SECTION EXL
EXTERIOR LIGHTING SYSTEM

CONTENTS

XENON TYPE

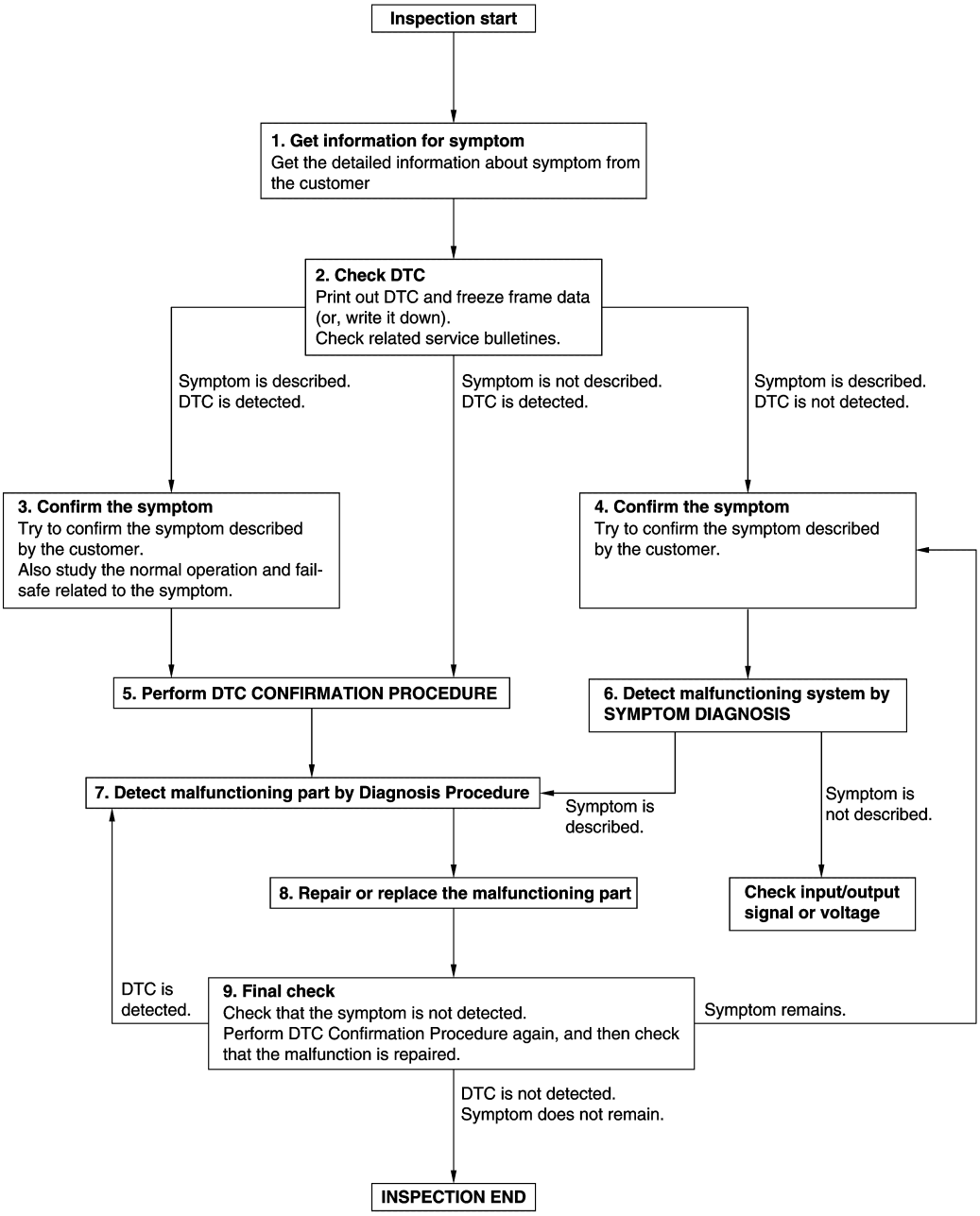
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:0000000008277456

OVERALL SEQUENCE



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DETAILED FLOW

1.GET INFORMATION FOR SYMPTOM

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

>> GO TO 2.

2.CHECK DTC

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

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

3. Check related service bulletins for information.

Are any symptoms described and any DTC detected?

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

3.CONFIRM THE SYMPTOM

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

>> GO TO 5.

4.CONFIRM THE SYMPTOM

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

>> GO TO 6.

5.PERFORM DTC CONFIRMATION PROCEDURE

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

NOTE:

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

Is DTC detected?

YES >> GO TO 7.
NO >> Check according to GI-46, "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-46, "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?

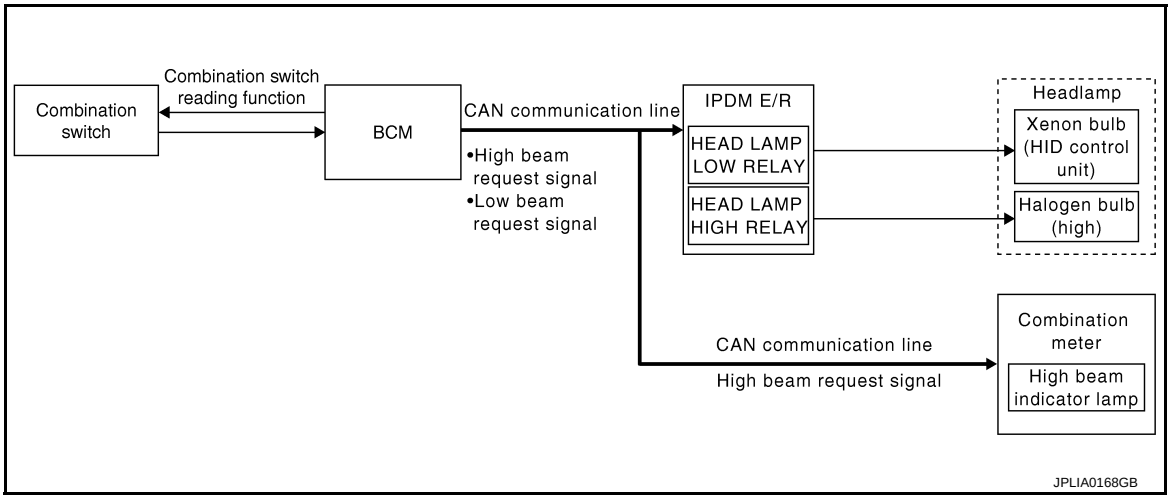
YES-1 >> DTC is detected: GO TO 7.
YES-2 >> Symptom remains: GO TO 4.
NO >> Before returning the vehicle to the customer, always erase DTC.

SYSTEM DESCRIPTION

HEADLAMP SYSTEM

System Diagram

INFOID:0000000008277457



System Description

INFOID:0000000008277458

OUTLINE

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

HEADLAMP (LO) OPERATION

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

Headlamp (LO) ON condition

- Lighting switch 2ND
- Lighting switch AUTO, and the auto light function ON judgment

- IPDM E/R turns the integrated headlamp low relay ON, and turns the headlamp ON according to the low beam request signal.

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.

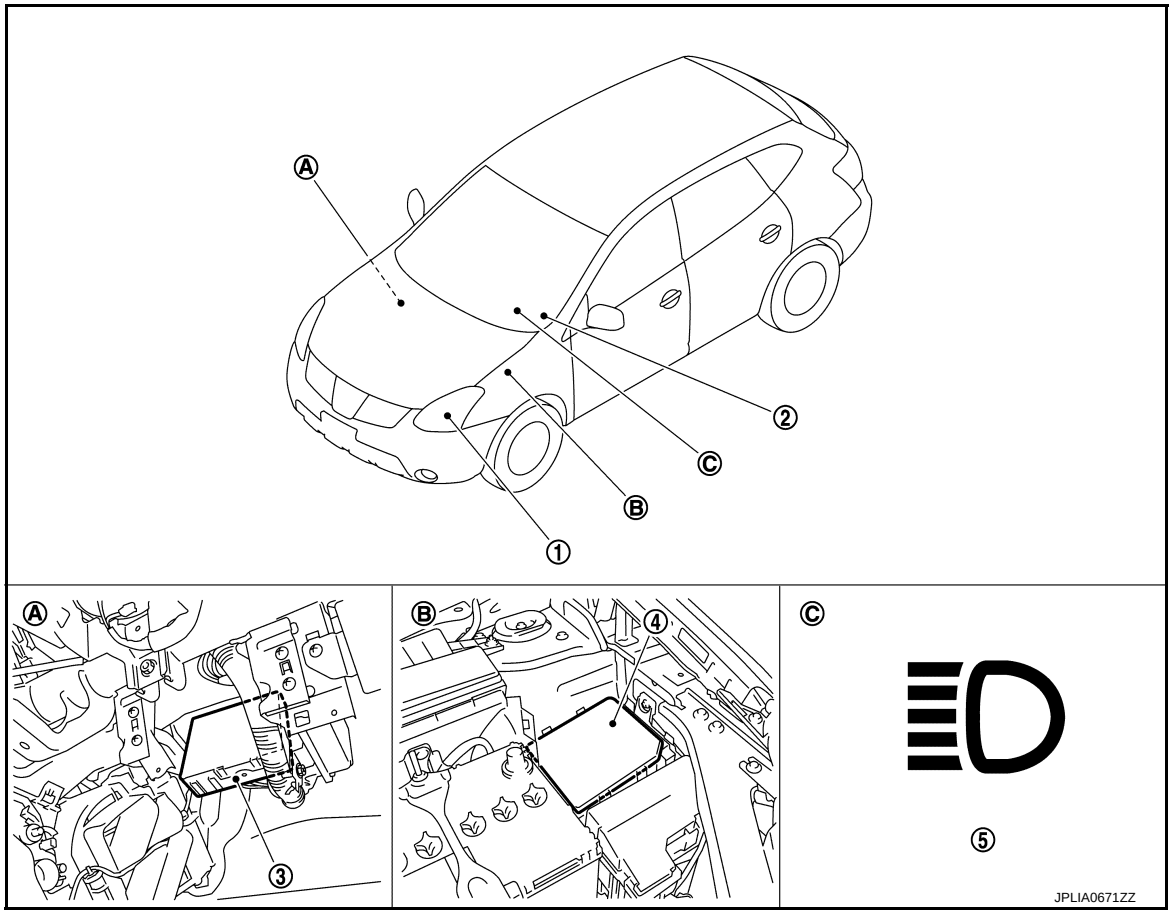
Headlamp (HI) ON condition

- Lighting switch HI with the lighting switch 2ND
- Lighting switch PASS
- Lighting switch AUTO, and the auto light function ON judgment

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

Component Parts Location

INFOID:0000000008277459



1. Headlamp
2. Combination switch
3. BCM
4. IPDM E/R
5. High beam indicator lamp
A. Over the glove box
B. Engine room (LH)
C. On the combination meter

Component Description

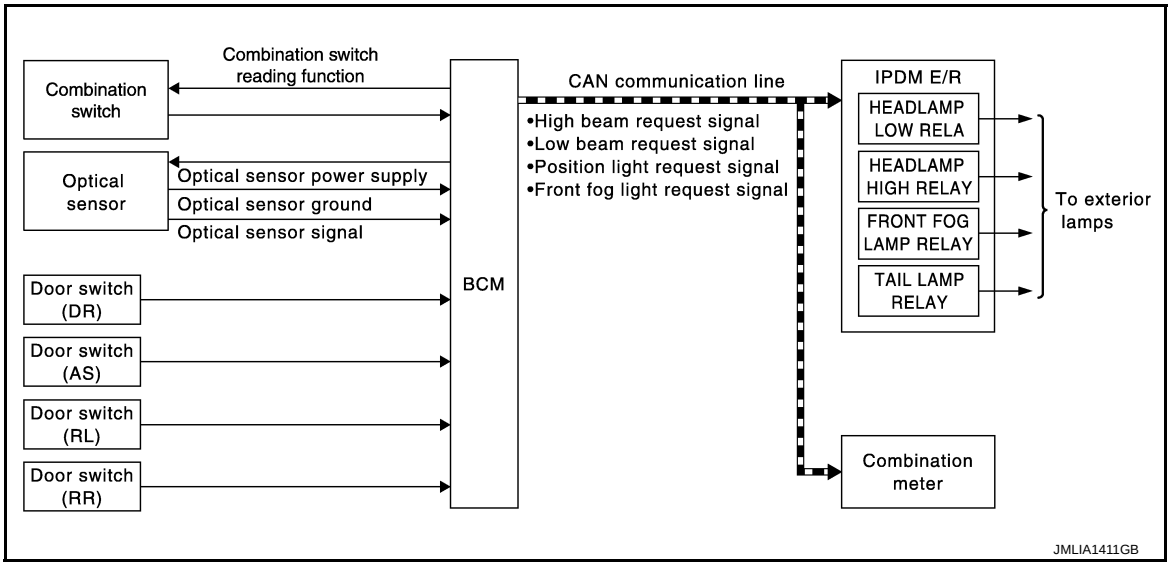
INFOID:0000000008277460

Part		Description
BCM		• Detects each switch condition by the combination switch reading function. • Judges that the headlamp is turned ON according to the vehicle condition. - Requests the headlamp relay (HI/LO) ON to IPDM E/R (with CAN communication). - Requests the high beam indicator lamp ON to the combination meter (with CAN communication).
IPDM E/R		Controls the integrated relay, and supplies voltage to the load according to the request from BCM (with CAN communication).
Combination switch (Lighting & turn signal switch)		Refer to BCS-9, "System Diagram".
Combination meter (High beam indicator lamp)		Turns the high beam indicator lamp ON according to the request from BCM (with CAN communication).
Front combination lamp assembly	• HID control unit • Xenon bulb	Refer to EXL-37, "Description".

AUTO LIGHT SYSTEM

System Diagram

INFOID:0000000008277461



System Description

INFOID:0000000008277462

OUTLINE

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

Control by BCM
- Combination switch reading function
- Headlamp control function
- Auto light function
- Delay timer function

Control by IPDM E/R
- Relay control function

- Auto light system has the auto light function and the delay timer function.
- Auto light function turns the exterior lamps* and each illumination ON/OFF automatically according to the outside brightness.
- When auto light system turns the exterior lamps ON with the ignition switch OFF, delay timer function turns the exterior lamps OFF depending on the vehicle condition with the auto light function after a certain period of time.

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

AUTO LIGHT FUNCTION

- BCM detects the combination switch condition with the combination switch reading function.
- BCM supplies voltage to optical sensor when the ignition switch is turned ON or ACC.
- Optical sensor converts outside brightness (lux) to voltage and transmits the optical sensor signal to BCM.
- BCM judges outside brightness from the optical sensor signal and judges ON/OFF condition of the exterior lamp and each illumination according to the outside brightness.
- BCM transmits each request signal to IPDM E/R with CAN communication according to ON/OFF condition by the auto light function.

NOTE:
ON/OFF timing differs based on the sensitivity from the setting. The setting can be set by CONSULT. Refer to EXL-22, "HEADLAMP : CONSULT Function (BCM - HEAD LAMP)".

DELAY TIMER FUNCTION

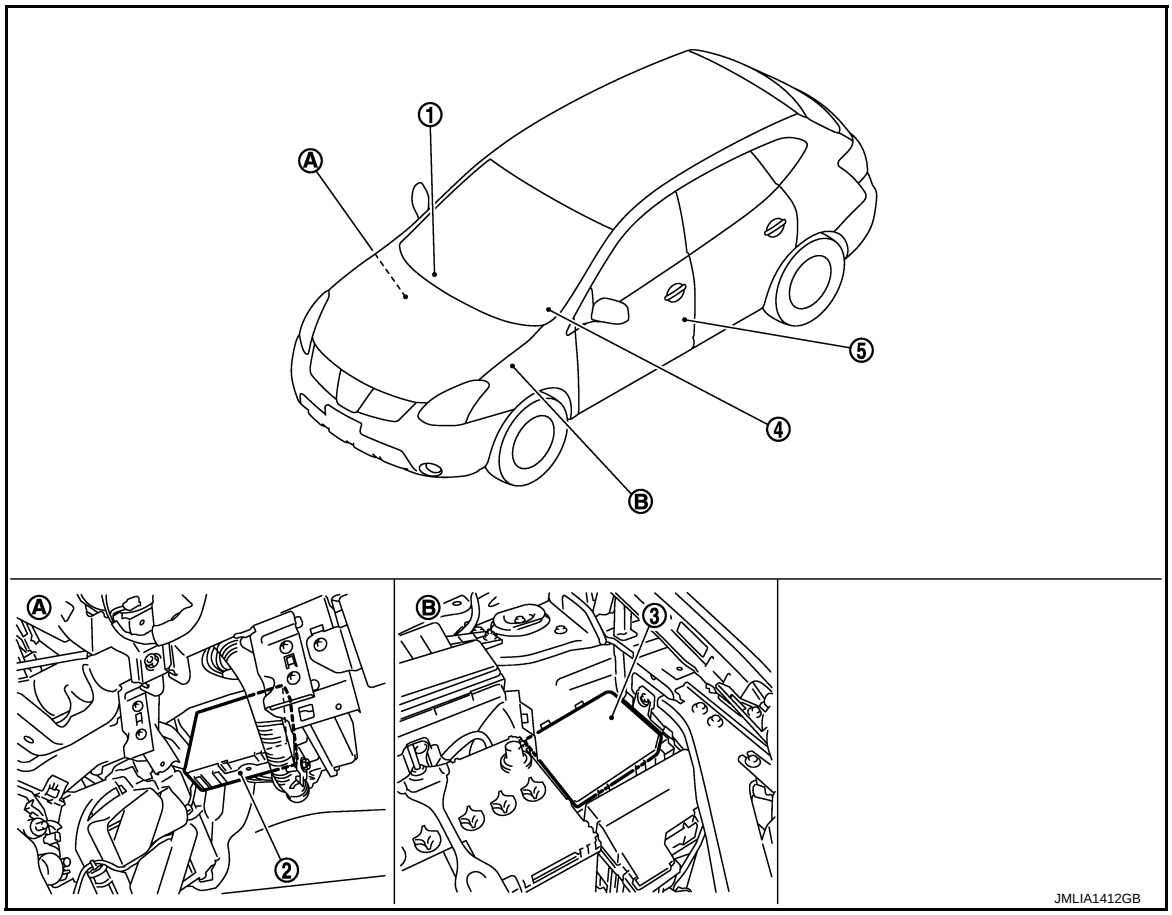
BCM turns the exterior lamp OFF depending on the vehicle condition with the auto light function when the ignition switch is turned OFF.
- Turns the exterior lamp OFF 5 minutes after detecting that any door opens (Door switch ON).
- Turns the exterior lamp OFF a certain period of time* after closing all doors (Door switch ON→OFF).

• Turns the exterior lamp OFF with the ignition switch ACC or the light switch OFF.
*: The preset time is 45 seconds. The timer operating time can be set by CONSULT. Refer to EXL-22, "HEADLAMP : CONSULT Function (BCM - HEAD LAMP)".

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

Component Parts Location

INFOID:0000000008277463



1. Optical sensor
2. BCM
3. IPDM E/R
4. Combination switch
5. Door switch
A. Over the glove box
B. Engine room (LH)

Component Description

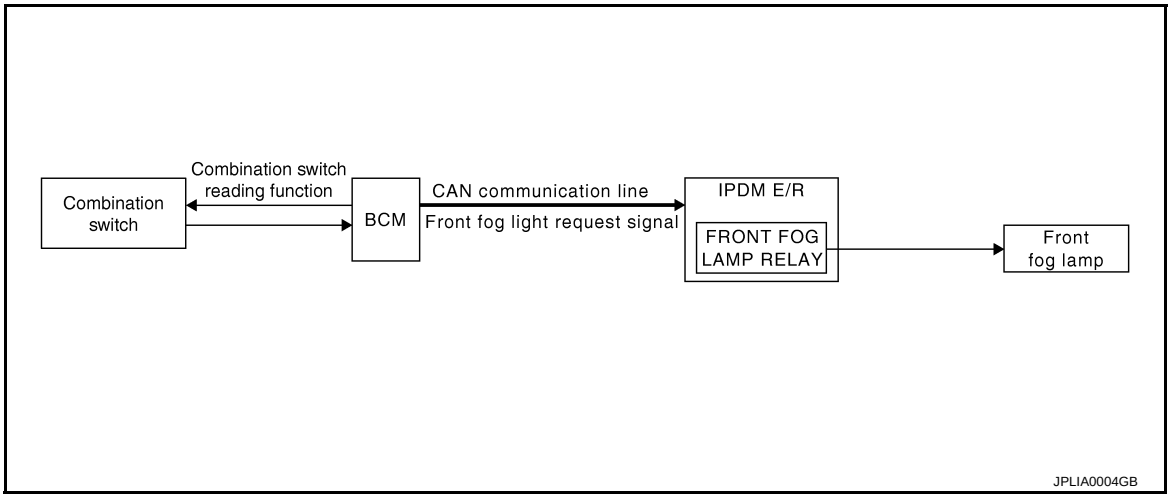
INFOID:0000000008277464

Part	Description
BCM	• Detects each switch condition by the combination switch reading function. • Judges the outside brightness from the optical sensor signal. • Judges the OFF timing according to the vehicle condition. • Judges the ON/OFF status of the exterior lamp and each illumination according to the outside brightness and the vehicle condition. Requests ON/OFF of each relay to IPDM E/R (with CAN communication).
IPDM E/R	Controls the integrated relay, and supplies voltage to the load according to the request from BCM (with CAN communication).
Combination switch (Lighting & turn signal switch)	Refer to BCS-9, "System Diagram".
Optical sensor	Refer to EXL-50, "Description".

FRONT FOG LAMP SYSTEM

System Diagram

INFOID:0000000008277465



System Description

INFOID:0000000008277466

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 with CAN communication according to the front fog lamp ON condition.

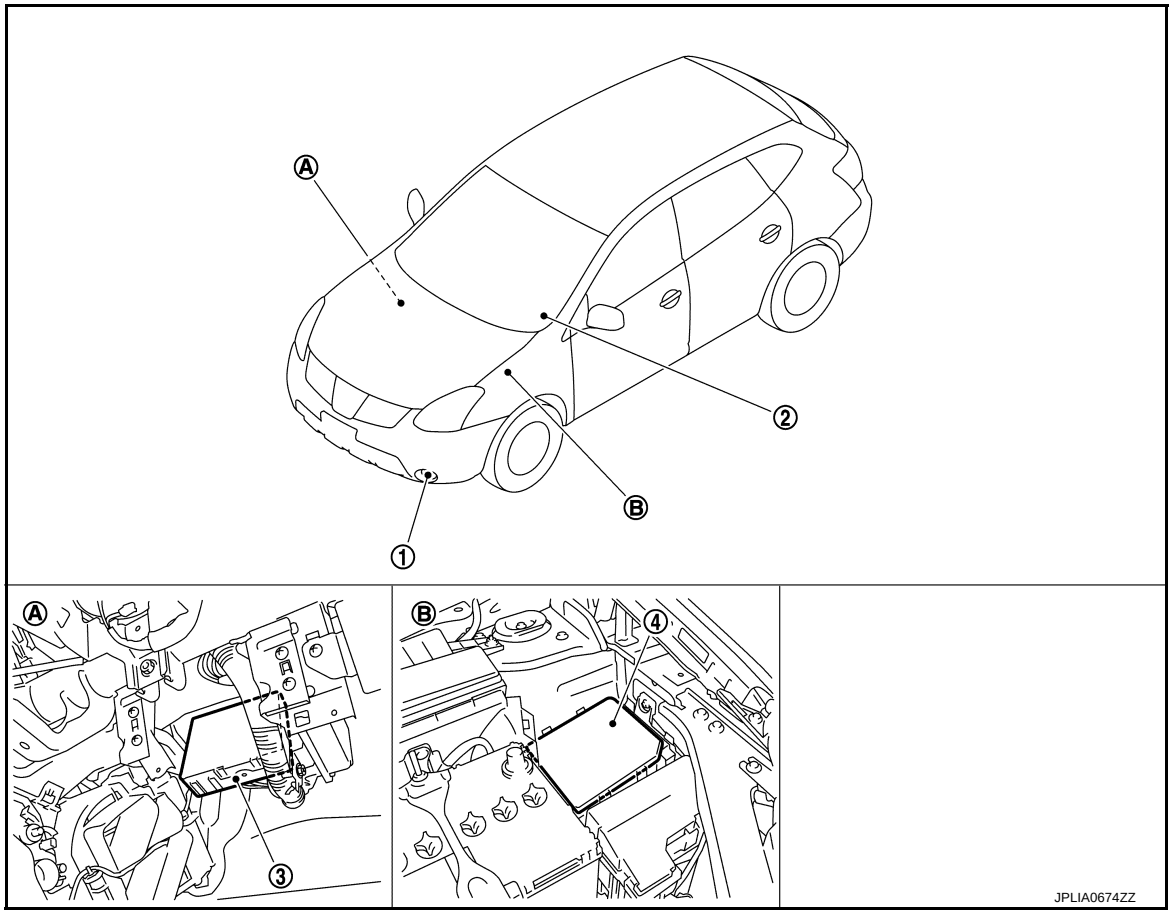
Front fog lamp ON condition

- Front fog lamp switch ON with headlamp ON (except for the high beam ON)

- 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.

Component Parts Location

INFOID:0000000008277467



1. Front fog lamp
2. Combination switch
3. BCM
4. IPDM E/R
A. Over the glove box
B. Engine room (LH)

Component Description

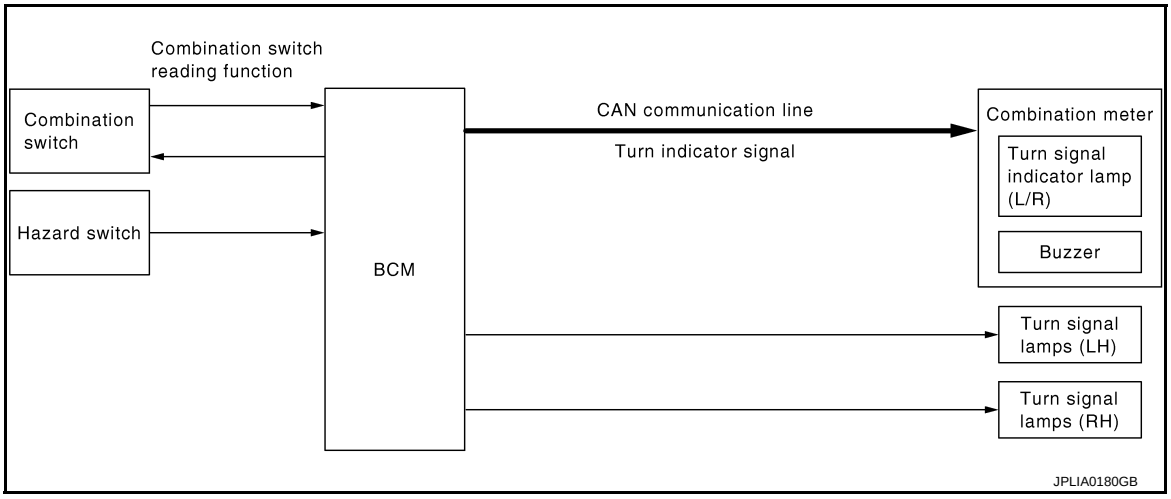
INFOID:0000000008277468

Part	Description
BCM	• Detects each switch condition by the combination switch reading function. • Judges the front fog lamp ON/OFF status according to the vehicle condition. - Requests the front fog lamp relay ON to IPDM E/R (with CAN communication).
IPDM E/R	Controls the integrated relay and supplies voltage to the load according to the request from BCM (with CAN communication).
Combination switch (Lighting & turn signal switch)	Refer to BCS-9, "System Diagram".

TURN SIGNAL AND HAZARD WARNING LAMP SYSTEM

System Diagram

INFOID:0000000008277469



System Description

INFOID:0000000008277470

OUTLINE

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

TURN SIGNAL LAMP OPERATION

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

HAZARD WARNING LAMP OPERATION

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

TURN SIGNAL INDICATOR LAMP AND TURN SIGNAL SOUND OPERATION

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

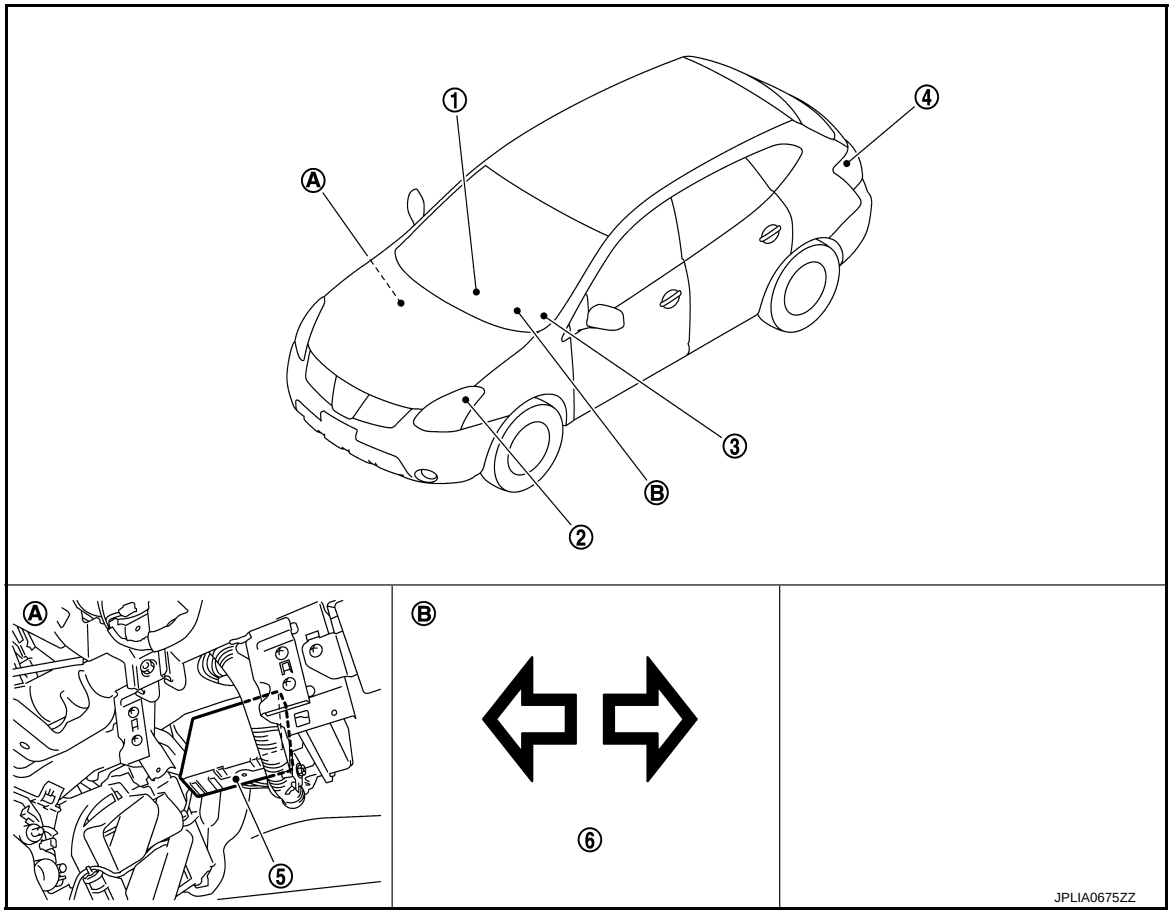
HIGH FLASHER OPERATION (FAIL-SAFE)

- BCM detects the turn signal lamp circuit status by the terminal 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.

Component Parts Location

INFOID:0000000008277471



1. Hazard switch
2. Front turn signal lamp
3. Combination switch
4. Rear turn signal lamp
5. BCM
6. Turn signal indicator lamp
A. Over the glove box
B. On the combination meter

Component Description

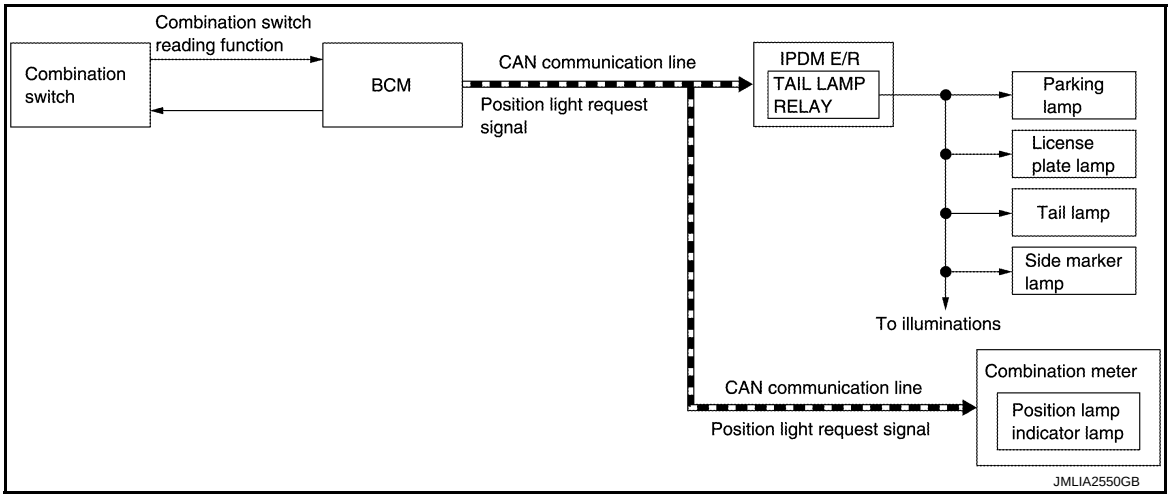
INFOID:0000000008277472

Part	Description
BCM	• Detects each switch condition by the combination switch reading function. • Judges the blinks of the turn signal lamp and the hazard warning lamp from each switch status. The applicable turn signal lamp blinks. • Requests the turn signal indicator lamp blink to the combination meter (with CAN communication).
Combination switch (Lighting & turn signal switch)	Refer to BCS-9, "System Diagram".
Hazard switch	Inputs the hazard switch ON/OFF signal to BCM.
Combination meter (Turn signal indicator lamp & buzzer)	Blinks the turn signal indicator lamp and outputs the turn signal operating sound with integrated buzzer according to the request from BCM (with CAN communication).

PARKING, LICENSE PLATE AND TAIL LAMPS SYSTEM

System Diagram

INFOID:0000000008277473



System Description

INFOID:0000000008277474

OUTLINE

Parking*, license plate and tail* lamps are controlled by combination switch reading function and headlamp control function of BCM, and relay control function of IPDM E/R.
*: Illuminated as side maker lamps too.

PARKING, LICENSE PLATE AND TAIL LAMPS OPERATION

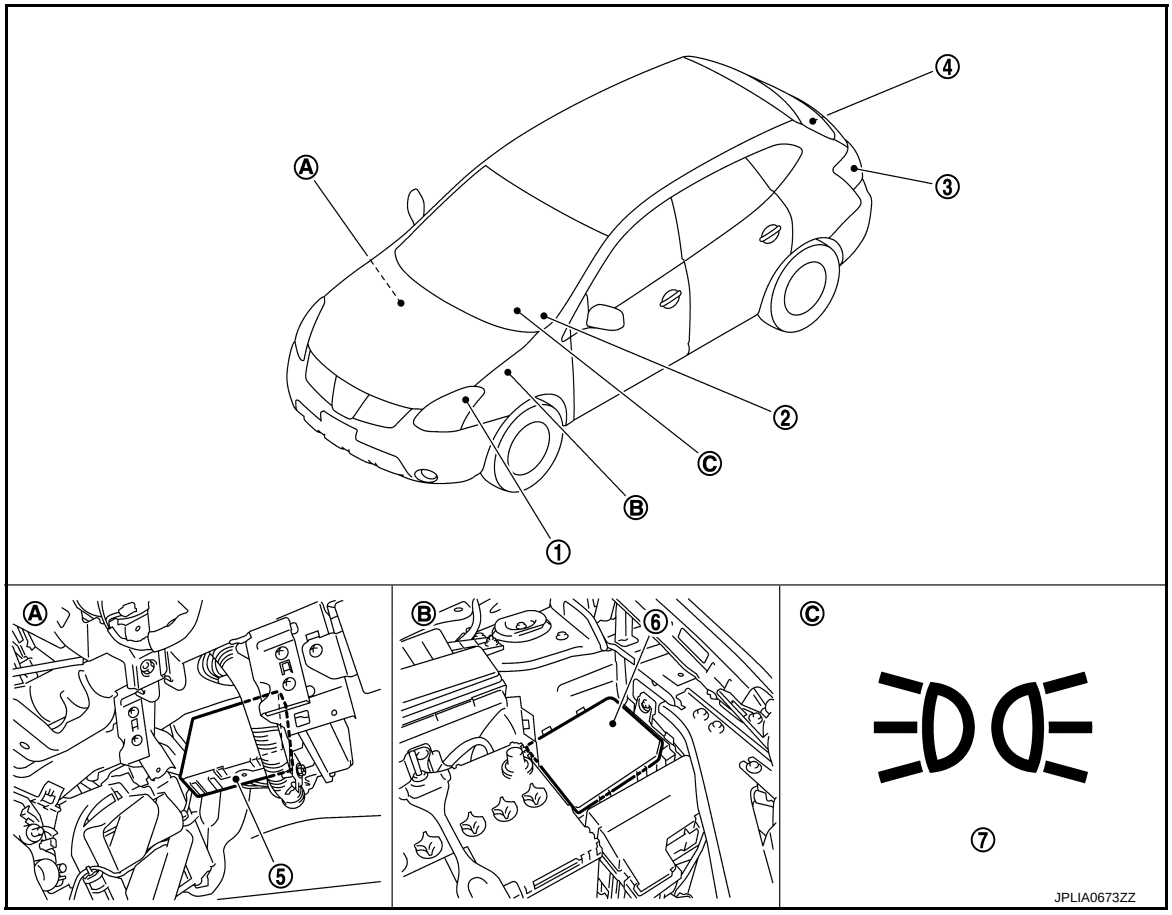
- BCM detects the combination switch condition by the combination switch reading function.
- BCM transmits the position light request signal to IPDM E/R and the combination meter with CAN communication according to the ON/OFF condition of the parking, license plate and tail lamps.

Parking, license plate and tail lamps ON condition
- Lighting switch 1ST
- Lighting switch 2ND

- IPDM E/R turns the integrated tail lamp relay ON and turns the parking lamp, the license plate 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.

Component Parts Location

INFOID:0000000008277475



1. Parking lamp (Side marker lamp)
2. Combination switch
3. Tail lamp (Side marker lamp)
4. License plate lamp
5. BCM
6. IPDM E/R
7. Position lamp indicator lamp
A. Over the glove box
B. Engine room (LH)
C. On the combination meter

Component Description

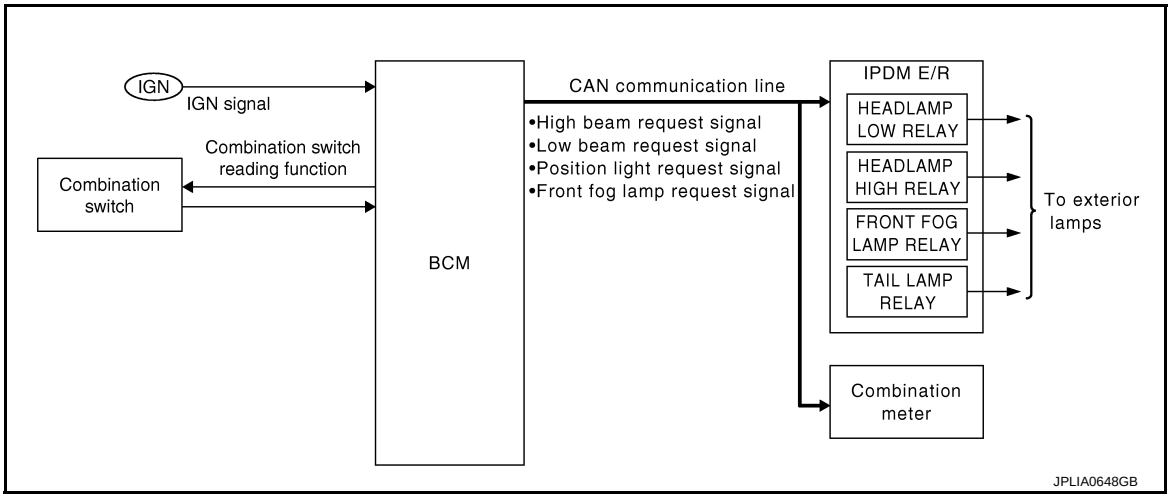
INFOID:0000000008277476

Part	Description
BCM	• Detects each switch condition by the combination switch reading function. • Judges the ON/OFF status of the parking, license plate and tail lamps according to the vehicle condition. - Requests the tail lamp relay ON to IPDM E/R (with CAN communication). - Requests the position lamp indicator lamp ON to the combination meter (with CAN communication).
IPDM E/R	Controls the integrated relay and supplies voltage to the load according to the request from BCM (with CAN communication).
Combination switch (Lighting & turn signal switch)	Refer to BCS-9, "System Diagram".
Combination meter (Position lamp indicator lamp)	Turns the position lamp indicator lamp ON according to the request from BCM (with CAN communication).

EXTERIOR LAMP BATTERY SAVER SYSTEM

System Diagram

INFOID:0000000008277477



System Description

INFOID:0000000008277478

OUTLINE

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

Control by BCM
- Combination switch reading function
- Headlamp control function
- Exterior lamp battery saver function

Control by IPDM E/R
- Relay control function
- BCM turns the exterior lamp* OFF after a period of time to prevent the battery from over-discharge when the ignition switch is turned OFF with the exterior lamp ON.

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

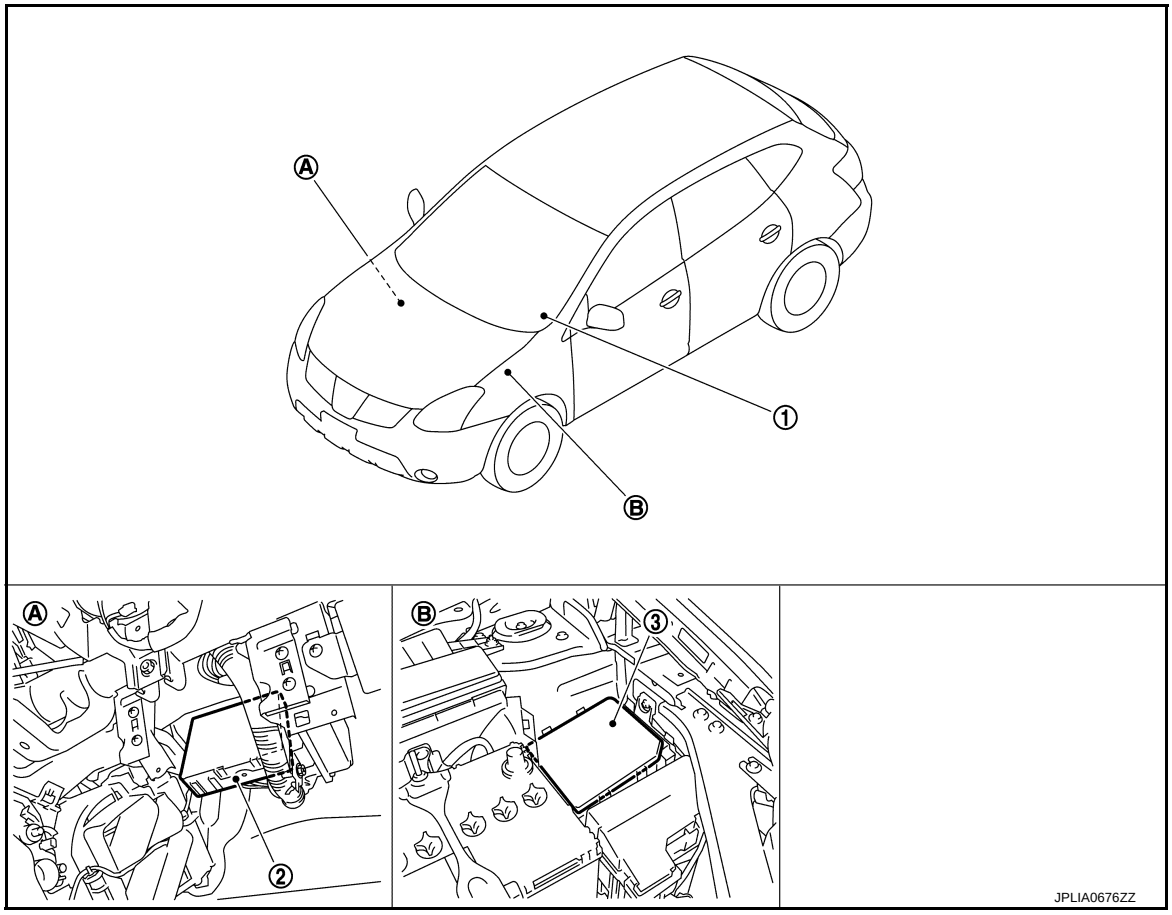
EXTERIOR LAMP BATTERY SAVER ACTIVATION

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

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

Component Parts Location

INFOID:0000000008277479



1. Combination switch
2. BCM
3. IPDM E/R
A. Over the glove box
B. Engine room (LH)

Component Description

INFOID:0000000008277480

Part	Description
BCM	• Detects each switch condition by the combination switch reading function. • Activates the battery saver to turn the exterior lamps OFF according to the vehicle condition. - Requests each relay OFF to IPDM E/R (with CAN communication).
IPDM E/R	Controls the integrated relay according to the request from BCM (with CAN communication).
Combination switch (Lighting & turn signal switch)	Refer to BCS-9, "System Diagram".

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

INFOID:0000000008277481

APPLICATION ITEM
CONSULT can display each diagnostic item using the diagnostic test modes shown following.

Diagnosis mode	Function description
ECU Identification	BCM part number is displayed.
Self-Diagnostic Result	Displays the diagnosis results judged by BCM. Refer to BCS-61, "DTC Index".
Data Monitor	BCM input/output signals are displayed.
Active Test	The signals used to activate each device are forcibly supplied from BCM.
Work Support	Changes the setting for each system function.
Configuration	• Read and save the vehicle specification. • Write the vehicle specification when replacing BCM.
CAN Diag Support Monitor	Monitors the reception status of CAN communication viewed from 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	CONSULT 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 control	INT LAMP	×	×	×
Remote keyless entry system	MULTI REMOTE ENT	×	×	×
Exterior lamp	HEAD LAMP	×	×	×
Wiper and washer	WIPER	×	×	×
Turn signal and hazard warning lamps	FLASHER		×	×
• Auto air conditioning system • Manual air conditioning system	AIR CONDITONER		×	
Intelligent Key system	INTELLIGENT KEY		×	
Combination switch	COMB SW		×	
Body control system	BCM	×		
Immobilizer	IMMU		×	×
Interior room lamp battery saver	BATTERY SAVER	×	×	×
Back door open	TRUNK		×	×
Vehicle security system	THEFT ALM	×	×	×
RAP system	RETAINED PWR	×	×	×
Signal buffer system	SIGNAL BUFFER		×	×
—	FUEL LID*			
TPMS	AIR PRESSURE MONITOR	×	×	×
Panic alarm system	PANIC ALARM			×

*: This item is displayed, but is not function.

HEADLAMP

HEADLAMP : CONSULT Function (BCM - HEAD LAMP)

INFOID:0000000008277482

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 MODE2.)	
	MODE 4	Less sensitive setting than normal setting (Turns ON later than normal operation.)	
BATTERY SAVER SET	On*	With the exterior lamp battery saver function	
	Off	Without the exterior lamp battery saver function	
ILL DELAY SET	MODE 1*	45 sec.	Sets delay timer function timer operation time. (All doors closed)
	MODE 2	Without the function	
	MODE 3	30 sec	
	MODE 4	60 sec	
	MODE 5	90 sec	
	MODE 6	120 sec	
	MODE 7	150 sec	
	MODE 8	180 sec	

*: Factory setting

DATA MONITOR

Monitor item [Unit]	Description
IGN ON SW [On/Off]	Ignition switch (ON) status judged from IGN signal (ignition power supply)
ACC ON SW [On/Off]	Ignition switch (ACC) status judged from ACC signal (ACC power supply)
HI BEAM SW [On/Off]	Each switch status that BCM judges from the combination switch reading function
HEAD LAMP SW1 [On/Off]	
HEAD LAMP SW2 [On/Off]	
LIGHT SW 1ST [On/Off]	
PASSING SW [On/Off]	
FR FOG SW [On/Off]	
AUTO LIGHT SW [On/Off]	
RR FOG SW [On/Off]	**NOTE:** The item is indicated, but not monitored
DOOR SW-DR [On/Off]	The switch status input from front door switch (driver side)
DOOR SW-AS [On/Off]	The switch status input from front door switch (passenger side)

Monitor item [Unit]	Description
DOOR SW-RR [On/Off]	The switch status input from rear door switch RH
DOOR SW- RL [On/Off]	The switch status input from rear door switch LH
BACK DOOR SW [On/Off]	The switch status input from back door switch
TURN SIGNAL R [On/Off]	Each switch status that BCM judges from the combination switch reading function
TURN SIGNAL L [On/Off]	
ENGINE RUNNING [On/Off]	The engine status received from ECM with CAN communication
PKB SW [On/Off]	The parking brake switch status received from combination meter with CAN communication
CARGO LAMP SW [On/Off]	**NOTE:** The item is indicated, but not monitored
OPTICAL SENSOR [V]	The value of exterior brightness voltage input from the optical sensor

ACTIVE TEST

Test item	Operation	Description
TAIL LAMP	On	Transmits the position light request signal to IPDM E/R with CAN communication to turn the tail lamp ON.
	Off	Stops the tail lamp request signal transmission.
HEAD LAMP	Hi	Transmits the high beam request signal with CAN communication to turn the headlamp (HI).
	Lo	Transmits the low beam request signal with CAN communication to turn the headlamp (LO).
	Off	Stops the high & low beam request signal transmission.
FR FOG LAMP	On	Transmits the front fog lights request signal to IPDM E/R with CAN communication to turn the front fog lamp ON.
	Off	Stops the front fog lights request signal transmission.
DAYTIME RUNNING LIGHT	On	**NOTE:** The item indicated, but not operate
	Off	

FLASHER

FLASHER : CONSULT Function (BCM - FLASHER)

INFOID:0000000008277483

DATA MONITOR

Monitor item [Unit]	Description
IGN ON SW [On/Off]	Ignition switch (ON) status judged from IGN signal (ignition power supply)
HAZARD SW [On/Off]	The switch status input from the hazard switch

Monitor item [Unit]	Description
TURN SIGNAL R [On/Off]	Each switch condition that BCM judges from the combination switch reading function
TURN SIGNAL L [On/Off]	
BRAKE SW [On/Off]	The switch status input from the stop lamp switch

ACTIVE TEST

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

DIAGNOSIS SYSTEM (IPDM E/R)

Diagnosis Description

INFOID:0000000008277484

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

Operation procedure

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

NOTE:
When auto active test mode has to be cancelled halfway through test, turn the ignition switch OFF.

CAUTION:
- **If auto active test mode cannot be actuated, check door switch system.**
- **Never start the engine.**

Inspection in auto active test mode

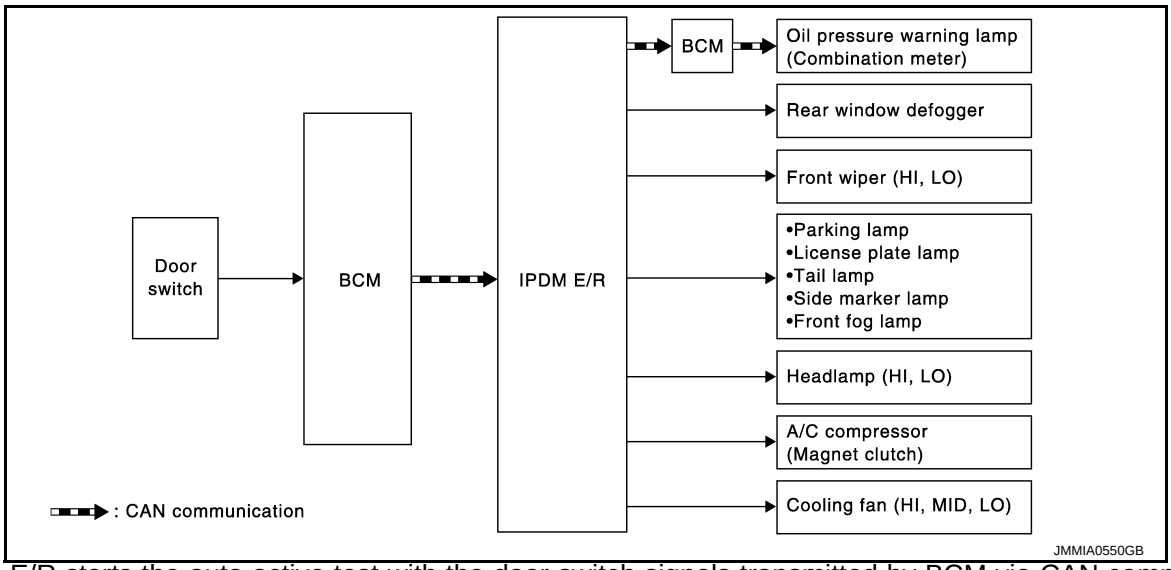
When auto active test mode is actuated, the following 6 steps are repeated 3 times.

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

NOTE:

*: With daytime running light system

Concept of auto active test



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

Diagnosis chart in auto active test mode

Symptom	Inspection contents		Possible cause
Rear window defogger does not operate	Perform auto active test. Does the rear window defogger operate?	YES	BCM signal input circuit
		NO	• Rear window defogger • Rear window defogger ground circuit • Harness or connector between IPDM E/R and rear window defogger • IPDM E/R
Any of the following components do not operate • Parking lamp • License plate lamp • Tail lamp • Side marker lamp • Front fog lamp • Headlamp (HI, LO) • Front wiper motor (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
Headlamps HI (daytime running light operation) do not operate	Perform auto active test. Do headlamps HI (daytime running light operation) operate?	YES	• CAN communication signal between ECM and BCM • CAN communication signal between combination meter and BCM • BCM signal input circuit
		NO	• Daytime running light relay power supply circuit • Harness or connector between IPDM E/R and daytime running light relay • Daytime running light relay

Symptom	Inspection contents		Possible cause
A/C compressor does not operate	Perform auto active test. Does the magnet clutch operate?	YES	• BCM signal input circuit • CAN communication signal between BCM and ECM • CAN communication signal between ECM and IPDM E/R
		NO	• Magnet clutch • Harness or connector between IPDM E/R and magnet clutch • IPDM E/R
Oil pressure warning lamp does not operate	Perform auto active test. Does the oil pressure warning lamp blink?	YES	• Harness or connector between IPDM E/R and oil pressure switch • Oil pressure switch • IPDM E/R
		NO	• CAN communication signal between IPDM E/R and BCM • CAN communication signal between BCM and combination meter • Combination meter
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	• Cooling fan motor-2 power supply circuit • Cooling fan motor-1 ground circuit • Cooling fan relay-4 or cooling fan relay-5 power supply circuit • Cooling fan relay-5 ground circuit • Harness or connector between IPDM E/R and cooling fan motor • Harness or connector between IPDM E/R, and cooling fan relay-4 or cooling fan relay-5 • Harness or connector between cooling fan motor-2, and cooling fan relay-4 or cooling fan relay-5 • Cooling fan relay-4 or cooling fan relay-5 • Cooling fan motor • IPDM E/R

CONSULT Function (IPDM E/R)

INFOID:0000000008277485

APPLICATION ITEM

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

Diagnosis mode	Description
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

Refer to PCS-25, "DTC Index".

DATA MONITOR

Monitor item

Monitor Item [Unit]	MAIN SIGNALS	Description
MOTOR FAN REQ [1 - 4]	×	Displays the value of the cooling fan speed 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. **NOTE:** This item is monitored only the vehicle with front fog lamp system.
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.
ST RLY REQ [Off/On]		Displays the status of the starter request signal.
IGN RLY [Off/On]	×	Displays the status of the ignition relay judged by IPDM E/R.
RR DEF REQ [Off/On]	×	Displays the status of the rear defogger 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.
DTRL REQ [Off/On]		Displays the status of the daytime running light request signal received from BCM via CAN communication. **NOTE:** This item is monitored only the vehicle with daytime running light system.
HOOD SW [Off/On]		Displays the status of the hood switch judged by IPDM E/R. **NOTE:** This item is monitored only the vehicle for Mexico.
THFT HRN REQ [Off/On]		Displays the status of the horn request signal by vehicle security system or panic alarm system received from BCM via CAN communication.
HORN CHIRP [Off/On]		Displays the status of the horn request signal by key fob LOCK operation received from BCM via CAN communication.

ACTIVE TEST

Test item

Test item	Operation	Description
REAR DEFOGGER	Off	OFF
	On	Operates the rear window defogger relay.
FRONT WIPER	Off	OFF
	Lo	Operates the front wiper relay.
	Hi	Operates the front wiper relay and front wiper high relay.

Test item	Operation	Description
MOTOR FAN	1	OFF
	2	Operates the cooling fan relay (LO operation).
	3	Operates the cooling fan relay (MID operation).
	4	Operates the cooling fan relay (HI operation).
EXTERNAL LAMPS	Off	OFF
	TAIL	Operates the tail lamp relay and the daytime running light relay. **NOTE:** Daytime running light relay is with daytime running light system only.
	Lo	Operates the headlamp low relay.
	Hi	Operates the headlamp low relay and ON/OFF the headlamp high relay at 4 seconds intervals.
	Fog	Operates the front fog lamp relay. **NOTE:** This item can test only the vehicle with front fog lamp system.
HORN	On	Operates horn relay for 20 ms.

DTC/CIRCUIT DIAGNOSIS

POWER SUPPLY AND GROUND CIRCUIT

BCM (BODY CONTROL MODULE)

BCM (BODY CONTROL MODULE) : Diagnosis Procedure

INFOID:0000000008277486

1.CHECK FUSES AND FUSIBLE LINK

Check that the following fuses and fusible link are not fusing.

Signal name	Fuses and fusible link No.
Battery power supply	10
	J
ACC power supply	20
Ignition power supply	1

Is the fuse fusing?

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

2.CHECK POWER SUPPLY CIRCUIT

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

Terminals			Ignition switch position		
(+)		(–)			
BCM			OFF	ACC	ON
Connector	Terminal				
M67	70	Ground	Battery voltage	Battery voltage	Battery voltage
	57				
M65	11		Approx. 0 V	Battery voltage	Battery voltage
	38		Approx. 0 V	Approx. 0 V	Battery voltage

Is the measurement value normal?

YES >> GO TO 3.
NO >> Repair the harness or connector.

3.CHECK GROUND CIRCUIT

Check continuity between BCM harness connector and the ground.

BCM		Ground	Continuity
Connector	Terminal		
M67	67		Existed

Does continuity exist?

YES >> INSPECTION END
NO >> Repair the harness or connector.

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) : Di-

agnosis Procedure

INFOID:0000000008277487

1.CHECK FUSIBLE LINK

Check that the following IPDM E/R fusible link is not blown.

Signal name	Fusible link No.
Battery power supply	C
	E
	K

Is the fusible link fusing?

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

2.CHECK POWER SUPPLY CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect IPDM E/R connectors.
3. Check voltage between IPDM E/R harness connectors and the ground.

Terminals			Voltage (Approx.)
(+)		(–)	
IPDM E/R			
Connector	Terminal		
E9	1	Ground	Battery voltage
	2		
E10	6		

Is the measurement value normal?

YES >> GO TO 3.
NO >> Repair the harness or connector.

3.CHECK GROUND CIRCUIT

Check continuity between IPDM E/R harness connectors and the ground.

IPDM E/R			Continuity
Connector	Terminal	Ground	
E11	11		Exist
E13	25		

Does continuity exist?

YES >> INSPECTION END
NO >> Repair the harness or connector.

EXTERIOR LAMP FUSE

Description

INFOID:0000000008277488

Fuse list

Unit	Location	Fuse No.	Capacity
Headlamp HI (LH)	IPDM E/R	#44	10 A
Headlamp HI (RH)	IPDM E/R	#43	10 A
Headlamp LO (LH)	IPDM E/R	#49	15 A
Headlamp LO (RH)	IPDM E/R	#50	15 A
Front fog lamp	IPDM E/R	#65	15 A
Parking lamp	IPDM E/R	#46	10 A
• Tail lamp • License plate lamp • Each illumination	IPDM E/R	#45	10 A
Stop lamp	FUSE BLOCK (J/B)	#11	10 A
Back-up lamp	IPDM E/R	#60	10 A

Diagnosis Procedure

INFOID:0000000008277489

1.CHECK FUSE

Check that the following fuses are not fusing.

Unit	Location	Fuse No.	Capacity
Headlamp HI (LH)	IPDM E/R	#44	10 A
Headlamp HI (RH)	IPDM E/R	#43	10 A
Headlamp LO (LH)	IPDM E/R	#49	15 A
Headlamp LO (RH)	IPDM E/R	#50	15 A
Front fog lamp	IPDM E/R	#65	15 A
Parking lamp	IPDM E/R	#46	10 A
• Tail lamp • License plate lamp • Each illumination	IPDM E/R	#45	10 A
Stop lamp	FUSE BLOCK (J/B)	#11	10 A
Back-up lamp	IPDM E/R	#60	10 A

Is the fuse fusing?

YES >> Repair the applicable circuit. And then replace the fuse.
NO >> The fuse is normal.

HEADLAMP (HI) CIRCUIT

Component Function Check

INFOID:0000000008277490

1.CHECK HEADLAMP (HI) OPERATION

IPDM E/R AUTO ACTIVE TEST
1. Activate IPDM E/R auto active test. Refer to PCS-8, "Diagnosis Description".
2. Check that the headlamp switches to the high beam.

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

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

NOTE:
ON/OFF is repeated 1 second each.

Is the headlamp (HI) turned ON?

YES >> Headlamp (HI) circuit is normal.
NO >> Refer to EXL-33, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008277491

1.CHECK HEADLAMP (HI) OUTPUT VOLTAGE

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

Terminals				Test item	Voltage (Approx.)
(+)			(–)		
IPDM E/R			Ground	EXTERNAL LAMPS	
Connector		Terminal			
RH	E12	22		Hi	Battery voltage
LH		21		Off	0 V

Is the measurement value normal?

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

2.CHECK HEADLAMP (HI) OPEN CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between the IPDM E/R harness connector and the headlamp high harness connector.

IPDM E/R			Headlamp high		Continuity
Connector		Terminal	Connector	Terminal	
RH	E12	22	E75	1	Existed
LH		21	E72	1	

Does continuity exist?

YES >> GO TO 5.

NO >> Repair the harnesses or connectors.

3.CHECK HEADLAMP (HI) FUSE

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

Unit	Location	Fuse No.	Capacity
Headlamp HI (LH)	IPDM E/R	#44	10 A
Headlamp HI (RH)	IPDM E/R	#43	10 A

Is the fuse fusing?

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

4.CHECK HEAD LAMP HIGH SHORT CIRCUIT

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

IPDM E/R			Ground	Continuity
Connector		Terminal		
RH	E12	22		Not existed
LH		21		

Does continuity exist?

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

5.CHECK HEAD LAMP (HI) GROUND OPEN CIRCUIT

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

Headlamp high			Ground	Continuity
Connector		Terminal		
RH	E75	2		Existed
LH	E72	2		

Does continuity exist?

