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**SECTION**  
**WIPER & WASHER**

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# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

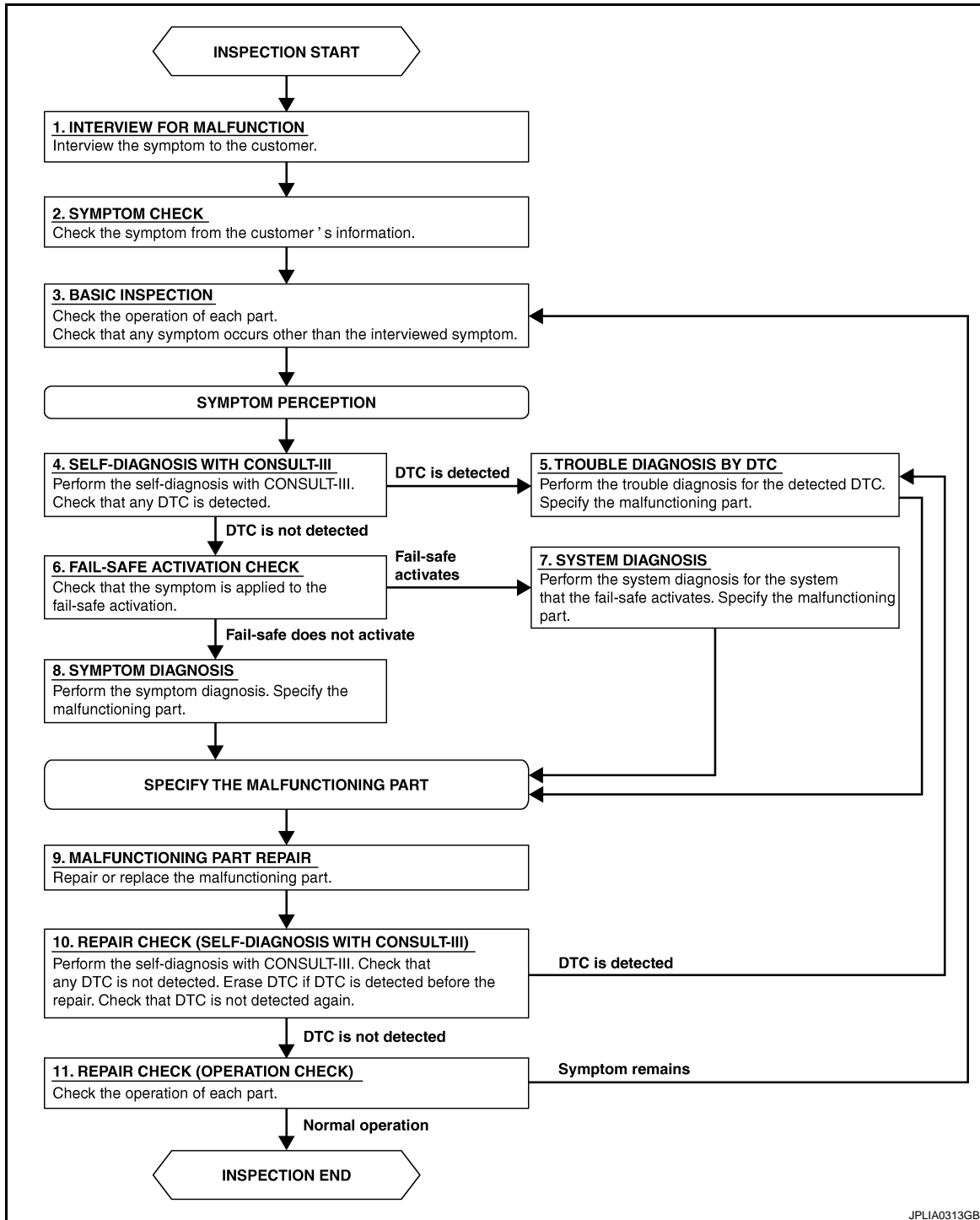
## BASIC INSPECTION

### DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000001452152

#### OVERALL SEQUENCE



JPLIA0313GB

#### DETAILED FLOW

##### 1. INTERVIEW FOR MALFUNCTION

Interview the symptom to the customer.

# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

---

>> GO TO 2.

## 2. SYMPTOM CHECK

---

Check the symptom from the customer's information.

>> GO TO 3.

## 3. BASIC INSPECTION

---

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

>> GO TO 4.

## 4. SELF-DIAGNOSIS WITH CONSULT-III

---

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

Is any DTC detected?

YES >> GO TO 5.

NO >> GO TO 6.

## 5. TROUBLE DIAGNOSIS BY DTC

---

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

>> GO TO 9.

## 6. FAIL-SAFE ACTIVATION CHECK

---

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

Does the fail-safe activate?

YES >> GO TO 7.

NO >> GO TO 8.

## 7. SYSTEM DIAGNOSIS

---

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

>> GO TO 9.

## 8. SYMPTOM DIAGNOSIS

---

Perform the symptom diagnosis. Specify the malfunctioning part.

>> GO TO 9.

## 9. MALFUNCTION PART REPAIR

---

Repair or replace the malfunctioning part.

>> GO TO 10.

## 10. REPAIR CHECK (SELF-DIAGNOSIS WITH CONSULT-III)

---

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

Is any DTC detected?

YES >> GO TO 5.

NO >> GO TO 11.

## 11. REPAIR CHECK (OPERATION CHECK)

---

Check the operation of each part.

Does it operate normally?

YES >> INSPECTION END

NO >> GO TO 3.

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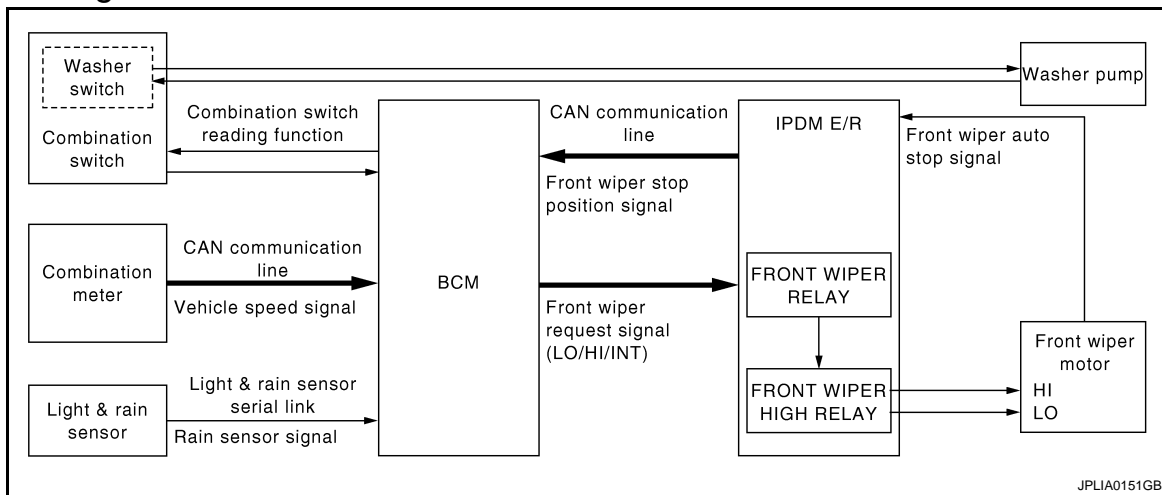
# FRONT WIPER AND WASHER SYSTEM

< FUNCTION DIAGNOSIS >

## FUNCTION DIAGNOSIS

### FRONT WIPER AND WASHER SYSTEM

#### System Diagram



#### System Description

INFOID:000000001208926

#### OUTLINE

The front wiper is controlled by each function of BCM and IPDM E/R.

##### Control by BCM

- Combination switch reading function
- Front wiper control function

##### Control by IPDM E/R

- Front wiper control function
- Relay control function

#### FRONT WIPER BASIC OPERATION

- BCM detects the combination switch condition by the combination switch reading function.
- BCM transmits the front wiper request signal to IPDM E/R with CAN communication depending on each operating condition of the front wiper.
- IPDM E/R turns ON/OFF the integrated front wiper relay and the front wiper high relay according to the front wiper request signal. IPDM E/R provides the power supply to operate the front wiper HI/LO operation.

#### FRONT WIPER LO OPERATION

- BCM transmits the front wiper request signal (LO) to IPDM E/R with CAN communication according to the front wiper LO operating condition.

##### Front wiper LO operating condition

- Ignition switch ON
- Front wiper switch LO or front wiper switch MIST (while pressing)
- IPDM E/R turns ON the integrated front wiper relay according to the front wiper request signal (LO).

#### FRONT WIPER HI OPERATION

- BCM transmits the front wiper request signal (HI) to IPDM E/R with CAN communication according to the front wiper HI operating condition.

##### Front wiper HI operating condition

- Ignition switch ON
- Front wiper switch HI
- IPDM E/R turns ON the integrated front wiper relay and the front wiper high relay according to the front wiper request signal (HI).

#### FRONT WIPER INT OPERATION (LINKED WITH VEHICLE SPEED)

# FRONT WIPER AND WASHER SYSTEM

## < FUNCTION DIAGNOSIS >

- BCM transmits the front wiper request signal (INT) to IPDM E/R with CAN communication according to the front wiper INT operation condition and the intermittent operation delay interval judged value.

Front wiper INT operating condition

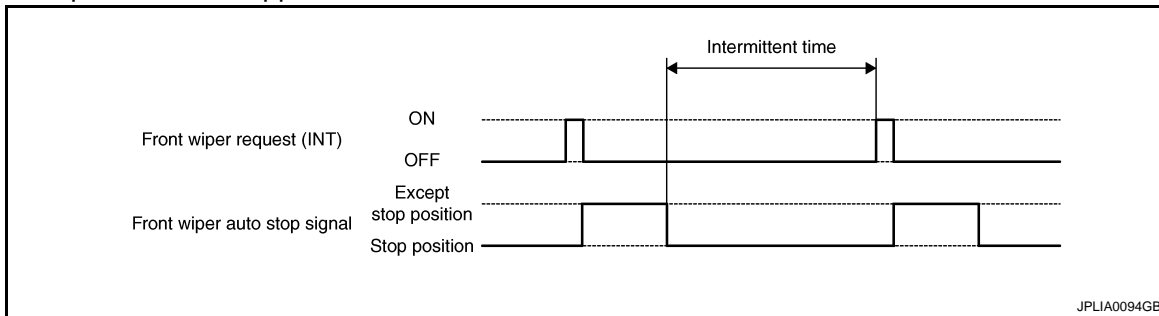
- Ignition switch ON
- Front wiper switch INT

Intermittent operation delay interval judgment

- BCM calculates the intermittent operation delay interval from the following
- Vehicle speed signal (received from the combination meter with CAN communication)
- Wiper intermittent dial position

Wiper intermittent dial position	Intermittent operation interval	Intermittent operation delay Interval (s)			
		Vehicle speed			
		Vehicle stopped or less than 5 km/h (3.1 MPH)	5 km/h (3.1 MPH) or more or less than 35 km/h (21.7 MPH)	35 km/h (21.7 MPH) or more or less than 65 km/h (40.4 MPH)	65 km/h (40.4 MPH) or more
1	Short ↑	0.8	0.6	0.4	0.24
2		4	3	2	1.2
3		10	7.5	5	3
4		16	12	8	4.8
5		24	18	12	7.2
6	↓ Long	32	24	16	9.6
7		42	31.5	21	12.6

- IPDM E/R turns the integrated front wiper relay ON so that the front wiper is operated only once according to the front wiper request signal (INT).
- BCM detects stop position/except stop position of the front wiper motor according to the front wiper stop position signal received from IPDM E/R with CAN communication.
- BCM transmits the front wiper request signal (INT) again after the intermittent operation delay interval after the front wiper motor is stopped.



## FRONT WIPER AUTO OPERATION

- BCM receives the wiping speed request signal from the rain sensor with the light and rain sensor serial link.
- BCM judges the auto wiping condition depending on the wiping speed request signal and the rain sensor sensitivity setting under front wiper AUTO operating condition.
- BCM transmits the front wiper request signals (LO or HI) to the IPDM E/R through CAN communication line according to the auto wiping condition.

Front wiper AUTO operating condition

- Ignition switch ON
- Front wiper switch INT

Rain sensor sensitivity setting

- BCM determines rain sensor sensitivity according to a wiper volume.

# FRONT WIPER AND WASHER SYSTEM

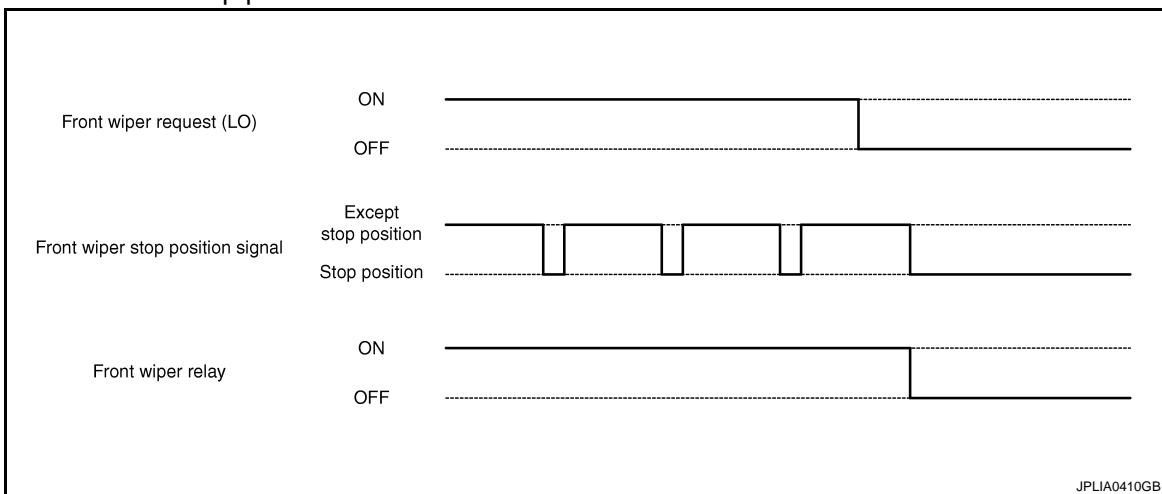
## < FUNCTION DIAGNOSIS >

Wiper intermittent dial position	Sensitivity
1	High sensitivity
2	
3	Medium-high sensitivity
4	
5	Low-medium sensitivity
6	
7	Low sensitivity

- IPDM E/R turns ON the integrated front wiper relay and front wiper HI relay according to the front wiper request signal (LO or HI).
- Light and rain sensor transmits rain sensor signal to BCM for HI operation immediately after sensing the raindrops increase under the wiper motor LO operating with the front wiper switch INT.

### FRONT WIPER AUTO STOP OPERATION

- BCM stops transmitting the front wiper request signal when the front wiper switch is turned OFF.
- IPDM E/R detects the front wiper stop position signal from the front wiper motor and detects the front wiper motor position (stop position/except stop position).
- When the front wiper request signal is stopped, IPDM E/R turns ON the front wiper relay until the front wiper motor returns to the stop position.



### NOTE:

- BCM stops the transmitting of the front wiper request signal when the ignition switch is OFF.
- IPDM E/R turns the front wiper relay OFF when the ignition switch is OFF.

### FRONT WIPER OPERATION LINKED WITH WASHER

- BCM transmits the front wiper request signal (LO) to IPDM E/R with CAN communication according to the washer linked operating condition of the front wiper.
- BCM transmits the front wiper request signal (LO) so that the front wiper operates approximately 3 times when the front washer switch OFF is detected.

Washer linked operating condition of front wiper

- Ignition switch ON
- Front washer switch ON (0.4 second or more)
- IPDM E/R turns ON the integrated front wiper relay according to the front wiper request signal (LO).
- The washer pump is grounded through the combination switch with the front washer switch ON.

### FRONT WIPER FAIL-SAFE OPERATION

- IPDM E/R performs the fail-safe function when the front wiper auto stop circuit is malfunctioning. Refer to [PCS-24, "Fail Safe"](#).
- BCM performs fail-safe operation when light and rain sensor or light and rain sensor-related systems are malfunctioning. Refer to [BCS-63, "Fail Safe"](#).

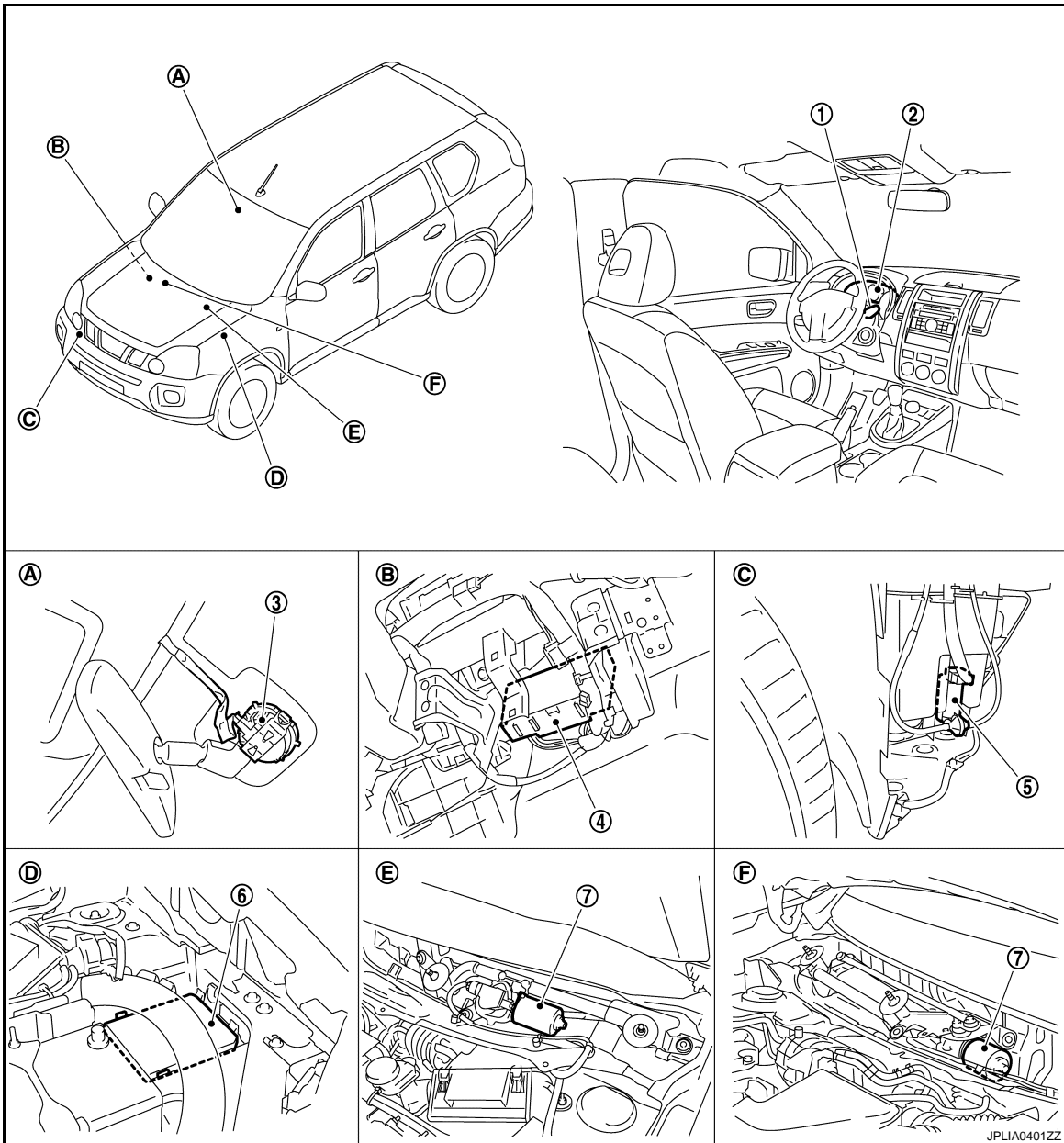


# FRONT WIPER AND WASHER SYSTEM

< FUNCTION DIAGNOSIS >

## Component Parts Location

INFOID:000000001208927



- |                               |  |   |
|-------------------------------|--|---|
| 1. Combination switch         | 2. Combination meter                               | 3. Light and rain sensor                            |
| 4. BCM                        | 5. Washer pump                                     | 6. IPDM E/R   |
| 7. Front wiper motor          |  |   |
| A. Inside mirror cover inside | B. Over the glove box                              | C. Radiator core support (RH)                       |
| D. Engine room (left side)    | E. Cowl top, left side of engine room (LHD models) | F. Cowl top, right side of engine room (RHD models) |

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# FRONT WIPER AND WASHER SYSTEM

< FUNCTION DIAGNOSIS >

## Component Description

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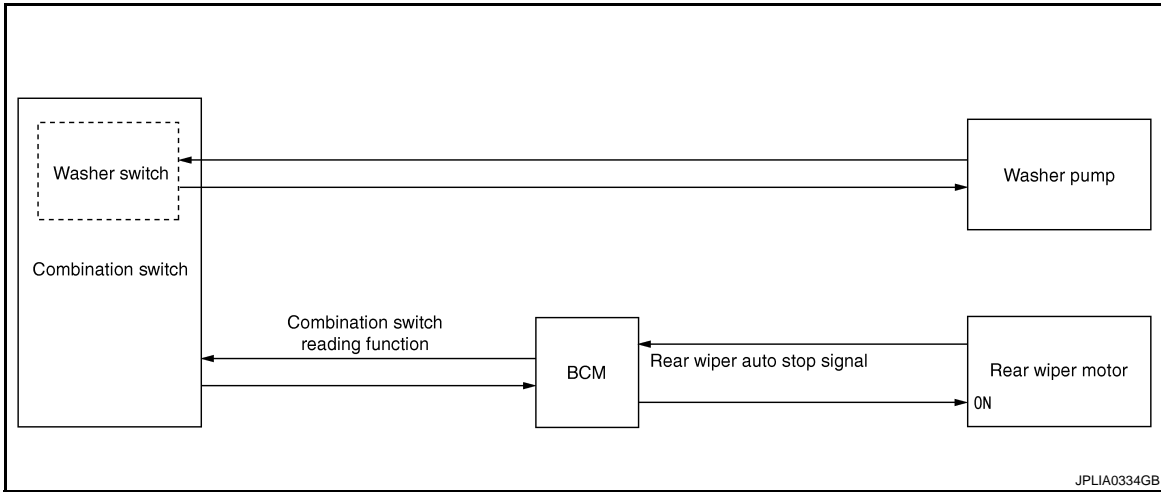
Part	Description
BCM	<ul style="list-style-type: none"><li>• Judges each switch status by the combination switch reading function.</li><li>• Requests (with CAN communication) the front wiper relay and the front wiper high relay ON to IPDM E/R.</li></ul>
IPDM E/R	<ul style="list-style-type: none"><li>• Controls the integrated relay according to the request (with CAN communication) from BCM.</li><li>• Performs the auto stop control of the front wiper.</li></ul>
Combination switch (Wiper & washer switch)	Refer to <a href="#">BCS-11. "System Diagram"</a> .
Combination meter	Transmits the vehicle speed signal to BCM with CAN communication.
Light and rain sensor	Detects water droplets on the windshield with infrared rays, and transmits the rain sensor signal to BCM through the light and rain sensor serial link.

# REAR WIPER AND WASHER SYSTEM

< FUNCTION DIAGNOSIS >

## REAR WIPER AND WASHER SYSTEM

### System Diagram



### System Description

INFOID:000000001208930

#### OUTLINE

The rear wiper is controlled by each function of BCM.

Control by BCM

- Combination switch reading function
- Rear wiper control function

#### REAR WIPER BASIC OPERATION

- BCM detects the combination switch condition by the combination switch reading function.
- BCM controls the rear wiper to start or stop.

#### REAR WIPER ON OPERATION

- BCM supplies power to the rear wiper motor according to the rear wiper ON operating condition.

Rear wiper ON operating condition

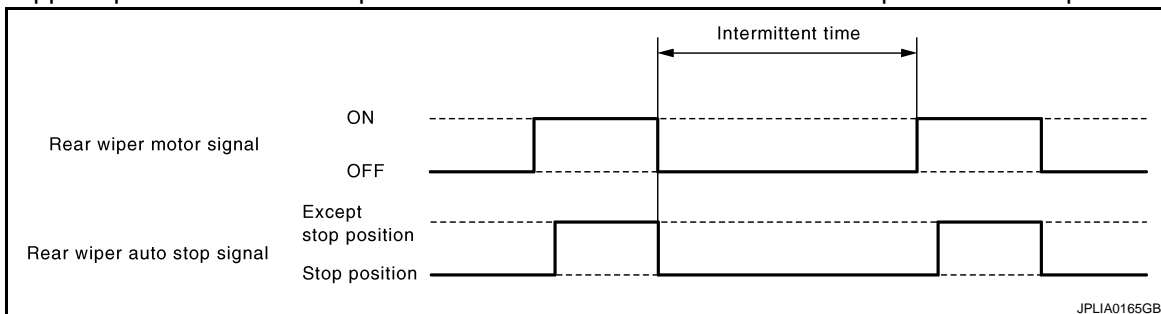
- Ignition switch ON
- Rear wiper switch ON

#### REAR WIPER INT OPERATION

- BCM supplies power to the rear wiper motor according to the INT operating condition.

Rear wiper INT operating condition

- Ignition switch ON
- Rear wiper switch INT
- BCM controls the rear wiper to operate once.
- BCM detects the rear wiper motor stopping position.
- BCM supplies power to the rear wiper motor after an intermittent from the stop of the rear wiper motor.



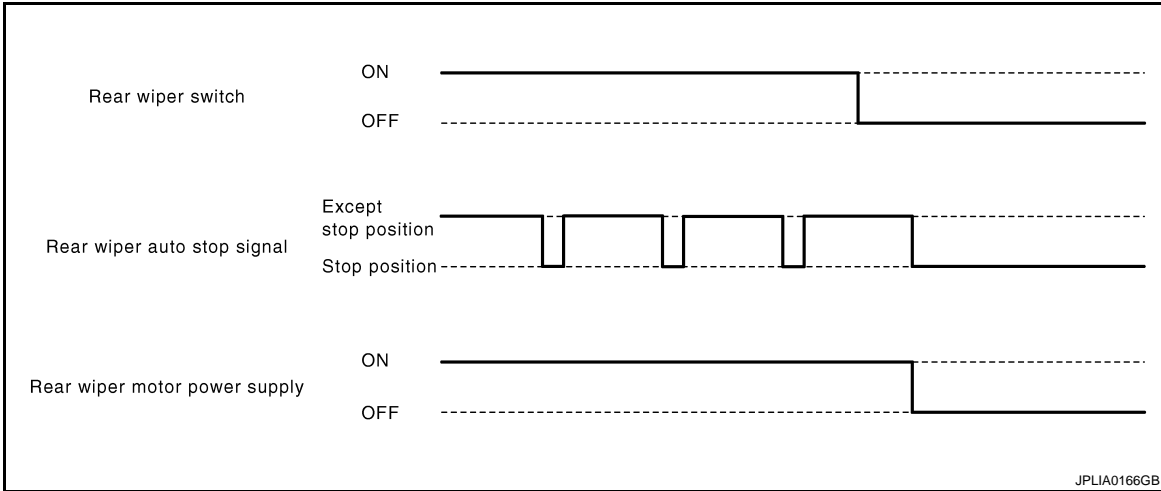
#### REAR WIPER AUTO STOP OPERATION

- BCM stops supplying power to the rear wiper motor when the rear wiper switch is turned OFF.

# REAR WIPER AND WASHER SYSTEM

## < FUNCTION DIAGNOSIS >

- BCM reads an auto stop signal from the rear wiper motor to detect a rear wiper motor position.
- When the rear wiper motor is at other than the stopping position, BCM continues to supply power to the rear wiper motor until it returns to the stopping position.



### NOTE:

BCM stops supplying power to the rear wiper motor when the ignition switch is turned OFF.

### REAR WIPER OPERATION LINKED WITH WASHER

- BCM supplies power to the rear wiper motor according to the washer linked operating condition of rear wiper. When the rear washer switch is turned OFF, BCM controls rear wiper to operate approximately 3 times.

Washer linked operating condition of rear wiper

- Ignition switch ON
- Rear washer switch ON (0.4 second or more)
- The washer pump is grounded through the combination switch with the rear washer switch ON.

### REAR WIPER FAIL-SAFE OPERATION

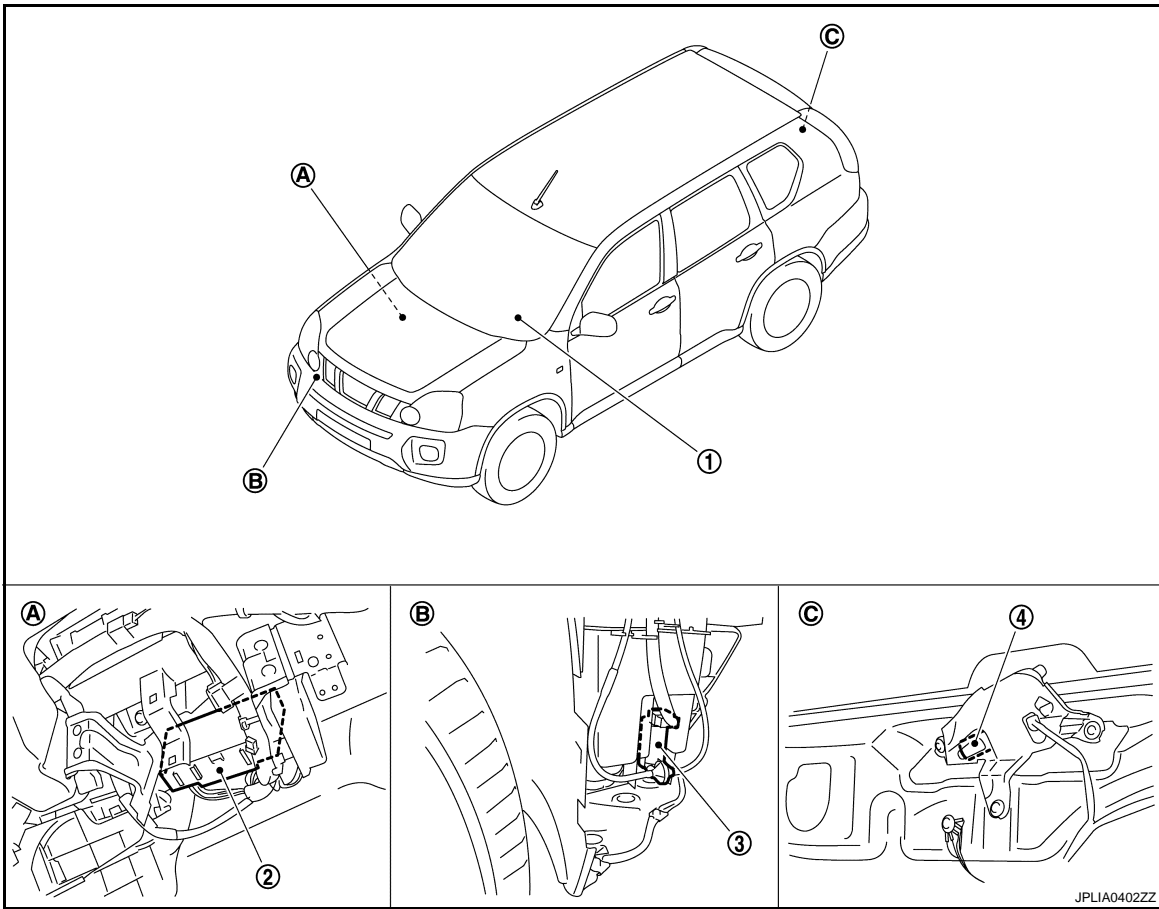
BCM performs the fail-safe function when the rear wiper auto stop circuit is malfunctioning. Refer to [BCS-63](#), "[Fail Safe](#)".

# REAR WIPER AND WASHER SYSTEM

< FUNCTION DIAGNOSIS >

## Component Parts Location

INFOID:000000001208931



1. Combination switch

2. BCM

3. Washer pump

4. Rear wiper motor

B. Radiator core support (RH)

C. Back door trim finisher lower inside

A. Over the glove box

## Component Description

INFOID:000000001208932

Part	Description
BCM	<ul style="list-style-type: none"> <li>Judges each switch status by the combination switch reading function.</li> <li>Supplies power to the rear wiper motor.</li> <li>Performs the auto stop control of the rear wiper.</li> </ul>
Combination switch (Wiper & washer switch)	Refer to <a href="#">BCS-11, "System Diagram"</a> .

