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# SECTION **WW**

## WIPER & WASHER

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# PRECAUTION

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## PRECAUTION

### PRECAUTION

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

INFOID:000000012519789

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

#### **WARNING:**

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SR section.
- 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.

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

#### **WARNING:**

- When working near the Airbag Diagnosis Sensor Unit or other Airbag 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 three minutes before performing any service.

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# COMPONENT PARTS

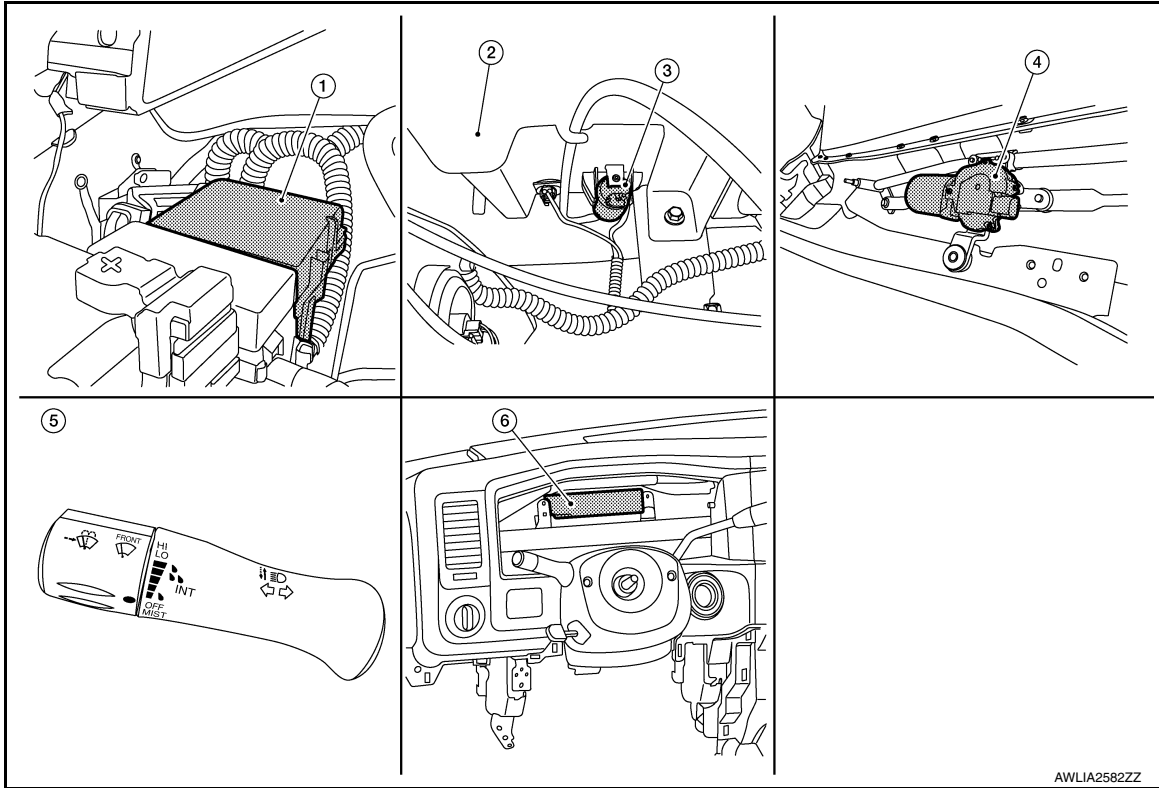
< SYSTEM DESCRIPTION >

## SYSTEM DESCRIPTION

### COMPONENT PARTS

#### Component Parts Location

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- |  |  |   |
|--|--|---|
| 1. IPDM E/R  | 2. Washer fluid reservoir                          | 3. Front washer motor   |
| 4. Front wiper motor<br>(view with cowl top removed) | 5. Combination switch (wiper and<br>washer switch) | 6. BCM<br>(view with combination meter and<br>steering wheel removed) |

#### Component Description

INFOID:000000012519791

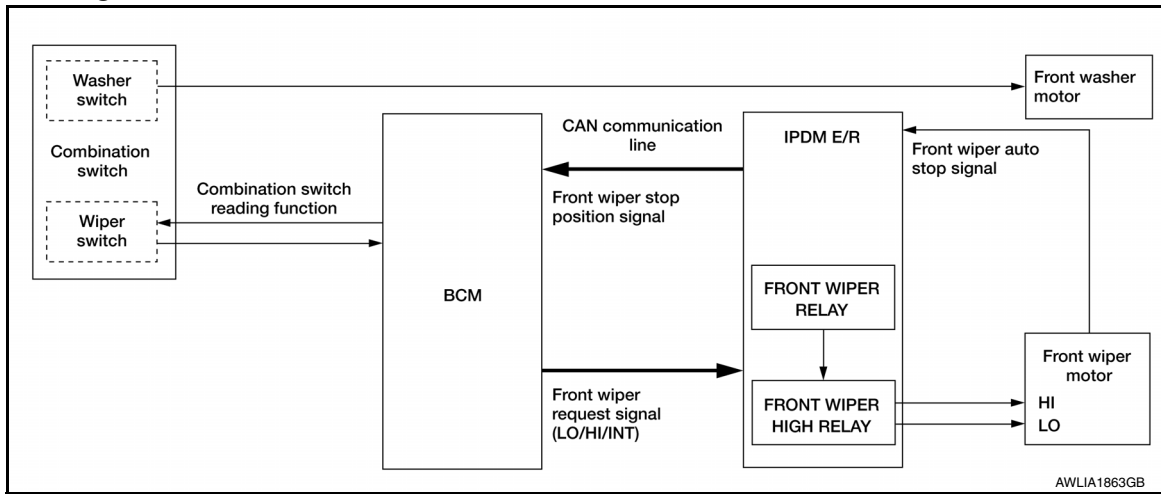
Component	Function
BCM	<ul style="list-style-type: none"> <li>Monitors combination switch status by performing the combination switch reading function.</li> <li>Sends front wiper relay and front wiper high relay ON signals to IPDM E/R.</li> </ul>
IPDM E/R	<ul style="list-style-type: none"> <li>Controls front wiper relay and front wiper high relay.</li> <li>Performs the auto stop control of the front wiper.</li> </ul>
Combination switch (wiper and washer switch)	<ul style="list-style-type: none"> <li>Provides input for wiper and washer control to BCM.</li> <li>Refer to <a href="#">WW-5, "System Description"</a> for more information.</li> </ul>
Front wiper motor	<ul style="list-style-type: none"> <li>Drives windshield wipers in HI or LO mode.</li> <li>Sends wiper stop signal to IPDM E/R.</li> </ul>
Front washer motor	Pumps windshield washer fluid to windshield in wash mode.

# SYSTEM

< SYSTEM DESCRIPTION >

## SYSTEM

### System Diagram



### System Description

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#### FRONT WIPER CONTROL (BASIC)

1. BCM detects the combination switch position by the combination switch reading function.
2. BCM transmits the front wiper request signal to the IPDM E/R using CAN communication.
3. IPDM E/R controls the integrated front wiper relay and front wiper high relay based on the status of the front wiper request signal.
4. IPDM E/R provides power to operate the front wiper motor.

#### LOW SPEED OPERATION

1. Ignition switch ON.
2. Front wiper switch in LO or MIST position.
3. BCM reads the combination switch position and transmits the front wiper request signal (LO) to IPDM E/R using CAN communication.
4. IPDM E/R turns ON the front wiper relay.

#### HIGH SPEED OPERATION

1. Ignition switch ON.
2. Front wiper switch in HI.
3. BCM reads the combination switch position and transmits the front wiper request signal (HI) to IPDM E/R using CAN communication.
4. IPDM E/R turns ON the front wiper relay and the front wiper high relay.