YES >> Replace the headlamp (HI) bulb. (Bulb socket is abnormally.)
NO >> Repair the harnesses or connectors.

HEADLAMP (LO) CIRCUIT

Description

INFOID:0000000008277492

Headlamp (LO) circuit is connected to HID control unit integrated in the headlamp. Headlamp (LO) circuit turns xenon headlamp ON.
For the details of HID control unit and the xenon headlamp, refer to EXL-37, "Description".

Component Function Check

INFOID:0000000008277493

1.CHECK HEADLAMP (LO) OPERATION

IPDM E/R AUTO ACTIVE TEST
1. Activate IPDM E/R auto active test. Refer to PCS-8, "Diagnosis Description".
2. Check that the headlamp is turned ON.

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

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

Is the headlamp (LO) turned ON?

YES >> Headlamp (LO) is normal.
NO >> Refer to EXL-35, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008277494

1.CHECK HEADLAMP (LO) OUTPUT VOLTAGE

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

Terminals				Test item	Voltage (Approx.)
(+)			(–)		
IPDM E/R			Ground	EXTERNAL LAMPS	
Connector		Terminal			
RH	E12	20		Lo	Battery voltage
LH		18		Off	0 V

Is the measurement value normal?

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

2.CHECK HEADLAMP (LO) OPEN CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between the IPDM E/R harness connector and the headlamp low harness connector.

IPDM E/R		Headlamp low		Continuity
Connector	Terminal	Connector	Terminal	

RH	E12	20	E74	1	Existed
LH		18	E71	1	

Does continuity exist?

YES >> GO TO 5.
NO >> Repair the harnesses or connectors.

3.CHECK HEADLAMP (LO) FUSE

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

Unit	Lotion	Fuse No.	Capacity
Headlamp LO (LH)	IPDM E/R	#49	15 A
Headlamp LO (RH)	IPDM E/R	#50	15 A

Is the fuse fusing?

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

4.CHECK HEADLAMP (LO) SHORT CIRCUIT

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

IPDM E/R			Ground	Continuity
Connector		Terminal		
RH	E12	20		Not existed
LH		18		

Does continuity exist?

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

5.CHECK HEADLAMP (LO) GROUND OPEN CIRCUIT

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

Headlamp low			Ground	Continuity
Connector		Terminal		
RH	E74	2		Existed
LH	E71	2		

Does continuity exist?

YES >> Perform the xenon headlamp diagnosis. Refer to EXL-37, "Description".
NO >> Repair the harnesses or connectors.

XENON HEADLAMP

Description

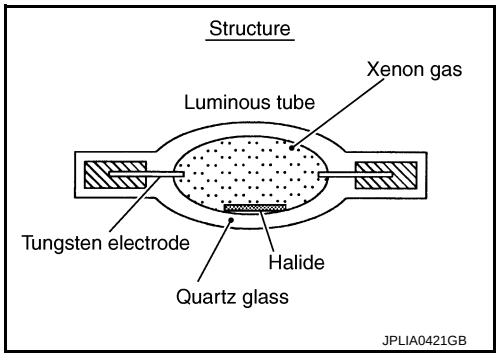
INFOID:0000000008277495

OUTLINE

- The lamp light source is by the arch discharge by applying high voltage into the xenon gas-filled bulb instead of the halogen bulb filament.
- Sight becomes more natural and brighter because the amount of light are gained adequately and the color of light is sunshine-like white.
- The xenon bulb drops the amount of light, repeats blinking, and illuminates in red if the bulb reaches the service life.

ILLUMINATION PRINCIPLE

1. Discharging starts in high voltage pulse between bulb electrodes.
2. Xenon gas is activated by current between electrodes. Pale light is emitted.
3. The luminous tube (bulb) temperature elevates. Evaporated halide is activated by discharge. The color of light changes into white.



NOTE:

- Brightness and the color of light may change slightly immediately after the headlamp turned ON until the xenon bulb becomes stable. This is not malfunction.
- Illumination time lag may occur between right and left. This is not malfunction.

PRECAUTIONS FOR TROUBLE DIAGNOSIS

Representative malfunction examples are; "Light does not turn ON", "Light blinks", and "Brightness is inadequate." The cause often be the xenon bulb. Such malfunctions, however, are occurred occasionally by HID control unit malfunction or lamp case malfunction. Specify the malfunctioning part with diagnosis procedure.

WARNING:

- **Never touch the harness, HID control unit, the inside and metal part of lamp when turning the headlamp ON or operating the lighting switch.**
- **Never work with wet hands.**

CAUTION:

- **Never perform HID control unit circuit diagnosis with a circuit tester or an equivalent.**
- **Temporarily install the headlamps on the vehicle. Connect the battery 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.**

NOTE:

- Turn the switch OFF once before turning ON, if the ON/OFF is inoperative.
- The xenon bulb drops the amount of light, repeats blinking, and illuminates in red if the bulb reaches the service life.

Diagnosis Procedure

INFOID:0000000008277496

1. CHECK XENON BULB

Install the normal bulb to the applicable headlamp. Check that the lighting switch is turned ON.

Is the headlamp turned ON?

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

2. CHECK HID CONTROL UNIT

Install the normal HID control unit to the applicable headlamp. Check that the lighting switch is turned ON.

Is the headlamp turned ON?

YES >> Replace HID control unit.
NO >> Xenon headlamp is normal. Check the headlamp control system.

FRONT FOG LAMP CIRCUIT

Component Function Check

INFOID:0000000008277497

1.CHECK FRONT FOG LAMP OPERATION

IPDM E/R AUTO ACTIVE TEST
1. Activate IPDM E/R auto active test. Refer to PCS-8, "Diagnosis Description".
2. Check that the front fog lamp is turned ON.

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

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

Is the front fog lamp turned ON?

YES >> Front fog lamp circuit is normal.
NO >> Refer to EXL-39, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008277498

1.CHECK FRONT FOG LAMP FUSE

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

Unit	Location	Fuse No.	Capacity
Front fog lamp	IPDM E/R	#65	15 A

Is the fuse fusing?

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

2.CHECK FRONT FOG LAMP SHORT CIRCUIT

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

IPDM E/R			Ground	Continuity
Connector		Terminal		
RH	E12	17		Not existed
LH		16		

Does continuity exist?

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

3.CHECK FRONT FOG LAMP BULB

Check the applicable lamp bulb.

Is the bulb normal?

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

4.CHECK FRONT FOG LAMP OUTPUT VOLTAGE

CONSULT ACTIVE TEST
1. Disconnect the front fog lamp connector.
2. Turn the ignition switch ON.
3. Select “EXTERNAL LAMPS” of IPDM E/R active test item.

4. With operating the test items, check the voltage between the IPDM E/R harness connector and the ground.

Terminals				Test item	Voltage (Approx.)
(+)			(–)		
IPDM E/R			Ground	EXTERNAL LAMPS	
Connector		Terminal			
RH	E12	17		Fog	Battery voltage
LH		16		Off	0 V

Is the measurement value normal?

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

5.CHECK FRONT FOG LAMP OPEN CIRCUIT

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

IPDM E/R			Front fog lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	E12	17	E48	2	Existed
LH		16	E30	2	

Does continuity exist?

YES >> GO TO 6.
NO >> Repair the harnesses or connectors.

6.CHECK FRONT FOG LAMP GROUND CIRCUIT OPEN CIRCUIT

Check continuity between the front fog lamp harness connector and the ground.

Front fog lamp			Ground	Continuity
Connector		Terminal		
RH	E48	1		Existed
LH	E30	1		

Does continuity exist?

YES >> Replace the front fog lamp.
NO >> Repair the harnesses or connectors.

PARKING LAMP CIRCUIT

Component Function Check

INFOID:0000000008277499

1.CHECK PARKING LAMP OPERATION

IPDM E/R AUTO ACTIVE TEST
1. Activate IPDM E/R auto active test. Refer to PCS-8, "Diagnosis Description".
2. Check that the parking lamp is turned ON.

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

TAIL : Parking lamp ON
Off : Parking lamp OFF

Is the parking lamp turned ON?

YES >> Parking lamp circuit is normal.
NO >> Refer to EXL-41, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008277500

1.CHECK PARKING LAMP FUSE

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

Unit	Location	Fuse No.	Capacity
Parking lamp	IPDM E/R	#46	10 A

Is the fuse fusing?

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

2.CHECK PARKING LAMP SHORT CIRCUIT

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

IPDM E/R			Ground	Continuity
Connector		Terminal		
RH	E14	39		Not existed
LH		38		

Does continuity exist?

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

3.CHECK PARKING LAMP BULB

Check the applicable lamp bulb.

Is the bulb normal?

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

4.CHECK PARKING LAMP OUTPUT VOLTAGE

CONSULT ACTIVE TEST
1. Disconnect the parking lamp connector.
2. Turn the ignition switch ON.
3. Select “EXTERNAL LAMPS” of IPDM E/R active test item.

4. With operating the test items, check the voltage between the IPDM E/R harness connector and the ground.

Terminals				Test item	Voltage (Approx.)
(+)			(–)		
IPDM E/R			Ground	EXTERNAL LAMPS	
Connector		Terminal			
RH	E14	39		TAIL	Battery voltage
LH		38		Off	0 V

Is the measurement value normal?

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

5.CHECK PARKING LAMP OPEN CIRCUIT

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

IPDM E/R			Parking lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	E14	39	E46	1	Existed
LH		38	E27	1	

Does continuity exist?

YES >> GO TO 6.
NO >> Repair the harnesses or connectors.

6.CHECK PARKING LAMP GROUND OPEN CIRCUIT

Check continuity between the parking lamp harness connector and the ground.

Parking lamp			Ground	Continuity
Connector		Terminal		
RH	E46	2		Existed
LH	E27	2		

Does continuity exist?

YES >> Replace the front combination lamp.
NO >> Repair the harnesses or connectors.

TURN SIGNAL LAMP CIRCUIT

Description

INFOID:0000000008277501

BCM performs the high flasher operation (fail-safe) if any bulb or harness of the turn signal lamp circuit is open.

NOTE:
The turn signal lamp blinks at normal speed when using the hazard warning lamp.

Component Function Check

INFOID:0000000008277502

1.CHECK TURN SIGNAL LAMP

CONSULT ACTIVE TEST

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

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

Is the turn signal lamp turned ON?

YES >> Turn signal lamp circuit is normal.
NO >> Refer to EXL-43, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008277503

1.CHECK TURN SIGNAL LAMP BULB

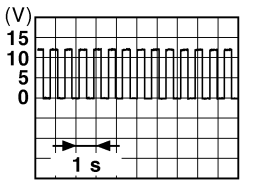
Check the applicable lamp bulb.

Is the bulb normal?

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

2.CHECK TURN SIGNAL LAMP OUTPUT VOLTAGE

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

Terminals				Condition	Voltage (Approx.)
(+)			(–)		
BCM				Turn signal switch	
Connector		Terminal			
RH	M67	61	Ground	LH or RH	 PKID0926E
LH		60			
				OFF	0 V

Is the measurement value normal?

YES >> GO TO 3.
NO >> Replace BCM. Refer to BCS-65, "Exploded View".

3.CHECK TURN SIGNAL LAMP OPEN CIRCUIT

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

Front turn signal lamp

BCM			Front turn signal lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	M67	61	E46	3	Existed
LH		60	E27		

Rear turn signal lamp

BCM			Rear combination lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	M67	61	B59	3	Existed
LH		60	B80		

Does continuity exist?

YES >> GO TO 4.
NO >> Repair the harnesses or connectors.

4.CHECK TURN SIGNAL LAMP SHORT CIRCUIT

Check continuity between the BCM harness connector and the ground.

BCM			Ground	Continuity
Connector		Terminal		
RH	M67	61		Not existed
LH		60		

Does continuity exist?

YES >> Repair the harnesses or connectors.
NO >> GO TO 5.

5.CHECK TURN SIGNAL LAMP GROUND OPEN CIRCUIT

Check continuity between the front turn signal lamp, or the rear combination lamp and the ground.

Front turn signal lamp

Front turn signal lamp			Ground	Continuity
Connector		Terminal		
RH	E46	2		Existed
LH	E27			

Rear turn signal lamp

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

Does continuity exist?

YES >> Replace the front combination lamp or the rear combination lamp.
NO >> Repair the harnesses or connectors.

HAZARD SWITCH

Component Function Check

INFOID:0000000008277504

1.CHECK HAZARD SWITCH SIGNAL BY CONSULT

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

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

Is the item status normal?

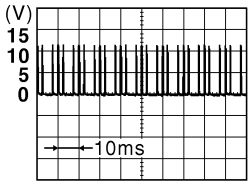
YES >> Hazard switch circuit is normal.
NO >> Refer to EXL-45, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008277505

1.CHECK HAZARD SWITCH SIGNAL INPUT

With operating the hazard switch, check the voltage between the BCM harness connector and the ground.

Terminals			Condition	Voltage (Approx.)
(+)		(–)		
BCM			Hazard switch	
Connector	Terminal			
M65	29	Ground	ON	0 V
			OFF	

JPMIA0154GB

Is the measurement value normal?

YES >> Replace BCM. Refer to BCS-65, "Exploded View".
NO >> GO TO 2.

2.CHECK HAZARD SWITCH SIGNAL OPEN CIRCUIT

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

Hazard switch		BCM		Continuity
Connector	Terminal	Connector	Terminal	
M45	2	M65	29	Existed

Does continuity exist?

YES >> GO TO 3.
NO >> Repair the harnesses or connectors.

3.CHECK HAZARD SWITCH SIGNAL SHORT CIRCUIT

Check continuity between the hazard switch harness connector and the ground.

Hazard switch		Ground	Continuity
Connector	Terminal		
M45	2		Not existed

Does continuity exist?

YES >> Repair the harnesses or connectors.
NO >> GO TO 4.

4. CHECK HAZARD SWITCH GROUND OPEN CIRCUIT

Check continuity between the hazard switch harness connector and the ground.

Hazard switch		Ground	Continuity
Connector	Terminal		
M45	1		Existed

Does continuity exist?

YES >> Replace the hazard switch.
NO >> Repair the harnesses or connectors.

TAIL LAMP CIRCUIT

Component Function Check

INFOID:0000000008277506

NOTE:
Check the license plate lamp circuit if the tail lamp and the license plate lamp are not turned ON. Refer to EXL-49, "Component Function Check".

1.CHECK TAIL LAMP OPERATION

IPDM E/R AUTO ACTIVE TEST
1. Activate IPDM E/R auto active test. Refer to PCS-8, "Diagnosis Description".
2. Check that the tail lamp is turned ON.

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

TAIL : Tail Lamp ON
Off : Tail lamp OFF

Is the tail lamp turned ON?

YES >> Tail lamp circuit is normal.
NO >> Refer to EXL-47, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008277507

1.CHECK TAIL LAMP FUSE

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

Unit	Location	Fuse No.	Capacity
Tail lamp	IPDM E/R	#45	10 A

Is the fuse fusing?

YES >> Repair the malfunctioning part before replacing the fuse.
NO >> GO TO 2.

2.CHECK TAIL LAMP OUTPUT VOLTAGE

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

Terminals			Test item	Voltage (Approx.)
(+)		(–)		
IPDM E/R		Ground	EXTERNAL LAMPS	
Connector	Terminal			
E14	37		TAIL	Battery voltage
			Off	0 V

Is the measurement value normal?

YES >> GO TO 3.
NO >> Replace IPDM E/R.

3.CHECK TAIL LAMP OPEN CIRCUIT

1. Turn the ignition switch OFF.

2. Disconnect IPDM E/R connector.
3. Check continuity between the IPDM E/R harness connector and the rear combination lamp harness connector.

IPDM E/R			Rear combination lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	E14	37	B59	1	Existed
LH			B80	1	

Does continuity exist?

YES >> GO TO 4.
NO >> Repair the harnesses or connectors.

4. CHECK TAIL LAMP GROUND OPEN CIRCUIT

Check continuity between the rear combination lamp harness connector and the ground.

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

Does continuity exist?

YES >> Replace the rear combination lamp.
NO >> Repair the harnesses or connectors.

LICENSE PLATE LAMP CIRCUIT

Component Function Check

INFOID:0000000008277508

1.CHECK LICENSE PLATE LAMP OPERATION

IPDM E/R AUTO ACTIVE TEST
1. Activate IPDM E/R auto active test. Refer to PCS-8, "Diagnosis Description".
2. Check that the license plate lamp is turned ON.

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

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

Is the license plate lamp turned ON?

YES >> License plate lamp circuit is normal.
NO >> Refer to EXL-49, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008277509

1.CHECK LICENSE PLATE LAMP BULB

Check the applicable lamp bulb.

Is the bulb normal?

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

2.CHECK LICENSE PLATE LAMP OPEN CIRCUIT

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

IPDM E/R			License plate lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	E14	37	D196	1	Existed
LH			D195	1	

Does continuity exist?

YES >> GO TO 3.
NO >> Repair the harnesses or connectors.

3.CHECK LICENSE PLATE LAMP GROUND OPEN CIRCUIT

Check continuity between the license plate lamp harness connector and the ground.

License plate lamp			Ground	Continuity
Connector		Terminal		
RH	D196	2		Existed
LH	D195	2		

Does continuity exist?

YES >> Replace the license plate lamp.
NO >> Repair the harnesses or connectors.

OPTICAL SENSOR

Description

INFOID:0000000008277510

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

Component Function Check

INFOID:0000000008277511

1.CHECK OPTICAL SENSOR SIGNAL BY CONSULT

CONSULT DATA MONITOR
1. Turn the ignition switch ON.
2. Select "OPTICAL SENSOR" of BCM (HEADLAMP) data monitor item.
3. Turn the lighting switch AUTO.
4. With the optical sensor illuminating, check the monitor status.

Monitor item	Condition		Voltage (Approx.)
OPTICAL SENSOR	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 item status normal?

YES >> Optical sensor is normal.
NO >> Refer to EXL-50, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008277512

1.CHECK OPTICAL SENSOR POWER SUPPLY INPUT

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

Terminals			Voltage (Approx.)
(+)		(–)	
Optical sensor		Ground	
Connector	Terminal		
M17	1		5 V

Is the measurement value normal?

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

2.CHECK OPTICAL SENSOR GROUND INPUT

Check the voltage between the optical sensor harness connector and the ground.

Terminals			Voltage (Approx.)
(+)		(–)	
Optical sensor		Ground	
Connector	Terminal		
M17	3		0 V

Is the measurement value normal?

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

3.CHECK OPTICAL SENSOR SIGNAL OUTPUT

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

Terminals			Condition	Voltage (Approx.)
(+)		(–)		
Optical sensor		Ground	Optical sensor	
Connector	Terminal			
M17	2		When bright outside of the vehicle	Close to 5 V
			When dark outside of the vehicle	Close to 0 V

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

Is the measurement value normal?

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

4. CHECK OPTICAL SENSOR OPEN CIRCUIT

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

Optical sensor		BCM		Continuity
Connector	Terminal	Connector	Terminal	
M17	1	M65	17	Existed

Does continuity exist?

YES >> GO TO 5.
NO >> Repair the harnesses or connectors.

5. CHECK OPTICAL SENSOR SHORT CIRCUIT

Check the continuity between the optical sensor harness connector and the ground.

Optical sensor		Ground	Continuity
Connector	Terminal		
M17	1		Not existed

Does continuity exist?

YES >> Repair the harnesses or connectors.
NO >> Replace BCM.

6. CHECK OPTICAL SENSOR GROUND OPEN CIRCUIT

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

Optical sensor		BCM		Continuity
Connector	Terminal	Connector	Terminal	
M17	3	M65	18	Existed

Does continuity exist?

YES >> Replace BCM.
NO >> Repair the harnesses or connectors.

7. CHECK OPTICAL SENSOR SIGNAL OPEN CIRCUIT

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

Optical sensor		BCM		Continuity
Connector	Terminal	Connector	Terminal	
M17	2	M65	14	Existed

Does continuity exist?

YES >> GO TO 8.
NO >> Repair the harnesses or connectors.

8. CHECK OPTICAL SENSOR SHORT CIRCUIT

Check the continuity between the optical sensor harness connector and the ground.

Optical sensor		Ground	Continuity
Connector	Terminal		
M17	2		Not existed

Does continuity exist?

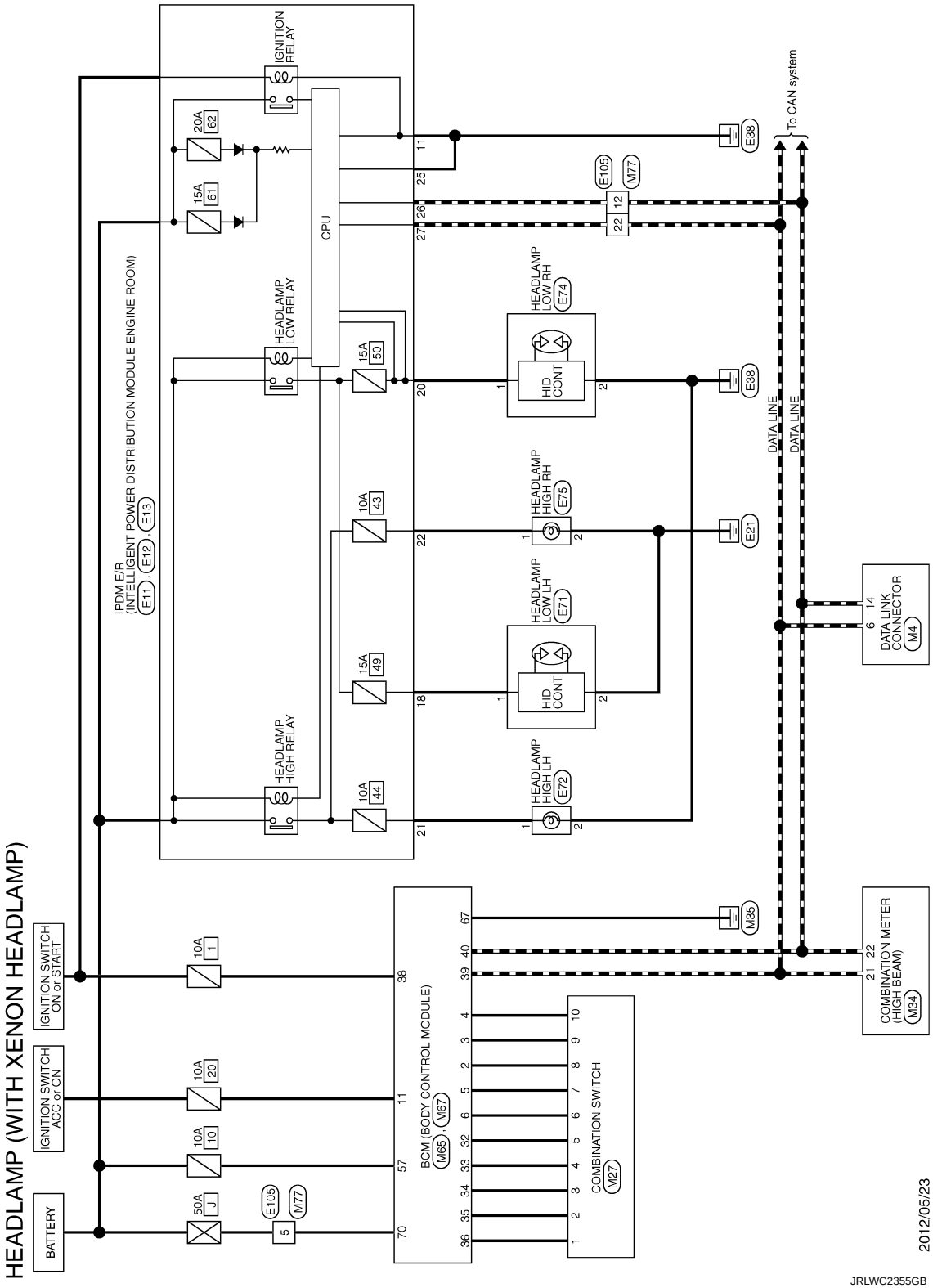
YES >> Repair the harnesses or connectors.
NO >> Replace BCM.

HEADLAMP SYSTEM

Wiring Diagram - HEADLAMP -

INFOID:0000000008277513

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information".



HEADLAMP AIMING CONTROL SYSTEM (MANUAL)

Description

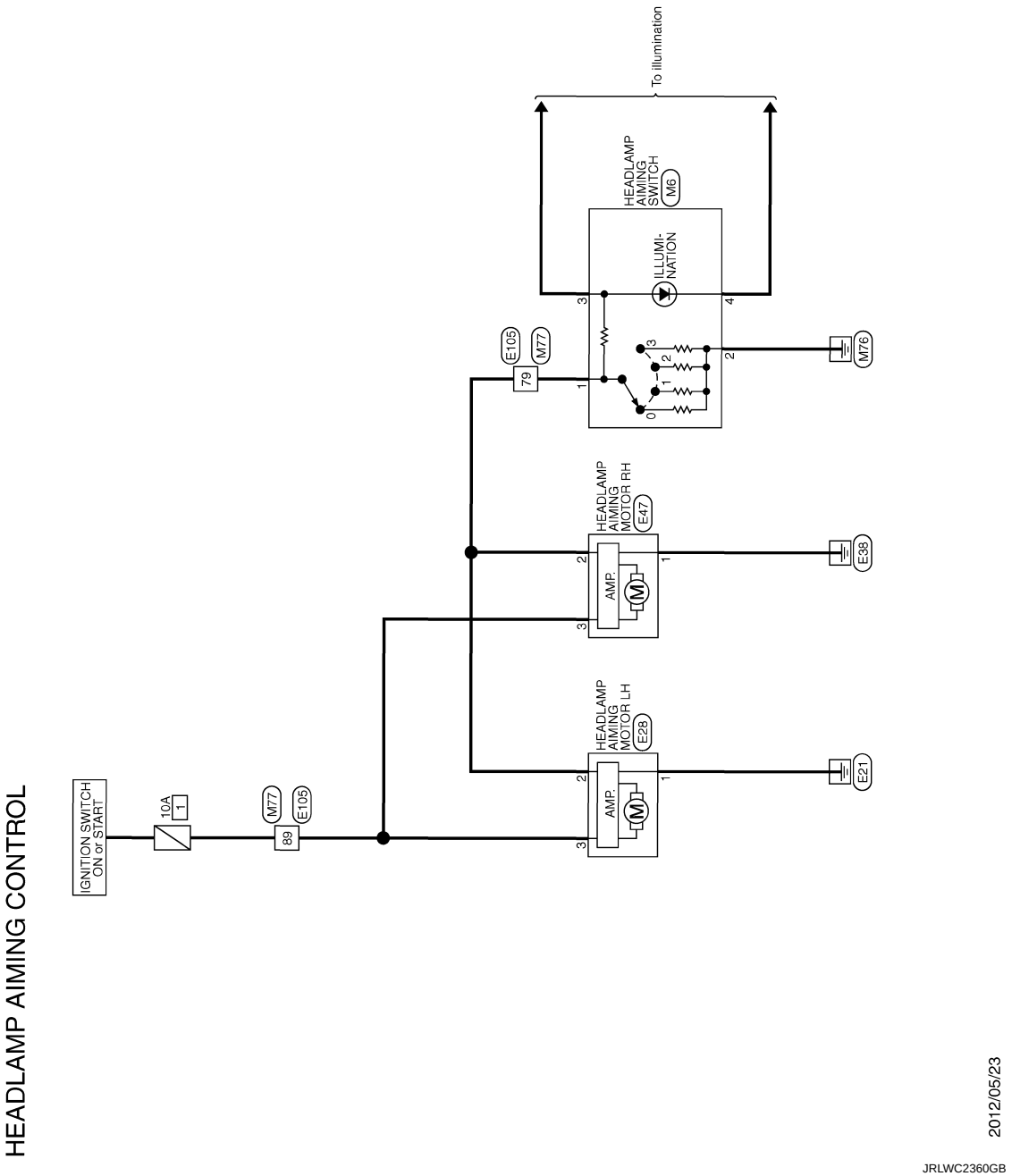
INFOID:0000000008277514

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

Wiring Diagram - HEADLAMP AIMING CONTROL SYSTEM (MANUAL) -

INFOID:0000000008277515

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information".

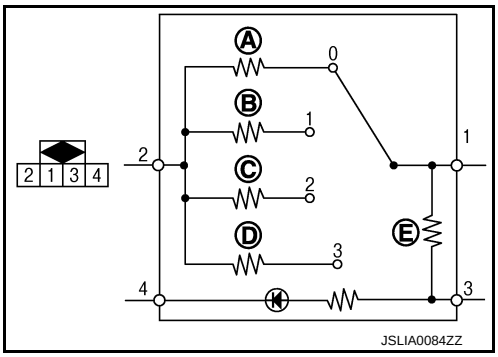


Component Inspection

INFOID:0000000008277516

1. CHECK HEADLAMP AIMING SWITCH

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



Headlamp aiming switch		Condition	Resistance (Approx.)
Terminal		Switch position	
1	2	0	A: 160 Ω
		1	B: 249 Ω
		2	C: 464 Ω
		3	D: 887 Ω
	3	—	E: 412 Ω

Is the measurement value normal?

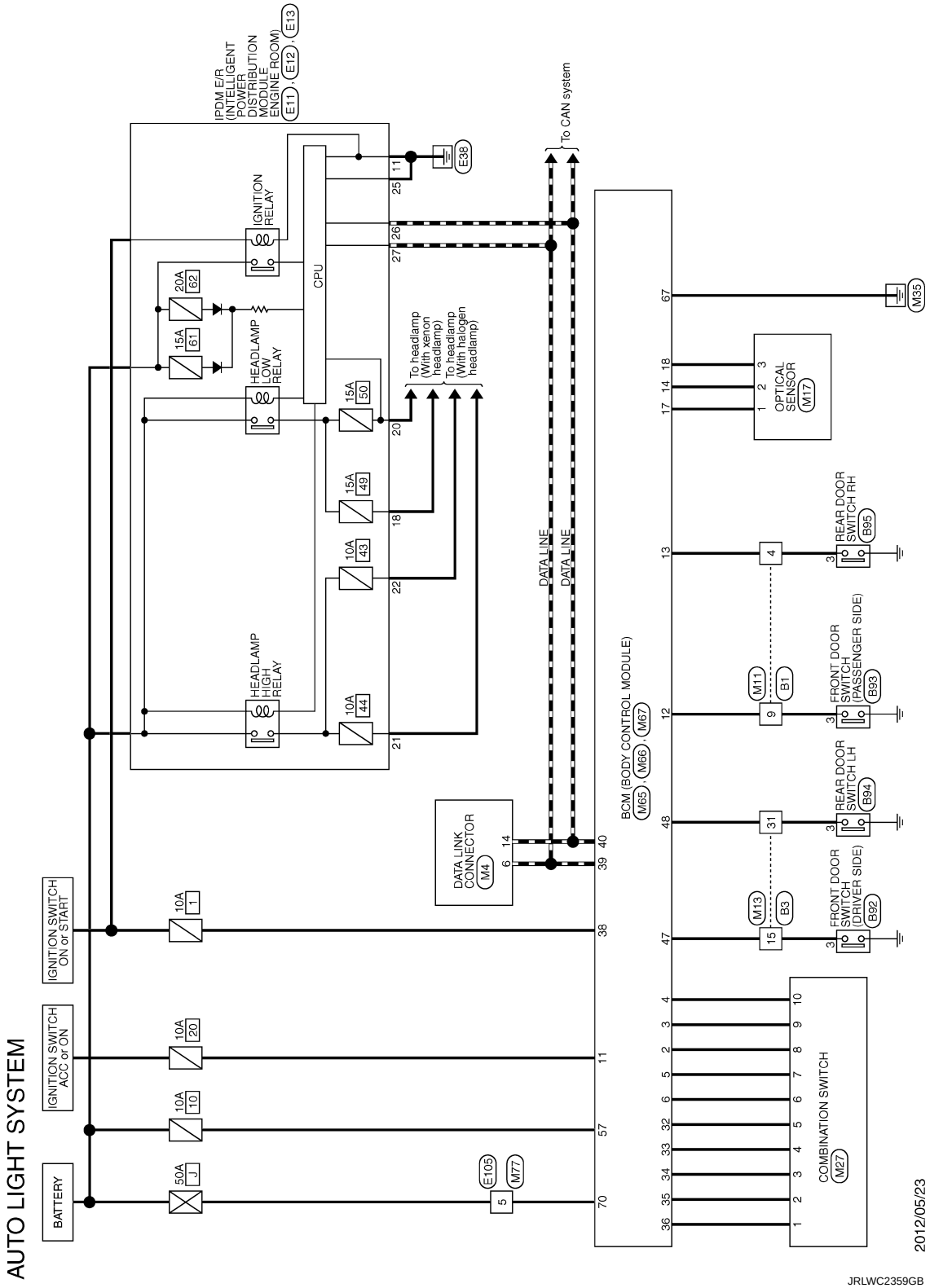
YES >> Headlamp aiming switch is normal.
NO >> Replace the headlamp aiming switch.

AUTO LIGHT SYSTEM

Wiring Diagram - AUTO LIGHT SYSTEM -

INFOID:0000000008277517

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information".

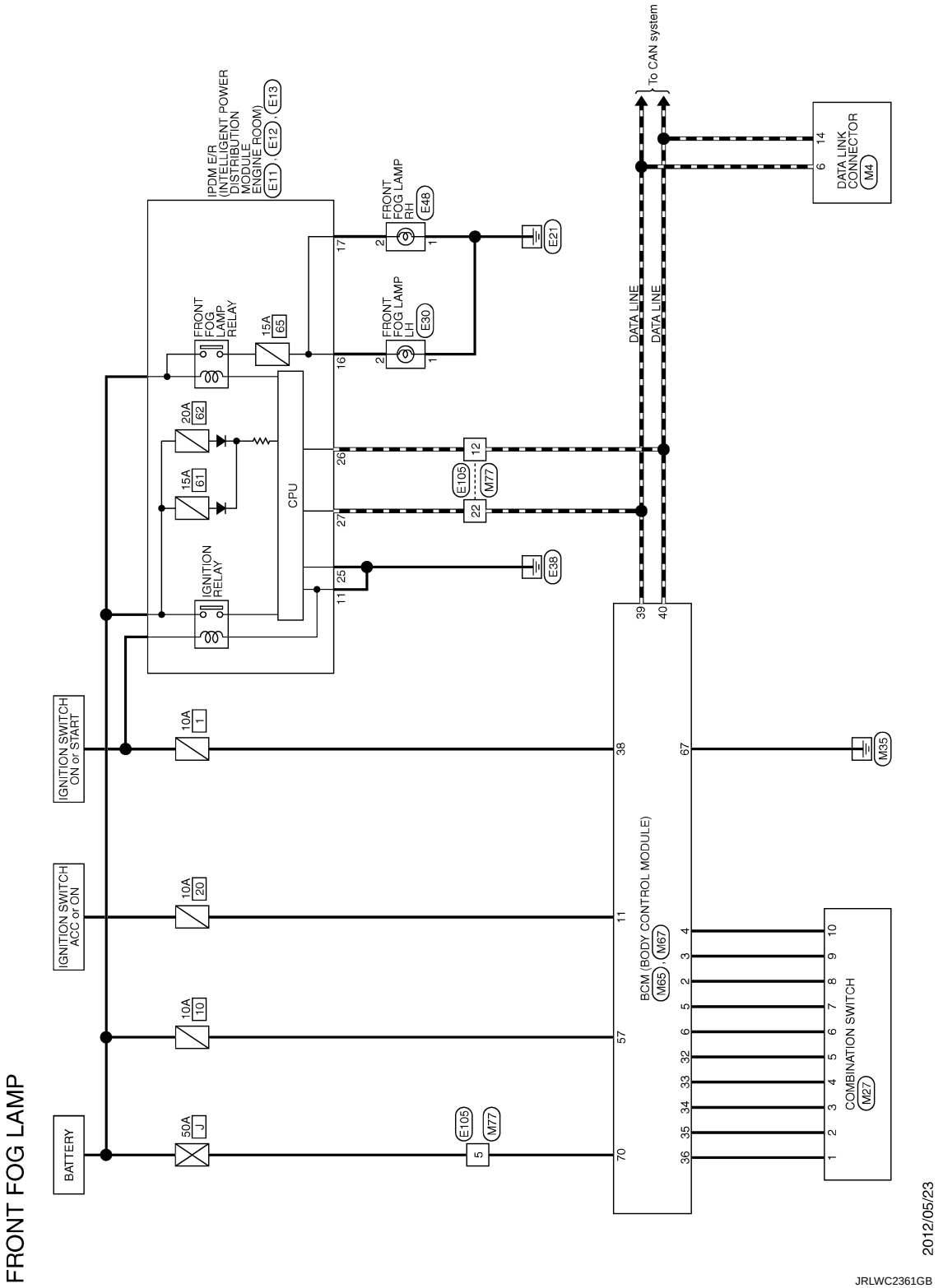


FRONT FOG LAMP SYSTEM

Wiring Diagram - FRONT FOG LAMP -

INFOID:0000000008277518

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information".

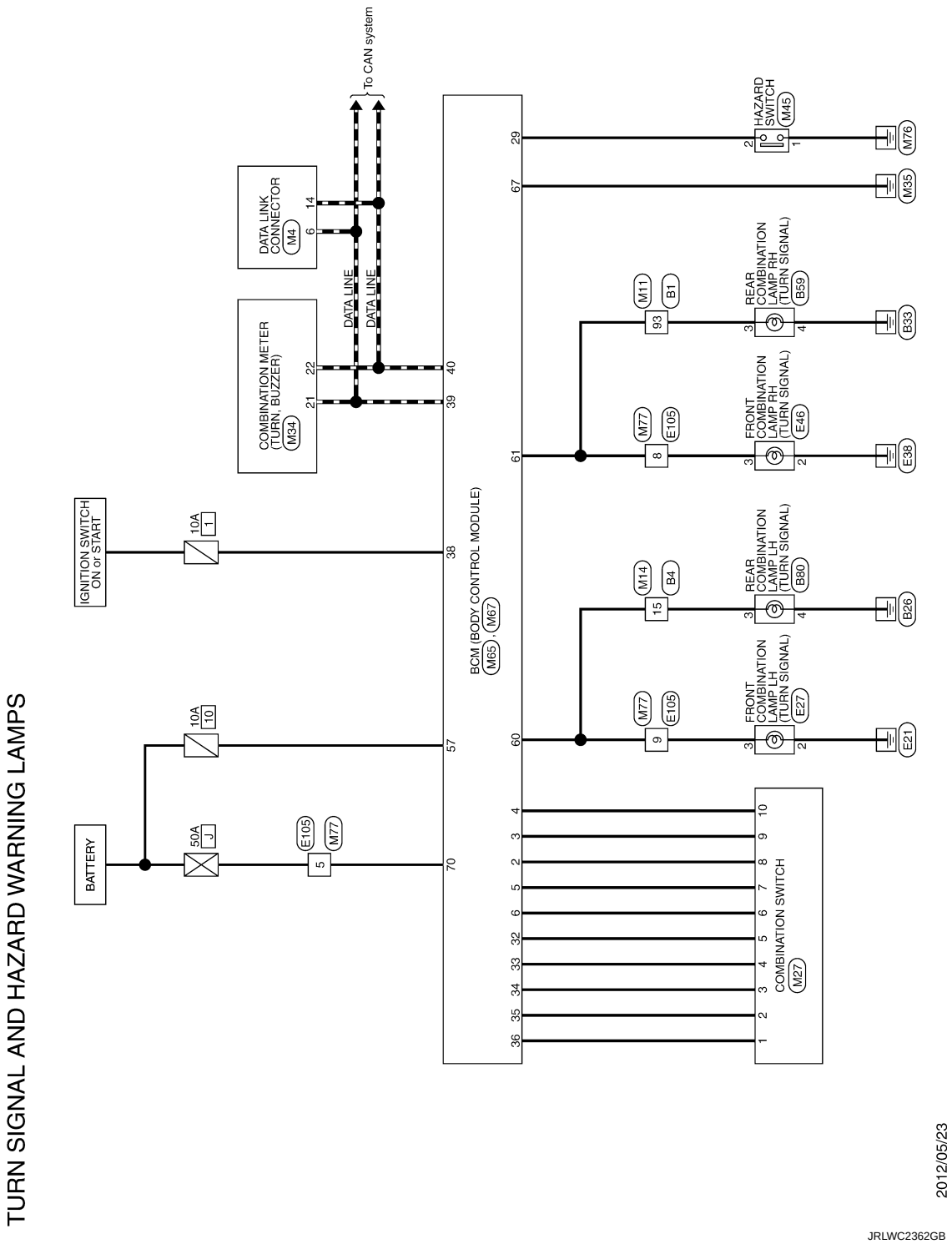


TURN SIGNAL AND HAZARD WARNING LAMP SYSTEM

Wiring Diagram - TURN AND HAZARD WARNING LAMPS -

INFOID:0000000008277519

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information".

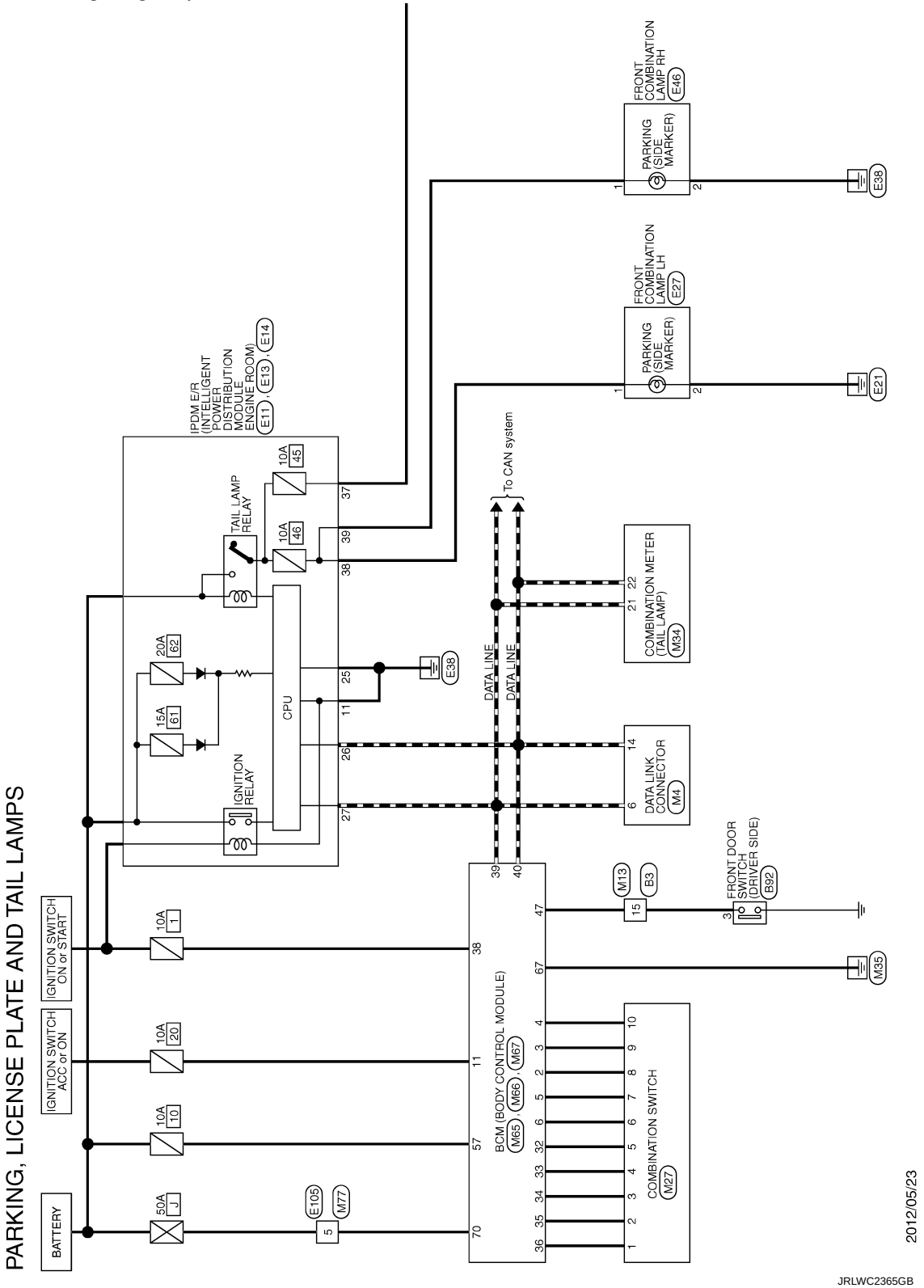


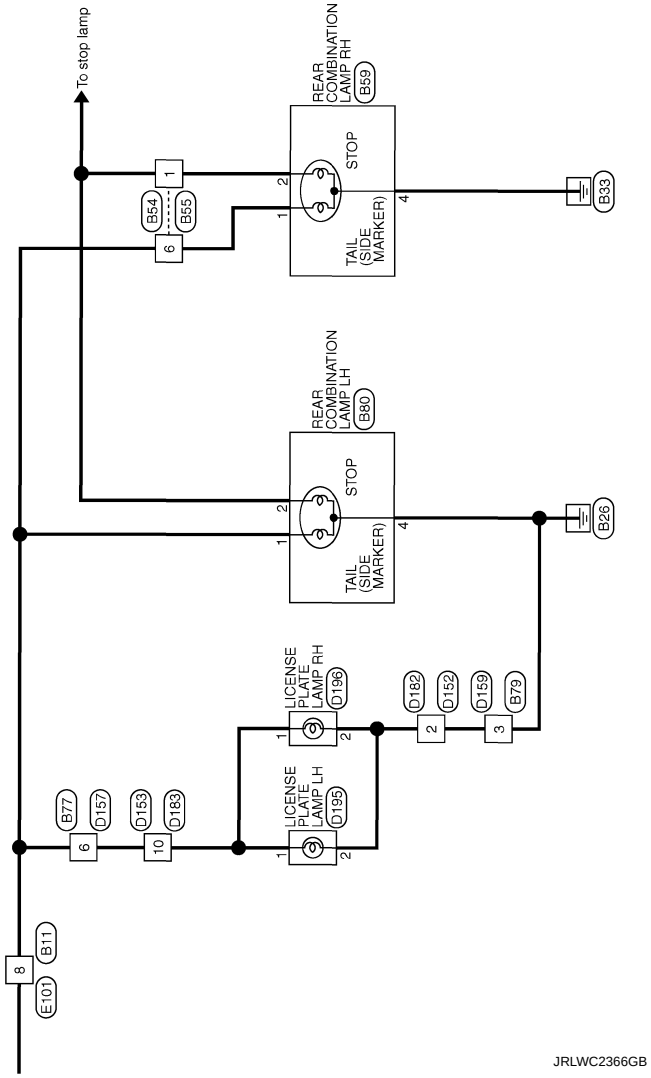
PARKING, LICENSE PLATE AND TAIL LAMPS SYSTEM

Wiring Diagram - PARKING, LICENSE PLATE AND TAIL LAMPS -

INFOID:0000000008277520

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information".



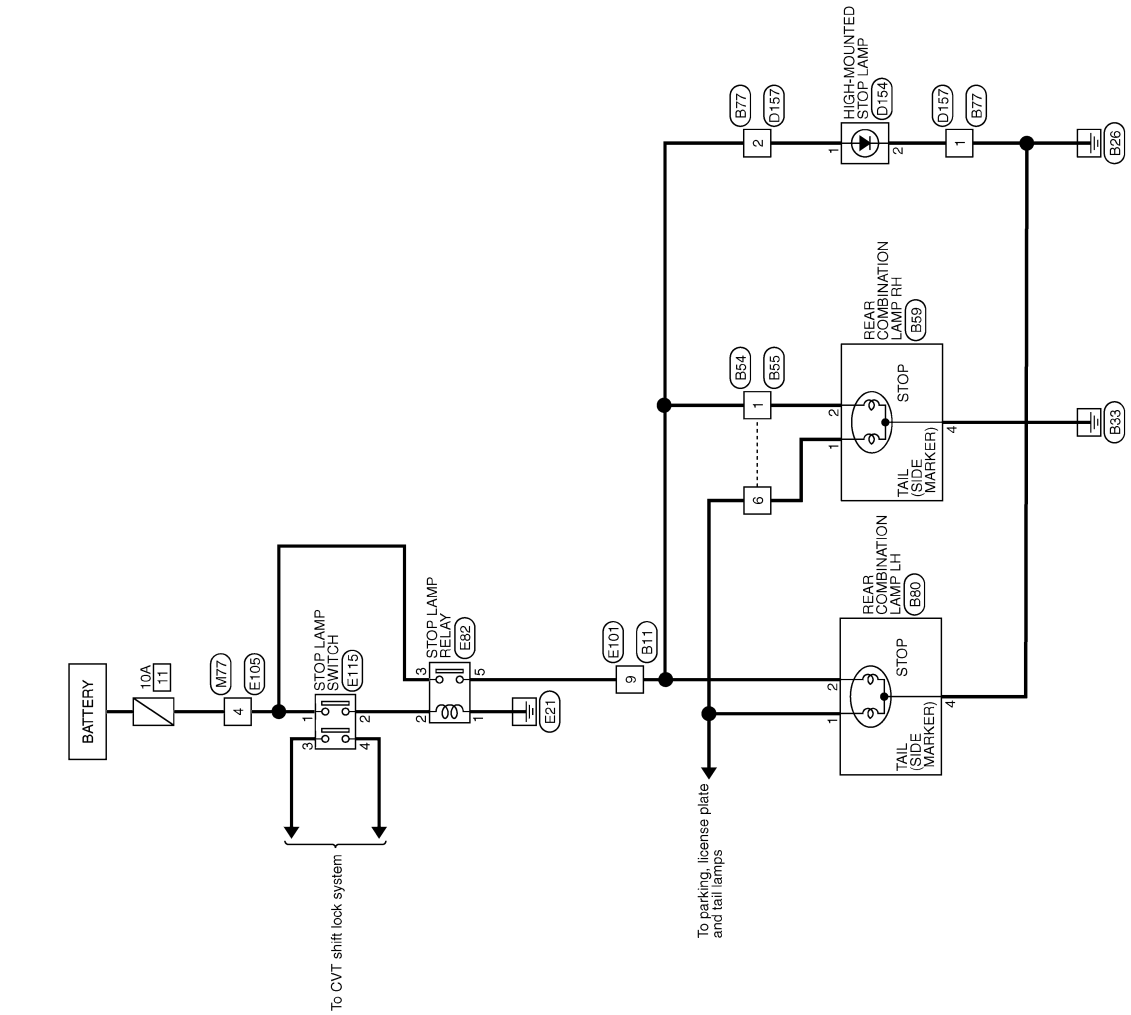

To stop lamp
REAR COMBINATION LAMP RH
B59
STOP
TAIL (SIDE MARKER)
B54
B55
B33
REAR COMBINATION LAMP LH
B80
B26
LICENSE PLATE LAMP RH
D196
LICENSE PLATE LAMP LH
D195
D182
D152
D159
B79
B77
D157
D153
D183
B11
E101
JRLWC2366GB

STOP LAMP

Wiring Diagram - STOP LAMP -

INFOID:0000000008277521

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information".



STOP LAMP

2012/05/23

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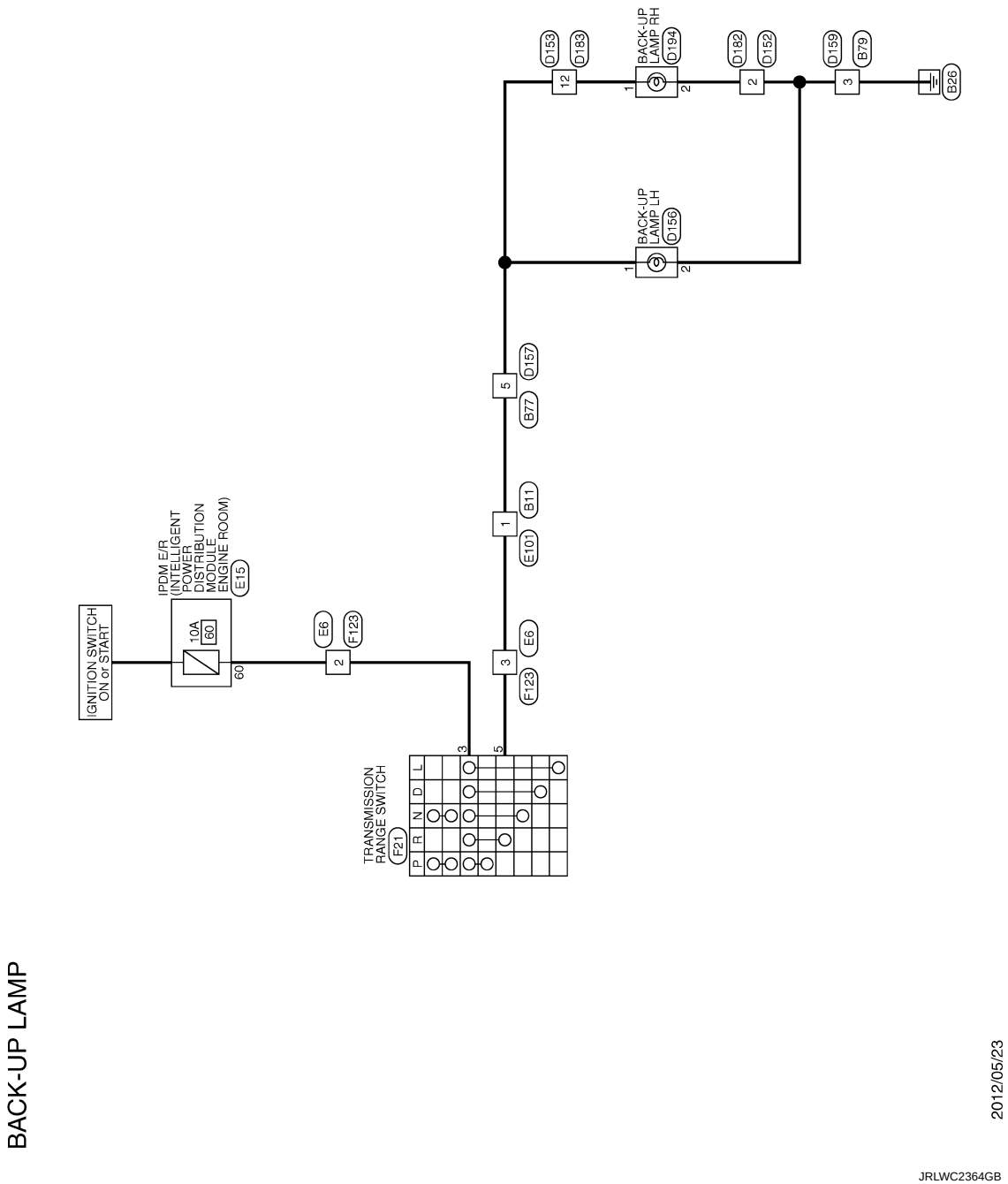
BACK-UP LAMP

Wiring Diagram - BUCK-UP LAMP -

INFOID:0000000008277522

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information".



ECU DIAGNOSIS INFORMATION

BCM (BODY CONTROL MODULE)

Reference Value

INFOID:0000000008729011

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.

