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# SECTION **WW**

## WIPER & WASHER

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# PRECAUTIONS

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## PRECAUTION

### PRECAUTIONS

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

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

The vehicle may be equipped with a passenger air bag deactivation switch. Because no rear seat exists where a rear-facing child restraint can be placed, the switch is designed to turn off the passenger air bag so that a rear-facing child restraint can be used in the front passenger seat. The switch is located in the center of the instrument panel, near the ashtray. When the switch is turned to the ON position, the passenger air bag is enabled and could inflate for certain types of collision. When the switch is turned to the OFF position, the passenger air bag is disabled and will not inflate. A passenger air bag OFF indicator on the instrument panel lights up when the passenger air bag is switched OFF. The driver air bag always remains enabled and is not affected by the passenger air bag deactivation switch.

#### **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 AIR BAG".
- 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.
- The vehicle may be equipped with a passenger air bag deactivation switch which can be operated by the customer. When the passenger air bag is switched OFF, the passenger air bag is disabled and will not inflate. When the passenger air bag is switched ON, the passenger air bag is enabled and could inflate for certain types of collision. After SRS maintenance or repair, make sure the passenger air bag deactivation switch is in the same position (ON or OFF) as when the vehicle arrived for service.

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

#### **WARNING:**

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.

#### Precaution Necessary for Steering Wheel Rotation after Battery Disconnect

INFOID:000000006696554

#### **NOTE:**

- Before removing and installing any control units, first turn the ignition switch to the LOCK position, then disconnect both battery cables.
- After finishing work, confirm that all control unit connectors are connected properly, then re-connect both battery cables.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If a DTC is detected, perform trouble diagnosis according to self-diagnosis results.

For vehicle with steering lock unit, if the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

If turning the steering wheel is required with the battery disconnected or discharged, follow the operation procedure below before starting the repair operation.

# PRECAUTIONS

< PRECAUTION >

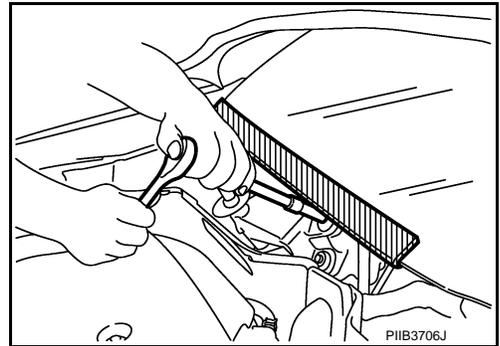
## OPERATION PROCEDURE

1. Connect both battery cables.  
**NOTE:**  
Supply power using jumper cables if battery is discharged.
2. Turn the ignition switch to ACC position.  
(At this time, the steering lock will be released.)
3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
4. Perform the necessary repair operation.
5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the ignition switch is turned to LOCK position.)
6. Perform self-diagnosis check of all control units using CONSULT-III.

## Precaution for Procedure without Cowl Top Cover

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



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# COMPONENT PARTS

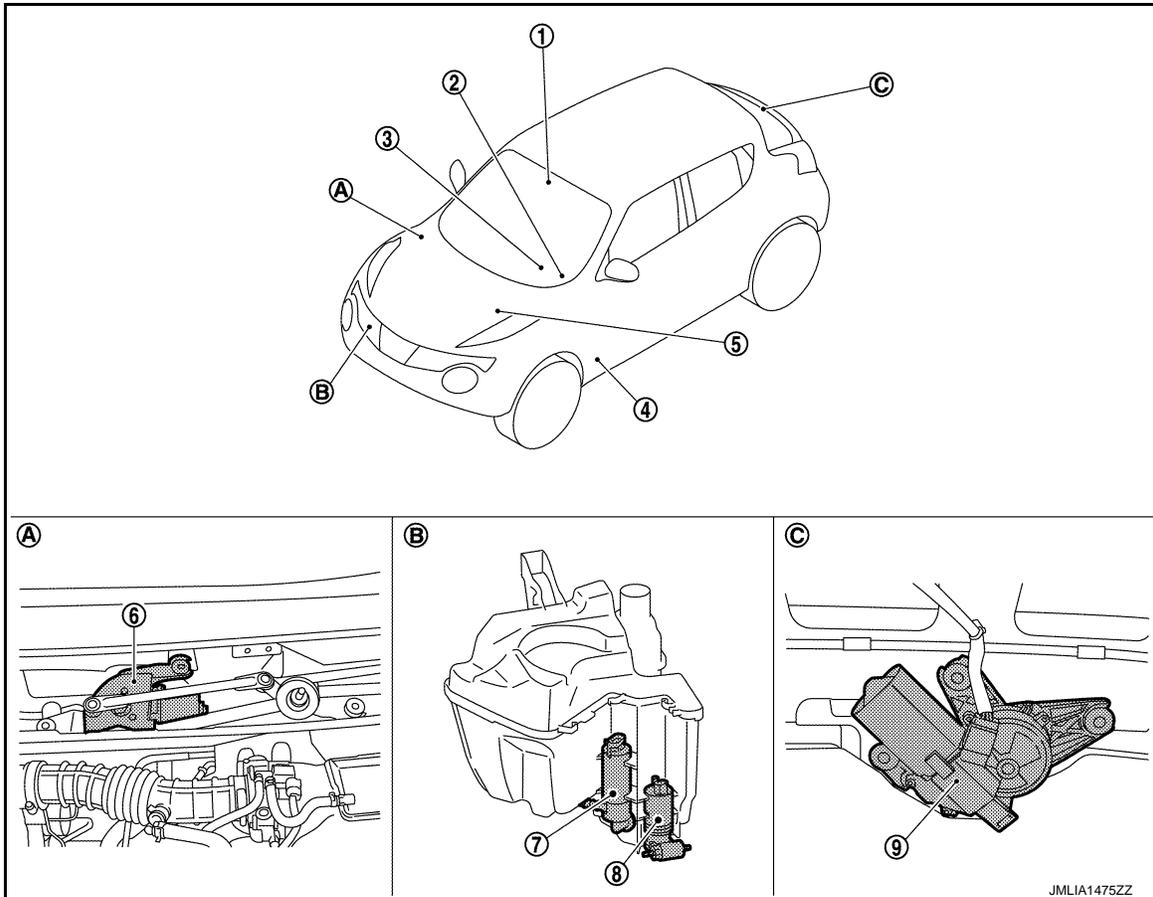
< SYSTEM DESCRIPTION >

## SYSTEM DESCRIPTION

### COMPONENT PARTS

#### Component Parts Location

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- |  |   |                                    |
|--|---|------------------------------------|
| 1. Light & rain sensor*1   | 2. Combination switch   | 3. Combination meter               |
| 4. BCM<br>Refer to <a href="#">BCS-6. "BODY CONTROL SYSTEM : Component Parts Location"</a> . | 5. IPDM E/R<br>Refer to <a href="#">PCS-5. "Component Parts Location"</a> (with Intelligent Key system) or <a href="#">PCS-37. "Component Parts Location"</a> (without Intelligent Key system). | 6. Front wiper motor               |
| 7. Headlamp washer pump*2  | 8. Washer pump  | 9. Rear wiper motor                |
| A. Cowl top, right side of engine room   | B. Behind front fender protector (RH)   | C. Back door lower finisher inside |

\*1: With light & rain sensor models

\*2: With cold area models

# COMPONENT PARTS

< SYSTEM DESCRIPTION >

## Component Description

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Part	Description
IPDM E/R	<ul style="list-style-type: none"> <li>Controls the integrated relay according to the request (via CAN communication) from BCM.</li> <li>Performs the auto stop control of the front wiper.</li> </ul>
BCM	<ul style="list-style-type: none"> <li>Judges the each switch status by the combination switch reading function.</li> <li>Requests (via CAN communication) the front wiper relay and the front wiper high/lo relay ON to IPDM E/R.</li> <li>Supplies power to the wiper motor.</li> <li>Performs the auto stop control of the rear wiper.</li> <li>Requests (via CAN communication) the headlamp washer relay ON to IPDM I/R.</li> </ul>
Light & rain sensor*1	Detects water droplets on the windshield with infrared rays, and transmits the light & rain sensor signal to BCM via the light & rain sensor serial link.
Combination switch (Wiper & washer switch)	Refer to <a href="#">BCS-9. "COMBINATION SWITCH READING SYSTEM : System Description"</a> (With Intelligent Key system) or <a href="#">BCS-100. "COMBINATION SWITCH READING SYSTEM : System Description"</a> (Without Intelligent Key system).
Washer switch	Refer to <a href="#">WW-7. "Washer Switch"</a> .
Washer pump	<ul style="list-style-type: none"> <li>Washer fluid is sprayed according to washer switch states.</li> <li>Switching between front washer and rear washer is performed according to the voltage polarity change to washer pump.</li> </ul>
Headlamp washer pump*2	Washer fluid is sprayed according to washer switch states and headlamp switch status.
Front wiper motor	<ul style="list-style-type: none"> <li>IPDM E/R controls front wiper operation.</li> <li>Front wiper auto stop signal is transmitted to IPDM E/R.</li> </ul>
Rear wiper motor	<ul style="list-style-type: none"> <li>BCM controls rear wiper operation.</li> <li>Rear wiper auto stop signal is transmitted to BCM.</li> </ul>
Combination meter	Transmits the vehicle speed signal to BCM via CAN communication.

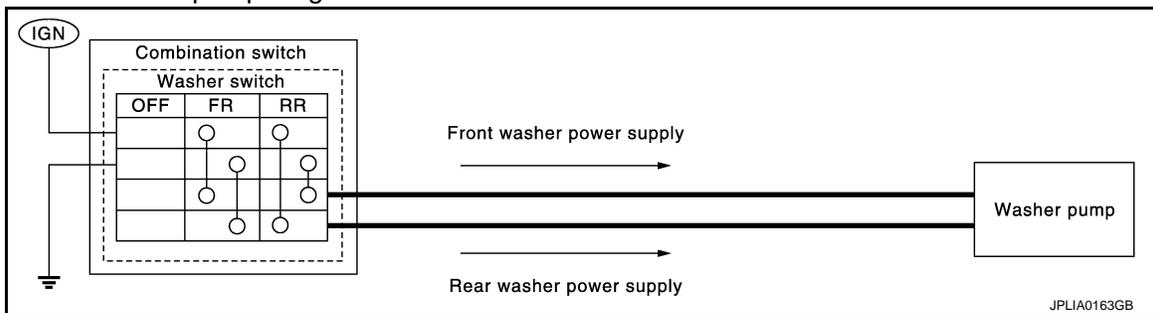
\*1: With light & rain sensor models

\*2: With cold area models

## Washer Switch

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- 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.



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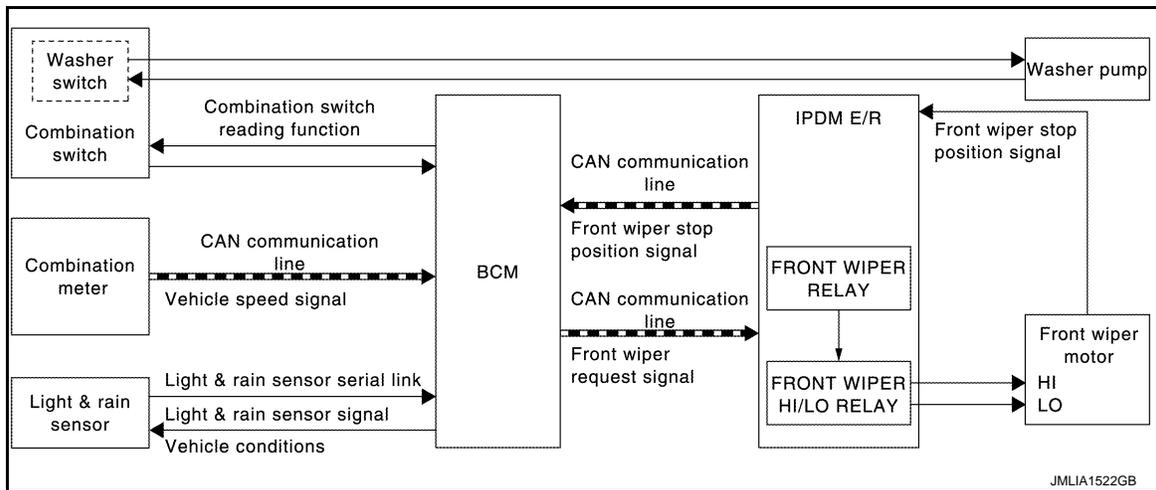
# SYSTEM

< SYSTEM DESCRIPTION >

## SYSTEM

### FRONT WIPER AND WASHER SYSTEM (WITH LIGHT & RAIN SENSOR)

### FRONT WIPER AND WASHER SYSTEM (WITH LIGHT & RAIN SENSOR) : System Diagram



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### FRONT WIPER AND WASHER SYSTEM (WITH LIGHT & RAIN SENSOR) : System Description

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#### 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/lo 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/lo relay according to the front wiper request signal (HI).

# SYSTEM

## < SYSTEM DESCRIPTION >

### 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 AUTO

Rain sensor sensitivity setting

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

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

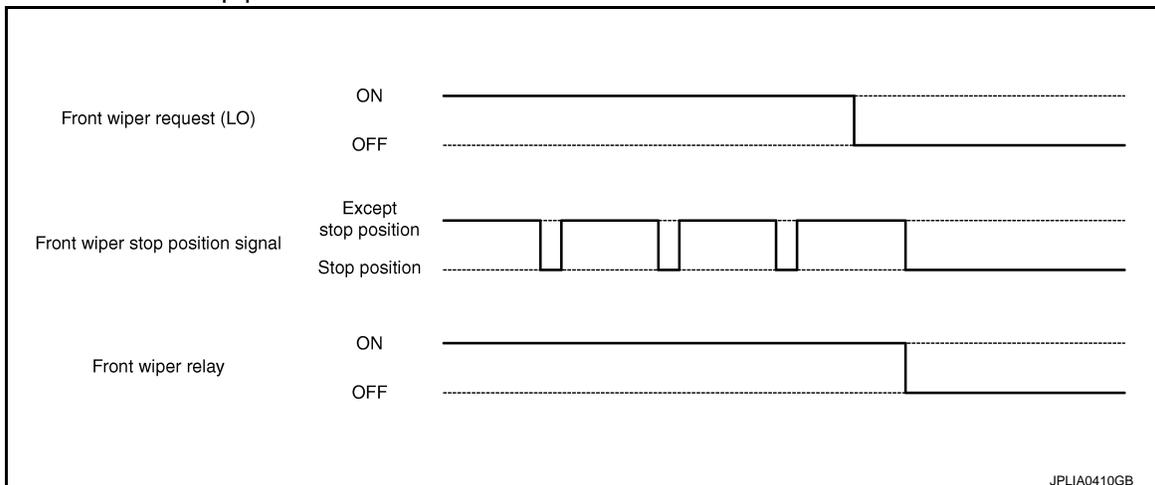
- IPDM E/R turns ON the integrated front wiper relay and front wiper HI relay according to the front wiper request signal (LO or HI).
- Light and rain sensor transmits rain sensor signal to BCM for HI operation immediately after sensing the raindrops increase under the wiper motor LO operating with the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

#### NOTE:

Factory setting of the rain sensor operation is operation linked with rain sensor. Rain sensor operation can be set to operation linked or not linked with rain sensor using CONSULT-III. Refer to [WW-19. "WIPER : CONSULT-III Function - WIPER"](#) (With Intelligent Key system) or [WW-23. "WIPER : CONSULT-III Function \(BCM - WIPER\)"](#) (Without Intelligent Key system).

### 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

# SYSTEM

## < SYSTEM DESCRIPTION >

- 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 SERVICE POSITION OPERATION

- When front wiper switch is contentiously operated for approximately 1 second, front wiper operates at Lo, stops, and stays in lock back status.

Operation conditions of front wiper service position function

- Turn ignition switch OFF (within 1 minutes)
- Front wiper switch ON (1 second or more)
- Shift position N or P
- Front wiper operates at LO and stops, when IPDM E/R detects front wiper request signal from BCM via CAN communication for 1 second, while front wiper position signal is detected at stop position.
- Front wiper service position function can be released when combination switch is turned to the ON position within 1 minutes after ignition switch turned to the OFF position. Front wiper service position function can be released when combination switch (either position of INT, LO, HI, MIST, or WASHER) is turned to the ON position 1 minutes or more after ignition switch is turned to the OFF position.

### FRONT WIPER AND WASHER SYSTEM (WITH LIGHT & RAIN SENSOR) : Fail-safe

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#### IPDM E/R

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 BCM

Control part	Fail-safe operation
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 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 AUTO mode and the front wiper motor is operating.</li> </ul>

IPDM E/R detects front wiper stop position by a front wiper stop position signal.

When a front wiper stop position signal is in the conditions listed below, IPDM E/R stops power supply to wiper after repeating a front wiper 10 seconds activation and 20 seconds stop five times.

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

#### NOTE:

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

#### BCM

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

Fail-safe Control

- Front wiper control

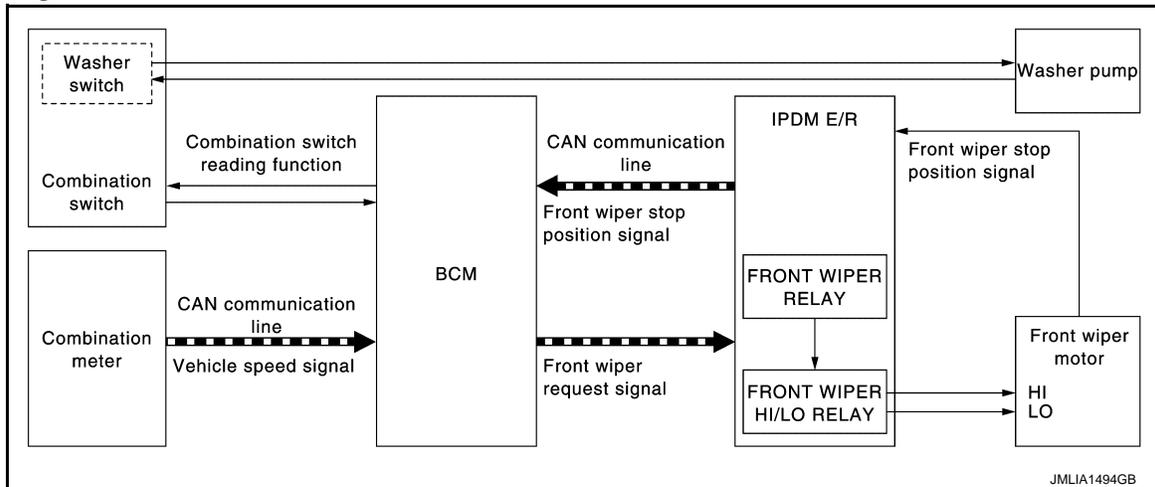
# SYSTEM

## < SYSTEM DESCRIPTION >

- Front wiper switch AUTO and sensing rain drop: The condition just before the activation of fail-safe is maintained until the front wiper switch is turned OFF.
- Front wiper switch AUTO and not sensing rain drop: Front wiper is LO operation until the front wiper switch is turned off.

## FRONT WIPER AND WASHER SYSTEM (WITHOUT LIGHT & RAIN SENSOR)

### FRONT WIPER AND WASHER SYSTEM (WITHOUT LIGHT & RAIN SENSOR) : System Diagram



### FRONT WIPER AND WASHER SYSTEM (WITHOUT LIGHT & RAIN SENSOR) : System Description

INFOID:000000006709719

#### 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

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## < SYSTEM DESCRIPTION >

- 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)

- 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

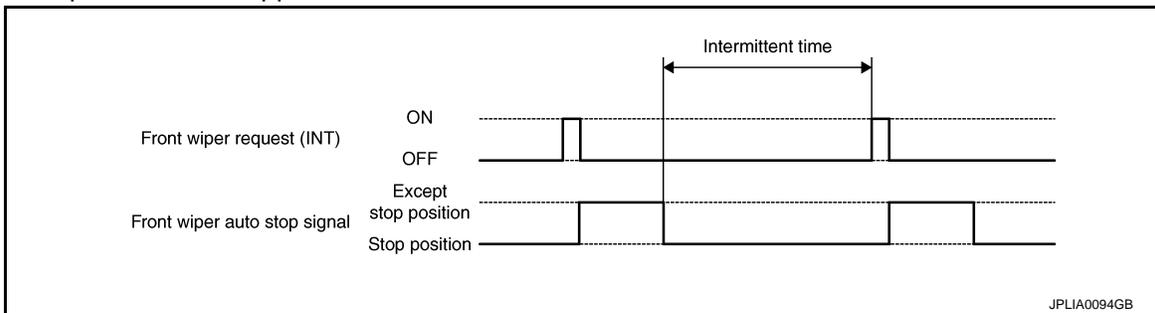
- Ignition switch ON
- Front wiper switch INT

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 and less than 35 km/h (21.7 MPH)	35 km/h (21.7 MPH) or more and 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.



### NOTE:

Factory setting of the front wiper intermittent operation is operation linked with vehicle speed. Front wiper intermittent operation can be set to operation linked or not linked with vehicle speed using CONSULT-III. Refer to [WW-19, "WIPER : CONSULT-III Function - WIPER"](#) (With Intelligent Key system) or [WW-23, "WIPER : CONSULT-III Function \(BCM - WIPER\)"](#) (Without Intelligent Key system).

Front wiper intermittent operation with vehicle speed

- BCM calculates the intermittent operation delay interval from the following
- Vehicle speed signal
- Wiper intermittent dial position

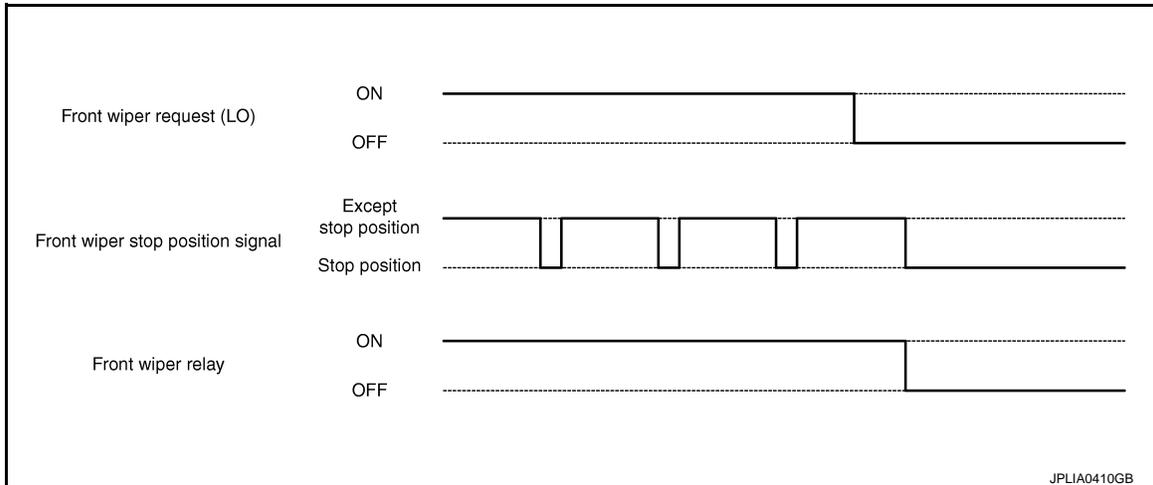
### FRONT WIPER AUTO STOP OPERATION

- 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).