#### INTERMITTENT OPERATION

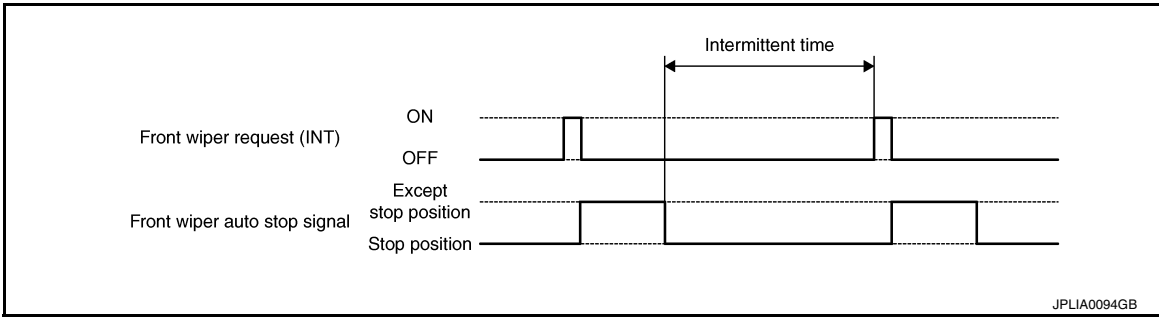
1. Ignition switch ON.
2. Front wiper switch INT.
3. BCM reads the combination switch position. BCM calculates the delay interval based on the table below and then transmits the front wiper request signal (INT) to IPDM E/R using CAN communication.
4. IPDM E/R turns ON the front wiper relay only once.
5. BCM detects stop position of the front wiper motor based on the front wiper stop position signal received from the IPDM E/R.
6. BCM transmits the front wiper request signal (INT) again after the delay interval.

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# SYSTEM

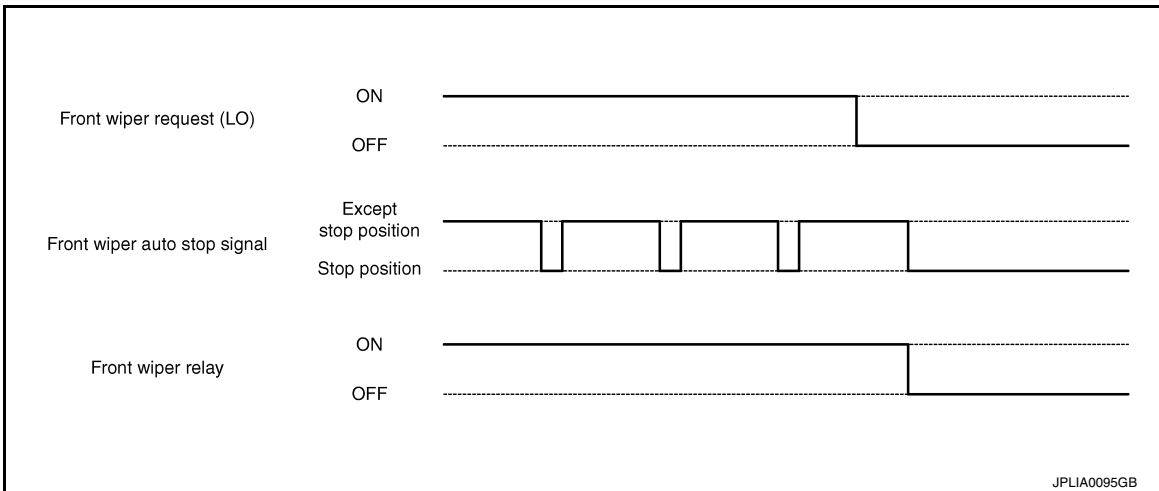
## < SYSTEM DESCRIPTION >



Intermittent switch position	Length of delay	Delay interval (s)
5	Short ↑	1
4		3
3		5
2	Long ↓	10
1		16

### AUTO STOP OPERATION

1. Front wiper switch is turned OFF.
2. BCM monitors wiper switch position by combination switch reading position function.
3. BCM stops transmitting the front wiper request signal to the IPDM E/R.
4. IPDM E/R detects the front wiper auto stop signal from the position of the front wiper motor (stop position/ except stop position).
5. 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.
6. IPDM E/R turns the front wiper relay OFF when the front wiper motor has reached the stop position.



### MIST OPERATION

1. Ignition switch ON.
2. Front washer switch in OFF position.
3. Front wiper switch in MIST position.
4. BCM reads the combination switch position and transmits the front wiper request signal (LO) to IPDM E/R using CAN communication.
5. IPDM E/R turns ON the front wiper relay.
6. The front wiper operates once after the front washer operation.

### WIPER/WASHER OPERATION

1. Ignition switch ON.
2. Front washer switch ON.
3. The front washer switch provides power to the front washer motor.

# SYSTEM

## < SYSTEM DESCRIPTION >

4. BCM reads the combination switch position and transmits the front wiper request signal (LO) to IPDM E/R using CAN communication. A
5. BCM transmits the front wiper request signal (LO) to IPDM E/R using CAN communication.
6. IPDM E/R turns ON the front wiper relay.
7. The front wiper operates. B

### NOTE:

BCM transmits the front wiper request signal (LO) so that the front wiper operates approximately 3 times after front washer switch OFF is detected. C

### Fail-Safe

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### FAIL-SAFE OPERATION

IPDM E/R performs the fail-safe function when the front wiper auto stop circuit is malfunctioning. Refer to [PCS-16, "Fail Safe"](#). D

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## DIAGNOSIS SYSTEM (BCM)

< SYSTEM DESCRIPTION >

### DIAGNOSIS SYSTEM (BCM)

#### COMMON ITEM

COMMON ITEM : CONSULT Function (BCM - COMMON ITEM)

INFOID:000000012742607

#### APPLICATION ITEM

CONSULT performs the following functions via CAN communication with BCM.

Direct Diagnostic Mode	Description
Ecu Identification	The BCM part number is displayed.
Self Diagnostic Result	The BCM self diagnostic results are displayed.
Data Monitor	The BCM input/output data is displayed in real time.
Active Test	The BCM activates outputs to test components.
Work support	The settings for BCM functions can be changed.
Configuration	<ul style="list-style-type: none"> <li>• The vehicle specification can be read and saved.</li> <li>• The vehicle specification can be written when replacing BCM.</li> </ul>
CAN Diag Support Mntr	The result of transmit/receive diagnosis of CAN communication is displayed.

#### SYSTEM APPLICATION

BCM can perform the following functions.

System	Sub System	Direct Diagnostic Mode						
		Ecu Identification	Self Diagnostic Result	Data Monitor	Active Test	Work support	Configuration	CAN Diag Support Mntr
Door lock	DOOR LOCK			x	x	x		
Rear window defogger	REAR DEFOGGER			x	x			
Warning chime	BUZZER			x	x			
Interior room lamp timer	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			
Air conditioner	AIR CONDITIONER			x				
Combination switch	COMB SW			x				
BCM	BCM	x	x			x	x	x
Immobilizer	IMMU		x		x			
Interior room lamp battery saver	BATTERY SAVER			x		x		
Vehicle security system	THEFT ALM			x	x	x		
RAP system	RETAINED PWR			x		x		
Signal buffer system	SIGNAL BUFFER			x	x			
Panic alarm system	PANIC ALARM				x			

#### WIPER



# DIAGNOSIS SYSTEM (BCM)

< SYSTEM DESCRIPTION >

## WIPER : CONSULT Function (BCM - WIPER)

INFOID:000000012742608

### DATA MONITOR

Monitor Item [Unit]	Description
IGN ON SW [On/Off]	Indicates condition of ignition switch ON position.
IGN SW CAN [On/Off]	Indicates ignition switch ON signal received from IPDM E/R on CAN communication line.
FR WIPER HI [On/Off]	Indicates condition of front wiper operation of combination switch.
FR WIPER LOW [On/Off]	
FR WIPER INT [On/Off]	
FR WASHER SW [On/Off]	
INT VOLUME [1 - 5]	
FR WIPER STOP [On/Off]	Indicates front wiper motor auto stop signal received from IPDM E/R on CAN communication line.
REVERSE SW CAN [On/Off]	Indicates reverse switch signal received from TCM on CAN communication line.
VEHICLE SPEED [km/h]	Indicates vehicle speed signal received from ABS on CAN communication line.

