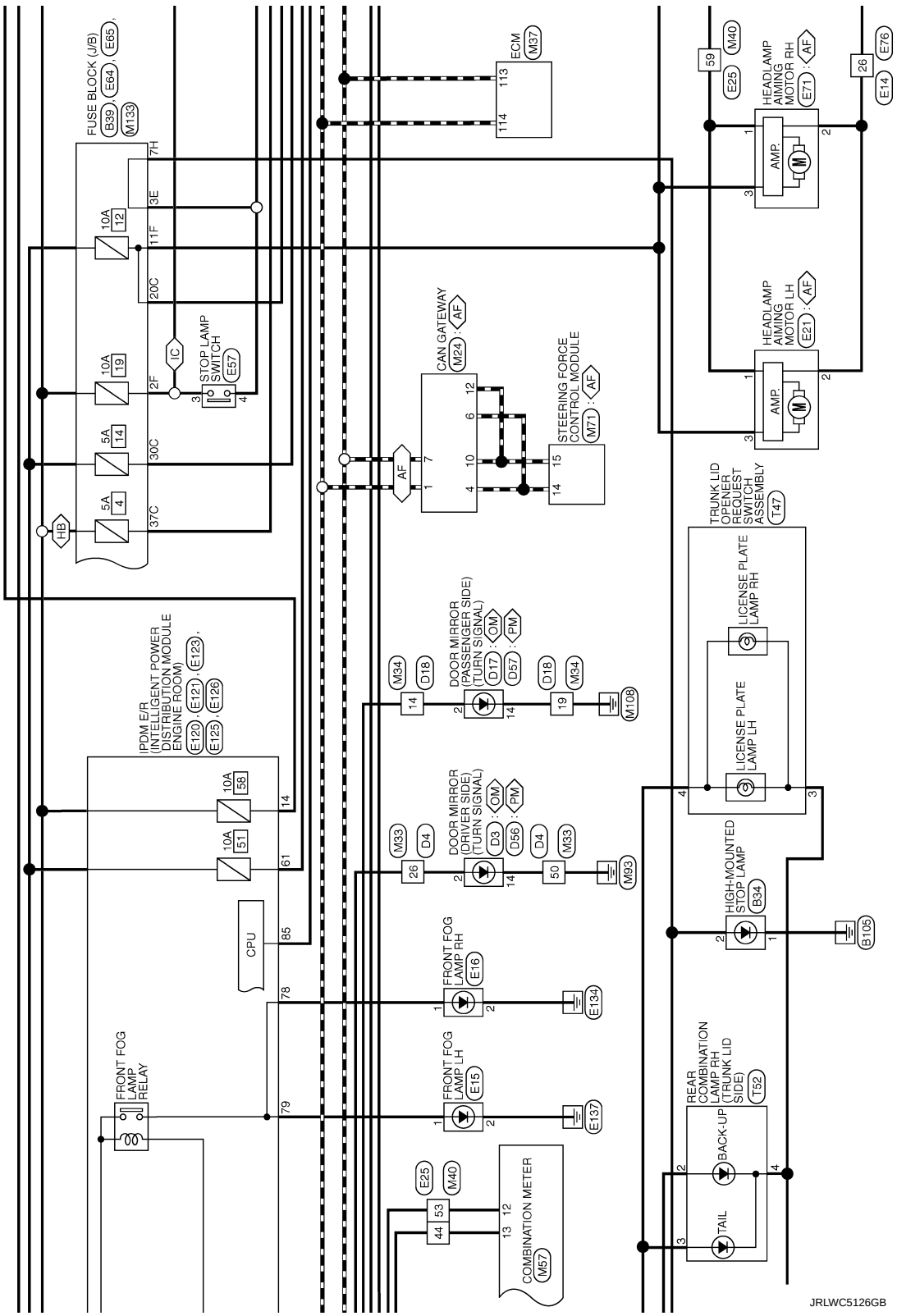
EXTERIOR LIGHTING SYSTEM

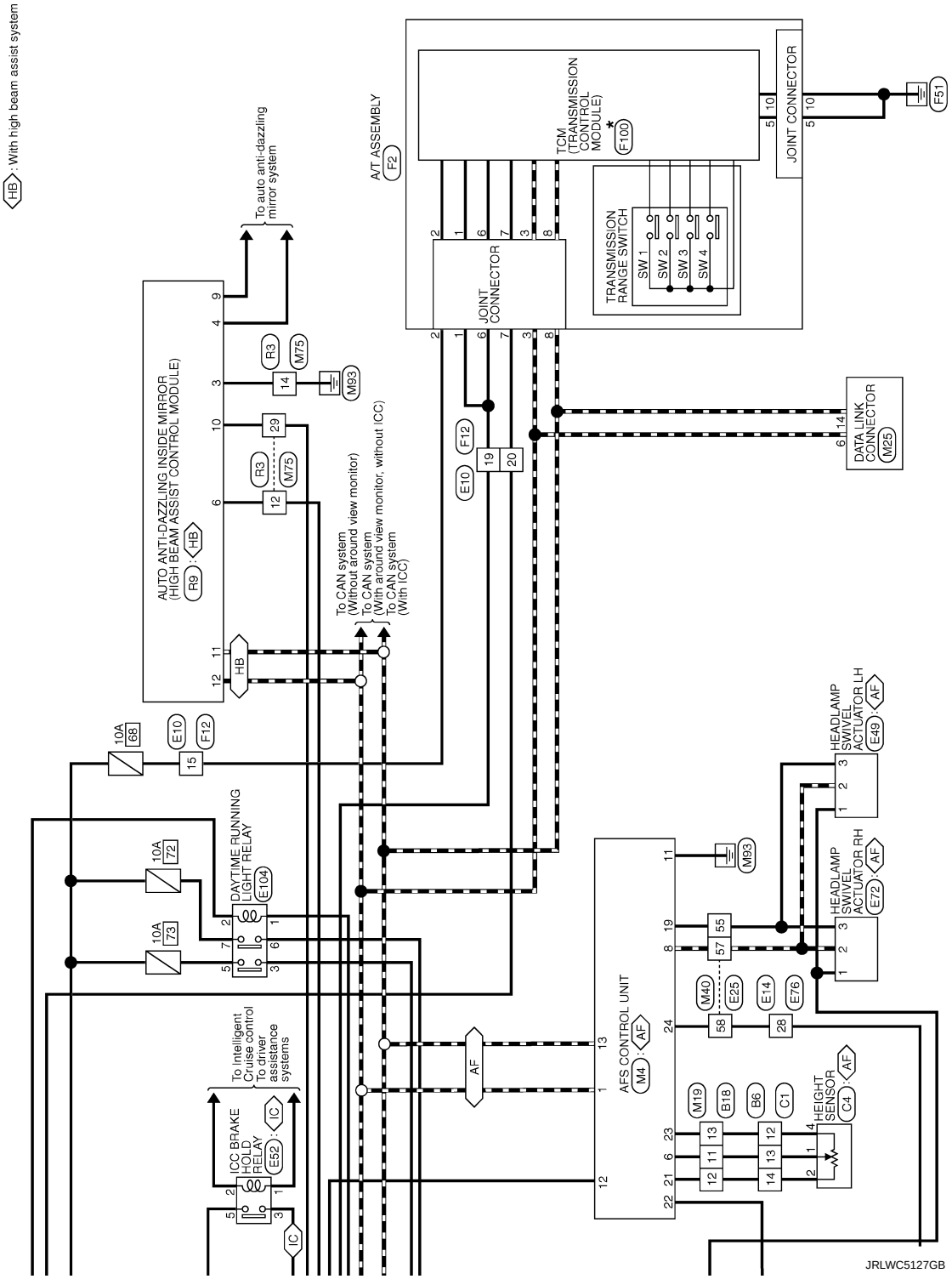
Wiring Diagram

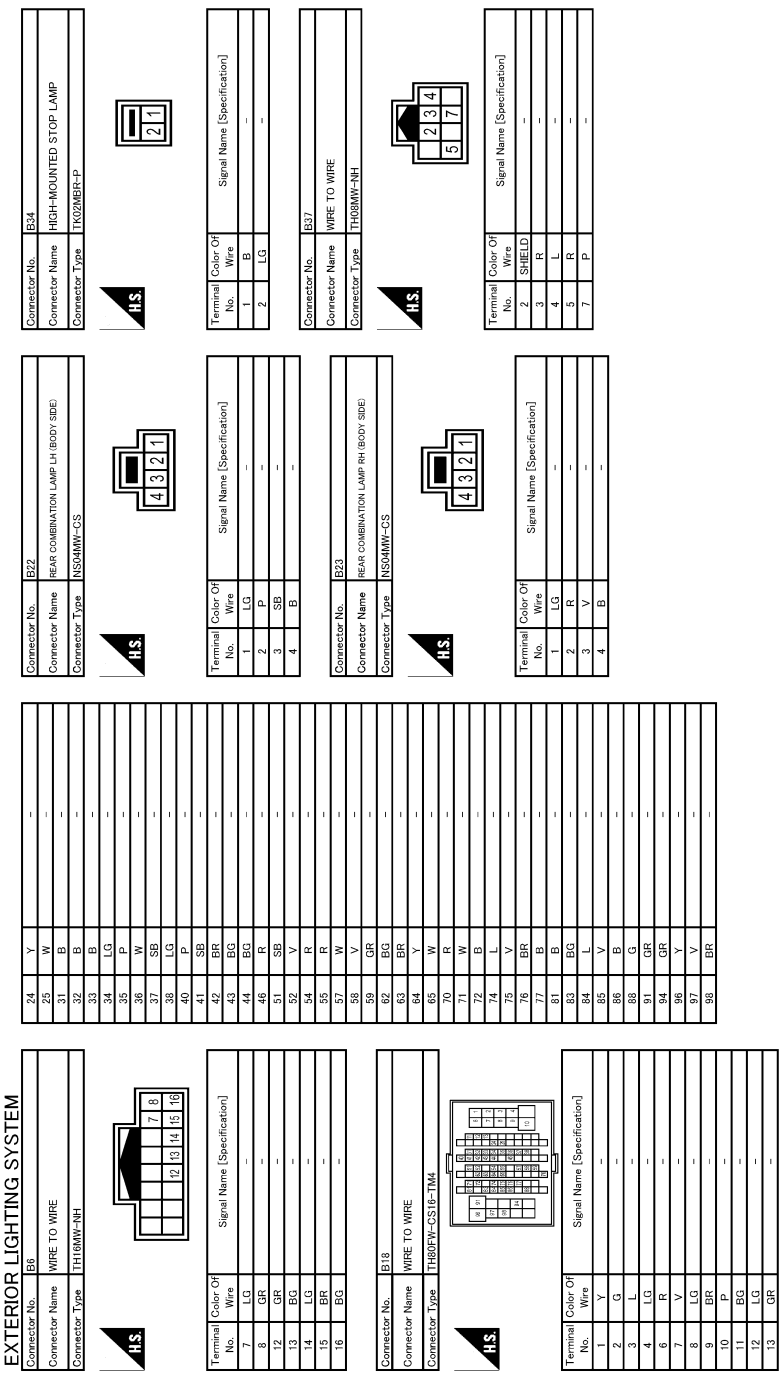
INFOID:0000000009238730



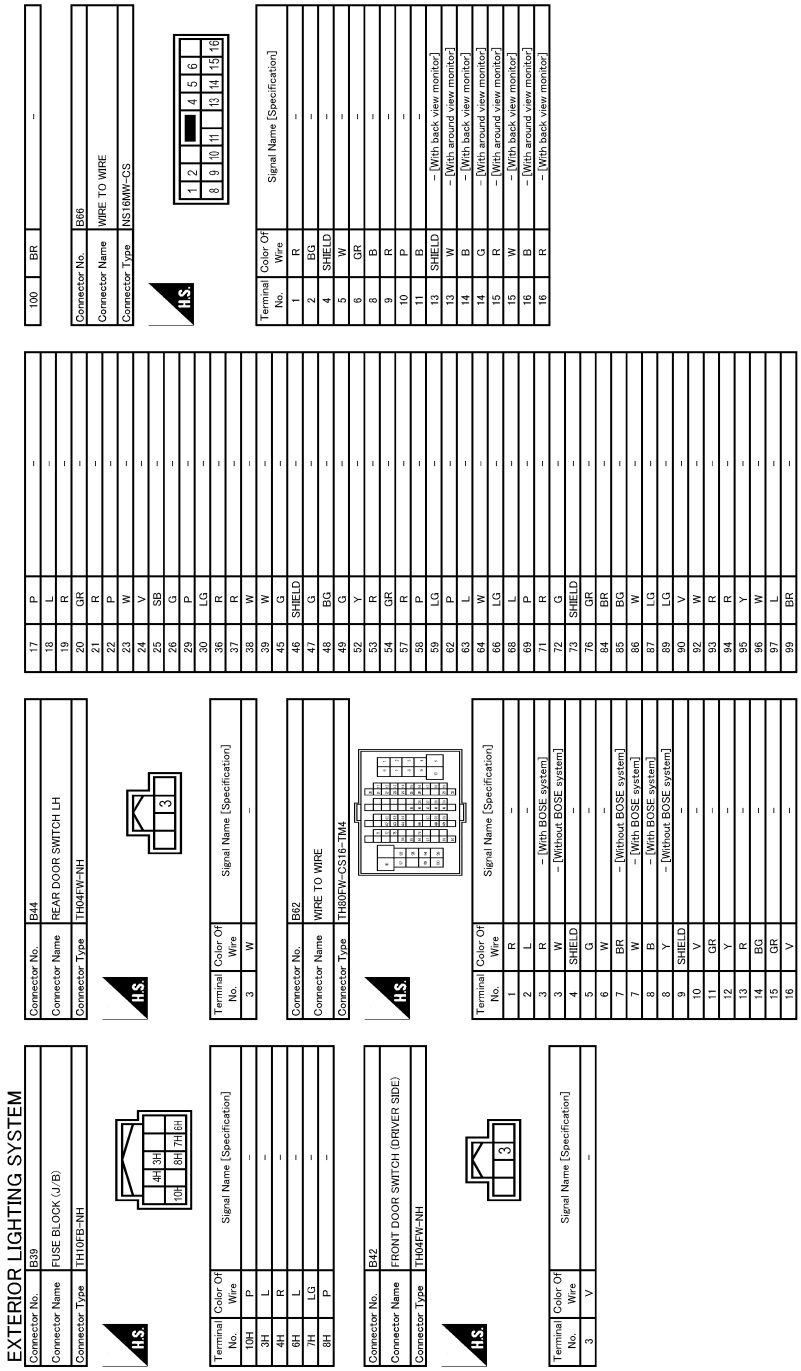

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E120, E121, E123, E125, E126
TAIL LAMP RELAY
HEADLAMP LOW RELAY
HEADLAMP HIGH RELAY
CPU
DATA LINE
DATA LINE
15A 57
15A 44
10A 42
15A 45
10A 43
10A 60
10A 59
FUSE BLOCK (J/B) B39, E64, E65, M133
4E
10H
FRONT COMBINATION LAMP RH E42
FRONT COMBINATION LAMP LH E41
E137
E134
E47
M39
15
M19
B18
55
REAR COMBINATION LAMP LH (BODY SIDE) B22
REAR COMBINATION LAMP RH (BODY SIDE) B23
REAR COMBINATION LAMP LH (TRUNK LID SIDE) T51
STOP
TAIL
TURN SIGNAL
BACK-UP
B105
B107
T48
B66
B72
B37
BCM(BODY CONTROL MODULE) M13, M14, M15, M16, M17
FRONT OUTSIDE HANDLE ASSEMBLY (DRIVER SIDE) (REQUEST SWITCH) D5
FRONT ONE TOUCH UNLOCK SENSOR ASSEMBLY (DRIVER SIDE) D10
ONE TOUCH UNLOCK SENSOR
D4
M33
M93
JRLWC5125GB


FUSE BLOCK (J/B)
B39, E64, E65, M133
10A 12
10A 19
5A 14
5A 4
7H
3E
11F
20C
2F
30C
37C
IC
HB
STOP LAMP SWITCH
E57
ECM
M37
113
114
CAN GATEWAY
M24 : AF
AF
STEERING FORCE CONTROL MODULE
M71 : AF
IPDM E/R
(INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E120, E121, E123, E125, E126
10A 58
10A 51
14
61
CPU
85
78
79
FRONT FOG LAMP RH
E16
E134
FRONT FOG LAMP LH
E15
E137
FRONT FOG LAMP RELAY
E25
M40
53
44
12
13
COMBINATION METER
M57
DOOR MIRROR (PASSENGER SIDE) (TURN SIGNAL)
OM : D17
PM : D57
M34
D18
14
19
M108
DOOR MIRROR (DRIVER SIDE) (TURN SIGNAL)
OM : D56
PM : D3
M33
D4
26
50
M93
HEADLAMP AIMING MOTOR RH
E71 : AF
HEADLAMP AIMING MOTOR LH
E21 : AF
AMP.
59
26
E76
E14
TRUNK LID OPENER REQUEST SWITCH ASSEMBLY
T47
LICENSE PLATE LAMP RH
LICENSE PLATE LAMP LH
HIGH-MOUNTED STOP LAMP
B34
B105
REAR COMBINATION LAMP RH (TRUNK LID SIDE)
T52
BACK-UP
TAIL
JRLWC5126GB


HB : With high beam assist system
To auto anti-dazzling mirror system
A/T ASSEMBLY F2
TCM (TRANSMISSION CONTROL MODULE) *F100
JOINT CONNECTOR
TRANSMISSION RANGE SWITCH
SW 1
SW 2
SW 3
SW 4
F51
AUTO ANTI-DAZZLING INSIDE MIRROR (HIGH BEAM ASSIST CONTROL MODULE)
R9 : HB
R3 M75 M93
To CAN system (Without around view monitor)
To CAN system (With around view monitor, without ICC)
To CAN system (With ICC)
F12 E10
DATA LINK CONNECTOR M25
10A 68
10A 72
10A 73
DAYTIME RUNNING LIGHT RELAY E104
To Intelligent Cruise control
To driver assistance systems
ICC BRAKE HOLD RELAY E52 : IC
AF
AFS CONTROL UNIT M4 : AF
HEADLAMP SWIVEL ACTUATOR LH E49 : AF
HEADLAMP SWIVEL ACTUATOR RH E72 : AF
M40 E25 E14 E76
M19 B18 B6 C1
HEIGHT SENSOR C4 : AF
JRLWC5127GB



JRLWC5128GB



JRLWC5129GB

EXTERIOR LIGHTING SYSTEM

Connector No.	B70
Connector Name	FRONT DOOR SWITCH (PASSENGER SIDE)
Connector Type	TH04FW-NH

Terminal No.	Color Of Wire	Signal Name [Specification]
3	GR	–

Connector No.	B72
Connector Name	WIRE TO WIRE
Connector Type	TH08FW-NH

Terminal No.	Color Of Wire	Signal Name [Specification]
2	SHIELD	–
3	R	–
4	L	–
5	R	–
7	P	–

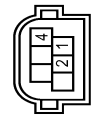
Connector No.	B78
Connector Name	REAR DOOR SWITCH RH
Connector Type	TH04FW-NH

Terminal No.	Color Of Wire	Signal Name [Specification]
3	R	–

Connector No.	C1
Connector Name	WIRE TO WIRE
Connector Type	TH16FW-NH

Terminal No.	Color Of Wire	Signal Name [Specification]
7	LG	–
8	GR	–
12	GR	–
13	BG	–
14	LG	–
15	BR	–
16	BG	–

Connector No.	C4
Connector Name	HEIGHT SENSOR
Connector Type	AAZ06FB1

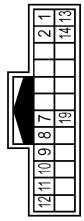


Terminal No.	Color Of Wire	Signal Name [Specification]
1	BG	–
2	LG	–
4	GR	–

Connector No.	D1
Connector Name	FRONT DOOR LOCK ASSEMBLY (DRIVER SIDE)
Connector Type	E06FGY-RS

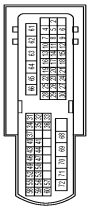
Terminal No.	Color Of Wire	Signal Name [Specification]
1	P	–
2	LG	–
3	W	–
4	B	–
5	Y	–
6	V	–

Connector No.	D3
Connector Name	DOOR MIRROR (DRIVER SIDE)
Connector Type	TH24MW-NH