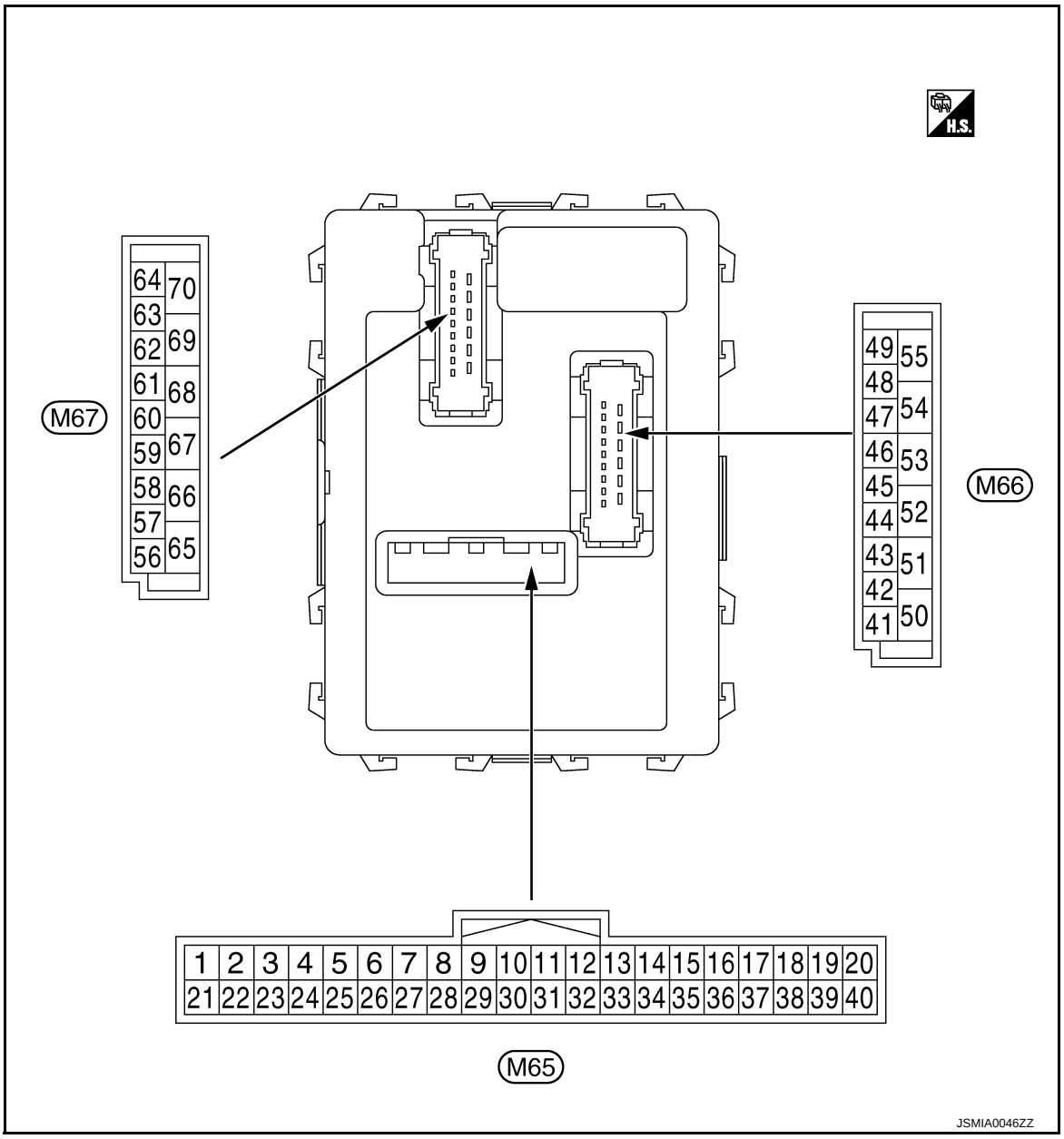
Monitor Item	Condition	Value/Status
IGN ON SW	Ignition switch OFF or ACC	Off
	Ignition switch ON	On
KEY ON SW	Mechanical key is removed from key cylinder	Off
	Mechanical key is inserted to key cylinder	On
CDL LOCK SW	Door lock/unlock switch does not operate	Off
	Press door lock/unlock switch to the lock side	On
CDL UNLOCK SW	Door lock/unlock switch does not operate	Off
	Press door lock/unlock switch to the unlock side	On
DOOR SW-DR	Driver's door closed	Off
	Driver's door opened	On
DOOR SW-AS	Passenger door closed	Off
	Passenger door opened	On
DOOR SW-RR	Rear RH door closed	Off
	Rear RH door opened	On
DOOR SW-RL	Rear LH door closed	Off
	Rear LH door opened	On
BACK DOOR SW	Back door closed	Off
	Back door opened	On
KEY CYL LK-SW	Other than driver door key cylinder LOCK position	Off
	Driver door key cylinder LOCK position	On
KEY CYL UN-SW	Other than driver door key cylinder UNLOCK position	Off
	Driver door key cylinder UNLOCK position	On
KEYLESS LOCK	“LOCK” button of key fob is not pressed	Off
	“LOCK” button of key fob is pressed	On
KEYLESS UNLOCK	“UNLOCK” button of key fob is not pressed	Off
	“UNLOCK” button of key fob is pressed	On
I-KEY LOCK	“LOCK” button of Intelligent Key or door request switch are not pressed	Off
	“LOCK” button of Intelligent Key or door request switch are pressed	On
I-KEY UNLOCK	“UNLOCK” button of Intelligent Key or door request switch are not pressed	Off
	“UNLOCK” button of Intelligent Key or door request switch are pressed	On
ACC ON SW	Ignition switch OFF	Off
	Ignition switch ACC or ON	On
REAR DEF SW	Rear window defogger switch OFF	Off
	Rear window defogger switch ON	On

Monitor Item	Condition	Value/Status
LIGHT SW 1ST	Lighting switch OFF	Off
	Lighting switch 1ST	On
BUCKLE SW	The seat belt (driver side) is unfastened. [Seat belt switch (driver side) OFF]	Off
	The seat belt (driver side) is fastened. [Seat belt switch (driver side) ON]	On
KEYLESS PANIC	PANIC button of key fob is not pressed	Off
	PANIC button of key fob is pressed	On
KEYLESS TRUNK	**NOTE:** The item is indicated, but not monitored.	Off
TRNK OPN MNTR	**NOTE:** The item is indicated, but not monitored.	Off
RKE LCK-UNLCK	LOCK/UNLOCK button of key fob is not pressed and held simultaneously	Off
	LOCK/UNLOCK button of key fob is pressed and held simultaneously	On
RKE KEEP UNLK	UNLOCK button of key fob is not pressed	Off
	UNLOCK button of key fob is pressed and held	On
HI BEAM SW	Lighting switch OFF	Off
	Lighting switch HI	On
HEAD LAMP SW 1	Lighting switch OFF	Off
	Lighting switch 2ND	On
HEAD LAMP SW 2	Lighting switch OFF	Off
	Lighting switch 2ND	On
AUTO LIGHT SW	Other than lighting switch AUTO	Off
	Lighting switch AUTO	On
PASSING SW	Other than lighting switch PASS	Off
	Lighting switch PASS	On
FR FOG SW	Front fog lamp switch OFF	Off
	Front fog lamp switch ON	On
RR FOG SW	**NOTE:** The item is indicated, but not monitored.	Off
TURN SIGNAL R	Turn signal switch OFF	Off
	Turn signal switch RH	On
TURN SIGNAL L	Turn signal switch OFF	Off
	Turn signal switch LH	On
ENGINE RUN	Engine stopped	Off
	Engine running	On
PKB SW	Parking brake switch is OFF	Off
	Parking brake switch is ON	On
CARGO LAMP SW	**NOTE:** The item is indicated, but not monitored.	Off
OPTICAL SENSOR	Bright outside of the vehicle	Close to 5 V
	Dark outside of the vehicle	Close to 0 V
IGN SW CAN	Ignition switch OFF or ACC	Off
	Ignition switch ON	On

Monitor Item	Condition	Value/Status
FR WIPER HI	Front wiper switch OFF	Off
	Front wiper switch HI	On
FR WIPER LOW	Front wiper switch OFF	Off
	Front wiper switch LO	On
FR WIPER INT	Front wiper switch OFF	Off
	Front wiper switch INT	On
FR WASHER SW	Front washer switch OFF	Off
	Front washer switch ON	On
INT VOLUME	Wiper intermittent dial is in a dial position 1 - 7	1 - 7
FR WIPER STOP	Any position other than front wiper stop position	Off
	Front wiper stop position	On
VEHICLE SPEED	While driving	Equivalent to speedometer reading
RR WIPER ON	Rear wiper switch OFF	Off
	Rear wiper switch ON	On
RR WIPER INT	Rear wiper switch OFF	Off
	Rear wiper switch INT	On
RR WASHER SW	Rear washer switch OFF	Off
	Rear washer switch ON	On
RR WIPER STOP	Rear wiper stop position	Off
	Other than rear wiper stop position	On
RR WIPER STP2	**NOTE:** The item is indicated, but not monitored.	Off
H/L WASH SW	**NOTE:** The item is indicated, but not monitored.	Off
HAZARD SW	Hazard switch OFF	Off
	Hazard switch ON	On
BRAKE SW	Brake pedal is not depressed	Off
	Brake pedal is depressed	On
FAN ON SIG	Blower fan motor switch OFF	Off
	Blower fan motor switch ON (other than OFF)	On
AIR COND SW	• A/C conditioner OFF (A/C switch indicator OFF) (Automatic air conditioner) • A/C switch OFF (Manual air conditioner)	Off
	• A/C conditioner ON (A/C switch indicator ON) (Automatic air conditioner) • A/C switch ON (Manual air conditioner)	On
I-KEY TRUNK	**NOTE:** The item is indicated, but not monitored.	Off
I-KEY PW DWN	UNLOCK button of Intelligent Key is not pressed	Off
	UNLOCK button of Intelligent Key is pressed and held	On
I-KEY PANIC	PANIC button of Intelligent Key is not pressed	Off
	PANIC button of Intelligent Key is pressed	On
PUSH SW	Return to ignition switch to “LOCK” position	Off
	Press ignition switch	On
TRNK OPNR SW	When back door opener switch is not pressed	Off
	When back door opener switch is pressed	On

Monitor Item	Condition	Value/Status
TRUNK CYL SW	**NOTE:** The item is indicated, but not monitored.	Off
HOOD SW	Close the hood **NOTE:** Vehicles of except for Mexico are OFF-fixed	Off
	Open the hood	On
OIL PRESS SW	• Ignition switch OFF or ACC • Engine running	Off
	Ignition switch ON	On
AIR PRESS FL	Ignition switch ON (Only when the signal from the transmitter is received)	Air pressure of front LH tire
AIR PRESS FR	Ignition switch ON (Only when the signal from the transmitter is received)	Air pressure of front RH tire
AIR PRESS RR	Ignition switch ON (Only when the signal from the transmitter is received)	Air pressure of rear RH tire
AIR PRESS RL	Ignition switch ON (Only when the signal from the transmitter is received)	Air pressure of rear LH tire
ID REGST FL1	ID of front LH tire transmitter is registered	Done
	ID of front LH tire transmitter is not registered	Yet
ID REGST FR1	ID of front RH tire transmitter is registered	Done
	ID of front RH tire transmitter is not registered	Yet
ID REGST RR1	ID of rear RH tire transmitter is registered	Done
	ID of rear RH tire transmitter is not registered	Yet
ID REGST RL1	ID of rear LH tire transmitter is registered	Done
	ID of rear LH tire transmitter is not registered	Yet
WARNING LAMP	Tire pressure indicator OFF	Off
	Tire pressure indicator ON	On
BUZZER	Tire pressure warning alarm is not sounding	Off
	Tire pressure warning alarm is sounding	On

TERMINAL LAYOUT

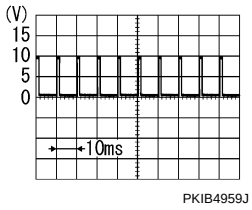
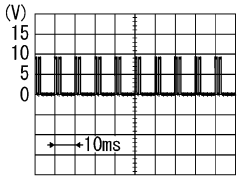
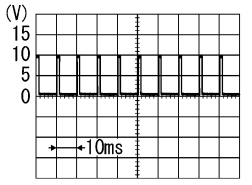
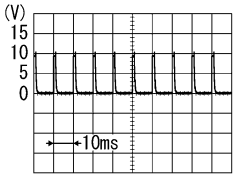
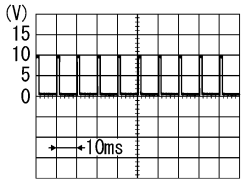


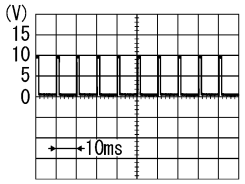
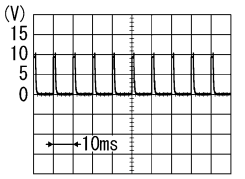
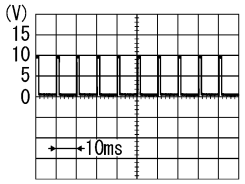
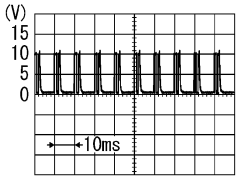
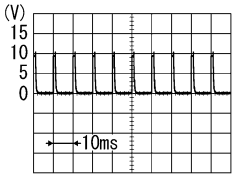
PHYSICAL VALUES

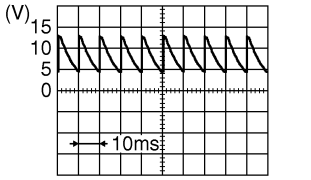
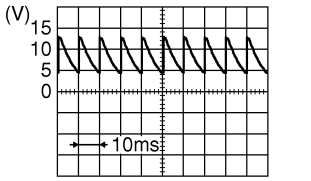
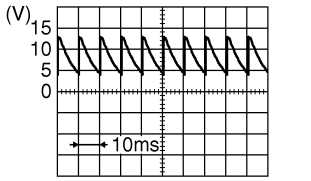
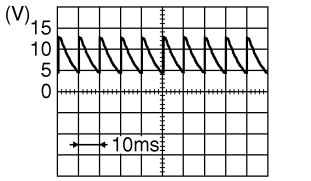
CAUTION:

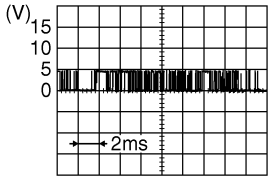
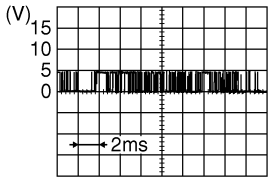
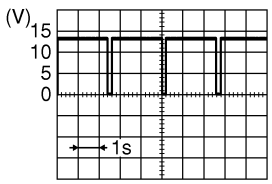
- **Check combination switch system terminal waveform under the loaded condition with lighting switch, turn signal switch and wiper switch OFF is not to be fluctuated by being overloaded.**
- **Turn wiper intermittent dial position to 4 except when checking waveform or voltage of wiper intermittent dial position. Wiper intermittent dial position can be confirmed on CONSULT. Refer to BCS-26, "COMB SW : CONSULT Function (BCM - COMB SW)".**
- **BCM reads the status of the combination switch at 10 ms internal normally. Refer to BCS-9, "System Diagram".**

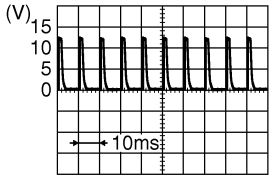
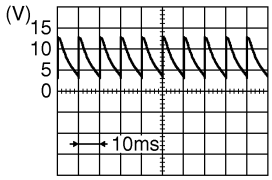
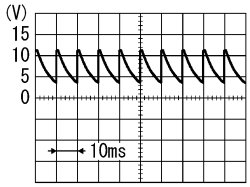
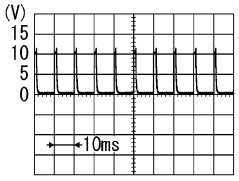
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
1 (V)	Ground	Ignition key hole illumination control	Output	Ignition key hole illumination	OFF	Battery voltage
					ON	0 V

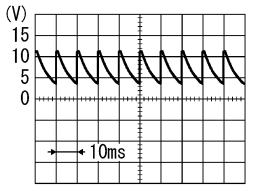
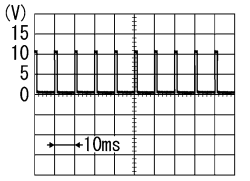
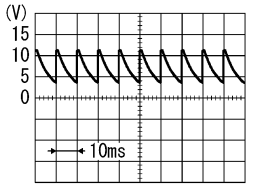
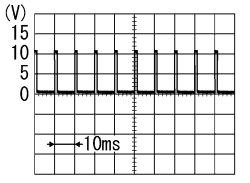
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
2 (G)	Ground	Combination switch INPUT 5	Input	Combination switch (Wiper intermittent dial 4)	All switch OFF	0 V
					Turn signal switch RH Lighting switch HI Lighting switch 1ST	 PKIB4959J 1.0 V
					Lighting switch 2ND	 PKIB4953J 2.0 V
3 (Y)	Ground	Combination switch INPUT 4	Input	Combination switch (Wiper intermittent dial 4)	All switch OFF	0 V
					Turn signal switch LH Lighting switch PASS Lighting switch 2ND	 PKIB4959J 1.0 V
					Front fog lamp switch ON	 PKIB4955J 0.8 V
4 (W)	Ground	Combination switch INPUT 3	Input	Combination switch (Wiper intermittent dial 4)	All switch OFF	0 V
					Lighting switch AUTO Front wiper switch LO Front wiper switch MIST Front wiper switch INT	 PKIB4959J 1.0 V

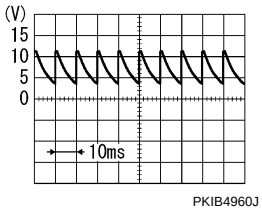
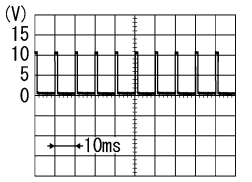
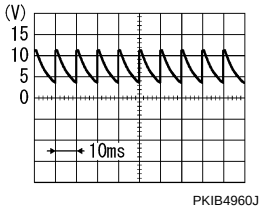
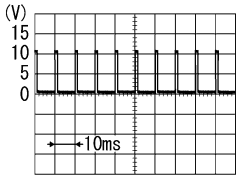
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
5 (R)	Ground	Combination switch INPUT 2	Input	Combination switch	All switch OFF (Wiper intermittent dial 4)	0 V
					Front washer switch (Wiper intermittent dial 4)	 PKIB4959J 1.0 V
					Rear washer ON (Wiper intermittent dial 4)	
					Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 5 • Wiper intermittent dial 6	
					Rear wiper switch ON (Wiper intermittent dial 4)	 PKIB4955J 0.8 V
6 (BG)	Ground	Combination switch INPUT 1	Input	Combination switch	All switch OFF (Wiper intermittent dial 4)	0 V
					Front wiper switch HI (Wiper intermittent dial 4)	 PKIB4959J 1.0 V
					Rear wiper switch INT (Wiper intermittent dial 4)	
					Wiper intermittent dial 3 (All switch OFF)	
					Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 2	 PKIB4952J 1.7 V
					Any of the condition below with all switch OFF • Wiper intermittent dial 6 • Wiper intermittent dial 7	 PKIB4955J 0.8 V

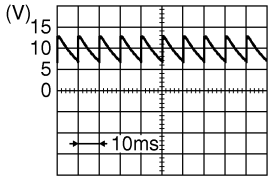
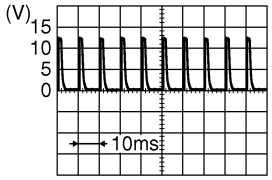
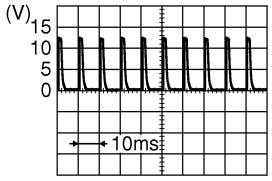
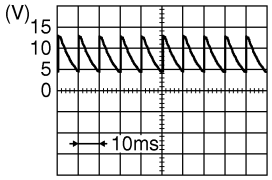
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
7 (V)	Ground	Door key cylinder switch UNLOCK signal	Input	Door key cylinder switch	NEUTRAL position	 JPMIA0587GB 8.0 - 8.5 V
					UNLOCK position	0 V
8 (R)	Ground	Door key cylinder switch LOCK signal	Input	Door key cylinder switch	NEUTRAL position	 JPMIA0587GB 8.0 - 8.5 V
					LOCK position	0 V
9 (R)	Ground	Stop lamp switch	Input	Stop lamp switch	OFF (Brake pedal is not depressed)	0 V
					ON (Brake pedal is depressed)	Battery voltage
10 (SB)	Ground	Rear window defogger switch	Input	Rear window defogger switch	Not pressed	Battery voltage
					Pressed	0 V
11 (SB)	Ground	Ignition switch ACC	Input	Ignition switch OFF		0 V
				Ignition switch ACC or ON		Battery voltage
12 (BG)	Ground	Passenger door switch	Input	Passenger door switch	OFF (When passenger door closed)	 JPMIA0586GB 7.5 - 8.0 V
					ON (When passenger door opened)	0 V
13 (LG)	Ground	Rear door switch RH	Input	Rear door switch RH	OFF (When rear door RH closed)	 JPMIA0587GB 8.0 - 8.5 V
					ON (When rear door RH opened)	0 V

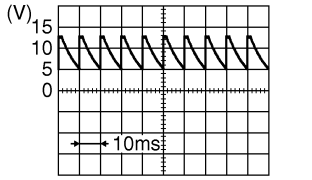
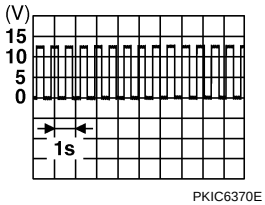
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
14 (G)	Ground	Optical sensor	Input	Ignition switch ON	When bright outside of the vehicle	Close to 5 V
					When dark outside of the vehicle	Close to 0 V
17 (W)	Ground	Optical sensor power supply	Output	Ignition switch	OFF, ACC	0 V
					ON	5 V
18* (R)	Ground	Receiver and sensor ground	Input	Ignition switch ON		0 V
19* (V)	Ground	Remote keyless entry receiver power supply	Input	Without Intelligent Key system	At any condition	5 V
				With Intelligent Key system	• Ignition switch OFF • For 3 seconds after ignition switch OFF to ON	0 V
					3 seconds or later after ignition switch OFF to ON	5 V
20* (GR)	Ground	Remote keyless entry receiver signal	Input	Without Intelligent Key system	At any condition	 JPMIA0589GB **NOTE:** The wave form changes according to signal-receiving condition.
				With Intelligent Key system	• Ignition switch OFF • For 3 seconds after ignition switch OFF to ON	0 V
					3 seconds or later after ignition switch OFF to ON	 JPMIA0589GB **NOTE:** The wave form changes according to signal-receiving condition.
21 (G)	Ground	NATS antenna amp.	Input/ Output	Just after inserting ignition key in key cylinder		Pointer of tester should move
23 (B)	Ground	Security indicator signal	Input	Security indicator	ON	0 V
					Blinking (Ignition switch OFF)	 JPMIA0590GB 12.0 V
					OFF	Battery voltage

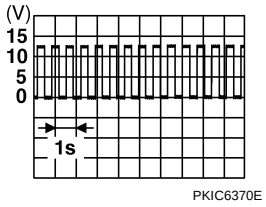
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
25 (BR)	Ground	NATS antenna amp.	Input/ Output	Just after inserting ignition key in key cylinder		Pointer of tester should move
27 (Y)	Ground	A/C switch	Input	Ignition switch OFF		
				Ignition switch ON	A/C switch OFF	 JPMIA0591GB 1.6 V
					A/C switch ON	0 V
28 (LG)	Ground	Blower fan switch	Input	Ignition switch OFF		
				Ignition switch ON	Blower fan switch OFF	 JPMIA0592GB 7.0 - 7.5 V
					Blower fan switch ON	0 V
29 (W)	Ground	Hazard switch	Input	Hazard switch	OFF	Battery voltage
					ON	0 V
30 (G)	Ground	Back door opener switch	Input	Back door opener switch	Not pressed	Battery voltage
					Pressed	0 V
32 (BR)	Ground	Combination switch OUTPUT 5	Output	Combination switch	All switch OFF (Wiper intermittent dial 4)	 PKIB4960J 7.2 V
					Front fog lamp switch ON (Wiper intermittent dial 4)	
					Rear wiper switch ON (Wiper intermittent dial 4)	 PKIB4956J 1.0 V
					Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 2 • Wiper intermittent dial 6 • Wiper intermittent dial 7	

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
33 (GR)	Ground	Combination switch OUTPUT 4	Output	Combination switch	All switch OFF (Wiper intermittent dial 4)	 PKIB4960J 7.2 V
					Lighting switch 1ST (Wiper intermittent dial 4) Lighting switch AUTO (Wiper intermittent dial 4) Rear wiper switch INT (Wiper intermittent dial 4) Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 5 • Wiper intermittent dial 6	 PKIB4958J 1.2 V
34 (SB)	Ground	Combination switch OUTPUT 3	Output	Combination switch	All switch OFF (Wiper intermittent dial 4)	 PKIB4960J 7.2 V
					Lighting switch 2ND (Wiper intermittent dial 4) Lighting switch HI (Wiper intermittent dial 4) Rear washer switch ON (Wiper intermittent dial 4) Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 2 • Wiper intermittent dial 3	 PKIB4958J 1.2 V

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
35 (B)	Ground	Combination switch OUTPUT 2	Output	Combination switch (Wiper intermittent dial 4)	All switch OFF	 PKIB4960J 7.2 V
					Lighting switch 2ND Lighting switch PASS Front wiper switch INT Front wiper switch HI	 PKIB4958J 1.2 V
36 (V)	Ground	Combination switch OUTPUT 1	Output	Combination switch (Wiper intermittent dial 4)	All switch OFF	 PKIB4960J 7.2 V
					Turn signal switch RH Turn signal switch LH Front wiper switch LO (Front wiper switch MIST) Front washer switch ON	 PKIB4958J 1.2 V
37 (LG)	Ground	Key switch	Input	Insert mechanical key into ignition key cylinder		Battery voltage
				Remove mechanical key from ignition key cylinder		0 V
38 (G)	Ground	Ignition switch ON	Input	Ignition switch OFF or ACC		0 V
				Ignition switch ON or START		Battery voltage
39 (L)	Ground	CAN-H	Input/ Output	—		—
40 (P)	Ground	CAN-L	Input/ Output	—		—

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
43 (V)	Ground	Back door switch	Input	Back door switch	OFF (When back door closed)	 JPMIA0593GB 9.5 - 10.0 V
					ON (When back door opened)	0 V
44 (B)	Ground	Rear wiper auto stop position	Input	Ignition switch ON	Rear wiper stop position	0 V
					Any position other than rear wiper stop position	Battery voltage
45 (P)	Ground	Door lock and unlock switch LOCK signal	Input	Door lock and unlock switch	NEUTRAL position	 JPMIA0591GB 1.6 V
					LOCK position	0 V
46 (BR)	Ground	Door lock and unlock switch UNLOCK signal	Input	Door lock and unlock switch	NEUTRAL position	 JPMIA0591GB 1.6 V
					UNLOCK position	0 V
47 (W)	Ground	Driver door switch	Input	Driver door switch	OFF (When driver door closed)	 JPMIA0587GB 8.0 - 8.5 V
					ON (When driver door opened)	0 V

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
48 (GR)	Ground	Rear door switch LH	Input	Rear door switch LH	OFF (When rear door LH closed)	 JPMIA0594GB 8.5 - 9.0 V
					ON (When rear door LH opened)	0 V
49 (L)	Ground	Luggage room lamp control	Output	Luggage room lamp switch DOOR position	Back door is closed (Luggage room lamp turns OFF)	Battery voltage
					Back door is opened (Luggage room lamp turns ON)	0 V
53 (V)	Ground	Back door open	Output	Back door opener switch	Not pressed (Back door actuator is activated)	0 V
					Pressed (Back door actuator is activated)	Battery voltage
55 (SB)	Ground	Rear wiper motor	Output	Ignition switch ON	Rear wiper switch OFF	0 V
					Rear wiper switch ON	Battery voltage
56 (Y)	Ground	Interior room lamp power supply	Output	After passing the interior room lamp battery saver operation time		0 V
				Any other time after passing the interior room lamp battery saver operation time		Battery voltage
57 (G)	Ground	Battery power supply	Input	Ignition switch OFF		Battery voltage
59 (L)	Ground	Driver door UNLOCK	Output	Driver door	UNLOCK (Actuator is activated)	Battery voltage
					Other then UNLOCK (Actuator is not activated)	0 V
60 (BR)	Ground	Turn signal LH	Output	Ignition switch ON	Turn signal switch OFF	0 V
					Turn signal switch LH	 PKIC6370E 6.0 V

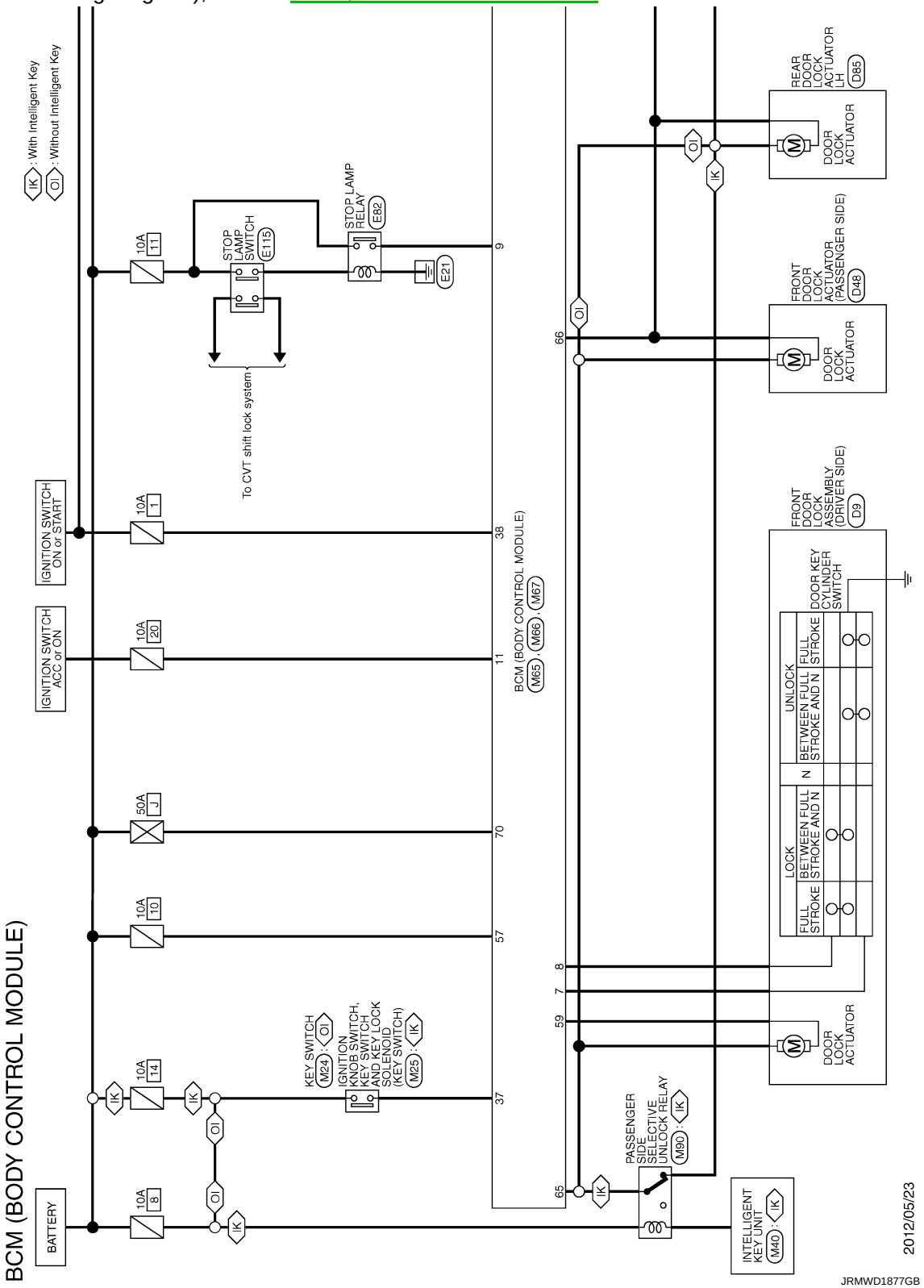
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
61 (GR)	Ground	Turn signal RH	Output	Ignition switch ON	Turn signal switch OFF	0 V
					Turn signal switch RH	 6.0 V
63 (R)	Ground	Interior room lamp timer control	Output	Interior room lamp	OFF	Battery voltage
					ON	0 V
65 (V)	Ground	All doors LOCK	Output	All doors	LOCK (Actuator is activated)	Battery voltage
					Other then LOCK (Actuator is not activated)	0 V
66 (G)	Ground	Passenger door and rear door UNLOCK	Output	Passenger door and rear door	UNLOCK (Actuator is activated)	Battery voltage
					Other then UNLOCK (Actuator is not activated)	0 V
67 (B)	Ground	Ground	Output	Ignition switch ON		0 V
68 (L)	Ground	P/W power supply (RAP)	Output	Ignition switch ON		Battery voltage
69 (P)	Ground	P/W power supply (BAT)	Output	Ignition switch OFF		Battery voltage
70 (Y)	Ground	Battery power supply	Input	Ignition switch OFF		Battery voltage

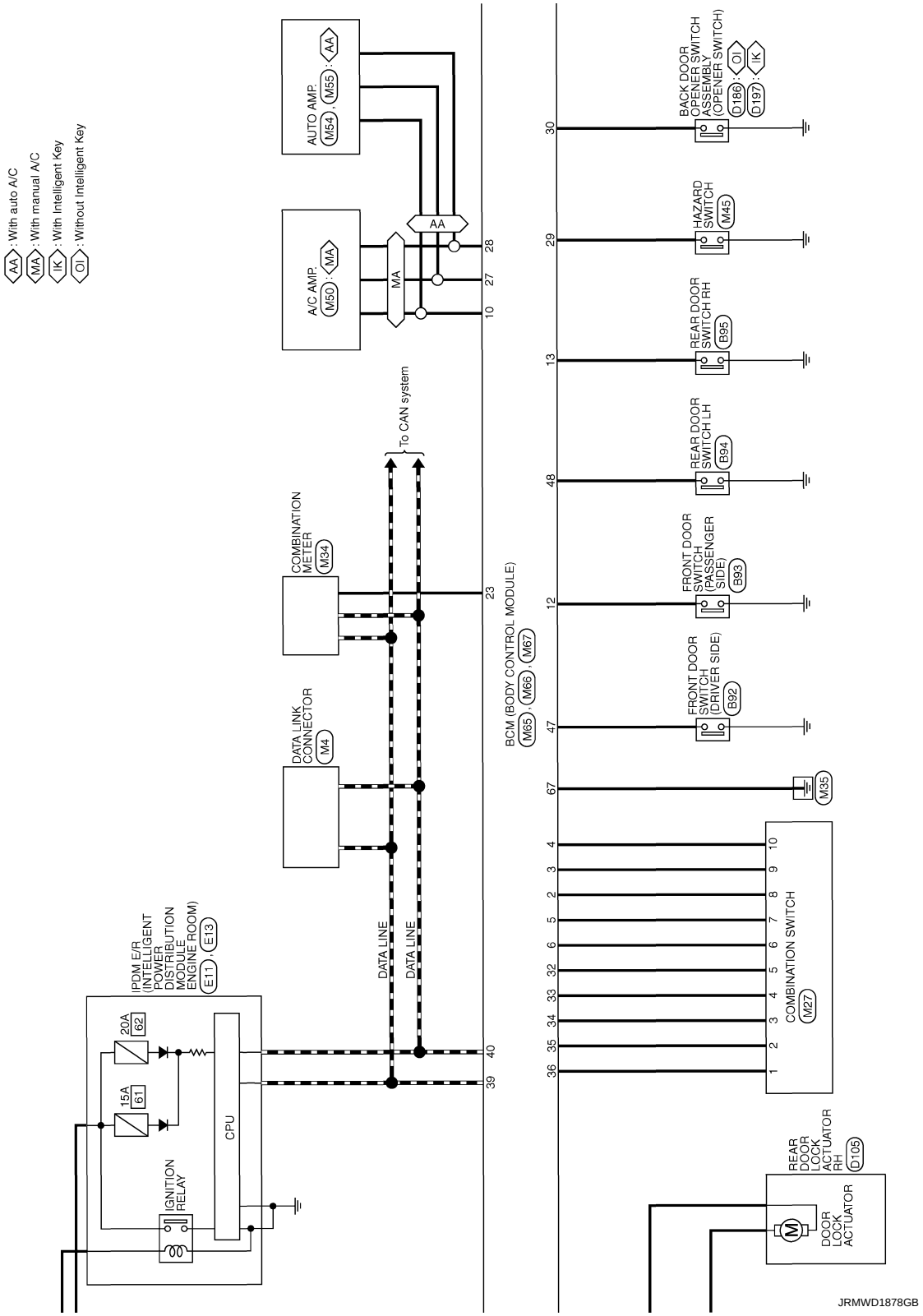
*: Except for Mexico with Intelligent Key

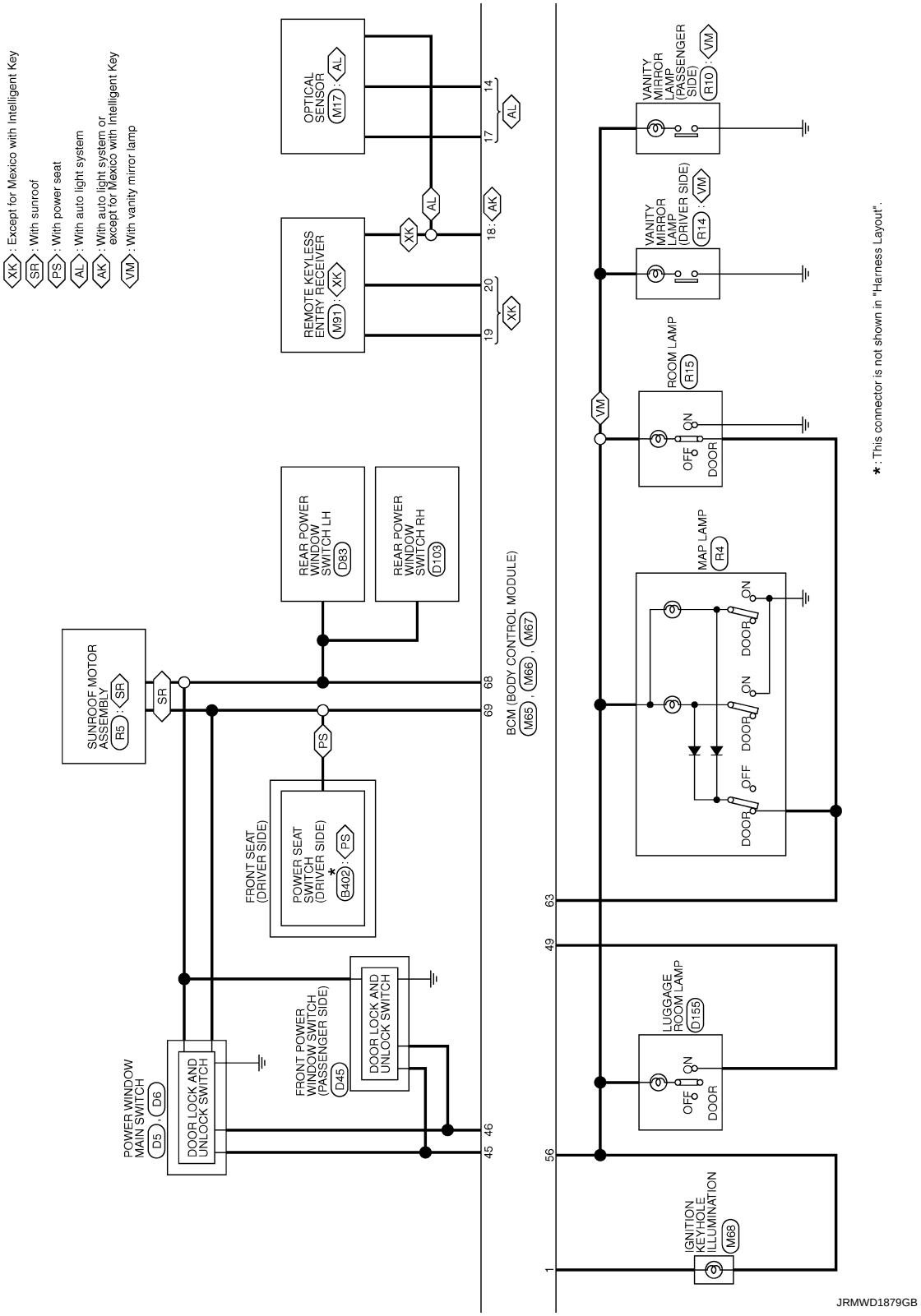
Wiring Diagram - BCM -

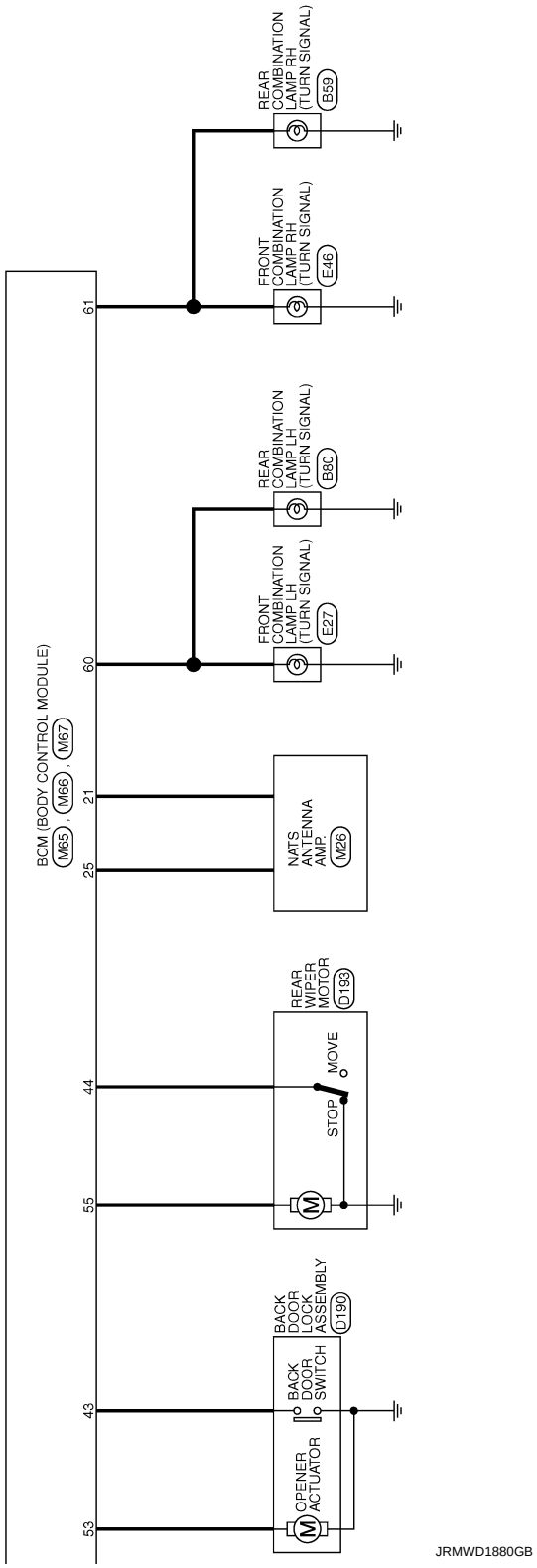
INFOID:0000000008729012

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information".




AA : With auto A/C
MA : With manual A/C
IK : With Intelligent Key
OI : Without Intelligent Key
AUTO AMP. (M54) (M55) : AA
A/C AMP. (M50) : MA
AA
MA
28
27
10
To CAN system
COMBINATION METER (M34)
23
DATA LINK CONNECTOR (M4)
DATA LINE
DATA LINE
40
39
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) (E11) (E13)
20A 62
15A 61
IGNITION RELAY
CPU
BCM (BODY CONTROL MODULE) (M65) (M66) (M67)
30
BACK DOOR OPENER SWITCH ASSEMBLY (OPENER SWITCH) (D186) : OI (D197) : IK
29
HAZARD SWITCH (M45)
13
REAR DOOR SWITCH RH (B95)
48
REAR DOOR SWITCH LH (B94)
12
FRONT DOOR SWITCH (PASSENGER SIDE) (B93)
47
FRONT DOOR SWITCH (DRIVER SIDE) (B92)
67
(M35)
4 3 2 5 6 32 33 34 35 36
10 9 8 7 6 5 4 3 2 1
COMBINATION SWITCH (M27)
REAR DOOR LOCK ACTUATOR RH (D105)
DOOR LOCK ACTUATOR
JRMWD1878GB


XK : Except for Mexico with Intelligent Key
SR : With sunroof
PS : With power seat
AL : With auto light system
AK : With auto light system or except for Mexico with Intelligent Key
VM : With vanity mirror lamp
OPTICAL SENSOR (M17) : AL
REMOTE KEYLESS ENTRY RECEIVER (M91) : XK
REAR POWER WINDOW SWITCH LH (D83)
REAR POWER WINDOW SWITCH RH (D103)
SUNROOF MOTOR ASSEMBLY (R5) : SR
FRONT SEAT (DRIVER SIDE)
POWER SEAT SWITCH (DRIVER SIDE) (B402) : PS
FRONT POWER WINDOW SWITCH (PASSENGER SIDE) (D45)
DOOR LOCK AND UNLOCK SWITCH
POWER WINDOW MAIN SWITCH (D5) (D6)
BCM (BODY CONTROL MODULE) (M65), (M66), (M67)
VANITY MIRROR LAMP (PASSENGER SIDE) (R10) : VM
VANITY MIRROR LAMP (DRIVER SIDE) (R14) : VM
ROOM LAMP (R15)
MAP LAMP (R4)
LUGGAGE ROOM LAMP (D155)
IGNITION KEYHOLE ILLUMINATION (M68)
ON
OFF
DOOR
*: This connector is not shown in "Harness Layout".
JRMWD1879GB



Fail-safe

INFOID:0000000008729013

REAR WIPER MOTOR PROTECTION

BCM detects the rear wiper stopping position according to the rear wiper stop position signal.
When the rear wiper stop position signal does not change more than 5 seconds while driving the rear wiper, BCM stops power supply to protect the rear wiper motor.

Condition of cancellation

1. Pass more than 1 minute after the rear wiper stop.
2. Turn the rear wiper switch OFF.
3. Operate the rear wiper switch or rear washer switch.

DTC Inspection Priority Chart

INFOID:0000000008729014

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

Priority	DTC
1	U1000: CAN COMM CIRCUIT
2	C1735: IGN CIRCUIT OPEN
3	• C1704: LOW PRESSURE FL • C1705: LOW PRESSURE FR • C1706: LOW PRESSURE RR • C1707: LOW PRESSURE RL • C1708: [NO DATA] FL • C1709: [NO DATA] FR • C1710: [NO DATA] RR • C1711: [NO DATA] RL • C1716: [PRESS DATA ERR] FL • C1717: [PRESS DATA ERR] FR • C1718: [PRESS DATA ERR] RR • C1719: [PRESS DATA ERR] RL • C1729: VHCL SPEED SIG ERR

DTC Index

INFOID:0000000008729015

NOTE:
Details of time display
- CRNT: Displays when there is a malfunction now or after returning to the normal condition until turning ignition switch OFF → ON again.
- 1 - 39: Displayed if any previous malfunction is present when current condition is normal. It increases like 1 → 2 → 3...38 → 39 after returning to the normal condition whenever ignition switch OFF → ON. The counter remains at 39 even if the number of cycles exceeds it. It is counted from 1 again when turning ignition switch OFF → ON after returning to the normal condition if the malfunction is detected again.

CONSULT display	Tire pressure monitor warning lamp ON	Reference
U1000: CAN COMM CIRCUIT	—	BCS-34
C1704: LOW PRESSURE FL	×	WT-14
C1705: LOW PRESSURE FR	×	
C1706: LOW PRESSURE RR	×	
C1707: LOW PRESSURE RL	×	
C1708: [NO DATA] FL	×	WT-16
C1709: [NO DATA] FR	×	
C1710: [NO DATA] RR	×	
C1711: [NO DATA] RL	×	
C1716: [PRESS DATA ERR] FL	×	WT-19
C1717: [PRESS DATA ERR] FR	×	
C1718: [PRESS DATA ERR] RR	×	
C1719: [PRESS DATA ERR] RL	×	
C1729: VHCL SPEED SIG ERR	×	WT-21
C1735: IGN CIRCUIT OPEN	—	BCS-35

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

Reference Value

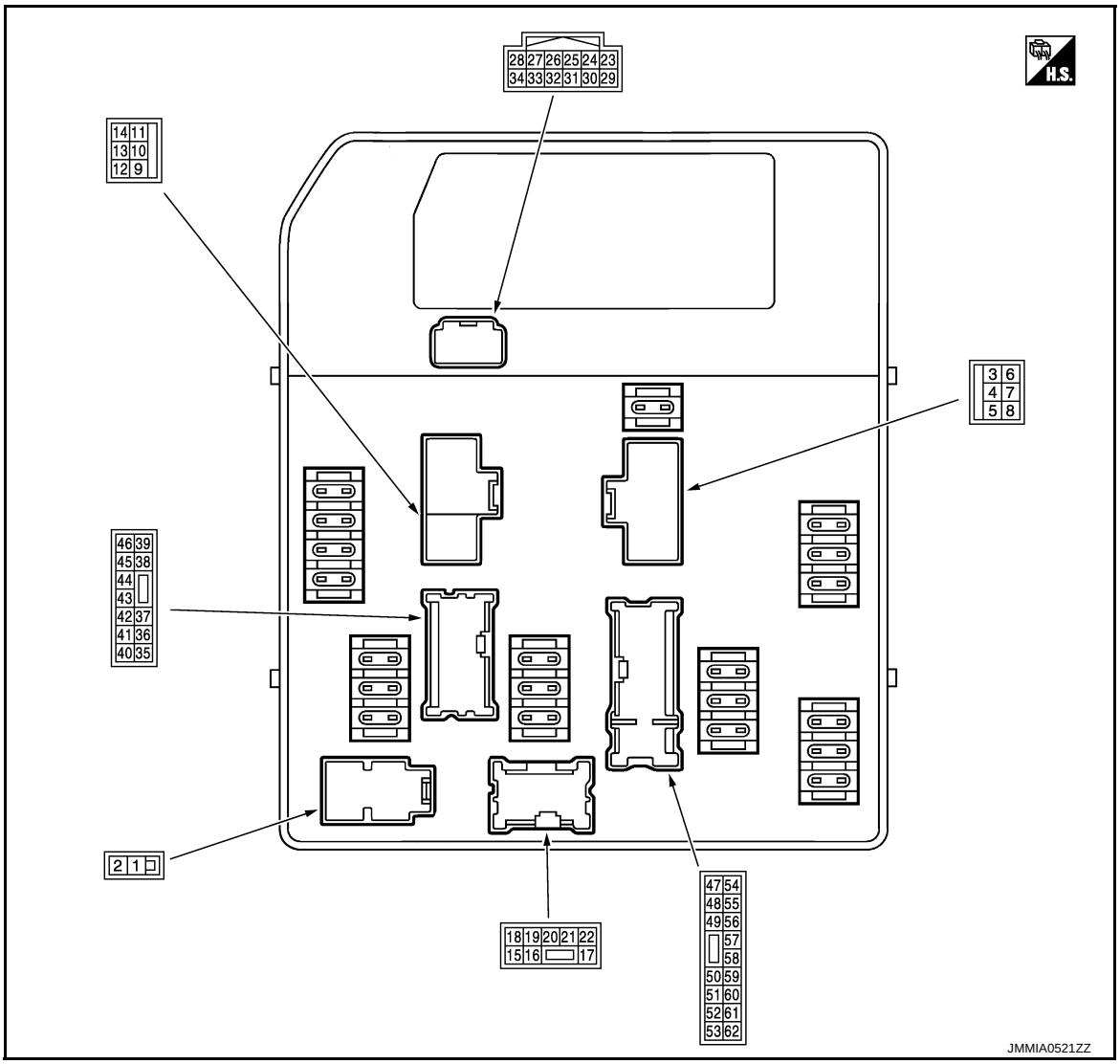
INFOID:0000000008729036

VALUES ON THE DIAGNOSIS TOOL

Monitor Item	Condition		Value/Status
MOTOR FAN REQ	Engine idle speed	Changes depending on engine coolant temperature, air conditioner operation status, vehicle speed, etc.	1 - 4
AC COMP REQ	Engine running	A/C switch OFF	Off
		A/C switch ON (Compressor is operating)	On
TAIL&CLR REQ	Lighting switch OFF		Off
	Lighting switch 1ST or 2ND		On
HL LO REQ	Lighting switch OFF		Off
	Lighting switch 2ND		On
HL HI REQ	Lighting switch OFF		Off
	Lighting switch HI (Light is illuminated)		On
FR FOG REQ **NOTE:** This item is monitored only on the vehicle with front fog lamp.	Lighting switch 2ND	Front fog lamp switch OFF	Off
		Front fog lamp switch ON	On
FR WIP REQ	Ignition switch ON	Front wiper switch OFF	Stop
		Front wiper switch INT	1LOW
		Front wiper switch LO	Low
		Front wiper switch HI	Hi
WIP AUTO STOP	Ignition switch ON	Front wiper stop position	STOP P
		Any position other than front wiper stop position	ACT P
WIP PROT	Ignition switch ON	Front wiper operates normally	Off
		Front wiper stops at fail-safe operation	BLOCK
ST RLY REQ **NOTE:** Vehicle without Intelligent Key system indicates only “ON”, and it does not change.	When Intelligent Key is outside the vehicle, and the push switch is pushed		Off
	When Intelligent Key is inside the vehicle, and the push switch is pushed		On
IGN RLY	Ignition switch OFF or ACC		Off
	Ignition switch ON		On
RR DEF REQ	Ignition switch ON	Rear window defogger switch OFF	Off
		Rear window defogger switch ON (Rear window defogger is operating)	On
OIL P SW	Ignition switch OFF, ACC or engine running		Open
	Ignition switch ON		Close
DTRL REQ **NOTE:** This item is monitored only on the vehicle with the daytime running light system.	Daytime running light system is not operated.		Off
	Daytime running light system is operated.		On

Monitor Item	Condition	Value/Status
HOOD SW **NOTE:** This item is monitored only the vehicle for Mexico.	Close the hood	Off
	Open the hood	On
THFT HRN REQ	Not operation	Off
	Horn is activated with vehicle security system or panic alarm system.	On
HORN CHIRP	Not operation	Off
	Horn is activated with key fob LOCK operation.	On

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	–	Signal name	Input/ Output		
1 (R)	Ground	Battery power supply	Input	Ignition switch OFF	Battery voltage
2 (G)	Ground	Battery power supply	Input	Ignition switch OFF	Battery voltage

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
3 (L)	Ground	Starter relay power supply	Output	When engine is clanking		Battery voltage
				When engine is not clanking		0 V
4 (W)	Ground	Cooling fan relay-1 power supply	Output	Cooling fan operation	OFF	0 V
					MID or HI	Battery voltage
5 (R)	Ground	Ignition switch START	Input	Ignition switch OFF, ACC or ON		0 V
				Ignition switch START		Battery voltage
6 (BR)	Ground	Battery power supply (Cooling fan relay)	Input	Ignition switch OFF		Battery voltage
7 (P)	Ground	Cooling fan motor-2 (HI) ground	—	Cooling fan operation	OFF	Battery voltage
					HI	0 V
8 (G)	Ground	Cooling fan relay-2 power supply	Output	Cooling fan operation	OFF	0 V
					HI	Battery voltage
11 (B)	Ground	Ground	—	Ignition switch ON		0 V
12 (G)	Ground	Rear window defogger relay power supply	Output	Ignition switch ON	Rear window defogger switch OFF	0 V
					Rear window defogger switch ON	Battery voltage
15[*1] (SB)	Ground	Daytime running light relay control	Output	Daytime running light system	Not operated	Battery voltage
					Operated	0 V
16[*2] (Y)	Ground	Front fog lamp (LH)	Output	Lighting switch 2ND	Front fog lamp switch OFF	0 V
					Front fog lamp switch ON	Battery voltage
17[*2] (W)	Ground	Front fog lamp (RH)	Output	Lighting switch 2ND	Front fog lamp switch OFF	0 V
					Front fog lamp switch ON	Battery voltage
18 (L)	Ground	Headlamp LO (LH)	Output	Lighting switch OFF		0 V
				Lighting switch 2ND		Battery voltage
20 (SB)	Ground	Headlamp LO (RH)	Output	Lighting switch OFF		0 V
				Lighting switch 2ND		Battery voltage
21 (G)	Ground	Headlamp HI (LH)	Output	Lighting switch OFF		0 V
				• Lighting switch 2ND and HI • Lighting switch PASS		Battery voltage
				Daytime running light system Operated[*1]		7.0 V
22 (LG)	Ground	Headlamp HI (RH)	Output	Lighting switch OFF		0 V
				• Lighting switch 2ND and HI • Lighting switch PASS		Battery voltage
				Daytime running light system Operated[*1]		7.0 V
23 (W)	Ground	Oil pressure switch	Input	Ignition switch ON	Engine stopped	0 V
					Engine running	Battery voltage
24 (Y)	Ground	Front wiper auto stop	Input	Ignition switch ON	Front wiper stop position	0 V
					Any position other than front wiper stop position	Battery voltage
25 (B)	Ground	Ground	—	Ignition switch ON		0 V
26 (P)	—	CAN-L	Input/ Output	—		—

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
27 (L)	—	CAN-H	Input/ Output	—		—
31 (LG)	Ground	Cooling fan relay-4 control	Output	Cooling fan operation	OFF	Battery voltage
					LO	0 - 1.0 V
32 (V)	Ground	Throttle control motor relay control	Input	After passing approximately 2 seconds or more after turning the ignition switch from ON to OFF		Battery voltage
				• Ignition switch ON • For approximately 2 seconds after turning ignition switch from ON to OFF		0 - 1.0 V
33 (GR)	Ground	Fuel pump relay control	Input	Ignition switch OFF		0 V
				Ignition switch ON	Engine stopped	Battery voltage
					Engine running	0.8 V
34*3 (W)	Ground	Hood switch	Input	Close the hood		Battery voltage
				Open the hood		0 V
37 (R)	Ground	Tail, license plate lamps and illuminations	Output	Lighting switch OFF		0 V
				Lighting switch 1ST		Battery voltage
38 (R)	Ground	Parking lamp (LH)	Output	Lighting switch OFF		0 V
				Lighting switch 1ST		Battery voltage
39 (GR)	Ground	Parking lamp (RH)	Output	Lighting switch OFF		0 V
				Lighting switch 1ST		Battery voltage
40 (BR)	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC		0 V
				Ignition switch ON		Battery voltage
41 (W)	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC		0 V
				Ignition switch ON		Battery voltage
42 (L)	Ground	Front wiper HI	Output	Ignition switch ON	Front wiper switch OFF	0 V
					Front wiper switch HI	Battery voltage
43 (G)	Ground	Front wiper LO	Output	Ignition switch ON	Front wiper switch OFF	0 V
					Front wiper switch LO	Battery voltage
45 (Y)	Ground	Starter relay power supply	Input	Ignition switch ON	Selector lever “P” or “N”	Battery voltage
					Selector lever in any position other than “P” or “N”	0 V
46 (W)	Ground	Fuel pump relay power supply	Output	• Ignition switch OFF or ACC • After passing approximately 1 second or more after turning the ignition switch ON		0 V
				• For approximately 1 second after turning the ignition switch ON • Engine running		Battery voltage
47 (BR)	Ground	ECM relay power supply	Output	After passing approximately 4 seconds or more after turning the ignition switch from ON to OFF		0 V
				• Ignition switch ON • For approximately 4 seconds after turning ignition switch from ON to OFF		Battery voltage
48 (R)	Ground	ECM relay power supply	Output	After passing approximately 4 seconds or more after turning the ignition switch from ON to OFF		0 V
				• Ignition switch ON • For approximately 4 seconds after turning ignition switch from ON to OFF		Battery voltage

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
50 (G)	Ground	Cooling fan relay-5 control	Output	Cooling fan operation	OFF	Battery voltage
					MID or HI	0 - 1.0 V
51 (L)	Ground	ECM relay control	Output	After passing approximately 4 seconds or more after turning the ignition switch from ON to OFF		Battery voltage
				• Ignition switch ON • For approximately 4 seconds after turning ignition switch from ON to OFF		0 - 1.0 V
52 (P)	Ground	Throttle control motor relay power supply	Output	After passing approximately 2 seconds or more after turning the ignition switch from ON to OFF		0 V
				• Ignition switch ON • For approximately 2 seconds after turning ignition switch from ON to OFF		Battery voltage
55 (BG)	Ground	A/C relay power supply	Output	Engine stopped		0 V
				Engine running	A/C switch OFF	0 V
					A/C switch ON (A/C compressor is operating)	Battery voltage
56 (SB)	Ground	Ignition switch ON	Input	Ignition switch OFF or ACC		0 V
				Ignition switch ON		Battery voltage
57 (V)	Ground	Horn relay control	Output	The horn is not activated		Battery voltage
				The horn is activated		0 V
58 (LG)	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC		0 V
				Ignition switch ON		Battery voltage
59 (BR)	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC		0 V
				Ignition switch ON		Battery voltage
60 (SB)	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC		0 V
				Ignition switch ON		Battery voltage
61 (R)	Ground	ECM power supply	Output	Ignition switch OFF		Battery voltage

*1: With daytime running light system

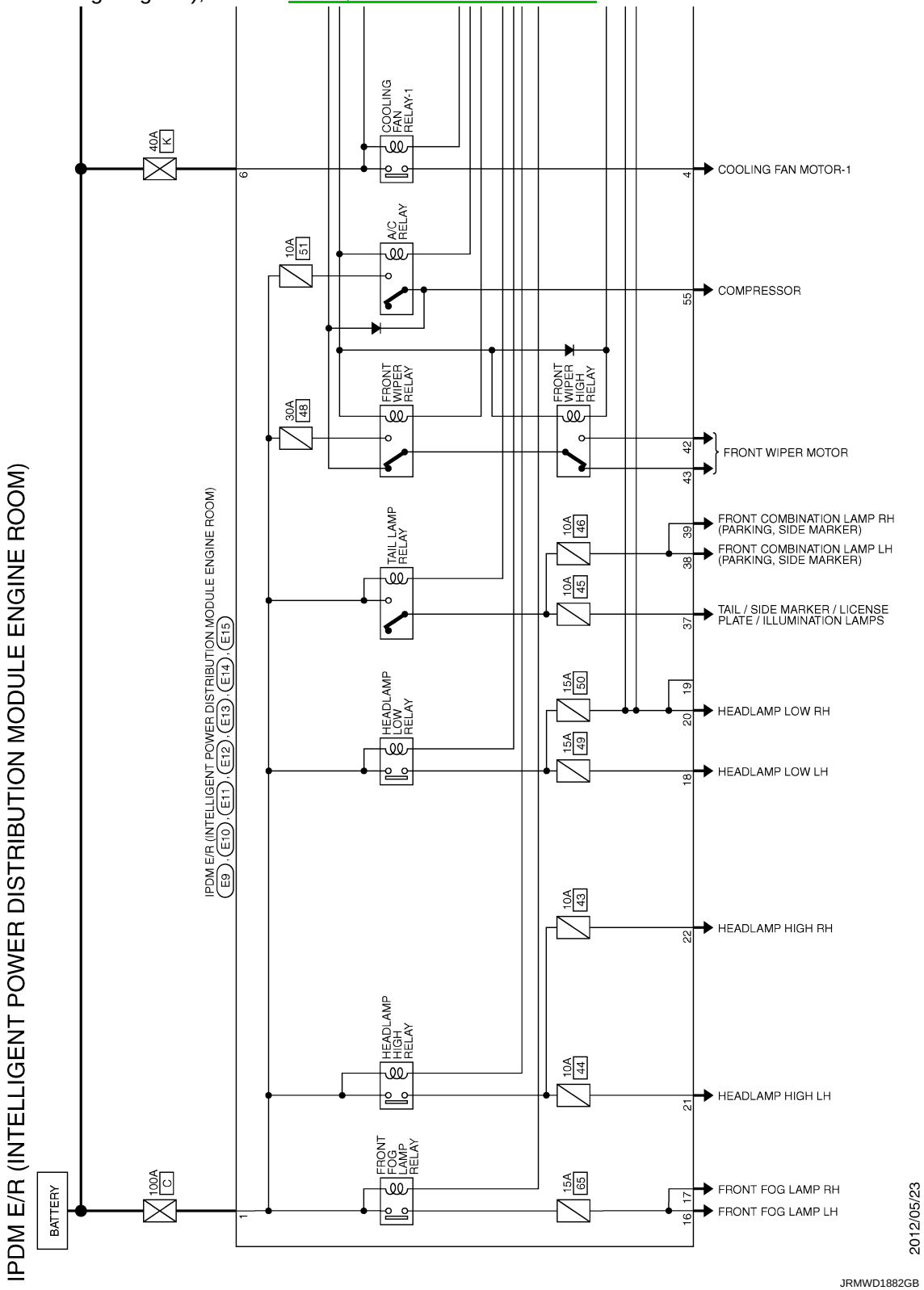
*2: With front fog lamp system

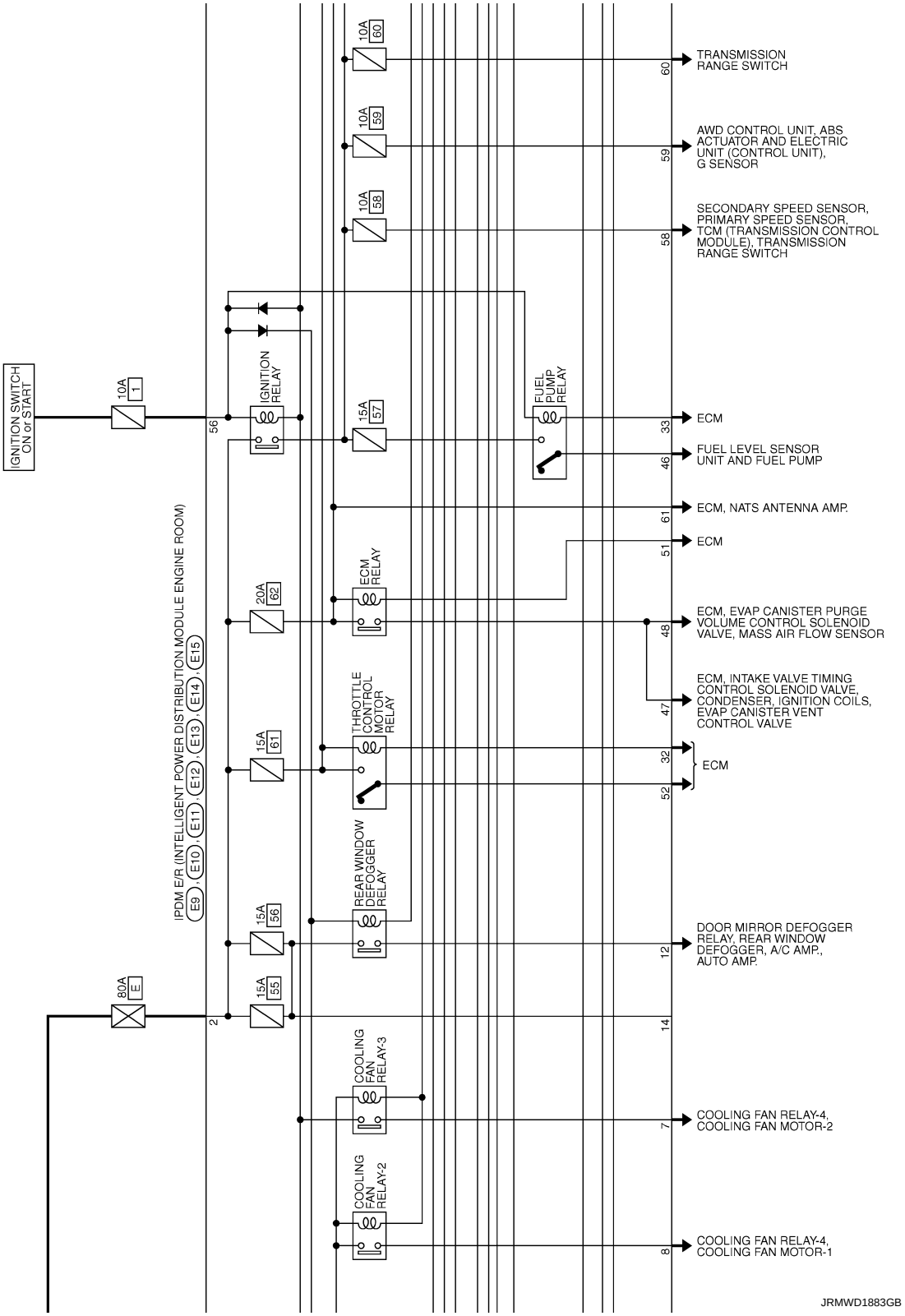
*3: For Mexico

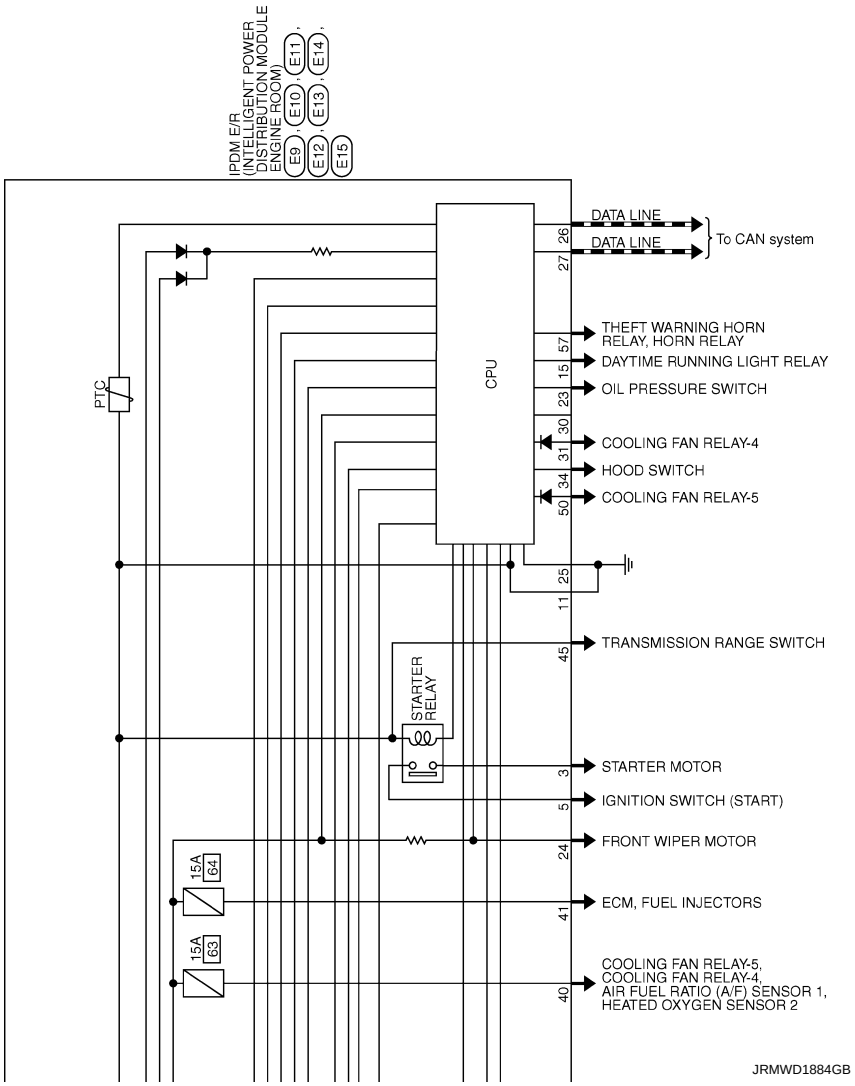
Wiring Diagram - IPDM E/R -

INFOID:0000000008729037

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information".