### ACTIVE TEST

Test Item	Description
FR WIPER	This test is able to check front wiper operation [Off/INT/Lo/Hi].

### WORK SUPPORT

Support Item	Setting	Description
WIPER SPEED SETTING	On	Front wiper intermittent time linked with vehicle speed and wiper intermittent dial position.
	Off*	Front wiper intermittent time is not linked with vehicle speed and wiper intermittent dial position.

\*: Initial Setting

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# DIAGNOSIS SYSTEM (IPDM E/R)

< SYSTEM DESCRIPTION >

## DIAGNOSIS SYSTEM (IPDM E/R)

### Diagnosis Description

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#### 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 low warning indicator
- Rear window defogger (if equipped)
- Front wipers
- Tail, license plate, side marker and parking lamps
- Front fog lamps (if equipped)
- Headlamps (Hi, Lo)
- A/C compressor (magnetic clutch)
- Cooling fan

##### Operation Procedure

1. Close the hood and front door RH, and lift the wiper arms from the windshield (to prevent windshield damage due to wiper operation).  
**NOTE:**  
When auto active test is performed with hood opened, sprinkle water on windshield beforehand.
2. Turn ignition switch OFF.
3. Turn the ignition switch ON and, within 20 seconds, press the front door switch LH 10 times. Then turn the ignition switch OFF.
4. Turn the ignition switch ON within 10 seconds. After that, the horn sounds once and the auto active test starts.
5. After a series of the following operations is repeated 3 times, auto active test is completed.

##### **NOTE:**

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

##### **CAUTION:**

- **If auto active test mode cannot be actuated, check door switch system. Refer to [DLK-50, "Description"](#).**
- **Do not start the engine.**

##### Inspection in Auto Active Test Mode

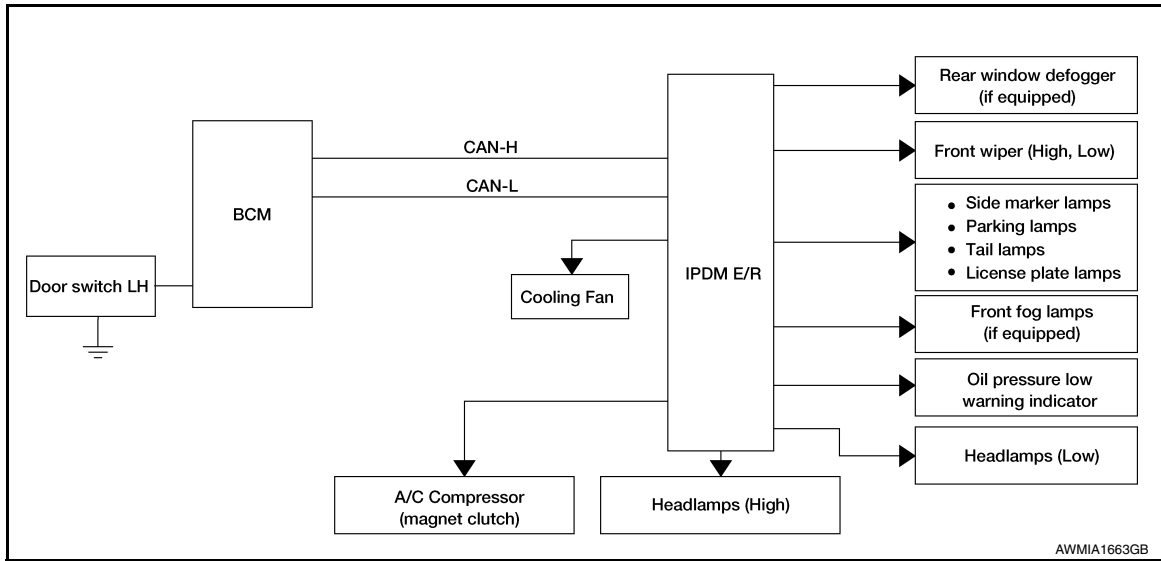
When auto active test mode is actuated, the following operation sequence is repeated 3 times.

Operation sequence	Inspection Location	Operation
1	Oil pressure low warning indicator	Blinks continuously during operation of auto active test
2	Rear window defogger (if equipped)	10 seconds
3	Front wipers	LO for 5 seconds → HI for 5 seconds
4	Tail, license plate, side marker, parking lamps and front fog lamps (if equipped)	10 seconds
5	Headlamps	LO for 10 seconds → HI on-off for 5 seconds
6	A/C compressor	ON ⇔ OFF 5 times
7	Cooling fan	10 seconds

# DIAGNOSIS SYSTEM (IPDM E/R)

## < SYSTEM DESCRIPTION >

### Concept of auto active test



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

### Diagnosis chart in auto active test mode

Symptom	Inspection contents	Possible cause
Oil pressure low warning indicator does not operate	Perform auto active test. Does the oil pressure low warning indicator blink?	YES <ul style="list-style-type: none"> <li>• IPDM E/R signal input circuit</li> <li>• CAN communication signal between ECM and combination meter</li> <li>• Oil pressure switch wiring</li> <li>• Oil pressure switch</li> </ul>
		NO <ul style="list-style-type: none"> <li>• CAN communication signal between IPDM E/R, BCM and combination meter</li> </ul>
Rear window defogger (if equipped) 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>• Harness or connector between front air control</li> <li>• CAN communication signal between BCM and IPDM E/R</li> <li>• Rear window defogger</li> <li>• Rear window defogger ground</li> <li>• IPDM E/R</li> </ul>
Any of the following components do not operate <ul style="list-style-type: none"> <li>• Front wipers</li> <li>• Tail lamps</li> <li>• License plate lamps</li> <li>• Parking lamps</li> <li>• Front fog lamps (if equipped)</li> <li>• Headlamps (Hi, Lo)</li> <li>• Side marker lamps</li> </ul>	Perform auto active test. Does the applicable system operate?	YES BCM signal input system
		NO <ul style="list-style-type: none"> <li>• Lamp or front wiper motor malfunction</li> <li>• Lamp or front wiper motor ground circuit</li> <li>• Harness or connector between IPDM E/R and applicable system</li> <li>• IPDM E/R</li> </ul>

## DIAGNOSIS SYSTEM (IPDM E/R)

### < SYSTEM DESCRIPTION >

Symptom	Inspection contents		Possible cause
A/C compressor does not operate	Perform auto active test. Does the A/C compressor operate?	YES	<ul style="list-style-type: none"> <li>• BCM signal input circuit</li> <li>• CAN communication signal between BCM and ECM</li> <li>• CAN communication signal between ECM and IPDM E/R</li> </ul>
		NO	<ul style="list-style-type: none"> <li>• Magnetic clutch malfunction</li> <li>• Harness or connector between IPDM E/R and magnetic clutch</li> <li>• IPDM E/R (integrated relay malfunction)</li> </ul>
Cooling fan does not operate	Perform auto active test. Does the cooling fan operate?	YES	<ul style="list-style-type: none"> <li>• ECM signal input circuit</li> <li>• CAN communication signal between ECM and IPDM E/R</li> </ul>
		NO	<ul style="list-style-type: none"> <li>• Cooling fan motor malfunction</li> <li>• Harness or connector between IPDM E/R and cooling fan</li> <li>• IPDM E/R (integrated relay malfunction)</li> </ul>

### CONSULT Function (IPDM E/R)

INFOID:000000012742610

#### APPLICATION ITEM

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

Direct Diagnostic Mode	Description
Self Diagnostic Result	The IPDM E/R self diagnostic results are displayed.
Data Monitor	The IPDM E/R input/output data is displayed in real time.
Active Test	The IPDM E/R activates outputs to test components.
CAN Diag Support Mntr	The result of transmit/receive diagnosis of CAN communication is displayed.

#### SELF DIAGNOSTIC RESULT

Refer to [PCS-17, "DTC Index"](#).