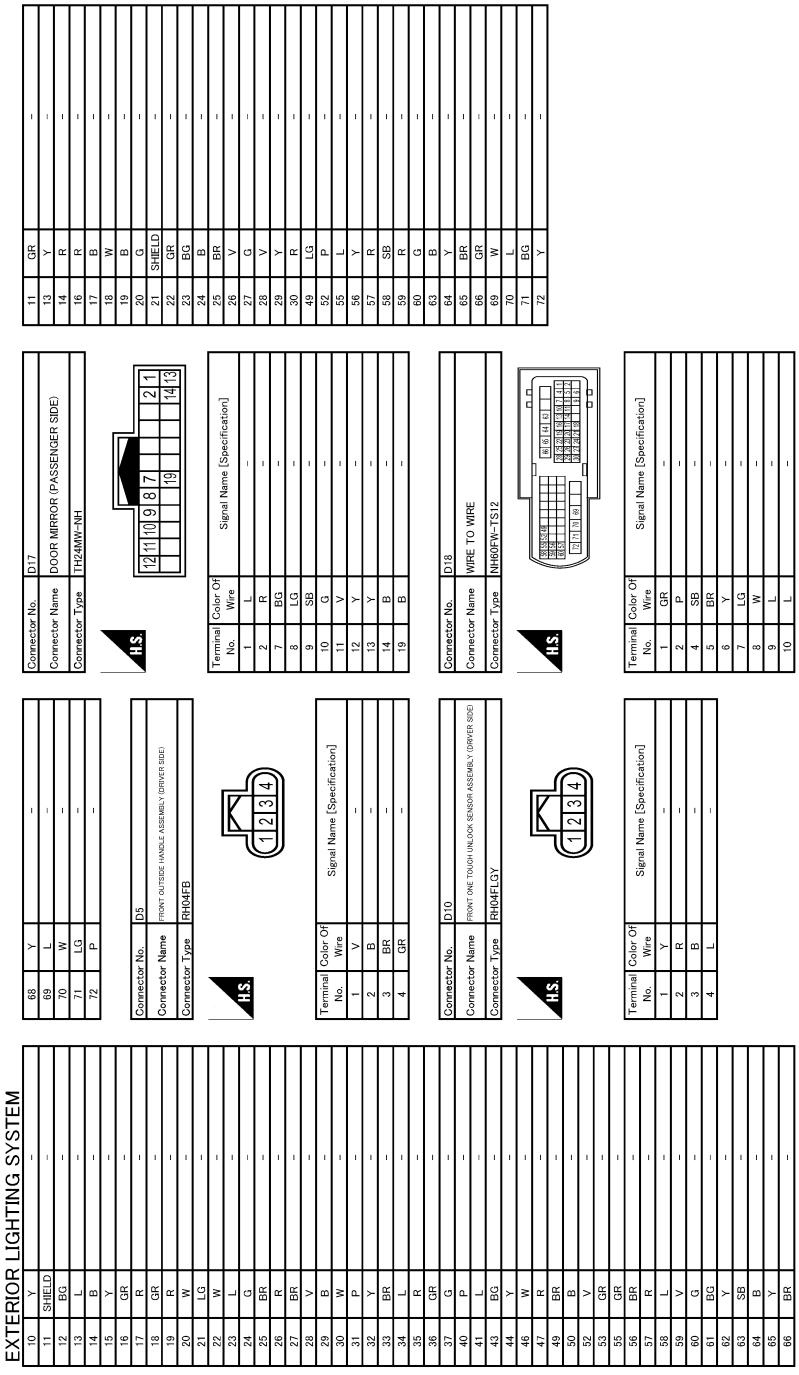
Terminal No.	Color Of Wire	Signal Name [Specification]
1	GR	–
2	R	–
7	L	–
8	SB	–
9	P	–
10	Y	–
11	GR	–
12	L	–
13	V	–
14	B	–
19	B	–

Connector No.	D4
Connector Name	WIRE TO WIRE
Connector Type	NH60FW-TS12



Terminal No.	Color Of Wire	Signal Name [Specification]
2	R	– [With DRPO]
2	SB	– [Without DRPO]
4	BG	–
5	R	– [With DRPO]
5	Y	– [Without DRPO]
6	V	–
7	LG	–
8	G	–
9	GR	–

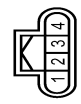
JRLWC5130GB



JRLWC5131GB

EXTERIOR LIGHTING SYSTEM

Connector No.	D19
Connector Name	(FRONT OUTSIDE HANDLE ASSEMBLY(PASSENGER SIDE)
Connector Type	RH04FB

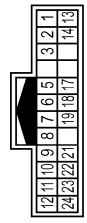


Terminal No.	Color Of Wire	Signal Name [Specification]
1	V	–
2	B	–
3	BR	–
4	GR	–

Connector No.	D22
Connector Name	(FRONT DNE TOUCH UNLOCK SENSOR ASSEMBLY (PASSENGER SIDE)
Connector Type	RH04FLGY

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

Connector No.	D56
Connector Name	DOOR MIRROR (DRIVER SIDE)
Connector Type	TH24MW-NH

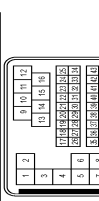


Terminal No.	Color Of Wire	Signal Name [Specification]
1	GR	–
2	R	–
3	G	–
4	B	–
5	W	–
6	L	–
7	SB	–
8	P	–
9	Y	–
10	GR	–
11	BG	–
12	V	–
13	B	–
14	SHIELD	–
15	R	–
16	B	–
17	BR	–
18	LG	–
19	W	–
20	G	–

Connector No.	D57
Connector Name	DOOR MIRROR (PASSENGER SIDE)
Connector Type	TH24MW-NH

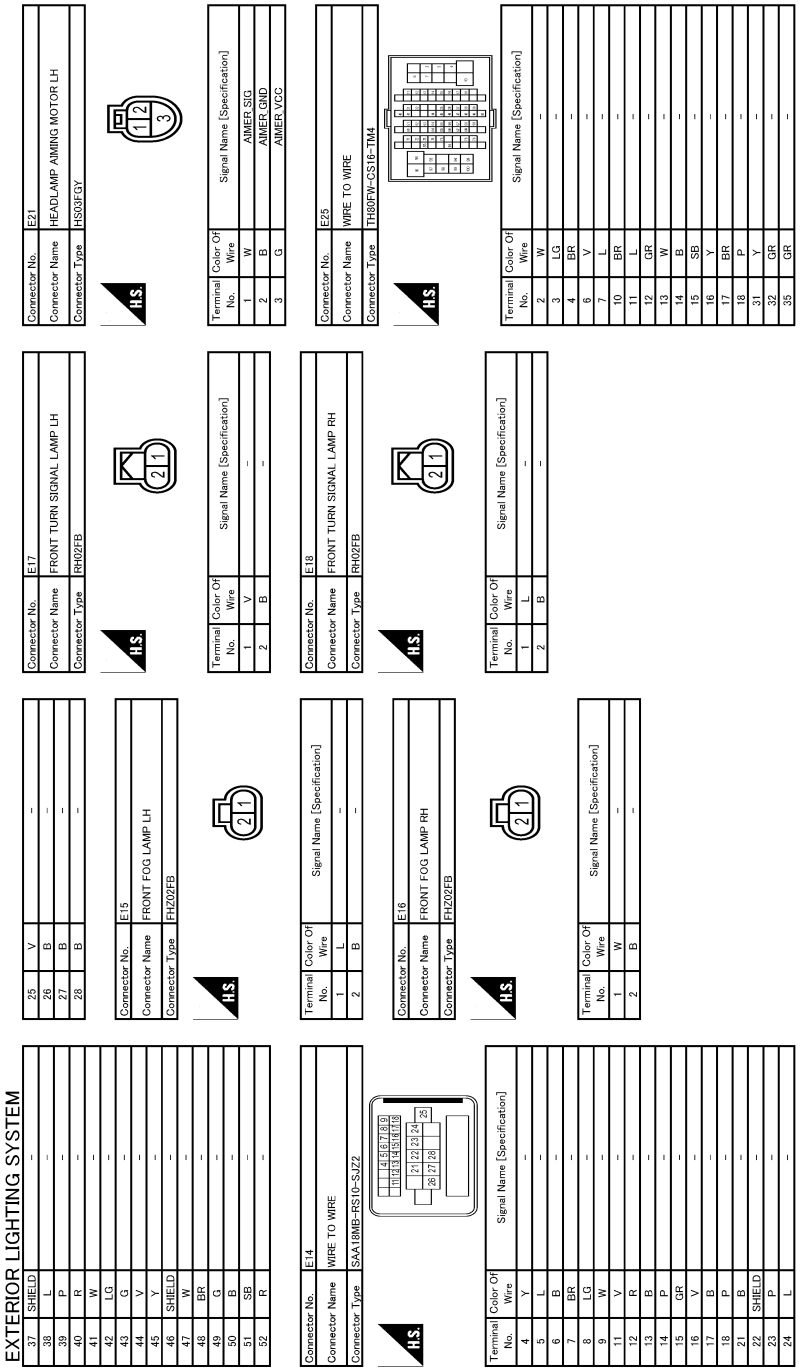
Terminal No.	Color Of Wire	Signal Name [Specification]
1	L	–
2	R	–
3	W	–
5	B	–
6	R	–
7	BG	–
8	LG	–
9	SB	–
10	G	–
11	V	–
12	Y	–
13	Y	–
14	B	–
17	SHIELD	–
18	G	–
19	B	–
21	P	–
22	BR	–
23	W	–
24	GR	–

Connector No.	E10
Connector Name	WIRE TO WIRE
Connector Type	SAA36MB-RS8-SHZ8

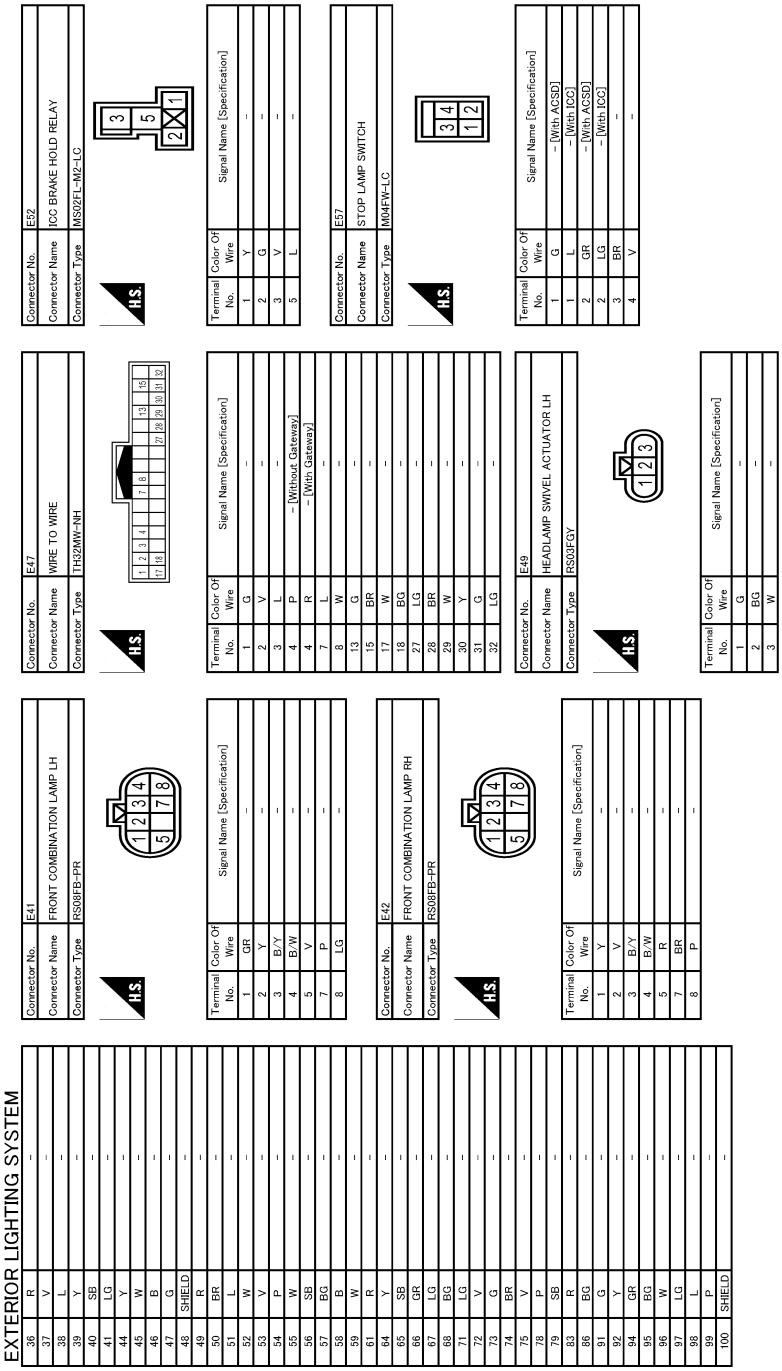


Terminal No.	Color Of Wire	Signal Name [Specification]
1	L/Y	–
2	SHIELD	–
3	L/B	–
4	SHIELD	–
5	BR	–
6	SB	–
7	G	–
8	W	–
9	W	–
10	Y	–
11	P	–
12	SB	–
13	L	–
14	G	–
15	LG	–
16	BR	–
17	L	–
18	P	–
19	GR	–
20	G	–
21	V	–
22	Y	–
23	L	–
24	GR	–
25	V	–
26	BR	–
27	W	–
28	V	–
29	BR	–
30	R	–
31	P	–
32	G	–
33	B	–
34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

JRLWC5132GB

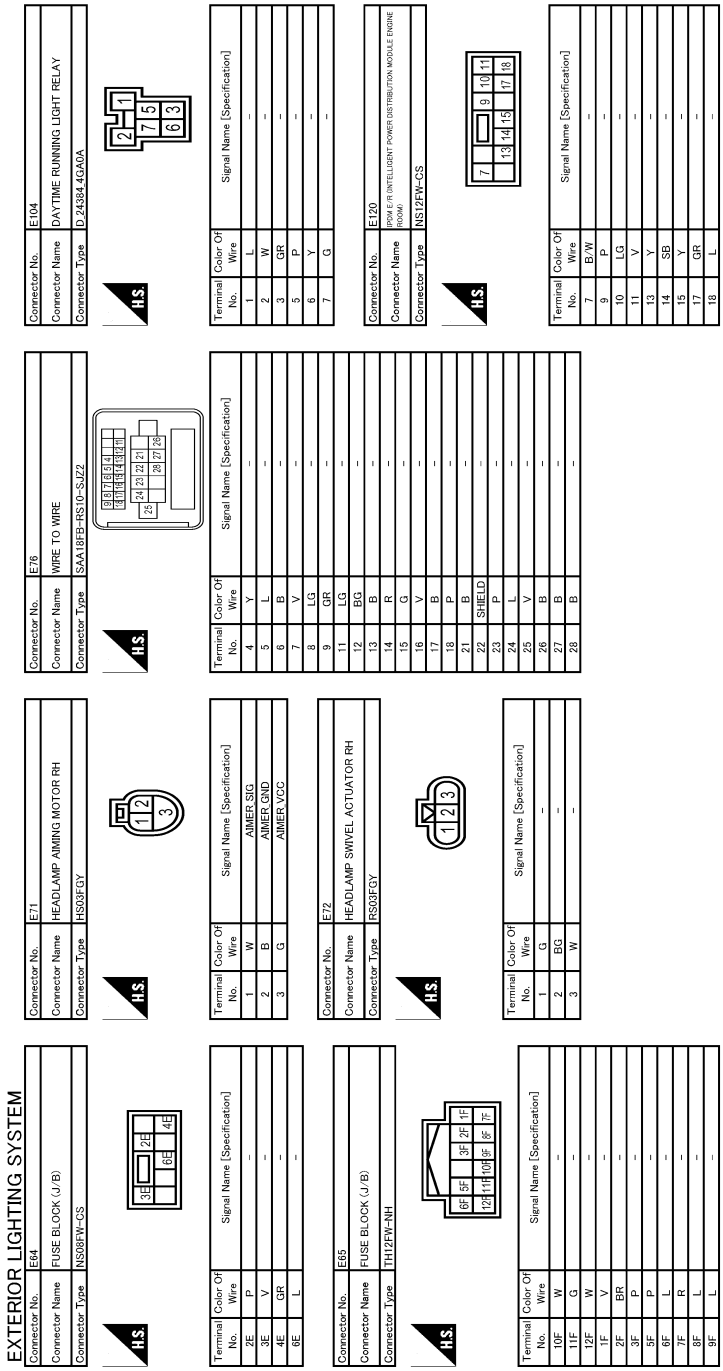


JRLWC5133GB



JRLWC5134GB

EXTERIOR LIGHTING SYSTEM



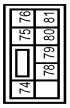
JRLWC5135GB

EXTERIOR LIGHTING SYSTEM

Connector No.	E121
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH32FW-NH

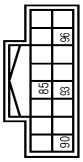
Terminal No.	Color Of Wire	Signal Name [Specification]
19	G	–
22	BG	–
23	LG	–
27	GR	–
28	P	–
29	L	–
31	G	–
33	SB	–
34	Y	–
35	G	–
36	SB	–
37	GR	–
38	BR	–
41	GR	–
43	V	–
57	P	–
58	SB	–
59	V	–
61	GR	–

Connector No.	E125
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS08FW-CS



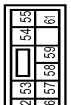
Terminal No.	Color Of Wire	Signal Name [Specification]
74	G	–
75	R	–
76	V	–
78	W	–
79	L	–
80	BR	–
81	P	–

Connector No.	E126
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH16FW-NH



Terminal No.	Color Of Wire	Signal Name [Specification]
85	L	–
90	BR	–
93	V	–
96	P	–

Connector No.	E123
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS10FW-CS

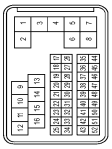


Terminal No.	Color Of Wire	Signal Name [Specification]
52	G	–
53	BR	–
54	Y	–
55	W	–
56	L	–

Connector No.	F2
Connector Name	A/T ASSEMBLY
Connector Type	RK10FG-DGY

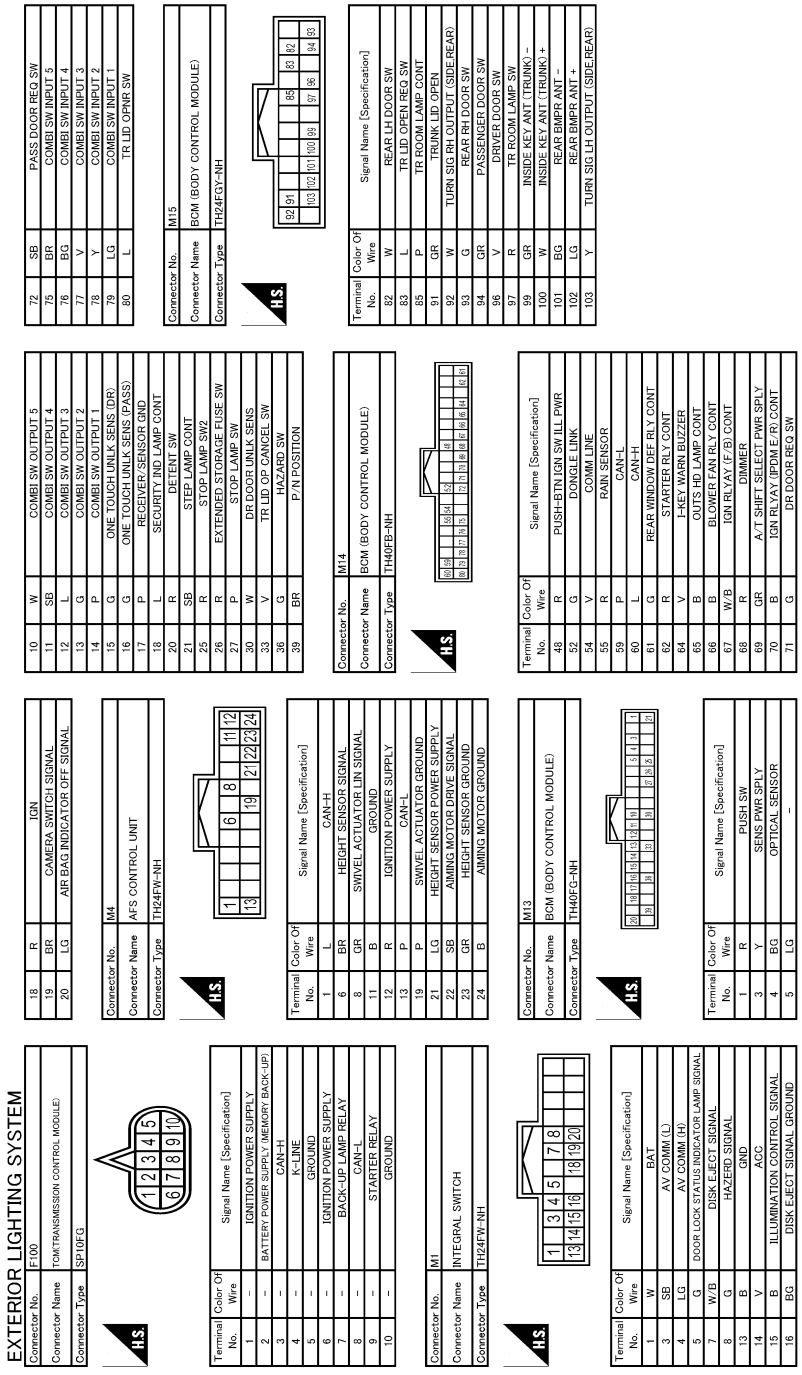
Terminal No.	Color Of Wire	Signal Name [Specification]
1	GR	IGNITION POWER SUPPLY
2	P	BATTERY POWER SUPPLY (MEMORY BACK-UP)
3	L	CAN-H
4	LG	K-LINE
5	B	GROUND
6	GR	IGNITION POWER SUPPLY
7	BG	BACK-UP LAMP RELAY
8	P	CAN-L
9	GR	STARTER RELAY
10	B	GROUND