# SYSTEM

## < SYSTEM DESCRIPTION >

- 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 SERVICE POSITION OPERATION

- When front wiper switch is contentiously operated for approximately 1 second, front wiper operates at Lo, stops, and stays in lock back status.

#### Operation conditions of front wiper service position function

- Turn ignition switch OFF (within 1 minutes)
- Front wiper switch ON (1 second or more)
- Shift position N or P
- Front wiper operates at LO and stops, when IPDM E/R detects front wiper request signal from BCM via CAN communication for 1 second, while front wiper position signal is detected at stop position.
- Front wiper service position function can be released when combination switch is turned to the ON position within 1 minutes after ignition switch turned to the OFF position. Front wiper service position function can be released when combination switch (either position of INT, LO, HI, MIST, or WASHER) is turned to the ON position 1 minutes or more after ignition switch is turned to the OFF position.

### FRONT WIPER AND WASHER SYSTEM (WITHOUT LIGHT & RAIN SENSOR) : Fail-safe

INFOID:000000006713610

#### IPDM E/R

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 BCM

# SYSTEM

## < SYSTEM DESCRIPTION >

Control part	Fail-safe operation
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 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 AUTO mode and the front wiper motor is operating.</li> </ul>

IPDM E/R detects front wiper stop position by a front wiper stop position signal.  
 When a front wiper stop position signal is in the conditions listed below, IPDM E/R stops power supply to wiper after repeating a front wiper 10 seconds activation and 20 seconds stop five times.

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

### NOTE:

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

### BCM

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

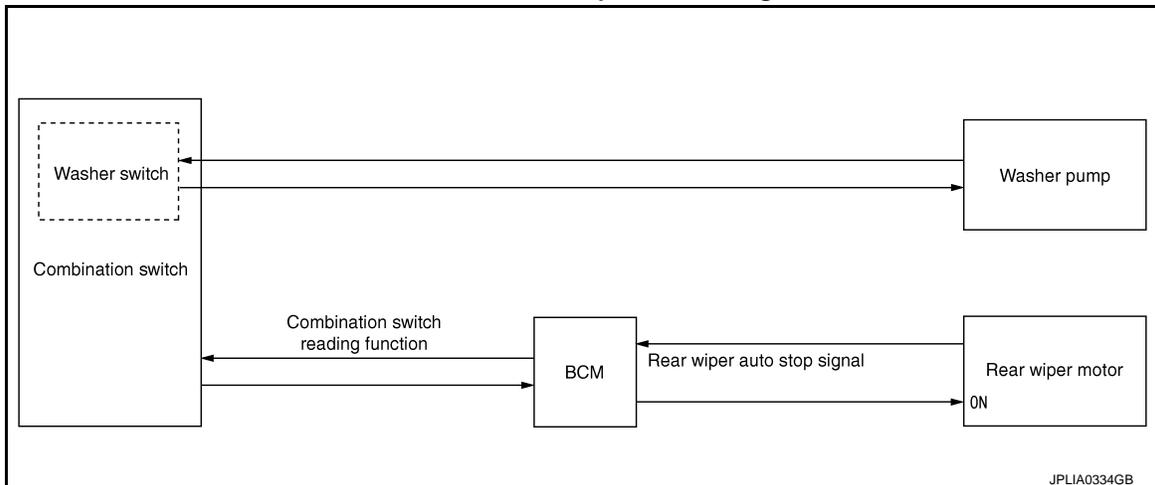
#### Fail-safe Control

- Front wiper control
  - Front wiper switch AUTO and sensing rain drop: The condition just before the activation of fail-safe is maintained until the front wiper switch is turned OFF.
  - Front wiper switch AUTO and not sensing rain drop: Front wiper is LO operation until the front wiper switch is turned off.

## REAR WIPER AND WASHER SYSTEM

### REAR WIPER AND WASHER SYSTEM : System Diagram

INFOID:000000006501834



JPLIA0334GB

### REAR WIPER AND WASHER SYSTEM : System Description

INFOID:000000006501835

#### OUTLINE

The rear wiper is controlled by each function of BCM.

#### Control by BCM

- Combination switch reading function
- Rear wiper control function

# SYSTEM

## < SYSTEM DESCRIPTION >

### 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

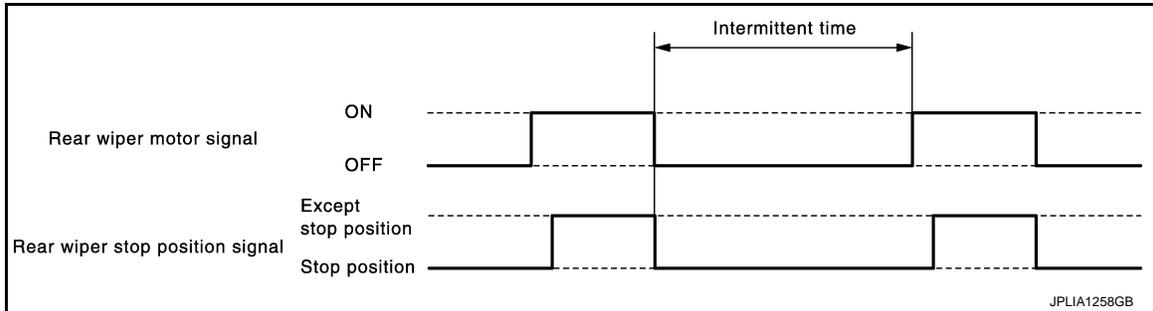
- Ignition switch ON
- Rear wiper switch ON

### REAR WIPER INT OPERATION

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

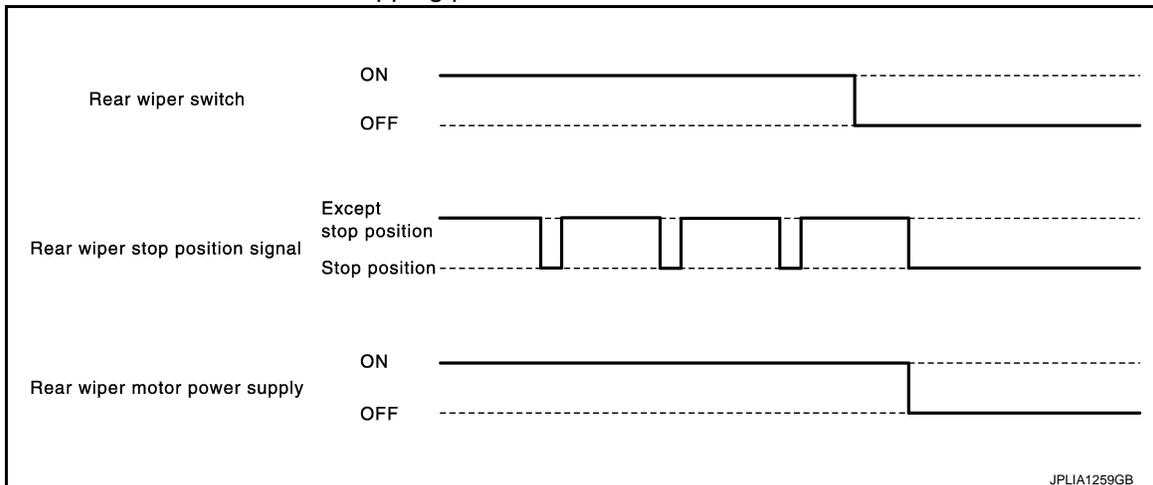
Rear wiper INT operating condition

- 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.
- BCM reads a rear wiper stop position 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)

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WW

# SYSTEM

## < SYSTEM DESCRIPTION >

- The washer pump is grounded through the combination switch with the rear washer switch ON.

## REAR WIPER AND WASHER SYSTEM : Fail-safe

INFOID:000000006501836

### REAR WIPER MOTOR PROTECTION

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

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

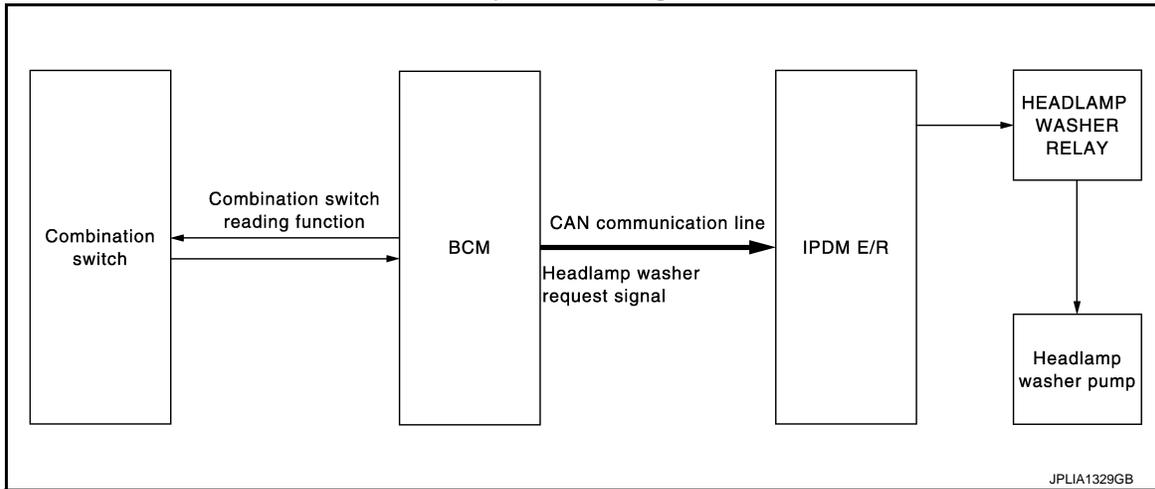
Condition of cancellation

1. More than 1 minute is passed after the rear wiper stop.
2. Turn rear wiper switch OFF.
3. Operate the rear wiper switch or rear washer switch.

## HEAD LAMP WASHER SYSTEM

### HEAD LAMP WASHER SYSTEM : System Diagram

INFOID:000000006709927



### HEAD LAMP WASHER SYSTEM : System Description

INFOID:000000006709928

#### OUTLINE

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

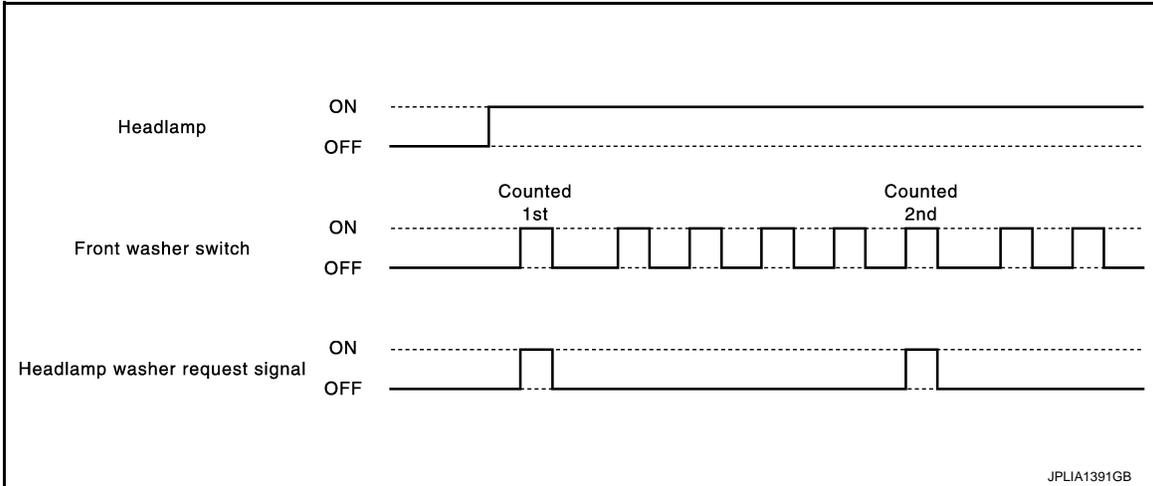
#### HEADLAMP WASHER OPERATION

- BCM detects the combination switch condition by the combination switch reading function.

# SYSTEM

## < SYSTEM DESCRIPTION >

- 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 front washer switch (The first time)

- Ignition switch ON
- Headlamps ON
- Front washer switch ON at first time

Operation is front washer switch (From the second time)

- Ignition switch ON
- Headlamps ON
- Front washer switch ON at fifth 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.

## HEAD LAMP WASHER SYSTEM : Fail-safe

INFOID:000000006709935

### IPDM E/R

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 BCM

Control part	Fail-safe operation
Headlamp washer relay	Headlamp washer relay OFF

WW

# DIAGNOSIS SYSTEM (BCM) (WITH INTELLIGENT KEY SYSTEM)

< SYSTEM DESCRIPTION >

## DIAGNOSIS SYSTEM (BCM) (WITH INTELLIGENT KEY SYSTEM) COMMON ITEM

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

INFOID:000000006706367

### APPLICATION ITEM

CONSULT-III performs the following functions via CAN communication with BCM.

Diagnosis mode	Function Description
Work Support	Changes the setting for each system function.
Self Diagnostic Result	Displays the diagnosis results judged by BCM.
CAN Diag Support Monitor	Monitors the reception status of CAN communication viewed from BCM. Refer to CONSULT-III operation manual.
Data Monitor	The BCM input/output signals are displayed.
Active Test	The signals used to activate each device are forcibly supplied from BCM.
Ecu Identification	The BCM part number is displayed.
Configuration	<ul style="list-style-type: none"> <li>Read and save the vehicle specification.</li> <li>Write the vehicle specification when replacing BCM.</li> </ul>

### SYSTEM APPLICATION

BCM can perform the following functions for each system.

#### NOTE:

It can perform the diagnosis modes except the following for all sub system selection items.

×: Applicable item

System	Sub system selection item	Diagnosis mode		
		Work Support	Data Monitor	Active Test
Door lock	DOOR LOCK	×	×	×
Rear window defogger	REAR DEFOGGER		×	×
Warning chime	BUZZER		×	×
Interior room lamp timer	INT LAMP	×	×	×
Exterior lamp	HEAD LAMP	×	×	×
Wiper and washer	WIPER	×	×	×
Turn signal and hazard warning lamps	FLASHER	×	×	×
<ul style="list-style-type: none"> <li>Automatic A/C</li> <li>Manual A/C</li> </ul>	AIR CONDITONER		×	×*2
<ul style="list-style-type: none"> <li>Intelligent Key system</li> <li>Engine start system</li> </ul>	INTELLIGENT KEY	×	×	×
Combination switch	COMB SW		×	
Body control system	BCM	×		
NVIS - NATS	IMMU	×	×	×
Interior room lamp battery saver	BATTERY SAVER	×	×	×
Back door open	TRUNK		×	
Theft warning alarm	THEFT ALM	×	×	×
—	RETAINED PWR*1		×	
Signal buffer system	SIGNAL BUFFER		×	×

#### NOTE:

- \*1: This item is displayed, but not used.
- \*2: For models with automatic A/C, this diagnosis mode is not used.

### FREEZE FRAME DATA (FFD)

# DIAGNOSIS SYSTEM (BCM) (WITH INTELLIGENT KEY SYSTEM)

## < SYSTEM DESCRIPTION >

The BCM records the following vehicle condition at the time a particular DTC is detected, and displays on CONSULT-III.

CONSULT screen item	Indication/Unit	Description	
Vehicle Speed	km/h	Vehicle speed of the moment a particular DTC is detected	
Odo/Trip Meter	km	Total mileage (Odometer value) of the moment a particular DTC is detected	
Vehicle Condition	SLEEP>LOCK	Power position status of the moment a particular DTC is detected	While turning BCM status from low power consumption mode to normal mode (Power supply position is "LOCK")
	SLEEP>OFF		While turning BCM status from low power consumption mode to normal mode (Power supply position is "OFF".)
	LOCK>ACC		While turning power supply position from "LOCK" to "ACC"
	ACC>ON		While turning power supply position from "ACC" to "IGN"
	RUN>ACC		While turning power supply position from "RUN" to "ACC" (Vehicle is stopping and selector lever is except P position.)
	CRANK>RUN		While turning power supply position from "CRANKING" to "RUN" (From cranking up the engine to run it)
	RUN>URGENT		While turning power supply position from "RUN" to "ACC" (Emergency stop operation)
	ACC>OFF		While turning power supply position from "ACC" to "OFF"
	OFF>LOCK		While turning power supply position from "OFF" to "LOCK"
	OFF>ACC		While turning power supply position from "OFF" to "ACC"
	ON>CRANK		While turning power supply position from "IGN" to "CRANKING"
	OFF>SLEEP		While turning BCM status from normal mode (Power supply position is "OFF".) to low power consumption mode
	LOCK>SLEEP		While turning BCM status from normal mode (Power supply position is "LOCK".) to low power consumption mode
	LOCK		Power supply position is "LOCK" (Ignition switch OFF with steering is locked.)
	OFF		Power supply position is "OFF" (Ignition switch OFF with steering is unlocked.)
	ACC		Power supply position is "ACC" (Ignition switch ACC)
	ON		Power supply position is "IGN" (Ignition switch ON with engine stopped)
ENGINE RUN	Power supply position is "RUN" (Ignition switch ON with engine running)		
CRANKING	Power supply position is "CRANKING" (At engine cranking)		
IGN Counter	0 - 39	<p>The number of times that ignition switch is turned ON after DTC is detected</p> <ul style="list-style-type: none"> <li>• The number is 0 when a malfunction is detected now.</li> <li>• The number increases like 1 → 2 → 3...38 → 39 after returning to the normal condition whenever ignition switch OFF → ON.</li> <li>• The number is fixed to 39 until the self-diagnosis results are erased if it is over 39.</li> </ul>	

## WIPER

### WIPER : CONSULT-III Function - WIPER

INFOID:000000006479423

## WORK SUPPORT

# DIAGNOSIS SYSTEM (BCM) (WITH INTELLIGENT KEY SYSTEM)

## < SYSTEM DESCRIPTION >

Service item	Setting item	Description	
WIPER SPEED SETTING*1	On*3	With vehicle speed (Front wiper intermittent time linked with the vehicle speed and wiper intermittent dial position)	The setting of front wiper INT operation can be changed
	Off	Without vehicle speed (Front wiper intermittent time linked with the wiper intermittent dial position)	
RAIN SEN WIP FUNC SET*2	On*3	With light & rain sensor (Front wiper intermittent time linked with the light & rain sensor, vehicle speed, and AUTO dial position)	The setting of front wiper AUTO operation can be changed
	Off	Without light & rain sensor (Front wiper intermittent time linked with the vehicle speed and AUTO dial position)	

\*1: The item is indicated, but not operated on model with rain sensor

\*2: The item is indicated, but not operated on model without rain sensor

\*3: Factory setting

## DATA MONITOR

Monitor Item [Unit]	Description
PUSH SW [Off/On]	The switch status input from push-button ignition switch
VEH SPEED 1 [km/h]	Displays the value of the vehicle speed signal received from combination meter via CAN communication
FR WIPER HI [Off/On]	Status of each switch judged by BCM using the combination switch reading function
FR WIPER LOW [Off/On]	
FR WASHER SW [Off/On]	
FR WIPER INT [Off/On]	
FR WIPER STOP [Off/On]	Displays the status of the front wiper stop position signal received from IPDM E/R via CAN communication.
INT VOLUME [1 - 7]	Status of each switch judged by BCM using the combination switch reading function
RR WIPER ON [Off/On]	Status of each switch judged by BCM using 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
H/L WASH SW [Off/On]	<b>NOTE:</b> The item is indicated, but not monitored
RAIN SENSOR [OFF/LOW/HIGH/SPLASH/NG]	Request signal from light & rain sensor detected by BCM is displayed

## ACTIVE TEST

# DIAGNOSIS SYSTEM (BCM) (WITH INTELLIGENT KEY SYSTEM)

## < SYSTEM DESCRIPTION >

Test item	Operation	Description
FR WIPER	Hi	Transmits the front wiper request signal (HI) to IPDM E/R via CAN communication to operate the front wiper HI operation.
	Lo	Transmits the front wiper request signal (LO) to IPDM E/R via CAN communication to operate the front wiper LO operation.
	INT	Transmits the front wiper request signal (INT) to IPDM E/R via CAN communication to operate the front wiper INT operation.
	Off	Stops transmitting the front wiper request signal to stop the front wiper operation.
RR WIPER	On	Output the voltage to operate the rear wiper motor.
	Off	Stops the voltage to stop the rear wiper motor.
HEADLAMP WASH-ER	On	Transmits the headlamp washer request signal to IPDM E/R via CAN communication to operate the headlamp washer operation.

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**WW**

M

N

O

P

## DIAGNOSIS SYSTEM (BCM) (WITHOUT INTELLIGENT KEY SYSTEM)

< SYSTEM DESCRIPTION >

### DIAGNOSIS SYSTEM (BCM) (WITHOUT INTELLIGENT KEY SYSTEM) COMMON ITEM

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

INFOID:000000006706361

#### APPLICATION ITEM

CONSULT-III performs the following functions via CAN communication with BCM.

Diagnosis mode	Function Description
Work Support	Changes the setting for each system function.
Self Diagnostic Result	Displays the diagnosis results judged by BCM.
CAN Diag Support Monitor	Monitors the reception status of CAN communication viewed from BCM. Refer to CONSULT-III operation manual.
Data Monitor	The BCM input/output signals are displayed.
Active Test	The signals used to activate each device are forcibly supplied from BCM.
Ecu Identification	The BCM part number is displayed.
Configuration	<ul style="list-style-type: none"> <li>• Read and save the vehicle specification.</li> <li>• Write the vehicle specification when replacing BCM.</li> </ul>

#### 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.

x: Applicable item

System	Sub system selection item	Diagnosis mode		
		Work Support	Data Monitor	Active Test
Door lock	DOOR LOCK	x	x	x
Rear window defogger	REAR DEFOGGER		x	x
Warning chime	BUZZER		x	x
Interior room lamp control	INT LAMP	x	x	x
Remote keyless entry system	MULTI REMOTE ENT	x	x	x
Exterior lamp	HEAD LAMP	x	x	x
Wiper and washer	WIPER	x	x	x
Turn signal and hazard warning lamps	FLASHER		x	x
<ul style="list-style-type: none"> <li>• Automatic A/C</li> <li>• Manual A/C</li> <li>• Manual heater</li> </ul>	AIR CONDITONER		x	x*2
Combination switch	COMB SW		x	
Body control system	BCM	x		
NATS	IMMU	x		x
Interior room lamp battery saver	BATTERY SAVER	x	x	x
Back door open	TRUNK		x	
Vehicle security system	THEFT ALM	x	x	x
—	RETAINED PWR*1		x	x
Signal buffer system	SIGNAL BUFFER		x	x
—	PANIC ALARM*1			x

• \*1: This item is displayed, but is not used.