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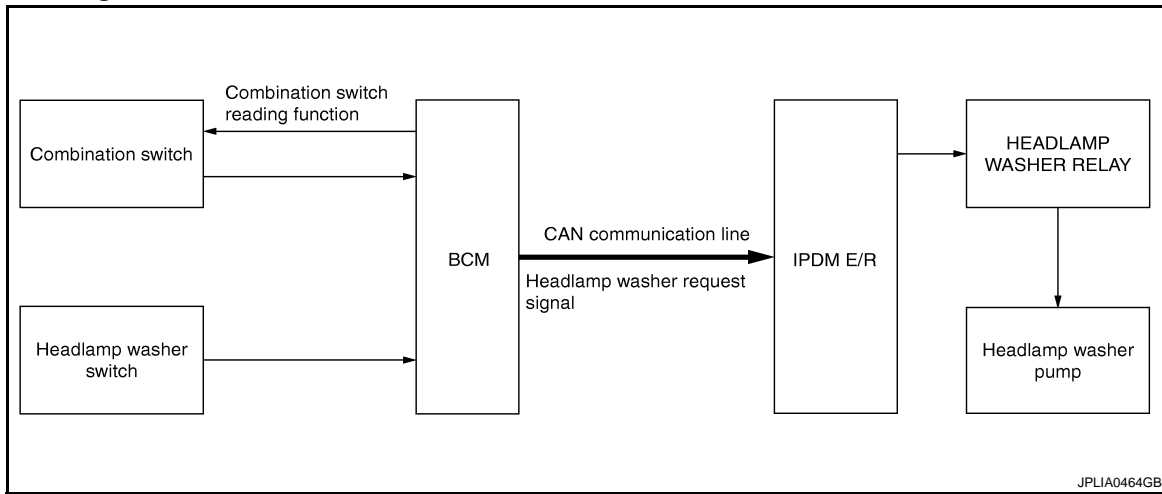
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# HEADLAMP WASHER SYSTEM

< FUNCTION DIAGNOSIS >

## HEADLAMP WASHER SYSTEM

### System Diagram



### System Description

INFOID:000000001208934

#### OUTLINE

- Headlamp washer system has following two operations.
  - Normal operation by the headlamp washer switch
  - Operation linked with front washer
- Headlamp washer is controlled by each function of BCM and IPDM E/R.

#### Control by BCM

- Combination switch reading function
- Headlamp washer control function

#### Control by IPDM E/R

- Headlamp washer relay control function

#### HEADLAMP WASHER OPERATION

- BCM detects the combination switch condition by the combination switch reading function.
- BCM transmits the headlamp washer request signal to IPDM E/R with CAN communication depending on each operating condition of the headlamp washer.

#### Operation is headlamp washer switch

- Ignition switch ON
- Headlamps ON (PASS excluded)
- Headlamp washer switch ON

#### Operation is front washer switch (The first time)

- Ignition switch ON
- Headlamps ON (PASS excluded)
- Front washer switch ON at first time

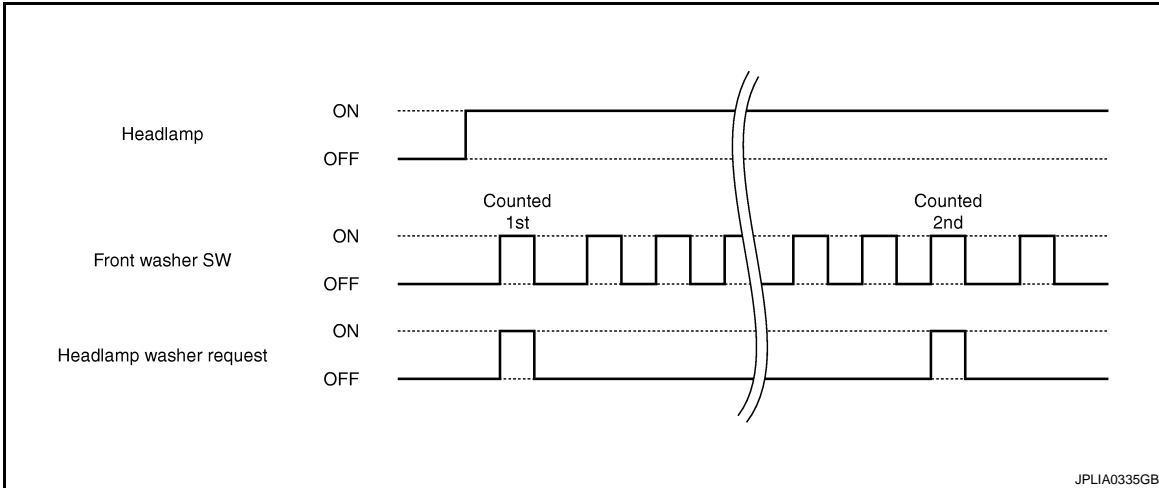
#### Operation is front washer switch (From the second time)

- Ignition switch ON
- Headlamps ON (PASS excluded)

# HEADLAMP WASHER SYSTEM

## < FUNCTION DIAGNOSIS >

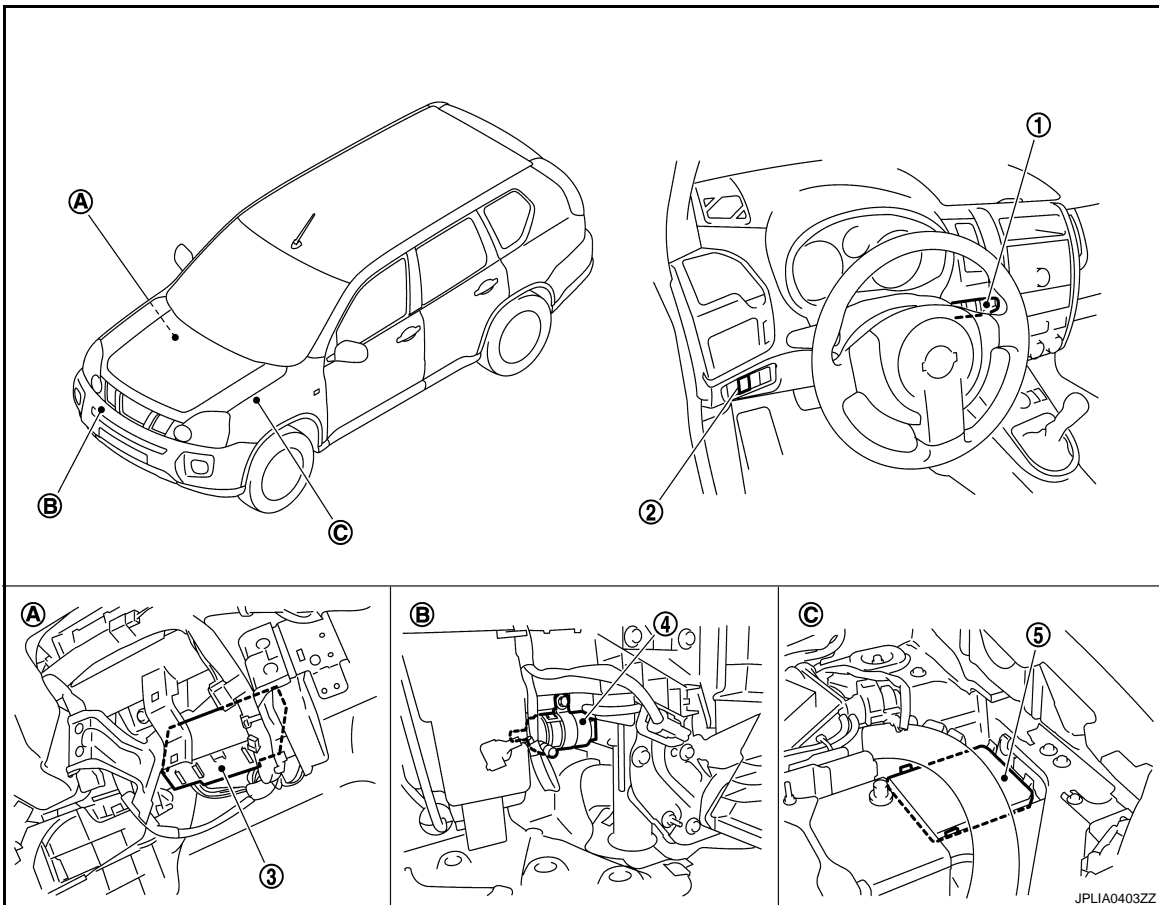
- Front washer switch ON at fifteenth time after the first time



- IPDM E/R turns ON/OFF the headlamp washer relay by receiving the headlamp washer request signal, and controls the headlamp washer.

## Component Parts Location

INFOID:000000001208935



- |                         |                               |                            |
|-------------------------|-------------------------------|----------------------------|
| 1. Combination switch   | 2. Headlamp washer switch     | 3. BCM                     |
| 4. Headlamp washer pump | 5. IPDM E/R                   |                            |
| A. Over the glove box   | B. Radiator core support (RH) | C. Engine room (left side) |

# HEADLAMP WASHER SYSTEM

< FUNCTION DIAGNOSIS >

## Component Description

INFOID:000000001208936

Part	Description
BCM	<ul style="list-style-type: none"><li>• Judges each switch status by the combination switch reading function.</li><li>• Requests (with CAN communication) the headlamp washer relay ON to IPDM E/R.</li></ul>
IPDM E/R	Controls the integrated relay according to the request (with CAN communication) from BCM.
Combination switch (Wiper & washer switch)	Refer to <a href="#">BCS-11. "System Diagram"</a> .
Headlamp washer switch	Headlamp washer switch inputs the signals to BCM when pressing the switch.



# DIAGNOSIS SYSTEM (BCM)

< FUNCTION DIAGNOSIS >

## DIAGNOSIS SYSTEM (BCM)

### COMMON ITEM

#### COMMON ITEM : CONSULT-III Function (BCM - COMMON ITEM)

INFOID:000000001452161

#### APPLICATION ITEM

CONSULT-III 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 Results	Displays the diagnosis results judged by BCM. Refer to <a href="#">BCS-65, "DTC Index"</a> .
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	<ul style="list-style-type: none"> <li>Read and save the vehicle specification.</li> <li>Write the vehicle specification when replacing BCM.</li> </ul>
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-III sub system selection item	Diagnosis mode		
		WORK SUPPORT	DATA MONITOR	ACTIVE TEST
—	BCM	×		
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		×	×
Air conditioner	AIR CONDITONER		×	
Intelligent Key system	INTELLIGENT KEY		×	
Combination switch	COMB SW		×	
Immobilizer	IMMU		×	×
Interior room lamp battery saver	BATTERY SAVER	×	×	×
Back door open	TRUNK		×	×
Vehicle security system	THEFT ALM	×	×	×
Signal buffer system	SIGNAL BUFFER		×	×
—	PTC HEATER*			

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

### WIPER

#### WIPER : CONSULT-III Function (BCM - WIPER)

INFOID:000000001208938

#### WORK SUPPORT

# DIAGNOSIS SYSTEM (BCM)

## < FUNCTION DIAGNOSIS >

Service item	Setting item	Description
WIPER SPEED SETTING	ON*	With vehicle speed (Front wiper intermittent time linked with the vehicle speed and wiper intermittent dial position)
	OFF	Without vehicle speed (Front wiper intermittent time linked with the wiper intermittent dial position)

\*:Factory setting

## DATA MONITOR

Monitor Item [Unit]	Description
VEHICLE SPEED [km/h]	The value of the vehicle speed signal received from combination meter with CAN communication.
IGN ON SW	Ignition switch ON status judged from ignition power supply.
IGN SW CAN	Ignition switch ON status received from IPDM E/R with CAN communication.
FR WIPER HI [OFF/ON]	Each switch status that BCM judges from the combination switch reading function.
FR WIPER LOW [OFF/ON]	
FR WIPER INT [OFF/ON]	
FR WASHER SW [OFF/ON]	
INT VOLUME [1 - 7]	Each switch status that BCM judges from the combination switch reading function.
FR WIPER STOP [OFF/ON]	Front wiper motor (stop position) status received from IPDM E/R with CAN communication.
RR WIPER ON [OFF/ON]	Each switch status that BCM judges from the combination switch reading function.
RR WIPER INT [OFF/ON]	
RR WASHER SW [OFF/ON]	
RR WIPER STOP [OFF/ON]	Rear wiper motor (stop position) status input from the rear wiper motor.
REVERSE SW CAN [OFF/ON]	<b>NOTE:</b> The item is indicated, but not monitored.
H/L WASH SW [OFF/ON]	Switch status input from headlamp washer switch.

## ACTIVE TEST

Test item	Operation	Description
FR WIPER	HI	Transmits the front wiper request signal (HI) to IPDM E/R with CAN communication to operate the front wiper HI operation.
	LO	Transmits the front wiper request signal (LO) to IPDM E/R with CAN communication to operate the front wiper LO operation.
	INT	Transmits the front wiper request signal (INT) to IPDM E/R with CAN communication to operate the front wiper INT operation.
	OFF	Stops transmitting the front wiper request signal to stop the front wiper operation.

## DIAGNOSIS SYSTEM (BCM)

### < FUNCTION DIAGNOSIS >

Test item	Operation	Description
RR WIPER	ON	Outputs the voltage to operate the rear wiper motor.
	OFF	Stops the voltage to stop.
HEADLAMP WASHER	ON	Transmits the headlamp washer request signal to IPDM E/R with CAN communication to operate the headlamp washer operation.

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# DIAGNOSIS SYSTEM (IPDM E/R)

< FUNCTION DIAGNOSIS >

## DIAGNOSIS SYSTEM (IPDM E/R)

### Diagnosis Description

INFOID:000000001452162

#### 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 lamps
- License plate lamps
- Tail lamps
- Front fog lamps
- Headlamps (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 ignition switch OFF.
3. Turn the ignition switch ON, and within 20 seconds, press the driver door switch 20 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:

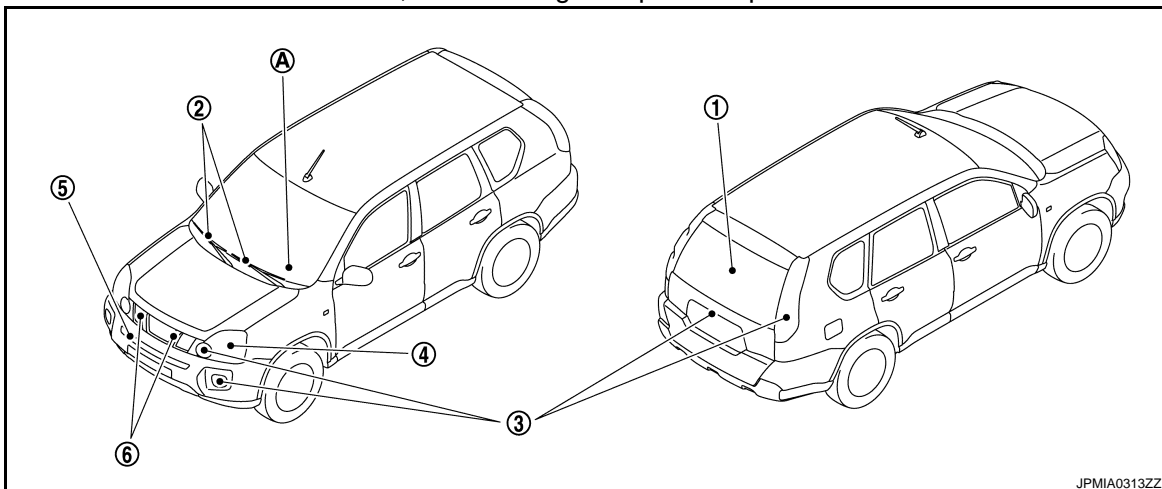
When auto active test mode has to be cancelled halfway through test, turn ignition switch OFF.

##### 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.

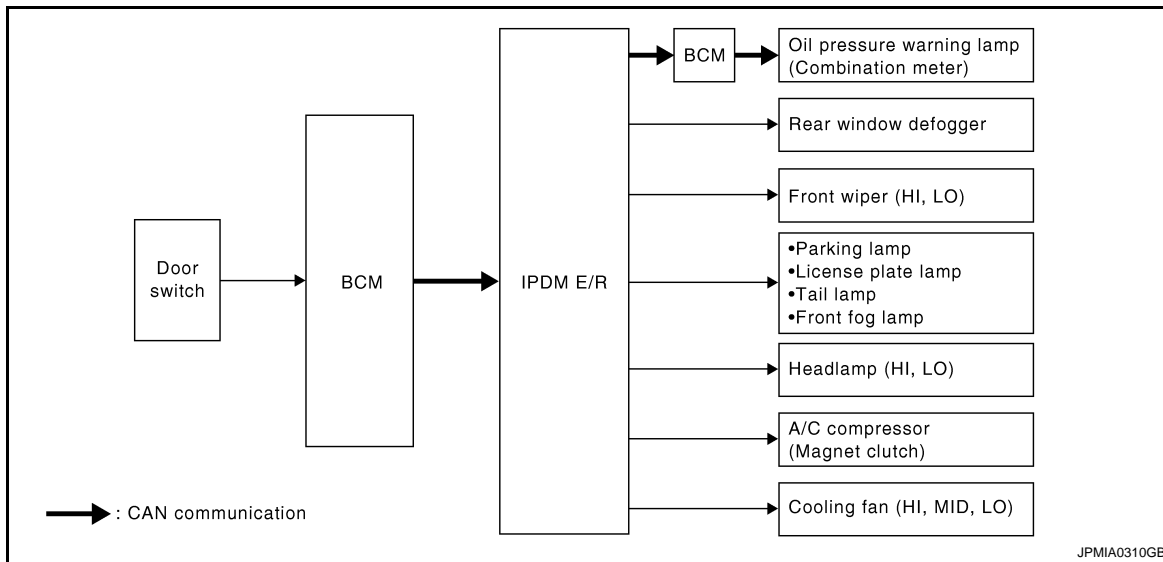


# DIAGNOSIS SYSTEM (IPDM E/R)

## < FUNCTION DIAGNOSIS >

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	LO for 5 seconds → HI for 5 seconds
3	<ul style="list-style-type: none"> <li>• Parking lamps</li> <li>• License plate lamps</li> <li>• Tail lamps</li> <li>• Front fog lamps</li> </ul>	10 seconds
4	Headlamps	LO ↔ HI 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

### 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 <ul style="list-style-type: none"> <li>• Rear window defogger</li> <li>• Rear window defogger ground circuit</li> <li>• Harness or connector between IPDM E/R and rear window defogger</li> <li>• IPDM E/R</li> </ul>
Any of the following components do not operate <ul style="list-style-type: none"> <li>• Parking lamps</li> <li>• License plate lamps</li> <li>• Tail lamps</li> <li>• Front fog lamps</li> <li>• Headlamps (HI, LO)</li> <li>• Front wiper (HI, LO)</li> </ul>	Perform auto active test. Does the applicable system operate?	YES BCM signal input circuit
		NO <ul style="list-style-type: none"> <li>• Lamp or motor</li> <li>• Lamp or motor ground circuit</li> <li>• Harness or connector between IPDM E/R and applicable system</li> <li>• IPDM E/R</li> </ul>

## DIAGNOSIS SYSTEM (IPDM E/R)

### < FUNCTION DIAGNOSIS >

Symptom	Inspection contents	Possible cause
A/C compressor does not operate	Perform auto active test. Does the magnet clutch operate?	YES <ul style="list-style-type: none"> <li>• Communication signal between BCM and auto amp.</li> <li>• BCM</li> <li>• CAN communication signal between BCM and ECM</li> <li>• CAN communication signal between ECM and IPDM E/R</li> </ul>
		NO <ul style="list-style-type: none"> <li>• Magnet clutch</li> <li>• Harness or connector between IPDM E/R and magnet clutch</li> <li>• IPDM E/R</li> </ul>
Oil pressure warning lamp does not operate	Perform auto active test. Does the oil pressure warning lamp blink?	YES <ul style="list-style-type: none"> <li>• Harness or connector between IPDM E/R and oil pressure switch</li> <li>• Oil pressure switch</li> <li>• IPDM E/R</li> </ul>
		NO <ul style="list-style-type: none"> <li>• CAN communication signal between IPDM E/R and BCM</li> <li>• CAN communication signal between BCM and combination meter</li> <li>• Combination meter</li> </ul>
Cooling fan does not operate	Perform auto active test. Does the cooling fan operate?	YES <ul style="list-style-type: none"> <li>• ECM signal input circuit</li> <li>• CAN communication signal between ECM and IPDM E/R</li> </ul>
		NO <ul style="list-style-type: none"> <li>• Cooling fan motor-2 power supply circuit</li> <li>• Cooling fan motor-1 ground circuit</li> <li>• Cooling fan relay-4 or cooling fan relay-5 power supply circuit</li> <li>• Cooling fan relay-5 ground circuit</li> <li>• Harness or connector between IPDM E/R and cooling fan motor</li> <li>• Harness or connector between IPDM E/R, and cooling fan relay-4 or cooling fan relay-5</li> <li>• Harness or connector between cooling fan motor-2, and cooling fan relay-4 or cooling fan relay-5</li> <li>• Cooling fan relay-4 or cooling fan relay-5</li> <li>• Cooling fan motor</li> <li>• IPDM E/R</li> </ul>

### CONSULT-III Function (IPDM E/R)

INFOID:000000001454767

#### APPLICATION ITEM

CONSULT-III 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 MNTR	The results of transmit/receive diagnosis of CAN communication can be read.

#### SELF DIAGNOSTIC

Refer to [PCS-26, "DTC Index"](#).

#### DATA MONITOR

Monitor item

# DIAGNOSIS SYSTEM (IPDM E/R)

## < FUNCTION DIAGNOSIS >

Monitor Item [Unit]	MAIN SIGNALS	Description	A
MOTOR FAN REQ [1 - 4]	×	Displays the value of the cooling fan speed signal received from ECM via CAN communication.	B
AC COMP REQ [Off/On]	×	Displays the status of the A/C compressor request signal received from ECM via CAN communication.	C
TAIL&CLR REQ [Off/On]	×	Displays the status of the position light request signal received from BCM via CAN communication.	D
HL LO REQ [Off/On]	×	Displays the status of the low beam request signal received from BCM via CAN communication.	E
HL HI REQ [Off/On]	×	Displays the status of the high beam request signal received from BCM via CAN communication.	F
FR FOG REQ [Off/On]	×	Displays the status of the front fog light request signal received from BCM via CAN communication. <b>NOTE:</b> This item is monitored only the vehicle with front fog lamp system.	G
HL WASHER REQ [Off/On]		Displays the status of the headlamp washer request signal received from BCM via CAN communication. <b>NOTE:</b> This item is monitored only the vehicle with headlamp washer system.	H
FR WIP REQ [Stop/1LOW/Low/Hi]	×	Displays the status of the front wiper request signal received from BCM via CAN communication.	I
WIP AUTO STOP [STOP P/ACT P]	×	Displays the status of the front wiper auto stop signal judged by IPDM E/R.	J
WIP PROT [Off/BLOCK]	×	Displays the status of the front wiper fail-safe operation judged by IPDM E/R.	K
ST RLY REQ [Off/On]		Displays the status of the ignition and starter request signal received from BCM via CAN communication.	WW
IGN RLY [Off/On]	×	Displays the status of the ignition relay judged by IPDM E/R.	M
RR DEF REQ [Off/On]	×	Displays the status of the rear defogger request signal received from BCM via CAN communication.	N
OIL P SW [Open/Close]		Displays the status of the oil pressure switch judged by IPDM E/R.	O
REV SW [Off/On]		<b>NOTE:</b> This item is indicated, but not monitored.	P
DTRL REQ [Off/On]		Displays the status of the daytime running light request signal received from BCM via CAN communication. <b>NOTE:</b> 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. <b>NOTE:</b> This item is monitored only the vehicle with the vehicle security system.	
THFT HRN REQ [Off/On]		Displays the status of the theft warning horn request signal received from BCM via CAN communication. <b>NOTE:</b> This item is monitored only the vehicle with the vehicle security system.	
HORN CHIRP [Off/On]		<b>NOTE:</b> This item is indicated, but not monitored.	

### ACTIVE TEST

Test item

## DIAGNOSIS SYSTEM (IPDM E/R)

### < FUNCTION DIAGNOSIS >

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.
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).
HEAD LAMP WASHER	On	Operates the headlamp washer relay for 1 second.
EXTERNAL LAMPS	Off	OFF
	TAIL	Operates the tail lamp relay and the daytime running light relay. <b>NOTE:</b> 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. <b>NOTE:</b> This item can test only the vehicle with front fog lamp system.
HORN	On	Operates horn relay for 20 ms. <b>NOTE:</b> This item can test only the vehicle with vehicle security system.



# WIPER AND WASHER FUSE, FUSIBLE LINK

< COMPONENT DIAGNOSIS >

## COMPONENT DIAGNOSIS

### WIPER AND WASHER FUSE, FUSIBLE LINK

#### Description

INFOID:000000001208941

Fuse, fusible link list

Unit	Location	No.	Capacity
Front wiper motor	IPDM E/R	48	30 A
Washer pump	Fuse block	4	10 A
Headlamp washer pump	Fuse and fusible link block	G	30 A

#### Diagnosis Procedure

INFOID:000000001208942

#### 1. CHECK FUSES AND FUSIBLE LINK

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

Unit	Location	No.	Capacity
Front wiper motor	IPDM E/R	48	30 A
Washer pump	Fuse block	4	10 A
Headlamp washer pump	Fuse and fusible link block	G	30 A

Is the fuse or fusible link fusing?

- YES >> Replace the fuse or fusible link with a new one after repairing the applicable circuit.
- NO >> The fuse or fusible link is normal.

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WW

# FRONT WIPER MOTOR LO CIRCUIT

< COMPONENT DIAGNOSIS >

## FRONT WIPER MOTOR LO CIRCUIT

### Component Function Check

INFOID:000000001208943

#### 1. CHECK FRONT WIPER LO OPERATION

##### IPDM E/R AUTO ACTIVE TEST

1. Start IPDM E/R auto active test. Refer to [PCS-8, "Diagnosis Description"](#).
2. Check that the front wiper operates at the LO operation.

##### CONSULT-III ACTIVE TEST

1. Select "FRONT WIPER" of IPDM E/R active test item.
2. With operating the test item, check front wiper operation.

**LO** : Front wiper (LO) operation

**OFF** : Stop the front wiper.

##### Is front wiper (LO) operation normally?

- YES >> Front wiper motor LO circuit is normal.  
NO >> Refer to [WW-26, "Diagnosis Procedure"](#).

### Diagnosis Procedure

INFOID:000000001208944

#### 1. CHECK FRONT WIPER MOTOR FUSE

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

Unit	Location	Fuse No.	Capacity
Front wiper motor	IPDM E/R	48	30 A

##### Is the fuse fusing?

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

#### 2. CHECK FRONT WIPER MOTOR (LO) SHORT CIRCUIT

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

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

##### Does continuity exist?

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

#### 3. CHECK FRONT WIPER MOTOR (LO) OUTPUT VOLTAGE

##### CONSULT-III ACTIVE TEST

1. Turn the ignition switch ON.
2. Select "FRONT WIPER" of IPDM E/R active test item.
3. With operating the test item, check voltage between IPDM E/R harness connector and ground.

# FRONT WIPER MOTOR LO CIRCUIT

## < COMPONENT DIAGNOSIS >

Terminals		Test item	Voltage (Approx.)
(+)	(-)		
IPDM E/R		FRONT WIPER	Battery voltage
Connector	Terminal		
E14	43	LO	Battery voltage
		OFF	0 V

Is the measurement value normal?

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

### 4. CHECK FRONT WIPER MOTOR (LO) OPEN CIRCUIT

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

IPDM E/R		Front wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
E14	43	E20	3	Existed

Does continuity exist?

- YES >> Replace front wiper motor.  
 NO >> Repair the harness or connector.

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WW

# FRONT WIPER MOTOR HI CIRCUIT

< COMPONENT DIAGNOSIS >

## FRONT WIPER MOTOR HI CIRCUIT

### Component Function Check

INFOID:000000001208945

#### 1. CHECK FRONT WIPER HI OPERATION

##### IPDM E/R AUTO ACTIVE TEST

1. Start IPDM E/R auto active test. Refer to [PCS-8, "Diagnosis Description"](#).
2. Check that the front wiper operates at the HI operation.

##### CONSULT-III ACTIVE TEST

1. Select "FRONT WIPER" of IPDM E/R active test item.
2. With operating the test item, check front wiper operation.

**HI** : Front wiper (HI) operation

**OFF** : Stop the front wiper.

Is front wiper (HI) operation normally?

- YES >> Front wiper motor HI circuit is normal.  
NO >> Refer to [WW-28, "Diagnosis Procedure"](#).

### Diagnosis Procedure

INFOID:000000001208946

#### 1. CHECK FRONT WIPER MOTOR FUSE

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

Unit	Location	Fuse No.	Capacity
Front wiper motor	IPDM E/R	48	30 A

Is the fuse fusing?

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

#### 2. CHECK FRONT WIPER MOTOR (HI) SHORT CIRCUIT

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

IPDM E/R		Ground	Continuity
Connector	Terminal		
E14	42		Not existed

Does continuity exist?

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

#### 3. CHECK FRONT WIPER MOTOR (HI) OUTPUT VOLTAGE

##### CONSULT-III ACTIVE TEST

1. Turn the ignition switch ON.
2. Select "FRONT WIPER" of IPDM E/R active test item.
3. With operating the test item, check voltage between IPDM E/R harness connector and ground.

# FRONT WIPER MOTOR HI CIRCUIT

## < COMPONENT DIAGNOSIS >

Terminals		Test item	Voltage (Approx.)
(+)	(-)		
IPDM E/R		FRONT WIPER	Battery voltage
Connector	Terminal		
E14	42	HI	Battery voltage
		OFF	0 V

Is the measurement value normal?

YES >> GO TO 4.

NO >> Replace IPDM E/R.

### 4. CHECK FRONT WIPER MOTOR (HI) OPEN CIRCUIT

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

IPDM E/R		Front wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
E14	42	E20	5	Existed

Does continuity exist?

YES >> Replace front wiper motor.

NO >> Repair the harness or connector.

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WW

# FRONT WIPER AUTO STOP SIGNAL CIRCUIT

< COMPONENT DIAGNOSIS >

## FRONT WIPER AUTO STOP SIGNAL CIRCUIT

### Component Function Check

INFOID:000000001208947

#### 1. CHECK FRONT WIPER (AUTO STOP) SIGNAL CHECK

##### ④ CONSULT-III DATA MONITOR

1. Select "FRONT WIPER STOP" of IPDM E/R data monitor item.
2. Operate the front wiper.
3. Check that "FR WIPER STOP" changes to "STOP P" and "ACT P" linked with the wiper operation.

Monitor item	Condition		Monitor status
FR WIPER STOP	Front wiper motor	Stop position	STOP P
		Except stop position	ACT P

Is the status of item normal?

- YES >> Front wiper auto stop signal circuit is normal.  
NO >> Refer to [WW-30, "Diagnosis Procedure"](#).

### Diagnosis Procedure

INFOID:000000001208948

#### 1. CHECK FRONT WIPER MOTOR (AUTO STOP) OUTPUT VOLTAGE

1. Turn the ignition switch OFF.
2. Disconnect front wiper motor connector.
3. Turn the ignition switch ON.
4. Check voltage between IPDM E/R harness connector and ground.

Terminals		Voltage (Approx.)
(+)	(-)	
IPDM E/R		Ground
Connector	Terminal	
E13	24	
		Battery voltage

Is the measurement value normal?

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

#### 2. CHECK FRONT WIPER MOTOR (AUTO STOP) SHORT CIRCUIT

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

IPDM E/R		Ground	Continuity
Connector	Terminal		
E13	24		Not existed

Does continuity exist?

- YES >> Repair the harness or connector.  
NO >> Replace IPDM E/R.

#### 3. CHECK FRONT WIPER MOTOR (AUTO STOP) CIRCUIT CONTINUITY

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

# FRONT WIPER AUTO STOP SIGNAL CIRCUIT

## < COMPONENT DIAGNOSIS >

IPDM E/R		Front wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
E13	24	E20	4	Existed

### Does continuity exist?

- YES >> Replace front wiper motor.
- NO >> Repair the harness or connector.

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O  
P

WW

# FRONT WIPER MOTOR GROUND CIRCUIT

< COMPONENT DIAGNOSIS >

## FRONT WIPER MOTOR GROUND CIRCUIT

### Diagnosis Procedure

INFOID:000000001208949

#### 1. CHECK FRONT WIPER MOTOR (GROUND) OPEN CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect front wiper motor connector.
3. Check continuity between front wiper motor harness connector and ground.

Front wiper motor		Ground	Continuity
Connector	Terminal		Existed
E20	2		

#### Does continuity exist?

- YES >> Front wiper motor ground circuit is normal.  
NO >> Repair the harness or connector.



# WASHER SWITCH

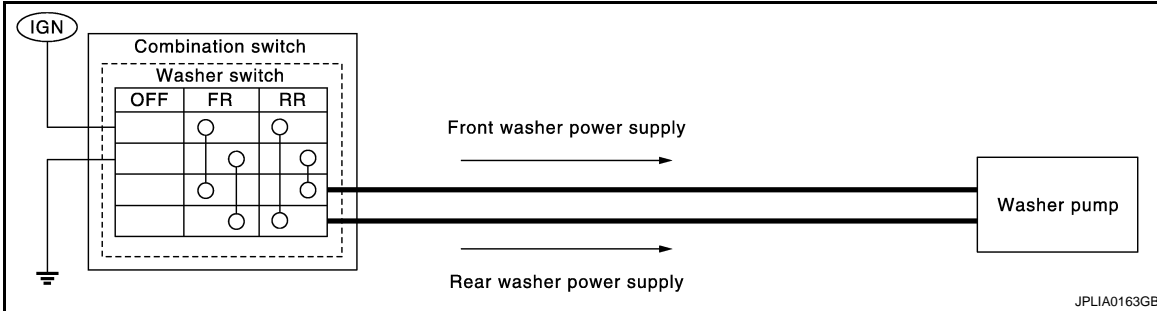
< COMPONENT DIAGNOSIS >

## WASHER SWITCH

### Description

INFOID:000000001208950

- Washer switch is integrated with combination switch.
- Combination switch switches polarity between front washer operating and rear washer operating to supply power to the washer pump on ground.