Connector No.	F12
Connector Name	WIRE TO WIRE
Connector Type	SAA36FB-HS8-SHZ8

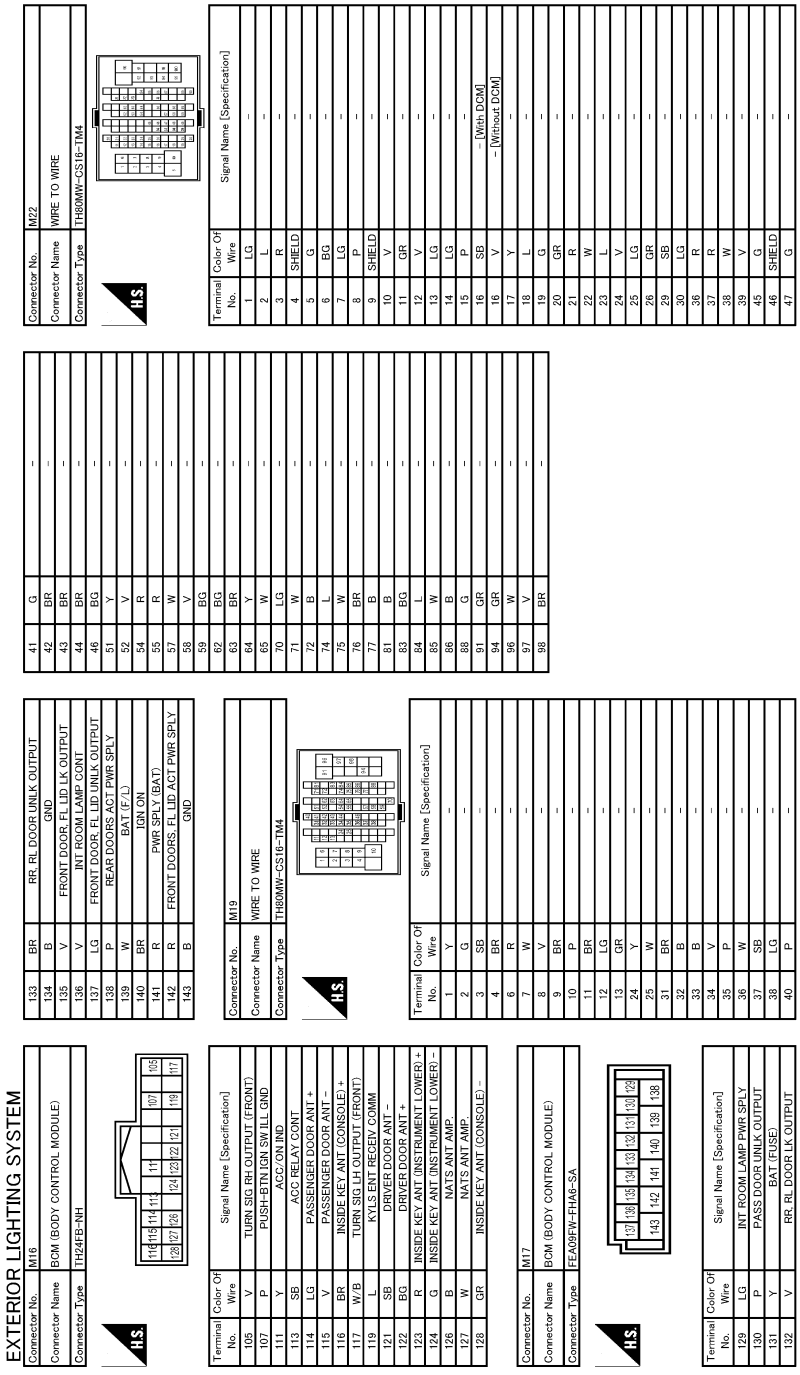


Terminal No.	Color Of Wire	Signal Name [Specification]
1	L/Y	–
2	SHIELD	–
3	L/B	–
4	SHIELD	–
5	BR	–
6	GR	–
7	G	–
8	W	–
9	W	–
10	G	–
11	R	–
12	P	–
13	L	–
14	LG	–
15	P	–
16	Y	–
17	L	–
18	P	–
19	GR	–
20	BG	–
21	LG	–
22	W	–
23	Y	–
24	LG	–
25	V	–
26	W	–
27	V	–
28	BR	–
29	LG	–
30	R	–
31	P	–
32	GR	–
33	B	–
34	BG	–
35	LG	–
36	SB	–
37	SHIELD	–
38	W	–
39	Y	–
40	G	–
41	B	–
42	GR	–
43	R	–
44	BG	–
45	Y	–
46	SHIELD	–
47	W	–
48	LG	–
49	L	–
50	R	–
51	SB	–
52	G	–

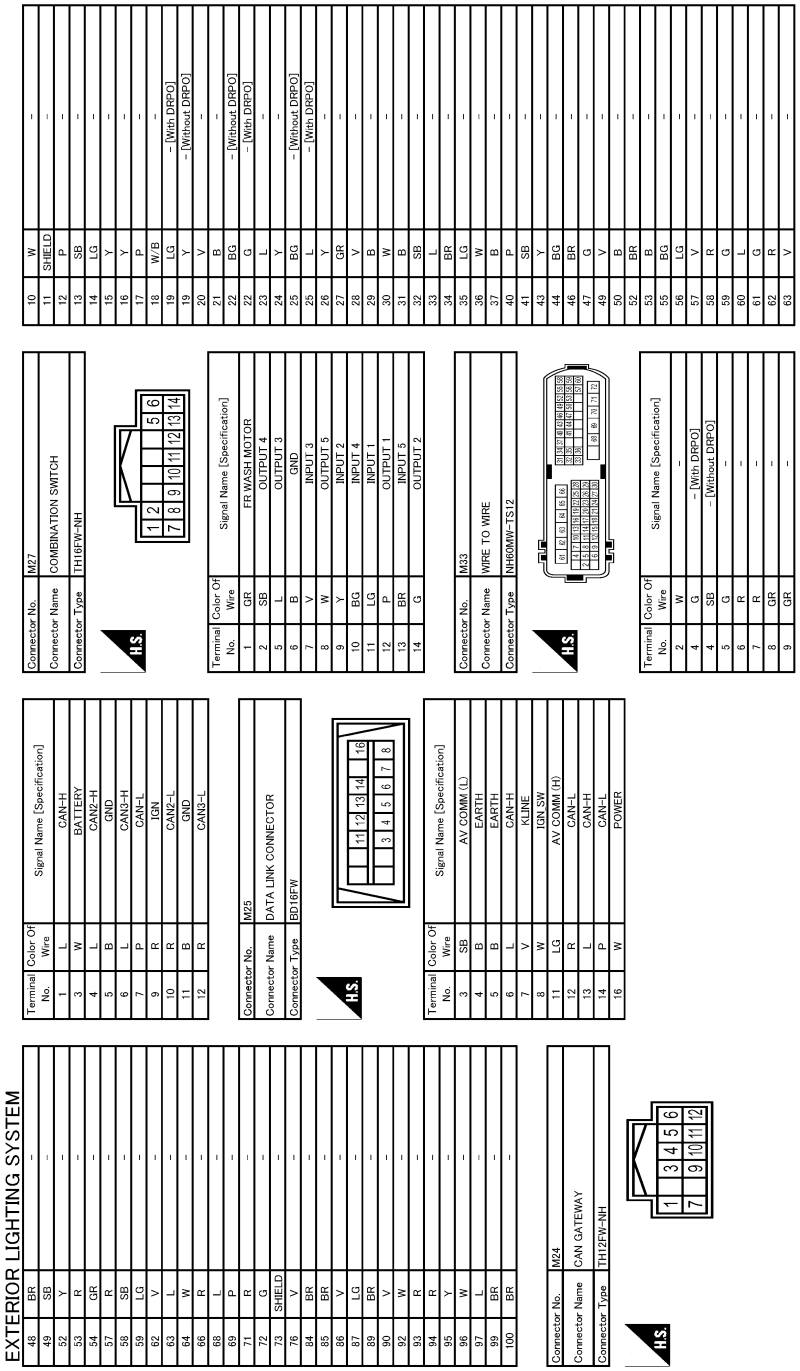
JRLWC5136GB



JRLWC5137GB



JRLWC5138GB



JRLWC5139GB

EXTERIOR LIGHTING SYSTEM

64	B	–
65	R	–
66	BR	–
68	P	–
69	V	–
70	W	–
71	LG	–
72	V	–

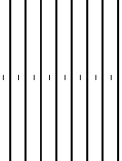
Connector No.	M34
Connector Name	WIRE TO WIRE
Connector Type	NH80MW–TS12

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	V	–
2	R	–
4	G	– [With DRPO]
4	SB	– [Without DRPO]
5	L	–
6	R	–
7	R	–
8	W	–
9	GR	–
10	V	–
11	Y	–
13	LG	–
14	W	–
16	G	–
17	B	–
18	W	–
19	B	–
20	SB	– [With DRPO]
20	Y	– [Without DRPO]
21	SHIELD	–
22	B	–
23	BG	– [Without DRPO]
23	P	– [With DRPO]
24	G	–
25	LG	–
26	BG	– [Without DRPO]
26	BR	– [With DRPO]
27	R	–
28	SB	–
29	BG	– [Without DRPO]
29	W/B	– [With DRPO]
30	L	–
49	P	–
52	V	–
55	B	–
56	SB	–
57	G	–
58	G	–
59	LG	–
60	R	–
63	B	–
64	R	–
65	BR	–
66	Y	–
69	BR	–
70	Y	–
71	SB	–
72	W	–

Connector No.	M37
Connector Name	ECM
Connector Type	RH24FGY–RZ8–R–LH–Z

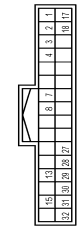
H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
97	Y	ACCELERATOR PEDAL POSITION SENSOR 1
98	BR	ACCELERATOR PEDAL POSITION SENSOR 2
99	W	SENSOR POWER SUPPLY (ACCELERATOR PEDAL POSITION SENSOR 1)
100	G	SENSOR GROUND (ACCELERATOR PEDAL POSITION SENSOR 1)
101	SB	ASCD STEERING SWITCH
101	SB	ICC STEERING SWITCH
102	LG	EVAP CONTROL SYSTEM PRESSURE SENSOR
103	L	SENSOR POWER SUPPLY (ACCELERATOR PEDAL POSITION SENSOR 2)
104	R	SENSOR GROUND (ACCELERATOR PEDAL POSITION SENSOR 2)
105	L	REFRIGERANT PRESSURE SENSOR
106	P	FUEL TANK TEMPERATURE SENSOR
107	GR	STEERING ANGLE SENSOR SIGNAL (STEERING ANGLE SENSOR)
108	Y	SENSOR GROUND (ASCD / ICC STEERING SWITCH)
109	BR	TRANSMISSION RANGE SWITCH
110	V	ENGINE SPEED SIGNAL OUTPUT
112	V	GNDA PDPRES/FTPRES
113	P	CAN COMMUNICATION LINE
114	L	CAN COMMUNICATION LINE
117	V	DATA LINK CONNECTOR
121	LG	EVAP CANISTER VENT CONTROL VALVE
122	SB	STOP LAMP SWITCH
123	B	ECM GROUND
124	B	ECM GROUND
125	R	POWER SUPPLY FOR ECM
126	BG	BRAKE PEDAL POSITION SWITCH
127	B	ECM GROUND
128	B	ECM GROUND

Connector No.	M39
Connector Name	WIRE TO WIRE
Connector Type	TH32FW–NH

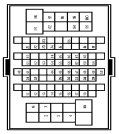
H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	W/B	–
2	SB	–
3	L	–
4	P	– [Without Gateway]
4	R	– [With Gateway]
7	L	–
8	W	–
13	G	–
15	R	–
17	BR	–
18	BG	–
27	LG	–
28	BR	–
29	W/B	–
30	Y	–
31	W	–
32	LG	–

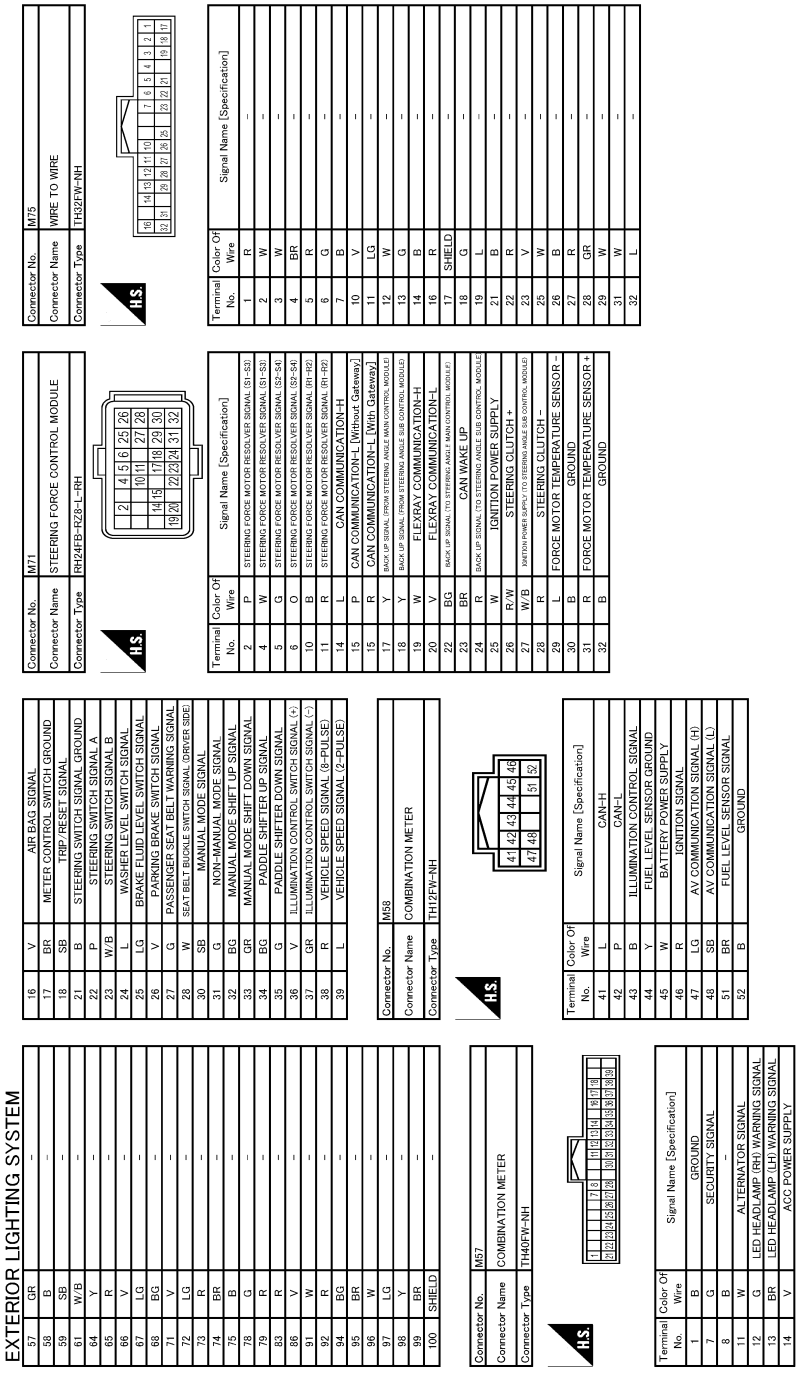
Connector No.	M40
Connector Name	WIRE TO WIRE
Connector Type	TH80MW–CS16–TM4

H.S.

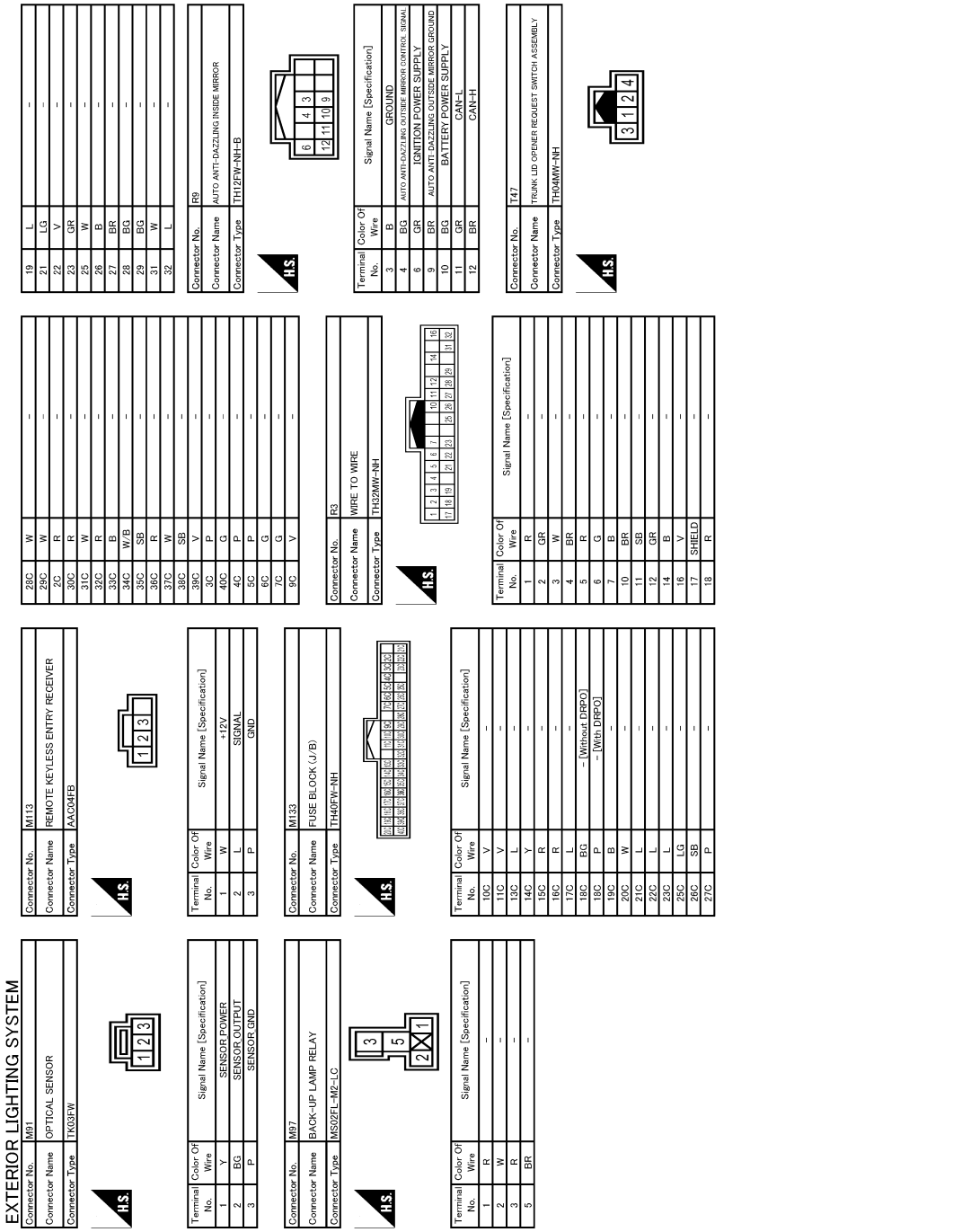


Terminal No.	Color Of Wire	Signal Name [Specification]
2	GR	–
3	L	–
4	V	–
6	W/B	–
7	V	–
10	W	–
11	W	–
12	B	–
13	GR	–
14	B	–
15	SB	–
16	B	–
17	LG	–
18	B	–
31	W	–
32	V	–
35	BG	–
36	G	–
37	B	–
38	L	–
39	Y	–
40	GR	–
41	L	–
44	BR	–
45	W	–
46	G	–
47	R	–
48	SHIELD	–
49	B	–
50	BR	–
51	L	–
52	W	–
53	G	–
54	Y	–
55	P	–
56	BG	–