• \*2: For models with automatic A/C, this mode is not used.

#### WIPER

# DIAGNOSIS SYSTEM (BCM) (WITHOUT INTELLIGENT KEY SYSTEM)

< SYSTEM DESCRIPTION >

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

INFOID:000000006706364

### WORK SUPPORT

Service item	Setting item	Description
WIPER SPEED SETTING*1	On*3	Linked with vehicle speed (Front wiper intermittent time linked with the vehicle speed and wiper intermittent dial position)
	Off	Not linked with vehicle speed (Front wiper intermittent time linked with the wiper intermittent dial position)
RAIN SEN WIP FUNC SET*2	On*3	With rain sensor (Front wiper intermittent time linked with the rain sensor, vehicle speed, and AUTO dial position)
	Off	Without rain sensor (Front wiper intermittent time linked with the vehicle speed and AUTO dial position)

\*1: The item is indicated, but not operated on model with rain sensor

\*2: The item is indicated, but not operated on model without rain sensor

\*3: Factory setting

### DATA MONITOR

Monitor Item [Unit]	Description
IGN ON SW [On/Off]	Ignition switch ON status judged from ignition power supply.
IGN SW CAN [On/Off]	Ignition switch ON status received from IPDM E/R with CAN communication.
FR WIPER HI [On/Off]	Each switch status that BCM judges from the combination switch reading function.
FR WIPER LOW [On/Off]	
FR WIPER INT [On/Off]	
FR WASHER SW [On/Off]	
INT VOLUME [1 - 7]	Each switch status that BCM judges from the combination switch reading function.
FR WIPER STOP [On/Off]	Front wiper motor (stop position) status received from IPDM E/R with CAN communication.
VEHICLE SPEED [km/h]	The value of the vehicle speed signal received from combination meter with CAN communication.
RR WIPER ON [On/Off]	Each switch status that BCM judges from the combination switch reading function.
RR WIPER INT [On/Off]	
RR WASHER SW [On/Off]	
RR WIPER STOP [On/Off]	Rear wiper motor (stop position) status input from the rear wiper motor.
REVERSE SW CAN [On/Off]	Reverse position status as judged from TCM with CAN communication.
RAIN SENSOR* [OFF/LOW/HIGH/SPLASH/NG]	Request signal from rain sensor detected by BCM is displayed

## DIAGNOSIS SYSTEM (BCM) (WITHOUT INTELLIGENT KEY SYSTEM)

### < SYSTEM DESCRIPTION >

\*: The item is displayed but is not monitored on model without rain sensor

### 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.
RR WIPER	On	Outputs the voltage to operate the rear wiper motor.
	Off	Stops the voltage to stop.
HEADLAMP WASH-ER	On	Transmits the headlamp washer request signal to IPDM E/R via CAN communication to operate the headlamp washer operation.

# DIAGNOSIS SYSTEM (IPDM E/R)

< SYSTEM DESCRIPTION >

## DIAGNOSIS SYSTEM (IPDM E/R)

### WITH INTELLIGENT KEY

#### WITH INTELLIGENT KEY : Diagnosis Description

INFOID:000000006706370

#### 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 (only for K9K engine models)
- Rear window defogger
- Front wiper motor
- Parking lamp
- License plate lamp
- Tail lamp
- Front fog lamp
- Headlamp (LO, HI)
- A/C compressor (magnet clutch)
- Cooling fan

##### Operation Procedure

##### CAUTION:

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

1. Turn the ignition switch OFF.
2. Turn the ignition switch ON, and within 20 seconds, press the driver door switch 10 times. Then turn the ignition switch OFF.

##### CAUTION:

**Close passenger door.**

3. Turn the ignition switch ON within 10 seconds. After that the horn sounds once and the auto active test starts.

##### CAUTION:

**Engine starts when ignition switch is turned ON while brake pedal is depressed.**

4. Oil pressure warning lamp starts blinking when the auto active test starts\*. (only for K9K engine models)  
\*: Except for K9K engine models, oil pressure warning lamp turn ON when auto active test start.
5. After a series of the following operations is repeated 3 times, auto active test is completed.

##### NOTE:

- When auto active test mode has to be cancelled halfway through test, turn the ignition switch OFF.
- When auto active test is not activated, door switch may be the cause. Check door switch. Refer to [DLK-87. "Component Function Check"](#) (with super lock) or [DLK-258. "Component Function Check"](#) (without super lock).

##### Inspection in Auto Active Test Mode

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

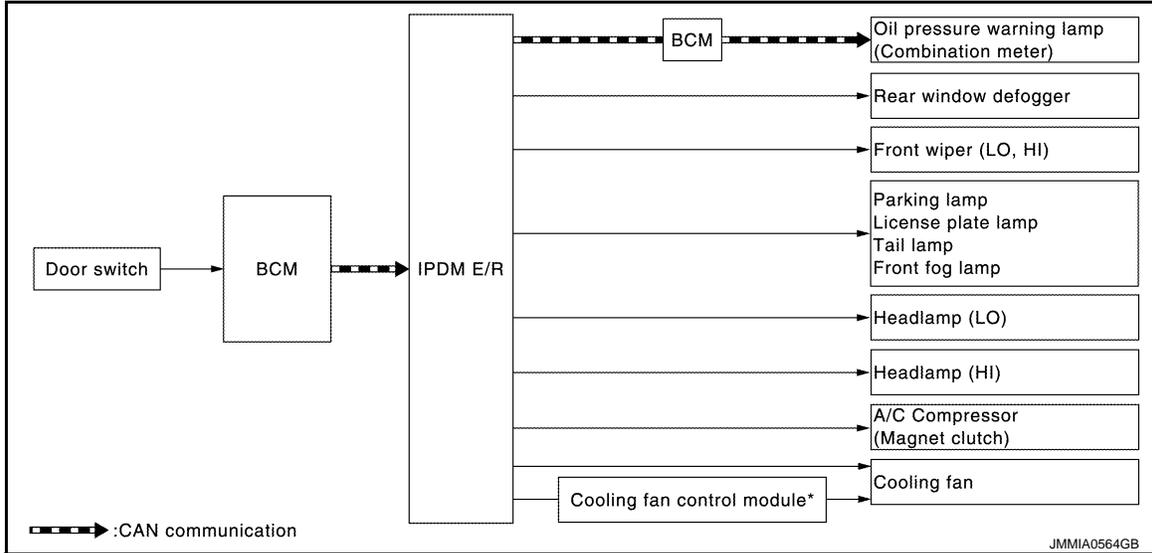
Operation sequence	Inspection location	Operation
1	Oil pressure warning lamp	Blinks continuously during operation of auto active test <b>NOTE:</b> Except for K9K engine models, turn ON continuously during operation of auto active test.
2	Rear window defogger	10 seconds
3	Front wiper motor	LO for 5 seconds → HI for 5 seconds
4	<ul style="list-style-type: none"><li>• Parking lamp</li><li>• License plate lamp</li><li>• Tail lamp</li><li>• Front fog lamp</li></ul>	10 seconds

# DIAGNOSIS SYSTEM (IPDM E/R)

## < SYSTEM DESCRIPTION >

Operation sequence	Inspection location	Operation
5	Headlamp	LO for 10 seconds → HI ON ⇔ OFF 5 times
6	A/C compressor (magnet clutch)	ON ⇔ OFF 5 times
7	Cooling fan	<ul style="list-style-type: none"> <li>• LO for 5 seconds → HI for 5 seconds (Except for MR16DDT models)</li> <li>• 50% duty for 5 seconds → 100% duty for 5 seconds (For MR16DDT models)</li> </ul>

### Concept of auto active test



\*: Only for models with MR16DDT engine

- 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 lamp</li> <li>• License plate lamp</li> <li>• Tail lamp</li> <li>• Front fog lamp</li> <li>• Headlamp (HI, LO)</li> <li>• Front wiper motor</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>
A/C compressor does not operate	Perform auto active test. Does the magnet clutch operate?	YES	<ul style="list-style-type: none"> <li>• A/C amp. signal input circuit</li> <li>• CAN communication signal between A/C amp. 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>

# DIAGNOSIS SYSTEM (IPDM E/R)

## < SYSTEM DESCRIPTION >

Symptom	Inspection contents		Possible cause
Oil pressure warning lamp does not operate (only for K9K engine models)	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>• Harness or connector between IPDM E/R and cooling fan motor</li> <li>• Harness or connector between IPDM E/R and cooling fan control module. (Only for models with MR16DDT engine)</li> <li>• Harness or connector between cooling fan control module and cooling fan motor (Only for models with MR16DDT engine)</li> <li>• Cooling fan motor</li> <li>• Cooling fan control module (Only for models with MR16DDT engine)</li> <li>• IPDM E/R</li> </ul>

## WITH INTELLIGENT KEY : CONSULT-III Function (IPDM E/R)

INFOID:000000006706371

### APPLICATION ITEM

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

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

### SELF DIAGNOSTIC RESULT

Refer to [PCS-25, "DTC Index"](#).

### DATA MONITOR

Monitor item

## DIAGNOSIS SYSTEM (IPDM E/R)

### < SYSTEM DESCRIPTION >

Monitor Item [Unit]	MAIN SIGNALS	Description
RAD FAN REQ [%]	×	Displays the value of the cooling fan speed request signal received from ECM via CAN communication. <b>NOTE:</b> This item is displayed only for vehicle with MR16DDT engine.
MOTOR FAN REQ [1/2/3/4]	×	Displays the value of the cooling fan speed request signal received from ECM via CAN communication. <b>NOTE:</b> This item is displayed only for vehicle without MR16DDT engine.
AC COMP REQ [Off/On]	×	Displays the status of the A/C compressor request signal received from ECM via CAN communication.
TAIL&CLR REQ [Off/On]	×	Displays the status of the position light request signal received from BCM via CAN communication.
HL LO REQ [Off/On]	×	Displays the status of the low beam request signal received from BCM via CAN communication.
HL HI REQ [Off/On]	×	Displays the status of the high beam request signal received from BCM via CAN communication.
FR FOG REQ [Off/On]	×	Displays the status of the front fog light request signal received from BCM via CAN communication.
FR WIP REQ [Stop/1LOW/Low/Hi]	×	Displays the status of the front wiper request signal received from BCM via CAN communication.
WIP AUTO STOP [STOP P/ACT P]	×	Displays the status of the front wiper auto stop signal judged by IPDM E/R.
WIP PROT [Off/BLOCK]	×	Displays the status of the front wiper fail-safe operation judged by IPDM E/R.
IGN RLY1 -REQ [Off/On]		Displays the status of the ignition switch ON signal received from BCM via CAN communication.
IGN RLY [Off/On]	×	Displays the status of the ignition relay judged by IPDM E/R.
PUSH SW [Off/On]		Displays the status of the push-button ignition switch judged by IPDM E/R.
INTER/NP SW [Off/On]		Displays the status of the ignition power supply (M/T models) or shift position (CVT models) judged by IPDM E/R.
ST RLY CONT [Off/On]		Displays the status of the starter relay status signal received from BCM via CAN communication.
IHBT RLY -REQ [Off/On]		Displays the status of the starter control relay signal received from BCM via CAN communication.
ST/INH RLY [Off/ ST ON/INH ON/UNKWN]		Displays the status of the starter relay and starter control relay judged by IPDM E/R.
DETENT SW [Off/On]		Displays the status of the CVT shift selector (detention switch) judged by IPDM E/R.
S/L RLY -REQ [Off/On]		Displays the status of the steering lock relay signal received from BCM via CAN communication.
S/L STATE [LOCK/UNLK/UNKWN]		Displays the status of the steering lock judged by IPDM E/R.
DTRL REQ [Off/On]		Displays the status of the daytime running light request signal received from BCM via CAN communication.
OIL P SW [Open/Close]		Displays the status of the oil pressure switch judged by IPDM E/R. <b>NOTE:</b> This item is monitored only K9K engine models.
HOOD SW [Off/On]		Displays the status of the hood switch judged by IPDM E/R.

# DIAGNOSIS SYSTEM (IPDM E/R)

## < SYSTEM DESCRIPTION >

Monitor Item [Unit]	MAIN SIGNALS	Description
HL WASHER REQ [Off/On]		Displays the status of the headlamp washer request signal received from BCM via CAN communication.
THFT HRN REQ [Off/On]		Displays the status of the theft warning horn request signal received from BCM via CAN communication.
HORN CHIRP [Off/On]		<b>NOTE:</b> The item is indicated, but not monitored.

## ACTIVE TEST

### Test item

Test item	Operation	Description	
HORN	On	Operates horn relay for 20 ms.	
REAR DEFOGGER	Off	OFF	
	On	Operates the rear window defogger relay.	
FRONT WIPER	Off	OFF	
	Lo	Operates the front wiper relay.	
	Hi	Operates the front wiper relay and front wiper high relay.	
MOTOR FAN	For MR16DDT engine	1	OFF
		2	Transmits 50% pulse duty signal (PWM signal) to the cooling fan control module.
		3	Transmits 75% pulse duty signal (PWM signal) to the cooling fan control module.
		4	Transmits 100% pulse duty signal (PWM signal) to the cooling fan control module.
	Except for MR16DDT engine	1	OFF
		2	Operates the cooling fan relay (LO operation).
		3	Operates the cooling fan relay (HI operation).
		4	
HEAD LAMP WASHER	On	Operates the headlamp washer relay for 1 second.	
EXTERNAL LAMPS	Off	OFF	
	TAIL	Operates the tail lamp relay.	
	Lo	Operates the headlamp low relay.	
	Hi	Operates the headlamp low relay and ON/OFF the headlamp high relay at 1 second intervals.	
	Fog	Operates the front fog lamp relay.	

## WITHOUT INTELLIGENT KEY

### WITHOUT INTELLIGENT KEY : Diagnosis Description

INFOID:000000006706372

## 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 (only for K9K engine models)
- Rear window defogger
- Front wiper motor
- Parking lamp
- License plate lamp
- Tail lamp
- Front fog lamp
- Headlamp (LO, HI)

## DIAGNOSIS SYSTEM (IPDM E/R)

### < SYSTEM DESCRIPTION >

- A/C compressor (magnet clutch)
- Cooling fan

#### Operation Procedure

#### CAUTION:

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

1. Turn the ignition switch OFF.
2. Turn the ignition switch ON, and within 20 seconds, press the driver door switch 10 times. Then turn the ignition switch OFF.

#### CAUTION:

**Close passenger door.**

3. Turn the ignition switch ON within 10 seconds. After that the horn sounds once and the auto active test starts.

#### CAUTION:

**Engine starts when ignition switch is turned ON while brake pedal is depressed.**

4. Oil pressure warning lamp starts blinking when the auto active test starts\*. (only for K9K engine models)  
\*: Except for K9K engine models, oil pressure warning lamp turn ON when auto active test start.
5. After a series of the following operations is repeated 3 times, auto active test is completed.

#### NOTE:

- When auto active test mode has to be cancelled halfway through test, turn the ignition switch OFF.
- When auto active test is not activated, door switch may be the cause. Check door switch. Refer to [DLK-397, "Component Function Check"](#) (with super lock) or [DLK-522, "Component Function Check"](#) (without super lock).

#### Inspection in Auto Active Test Mode

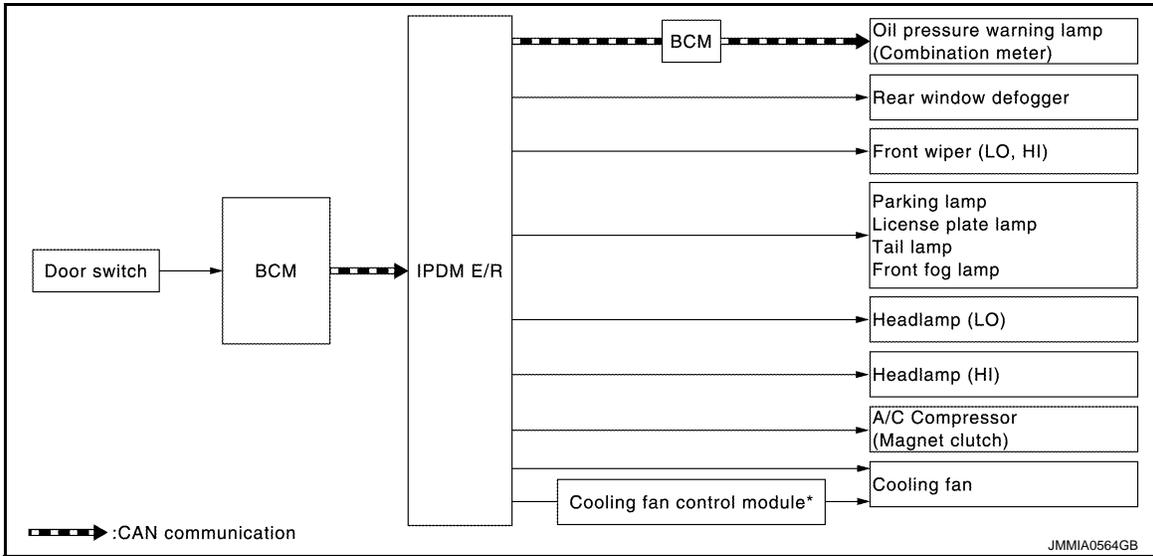
When auto active test mode is actuated, the following operation sequence is repeated 3 times.

Operation sequence	Inspection location	Operation
1	Oil pressure warning lamp	Blinks continuously during operation of auto active test <b>NOTE:</b> Except for K9K engine models, turn ON continuously during operation of auto active test.
2	Rear window defogger	10 seconds
3	Front wiper motor	LO for 5 seconds → HI for 5 seconds
4	<ul style="list-style-type: none"> <li>• Parking lamp</li> <li>• License plate lamp</li> <li>• Tail lamp</li> <li>• Front fog lamp</li> </ul>	10 seconds
5	Headlamp	LO for 10 seconds → HI ON ↔ OFF 5 times
6	A/C compressor (magnet clutch)	ON ↔ OFF 5 times
7	Cooling fan	<ul style="list-style-type: none"> <li>• LO for 5 seconds → HI for 5 seconds (Except for MR16DDT models)</li> <li>• 50% duty for 5 seconds → 100% duty for 5 seconds (For MR16DDT models)</li> </ul>

# DIAGNOSIS SYSTEM (IPDM E/R)

## < SYSTEM DESCRIPTION >

Concept of auto active test



\*: Only for models with MR16DDT engine

- 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 lamp</li> <li>• License plate lamp</li> <li>• Tail lamp</li> <li>• Front fog lamp</li> <li>• Headlamp (HI, LO)</li> <li>• Front wiper motor</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>
A/C compressor does not operate	Perform auto active test. Does the magnet clutch operate?	YES <ul style="list-style-type: none"> <li>• A/C amp. signal input circuit</li> <li>• CAN communication signal between A/C amp. 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>

## DIAGNOSIS SYSTEM (IPDM E/R)

### < SYSTEM DESCRIPTION >

Symptom	Inspection contents	Possible cause	
Oil pressure warning lamp does not operate (only for K9K engine models)	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>• Harness or connector between IPDM E/R and cooling fan motor</li> <li>• Harness or connector between IPDM E/R and cooling fan control module. (Only for model with MR16DDT engine)</li> <li>• Harness or connector between cooling fan control module and cooling fan motor (Only for model with MR16DDT engine)</li> <li>• Cooling fan motor</li> <li>• Cooling fan control module (Only for model with MR16DDT engine)</li> <li>• IPDM E/R</li> </ul>

### WITHOUT INTELLIGENT KEY : CONSULT-III Function (IPDM E/R)

INFOID:000000006706373

#### APPLICATION ITEM

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

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

#### SELF DIAGNOSTIC RESULT

Refer to [PCS-55, "DTC Index"](#).

#### DATA MONITOR

Monitor item

# DIAGNOSIS SYSTEM (IPDM E/R)

## < SYSTEM DESCRIPTION >

Monitor Item [Unit]	MAIN SIG- NALS	Description
RAD FAN REQ [%]	×	Displays the value of the cooling fan speed request signal received from ECM via CAN communication. <b>NOTE:</b> This item is displayed only for vehicle with MR16DDT engine
MOTOR FAN REQ [1/2/3/4]	×	Displays the value of the cooling fan speed request signal received from ECM via CAN communication. <b>NOTE:</b> This item is displayed only for vehicle without MR16DDT engine
AC COMP REQ [Off/On]	×	Displays the status of the A/C compressor request signal received from ECM via CAN communication.
TAIL&CLR REQ [Off/On]	×	Displays the status of the position light request signal received from BCM via CAN communication.
HL LO REQ [Off/On]	×	Displays the status of the low beam request signal received from BCM via CAN communication.
HL HI REQ [Off/On]	×	Displays the status of the high beam request signal received from BCM via CAN communication.
FR FOG REQ [Off/On]	×	Displays the status of the front fog light request signal received from BCM via CAN communication.
FR WIP REQ [Stop/1LOW/Low/Hi]	×	Displays the status of the front wiper request signal received from BCM via CAN communication.
WIP AUTO STOP [STOP P/ACT P]	×	Displays the status of the front wiper auto stop signal judged by IPDM E/R.
WIP PROT [Off/BLOCK]	×	Displays the status of the front wiper fail-safe operation judged by IPDM E/R.
IGN RLY [Off/On]	×	Displays the status of the ignition relay judged by IPDM E/R.
INTER/NP SW [Off/On]		Displays the status of the shift position (CVT models) judged by IPDM E/R.
ST RLY REQ [Off/On]		Displays the status of the starter relay status signal received from BCM via CAN communication.
DTRL REQ [Off/On]		Displays the status of the daytime running light request signal received from BCM via CAN communication.
OIL P SW [Open/Close]		Displays the status of the oil pressure switch judged by IPDM E/R. <b>NOTE:</b> This item is monitored only K9K engine models.
HOOD SW [Off/On]		Displays the status of the hood switch judged by IPDM E/R.
HL WASHER REQ [Off/On]		Displays the status of the headlamp washer request signal received from BCM via CAN communication.
THFT HRN REQ [Off/On]		Displays the status of the theft warning horn request signal received from BCM via CAN communication.
HORN CHIRP [Off/On]		<b>NOTE:</b> This item is indicated, but not monitored.