#### DATA MONITOR

Monitor Item [Unit]	Main Signals	Description
MOTOR FAN REQ [1/2/3/4]	×	Indicates cooling fan speed signal received from ECM on CAN communication line
AC COMP REQ [On/Off]	×	Indicates A/C compressor request signal received from ECM on CAN communication line
TAIL&CLR REQ [On/Off]	×	Indicates position light request signal received from BCM on CAN communication line
HL LO REQ [On/Off]	×	Indicates low beam request signal received from BCM on CAN communication line
HL HI REQ [On/Off]	×	Indicates high beam request signal received from BCM on CAN communication line
FR FOG REQ [On/Off]	×	Indicates fog lamp request signal received from BCM on CAN communication line
FR WIP REQ [Stop/1LOW/Low/Hi]	×	Indicates front wiper request signal received from BCM on CAN communication line

## DIAGNOSIS SYSTEM (IPDM E/R)

### < SYSTEM DESCRIPTION >

Monitor Item [Unit]	Main Signals	Description
WIP AUTO STOP [STOP P/ACT P]	×	Indicates condition of front wiper auto stop signal
WIP PROT [Off/BLOCK]	×	Indicates condition of front wiper fail-safe operation
ST RLY REQ [On/Off]		Indicates starter request signal received from ECM on CAN communication line
IGN RLY [On/Off]	×	Indicates condition of ignition relay
RR DEF REQ [On/Off]	×	Indicates rear defogger request signal received from AV control unit on CAN communication line
OIL P SW [Open/Close]		Indicates condition of oil pressure switch
DTRL REQ [On/Off]		Indicates daytime running light request signal received from BCM on CAN communication line
THFT HRN REQ [On/Off]		Indicates theft warning horn request signal received from BCM on CAN communication line
HORN CHIRP [On/Off]		Indicates horn reminder signal received from BCM on CAN communication line

### ACTIVE TEST

Test item	Description
REAR DEFOGGER	This test is able to check rear defogger operation [On/Off].
FRONT WIPER	This test is able to check wiper motor operation [Hi/Lo/Off].
MOTOR FAN	This test is able to check cooling fan operation [4/3/2/1].
EXTERNAL LAMPS	This test is able to check external lamp operation [Hi/Lo/TAIL/Fog/Off].
HORN	This test is able to check horn operation [On].

### CAN DIAG SUPPORT MNTR

Refer to [LAN-13. "CAN Diagnostic Support Monitor"](#).

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# BCM, IPDM E/R

< ECU DIAGNOSIS INFORMATION >

## ECU DIAGNOSIS INFORMATION

BCM, IPDM E/R

List of ECU Reference

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ECU	Reference
BCM	<a href="#">BCS-28, "Reference Value"</a>
	<a href="#">BCS-41, "Wiring Diagram"</a>
	<a href="#">BCS-39, "Fail-safe"</a>
	<a href="#">BCS-39, "DTC Inspection Priority Chart"</a>
	<a href="#">BCS-39, "DTC Index"</a>
IPDM E/R	<a href="#">PCS-12, "Reference Value"</a>
	<a href="#">PCS-19, "Wiring Diagram"</a>
	<a href="#">PCS-13, "Terminal Layout"</a>
	<a href="#">PCS-13, "Physical Values"</a>
	<a href="#">PCS-16, "Fail Safe"</a>
	<a href="#">PCS-17, "DTC Index"</a>

# FRONT WIPER AND WASHER SYSTEM

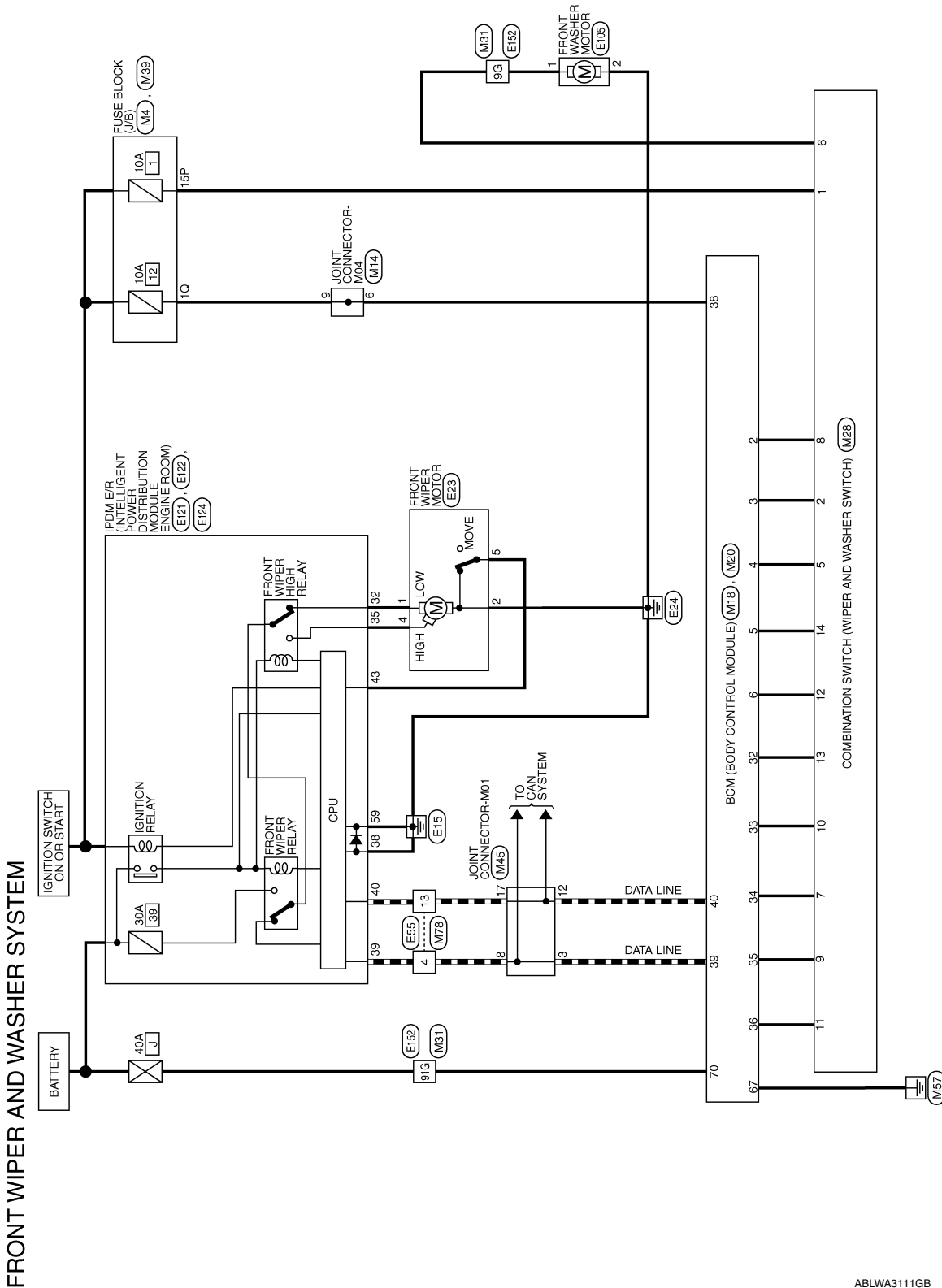
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## WIRING DIAGRAM

### FRONT WIPER AND WASHER SYSTEM

Wiring Diagram

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# FRONT WIPER AND WASHER SYSTEM

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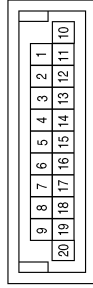
## FRONT WIPER AND WASHER SYSTEM CONNECTORS

Connector No.	M4
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
15P	R	-

Connector No.	M14
Connector Name	JOINT CONNECTOR-M04
Connector Color	BLUE



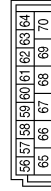
Terminal No.	Color of Wire	Signal Name
6	R	-
9	R	-