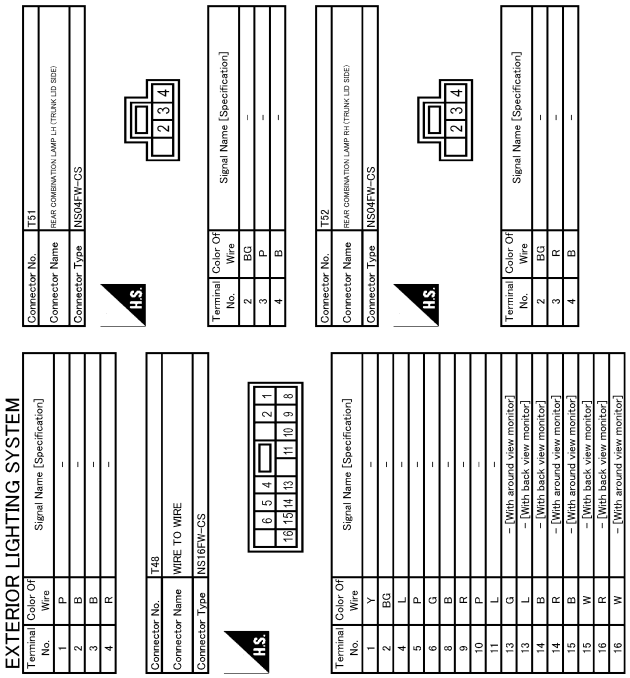
JRLWC5140GB



JRLWC5141GB



JRLWC5142GB



JRLWC5143GB

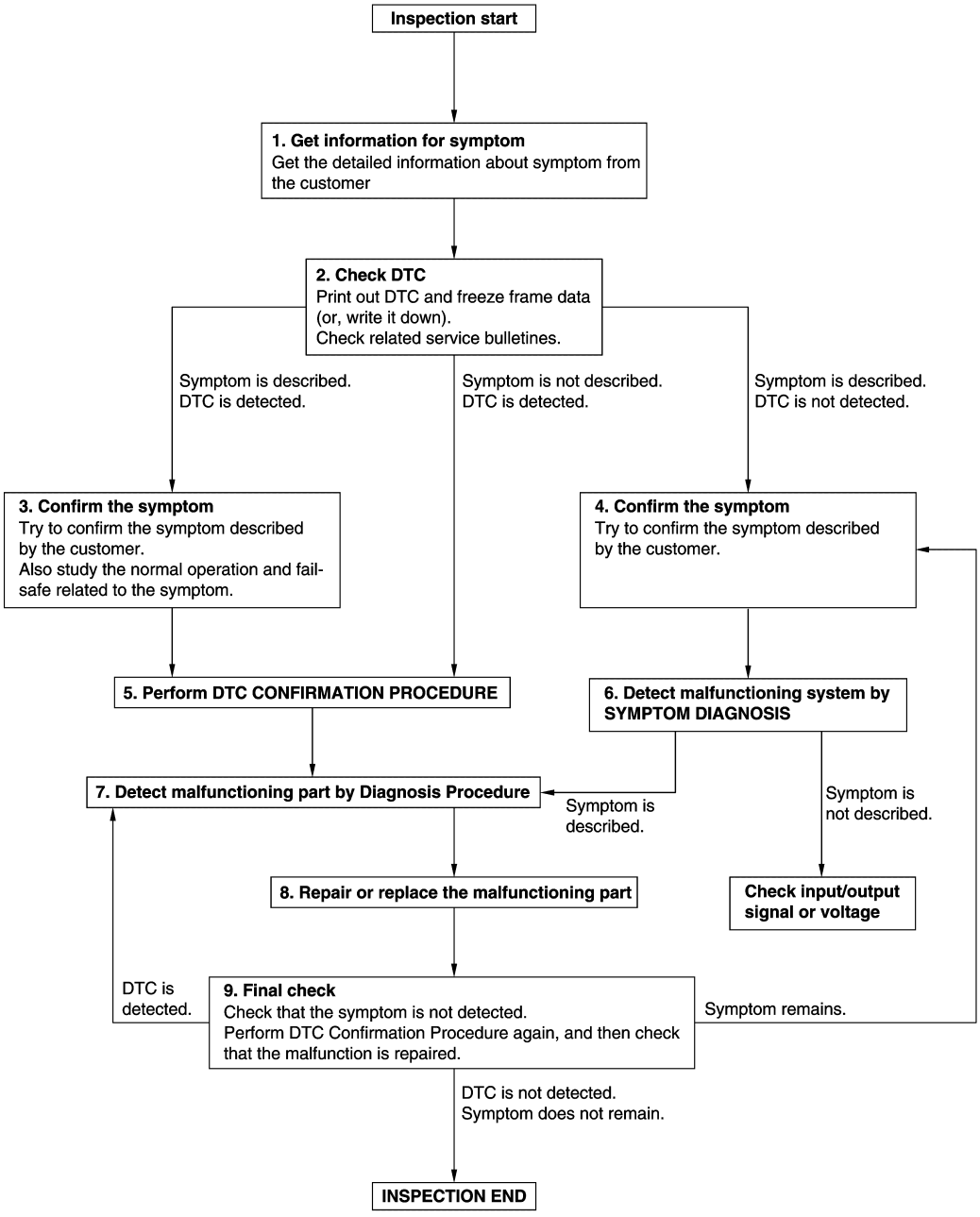
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:0000000009728745

OVERALL SEQUENCE



JMKIA8652GB

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:0000000009728726

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-160, "Symptom Table".

ADDITIONAL SERVICE WHEN REPLACING HIGH BEAM ASSIST CONTROL MODULE

Description

INFOID:0000000009728727

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:0000000009728728

1.WRITING VEHICLE SPECIFICATION

CONSULT Configuration

Perform “WRITE CONFIGURATION” to write vehicle specification. Refer to EXL-98, "Work Procedure".

>> WORK END

ADDITIONAL SERVICE WHEN REPLACING AFS CONTROL UNIT

Description

INFOID:0000000009728729

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:0000000009728730

1. SAVING VEHICLE SPECIFICATION

CONSULT Configuration

Perform “READ CONFIGURATION” to save or print current vehicle specification. Refer to EXL-99, "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-181, "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-99, "Work Procedure".

>> GO TO 4.

4. SENSOR INITIALIZE

CONSULT Work Support

Perform “SENSOR INITIALIZE”. Refer to EXL-101, "Work Procedure".

>> WORK END

CONFIGURATION (HIGH BEAM ASSIST CONTROL MODULE)

Description

INFOID:0000000009728733

Vehicle specification needs to be written with CONSULT because it is not written after replacing the high beam assist control module.

Function	Description
WRITE CONFIGURATION	Writes the vehicle configuration automatically.

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:0000000009728734

1.WRITE CONFIGURATION

CONSULT Configuration

1. Turn ignition switch ON.
2. Select “Configuration” mode of “HIGH BEAM ASSIST” using CONSULT.
3. Select “WRITE CONFIGURATION”.
4. Select “Setting change”.
5. When “COMMAND FINISHED”, touch “End”.

>> WORK END

CONFIGURATION (AFS CONTROL UNIT)

Description

INFOID:0000000009728736

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:0000000009728737

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-100, "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-100, "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:0000000009728738

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	
ENGINE TYPE	TYPE 2	—
DIRECT ADAPTIVE STEERING	WITH	—
TRANSMISSION	AT	—
HANDLE	LHD	—

SENSOR INITIALIZE

Description

INFOID:0000000009728741

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

Work Procedure

INFOID:0000000009728742

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 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:0000000009728746

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.DTC CONFIRMATION

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-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:0000000009728747

1.PERFORM CONFIGURATION

Perform configuration.

>> Refer to EXL-99, "Work Procedure".

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

DTC Description

INFOID:0000000009728752

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.DTC CONFIRMATION

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-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:0000000009728753

1.REPLACE HIGH BEAM ASSIST CONTROL MODULE

Replace inside mirror assembly (high beam assist control module). Refer to MIR-45, "Removal and Installation".

>> INSPECTION END

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

DTC Description

INFOID:0000000009728754

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.DTC CONFIRMATION

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-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:0000000009728755

1.CHECK POWER SUPPLY CIRCUIT

Check high beam assist control module power supply circuit. Refer to EXL-128, "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-45, "Removal and Installation".
NO >> Repair the malfunctioning part.

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

DTC Description

INFOID:0000000009728756

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.DTC CONFIRMATION

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-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:0000000009728757

1.REPLACE HIGH BEAM ASSIST CONTROL MODULE

Replace inside mirror assembly (high beam assist control module). Refer to MIR-45, "Removal and Installation".

>> INSPECTION END

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

DTC Description

INFOID:0000000009728758

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.DTC CONFIRMATION

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-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:0000000009728759

1.REPLACE HIGH BEAM ASSIST CONTROL MODULE

Replace inside mirror assembly (high beam assist control module). Refer to MIR-45, "Removal and Installation".

>> INSPECTION END

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

DTC Description

INFOID:0000000009728760

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.DTC CONFIRMATION

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-111, "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:0000000009728761

1.REPLACE HIGH BEAM ASSIST CONTROL MODULE

Replace inside mirror assembly (high beam assist control module). Refer to MIR-45, "Removal and Installation".

>> INSPECTION END

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

DTC Description

INFOID:0000000009728762

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.DTC CONFIRMATION

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-111, "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:0000000009728763

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-108, "DTC Description".

Is DTC detected again?

YES >> Replace inside mirror assembly (high beam assist control module). Refer to MIR-45, "Removal and Installation".
NO >> INSPECTION END

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

DTC Description

INFOID:0000000009728764

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.DTC CONFIRMATION

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-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:0000000009728765

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-45, "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-109, "DTC Description".

Is DTC detected again?

YES >> Replace inside mirror assembly (high beam assist control module). Refer to MIR-45, "Removal and Installation".
NO >> INSPECTION END

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

DTC Description

INFOID:0000000009728766

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.DTC CONFIRMATION

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-111, "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:0000000009728767

1.PERFORM CONFIGURATION

Perform configuration.

>> Refer to EXL-98, "Work Procedure".

B2503 SWIVEL ACTUATOR [RH]

DTC Description

INFOID:0000000009728768

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.DTC CONFIRMATION

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-112, "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:0000000009728769

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 CIRCUIT

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	Ground	Battery voltage
E72	1		

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	
E72	3	M4	19	Existed

Is the inspection result normal?

YES >> Replace front combination lamp RH. Refer to EXL-172, "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	
E72	2	M4	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		
E72	2	Ground	Not existed

Is the inspection result normal?

YES >> Replace front combination lamp RH. Refer to EXL-172, "Removal and Installation".
NO >> Repair or replace harness.

B2504 SWIVEL ACTUATOR [LH]

DTC Description

INFOID:0000000009728770

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.DTC CONFIRMATION

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-114, "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:0000000009728771

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 CIRCUIT

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
E49	1		

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	
E49	3	M4	19	Existed

Is the inspection result normal?

YES >> Replace front combination lamp LH. Refer to EXL-172, "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	
E49	2	M4	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		
E49	2	Ground	Not existed

Is the inspection result normal?

YES >> Replace front combination lamp LH. Refer to EXL-172, "Removal and Installation".
NO >> Repair or replace harness.

B2512 STEERING PINION ANGLE SIGNAL

DTC Description

INFOID:0000000009728772

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition
B2512	4WAS SIG [Front steer (Pinion angle) signal]	• Malfunction status of the steering pinion angle signal received from the steering force control module continues for 2 seconds or more when the ignition switch is turned ON • Direct Adaptive Steering malfunction signal is received from the steering force control module for 2 seconds or more continuously when the ignition switch is turned ON

POSSIBLE CAUSE

Direct adaptive steering 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. DTC CONFIRMATION

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-116, "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:0000000009728773

1. STEERING FORCE CONTROL MODULE SELF-DIAGNOSIS

With CONSULT

1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “EPS/DAST 3” using CONSULT, and repair or replace malfunctioning parts.
3. Check DTC, and repair or replace malfunctioning parts.

>> Refer to STC-80, "DTC Index".

B2514 HEIGHT SENSOR UNUSUAL [RR]

DTC Description

INFOID:0000000009728774

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 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 height sensor is 4.0 V or more or 1.2 V or less and this condition continues for 10 seconds or more when the ignition switch is turned ON

POSSIBLE CAUSE

- Harness or connectors
- Height sensor installation condition
- 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. DTC CONFIRMATION

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-117, "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:0000000009728775

1. CHECK INSTALLATION OF HEIGHT SENSOR

Check height sensor is properly installed. Refer to EXL-182, "Exploded View".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts and perform sensor initialize. Refer to EXL-101, "Work Procedure".

2. CHECK HEIGHT SENSOR SIGNAL INPUT

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

+		-	Voltage
AFS control unit			
Connector	Terminal		
M4	6	Ground	1.2 - 4.0 V

Is the measurement value within the standard value?

YES >> Replace AFS control unit. Refer to EXL-181, "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 HEIGHT SENSOR POWER SUPPLY INPUT VOLTAGE

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

+		-	Voltage
Height sensor			
Connector	Terminal		
C4	2	Ground	4.45 - 6.25 V

Is the inspection result normal?

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

4. CHECK 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 height sensor harness connector.

AFS control unit		Height sensor		Continuity
Connector	Terminal	Connector	Terminal	
M4	6	C4	1	Existed

Is the inspection result normal?

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

5. CHECK HEIGHT SENSOR SIGNAL CIRCUIT (SHORT)

Check continuity between AFS control unit harness connector and ground.

AFS control unit		—	Continuity
Connector	Terminal		
M4	6	Ground	Not existed

Is the inspection result normal?

YES >> Replace height sensor. Refer to EXL-182, "Removal and Installation".
NO >> Repair or replace harness.

6. CHECK 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 height sensor harness connector.

AFS control unit		Height sensor		Continuity
Connector	Terminal	Connector	Terminal	
M4	21	C4	2	Existed

Is the inspection result normal?

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

7. CHECK HEIGHT SENSOR POWER SUPPLY CIRCUIT (SHORT)

Check continuity between AFS control unit harness connector and ground.

AFS control unit		—	Continuity
Connector	Terminal		
M4	21	Ground	Not existed

Is the inspection result normal?

YES >> Replace AFS control unit. Refer to EXL-181, "Removal and Installation"
NO >> Repair or replace harness.

8. CHECK HEIGHT SENSOR GROUND VOLTAGE OUTPUT

Check voltage between AFS control unit harness connector and ground.

+		-	Voltage (Approx.)
AFS control unit			
Connector	Terminal		
M4	23	Ground	0 V

Is the inspection result normal?

YES >> GO TO 9.
NO >> Replace AFS control unit. Refer to EXL-181, "Removal and Installation"

9. CHECK HEIGHT SENSOR GROUND CIRCUIT

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

AFS control unit		Height sensor		Continuity
Connector	Terminal	Connector	Terminal	
M4	23	C4	4	Existed

Is the inspection result normal?

YES >> Replace height sensor. Refer to EXL-182, "Removal and Installation".
NO >> Repair or replace harness.

B2516 SHIFT POSITION SIGNAL [R, P]

DTC Description

INFOID:0000000009728776

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. DTC CONFIRMATION

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-120, "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:0000000009728777

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-85, "DTC Index".

B2517 VEHICLE SPEED SIGNAL

DTC Description

INFOID:0000000009728778

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. DTC CONFIRMATION

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-121, "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:0000000009728779

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-80, "DTC Index".

B2519 LEVELIZER CALIBRATION

DTC Description

INFOID:0000000009728780

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 stop at the position when DTC is detected

DTC CONFIRMATION PROCEDURE

1.DTC CONFIRMATION

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-122, "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:0000000009728781

1.SENSOR INITIALIZE

Perform sensor initialize.

>> Refer to EXL-101, "Work Procedure".

B2521 ECU CIRCUIT

DTC Description

INFOID:0000000009728782

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. DTC CONFIRMATION

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-123, "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:0000000009728783

1. REPLACE AFS CONTROL UNIT

Replace AFS control unit. Refer to EXL-181, "Removal and Installation".

>> INSPECTION END

U1000 CAN COMM CIRCUIT

DTC Description

INFOID:0000000009728788

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.DTC CONFIRMATION

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-124, "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:0000000009728789

1.CHECK CAN COMMUNICATION SYSTEM

Perform trouble diagnosis for CAN communication system. Refer to LAN-26, "Trouble Diagnosis Flow Chart".

>> INSPECTION END

U1000-01 CAN COMM CIRCUIT

DTC Description

INFOID:0000000009728790

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.DTC CONFIRMATION

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-125, "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:0000000009728791

1.CHECK CAN COMMUNICATION SYSTEM

Perform trouble diagnosis for CAN communication system. Refer to LAN-26, "Trouble Diagnosis Flow Chart".

>> INSPECTION END

U1010 CONTROL UNIT (CAN)

DTC Description

INFOID:0000000009728792

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.DTC CONFIRMATION

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-126, "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:0000000009728793

1.REPLACE AFS CONTROL UNIT

Replace AFS control unit. Refer to EXL-181, "Removal and Installation".

>> INSPECTION END

U1010-49 CONTROL UNIT (CAN)

DTC Description

INFOID:0000000009728794

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.DTC CONFIRMATION

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-127, "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:0000000009728795

1.REPLACE HIGH BEAM ASSIST CONTROL MODULE

Replace inside mirror assembly (high beam assist control module). Refer to MIR-45, "Removal and Installation".

>> INSPECTION END

POWER SUPPLY AND GROUND CIRCUIT

HIGH BEAM ASSIST CONTROL MODULE

HIGH BEAM ASSIST CONTROL MODULE : Diagnosis Procedure

INFOID:0000000009728796

1.CHECK FUSES

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

Signal name	Fuse No.	Capacity
Battery power supply	4	5 A
Ignition power supply	12	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 POWER SUPPLY CIRCUIT

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		
R9	6	Ground	9 – 16 V
	10		

Is the inspection result normal?

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

3.CHECK 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		
R9	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:0000000009728797

1.CHECK FUSES

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

Signal name	Fuse No.	Capacity
Ignition power supply	14	5 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 POWER SUPPLY CIRCUIT

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		
M4	12	Ground	9 – 16 V

Is the inspection result normal?

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

3.CHECK GROUND CIRCUIT

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

AFS control unit		—	Continuity
Connector	Terminal		
M4	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:0000000009728801

1.CHECK HEADLAMP (HI) OPERATION

With CONSULT

1. Select “EXTERNAL LAMPS” in “Active Test” mode of “IPDM E/R” using CONSULT.
2. 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-130, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000009728802

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	#42	10 A
Headlamp HI (LH)		#43	

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) OUTPUT VOLTAGE

With CONSULT

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

+			-	Test item		Voltage
IPDM E/R						
Connector		Terminal				
RH	E125	80	Ground	EXTERNAL LAMPS	Hi	9 – 16 V (Repeated 1 second)
					Off	0 – 1 V
LH		81			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-37, "Removal and Installation".

3.CHECK HEADLAMP (HI) POWER SUPPLY CIRCUIT

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

IPDM E/R			Front combination lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	E125	80	E42	7	Existed
LH		81	E41		

Is the inspection result normal?

YES >> Perform the LED headlamp diagnosis. Refer to EXL-134, "Diagnosis Procedure".
NO >> Repair or replace harness.

HEADLAMP (LO) CIRCUIT

Component Function Check

INFOID:0000000009728803

1.CHECK HEADLAMP (LO) OPERATION

With CONSULT
1. Select “EXTERNAL LAMPS” in “Active Test” mode of “IPDM E/R” using CONSULT.
2. 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-132, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000009728804

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	#44	15 A
Headlamp LO (LH)		#45	

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) OUTPUT VOLTAGE

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

+			-	Test item		Voltage
IPDM E/R						
Connector		Terminal				
RH	E125	75	Ground	EXTERNAL LAMPS	Lo	9 – 16 V
					Off	0 – 1 V
LH		76			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-37, "Removal and Installation".

3.CHECK HEADLAMP (LO) POWER SUPPLY CIRCUIT

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

IPDM E/R			Front combination lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	E125	75	E42	5	Existed
LH		76	E41		

Is the inspection result normal?

YES >> Perform the LED headlamp diagnosis. Refer to EXL-134, "Diagnosis Procedure".
NO >> Repair or replace harness.

LED HEADLAMP

Diagnosis Procedure

INFOID:0000000009728805

1.CHECK LED 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	E42	3	Ground	Existed
LH	E41			

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-95, "Work Procedure".

Is the headlamp turned ON?

YES >> Replace front combination lamp. Refer to EXL-172, "Removal and Installation".
NO >> LED headlamp is normal. Check headlamp control system.

HEADLAMP WARNING

Component Function Check

INFOID:0000000009728806

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-135, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000009728807

1.CHECK HEADLAMP WARNING LAMP 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	E42	2	Ground	12 V
LH	E41			

Is the inspection result normal?

YES >> Replace front combination lamp. Refer to EXL-172, "Removal and Installation".
NO >> GO TO 2.

2.CHECK HEADLAMP WARNING LAMP SIGNAL CIRCUIT

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

Combination meter			Front combination lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	M57	12	E42	2	Existed
LH		13	E41		

Is the inspection result normal?

YES >> Replace combination lamp. Refer to MWI-126, "Removal and Installation".
NO >> Repair or replace harness.

HEADLAMP LEVELIZER CIRCUIT

Component Function Check

INFOID:0000000009728808

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	MaxPosition	Moves the light axis to the lowest position.
	MinPosition	Moves the light axis to the initial position.

Is the inspection result normal?

YES >> Headlamp levelizer circuit is normal.
NO >> Refer to EXL-136, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000009728809

1.CHECK AIMING MOTOR DRIVE SIGNAL OUTPUT

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 items, check voltage between AFS control unit harness connector and ground.

+		-	Test item		Voltage (Approx.)
AFS control unit					
Connector	Terminal				
M4	22	Ground	LEVELIZER TEST	MaxPosition	8.01 V
				MinPosition	3.75 V

Is the inspection result normal?