## ACTIVE TEST

### Test item

Test item	Operation	Description
HORN	On	Operates horn relay for 20 ms.
REAR DEFOGGER	Off	OFF
	On	Operates the rear window defogger relay.

## DIAGNOSIS SYSTEM (IPDM E/R)

### < SYSTEM DESCRIPTION >

Test item		Operation	Description
FRONT WIPER		Off	OFF
		Lo	Operates the front wiper relay.
		Hi	Operates the front wiper relay and front wiper high relay.
MOTOR FAN	For MR16DDT engine	1	OFF
		2	Transmits 50% pulse duty signal (PWM signal) to the cooling fan control module.
		3	Transmits 75% pulse duty signal (PWM signal) to the cooling fan control module.
		4	Transmits 100% pulse duty signal (PWM signal) to the cooling fan control module.
	Except for MR16DDT engine	1	OFF
		2	Operates the cooling fan relay (LO operation).
		3	Operates the cooling fan relay (HI operation).
		4	
HEAD LAMP WASHER		On	Operates the headlamp washer relay for 1 second.
EXTERNAL LAMPS		Off	OFF
		TAIL	Operates the tail lamp relay.
		Lo	Operates the headlamp low relay.
		Hi	Operates the headlamp low relay and ON/OFF the headlamp high relay at 1 second intervals.
		Fog	Operates the front fog lamp relay.

# BCM, IPDM E/R

< ECU DIAGNOSIS INFORMATION >

## ECU DIAGNOSIS INFORMATION

BCM, IPDM E/R

List of ECU Reference

INFOID:000000006700112

ECU		Reference
BCM	(With Intelligent Key system)	<a href="#">BCS-41, "Reference Value"</a>
		<a href="#">BCS-64, "Fail-safe"</a>
		<a href="#">BCS-66, "DTC Inspection Priority Chart"</a>
	(Without Intelligent Key system)	<a href="#">BCS-67, "DTC Index"</a>
		<a href="#">BCS-125, "Reference Value"</a>
		<a href="#">BCS-140, "Fail-safe"</a>
		<a href="#">BCS-140, "DTC Inspection Priority Chart"</a>
IPDM E/R	(With Intelligent Key system)	<a href="#">BCS-141, "DTC Index"</a>
		<a href="#">PCS-17, "Reference Value"</a>
		<a href="#">PCS-24, "Fail-Safe"</a>
	(Without Intelligent Key system)	<a href="#">PCS-25, "DTC Index"</a>
		<a href="#">PCS-48, "Reference Value"</a>
		<a href="#">PCS-54, "Fail-Safe"</a>
		<a href="#">PCS-55, "DTC Index"</a>

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# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

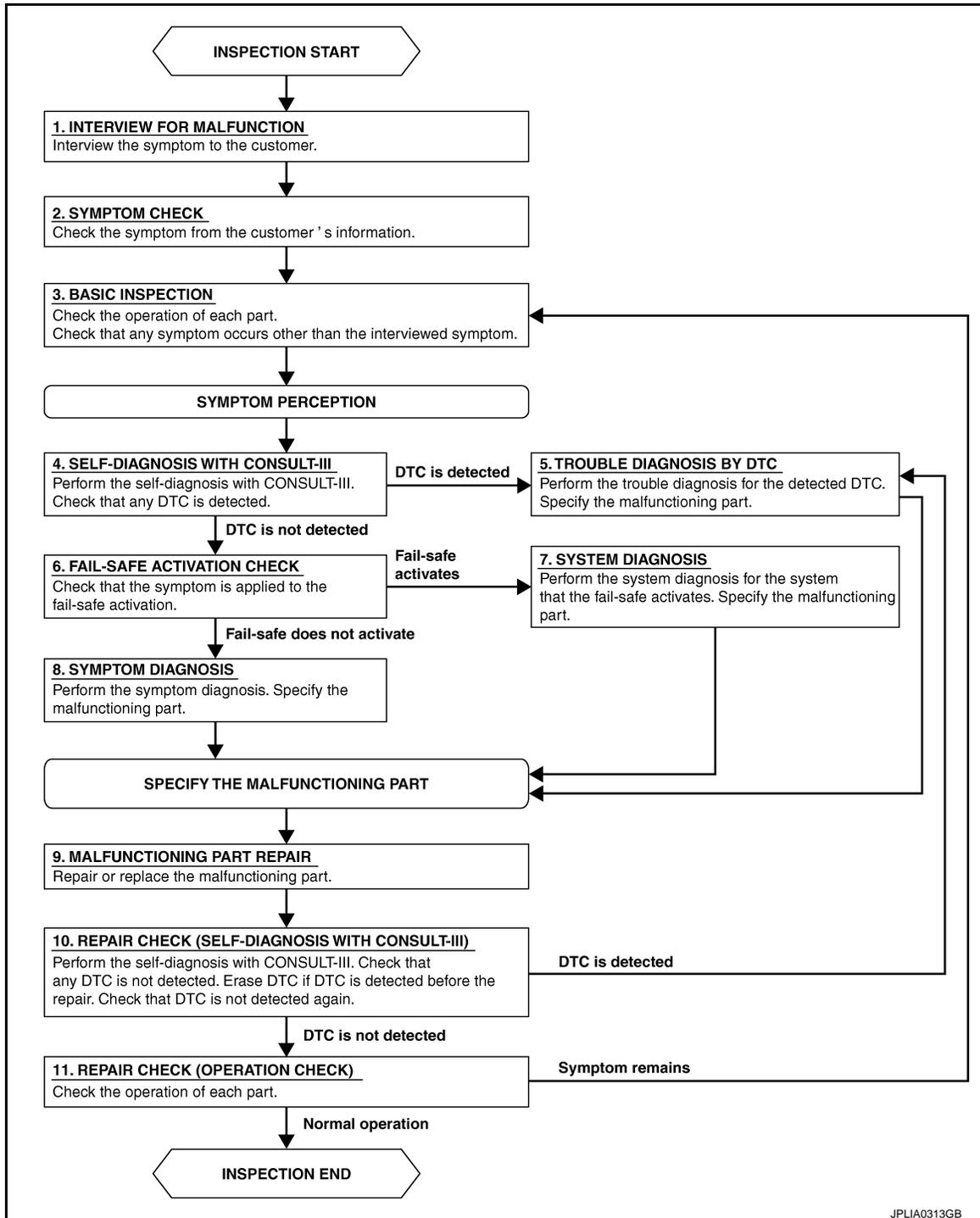
## BASIC INSPECTION

### DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000006479428

#### 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 MOTOR LO CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

## DTC/CIRCUIT DIAGNOSIS

### FRONT WIPER MOTOR LO CIRCUIT

#### Component Function Check

INFOID:000000006479430

#### 1. CHECK FRONT WIPER 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-38, "Diagnosis Procedure"](#).

#### Diagnosis Procedure

INFOID:000000006479431

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

##### CONSULT-III ACTIVE TEST

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

(+)		(-)	Condition		Voltage (Approx.)
Connector	Terminal				
E20	2	Ground	FRONT WIPER	Lo	Battery voltage
				Off	0 V

Is the inspection result normal?

- YES >> Replace front wiper motor.  
NO >> GO TO 2.

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

1. Turn 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	45	E20	2	Existed

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

IPDM E/R		Ground	Continuity
Connector	Terminal		
E14	45		Not existed

Is the inspection result normal?

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

# FRONT WIPER MOTOR HI CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

## FRONT WIPER MOTOR HI CIRCUIT

### Component Function Check

INFOID:000000006479432

#### 1. CHECK FRONT WIPER 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-39, "Diagnosis Procedure"](#).

### Diagnosis Procedure

INFOID:000000006479433

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

##### CONSULT-III ACTIVE TEST

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

(+)		(-)	Condition	Voltage (Approx.)	
Front wiper motor					
Connector	Terminal				
E20	1	Ground	FRONT WIPER	Hi	Battery voltage
				Off	0 V

Is the inspection result normal?

- YES >> Replace front wiper motor.  
 NO >> GO TO 2.

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

1. Turn 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	39	E20	1	Existed

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

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

Is the inspection result normal?

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

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# FRONT WIPER AUTO STOP SIGNAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

## FRONT WIPER AUTO STOP SIGNAL CIRCUIT

### Component Function Check

INFOID:000000006479434

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

##### CONSULT-III DATA MONITOR

1. Select "WIP AUTO STOP" of IPDM E/R data monitor item.
2. Operate the front wiper.
3. With the front wiper operation, check the monitor status.

Monitor item	Condition		Monitor status
WIP AUTO STOP	Front wiper motor	Stop position	STOP P
		Except stop position	ACT P

Is the status of item normal?

- YES >> Auto stop signal circuit is normal.  
NO >> Refer to [WW-40, "Diagnosis Procedure"](#).

### Diagnosis Procedure

INFOID:000000006479435

#### 1. CHECK IPDM E/R OUTPUT VOLTAGE

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

(+)		(-)	Voltage (Approx.)
Connector	Terminal		
E20	4	Ground	Battery voltage

Is the inspection result normal?

- YES >> Replace front wiper motor.  
NO >> GO TO 2.

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

1. Turn 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	
E13	25	E20	4	Existed

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

IPDM E/R		Ground	Continuity
Connector	Terminal		
E13	25		Not existed

Is the inspection result normal?

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

# FRONT WIPER MOTOR GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

## FRONT WIPER MOTOR GROUND CIRCUIT

### Diagnosis Procedure

INFOID:000000006479436

#### 1. CHECK FRONT WIPER MOTOR GROUND CIRCUIT

1. Turn 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		
E20	5		Existed

Is the inspection result normal?

- YES >> INSPECTION END  
NO >> Repair or replace harness.

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# LIGHT & RAIN SENSOR

< DTC/CIRCUIT DIAGNOSIS >

## LIGHT & RAIN SENSOR

### Component Function Check

INFOID:000000006479551

#### 1.CHECK FRONT WIPER AUTO OPERATION

1. Clean rain sensor detection area of windshield fully.
2. When the front wiper switch is turned to AUTO position, front wiper operates once regardless of a rainy condition.

Is front wiper (AUTO) operation normally?

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

### Diagnosis Procedure

INFOID:000000006479552

#### 1.CHECK LIGHT & RAIN SENSOR FUSE

1. Turn the ignition switch OFF.
2. Check that the light & rain sensor 10A fuse (#7) is not fusing.

Is the fuse fusing?

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

#### 2.CHECK LIGHT & RAIN SENSOR POWER SUPPLY

1. Disconnect light & rain sensor connector.
2. Check voltage between light & rain sensor harness connector and ground.

(+)		(-)	Voltage (Approx.)
Light & rain sensor			
Connector	Terminal	Ground	Battery voltage
R5	1		

Is the inspection result normal?

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

#### 3.CHECK LIGHT & RAIN SENSOR GROUND CIRCUIT

Check continuity between light & rain sensor harness connector and ground.

Light & rain sensor		Ground	Continuity
Connector	Terminal		
R5	3		Existed

Is the inspection result normal?

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

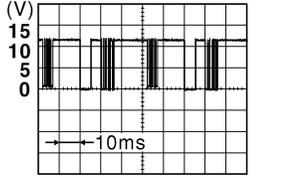
#### 4.CHECK LIGHT & RAIN SENSOR SIGNAL

1. Connect light & rain sensor connector.
2. Turn ignition switch ON.
3. Check signal between BCM harness connector and ground with oscilloscope.

(+)		(-)	Condition	Signal (Reference value)
BCM				
Connector	Terminal			

# LIGHT & RAIN SENSOR

## < DTC/CIRCUIT DIAGNOSIS >

With Intelligent Key system	M68	11	Ground	Ignition switch ON	
Without Intelligent Key system	M65	14			

Is the inspection result normal?

- YES >> Replace light & rain sensor.
- NO >> GO TO 5.

### 5. CHECK LIGHT & RAIN SENSOR SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect BCM connector and light & rain sensor connector.
3. Check continuity between BCM harness connector and light & rain sensor harness connector.

BCM			Light & rain sensor		Continuity
Connector	Terminal	Connector	Terminal		
With intelligent Key system	M68	11	R5	2	Existed
Without intelligent Key system	M65	14			

Is the inspection result normal?

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

### 6. CHECK LIGHT & RAIN SENSOR SIGNAL CIRCUIT FOR SHORT

Check continuity between BCM harness connector and ground.

BCM			Ground	Continuity
Connector	Terminal			
With intelligent Key system	M68	11	Ground	Not existed
Without intelligent Key system	M65	14		

Is the inspection result normal?

- YES >> Repair or replace harness.
- NO >> Replace BCM. Refer to [BCS-93, "Removal and Installation"](#) (with Intelligent Key system) or [BCS-161, "Removal and Installation"](#) (Without Intelligent Key system).

# WASHER SWITCH

< DTC/CIRCUIT DIAGNOSIS >

## WASHER SWITCH

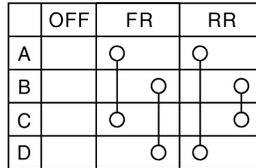
### Component Inspection

INFOID:000000006479439

#### 1. CHECK WASHER SWITCH

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

- A : Terminal 4
- B : Terminal 6
- C : Terminal 3
- D : Terminal 1



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Combination switch		Condition	Continuity
Terminal			
3	4	Front washer switch ON	Existed
1	6		
1	4	Rear washer switch ON	
6	3		

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace combination switch (Wiper and washer switch).

# REAR WIPER MOTOR CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

## REAR WIPER MOTOR CIRCUIT

### Component Function Check

INFOID:000000006479440

#### 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-45, "Diagnosis Procedure"](#).

### Diagnosis Procedure

INFOID:000000006479441

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

##### CONSULT-III ACTIVE TEST

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

(+)		(-)	Condition		Voltage (Approx.)
Rear wiper motor					
Connector	Terminal				
D112	1	Ground	REAR WIPER	On	Battery voltage
				Off	0 V

Is the inspection result normal?

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

#### 2. CHECK REAR WIPER MOTOR CIRCUIT

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

BCM			Rear wiper motor		Continuity
Connector	Terminal	Terminal	Connector	Terminal	
With intelligent Key system	B10	54	D112	2	Existed
Without intelligent Key system	B9	53			

4. Check continuity between BCM harness connector and ground.

BCM			Ground	Continuity
Connector	Terminal	Terminal		
With intelligent Key system	B10	54	Ground	Not existed
Without intelligent Key system	B9	53		

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## REAR WIPER MOTOR CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

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Is the inspection result normal?

YES >> Replace BCM. Refer to [BCS-93, "Removal and Installation"](#).

NO >> Repair or replace harness.

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

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Check continuity between rear wiper motor harness connector and ground.

Rear wiper motor		Ground	Continuity
Connector	Terminal		
D112	3		Existed

Is the inspection result normal?

YES >> Replace rear wiper motor.

NO >> Repair or replace harness.

# REAR WIPER AUTO STOP SIGNAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

## REAR WIPER AUTO STOP SIGNAL CIRCUIT

### Component Function Check

INFOID:000000006479442

#### 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-47. "Diagnosis Procedure"](#).

### Diagnosis Procedure

INFOID:000000006479443

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

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

(+)		(-)	Voltage (Approx.)
Rear wiper motor			
Connector	Terminal	Ground	Battery voltage
D112	2		

Is the inspection result normal?

- YES >> Replace rear wiper motor.  
 NO >> GO TO 2.

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

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

BCM			Rear wiper motor		Continuity
Connector	Terminal		Connector	Terminal	
With intelligent Key system	B10	44	D112	2	Existed
Without intelligent Key system	B9	41			

4. Check continuity between BCM harness connector and ground.

BCM			Ground	Continuity
Connector	Terminal			
With intelligent Key system	B10	44		Not existed
Without intelligent Key system	B9	41		

Is the inspection result normal?

## REAR WIPER AUTO STOP SIGNAL CIRCUIT

### < DTC/CIRCUIT DIAGNOSIS >

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- YES >> Replace BCM. Refer to [BCS-93, "Removal and Installation"](#).
- NO >> Repair or replace harness.

# HEADLAMP WASHER RELAY

< DTC/CIRCUIT DIAGNOSIS >

## HEADLAMP WASHER RELAY

### Component Inspection

INFOID:000000006479444

#### 1. CHECK HEADLAMP WASHER RELAY

1. Turn the ignition switch OFF.
2. Remove 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

Is the inspection result normal?

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

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# HEADLAMP WASHER CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

## HEADLAMP WASHER CIRCUIT

### Component Function Check

INFOID:000000006479445

#### 1.CHECK HEADLAMP WASHER OPERATION

##### CONSULT-III ACTIVE TEST

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

**On** :Headlamp washer ON operation

**Off** :Stop the headlamp washer.

##### Is headlamp washer operation normally?

- YES >> Headlamp washer circuit is normal.  
NO >> Refer to [WW-50, "Diagnosis Procedure"](#).

### Diagnosis Procedure

INFOID:000000006479446

#### 1.CHECK HEADLAMP WASHER FUSIBLE LINK

1. Turn the ignition switch OFF.
2. Check that the headlamp washer 30A fusible link (#L) 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 relay harness connector and ground.

(+)		(-)	Voltage (Approx.)
Headlamp washer relay			
Connector	Terminal	Ground	Battery voltage
E115	1		
	3		

##### Is the inspection result normal?

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

#### 3.CHECK HEADLAMP WASHER RELAY

Check headlamp washer relay. Refer to [WW-49, "Component Inspection"](#).

##### Is the headlamp washer relay normal?

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

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

##### CONSULT-III ACTIVE TEST

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

(+)		(-)	Test item	Voltage (Approx.)
IPDM E/R			HEAD LAMP WASHER	
Connector	Terminal			

# HEADLAMP WASHER CIRCUIT

## < DTC/CIRCUIT DIAGNOSIS >

E12	21	Ground	On	0 V
			Off	Battery voltage

Is the inspection result 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	
E12	21	E115	2	Existed

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair the harnesses or connectors.

### 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		
E12	21		Not existed

Is the inspection result normal?

YES >> Repair the harnesses or connectors.

NO >> Replace IPDM E/R.

### 7. CHECK HEADLAMP WASHER PUMP OPEN CIRCUIT

1. Turn the ignition switch OFF.
2. Remove headlamp washer relay.
3. Disconnect headlamp washer pump connector.
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	
E115	5	E114	1	Existed

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair the harnesses or connectors.

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

Check continuity headlamp washer pump harness connector and ground.

Headlamp washer pump		Ground	Continuity
Connector	Terminal		
E114	2		Existed

Is the inspection result normal?

YES >> Replace headlamp washer pump.

NO >> Repair the harnesses or connectors.

# WIPER AND WASHER SYSTEM

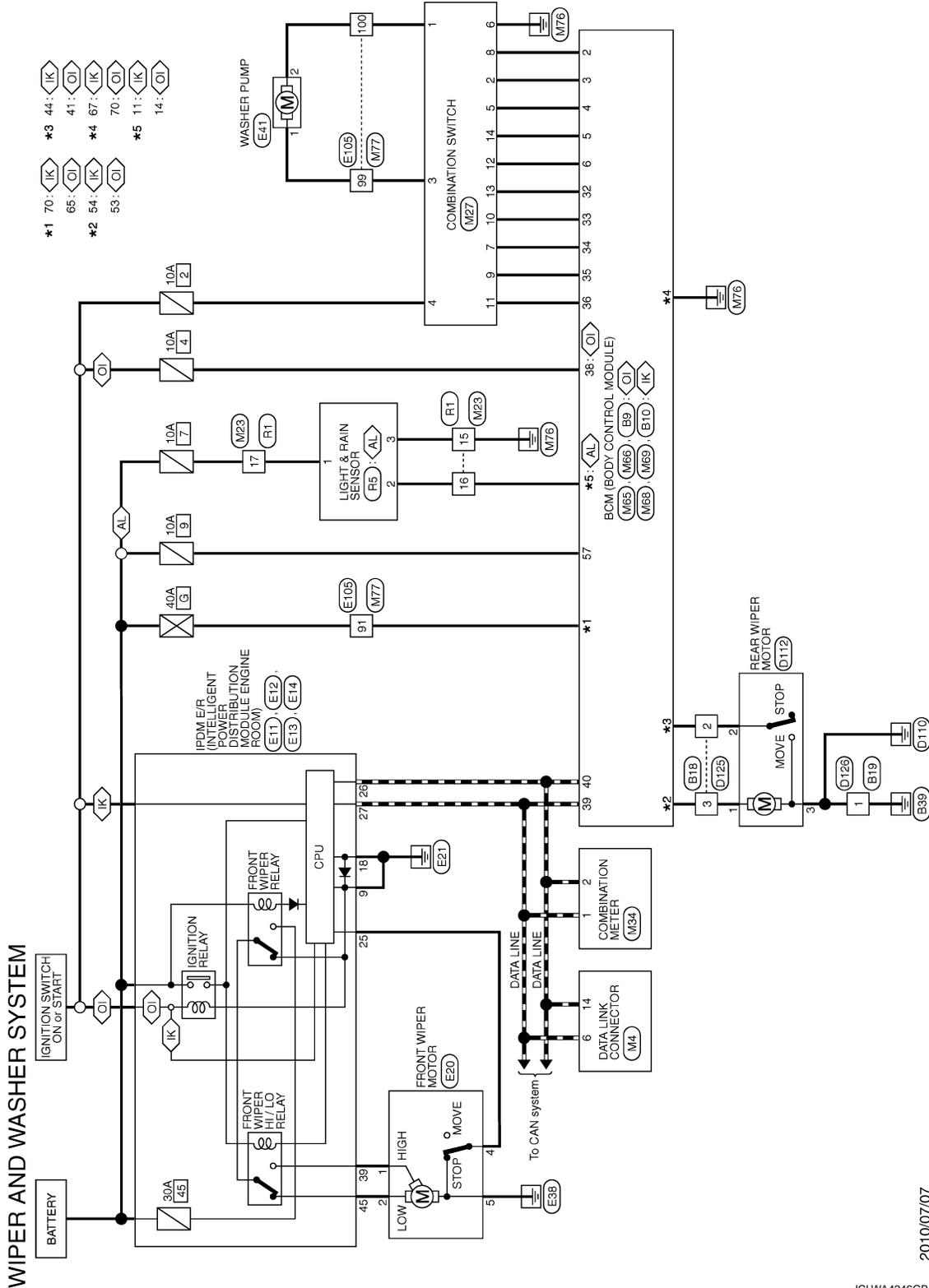
< DTC/CIRCUIT DIAGNOSIS >

## WIPER AND WASHER SYSTEM

### Wiring Diagram - WIPER AND WASHER SYSTEM -

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For connector terminal arrangements, harness layouts, and alphabets in a  (option abbreviation; if not described in wiring diagram), refer to [GI-12, "Connector Information/Explanation of Option Abbreviation"](#).