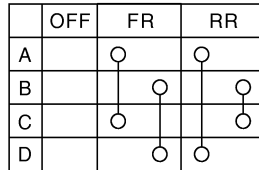
### Component Inspection

INFOID:000000001208951

#### 1. CHECK WIPER SWITCH

1. Turn the ignition switch OFF.
2. Disconnect combination switch connector.
3. Check continuity between the combination switch terminals.

- A : Terminal 14  
 B : Terminal 12  
 C : Terminal 13  
 D : Terminal 11



JPLIA0164GB

Combination switch		Condition	Continuity
Terminal			
11	12	Front washer switch ON	Existed
13	14		
11	14	Rear washer switch ON	
12	13		

#### Does continuity exist?

- YES >> Wiper and washer switch is normal.  
 NO >> Replace combination switch (Wiper and washer switch).

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WW

# RAIN SENSOR

< COMPONENT DIAGNOSIS >

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## RAIN SENSOR

### Description

INFOID:000000001208952

Detects water droplets on the windshield with infrared rays, and transmits the rain sensor signal to BCM through the light and rain sensor serial link.

### Diagnosis Procedure

INFOID:000000001208953

Refer to [EXL-81, "Component Function Check"](#).

# REAR WIPER MOTOR CIRCUIT

< COMPONENT DIAGNOSIS >

## REAR WIPER MOTOR CIRCUIT

### Component Function Check

INFOID:000000001208954

#### 1.CHECK REAR WIPER ON OPERATION

##### CONSULT-III ACTIVE TEST

1. Select "RR WIPER" of BCM active test item.
2. With operating the test item, check rear wiper operation.

**ON** : Rear wiper ON operation

**OFF** : Stop the rear wiper.

##### Is rear wiper operation normally?

- YES >> Rear wiper motor circuit is normal.  
NO >> Refer to [WW-35, "Diagnosis Procedure"](#).

### Diagnosis Procedure

INFOID:000000001208955

#### 1.CHECK REAR WIPER MOTOR OUTPUT VOLTAGE

##### CONSULT-III ACTIVE TEST

1. Turn the ignition switch OFF.
2. Disconnect rear wiper motor connector.
3. Turn the ignition switch ON.
4. Select "RR WIPER" of BCM active test item.
5. With operating the test item, check voltage between BCM harness connector and ground.

Terminals		Test item	Voltage (Approx.)
(+)	(-)		
BCM		REAR WIPER	Battery voltage
Connector	Terminal		
M66	43	ON	Battery voltage
		OFF	0 V

##### Is the measurement value normal?

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

#### 2.CHECK REAR WIPER MOTOR SHORT CIRCUIT

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

BCM		Ground	Continuity
Connector	Terminal		
M66	43		Not existed

##### Does continuity exist?

- YES >> Repair the harness or connector.  
NO >> Replace BCM.

#### 3.CHECK REAR WIPER MOTOR OPEN CIRCUIT

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

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
M  
N  
O  
P

WW

## REAR WIPER MOTOR CIRCUIT

### < COMPONENT DIAGNOSIS >

---

BCM		Rear wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
M66	43	D193	1	Existed

#### Does continuity exist?

YES >> GO TO 4.

NO >> Repair the harness or connector.

### **4.**CHECK REAR WIPER MOTOR GROUND OPEN CIRCUIT

---

Check continuity between rear wiper motor harness connector and ground.

Rear wiper motor		Ground	Continuity
Connector	Terminal		
D193	4		Existed

#### Does continuity exist?

YES >> Replace rear wiper motor.

NO >> Repair the harness or connector.

# REAR WIPER AUTO STOP SIGNAL CIRCUIT

< COMPONENT DIAGNOSIS >

## REAR WIPER AUTO STOP SIGNAL CIRCUIT

### Component Function Check

INFOID:000000001208956

#### 1.CHECK REAR WIPER (AUTO STOP) OPERATION

##### CONSULT-III DATA MONITOR

1. Select "WIPER" of BCM data monitor item.
2. Operate the rear wiper.
3. Check that "RR WIPER STOP" changes to "ON" and "OFF" linked with the wiper operation.

Monitor item	Condition		Monitor status
RR WIPER STOP	Rear wiper motor	Stop position	ON
		Except stop position	OFF

Is the status of item normal?

- YES >> Rear wiper auto stop signal circuit is normal.  
NO >> Refer to [WW-37, "Diagnosis Procedure"](#).

### Diagnosis Procedure

INFOID:000000001208957

#### 1.CHECK REAR WIPER MOTOR (AUTO STOP) OUTPUT VOLTAGE

1. Turn the ignition switch OFF.
2. Disconnect rear wiper motor connector.
3. Turn the ignition switch ON.
4. Check voltage between BCM harness connector and ground.

Terminals		Voltage (Approx.)
(+)	(-)	
BCM		Ground
Connector	Terminal	
M66	44	
		Battery voltage

Is the measurement value normal?

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

#### 2.CHECK REAR WIPER MOTOR (AUTO STOP) SHORT CIRCUIT

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

BCM		Ground	Continuity
Connector	Terminal		
M66	44		Not existed

Does continuity exist?

- YES >> Repair the harness or connector.  
NO >> Replace BCM.

#### 3.CHECK REAR WIPER MOTOR (AUTO STOP) OPEN CIRCUIT

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

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
M  
N  
O  
P

WW

## REAR WIPER AUTO STOP SIGNAL CIRCUIT

### < COMPONENT DIAGNOSIS >

---

BCM		Rear wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
M66	44	D193	4	Existed

#### Does continuity exist?

- YES >> Replace rear wiper motor.  
NO >> Repair the harness or connector.

# HEADLAMP WASHER RELAY

< COMPONENT DIAGNOSIS >

## HEADLAMP WASHER RELAY

### Component Inspection

INFOID:000000001208958

#### 1. CHECK HEADLAMP WASHER RELAY

1. Turn the ignition switch OFF.
2. Disconnect headlamp washer relay.
3. Apply battery voltage to headlamp washer relay between terminals 1 and 2.
4. Check continuity of headlamp washer relay.

Headlamp washer relay		Condition	Continuity
Terminal		Voltage	
3	5	Apply	Existed
		Not Apply	Not existed

#### Does continuity exist?

- YES >> Headlamp washer relay is normal.  
NO >> Replace headlamp washer relay.

A  
B  
C  
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E  
F  
G  
H  
I  
J  
K  
M  
N  
O  
P

WW

# HEADLAMP WASHER SWITCH

< COMPONENT DIAGNOSIS >

## HEADLAMP WASHER SWITCH

### Description

INFOID:000000001301413

Headlamp washer switch inputs the signals to BCM when pressing the switch.

### Component Function Check

INFOID:000000001301414

#### 1. CHECK HEADLAMP SWITCH SIGNAL BY CONSULT-III

##### CONSULT-III DATA MONITOR

1. Turn the ignition switch ON.
2. Select "H/L WASH SW" of BCM data monitor item.
3. With operating the headlamp washer switch, check the monitor status.

Monitor item	Condition		Monitor status
H/L WASH SW	Headlamp washer switch	While pressing	ON
		While not pressing	OFF

Is the item status normal?

YES >> Headlamp washer switch circuit is normal.

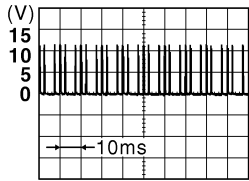
NO >> Refer to [WW-40, "Diagnosis Procedure"](#).

### Diagnosis Procedure

INFOID:000000001301415

#### 1. CHECK HEADLAMP WASHER SWITCH SIGNAL INPUT

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

Terminals		Condition	Voltage (Approx.)
(+)	(-)		
BCM		Headlamp Washer switch	0 V
Connector	Terminal		
M65	35	While pressing	
		While not pressing	
		Ground	

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Is the measurement value normal?

YES >> Replace BCM.

NO >> GO TO 2.

#### 2. CHECK HEADLAMP WASHER SWITCH SIGNAL OPEN CIRCUIT

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

Headlamp washer switch		BCM		Continuity
Connector	Terminal	Connector	Terminal	
M7	1	M65	35	Existed

Does continuity exist?



# HEADLAMP WASHER SWITCH

## < COMPONENT DIAGNOSIS >

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

### 3.CHECK HEADLAMP WASHER SWITCH SIGNAL SHORT CIRCUIT

Check continuity between the headlamp washer switch harness connector and the ground.

Headlamp washer switch		Ground	Continuity
Connector	Terminal		
M7	1		Not existed

#### Does continuity exist?

- YES >> Repair the harness or connector.  
NO >> GO TO 4.

### 4.CHECK HEADLAMP WASHER SWITCH GROUND OPEN CIRCUIT

Check continuity between the headlamp washer switch harness connector and the ground.

Headlamp washer switch		Ground	Continuity
Connector	Terminal		
M7	2		Existed

#### Does continuity exist?

- YES >> Replace headlamp washer switch.  
NO >> Repair the harness or connector.

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
M  
N  
O  
P

WW

# HEADLAMP WASHER CIRCUIT

< COMPONENT DIAGNOSIS >

## HEADLAMP WASHER CIRCUIT

### Component Function Check

INFOID:000000001208959

#### 1.CHECK HEADLAMP WASHER OPERATION

##### ⓑCONSULT-III ACTIVE TEST

1. Select "HEADLAMP WASHER" of IPDM E/R active test item.
2. With operating the test item, check headlamp washer operation.

**ON** : Headlamp washer ON operation

**OFF** : Stop the headlamp washer.

Is the headlamp washer operation normally?

- YES >> Headlamp washer circuit is normal.  
NO >> Refer to [WW-42, "Diagnosis Procedure"](#).

### Diagnosis Procedure

INFOID:000000001208960

#### 1.CHECK HEADLAMP WASHER FUSIBLE LINK

1. Turn the ignition switch OFF.
2. Check that the headlamp washer 30A fusible link (#G) is not fusing.

Is the fusible link fusing?

- YES >> Replace the fusible link after repairing the applicable circuit.  
NO >> GO TO 2.

#### 2.CHECK HEADLAMP WASHER RELAY POWER SUPPLY

1. Remove headlamp washer relay.
2. Check voltage between headlamp washer harness connector and ground.

Terminals		Voltage (Approx.)
(+)	(-)	
Headlamp washer relay		Ground  Battery voltage
Connector	Terminal	
E32	2	
	5	

Is the measurement value normal?

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

#### 3.CHECK HEADLAMP WASHER RELAY

Check headlamp washer relay. Refer to [WW-39, "Component Inspection"](#).

Is the headlamp washer relay normal?

- YES >> GO TO 4.  
NO >> Replace the headlamp washer relay.

#### 4.CHECK HEADLAMP WASHER RELAY CONTROL SIGNAL OUTPUT

##### ⓑCONSULT-III ACTIVE TEST

1. Install headlamp washer relay.
2. Turn the ignition switch ON.
3. Select "HEADLAMP WASHER" of IPDM E/R active test item.
4. With operating the test item, check voltage between IPDM E/R harness connector and ground.

# HEADLAMP WASHER CIRCUIT

## < COMPONENT DIAGNOSIS >

Terminals		Test item	Voltage (Approx.)
(+)	(-)		
IPDM E/R		HEADLAMP WASHER	0 V
Connector	Terminal		
E14	35	ON	0 V
		OFF	Battery voltage

Is the measurement value normal?

YES >> GO TO 7.

Fixed at 0 V >> GO TO 5.

Fixed at Battery voltage >> Replace IPDM E/R.

### 5. CHECK HEADLAMP WASHER RELAY CONTROL SIGNAL OPEN CIRCUIT

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

IPDM E/R		Headlamp washer relay		Continuity
Connector	Terminal	Connector	Terminal	
E14	35	E32	1	Existed

Does continuity exist?

YES >> GO TO 6.

NO >> Repair the harness or connector.

### 6. CHECK HEADLAMP WASHER RELAY CONTROL SIGNAL SHORT CIRCUIT

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

IPDM E/R		Ground	Continuity
Connector	Terminal		
E14	35		Not existed

Does continuity exist?

YES >> Repair the harness or connector.

NO >> Replace IPDM E/R.

### 7. CHECK HEADLAMP WASHER PUMP OPEN CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect headlamp washer pump connector.
3. Remove headlamp washer relay.
4. Check continuity between headlamp washer relay harness connector and headlamp washer pump harness connector.

Headlamp washer relay		Headlamp washer pump		Continuity
Connector	Terminal	Connector	Terminal	
E32	3	E42	1	Existed

Does continuity exist?

YES >> GO TO 8.

NO >> Repair the harness or connector.

### 8. CHECK HEADLAMP WASHER PUMP (GROUND) OPEN CIRCUIT

Check continuity between headlamp washer pump harness connector and ground.

A  
B  
C  
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E  
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J  
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M  
N  
O  
P

WW

## HEADLAMP WASHER CIRCUIT

### < COMPONENT DIAGNOSIS >

---

Headlamp washer pump		Ground	Continuity
Connector	Terminal		Existed
E42	2		

#### Does continuity exist?

YES >> Replace headlamp washer pump.

NO >> Repair the harness or connector.

# FRONT WIPER AND WASHER SYSTEM

< COMPONENT DIAGNOSIS >

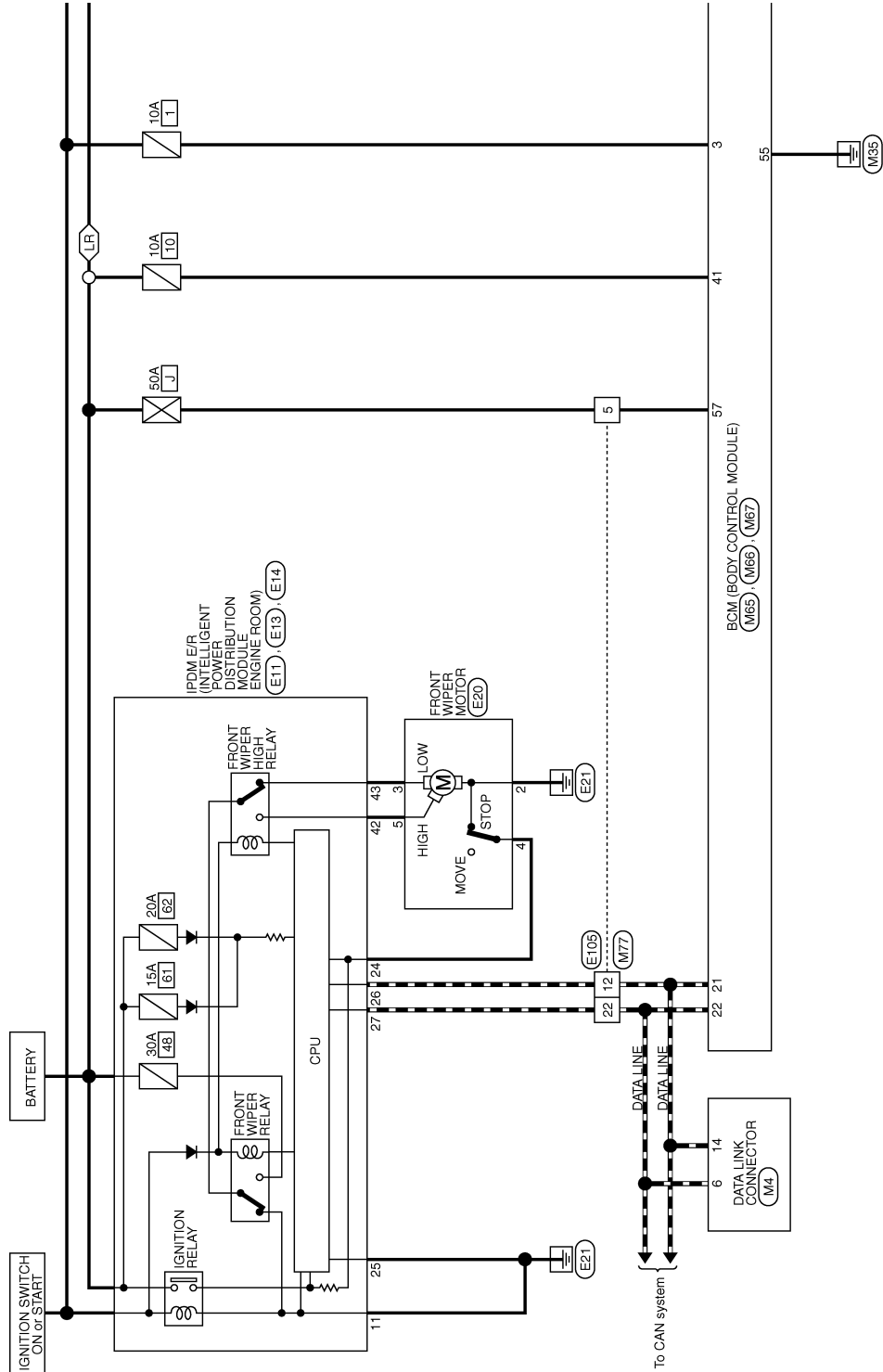
## FRONT WIPER AND WASHER SYSTEM

### Wiring Diagram - FRONT WIPER AND WASHER SYSTEM -

INFOID:000000001208961

#### FRONT WIPER AND WASHER SYSTEM

LF: With light & rain sensor



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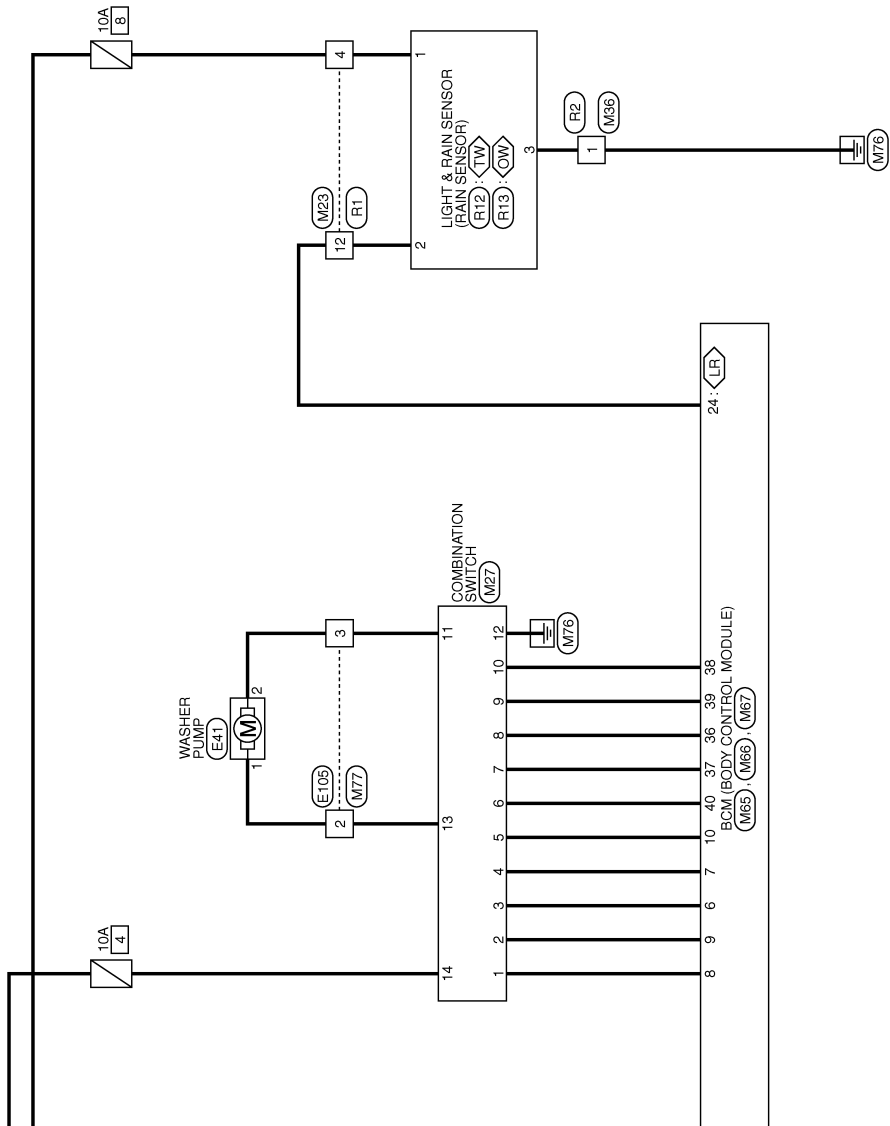
A  
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WW

# FRONT WIPER AND WASHER SYSTEM

## < COMPONENT DIAGNOSIS >

- ◁LF> : With light & rain sensor
- ◁TW> : With theft warning system
- ◁OW> : Without theft warning system



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# FRONT WIPER AND WASHER SYSTEM

## < COMPONENT DIAGNOSIS >

### FRONT WIPER AND WASHER SYSTEM

Connector No.	E11
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	M08FE-LC



Terminal No.	Color of Wire	Signal Name [Specification]
11	B	-

Connector No.	E13
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH12FW-NH



Terminal No.	Color of Wire	Signal Name [Specification]
24	Y	-
25	B	-
26	P	-
27	L	-

Connector No.	E14
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS12FEER-CS



Terminal No.	Color of Wire	Signal Name [Specification]
42	L	-
43	G	-

Connector No.	E20
Connector Name	FRONT WIPER MOTOR
Connector Type	HS20FEY



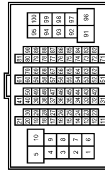
Terminal No.	Color of Wire	Signal Name [Specification]
2	B	-
3	G	-
4	Y	-
5	L	-

Connector No.	E41
Connector Name	WASHER PUMP
Connector Type	M02EW-LC



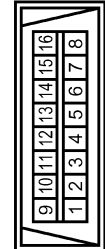
Terminal No.	Color of Wire	Signal Name [Specification]
1	O	-
2	LG	-

Connector No.	E105
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4



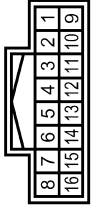
Terminal No.	Color of Wire	Signal Name [Specification]
2	O	-
3	LG	-
5	Y	-
12	P	-
22	L	-

Connector No.	M4
Connector Name	DATA LINK CONNECTOR
Connector Type	BD18FW



Terminal No.	Color of Wire	Signal Name [Specification]
6	L	-
14	P	-

Connector No.	M23
Connector Name	WIRE TO WIRE
Connector Type	TH18FW-NH



Terminal No.	Color of Wire	Signal Name [Specification]
4	Y	-
12	GR	-

# FRONT WIPER AND WASHER SYSTEM

## < COMPONENT DIAGNOSIS >

### FRONT WIPER AND WASHER SYSTEM

Connector No.	M27
Connector Name	COMBINATION SWITCH
Connector Type	TK16FW



12	13	10	9	8	7		
14	11	1	2	3	4	5	6

Terminal No.	Color of Wire	Signal Name [Specification]
1	V	INPUT 1
2	LG	INPUT 2[RHD models]
3	L	INPUT 2[LHD models]
4	GR	INPUT 4
5	O	INPUT 5[RHD models]
6	BR	INPUT 3[LHD models]
7	R	OUTPUT 1
8	G	OUTPUT 2
9	Y	OUTPUT 4

Connector No.	M65
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	AABA0FB



31	32	33	34	35	36	37	38	39	40
21	22	23	24	25	26	27	28	29	30
11	12	13	14	15	16	17	18	19	20
1	2	3	4	5	6	7	8	9	10

Terminal No.	Color of Wire	Signal Name [Specification]
3	W	IGN SW
6	L	COMBI SW INPUT 3
7	GR	COMBI SW INPUT 4
8	V	COMBI SW INPUT 1
9	LG	COMBI SW INPUT 2[RHD models]
9	B	COMBI SW INPUT 2[LHD models]
10	O	COMBI SW 3 [RHD models]
10	BR	COMBI SW 5 [LHD models]
21	P	CAN-L
22	L	CAN-H
24	GR	LIGHT & RAIN SEN

Connector No.	M38
Connector Name	WIRE TO WIRE
Connector Type	NS08FW-CS



3	2	1		
8	7	6	5	4

Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-

Connector No.	M66
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FEA12FB



62	61	60	59	49	48	47	46	45	44	43	42	41
----	----	----	----	----	----	----	----	----	----	----	----	----

Terminal No.	Color of Wire	Signal Name [Specification]
41	LG	BAT(FUSE)

Connector No.	M67
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FHA08FB



60	59	58	57	56	55	54	53
----	----	----	----	----	----	----	----

Terminal No.	Color of Wire	Signal Name [Specification]
55	B	GND
57	Y	BAT(F/L)

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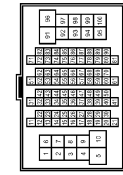


# FRONT WIPER AND WASHER SYSTEM

## < COMPONENT DIAGNOSIS >

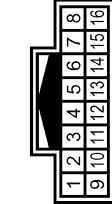
### FRONT WIPER AND WASHER SYSTEM

Connector No.	M77
Connector Name	WIRE TO WIRE
Connector Type	TH80W-CS16-TM4



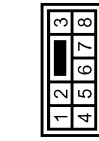
Terminal No.	Color of Wire	Signal Name [Specification]
2	SB	-
3	LG	-
5	Y	-
12	P	-
22	L	-

Connector No.	R1
Connector Name	WIRE TO WIRE
Connector Type	TH18MW-NH



Terminal No.	Color of Wire	Signal Name [Specification]
4	Y	-
12	R	-

Connector No.	R2
Connector Name	WIRE TO WIRE
Connector Type	NSDBMW-CS



Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-

Connector No.	RI2
Connector Name	LIGHT & RAIN SENSOR
Connector Type	AAE03FB



Terminal No.	Color of Wire	Signal Name [Specification]
1	Y	-B
2	R	SIG
3	B	GND

Connector No.	RI3
Connector Name	LIGHT & RAIN SENSOR
Connector Type	AAE03FB



Terminal No.	Color of Wire	Signal Name [Specification]
1	Y	-B
2	R	SIG
3	B	GND

A  
B  
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WW

# REAR WIPER AND WASHER SYSTEM

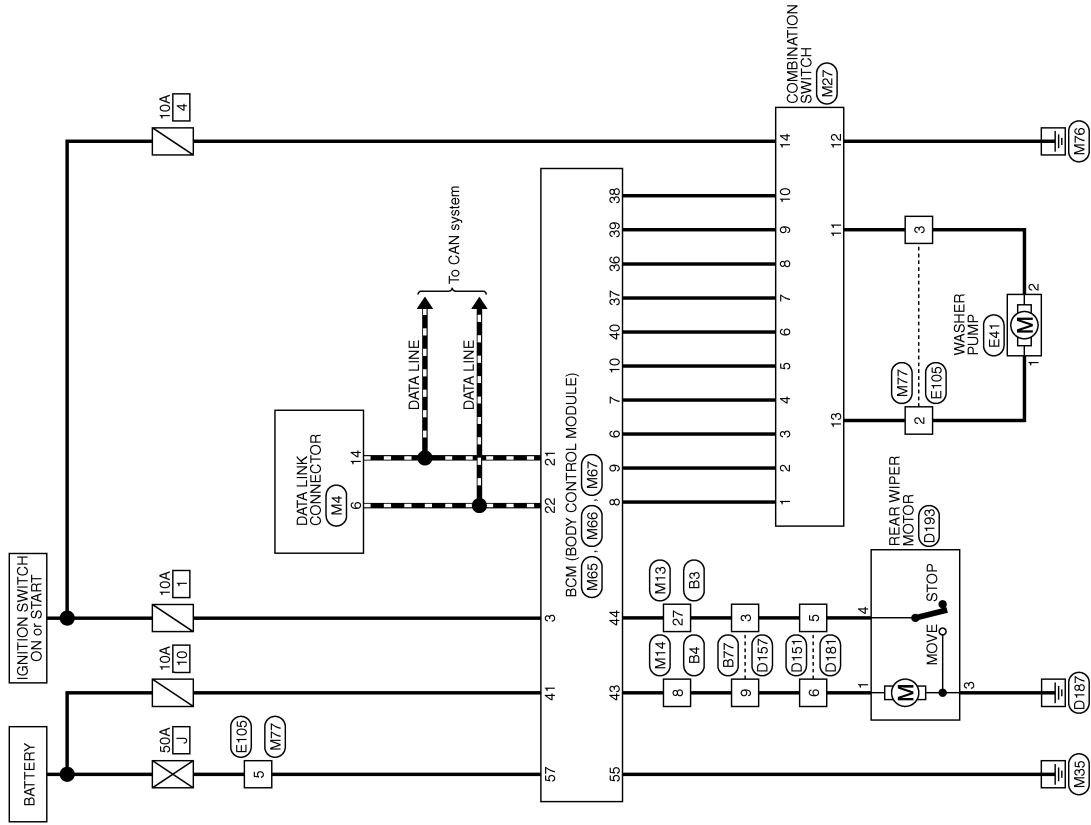
< COMPONENT DIAGNOSIS >

## REAR WIPER AND WASHER SYSTEM

Wiring Diagram - REAR WIPER AND WASHER SYSTEM -

INFOID:000000001208962

### REAR WIPER AND WASHER SYSTEM



2007/02/28



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# REAR WIPER AND WASHER SYSTEM

## < COMPONENT DIAGNOSIS >



### REAR WIPER AND WASHER SYSTEM

Connector No.	B3
Connector Name	WIRE TO WIRE
Connector Type	TH32MW-NH


Terminal No.	27	GR	-
Color of Wire			
Signal Name [Specification]			

Connector No.	B4
Connector Name	WIRE TO WIRE
Connector Type	NS16MW-CS



Terminal No.	8	SB	-
Color of Wire			
Signal Name [Specification]			

Connector No.	B77
Connector Name	WIRE TO WIRE
Connector Type	NS10MW-CS




Terminal No.	3	GR	-
Color of Wire			
Signal Name [Specification]			

Connector No.	D151
Connector Name	WIRE TO WIRE
Connector Type	NS28FBR-CS

Terminal No.	5	O	-
Color of Wire			
Signal Name [Specification]			

Connector No.	D157
Connector Name	WIRE TO WIRE
Connector Type	NS10FW-CS





Terminal No.	3	O	-
Color of Wire			
Signal Name [Specification]			

Connector No.	D181
Connector Name	WIRE TO WIRE
Connector Type	NS30MBR-CS






Terminal No.	5	O	-
Color of Wire			
Signal Name [Specification]			

Connector No.	D193
Connector Name	REAR WIPER MOTOR
Connector Type	CJ04FW-TV




Terminal No.	1	SB	-
Color of Wire			
Signal Name [Specification]			

Connector No.	E41
Connector Name	WASHER PUMP
Connector Type	M02FW-LC

Terminal No.	1	O	-
Color of Wire			
Signal Name [Specification]			

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# REAR WIPER AND WASHER SYSTEM

## < COMPONENT DIAGNOSIS >

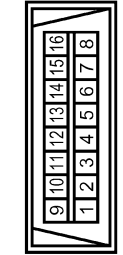
### REAR WIPER AND WASHER SYSTEM

Connector No.	E105
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4



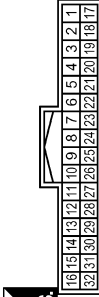
Terminal No.	Color of Wire	Signal Name [Specification]
1	O	-
2	LG	-
3	Y	-

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



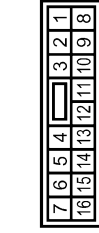
Terminal No.	Color of Wire	Signal Name [Specification]
6	L	-
14	P	-

Connector No.	M13
Connector Name	WIRE TO WIRE
Connector Type	TH32FW-NH



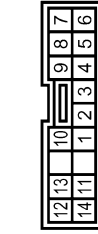
Terminal No.	Color of Wire	Signal Name [Specification]
27	B	-

Connector No.	M14
Connector Name	WIRE TO WIRE
Connector Type	NS18FW-CS



Terminal No.	Color of Wire	Signal Name [Specification]
8	SB	-

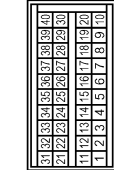
Connector No.	M27
Connector Name	COMBINATION SWITCH
Connector Type	TK16FW



Terminal No.	Color of Wire	Signal Name [Specification]
1	V	INPUT 1
2	LG	INPUT 2[RHD models]
2	B	INPUT 2[LHD models]
3	L	INPUT 3
4	GR	INPUT 4
5	O	INPUT 5[RHD models]
5	BR	INPUT 5[LHD models]
6	P	OUTPUT 1
7	R	OUTPUT 2
8	G	OUTPUT 5
9	Y	OUTPUT 4

10	W	OUTPUT 3
11	LG	WASH FR(-) RR(+)
12	B	GND
13	O	WASH FR(+ ) RR(-)
14	W	IGN

Connector No.	M65
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	A4B40FB



Terminal No.	Color of Wire	Signal Name [Specification]
3	W	IGN SW
6	L	COMBI SW INPUT 3
7	GR	COMBI SW INPUT 4
8	V	COMBI SW INPUT 1
9	LG	COMBI SW INPUT 2[RHD models]
9	B	COMBI SW INPUT 2[LHD models]
10	O	COMBI SW 5 [RHD models]
10	BR	COMBI SW 5 [LHD models]
21	P	CAN-L
22	L	CAN-H
36	G	COMBI SW OUTPUT 5

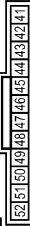
37	R	COMBI SW OUTPUT 2
38	W	COMBI SW OUTPUT 3
39	Y	COMBI SW OUTPUT 4
40	P	COMBI SW OUTPUT 1