YES >> GO TO 2.
NO-1 >> Fixed at 0 V: GO TO 3.
NO-2 >> Fixed at battery voltage: GO TO 4.

2.CHECK AIMING MOTOR DRIVE 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	M4	22	E71	1	Existed
LH			E21		

Is the inspection result normal?

YES >> Replace front combination lamp. Refer to EXL-172, "Removal and Installation".
NO >> Repair or replace harness.

3.CHECK AIMING MOTOR DRIVE 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		
M4	22	Ground	Not existed

Is the inspection result normal?

YES >> Replace AFS control unit. Refer to EXL-181, "Removal and Installation".
NO >> Repair or replace harness.

4. CHECK AIMING MOTOR DRIVE 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		
M4	22	Ground	0 V

Is the inspection result normal?

YES >> Replace AFS control unit. Refer to EXL-181, "Removal and Installation".
NO >> Repair or replace harness.

PARKING LAMP CIRCUIT

Component Function Check

INFOID:0000000009728812

1.CHECK PARKING LAMP OPERATION

With CONSULT
1. Select “EXTERNAL LAMPS” in “Active Test” mode of “IPDM E/R” using CONSULT.
2. 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-138, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000009728813

1.CHECK FUSE

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

Unit	Location	Fuse No.	Capacity
Parking lamp RH	IPDM E/R	#60	10 A
Parking lamp LH		#59	

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 PARKING LAMP OUTPUT VOLTAGE

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

+			-	Test item		Voltage
IPDM E/R						
Connector		Terminal				
RH	E120	9	Ground	EXTERNAL LAMPS	TAIL	9 – 16 V
					Off	0 – 1 V
LH		10			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-37, "Removal and Installation".

3.CHECK PARKING LAMP POWER SUPPLY CIRCUIT

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

IPDM E/R			Front combination lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	E120	9	E42	8	Existed
LH		10	E41		

Is the inspection result normal?

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

4. CHECK PARKING LAMP GROUND CIRCUIT

Check continuity between parking lamp harness connector and ground.

Front combination lamp			—	Continuity
Connector		Terminal		
RH	E42	4	Ground	Existed
LH	E41			

Is the inspection result normal?

YES >> Replace front combination lamp. Refer to EXL-172, "Removal and Installation".
NO >> Repair or replace harness.

TAIL LAMP CIRCUIT

Component Function Check

INFOID:0000000009728814

1.CHECK TAIL LAMP OPERATION

With CONSULT
1. Select “EXTERNAL LAMPS” in “Active Test” mode of “IPDM E/R” using CONSULT.
2. 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-140, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000009728815

1.CHECK FUSE

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

Unit	Location	Fuse No.	Capacity
Tail lamp RH	IPDM E/R	#60	10 A
Tail lamp LH		#59	

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 OUTPUT VOLTAGE

With CONSULT
1. Disconnect rear combination lamp (body side/trunk lid side) connector.
2. Turn ignition switch ON.
3. Select “EXTERNAL LAMPS” in “Active Test” mode of “IPDM E/R” using CONSULT.
4. With operating the test items, check voltage between IPDM E/R harness connector and ground.

+			-	Test item		Voltage
IPDM E/R						
Connector		Terminal				
RH	E126	90	Ground	EXTERNAL LAMPS	TAIL	9 – 16 V
					Off	0 – 1 V
LH	E120	17			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-37, "Removal and Installation".

3.CHECK TAIL LAMP POWER SUPPLY CIRCUIT

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

Body side

IPDM E/R			Rear combination lamp (body side)		Continuity
Connector		Terminal	Connector	Terminal	
RH	E126	90	B23	2	Existed
LH	E120	17	B22		

Trunk lid side

IPDM E/R			Rear combination lamp (trunk lid side)		Continuity
Connector		Terminal	Connector	Terminal	
RH	E126	90	T52	3	Existed
LH	E120	17	T51		

Is the inspection result normal?

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

4. CHECK TAIL LAMP GROUND CIRCUIT

Check continuity between rear combination lamp harness connector and ground.

Body side

Rear combination lamp (body side)			—	Continuity
Connector		Terminal		
RH	B23	4	Ground	Existed
LH	B22			

Trunk lid side

Rear combination lamp (trunk lid side)			—	Continuity
Connector		Terminal		
RH	T52	4	Ground	Existed
LH	T51			

Is the inspection result normal?

YES >> Replace rear combination lamp. Refer to EXL-185, "Removal and Installation".
NO >> Repair or replace harness.

LICENSE PLATE LAMP CIRCUIT

Component Function Check

INFOID:0000000009728816

1.CHECK TAIL LAMP OPERATION

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

Is the inspection result normal?

YES >> GO TO 2.
NO >> Check tail lamp circuit. Refer to EXL-140, "Component Function Check".

2.CHECK LICENSE PLATE LAMP OPERATION

With CONSULT

1. Select “EXTERNAL LAMPS” in “Active Test” mode of “IPDM E/R” using CONSULT.
2. 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-142, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000009728817

1.CHECK LICENSE PLATE LAMP BULB

Check the applicable license plate lamp bulb.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace bulb. Refer to EXL-190, "Replacement".

2.CHECK LICENSE PLATE LAMP POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and trunk lid opener request switch assembly connector.
3. Check continuity between IPDM E/R harness connector and trunk lid opener request switch assembly harness connector.

IPDM E/R		Trunk lid opener request switch assembly		Continuity
Connector	Terminal	Connector	Terminal	
E126	90	T47	4	Existed

Is the inspection result normal?

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

3.CHECK LICENSE PLATE LAMP GROUND CIRCUIT

Check continuity between trunk lid opener request switch harness connector and ground.

License plate lamp		—	Continuity
Connector	Terminal		
T47	3	Ground	Existed

Is the inspection result normal?

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

DAYTIME RUNNING LIGHT CIRCUIT

Component Function Check

INFOID:0000000009728848

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-143, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000009728849

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	#58	10 A
	#72	
	#73	

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 (Approx.)
Daytime running light relay			
Connector	Terminal		
E104	2	Ground	Battery voltage
	5		
	7		

Is the inspection result normal?

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

3.CHECK DAYTIME RUNNING LIGHT RELAY

Check daytime running light relay. Refer to EXL-145, "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 OUTPUT

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				
E126	85	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-37, "Removal and Installation".
NO >> Replace BCM. Refer to BCS-98, "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 harness connector.
4. Check continuity between IPDM E/R harness connector and daytime running light relay harness connector.

IPDM E/R		Daytime running light relay		Continuity
Connector	Terminal	Connector	Terminal	
E126	85	E104	1	Existed

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-37, "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	E104	6	E42	1	Existed
LH		3	E41		

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	E42	4	Ground	Existed
LH	E41			

Is the inspection result normal?

YES >> Replace front combination lamp. Refer to EXL-172, "Removal and Installation".
NO >> Repair or replace harness.

Component Inspection

INFOID:0000000009728850

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				
5	3	Battery voltage	Apply	Existed
			Not apply	Not existed
7	6		Apply	Existed
			Not apply	Not existed

Is the inspection result normal?

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

BACK-UP LAMP CIRCUIT

Component Function Check

INFOID:0000000009728818

1.CHECK BACK-UP LAMP OPERATION

1. Turn ignition switch ON.
2. With operating the selector lever, check that the back-up lamp is turned ON.

Selector lever position: R : Back-up lamp ON
Selector lever position: Other than above : Back-up lamp OFF

Is the inspection result normal?

YES >> Back-up lamp circuit is normal.
NO >> Refer to EXL-146, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000009728819

1.CHECK BACK-UP LAMP RELAY FUSES

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

Unit	Fuse No.	Capacity
Back-up lamp relay	#11	5 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 BACK-UP LAMP RELAY POWER SUPPLY

1. Remove back-up lamp relay.
2. Check voltage between back-up lamp relay harness connector and ground.

+		-	Voltage (Approx.)
Back-up lamp relay			
Connector	Terminal		
M97	1	Ground	Battery voltage
	3		

Is the inspection result normal?

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

3.CHECK BACK-UP LAMP RELAY

Check back-up lamp relay. Refer to EXL-148, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace back-up lamp relay.

4.CHECK BACK-UP LAMP RELAY CONTROL SIGNAL OUTPUT

With CONSULT

1. Install back-up lamp relay.
2. Turn ignition switch ON.
3. With operating the selector lever, check voltage between A/T assembly harness connector and ground.

+		-	Condition		Voltage (Approx.)
A/T assembly					
Connector	Terminal				
F2	7	Ground	Selector lever position	"R"	0 V
				Other than above	Battery voltage

Is the inspection result normal?

YES >> GO TO 7.
NO-1 >> Fixed at 0 – 1 V: GO TO 5.
NO-2 >> Fixed at 9 – 16 V: Replace control valve & TCM. Refer to TM-219, "Removal and Installation".

5. CHECK BACK-UP LAMP RELAY CONTROL SIGNAL CIRCUIT

1. Turn ignition switch OFF.
2. Remove back-up lamp relay.
3. Disconnect A/T assembly harness connector.
4. Check continuity between A/T assembly harness connector and back-up lamp relay harness connector.

A/T assembly		Back-up lamp relay		Continuity
Connector	Terminal	Connector	Terminal	
F2	7	M97	2	Existed

Is the inspection result normal?

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

6. CHECK JOINT CONNECTOR

1. Remove joint connector. Refer to TM-218, "Exploded View".
2. Check the continuity between joint connector terminals.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal	Terminal	
7	7	Existed

Is the inspection result normal?

YES >> Replace control valve & TCM. Refer to TM-219, "Removal and Installation".
NO >> Replace joint connector.

7. CHECK BACK-UP LAMP POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Remove back-up lamp relay.
3. Disconnect rear combination lamp (trunk lid side) connector.
4. Check continuity between back-up lamp relay harness connector and rear combination lamp (trunk lid side) harness connector.

Back-up lamp relay			Rear combination lamp (trunk lid side)		Continuity
Connector		Terminal	Connector	Terminal	
RH	M97	5	T52	2	Existed
LH			T51		

Is the inspection result normal?

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

8. CHECK BACK-UP LAMP GROUND CIRCUIT

Check continuity between rear combination lamp (trunk lid side) harness connector and ground.

Rear combination lamp (trunk lid side)			—	Continuity
Connector		Terminal		
RH	T52	4	Ground	Existed
LH	T51			

Is the inspection result normal?

YES >> Replace rear combination lamp (trunk lid side). Refer to EXL-185, "Removal and Installation".
NO >> Repair or replace harness.

Component Inspection

INFOID:0000000009728820

1. CHECK BACK-UP LAMP RELAY

1. Turn ignition switch OFF.
2. Remove back-up lamp relay.
3. Apply battery voltage to back-up lamp relay between terminals 1 and 2.
4. Check continuity of back-up lamp relay terminals.

Back-up lamp relay		Condition		Continuity
Terminal				
3	5	Battery voltage	Apply	Existed
			Not apply	Not existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace back-up lamp relay.

FRONT FOG LAMP CIRCUIT

Component Function Check

INFOID:0000000009728821

1.CHECK FRONT FOG LAMP OPERATION

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

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

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-149, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000009728822

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	#57	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 OUTPUT VOLTAGE

With CONSULT
1. Disconnect front fog lamp connector.
2. Turn ignition switch ON.
3. Select “EXTERNAL LAMPS” in “Active Test” mode of “IPDM E/R” using CONSULT.
4. 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	E125	78	Ground	EXTERNAL LAMPS	Fog	9 – 16 V
					Off	0 – 1 V
LH		79			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-37, "Removal and Installation".

3.CHECK FRONT FOG LAMP POWER SUPPLY CIRCUIT

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

IPDM E/R			Front fog lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	E125	78	E16	1	Existed
LH		79	E15		

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	E16	2	Ground	Existed
LH	E15			

Is the inspection result normal?

YES >> Replace front fog lamp. Refer to EXL-176, "Removal and Installation".
NO >> Repair or replace harness.

TURN SIGNAL LAMP CIRCUIT

Component Function Check

INFOID:0000000009728826

1.CHECK TURN SIGNAL LAMP

With CONSULT

1. Select “FLASHER” of “BCM” using CONSULT.
2. Select “FLASHER” in “Active Test” mode.
3. With operating the test items, check that the turn signal lamps blink.

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

Is the inspection result normal?

YES >> Turn signal lamp circuit is normal.
NO >> Refer to EXL-151, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000009728827

1.CHECK TURN SIGNAL LAMP BULB

Check the applicable lamp bulb.

NOTE:
Except front turn signal lamp and side turn signal lamp.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace bulb. Refer to EXL-187, "Replacement".

2.CHECK TURN SIGNAL LAMP OUTPUT VOLTAGE

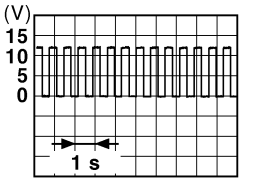
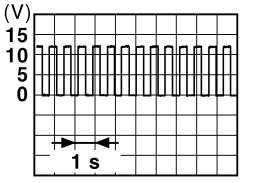
With CONSULT

1. Turn ignition switch OFF.
2. Disconnect the following connectors.

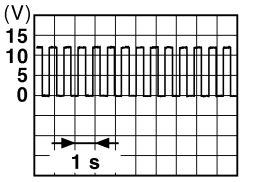
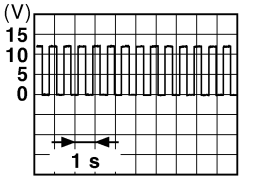
- Front turn signal lamp
- Door mirror
- Rear combination lamp (body side)

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	M16	105	Ground	FLASHER	RH	 PKID0926E
					Off	0 V
LH		117			LH	 PKID0926E
					Off	0 V

Side turn signal lamp and rear turn signal lamp

+			-	Test item		Voltage
BCM						
Connector		Terminal				
RH	M15	92	Ground	FLASHER	RH	 PKID0926E
					Off	0 V
LH		103			LH	 PKID0926E
					Off	0 V

Is the inspection result normal?

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

3. 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	M16	105	Ground	Not existed
LH		117		

Side turn signal lamp and rear turn signal lamp

BCM			—	Continuity
Connector		Terminal		
RH	M15	92	Ground	Not existed
LH		103		

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-98, "Removal and Installation".
NO >> Repair or replace harness.

4. 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 front turn signal lamp, door mirror or rear combination lamp (body side) harness connector.

Front turn signal lamp

BCM			Front turn signal lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	M16	105	E18	1	Existed
LH		117	E17		

Side turn signal lamp (without automatic drive positioner)

BCM			Door mirror		Continuity
Connector		Terminal	Connector	Terminal	
RH	M15	92	D17	2	Existed
LH		103	D3		

Side turn signal lamp (with automatic drive positioner)

BCM			Door mirror		Continuity
Connector		Terminal	Connector	Terminal	
RH	M15	92	D57	2	Existed
LH		103	D56		

Rear turn signal lamp

BCM			Rear combination lamp (body side)		Continuity
Connector		Terminal	Connector	Terminal	
RH	M15	92	B23	3	Existed
LH		103	B22		

Is the inspection result normal?

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

5. CHECK TURN SIGNAL LAMP GROUND CIRCUIT

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

Front turn signal lamp

Front turn signal lamp			—	Continuity
Connector		Terminal		
RH	E18	2	Ground	Existed
LH	E17			

Side turn signal lamp (without automatic drive positioner)

Door mirror			—	Continuity
Connector		Terminal		
RH	D17	14	Ground	Existed
LH	D3			

Side turn signal lamp (with automatic drive positioner)

Door mirror			—	Continuity
Connector		Terminal		
RH	D57	14	Ground	Existed
LH	D56			

Rear turn signal lamp

Rear combination lamp (body side)			—	Continuity
Connector		Terminal		
RH	B23	4	Ground	Existed
LH	B22			

Is the inspection result normal?

YES-1 >> Front turn signal lamp: Replace front turn signal lamp. Refer to EXL-174, "Removal and Installation".

YES-2 >> Side turn signal lamp: Replace side turn signal lamp. Refer to EXL-177, "Removal and Installation".

YES-3 >> Rear turn signal lamp: Check corresponding rear turn signal lamp bulb socket and harness. Repair or replace if necessary.

NO >> Repair or replace harness.

OPTICAL SENSOR

Component Function Check

INFOID:0000000009728828

1.CHECK OPTICAL SENSOR SIGNAL BY CONSULT

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-155, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000009728829

1.CHECK OPTICAL SENSOR POWER SUPPLY INPUT

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		
M91	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 INPUT

Check voltage between optical sensor harness connector and ground.

+		-	Voltage
Optical sensor			
Connector	Terminal		
M91	3	Ground	0 V

Is the inspection result normal?

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

3.CHECK OPTICAL SENSOR SIGNAL OUTPUT

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

+		-	Condition		Voltage (Approx.)
Optical sensor					
Connector	Terminal				
M91	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-178, "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	
M91	1	M13	3	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		
M91	1	Ground	Not existed

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-98, "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	
M91	3	M13	17	Existed

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-98, "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	
M91	2	M13	4	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		
M91	2	Ground	Not existed

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-98, "Removal and Installation".
NO >> Repair or replace harness.

HAZARD SWITCH

Component Function Check

INFOID:0000000009728830

1.CHECK HAZARD SWITCH SIGNAL BY CONSULT

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?

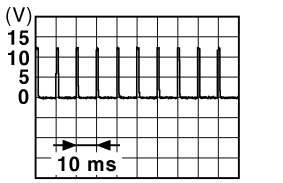
YES >> Hazard switch circuit is normal.
NO >> Refer to EXL-158, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000009728831

1.CHECK HAZARD SWITCH SIGNAL INPUT

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

+		-	Voltage
Integral switch			
Connector	Terminal		
M1	8	Ground	 JPMIA0012GB 1.1 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 integral switch harness connector and BCM harness connector.

Integral switch		BCM		Continuity
Connector	Terminal	Connector	Terminal	
M1	8	M13	36	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 integral switch harness connector and ground.

Integral switch		—	Continuity
Connector	Terminal		
M1	8	Ground	Not existed

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-98, "Removal and Installation".
NO >> Repair or replace harness.

4. CHECK HAZARD SWITCH GROUND CIRCUIT

Check continuity between integral switch harness connector and ground.

Integral switch		—	Continuity
Connector	Terminal		
M1	13	Ground	Existed

Is the inspection result normal?

YES >> Replace integral switch. Refer to AV-280, "Removal and Installation".
NO >> Repair or replace harness.

SYMPTOM DIAGNOSIS

EXTERIOR LIGHTING SYSTEM SYMPTOMS

Symptom Table

INFOID:0000000009728834

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 internal circuit - LED (headlamp high) - LED headlamp control module - Harness • IPDM E/R	Headlamp (HI) circuit Refer to EXL-130, "Component Function Check".
	Both sides	**Symptom diagnosis** "BOTH SIDE HEADLAMPS (HI) ARE NOT TURNED ON" Refer to EXL-164, "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 internal circuit - LED (headlamp low) - LED headlamp control module - Harness • IPDM E/R	Headlamp (LO) circuit Refer to EXL-132, "Component Function Check".
	Both sides	**Symptom diagnosis** "BOTH SIDE HEADLAMPS (LO) ARE NOT TURNED ON" Refer to EXL-165, "Diagnosis Procedure".	
Headlamp (HI) and (LO) is not turned ON		• LED headlamp ground circuit • Front combination lamp internal circuit - LED headlamp control module - Harness	LED headlamp Refer to EXL-135, "Component Function Check".
Headlamp warning remains ON [Headlamp (LO) is turned ON]		• LED headlamp warning signal circuit • Front combination lamp internal circuit - LED headlamp control module - Harness • Combination meter	Headlamp warning Refer to EXL-135, "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-96, "Symptom Table".
		• Optical sensor power supply/ground/signal circuit • Optical sensor • BCM	Optical sensor Refer to EXL-155, "Component Function Check".