Connector No.	M18
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
2	L	INPUT 5
3	P	INPUT 4
4	LG	INPUT 3
5	O	INPUT 2
6	R	INPUT 1
32	SB	OUTPUT 5
33	G	OUTPUT 4
34	Y	OUTPUT 3
35	BR	OUTPUT 2
36	Y	OUTPUT 1
38	R	IGN SW
39	L	CAN-H
40	P	CAN-L

Connector No.	M20
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
67	B	GND
70	R	BATTERY (F/L)

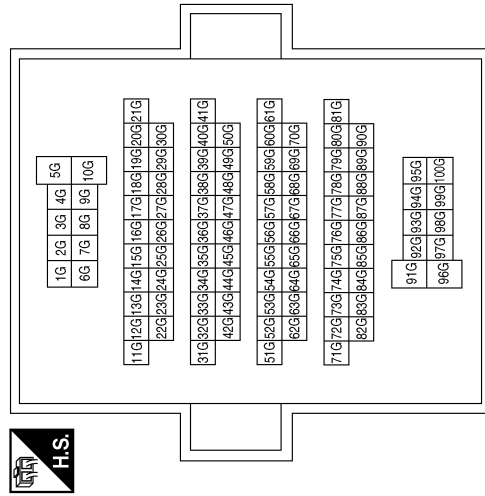


# FRONT WIPER AND WASHER SYSTEM

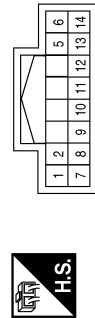
< WIRING DIAGRAM >

Terminal No.	Color of Wire	Signal Name
9G	V	-
91G	R	-

Connector No.	M31
Connector Name	WIRE TO WIRE
Connector Color	WHITE

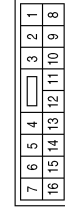


Connector No.	M28
Connector Name	COMBINATION SWITCH
Connector Color	WHITE

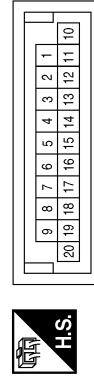


Terminal No.	Color of Wire	Signal Name
1	R	-
2	P	-
5	LG	-
6	V	-
7	Y	-
8	L	-
9	BR	-
10	G	-
11	Y	-
12	R	-
13	SB	-
14	O	-

Connector No.	M78
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Connector No.	M45
Connector Name	JOINT CONNECTOR-M01
Connector Color	BLUE



Terminal No.	Color of Wire	Signal Name
4	L	-
13	P	-

Terminal No.	Color of Wire	Signal Name
3	L	-
8	L	-
12	P	-
17	P	-

Connector No.	M39
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1Q	R	-

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WW

# FRONT WIPER AND WASHER SYSTEM

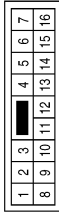
< WIRING DIAGRAM >

Connector No.	E105
Connector Name	FRONT WASHER MOTOR
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	V	-
2	B	-

Connector No.	E55
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
4	L	-
13	P	-

Connector No.	E23
Connector Name	FRONT WIPER MOTOR
Connector Color	GRAY



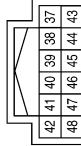
Terminal No.	Color of Wire	Signal Name
1	L	-
2	B	-
4	SB	-
5	Y	-

Connector No.	E124
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
59	B	GND (POWER)

Connector No.	E122
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
38	B	GND (SIGNAL)
39	L	CAN-H
40	P	CAN-L
43	Y	AUTO STOP SW

Connector No.	E121
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	BROWN



Terminal No.	Color of Wire	Signal Name
32	L	FR WIPER LO
35	SB	FR WIPER HI

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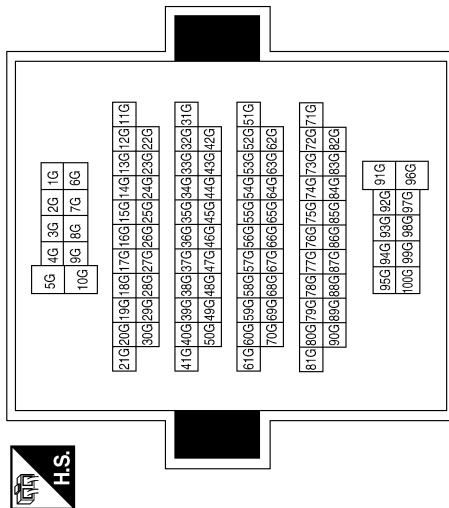
# FRONT WIPER AND WASHER SYSTEM

< WIRING DIAGRAM >

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Terminal No.	Color of Wire	Signal Name
9G	V	-
91G	R	-

Connector No.	E152
Connector Name	WIRE TO WIRE
Connector Color	WHITE



ABLIA2963GB

# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

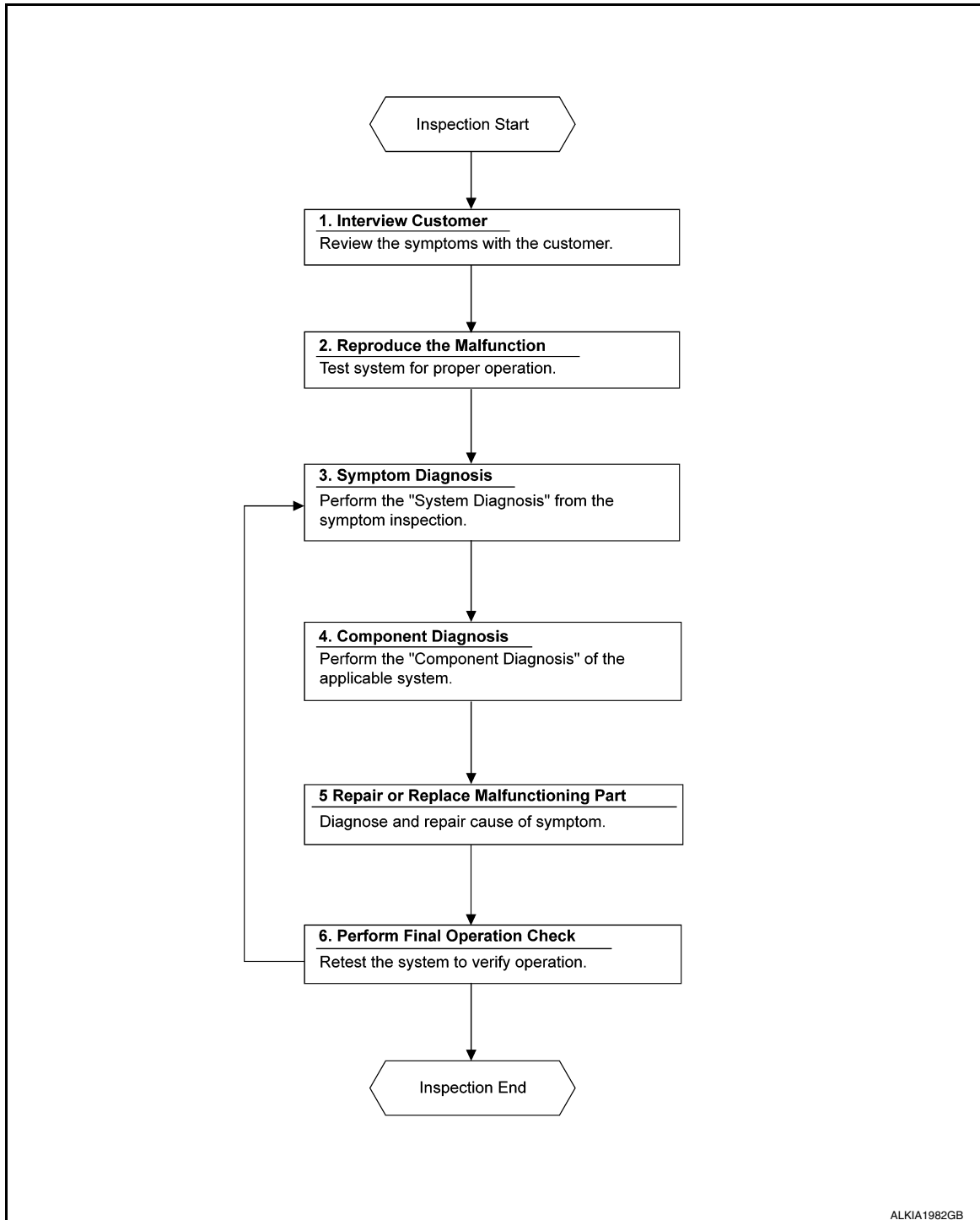
## BASIC INSPECTION

### DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000012742611

#### OVERALL SEQUENCE



#### DETAILED FLOW

##### 1. INTERVIEW CUSTOMER

Interview the customer to obtain as much information as possible about the conditions and environment under which the malfunction occurred.

# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

---

>> GO TO 2.

## 2. REPRODUCE THE MALFUNCTION

---

Reproduce the malfunction on the vehicle that the customer describes.  
Inspect the relation of the symptoms and the condition when the symptoms occur.

>> GO TO 3.

## 3. SYMPTOM DIAGNOSIS

---

Use Symptom diagnosis from the symptom inspection result in step 2 and then identify where to start performing the diagnosis based on possible causes and symptoms.

>> GO TO 4.

## 4. COMPONENT DIAGNOSIS

---

Perform the diagnosis with Component diagnosis of the applicable system.

>> GO TO 5.

## 5. REPAIR OR REPLACE THE MALFUNCTIONING PART

---

Repair or replace the specified malfunctioning parts.

>> GO TO 6.

## 6. PERFORM FINAL OPERATIONAL CHECK

---

Check that malfunctions are not reproduced when obtaining the malfunction information from the customer, referring to the symptom inspection result in step 2.

Are the malfunctions corrected?

YES >> Inspection End.

NO >> GO TO 3.

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WW

# WIPER AND WASHER FUSE

< DTC/CIRCUIT DIAGNOSIS >

## DTC/CIRCUIT DIAGNOSIS

### WIPER AND WASHER FUSE

#### Description

INFOID:0000000012519801

Component	Capacity	Fuse No.	Location
Front wiper motor	30 A	39	IPDM E/R
Front washer motor	10 A	1	Fuse block (J/B)

#### Diagnosis Procedure

INFOID:0000000012519802

#### 1. CHECK FUSES

Check that the following fuses are not blown:

Component	Capacity	Fuse No.	Location
Front wiper motor	30 A	39	IPDM E/R
Front washer motor	10 A	1	Fuse block (J/B)

Is the fuse or fusible link blown?

- YES >> Replace the blown fuse or fusible link after repairing the affected circuit.
- NO >> Inspection End.

# FRONT WIPER MOTOR LO CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

## FRONT WIPER MOTOR LO CIRCUIT

### Component Function Check

INFOID:000000012519803

#### 1. CHECK FRONT WIPER LO OPERATION

##### ⊗ IPDM E/R AUTO ACTIVE TEST

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

##### Ⓟ CONSULT ACTIVE TEST

1. Select FR WIPER of BCM (WIPER) active test item.
2. While operating the test item, check front wiper LO operation and OFF.

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

**OFF** : Front wiper OFF

Is the inspection result normal?

- YES >> Front wiper motor LO circuit is normal.  
 NO >> Refer to [WW-23, "Diagnosis Procedure"](#).

### Diagnosis Procedure

INFOID:000000012519804

Regarding Wiring Diagram information, refer to [WW-15, "Wiring Diagram"](#).

#### 1. CHECK FRONT WIPER MOTOR FUSE

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

Component	Capacity	Fuse No.	Location
Front wiper motor	30 A	39	IPDM E/R

Is the fuse or fusible link blown?

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

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

1. Turn the ignition switch ON.
2. Select FR WIPER of BCM (WIPER) active test item.
3. While performing the active test, check voltage between IPDM E/R harness connector and ground.

Terminals		FRONT WIPER	Voltage (Approx.)
(+)	(-)		
IPDM E/R			
Connector	Terminal		
E121	32	OFF	0V

Is the inspection result normal?

- YES >> GO TO 3  
 NO >> Replace IPDM E/R. Refer to [PCS-25, "Removal and Installation"](#).

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

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

## FRONT WIPER MOTOR LO CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

IPDM E/R		Front wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
E121	32	E23	1	Yes

Is the inspection result normal?

- YES >> Replace front wiper motor. Refer to [WW-43, "Removal and Installation"](#).  
NO >> Repair or replace harness.



# FRONT WIPER MOTOR HI CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

## FRONT WIPER MOTOR HI CIRCUIT

### Component Function Check

INFOID:000000012519805

#### 1. CHECK FRONT WIPER HI OPERATION

##### ⊗ IPDM E/R AUTO ACTIVE TEST

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

##### Ⓟ CONSULT ACTIVE TEST

1. Select FR WIPER of BCM (WIPER) active test item.
2. While operating the test item, check front wiper HI operation and OFF.

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

**OFF** : Front wiper OFF

Is the inspection result normal?

- YES >> Front wiper motor HI circuit is normal.  
 NO >> Refer to [WW-25, "Diagnosis Procedure"](#).

### Diagnosis Procedure

INFOID:000000012519806

Regarding Wiring Diagram information, refer to [WW-15, "Wiring Diagram"](#).

#### 1. CHECK FRONT WIPER MOTOR FUSE

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

Component	Capacity	Fuse No.	Location
Front wiper motor	30 A	39	IPDM E/R

Is the inspection result normal?

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

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

1. Turn the ignition switch ON.
2. Select FR WIPER of BCM (WIPER) active test item.
3. While performing the active test, check voltage between IPDM E/R harness connector and ground.

Terminals		FRONT WIPER	Voltage (Approx.)
(+)	(-)		
IPDM E/R			
Connector	Terminal		
E121	35	OFF	0V

Is the inspection result normal?

- YES >> GO TO 3  
 NO >> Replace IPDM E/R. Refer to [PCS-25, "Removal and Installation"](#).

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

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

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## FRONT WIPER MOTOR HI CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

IPDM E/R		Front wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
E121	35	E23	4	Yes

Is the inspection result normal?

- YES >> Replace front wiper motor. Refer to [WW-43, "Removal and Installation"](#).  
NO >> Repair or replace harness.

# FRONT WIPER AUTO STOP SIGNAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

## FRONT WIPER AUTO STOP SIGNAL CIRCUIT

### Component Function Check

INFOID:000000012519807

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

1. Select FR WIPER STOP of BCM (WIPER) data monitor item.
2. Operate the front wiper.
3. Check that FR WIPER STOP changes from ON to OFF according to the wiper position.

Data monitor	Condition		Status
FR WIPER STOP	Front wiper motor	Stop position	ON
		Except stop position	OFF

Is the inspection result normal?

- YES >> Front wiper auto stop signal circuit is normal.  
 NO >> Refer to [WW-27, "Diagnosis Procedure"](#).

### Diagnosis Procedure

INFOID:000000012519808

Regarding Wiring Diagram information, refer to [WW-15, "Wiring Diagram"](#).

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

1. Turn the ignition switch ON.
2. Check voltage between IPDM E/R harness connector and ground.

Terminals		FRONT WIPER	Voltage (Approx.)
(+)	(-)		
IPDM E/R		Ground	Battery voltage
Connector	Terminal		
E122	43		
		Except stop position	Battery voltage
		Stop position	0 V

Is the inspection result normal?

- YES >> Check for intermittent failure.  
 NO >> GO TO 2

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

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

IPDM E/R		Ground	Continuity
Connector	Terminal		
E122	43		No

Is the inspection result normal?

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

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

Check continuity between IPDM E/R harness connector and front wiper motor harness connector.

## FRONT WIPER AUTO STOP SIGNAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

IPDM E/R		Front wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
E122	43	E23	5	Yes

Is the inspection result normal?

- YES >> Replace front wiper motor. Refer to [WW-43, "Removal and Installation"](#).  
NO >> Repair or replace harness.

# FRONT WIPER MOTOR GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

## FRONT WIPER MOTOR GROUND CIRCUIT

### Diagnosis Procedure

INFOID:000000012519809

Regarding Wiring Diagram information, refer to [WW-15. "Wiring Diagram"](#).