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# WIPER AND WASHER SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

## SYMPTOM DIAGNOSIS

### WIPER AND WASHER SYSTEM SYMPTOMS WITH RAIN SENSOR

#### WITH RAIN SENSOR : Symptom Table

INFOID:000000006709981

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-92, "Symptom Table"</a> (With Intelligent Key system) or <a href="#">BCS-160, "Symptom Table"</a> (Without Intelligent Key system).
		<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-39, "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 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-92, "Symptom Table"</a> (With Intelligent Key system) or <a href="#">BCS-160, "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-38, "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 (Auto 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-92, "Symptom Table"</a> (With Intelligent Key system) or <a href="#">BCS-160, "Symptom Table"</a> (without Intelligent Key system).
		<ul style="list-style-type: none"> <li>Rain sensor</li> <li>Harness between light &amp; rain sensor and BCM</li> <li>BCM</li> </ul>	Rain sensor Refer to <a href="#">WW-42, "Component Function Check"</a> .
	HI, LO and INT	SYMPTOM DIAGNOSIS "FRONT WIPER DOES NOT OPERATE" Refer to <a href="#">WW-63, "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-92</a> , " <a href="#">Symptom Table</a> " (With Intelligent Key system) or <a href="#">BCS-160</a> , " <a href="#">Symptom Table</a> ".
		Front wiper request signal	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-92</a> , " <a href="#">Symptom Table</a> " (With Intelligent Key system) or <a href="#">BCS-160</a> , " <a href="#">Symptom Table</a> " (Without Intelligent Key system).
		Front wiper request signal	IPDM E/R DATA MONITOR "FR WIP REQ"
		IPDM E/R	—
	INT only (Auto operation)	<ul style="list-style-type: none"> <li>Combination switch</li> <li>BCM</li> </ul>	Combination switch Refer to <a href="#">BCS-92</a> , " <a href="#">Symptom Table</a> " (With Intelligent Key system) or <a href="#">BCS-160</a> , " <a href="#">Symptom Table</a> " (Without Intelligent Key system).
		<ul style="list-style-type: none"> <li>Rain sensor</li> <li>Harness between light &amp; rain sensor and BCM</li> <li>BCM</li> </ul>	Rain sensor Refer to <a href="#">WW-42</a> , " <a href="#">Component Function Check</a> ".
	Sensitivity 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>	Combination switch Refer to <a href="#">BCS-92</a> , " <a href="#">Symptom Table</a> " (With Intelligent Key system) or <a href="#">BCS-160</a> , " <a href="#">Symptom Table</a> " (Without Intelligent Key system).
BCM		—	
Front wiper does not operate normally.	Service positioning operation does not operate	<ul style="list-style-type: none"> <li>Combination switch</li> <li>BCM</li> <li>IPDM E/R</li> </ul>	Combination switch Refer to <a href="#">BCS-92</a> , " <a href="#">Symptom Table</a> " (With Intelligent Key system) or <a href="#">BCS-160</a> , " <a href="#">Symptom Table</a> " (Without Intelligent Key system).
	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-92</a> , " <a href="#">Symptom Table</a> " (With Intelligent Key system) or <a href="#">BCS-160</a> , " <a href="#">Symptom Table</a> " (Without Intelligent Key system).
		BCM	—
	Does not return to stop position. [Repeatedly operates for 10 seconds and then stops for 20 seconds. After that, it stops the operation. (Fail-safe)]	<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-40</a> , " <a href="#">Component Function Check</a> ".

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## WIPER AND WASHER SYSTEM SYMPTOMS

### < SYMPTOM DIAGNOSIS >

Symptom		Probable malfunction location	Inspection item
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-92, "Symptom Table"</a> (With Intelligent Key system) or <a href="#">BCS-160, "Symptom Table"</a> (Without Intelligent Key system).
	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-92, "Symptom Table"</a> (With Intelligent Key system) or <a href="#">BCS-160, "Symptom Table"</a> (Without Intelligent Key system).
	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-92, "Symptom Table"</a> (With Intelligent Key system) or <a href="#">BCS-160, "Symptom Table"</a> (Without Intelligent Key system).
		<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-92, "Symptom Table"</a> (With Intelligent Key system) or <a href="#">BCS-160, "Symptom Table"</a> (Without Intelligent Key system).
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-45, "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-92, "Symptom Table"</a> (With Intelligent Key system) or <a href="#">BCS-160, "Symptom Table"</a> (Without Intelligent Key system).
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-92, "Symptom Table"</a> (With Intelligent Key system) or <a href="#">BCS-160, "Symptom Table"</a> (without Intelligent Key system).
		BCM	—
	Rear wiper does not return to the stop position. [Stops after a five-second operation (Fail-safe)]	<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-47, "Component Function Check"</a> .

# WIPER AND WASHER SYSTEM SYMPTOMS

## < SYMPTOM DIAGNOSIS >

Symptom		Probable malfunction location	Inspection item	
Headlamp washer does not operate.	Headlamp washer does not operate with the front washer when headlamps are turned ON.	<ul style="list-style-type: none"> <li>• Combination switch</li> <li>• Harness between combination switch and BCM</li> <li>• BCM</li> <li>• Headlamp washer pump</li> </ul>	Combination switch Refer to <a href="#">BCS-92, "Symptom Table"</a> (With Intelligent Key system) or <a href="#">BCS-160, "Symptom Table"</a> (Without Intelligent Key system).	A
		<ul style="list-style-type: none"> <li>• Fusible link</li> <li>• Harness between fusible link and headlamp washer relay</li> <li>• Headlamp washer relay</li> <li>• Harness between headlamp washer relay and IPDM E/R</li> <li>• IPDM E/R</li> <li>• Harness between headlamp washer relay and headlamp washer pump</li> <li>• Harness between headlamp washer pump and ground</li> <li>• Headlamp washer pump</li> </ul>	Headlamp washer circuit Refer to <a href="#">WW-50, "Component Function Check"</a> .	B
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## WITHOUT RAIN SENSOR

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# WIPER AND WASHER SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

## WITHOUT RAIN SENSOR : Symptom Table

INFOID:000000006709982

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-92, "Symptom Table"</a> (With Intelligent Key system) or <a href="#">BCS-160, "Symptom Table"</a> (Without Intelligent Key system).
		<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-39, "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-92, "Symptom Table"</a> (With Intelligent Key system) or <a href="#">BCS-160, "Symptom Table"</a> (Without Intelligent Key system).
		<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-38, "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-92, "Symptom Table"</a> (With Intelligent Key system) or <a href="#">BCS-160, "Symptom Table"</a> (Without Intelligent Key system).
		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 Refer to <a href="#">WW-63, "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-92, "Symptom Table"</a> (With Intelligent Key system) or <a href="#">BCS-160, "Symptom Table"</a> (Without Intelligent Key system).
		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-92, "Symptom Table"</a> (With Intelligent Key system) or <a href="#">BCS-160, "Symptom Table"</a> (Without Intelligent Key system).
		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-92, "Symptom Table"</a> (With Intelligent Key system) or <a href="#">BCS-160, "Symptom Table"</a> (Without Intelligent Key system).
		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"

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## WIPER AND WASHER SYSTEM SYMPTOMS

### < SYMPTOM DIAGNOSIS >

Symptom	Probable malfunction location	Inspection item	
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>	Combination switch Refer to <a href="#">BCS-92, "Symptom Table"</a> (With Intelligent Key system) or <a href="#">BCS-160, "Symptom Table"</a> (Without Intelligent Key system).
		BCM	—
	Intermittent control linked with vehicle speed cannot be performed	Check the wiper setting is linked with vehicle speed. Refer to <a href="#">WW-19, "WIPER : CONSULT-III Function - WIPER"</a> (With Intelligent Key system) or <a href="#">WW-23, "WIPER : CONSULT-III Function (BCM - WIPER)"</a> (Without Intelligent Key system).	
	Service positioning operation does not operate	<ul style="list-style-type: none"> <li>• Combination switch</li> <li>• BCM</li> <li>• IPDM E/R</li> </ul>	Combination switch Refer to <a href="#">BCS-92, "Symptom Table"</a> (With Intelligent Key system) or <a href="#">BCS-160, "Symptom Table"</a> (Without Intelligent Key system).
	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-92, "Symptom Table"</a> (With Intelligent Key system) or <a href="#">BCS-160, "Symptom Table"</a> (Without Intelligent Key system).
	BCM	—	
Does not return to stop position [Repeatedly operates for 10 seconds and then stops for 20 seconds. After that, it stops the operation. (Fail-safe)]	<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-40, "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-92, "Symptom Table"</a> (With Intelligent Key system) or <a href="#">BCS-160, "Symptom Table"</a> (Without Intelligent Key system).
	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-92, "Symptom Table"</a> (With Intelligent Key system) or <a href="#">BCS-160, "Symptom Table"</a> (Without Intelligent Key system).
	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-92, "Symptom Table"</a> (With Intelligent Key system) or <a href="#">BCS-160, "Symptom Table"</a> (Without Intelligent Key system).
		<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-92, "Symptom Table"</a> (With Intelligent Key system) or <a href="#">BCS-160, "Symptom Table"</a> (Without Intelligent Key system).

## 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-45, "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-92, "Symptom Table"</a> (With Intelligent Key system) or <a href="#">BCS-160, "Symptom Table"</a> (Without Intelligent Key system).
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-92, "Symptom Table"</a> (With Intelligent Key system) or <a href="#">BCS-160, "Symptom Table"</a> (Without Intelligent Key system).
		BCM	—
	Rear wiper does not return to the stop position. [Stops after a five-second operation. (Fail-safe)]	<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-47, "Component Function Check"</a> .
Headlamp washer does not operate.	Headlamp washer does not operate with the front washer when headlamps are turned ON.	<ul style="list-style-type: none"> <li>Combination switch</li> <li>Harness between combination switch and BCM</li> <li>BCM</li> <li>Headlamp washer pump</li> </ul>	Combination switch Refer to <a href="#">BCS-92, "Symptom Table"</a> (With Intelligent Key system) or <a href="#">BCS-160, "Symptom Table"</a> (Without Intelligent Key system).
		<ul style="list-style-type: none"> <li>Fusible link</li> <li>Harness between fusible link and headlamp washer relay</li> <li>Headlamp washer relay</li> <li>Harness between headlamp washer relay and IPDM E/R</li> <li>IPDM E/R</li> <li>Harness between headlamp washer relay and headlamp washer pump</li> <li>Harness between headlamp washer pump and ground</li> <li>Headlamp washer pump</li> </ul>	Headlamp washer circuit Refer to <a href="#">WW-50, "Component Function Check"</a> .
	BCM	—	

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## NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS >

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### NORMAL OPERATING CONDITION

#### Description

INFOID:000000006479450

#### 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.

# FRONT WIPER DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

## FRONT WIPER DOES NOT OPERATE

### Description

INFOID:000000006479451

The front wiper does not operate under any operation conditions.

### Diagnosis Procedure

INFOID:000000006479452

#### 1. CHECK WIPER RELAY 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

Check front wiper motor fuse.

Unit	Location	No.	Capacity
Front wiper motor	IPDM E/R	45	30A
Headlamp washer relay	-	U	30A

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace the fuse after repairing the applicable circuit.

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

Check front wiper motor ground circuit. Refer to [WW-41, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace harness.

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

##### CONSULT-III ACTIVE TEST

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

(+)		(-)	Condition	Voltage (Approx.)	
Connector	Terminal				
E20	2	Ground	FRONT WIPER	Lo	Battery voltage
				Off	0 V
	1			Hi	Battery voltage
				Off	0 V

Is the inspection result normal?

YES >> Replace front wiper motor.

NO >> Replace IPDM E/R.

# FRONT WIPER DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

## 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 inspection result normal?

YES >> Replace IPDM E/R.

NO >> GO TO 6.

## 6. CHECK COMBINATION SWITCH

Perform the inspection of the combination switch. Refer to [BCS-92, "Symptom Table"](#) (with Intelligent Key system) or [BCS-160, "Symptom Table"](#) (without Intelligent Key system).

Is combination switch normal?

YES >> Replace BCM. Refer to [BCS-93, "Removal and Installation"](#) (with Intelligent Key system) or [BCS-161, "Removal and Installation"](#) (without Intelligent Key system).

NO >> Repair or replace the applicable parts.

# HEADLAMP WASHER NOZZLE AND TUBE

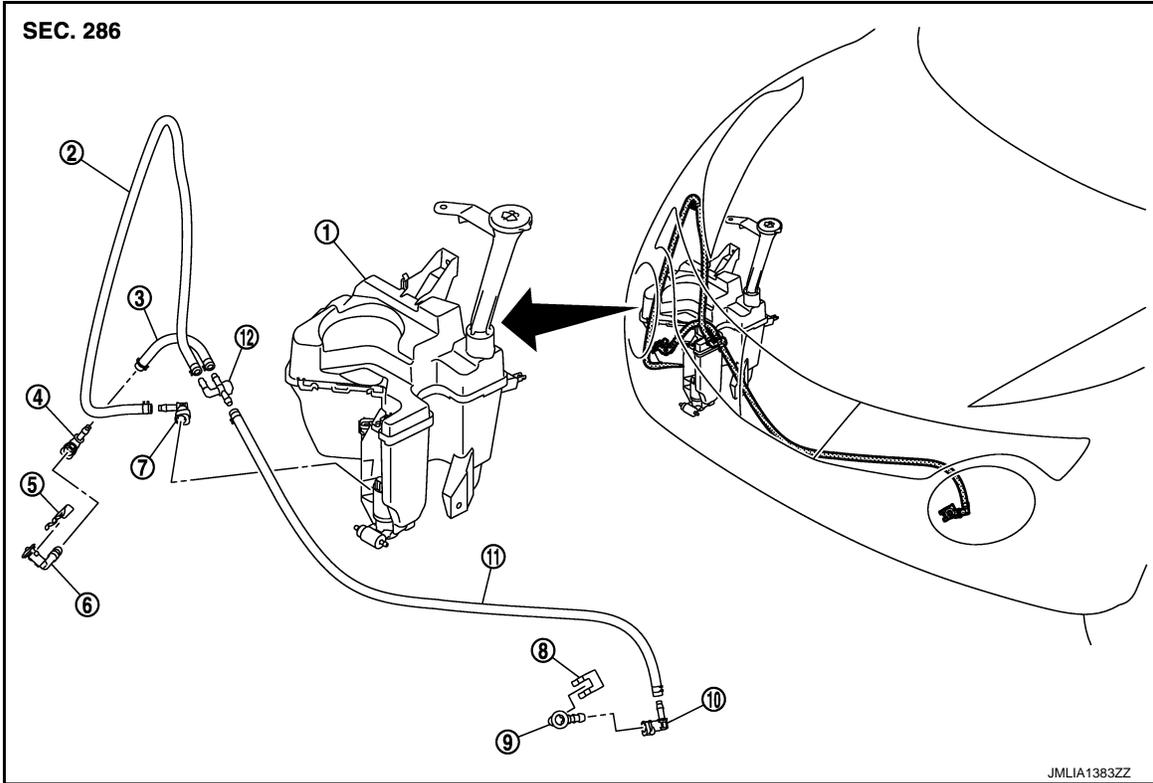
< REMOVAL AND INSTALLATION >

## REMOVAL AND INSTALLATION

### HEADLAMP WASHER NOZZLE AND TUBE

Exploded View

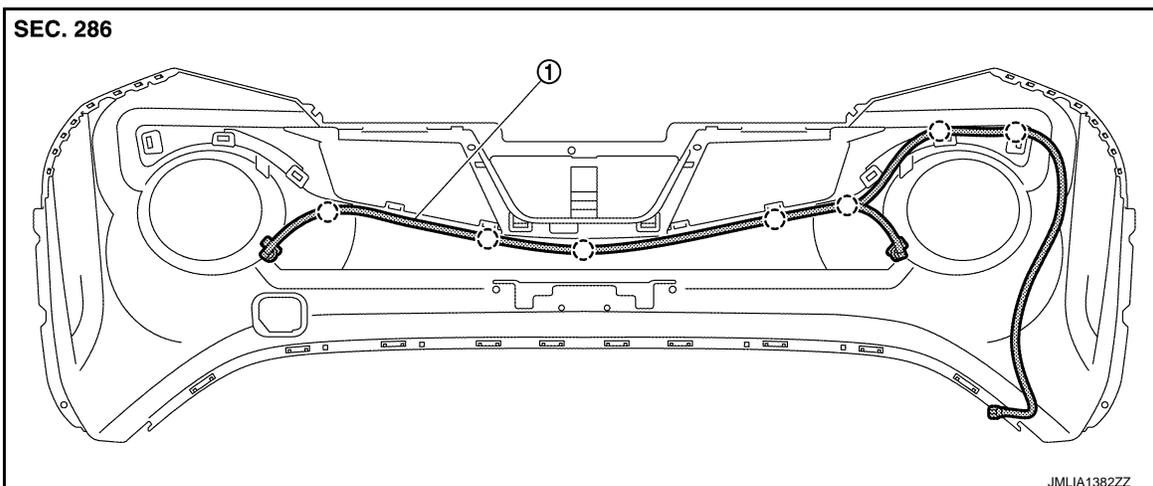
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- |   |                                      |                              |
|---|--------------------------------------|------------------------------|
| 1. Washer tank                          | 2. Headlamp washer tube (tank side)  | 3. Headlamp washer tube RH   |
| 4. Headlamp washer nozzle connector RH  | 5. Headlamp washer nozzle bracket RH | 6. Headlamp washer nozzle RH |
| 7. Headlamp washer nozzle joint         | 8. Headlamp washer nozzle bracket LH | 9. Headlamp washer nozzle LH |
| 10. Headlamp washer nozzle connector LH | 11. Headlamp washer tube LH          | 12. Check valve              |

Hydraulic Layout

INFOID:000000006479454



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# HEADLAMP WASHER NOZZLE AND TUBE

## < REMOVAL AND INSTALLATION >

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1. Headlamp washer nozzle tube

 : Clip

### Removal and Installation

INFOID:000000006479455

#### REMOVAL

1. Remove front bumper fascia. Refer to [EXT-13. "Removal and Installation"](#).
2. Disengage headlamp washer tube fixing clip from front bumper.
3. Remove headlamp washer nozzle bracket.
4. Remove headlamp washer nozzle from the front bumper fascia.

#### INSTALLATION

Install in the reverse order of removal.

#### Inspection

INFOID:000000006479456

#### 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.

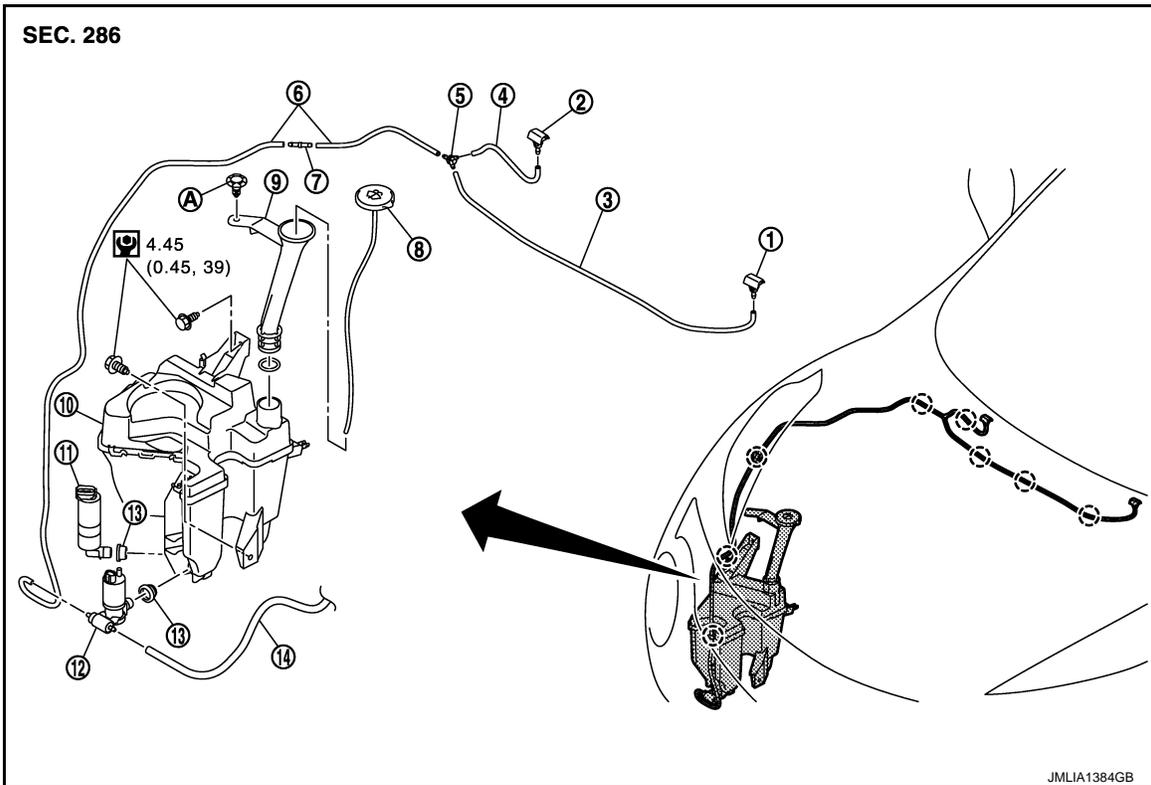
# WASHER TANK

< REMOVAL AND INSTALLATION >

## WASHER TANK

Exploded View

INFOID:000000006479457



- |                           |                           |                         |
|---------------------------|---------------------------|-------------------------|
| 1. Front washer nozzle LH | 2. Front washer nozzle RH | 3. Front washer tube LH |
| 4. Front washer tube RH   | 5. Check valve            | 6. Front washer tube    |
| 7. Joint                  | 8. Washer tank inlet cap  | 9. Washer tank inlet    |
| 10. Washer tank           | 11. Headlamp washer pump  | 12. Washer pump         |
| 13. Packing               | 14. Rear washer tube      |                         |

A : Clip

○ : Clip

⊙ : N·m (kg·m, in·lb)

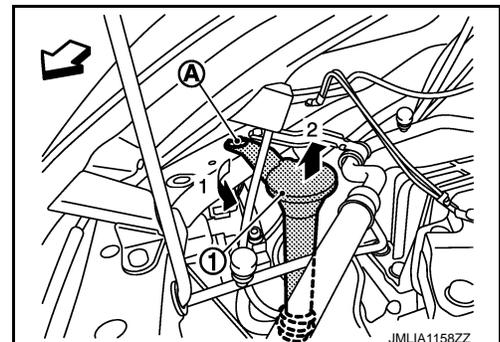
## Removal and Installation

INFOID:000000006479458

### REMOVAL

1. Fully open hood.
2. Remove washer tank inlet fixing clip (A).
3. Pull out washer tank inlet (1) from washer tank.

↔ : Vehicle front



4. Remove fender protector RH (front). Refer to [EXT-22. "Removal and Installation"](#).

## WASHER TANK

### < REMOVAL AND INSTALLATION >

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5. Disconnect washer pump connector.
6. Disconnect headlamp washer pump connector.
7. Disconnect washer level switch connector.
8. Disconnect front washer tube and rear washer tube.
9. Disconnect headlamp washer tube joint.
10. Remove washer tank mounting bolts.