Symptom	Possible cause	Inspection item
Parking lamp is not turned ON	• Fuse • Parking lamp power supply/ground circuit • Front combination lamp internal circuit - LED (parking lamp) - Control circuit - Harness • IPDM E/R	Parking lamp circuit Refer to EXL-138, "Component Function Check".
Side marker lamp is not turned ON [Parking lamp is turned ON]	Front combination lamp internal circuit • LED (side marker lamp) • Control circuit • Harness	Replace front combination lamp Refer to EXL-172, "Removal and Installation".
Tail lamp is not turned ON	• Fuse • Tail lamp power supply/ground circuit • Rear combination lamp internal circuit - LED (tail lamp) - Harness • IPDM E/R	Tail lamp circuit Refer to EXL-140, "Component Function Check".
License plate lamp is not turned ON [Tail lamp is turned ON]	• License plate lamp power supply/ground circuit • License plate lamp bulb • License plate lamp bulb socket • IPDM E/R	License plate lamp circuit Refer to EXL-142, "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-166, "Diagnosis Procedure".	
Position lamp indicator 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 • Daytime running light relay power supply/control signal circuit • Daytime running light power supply/ground circuit • Front combination lamp internal circuit - LED (daytime running light) - Control circuit - Harness • IPDM E/R • BCM • ECM • Combination meter	• Daytime running light circuit Refer to EXL-143, "Component Function Check". • BCM (HEAD LAMP) Data monitor “ENGINE STATE” • Combination meter Data monitor “PKB SW”

Symptom		Possible cause	Inspection item
Back-up lamp is not turned ON		• Fuse • Back-up lamp relay • Back-up lamp relay power supply/control signal circuit • Back-up lamp power supply/ground circuit • Rear combination lamp internal circuit - LED (back-up lamp) - Harness • Joint connector • TCM	Back-up lamp circuit Refer to EXL-146, "Component Function Check".
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 • Side turn signal lamp - Side turn signal lamp power supply/ground circuit - Side turn signal lamp • Rear turn signal lamp - Rear turn signal lamp power supply/ground circuit - Bulb (rear turn signal lamp) - Rear turn signal lamp bulb socket/harness	Turn signal lamp circuit Refer to EXL-151, "Component Function Check".
	Indicator lamp is included	• Combination switch input/output signal circuit • Combination switch • BCM	Combination switch Refer to BCS-96, "Symptom Table".
Turn signal indicator lamp does not blink (Turn signal i 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-104, "COMBINATION METER : Diagnosis Procedure".
• Hazard warning lamp does not activate (Turn signal is normal) • Hazard warning lamp continues activating		• Hazard switch signal/ground circuit • Integral switch (hazard switch) • BCM	Hazard switch Refer to EXL-158, "Component Function Check".
Front fog lamp is not turned ON	One side	• Front fog lamp power supply/ground circuit • Front fog lamp • IPDM E/R	Front fog lamp circuit Refer to EXL-149, "Component Function Check".
	Both sides	**Symptom diagnosis** “BOTH SIDE FRONT FOG LAMPS ARE NOT TURNED ON” Refer to EXL-167, "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”
Headlamp auto aiming does not activate (AFS is normal)		• Aiming motor drive signal circuit • Front combination lamp (headlamp aiming motor) • AFS control unit	Headlamp levelizer circuit Refer to EXL-136, "Component Function Check".

NORMAL OPERATING CONDITION

Description

INFOID:0000000009728835

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:0000000009728836

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

Diagnosis Procedure

INFOID:0000000009728837

1.COMBINATION SWITCH INSPECTION

Check combination switch. Refer to BCS-96, "Symptom Table".

Is the inspection result normal?

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

2.CHECK HEADLAMP (HI) REQUEST SIGNAL INPUT

With CONSULT

1. Select “HL HI 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
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-37, "Removal and Installation".
NO >> Replace BCM. Refer to BCS-98, "Removal and Installation".

BOTH SIDE HEADLAMPS (LO) ARE NOT TURNED ON

Description

INFOID:0000000009728838

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

Diagnosis Procedure

INFOID:0000000009728839

1.CHECK COMBINATION SWITCH

Check combination switch. Refer to BCS-96, "Symptom Table".

Is the inspection result normal?

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

2.CHECK HEADLAMP (LO) REQUEST SIGNAL INPUT

With CONSULT

1. Select “HL LO 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
HL LO REQ	Lighting switch	2ND	On
		OFF	Off

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-37, "Removal and Installation".
NO >> Replace BCM. Refer to BCS-98, "Removal and Installation".

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

Description

INFOID:0000000009728840

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

Diagnosis Procedure

INFOID:0000000009728841

1.COMBINATION SWITCH INSPECTION

Check combination switch. Refer to BCS-96, "Symptom Table".

Is the combination switch normal?

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

2.CHECK TAIL LAMP RELAY REQUEST SIGNAL INPUT

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-37, "Removal and Installation".
NO >> Replace BCM. Refer to BCS-98, "Removal and Installation".

BOTH SIDE FRONT FOG LAMPS ARE NOT TURNED ON

Description

INFOID:0000000009728842

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

Diagnosis Procedure

INFOID:0000000009728843

1.COMBINATION SWITCH INSPECTION

Check combination switch. Refer to BCS-96, "Symptom Table".

Is the inspection result normal?

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

2.CHECK FRONT FOG LAMP REQUEST SIGNAL INPUT

With CONSULT

1. Select “FR FOG REQ” in “Data Monitor” mode of “IPDM E/R” using CONSULT.
2. With operating the front fog lamp switch, check the monitor status.

Monitor item	Condition		Monitor status
FR FOG REQ	Front fog lamp switch (With lighting switch 1ST)	ON	On
		OFF	Off

Is the item status normal?

YES >> Perform the front fog lamp diagnosis. Refer to EXL-149, "Diagnosis Procedure".
NO >> Replace BCM. Refer to BCS-98, "Removal and Installation".

PERIODIC MAINTENANCE

HEADLAMP AIMING ADJUSTMENT

Description

INFOID:0000000009695520

PREPARATION BEFORE ADJUSTING

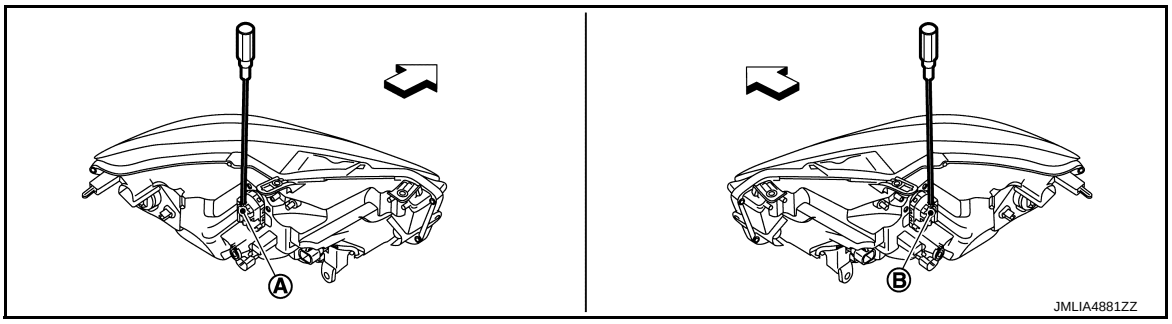
NOTE:

- 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:
  Never 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



Ⓐ Headlamp LH (UP/DOWN) adjustment screw

Ⓑ Headlamp RH (UP/DOWN) adjustment screw

⇦ : Vehicle front

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

Aiming Adjustment Procedure

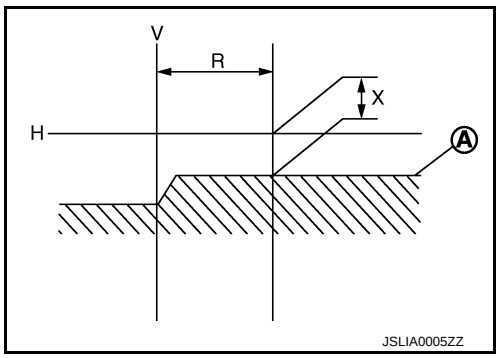
INFOID:0000000009695521

1. Place the screen.
   NOTE:
   - Stop the vehicle facing the wall.
   - Place the board on a plain road vertically.
2. Face the vehicle with the screen. Maintain 10 m (32.8 ft) between the headlamp center and the screen.
3. Start the engine. Turn the headlamp (LO) ON.
   NOTE:
   Shut off the headlamp light with the board to prevent from illuminating the adjustment screen.

CAUTION:
Never cover the lens surface with tape etc. The lens is made of rejin.

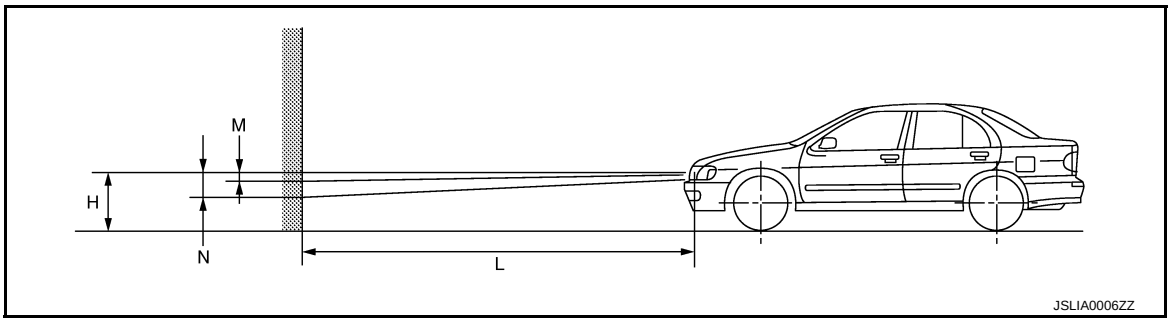
4. Measure the distance (X) between the horizontal center line of headlamp (H) and the cutoff line Ⓐ within the light axis measurement range (R) from the vertical center line ahead of headlamp (V).
Low beam distribution on the screen

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



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

Side view



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

unit: mm (in)

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

FRONT FOG LAMP AIMING ADJUSTMENT

Description

INFOID:0000000009695524

PREPARATION BEFORE ADJUSTING

NOTE:
For details, refer to the regulations in your own country.

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:
  Never 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.

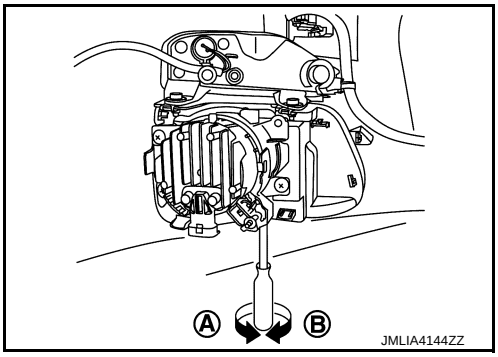
AIMING ADJUSTMENT SCREW

- Turn the aiming adjusting screw for adjustment.

  Ⓐ: DOWN

  Ⓑ: 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:0000000009695525

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 Ⓐ with the aiming adjustment screw so that the distance (X) between the horizontal center line of front fog lamp (H) and Ⓐ becomes 100 mm (3.94 in).
   Front fog lamp light distribution on the screen

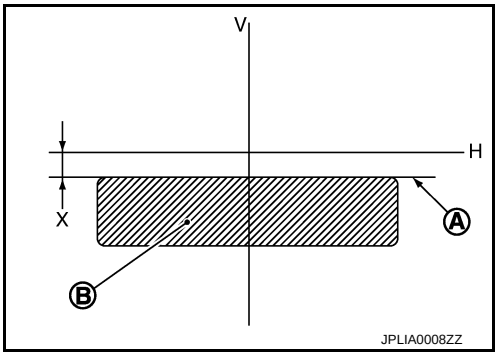
   Ⓐ : Cutoff line

   Ⓑ : High illuminance area

   H : Horizontal center line of front fog lamp

   V : Vertical center line of front fog lamp

   X : Cutoff line height



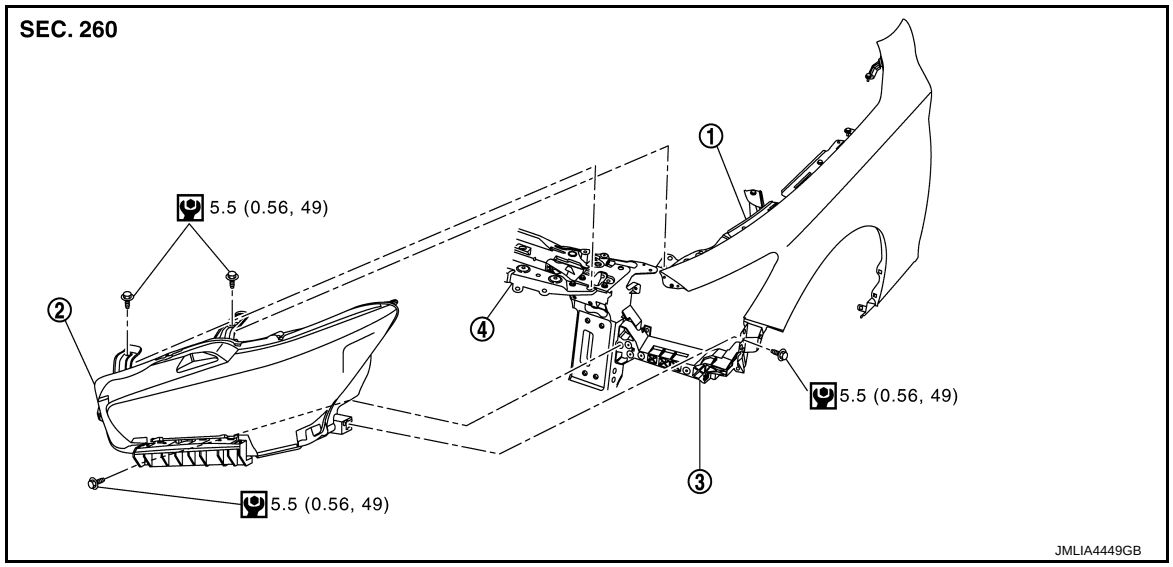
REMOVAL AND INSTALLATION

FRONT COMBINATION LAMP

Exploded View

INFOID:0000000009695526

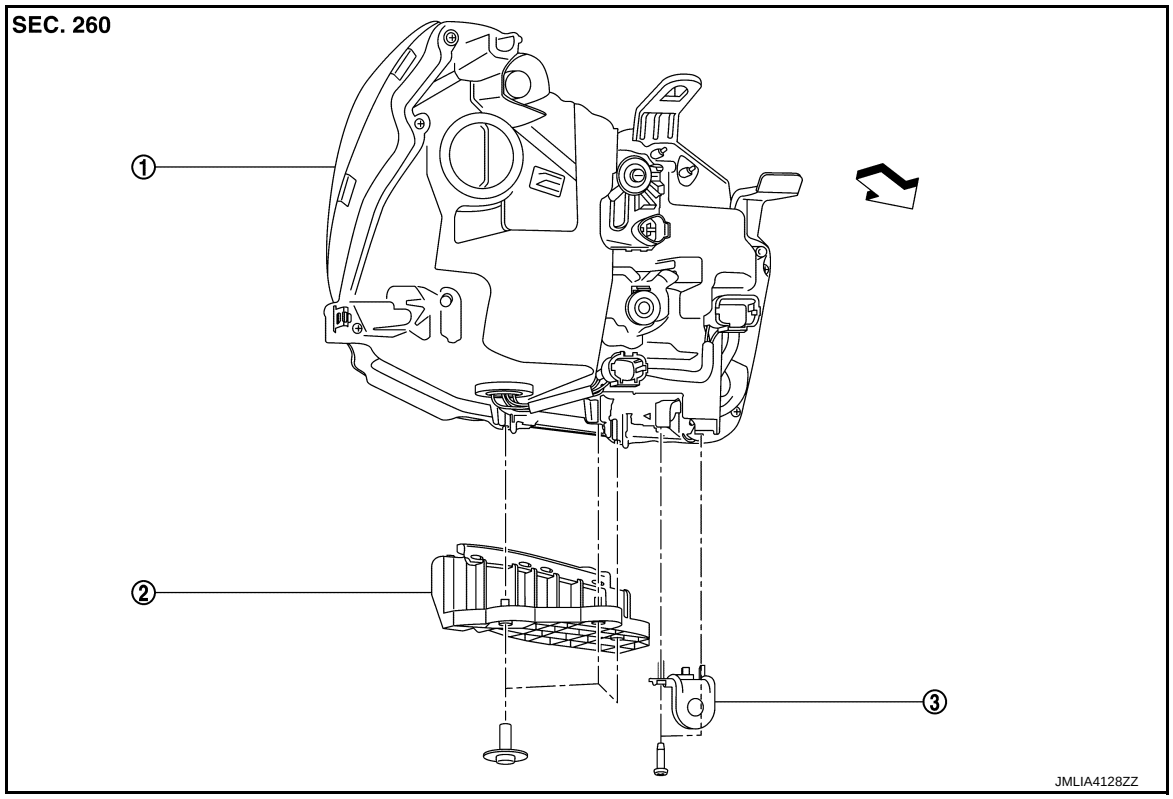
REMOVAL



① Front fender panel ② Front combination lamp ③ Radiator core support bracket
④ Radiator core support upper center

: N·m (kg-m, in-lb)

DISASSEMBLY



① Front combination lamp housing ② Headlamp bracket A ③ Headlamp bracket B
⇦ : Vehicle front

Removal and Installation

INFOID:0000000009695527

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

REMOVAL

1. Remove front bumper fascia. Refer to EXT-14, "Removal and Installation".
2. Remove front combination lamp assembly mounting bolts.
3. Pull out front combination lamp assembly forward the vehicle.
4. Disconnect front combination lamp assembly harness connectors and fixing clips.
5. Remove front combination lamp assembly.

INSTALLATION

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

CAUTION:
After installation, perform aiming adjustment. Refer to EXL-168, "Description".

Replacement

INFOID:0000000009695528

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:0000000009695529

DISASSEMBLY

1. Remove headlamp bracket A mounting screws and remove headlamp bracket A from headlamp assembly.
2. Remove headlamp bracket B mounting screws and remove headlamp bracket B from headlamp assembly.

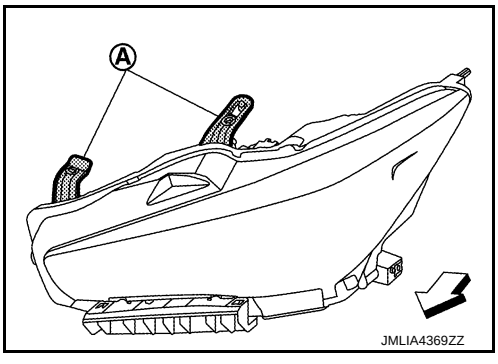
ASSEMBLY

Install in the reverse order of removal.

Installing service bracket

INFOID:0000000009726376

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



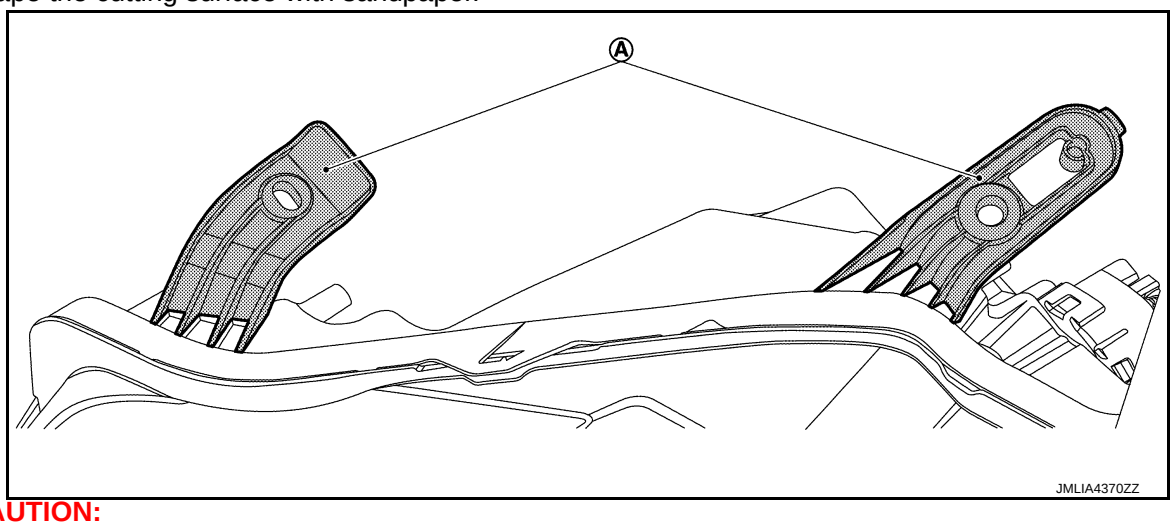
⇦ : Vehicle front

CAUTION:
- **Installation of service bracket is possible only if part Ⓐ is damaged.**
- **If front combination housing or other part of front combination lamp except part Ⓐ is damaged, replace front combination lamp assembly.**

Removal

1. Remove front combination lamp. Refer to EXL-172, "Removal and Installation".

2. If part Ⓐ is damaged, cut the whole part from fixing section to the front combination lamp housing, then shape the cutting surface with sandpaper.

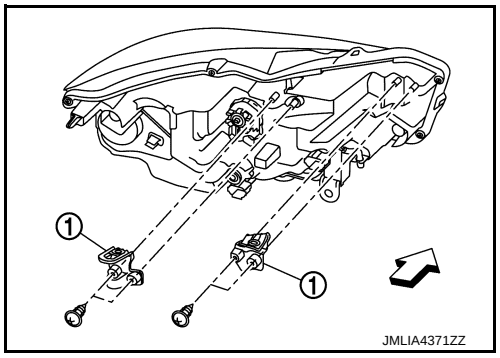


CAUTION:
Be careful to not shape the cutting surface more than necessary, and shape while adjusting with the new service brackets to be installed.

Installation

Install service brackets ① to front combination lamp housing with screws.