### 1. CHECK FRONT WIPER MOTOR GROUND CIRCUIT

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

Front wiper motor		Ground	Continuity
Connector	Terminal		Yes
E23	2		

Is the inspection result normal?

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

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# WASHER MOTOR CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

## WASHER MOTOR CIRCUIT

### Diagnosis Procedure

INFOID:000000012519810

Regarding Wiring Diagram information, refer to [WW-15. "Wiring Diagram"](#).

#### 1. CHECK FRONT WASHER MOTOR FUSE

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

Component	Capacity	Fuse No.	Location
Front washer motor	10A	1	Fuse block (J/B)

Is the inspection result normal?

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

#### 2. CHECK FRONT WASHER MOTOR POWER SUPPLY

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

Terminals		Washer switch	Voltage (Approx.)
(+)	(-)		
Front washer motor		Ground	Battery voltage
Connector	Terminal		
E105	1		
		ON	Battery voltage
		OFF	0 V

Is the inspection result normal?

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

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

Check continuity between front washer motor harness connector and ground.

Front washer motor		Ground	Continuity
Connector	Terminal		
E105	2		Yes

Is the inspection result normal?

- YES >> Replace front washer motor. Refer to [WW-47. "Washer Tank"](#).  
NO >> Repair or replace harness.

#### 4. CHECK WASHER SWITCH

Check washer switch. Refer to [WW-31. "Component Inspection"](#).

Is the inspection result normal?

- YES >> Repair harness between fuse and front washer motor.  
NO >> Replace washer switch. Refer to [WW-48. "Wiper and Washer Switch"](#).

# WASHER SWITCH

< DTC/CIRCUIT DIAGNOSIS >

## WASHER SWITCH

### Description

INFOID:0000000012519811

- Washer switch is integrated with combination switch.
- Washer switch supplies power to the front washer motor.

### Component Inspection

INFOID:0000000012519812

Regarding Wiring Diagram information, refer to [WW-15, "Wiring Diagram"](#).

## 1. CHECK WASHER SWITCH

1. Turn the ignition switch OFF.
2. Disconnect combination switch (wiper and washer switch).
3. Check continuity between the combination switch (wiper and washer switch) terminals.

Combination switch (washer switch)		Condition	Continuity
Terminals			
1	6	Washer switch ON	Yes
		Washer switch OFF	No
11	14	Washer switch ON	Yes
		Washer switch OFF	No

Is the inspection result normal?

YES >> Washer switch is normal.

NO >> Replace combination switch (wiper and washer switch). Refer to [WW-48, "Wiper and Washer Switch"](#).

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# WIPER AND WASHER SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

## SYMPTOM DIAGNOSIS

### WIPER AND WASHER SYSTEM SYMPTOMS

#### Symptom Table

INFOID:0000000012519813

**CAUTION:**

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

Symptom		Possible malfunction	Reference	
Front wiper does not operate in...	HI only	<ul style="list-style-type: none"> <li>Combination switch (wiper and washer switch)</li> <li>Harness between combination switch (wiper and washer switch) and BCM</li> <li>BCM</li> </ul>	Combination switch (wiper and washer switch) Refer to <a href="#">BCS-60, "Symptom Table"</a> .	
		<ul style="list-style-type: none"> <li>IPDM E/R</li> <li>Harness between IPDM E/R and front wiper motor</li> <li>Front wiper motor</li> </ul>	Front wiper motor (HI) circuit Refer to <a href="#">WW-25, "Component Function Check"</a> .	
		Front wiper request signal (IPDM E/R)	Check FR WIP REQ in DATA MONITOR of IPDM E/R. Refer to <a href="#">PCS-10, "CONSULT Function (IPDM E/R)"</a> .	
	LO and INT	<ul style="list-style-type: none"> <li>Combination switch (wiper and washer switch)</li> <li>Harness between combination switch (wiper and washer switch) and BCM</li> <li>BCM</li> </ul>	Combination switch (wiper and washer switch) Refer to <a href="#">BCS-60, "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-23, "Component Function Check"</a> .	
		Front wiper request signal (IPDM E/R)	Check FR WIP REQ in DATA MONITOR of IPDM E/R. Refer to <a href="#">PCS-10, "CONSULT Function (IPDM E/R)"</a> .	
	INT only	<ul style="list-style-type: none"> <li>Combination switch (wiper and washer switch)</li> <li>Harness between combination switch (wiper and washer switch) and BCM</li> <li>BCM</li> </ul>	Combination switch (wiper and washer switch) Refer to <a href="#">BCS-60, "Symptom Table"</a> .	
		Front wiper request signal (IPDM E/R)	Check FR WIP REQ in DATA MONITOR of IPDM E/R. Refer to <a href="#">PCS-10, "CONSULT Function (IPDM E/R)"</a> .	
	Any mode	—	Refer to <a href="#">WW-34, "Diagnosis Procedure"</a> .	
	Front wiper does not stop in...	Any mode	Front wiper auto stop signal (IPDM E/R)	Refer to <a href="#">WW-27, "Component Function Check"</a> .
			<ul style="list-style-type: none"> <li>Combination switch (wiper and washer switch)</li> <li>BCM</li> </ul>	Combination switch (wiper and washer switch) Refer to <a href="#">BCS-60, "Symptom Table"</a> .



## WIPER AND WASHER SYSTEM SYMPTOMS

### < SYMPTOM DIAGNOSIS >

Symptom		Possible malfunction	Reference
Front wiper operates abnormally because...	Intermittent adjustments cannot be made.	<ul style="list-style-type: none"> <li>• Combination switch (wiper and washer switch)</li> <li>• Harness between combination switch (wiper and washer switch) and BCM</li> <li>• BCM</li> </ul>	Combination switch (wiper and washer switch) Refer to <a href="#">BCS-60, "Symptom Table"</a> .
	Wiper/washer will not operate together.	<ul style="list-style-type: none"> <li>• Combination switch (wiper and washer switch)</li> <li>• Harness between combination switch (wiper and washer switch) and BCM</li> <li>• BCM</li> </ul>	Combination switch (wiper and washer switch) Refer to <a href="#">BCS-60, "Symptom Table"</a> .
	Wipers will not return to stop position (repeatedly operates for 10 seconds and then stops for 20 seconds. Wipers then stop operating).	<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-27, "Component Function Check"</a> .
Front washer motor does not operate...	When washer switch is pressed.	<ul style="list-style-type: none"> <li>• Low washer fluid</li> <li>• Obstructed or disconnected washer hose or nozzle</li> </ul>	Refer to <a href="#">WW-45, "Exploded View"</a> .
		<ul style="list-style-type: none"> <li>• Front washer motor</li> <li>• Harness between combination switch (wiper and washer switch) and front washer motor</li> </ul>	Refer to <a href="#">WW-30, "Diagnosis Procedure"</a> (washer motor). Refer to <a href="#">WW-31, "Component Inspection"</a> (washer switch).
		Combination switch (wiper and washer switch)	Combination switch (wiper and washer switch) Refer to <a href="#">BCS-60, "Symptom Table"</a> .

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# FRONT WIPER DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

## FRONT WIPER DOES NOT OPERATE

### Description

INFOID:000000012519814

The front wiper does not operate under any operation conditions.

### Diagnosis Procedure

INFOID:000000012519815

Regarding Wiring Diagram information, refer to [WW-15, "Wiring Diagram"](#).

## 1. CHECK WIPER RELAY OPERATION

### ⊗ IPDM E/R AUTO ACTIVE TEST

1. Start IPDM E/R auto active test. Refer to [PCS-10, "CONSULT Function \(IPDM E/R\)"](#).
2. Check that the front wiper operates on LO and HI operation.

### ⓐ CONSULT ACTIVE TEST

1. Select FR WIPER of BCM (WIPER) active test item.
2. While operating the test item, check front wiper LO/Hi operation and OFF.

**LO** : Front wiper LO operation  
**HI** : Front wiper HI operation  
**OFF** : Front wiper stop

Is the inspection result normal?