# REAR WIPER AND WASHER SYSTEM

## < COMPONENT DIAGNOSIS >

### REAR WIPER AND WASHER SYSTEM

Connector No.	M86
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FEA1ZFBR



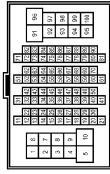
Terminal No.	Color of Wire	Signal Name [Specification]
41	LG	BAT(FUSE)
43	SB	REAR WIPER MOTOR OUTPUT
44	B	REAR WIPER AUTO STOP

Connector No.	M67
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FHA08FB



Terminal No.	Color of Wire	Signal Name [Specification]
55	B	GND
57	Y	BAT(F/L)

Connector No.	M77
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4



Terminal No.	Color of Wire	Signal Name [Specification]
2	SB	
3	LG	
5	Y	

A  
B  
C  
D  
E  
F  
G  
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I  
J  
K  
M  
N  
O  
P

WW

JCLWA0520GB

# HEADLAMP WASHER SYSTEM

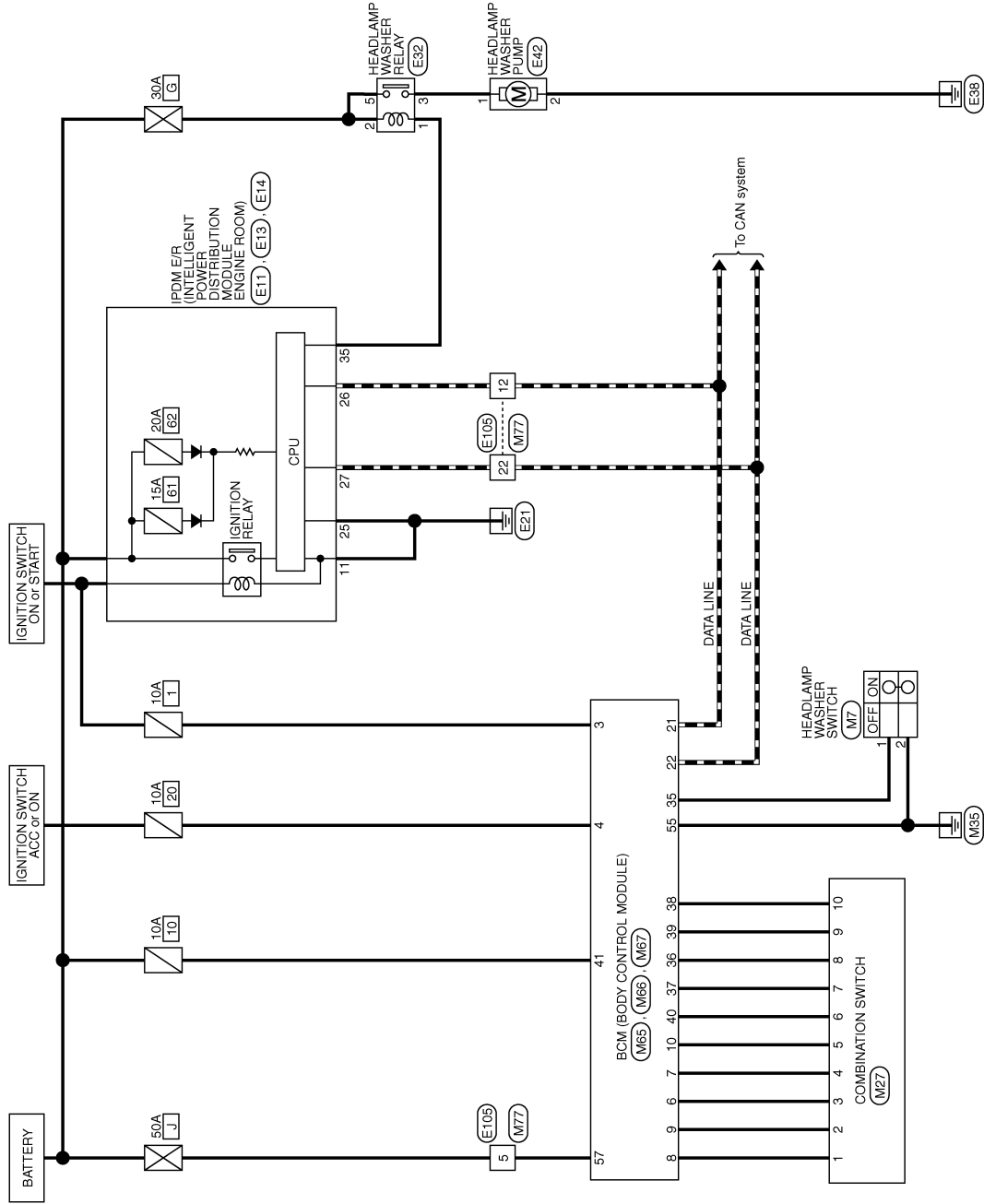
< COMPONENT DIAGNOSIS >

## HEADLAMP WASHER SYSTEM

Wiring Diagram - HEADLAMP WASHER -

INFOID:000000001208963

### HEADLAMP WASHER



2007/02/28

JCLWA0521GB

# HEADLAMP WASHER SYSTEM

## < COMPONENT DIAGNOSIS >

### HEADLAMP WASHER

Connector No.	E11
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	M08FE-LC



Terminal No.	Color of Wire	Signal Name [Specification]
11	B	-

Connector No.	E13
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH12FW-NH



Terminal No.	Color of Wire	Signal Name [Specification]
25	B	-
26	P	-
27	L	-

Connector No.	E14
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS17FEH-CS



Terminal No.	Color of Wire	Signal Name [Specification]
35	W	-

Connector No.	E32
Connector Name	HEADLAMP WASHER RELAY
Connector Type	MS02FL-M2



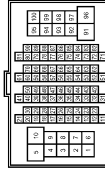
Terminal No.	Color of Wire	Signal Name [Specification]
1	W	-
2	L	-
3	GR	-
5	L	-

Connector No.	E42
Connector Name	HEADLAMP WASHER PUMP
Connector Type	RS02EGY



Terminal No.	Color of Wire	Signal Name [Specification]
1	GR	-
2	B	-

Connector No.	E105
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4



Terminal No.	Color of Wire	Signal Name [Specification]
5	Y	-
12	P	-
22	L	-

Connector No.	M7
Connector Name	HEADLAMP WASHER SWITCH
Connector Type	TK08FGY



Terminal No.	Color of Wire	Signal Name [Specification]
1	G	-
2	B	-

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
L  
M  
N  
O  
P

WW

# HEADLAMP WASHER SYSTEM

## < COMPONENT DIAGNOSIS >

### HEADLAMP WASHER

Connector No.	M27
Connector Name	COMBINATION SWITCH
Connector Type	TK16FW



12	13	10	9	8	7		
14	11	1	2	3	4	5	6

Terminal No.	Color of Wire	Signal Name [Specification]
1	V	INPUT 1
2	LG	INPUT 2[RHD models]
2	B	INPUT 2[LHD models]
3	L	INPUT 3
4	GR	INPUT 4
5	O	INPUT 5[RHD models]
5	BR	INPUT 5[LHD models]
6	P	OUTPUT 1
7	R	OUTPUT 2
8	G	OUTPUT 5
9	Y	OUTPUT 4



52	51	50	49	48	47	46	45	44	43	42	41
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Connector No.	M66
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FEA12FBR

10	W	OUTPUT 3
----	---	----------

Connector No.	M65
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	AAB46FB



31	32	33	34	35	36	37	38	39	40
21	22	23	24	25	26	27	28	29	30
11	12	13	14	15	16	17	18	19	20
1	2	3	4	5	6	7	8	9	10

Terminal No.	Color of Wire	Signal Name [Specification]
3	W	IGN SW
4	SB	ACC SW
6	L	COMBI SW INPUT 3
7	GR	COMBI SW INPUT 4
8	V	COMBI SW INPUT 1
9	LG	COMBI SW INPUT 2[RHD models]
9	B	COMBI SW INPUT 2[LHD models]
10	O	COMBI SW 5 [RHD models]
10	BR	COMBI SW 5 [LHD models]
21	P	CAN L
22	L	CAN H

Connector No.	M77
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-GS16-TM4



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40

Terminal No.	Color of Wire	Signal Name [Specification]
55	B	GND
57	Y	BAT(F/L)

Terminal No.	Color of Wire	Signal Name [Specification]
5	Y	-
12	P	-
22	L	-

35	G	HEAD LAMP WASSHER SW
36	G	COMBI SW OUTPUT 5
37	R	COMBI SW OUTPUT 2
38	W	COMBI SW OUTPUT 3
39	Y	COMBI SW OUTPUT 4
40	P	COMBI SW OUTPUT 1



# BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

## ECU DIAGNOSIS

### BCM (BODY CONTROL MODULE)

Reference Value

INFOID:000000001452168

#### VALUES ON THE DIAGNOSIS TOOL

Monitor Item	Condition	Value/Status
VEHICLE SPEED	While driving	Equivalent to speedometer reading
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
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
PUSH SW	Return to ignition switch to "LOCK" position	Off
	Press ignition switch	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
SHOCK SENSOR	Ignition switch ON	NOMAL
	After the reception of air bag deployment signal from air bag diagnosis sensor unit	Off
	During the reception of air bag deployment signal from air bag diagnosis sensor unit	On
UNLOCK SHOCK	Other than the following	Off
	During the unlock operation interlocked with air bag	On

## BCM (BODY CONTROL MODULE)

### < ECU DIAGNOSIS >

Monitor Item	Condition	Value/Status
UNLOCK WITH DR	<b>NOTE:</b> The item is indicated, but not monitored	On
		Off
LOCK WITH SPEED	Vehicle speed sensing auto door lock function does not operate	Off
	Vehicle speed sensing auto door lock function is operating	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
TAIL LAMP SW	Lighting switch OFF	Off
	Lighting switch 1ST	On
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
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
PASSING SW	Other than lighting switch PASS	Off
	Lighting switch PASS	On
AUTO LIGHT SW	Lighting switch OFF	Off
	Lighting switch AUTO	On
FR FOG SW	Front fog lamp switch OFF	Off
	Front fog lamp switch ON	On
RR FOG SW	Rear fog lamp switch OFF	Off
	Rear fog lamp switch ON	On
ENGINE RUN	Engine stopped	Off
	Engine running	On
LIT-SEN FAIL	Light & rain sensor is in normal condition	OK
	Light & rain sensor is with error	NOTOK
AUT LIGHT SYS	Outside of the room is dark	On
	Outside of the room is bright	Off
HD LIGHT TIME	—	Displays a setting time of the follow me home function set by the work support
IGN SW CAN	Ignition switch OFF or ACC	Off
	Ignition switch ON	On
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

## BCM (BODY CONTROL MODULE)

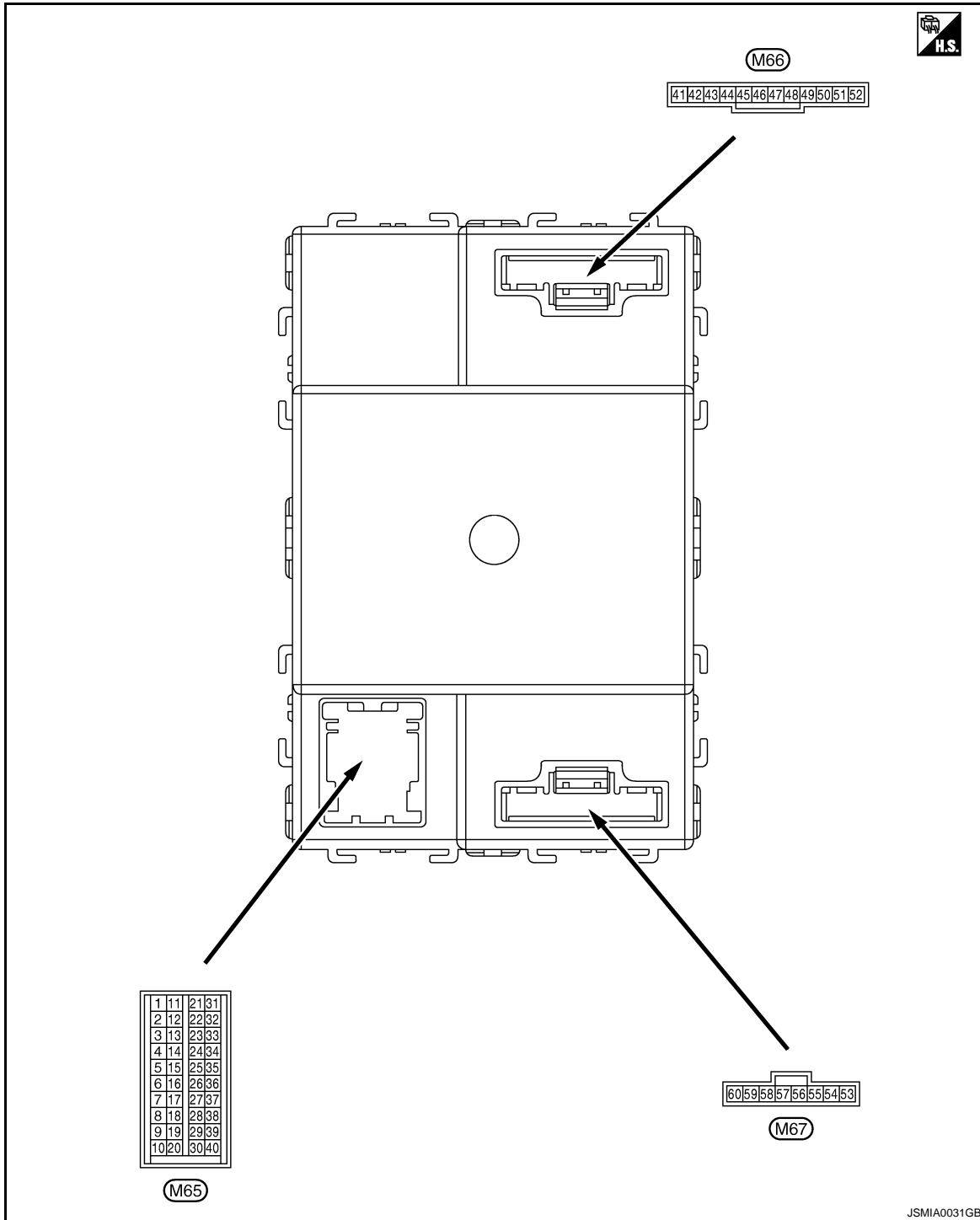
### < ECU DIAGNOSIS >

Monitor Item	Condition	Value/Status	
FR WASHER SW	Front washer switch OFF	Off	A
	Front washer switch ON	On	
INT VOLUME	Wiper intermittent dial is in a dial position 1 - 7	1 - 7	B
FR WIPER STOP	Any position other than front wiper stop position	Off	
	Front wiper stop position	On	
RR WIPER ON	Rear wiper switch OFF	Off	C
	Rear wiper switch ON	On	
RR WIPER INT	Rear wiper switch OFF	Off	D
	Rear wiper switch INT	On	
RR WIPER STOP	Rear wiper stop position	Off	
	Other than rear wiper stop position	On	E
RR WASHER SW	Rear washer switch OFF	Off	
	Rear washer switch ON	On	F
REVERSE SW CAN	<b>NOTE:</b> The item is indicated, but not monitored	Off	
		On	
H/L WASH SW	When headlamp washer switch is not pressed	Off	G
	When headlamp washer switch is pressed	On	
FAN ON SIG	Blower fan motor switch OFF	Off	
	Blower fan motor switch ON (other than OFF)	On	H
AIR COND SW	Compressor ON is not requested from auto amp. (A/C indicator OFF, blower fan motor switch OFF or etc.)	Off	
	Compressor ON is requested from auto amp. (A/C indicator ON and blower fan motor switch ON).	On	I
HAZARD SW	Hazard switch OFF	Off	
	Hazard switch ON	On	J
BRAKE SW	Brake pedal is not depressed	Off	
	Brake pedal is depressed	On	K
TRNK OPNR SW	When back door opener switch is not pressed	Off	
	When back door opener switch is pressed	On	WW
HOOD SW	Close the hood <b>NOTE:</b> Vehicles without theft warning system are OFF-fixed	Off	
	Open the hood	On	M
AUTO RELOCK	Auto lock function does not operate	Off	
	Auto lock function is operating	On	N
GLS BREAK SEN	The vehicle without glass break sensor	Off	
	The vehicle with glass break sensor	On	
OIL PRESS SW	<ul style="list-style-type: none"> <li>• Ignition switch OFF or ACC</li> <li>• Engine running</li> </ul>	Off	O
	Ignition switch ON	On	P

# BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

## 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-III. Refer to [BCS-28, "COMB SW : CONSULT-III Function \(BCM - COMB SW\)"](#).
- BCM reads the status of the combination switch at 10 ms internal normally. Refer to [BCS-9, "System Description"](#).

# BCM (BODY CONTROL MODULE)

## < ECU DIAGNOSIS >

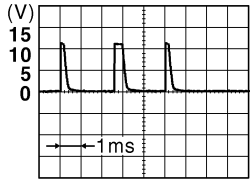
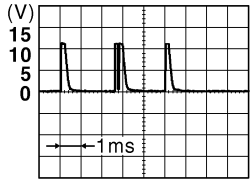
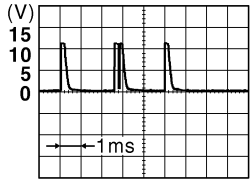
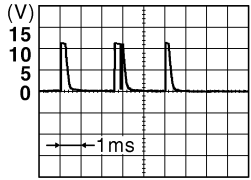
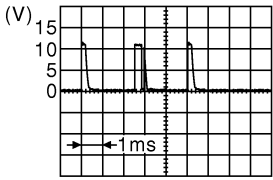
Terminal No. (Wire color)		Description		Condition	Value (Approx.)
		Signal name	Input/ Output		
+	-				
1 (W)	Ground	NATS antenna amp.	Input/ Output	Insert mechanical key into ignition key cylinder	Just after Insert mechanical key into ignition key cylinder. Pointer of tester should move
2 (G)	Ground	NATS antenna amp.	Input/ Output	Insert mechanical key into ignition key cylinder	Just after Insert mechanical key into ignition key cylinder. Pointer of tester should move
3 (W)	Ground	Ignition power supply	Input	Ignition switch OFF or ACC	0 V
				Ignition switch ON or START	Battery voltage
4 (SB)	Ground	ACC power supply	Input	Ignition switch OFF	0 V
				Ignition switch ON or ACC	Battery voltage
5 (LG) <sup>*1</sup> (R) <sup>*2</sup>	Ground	Key switch	Input	Insert mechanical key into ignition key cylinder	Battery voltage
				Remove mechanical key from ignition key cylinder	0 V

A  
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K  
M  
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P

WW

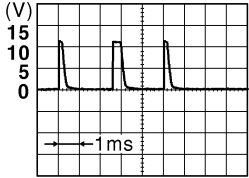

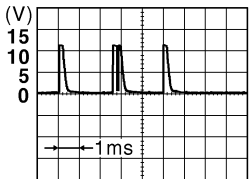
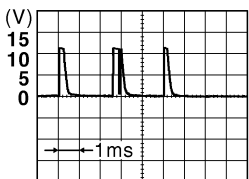
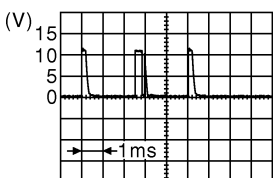
# BCM (BODY CONTROL MODULE)

## < ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition	Value (Approx.)	
+	-	Signal name	Input/ Output			
6 (L)	Ground	Combination switch INPUT 3	Input	Combination switch	All switch OFF (Wiper intermittent dial 4)	 <p style="text-align: right; font-size: small;">JPMIA0165GB</p> <p style="text-align: center;">1.4 V</p>
					Lighting switch HI (Wiper intermittent dial 4)	 <p style="text-align: right; font-size: small;">JPMIA0166GB</p> <p style="text-align: center;">1.3 V</p>
					Lighting switch 2ND (Wiper intermittent dial 4)	 <p style="text-align: right; font-size: small;">JPMIA0167GB</p> <p style="text-align: center;">1.3 V</p>
					Rear washer switch ON	 <p style="text-align: right; font-size: small;">JPMIA0169GB</p> <p style="text-align: center;">1.3 V</p>
					Any of the condition below with all switch OFF	<ul style="list-style-type: none"> <li>• Wiper intermittent dial 1</li> <li>• Wiper intermittent dial 2</li> <li>• Wiper intermittent dial 3</li> </ul>  <p style="text-align: right; font-size: small;">JPMIA0196GB</p> <p style="text-align: center;">1.3 V</p>

# BCM (BODY CONTROL MODULE)

## < ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition	Value (Approx.)		
+	-	Signal name	Input/ Output				
7 (GR)	Ground	Combination switch INPUT 4	Input	Combination switch	All switch OFF (Wiper intermittent dial 4)	 <p style="text-align: right;">1.4 V</p>	
					Lighting switch 1ST (Wiper intermittent dial 4)	 <p style="text-align: right;">1.3 V</p>	
					Lighting switch AUTO (Wiper intermittent dial 4)	 <p style="text-align: right;">1.3 V</p>	
					Any of the condition below with all switch OFF	<ul style="list-style-type: none"> <li>• Wiper intermittent dial 1</li> <li>• Wiper intermittent dial 6</li> </ul>	 <p style="text-align: right;">1.3 V</p>
					Rear wiper INT (Wiper intermittent dial 4)	 <p style="text-align: right;">1.3 V</p>	

A  
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WW

# BCM (BODY CONTROL MODULE)

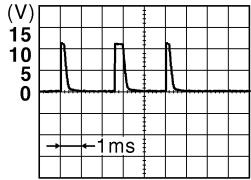
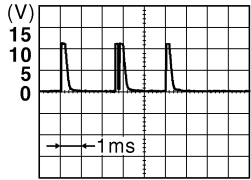
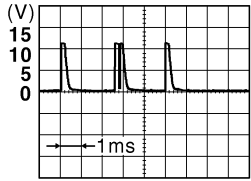
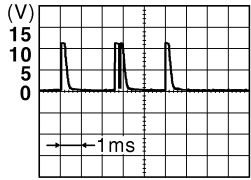
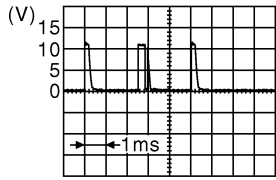
## < ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
8 (V)	Ground	Combination switch INPUT 1	Input	Combination switch (Wiper intermit- tent dial 4)	All switch OFF <div style="text-align: right;"> <p style="text-align: right; font-size: small;">JPMIA0165GB</p> <p style="text-align: center;">1.4 V</p> </div>
					Turn signal switch RH <div style="text-align: right;"> <p style="text-align: right; font-size: small;">JPMIA0166GB</p> <p style="text-align: center;">1.3 V</p> </div>
					Turn signal switch LH <div style="text-align: right;"> <p style="text-align: right; font-size: small;">JPMIA0167GB</p> <p style="text-align: center;">1.3 V</p> </div>
					Front wiper switch LO <div style="text-align: right;"> <p style="text-align: right; font-size: small;">JPMIA0168GB</p> <p style="text-align: center;">1.3 V</p> </div>
					Front washer switch ON <div style="text-align: right;"> <p style="text-align: right; font-size: small;">JPMIA0196GB</p> <p style="text-align: center;">1.3 V</p> </div>



# BCM (BODY CONTROL MODULE)

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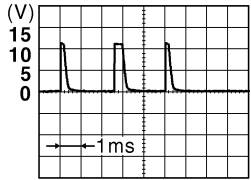
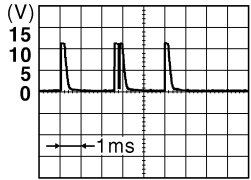
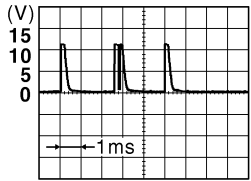
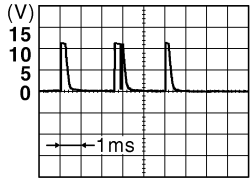
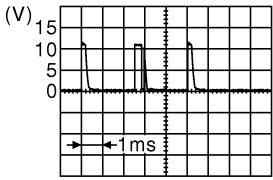
Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
9 (G) <sup>*3</sup> (B) <sup>*4</sup>	Ground	Combination switch INPUT 2	Input	Combination switch (Wiper intermit- tent dial 4)	All switch OFF  JPMIA0165GB 1.4 V
					Lighting switch 2ND  JPMIA0166GB 1.3 V
					Lighting switch PASS  JPMIA0167GB 1.3 V
					Front wiper switch INT  JPMIA0168GB 1.3 V
					Front wiper switch HI  JPMIA0196GB 1.3 V

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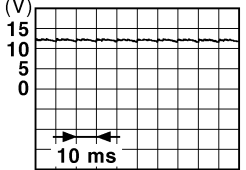
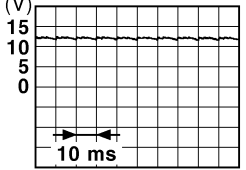
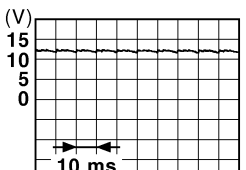
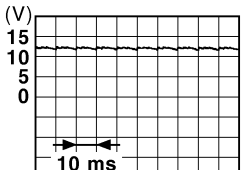
# BCM (BODY CONTROL MODULE)

## < ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition	Value (Approx.)	
+	-	Signal name	Input/ Output			
10 (BR)	Ground	Combination switch INPUT 5	Input	Combination switch	All switch OFF (Wiper intermittent dial 4)	 <p style="text-align: right;">1.3 V</p>
					Front fog lamp switch ON (Wiper intermittent dial 4)	 <p style="text-align: right;">1.3 V</p>
					Rear fog lamp switch ON (Wiper intermittent dial 4)	 <p style="text-align: right;">1.3 V</p>
					Rear wiper switch ON (Wiper intermittent dial 4)	 <p style="text-align: right;">1.3 V</p>
					Any of the condition below with all switch OFF	 <p style="text-align: right;">1.3 V</p>
					<ul style="list-style-type: none"> <li>• Wiper intermittent dial 1</li> <li>• Wiper intermittent dial 2</li> <li>• Wiper intermittent dial 6</li> <li>• Wiper intermittent dial 7</li> </ul>	
11 (B)	Ground	Audio link	Input/ Output	—	—	

# BCM (BODY CONTROL MODULE)

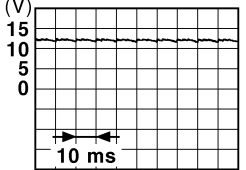
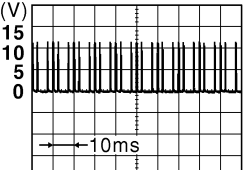
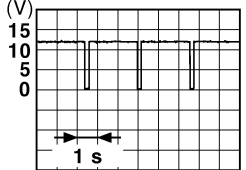
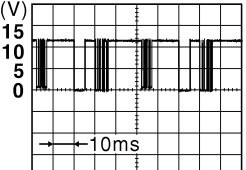
## < ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition	Value (Approx.)	
+	-	Signal name	Input/ Output			
12 (LG)	Ground	Rear door switch RH	Input	Rear door switch RH	OFF (When rear door RH closed)	 11.2 V
				ON (When rear door RH opened)	0 V	
13 (V)	Ground	Back door switch	Input	Back door switch	OFF (When back door closed)	 11.2 V
				ON (When back door opened)	0 V	
14 (P) <sup>*3</sup> (BR) <sup>*4</sup>	Ground	Passenger door switch	Input	Passenger door switch	OFF (When passenger door closed)	 11.2 V
				ON (When passenger door opened)	0 V	
15 (BR) <sup>*3</sup> (P) <sup>*4</sup>	Ground	Driver door switch	Input	Driver door switch	OFF (When driver door closed)	 11.2 V
				ON (When driver door opened)	0 V	

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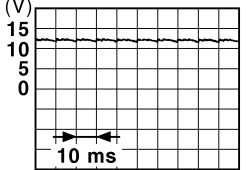
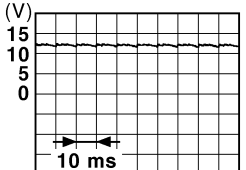
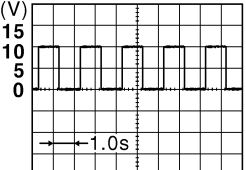
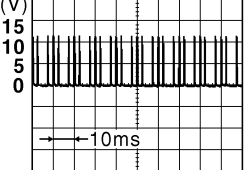
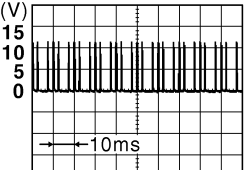
# BCM (BODY CONTROL MODULE)

## < ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
16 (GR)	Ground	Rear door switch LH	Input	Rear door switch LH	 <p style="text-align: right;">PKID0924E</p> <p style="text-align: center;">11.2 V</p>
				ON (When rear door LH opened)	0 V
17 (L)	Ground	Door lock status indicator	Output	Door lock status indicator	ON 12 V
				OFF	0 V
20 (SB)	Ground	Rear window defogger switch	Input	Rear window defogger switch	 <p style="text-align: right;">JPMIA0154GB</p> <p style="text-align: center;">1.1 V</p>
				While pressing	0 V
21 (P)	—	CAN-L	Input/ Output	—	—
22 (L)	—	CAN-H	Input/ Output	—	—
23 (V)	Ground	Security indicator	Output	Security indicator	ON 0 V
				Blinking	 <p style="text-align: right;">JPMIA0014GB</p> <p style="text-align: center;">10.3 V</p>
24 (GR)	Ground	Light & rain sensor serial link	Input/ Output	Ignition switch OFF or ACC	12 V
				Ignition switch ON	 <p style="text-align: right;">JPMIA0156GB</p> <p style="text-align: center;">8.7 V</p>
25 (G)	Ground	Alarm link	Output	—	—

# BCM (BODY CONTROL MODULE)

## < ECU DIAGNOSIS >

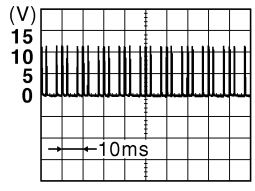
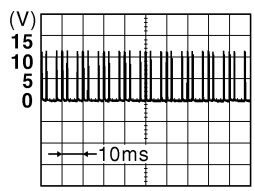
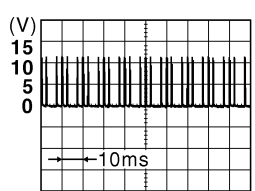
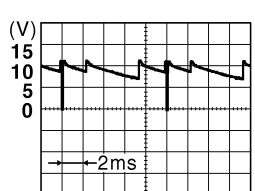
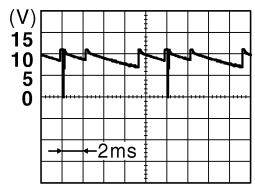
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
26 (GR) <sup>*5</sup> (LG) <sup>*6</sup>	Ground	Blower fan motor switch	Input	Blower fan mo- tor switch	OFF	 PKID0924E 11.2 V
					ON (other than OFF)	0 V
27 (P) <sup>*5</sup> (Y) <sup>*6</sup>	Ground	A/C switch	Input	Ignition switch ON	Compressor ON is not re- quested from auto amp. (A/C indicator OFF, blow- er fan motor switch OFF or etc.)	 PKID0924E 11.2 V
					Compressor ON is re- quested from auto amp. (A/C indicator ON and blower fan motor switch ON).	0 V
28 (LG) <sup>*7</sup> (R) <sup>*8</sup>	Ground	Shock detect sensor	Input	Ignition switch ON	Ignition switch OFF or ACC	0 V
					Ignition switch ON	 JPMIA0155GB 6.0 V
29 (LG) <sup>*3</sup> (O) <sup>*4</sup>	Ground	Back door opener switch	Input	Back door opener switch	Not pressed	 JPMIA0154GB 1.2 V
					Pressed	0 V
32 (BR)	Ground	Door lock/unlock switch (Unlock)	Input	Door lock/un- lock switch	Not pressed	 JPMIA0154GB 1.2 V
					Pressed to the unlock side	0 V

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# BCM (BODY CONTROL MODULE)

## < ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
33 (W) <sup>*9</sup> (Y) <sup>*10</sup>	Ground	Hazard switch	Input	Hazard switch	OFF	 1.3 V
					ON	0 V
34 (SB) <sup>*3</sup> (P) <sup>*4</sup>	Ground	Door lock/unlock switch (Lock)	Input	Door lock/un- lock switch	Not pressed	 1.2 V
					Pressed to the lock side	0 V
35 (G)	Ground	Headlamp washer switch	Input	Headlamp washer switch	Not pressed	 1.2 V
					Pressed to the lock side	0 V
36 (G)	Ground	Combination switch OUTPUT 5	Output	Combination switch (Wiper intermit- tent dial 4)	All switch OFF	0 V
					Turn signal switch RH	 9.1 V
					Lighting switch 2ND	
					Lighting switch HI	
Lighting switch 1ST	0 V					
37 (R)	Ground	Combination switch OUTPUT 2	Output	Combination switch	All switch OFF (Wiper intermittent dial 4)	0 V
					Front washer switch ON (Wiper intermittent dial 4)	 9.1 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 5 • Wiper intermittent dial 6	
Rear wiper switch ON (Wiper intermittent dial 4)	0 V					