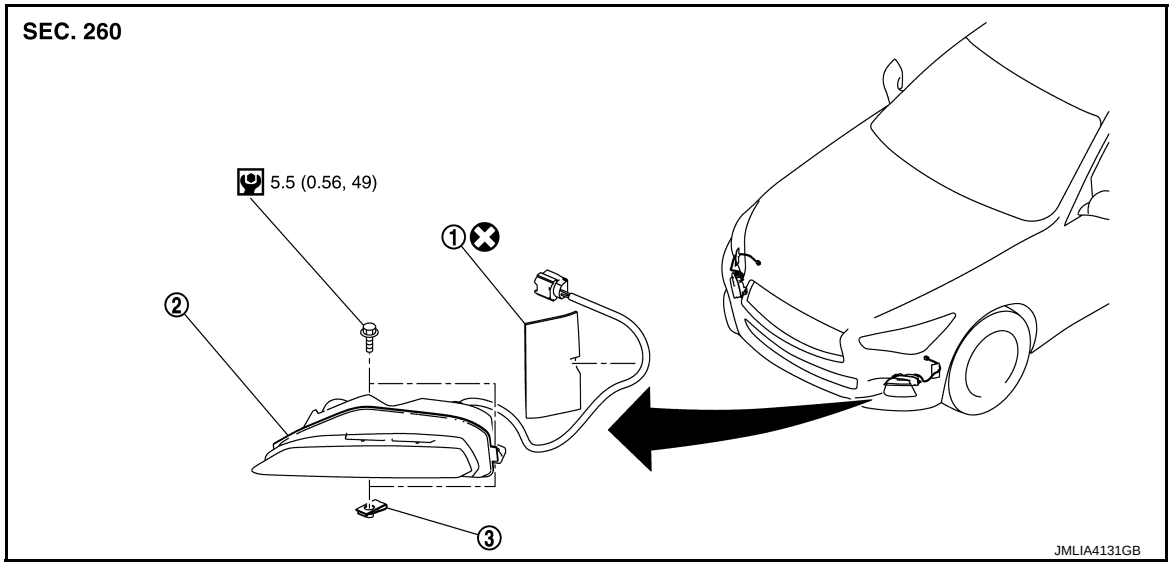
⇦ : Vehicle front



FRONT TURN SIGNAL LAMP ASSEMBLY

Exploded View

INFOID:0000000009726444



① Harness protector ② Front turn signal lamp assembly ③ U nut

: N·m (kg-m, in-lb)

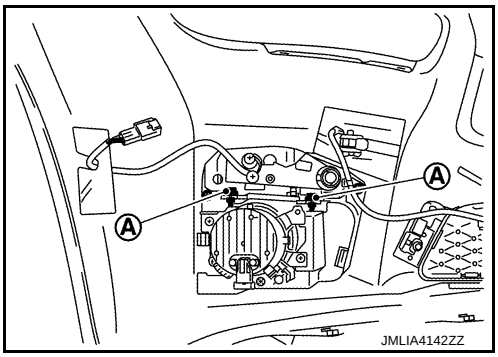
: Always replace after every disassembly.

Removal and Installation

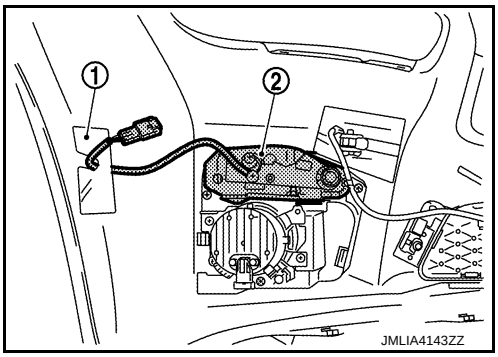
INFOID:0000000009726445

REMOVAL

1. Remove front bumper fascia. Refer to EXT-14, "Removal and Installation".
2. Remove front turn signal lamp assembly mounting bolts Ⓐ.



3. Remove harness protector ①, and then remove front turn signal lamp assembly ② from front bumper fascia.



INSTALLATION

Install in the reverse order of removal.

Replacement

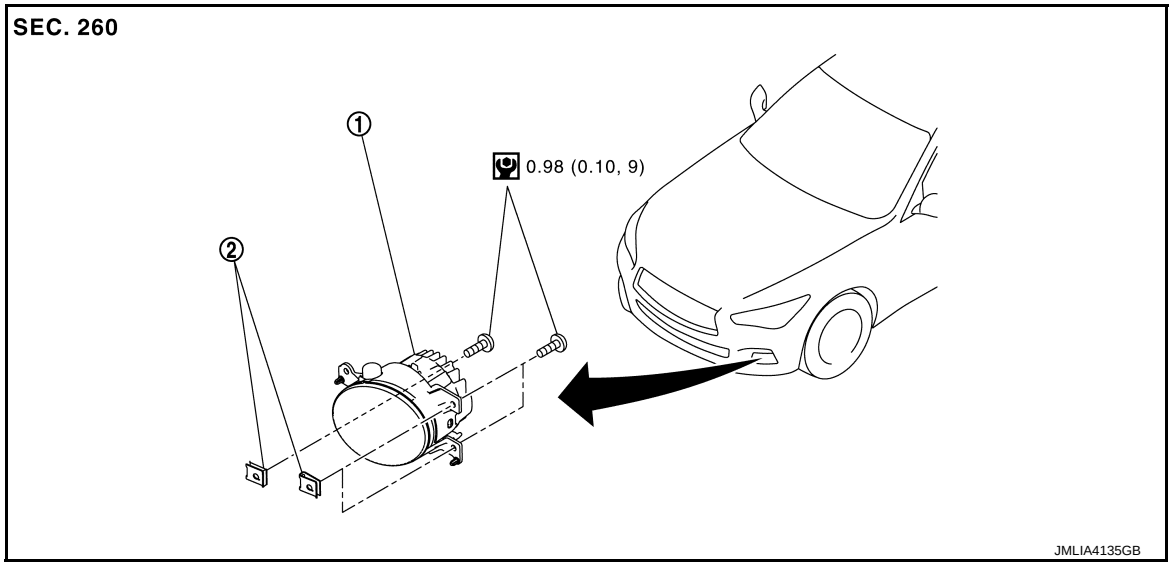
INFOID:0000000009726446

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:0000000009695533



① Front fog lamp assembly ② U nut

: N·m (kg-m, in-lb)

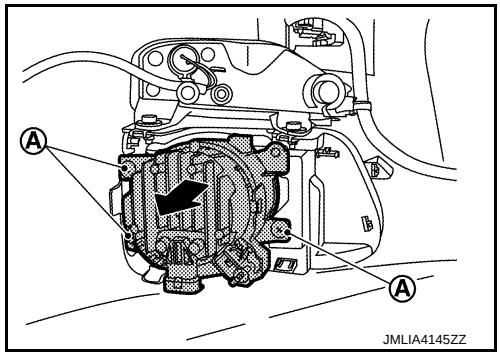
Removal and Installation

INFOID:0000000009695534

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

REMOVAL

1. Remove front fender protector to make work space. Refer to EXT-29, "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

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

NOTE:
After installation, perform aiming adjustment. Refer to EXL-170, "Aiming Adjustment Procedure"

Replacement

INFOID:0000000009695535

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:0000000009695538

Refer to MIR-48, "Exploded View".

Removal and Installation

INFOID:0000000009695539

Refer to MIR-50, "DOOR MIRROR : Disassembly and Assembly".

Replacement

INFOID:0000000009695540

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

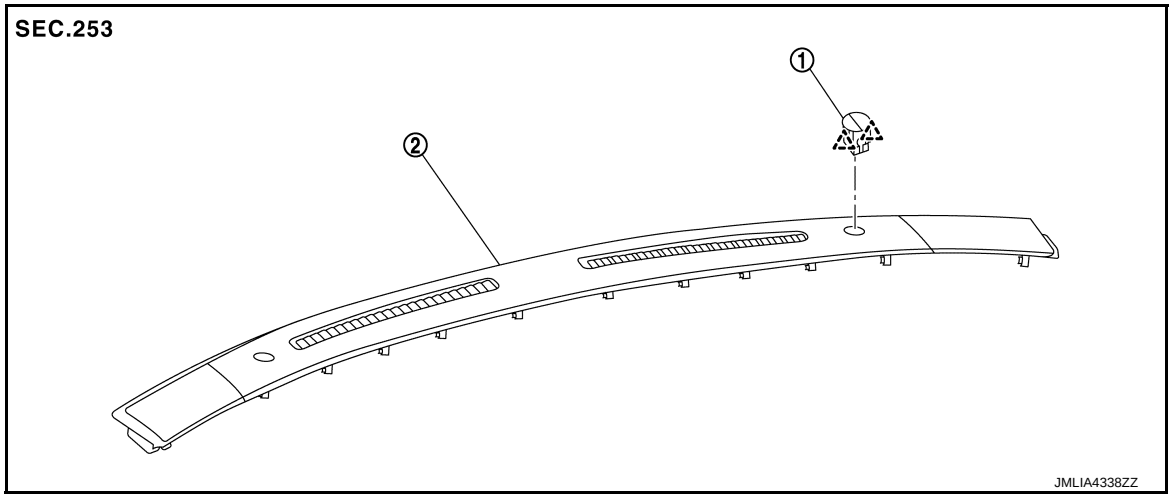
SIDE TURN SIGNAL LAMP

1. Remove side turn signal lamp. Refer to EXL-177, "Removal and Installation".
2. Replace side turn signal lamp with new part.

OPTICAL SENSOR

Exploded View

INFOID:0000000009695541



① Optical sensor ② Front speaker grille

: Pawl

Removal and Installation

INFOID:0000000009695542

REMOVAL

1. Remove front speaker grille. Refer to IP-12, "Removal and Installation".
2. Disconnect optical sensor harness connector.
3. Disengage optical sensor fixing pawls and remove it from front speaker grille.

INSTALLATION

Install in the reverse order of removal.

LIGHTING & TURN SIGNAL SWITCH

Removal and Installation

INFOID:0000000009695543

REMOVAL

Remove light & turn signal switch. Refer to BCS-99, "Removal and Installation".

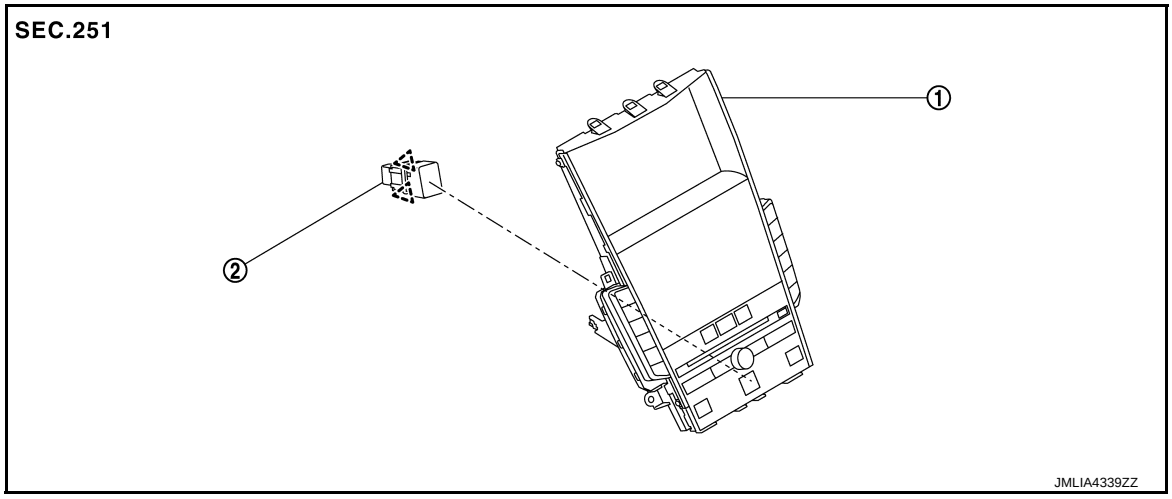
INSTALLATION

Install in the reverse order of removal.

HAZARD SWITCH

Exploded View

INFOID:0000000009695544



① Integral switch ② Hazard switch

: Pawl

Removal and Installation

INFOID:0000000009695545

REMOVAL

1. Remove integral switch. Refer to IP-12, "Removal and Installation".
2. Disengage fixing pawls, and then remove hazard switch from integral switch.

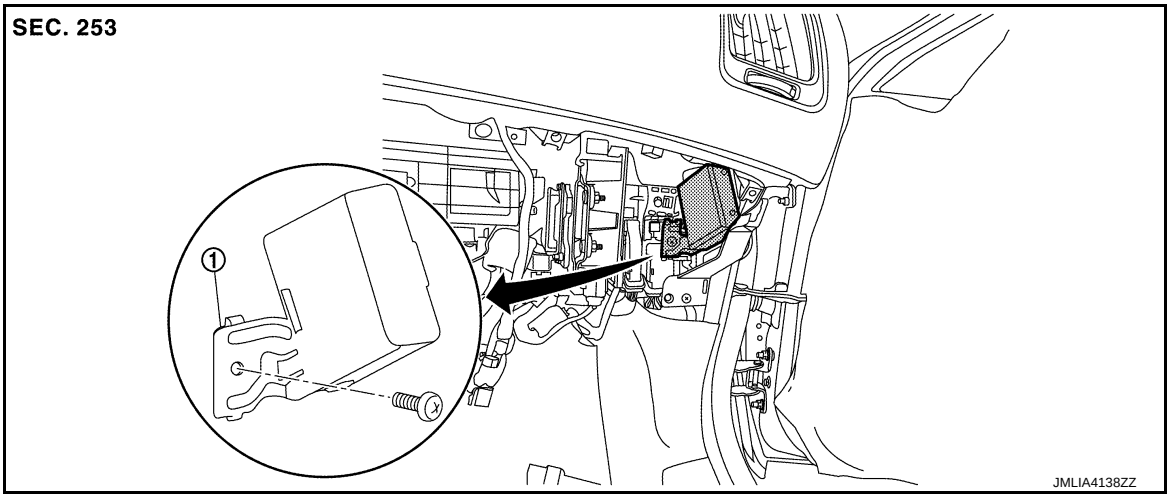
INSTALLATION

Install in the reverse order of removal.

AFS CONTROL UNIT

Exploded View

INFOID:0000000009695546



① AFS control unit

Removal and Installation

INFOID:0000000009695547

NOTE:
Before replacing AFS control unit, perform “READ CONFIGURATION” to save or print current vehicle specification. Refer to EXL-99, "Description".

REMOVAL

1. Remove instrument lower panel RH. Refer to IP-12, "Removal and Installation".
2. Disconnect AFS control unit connector.
3. Remove AFS control unit mounting screw.
4. Remove AFS control unit.

INSTALLATION

Install in the reverse order of removal.

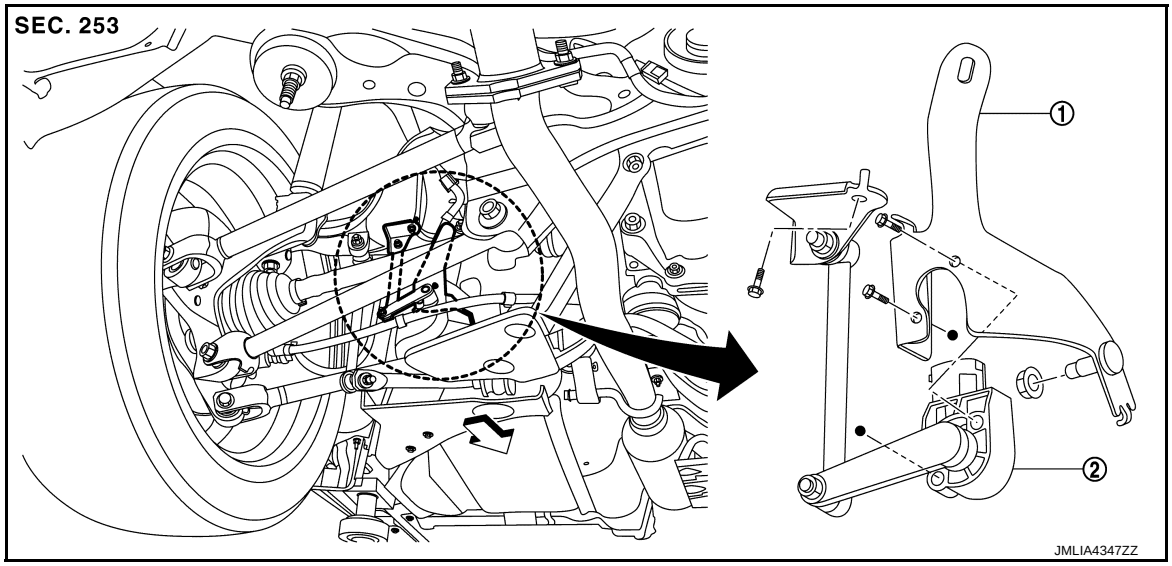
CAUTION:

- **Be sure to perform “WRITE CONFIGURATION” when replacing AFS control unit. Or not doing so, AFS control function does not operate normally. Refer to EXL-99, "Work Procedure".**
- **Be sure to perform “SENSOR INITIALIZE” when replacing AFS control unit. Refer to EXL-101, "Work Procedure".**

HEIGHT SENSOR

Exploded View

INFOID:0000000009695549



① Height sensor bracket ② Height sensor unit

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

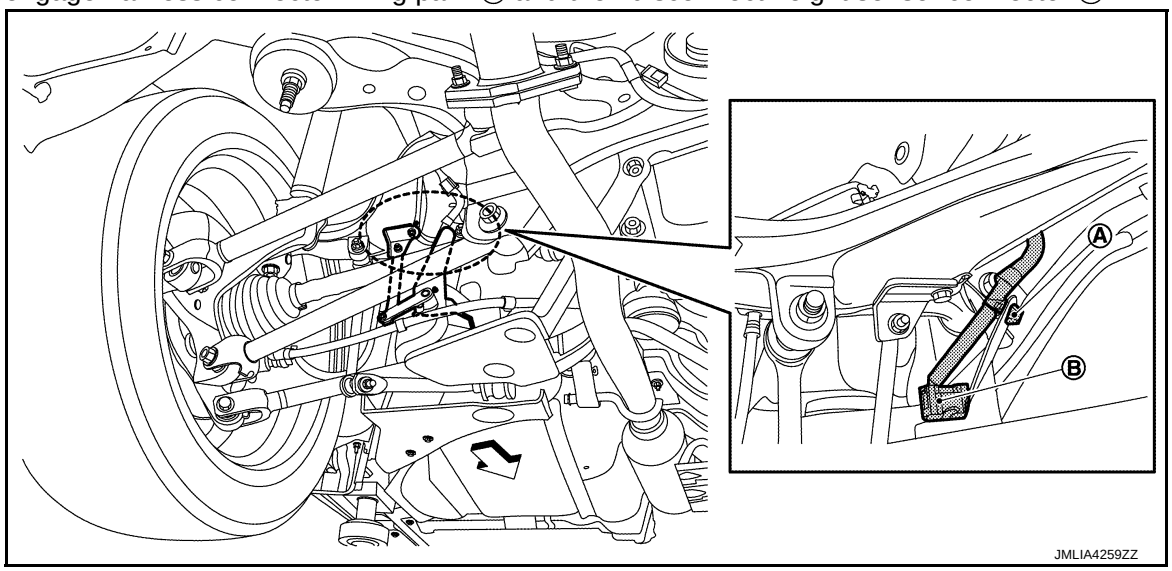
⇦ : Vehicle front

Removal and Installation

INFOID:0000000009695550

REMOVAL

1. Disengage harness connector fixing pawl Ⓐ and then disconnect height sensor connector Ⓑ.



⇦ : Vehicle front

2. Remove height sensor assembly mounting nut and bolt.
3. Remove height sensor assembly.

INSTALLATION

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

CAUTION:

Be sure to perform “SENSOR INITIALIZE” when removing height sensor. Refer to EXL-101, "Work Procedure".