IGNITION SWITCH ON or START
10A 1
56
IGNITION RELAY
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E9, E10, E11, E12, E13, E14, E15
80A E
2
10A 60
10A 59
10A 58
15A 57
20A 62
15A 61
15A 56
15A 55
FUEL PUMP RELAY
ECM RELAY
THROTTLE CONTROL MOTOR RELAY
REAR WINDOW DEFOGGER RELAY
COOLING FAN RELAY-3
COOLING FAN RELAY-2
60 TRANSMISSION RANGE SWITCH
59 AWD CONTROL UNIT, ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT), G SENSOR
58 SECONDARY SPEED SENSOR, PRIMARY SPEED SENSOR, TCM (TRANSMISSION CONTROL MODULE), TRANSMISSION RANGE SWITCH
33 ECM
46 FUEL LEVEL SENSOR UNIT AND FUEL PUMP
61 ECM, NATS ANTENNA AMP.
51 ECM
48 ECM, EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE, MASS AIR FLOW SENSOR
47 ECM, INTAKE VALVE TIMING CONTROL SOLENOID VALVE, CONDENSER, IGNITION COILS, EVAP CANISTER VENT CONTROL VALVE
32 ECM
52
12 DOOR MIRROR DEFOGGER RELAY, REAR WINDOW DEFOGGER, A/C AMP., AUTO AMP.
14
7 COOLING FAN RELAY-4, COOLING FAN MOTOR-2
8 COOLING FAN RELAY-4, COOLING FAN MOTOR-1
JRMWD1883GB



Fail-safe

INFOID:0000000008729038

CAN COMMUNICATION CONTROL

When CAN communication with ECM and 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 ECM

Control part	Fail-safe in operation
Cooling fan	• The cooling fan relay-1, the cooling fan relay-2, the cooling fan relay-3 and the cooling fan relay-5 turn ON when the ignition switch is turned ON • The cooling fan relay-1, the cooling fan relay-2, the cooling fan relay-3 and the cooling fan relay-5 turn OFF when the ignition switch is turned OFF • Cooling fan relay-4 OFF
A/C compressor	A/C relay OFF

If no CAN communication is available with BCM

Control part	Fail-safe in operation
Headlamp	• The headlamp low relay turns ON when the ignition switch is turned ON • The headlamp low relay turns OFF when the ignition switch is turned OFF • Headlamp high relay OFF
• Parking lamps • License plate lamps • Tail lamps • Illuminations	• The tail lamp relay and the daytime running light relay* turn ON when the ignition switch is turned ON • The tail lamp relay and the daytime running light relay* turn OFF when the ignition switch is turned OFF
Front wiper	• The status just before activation of fail-safe control is maintained until the ignition switch is turned OFF while the front wiper is operating at LO or HI speed. • The front wiper is operated at LO speed until the ignition switch is turned OFF if the fail-safe control is activated while the front wiper is set in the INT mode and the front wiper motor is operating.
Front fog lamps	Front fog lamp relay OFF
Starter motor	Starter relay OFF
Rear window defogger	Rear window defogger relay OFF
Horn	Horn relay OFF

NOTE:

*: With daytime running light system

IGNITION RELAY MALFUNCTION DETECTION FUNCTION

- IPDM E/R monitors status of ignition relay by the voltage at ignition relay contact circuit inside it.
- IPDM E/R judges that the ignition relay is error, if status of the ignition relay and ignition switch ON signal (CAN).
- If the ignition relay cannot turn OFF due to contact seizure, it activates the tail lamp relay and daytime running light relay* for 10 minutes to alert the user to the ignition relay malfunction when the ignition switch is turned OFF.

Detection		IPDM E/R judgment	Operation
Ignition switch ON signal	Ignition relay		
ON	ON	Ignition relay normal	—
OFF	OFF	Ignition relay normal	—
OFF	ON	Ignition relay ON stuck	Turn on the tail lamp relay and daytime running light relay* for 10 minutes
ON	OFF	Ignition relay OFF stuck	Detect DTC "B2099: IGN RELAY OFF"

NOTE:

*: With daytime running light system

FRONT WIPER CONTROL

IPDM E/R detects the front wiper stop position with the front wiper stop position signal.
When the front wiper stop position signal is in the conditions listed below, IPDM E/R repeats a front wiper 10 seconds operation and 20 seconds stop five times.

Ignition switch	Front wiper switch	Front wiper stop position signal
ON	OFF	The front wiper stop position signal (stop position) cannot be input for 10 seconds.
	ON	The front wiper stop position signal does not change for 10 seconds.

NOTE:
This operation status can be confirmed on the IPDM E/R “Data Monitor” that displays “BLOCK” for the item “WIP PROT” while the wiper is stopped.

DTC Index

INFOID:0000000008729039

CONSULT display	Fail-safe	Timing[NOTE]		Reference page
No DTC is detected. further testing may be required.	—	—	—	—
U1000: CAN COMM CIRCUIT	×	CRNT	PAST	PCS-13
B2099: IGN RELAY OFF	—	CRNT	PAST	PCS-14

NOTE:
The details of time display are as follows.

- CRNT: The malfunctions that are detected now.
- PAST: The number is indicated when it is normal at present and a malfunction was detected in the past.

SYMPTOM DIAGNOSIS

EXTERIOR LIGHTING SYSTEM SYMPTOMS

Symptom Table

INFOID:0000000008277532

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

Symptom		Possible cause	Inspection item
Headlamp (HI) is not turned ON.	One side	• Fuse • Halogen bulb (HI) • Harness between IPDM E/R and the headlamp high • IPDM E/R	Headlamp (HI) circuit Refer to EXL-33.
	Both sides	**Symptom diagnosis** "BOTH SIDE HEADLAMPS (HI) ARE NOT TURNED ON" Refer to EXL-97.	
Headlamp (HI) is not turned OFF.	When ignition switch is turned ON.		
	When ignition switch is turned OFF.	IPDM E/R	—
High beam indicator lamp is not turned ON. [The headlamp (HI) is turned ON.]		Combination meter	• Combination meter Data monitor "HI-BEAM IND" • BCM (HEAD LAMP) Active test "HEADLAMP"
Headlamp (LO) is not turned ON.	One side	• Fuse • Xenon bulb (LO) • Harness between IPDM E/R and the headlamp low • IPDM E/R	Headlamp (LO) circuit Refer to EXL-35.
	Both sides	**Symptom diagnosis** "BOTH SIDE HEADLAMPS (LO) ARE NOT TURNED ON" Refer to EXL-98.	
Headlamp (LO) is not turned OFF.	When ignition switch is turned ON.		
	When ignition switch is turned OFF.	IPDM E/R	—
Headlamp is not turned ON/OFF with the lighting switch AUTO.		• Combination switch • Harness between the combination switch and BCM • BCM	Combination switch Refer to BCS-64
		• Optical sensor • Harness between the optical sensor and BCM • BCM	Optical sensor Refer to EXL-50
Front fog lamp is not turned ON.	One side	• Front fog lamp bulb • Harness between IPDM E/R and the front fog lamp • Front fog lamp • IPDM E/R	Front fog lamp circuit Refer to EXL-39.
	Both sides	**Symptom diagnosis** "BOTH SIDE FRONT FOG LAMPS ARE NOT TURNED ON" Refer to EXL-100.	
Front fog lamp is not turned ON.			
Parking lamp is not turned ON.		• Parking lamp bulb • Harness between IPDM E/R and the front combination lamp • Front combination lamp • IPDM E/R	Parking lamp circuit Refer to EXL-41.

Symptom		Possible cause	Inspection item
Tail lamp is not turned ON.		• Tail lamp bulb • Harness between IPDM E/R and the rear combination lamp • Rear combination lamp	Tail lamp circuit Refer to EXL-47.
License plate lamp is not turned ON.		• License plate lamp bulb • Harness between IPDM E/R and the license plate lamp • License plate lamp	License plate lamp circuit Refer to EXL-49.
Tail lamp and the license plate lamp are not turned ON.		• Fuse • Harness between IPDM E/R and the rear combination lamp • IPDM E/R	License plate lamp circuit Refer to EXL-49.
• Parking lamp, the tail lamp and the license plate lamp are not turned ON. • Parking lamp, the tail lamp and the license plate lamp are not turned OFF. (Each illumination is turned ON/OFF.)		**Symptom diagnosis** “PARKING, LICENSE PLATE AND TAIL LAMPS ARE NOT TURNED ON” Refer to EXL-99.	
Position lamp indicator is not turned ON. (Parking, tail lamps are turned ON.)		Combination meter	• Combination meter Data monitor “LIGHT IND” • BCM (HEAD LAMP) Active test “TAIL LAMP”
Turn signal lamp does not blink.	Indicator lamp is normal. (Applicable side performs the high flasher activation.)	• Harness between BCM and each turn signal lamp • Turn signal lamp bulb	Turn signal circuit Refer to EXL-43.
	Indicator lamp is included.	• Combination switch • Harness between the combination switch and BCM • BCM	Combination switch Refer toBCS-41.
Turn signal indicator lamp does not blink. (Turn signal indicator lamp is normal.)	One side	Combination meter	—
	Both sides (Always)	• Turn signal indicator lamp signal - BCM • Combination meter	• Combination meter Data monitor “TURN IND” • BCM (FLASHER) Active test “FLASHER”
	Both sides (Only when activating hazard warning lamp with the ignition switch OFF)	• Combination meter power supply and the ground circuit • Combination meter	Combination meter Power supply and the ground circuit Refer to MWI-55.
• Hazard warning lamp does not activate. • Hazard warning lamp continues activating. (Turn signal is normal.)		• Hazard switch • Harness between the hazard switch and BCM • BCM	Hazard switch Refer to EXL-45.

NORMAL OPERATING CONDITION

Description

INFOID:0000000008277533

XENON HEADLAMP

- Brightness and the color of light may change slightly immediately after turning the headlamp ON until the xenon bulb becomes stable. This is normal.
- Illumination time lag may occur between right and left. This is normal.

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.

BOTH SIDE HEADLAMPS (HI) ARE NOT TURNED ON

Description

INFOID:0000000008277534

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

Diagnosis Procedure

INFOID:0000000008277535

1.COMBINATION SWITCH INSPECTION

Check the combination switch. Refer to BCS-64, "Symptom Table".

Is the combination switch normal?

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

2.CHECK HEADLAMP (HI) REQUEST SIGNAL INPUT

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

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

Is the item status normal?

YES >> GO TO 3.
NO >> Replace BCM. Refer to BCS-65, "Exploded View".

3.HEADLAMP (HI) CIRCUIT INSPECTION

Check the headlamp (HI) circuit. Refer to EXL-33, "Component Function Check".

Is the headlamp (HI) circuit normal?

YES >> Replace IPDM E/R.
NO >> Repair or replace the malfunctioning part.

BOTH SIDE HEADLAMPS (LO) ARE NOT TURNED ON

Description

INFOID:0000000008277536

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

Diagnosis Procedure

INFOID:0000000008277537

1.CHECK COMBINATION SWITCH

Check the combination switch. Refer to BCS-64, "Symptom Table".

Is the combination switch normal?

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

2.CHECK HEADLAMP (LO) REQUEST SIGNAL INPUT

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

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

Is the item status normal?

YES >> GO TO 3.
NO >> Replace BCM. Refer to BCS-65, "Exploded View".

3.HEADLAMP (LO) CIRCUIT INSPECTION

Check the headlamp (LO) circuit. Refer to EXL-35, "Component Function Check".

Is the headlamp (LO) circuit normal?

YES >> Replace IPDM E/R.
NO >> Repair or replace the malfunctioning part.

PARKING, LICENSE PLATE AND TAIL LAMPS ARE NOT TURNED ON

Description

INFOID:0000000008277538

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

Diagnosis Procedure

INFOID:0000000008277539

1.CHECK FUSE

Check that the following fuse is fusing.

Unit	Location	Fuse No.	Capacity
Parking lamp	IPDM E/R	#46	10 A
• Tail lamp • License plate lamp		#45	10 A

Is the fuse fusing?

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

2.COMBINATION SWITCH INSPECTION

Check the combination switch. Refer to BCS-64, "Symptom Table".

Is the combination switch normal?

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

3.CHECK TAIL LAMP RELAY REQUEST SIGNAL INPUT

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

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

Is the item status normal?

YES >> GO TO 4.
NO >> Replace BCM. Refer to BCS-65, "Exploded View".

4.TAIL LAMP CIRCUIT INSPECTION

Check the tail lamp circuit. Refer to EXL-47, "Component Function Check".

Is the tail lamp circuit normal?

YES >> Replace IPDM E/R.
NO >> Repair or replace the malfunctioning part.

BOTH SIDE FRONT FOG LAMPS ARE NOT TURNED ON

Description

INFOID:0000000008277540

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

Diagnosis Procedure

INFOID:0000000008277541

1.CHECK FUSE

Check that the following fuse is fusing.

Unit	Location	Fuse No.	Capacity
Front fog lamp	IPDM E/R	#65	15 A

Is the fuse fusing?

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

2.COMBINATION SWITCH INSPECTION

Check the combination switch. Refer to BCS-64, "Symptom Table".

Is the combination switch normal?

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

3.CHECK FRONT FOG LAMP REQUEST SIGNAL INPUT

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

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

Is the item status normal?

YES >> GO TO 4.
NO >> Replace BCM. Refer to BCS-65, "Exploded View".

4.FRONT FOG LAMP CIRCUIT INSPECTION

Check the front fog lamp circuit. Refer to EXL-39, "Component Function Check".

Is the front fog lamp circuit normal?

YES >> Replace IPDM E/R.
NO >> Repair or replace the malfunctioning part.

PRECAUTION

PRECAUTIONS

FOR USA AND CANADA

FOR USA AND CANADA : Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:0000000008277542

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.**

FOR USA AND CANADA : Precautions For Xenon Headlamp Service

INFOID:0000000008277543

WARNING:

Comply with the following warnings to prevent any serious accident.

- **Disconnect the battery cable (negative terminal) or the power supply fuse before installing, removing, or touching the xenon headlamp (bulb included). The xenon headlamp contains high-voltage generated parts.**
- **Never work with wet hands.**
- **Check the xenon headlamp ON-OFF status after assembling it to the vehicle. Never turn the xenon headlamp ON in other conditions. Connect the power supply to the vehicle-side connector. (Turning it ON outside the lamp case may cause fire or visual impairments.)**
- **Never touch the bulb glass immediately after turning it OFF. It is extremely hot.**

CAUTION:

Comply with the following cautions to prevent any error and malfunction.

- **Install the xenon bulb securely. (Insufficient bulb socket installation may melt the bulb, the connector, the housing, etc. by high-voltage leakage or corona discharge.)**
- **Never perform HID circuit inspection with a tester.**
- **Never touch the xenon bulb glass with hands. Never put oil and grease on it.**
- **Dispose of the used xenon bulb after packing it in thick vinyl without breaking it.**
- **Never wipe out dirt and contamination with organic solvent (thinner, gasoline, etc.).**

FOR MEXICO

FOR MEXICO : Precaution for Supplemental Restraint System (SRS) "AIR BAG" and

"SEAT BELT PRE-TENSIONER"

INFOID:0000000008277544

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the “SRS AIR BAG” and “SEAT BELT” of this Service Manual.

WARNING:

Always observe the following items for preventing accidental activation.

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

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

WARNING:

Always observe the following items for preventing accidental activation.

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

FOR MEXICO : Precautions For Xenon Headlamp Service

INFOID:0000000008277545

WARNING:

Comply with the following warnings to prevent any serious accident.

- **Disconnect the battery cable (negative terminal) or the power supply fuse before installing, removing, or touching the xenon headlamp (bulb included). The xenon headlamp contains high-voltage generated parts.**
- **Never work with wet hands.**
- **Check the xenon headlamp ON-OFF status after assembling it to the vehicle. Never turn the xenon headlamp ON in other conditions. Connect the power supply to the vehicle-side connector. (Turning it ON outside the lamp case may cause fire or visual impairments.)**
- **Never touch the bulb glass immediately after turning it OFF. It is extremely hot.**

CAUTION:

Comply with the following cautions to prevent any error and malfunction.

- **Install the xenon bulb securely. (Insufficient bulb socket installation may melt the bulb, the connector, the housing, etc. by high-voltage leakage or corona discharge.)**
- **Never perform HID circuit inspection with a tester.**
- **Never touch the xenon bulb glass with hands. Never put oil and grease on it.**
- **Dispose of the used xenon bulb after packing it in thick vinyl without breaking it.**
- **Never wipe out dirt and contamination with organic solvent (thinner, gasoline, etc.).**

PERIODIC MAINTENANCE

HEADLAMP AIMING ADJUSTMENT

Description

INFOID:0000000008277546

PREPARATION BEFORE ADJUSTING

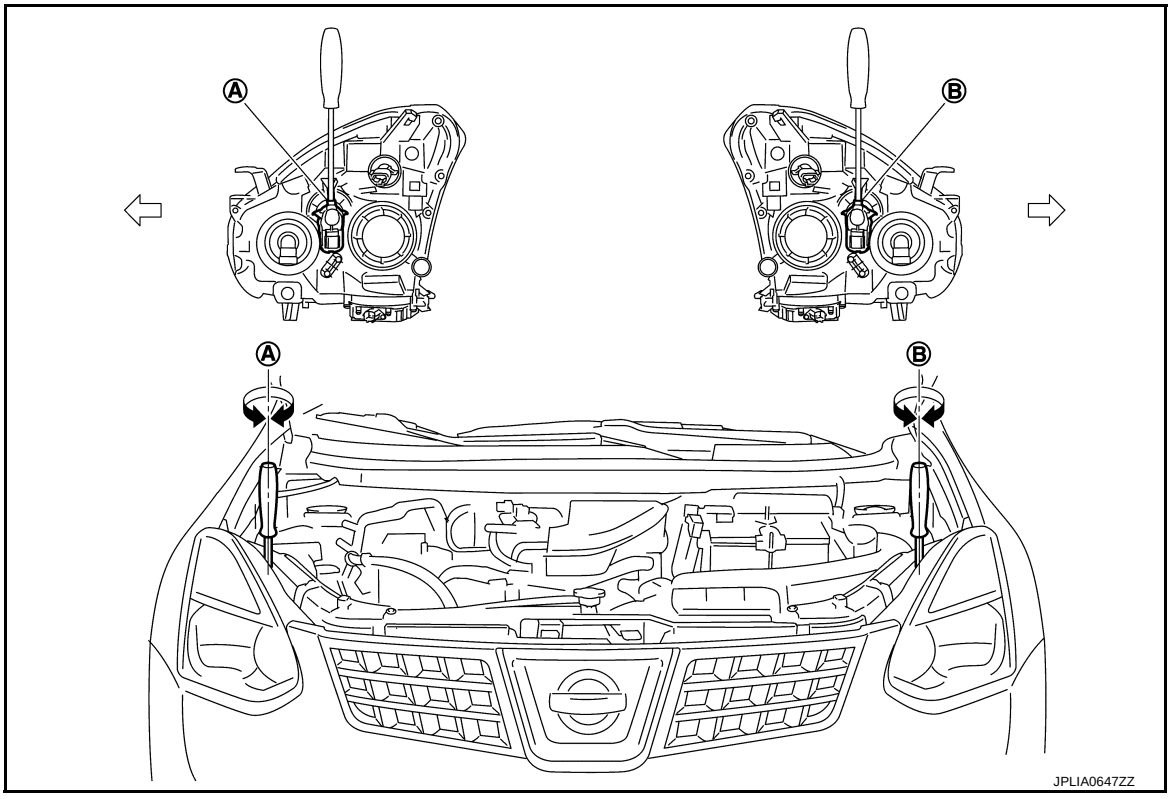
NOTE:

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

Before performing aiming adjustment, check the following.

- Adjust the tire pressure to the specification.
- Fill with fuel, engine coolant and each oil.
- Maintain the unloaded vehicle condition. (Remove luggage from the passenger compartment and the luggage room.)
  NOTE:
  Do not remove the temporary tire, jack and on-vehicle tool.
- Wipe out dirt on the headlamp.
  CAUTION:
  Never use organic solvent (thinner, gasoline etc.)
- Ride alone on the driver seat.
- Headlamp aiming switch sets to “0”.

AIMING ADJUSTMENT SCREW



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

⇦: Vehicle center

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

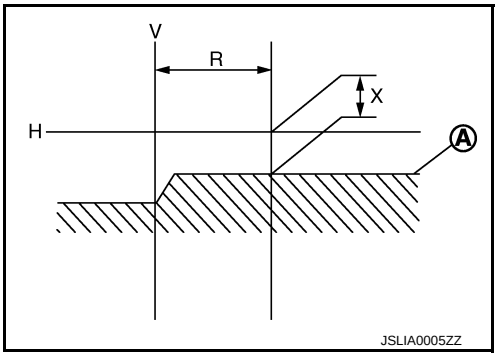
Aiming Adjustment Procedure

INFOID:0000000008277547

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 bulb center and the screen.
3. Start the engine. Turn the headlamp (LO) ON.
   NOTE:
   Shut off the headlamp light with the board to prevent from illuminating the adjustment screen.
   CAUTION:
   Never cover the lens surface with a tape etc. The lens is made of resin.
4. Measure the distance (X) between the horizontal center line of headlamp (H) and the cutoff line (A) within the light axis measurement range (R) from the vertical center line ahead of headlamp (V).

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

Low beam distribution on the screen

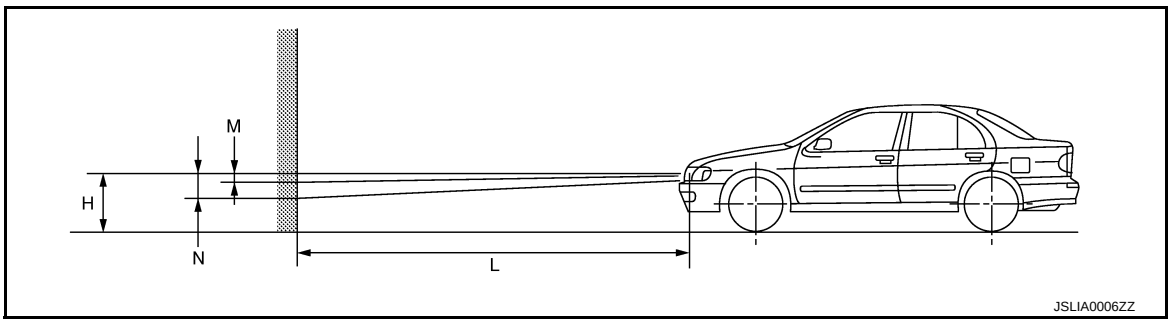


5. Adjust the cutoff line height (X) with the aiming adjustment screw so as to enter in the adjustment range (M–N) according to the horizontal center line of headlamp (H).

unit: mm (in)

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

Side view



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

FRONT FOG LAMP AIMING ADJUSTMENT

Description

INFOID:0000000008277548

PREPARATION BEFORE ADJUSTING

NOTE:

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

Before performing aiming adjustment, check the following.

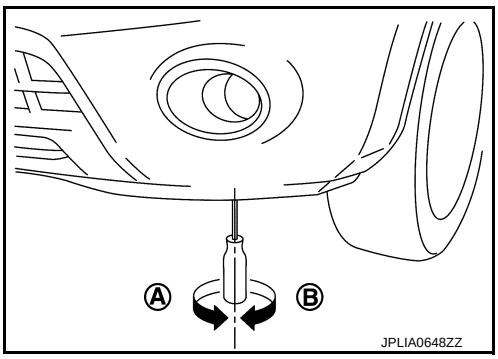
- Adjust the tire pressure to the specification.
- Fill with fuel, engine coolant and each oil.
- Maintain the unloaded vehicle condition. (Remove luggage from the passenger compartment and the luggage room.)
  NOTE:
  Do not remove the temporary tire, jack and on-vehicle tool.
- Wipe out dirt on the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

AIMING ADJUSTMENT SCREW

- Turn the aiming adjusting screw for adjustment.

  A: UP

  B: DOWN



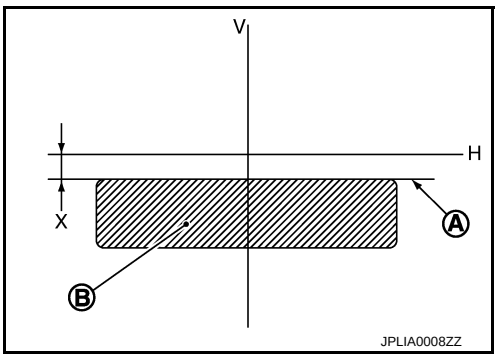
- For the position and direction of the adjusting screw, refer to the figure.
  NOTE:
  A screwdriver or hexagonal wrench [6 mm (0.24 in)] can be used for adjustment.

Aiming Adjustment Procedure

INFOID:0000000008277549

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. Illuminate the front fog lamp.
   CAUTION:
   Never cover the lens surface with a tape etc. The lens is made of resin.
   NOTE:
   Shut off the headlamp light with the board to prevent from illuminating the adjustment screen.
4. Adjust the cutoff line height (A) with the aiming adjustment screw so that the distance (X) between the horizontal center line of front fog lamp (H) and (A) becomes 150 mm (5.91 in).

Front fog lamp light distribution on the screen



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

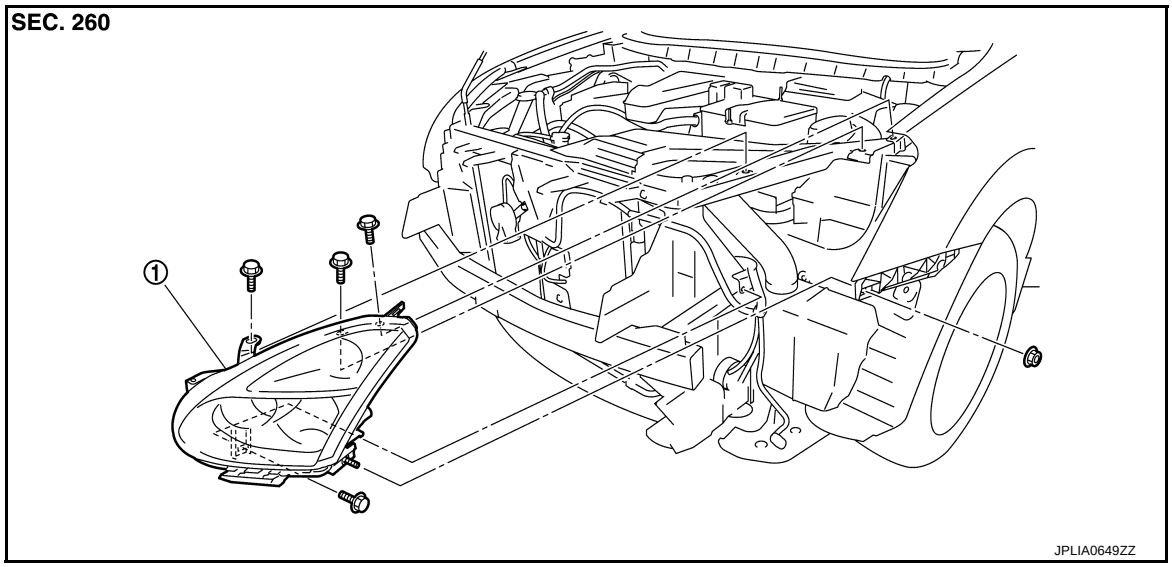
REMOVAL AND INSTALLATION

FRONT COMBINATION LAMP

Exploded View

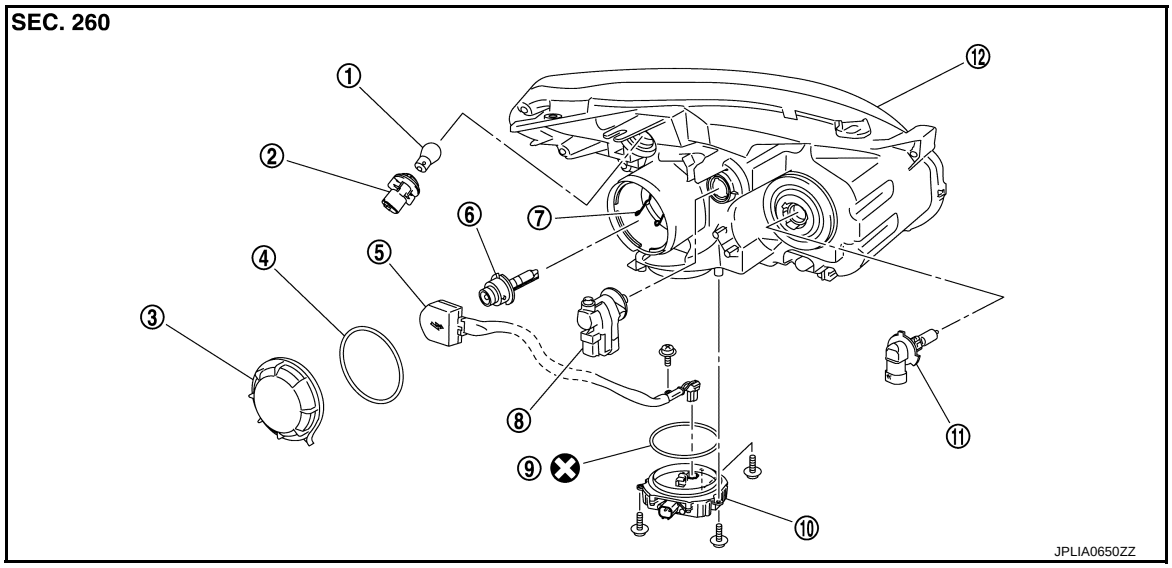
INFOID:0000000008277550

REMOVAL



1. Front combination lamp

DISASSEMBLY



1. Front turn signal/parking (side marker) lamp bulb
2. Front turn signal/parking (side marker) lamp bulb socket
3. Resin cap
4. Seal packing
5. Xenon bulb socket (Starter)
6. Xenon bulb (LO)
7. Retaining spring
8. Headlamp aiming motor
9. Seal packing
10. HID control unit (Inverter)
11. Halogen bulb (HI)
12. Headlamp housing assembly

Refer to GI-4, "Components" for symbols in the figure.

Removal and Installation

INFOID:0000000008277551

REMOVAL

CAUTION:
Disconnect the battery negative terminal or the fuse.

1. Remove front bumper fascia. Refer to EXT-13, "Exploded View".
2. Remove the headlamp mounting bolts and nuts.
3. Remove the mounting stud of the headlamp outside from front fender.
4. Pull out the headlamp assembly forward the vehicle.
5. Disconnect the connector before removing the headlamp assembly.

INSTALLATION

Install in the reverse order of removal.

NOTE:
After installation, perform aiming adjustment. Refer to EXL-103, "Description".

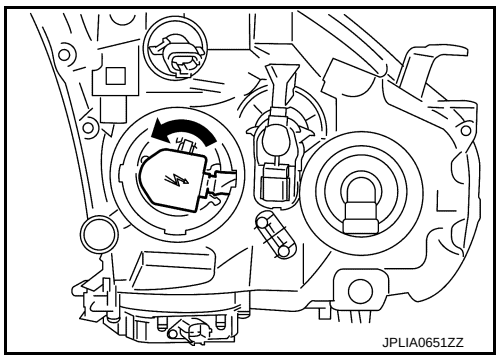
Replacement

INFOID:0000000008277552

CAUTION:
- **Disconnect the battery negative terminal or the fuse.**
- **After installing the bulb, install the resin cap and the bulb socket securely for watertightness.**

HEADLAMP BULB (LO)

1. Remove the air duct*. Keep a service area.
   *When replace a left.
2. Rotate the resin cap counterclockwise and unlock it.
3. Rotate the bulb socket counterclockwise and unlock it.
4. Unlock the retaining spring. And remove the bulb from the headlamp housing assembly.
   CAUTION:
   Never break the xenon bulb ceramic tube when replacing the bulb.



HEADLAMP BULB (HI)

1. Rotate the bulb socket counterclockwise and unlock it.
2. Disconnect the connector. And remove the bulb.

FRONT TURN SIGNAL/PARKING (SIDE MARKER) LAMP BULB

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

Disassembly and Assembly

INFOID:0000000008277553

DISASSEMBLY

1. Rotate the resin cap counterclockwise and unlock it.
2. Rotate the xenon bulb socket counterclockwise and unlock it.
3. Unlock the retaining spring. And remove the xenon bulb (LO).
4. Remove the HID control unit installation screw.
5. Remove the screw. Disconnect the connector from HID control unit.
6. Remove the xenon bulb socket from headlamp housing assembly.
7. Rotate the halogen bulb (HI) counterclockwise and unlock it.

8. Remove the halogen bulb from headlamp housing assembly.
9. Rotate the front turn signal/parking (side marker) lamp bulb socket counterclockwise and unlock it.
10. Remove the bulb from the front turn signal/parking (side marker) lamp bulb socket.

ASSEMBLY

Assemble in the reverse order of disassembly.

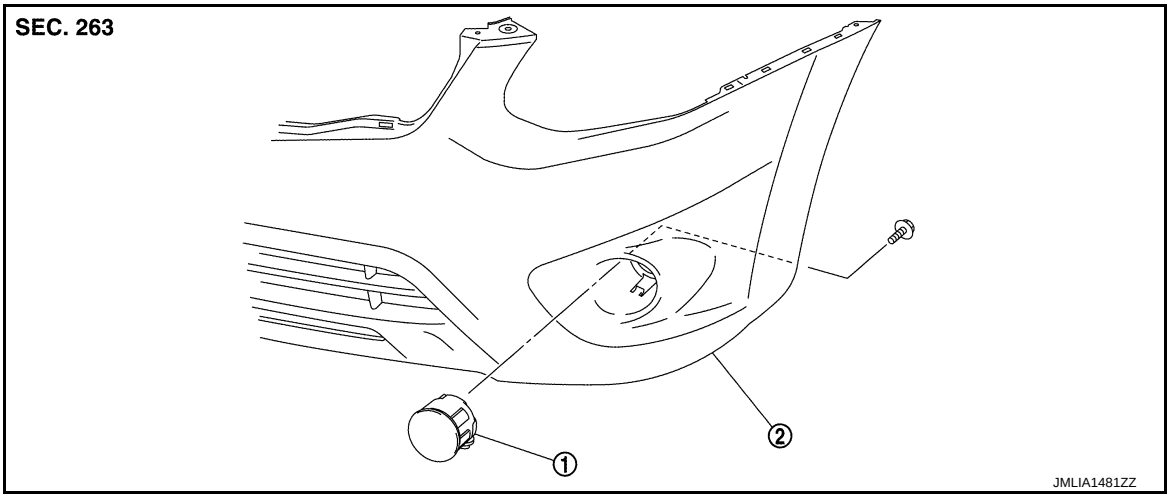
CAUTION:

- **Install HID control unit securely.**
- **After installing the bulb, install the resin cap and the bulb socket securely for watertightness.**

FRONT FOG LAMP

Exploded View

INFOID:0000000008277554



1. Front fog lamp
2. Bumper fascia assembly

Removal and Installation

INFOID:0000000008277555

CAUTION:
Disconnect the battery negative terminal or the fuse.

REMOVAL

1. Remove front mudguard and front fender protector. Keep a service area. Refer to EXT-22, "Removal and Installation".
2. Remove front under cover.
3. Remove front fog lamp connector.
4. Remove front fog lamp fixing screw, and then remove front fog lamp.

INSTALLATION

Note the following item, and then installation is the reverse order of removal.
NOTE:
After installation, perform aiming adjustment. Refer to EXL-106, "Description".

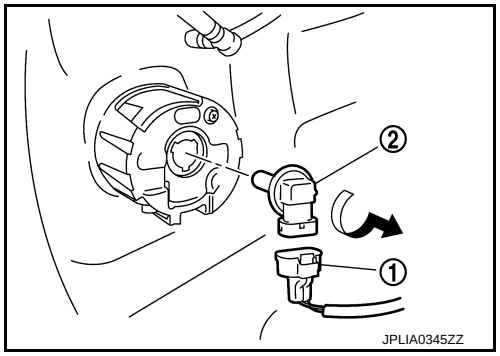
Replacement

INFOID:0000000008277556

CAUTION:
Disconnect the battery negative terminal or the fuse.

FRONT FOG LAMP BULB

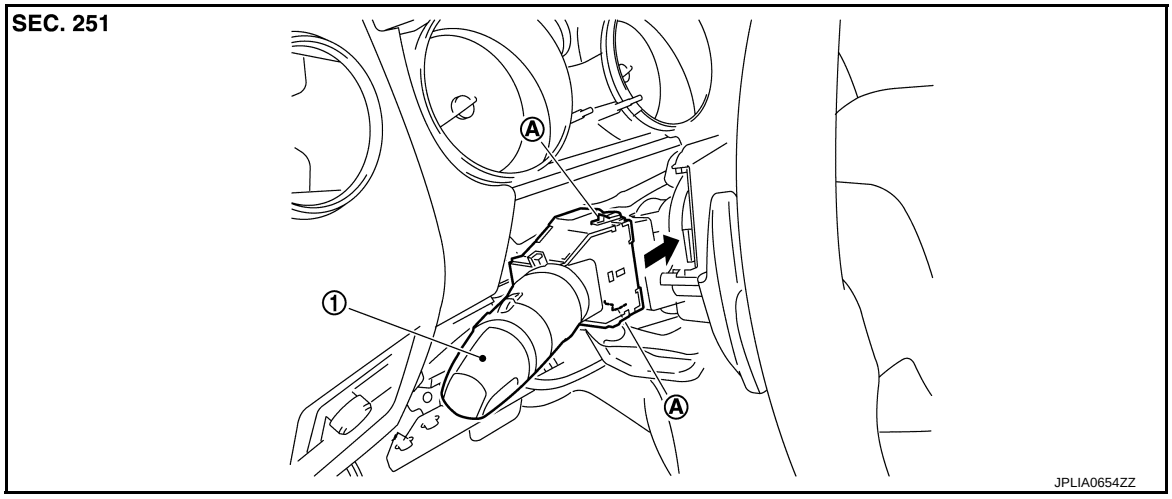
1. Remove front mudguard and front fender protector. Keep the service area. Refer to EXT-22, "Exploded View".
2. Remove front fog lamp bulb connector (1).
3. Rotate bulb (2) counterclockwise and unlock it.



LIGHTING & TURN SIGNAL SWITCH

Exploded View

INFOID:0000000008277557



1. Lighting & turn signal switch
A. Pawl

Removal and Installation

INFOID:0000000008277558

REMOVAL

1. Remove steering column cover. Refer to IP-13, "Exploded View".
2. While pressing pawls, pull the lighting & turn signal switch. And disconnect from the switch base.

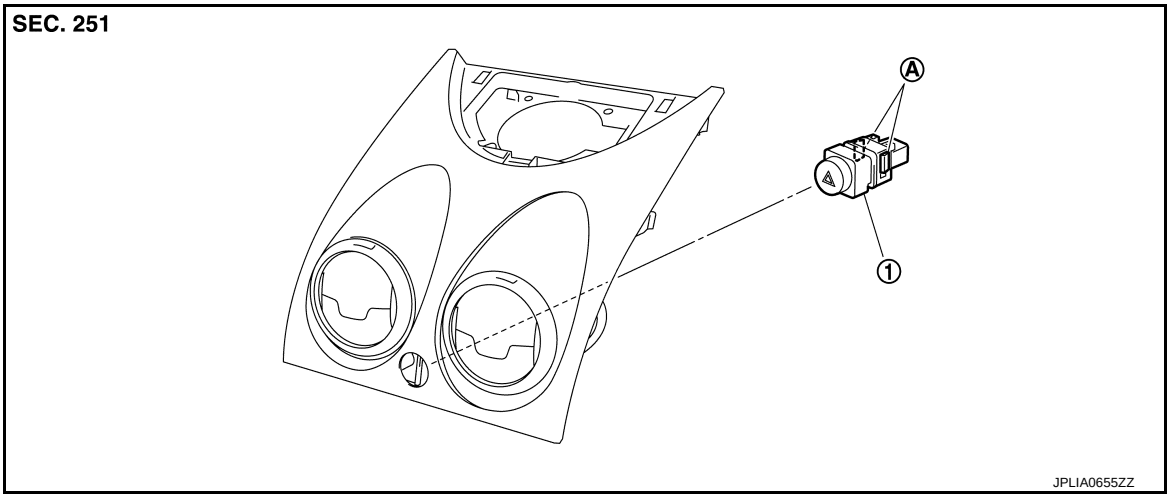
INSTALLATION

Installation is the reverse order of removal.

HAZARD SWITCH

Exploded View

INFOID:0000000008277559



1. Hazard switch
A. Pawls

Removal and Installation

INFOID:0000000008277560

REMOVAL

1. Remove the cluster lid C. Refer to IP-13, "Exploded View".
2. Push the pawl. And remove the hazard switch.

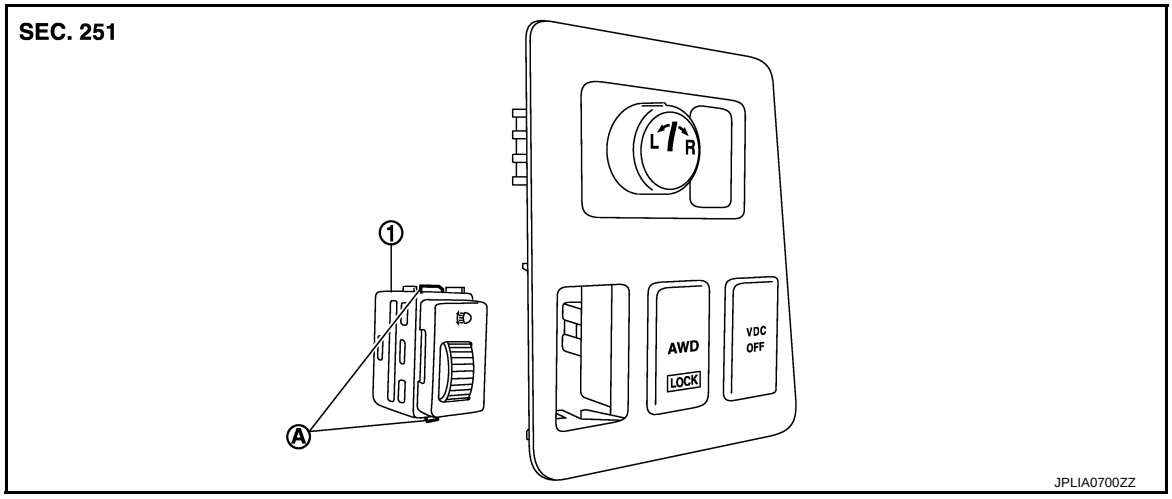
INSTALLATION

Install in the reverse order of removal.

HEADLAMP AIMING SWITCH

Exploded View

INFOID:0000000008277561



1. Headlamp aiming switch
A. Pawls

Removal and Installation

INFOID:0000000008277562

REMOVAL

1. Remove the switch panel. Refer to IP-13, "Exploded View".
2. Widen the pawl. And remove the headlamp aiming switch.

INSTALLATION

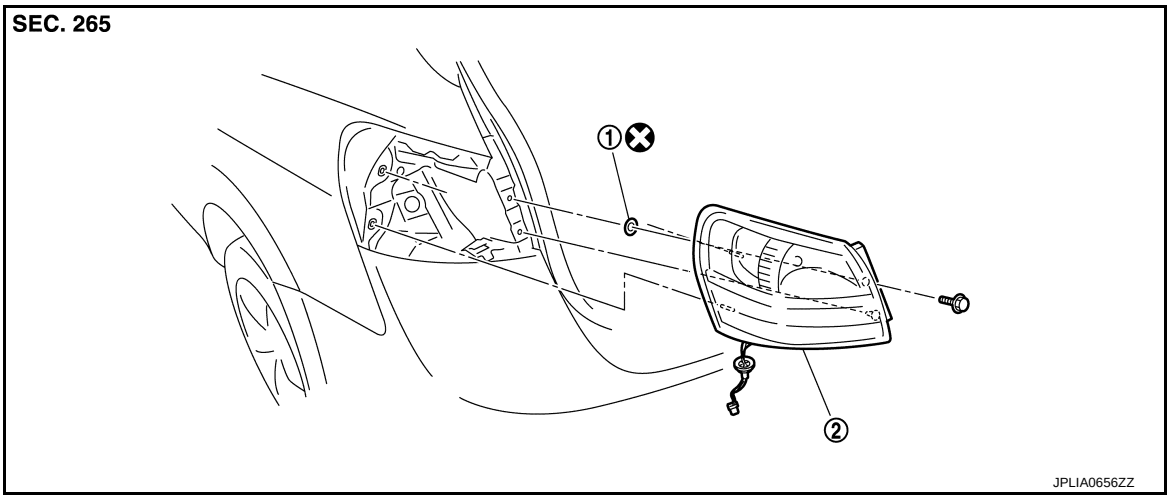
Install in the reverse order of removal.

REAR COMBINATION LAMP

Exploded View

INFOID:0000000008277563

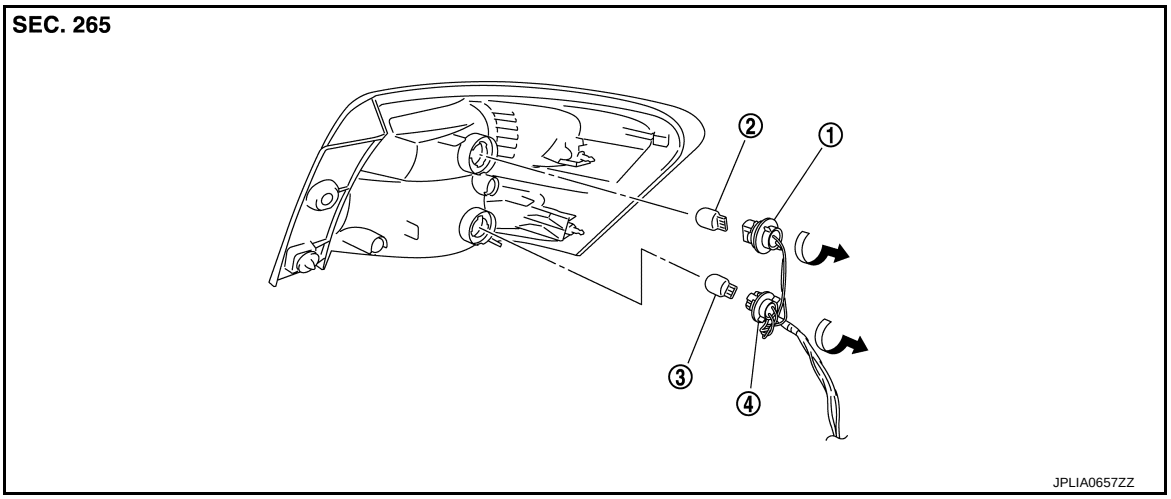
REMOVAL



1. Seal packing
2. Rear combination lamp

Refer to GI-4, "Components" for symbols in the figure.

DISASSEMBLY



1. Rear turn signal lamp bulb socket
2. Rear turn signal lamp bulb
3. Stop/tail (side marker lamp) bulb
4. Stop/tail (side marker lamp) bulb socket

Removal and Installation

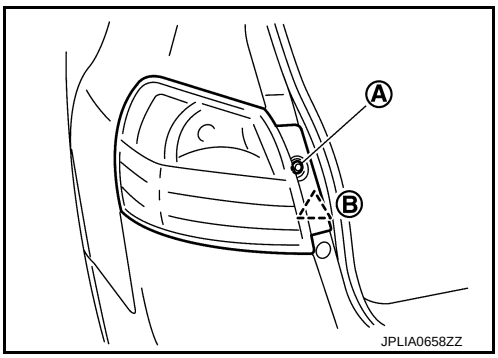
INFOID:0000000008277564

CAUTION:
Disconnect the battery negative terminal or the fuse.

REMOVAL

1. Remove the luggage side lower finisher. Refer to INT-31, "Exploded View".
2. Disconnect rear combination lamp connector.

3. Remove rear combination lamp mounting bolts (A).
4. Turn up the back door weather strip, insert an appropriate tool between rear combination lamp and vehicles and remove a clip (B).
5. Pull the rear combination lamp toward rear of the vehicle. Remove the rear combination lamp.



INSTALLATION

Install in the reverse order of removal.

Replacement

INFOID:0000000008277565

CAUTION:

Disconnect the battery negative terminal or the fuse.

STOP/TAIL (SIDE MARKER) LAMP BULB

1. Remove rear combination lamp. Refer to EXL-115, "Exploded View".
2. Rotate the stop/tail (side marker lamp) bulb socket counterclockwise, and unlock it.
3. Remove bulb from the bulb socket.

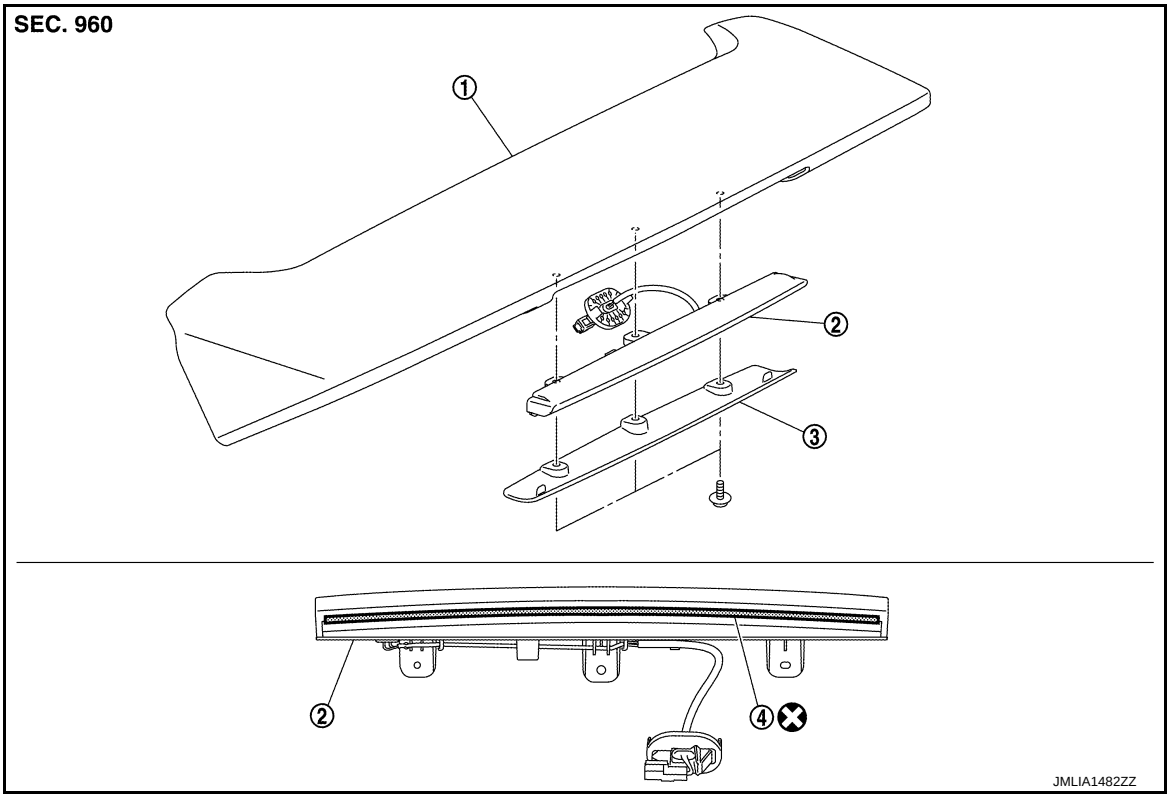
REAR TURN SIGNAL LAMP BULB

1. Remove rear combination lamp. Refer to EXL-115, "Exploded View".
2. Rotate the rear turn signal lamp bulb socket counterclockwise, and unlock it.
3. Remove bulb from the bulb socket.

HIGH-MOUNTED STOP LAMP

Exploded View

INFOID:0000000008277566



1. Rear spoiler
2. High-mounted stop lamp
3. High-mounted stop lamp cover
4. Double-sided tape [t: 1.2 mm (0.047 in)]

Refer to GI-4, "Components" for symbols in the figure.

Removal and Installation

INFOID:0000000008277567

CAUTION:
Disconnect battery negative terminal or remove the fuse.

REMOVAL

1. Remove rear spoiler. Refer to EXT-32, "Removal and Installation".
2. Remove high-mounted stop lamp grommet from body panel.
3. Disconnect high-mounted stop lamp connector.
4. Remove high-mounted stop lamp.

INSTALLATION

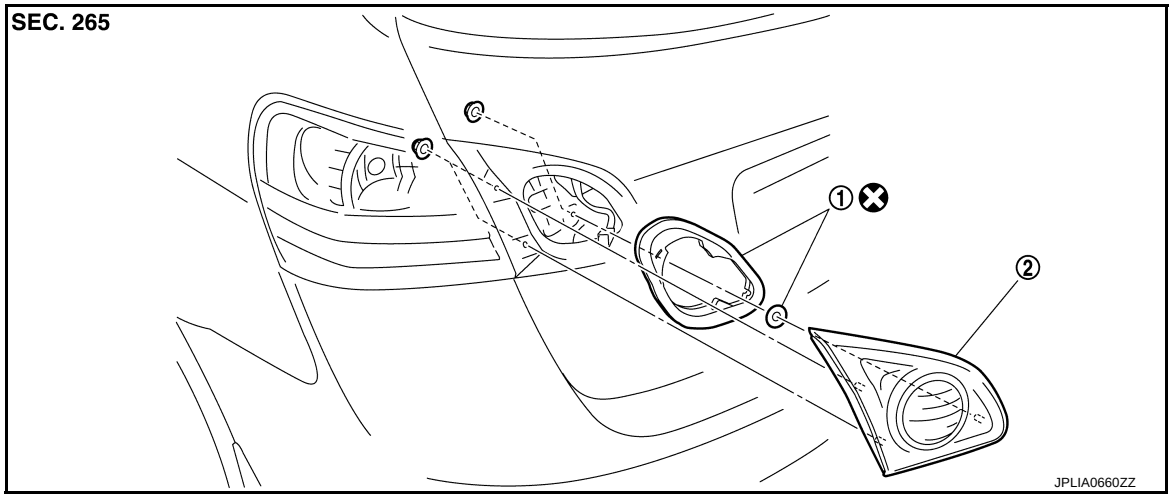
Note the following item, and then installation is the reverse order of removal.

CAUTION:
Seal packing cannot be reused.

BACK-UP LAMP

Exploded View

INFOID:0000000008277568



1. Seal packing
2. Back-up lamp

Refer to GI-4, "Components" for symbols in the figure.

Removal and Installation

INFOID:0000000008277569

CAUTION:
Disconnect the battery negative terminal or the fuse.

REMOVAL

1. Remove the back door mask. Refer to INT-34, "Exploded View".
2. Remove back-up lamp mounting nuts.
3. Disconnect back-up lamp connector. And remove the back-up lamp.

INSTALLATION

Install in the reverse order of removal.

CAUTION:
Seal packing cannot be reused.

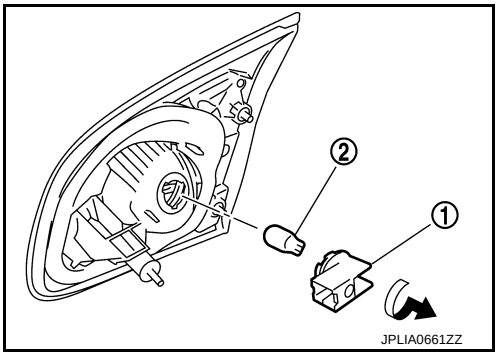
Replacement

INFOID:0000000008277570

CAUTION:
Disconnect the battery negative terminal or the fuse.

BACK-UP LAMP BULB

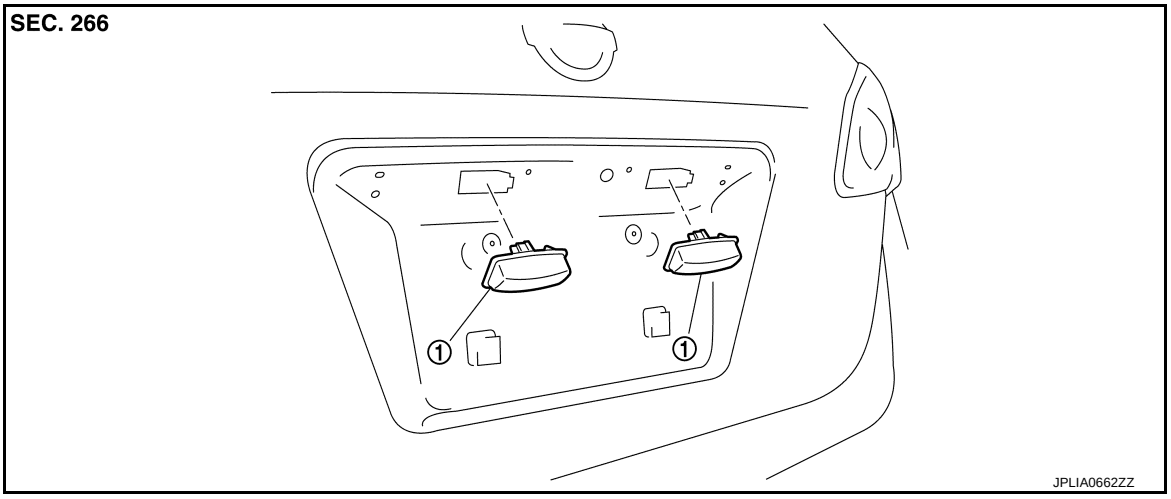
1. Remove the back-up lamp. Refer to EXL-118, "Exploded View".
2. Disconnect the connector, rotate the bulb socket (1) counter-clockwise and unlock it.
3. Remove the bulb (2) from the socket.



LICENSE PLATE LAMP

Exploded View

INFOID:0000000008277571



1. License plate lamp

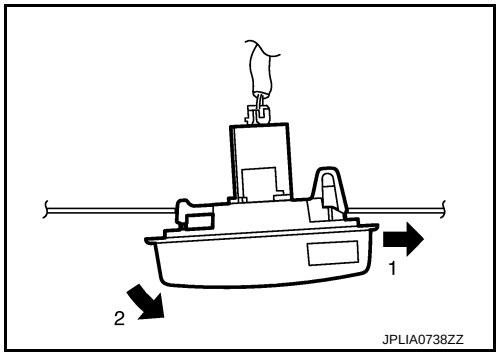
Removal and Installation

INFOID:0000000008277572

CAUTION:
Disconnect the battery negative terminal or the fuse.

REMOVAL

1. Remove back door trim finisher lower. Refer to INT-34, "Exploded View".
2. Remove back door finisher.Refer to INT-34, "Exploded View".
3. Remove the license plate lamp in numerical order shown in the figure.
4. Disconnect the license plate lamp connector.



INSTALLATION

1. Connect the license plate lamp connector.
2. Fix the pawl-side behind the license plate lamp housing first, then push the resin clip-side.

Replacement

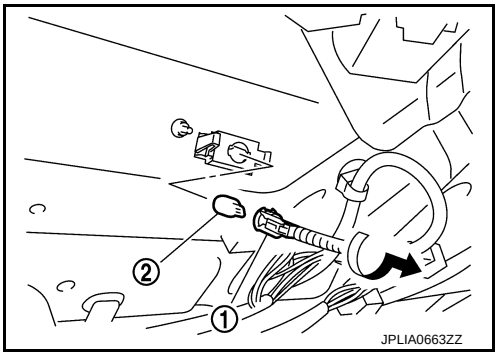
INFOID:0000000008277573

CAUTION:
Disconnect the battery negative terminal or the fuse.

LICENSE PLATE LAMP BULB

1. Remove back door trim finisher lower. Refer to INT-34, "Exploded View".

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



SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Bulb Specifications

INFOID:0000000008277574

Item		Type	Wattage (W)
Front combination lamp	Headlamp (HI)	HB3	60
	Headlamp (LO)	D2S (XENON)	35
	Front turn signal/parking (side marker) lamp	S25 (Amber)	27/8
Front fog lamp		H8	35
Rear combination lamp	Stop/tail (side marker) lamp	W21/5W	21/5
	Rear turn signal lamp	W21W	21
	Back-up lamp	W16W	16
License plate lamp		W5W	5
High-mounted stop lamp		LED	—

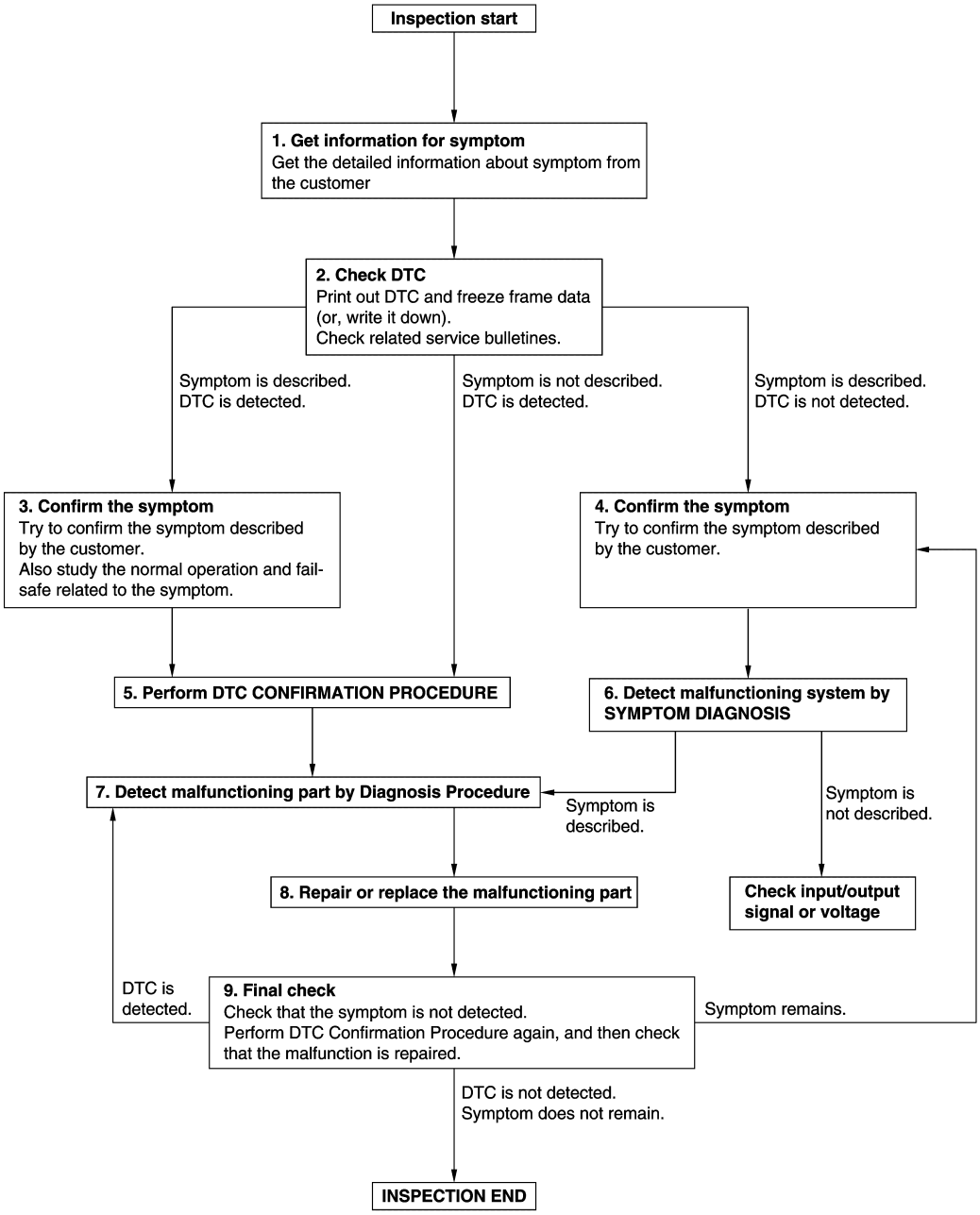
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:0000000008277575

OVERALL SEQUENCE



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DETAILED FLOW

1.GET INFORMATION FOR SYMPTOM

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

>> GO TO 2.