### INSTALLATION

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

**CAUTION:**

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

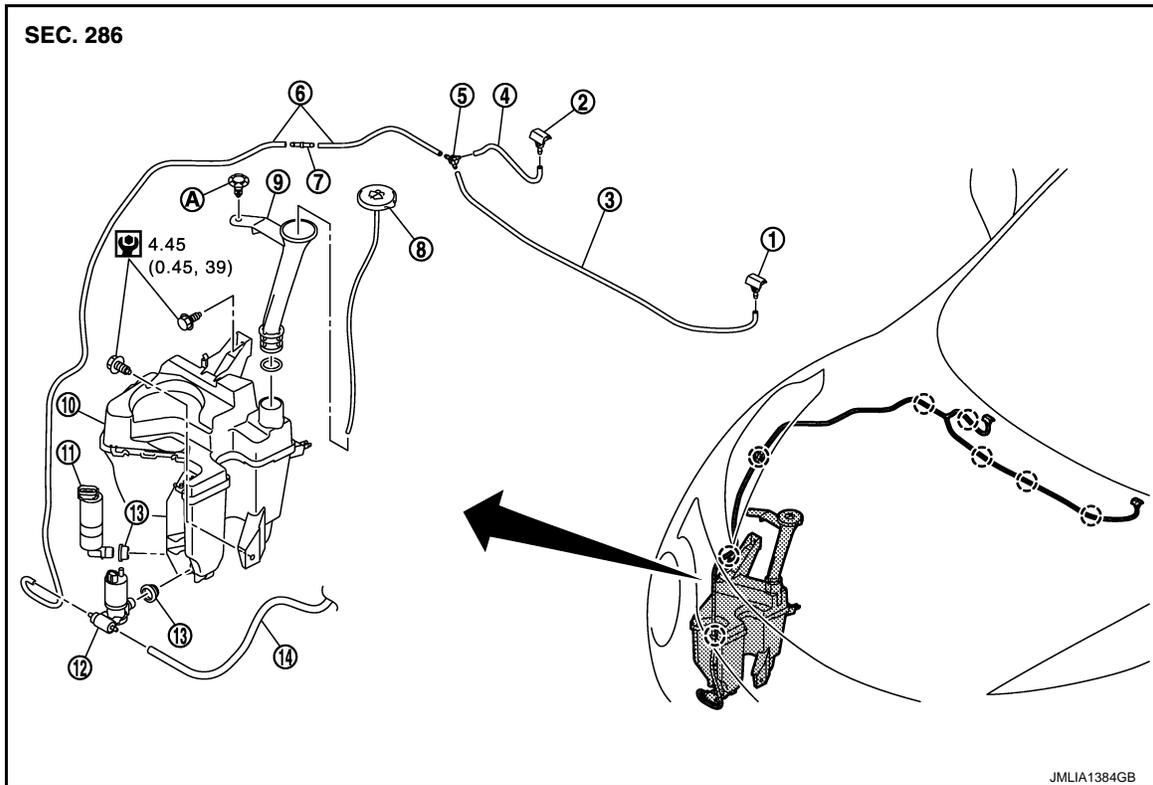
# WASHER PUMP

< REMOVAL AND INSTALLATION >

## WASHER PUMP

Exploded View

INFOID:000000006628105



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|---------------------------|---------------------------|-------------------------|
| 1. Front washer nozzle LH | 2. Front washer nozzle RH | 3. Front washer tube LH |
| 4. Front washer tube RH   | 5. Check valve            | 6. Front washer tube    |
| 7. Joint                  | 8. Washer tank inlet cap  | 9. Washer tank inlet    |
| 10. Washer tank           | 11. Headlamp washer pump  | 12. Washer pump         |
| 13. Packing               | 14. Rear washer tube      |                         |

A : Clip

○ : Clip

⊙ : N·m (kg·m, in·lb)

## Removal and Installation

INFOID:000000006479460

### REMOVAL

1. Remove fender protector RH (front). Refer to [EXT-22, "Removal and Installation"](#).
2. Disconnect washer pump connector.
3. Disconnect front washer tube and rear washer tube.
4. Remove washer pump from the washer tank.
5. Remove packing from washer tank.

### INSTALLATION

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

#### CAUTION:

- Check that there is no leakage after installation or replace packing with new part if it has been damaged.
- Never twist the packing when installing the washer pump.

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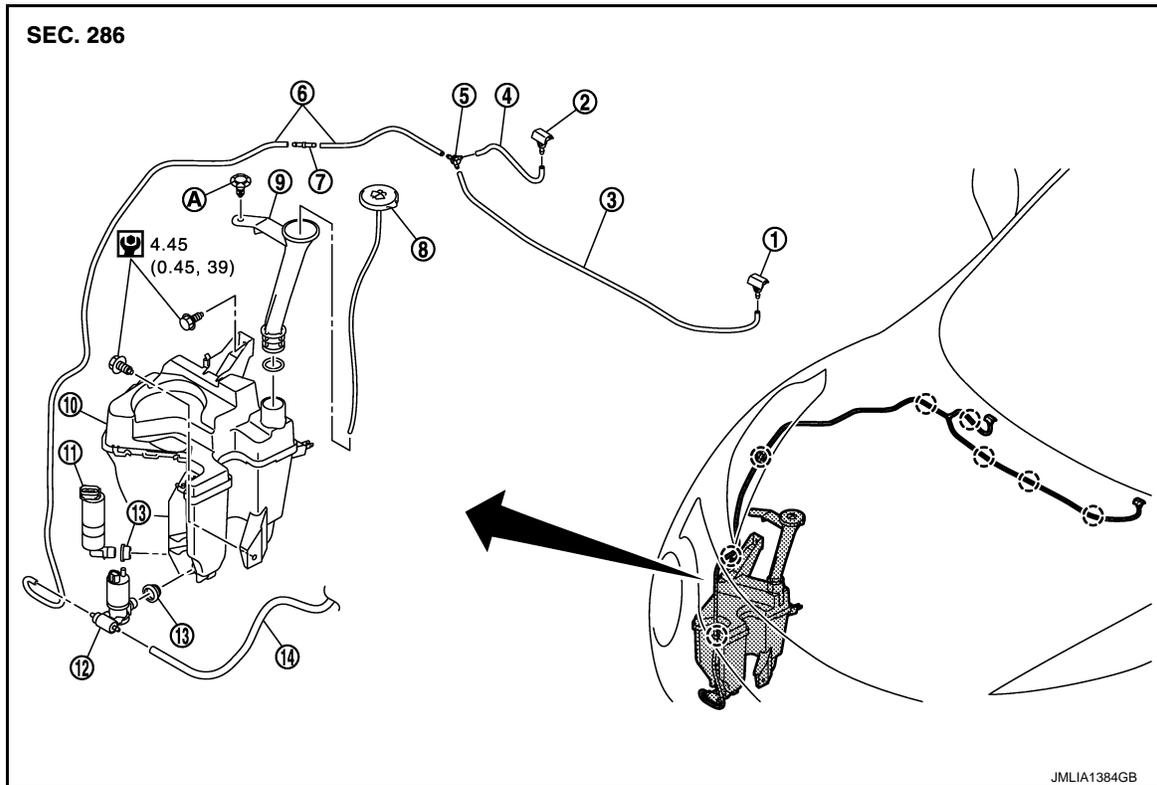
# HEADLAMP WASHER PUMP

< REMOVAL AND INSTALLATION >

## HEADLAMP WASHER PUMP

Exploded View

INFOID:000000006628106



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|---------------------------|---------------------------|-------------------------|
| 1. Front washer nozzle LH | 2. Front washer nozzle RH | 3. Front washer tube LH |
| 4. Front washer tube RH   | 5. Check valve            | 6. Front washer tube    |
| 7. Joint                  | 8. Washer tank inlet cap  | 9. Washer tank inlet    |
| 10. Washer tank           | 11. Headlamp washer pump  | 12. Washer pump         |
| 13. Packing               | 14. Rear washer tube      |                         |

A : Clip

○ : Clip

⊙ : N-m (kg-m, in-lb)

## Removal and Installation

INFOID:000000006479462

### REMOVAL

1. Remove fender protector RH (front). Refer to [EXT-22, "Removal and Installation"](#).
2. Disconnect headlamp washer pump connector.
3. Disconnect headlamp washer tube joint.
4. Remove headlamp washer pump from the washer tank.
5. Remove the packing from the washer tank.

### INSTALLATION

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

#### CAUTION:

- Check that there is no leakage after installation or replace packing with new part if it has been damaged.
- Never twist the packing when installing the headlamp washer pump.

# WASHER LEVEL SWITCH

< REMOVAL AND INSTALLATION >

## WASHER LEVEL SWITCH

---

### Removal and Installation

INFOID:000000006479463

The washer level switch must be replaced together with the washer tank as an assembly. Refer to [WW-67](#), "[Removal and Installation](#)".

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WW

# FRONT WASHER NOZZLE AND TUBE

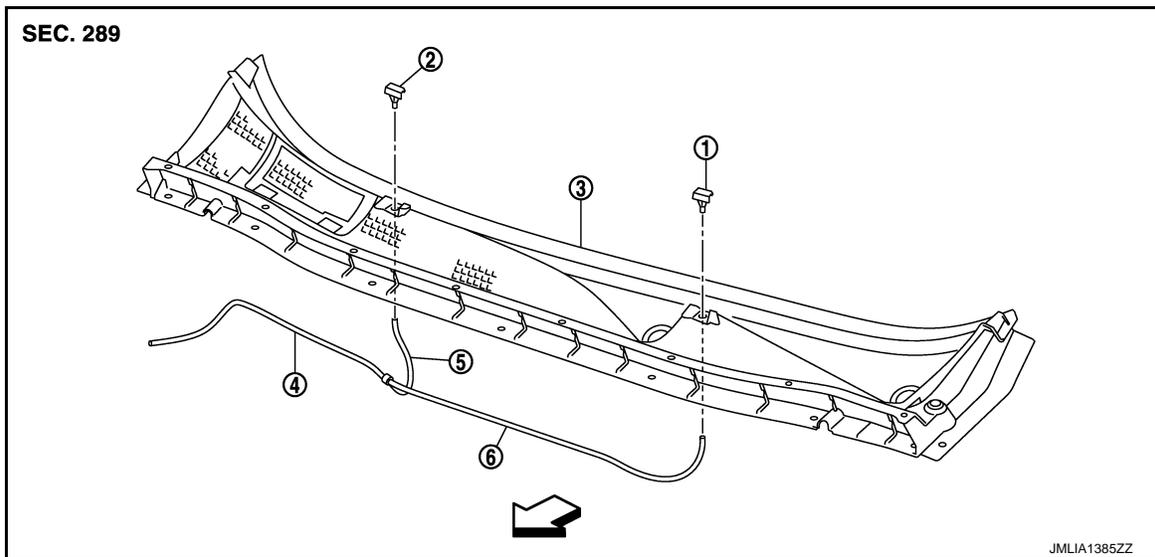
< REMOVAL AND INSTALLATION >

## FRONT WASHER NOZZLE AND TUBE

Exploded View

INFOID:000000006479464

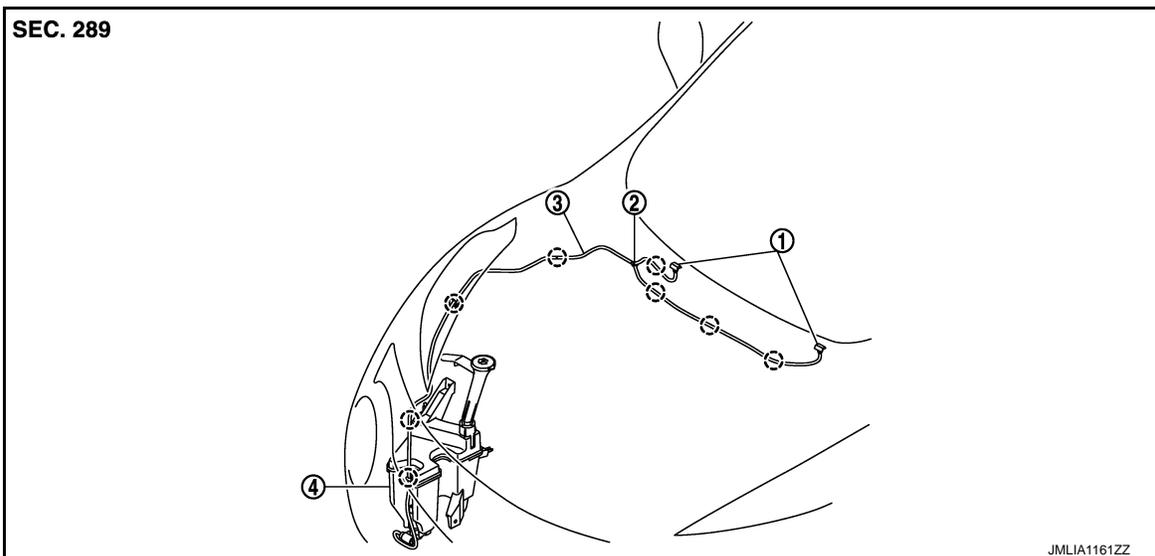
LHD models



- |                                  |                           |                         |
|----------------------------------|---------------------------|-------------------------|
| 1. Front washer nozzle LH        | 2. Front washer nozzle RH | 3. Cowl top cover       |
| 4. Front washer tube (tank side) | 5. Front washer tube RH   | 6. Front washer tube LH |
- ← : Vehicle front

## Hydraulic Layout

INFOID:000000006479465



- |                        |                |                 |
|------------------------|----------------|-----------------|
| 1. Front washer nozzle | 2. Check valve | 3. Front washer |
| 4. Washer tank         |                |                 |
- : Clip

## Removal and Installation

INFOID:000000006479466

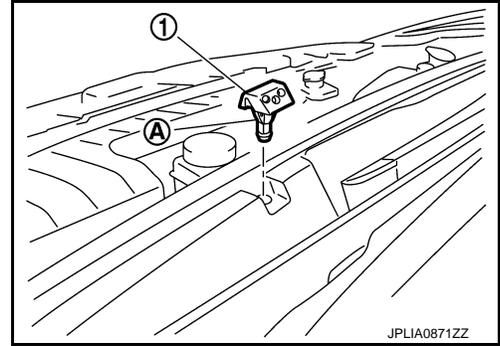
### REMOVAL

1. Remove cowl top cover. Refer to [EXT-20. "Removal and Installation"](#).

# FRONT WASHER NOZZLE AND TUBE

## < REMOVAL AND INSTALLATION >

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



## INSTALLATION

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

### CAUTION:

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

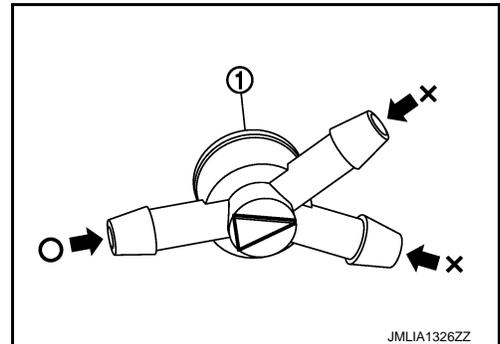
## Inspection and Adjustment

INFOID:000000006479467

## INSPECTION

Check valve Inspection

Check that air can pass through the hose by blowing forward (toward the nozzle (1)), and check that air cannot pass through by sucking.

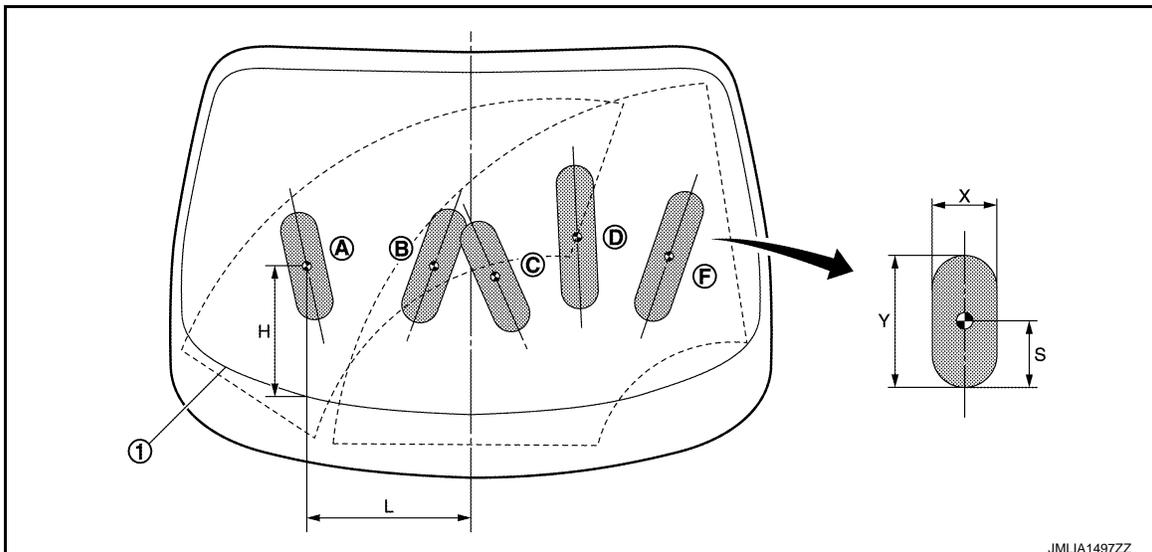


## ADJUSTMENT

Washer Nozzle Spray Position Adjustment

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

LHD models



A  
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WW

# FRONT WASHER NOZZLE AND TUBE

## < REMOVAL AND INSTALLATION >

1. Black printed frame line

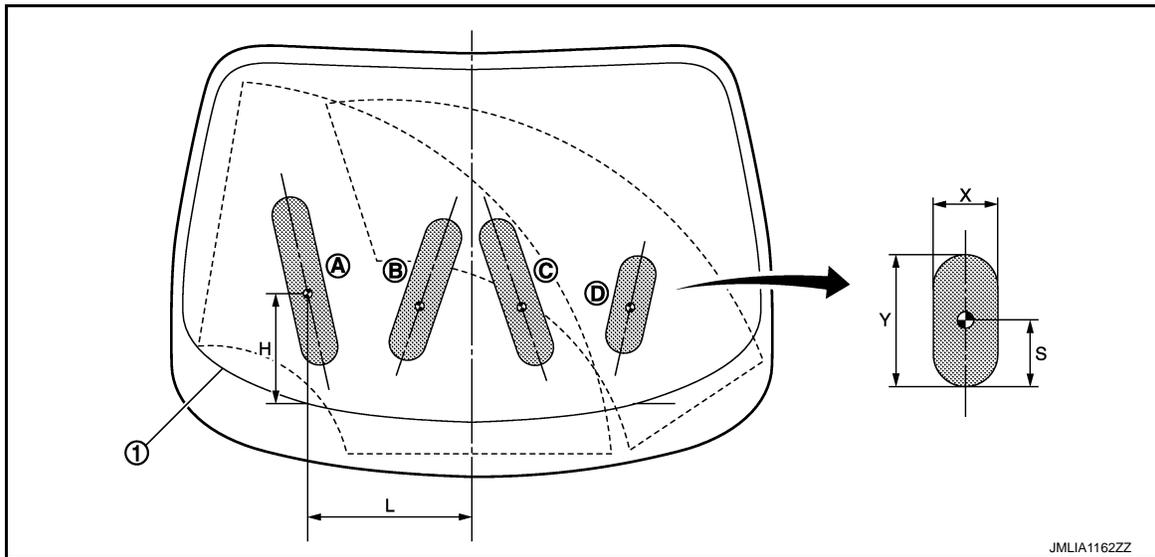
 : Spray area

 : Target spray position

Unit: mm (in)

Spray position	H	L	X	Y	S
A	244 (9.61)	350 (13.78)	80 (3.15)	238 (9.37)	78 (3.07)
B	284 (11.18)	93 (3.66)	80 (3.15)	257 (10.12)	89 (3.50)
C	258 (10.16)	70.5 (2.78)	80 (3.15)	255 (10.04)	82 (3.23)
D	309 (12.17)	234 (9.21)	80 (3.15)	312 (12.28)	95 (3.74)
E	235 (9.25)	413 (16.26)	80 (3.15)	295 (11.61)	90 (3.54)

RHD models



JMLIA1162ZZ

1. Black printed frame line

 : Spray area

 : Target spray position

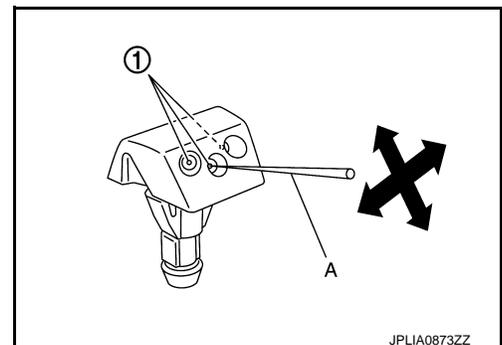
Unit: mm (in)

Spray position	H	L	X	Y	S
A	231 (9.09)	359 (14.13)	80 (3.15)	365 (14.37)	155 (6.10)
B	243 (9.57)	116 (4.57)	80 (3.15)	315 (12.40)	120 (4.72)
C	244 (9.61)	107 (4.21)	80 (3.15)	325 (12.80)	130 (5.12)
D	211 (8.31)	342 (13.46)	80 (3.15)	211 (8.31)	100 (3.94)

Insert a needle or similar object (A) into the spray opening (1) 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.