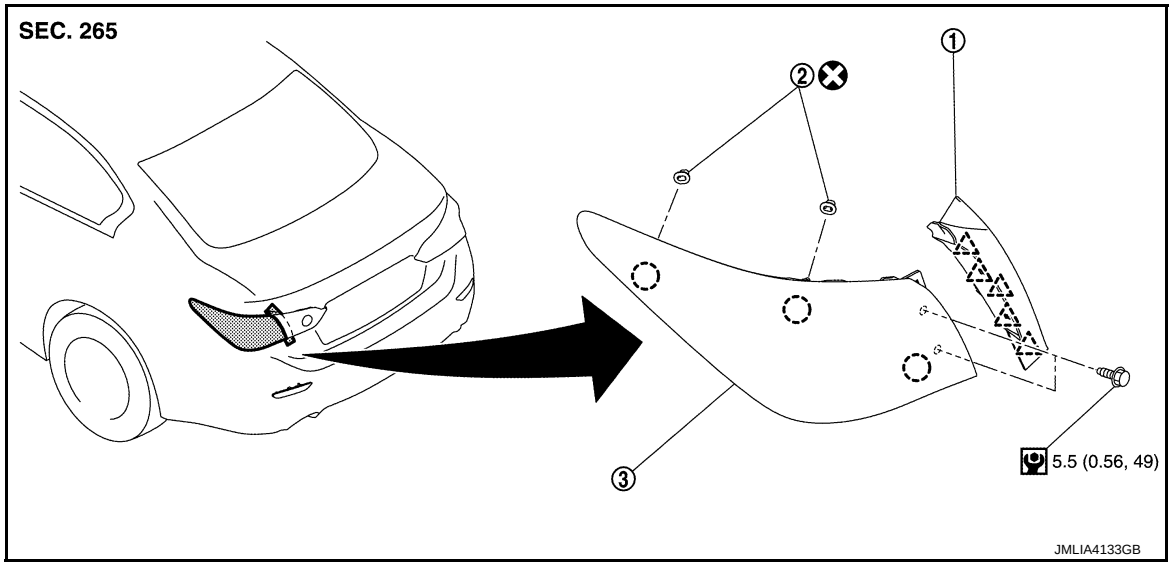
REAR COMBINATION LAMP

Exploded View

INFOID:0000000009695551

REMOVAL

Rear Combination Lamp (body side)



① Rear combination lamp finisher ② Grommet ③ Rear combination lamp

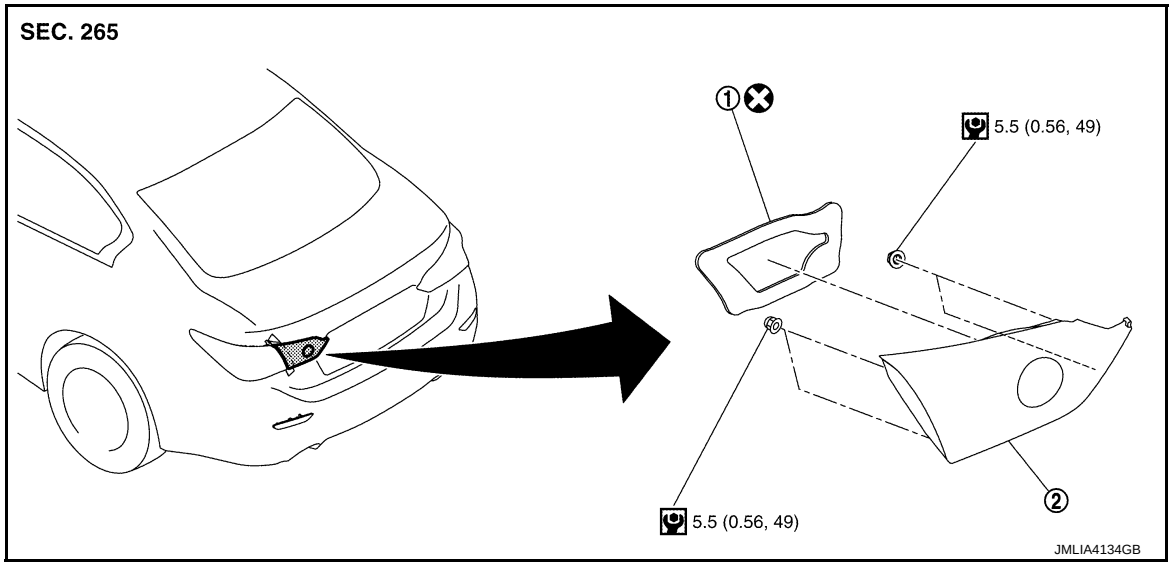
: Clip

: Pawl

: N·m (kg-m, in-lb)

: Always replace after every disassembly.

Rear Combination Lamp (trunk lid side)

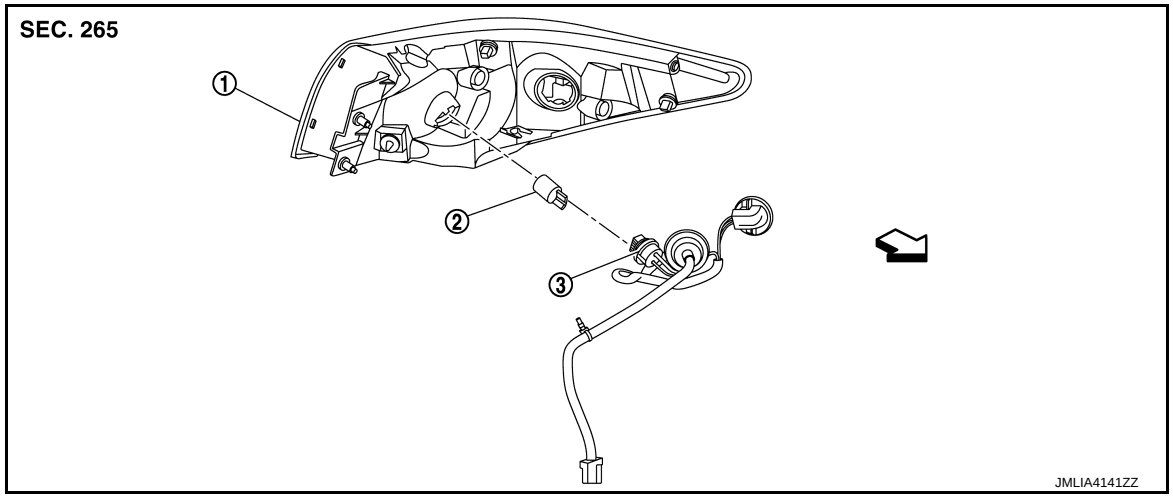


① Seal packing ② Rear combination lamp

: N·m (kg-m, in-lb)

: Always replace after every disassembly.

DISASSEMBLY



① Rear combination lamp housing (body side) ② Rear turn signal lamp bulb ③ Rear turn signal lamp socket

⇦ : Vehicle front

Removal and Installation

INFOID:0000000009695552

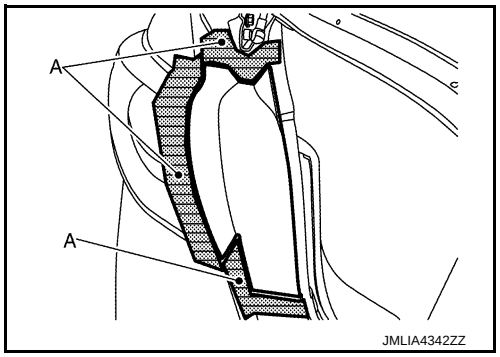
CAUTION:
- **Disconnect the battery negative terminal or the fuse.**
- **When removing, always use a remover tool that is made of plastic.**

REMOVAL

Rear Combination Lamp (body side)

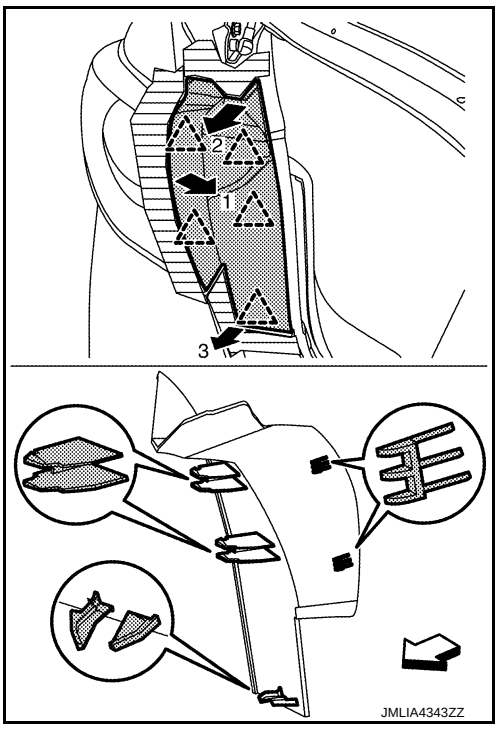
1. Fully open trunk lid.
2. Remove rear combination lamp finisher.

a. Apply a strip of protective tape (A) on body panel to protect it from damage.



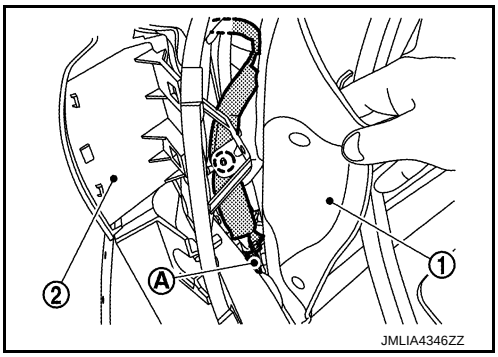
b. Disengage rear combination lamp finisher fixing pawls with a remover tool according to the numerical order 1 → 3 and remove rear combination lamp finisher.

: Pawl
: Vehicle front

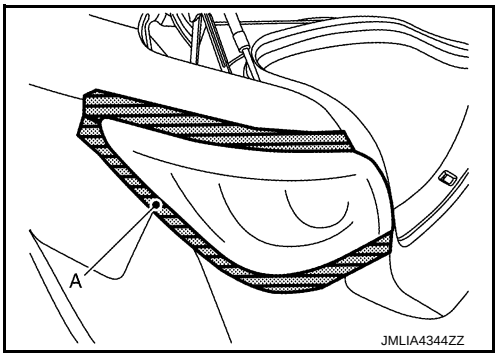


3. Remove rear combination lamp.
a. Remove rear combination lamp mounting bolts.
b. Remove trunk rear plate. Refer to INT-48, "TRUNK REAR PLATE : Removal and Installation".
c. Remove partially trunk weather-strip.
d. Remove partially trunk lid inner finisher ①, and then disconnect rear combination lamp ② harness connector Ⓐ and fixing clip.

: Clip

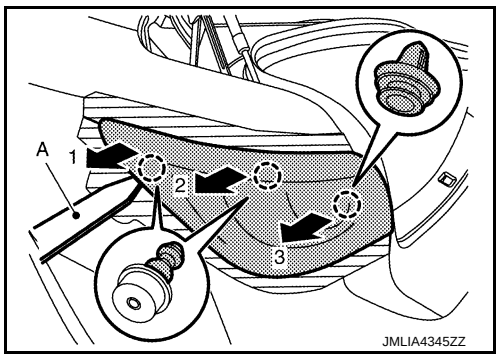


e. Apply a strip of protective tape (A) on body panel to protect it from damage.



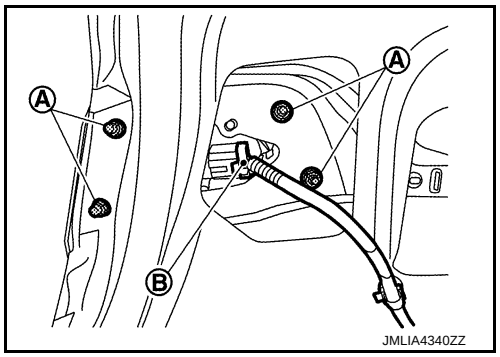
f. Disengage rear combination lamp fixing clips with a remover tool (A) according to the numerical order 1 → 3 and, and then pull out rear combination lamp to remove.

: Clip

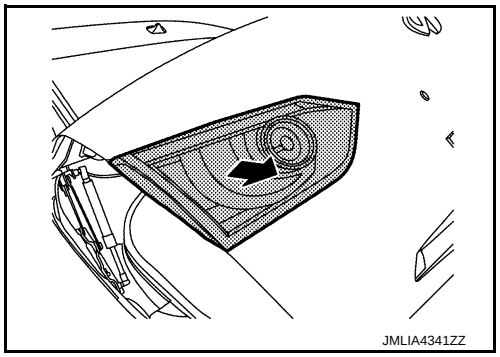


Rear Combination Lamp (trunk lid side)

1. Fully open trunk lid.
2. Remove trunk lid inner finisher. Refer to INT-53, "Removal and Installation".
3. Remove trunk lid finisher. Refer to EXT-55, "TRUNK LID FINISHER : Removal and Installation".
4. Remove rear combination lamp (trunk lid side) mounting nuts Ⓐ and then disconnect harness connector Ⓑ.



5. Pull rear combination lamp (trunk lid side) out off trunk lid panel and remove it.



INSTALLATION

Install in the reverse order of removal.

CAUTION:

- **Always replace grommet and seal packing with new part after every removal.**

Replacement

INFOID:0000000009695553

CAUTION:

- **Disconnect the battery negative terminal or 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.**

REAR TURN SIGNAL LAMP BULB

1. Remove rear combination lamp (body side). Refer to EXL-185, "Removal and Installation".
2. Rotate rear turn signal lamp bulb socket counterclockwise, and then remove rear turn signal lamp bulb socket.

3. Remove rear turn signal lamp bulb from rear turn signal lamp bulb socket.

STOP/TAIL LAMP

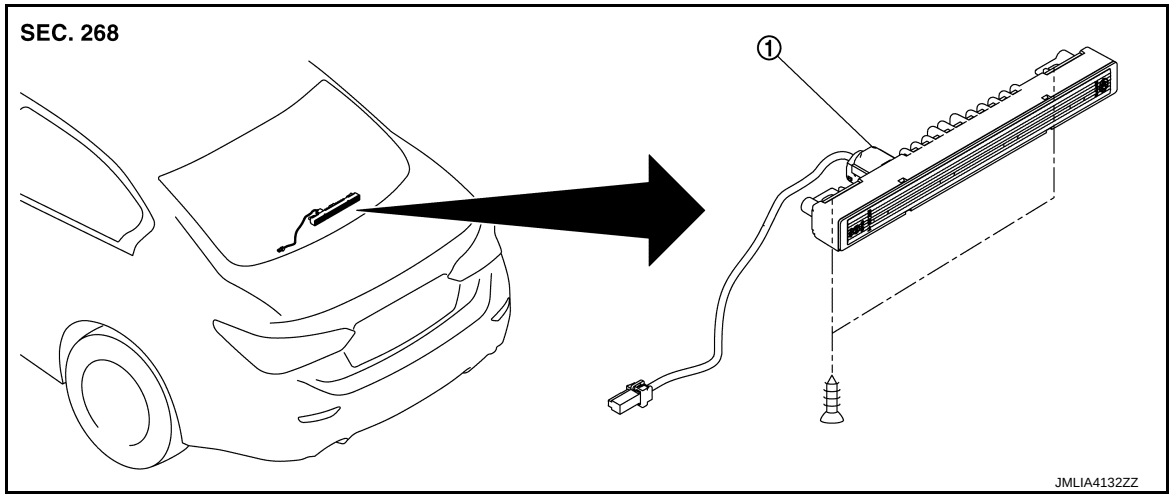
CAUTION:

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

HIGH-MOUNTED STOP LAMP

Exploded View

INFOID:0000000009695557



① High-mounted stop lamp unit

Removal and Installation

INFOID:0000000009695558

CAUTION:
Disconnect battery negative terminal or remove the fuse.

REMOVAL

1. Disconnect high-mounted stop lamp unit harness connector.
2. Remove rear parcel shelf finisher. Refer to INT-33, "Removal and Installation".
3. Remove high-mounted stop lamp unit assembly from rear parcel shelf finisher.

INSTALLATION

Install in the reverse order of removal.

Replacement

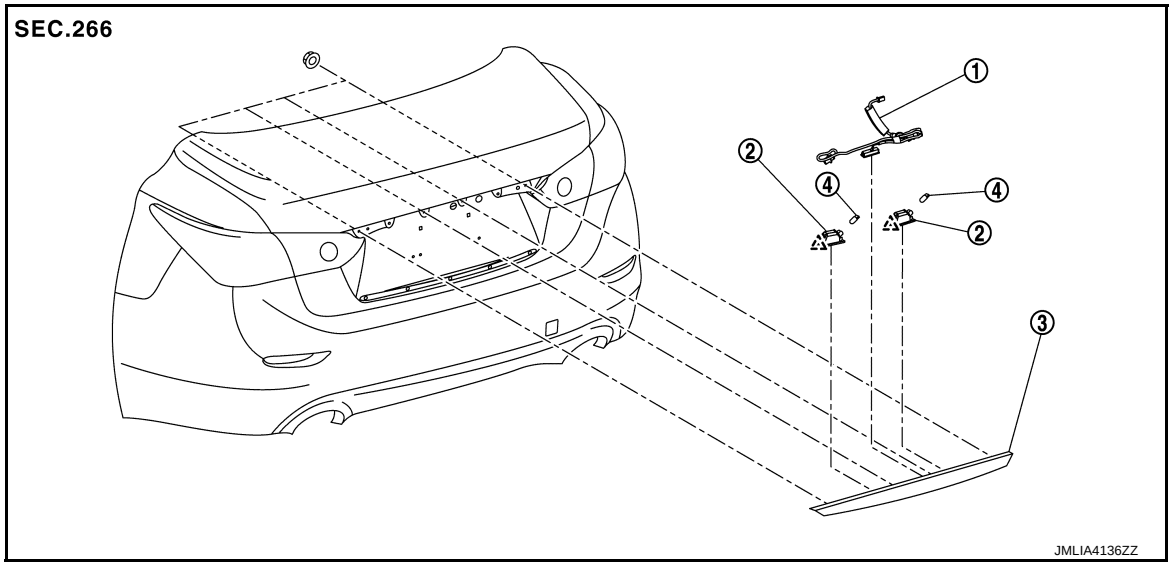
INFOID:0000000009726734

CAUTION:
Replacement of a single part is not possible due to the adoption of LED bulb. For replacement, replace high-mounted stop lamp unit as a set.

LICENSE PLATE LAMP

Exploded View

INFOID:0000000009695559



① Harness connector assembly ② License plate lamp housing ③ Trunk lid finisher
④ License plate lamp bulb
: Pawl

Removal and Installation

INFOID:0000000009695560

CAUTION:
Disconnect battery negative terminal or remove the fuse.

REMOVAL

1. Remove trunk lid finisher. Refer to EXT-55, "TRUNK LID FINISHER : Removal and Installation".
2. Disconnect license plate lamp harness connector.
3. Disengage license plate lamp housing fixing pawl, and then remove license plate lamp housing.

INSTALLATION

Install in the reverse order of removal.

Replacement

INFOID:0000000009695561

CAUTION:
- **Disconnect the battery negative terminal or 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.**

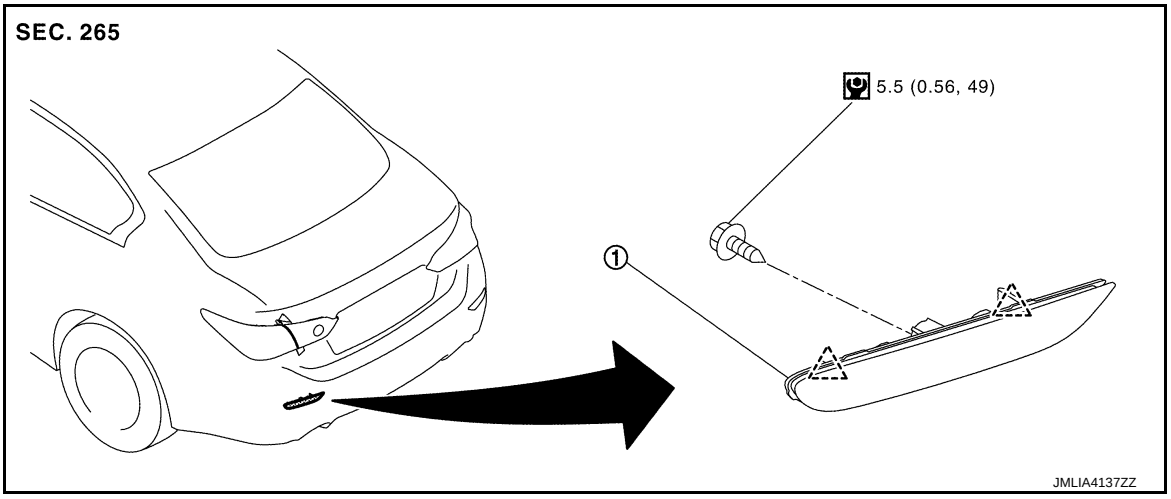
LICENSE PLATE LAMP BULB

1. Remove trunk lid inner finisher. Refer to INT-53, "Removal and Installation".
2. Rotate the bulb socket counterclockwise and unlock it.
3. Remove the bulb from the socket.

REAR REFLEX REFLECTOR

Exploded View

INFOID:0000000009695562



① Rear reflex reflector

△ : Pawl

: N·m (kg-m, in-lb)

Removal and Installation

INFOID:0000000009695563

REMOVAL

1. Remove rear bumper fascia. Refer to EXT-21, "Removal and Installation".
2. Remove rear reflex reflector fixing screw and pawls and then remove rear reflex reflector.

INSTALLATION

Install in the reverse order of removal.

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Bulb Specifications

INFOID:0000000009695564

Item		Type	Wattage (W)
Front combination lamp	High beam	LED	23
	Low beam		23
	Parking lamp (lower side)/ daytime running light (lower side)		0.3/7.5
	Parking lamp (upper side)/ daytime running light (upper side)		0.3
	Front side marker lamp		0.3
Front fog lamp		LED	13.5
Front turn signal lamp		LED	10.5
Side turn signal lamp (built in door mirror)		LED	0.3
Rear combination lamp (body side)	Tail lamp	LED	1.9
	Stop lamp	LED	2.1
	Rear turn signal lamp	WY21W	21
Rear combination lamp (trunk lid side)	Tail lamp	LED	1.8
	Back-up lamp	LED	3.1
License plate lamp		W5W	5
High-mounted stop lamp		LED	2.4