# BCM (BODY CONTROL MODULE)

## < ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition	Value (Approx.)	
+	-	Signal name	Input/ Output			
38 (W)	Ground	Combination switch OUTPUT 3	Output	Combination switch (Wiper intermittent dial 4)	All switch OFF	0 V
				Front wiper switch LO		
				Front wiper switch MIST		
				Front wiper switch INT		
				Lighting switch AUTO		
Rear fog lamp switch ON	9.3 V					
39 (Y)	Ground	Combination switch OUTPUT 4	Output	Combination switch (Wiper intermittent dial 4)	All switch OFF	0 V
				Turn signal switch LH		
				Lighting switch PASS		
				Lighting switch 2ND		
				Front fog lamp switch ON		9.3 V
40 (P)	Ground	Combination switch OUTPUT 1	Output	Combination switch	All switch OFF (Wiper intermittent dial 4)	0 V
				<ul style="list-style-type: none"> <li>• Wiper intermittent dial 1</li> <li>• Wiper intermittent dial 2</li> <li>• Wiper intermittent dial 3</li> <li>• Wiper intermittent dial 6</li> <li>• Wiper intermittent dial 7</li> </ul>		
						Rear wiper switch INT (Wiper intermittent dial 4)
41 (LG)	Ground	Battery power supply	Input	Ignition switch OFF	Battery voltage	
42 (V)	Ground	Interior room lamp power supply	Output	Interior room lamp battery saver activation	0 V	
				Interior room lamp battery saver no activation	12 V	
43 (SB)	Ground	Rear wiper motor	Output	Rear wiper switch OFF	0 V	
				Rear wiper switch ON	12 V	
44 (B)	Ground	Rear wiper auto stop	Input	Ignition switch ON		
				Any position other than rear wiper stop position	0 V	

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# BCM (BODY CONTROL MODULE)

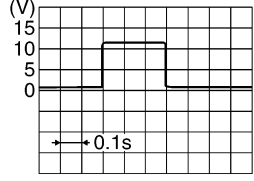
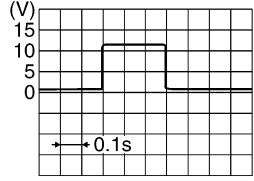
## < ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
45 (V)	Ground	Back door lock actuator	Output	Back door opener switch	<p style="text-align: right; font-size: small;">SKIA9232E</p>
				Pressed	0 V
47 (BR)	Ground	Turn signal LH	Output	Ignition switch ON	<p style="text-align: right; font-size: small;">PKID0926E</p>
				Turn signal switch LH	6.5 V
48 (GR)	Ground	Turn signal RH	Output	Ignition switch ON	<p style="text-align: right; font-size: small;">PKID0926E</p>
				Turn signal switch RH	6.5 V
49 (Y)	Ground	Rear fog lamp	Output	Rear fog lamp	OFF 0 V ON 12 V
				OFF	0 V
50 (G)	Ground	Unlock sensor	Input	Driver's door	Unlock 5 V lock 0 V
				lock	0 V
51 (R)	Ground	Stop lamp switch	Input	Depress the brake pedal	Battery voltage
				Release the brake pedal	0 V
52 (R)	Ground	Room lamp timer control	Output	Interior room lamp	OFF 12 V ON 0 V
				ON	0 V
53 (L)	Ground	Power window power supply (IGN)	Output	Ignition switch	OFF or ACC 0 V ON 12 V
				ON	12 V
54 (O)	Ground	Door unlock (All other than driver's door)	Output	Door lock/unlock switch	<p style="text-align: right; font-size: small;">SKIA9232E</p>
				Pressed to the unlock side	0 V
55 (B)	Ground	Ground	—	Ignition switch ON	0 V
				Not pressed	0 V



# BCM (BODY CONTROL MODULE)

## < ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition	Value (Approx.)	
		Signal name	Input/ Output			
+	-					
56 (V)	Ground	Door lock (All) and fuel lid lock	Output	Door lock/un- lock switch	Not pressed	0 V
					Pressed to the lock side	 <p style="text-align: right; font-size: small;">SKIA9232E</p>
57 (Y)	Ground	Battery power sup- ply	Input	Ignition switch OFF	Battery voltage	
58 (P)	Ground	Power window pow- er supply (BAT)	Output	Ignition switch OFF	12 V	
59 (R)	Ground	Super lock	Output	When lock button of key fob or Intelligent Key is not pressed	0 V	
				When lock button of key fob or Intelligent Key is pressed	12 V	
60 (G)	Ground	Driver's door unlock and fuel lid unlock	Output	Door lock/un- lock switch	Pressed to the unlock side	 <p style="text-align: right; font-size: small;">SKIA9232E</p>
					Not pressed	0 V

\*1: With Intelligent Key

\*2: Without Intelligent Key

\*3: RHD models

\*4: LHD models

\*5: With gasoline engine

\*6: With diesel engine

\*7: RHD models with side air bag

\*8: LHD models with side air bag

\*9: With xenon headlamp and daytime light system

\*10: Except with xenon headlamp and daytime light system

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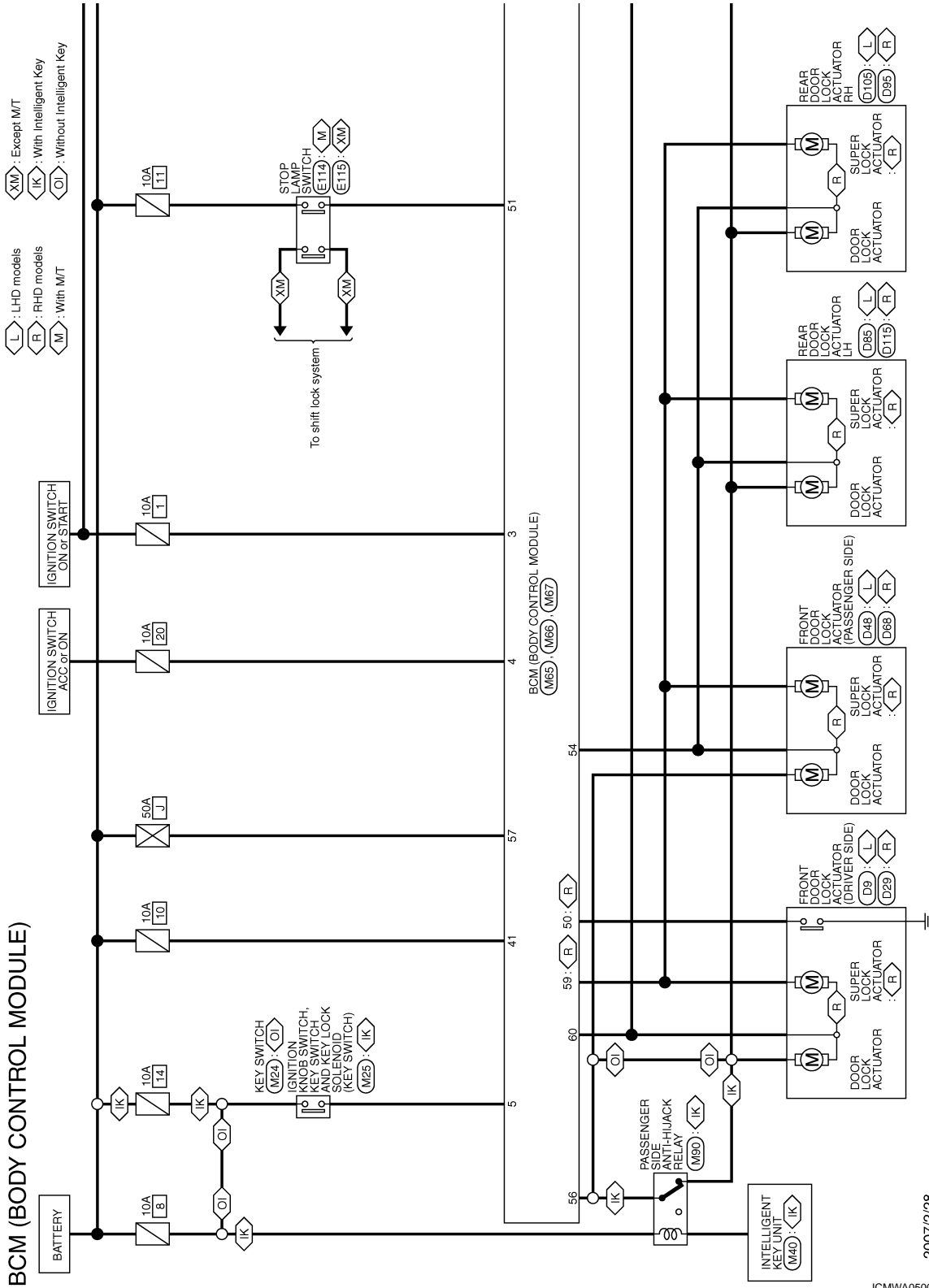
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# BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

## Wiring Diagram - BCM -

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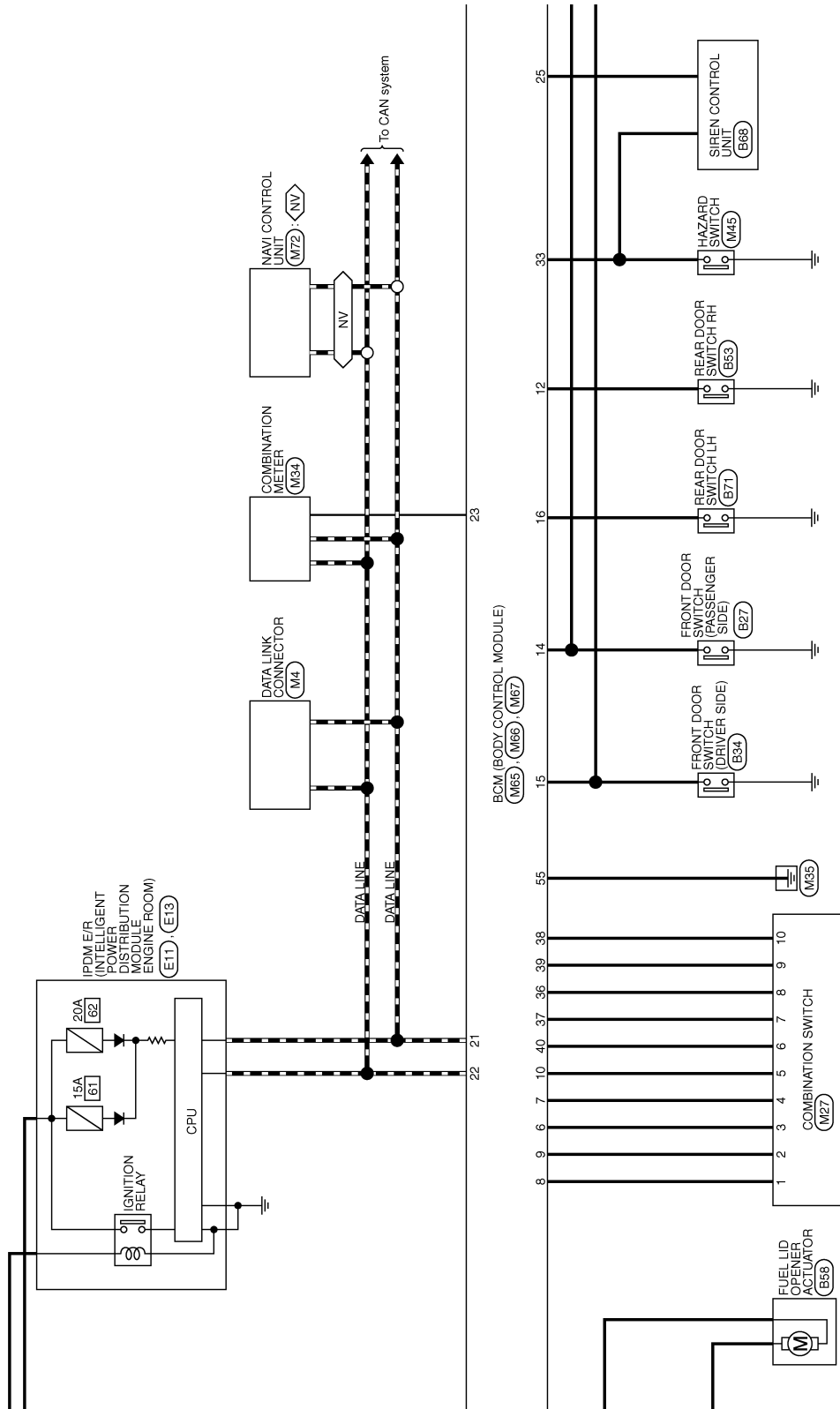
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JCMWA0500GE

# BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

: With navigation system



JCMWA0501GE

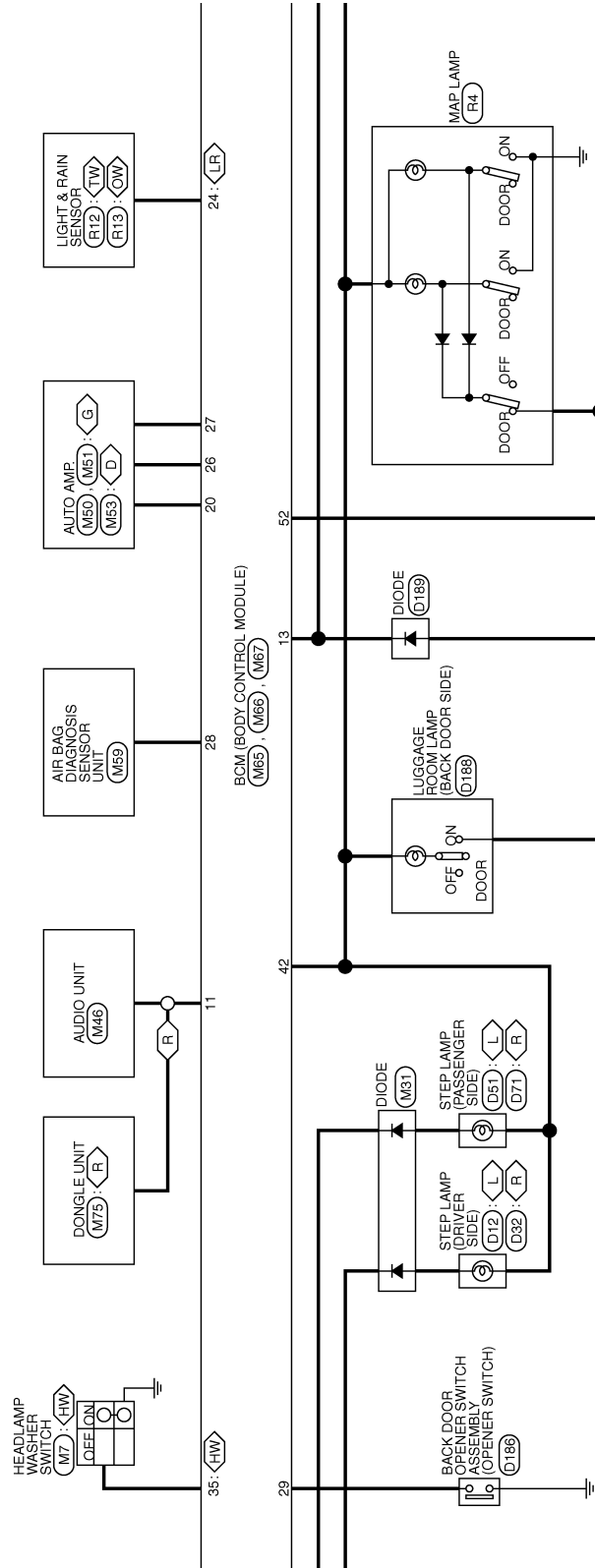
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# BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

- L : LHD models
- R : RHD models
- G : With gasoline engine
- D : With diesel engine
- HW : With headlamp washer
- LR : With light & rain sensor
- TW : With theft warning system
- OW : Without theft warning system



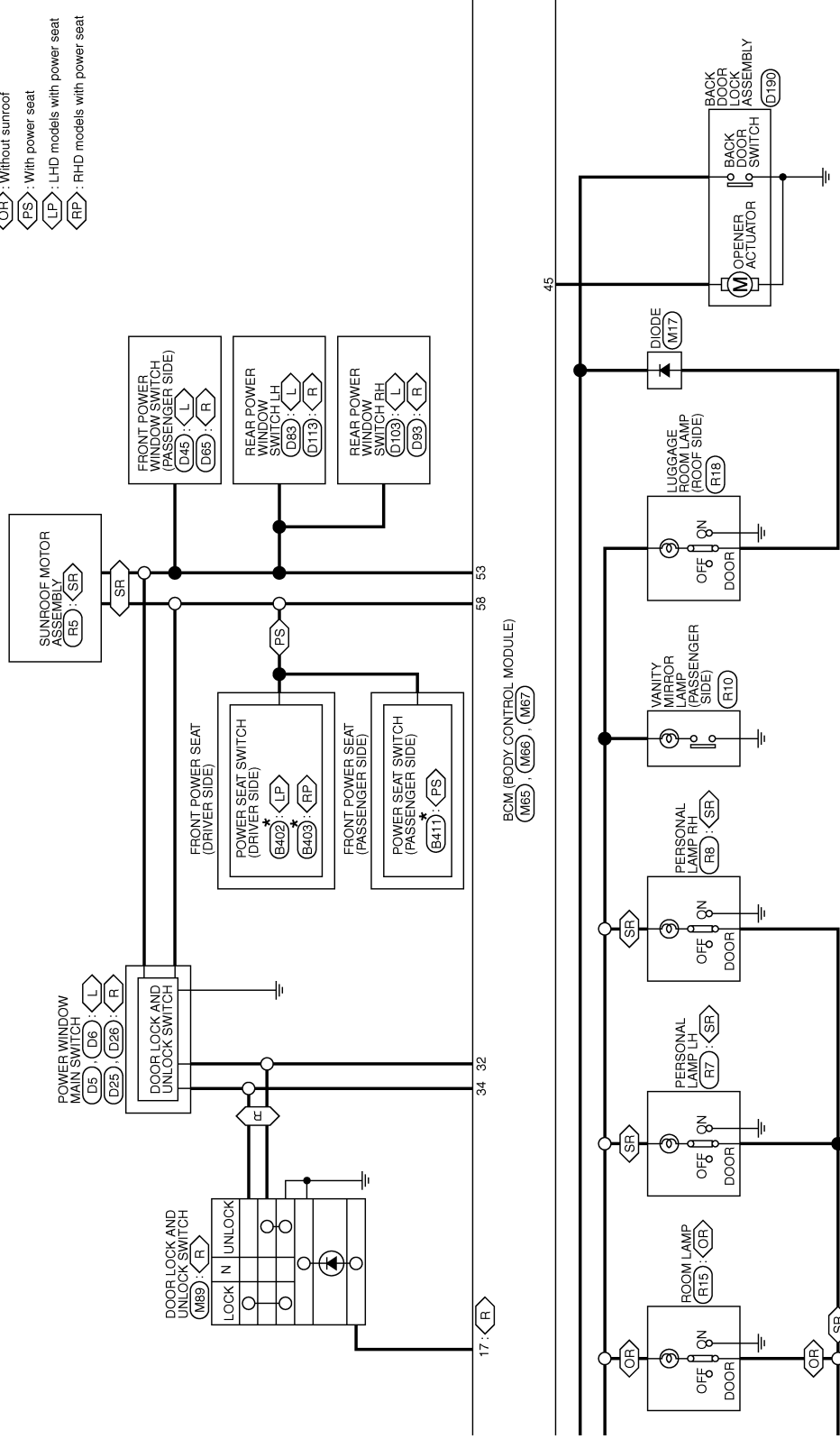
JCMWA0502G1

# BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

- : LHD models
- : RHD models
- : With sunroof
- : Without sunroof
- : With power seat
- : LHD models with power seat
- : RHD models with power seat

\*: This connector is not shown in "Harness Layout".



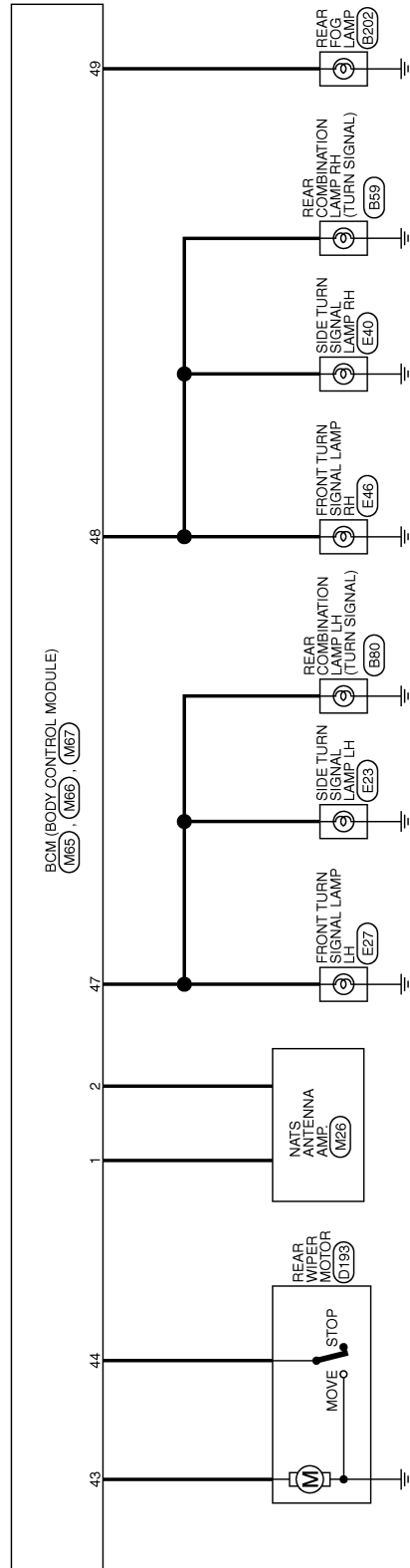
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# BCM (BODY CONTROL MODULE)

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# BCM (BODY CONTROL MODULE)

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## BCM (BODY CONTROL MODULE)

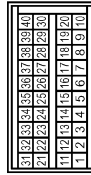
Connector No.	M27
Connector Name	COMBINATION SWITCH
Connector Type	TK16FW

10	W	OUTPUT 3
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Terminal No.	Color of Wire	Signal Name [Specification]
1	V	INPUT 1
2	LG	INPUT 2[RHD models]
3	L	INPUT 3
4	GR	INPUT 4
5	O	INPUT 5[RHD models]
6	P	OUTPUT 1
7	R	OUTPUT 2
8	G	OUTPUT 5
9	Y	OUTPUT 4

Connector No.	M65
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	AA84FB



Terminal No.	Color of Wire	Signal Name [Specification]
1	W	NATS ANTENNA AMP.
2	G	NATS ANTENNA AMP.
3	W	IGN SW
4	SB	ACC SW
5	LG	KEY SW[With Intelligent Key]
6	L	COMBI SW INPUT 3
7	GR	COMBI SW INPUT 4
8	V	COMBI SW INPUT 1
9	LG	COMBI SW INPUT 2[RHD models]
10	O	COMBI SW 5 [RHD models]

39	Y	COMBI SW OUTPUT 4
40	P	COMBI SW OUTPUT 1

11	B	AUDIO DONGLE LINK[SIGNAL]
12	LG	DOOR SW (RR)
13	V	DOOR SW (BACK)[LHD models]
14	P	DOOR SW (AS)[RHD models]
15	BR	DOOR SW (DR)[RHD models]
16	GR	DOOR SW (RL)[LHD models]
17	L	DOOR LOCK INDICATOR
20	SB	RR DEF SW
21	P	CAN-L
22	L	CAN-H
23	V	SECURITY INDICATOR[LHD models]
24	GR	LIGHT & RAIN SEN
25	G	ALARM LINK
26	GR	BLOWER FAN SW
27	P	AIRCON SW[With gasoline engine]
28	LG	SHOCK DETECT SW[RHD models with air bag]
29	O	BACK DOOR OPEN SW
32	BR	LOCK UNLOCK SW (UNLOCK)
33	W	HASAMP SW[with auto lock control system]
34	SB	LOCK UNLOCK SW (LOCK)[RHD models]
35	G	HEAD LAMP WASHER SW
36	G	COMBI SW OUTPUT 5
37	R	COMBI SW OUTPUT 2
38	W	COMBI SW OUTPUT 3

JCMWA0505GE



# BCM (BODY CONTROL MODULE)

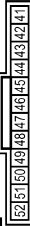
< ECU DIAGNOSIS >

Connector No.	M67
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FHA08FB



Terminal No.	Color of Wire	Signal Name [Specification]
53	L	P/W POWER SUPPLY(IGN)
54	O	DOOR UNLOCK OUTPUT (OTHER[LHD models])
55	B	GND
56	V	DOOR LOCK OUTPUT (ALL)
57	Y	BATF/L
58	P	P/W POWER SUPPLY(BAT)
59	R	SUPER LOCK SET OUTPUT
60	G	DOOR UNLOCK/RELEASE OUTPUT(LHD models)

52	R	ROOM LAMP CONTROL
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## BCM (BODY CONTROL MODULE)

Connector No.	M66
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FEA2FBR

Terminal No.	Color of Wire	Signal Name [Specification]
41	LG	BAT(USE)
42	V	ROOM LAMP POWER SUPPLY
43	SB	REAR WIPER MOTOR OUTPUT
44	B	REAR WIPER AUTO STOP
45	V	BACK DOOR OPEN OUTPUT(LHD models)
47	BR	FRASHER OUTPUT (LH)
48	GR	FRASHER OUTPUT (RH)
49	Y	REAR FOG LAMP
50	G	EXTRA INPUT(RHD models with Intelligent Key)
51	R	STOP LAMP SW(LHD models)

JCMWA0506Gf

## Fail Safe

INFOID:000000001452170

### FAIL-SAFE CONTROL BY DTC

BCM performs fail-safe control when any DTC is detected.



# BCM (BODY CONTROL MODULE)

## < ECU DIAGNOSIS >

DTC	Fail-safe	Cancellation	
B2190: NATS ANTENNA AMP	<ul style="list-style-type: none"> <li>Inhibits engine cranking</li> <li>Inhibits steering lock unlocking (Intelligent Key unit)</li> <li>Fuel cut (ECM)</li> </ul>	Erase DTC	A
B2191: DIFFERENCE OF KEY	<ul style="list-style-type: none"> <li>Inhibits engine cranking</li> <li>Inhibits steering lock unlocking (Intelligent Key unit)</li> <li>Fuel cut (ECM)</li> </ul>	Erase DTC	B
B2192: ID DISCORD BCM-ECM	Fuel cut (ECM)	Erase DTC	C
B2193: CHAIN OF BCM-ECM	Fuel cut (ECM)	Erase DTC	
B2194: DISCORD BCM-I-KEY	<ul style="list-style-type: none"> <li>Inhibits engine cranking</li> <li>Inhibits steering lock unlocking (Intelligent Key unit)</li> <li>Fuel cut (ECM)</li> </ul>	Erase DTC	D
B2195: ANTI SCANNING	<ul style="list-style-type: none"> <li>Inhibits engine cranking</li> <li>Inhibits steering lock unlocking (Intelligent Key unit)</li> <li>Fuel cut (ECM)</li> </ul>	Erase DTC	E
B2196: DONGLE NG	<ul style="list-style-type: none"> <li>Inhibits engine cranking</li> <li>Inhibits steering lock unlocking (Intelligent Key unit)</li> <li>Fuel cut (ECM)</li> </ul>	Erase DTC	F

### REAR WIPER MOTOR PROTECTION

BCM detects the rear wiper stopping position according to the rear wiper auto stop signal. When the rear wiper auto stop 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

- Turn ignition switch OFF.
- Pass more than 1 minute after the rear wiper stop.
- Turn ignition switch ON.
- Operate the rear wiper switch.

### HIGH FLASHER OPERATION

BCM detects the turn signal lamp circuit status from the terminal voltage. 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 activating the hazard warning lamp.

### FAIL-SAFE CONTROL BY LIGHT & RAIN SENSOR MALFUNCTION

BCM detects the light & rain sensor serial link error and the light & rain sensor malfunction. BCM controls the following fail-safe when light & rain sensor has a malfunction.

Fail-safe Control

- Auto light control: Headlamp is turned ON.
- Front wiper control: The condition just before the activation of fail-safe is maintained until the front wiper switch is turned OFF.

### DTC Inspection Priority Chart

INFOID:000000001452171

Priority	DTC	
1	<ul style="list-style-type: none"> <li>U1000: CAN COMM CIRCUIT</li> <li>U1010: CONTROL UNIT (CAN)</li> </ul>	O
2	<ul style="list-style-type: none"> <li>B2190: NATS ANTENNA AMP</li> <li>B2191: DIFFERNCE OF KEY</li> <li>B2192: ID DISCORD BCM-ECM</li> <li>B2193: CHAIN OF BCM-ECM</li> <li>B2194: DISCORD BCM-I-KEY</li> <li>B2195: ANTI SCANNING</li> <li>B2196: DONGLE NG</li> </ul>	P

# BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

## DTC Index

INFOID:000000001452172

### 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.
- PAST: Displays when there is a malfunction that is detected in the past and stored.
- 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.