2.CHECK DTC

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

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

3. Check related service bulletins for information.

Are any symptoms described and any DTC detected?

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

3.CONFIRM THE SYMPTOM

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

>> GO TO 5.

4.CONFIRM THE SYMPTOM

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

>> GO TO 6.

5.PERFORM DTC CONFIRMATION PROCEDURE

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

NOTE:

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

Is DTC detected?

YES >> GO TO 7.
NO >> Check according to GI-46, "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-46, "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?

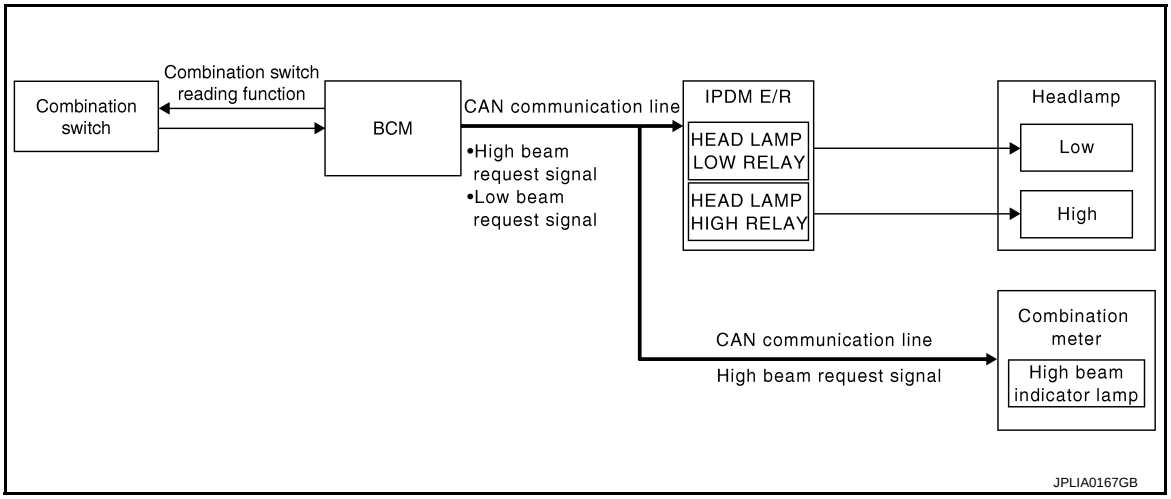
YES-1 >> DTC is detected: GO TO 7.
YES-2 >> Symptom remains: GO TO 4.
NO >> Before returning the vehicle to the customer, always erase DTC.

SYSTEM DESCRIPTION

HEADLAMP SYSTEM

System Diagram

INFOID:0000000008277576



System Description

INFOID:0000000008277577

OUTLINE

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

HEADLAMP (LO) OPERATION

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

Headlamp (LO) ON condition
- Lighting switch 2ND
- Lighting switch AUTO, and the auto light function ON judgment

- IPDM E/R turns the integrated headlamp low relay ON, and turns the headlamp ON according to the low beam request signal.

HEADLAMP (HI) OPERATION

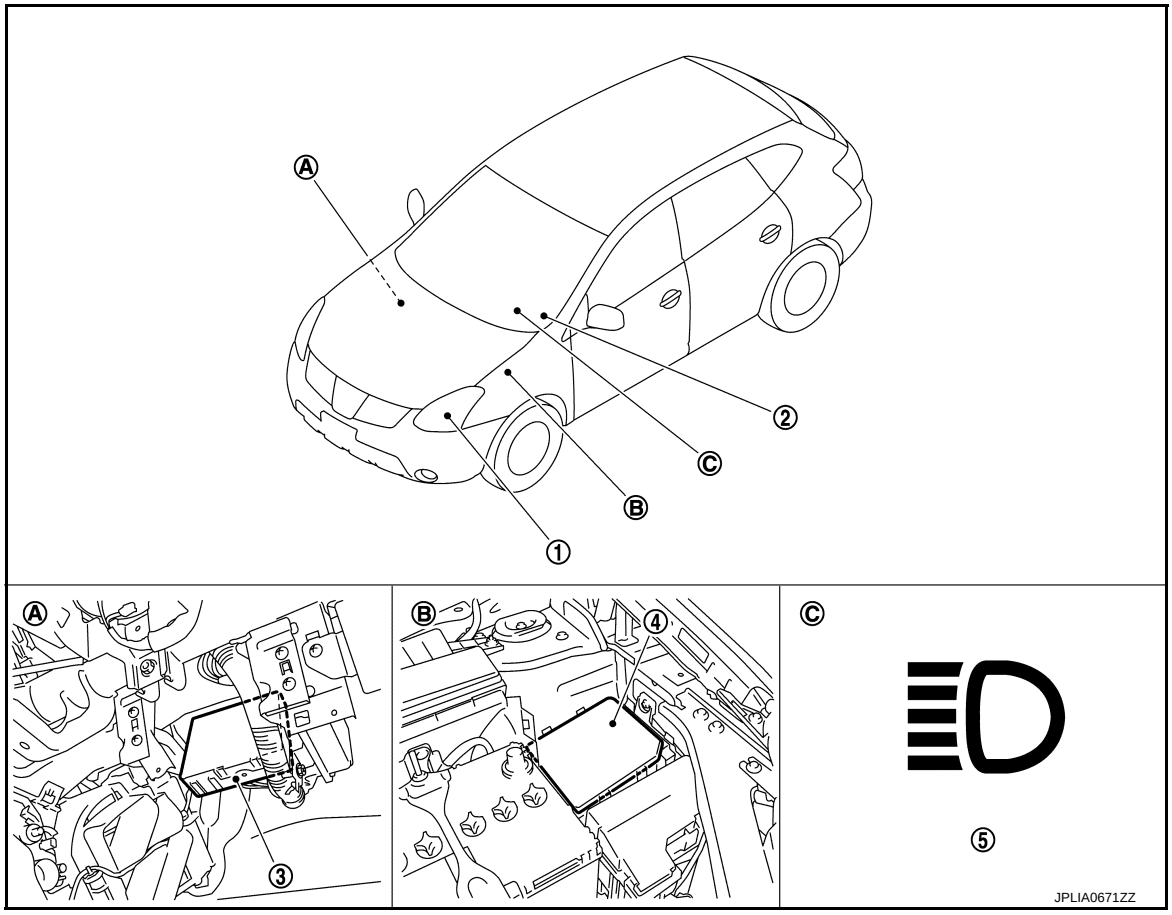
- BCM transmits the high beam request signal to IPDM E/R and the combination meter with CAN communication according to the headlamp (HI) ON condition.

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

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

Component Parts Location

INFOID:0000000008277578



1. Headlamp
2. Combination switch
3. BCM
4. IPDM E/R
5. High beam indicator lamp
A. Over the glove box
B. Engine room (LH)
C. On the combination meter

Component Description

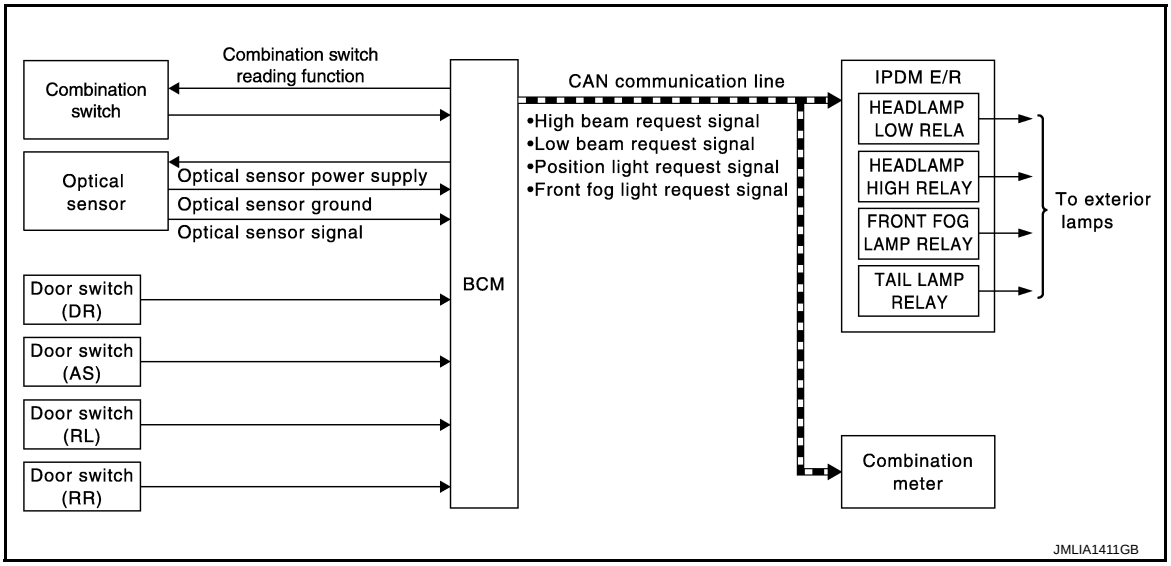
INFOID:0000000008277579

Part	Description
BCM	• Detects each switch condition by the combination switch reading function. • Judges that the headlamp is turned ON according to the vehicle condition. - Requests the headlamp relay (HI/LO) ON to IPDM E/R (with CAN communication). - Requests the high beam indicator lamp ON to the combination meter (with CAN communication).
IPDM E/R	Controls the integrated relay, and supplies voltage to the load according to the request from BCM (with CAN communication).
Combination switch (Lighting & turn signal switch)	Refer to BCS-9, "System Diagram".
Combination meter (High beam indicator lamp)	Turns the high beam indicator lamp ON according to the request from BCM (with CAN communication).

AUTO LIGHT SYSTEM

System Diagram

INFOID:0000000008277580



System Description

INFOID:0000000008277581

OUTLINE

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

Control by BCM
- Combination switch reading function
- Headlamp control function
- Auto light function
- Delay timer function

Control by IPDM E/R
- Relay control function

- Auto light system has the auto light function and the delay timer function.
- Auto light function turns the exterior lamps* and each illumination ON/OFF automatically according to the outside brightness.
- When auto light system turns the exterior lamps ON with the ignition switch OFF, delay timer function turns the exterior lamps OFF depending on the vehicle condition with the auto light function after a certain period of time.

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

AUTO LIGHT FUNCTION

- BCM detects the combination switch condition with the combination switch reading function.
- BCM supplies voltage to optical sensor when the ignition switch is turned ON or ACC.
- Optical sensor converts outside brightness (lux) to voltage and transmits the optical sensor signal to BCM.
- BCM judges outside brightness from the optical sensor signal and judges ON/OFF condition of the exterior lamp and each illumination according to the outside brightness.
- BCM transmits each request signal to IPDM E/R with CAN communication according to ON/OFF condition by the auto light function.

NOTE:
ON/OFF timing differs based on the sensitivity from the setting. The setting can be set by CONSULT. Refer to EXL-141, "HEADLAMP : CONSULT Function (BCM - HEAD LAMP)".

DELAY TIMER FUNCTION

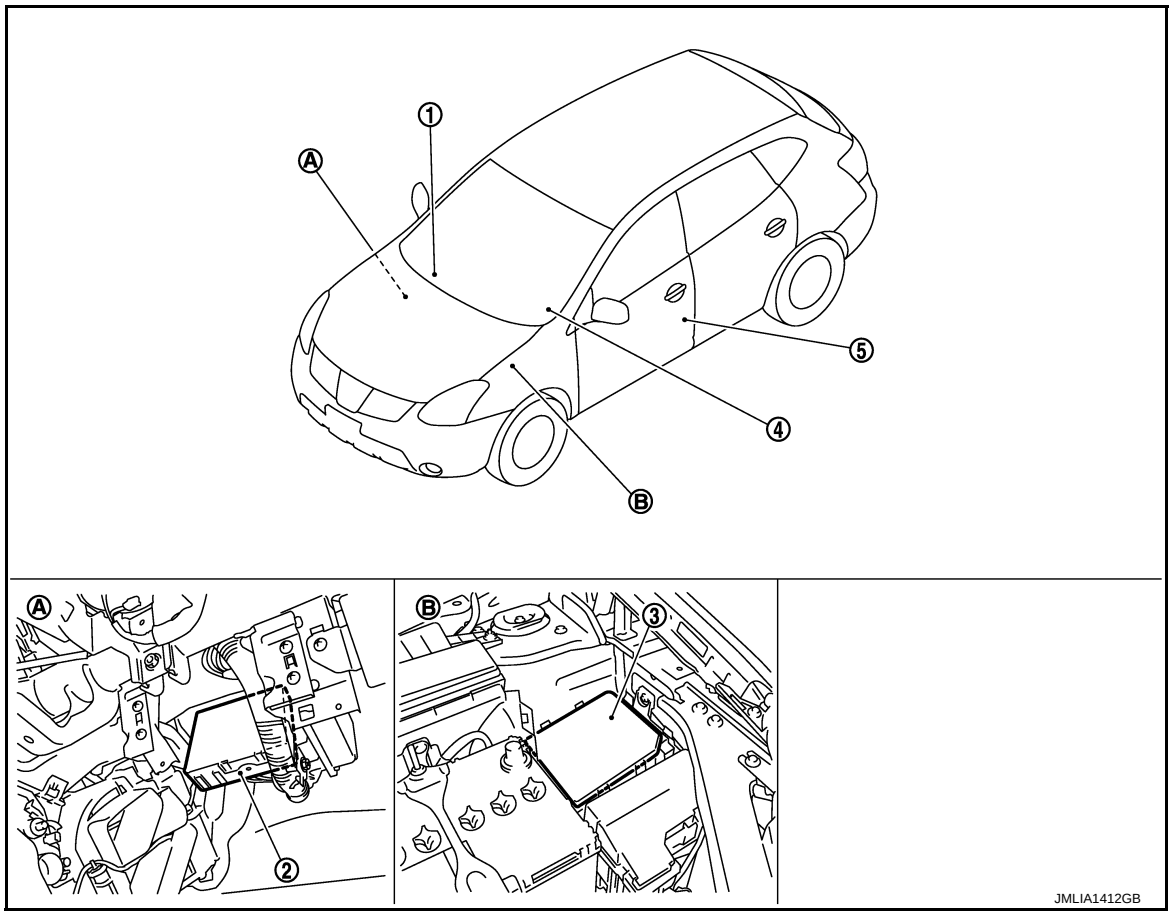
BCM turns the exterior lamp OFF depending on the vehicle condition with the auto light function when the ignition switch is turned OFF.
- Turns the exterior lamp OFF 5 minutes after detecting that any door opens (Door switch ON).
- Turns the exterior lamp OFF a certain period of time* after closing all doors (Door switch ON→OFF).

• Turns the exterior lamp OFF with the ignition switch ACC or the light switch OFF.
*: The preset time is 45 seconds. The timer operating time can be set by CONSULT. Refer to EXL-141, "HEADLAMP : CONSULT Function (BCM - HEAD LAMP)".

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

Component Parts Location

INFOID:0000000008277582



1. Optical sensor
2. BCM
3. IPDM E/R
4. Combination switch
5. Door switch
A. Over the glove box
B. Engine room (LH)

Component Description

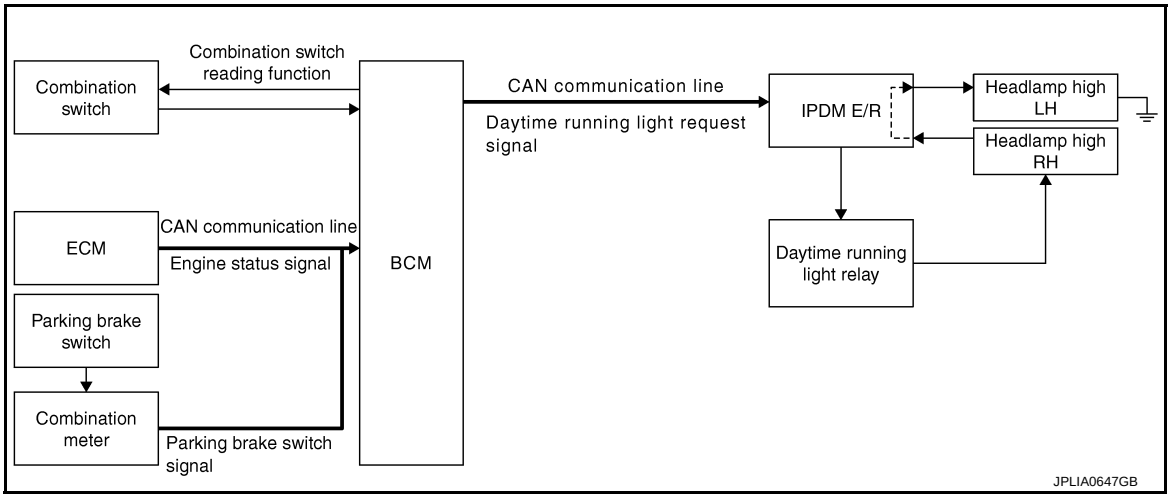
INFOID:0000000008277583

Part	Description
BCM	• Detects each switch condition by the combination switch reading function. • Judges the outside brightness from the optical sensor signal. • Judges the OFF timing according to the vehicle condition. • Judges the ON/OFF status of the exterior lamp and each illumination according to the outside brightness and the vehicle condition. Requests ON/OFF of each relay to IPDM E/R (with CAN communication).
IPDM E/R	Controls the integrated relay, and supplies voltage to the load according to the request from BCM (with CAN communication).
Combination switch (Lighting & turn signal switch)	Refer to BCS-9, "System Diagram".
Optical sensor	Refer to EXL-171, "Description".

DAYTIME RUNNING LIGHT SYSTEM

System Diagram

INFOID:0000000008277584



System Description

INFOID:0000000008277585

OUTLINE

- Turns the headlamp high ON (high beam at approximately half illumination) as the daytime running light.
- 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

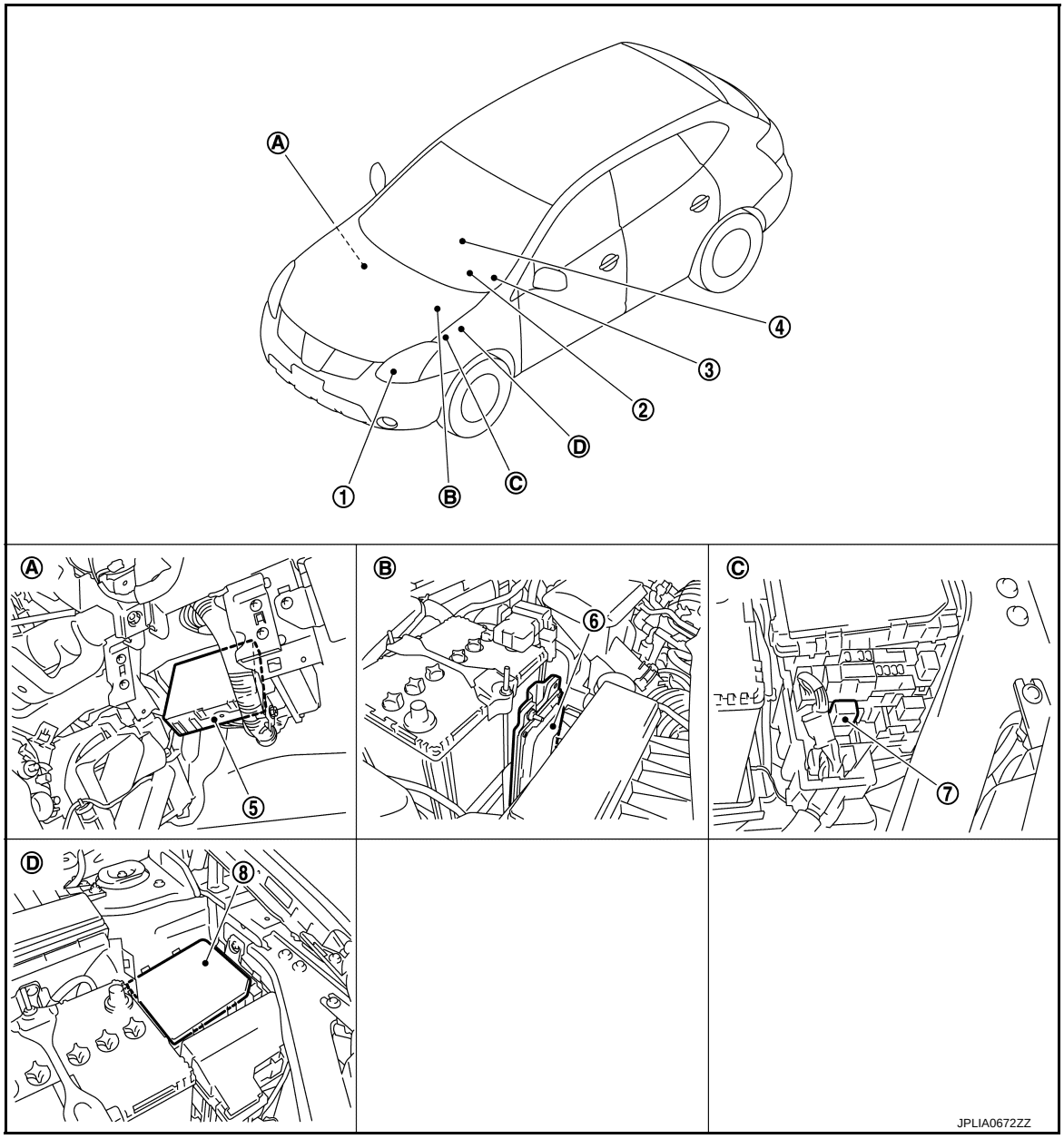
- BCM detects the combination switch condition by the combination switch reading function.
- BCM detects the engine condition by the engine status signal received from ECM with CAN communication.
- BCM detects the parking brake condition by the parking brake switch signal received from combination meter with CAN communication.
- BCM transmits the daytime running light request signal to IPDM E/R with CAN communication according to the daytime running light ON condition.

Daytime running light ON condition
- Engine running
- Lighting switch OFF or 1ST
- Parking brake OFF
- Ignition switch ON

- IPDM E/R controls the daytime running light relay (ground-side) to turn ON according to the daytime running light request signal.
- Power is supplied from the daytime running light relay through headlamp high (RH) and IPDM E/R to headlamp high (LH). And high beam headlamps are illuminated (approximately half illumination) as the daytime running light.

Component Parts Location

INFOID:0000000008277586



1. Headlamp (HI)
2. Combination meter
3. Combination switch
4. Parking brake
5. BCM
6. ECM
7. Daytime running light relay
8. IPDM E/R
A. Over the glove box
B. Engine room (LH)
C. Fuse and fusible link box
D. Engine room (LH)

Component Description

INFOID:0000000008277587

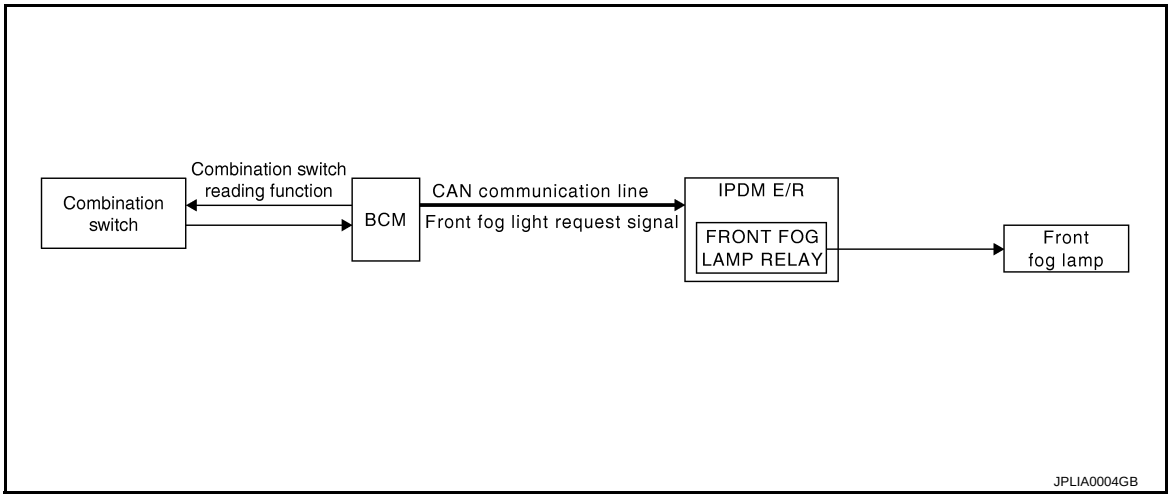
Part	Description
BCM	• Detects each switch condition with the combination switch reading function. • Judges each lamps ON/OFF condition according to the vehicle condition. Requests the each relay ON to IPDM E/R (with CAN communication).
IPDM E/R	Controls the relay and supplies voltage to the load according to the request from BCM (with CAN communication).

Part	Description
Combination switch (Lighting & turn signal switch)	Refer to BCS-9, "System Diagram".
ECM	Transmits the engine status signal to BCM with CAN communication.
Combination meter	Transmits the parking brake switch signal to BCM with CAN communication.

FRONT FOG LAMP SYSTEM

System Diagram

INFOID:0000000008277588



System Description

INFOID:0000000008277589

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 with CAN communication according to the front fog lamp ON condition.

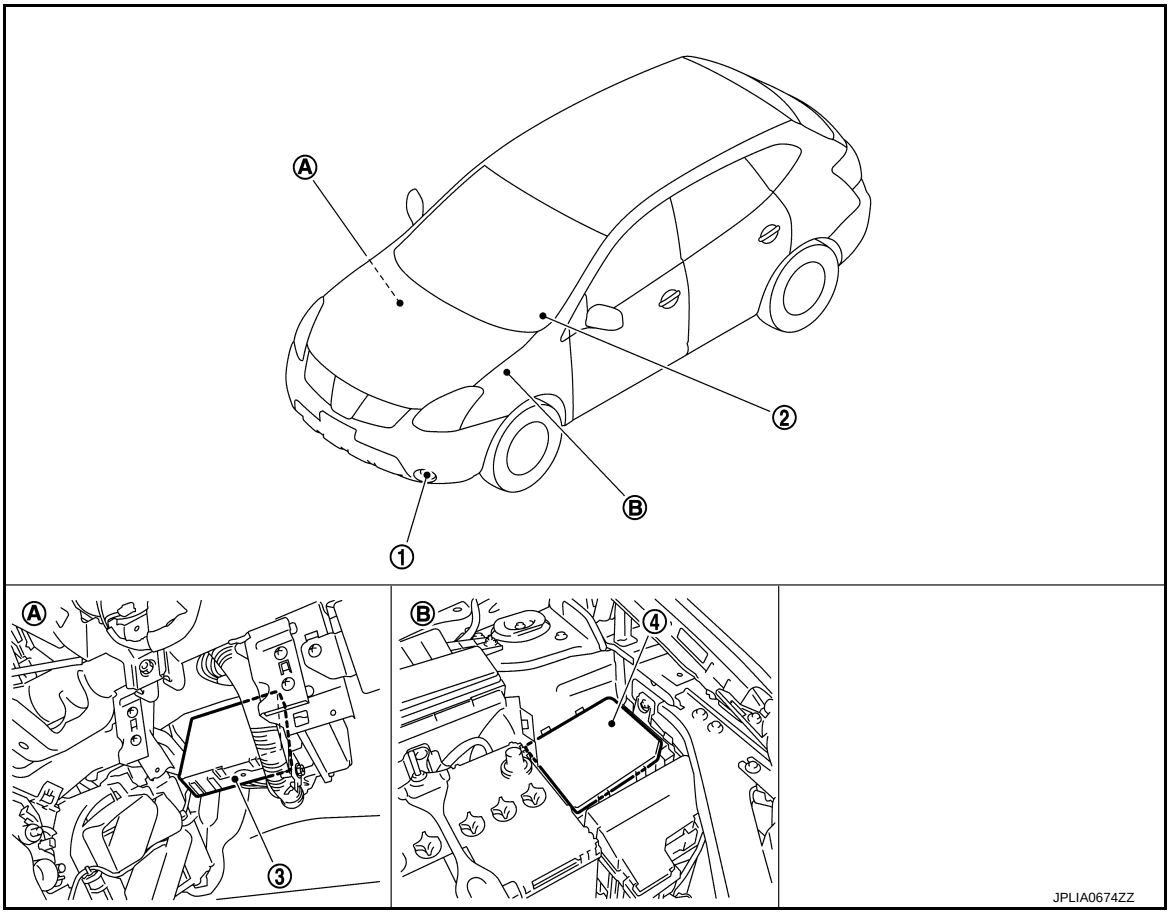
Front fog lamp ON condition

- Front fog lamp switch ON with headlamp ON (except for the high beam ON)

- 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.

Component Parts Location

INFOID:0000000008277590



1. Front fog lamp
2. Combination switch
3. BCM
4. IPDM E/R
A. Over the glove box
B. Engine room (LH)

Component Description

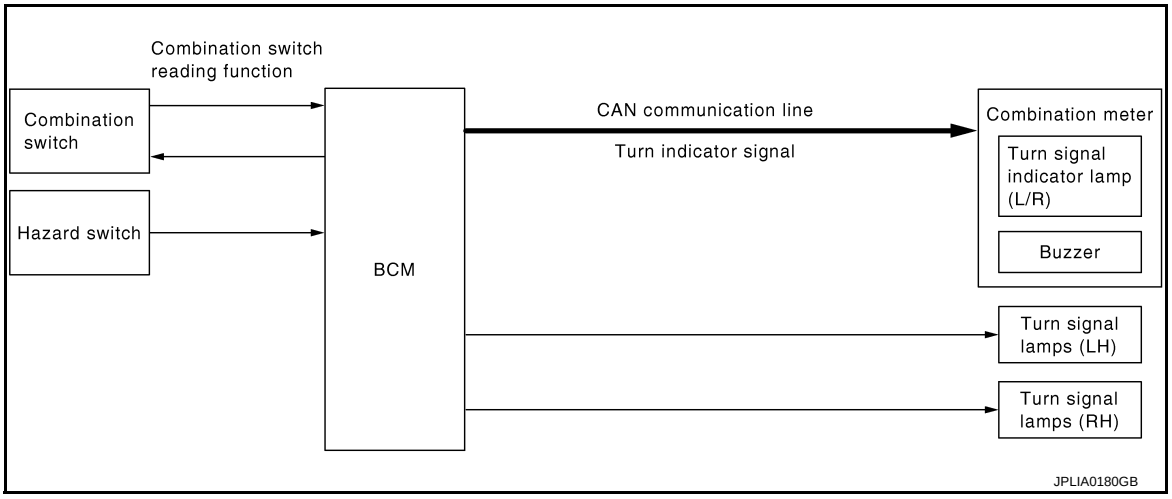
INFOID:0000000008277591

Part	Description
BCM	• Detects each switch condition by the combination switch reading function. • Judges the front fog lamp ON/OFF status according to the vehicle condition. - Requests the front fog lamp relay ON to IPDM E/R (with CAN communication).
IPDM E/R	Controls the integrated relay and supplies voltage to the load according to the request from BCM (with CAN communication).
Combination switch (Lighting & turn signal switch)	Refer to BCS-9, "System Diagram".

TURN SIGNAL AND HAZARD WARNING LAMP SYSTEM

System Diagram

INFOID:0000000008277592



System Description

INFOID:0000000008277593

OUTLINE

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

TURN SIGNAL LAMP OPERATION

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

HAZARD WARNING LAMP OPERATION

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

TURN SIGNAL INDICATOR LAMP AND TURN SIGNAL SOUND OPERATION

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

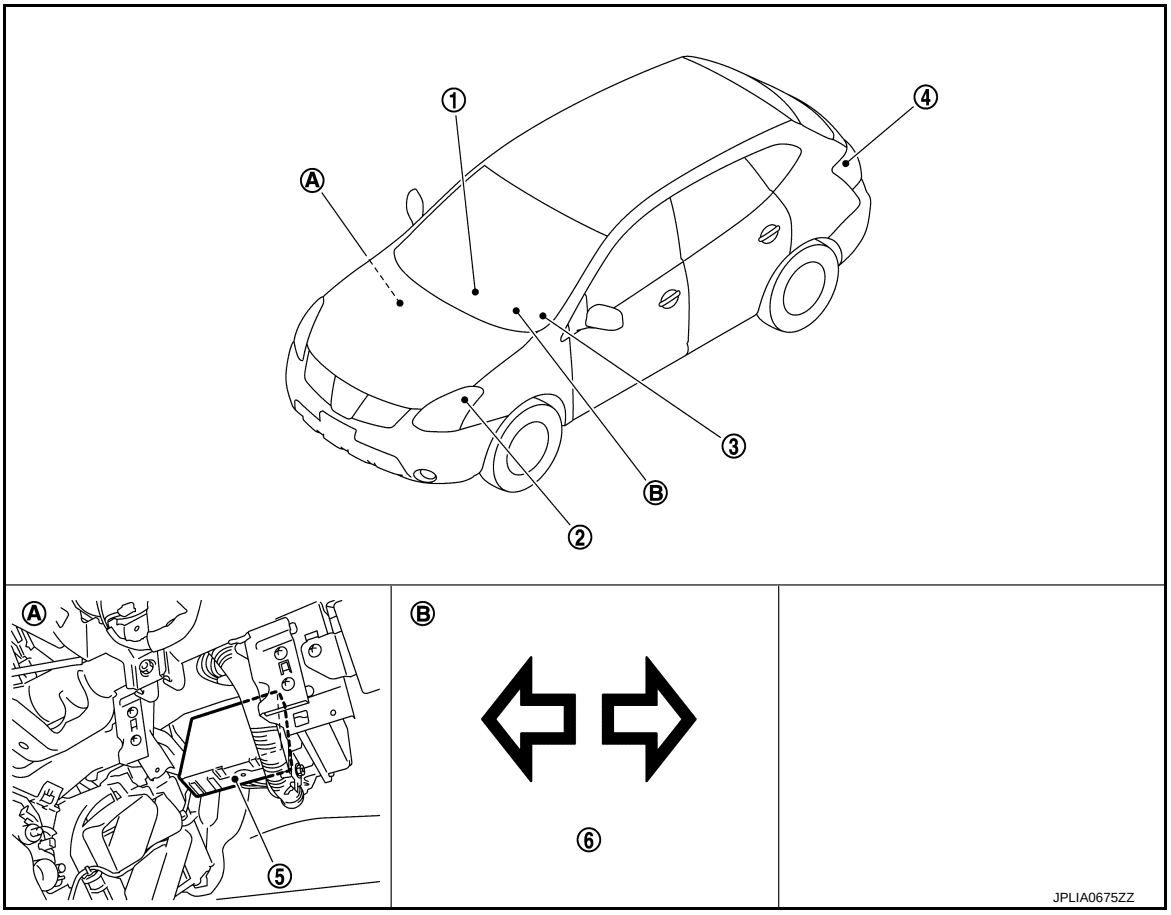
HIGH FLASHER OPERATION (FAIL-SAFE)

- BCM detects the turn signal lamp circuit status by the terminal 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.

Component Parts Location

INFOID:0000000008277594



1. Hazard switch
2. Front turn signal lamp
3. Combination switch
4. Rear turn signal lamp
5. BCM
6. Turn signal indicator lamp
A. Over the glove box
B. On the combination meter

Component Description

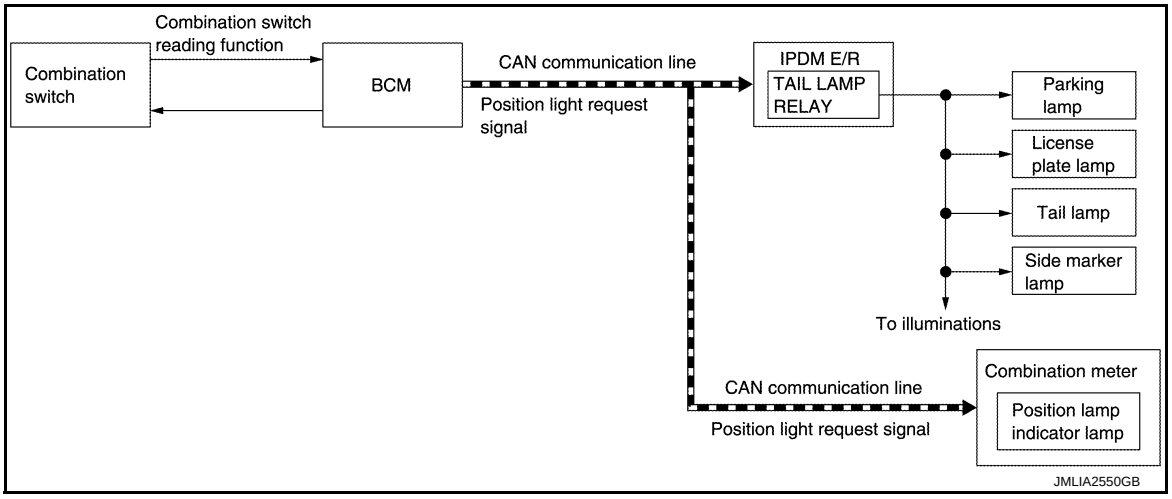
INFOID:0000000008277595

Part	Description
BCM	• Detects each switch condition by the combination switch reading function. • Judges the blinks of the turn signal lamp and the hazard warning lamp from each switch status. The applicable turn signal lamp blinks. • Requests the turn signal indicator lamp blink to the combination meter (with CAN communication).
Combination switch (Lighting & turn signal switch)	Refer to BCS-9, "System Diagram".
Hazard switch	Inputs the hazard switch ON/OFF signal to BCM.
Combination meter (Turn signal indicator lamp & buzzer)	Blinks the turn signal indicator lamp and outputs the turn signal operating sound with integrated buzzer according to the request from BCM (with CAN communication).

PARKING, LICENSE PLATE AND TAIL LAMPS SYSTEM

System Diagram

INFOID:0000000008277596



System Description

INFOID:0000000008277597

OUTLINE

Parking*, license plate and tail* lamps are controlled by combination switch reading function and headlamp control function of BCM, and relay control function of IPDM E/R.
*: Illuminated as side maker lamps too.

PARKING, LICENSE PLATE AND TAIL LAMPS OPERATION

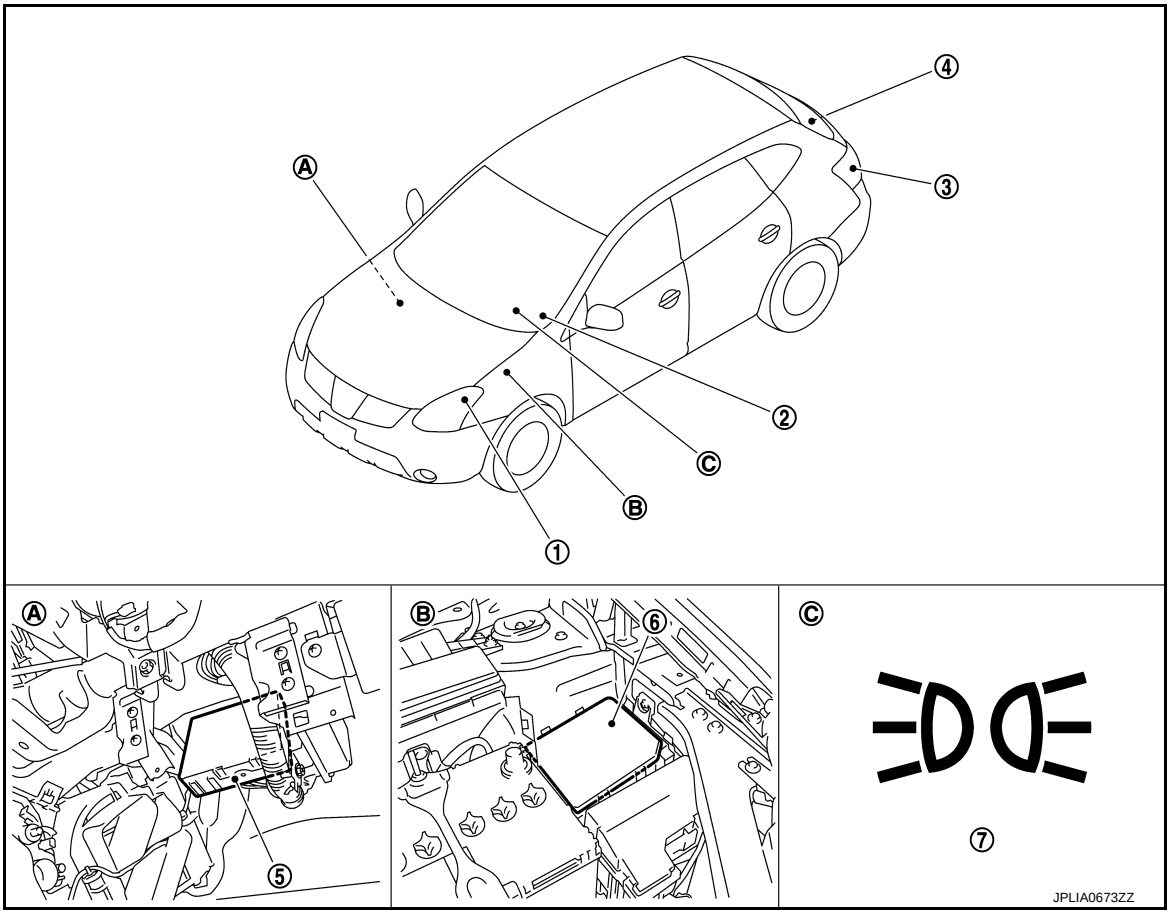
- BCM detects the combination switch condition by the combination switch reading function.
- BCM transmits the position light request signal to IPDM E/R and the combination meter with CAN communication according to the ON/OFF condition of the parking, license plate and tail lamps.

Parking, license plate and tail lamps ON condition
- Lighting switch 1ST
- Lighting switch 2ND

- IPDM E/R turns the integrated tail lamp relay ON and turns the parking lamp, the license plate 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.

Component Parts Location

INFOID:0000000008277598



1. Parking lamp (Side marker lamp)
2. Combination switch
3. Tail lamp (Side marker lamp)
4. License plate lamp
5. BCM
6. IPDM E/R
7. Position lamp indicator lamp
A. Over the glove box
B. Engine room (LH)
C. On the combination meter

Component Description

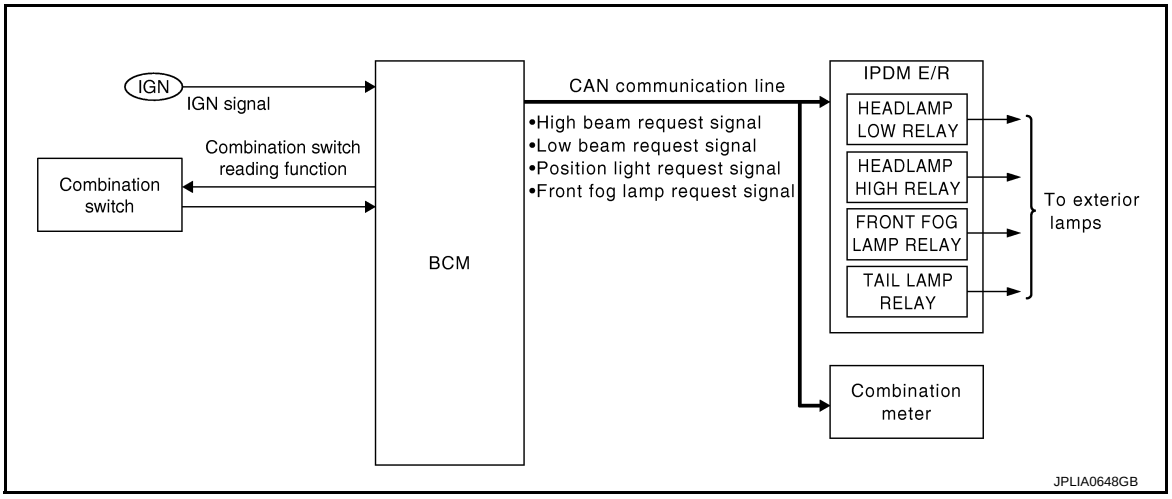
INFOID:0000000008277599

Part	Description
BCM	• Detects each switch condition by the combination switch reading function. • Judges the ON/OFF status of the parking, license plate and tail lamps according to the vehicle condition. - Requests the tail lamp relay ON to IPDM E/R (with CAN communication). - Requests the position lamp indicator lamp ON to the combination meter (with CAN communication).
IPDM E/R	Controls the integrated relay and supplies voltage to the load according to the request from BCM (with CAN communication).
Combination switch (Lighting & turn signal switch)	Refer to BCS-9, "System Diagram".
Combination meter (Position lamp indicator lamp)	Turns the position lamp indicator lamp ON according to the request from BCM (with CAN communication).

EXTERIOR LAMP BATTERY SAVER SYSTEM

System Diagram

INFOID:0000000008277600



System Description

INFOID:0000000008277601

OUTLINE

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

Control by BCM

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

Control by IPDM E/R

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

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

EXTERIOR LAMP BATTERY SAVER ACTIVATION

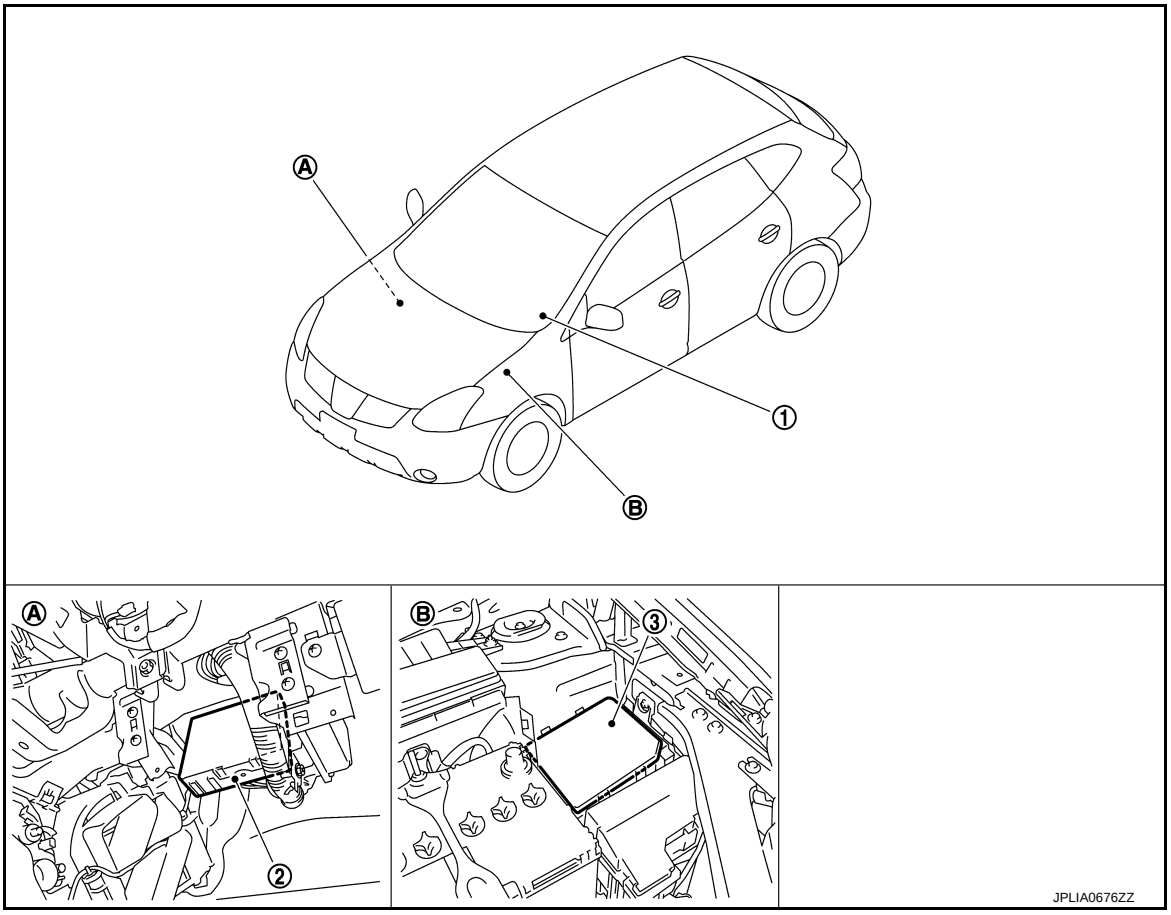
BCM activates the timer and turns the exterior lamp OFF 5 minutes after the ignition switch is turned from ON → OFF with the exterior lamps ON.

NOTE:

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

Component Parts Location

INFOID:0000000008277602



1. Combination switch
2. BCM
3. IPDM E/R
A. Over the glove box
B. Engine room (LH)

Component Description

INFOID:0000000008277603

Part	Description
BCM	• Detects each switch condition by the combination switch reading function. • Activates the battery saver to turn the exterior lamps OFF according to the vehicle condition. - Requests each relay OFF to IPDM E/R (with CAN communication).
IPDM E/R	Controls the integrated relay according to the request from BCM (with CAN communication).
Combination switch (Lighting & turn signal switch)	Refer to BCS-9, "System Diagram".

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

INFOID:0000000008277604

APPLICATION ITEM
CONSULT can display each diagnostic item using the diagnostic test modes shown following.

Diagnosis mode	Function description
ECU Identification	BCM part number is displayed.
Self-Diagnostic Result	Displays the diagnosis results judged by BCM. Refer to BCS-61, "DTC Index".
Data Monitor	BCM input/output signals are displayed.
Active Test	The signals used to activate each device are forcibly supplied from BCM.
Work Support	Changes the setting for each system function.
Configuration	• Read and save the vehicle specification. • Write the vehicle specification when replacing BCM.
CAN Diag Support Monitor	Monitors the reception status of CAN communication viewed from 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	CONSULT 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 control	INT LAMP	×	×	×
Remote keyless entry system	MULTI REMOTE ENT	×	×	×
Exterior lamp	HEAD LAMP	×	×	×
Wiper and washer	WIPER	×	×	×
Turn signal and hazard warning lamps	FLASHER		×	×
• Auto air conditioning system • Manual air conditioning system	AIR CONDITONER		×	
Intelligent Key system	INTELLIGENT KEY		×	
Combination switch	COMB SW		×	
Body control system	BCM	×		
Immobilizer	IMMU		×	×
Interior room lamp battery saver	BATTERY SAVER	×	×	×
Back door open	TRUNK		×	×
Vehicle security system	THEFT ALM	×	×	×
RAP system	RETAINED PWR	×	×	×
Signal buffer system	SIGNAL BUFFER		×	×
—	FUEL LID*			
TPMS	AIR PRESSURE MONITOR	×	×	×
Panic alarm system	PANIC ALARM			×

*: This item is displayed, but is not function.

HEADLAMP

HEADLAMP : CONSULT Function (BCM - HEAD LAMP)

INFOID:0000000008277605

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 MODE2.)	
	MODE 4	Less sensitive setting than normal setting (Turns ON later than normal operation.)	
BATTERY SAVER SET	On*	With the exterior lamp battery saver function	
	Off	Without the exterior lamp battery saver function	
ILL DELAY SET	MODE 1*	45 sec.	Sets delay timer function timer operation time. (All doors closed)
	MODE 2	Without the function	
	MODE 3	30 sec	
	MODE 4	60 sec	
	MODE 5	90 sec	
	MODE 6	120 sec	
	MODE 7	150 sec	
	MODE 8	180 sec	

*: Factory setting

DATA MONITOR

Monitor item [Unit]	Description
IGN ON SW [On/Off]	Ignition switch (ON) status judged from IGN signal (ignition power supply)
HI BEAM SW [On/Off]	Each switch status that BCM judges from the combination switch reading function
HEAD LAMP SW1 [On/Off]	
HEAD LAMP SW2 [On/Off]	
LIGHT SW 1ST [On/Off]	
PASSING SW [On/Off]	
FR FOG SW [On/Off]	
AUTO LIGHT SW [On/Off]	
RR FOG SW [On/Off]	**NOTE:** The item is indicated, but not monitored
DOOR SW-DR [On/Off]	The switch status input from front door switch (driver side)
DOOR SW-AS [On/Off]	The switch status input from front door switch (passenger side)
DOOR SW-RR [On/Off]	The switch status input from rear door switch RH

Monitor item [Unit]	Description
DOOR SW- RL [On/Off]	The switch status input from rear door switch LH
BACK DOOR SW [On/Off]	The switch status input from back door switch
TURN SIGNAL R [On/Off]	Each switch status that BCM judges from the combination switch reading function
TURN SIGNAL L [On/Off]	
ENGINE RUNNING [On/Off]	The engine status received from ECM with CAN communication
PKB SW [On/Off]	The parking brake switch status received from combination meter with CAN communication
CARGO LAMP SW [On/Off]	**NOTE:** The item is indicated, but not monitored
OPTICAL SENSOR [V]	The value of exterior brightness voltage input from the optical sensor

ACTIVE TEST

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

FLASHER

FLASHER : CONSULT Function (BCM - FLASHER)

INFOID:0000000008277606

DATA MONITOR

Monitor item [Unit]	Description
IGN ON SW [On/Off]	Ignition switch (ON) status judged from IGN signal (ignition power supply)
HAZARD SW [On/Off]	The switch status input from the hazard switch
TURN SIGNAL R [On/Off]	Each switch condition that BCM judges from the combination switch reading function
TURN SIGNAL L [On/Off]	
BRAKE SW [On/Off]	The switch status input from the stop lamp switch

ACTIVE TEST

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

DIAGNOSIS SYSTEM (IPDM E/R)

Diagnosis Description

INFOID:0000000008277607

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

Operation procedure

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

NOTE:
When auto active test mode has to be cancelled halfway through test, turn the ignition switch OFF.
CAUTION:
- **If auto active test mode cannot be actuated, check door switch system.**
- **Never start the engine.**

Inspection in auto active test mode

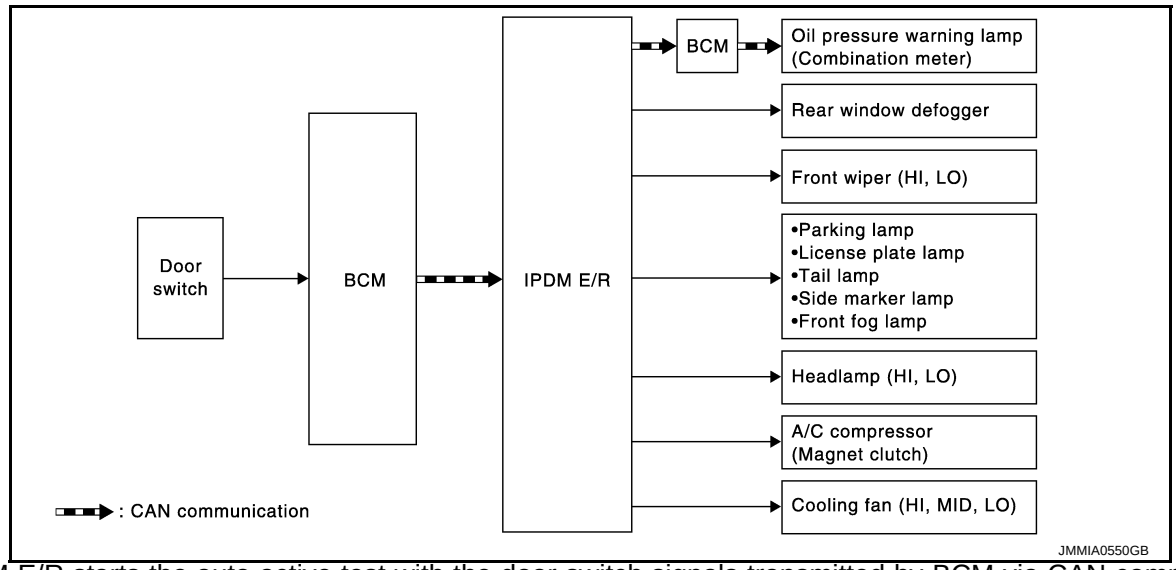
When auto active test mode is actuated, the following 6 steps are repeated 3 times.

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

NOTE:

*: With daytime running light system

Concept of auto active test



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

Diagnosis chart in auto active test mode

Symptom	Inspection contents		Possible cause
Rear window defogger does not operate	Perform auto active test. Does the rear window defogger operate?	YES	BCM signal input circuit
		NO	• Rear window defogger • Rear window defogger ground circuit • Harness or connector between IPDM E/R and rear window defogger • IPDM E/R
Any of the following components do not operate • Parking lamp • License plate lamp • Tail lamp • Side marker lamp • Front fog lamp • Headlamp (HI, LO) • Front wiper motor (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
Headlamps HI (daytime running light operation) do not operate	Perform auto active test. Do headlamps HI (daytime running light operation) operate?	YES	• CAN communication signal between ECM and BCM • CAN communication signal between combination meter and BCM • BCM signal input circuit
		NO	• Daytime running light relay power supply circuit • Harness or connector between IPDM E/R and daytime running light relay • Daytime running light relay

Symptom	Inspection contents		Possible cause
A/C compressor does not operate	Perform auto active test. Does the magnet clutch operate?	YES	• BCM signal input circuit • CAN communication signal between BCM and ECM • CAN communication signal between ECM and IPDM E/R
		NO	• Magnet clutch • Harness or connector between IPDM E/R and magnet clutch • IPDM E/R
Oil pressure warning lamp does not operate	Perform auto active test. Does the oil pressure warning lamp blink?	YES	• Harness or connector between IPDM E/R and oil pressure switch • Oil pressure switch • IPDM E/R
		NO	• CAN communication signal between IPDM E/R and BCM • CAN communication signal between BCM and combination meter • Combination meter
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	• Cooling fan motor-2 power supply circuit • Cooling fan motor-1 ground circuit • Cooling fan relay-4 or cooling fan relay-5 power supply circuit • Cooling fan relay-5 ground circuit • Harness or connector between IPDM E/R and cooling fan motor • Harness or connector between IPDM E/R, and cooling fan relay-4 or cooling fan relay-5 • Harness or connector between cooling fan motor-2, and cooling fan relay-4 or cooling fan relay-5 • Cooling fan relay-4 or cooling fan relay-5 • Cooling fan motor • IPDM E/R

CONSULT Function (IPDM E/R)

INFOID:0000000008277608

APPLICATION ITEM

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

Diagnosis mode	Description
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

Refer to PCS-25, "DTC Index".

DATA MONITOR

Monitor item

Monitor Item [Unit]	MAIN SIGNALS	Description
MOTOR FAN REQ [1 - 4]	×	Displays the value of the cooling fan speed 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. **NOTE:** This item is monitored only the vehicle with front fog lamp system.
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.
ST RLY REQ [Off/On]		Displays the status of the starter request signal.
IGN RLY [Off/On]	×	Displays the status of the ignition relay judged by IPDM E/R.
RR DEF REQ [Off/On]	×	Displays the status of the rear defogger 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.
DTRL REQ [Off/On]		Displays the status of the daytime running light request signal received from BCM via CAN communication. **NOTE:** This item is monitored only the vehicle with daytime running light system.
HOOD SW [Off/On]		Displays the status of the hood switch judged by IPDM E/R. **NOTE:** This item is monitored only the vehicle for Mexico.
THFT HRN REQ [Off/On]		Displays the status of the horn request signal by vehicle security system or panic alarm system received from BCM via CAN communication.
HORN CHIRP [Off/On]		Displays the status of the horn request signal by key fob LOCK operation received from BCM via CAN communication.

ACTIVE TEST

Test item

Test item	Operation	Description
REAR DEFOGGER	Off	OFF
	On	Operates the rear window defogger relay.
FRONT WIPER	Off	OFF
	Lo	Operates the front wiper relay.
	Hi	Operates the front wiper relay and front wiper high relay.

Test item	Operation	Description
MOTOR FAN	1	OFF
	2	Operates the cooling fan relay (LO operation).
	3	Operates the cooling fan relay (MID operation).
	4	Operates the cooling fan relay (HI operation).
EXTERNAL LAMPS	Off	OFF
	TAIL	Operates the tail lamp relay and the daytime running light relay. **NOTE:** Daytime running light relay is with daytime running light system only.
	Lo	Operates the headlamp low relay.
	Hi	Operates the headlamp low relay and ON/OFF the headlamp high relay at 4 seconds intervals.
	Fog	Operates the front fog lamp relay. **NOTE:** This item can test only the vehicle with front fog lamp system.
HORN	On	Operates horn relay for 20 ms.

DTC/CIRCUIT DIAGNOSIS

POWER SUPPLY AND GROUND CIRCUIT

BCM (BODY CONTROL MODULE)

BCM (BODY CONTROL MODULE) : Diagnosis Procedure

INFOID:0000000008277609

1.CHECK FUSES AND FUSIBLE LINK

Check that the following fuses and fusible link are not fusing.

Signal name	Fuses and fusible link No.
Battery power supply	10
	J
ACC power supply	20
Ignition power supply	1

Is the fuse fusing?

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

2.CHECK POWER SUPPLY CIRCUIT

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

Terminals			Ignition switch position		
(+)		(–)			
BCM			OFF	ACC	ON
Connector	Terminal				
M67	70	Ground	Battery voltage	Battery voltage	Battery voltage
	57				
M65	11		Approx. 0 V	Battery voltage	Battery voltage
	38		Approx. 0 V	Approx. 0 V	Battery voltage

Is the measurement value normal?

YES >> GO TO 3.
NO >> Repair the harness or connector.

3.CHECK GROUND CIRCUIT

Check continuity between BCM harness connector and the ground.

BCM		Ground	Continuity
Connector	Terminal		
M67	67		Existed

Does continuity exist?

YES >> INSPECTION END
NO >> Repair the harness or connector.

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) : Di-

agnosis Procedure

INFOID:0000000008277610

1.CHECK FUSIBLE LINK

Check that the following IPDM E/R fusible link is not blown.

Signal name	Fusible link No.
Battery power supply	C
	E
	K

Is the fusible link fusing?

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

2.CHECK POWER SUPPLY CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect IPDM E/R connectors.
3. Check voltage between IPDM E/R harness connectors and the ground.

Terminals			Voltage (Approx.)
(+)		(–)	
IPDM E/R			
Connector	Terminal	Ground	Battery voltage
E9	1		
	2		
E10	6		

Is the measurement value normal?

YES >> GO TO 3.
NO >> Repair the harness or connector.

3.CHECK GROUND CIRCUIT

Check continuity between IPDM E/R harness connectors and the ground.

IPDM E/R		Ground	Continuity
Connector	Terminal		
E11	11		Exist
E13	25		

Does continuity exist?