JPLIA0873ZZ

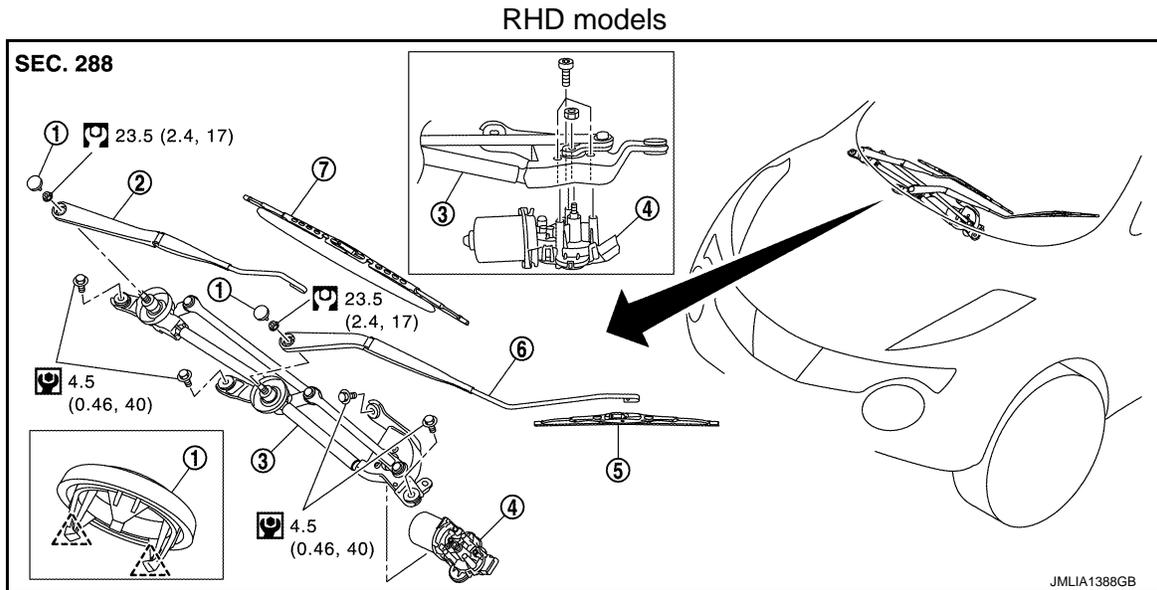
# FRONT WIPER ARM

< REMOVAL AND INSTALLATION >

## FRONT WIPER ARM

Exploded View

INFOID:000000006479468

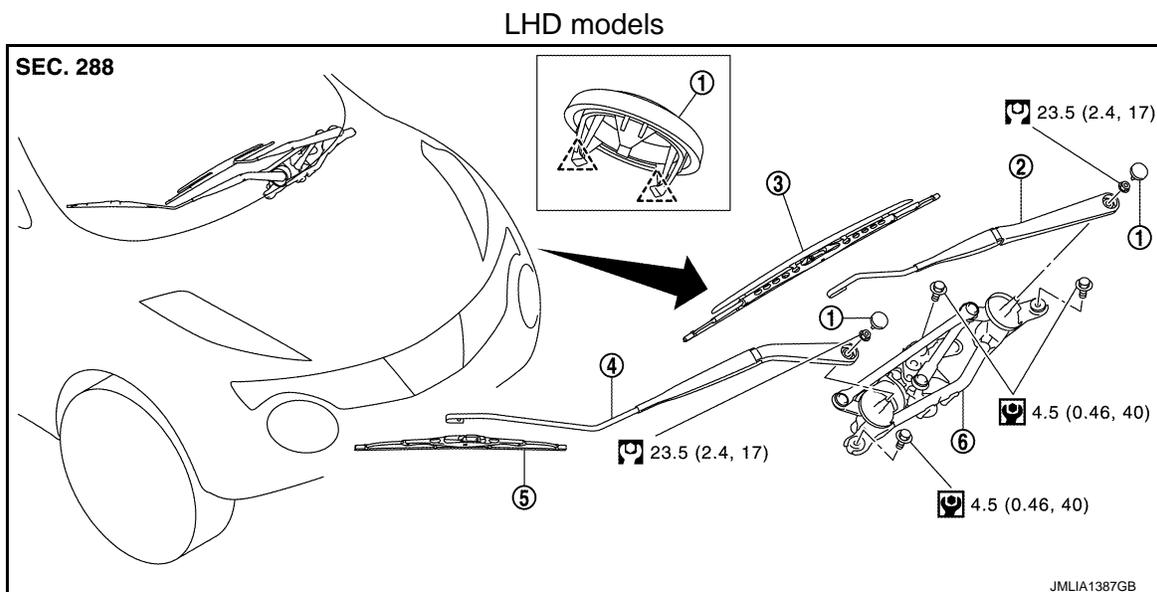


- |                         |                         |                               |
|-------------------------|-------------------------|-------------------------------|
| 1. Front wiper arm cap  | 2. Front wiper arm RH   | 3. Front wiper drive assembly |
| 4. Front wiper motor    | 5. Front wiper blade LH | 6. Front wiper arm LH         |
| 7. Front wiper blade RH |                         |                               |

: Pawl

: N·m (kg-m, in-lb)

: N·m (kg-m, ft-lb)



- |                        |                         |                               |
|------------------------|-------------------------|-------------------------------|
| 1. Front wiper arm cap | 2. Front wiper arm LH   | 3. Front wiper blade LH       |
| 4. Front wiper arm RH  | 5. Front wiper blade RH | 6. Front wiper drive assembly |

: Pawl

: N·m (kg-m, in-lb)

: N·m (kg-m, ft-lb)

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WW

# FRONT WIPER ARM

## < REMOVAL AND INSTALLATION >

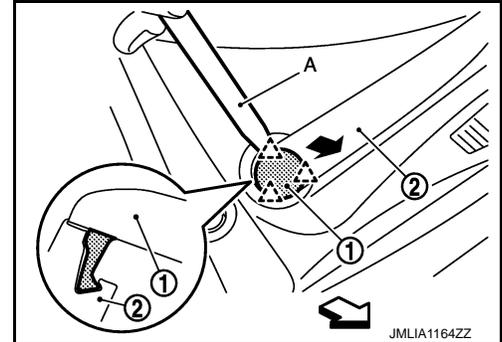
### Removal and Installation

INFOID:000000006479469

#### REMOVAL

1. Operate front wiper to move it to the auto stop position.
2. Open the hood.
3. Disengage front wiper arm cap (1) fixing pawls with a remover tool (A), and then remove front wiper arm cap from the wiper arm (2).

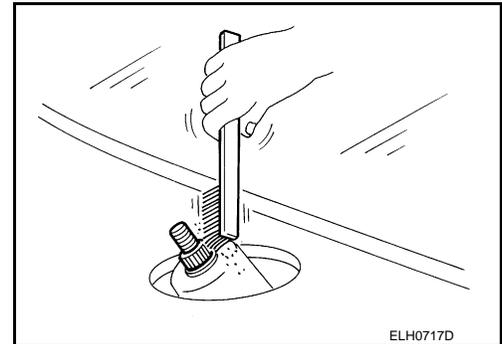
- △ : Pawl
- ⇐ : Vehicle front



4. Remove front wiper arm mounting nuts.
5. Raise front wiper arm, and then 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 front wiper motor to move the front wiper to the auto stop position.
3. Adjust front wiper blade position. Refer to [WW-76, "Adjustment"](#).
4. Install front wiper arm by tightening the mounting nuts.
5. Inject the washer fluid.
6. Operate 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

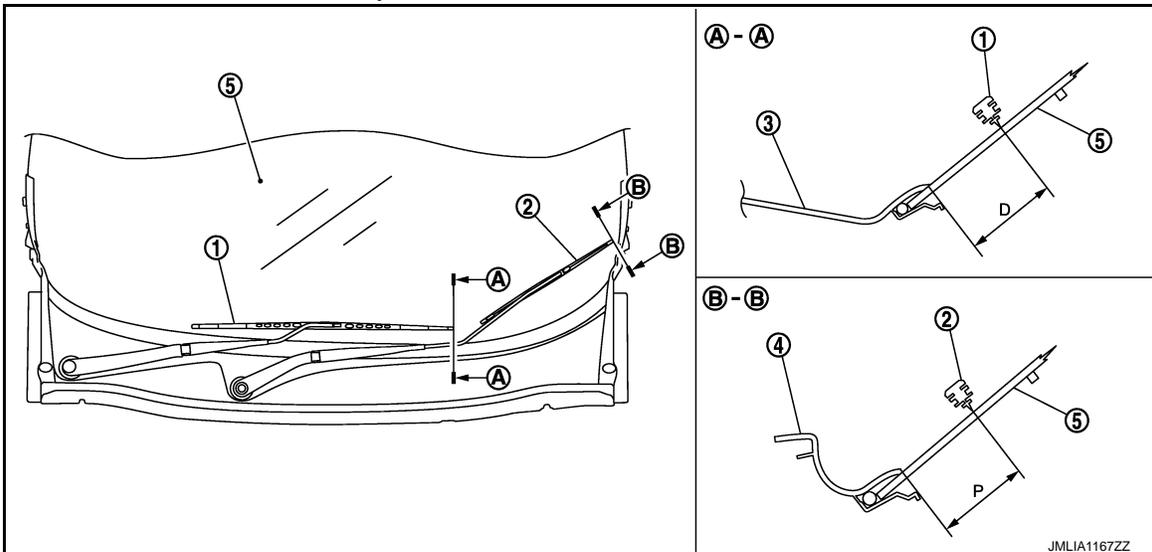
INFOID:000000006479470

#### WIPER BLADE POSITION ADJUSTMENT

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

#### NOTE:

This figure is for RHD models and is symmetric with LHD models.



# FRONT WIPER ARM

## < REMOVAL AND INSTALLATION >

---

- |                         |                              |                   |   |
|-------------------------|------------------------------|-------------------|---|
| 1. Front wiper blade RH | 2. Front wiper blade LH      | 3. Cowl top cover | A |
| 4. Front fender cover   | 5. Windshield glass assembly |                   |   |

Standard clearance

**D** :  $37.7 \pm 7.5 \text{ mm}$  ( $1.484 \pm 0.295 \text{ in}$ )

**P** :  $46.8 \pm 7.5 \text{ mm}$  ( $1.843 \pm 0.295 \text{ in}$ )

B

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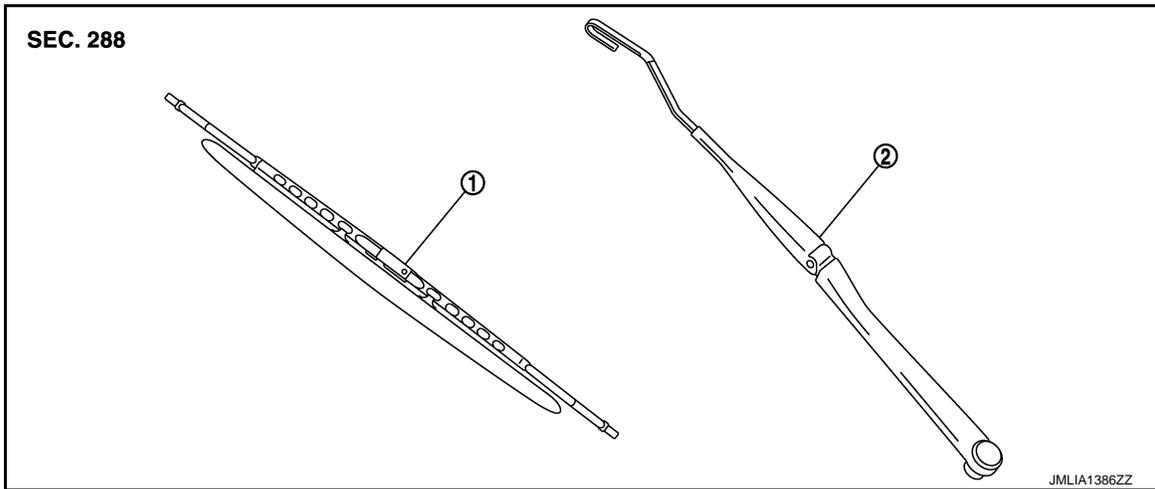
# FRONT WIPER BLADE

< REMOVAL AND INSTALLATION >

## FRONT WIPER BLADE

Exploded View

INFOID:000000006479471



1. Wiper blade

2. Wiper arm

## Removal and Installation

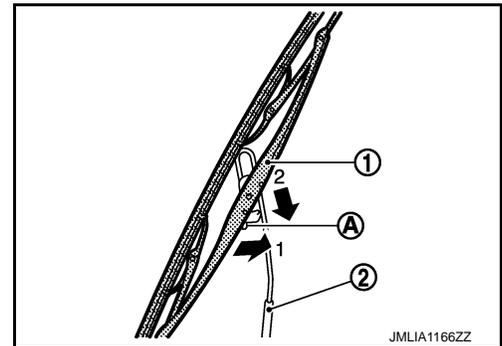
INFOID:000000006479472

### REMOVAL

Push up the lever (A) of wiper blade (1), while sliding wiper blade toward the direction of the arrow to remove it from wiper arm (2).

### CAUTION:

Be careful not to drop the wiper blade onto the windshield glass.



### INSTALLATION

1. Install wiper blade into wiper arm.
2. Install wiper arm.

# FRONT WIPER DRIVE ASSEMBLY

< REMOVAL AND INSTALLATION >

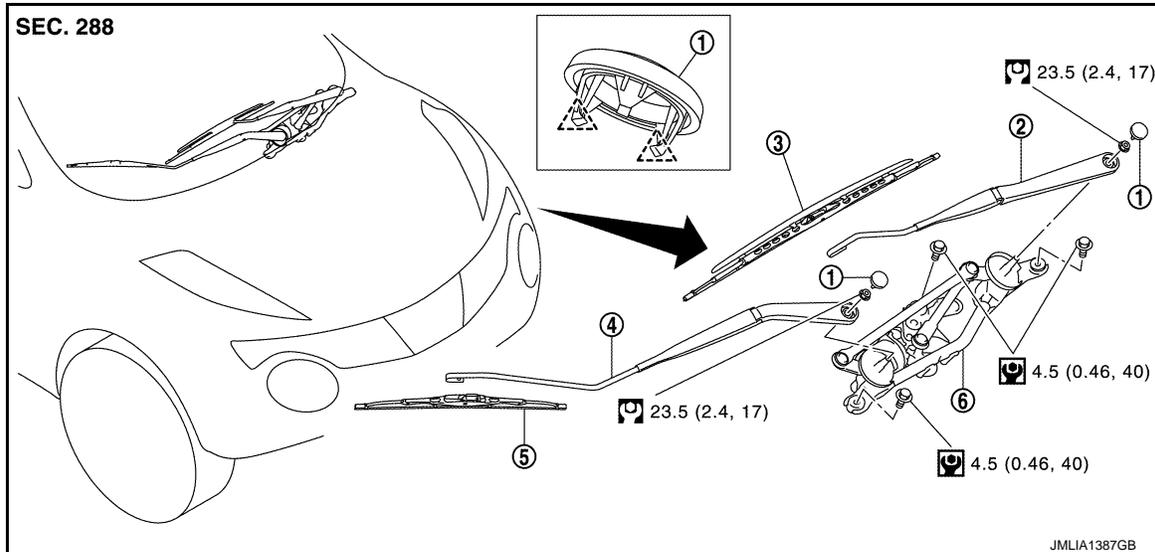
## FRONT WIPER DRIVE ASSEMBLY

Exploded View

INFOID:000000006643225

### REMOVAL

LHD models



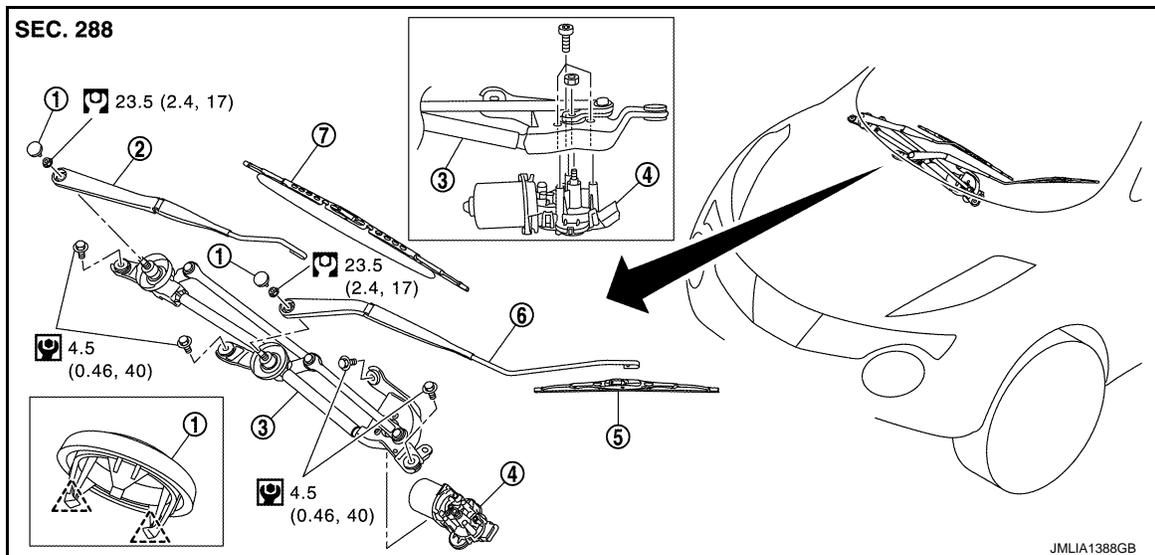
- |                        |                         |                               |
|------------------------|-------------------------|-------------------------------|
| 1. Front wiper arm cap | 2. Front wiper arm LH   | 3. Front wiper blade LH       |
| 4. Front wiper arm RH  | 5. Front wiper blade RH | 6. Front wiper drive assembly |

: Pawl

: N·m (kg-m, in-lb)

: N·m (kg-m, ft-lb)

RHD models



- |                         |                         |                               |
|-------------------------|-------------------------|-------------------------------|
| 1. Front wiper arm cap  | 2. Front wiper arm RH   | 3. Front wiper drive assembly |
| 4. Front wiper motor    | 5. Front wiper blade LH | 6. Front wiper arm LH         |
| 7. Front wiper blade RH |                         |                               |

: Pawl

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WW

# FRONT WIPER DRIVE ASSEMBLY

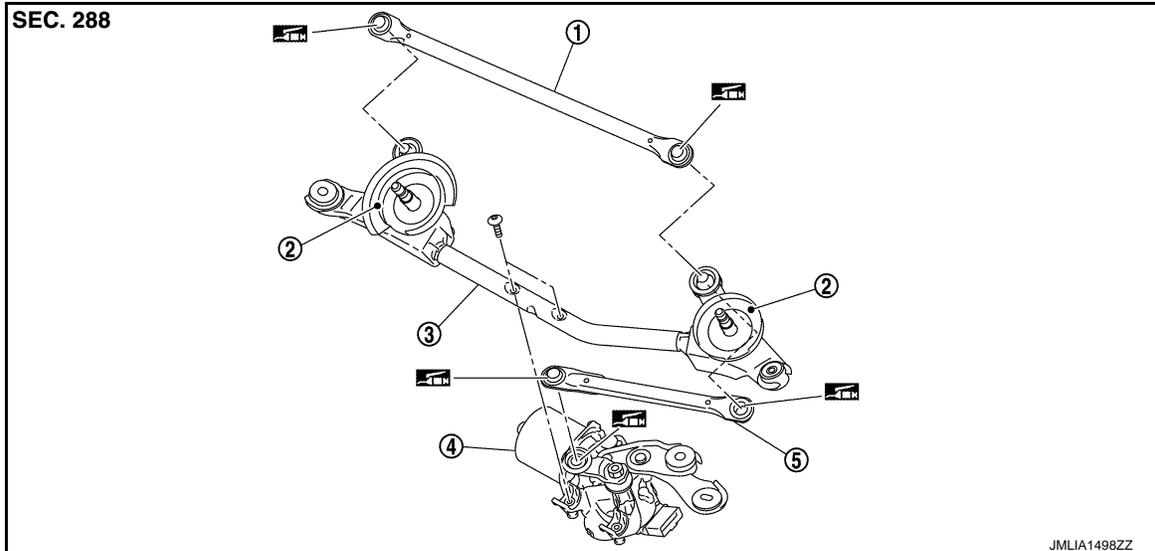
## < REMOVAL AND INSTALLATION >

 : N·m (kg·m, in·lb)

 : N·m (kg·m, ft·lb)

### DISASSEMBLY

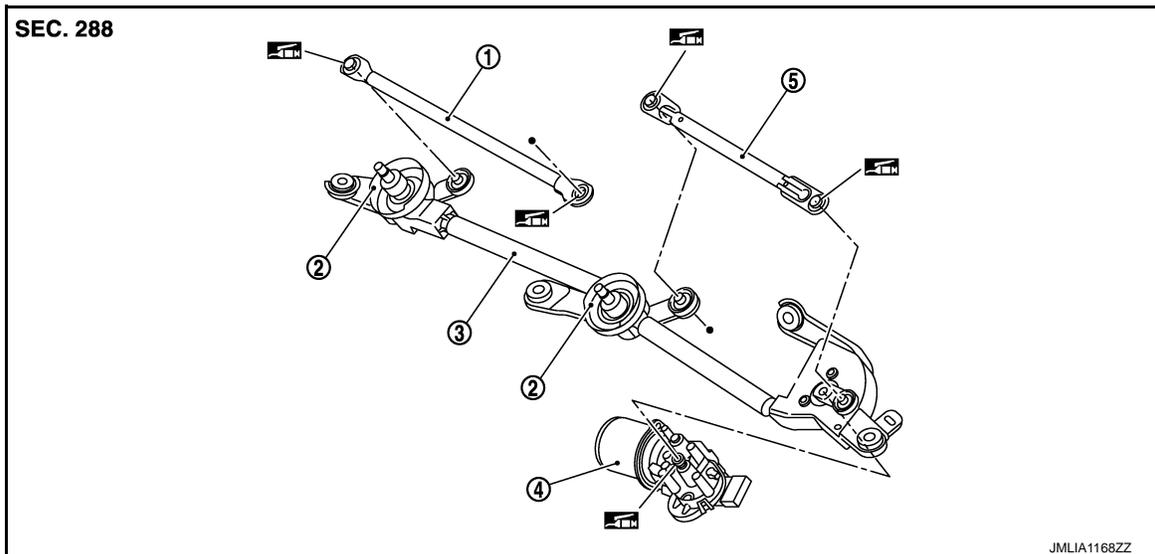
#### LHD models



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

 : Nissan MP special grease No.2

#### RHD models



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

 : Nissan MP special grease No.2

### Removal and Installation

INFOID:000000006479475

#### REMOVAL

1. Remove front wiper arms (LH and RH). Refer to [WW-76, "Removal and Installation"](#).

# FRONT WIPER DRIVE ASSEMBLY

## < REMOVAL AND INSTALLATION >

2. Remove cowl top cover. Refer to [EXT-20, "Removal and Installation"](#).
3. Disconnect the front wiper motor connector.
4. Remove the mounting bolts from front wiper drive assembly.
5. Remove the front wiper drive assembly from the vehicle.