DTC	TIME		Fail-safe	Reference
	0	1 - 39		
U1000: CAN COMM CIRCUIT	0	1 - 39	—	<a href="#">BCS-33</a>
U1010: CONTROL UNIT (CAN)	0	1 - 39	—	<a href="#">BCS-34</a>
B2190: NATS ANTENNA AMP	CRNT	PAST	×	<ul style="list-style-type: none"> <li>• With Intelligent Key system: <a href="#">SEC-41</a></li> <li>• Without Intelligent Key system: <a href="#">SEC-254</a></li> </ul>
B2191: DIFFERENCE OF KEY	CRNT	PAST	×	<ul style="list-style-type: none"> <li>• With Intelligent Key system: <a href="#">SEC-43</a></li> <li>• Without Intelligent Key system: <a href="#">SEC-256</a></li> </ul>
B2192: ID DISCORD BCM-ECM	CRNT	PAST	×	<ul style="list-style-type: none"> <li>• With Intelligent Key system: <a href="#">SEC-38</a></li> <li>• Without Intelligent Key system: <a href="#">SEC-251</a></li> </ul>
B2193: CHAIN OF BCM-ECM	CRNT	PAST	×	<ul style="list-style-type: none"> <li>• With Intelligent Key system: <a href="#">SEC-40</a></li> <li>• Without Intelligent Key system: <a href="#">SEC-253</a></li> </ul>
B2194: DISCORD BCM-I-KEY	CRNT	PAST	×	<a href="#">SEC-53</a>
B2195: ANTI SCANNING	CRNT	PAST	×	<ul style="list-style-type: none"> <li>• With Intelligent Key system: <a href="#">SEC-54</a></li> <li>• Without Intelligent Key system: <a href="#">SEC-264</a></li> </ul>
B2196: DONGLE NG	CRNT	PAST	×	<ul style="list-style-type: none"> <li>• With Intelligent Key system: <a href="#">SEC-55</a></li> <li>• Without Intelligent Key system: <a href="#">SEC-265</a></li> </ul>

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

< ECU DIAGNOSIS >

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

Reference Value

INFOID:000000001452173

VALUES ON THE DIAGNOSIS TOOL

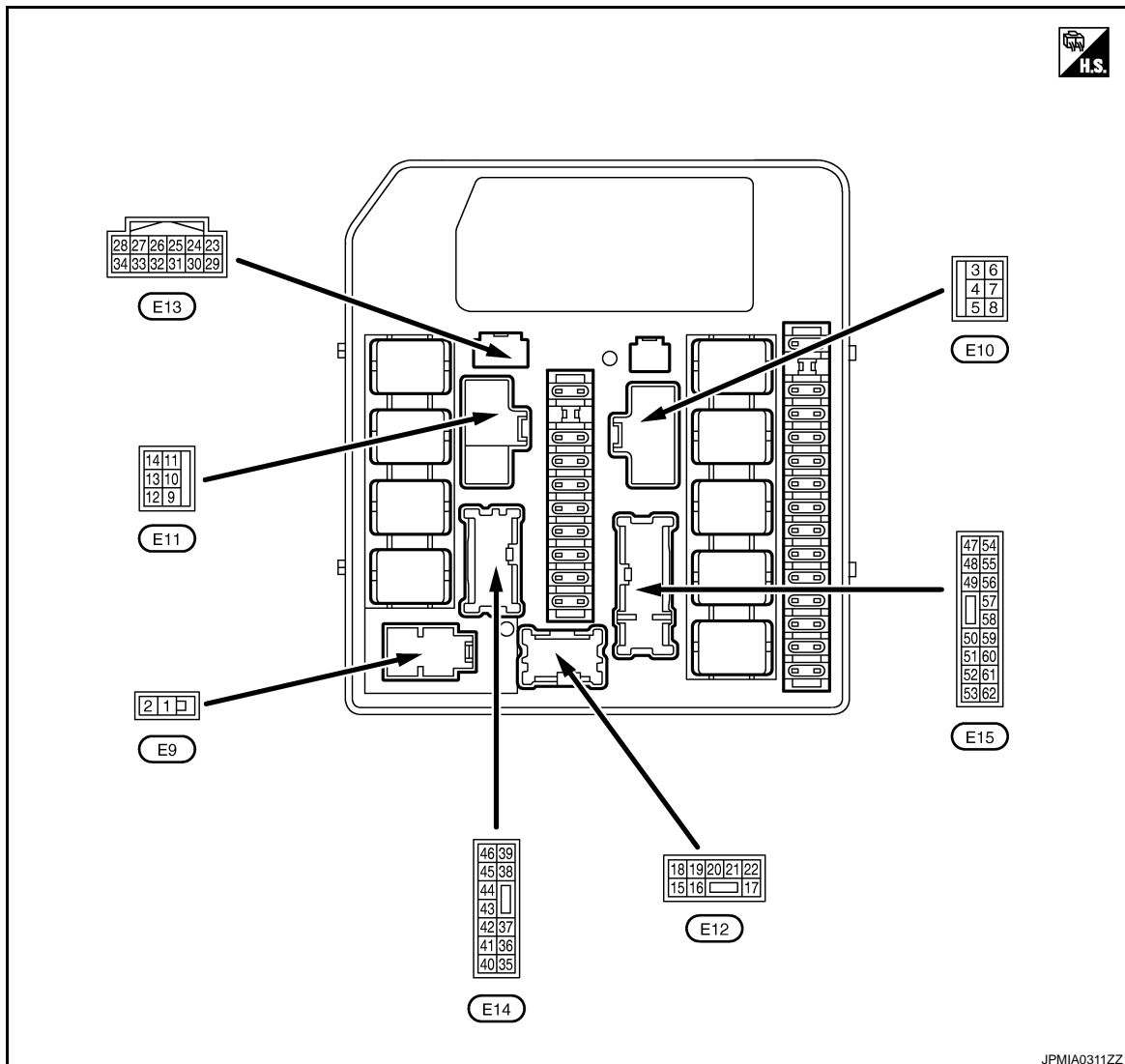
Monitor Item	Condition		Value/Status
MOTOR FAN REQ	Engine idle speed	Changes depending on engine coolant temperature, air conditioner operation status, vehicle speed, etc.	1 - 4
AC COMP REQ	Engine running	A/C switch OFF	Off
		A/C switch ON (Compressor is operating)	On
TAIL&CLR REQ	Lighting switch OFF		Off
	Lighting switch 1ST, 2ND or AUTO (Light is illuminated)		On
HL LO REQ	Lighting switch OFF		Off
	Lighting switch 2ND or AUTO (Light is illuminated)		On
HL HI REQ	Lighting switch OFF		Off
	Lighting switch HI (Light is illuminated)		On
FR FOG REQ	Lighting switch 2ND or AUTO (Light is illuminated)	Front fog lamp switch OFF	Off
		Front fog lamp switch ON	On
HL WASHER REQ <b>NOTE:</b> This item is monitored only on the vehicle with headlamp washer.	Ignition switch ON, and low beam headlamp is ON	Front washer switch OFF	Off
		Front washer switch ON (When headlamp washer is operating)	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 <b>NOTE:</b> 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

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

## < ECU DIAGNOSIS >

Monitor Item	Condition	Value/Status
REV SW	<b>NOTE:</b> This item is indicated, but not monitored.	Off
DTRL REQ	Daytime running light system is not operated with lighting switch OFF.	Off
<b>NOTE:</b> This item is monitored only on the vehicle with the daytime running light system.	Any of the condition below	On
	<ul style="list-style-type: none"> <li>Daytime running light system is operated.</li> <li>Lighting switch 1ST, 2ND or AUTO (Light is illuminated)</li> </ul>	On
HOOD SW	Close the hood	Off
<b>NOTE:</b> This item is monitored only on the vehicle with the vehicle security system.	Open the hood	On
	Not operation	Off
THFT HRN REQ	Not operation	Off
<b>NOTE:</b> This item is monitored only on the vehicle with the vehicle security system.	Horn is activated with vehicle security system.	On
	<b>NOTE:</b> This item is indicated, but not monitored.	Off

## TERMINAL LAYOUT



## PHYSICAL VALUES

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

## < ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
1 (G)	Ground	Battery power supply	Input	Ignition switch OFF		Battery voltage
2 (R)	Ground	Battery power supply	Input	Ignition switch OFF		Battery voltage
3 (O)*1 (BR)*2	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 (O)*3 (G)*4	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*5 (SB)	Ground	Daytime running light relay control	Output	<ul style="list-style-type: none"> <li>• Parking lamp</li> <li>• License plate lamp</li> <li>• Tail lamp</li> </ul>	Turn off	Battery voltage
					Turn on	0 V
16*6 (Y)	Ground	Front fog lamp (LH)	Output	Lighting switch 1ST	Front fog lamp switch OFF	0 V
					Front fog lamp switch ON	Battery voltage
17*6 (W)	Ground	Front fog lamp (RH)	Output	Lighting switch 1ST	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
19*7 (R)	Ground	Headlamp aiming motor power supply	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
				<ul style="list-style-type: none"> <li>• Lighting switch 2ND and HI</li> <li>• lighting switch PASS</li> </ul>		Battery voltage
22 (LG)	Ground	Headlamp HI (RH)	Output	Lighting switch OFF		0 V
				<ul style="list-style-type: none"> <li>• Lighting switch 2ND and HI</li> <li>• lighting switch PASS</li> </ul>		Battery voltage
23 (W)	Ground	Oil pressure switch	Input	Ignition switch ON	Engine stopped	0 V
					Engine running	Battery voltage

A

B

C

D

E

F

G

H

I

J

K

WW

M

N

O

P

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

## < ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
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	—		—
27 (L)	—	CAN-H	Input/ Output	—		—
31 (V)	Ground	Cooling fan relay-4 control	Output	Cooling fan operation	OFF	Battery voltage
					LO	0 V
32*1 (LG)	Ground	ETC relay control	Input	After passing approximately 2 seconds or more after turning the ignition switch from ON to OFF		Battery voltage
				<ul style="list-style-type: none"> <li>Ignition switch ON</li> <li>For approximately 2 seconds after turning ignition switch from ON to OFF</li> </ul>		0 V
33*1 (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*8 (Y)	Ground	Hood switch	Input	Close the hood		Battery voltage
				Open the hood		0 V
35*9 (W)	Ground	Headlamp washer relay control	Output	Ignition switch ON	When headlamp washer is not operating	Battery voltage
					When headlamp washer is operating	0 V
37 (R)	Ground	Tail, license plate lamps and illuminations	Output	Lighting switch OFF		0 V
				Lighting switch 1ST		Battery voltage
38*10 (O)*1 (GR)*2	Ground	Parking lamp (LH)	Output	Lighting switch OFF		0 V
				Lighting switch 1ST		Battery voltage
39*10 (GR)	Ground	Parking lamp (RH)	Output	Lighting switch OFF		0 V
				Lighting switch 1ST		Battery voltage
40 (V)	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC		0 V
				Ignition switch ON		Battery voltage
41 (O)*1 (L)*2	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 (Except M/T models)	Selector lever "P" or "N"	Battery voltage
					Selector lever in any position other than "P" or "N"	0 V
				Ignition switch ON (M/T models)		Battery voltage

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

## < ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition	Value (Approx.)	
+	-	Signal name	Input/ Output			
46*1 (W)	Ground	Fuel pump relay power supply	Output	<ul style="list-style-type: none"> <li>Ignition switch OFF or ACC</li> <li>After passing approximately 1 second or more after turning the ignition switch ON</li> </ul>	0 V	
				<ul style="list-style-type: none"> <li>For approximately 1 second after turning the ignition switch ON</li> <li>Engine running</li> </ul>	Battery voltage	
47 (BR)*1 (G)*2	Ground	ECM relay power supply	Output	After passing approximately 20 seconds or more after turning the ignition switch from ON to OFF	0 V	
				<ul style="list-style-type: none"> <li>Ignition switch ON</li> <li>For approximately 20 seconds after turning ignition switch from ON to OFF</li> </ul>	Battery voltage	
48 (R)*1 (V)*2	Ground	ECM relay power supply	Output	After passing approximately 20 seconds or more after turning the ignition switch from ON to OFF	0 V	
				<ul style="list-style-type: none"> <li>Ignition switch ON</li> <li>For approximately 20 seconds after turning ignition switch from ON to OFF</li> </ul>	Battery voltage	
50 (G)	Ground	Cooling fan relay-5 control	Output	Cooling fan operation	OFF	
				MID or HI	0 V	
51 (W)	Ground	ECM relay control	Output	After passing approximately 20 seconds or more after turning the ignition switch from ON to OFF	Battery voltage	
				<ul style="list-style-type: none"> <li>Ignition switch ON</li> <li>For approximately 20 seconds after turning ignition switch from ON to OFF</li> </ul>	0 V	
52*1 (P)	Ground	ETC relay power supply	Output	After passing approximately 2 seconds or more after turning the ignition switch from ON to OFF	0 V	
				<ul style="list-style-type: none"> <li>Ignition switch ON</li> <li>For approximately 2 seconds after turning ignition switch from ON to OFF</li> </ul>	Battery voltage	
55 (O)	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 (L)	Ground	Ignition switch ON	Input	Ignition switch OFF or ACC	0 V	
				Ignition switch ON	Battery voltage	
57*8 (V)	Ground	Horn relay control	Output	The horn is not activated	Battery voltage	
				The horn is activated	0 V	
58 (Y)	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC	0 V	
				Ignition switch ON	Battery voltage	
59 (GR)	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 (O)	Ground	ECM power supply	Output	Ignition switch OFF	Battery voltage	

\*1: MR engine and QR engine models

\*2: M9R engine models

\*3: MR engine models

\*4: QR engine and M9R engine models

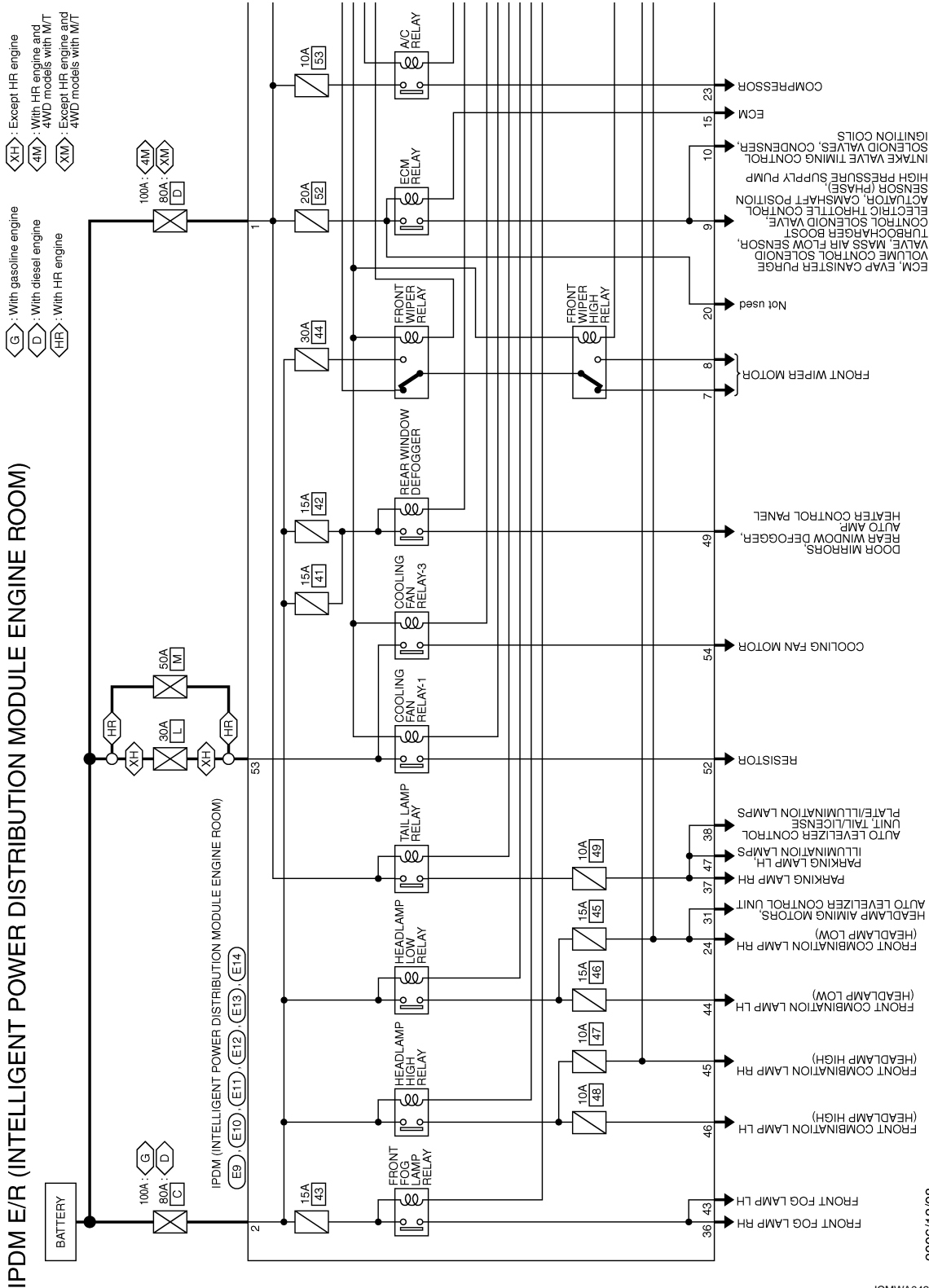
# IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

## < ECU DIAGNOSIS >

- \*5: With daytime running light system
- \*6: With front fog lamp system
- \*7: Halogen type headlamp
- \*8: With vehicle security system
- \*9: With headlamp washer system
- \*10: Without daytime running light system

## Wiring Diagram - IPDM E/R -

INFOID:000000001452174



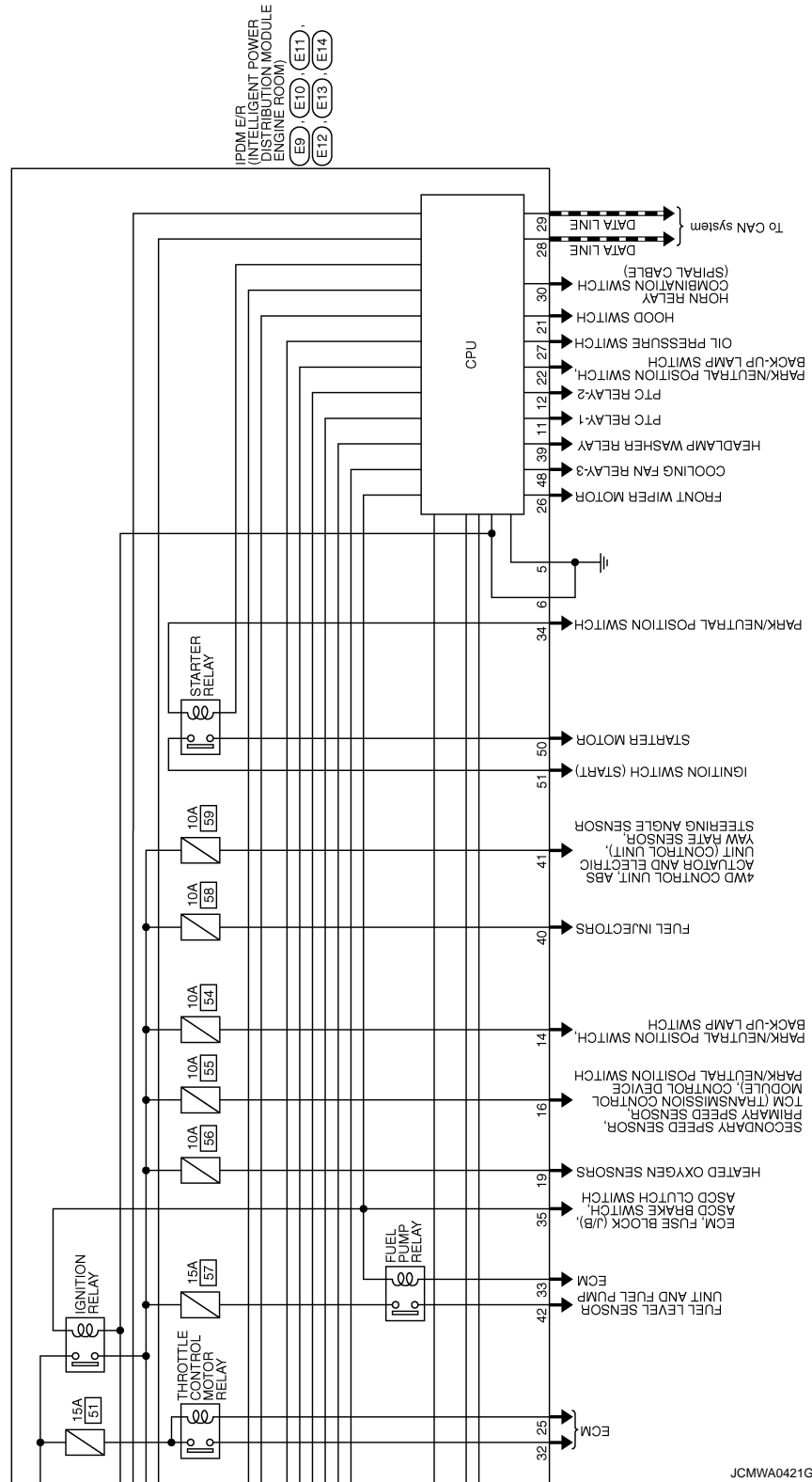
2006/12/08

JCMWA0420GE



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

< ECU DIAGNOSIS >



JCMWA0421GE

A  
B  
C  
D  
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F  
G  
H  
I  
J  
K  
WW  
M  
N  
O  
P

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

< ECU DIAGNOSIS >

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

Connector No.	E9
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	LD2FB-MC



1	2
---	---

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

Connector No.	E10
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	M08FB-LC



5	4	3
8	7	6

Terminal No.	Color of Wire	Signal Name [Specification]
5	B	
6	B	
7	Y	
8	Y/R	

Connector No.	E11
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS1ZFBR-CS



13	12	11	10	9		
20	19	18	17	16	15	14

Terminal No.	Color of Wire	Signal Name [Specification]
9	G	
10	L/R	
11	O	
12	G/Y	
14	R/B	
15	Y/L	-[With gasoline engine]
15	B/R	-[With diesel engine]
16	Y/R	
19	R/O	
20	-	

Connector No.	E12
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS1ZPW-CS



25	24	23	22	21		
32	31	30	29	28	27	26

Terminal No.	Color of Wire	Signal Name [Specification]
21	GR	
22	Y/G	
23	Y/B	
24	R/Y	
25	G/L	
26	O	
27	W	
28	L	
29	P	
30	L	
31	R	

32	R/Y
----	-----

Connector No.	E13
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS10FPW-CS



39	38	37	36	35	34	33		
48	47	46	45	44	43	42	41	40

Terminal No.	Color of Wire	Signal Name [Specification]
33	B/O	
34	R/B	
35	W/L	
36	W	
37	R/W	
38	R/L	
39	GR	
40	SB	-[With MR engine]
40	BR/Y	-[With HR engine]
41	P	
42	B/Y	

43	W/B
44	L
45	L/W
46	G
47	R/L
48	Y

JCMWA0422GE

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

< ECU DIAGNOSIS >

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
M  
N  
O  
P

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

Connector No.	E14
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	YZK 7283-5391-40 F



Terminal No.	Color of Wires	Signal Name (Specification)
48	B	-
50	B/R	-
51	P	-
52	W	-
53	W/B	-
54	R	-

WW

## Fail Safe

### 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

JCMWA0423GE

INFOID:000000001452175

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

## < ECU DIAGNOSIS >

Control part	Fail-safe in operation
Cooling fan	<ul style="list-style-type: none"> <li>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</li> <li>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</li> <li>Cooling fan relay-4 OFF</li> </ul>
A/C compressor	A/C relay OFF

If no CAN communication is available with BCM

Control part	Fail-safe in operation
Headlamp	<ul style="list-style-type: none"> <li>The headlamp low relay turns ON when the ignition switch is turned ON</li> <li>The headlamp low relay turns OFF when the ignition switch is turned OFF</li> <li>Headlamp high relay OFF</li> </ul>
<ul style="list-style-type: none"> <li>Parking lamps</li> <li>License plate lamps</li> <li>Tail lamps</li> <li>Illuminations</li> </ul>	<ul style="list-style-type: none"> <li>The tail lamp relay and the daytime running light relay*<sup>1</sup> turn ON when the ignition switch is turned ON</li> <li>The tail lamp relay and the daytime running light relay*<sup>1</sup> turn OFF when the ignition switch is turned OFF</li> </ul>
Front wiper	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> </ul>
Front fog lamps	Front fog lamp relay OFF
Starter motor	Starter relay OFF
Rear window defogger	Rear window defogger relay OFF
Headlamp washer* <sup>2</sup>	Headlamp washer relay OFF
Horn* <sup>3</sup>	Horn relay OFF

### NOTE:

- \*1: With daytime running light system
- \*2: With headlamp washer system
- \*3: With vehicle security 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.

DTC	Ignition switch	Ignition relay	Tail lamp relay and daytime running light relay*
—	ON	ON	—
—	OFF	OFF	—
—	OFF	ON	ON (10 minutes)
B2099: IGN RLY OFF	ON	OFF	—

### NOTE:

- The tail lamp relay and the daytime running light relay\* are turned OFF when the ignition switch is turned ON.
- \*: With daytime running light system

### Front wiper control

IPDM E/R detects the front wiper stop position with the front wiper auto stop signal.

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

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

## < ECU DIAGNOSIS >

Ignition switch	Front wiper switch	Front wiper auto stop signal
ON	OFF	The front wiper auto stop signal (stop position) cannot be input for 10 seconds.
	ON	The front wiper auto stop 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:000000001452176

CONSULT display	Fail-safe	Timing <sup>NOTE</sup>		Reference page
No DTC is detected. further testing may be required.	—	—	—	—
U1000: CAN COMM CIRCUIT	×	CRNT	PAST	<a href="#">PCS-13</a>
B2099: IGN RELAY OFF	—	CRNT	PAST	<a href="#">PCS-14</a>

**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.

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# WIPER AND WASHER SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

## SYMPTOM DIAGNOSIS

### WIPER AND WASHER SYSTEM SYMPTOMS

#### Symptom Table

INFOID:000000001208973

**CAUTION:**

Perform the self-diagnosis with CONSULT-III before performing the diagnosis by symptom. Perform the diagnosis by DTC if DTC is detected.

Symptom		Probable malfunction location	Inspection item	
Front wiper does not operate.	HI only	<ul style="list-style-type: none"> <li>Combination switch</li> <li>Harness between combination switch and BCM</li> <li>BCM</li> </ul>	Combination switch Refer to <a href="#">BCS-67, "Symptom Table"</a> .	
		<ul style="list-style-type: none"> <li>IPDM E/R</li> <li>Harness between IPDM E/R and front wiper motor</li> <li>Front wiper motor</li> </ul>	Front wiper motor (HI) circuit Refer to <a href="#">WW-28, "Component Function Check"</a> .	
		Front wiper request signal <ul style="list-style-type: none"> <li>BCM</li> <li>IPDM E/R</li> </ul>	IPDM E/R DATA MONITOR "FR WIP REQ"	
	LO and INT	<ul style="list-style-type: none"> <li>Combination switch</li> <li>Harness between combination switch and BCM</li> <li>BCM</li> </ul>	Combination switch Refer to <a href="#">BCS-67, "Symptom Table"</a> .	
		<ul style="list-style-type: none"> <li>IPDM E/R</li> <li>Harness between IPDM E/R and front wiper motor</li> <li>Front wiper motor</li> </ul>	Front wiper motor (LO) circuit Refer to <a href="#">WW-26, "Component Function Check"</a> .	
		Front wiper request signal <ul style="list-style-type: none"> <li>BCM</li> <li>IPDM E/R</li> </ul>	IPDM E/R DATA MONITOR "FR WIP REQ"	
	INT only	<ul style="list-style-type: none"> <li>Combination switch</li> <li>Harness between combination switch and BCM</li> <li>BCM</li> </ul>	Combination switch Refer to <a href="#">BCS-67, "Symptom Table"</a> .	
		Front wiper request signal <ul style="list-style-type: none"> <li>BCM</li> <li>IPDM E/R</li> </ul>	IPDM E/R DATA MONITOR "FR WIP REQ"	
	HI, LO, and INT	SYMPTOM DIAGNOSIS "FRONT WIPER DOES NOT OPERATE" Refer to <a href="#">WW-98, "Diagnosis Procedure"</a> .		

## WIPER AND WASHER SYSTEM SYMPTOMS

### < SYMPTOM DIAGNOSIS >

Symptom	Probable malfunction location	Inspection item	
Front wiper does not stop.	HI only	<ul style="list-style-type: none"> <li>• Combination switch</li> <li>• BCM</li> </ul>	Combination switch Refer to <a href="#">BCS-67, "Symptom Table"</a> .
		Front wiper request signal <ul style="list-style-type: none"> <li>• BCM</li> <li>• IPDM E/R</li> </ul>	IPDM E/R DATA MONITOR "FR WIP REQ"
		IPDM E/R	—
	LO only	<ul style="list-style-type: none"> <li>• Combination switch</li> <li>• BCM</li> </ul>	Combination switch Refer to <a href="#">BCS-67, "Symptom Table"</a> .
		Front wiper request signal <ul style="list-style-type: none"> <li>• BCM</li> <li>• IPDM E/R</li> </ul>	IPDM E/R DATA MONITOR "FR WIP REQ"
		IPDM E/R	—
	INT only	<ul style="list-style-type: none"> <li>• Combination switch</li> <li>• BCM</li> </ul>	Combination switch Refer to <a href="#">BCS-67, "Symptom Table"</a> .
		Front wiper request signal <ul style="list-style-type: none"> <li>• BCM</li> <li>• IPDM E/R</li> </ul>	IPDM E/R DATA MONITOR "FR WIP REQ"
	Front wiper does not operate normally.	Intermittent adjustment cannot be performed.	<ul style="list-style-type: none"> <li>• Combination switch</li> <li>• Harness between combination switch and BCM</li> <li>• BCM</li> </ul>
BCM			—
Intermittent control linked with vehicle speed cannot be performed.		Check the vehicle speed detection wiper setting. Refer to <a href="#">WW-17, "WIPER : CONSULT-III Function (BCM - WIPER)"</a> .	
Wiper is not linked to the washer operation.		<ul style="list-style-type: none"> <li>• Combination switch</li> <li>• Harness between combination switch and BCM</li> <li>• BCM</li> </ul>	Combination switch Refer to <a href="#">BCS-67, "Symptom Table"</a> .
		BCM	—
Does not return to stop position (Repeatedly operates for 10 seconds and then stops for 20 seconds. After that, it stops the operation).	<ul style="list-style-type: none"> <li>• IPDM E/R</li> <li>• Harness between IPDM E/R and front wiper motor</li> <li>• Front wiper motor</li> </ul>	Front wiper auto stop signal circuit Refer to <a href="#">WW-30, "Component Function Check"</a> .	
Rear wiper does not operate.	ON only	<ul style="list-style-type: none"> <li>• Combination switch</li> <li>• Harness between combination switch and BCM</li> <li>• BCM</li> </ul>	Combination switch Refer to <a href="#">BCS-67, "Symptom Table"</a> .
		<ul style="list-style-type: none"> <li>• Combination switch</li> <li>• Harness between combination switch and BCM</li> <li>• BCM</li> </ul>	Combination switch Refer to <a href="#">BCS-67, "Symptom Table"</a> .
	ON and INT	<ul style="list-style-type: none"> <li>• Combination switch</li> <li>• Harness between combination switch and BCM</li> <li>• BCM</li> </ul>	Combination switch Refer to <a href="#">BCS-67, "Symptom Table"</a> .
		<ul style="list-style-type: none"> <li>• BCM</li> <li>• Harness between rear wiper motor and BCM</li> <li>• Harness between rear wiper motor and ground</li> <li>• Rear wiper motor</li> </ul>	Combination switch Refer to <a href="#">BCS-67, "Symptom Table"</a> .

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## WIPER AND WASHER SYSTEM SYMPTOMS

### < SYMPTOM DIAGNOSIS >

Symptom		Probable malfunction location	Inspection item
Rear wiper does not stop.	ON only	<ul style="list-style-type: none"> <li>• Combination switch</li> <li>• BCM</li> </ul>	Rear wiper motor circuit Refer to <a href="#">WW-35, "Component Function Check"</a> .
	INT only	<ul style="list-style-type: none"> <li>• Combination switch</li> <li>• BCM</li> </ul>	Combination switch Refer to <a href="#">BCS-67, "Symptom Table"</a> .
Rear wiper does not operate normally.	Wiper is not linked to the washer operation.	<ul style="list-style-type: none"> <li>• Combination switch</li> <li>• Harness between rear wiper motor and BCM</li> <li>• BCM</li> </ul>	Combination switch Refer to <a href="#">BCS-67, "Symptom Table"</a> .
		BCM	—
	<p>Rear wiper does not return to the stop position (Stops after a five-second operation).</p> <p>Rear wiper stops after operating for five seconds when ignition switch is turned ON.</p>	<ul style="list-style-type: none"> <li>• BCM</li> <li>• Harness between rear wiper motor and BCM</li> <li>• Rear wiper motor</li> </ul>	Rear wiper auto stop signal circuit Refer to <a href="#">WW-37, "Component Function Check"</a> .
Headlamp washer does not operate.		SYMPTOM DIAGNOSIS "HEADLAMP WASHER DOES NOT OPERATE" Refer to <a href="#">WW-98, "Diagnosis Procedure"</a> .	
Headlamp washer does not operate normally.	Wiper is not linked to the front washer operation. (Operates normally with headlamp washer switch)	<ul style="list-style-type: none"> <li>• Combination switch</li> <li>• Harness between combination switch and BCM</li> <li>• BCM</li> </ul>	Combination switch Refer to <a href="#">BCS-67, "Symptom Table"</a> .
	Does not operate with headlamp washer switch. (Operates normally with linked to front washer)	<ul style="list-style-type: none"> <li>• Headlamp washer switch</li> <li>• Harness between headlamp washer switch and BCM</li> <li>• BCM</li> </ul>	Headlamp washer switch Refer to <a href="#">WW-42, "Component Function Check"</a> .
Headlamp washer does not stop.		<ul style="list-style-type: none"> <li>• Headlamp washer relay</li> <li>• Harness between headlamp washer relay and IPDM E/R</li> <li>• IPDM E/R</li> </ul>	Headlamp washer circuit Refer to <a href="#">WW-42, "Component Function Check"</a> .



# NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS >

## NORMAL OPERATING CONDITION

### Description

INFOID:000000001208974

#### FRONT WIPER MOTOR PROTECTION FUNCTION

- IPDM E/R may stop the front wiper to protect the front wiper motor if any obstruction (operation resistance) such as a large amount of snow is detected during the front wiper operation.
- At that time turn OFF the front wiper and remove the foreign object. Then wait for approximately 20 seconds or more and reactivate the front wiper. The wiper will operate normally.

#### REAR WIPER MOTOR PROTECTION FUNCTION

- BCM may stop rear wiper to protect the rear wiper motor when the rear wiper is stopped for 5 seconds or more due to a snowfall.
- Rear wiper operates normally one minute after the obstacles are removed with rear wiper OFF.

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# FRONT WIPER DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

## FRONT WIPER DOES NOT OPERATE

### Description

INFOID:000000001208975

The front wiper does not operate under any operation conditions.

### Diagnosis Procedure

INFOID:000000001208976

#### 1. CHECK WIPER RELAY OPERATION

##### IPDM E/R AUTO ACTIVE TEST

1. Start IPDM E/R auto active test. Refer to [PCS-8, "Diagnosis Description"](#).
2. Check that the front wiper operates at the LO/HI operation.

##### CONSULT-III ACTIVE TEST

1. Select "FRONT WIPER" of IPDM E/R active test item.
2. With operating the test item, check front wiper operation.

**LO** : Front wiper LO operation

**HI** : Front wiper HI operation

**OFF** : Stop the front wiper.

##### Is front wiper operation normally?

YES >> GO TO 5.

NO >> GO TO 2.

#### 2. CHECK FRONT WIPER MOTOR FUSE

1. Turn the ignition switch OFF.
2. Check that the front wiper motor 30A fuse (#48) is not fusing.

##### Is the fuse fusing?

YES >> Replace the fuse after repairing the applicable circuit.

NO >> GO TO 3.

#### 3. CHECK FRONT WIPER MOTOR GROUND OPEN CIRCUIT

1. Disconnect front wiper motor connector.
2. Check continuity between front wiper motor harness connector and ground.

Front wiper motor		Ground	Continuity
Connector	Terminal		Existed
E20	2		

##### Does continuity exist?

YES >> GO TO 4.

NO >> Repair the harness or connector.

#### 4. CHECK FRONT WIPER MOTOR OUTPUT VOLTAGE

##### CONSULT-III ACTIVE TEST

1. Turn the ignition switch ON.
2. Select "FRONT WIPER" of IPDM E/R active test item.
3. With operating the test item, check voltage between IPDM E/R harness connector and ground.

# FRONT WIPER DOES NOT OPERATE

## < SYMPTOM DIAGNOSIS >

Terminals		Test item	Voltage (Approx.)
(+)	(-)		
IPDM E/R		FRONT WIPER	
Connector	Terminal		
E14	43	LO	Battery voltage
		OFF	0 V
	42	HI	Battery voltage
		OFF	0 V

Is the measurement value normal?

YES >> Replace front wiper motor.

NO >> Replace IPDM E/R.