YES >> INSPECTION END
NO >> Repair the harness or connector.

EXTERIOR LAMP FUSE

Description

INFOID:0000000008277611

Fuse list

Unit	Location	Fuse No.	Capacity
Headlamp HI (LH)	IPDM E/R	#44	10 A
Headlamp HI (RH)	IPDM E/R	#43	10 A
Headlamp LO (LH)	IPDM E/R	#49	15 A
Headlamp LO (RH)	IPDM E/R	#50	15 A
Daytime running light	FUSE AND FUSIBLE LINK BLOCK	#33	10 A
Front fog lamp	IPDM E/R	#65	15 A
Parking lamp	IPDM E/R	#46	10 A
• Tail lamp • License plate lamp • Each illumination	IPDM E/R	#45	10 A
Stop lamp	FUSE BLOCK (J/B)	#11	10 A
Back-up lamp	IPDM E/R	#60	10 A

Diagnosis Procedure

INFOID:0000000008277612

1.CHECK FUSE

Check that the following fuses are not fusing.

Unit	Location	Fuse No.	Capacity
Headlamp HI (LH)	IPDM E/R	#44	10 A
Headlamp HI (RH)	IPDM E/R	#43	10 A
Headlamp LO (LH)	IPDM E/R	#49	15 A
Headlamp LO (RH)	IPDM E/R	#50	15 A
Daytime running light	FUSE AND FUSIBLE LINK BLOCK	#33	10 A
Front fog lamp	IPDM E/R	#65	15 A
Parking lamp	IPDM E/R	#46	10 A
• Tail lamp • License plate lamp • Each illumination	IPDM E/R	#45	10 A
Stop lamp	FUSE BLOCK (J/B)	#11	10 A
Back-up lamp	IPDM E/R	#60	10 A

Is the fuse fusing?

YES >> Repair the applicable circuit. And then replace the fuse.
NO >> The fuse is normal.

HEADLAMP (HI) CIRCUIT

Component Function Check

INFOID:0000000008277613

1.CHECK HEADLAMP (HI) OPERATION

IPDM E/R AUTO ACTIVE TEST
1. Activate IPDM E/R auto active test. Refer to PCS-8, "Diagnosis Description".
2. Check that the headlamp switches to the high beam.

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

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

NOTE:
ON/OFF is repeated 1 second each.

Is the headlamp (HI) turned ON?

YES >> Headlamp (HI) circuit is normal.
NO >> Refer to EXL-152, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008277614

1.CHECK HEADLAMP (HI) OUTPUT VOLTAGE

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

Terminals				Test item	Voltage (Approx.)
(+)			(–)		
IPDM E/R			Ground	EXTERNAL LAMPS	
Connector		Terminal			
RH	E12	22		Hi	Battery voltage
LH		21		Off	0 V

Is the measurement value normal?

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

2.CHECK HEADLAMP (HI) OPEN CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between the IPDM E/R harness connector and the headlamp high harness connector.

IPDM E/R			Headlamp high		Continuity
Connector		Terminal	Connector	Terminal	
RH	E12	22	E43	1	Existed
LH		21	E24	1	

Does continuity exist?

YES (Without daytime running light system)>>GO TO 5.

YES (With daytime running light system)>>GO TO 6.
NO >> Repair the harnesses or connectors.

3.CHECK HEADLAMP (HI) FUSE

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

Unit	Location	Fuse No.	Capacity
Headlamp HI (LH)	IPDM E/R	#44	10 A
Headlamp HI (RH)	IPDM E/R	#43	10 A

Is the fuse fusing?

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

4.CHECK HEADLAMP HIGH (HI) SHORT CIRCUIT

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

IPDM E/R			Ground	Continuity
Connector		Terminal		
RH	E12	22		Not existed
LH		21		

Does continuity exist?

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

5.CHECK HEADLAMP (HI) GROUND OPEN CIRCUIT

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

Headlamp high			Ground	Continuity
Connector		Terminal		
RH	E43	2		Existed
LH	E24	2		

Does continuity exist?

YES >> Replace the headlamp (HI) bulb. (Bulb socket is abnormally.)
NO >> Repair the harnesses or connectors.

6.CHECK HEADLAMP (HI) GROUND OPEN CIRCUIT (LH SIDE)

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

Headlamp high			Ground	Continuity
Connector		Terminal		Existed
LH	E24	2		

Does continuity exist?

YES >> GO TO 7.
NO >> Repair the harnesses or connectors.

7.CHECK CONTINUITY BETWEEN HEADLAMP HIGH (RH) AND DAYTIME RUNNING LIGHT RELAY

1. Remove daytime running light relay.

2. Check continuity between headlamp high RH harness connector and daytime running light relay harness connector.

Headlamp high			Daytime running light relay		Continuity
Connector		Terminal	Connector	Terminal	Existed
RH	E43	2	E65	3	

Does continuity exist?

YES >> GO TO 8.
NO >> Repair the harness or connector.

8. CHECK THE DAYTIME RUNNING LIGHT RELAY GROUND OPEN CIRCUIT

Check continuity between daytime running light relay harness connector and ground.

Daytime running light relay		Ground	Continuity
Connector	Terminal		Existed
E65	4		

Does continuity exist?

YES >> GO TO 9.
NO >> Repair the harness or connector.

9. CHECK THE DAYTIME RUNNING LIGHT RELAY

Check daytime running light relay. Refer to EXL-160, "Component Inspection".

Is the daytime running light relay normal?

YES >> Replace the headlamp (HI) bulb. (Bulb socket is abnormally.)
NO >> Replace the daytime running light relay.

HEADLAMP (LO) CIRCUIT

Component Function Check

INFOID:0000000008277615

1.CHECK HEADLAMP (LO) OPERATION

IPDM E/R AUTO ACTIVE TEST
1. Activate IPDM E/R auto active test. Refer to PCS-8, "Diagnosis Description".
2. Check that the headlamp is turned ON.

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

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

Is the headlamp (LO) turned ON?

YES >> Headlamp (LO) is normal.
NO >> Refer to EXL-155, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008277616

1.CHECK HEADLAMP (LO) OUTPUT VOLTAGE

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

Terminals				Test item	Voltage (Approx.)
(+)			(–)		
IPDM E/R			Ground	EXTERNAL LAMPS	
Connector		Terminal			
RH	E12	20		LO	Battery voltage
LH		18		OFF	0 V

Is the measurement value normal?

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

2.CHECK HEADLAMP (LO) OPEN CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between the IPDM E/R harness connector and the headlamp low harness connector.

IPDM E/R			Headlamp low		Continuity
Connector		Terminal	Connector	Terminal	
RH	E12	20	E45	1	Existed
LH		18	E26	1	

Does continuity exist?

YES >> GO TO 5.
NO >> Repair the harnesses or connectors.

3. CHECK HEADLAMP (LO) FUSE

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

Unit	Lotion	Fuse No.	Capacity
Headlamp LO (LH)	IPDM E/R	#49	15 A
Headlamp LO (RH)	IPDM E/R	#50	15 A

Is the fuse fusing?

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

4. CHECK HEADLAMP (LO) SHORT CIRCUIT

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

IPDM E/R			Ground	Continuity
Connector		Terminal		
RH	E12	20		Not existed
LH		18		

Does continuity exist?

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

5. CHECK HEADLAMP (LO) GROUND OPEN CIRCUIT

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

Headlamp low			Ground	Continuity
Connector		Terminal		
RH	E45	2		Existed
LH	E26	2		

Does continuity exist?

YES >> Replace the headlamp (LO) bulb. (Bulb socket is abnormally.)
NO >> Repair the harnesses or connectors.

FRONT FOG LAMP CIRCUIT

Component Function Check

INFOID:0000000008277617

1.CHECK FRONT FOG LAMP OPERATION

IPDM E/R AUTO ACTIVE TEST
1. Activate IPDM E/R auto active test. Refer to PCS-8, "Diagnosis Description".
2. Check that the front fog lamp is turned ON.

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

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

Is the front fog lamp turned ON?

YES >> Front fog lamp circuit is normal.
NO >> Refer to EXL-157, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008277618

1.CHECK FRONT FOG LAMP FUSE

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

Unit	Location	Fuse No.	Capacity
Front fog lamp	IPDM E/R	#65	15 A

Is the fuse fusing?

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

2.CHECK FRONT FOG LAMP SHORT CIRCUIT

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

IPDM E/R			Ground	Continuity
Connector		Terminal		
RH	E12	17		Not existed
LH		16		

Does continuity exist?

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

3.CHECK FRONT FOG LAMP BULB

Check the applicable lamp bulb.

Is the bulb normal?

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

4.CHECK FRONT FOG LAMP OUTPUT VOLTAGE

CONSULT ACTIVE TEST
1. Disconnect the front fog lamp connector.
2. Turn the ignition switch ON.
3. Select “EXTERNAL LAMPS” of IPDM E/R active test item.

4. With operating the test items, check the voltage between the IPDM E/R harness connector and the ground.

Terminals				Test item	Voltage (Approx.)
(+)			(–)		
IPDM E/R			Ground	EXTERNAL LAMPS	
Connector		Terminal			
RH	E12	17		Fog	Battery voltage
LH		16		Off	0 V

Is the measurement value normal?

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

5.CHECK FRONT FOG LAMP OPEN CIRCUIT

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

IPDM E/R			Front fog lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	E12	17	E48	2	Existed
LH		16	E30	2	

Does continuity exist?

YES >> GO TO 6.
NO >> Repair the harnesses or connectors.

6.CHECK FRONT FOG LAMP GROUND CIRCUIT OPEN CIRCUIT

Check continuity between the front fog lamp harness connector and the ground.

Front fog lamp			Ground	Continuity
Connector		Terminal		
RH	E48	1		Existed
LH	E30	1		

Does continuity exist?

YES >> Replace the front fog lamp.
NO >> Repair the harnesses or connectors.

DAYTIME RUNNING LIGHT RELAY CIRCUIT

Component Function Check

INFOID:0000000008277619

1.CHECK DAYTIME RUNNING LIGHT OPERATION

CONSULT ACTIVE TEST
1. Select “EXTERNAL LAMPS” of IPDM E/R active test item.
2. With operating the test item, check that daytime running light operation.

TAIL : Daytime running light ON
Off : Daytime running light OFF

Is the daytime running light turned ON?

YES >> Daytime running light relay circuit is normal.
NO >> Refer to EXL-159, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008277620

1.CHECK DAYTIME RUNNING LIGHT RELAY FUSE

Check that the following fuse is not fusing.

Unit	Location	Fuse No.	Capacity
Daytime running light relay	Fuse and fusible link block	#33	10A

Is the fuse fusing?

YES >> Replace the fuse after repairing the applicable circuit.
NO >> GO TO 2.

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.

Terminals			Voltage (Approx.)
(+)		(–)	
Daytime running light relay		Ground	
Connector	Terminal		
E65	1		Battery voltage
	5		

Is the measurement value normal?

YES >> GO TO 3.
NO >> Repair harnesses or connectors.

3.CHECK DAYTIME RUNNING LIGHT RELAY

Check daytime running light relay. Refer to EXL-160, "Component Inspection".

Is the daytime running light relay normal?

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

4.CHECK DAYTIME RUNNING LIGHT RELAY CONTROL SIGNAL OUTPUT

CONSULT ACTIVE TEST
1. Turn the ignition switch OFF.
2. Install daytime running light relay.
3. Turn the ignition switch ON.
4. Select “DAYTIME RUNNING LIGHT” of BCM (HEAD LAMP) active test item.
5. With operating the test item, check voltage between IPDM E/R harness connector and ground.

Terminals			Test item	Voltage (Approx.)
(+)		(–)		
IPDM E/R		Ground	DAYTIME RUNNING LIGHT	
Connector	Terminal			
E12	15		On	0 V
			Off	Battery voltage

Is the measurement value normal?

YES >> Check parking lamp circuit. Refer to EXL-162, "Component Function Check".
Fixed at 0 V >> GO TO 5.
Fixed at battery voltage >>Replace IPDM E/R.

5.CHECK DAYTIME RUNNING LIGHT RELAY CONTROL SIGNAL OPEN CIRCUIT

1. Remove daytime running light relay.
2. Disconnect IPDM E/R harness connector.
3. 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	
E12	15	E65	2	Existed

Does continuity exist?

YES >> GO TO 6.
NO >> Repair the harnesses or connectors.

6.CHECK DAYTIME RUNNING LIGHT RELAY CONTROL SIGNAL SHORT CIRCUIT

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

IPDM E/R		Ground	Continuity
Connector	Terminal		
E12	15		Not existed

Does continuity exist?

YES >> Repair the harnesses or connectors.
NO >> Replace IPDM E/R.

Component Inspection

INFOID:0000000008277621

1.CHECK DAYTIME RUNNING LIGHT RELAY

1. Turn the 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.

Daytime running light relay		Condition	Continuity
Terminal		Voltage	
5	3	Apply	Existed
		Not Apply	Not existed
4		Apply	Not existed
		Not Apply	Existed

Does continuity exist?

YES >> Daytime running light relay is normal.
NO >> Replace daytime running light relay.

PARKING LAMP CIRCUIT

Component Function Check

INFOID:0000000008277622

1.CHECK PARKING LAMP OPERATION

IPDM E/R AUTO ACTIVE TEST
1. Activate IPDM E/R auto active test. Refer to PCS-8, "Diagnosis Description".
2. Check that the parking lamp is turned ON.

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

TAIL : Parking lamp ON
Off : Parking lamp OFF

Is the parking lamp turned ON?

YES >> Parking lamp circuit is normal.
NO >> Refer to EXL-162, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008277623

1.CHECK PARKING LAMP FUSE

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

Unit	Location	Fuse No.	Capacity
Parking lamp	IPDM E/R	#46	10 A

Is the fuse fusing?

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

2.CHECK PARKING LAMP SHORT CIRCUIT

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

IPDM E/R			Ground	Continuity
Connector		Terminal		
RH	E14	39		Not existed
LH		38		

Does continuity exist?

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

3.CHECK PARKING LAMP BULB

Check the applicable lamp bulb.

Is the bulb normal?

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

4.CHECK PARKING LAMP OUTPUT VOLTAGE

CONSULT ACTIVE TEST
1. Disconnect the parking lamp connector.
2. Turn the ignition switch ON.
3. Select “EXTERNAL LAMPS” of IPDM E/R active test item.

4. With operating the test items, check the voltage between the IPDM E/R harness connector and the ground.

Terminals				Test item	Voltage (Approx.)
(+)			(–)		
IPDM E/R			Ground	EXTERNAL LAMPS	
Connector		Terminal			
RH	E14	39		TAIL	Battery voltage
LH		38		Off	0 V

Is the measurement value normal?

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

5. CHECK PARKING LAMP OPEN CIRCUIT

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

IPDM E/R			Parking lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	E14	39	E46	1	Existed
LH		38	E27	1	

Does continuity exist?

YES >> GO TO 6.
NO >> Repair the harnesses or connectors.

6. CHECK PARKING LAMP GROUND OPEN CIRCUIT

Check continuity between the parking lamp harness connector and the ground.

Parking lamp			Ground	Continuity
Connector		Terminal		
RH	E46	2		Existed
LH	E27	2		

Does continuity exist?

YES >> Replace the front combination lamp.
NO >> Repair the harnesses or connectors.

TURN SIGNAL LAMP CIRCUIT

Description

INFOID:0000000008277624

BCM performs the high flasher operation (fail-safe) if any bulb or harness of the turn signal lamp circuit is open.

NOTE:

The turn signal lamp blinks at normal speed when using the hazard warning lamp.

Component Function Check

INFOID:0000000008277625

1.CHECK TURN SIGNAL LAMP

CONSULT ACTIVE TEST

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

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

Is the turn signal lamp turned ON?

YES >> Turn signal lamp circuit is normal.
NO >> Refer to EXL-164, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008277626

1.CHECK TURN SIGNAL LAMP BULB

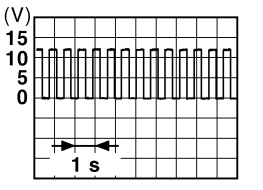
Check the applicable lamp bulb.

Is the bulb normal?

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

2.CHECK TURN SIGNAL LAMP OUTPUT VOLTAGE

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

Terminals				Condition	Voltage (Approx.)
(+)			(–)		
BCM				Turn signal switch	
Connector		Terminal			
RH	M67	61	Ground	LH or RH	
LH		60			
				OFF	0 V

Is the measurement value normal?

YES >> GO TO 3.
NO >> Replace BCM. Refer to BCS-65, "Exploded View".

3.CHECK TURN SIGNAL LAMP OPEN CIRCUIT

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

Front turn signal lamp

BCM			Front turn signal lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	M67	61	E46	3	Existed
LH		60	E27		

Rear turn signal lamp

BCM			Rear combination lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	M67	61	B59	3	Existed
LH		60	B80		

Does continuity exist?

YES >> GO TO 4.
NO >> Repair the harnesses or connectors.

4.CHECK TURN SIGNAL LAMP SHORT CIRCUIT

Check continuity between the BCM harness connector and the ground.

BCM			Ground	Continuity
Connector		Terminal		
RH	M67	61		Not existed
LH		60		

Does continuity exist?

YES >> Repair the harnesses or connectors.
NO >> GO TO 5.

5.CHECK TURN SIGNAL LAMP GROUND OPEN CIRCUIT

Check continuity between the front turn signal lamp, or the rear combination lamp and the ground.

Front turn signal lamp

Front turn signal lamp			Ground	Continuity
Connector		Terminal		
RH	E46	2		Existed
LH	E27			

Rear turn signal lamp

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

Does continuity exist?

YES >> Replace the front combination lamp or the rear combination lamp.
NO >> Repair the harnesses or connectors.

HAZARD SWITCH

Component Function Check

INFOID:0000000008277627

1.CHECK HAZARD SWITCH SIGNAL BY CONSULT

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

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

Is the item status normal?

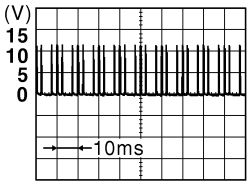
YES >> Hazard switch circuit is normal.
NO >> Refer to EXL-166, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008277628

1.CHECK HAZARD SWITCH SIGNAL INPUT

With operating the hazard switch, check the voltage between the BCM harness connector and the ground.

Terminals			Condition	Voltage (Approx.)
(+)		(–)		
BCM			Hazard switch	
Connector	Terminal			
M65	29	Ground	ON	0 V
			OFF	

JPMIA0154GB

Is the measurement value normal?

YES >> Replace BCM. Refer to BCS-65, "Exploded View".
NO >> GO TO 2.

2.CHECK HAZARD SWITCH SIGNAL OPEN CIRCUIT

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

Hazard switch		BCM		Continuity
Connector	Terminal	Connector	Terminal	
M45	2	M65	29	Existed

Does continuity exist?

YES >> GO TO 3.
NO >> Repair the harnesses or connectors.

3.CHECK HAZARD SWITCH SIGNAL SHORT CIRCUIT

Check continuity between the hazard switch harness connector and the ground.

Hazard switch		Ground	Continuity
Connector	Terminal		
M45	2		Not existed

Does continuity exist?

YES >> Repair the harnesses or connectors.
NO >> GO TO 4.

4. CHECK HAZARD SWITCH GROUND OPEN CIRCUIT

Check continuity between the hazard switch harness connector and the ground.

Hazard switch		Ground	Continuity
Connector	Terminal		
M45	1		Existed

Does continuity exist?

YES >> Replace the hazard switch.
NO >> Repair the harnesses or connectors.

TAIL LAMP CIRCUIT

Component Function Check

INFOID:0000000008277629

NOTE:
Check the license plate lamp circuit if the tail lamp and the license plate lamp are not turned ON. Refer to EXL-170, "Component Function Check".

1.CHECK TAIL LAMP OPERATION

IPDM E/R AUTO ACTIVE TEST
1. Activate IPDM E/R auto active test. Refer to PCS-8, "Diagnosis Description".
2. Check that the tail lamp is turned ON.

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

TAIL : Tail Lamp ON
Off : Tail lamp OFF

Is the tail lamp turned ON?

YES >> Tail lamp circuit is normal.
NO >> Refer to EXL-168, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008277630

1.CHECK TAIL LAMP FUSE

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

Unit	Location	Fuse No.	Capacity
Tail lamp	IPDM E/R	#45	10 A

Is the fuse fusing?

YES >> Repair the malfunctioning part before replacing the fuse.
NO >> GO TO 2.

2.CHECK TAIL LAMP OUTPUT VOLTAGE

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

Terminals			Test item	Voltage (Approx.)
(+)		(–)		
IPDM E/R		Ground	EXTERNAL LAMPS	
Connector	Terminal			
E14	37		TAIL	Battery voltage
			Off	0 V

Is the measurement value normal?

YES >> GO TO 3.
NO >> Replace IPDM E/R.

3.CHECK TAIL LAMP OPEN CIRCUIT

1. Turn the ignition switch OFF.

2. Disconnect IPDM E/R connector.
3. Check continuity between the IPDM E/R harness connector and the rear combination lamp harness connector.

IPDM E/R			Rear combination lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	E14	37	B59	1	Existed
LH			B80	1	

Does continuity exist?

YES >> GO TO 4.
NO >> Repair the harnesses or connectors.

4. CHECK TAIL LAMP GROUND OPEN CIRCUIT

Check continuity between the rear combination lamp harness connector and the ground.

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

Does continuity exist?

YES >> Replace the rear combination lamp.
NO >> Repair the harnesses or connectors.

LICENSE PLATE LAMP CIRCUIT

Component Function Check

INFOID:0000000008277631

1.CHECK LICENSE PLATE LAMP OPERATION

IPDM E/R AUTO ACTIVE TEST
1. Activate IPDM E/R auto active test. Refer to PCS-8, "Diagnosis Description".
2. Check that the license plate lamp is turned ON.

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

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

Is the license plate lamp turned ON?

YES >> License plate lamp circuit is normal.
NO >> Refer to EXL-170, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008277632

1.CHECK LICENSE PLATE LAMP BULB

Check the applicable lamp bulb.

Is the bulb normal?

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

2.CHECK LICENSE PLATE LAMP OPEN CIRCUIT

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

IPDM E/R			License plate lamp		Continuity
Connector		Terminal	Connector	Terminal	
RH	E14	37	D196	1	Existed
LH			D195	1	

Does continuity exist?

YES >> GO TO 3.
NO >> Repair the harnesses or connectors.

3.CHECK LICENSE PLATE LAMP GROUND OPEN CIRCUIT

Check continuity between the license plate lamp harness connector and the ground.

License plate lamp			Ground	Continuity
Connector		Terminal		
RH	D196	2		Existed
LH	D195	2		

Does continuity exist?

YES >> Replace the license plate lamp.
NO >> Repair the harnesses or connectors.

OPTICAL SENSOR

Description

INFOID:0000000008277633

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

Component Function Check

INFOID:0000000008277634

1.CHECK OPTICAL SENSOR SIGNAL BY CONSULT

CONSULT DATA MONITOR
1. Turn the ignition switch ON.
2. Select "OPTICAL SENSOR" of BCM (HEADLAMP) data monitor item.
3. Turn the lighting switch AUTO.
4. With the optical sensor illuminating, check the monitor status.

Monitor item	Condition		Voltage (Approx.)
OPTICAL SENSOR	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 item status normal?

YES >> Optical sensor is normal.
NO >> Refer to EXL-171, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008277635

1.CHECK OPTICAL SENSOR POWER SUPPLY INPUT

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

Terminals			Voltage (Approx.)
(+)		(–)	
Optical sensor		Ground	
Connector	Terminal		
M17	1		5 V

Is the measurement value normal?

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

2.CHECK OPTICAL SENSOR GROUND INPUT

Check the voltage between the optical sensor harness connector and the ground.

Terminals			Voltage (Approx.)
(+)		(–)	
Optical sensor		Ground	
Connector	Terminal		
M17	3		0 V

Is the measurement value normal?

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

3.CHECK OPTICAL SENSOR SIGNAL OUTPUT

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

Terminals			Condition	Voltage (Approx.)
(+)		(–)		
Optical sensor			Optical sensor	
Connector	Terminal			
M17	2	Ground	When bright outside of the vehicle	Close to 5 V
			When dark outside of the vehicle	Close to 0 V

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

Is the measurement value normal?

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

4.CHECK OPTICAL SENSOR OPEN CIRCUIT

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

Optical sensor		BCM		Continuity
Connector	Terminal	Connector	Terminal	
M17	1	M65	17	Existed

Does continuity exist?

YES >> GO TO 5.
NO >> Repair the harnesses or connectors.

5.CHECK OPTICAL SENSOR SHORT CIRCUIT

Check the continuity between the optical sensor harness connector and the ground.

Optical sensor		Ground	Continuity
Connector	Terminal		
M17	1		Not existed

Does continuity exist?

YES >> Repair the harnesses or connectors.
NO >> Replace BCM.

6.CHECK OPTICAL SENSOR GROUND OPEN CIRCUIT

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

Optical sensor		BCM		Continuity
Connector	Terminal	Connector	Terminal	
M17	3	M65	18	Existed

Does continuity exist?

YES >> Replace BCM.
NO >> Repair the harnesses or connectors.

7.CHECK OPTICAL SENSOR SIGNAL OPEN CIRCUIT

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

Optical sensor		BCM		Continuity
Connector	Terminal	Connector	Terminal	
M17	2	M65	14	Existed

Does continuity exist?

YES >> GO TO 8.
NO >> Repair the harnesses or connectors.

8. CHECK OPTICAL SENSOR SHORT CIRCUIT

Check the continuity between the optical sensor harness connector and the ground.

Optical sensor		Ground	Continuity
Connector	Terminal		
M17	2		Not existed

Does continuity exist?

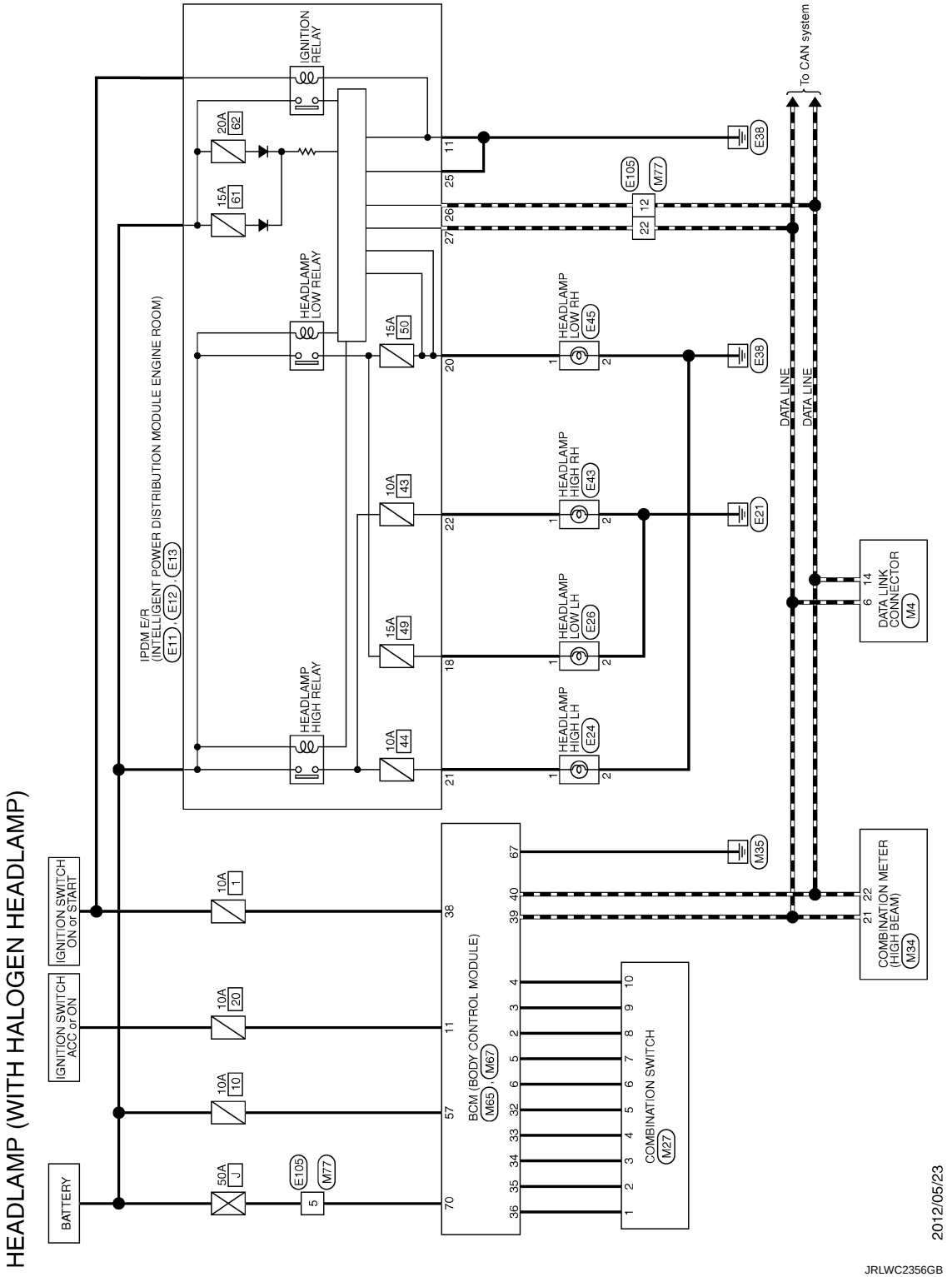
YES >> Repair the harnesses or connectors.
NO >> Replace BCM.

HEADLAMP SYSTEM

Wiring Diagram - HEADLAMP -

INFOID:0000000008277636

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information".

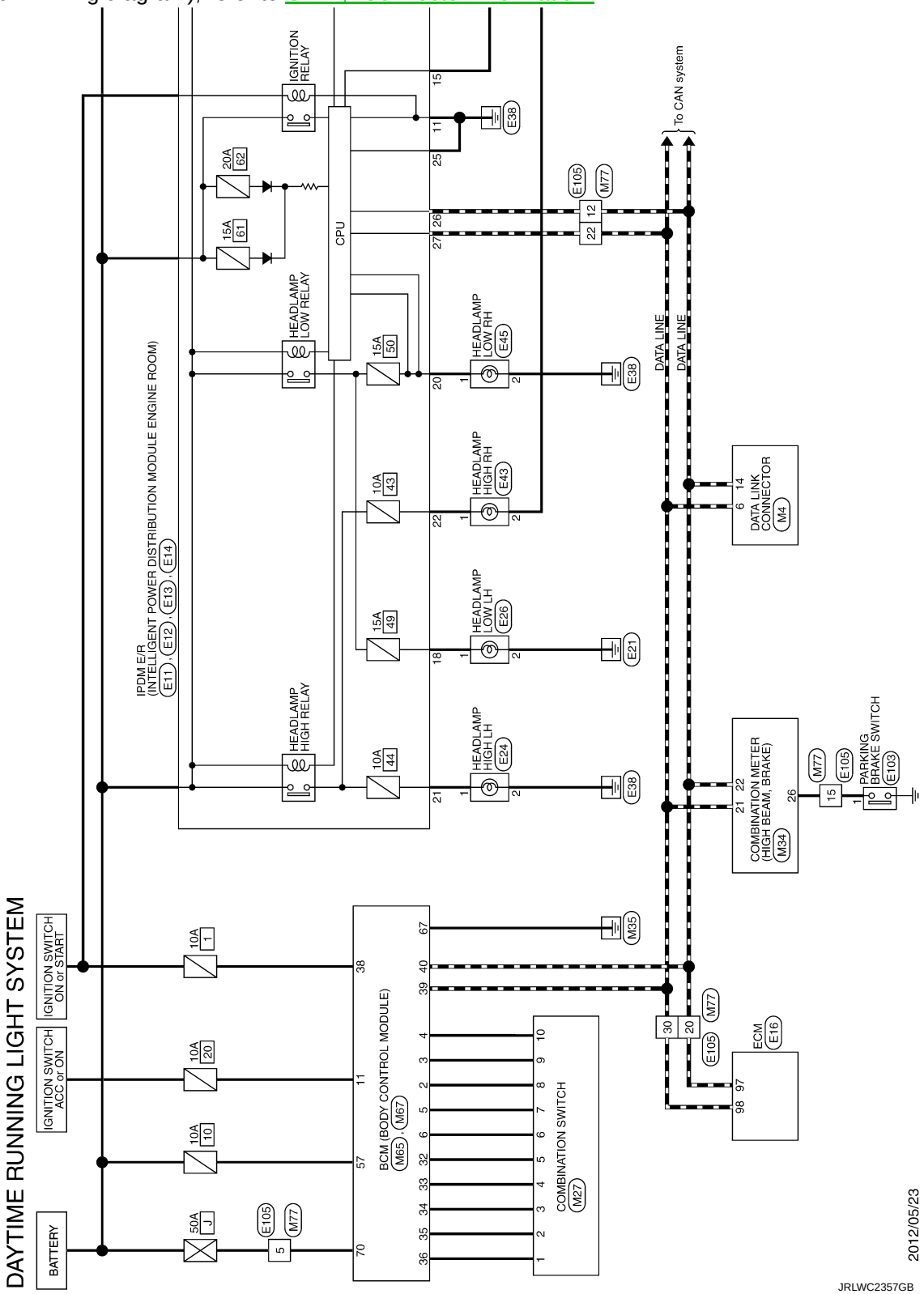


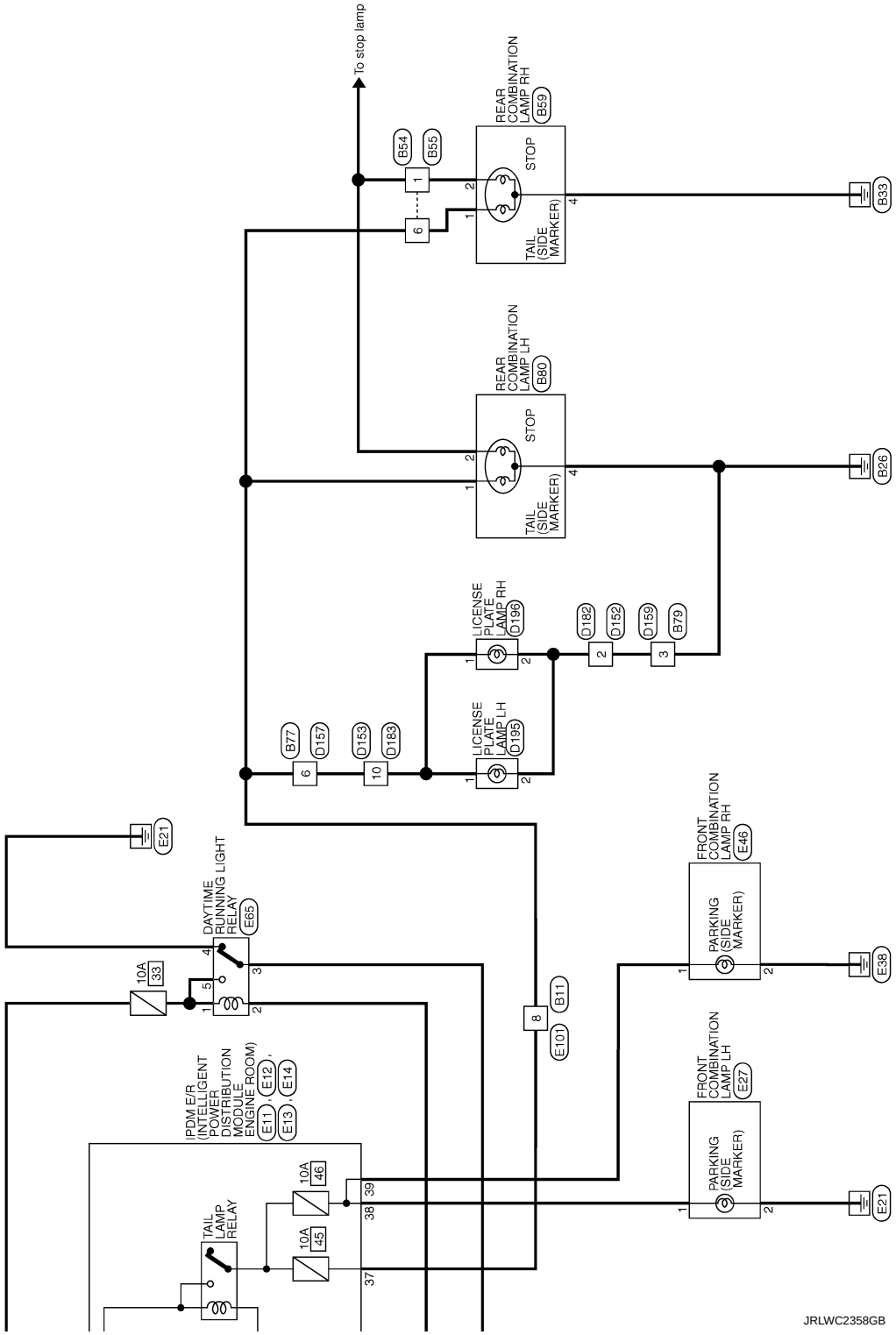
DAYTIME RUNNING LIGHT SYSTEM

Wiring Diagram - DAYTIME RUNNING LIGHT SYSTEM -

INFOID:0000000008277637

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information".



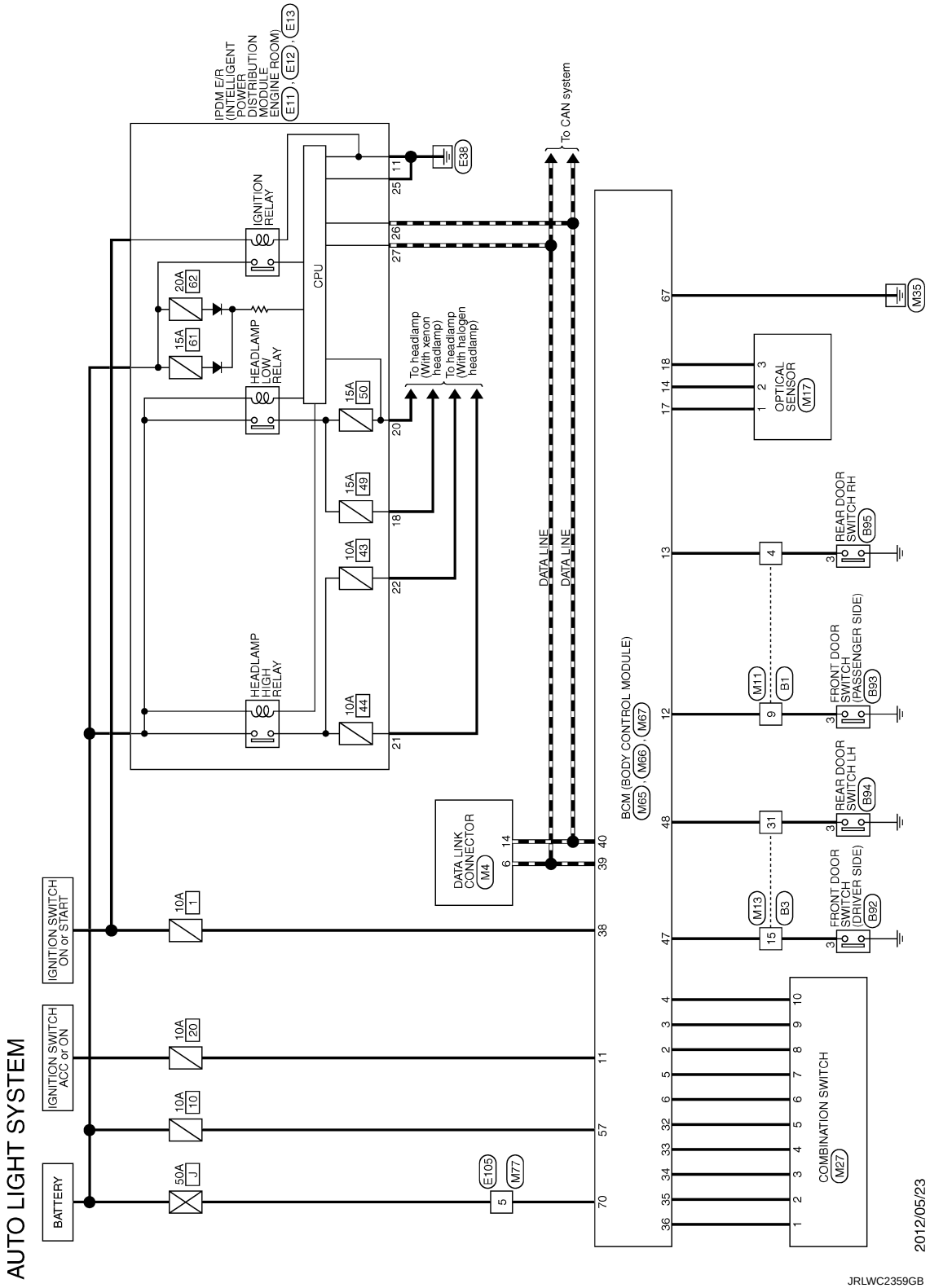

To stop lamp
REAR COMBINATION LAMP RH
B59
B54
B55
STOP
TAIL (SIDE MARKER)
B33
REAR COMBINATION LAMP LH
B80
B26
LICENSE PLATE LAMP RH
D196
D182
D152
D159
B79
LICENSE PLATE LAMP LH
D195
B77
D157
D153
D183
E21
DAYTIME RUNNING LIGHT RELAY
E65
10A 33
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E11, E12, E13, E14
TAIL LAMP RELAY
10A 46
10A 45
B11
E101
FRONT COMBINATION LAMP RH
E46
PARKING (SIDE MARKER)
E38
FRONT COMBINATION LAMP LH
E27
E21
JRLWC2358GB

AUTO LIGHT SYSTEM

Wiring Diagram - AUTO LIGHT SYSTEM -

INFOID:0000000008277638

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information".

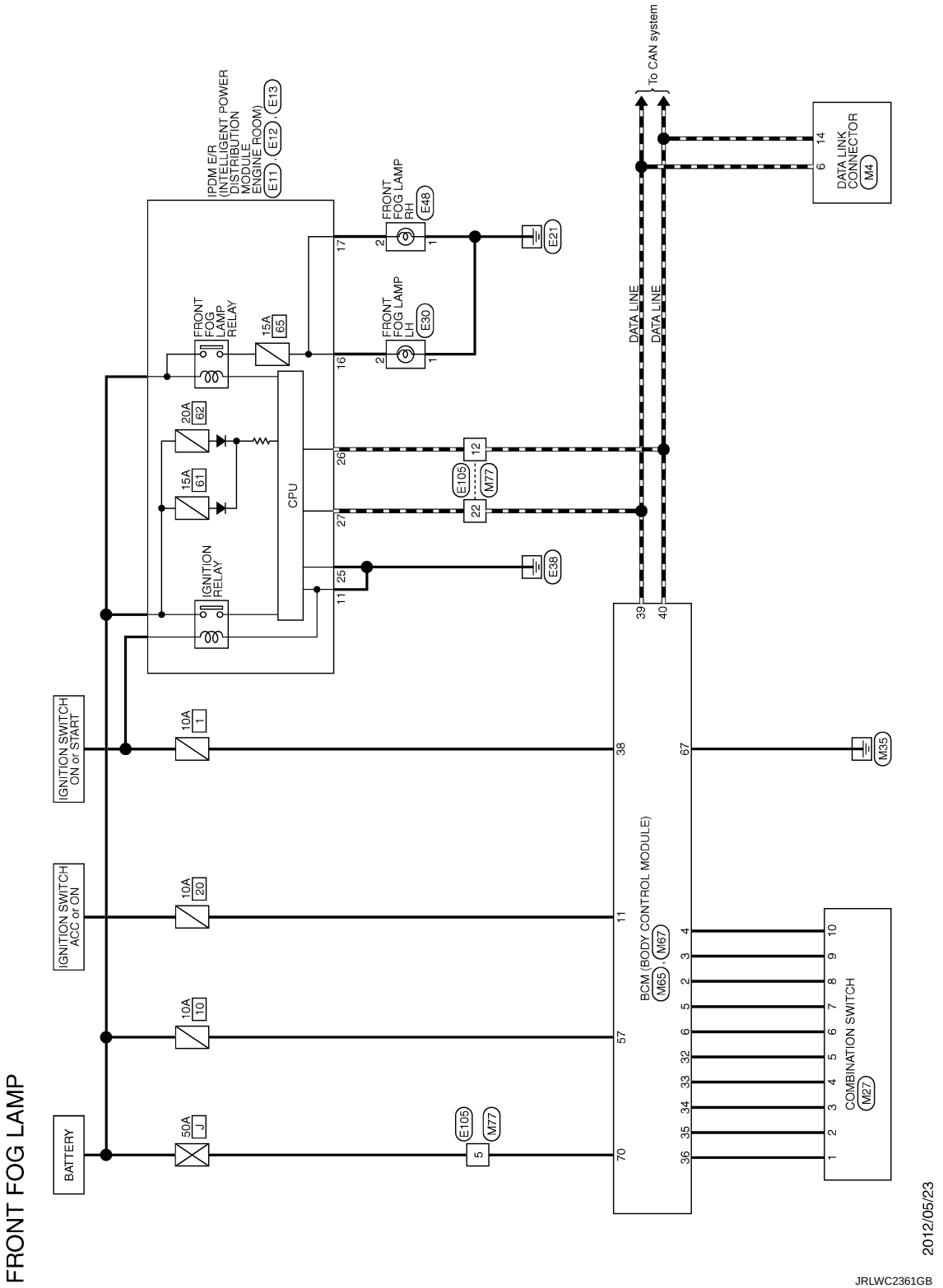


FRONT FOG LAMP SYSTEM

Wiring Diagram - FRONT FOG LAMP -

INFOID:0000000008277639

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information".

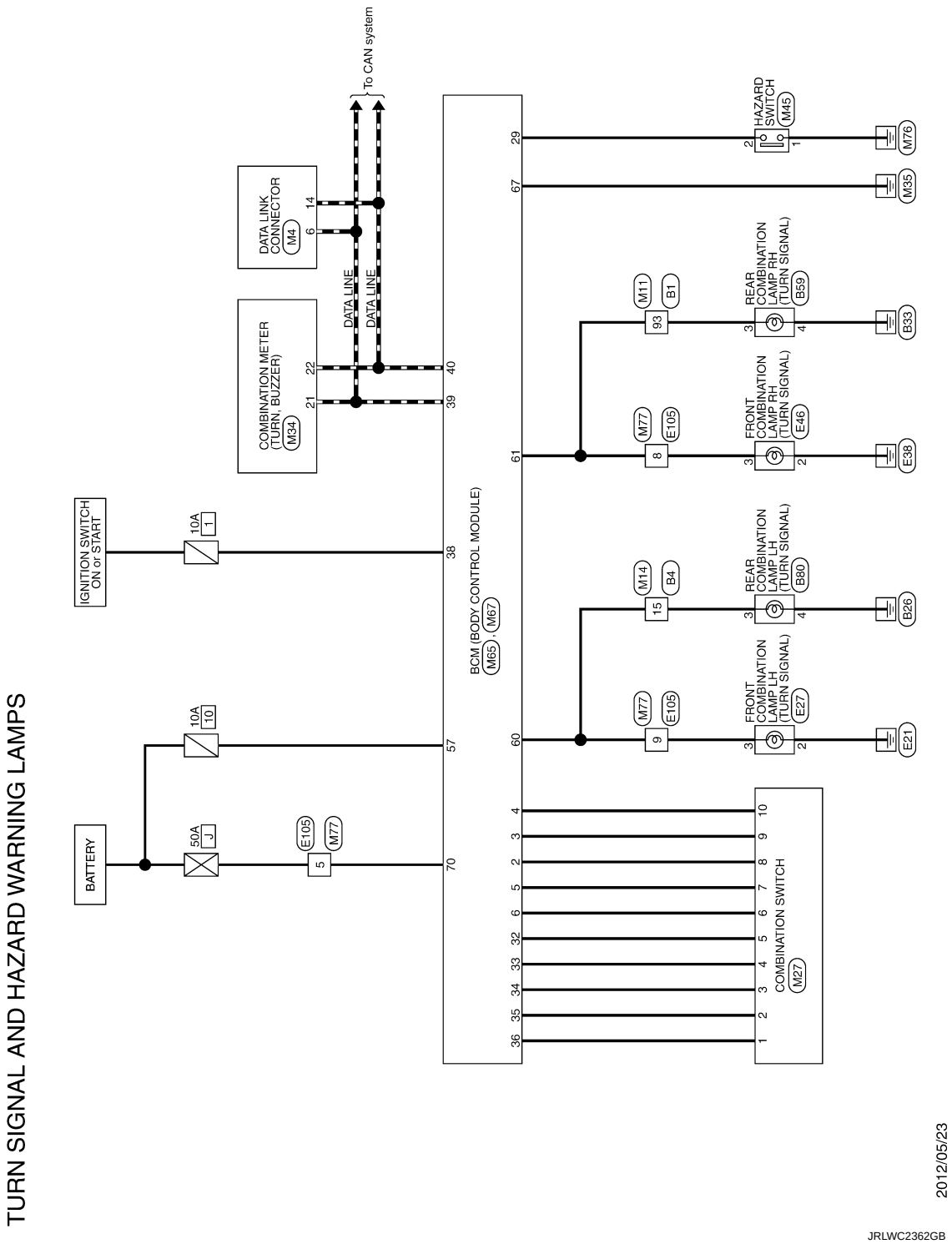


TURN SIGNAL AND HAZARD WARNING LAMP SYSTEM

Wiring Diagram - TURN AND HAZARD WARNING LAMPS -

INFOID:0000000008277640

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information".

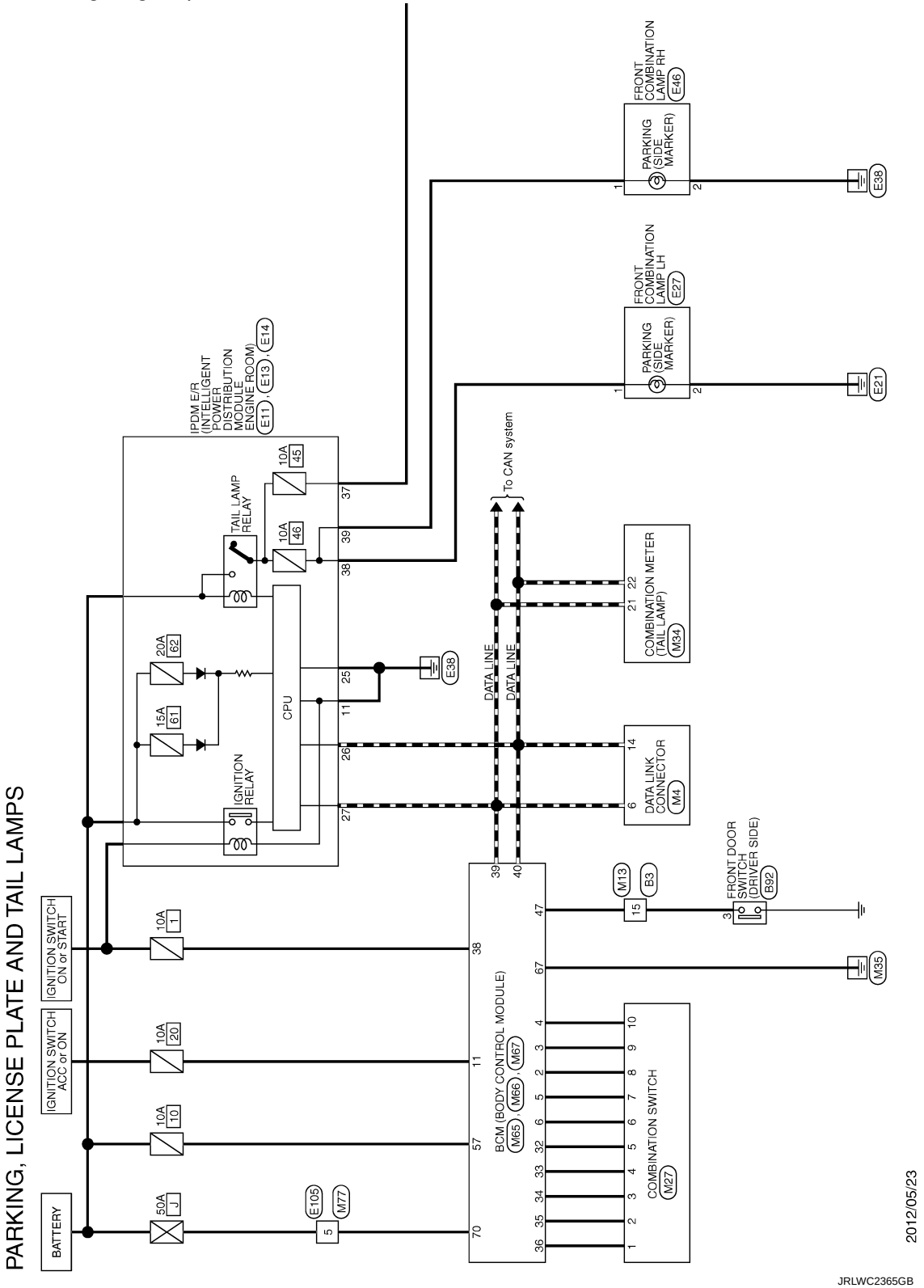


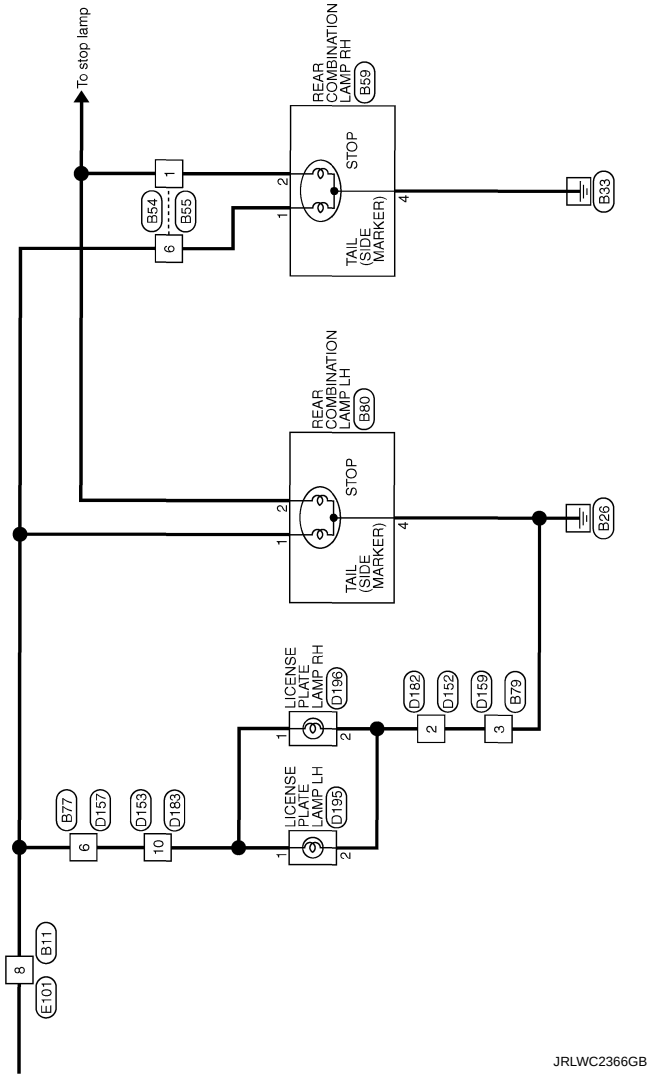
PARKING, LICENSE PLATE AND TAIL LAMPS SYSTEM

Wiring Diagram - PARKING, LICENSE PLATE AND TAIL LAMPS -

INFOID:0000000008277641

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information".



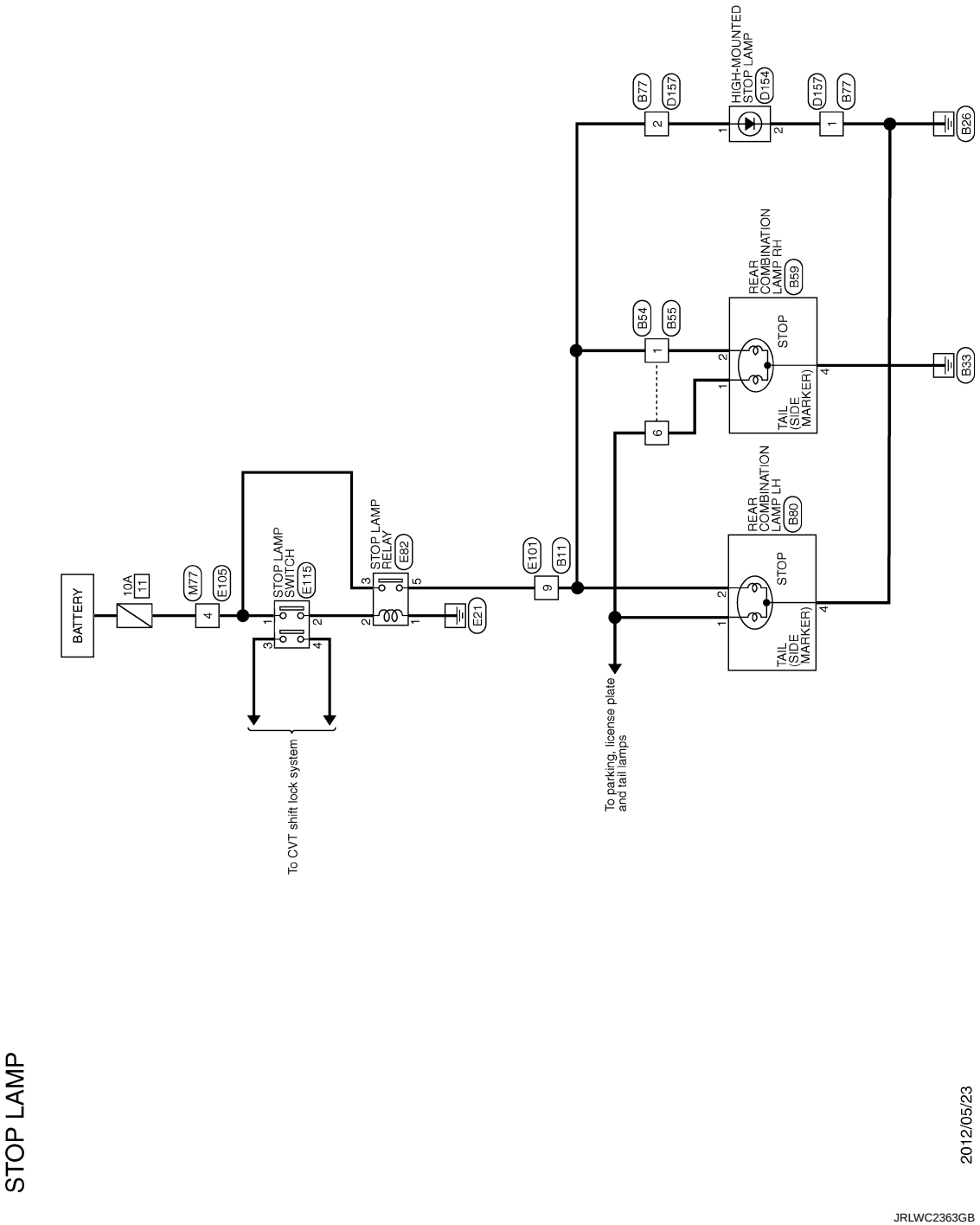

To stop lamp
REAR COMBINATION LAMP RH
B59
STOP
TAIL (SIDE MARKER)
B54
B55
B33
REAR COMBINATION LAMP LH
B80
B26
LICENSE PLATE LAMP RH
D196
LICENSE PLATE LAMP LH
D195
D182
D152
D159
B79
B77
D157
D153
D183
B11
E101
JRLWC2366GB

STOP LAMP

Wiring Diagram - STOP LAMP -

INFOID:0000000008277642

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information".

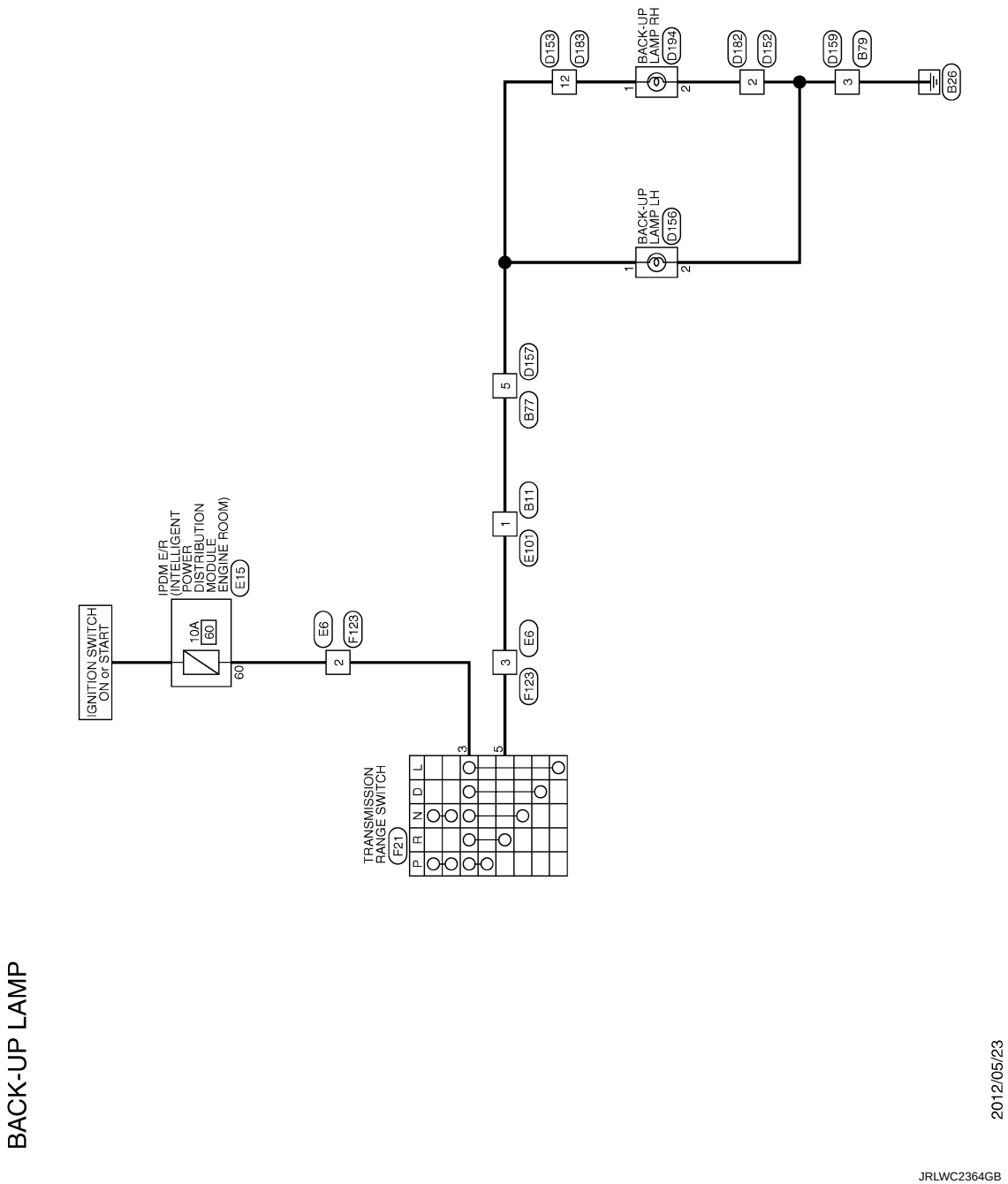


BACK-UP LAMP

Wiring Diagram - BUCK-UP LAMP -

INFOID:0000000008277643

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information".