## INSTALLATION

1. Install the front wiper drive assembly to the vehicle.
2. Connect front wiper motor connector.
3. Operate front wiper to move it to the auto stop position.
4. Install cowl top cover. Refer to [EXT-20, "Removal and Installation"](#).
5. Install front wiper arms. Refer to [WW-76, "Removal and Installation"](#).

## Disassembly and Assembly

INFOID:000000006479476

## DISASSEMBLY

1. Remove the front wiper linkage 1 and 2 from the front wiper drive assembly.  
**CAUTION:**  
**Never bend the linkage or damage the plastic part of the ball joint when removing the 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 the front wiper motor to the 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:**
  - **Never 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.**

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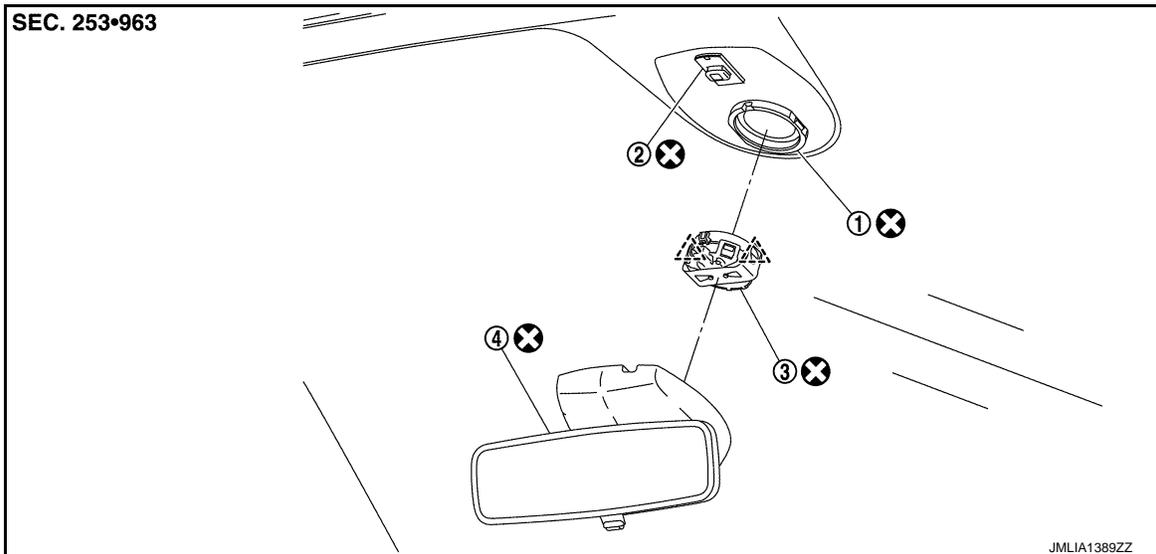
# LIGHT & RAIN SENSOR

< REMOVAL AND INSTALLATION >

## LIGHT & RAIN SENSOR

Exploded View

INFOID:000000006479477



1. Light & rain sensor bracket
2. Mirror base
3. Light & rain sensor
4. Inside mirror assembly

 : Pawl

 : Do not reuse

## Removal and Installation

INFOID:000000006479478

### CAUTION:

**When the light & rain sensor is removed from windshield, the light & rain sensor cannot be reused.**

### REMOVAL

1. Remove inside mirror assembly. Refer to [MIR-41. "Removal and Installation"](#).
2. Disconnect light & rain sensor connector.
3. Disengage both sides fixing pawls, and remove the light & rain sensor from the windshield.

### INSTALLATION

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

### CAUTION:

- Surface of windshield should be cleaned.
- Never touch gel/adhesive of new part.

# WIPER AND WASHER SWITCH

< REMOVAL AND INSTALLATION >

---

## WIPER AND WASHER SWITCH

### Exploded View

INFOID:000000006479479

The washer level switch must be replaced together with the washer tank as an assembly. Refer to [WW-67](#), "[Removal and Installation](#)".

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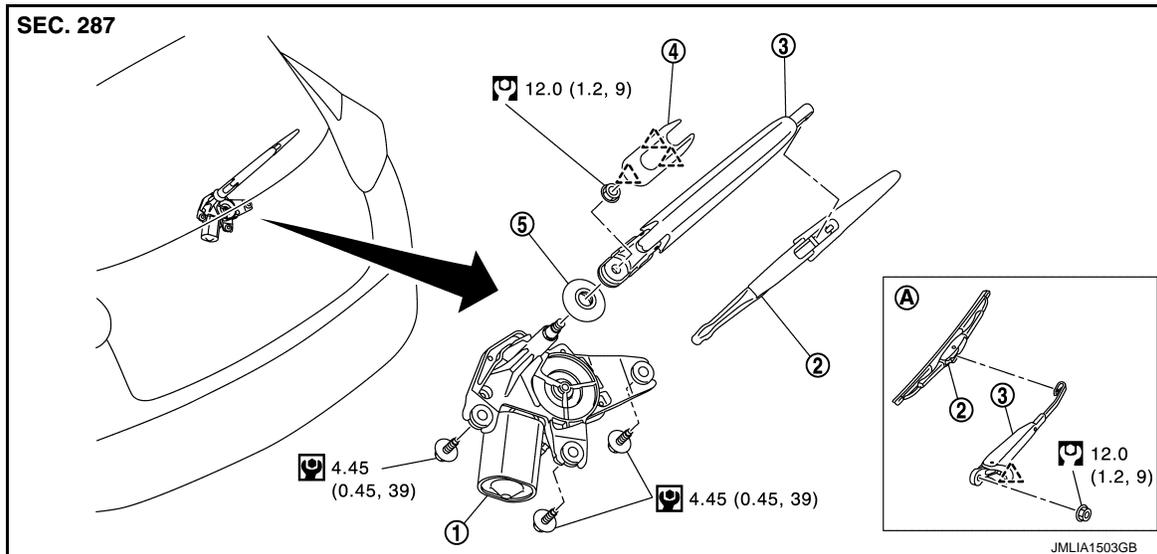
# REAR WIPER ARM

< REMOVAL AND INSTALLATION >

## REAR WIPER ARM

Exploded View

INFOID:000000006479480



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

A : Model for cold areas

 : Pawl

 : N·m (kg-m, in-lb)

 : N·m (kg-m, ft-lb)

## Removal and Installation

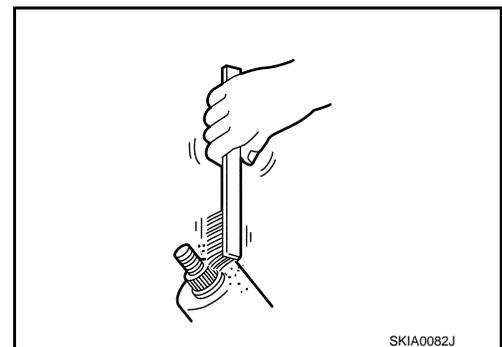
INFOID:000000006479481

### REMOVAL

1. Operate rear wiper to the auto stop position.
2. Remove rear wiper arm cover.
3. Remove rear wiper arm mounting nut.
4. 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-84, "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 the rear wiper arm cover.



## Adjustment

INFOID:000000006479482

## REAR WIPER BLADE POSITION ADJUSTMENT

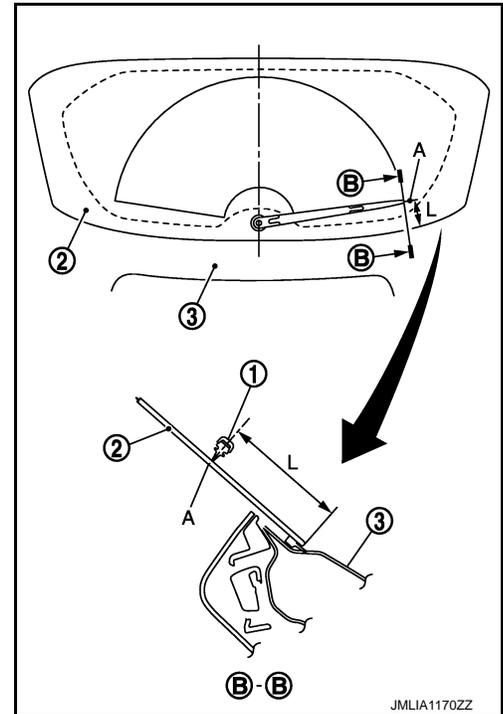
# REAR WIPER ARM

## < REMOVAL AND INSTALLATION >

Set the wiper blade top on the defrosting wire (A) (clearance between the end of back door glass and the top of wiper blade center).

Standard clearance

1. Rear wiper blade
  2. Back door window glass
  3. Back door panel
- A : Rear defogger wire print  
L :  $67.5 \pm 7.5$  mm ( $2.657 \pm 0.295$ in)



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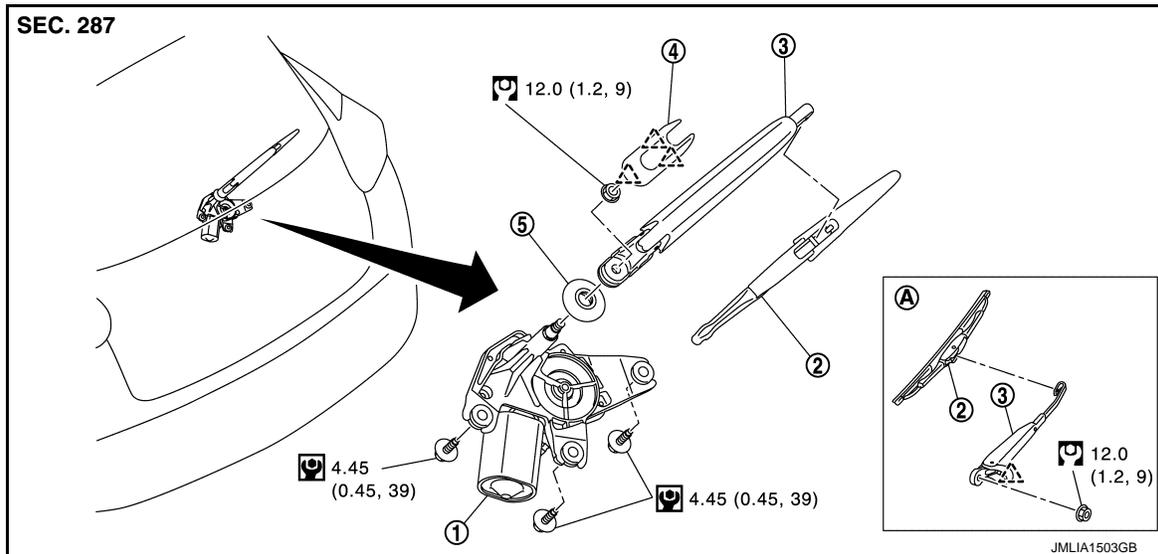
# REAR WIPER MOTOR

< REMOVAL AND INSTALLATION >

## REAR WIPER MOTOR

Exploded View

INFOID:000000006645398



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

A : Model for cold areas

 : Pawl

 : N·m (kg-m, in-lb)

 : N·m (kg-m, ft-lb)

## Removal and Installation

INFOID:000000006479484

### REMOVAL

1. Remove rear wiper arm. Refer to [WW-84, "Removal and Installation"](#).
2. Remove back door lower finisher. Refer to [INT-35, "BACK DOOR LOWER FINISHER : Removal and Installation"](#).
3. Disconnect rear wiper motor connector.
4. Remove rear wiper motor mounting bolts.
5. Remove rear wiper motor from the vehicle.
6. Remove the pivot seal.

### INSTALLATION

Install in the reverse order of removal.

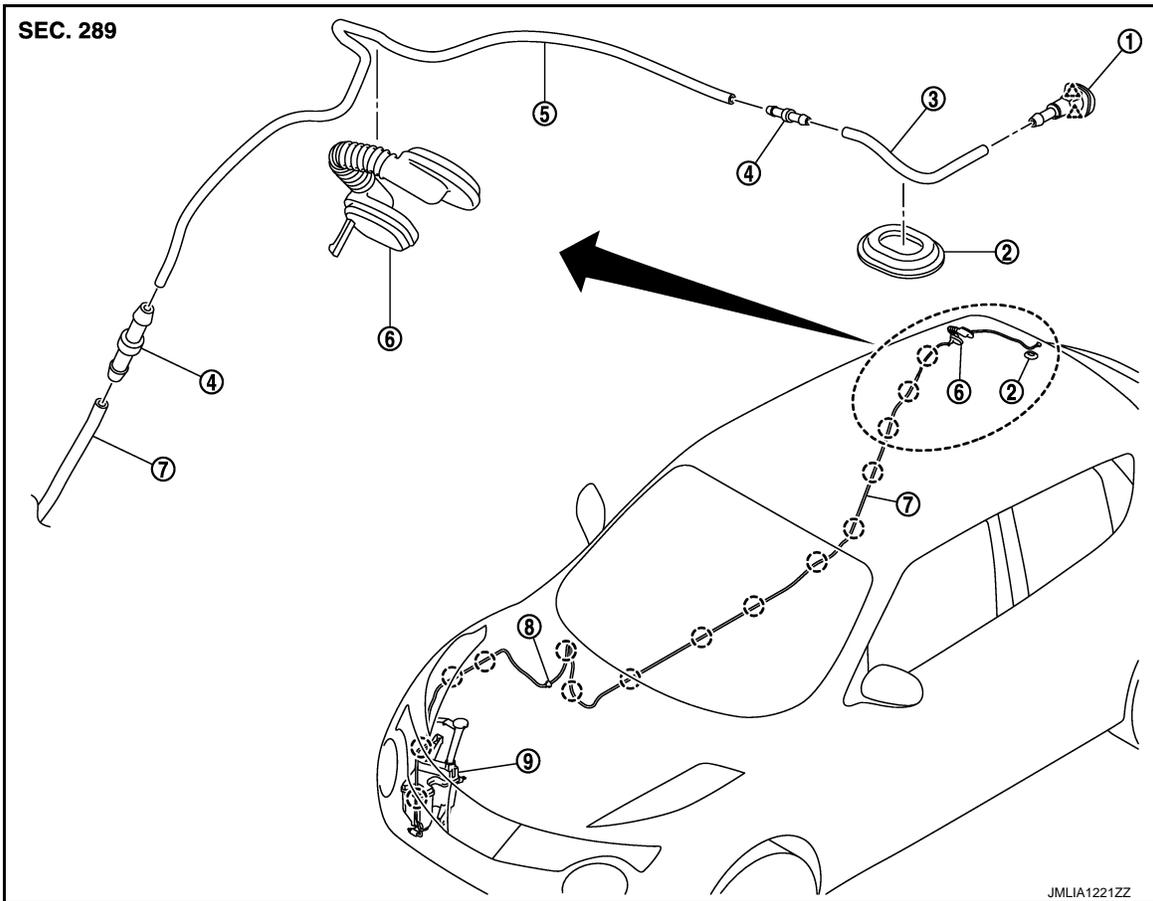
# REAR WASHER NOZZLE AND TUBE

< REMOVAL AND INSTALLATION >

## REAR WASHER NOZZLE AND TUBE

Hydraulic Layout

INFOID:000000006479485



- |                       |                       |                          |
|-----------------------|-----------------------|--------------------------|
| 1. Rear washer nozzle | 2. Plug               | 3. Rear washer tube      |
| 4. Joint              | 5. Second washer tube | 6. Back door seal rubber |
| 7. Front washer tube  |                       |                          |

- : Clip  
 △ : Pawl

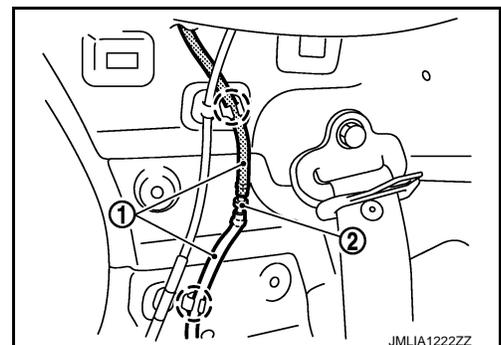
### Removal and Installation

INFOID:000000006479486

#### REMOVAL

1. Remove luggage side upper finisher RH. Refer to [INT-32. "LUGGAGE SIDE UPPER FINISHER : Removal and Installation"](#).
2. Disconnect rear washer tube (2) fixing clip and then remove rear washer tube joint (2) from rear washer tube.

- : Clip



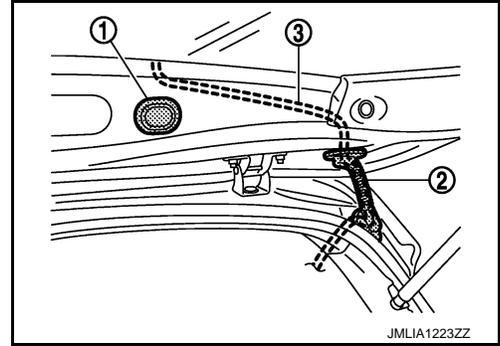
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WW

# REAR WASHER NOZZLE AND TUBE

## < REMOVAL AND INSTALLATION >

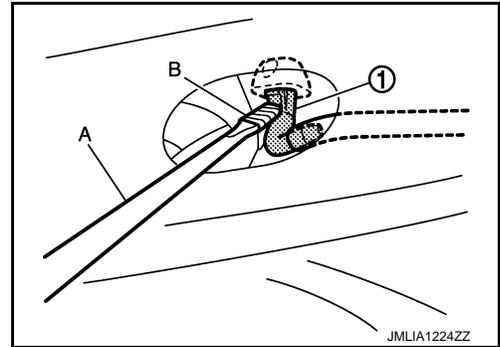
3. Fully open back door.
4. Remove back door seal rubber (2), and then remove rear washer tube (3) from back door seal rubber.
5. Remove plug (1).



6. Disengage rear washer nozzle (1) fixing pawl with a flat-bladed screwdriver (A) and remove the rear washer nozzle.

**CAUTION:**

**Wrap the flat-bladed screwdriver into a protective tape (B) to protect the part from damage.**



7. Remove rear washer nozzle from the rear washer tube.

## INSTALLATION

Install in the reverse order of removal.

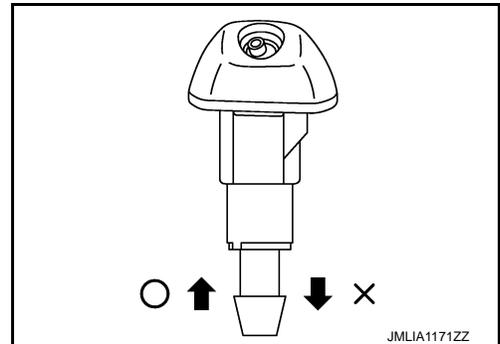
## Inspection and Adjustment

INFOID:000000006479487

### 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.



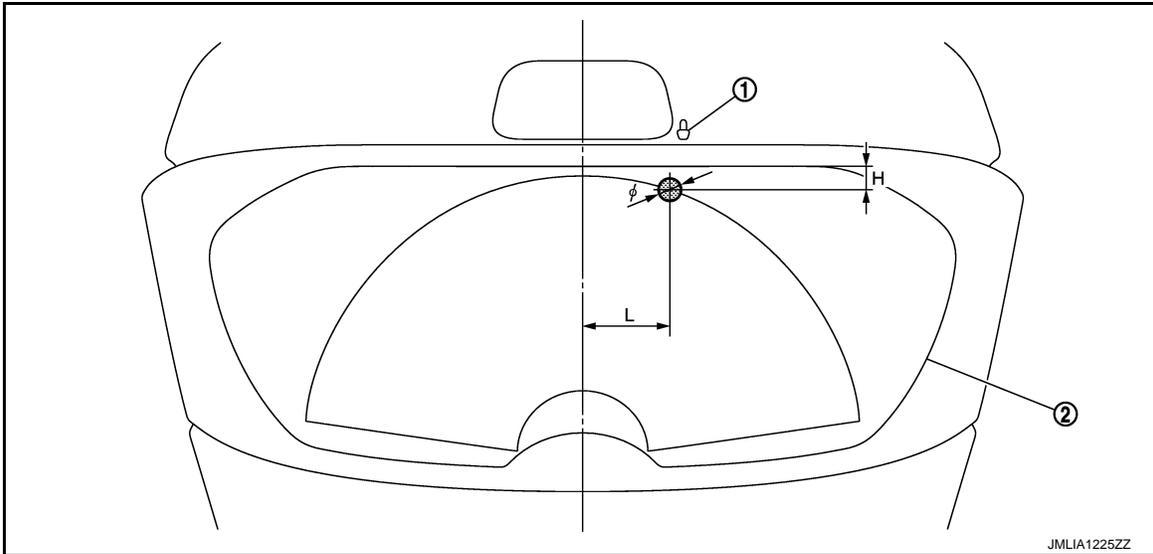
### ADJUSTMENT

Washer Nozzle Spray Position adjustment

# REAR WASHER NOZZLE AND TUBE

## < REMOVAL AND INSTALLATION >

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



1. Rear washer nozzle

2. Black print frame line

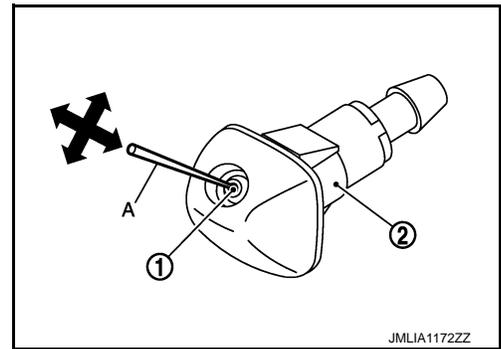
Unit: mm (in)

L: Length	H : Height	$\phi$ : Spray area
122.8 (4.83)	32.8 (1.29)	30 (1.18)

Insert a needle or similar object (A) into the spray opening (1) and move up/down and left/right to adjust the spray position.

**NOTE:**

If wax or dust gets into the spray opening of rear washer nozzle (2), remove wax or dust with a needle or small pin.



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

WW