### 5. CHECK FRONT WIPER REQUEST SIGNAL INPUT

#### CONSULT-III DATA MONITOR

1. Select "FR WIP REQ" of IPDM E/R data monitor item.
2. Switch the front wiper switch to HI and LO.
3. With operating the front wiper switch, check the status of "FR WIP REQ".

Monitor item	Condition		Monitor status
FR WIP REQ	Front wiper switch HI	ON	HI
		OFF	STOP
	Front wiper switch LO	ON	LOW
		OFF	STOP

Is the status of item normal?

YES >> Replace IPDM E/R.

NO >> GO TO 6.

### 6. CHECK COMBINATION SWITCH

Perform the inspection of the combination switch. Refer to [BCS-67. "Symptom Table"](#).

Is combination switch normal?

YES >> Replace BCM.

NO >> Repair or replace the applicable parts.

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# HEADLAMP WASHER DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

## HEADLAMP WASHER DOES NOT OPERATE

### Description

INFOID:000000001301446

Headlamp washer does not operate with headlamp washer switch nor is linked to front washer operation.

### Diagnosis Procedure

INFOID:000000001301447

#### 1. CHECK HEADLAMP WASHER CIRCUIT

Check headlamp washer circuit. Refer to [WW-42, "Component Function Check"](#).

Is headlamp washer circuit normal?

YES >> GO TO 2.

NO >> Repair or replace the applicable parts.

#### 2. CHECK HEADLAMP WASHER REQUEST SIGNAL INPUT

##### ⓂCONSULT-III DATA MONITOR

1. Turn the lighting switch to 2ND.
2. Select "HL WASHER REQ" of IPDM E/R data monitor item.
3. With operating the headlamp washer switch, check the status of "HL WASHER REQ".

Monitor item	Condition		Monitor status
HL WASHER REQ	Headlamp washer switch	While pressing	ON
		While not pressing	OFF

Is the status of item normal?

YES >> Replace IPDM E/R.

NO >> Replace BCM.

# PRECAUTIONS

< PRECAUTION >

## PRECAUTION

### PRECAUTIONS

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

INFOID:000000001308746

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 AIRBAG" and "SEAT BELT" of this Service Manual.

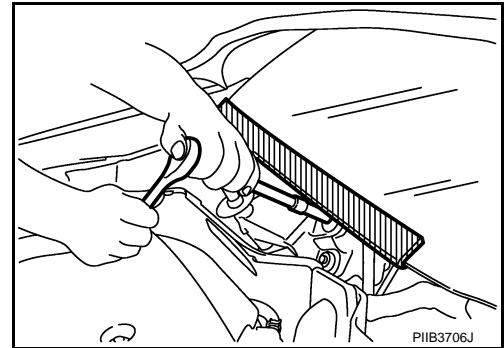
#### **WARNING:**

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which 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 the "SRS AIRBAG".
- Do not 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.

#### Precaution for Procedure without Cowl Top Cover

INFOID:000000001308747

When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc.



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# HEADLAMP WASHER NOZZLE AND TUBE

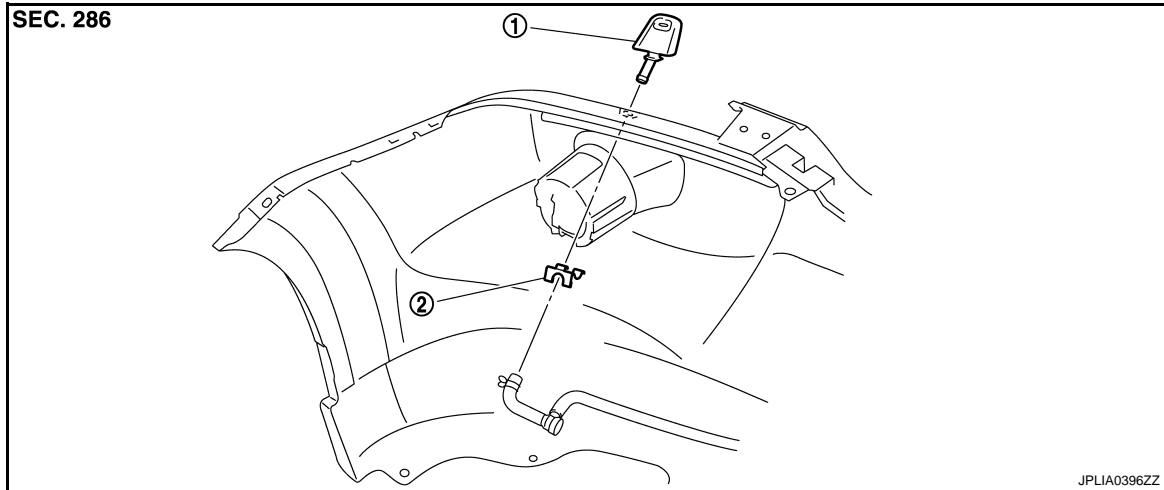
< ON-VEHICLE REPAIR >

## ON-VEHICLE REPAIR

### HEADLAMP WASHER NOZZLE AND TUBE

Exploded View

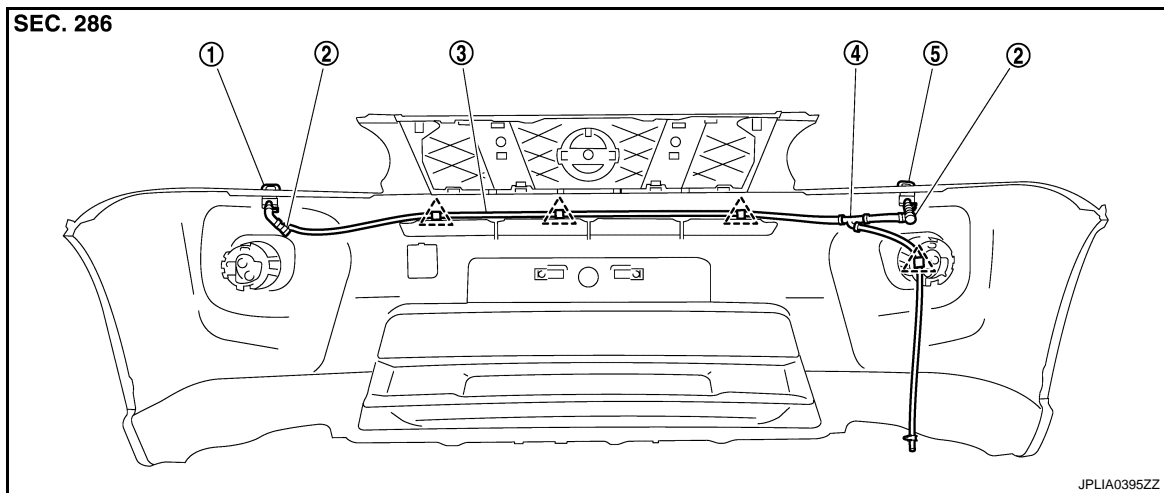
INFOID:000000001208981




1. Headlamp washer nozzle
2. Headlamp washer nozzle clip

Hydraulic Layout

INFOID:000000001208982



1. Headlamp washer nozzle (LH)
2. Check valve
3. Headlamp washer tube
4. Headlamp washer tube joint
5. Headlamp washer nozzle (RH)

 : Clip

Removal and Installation

INFOID:000000001208983

#### REMOVAL

1. Remove the front bumper fascia. Refer to [EXT-12, "Exploded View"](#).
2. Remove headlamp washer nozzle clip.
3. Remove headlamp washer tube from headlamp washer nozzle.
4. Remove headlamp washer nozzle from the front bumper fascia.

#### INSTALLATION

# HEADLAMP WASHER NOZZLE AND TUBE

< ON-VEHICLE REPAIR >

Install in the reverse order of removal.

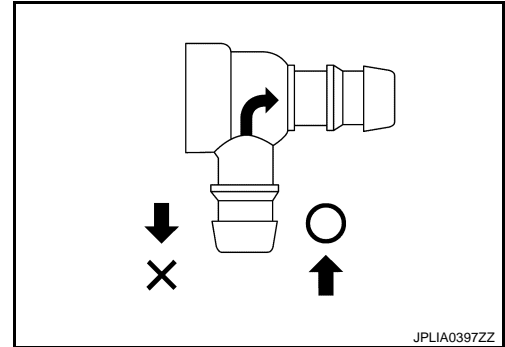
## Inspection and Adjustment

INFOID:000000001306473

### INSPECTION

#### Check Valve Inspection

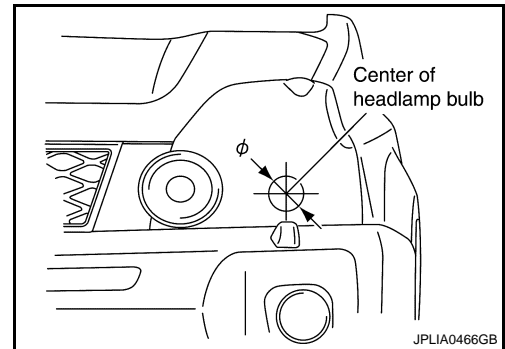
Check that air can pass through the hose by blowing forward (toward the nozzle), and check that air cannot pass through by sucking.



### ADJUSTMENT

Headlamp Washer Nozzle Spray Position Adjustment  
Adjust spray position as shown in the figure.

$\phi$  : 60 mm (2.36 in)



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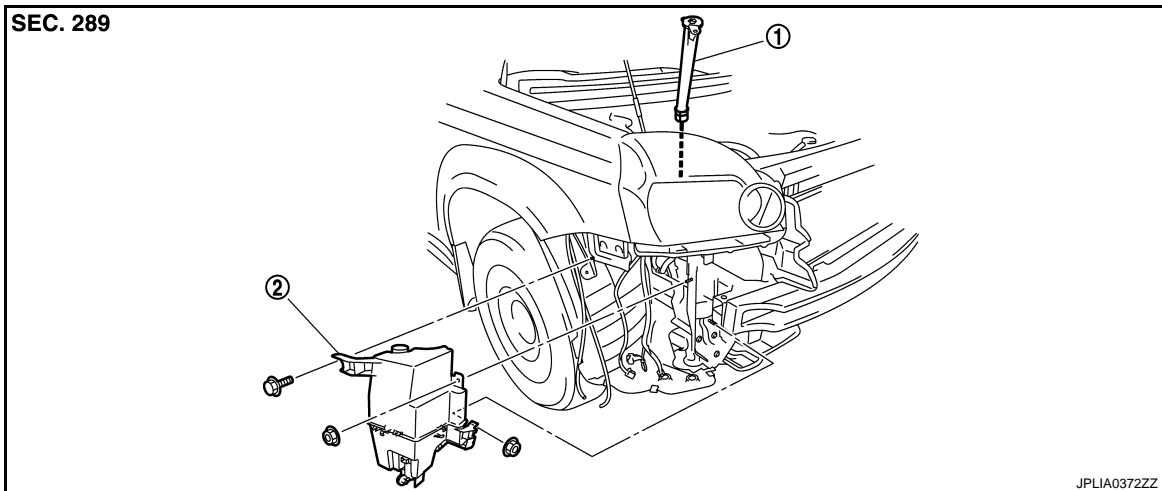
# WASHER TANK

< ON-VEHICLE REPAIR >

## WASHER TANK

### Exploded View

INFOID:000000001208985



1. Washer tank inlet

2. Washer tank

### Removal and Installation

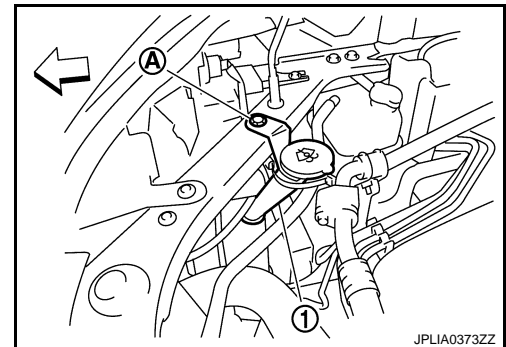
INFOID:000000001208986

#### REMOVAL

1. Remove the clip (A).

← : Vehicle front

2. Pull out the washer tank inlet (1) from the washer tank.
3. Remove the fender protector RH (front). Refer to [EXT-21](#), "Exploded View".
4. Disconnect washer pump connector.
5. Disconnect headlamp washer pump connector.
6. Remove all washer tubes.
7. Remove washer tank mounting nuts and bolt.
8. Remove the washer tank from the vehicle.



#### INSTALLATION

Install in the reverse order of removal.

#### **CAUTION:**

**Add water up to the top of the washer tank inlet after installing. Check that there is no leakage.**



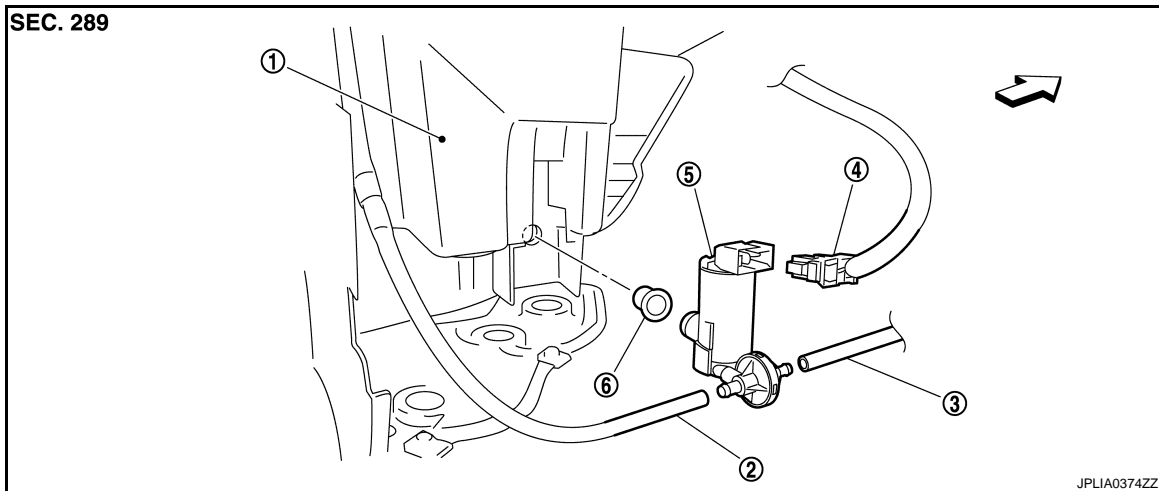
# WASHER PUMP

< ON-VEHICLE REPAIR >

## WASHER PUMP

### Exploded View

INFOID:000000001208987



- |                          |                     |                      |
|--------------------------|---------------------|----------------------|
| 1. Washer tank           | 2. Rear washer tube | 3. Front washer tube |
| 4. Washer pump connector | 5. Washer pump      | 6. Packing           |

⇨ : Vehicle front

### Removal and Installation

INFOID:000000001208988

#### REMOVAL

1. Remove the fender protector RH (front). Refer to [EXT-21, "Exploded View"](#).
2. Disconnect washer pump connector.
3. Remove front washer tube and rear washer tube.
4. Remove washer pump from the washer tank.
5. Remove the packing from the washer tank.

#### INSTALLATION

Install in the reverse order of removal.

#### **CAUTION:**

**Never twist the packing when installing the washer pump.**

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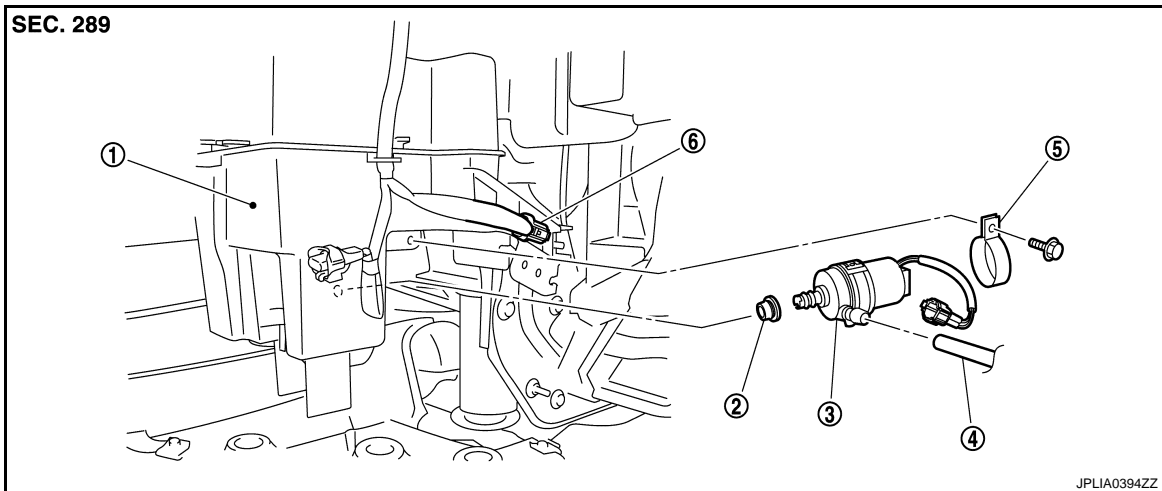
# HEADLAMP WASHER PUMP

< ON-VEHICLE REPAIR >

## HEADLAMP WASHER PUMP

Exploded View

INFOID:000000001208989



- |                         |             |                                   |
|-------------------------|-------------|-----------------------------------|
| 1. Washer tank          | 2. Packing  | 3. Headlamp washer pump           |
| 4. Headlamp washer tube | 5. Fix band | 6. Headlamp washer pump connector |

## Removal and Installation

INFOID:000000001208990

### REMOVAL

1. Remove the fender protector RH (front). Refer to [EXT-21, "Exploded View"](#).
2. Disconnect the headlamp washer pump connector.
3. Remove headlamp washer tube.
4. Remove headlamp washer pump from the washer tank.
5. Remove the packing from the washer tank.

### INSTALLATION

Install in the reverse order of removal.

#### **CAUTION:**

**Never twist the packing when installing the washer pump.**

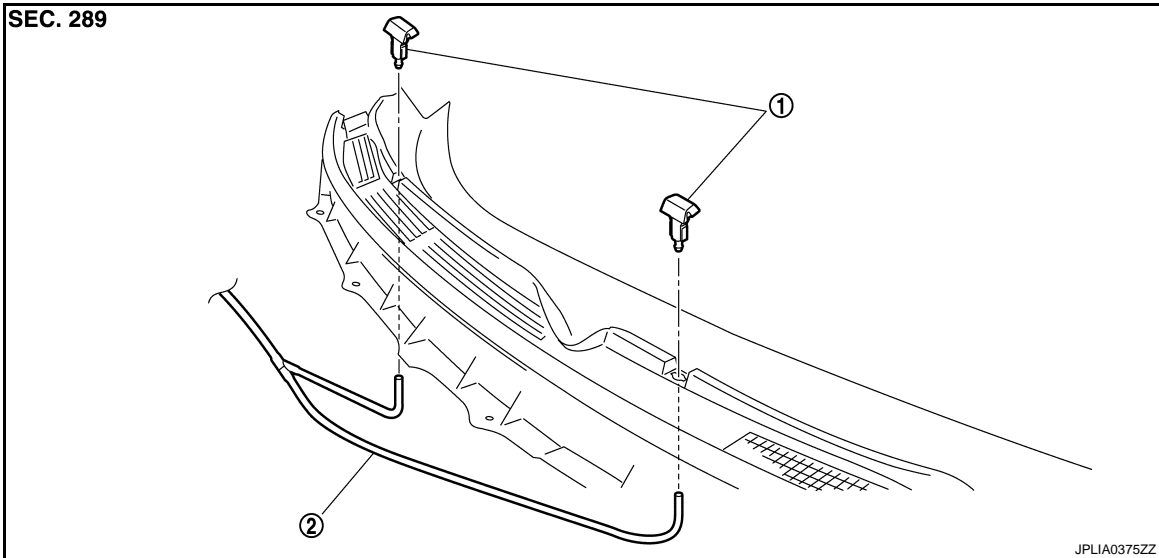
# FRONT WASHER NOZZLE AND TUBE

< ON-VEHICLE REPAIR >

## FRONT WASHER NOZZLE AND TUBE

Exploded View

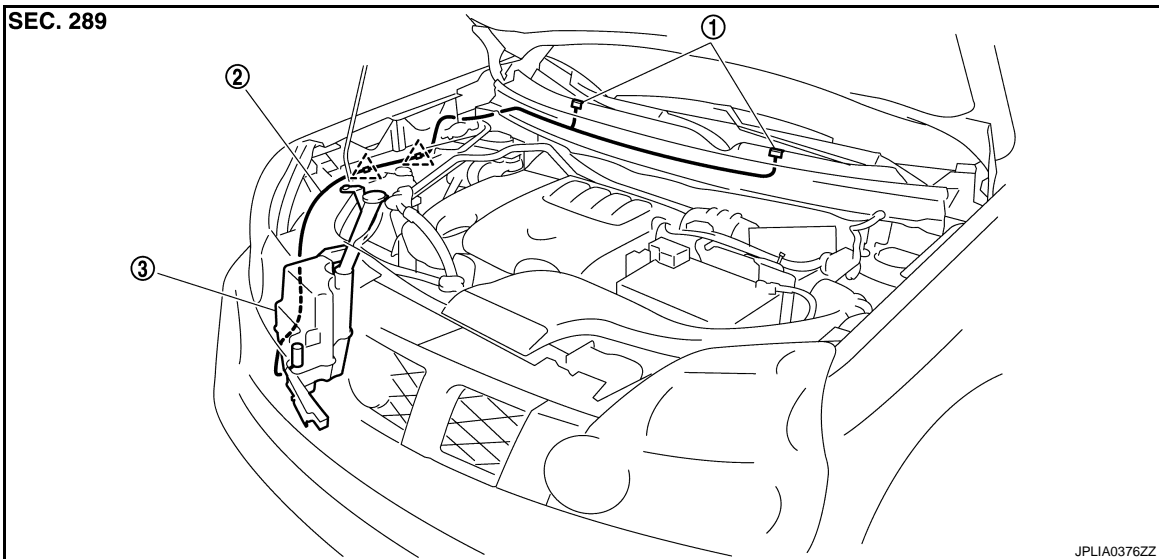
INFOID:000000001306481



- 1. Front washer nozzle
- 2. Front washer tube

Hydraulic Layout

INFOID:000000001208991



- 1. Front washer nozzle
- 2. Front washer tube
- 3. Washer tank

△ : Clip

Removal and Installation

INFOID:000000001208992

### REMOVAL

1. Remove cowl top cover. Refer to [EXT-19, "Exploded View"](#).
2. Disconnect front washer tube from front washer nozzle.

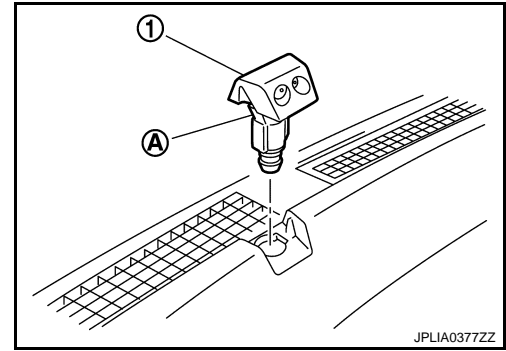
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WW

# FRONT WASHER NOZZLE AND TUBE

## < ON-VEHICLE REPAIR >

- While pressing pawl (A) on the cowl top cover front side of front washer nozzle (1), remove front washer nozzle from cowl top cover.



JPLIA0377ZZ

## INSTALLATION

Install in the reverse order of removal.

### CAUTION:

The spray positions differ, check that left and right nozzles are installed correctly.

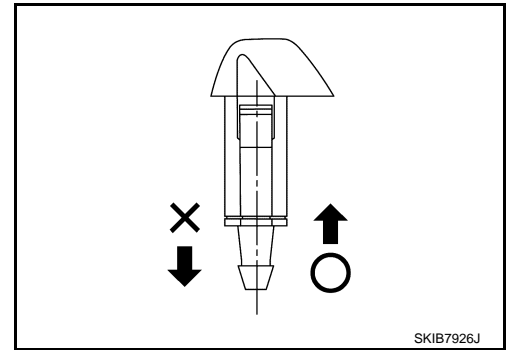
## Inspection and Adjustment

INFOID:000000001208993

## INSPECTION

### Washer Nozzle Inspection

Check that air can pass through the hose by blowing forward (toward the nozzle), and check that air cannot pass through by sucking.



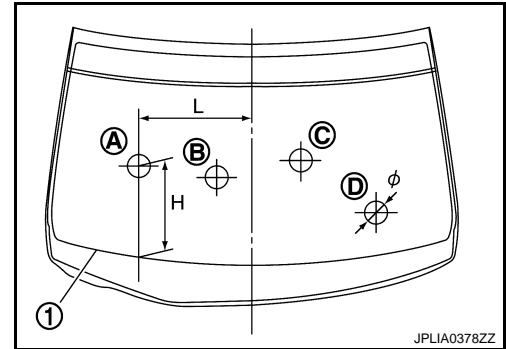
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## ADJUSTMENT

### Washer Nozzle Spray Position Adjustment

Adjust spray positions to match the positions shown in the figure.

① : Black printed frame line



JPLIA0378ZZ

- LHD models

Unit: mm (in)

Spray position	H (Height)	L (Width)	φ (Spray point area)
A	319 (12.56)	391 (15.39)	80 (3.15)
B	306 (12.05)	192 (7.56)	80 (3.15)
C	357 (14.06)	171 (6.73)	80 (3.15)
D	324 (12.76)	428 (16.85)	80 (3.15)

- RHD models

# FRONT WASHER NOZZLE AND TUBE

< ON-VEHICLE REPAIR >

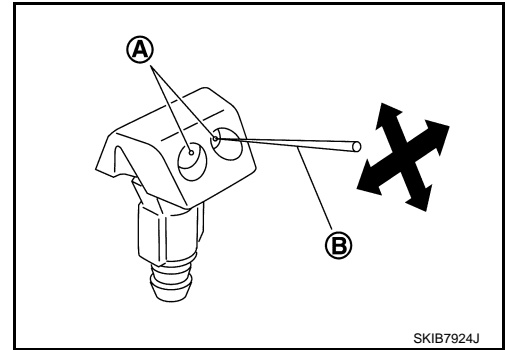
Unit: mm (in)

Spray position	H (Height)	L (Width)	φ (Spray point area)
A	150 (5.91)	432 (17.01)	80 (3.15)
B	357 (14.06)	171 (6.73)	80 (3.15)
C	302 (11.89)	120 (4.72)	80 (3.15)
D	319 (12.56)	391 (15.39)	80 (3.15)

Insert a needle or similar object (B) into the spray opening (A) and move up/down and left/right to adjust the spray position.

**NOTE:**

If wax or dust gets into the nozzle, remove wax or dust with a needle or small pin.



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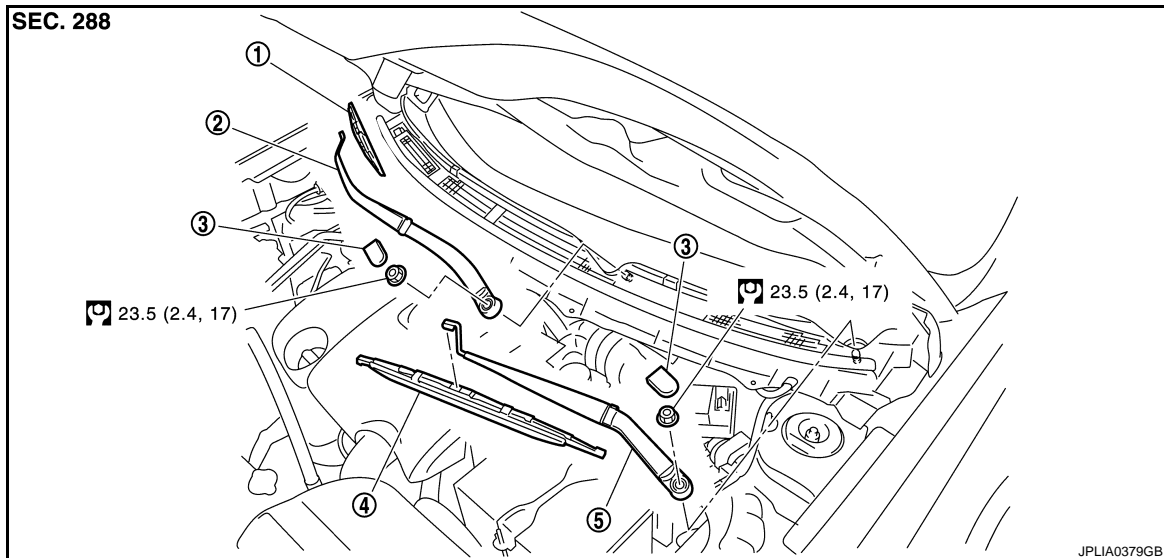
# FRONT WIPER ARM

< ON-VEHICLE REPAIR >

## FRONT WIPER ARM

Exploded View

INFOID:000000001208994



- |                           |                         |                        |
|---------------------------|-------------------------|------------------------|
| 1. Front wiper blade (RH) | 2. Front wiper arm (RH) | 3. Front wiper arm cap |
| 4. Front wiper blade (LH) | 5. Front wiper arm (LH) |                        |

Refer to [GI-4, "Components"](#) for symbols in the figure.

## Removal and Installation

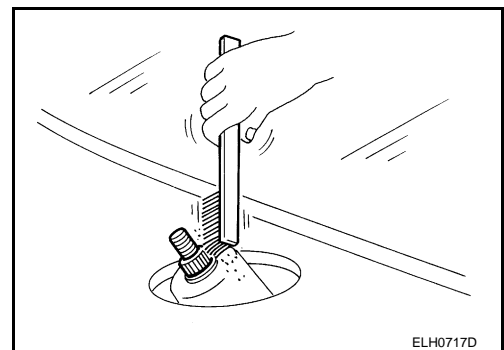
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### REMOVAL

1. Operate the front wiper to move it to the auto stop position.
2. Open the hood.
3. Remove front wiper arm caps.
4. Remove the front wiper arm mounting nuts.
5. Raise front wiper arm, and remove front wiper arm from the vehicle.

### INSTALLATION

1. Clean wiper arm mount as shown in the figure to prevent nuts from being loosened.
2. Operate the front wiper motor to move the front wiper to the auto stop position.
3. Adjust the front wiper blade position. Refer to [WW-110, "Adjustment"](#).
4. Install the front wiper arms by tightening the mounting nuts.
5. Inject the washer fluid.
6. Operate the front wiper to move it to the auto stop position.
7. Check that the front wiper blades stop at the specified position.
8. Install front wiper arm caps.