ECU DIAGNOSIS INFORMATION

BCM (BODY CONTROL MODULE)

Reference Value

INFOID:0000000008729016

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.

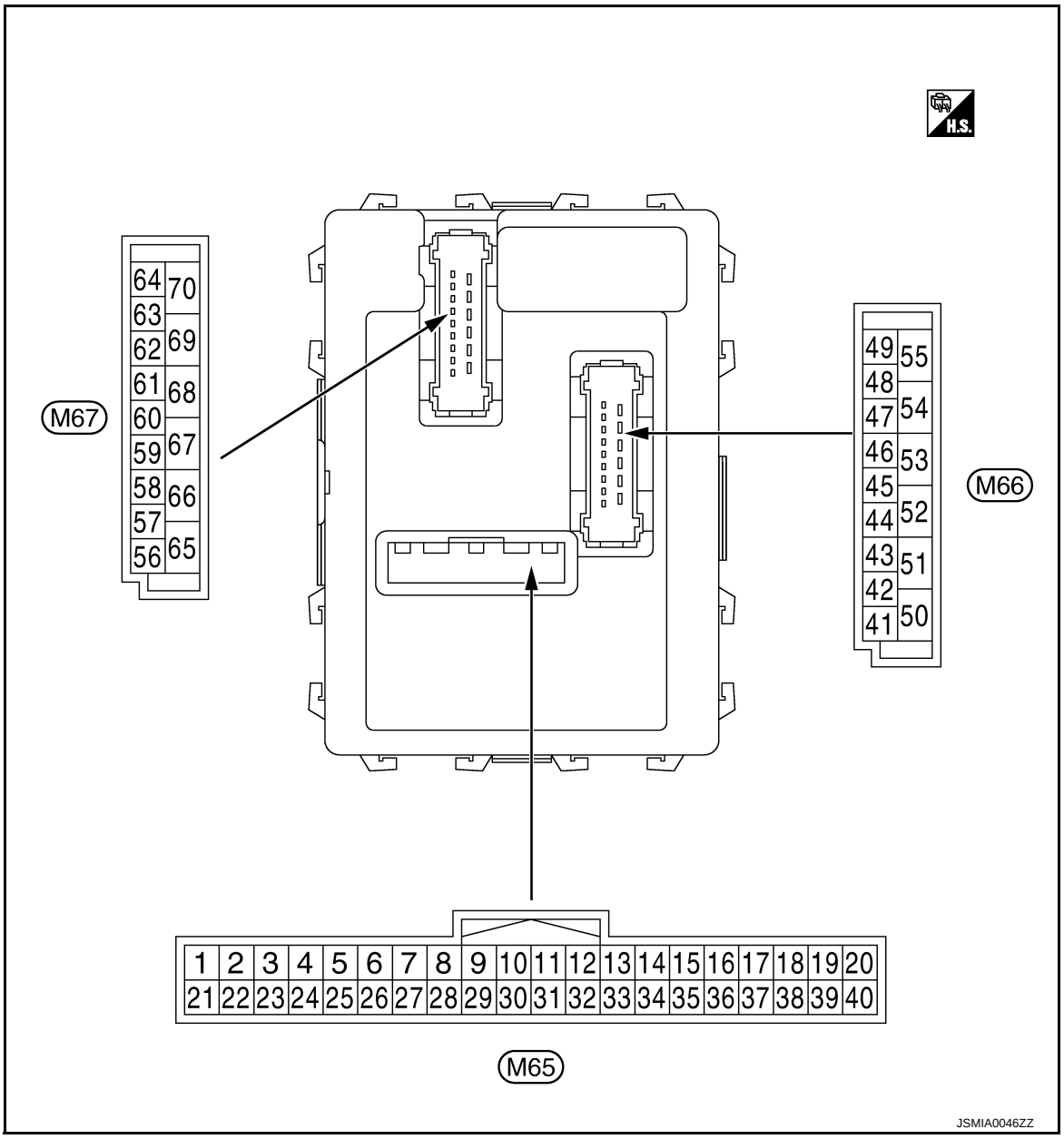
Monitor Item	Condition	Value/Status
IGN ON SW	Ignition switch OFF or ACC	Off
	Ignition switch ON	On
KEY ON SW	Mechanical key is removed from key cylinder	Off
	Mechanical key is inserted to key cylinder	On
CDL LOCK SW	Door lock/unlock switch does not operate	Off
	Press door lock/unlock switch to the lock side	On
CDL UNLOCK SW	Door lock/unlock switch does not operate	Off
	Press door lock/unlock switch to the unlock side	On
DOOR SW-DR	Driver's door closed	Off
	Driver's door opened	On
DOOR SW-AS	Passenger door closed	Off
	Passenger door opened	On
DOOR SW-RR	Rear RH door closed	Off
	Rear RH door opened	On
DOOR SW-RL	Rear LH door closed	Off
	Rear LH door opened	On
BACK DOOR SW	Back door closed	Off
	Back door opened	On
KEY CYL LK-SW	Other than driver door key cylinder LOCK position	Off
	Driver door key cylinder LOCK position	On
KEY CYL UN-SW	Other than driver door key cylinder UNLOCK position	Off
	Driver door key cylinder UNLOCK position	On
KEYLESS LOCK	“LOCK” button of key fob is not pressed	Off
	“LOCK” button of key fob is pressed	On
KEYLESS UNLOCK	“UNLOCK” button of key fob is not pressed	Off
	“UNLOCK” button of key fob is pressed	On
I-KEY LOCK	“LOCK” button of Intelligent Key or door request switch are not pressed	Off
	“LOCK” button of Intelligent Key or door request switch are pressed	On
I-KEY UNLOCK	“UNLOCK” button of Intelligent Key or door request switch are not pressed	Off
	“UNLOCK” button of Intelligent Key or door request switch are pressed	On
ACC ON SW	Ignition switch OFF	Off
	Ignition switch ACC or ON	On
REAR DEF SW	Rear window defogger switch OFF	Off
	Rear window defogger switch ON	On

Monitor Item	Condition	Value/Status
LIGHT SW 1ST	Lighting switch OFF	Off
	Lighting switch 1ST	On
BUCKLE SW	The seat belt (driver side) is unfastened. [Seat belt switch (driver side) OFF]	Off
	The seat belt (driver side) is fastened. [Seat belt switch (driver side) ON]	On
KEYLESS PANIC	PANIC button of key fob is not pressed	Off
	PANIC button of key fob is pressed	On
KEYLESS TRUNK	**NOTE:** The item is indicated, but not monitored.	Off
TRNK OPN MNTR	**NOTE:** The item is indicated, but not monitored.	Off
RKE LCK-UNLCK	LOCK/UNLOCK button of key fob is not pressed and held simultaneously	Off
	LOCK/UNLOCK button of key fob is pressed and held simultaneously	On
RKE KEEP UNLK	UNLOCK button of key fob is not pressed	Off
	UNLOCK button of key fob is pressed and held	On
HI BEAM SW	Lighting switch OFF	Off
	Lighting switch HI	On
HEAD LAMP SW 1	Lighting switch OFF	Off
	Lighting switch 2ND	On
HEAD LAMP SW 2	Lighting switch OFF	Off
	Lighting switch 2ND	On
AUTO LIGHT SW	Other than lighting switch AUTO	Off
	Lighting switch AUTO	On
PASSING SW	Other than lighting switch PASS	Off
	Lighting switch PASS	On
FR FOG SW	Front fog lamp switch OFF	Off
	Front fog lamp switch ON	On
RR FOG SW	**NOTE:** The item is indicated, but not monitored.	Off
TURN SIGNAL R	Turn signal switch OFF	Off
	Turn signal switch RH	On
TURN SIGNAL L	Turn signal switch OFF	Off
	Turn signal switch LH	On
ENGINE RUN	Engine stopped	Off
	Engine running	On
PKB SW	Parking brake switch is OFF	Off
	Parking brake switch is ON	On
CARGO LAMP SW	**NOTE:** The item is indicated, but not monitored.	Off
OPTICAL SENSOR	Bright outside of the vehicle	Close to 5 V
	Dark outside of the vehicle	Close to 0 V
IGN SW CAN	Ignition switch OFF or ACC	Off
	Ignition switch ON	On

Monitor Item	Condition	Value/Status
FR WIPER HI	Front wiper switch OFF	Off
	Front wiper switch HI	On
FR WIPER LOW	Front wiper switch OFF	Off
	Front wiper switch LO	On
FR WIPER INT	Front wiper switch OFF	Off
	Front wiper switch INT	On
FR WASHER SW	Front washer switch OFF	Off
	Front washer switch ON	On
INT VOLUME	Wiper intermittent dial is in a dial position 1 - 7	1 - 7
FR WIPER STOP	Any position other than front wiper stop position	Off
	Front wiper stop position	On
VEHICLE SPEED	While driving	Equivalent to speedometer reading
RR WIPER ON	Rear wiper switch OFF	Off
	Rear wiper switch ON	On
RR WIPER INT	Rear wiper switch OFF	Off
	Rear wiper switch INT	On
RR WASHER SW	Rear washer switch OFF	Off
	Rear washer switch ON	On
RR WIPER STOP	Rear wiper stop position	Off
	Other than rear wiper stop position	On
RR WIPER STP2	**NOTE:** The item is indicated, but not monitored.	Off
H/L WASH SW	**NOTE:** The item is indicated, but not monitored.	Off
HAZARD SW	Hazard switch OFF	Off
	Hazard switch ON	On
BRAKE SW	Brake pedal is not depressed	Off
	Brake pedal is depressed	On
FAN ON SIG	Blower fan motor switch OFF	Off
	Blower fan motor switch ON (other than OFF)	On
AIR COND SW	• A/C conditioner OFF (A/C switch indicator OFF) (Automatic air conditioner) • A/C switch OFF (Manual air conditioner)	Off
	• A/C conditioner ON (A/C switch indicator ON) (Automatic air conditioner) • A/C switch ON (Manual air conditioner)	On
I-KEY TRUNK	**NOTE:** The item is indicated, but not monitored.	Off
I-KEY PW DWN	UNLOCK button of Intelligent Key is not pressed	Off
	UNLOCK button of Intelligent Key is pressed and held	On
I-KEY PANIC	PANIC button of Intelligent Key is not pressed	Off
	PANIC button of Intelligent Key is pressed	On
PUSH SW	Return to ignition switch to “LOCK” position	Off
	Press ignition switch	On
TRNK OPNR SW	When back door opener switch is not pressed	Off
	When back door opener switch is pressed	On

Monitor Item	Condition	Value/Status
TRUNK CYL SW	**NOTE:** The item is indicated, but not monitored.	Off
HOOD SW	Close the hood **NOTE:** Vehicles of except for Mexico are OFF-fixed	Off
	Open the hood	On
OIL PRESS SW	• Ignition switch OFF or ACC • Engine running	Off
	Ignition switch ON	On
AIR PRESS FL	Ignition switch ON (Only when the signal from the transmitter is received)	Air pressure of front LH tire
AIR PRESS FR	Ignition switch ON (Only when the signal from the transmitter is received)	Air pressure of front RH tire
AIR PRESS RR	Ignition switch ON (Only when the signal from the transmitter is received)	Air pressure of rear RH tire
AIR PRESS RL	Ignition switch ON (Only when the signal from the transmitter is received)	Air pressure of rear LH tire
ID REGST FL1	ID of front LH tire transmitter is registered	Done
	ID of front LH tire transmitter is not registered	Yet
ID REGST FR1	ID of front RH tire transmitter is registered	Done
	ID of front RH tire transmitter is not registered	Yet
ID REGST RR1	ID of rear RH tire transmitter is registered	Done
	ID of rear RH tire transmitter is not registered	Yet
ID REGST RL1	ID of rear LH tire transmitter is registered	Done
	ID of rear LH tire transmitter is not registered	Yet
WARNING LAMP	Tire pressure indicator OFF	Off
	Tire pressure indicator ON	On
BUZZER	Tire pressure warning alarm is not sounding	Off
	Tire pressure warning alarm is sounding	On

TERMINAL LAYOUT

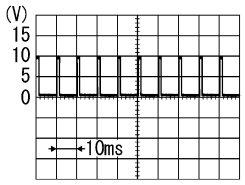
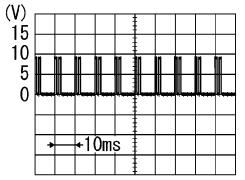
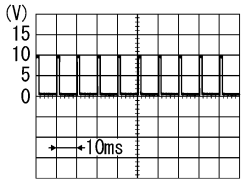
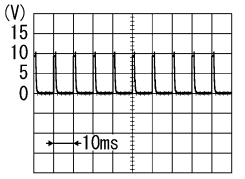
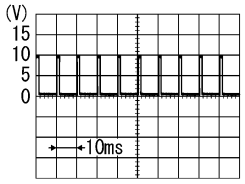


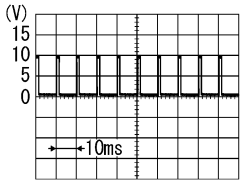
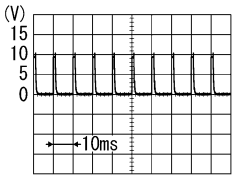
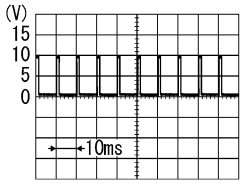
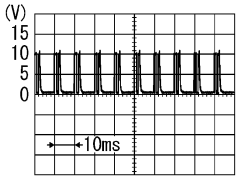
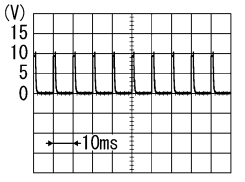
PHYSICAL VALUES

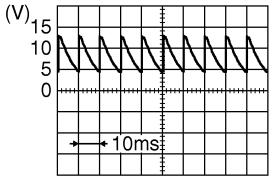
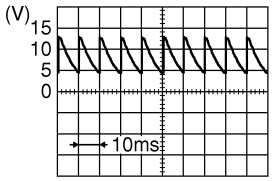
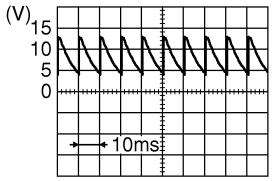
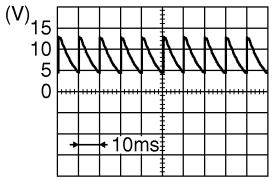
CAUTION:

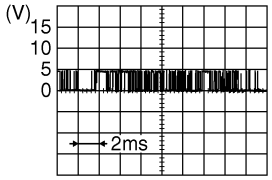
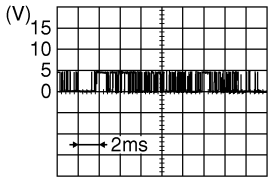
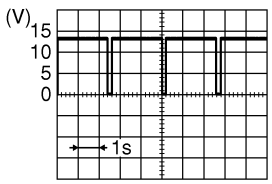
- **Check combination switch system terminal waveform under the loaded condition with lighting switch, turn signal switch and wiper switch OFF is not to be fluctuated by being overloaded.**
- **Turn wiper intermittent dial position to 4 except when checking waveform or voltage of wiper intermittent dial position. Wiper intermittent dial position can be confirmed on CONSULT. Refer to BCS-26, "COMB SW : CONSULT Function (BCM - COMB SW)".**
- **BCM reads the status of the combination switch at 10 ms internal normally. Refer to BCS-9, "System Diagram".**

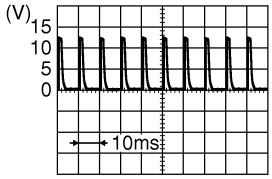
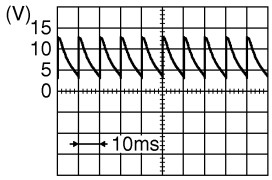
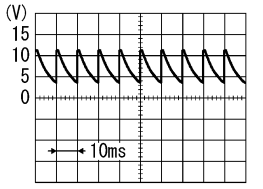
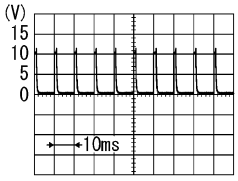
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
1 (V)	Ground	Ignition key hole illumination control	Output	Ignition key hole illumination	OFF	Battery voltage
					ON	0 V

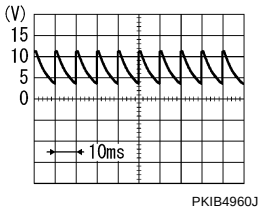
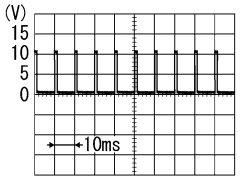
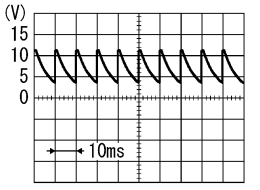
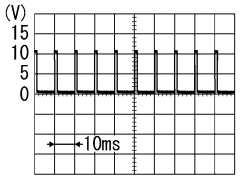
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
2 (G)	Ground	Combination switch INPUT 5	Input	Combination switch (Wiper intermittent dial 4)	All switch OFF	0 V
					Turn signal switch RH Lighting switch HI Lighting switch 1ST	 PKIB4959J 1.0 V
					Lighting switch 2ND	 PKIB4953J 2.0 V
3 (Y)	Ground	Combination switch INPUT 4	Input	Combination switch (Wiper intermittent dial 4)	All switch OFF	0 V
					Turn signal switch LH Lighting switch PASS Lighting switch 2ND	 PKIB4959J 1.0 V
					Front fog lamp switch ON	 PKIB4955J 0.8 V
4 (W)	Ground	Combination switch INPUT 3	Input	Combination switch (Wiper intermittent dial 4)	All switch OFF	0 V
					Lighting switch AUTO Front wiper switch LO Front wiper switch MIST Front wiper switch INT	 PKIB4959J 1.0 V

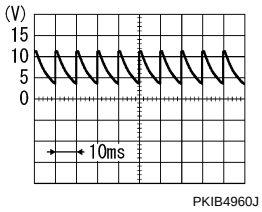
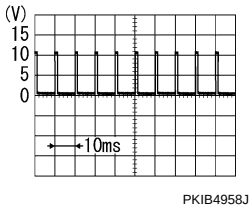
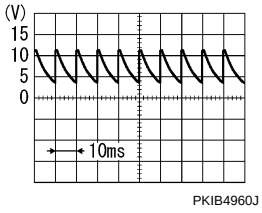
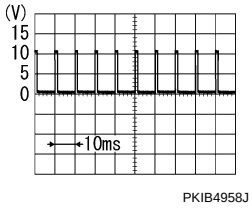
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
5 (R)	Ground	Combination switch INPUT 2	Input	Combination switch	All switch OFF (Wiper intermittent dial 4)	0 V
					Front washer switch (Wiper intermittent dial 4)	 PKIB4959J 1.0 V
					Rear washer ON (Wiper intermittent dial 4)	
					Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 5 • Wiper intermittent dial 6	
					Rear wiper switch ON (Wiper intermittent dial 4)	 PKIB4955J 0.8 V
6 (BG)	Ground	Combination switch INPUT 1	Input	Combination switch	All switch OFF (Wiper intermittent dial 4)	0 V
					Front wiper switch HI (Wiper intermittent dial 4)	 PKIB4959J 1.0 V
					Rear wiper switch INT (Wiper intermittent dial 4)	
					Wiper intermittent dial 3 (All switch OFF)	
					Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 2	 PKIB4952J 1.7 V
					Any of the condition below with all switch OFF • Wiper intermittent dial 6 • Wiper intermittent dial 7	 PKIB4955J 0.8 V

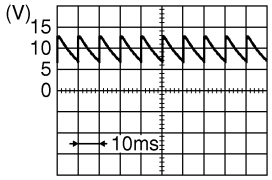
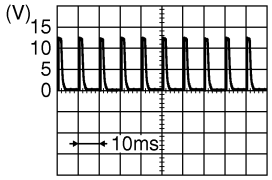
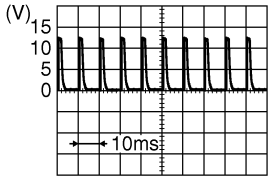
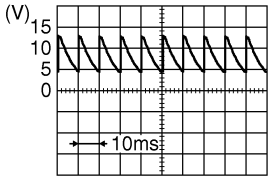
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
7 (V)	Ground	Door key cylinder switch UNLOCK signal	Input	Door key cylinder switch	NEUTRAL position	 JPMIA0587GB 8.0 - 8.5 V
					UNLOCK position	0 V
8 (R)	Ground	Door key cylinder switch LOCK signal	Input	Door key cylinder switch	NEUTRAL position	 JPMIA0587GB 8.0 - 8.5 V
					LOCK position	0 V
9 (R)	Ground	Stop lamp switch	Input	Stop lamp switch	OFF (Brake pedal is not depressed)	0 V
					ON (Brake pedal is depressed)	Battery voltage
10 (SB)	Ground	Rear window defogger switch	Input	Rear window defogger switch	Not pressed	Battery voltage
					Pressed	0 V
11 (SB)	Ground	Ignition switch ACC	Input	Ignition switch OFF		0 V
				Ignition switch ACC or ON		Battery voltage
12 (BG)	Ground	Passenger door switch	Input	Passenger door switch	OFF (When passenger door closed)	 JPMIA0586GB 7.5 - 8.0 V
					ON (When passenger door opened)	0 V
13 (LG)	Ground	Rear door switch RH	Input	Rear door switch RH	OFF (When rear door RH closed)	 JPMIA0587GB 8.0 - 8.5 V
					ON (When rear door RH opened)	0 V

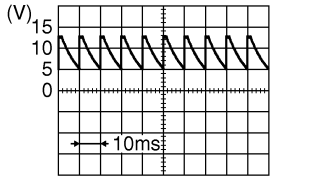
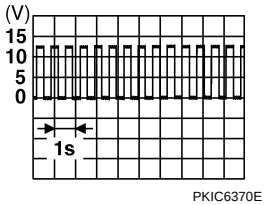
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
14 (G)	Ground	Optical sensor	Input	Ignition switch ON	When bright outside of the vehicle	Close to 5 V
					When dark outside of the vehicle	Close to 0 V
17 (W)	Ground	Optical sensor power supply	Output	Ignition switch	OFF, ACC	0 V
					ON	5 V
18* (R)	Ground	Receiver and sensor ground	Input	Ignition switch ON		0 V
19* (V)	Ground	Remote keyless entry receiver power supply	Input	Without Intelligent Key system	At any condition	5 V
				With Intelligent Key system	• Ignition switch OFF • For 3 seconds after ignition switch OFF to ON	0 V
					3 seconds or later after ignition switch OFF to ON	5 V
20* (GR)	Ground	Remote keyless entry receiver signal	Input	Without Intelligent Key system	At any condition	 JPMIA0589GB **NOTE:** The wave form changes according to signal-receiving condition.
				With Intelligent Key system	• Ignition switch OFF • For 3 seconds after ignition switch OFF to ON	0 V
					3 seconds or later after ignition switch OFF to ON	 JPMIA0589GB **NOTE:** The wave form changes according to signal-receiving condition.
21 (G)	Ground	NATS antenna amp.	Input/ Output	Just after inserting ignition key in key cylinder		Pointer of tester should move
23 (B)	Ground	Security indicator signal	Input	Security indicator	ON	0 V
					Blinking (Ignition switch OFF)	 JPMIA0590GB 12.0 V
					OFF	Battery voltage

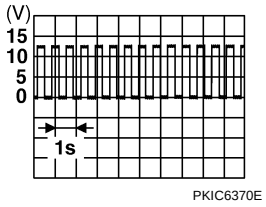
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
25 (BR)	Ground	NATS antenna amp.	Input/ Output	Just after inserting ignition key in key cylinder		Pointer of tester should move
27 (Y)	Ground	A/C switch	Input	Ignition switch OFF		 JPMIA0591GB 1.6 V
				Ignition switch ON	A/C switch OFF	
					A/C switch ON	0 V
28 (LG)	Ground	Blower fan switch	Input	Ignition switch OFF		 JPMIA0592GB 7.0 - 7.5 V
				Ignition switch ON	Blower fan switch OFF	
					Blower fan switch ON	0 V
29 (W)	Ground	Hazard switch	Input	Hazard switch	OFF	Battery voltage
					ON	0 V
30 (G)	Ground	Back door opener switch	Input	Back door opener switch	Not pressed	Battery voltage
					Pressed	0 V
32 (BR)	Ground	Combination switch OUTPUT 5	Output	Combination switch	All switch OFF (Wiper intermittent dial 4)	 PKIB4960J 7.2 V
					Front fog lamp switch ON (Wiper intermittent dial 4)	
					Rear wiper switch ON (Wiper intermittent dial 4)	 PKIB4956J 1.0 V
					Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 2 • Wiper intermittent dial 6 • Wiper intermittent dial 7	

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
33 (GR)	Ground	Combination switch OUTPUT 4	Output	Combination switch	All switch OFF (Wiper intermittent dial 4)	 PKIB4960J 7.2 V
					Lighting switch 1ST (Wiper intermittent dial 4)	
					Lighting switch AUTO (Wiper intermittent dial 4)	 PKIB4958J 1.2 V
					Rear wiper switch INT (Wiper intermittent dial 4)	
					Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 5 • Wiper intermittent dial 6	
34 (SB)	Ground	Combination switch OUTPUT 3	Output	Combination switch	All switch OFF (Wiper intermittent dial 4)	 PKIB4960J 7.2 V
					Lighting switch 2ND (Wiper intermittent dial 4)	
					Lighting switch HI (Wiper intermittent dial 4)	 PKIB4958J 1.2 V
					Rear washer switch ON (Wiper intermittent dial 4)	
					Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 2 • Wiper intermittent dial 3	

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
35 (B)	Ground	Combination switch OUTPUT 2	Output	Combination switch (Wiper intermittent dial 4)	All switch OFF	 PKIB4960J 7.2 V
					Lighting switch 2ND Lighting switch PASS Front wiper switch INT Front wiper switch HI	 PKIB4958J 1.2 V
36 (V)	Ground	Combination switch OUTPUT 1	Output	Combination switch (Wiper intermittent dial 4)	All switch OFF	 PKIB4960J 7.2 V
					Turn signal switch RH Turn signal switch LH Front wiper switch LO (Front wiper switch MIST) Front washer switch ON	 PKIB4958J 1.2 V
37 (LG)	Ground	Key switch	Input	Insert mechanical key into ignition key cylinder		Battery voltage
				Remove mechanical key from ignition key cylinder		0 V
38 (G)	Ground	Ignition switch ON	Input	Ignition switch OFF or ACC		0 V
				Ignition switch ON or START		Battery voltage
39 (L)	Ground	CAN-H	Input/ Output	—		—
40 (P)	Ground	CAN-L	Input/ Output	—		—

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
43 (V)	Ground	Back door switch	Input	Back door switch	OFF (When back door closed)	 JPMIA0593GB 9.5 - 10.0 V
					ON (When back door opened)	0 V
44 (B)	Ground	Rear wiper auto stop position	Input	Ignition switch ON	Rear wiper stop position	0 V
					Any position other than rear wiper stop position	Battery voltage
45 (P)	Ground	Door lock and unlock switch LOCK signal	Input	Door lock and unlock switch	NEUTRAL position	 JPMIA0591GB 1.6 V
					LOCK position	0 V
46 (BR)	Ground	Door lock and unlock switch UNLOCK signal	Input	Door lock and unlock switch	NEUTRAL position	 JPMIA0591GB 1.6 V
					UNLOCK position	0 V
47 (W)	Ground	Driver door switch	Input	Driver door switch	OFF (When driver door closed)	 JPMIA0587GB 8.0 - 8.5 V
					ON (When driver door opened)	0 V

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
48 (GR)	Ground	Rear door switch LH	Input	Rear door switch LH	OFF (When rear door LH closed)	 JPMIA0594GB 8.5 - 9.0 V
					ON (When rear door LH opened)	0 V
49 (L)	Ground	Luggage room lamp control	Output	Luggage room lamp switch DOOR position	Back door is closed (Luggage room lamp turns OFF)	Battery voltage
					Back door is opened (Luggage room lamp turns ON)	0 V
53 (V)	Ground	Back door open	Output	Back door opener switch	Not pressed (Back door actuator is activated)	0 V
					Pressed (Back door actuator is activated)	Battery voltage
55 (SB)	Ground	Rear wiper motor	Output	Ignition switch ON	Rear wiper switch OFF	0 V
					Rear wiper switch ON	Battery voltage
56 (Y)	Ground	Interior room lamp power supply	Output	After passing the interior room lamp battery saver operation time		0 V
				Any other time after passing the interior room lamp battery saver operation time		Battery voltage
57 (G)	Ground	Battery power supply	Input	Ignition switch OFF		Battery voltage
59 (L)	Ground	Driver door UNLOCK	Output	Driver door	UNLOCK (Actuator is activated)	Battery voltage
					Other then UNLOCK (Actuator is not activated)	0 V
60 (BR)	Ground	Turn signal LH	Output	Ignition switch ON	Turn signal switch OFF	0 V
					Turn signal switch LH	 PKIC6370E 6.0 V

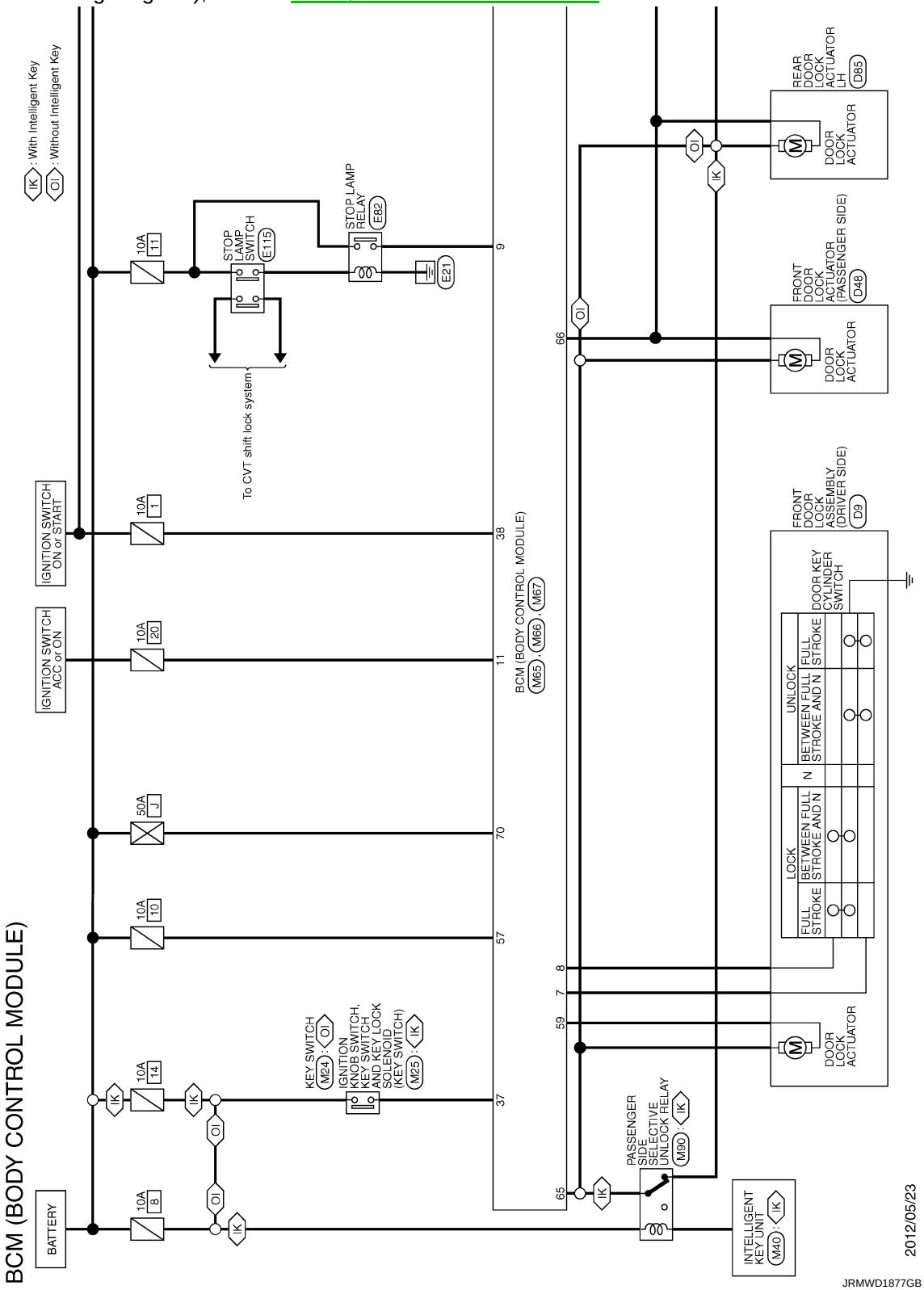
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
61 (GR)	Ground	Turn signal RH	Output	Ignition switch ON	Turn signal switch OFF	0 V
					Turn signal switch RH	 6.0 V
63 (R)	Ground	Interior room lamp timer control	Output	Interior room lamp	OFF	Battery voltage
					ON	0 V
65 (V)	Ground	All doors LOCK	Output	All doors	LOCK (Actuator is activated)	Battery voltage
					Other then LOCK (Actuator is not activated)	0 V
66 (G)	Ground	Passenger door and rear door UNLOCK	Output	Passenger door and rear door	UNLOCK (Actuator is activated)	Battery voltage
					Other then UNLOCK (Actuator is not activated)	0 V
67 (B)	Ground	Ground	Output	Ignition switch ON		0 V
68 (L)	Ground	P/W power supply (RAP)	Output	Ignition switch ON		Battery voltage
69 (P)	Ground	P/W power supply (BAT)	Output	Ignition switch OFF		Battery voltage
70 (Y)	Ground	Battery power supply	Input	Ignition switch OFF		Battery voltage

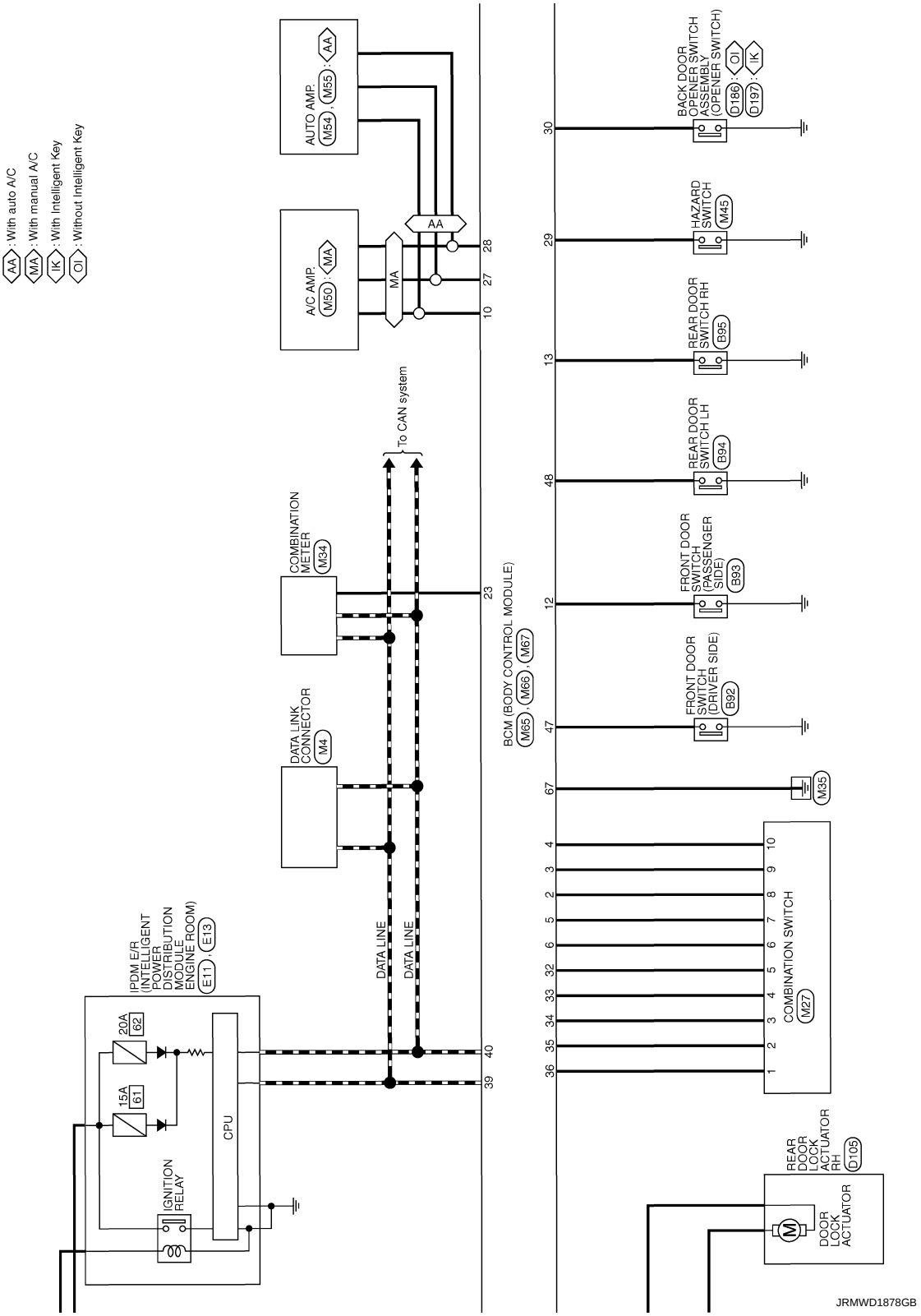
*: Except for Mexico with Intelligent Key

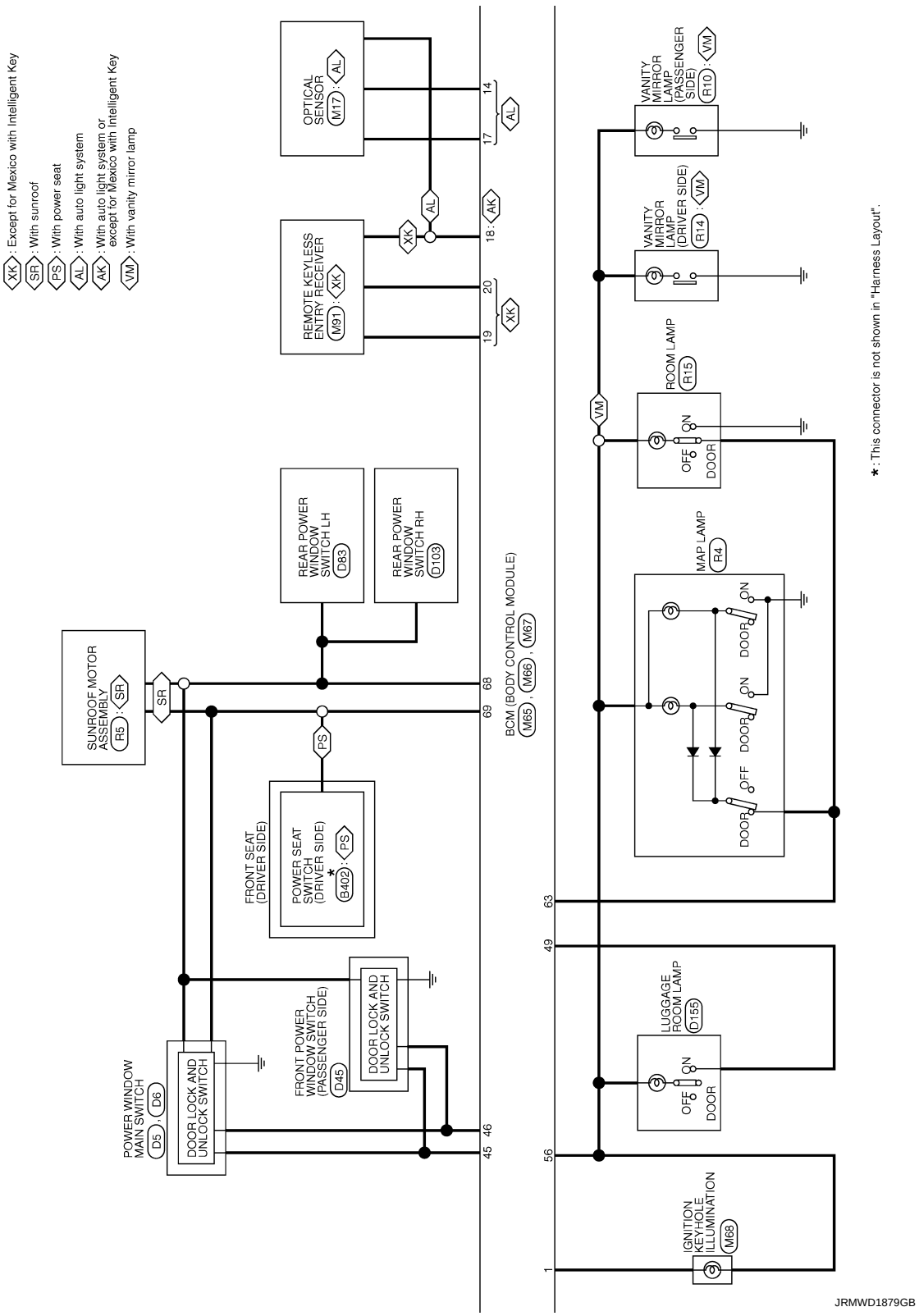
Wiring Diagram - BCM -

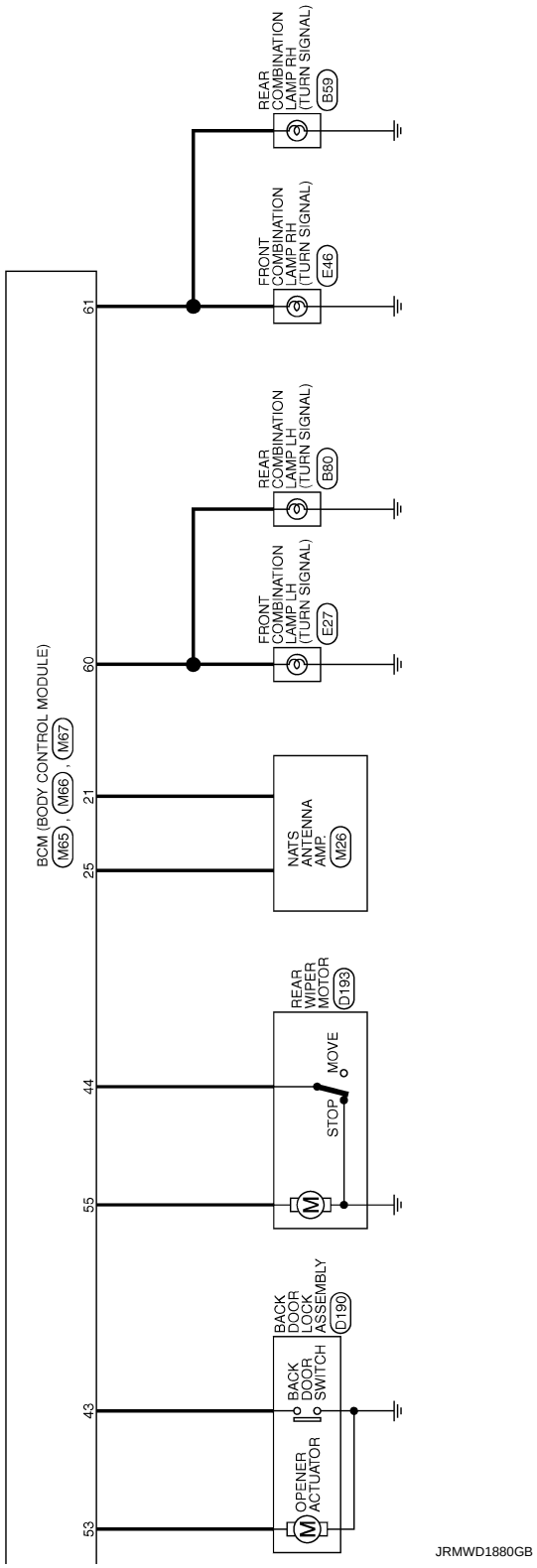
INFOID:0000000008729017

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information".




AA : With auto A/C
MA : With manual A/C
IK : With Intelligent Key
OI : Without Intelligent Key
AUTO AMP. (M54) (M55) : AA
A/C AMP. (M50) : MA
AA
MA
28
27
10
To CAN system
COMBINATION METER (M34)
23
DATA LINK CONNECTOR (M4)
DATA LINE
DATA LINE
40
39
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) (E11) : (E13)
20A 62
15A 61
IGNITION RELAY
CPU
BCM (BODY CONTROL MODULE) (M65) (M66) : (M67)
30
29
13
48
12
47
67
4 3 2 5 6 32 33 34 35 36
10 9 8 7 6 5 4 3 2 1
BACK DOOR OPENER SWITCH ASSEMBLY (OPENER SWITCH) (D186) : OI (D197) : IK
HAZARD SWITCH (M45)
REAR DOOR SWITCH RH (B95)
REAR DOOR SWITCH LH (B94)
FRONT DOOR SWITCH (PASSENGER SIDE) (B93)
FRONT DOOR SWITCH (DRIVER SIDE) (B92)
(M35)
COMBINATION SWITCH (M27)
REAR DOOR LOCK ACTUATOR RH (D105)
DOOR LOCK ACTUATOR
JRMWD1878GB


XK : Except for Mexico with Intelligent Key
SR : With sunroof
PS : With power seat
AL : With auto light system
AK : With auto light system or except for Mexico with Intelligent Key
VM : With vanity mirror lamp
OPTICAL SENSOR M17 : AL
REMOTE KEYLESS ENTRY RECEIVER M91 : XK
REAR POWER WINDOW SWITCH LH D83
REAR POWER WINDOW SWITCH RH D103
SUNROOF MOTOR ASSEMBLY R5 : SR
FRONT SEAT (DRIVER SIDE)
POWER SEAT SWITCH (DRIVER SIDE) B402 : PS
FRONT POWER WINDOW SWITCH (PASSENGER SIDE) D45
DOOR LOCK AND UNLOCK SWITCH
POWER WINDOW MAIN SWITCH D5 D6
BCM (BODY CONTROL MODULE) M65 , M66 , M67
VANITY MIRROR LAMP (PASSENGER SIDE) R10 : VM
VANITY MIRROR LAMP (DRIVER SIDE) R14 : VM
ROOM LAMP R15
MAP LAMP R4
LUGGAGE ROOM LAMP D155
IGNITION KEYHOLE ILLUMINATION M68
ON
OFF
DOOR
*: This connector is not shown in "Harness Layout".
JRMWD1879GB



Fail-safe

INFOID:0000000008729018

REAR WIPER MOTOR PROTECTION

BCM detects the rear wiper stopping position according to the rear wiper stop position signal.
When the rear wiper stop position signal does not change more than 5 seconds while driving the rear wiper, BCM stops power supply to protect the rear wiper motor.

Condition of cancellation

1. Pass more than 1 minute after the rear wiper stop.
2. Turn the rear wiper switch OFF.
3. Operate the rear wiper switch or rear washer switch.

DTC Inspection Priority Chart

INFOID:0000000008729019

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

Priority	DTC
1	U1000: CAN COMM CIRCUIT
2	C1735: IGN CIRCUIT OPEN
3	• C1704: LOW PRESSURE FL • C1705: LOW PRESSURE FR • C1706: LOW PRESSURE RR • C1707: LOW PRESSURE RL • C1708: [NO DATA] FL • C1709: [NO DATA] FR • C1710: [NO DATA] RR • C1711: [NO DATA] RL • C1716: [PRESS DATA ERR] FL • C1717: [PRESS DATA ERR] FR • C1718: [PRESS DATA ERR] RR • C1719: [PRESS DATA ERR] RL • C1729: VHCL SPEED SIG ERR

DTC Index

INFOID:0000000008729020

NOTE:
Details of time display
- CRNT: Displays when there is a malfunction now or after returning to the normal condition until turning ignition switch OFF → ON again.
- 1 - 39: Displayed if any previous malfunction is present when current condition is normal. It increases like 1 → 2 → 3...38 → 39 after returning to the normal condition whenever ignition switch OFF → ON. The counter remains at 39 even if the number of cycles exceeds it. It is counted from 1 again when turning ignition switch OFF → ON after returning to the normal condition if the malfunction is detected again.

CONSULT display	Tire pressure monitor warning lamp ON	Reference
U1000: CAN COMM CIRCUIT	—	BCS-34
C1704: LOW PRESSURE FL	×	WT-14
C1705: LOW PRESSURE FR	×	
C1706: LOW PRESSURE RR	×	
C1707: LOW PRESSURE RL	×	
C1708: [NO DATA] FL	×	WT-16
C1709: [NO DATA] FR	×	
C1710: [NO DATA] RR	×	
C1711: [NO DATA] RL	×	
C1716: [PRESS DATA ERR] FL	×	WT-19
C1717: [PRESS DATA ERR] FR	×	
C1718: [PRESS DATA ERR] RR	×	
C1719: [PRESS DATA ERR] RL	×	
C1729: VHCL SPEED SIG ERR	×	WT-21
C1735: IGN CIRCUIT OPEN	—	BCS-35

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

Reference Value

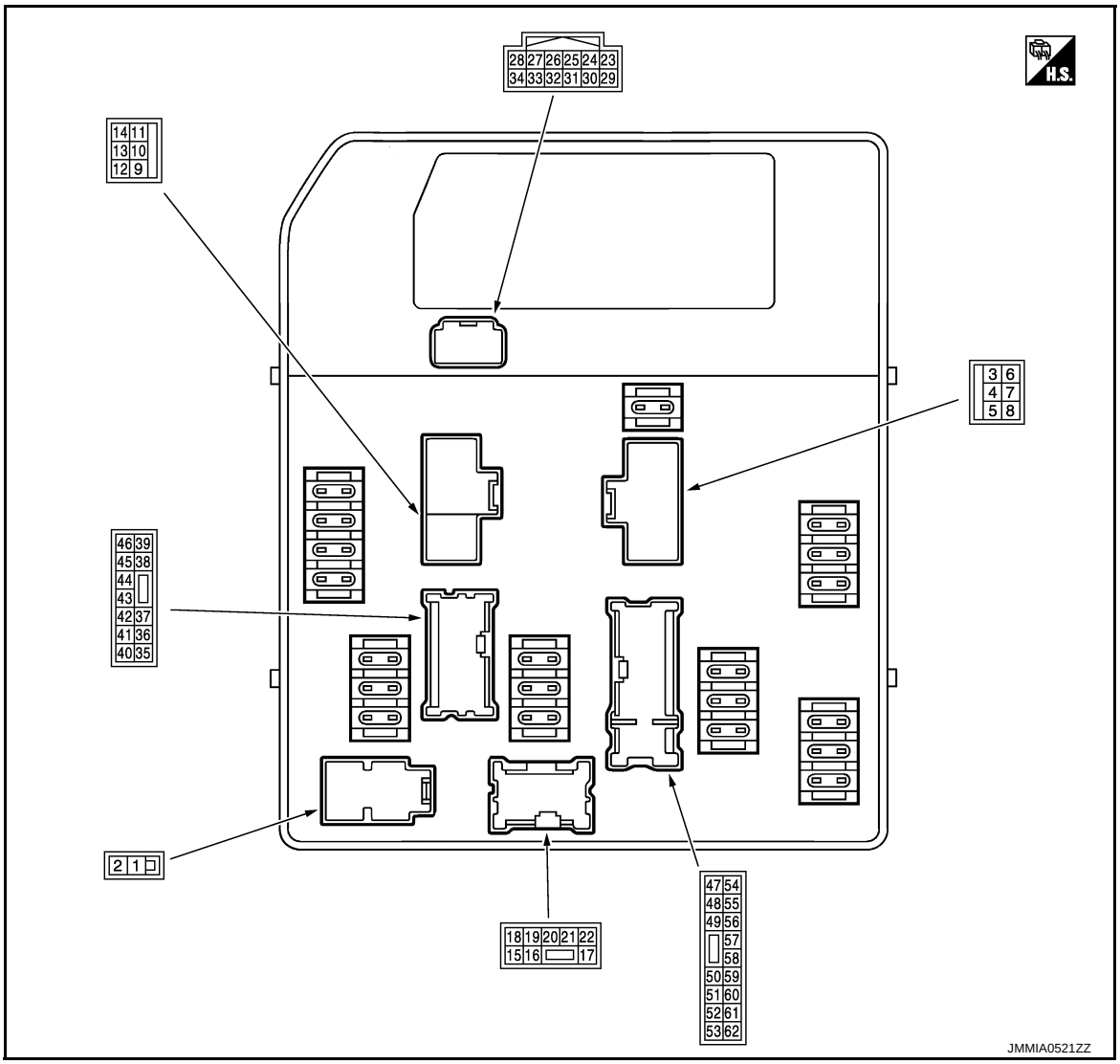
INFOID:0000000008729040

VALUES ON THE DIAGNOSIS TOOL

Monitor Item	Condition		Value/Status
MOTOR FAN REQ	Engine idle speed	Changes depending on engine coolant temperature, air conditioner operation status, vehicle speed, etc.	1 - 4
AC COMP REQ	Engine running	A/C switch OFF	Off
		A/C switch ON (Compressor is operating)	On
TAIL&CLR REQ	Lighting switch OFF		Off
	Lighting switch 1ST or 2ND		On
HL LO REQ	Lighting switch OFF		Off
	Lighting switch 2ND		On
HL HI REQ	Lighting switch OFF		Off
	Lighting switch HI (Light is illuminated)		On
FR FOG REQ **NOTE:** This item is monitored only on the vehicle with front fog lamp.	Lighting switch 2ND	Front fog lamp switch OFF	Off
		Front fog lamp switch ON	On
FR WIP REQ	Ignition switch ON	Front wiper switch OFF	Stop
		Front wiper switch INT	1LOW
		Front wiper switch LO	Low
		Front wiper switch HI	Hi
WIP AUTO STOP	Ignition switch ON	Front wiper stop position	STOP P
		Any position other than front wiper stop position	ACT P
WIP PROT	Ignition switch ON	Front wiper operates normally	Off
		Front wiper stops at fail-safe operation	BLOCK
ST RLY REQ **NOTE:** Vehicle without Intelligent Key system indicates only “ON”, and it does not change.	When Intelligent Key is outside the vehicle, and the push switch is pushed		Off
	When Intelligent Key is inside the vehicle, and the push switch is pushed		On
IGN RLY	Ignition switch OFF or ACC		Off
	Ignition switch ON		On
RR DEF REQ	Ignition switch ON	Rear window defogger switch OFF	Off
		Rear window defogger switch ON (Rear window defogger is operating)	On
OIL P SW	Ignition switch OFF, ACC or engine running		Open
	Ignition switch ON		Close
DTRL REQ **NOTE:** This item is monitored only on the vehicle with the daytime running light system.	Daytime running light system is not operated.		Off
	Daytime running light system is operated.		On

Monitor Item	Condition	Value/Status
HOOD SW **NOTE:** This item is monitored only the vehicle for Mexico.	Close the hood	Off
	Open the hood	On
THFT HRN REQ	Not operation	Off
	Horn is activated with vehicle security system or panic alarm system.	On
HORN CHIRP	Not operation	Off
	Horn is activated with key fob LOCK operation.	On

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	–	Signal name	Input/ Output		
1 (R)	Ground	Battery power supply	Input	Ignition switch OFF	Battery voltage
2 (G)	Ground	Battery power supply	Input	Ignition switch OFF	Battery voltage

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
3 (L)	Ground	Starter relay power supply	Output	When engine is clanking		Battery voltage
				When engine is not clanking		0 V
4 (W)	Ground	Cooling fan relay-1 power supply	Output	Cooling fan operation	OFF	0 V
					MID or HI	Battery voltage
5 (R)	Ground	Ignition switch START	Input	Ignition switch OFF, ACC or ON		0 V
				Ignition switch START		Battery voltage
6 (BR)	Ground	Battery power supply (Cooling fan relay)	Input	Ignition switch OFF		Battery voltage
7 (P)	Ground	Cooling fan motor-2 (HI) ground	—	Cooling fan operation	OFF	Battery voltage
					HI	0 V
8 (G)	Ground	Cooling fan relay-2 power supply	Output	Cooling fan operation	OFF	0 V
					HI	Battery voltage
11 (B)	Ground	Ground	—	Ignition switch ON		0 V
12 (G)	Ground	Rear window defogger relay power supply	Output	Ignition switch ON	Rear window defogger switch OFF	0 V
					Rear window defogger switch ON	Battery voltage
15[*1] (SB)	Ground	Daytime running light relay control	Output	Daytime running light system	Not operated	Battery voltage
					Operated	0 V
16[*2] (Y)	Ground	Front fog lamp (LH)	Output	Lighting switch 2ND	Front fog lamp switch OFF	0 V
					Front fog lamp switch ON	Battery voltage
17[*2] (W)	Ground	Front fog lamp (RH)	Output	Lighting switch 2ND	Front fog lamp switch OFF	0 V
					Front fog lamp switch ON	Battery voltage
18 (L)	Ground	Headlamp LO (LH)	Output	Lighting switch OFF		0 V
				Lighting switch 2ND		Battery voltage
20 (SB)	Ground	Headlamp LO (RH)	Output	Lighting switch OFF		0 V
				Lighting switch 2ND		Battery voltage
21 (G)	Ground	Headlamp HI (LH)	Output	Lighting switch OFF		0 V
				• Lighting switch 2ND and HI • Lighting switch PASS		Battery voltage
				Daytime running light system Operated[*1]		7.0 V
22 (LG)	Ground	Headlamp HI (RH)	Output	Lighting switch OFF		0 V
				• Lighting switch 2ND and HI • Lighting switch PASS		Battery voltage
				Daytime running light system Operated[*1]		7.0 V
23 (W)	Ground	Oil pressure switch	Input	Ignition switch ON	Engine stopped	0 V
					Engine running	Battery voltage
24 (Y)	Ground	Front wiper auto stop	Input	Ignition switch ON	Front wiper stop position	0 V
					Any position other than front wiper stop position	Battery voltage
25 (B)	Ground	Ground	—	Ignition switch ON		0 V
26 (P)	—	CAN-L	Input/ Output	—		—

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
27 (L)	—	CAN-H	Input/ Output	—		—
31 (LG)	Ground	Cooling fan relay-4 control	Output	Cooling fan operation	OFF	Battery voltage
					LO	0 - 1.0 V
32 (V)	Ground	Throttle control motor relay control	Input	After passing approximately 2 seconds or more after turning the ignition switch from ON to OFF		Battery voltage
				• Ignition switch ON • For approximately 2 seconds after turning ignition switch from ON to OFF		0 - 1.0 V
33 (GR)	Ground	Fuel pump relay control	Input	Ignition switch OFF		0 V
				Ignition switch ON	Engine stopped	Battery voltage
					Engine running	0.8 V
34*3 (W)	Ground	Hood switch	Input	Close the hood		Battery voltage
				Open the hood		0 V
37 (R)	Ground	Tail, license plate lamps and illuminations	Output	Lighting switch OFF		0 V
				Lighting switch 1ST		Battery voltage
38 (R)	Ground	Parking lamp (LH)	Output	Lighting switch OFF		0 V
				Lighting switch 1ST		Battery voltage
39 (GR)	Ground	Parking lamp (RH)	Output	Lighting switch OFF		0 V
				Lighting switch 1ST		Battery voltage
40 (BR)	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC		0 V
				Ignition switch ON		Battery voltage
41 (W)	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC		0 V
				Ignition switch ON		Battery voltage
42 (L)	Ground	Front wiper HI	Output	Ignition switch ON	Front wiper switch OFF	0 V
					Front wiper switch HI	Battery voltage
43 (G)	Ground	Front wiper LO	Output	Ignition switch ON	Front wiper switch OFF	0 V
					Front wiper switch LO	Battery voltage
45 (Y)	Ground	Starter relay power supply	Input	Ignition switch ON	Selector lever “P” or “N”	Battery voltage
					Selector lever in any position other than “P” or “N”	0 V
46 (W)	Ground	Fuel pump relay power supply	Output	• Ignition switch OFF or ACC • After passing approximately 1 second or more after turning the ignition switch ON		0 V
				• For approximately 1 second after turning the ignition switch ON • Engine running		Battery voltage
47 (BR)	Ground	ECM relay power supply	Output	After passing approximately 4 seconds or more after turning the ignition switch from ON to OFF		0 V
				• Ignition switch ON • For approximately 4 seconds after turning ignition switch from ON to OFF		Battery voltage
48 (R)	Ground	ECM relay power supply	Output	After passing approximately 4 seconds or more after turning the ignition switch from ON to OFF		0 V
				• Ignition switch ON • For approximately 4 seconds after turning ignition switch from ON to OFF		Battery voltage

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
50 (G)	Ground	Cooling fan relay-5 control	Output	Cooling fan operation	OFF	Battery voltage
					MID or HI	0 - 1.0 V
51 (L)	Ground	ECM relay control	Output	After passing approximately 4 seconds or more after turning the ignition switch from ON to OFF		Battery voltage
				• Ignition switch ON • For approximately 4 seconds after turning ignition switch from ON to OFF		0 - 1.0 V
52 (P)	Ground	Throttle control motor relay power supply	Output	After passing approximately 2 seconds or more after turning the ignition switch from ON to OFF		0 V
				• Ignition switch ON • For approximately 2 seconds after turning ignition switch from ON to OFF		Battery voltage
55 (BG)	Ground	A/C relay power supply	Output	Engine stopped		0 V
				Engine running	A/C switch OFF	0 V
					A/C switch ON (A/C compressor is operating)	Battery voltage
56 (SB)	Ground	Ignition switch ON	Input	Ignition switch OFF or ACC		0 V
				Ignition switch ON		Battery voltage
57 (V)	Ground	Horn relay control	Output	The horn is not activated		Battery voltage
				The horn is activated		0 V
58 (LG)	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC		0 V
				Ignition switch ON		Battery voltage
59 (BR)	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC		0 V
				Ignition switch ON		Battery voltage
60 (SB)	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC		0 V
				Ignition switch ON		Battery voltage
61 (R)	Ground	ECM power supply	Output	Ignition switch OFF		Battery voltage

*1: With daytime running light system

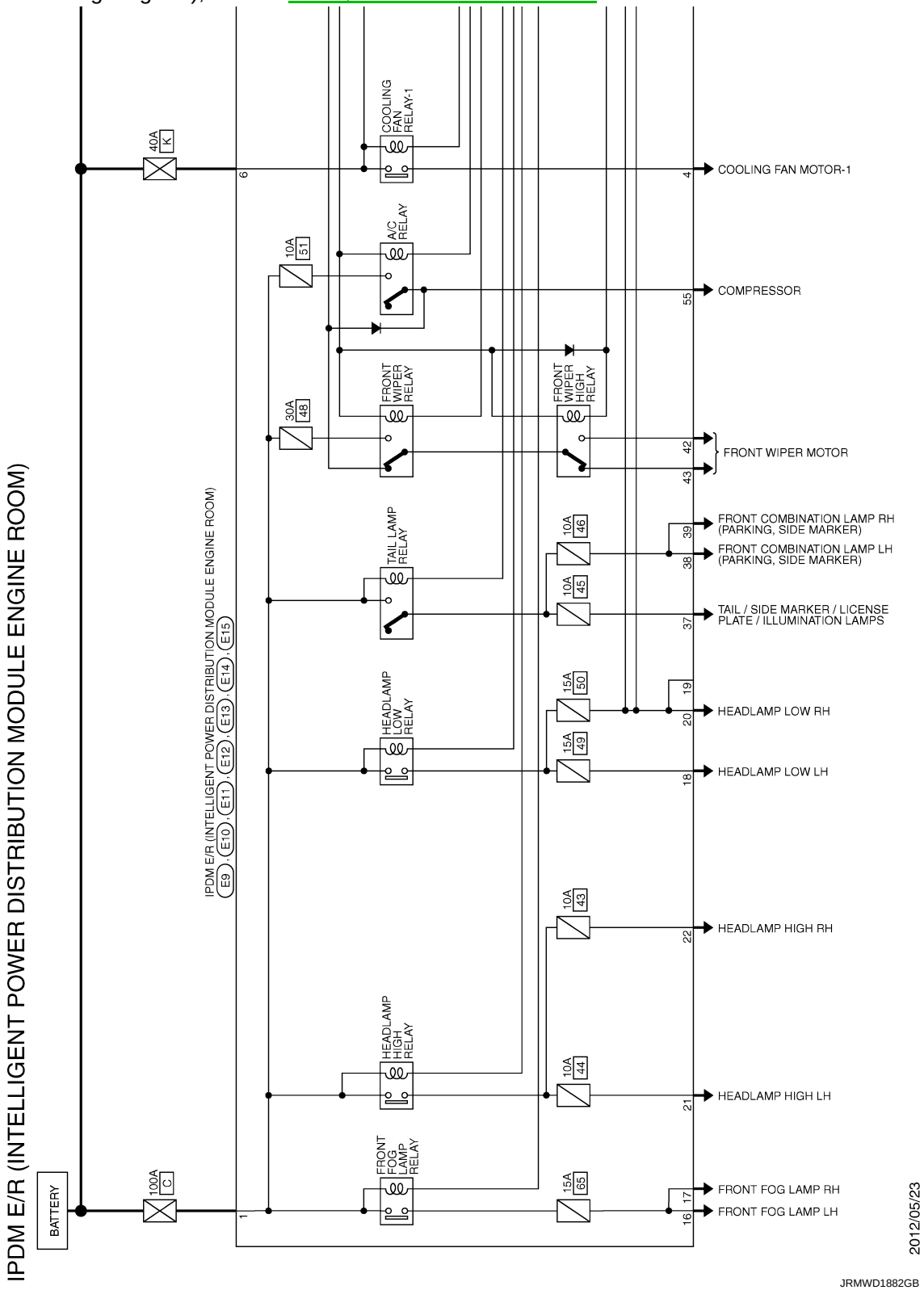
*2: With front fog lamp system

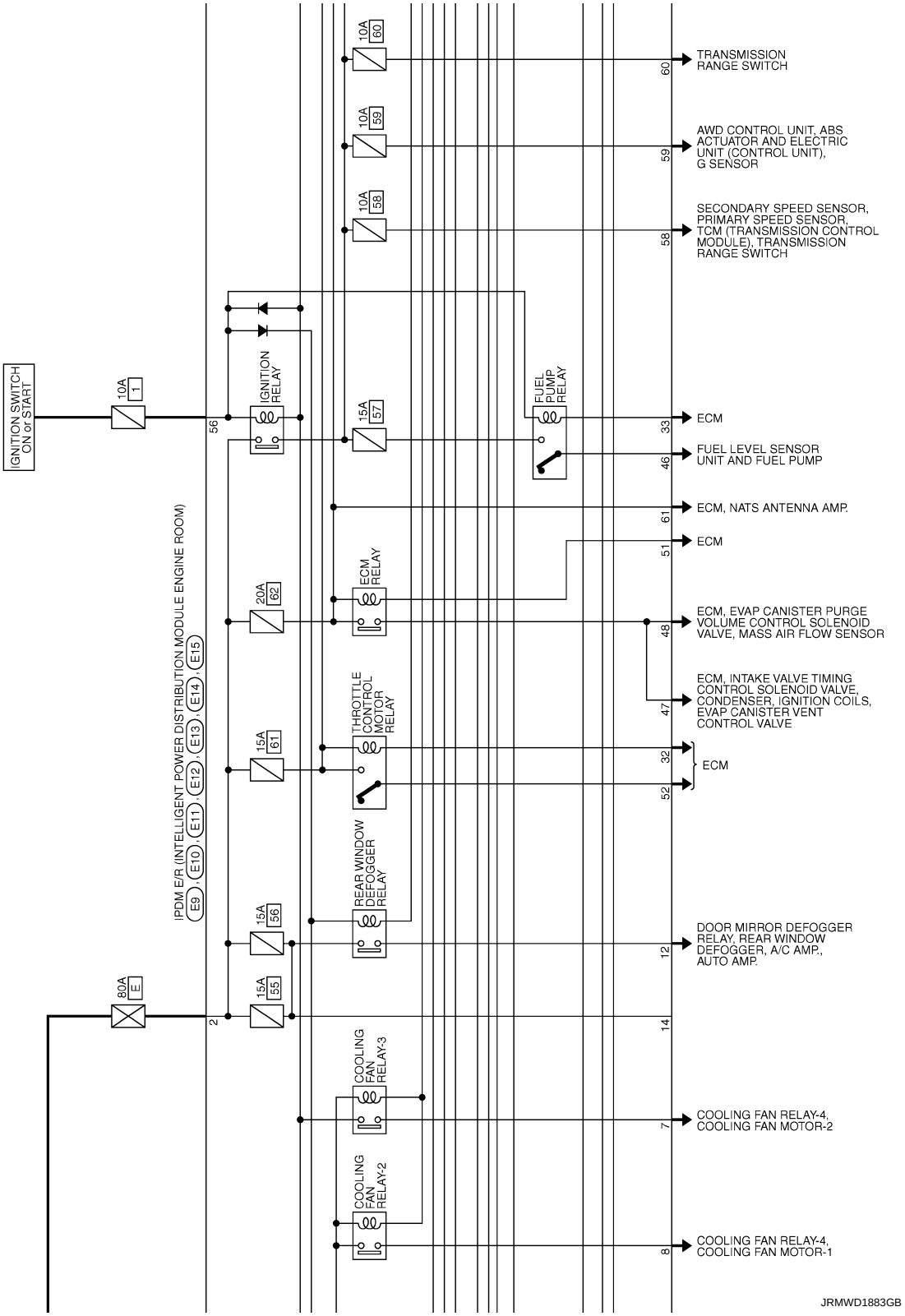
*3: For Mexico

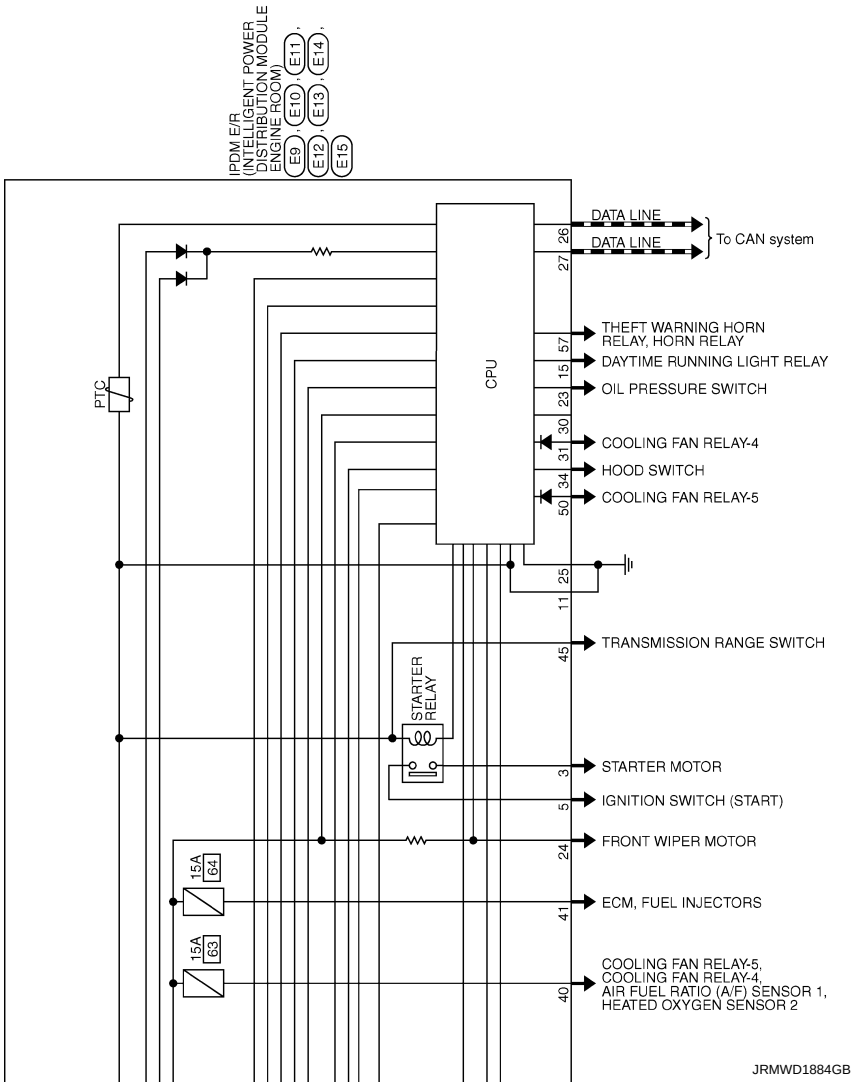
Wiring Diagram - IPDM E/R -

INFOID:0000000008729041

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information".




IGNITION SWITCH ON or START
10A 1
56
IGNITION RELAY
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E9, E10, E11, E12, E13, E14, E15
80A E
2
10A 60
10A 59
10A 58
15A 57
20A 62
15A 61
15A 56
15A 55
FUEL PUMP RELAY
ECM RELAY
THROTTLE CONTROL MOTOR RELAY
REAR WINDOW DEFOGGER RELAY
COOLING FAN RELAY-3
COOLING FAN RELAY-2
60 TRANSMISSION RANGE SWITCH
59 AWD CONTROL UNIT, ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT), G SENSOR
58 SECONDARY SPEED SENSOR, PRIMARY SPEED SENSOR, TCM (TRANSMISSION CONTROL MODULE), TRANSMISSION RANGE SWITCH
33 ECM
46 FUEL LEVEL SENSOR UNIT AND FUEL PUMP
61 ECM, NATS ANTENNA AMP.
51 ECM
48 ECM, EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE, MASS AIR FLOW SENSOR
47 ECM, INTAKE VALVE TIMING CONTROL SOLENOID VALVE, CONDENSER, IGNITION COILS, EVAP CANISTER VENT CONTROL VALVE
32 ECM
52
12 DOOR MIRROR DEFOGGER RELAY, REAR WINDOW DEFOGGER, A/C AMP., AUTO AMP.
14
7 COOLING FAN RELAY-4, COOLING FAN MOTOR-2
8 COOLING FAN RELAY-4, COOLING FAN MOTOR-1
JRMWD1883GB



Fail-safe

INFOID:0000000008729042

CAN COMMUNICATION CONTROL

When CAN communication with ECM and 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 ECM

Control part	Fail-safe in operation
Cooling fan	• The cooling fan relay-1, the cooling fan relay-2, the cooling fan relay-3 and the cooling fan relay-5 turn ON when the ignition switch is turned ON • The cooling fan relay-1, the cooling fan relay-2, the cooling fan relay-3 and the cooling fan relay-5 turn OFF when the ignition switch is turned OFF • Cooling fan relay-4 OFF
A/C compressor	A/C relay OFF

If no CAN communication is available with BCM

Control part	Fail-safe in operation
Headlamp	• The headlamp low relay turns ON when the ignition switch is turned ON • The headlamp low relay turns OFF when the ignition switch is turned OFF • Headlamp high relay OFF
• Parking lamps • License plate lamps • Tail lamps • Illuminations	• The tail lamp relay and the daytime running light relay* turn ON when the ignition switch is turned ON • The tail lamp relay and the daytime running light relay* turn OFF when the ignition switch is turned OFF
Front wiper	• The status just before activation of fail-safe control is maintained until the ignition switch is turned OFF while the front wiper is operating at LO or HI speed. • The front wiper is operated at LO speed until the ignition switch is turned OFF if the fail-safe control is activated while the front wiper is set in the INT mode and the front wiper motor is operating.
Front fog lamps	Front fog lamp relay OFF
Starter motor	Starter relay OFF
Rear window defogger	Rear window defogger relay OFF
Horn	Horn relay OFF

NOTE:

*: With daytime running light system

IGNITION RELAY MALFUNCTION DETECTION FUNCTION

- IPDM E/R monitors status of ignition relay by the voltage at ignition relay contact circuit inside it.
- IPDM E/R judges that the ignition relay is error, if status of the ignition relay and ignition switch ON signal (CAN).
- If the ignition relay cannot turn OFF due to contact seizure, it activates the tail lamp relay and daytime running light relay* for 10 minutes to alert the user to the ignition relay malfunction when the ignition switch is turned OFF.

Detection		IPDM E/R judgment	Operation
Ignition switch ON signal	Ignition relay		
ON	ON	Ignition relay normal	—
OFF	OFF	Ignition relay normal	—
OFF	ON	Ignition relay ON stuck	Turn on the tail lamp relay and daytime running light relay* for 10 minutes
ON	OFF	Ignition relay OFF stuck	Detect DTC "B2099: IGN RELAY OFF"

NOTE:

*: With daytime running light system

FRONT WIPER CONTROL

IPDM E/R detects the front wiper stop position with the front wiper stop position signal.
When the front wiper stop position signal is in the conditions listed below, IPDM E/R repeats a front wiper 10 seconds operation and 20 seconds stop five times.

Ignition switch	Front wiper switch	Front wiper stop position signal
ON	OFF	The front wiper stop position signal (stop position) cannot be input for 10 seconds.
	ON	The front wiper stop position signal does not change for 10 seconds.

NOTE:
This operation status can be confirmed on the IPDM E/R “Data Monitor” that displays “BLOCK” for the item “WIP PROT” while the wiper is stopped.

DTC Index

INFOID:0000000008729043

CONSULT display	Fail-safe	Timing[NOTE]		Reference page
No DTC is detected. further testing may be required.	—	—	—	—
U1000: CAN COMM CIRCUIT	×	CRNT	PAST	PCS-13
B2099: IGN RELAY OFF	—	CRNT	PAST	PCS-14

NOTE:
The details of time display are as follows.

- CRNT: The malfunctions that are detected now.
- PAST: The number is indicated when it is normal at present and a malfunction was detected in the past.

SYMPTOM DIAGNOSIS

EXTERIOR LIGHTING SYSTEM SYMPTOMS

Symptom Table

INFOID:0000000008277653

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

Symptom		Possible cause	Inspection item
Headlamp (HI) is not turned ON.	One side	• Fuse • Halogen bulb (HI) • Harness between IPDM E/R and the headlamp high • Daytime running light relay (with daytime running light system) • IPDM E/R	Headlamp (HI) circuit Refer to EXL-152.
	Both sides	**Symptom diagnosis** "BOTH SIDE HEADLAMPS (HI) ARE NOT TURNED ON" Refer to EXL-217.	
Headlamp (HI) is not turned OFF.	When ignition switch is turned ON.		
	When ignition switch is turned OFF.	IPDM E/R	—
High beam indicator lamp is not turned ON. [The headlamp (HI) is turned ON.]		Combination meter	• Combination meter Data monitor "HI-BEAM IND" • BCM (HEAD LAMP) Active test "HEADLAMP"
Headlamp (LO) is not turned ON.	One side	• Fuse • Halogen bulb (LO) • Harness between IPDM E/R and the headlamp low • IPDM E/R	Headlamp (LO) circuit Refer to EXL-155.
	Both sides	**Symptom diagnosis** "BOTH SIDE HEADLAMPS (LO) ARE NOT TURNED ON" Refer to EXL-218.	
Headlamp (LO) is not turned OFF.	When ignition switch is turned ON.		
	When ignition switch is turned OFF.	IPDM E/R	—
Headlamp is not turned ON/OFF with the lighting switch AUTO.		• Combination switch • Harness between the combination switch and BCM • BCM	Combination switch Refer to BCS-64
		• Optical sensor • Harness between the optical sensor and BCM • BCM	Optical sensor Refer to EXL-171
Daytime running light is not turned ON.		• Fuse • Halogen bulb (HI) • Harness between IPDM E/R and the daytime running light relay • Daytime running light relay • IPDM E/R • BCM • ECM • Combination meter	• Daytime running light relay circuit Refer to EXL-159. • BCM (HEAD LAMP) Data monitor "ENGINE RUNNING" and "PKB SW" • BCM (HEAD LAMP) Active test "DAYTIME RUNNING LIGHT"

Symptom		Possible cause	Inspection item
Front fog lamp is not turned ON.	One side	• Front fog lamp bulb • Harness between IPDM E/R and the front fog lamp • Front fog lamp • IPDM E/R	Front fog lamp circuit Refer to EXL-157.
	Both sides	**Symptom diagnosis** "BOTH SIDE FRONT FOG LAMPS ARE NOT TURNED ON" Refer to EXL-220.	
Front fog lamp is not turned ON.			
Parking lamp is not turned ON.		• Parking lamp bulb • Harness between IPDM E/R and the front combination lamp • Front combination lamp • IPDM E/R	Parking lamp circuit Refer to EXL-162.
Tail lamp is not turned ON.		• Tail lamp bulb • Harness between IPDM E/R and the rear combination lamp • Rear combination lamp	Tail lamp circuit Refer to EXL-168.
License plate lamp is not turned ON.		• License plate lamp bulb • Harness between IPDM E/R and the license plate lamp • License plate lamp	License plate lamp circuit Refer to EXL-170.
Tail lamp and the license plate lamp are not turned ON.		• Fuse • Harness between IPDM E/R and the rear combination lamp • IPDM E/R	License plate lamp circuit Refer to EXL-170.
• Parking lamp, the tail lamp and the license plate lamp are not turned ON. • Parking lamp, the tail lamp and the license plate lamp are not turned OFF. (Each illumination is turned ON/OFF.)		**Symptom diagnosis** "PARKING, LICENSE PLATE AND TAIL LAMPS ARE NOT TURNED ON" Refer to EXL-219.	
Position lamp indicator is not turned ON. (Parking, tail lamps are turned ON.)		Combination meter	• Combination meter Data monitor "LIGHT IND" • BCM (HEAD LAMP) Active test "TAIL LAMP"
Turn signal lamp does not blink.	Indicator lamp is normal. (Applicable side performs the high flasher activation.)	• Harness between BCM and each turn signal lamp • Turn signal lamp bulb	Turn signal circuit Refer to EXL-164.
	Indicator lamp is included.	• Combination switch • Harness between the combination switch and BCM • BCM	Combination switch Refer to BCS-41.
Turn signal indicator lamp does not blink. (Turn signal indicator lamp is normal.)	One side	Combination meter	—
	Both sides (Always)	• Turn signal indicator lamp signal - BCM • Combination meter	• Combination meter Data monitor "TURN IND" • BCM (FLASHER) Active test "FLASHER"
	Both sides (Only when activating hazard warning lamp with the ignition switch OFF)	• Combination meter power supply and the ground circuit • Combination meter	Combination meter Power supply and the ground circuit Refer to MWI-55.
• Hazard warning lamp does not activate. • Hazard warning lamp continues activating. (Turn signal is normal.)		• Hazard switch • Harness between the hazard switch and BCM • BCM	Hazard switch Refer to EXL-166.

NORMAL OPERATING CONDITION

Description

INFOID:0000000008277654

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.

BOTH SIDE HEADLAMPS (HI) ARE NOT TURNED ON

Description

INFOID:0000000008277655

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

Diagnosis Procedure

INFOID:0000000008277656

1.COMBINATION SWITCH INSPECTION

Check the combination switch. Refer to BCS-64, "Symptom Table".

Is the combination switch normal?

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

2.CHECK HEADLAMP (HI) REQUEST SIGNAL INPUT

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

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

Is the item status normal?

YES >> GO TO 3.
NO >> Replace BCM. Refer to BCS-65, "Exploded View".

3.HEADLAMP (HI) CIRCUIT INSPECTION

Check the headlamp (HI) circuit. Refer to EXL-152, "Component Function Check".

Is the headlamp (HI) circuit normal?

YES >> Replace IPDM E/R.
NO >> Repair or replace the malfunctioning part.

BOTH SIDE HEADLAMPS (LO) ARE NOT TURNED ON

Description

INFOID:0000000008277657

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

Diagnosis Procedure

INFOID:0000000008277658

1.CHECK COMBINATION SWITCH

Check the combination switch. Refer to BCS-64, "Symptom Table".

Is the combination switch normal?

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

2.CHECK HEADLAMP (LO) REQUEST SIGNAL INPUT

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

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

Is the item status normal?

YES >> GO TO 3.
NO >> Replace BCM. Refer to BCS-65, "Exploded View".

3.HEADLAMP (LO) CIRCUIT INSPECTION

Check the headlamp (LO) circuit. Refer to EXL-155, "Component Function Check".

Is the headlamp (LO) circuit normal?

YES >> Replace IPDM E/R.
NO >> Repair or replace the malfunctioning part.

PARKING, LICENSE PLATE AND TAIL LAMPS ARE NOT TURNED ON

Description

INFOID:0000000008277659

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

Diagnosis Procedure

INFOID:0000000008277660

1.CHECK FUSE

Check that the following fuse is fusing.

Unit	Location	Fuse No.	Capacity
Parking lamp	IPDM E/R	#46	10 A
• Tail lamp • License plate lamp		#45	10 A

Is the fuse fusing?

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

2.COMBINATION SWITCH INSPECTION

Check the combination switch. Refer to BCS-64, "Symptom Table".

Is the combination switch normal?

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

3.CHECK TAIL LAMP RELAY REQUEST SIGNAL INPUT

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

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

Is the item status normal?

YES >> GO TO 4.
NO >> Replace BCM. Refer to BCS-65, "Exploded View".

4.TAIL LAMP CIRCUIT INSPECTION

Check the tail lamp circuit. Refer to EXL-168, "Component Function Check".

Is the tail lamp circuit normal?

YES >> Replace IPDM E/R.
NO >> Repair or replace the malfunctioning part.

BOTH SIDE FRONT FOG LAMPS ARE NOT TURNED ON

Description

INFOID:0000000008277661

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

Diagnosis Procedure

INFOID:0000000008277662

1.CHECK FUSE

Check that the following fuse is fusing.

Unit	Location	Fuse No.	Capacity
Front fog lamp	IPDM E/R	#65	15 A

Is the fuse fusing?

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

2.COMBINATION SWITCH INSPECTION

Check the combination switch. Refer to BCS-64, "Symptom Table".

Is the combination switch normal?

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

3.CHECK FRONT FOG LAMP REQUEST SIGNAL INPUT

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

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

Is the item status normal?

YES >> GO TO 4.
NO >> Replace BCM. Refer to BCS-65, "Exploded View".

4.FRONT FOG LAMP CIRCUIT INSPECTION

Check the front fog lamp circuit. Refer to EXL-157, "Component Function Check".

Is the front fog lamp circuit normal?

YES >> Replace IPDM E/R.
NO >> Repair or replace the malfunctioning part.

PRECAUTION

PRECAUTIONS

FOR USA AND CANADA

FOR USA AND CANADA : Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:0000000008277663

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.**

FOR MEXICO

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

INFOID:0000000008277664

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the “SRS AIR BAG” and “SEAT BELT” of this Service Manual.

WARNING:

Always observe the following items for preventing accidental activation.

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

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

WARNING:

Always observe the following items for preventing accidental activation.

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

PERIODIC MAINTENANCE

HEADLAMP AIMING ADJUSTMENT

Description

INFOID:0000000008277665

PREPARATION BEFORE ADJUSTING

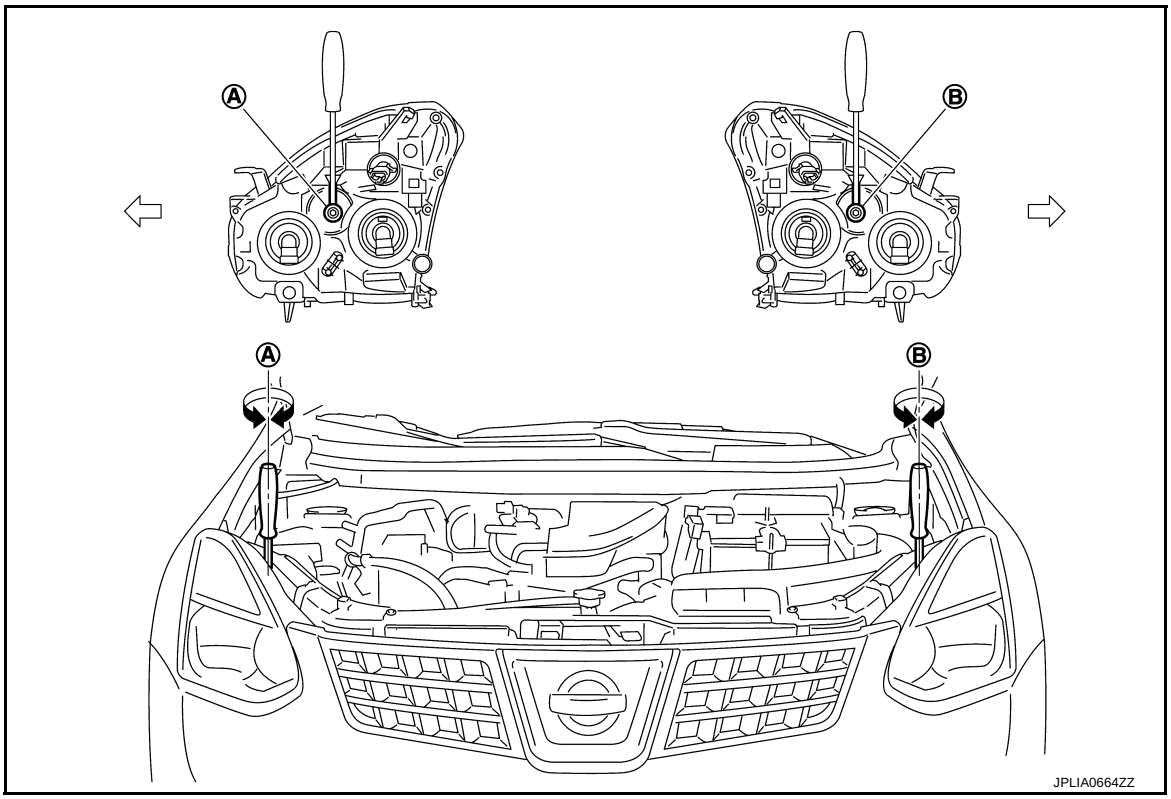
NOTE:

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

Before performing aiming adjustment, check the following.

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

AIMING ADJUSTMENT SCREW



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

⇦: Vehicle center

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

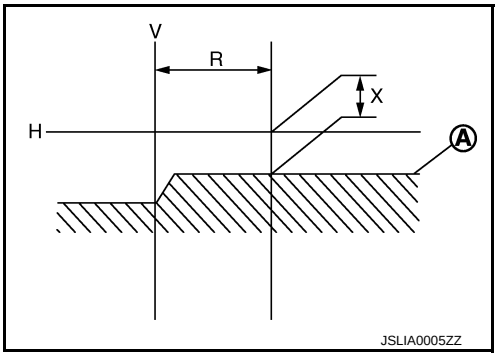
Aiming Adjustment Procedure

INFOID:0000000008277666

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 bulb center and the screen.
3. Start the engine. Turn the headlamp (LO) ON.
   NOTE:
   Shut off the headlamp light with the board to prevent from illuminating the adjustment screen.
   CAUTION:
   Never cover the lens surface with a tape etc. The lens is made of resin.
4. Measure the distance (X) between the horizontal center line of headlamp (H) and the cutoff line (A) within the light axis measurement range (R) from the vertical center line ahead of headlamp (V).

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

Low beam distribution on the screen

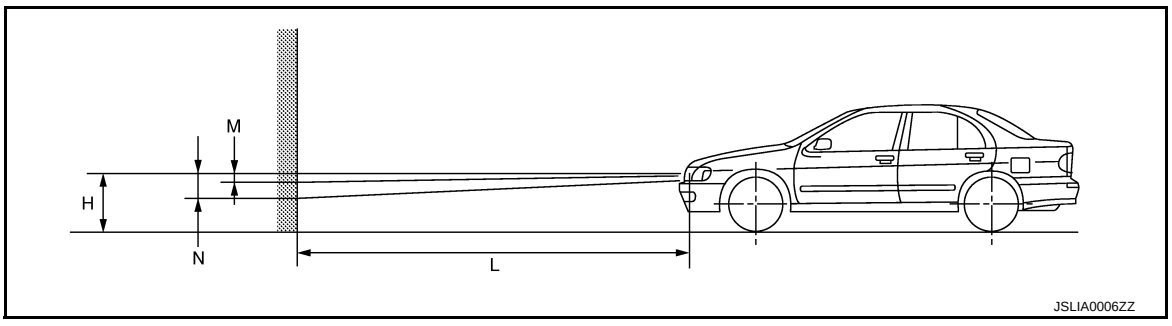


5. Adjust the cutoff line height (X) with the aiming adjustment screw so as to enter in the adjustment range (M–N) according to the horizontal center line of headlamp (H).

unit: mm (in)

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

Side view



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

FRONT FOG LAMP AIMING ADJUSTMENT

Description

INFOID:0000000008277667

PREPARATION BEFORE ADJUSTING

NOTE:

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

Before performing aiming adjustment, check the following.

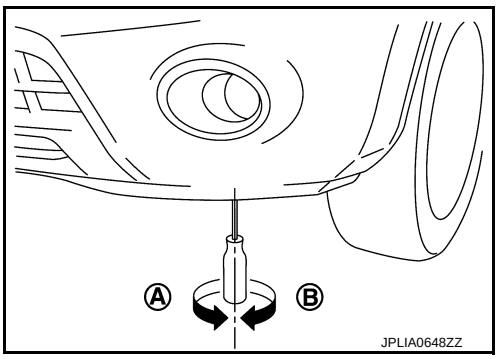
- Adjust the tire pressure to the specification.
- Fill with fuel, engine coolant and each oil.
- Maintain the unloaded vehicle condition. (Remove luggage from the passenger compartment and the luggage room.)
  NOTE:
  Do not remove the temporary tire, jack and on-vehicle tool.
- Wipe out dirt on the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

AIMING ADJUSTMENT SCREW

- Turn the aiming adjusting screw for adjustment.

  A: UP

  B: DOWN



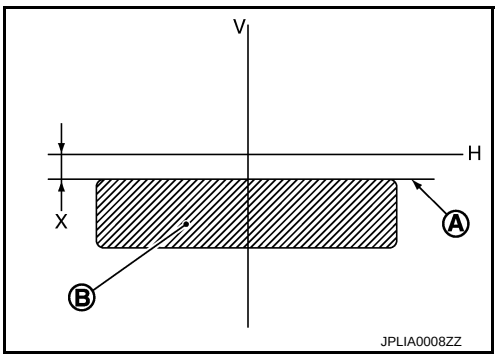
- For the position and direction of the adjusting screw, refer to the figure.
  NOTE:
  A screwdriver or hexagonal wrench [6 mm (0.24 in)] can be used for adjustment.

Aiming Adjustment Procedure

INFOID:0000000008277668

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. Illuminate the front fog lamp.
   CAUTION:
   Never cover the lens surface with a tape etc. The lens is made of resin.
   NOTE:
   Shut off the headlamp light with the board to prevent from illuminating the adjustment screen.
4. Adjust the cutoff line height (A) with the aiming adjustment screw so that the distance (X) between the horizontal center line of front fog lamp (H) and (A) becomes 150 mm (5.91 in).

Front fog lamp light distribution on the screen



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

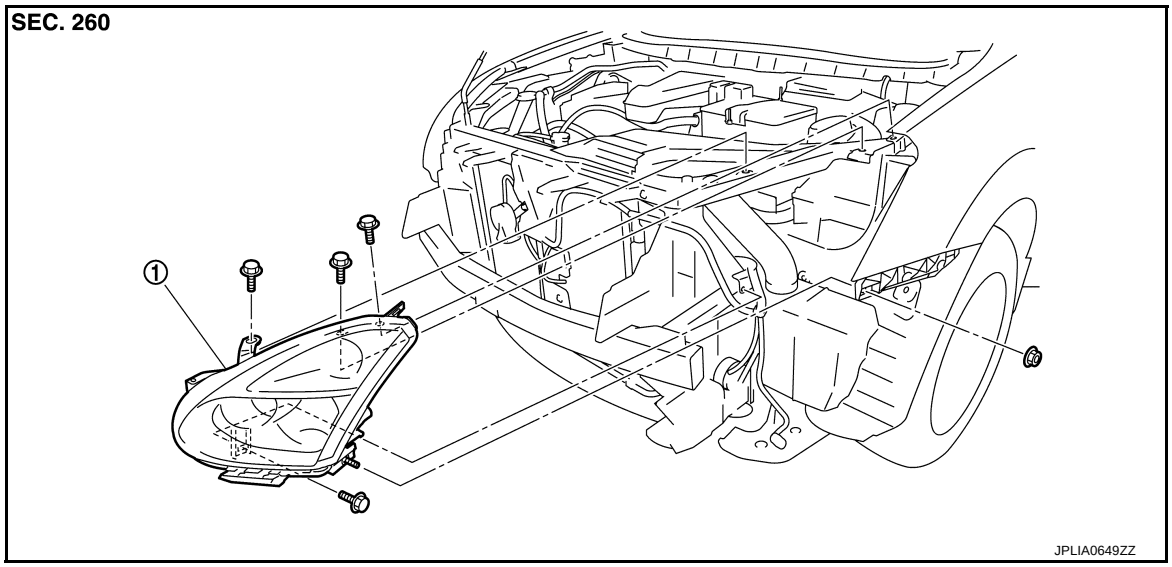
REMOVAL AND INSTALLATION

FRONT COMBINATION LAMP

Exploded View

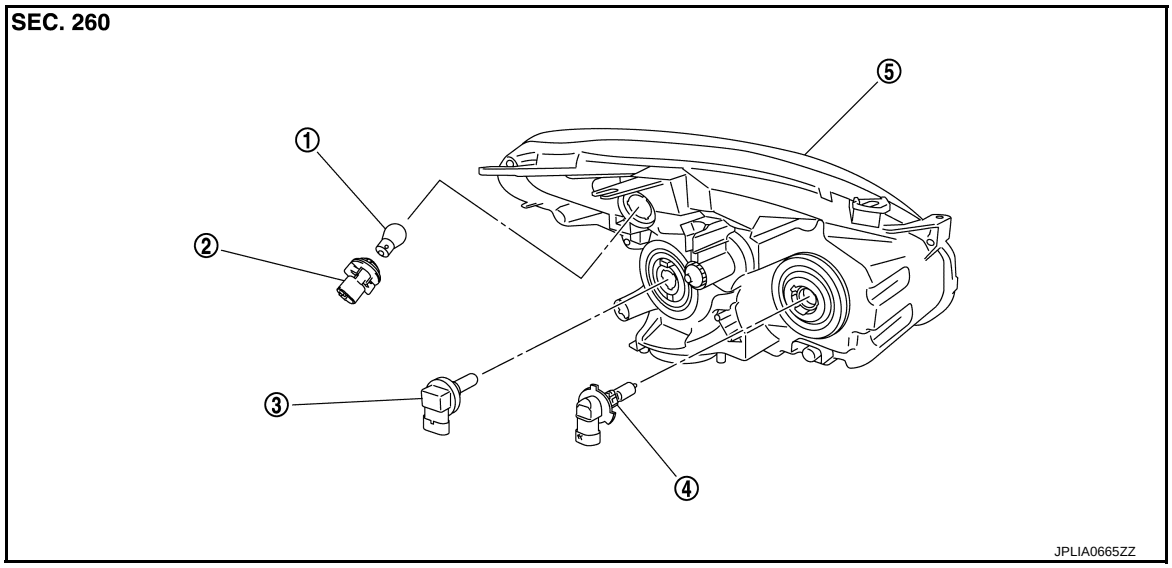
INFOID:0000000008277669

REMOVAL



1. Front combination lamp

DISASSEMBLY



1. Front turn signal/parking (side marker) lamp bulb
2. Front turn signal/parking (side marker) lamp bulb socket
3. Halogen bulb (LO)
4. Halogen bulb (HI)
5. Headlamp housing assembly

Removal and Installation

INFOID:0000000008277670

REMOVAL

CAUTION:

Disconnect the battery negative terminal or the fuse.

1. Remove front bumper fascia. Refer to EXT-13, "Exploded View".

2. Remove the headlamp mounting bolts and nuts.
3. Remove the mounting stud of the headlamp outside from front fender.
4. Pull out the headlamp assembly forward the vehicle.
5. Disconnect the connector before removing the headlamp assembly.

INSTALLATION

Install in the reverse order of removal.

NOTE:

After installation, perform aiming adjustment. Refer to EXL-223, "Description".

Replacement

INFOID:0000000008277671

CAUTION:

- **Disconnect the battery negative terminal or the fuse.**
- **After installing the bulb, install the resin cap and the bulb socket securely for watertightness.**

HEADLAMP BULB (LO)

1. Remove the air duct*. Keep a service area.
   *When replace a left.
2. Rotate the bulb counterclockwise and unlock it.
3. Disconnect the headlamp bulb connector.
4. Remove the bulb from the headlamp housing assembly.

HEADLAMP BULB (HI)

1. Remove the air duct*. Keep a service area.
   *When replace a left.
2. Rotate the bulb counterclockwise and unlock it.
3. Disconnect the headlamp bulb connector.
4. Remove the bulb from the headlamp housing assembly.

FRONT TURN SIGNAL/PARKING (SIDE MARKER) LAMP BULB

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

Disassembly and Assembly

INFOID:0000000008277672

DISASSEMBLY

1. Rotate the headlamp bulb (LO) counterclockwise and unlock it
2. Disconnect the headlamp bulb (LO) connector. And remove the bulb from the headlamp housing assembly.
3. Rotate the headlamp bulb (HI) counterclockwise and unlock it
4. Disconnect the headlamp bulb (HI) connector. And remove the bulb from the headlamp housing assembly.
5. Rotate the front turn signal/parking (side marker) lamp bulb socket counterclockwise and unlock it.
6. Remove the bulb from the front turn signal/parking (side marker) lamp bulb socket.

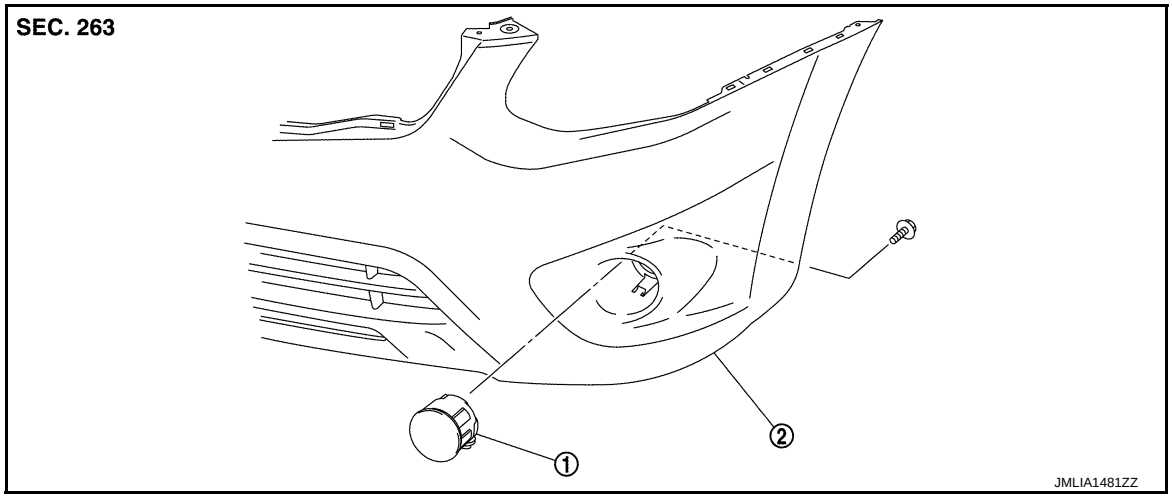
ASSEMBLY

Assemble in the reverse order of disassembly.

FRONT FOG LAMP

Exploded View

INFOID:0000000008277673



1. Front fog lamp
2. Bumper fascia assembly

Removal and Installation

INFOID:0000000008277674

CAUTION:
Disconnect the battery negative terminal or the fuse.

REMOVAL

1. Remove front mudguard and front fender protector. Keep a service area. Refer to EXT-22, "Removal and Installation".
2. Remove front under cover.
3. Remove front fog lamp connector.
4. Remove front fog lamp fixing screw, and then remove front fog lamp.

INSTALLATION

Note the following item, and then installation is the reverse order of removal.
NOTE:
After installation, perform aiming adjustment. Refer to EXL-226, "Description".

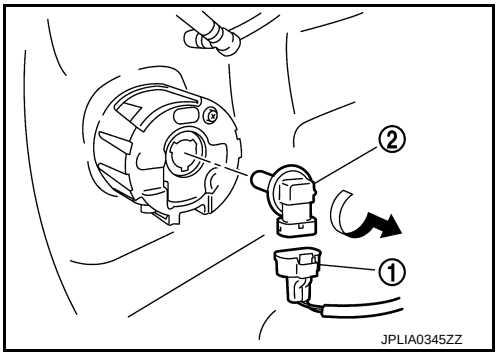
Replacement

INFOID:0000000008277675

CAUTION:
Disconnect the battery negative terminal or the fuse.

FRONT FOG LAMP BULB

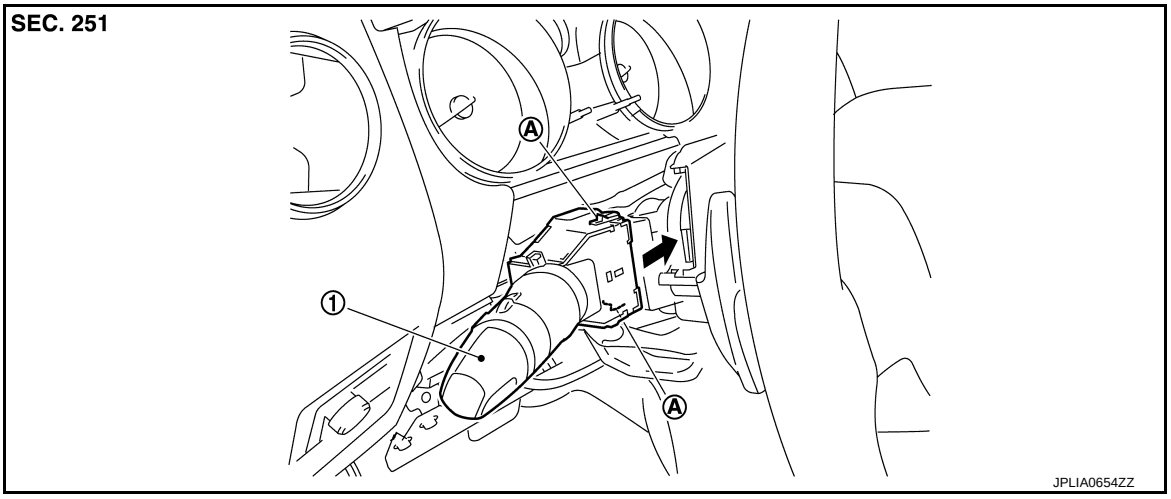
1. Remove front mudguard and front fender protector. Keep the service area. Refer to EXT-22, "Exploded View".
2. Remove front fog lamp bulb connector (1).
3. Rotate bulb (2) counterclockwise and unlock it.



LIGHTING & TURN SIGNAL SWITCH

Exploded View

INFOID:0000000008277676



1. Lighting & turn signal switch
A. Pawl

Removal and Installation

INFOID:0000000008277677

REMOVAL

1. Remove steering column cover. Refer to IP-13, "Exploded View".
2. While pressing pawls, pull the lighting & turn signal switch. And disconnect from the switch base.

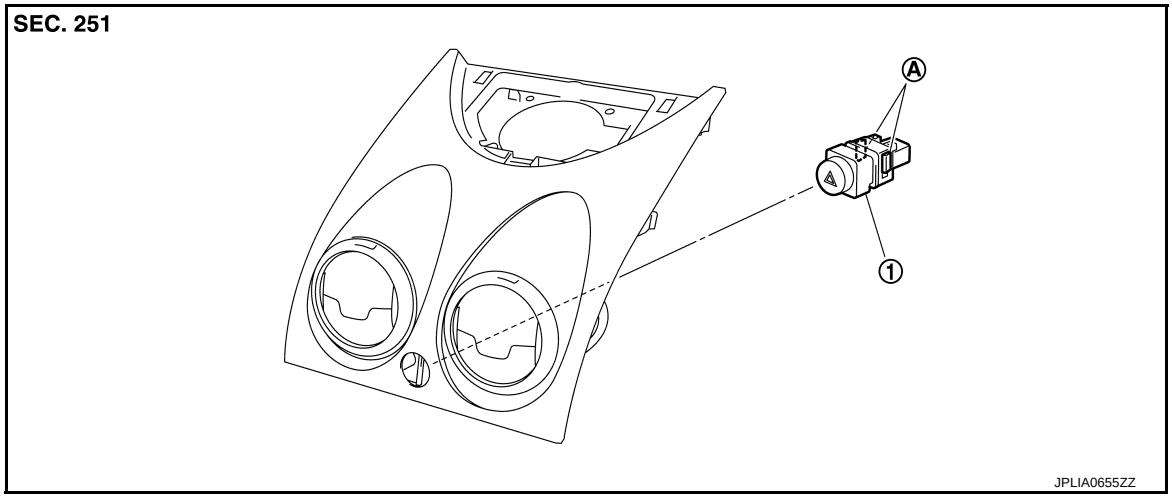
INSTALLATION

Installation is the reverse order of removal.

HAZARD SWITCH

Exploded View

INFOID:0000000008277678



1. Hazard switch
A. Pawls

Removal and Installation

INFOID:0000000008277679

REMOVAL

1. Remove the cluster lid C. Refer to IP-13, "Exploded View".
2. Push the pawl. And remove the hazard switch.

INSTALLATION

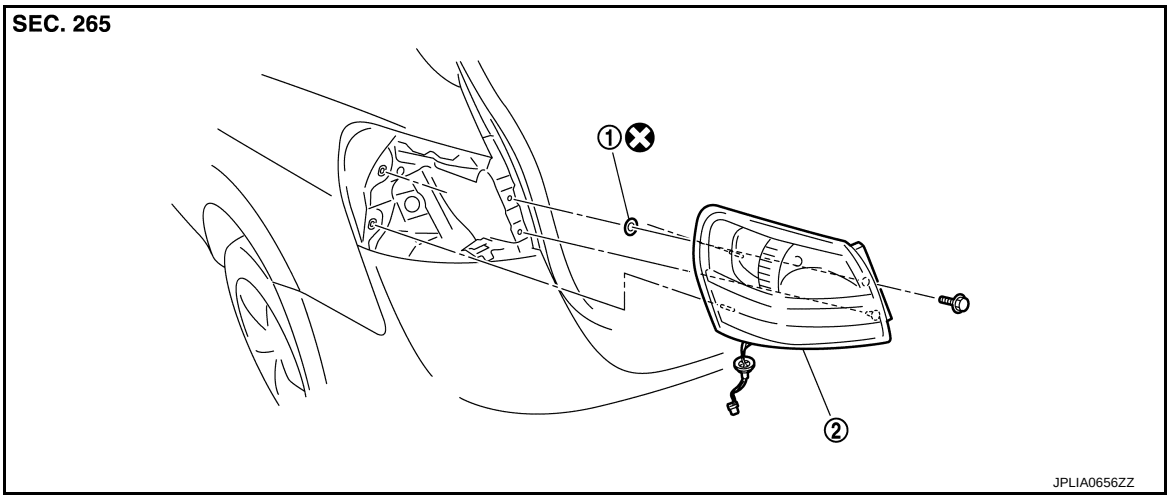
Install in the reverse order of removal.

REAR COMBINATION LAMP

Exploded View

INFOID:0000000008277680

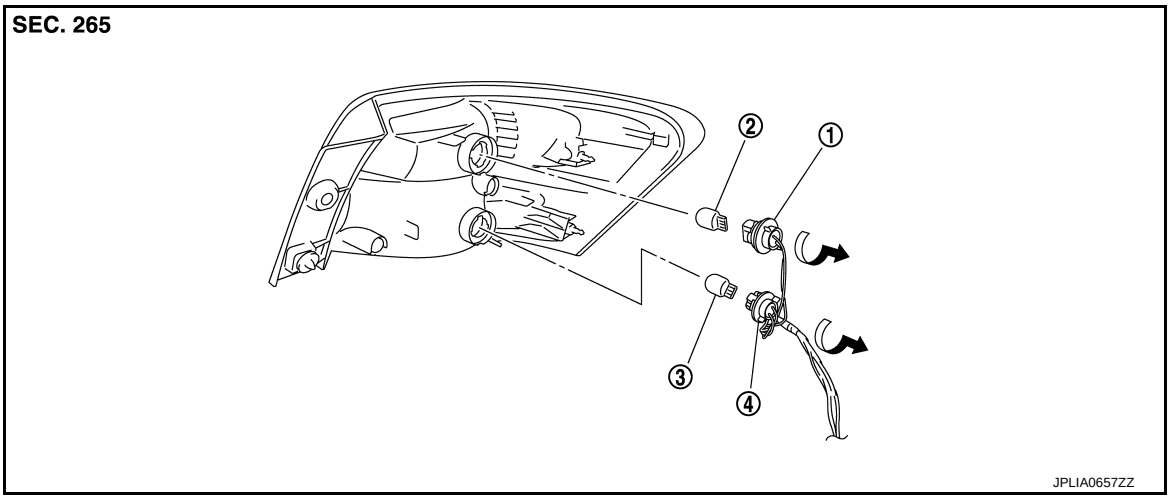
REMOVAL



1. Seal packing
2. Rear combination lamp

Refer to GI-4, "Components" for symbols in the figure.

DISASSEMBLY



1. Rear turn signal lamp bulb socket
2. Rear turn signal lamp bulb
3. Stop/tail (side marker lamp) bulb
4. Stop/tail (side marker lamp) bulb socket

Removal and Installation

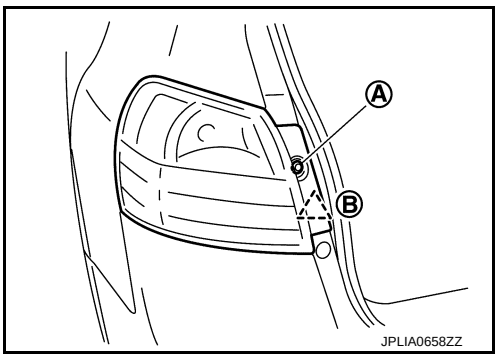
INFOID:0000000008277681

CAUTION:
Disconnect the battery negative terminal or the fuse.

REMOVAL

1. Remove the luggage side lower finisher. Refer to INT-31, "Exploded View".
2. Disconnect rear combination lamp connector.

3. Remove rear combination lamp mounting bolts (A).
4. Turn up the back door weather strip, insert an appropriate tool between rear combination lamp and vehicles and remove a clip (B).
5. Pull the rear combination lamp toward rear of the vehicle. Remove the rear combination lamp.



INSTALLATION

Install in the reverse order of removal.

Replacement

INFOID:0000000008277682

CAUTION:

Disconnect the battery negative terminal or the fuse.

STOP/TAIL (SIDE MARKER) LAMP BULB

1. Remove rear combination lamp. Refer to EXL-233, "Exploded View".
2. Rotate the stop/tail (side marker lamp) bulb socket counterclockwise, and unlock it.
3. Remove bulb from the bulb socket.

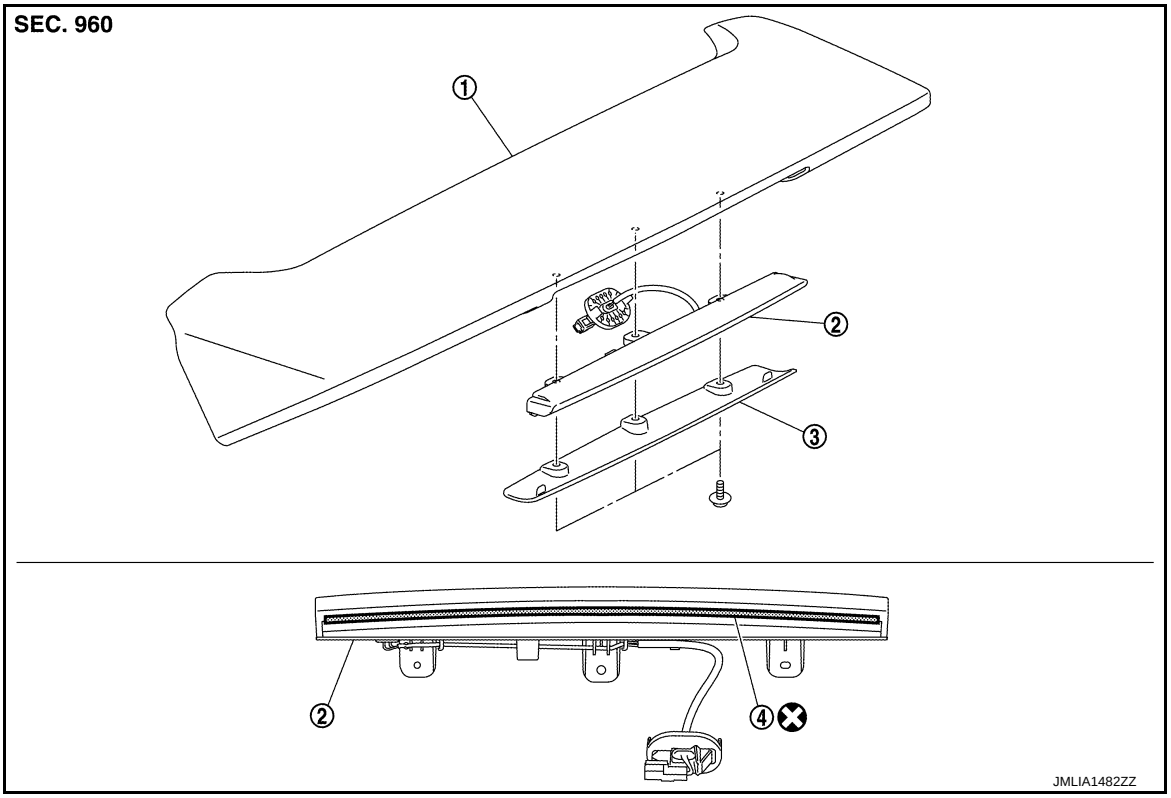
REAR TURN SIGNAL LAMP BULB

1. Remove rear combination lamp. Refer to EXL-233, "Exploded View".
2. Rotate the rear turn signal lamp bulb socket counterclockwise, and unlock it.
3. Remove bulb from the bulb socket.

HIGH-MOUNTED STOP LAMP

Exploded View

INFOID:0000000008277683



1. Rear spoiler
2. High-mounted stop lamp
3. High-mounted stop lamp cover
4. Double-sided tape [t: 1.2 mm (0.047 in)]

Refer to GI-4, "Components" for symbols in the figure.

Removal and Installation

INFOID:0000000008277684

CAUTION:
Disconnect battery negative terminal or remove the fuse.

REMOVAL

1. Remove rear spoiler. Refer to EXT-32, "Removal and Installation".
2. Remove high-mounted stop lamp grommet from body panel.
3. Disconnect high-mounted stop lamp connector.
4. Remove high-mounted stop lamp.

INSTALLATION

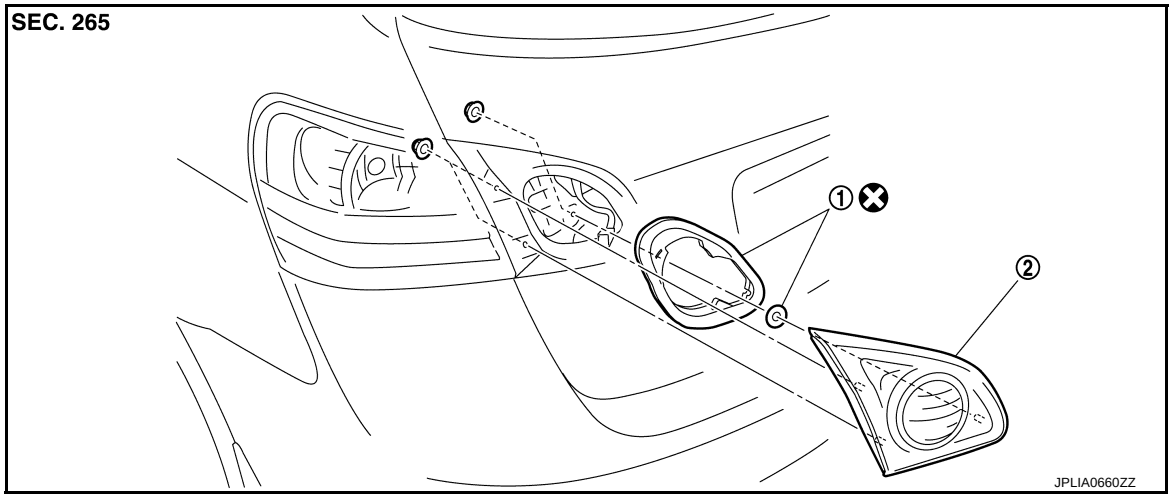
Note the following item, and then installation is the reverse order of removal.

CAUTION:
Seal packing cannot be reused.

BACK-UP LAMP

Exploded View

INFOID:0000000008277685



1. Seal packing
2. Back-up lamp

Refer to GI-4, "Components" for symbols in the figure.

Removal and Installation

INFOID:0000000008277686

CAUTION:
Disconnect the battery negative terminal or the fuse.

REMOVAL

1. Remove the back door mask. Refer to INT-34, "Exploded View".
2. Remove back-up lamp mounting nuts.
3. Disconnect back-up lamp connector. And remove the back-up lamp.

INSTALLATION

Install in the reverse order of removal.

CAUTION:
Seal packing cannot be reused.

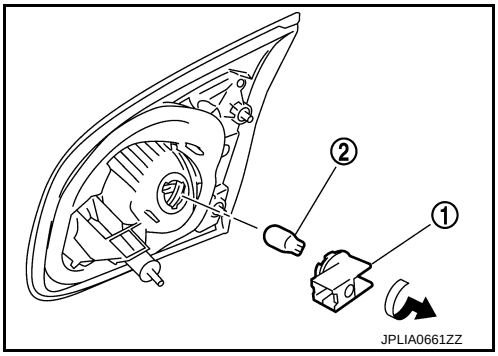
Replacement

INFOID:0000000008277687

CAUTION:
Disconnect the battery negative terminal or the fuse.

BACK-UP LAMP BULB

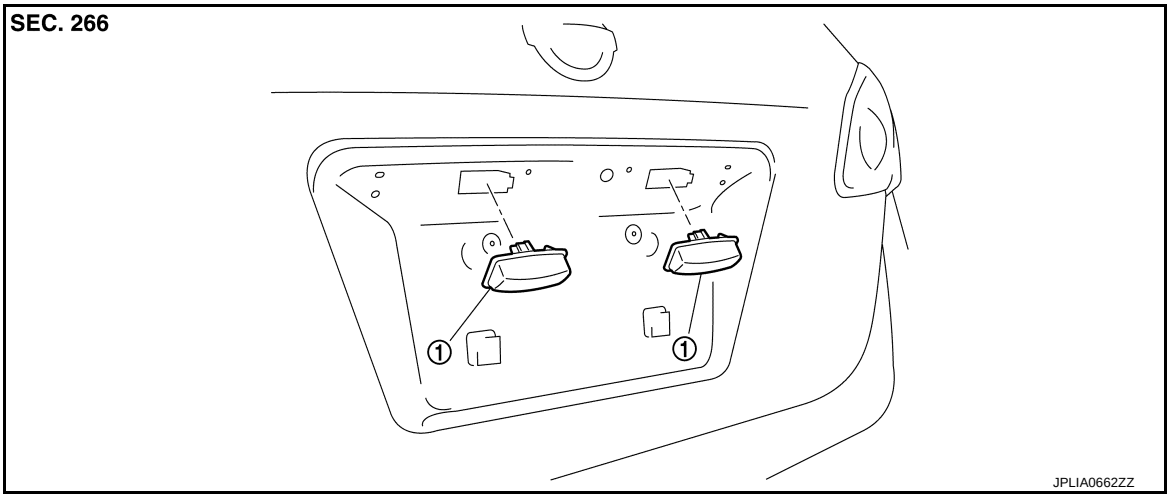
1. Remove the back-up lamp. Refer to EXL-236, "Exploded View".
2. Disconnect the connector, rotate the bulb socket (1) counter-clockwise and unlock it.
3. Remove the bulb (2) from the socket.



LICENSE PLATE LAMP

Exploded View

INFOID:0000000008277688



1. License plate lamp

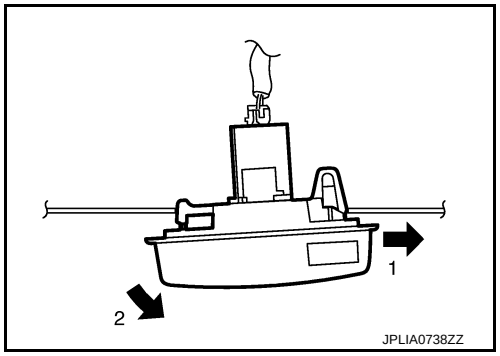
Removal and Installation

INFOID:0000000008277689

CAUTION:
Disconnect the battery negative terminal or the fuse.

REMOVAL

1. Remove back door trim finisher lower. Refer to INT-34, "Exploded View".
2. Remove back door finisher.Refer to INT-34, "Exploded View".
3. Remove the license plate lamp in numerical order shown in the figure.
4. Disconnect the license plate lamp connector.



INSTALLATION

1. Connect the license plate lamp connector.
2. Fix the pawl-side behind the license plate lamp housing first, then push the resin clip-side.

Replacement

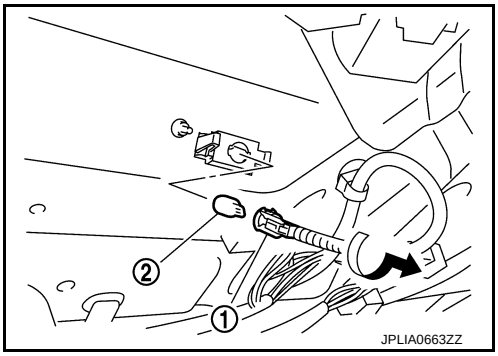
INFOID:0000000008277690

CAUTION:
Disconnect the battery negative terminal or the fuse.

LICENSE PLATE LAMP BULB

1. Remove back door trim finisher lower. Refer to INT-34, "Exploded View".

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



SERVICE DATA AND SPECIFICATIONS (SDS)

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Bulb Specifications

INFOID:0000000008277691

Item		Type	Wattage (W)
Front combination lamp	Headlamp (HI)	HB3	60
	Headlamp (LO)	H11	55
	Front turn signal/parking (side marker) lamp	S25 (Amber)	27/8
Front fog lamp		H8	35
Rear combination lamp	Stop/tail (side marker) lamp	W21/5W	21/5
	Rear turn signal lamp	W21W	21
	Back-up lamp	W16W	16
License plate lamp		W5W	5
High-mounted stop lamp		LED	—