## Adjustment

INFOID:000000001208996

### WIPER BLADE POSITION ADJUSTMENT

Clearance between the end of cowl top cover and the top of front wiper blade center

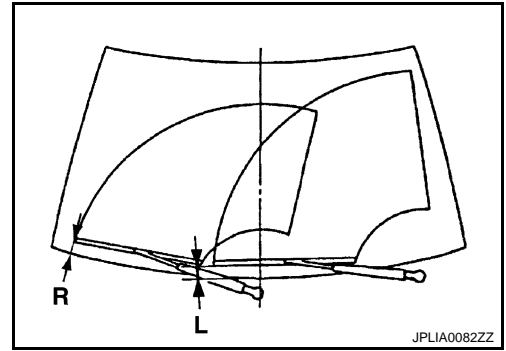
# FRONT WIPER ARM

## < ON-VEHICLE REPAIR >

Standard clearance

**R** :  $34.1 \pm 7.5 \text{ mm}$  ( $1.343 \pm 0.295 \text{ in}$ )

**L** :  $39.7 \pm 7.5 \text{ mm}$  ( $1.563 \pm 0.295 \text{ in}$ )



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# FRONT WIPER DRIVE ASSEMBLY

< ON-VEHICLE REPAIR >

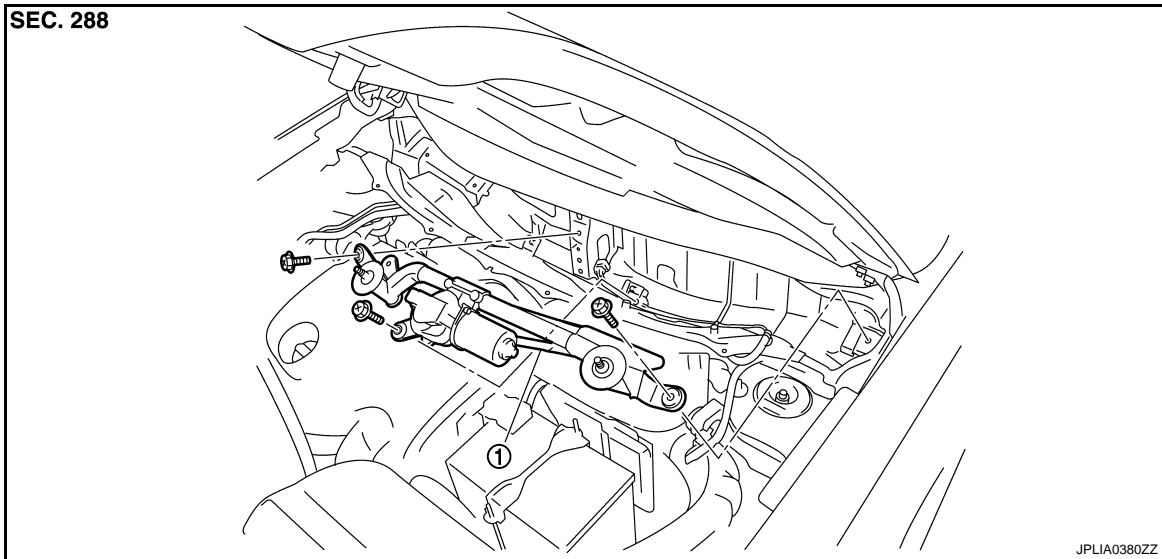
## FRONT WIPER DRIVE ASSEMBLY

LHD MODELS

LHD MODELS : Exploded View

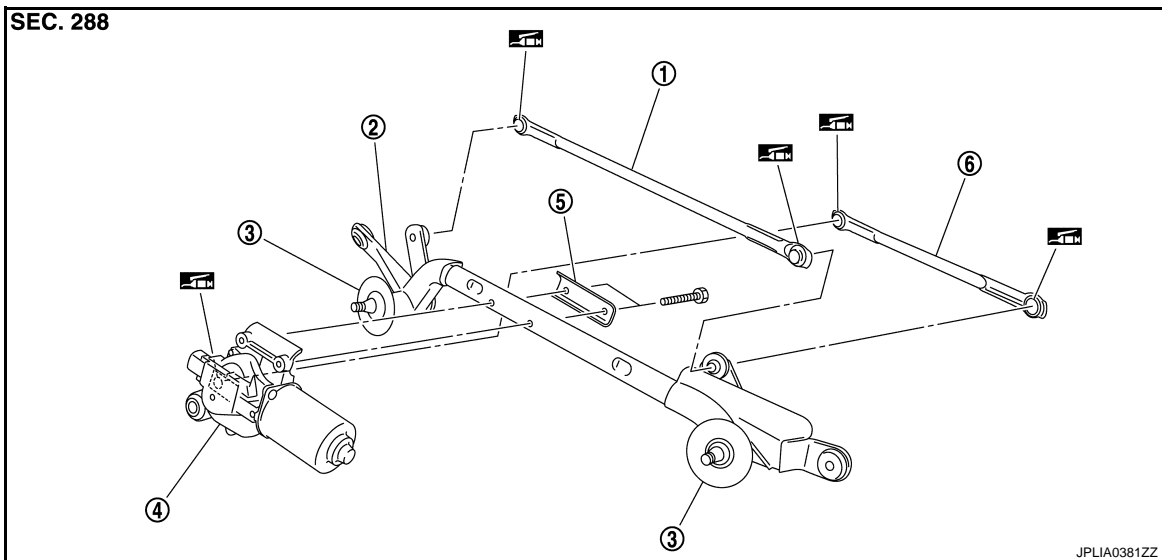
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REMOVAL VIEW




1. Front wiper drive assembly

DISASSEMBLY VIEW



- |                          |                      |                          |
|--------------------------|----------------------|--------------------------|
| 1. Front wiper linkage 1 | 2. Front wiper frame | 3. Shaft seal            |
| 4. Front wiper motor     | 5. Bracket           | 6. Front wiper linkage 2 |

: Multi-purpose grease or an equivalent

LHD MODELS : Removal and Installation

INFOID:000000001208998

REMOVAL

1. Remove front wiper arm. Refer to [WW-110, "Exploded View"](#).
2. Remove cowl top cover. Refer to [EXT-19, "Exploded View"](#).

WW-112



# FRONT WIPER DRIVE ASSEMBLY

## < ON-VEHICLE REPAIR >

3. Remove bolts from the front wiper drive assembly.
4. Disconnect the front wiper motor connector.
5. Remove front wiper drive assembly from the vehicle.

## INSTALLATION

1. Install the front wiper drive assembly to the vehicle.
2. Connect the front wiper motor connector.
3. Operate the front wiper to move it to the auto stop position.
4. Install the cowl top cover. Refer to [EXT-19, "Exploded View"](#).
5. Install front wiper arms. Refer to [WW-110, "Exploded View"](#).

## LHD MODELS : Disassembly and Assembly

INFOID:000000001208999

### DISASSEMBLY

1. Remove the front wiper linkage 1 and 2 from the front wiper drive assembly.  
**CAUTION:**  
**Do not bend the linkage or damage the plastic part of the ball joint when removing the front wiper linkage.**
2. Remove the front wiper motor mounting screws, and then remove the front wiper motor from the front wiper frame.

### ASSEMBLY

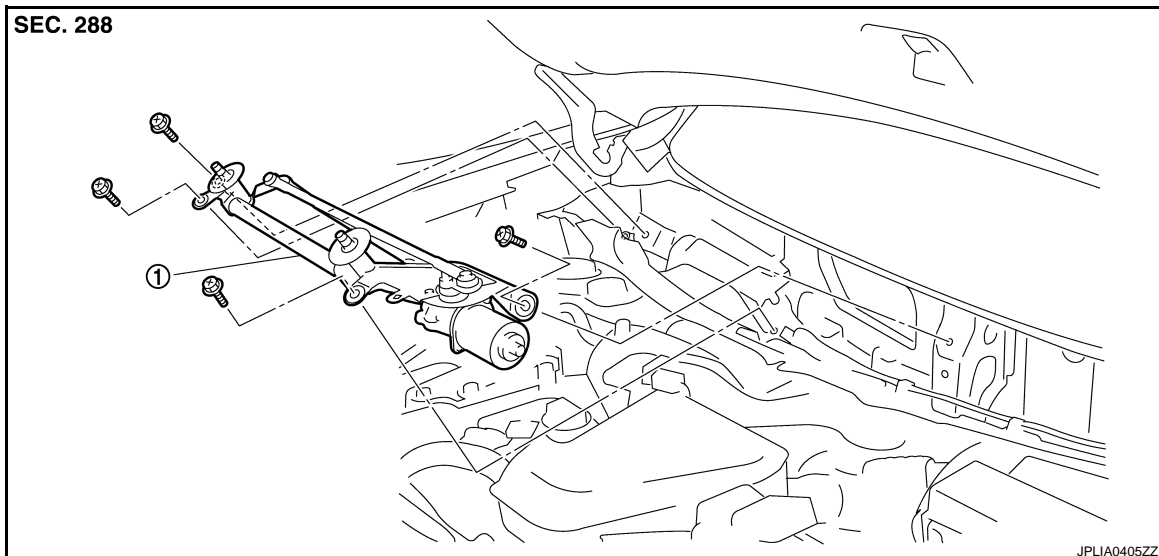
1. Connect the front wiper motor connector.
2. Operate the front wiper to move it to the auto stop position.
3. Disconnect the front wiper motor connector.
4. Install front wiper motor to front wiper frame.
5. Install the front wiper linkage 2 to the front wiper motor and the front wiper frame.
6. Install the front wiper linkage 1 to the front wiper frame.  
**CAUTION:**
  - Do not drop front wiper motor or cause it to come into contact with other parts.
  - Be careful for the grease condition at the front wiper motor and front wiper linkage joint (retainer). Apply multi-purpose grease or an equivalent if necessary.

## RHD MODELS

### RHD MODELS : Exploded View

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### REMOVAL VIEW



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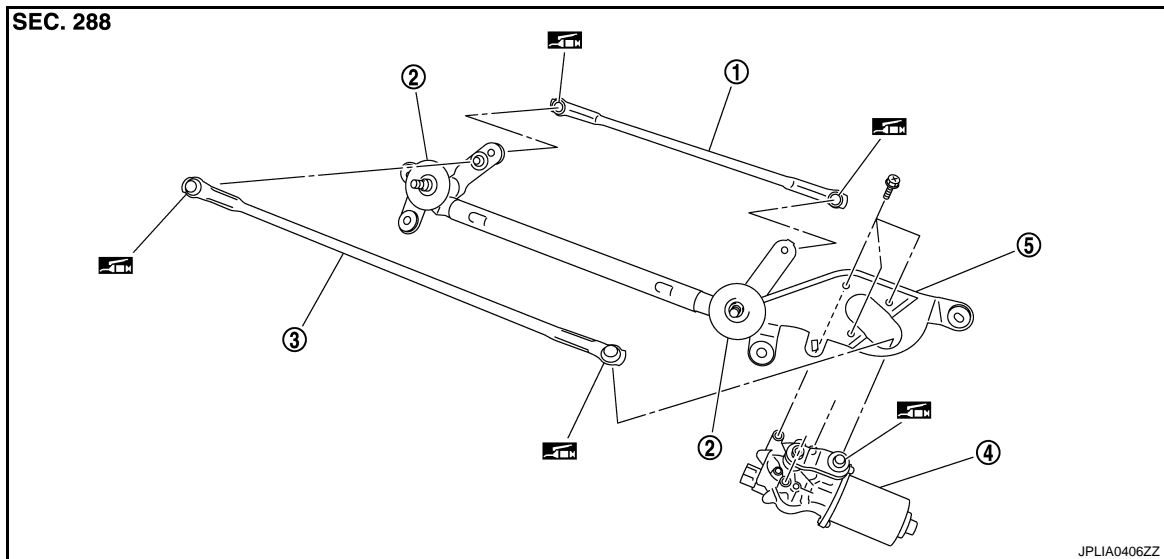
WW

# FRONT WIPER DRIVE ASSEMBLY


< ON-VEHICLE REPAIR >

1. Front wiper drive assembly

## DISASSEMBLY VIEW



- |                          |                      |                          |
|--------------------------|----------------------|--------------------------|
| 1. Front wiper linkage 1 | 2. Shaft seal        | 3. Front wiper linkage 2 |
| 4. Front wiper motor     | 5. Front wiper frame |                          |

: Multi-purpose grease or an equivalent

## RHD MODELS : Removal and Installation

INFOID:000000001209001

### REMOVAL

1. Remove front wiper arm. Refer to [WW-110. "Exploded View"](#).
2. Remove cowl top cover. Refer to [EXT-19. "Exploded View"](#).
3. Remove bolts from the front wiper drive assembly.
4. Disconnect the front wiper motor connector.
5. Remove front wiper drive assembly from the vehicle.

### INSTALLATION

1. Install the front wiper drive assembly to the vehicle.
2. Connect the front wiper motor connector.
3. Operate the front wiper to move it to the auto stop position.
4. Install the cowl top cover. Refer to [EXT-19. "Exploded View"](#).
5. Install front wiper arms. Refer to [WW-110. "Exploded View"](#).

## RHD MODELS : Disassembly and Assembly

INFOID:000000001209002

### DISASSEMBLY

1. Remove the front wiper linkage 1 and 2 from the front wiper drive assembly.  
**CAUTION:**  
**Do not bend the linkage or damage the plastic part of the ball joint when removing the front wiper linkage.**
2. Remove the front wiper motor mounting screws, and then remove the front wiper motor from the front wiper frame.

### ASSEMBLY

1. Connect the front wiper motor connector.
2. Operate the front wiper to move it to the auto stop position.

## FRONT WIPER DRIVE ASSEMBLY

### < ON-VEHICLE REPAIR >

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3. Disconnect the front wiper motor connector.
4. Install front wiper motor to front wiper frame.
5. Install the front wiper linkage 2 to the front wiper motor and the front wiper frame.
6. Install the front wiper linkage 1 to the front wiper frame.

**CAUTION:**

- Do not drop front wiper motor or cause it to come into contact with other parts.
- Be careful for the grease condition at the wiper motor and wiper linkage joint (retainer). Apply multi-purpose grease or an equivalent if necessary.

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## RAIN SENSOR

< ON-VEHICLE REPAIR >

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### RAIN SENSOR

#### Exploded View

INFOID:000000001209003

Refer to [EXL-219. "Exploded View"](#).

#### Removal and Installation

INFOID:000000001209004

Refer to [EXL-220. "Removal and Installation"](#).

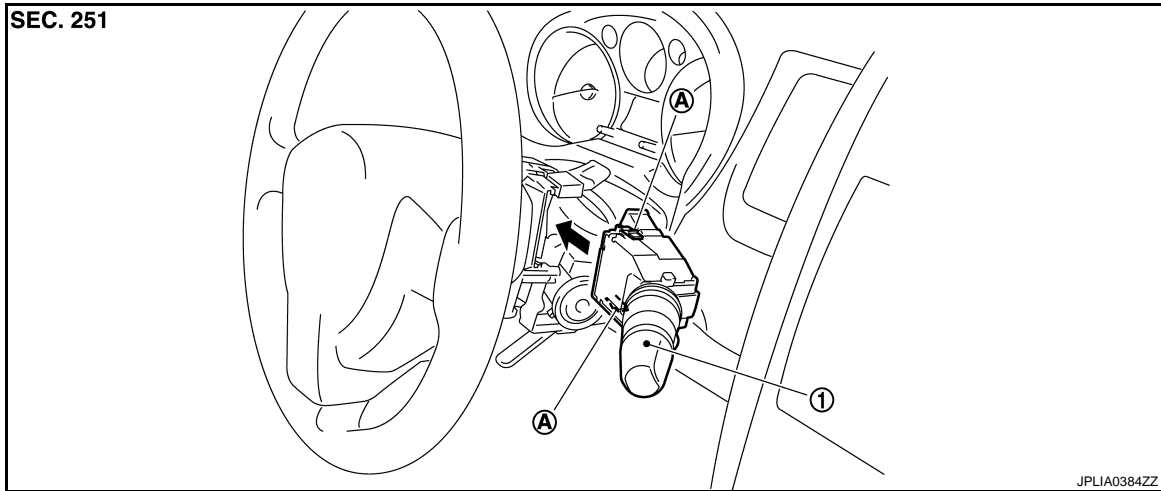
# WIPER AND WASHER SWITCH

< ON-VEHICLE REPAIR >

## WIPER AND WASHER SWITCH

Exploded View

INFOID:000000001209005



- 1. Wiper & washer switch
- A. Pawl

## Removal and Installation

INFOID:000000001209006

### REMOVAL

1. Remove steering column cover. Refer to [IP-11. "Exploded View"](#).
2. While pressing pawls, pull the wiper & washer switch. And disconnect it from the switch base.

### INSTALLATION

Install in the reverse order of removal.

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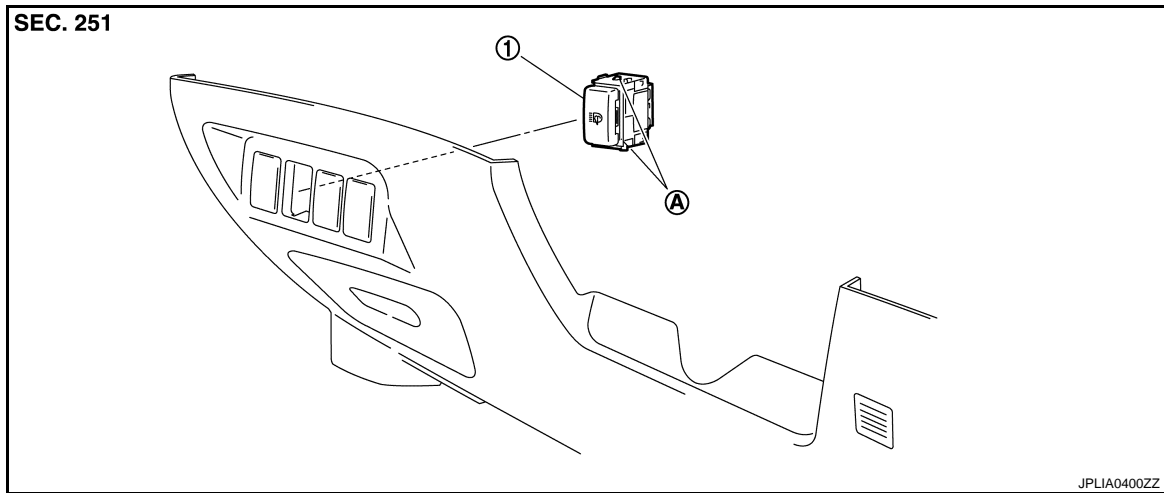
# HEADLAMP WASHER SWITCH

< ON-VEHICLE REPAIR >

## HEADLAMP WASHER SWITCH

Exploded View

INFOID:000000001301411



- 1. Headlamp washer switch
- A. Pawl

## Removal and Installation

INFOID:000000001301412

### REMOVAL

1. Remove instrument driver lower panel. Refer to [IP-11, "Exploded View"](#).
2. Widen the pawl. And remove headlamp washer switch.

### INSTALLATION

Install in the reverse order of removal.

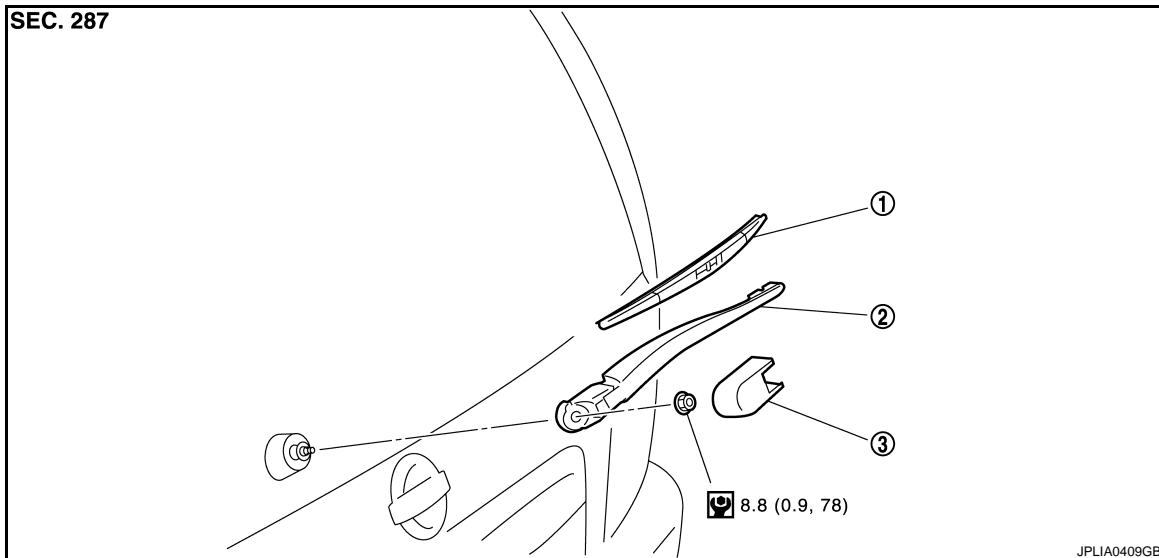
# REAR WIPER ARM

< ON-VEHICLE REPAIR >

## REAR WIPER ARM

### Exploded View

INFOID:000000001312089



1. Rear wiper blade

2. Rear wiper arm

3. Rear wiper arm cover

### Removal and Installation

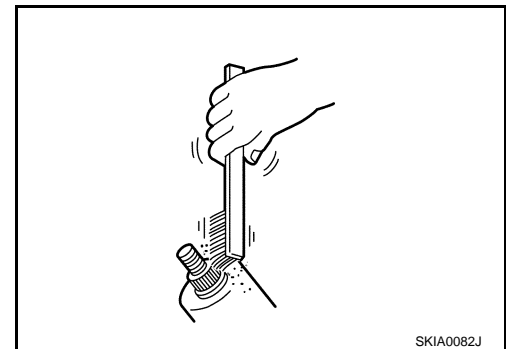
INFOID:000000001312090

#### REMOVAL

1. Operate the rear wiper to the auto stop position.
2. Remove rear wiper arm cover.
3. Remove the rear wiper arm mounting nut.
4. Raise rear wiper arm, and remove wiper arm from the vehicle.

#### INSTALLATION

1. Clean wiper arm mount as shown in the figure to prevent nut from being loosened.



2. Operate the rear wiper motor to the auto stop position.
3. Adjust the rear wiper blade position. Refer to [WW-120. "Adjustment"](#).
4. Install the rear wiper arm by tightening the mounting nut.
5. Inject the washer fluid.
6. Operate the rear wiper to the auto stop position.
7. Check that the rear wiper blades stop at the specified position.
8. Install rear wiper arm cover.

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# REAR WIPER ARM

< ON-VEHICLE REPAIR >

## Adjustment

INFOID:000000001312091

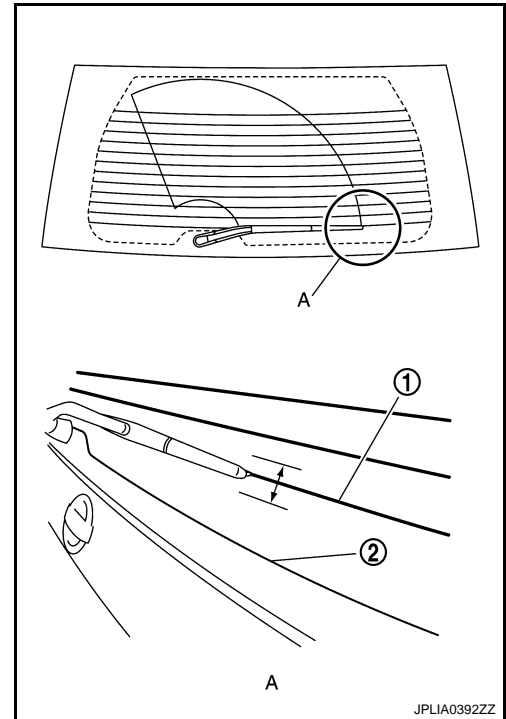
### REAR WIPER BLADE POSITION ADJUSTMENT

Lift the blade up and then set it down onto back door window glass surface to set the blade center to lowest heat wire immediately.

1 : Lowest heat wire

2 : Black printed

**Lowest heat wire :  $\pm 7.5$  mm ( $\pm 0.295$  in)**





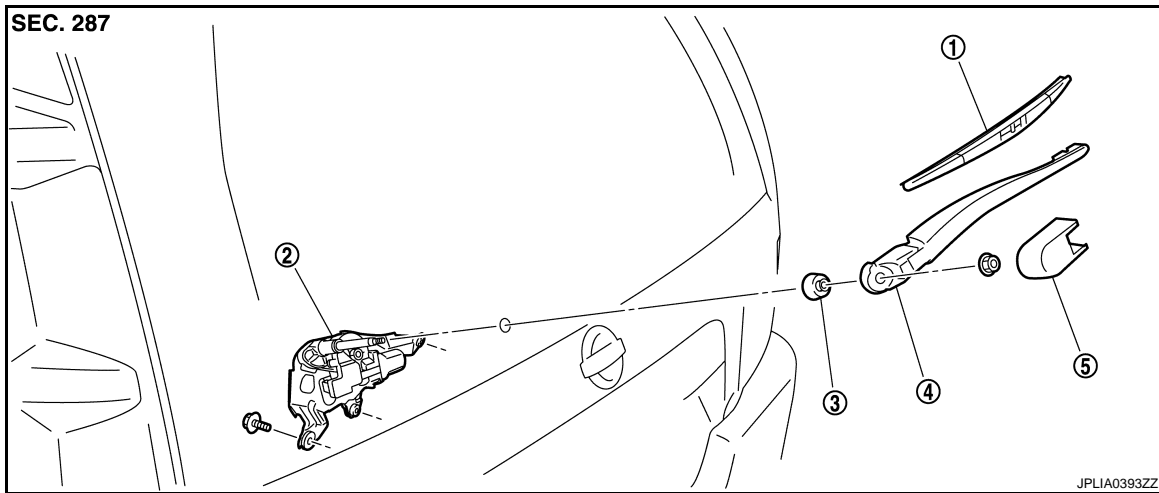
# REAR WIPER MOTOR

< ON-VEHICLE REPAIR >

## REAR WIPER MOTOR

### Exploded View

INFOID:000000001209007



- |                     |                         |               |
|---------------------|-------------------------|---------------|
| 1. Rear wiper blade | 2. Rear wiper motor     | 3. Pivot seal |
| 4. Rear wiper arm   | 5. Rear wiper arm cover |               |

### Removal and Installation

INFOID:000000001209008

#### REMOVAL

1. Remove rear wiper arm cover and rear wiper arm. Refer to [WW-119, "Exploded View"](#).
2. Remove back door trim finisher lower. Refer to [INT-31, "Exploded View"](#).
3. Disconnect the rear wiper motor connector.
4. Remove bolts.
5. Remove rear wiper motor from the vehicle.
6. Remove pivot seal.

#### INSTALLATION

1. Install the pivot seal.
2. Install the rear wiper motor to the vehicle.
3. Connect the rear wiper motor connector.
4. Operate the rear wiper to the auto stop position.
5. Install the back door trim finisher lower. Refer to [INT-31, "Exploded View"](#).
6. Install rear wiper arm cover and rear wiper arm. Refer to [WW-119, "Exploded View"](#).

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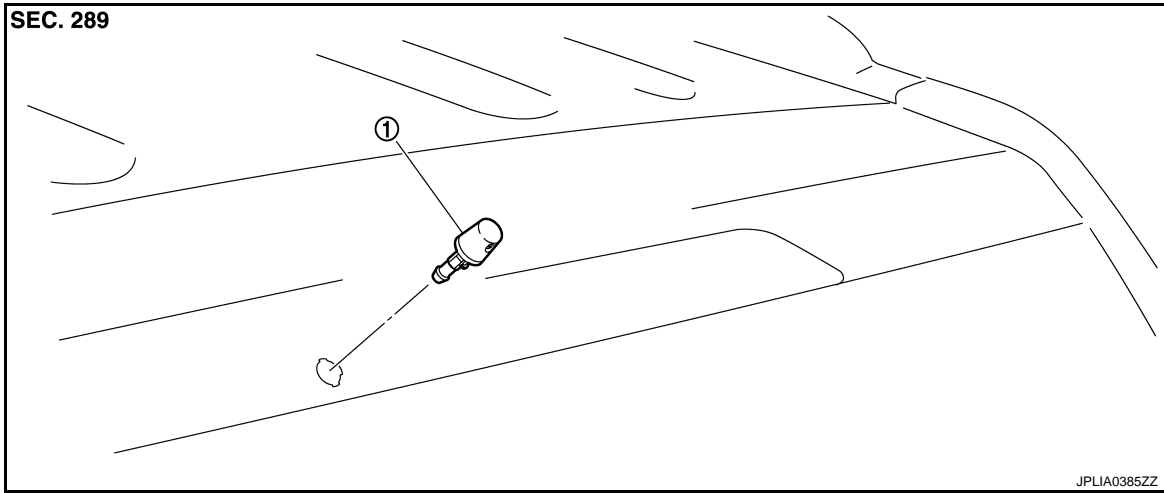
# REAR WASHER NOZZLE AND TUBE

< ON-VEHICLE REPAIR >

## REAR WASHER NOZZLE AND TUBE

Exploded View

INFOID:000000001306512



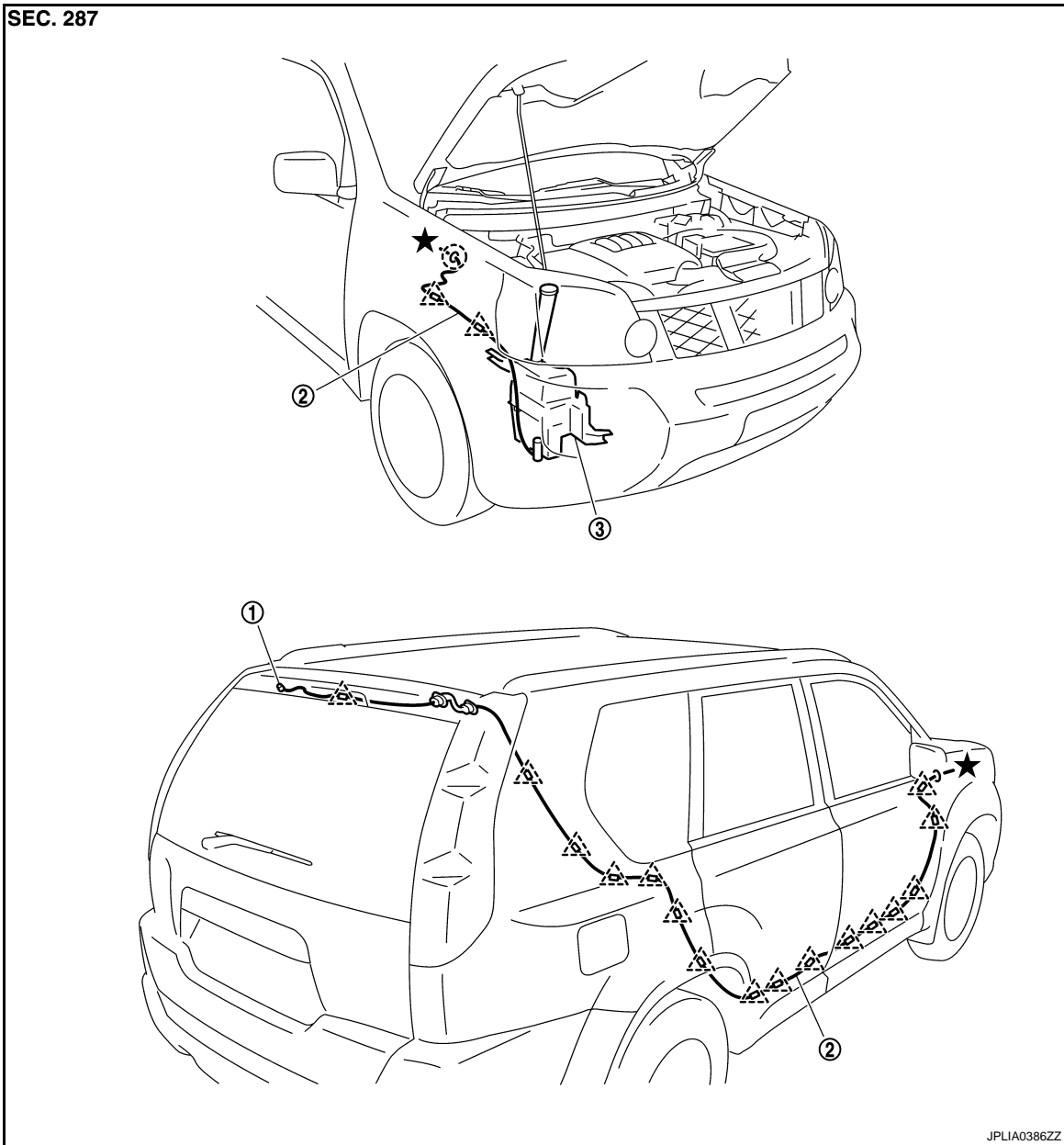
1. Rear washer nozzle

# REAR WASHER NOZZLE AND TUBE

< ON-VEHICLE REPAIR >

## Hydraulic Layout

INFOID:000000001209010



## Removal and Installation

INFOID:000000001209011

### REMOVAL

1. Remove the back door inner finisher. Refer to [INT-31, "Exploded View"](#).
2. Remove the rear washer tube from the rear washer nozzle.

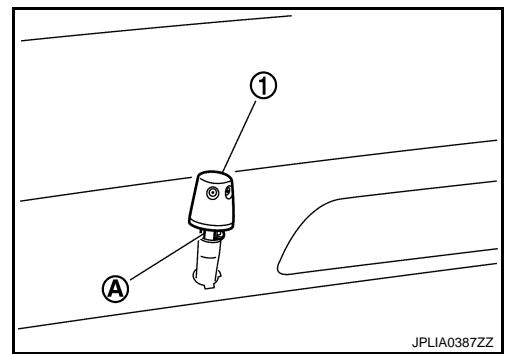
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# REAR WASHER NOZZLE AND TUBE

## < ON-VEHICLE REPAIR >

- Push pawl (A), and remove the rear washer nozzle (1) from the back door.



## INSTALLATION

Install in the reverse order of removal.

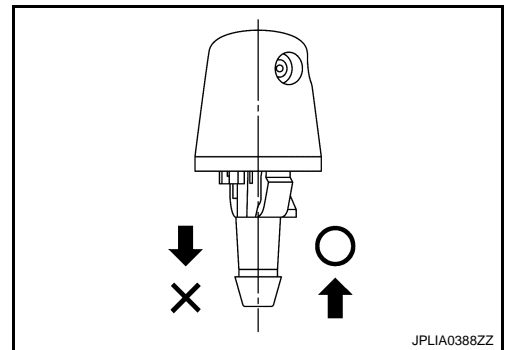
## Inspection and Adjustment

INFOID:000000001209012

## INSPECTION

### Washer Nozzle Inspection

Check that air can pass through the hose by blowing forward (toward the nozzle), and check that air cannot pass through by sucking.



## ADJUSTMENT

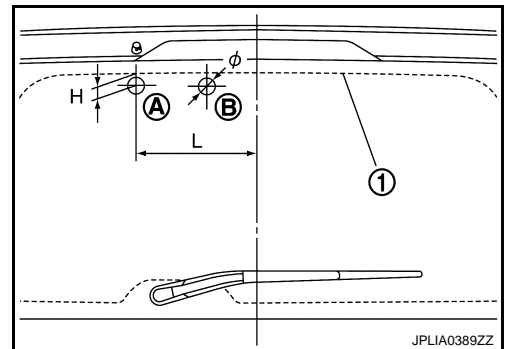
### Washer Nozzle Spray Position adjustment

Adjust spray positions to match the positions shown in the figure.

1 : Black printed frame line

Unit: mm (in)

Spray position	H (Height)	L (width)	$\phi$ (Spray position area)
A	31 (1.22)	215.5 (8.48)	30 (1.18)
B	37 (1.46)	95 (3.74)	30 (1.18)



Insert a needle or similar object (B) into the spray opening (A) and move up/down and left/right to adjust the spray position.

### NOTE:

If wax or dust gets into the nozzle, remove wax or dust with a needle or small pin.