- YES >> GO TO 5  
NO >> GO TO 2

## 2. CHECK FRONT WIPER MOTOR FUSE

Refer to [WW-22, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES >> Replace the fuse after repairing the affected circuit.  
NO >> GO TO 3

## 3. CHECK FRONT WIPER MOTOR GROUND CIRCUIT

Refer to [WW-29, "Diagnosis Procedure"](#).

Is the inspection result normal?

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

## 4. CHECK FRONT WIPER MOTOR OUTPUT VOLTAGE

1. Turn the ignition switch ON.
2. With CONSULT, select FRONT WIPER of IPDM E/R ACTIVE TEST item.
3. Check voltage between IPDM E/R harness connector and ground while wipers are operating.

Terminals		FRONT WIPER	Voltage (Approx.)		
(+)	(-)				
IPDM E/R		Ground			
Connector	Terminal				
E121	32			LO	Battery voltage
	35			OFF	0 V
		HI	Battery voltage		
		OFF	0 V		

Is the inspection result normal?

- YES >> Replace front wiper motor. Refer to [WW-43, "Removal and Installation"](#).

# FRONT WIPER DOES NOT OPERATE

## < SYMPTOM DIAGNOSIS >

NO >> Replace IPDM E/R. Refer to [PCS-25. "Removal and Installation"](#).

### 5. CHECK FRONT WIPER REQUEST SIGNAL INPUT

1. With CONSULT, select FR WIP REQ in DATA MONITOR of IPDM E/R.
2. Switch the front wiper switch to HI and LO.
3. Check the status of FR WIP REQ while operating the switch.

Data monitor	Condition	Status
FR WIP REQ	Front wiper switch OFF	STOP
	Front wiper switch LO	LOW
	Front wiper switch HI	HI

#### Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to [PCS-25. "Removal and Installation"](#).

NO >> GO TO 6

### 6. CHECK COMBINATION SWITCH (WIPER AND WASHER SWITCH)

Check combination switch (wiper and washer switch). Refer to [BCS-60. "Symptom Table"](#).

#### Is the inspection result normal?

YES >> Replace BCM. Refer to [BCS-62. "Removal and Installation"](#).

NO >> Repair or replace the applicable parts.

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## NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS >

---

### NORMAL OPERATING CONDITION

#### Description

INFOID:000000012519816

#### 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. Wait for approximately 20 seconds or more and reactivate the front wiper. The wiper will operate normally.

# FRONT WIPER ARM

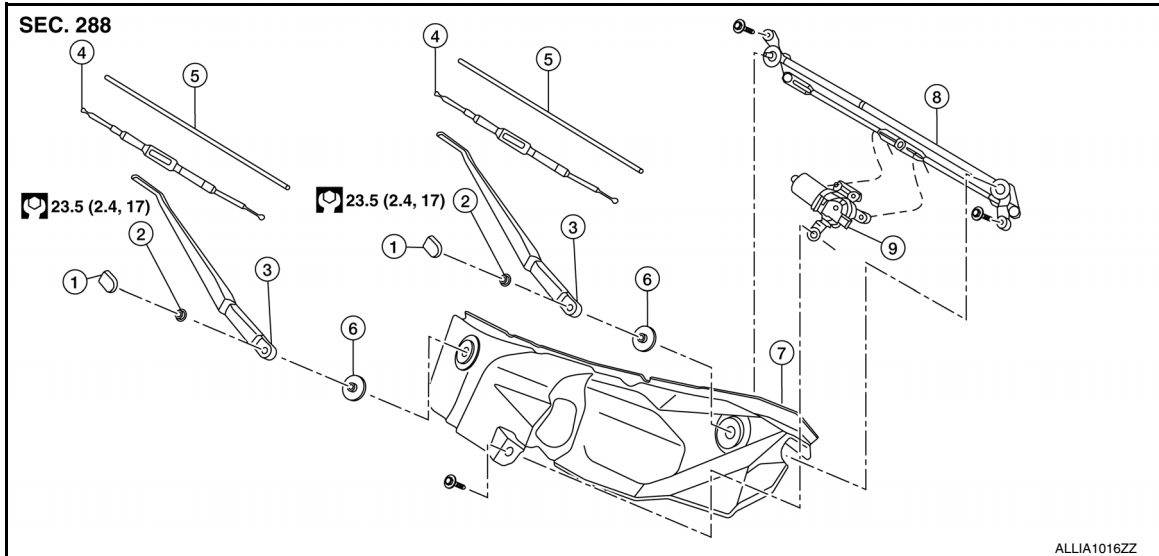
< REMOVAL AND INSTALLATION >

## REMOVAL AND INSTALLATION

### FRONT WIPER ARM

Exploded View

INFOID:0000000012519817



- |                            |                           |                          |
|----------------------------|---------------------------|--------------------------|
| 1. Wiper arm covers        | 2. Wiper arm nuts         | 3. Wiper arms            |
| 4. Wiper frames            | 5. Wiper blade refills    | 6. Wiper arm shaft seals |
| 7. Wiper motor water cover | 8. Wiper linkage assembly | 9. Wiper Motor           |

### Removal and Installation

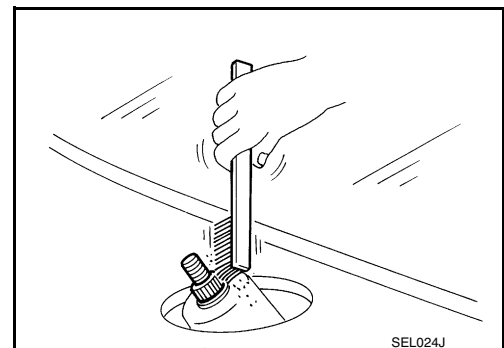
INFOID:0000000012519818

#### REMOVAL

1. Remove wiper arm covers and wiper arm nuts.
2. Remove front wiper arm (LH/RH).
3. Remove front wiper blade assembly (LH/RH).

#### INSTALLATION

1. Operate wiper motor one full cycle, then turn "OFF" (Auto Stop).
2. Clean up the pivot area as shown. This will reduce possibility of wiper arm looseness.



3. Install front blade assembly (LH/RH).
4. Install front wiper arm (LH/RH).
5. Tighten wiper arm nuts to specified torque, and install wiper arm covers.
6. Ensure that wiper blades stop within proper clearance. Refer to [WW-38, "Adjustment"](#).

# FRONT WIPER ARM

< REMOVAL AND INSTALLATION >

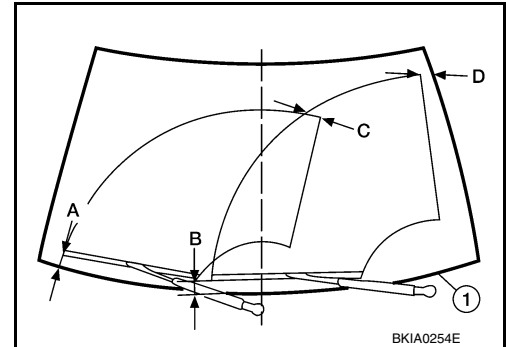
## Adjustment

INFOID:000000012519819

### FRONT WIPER ARM ADJUSTMENT

1. Operate wiper motor one full cycle, then turn "OFF" (Auto Stop).
2. Lift the wiper blade up and then rest it onto glass surface, check the blade clearance (A), (B), (C) and (D).  
(1): Molding end

<b>Clearance (A)</b>	<b>: 43.0 ± 7.5 mm (1.69 ± 0.30 in)</b>
<b>Clearance (B)</b>	<b>: 39.4 ± 7.5 mm (1.55 ± 0.30 in)</b>
<b>Clearance (C)</b>	<b>: 30.0 ± 7.5 mm (1.18 ± 0.30 in)</b>
<b>Clearance (D)</b>	<b>: 60.0 ± 7.5 mm (2.36 ± 0.30 in)</b>



3. Remove wiper arm covers and wiper arm nuts.
4. Adjust front wiper arms on wiper motor pivot shafts to obtain above specified blade clearances.
5. Tighten wiper arm nuts to specified torque, and install wiper arm covers.

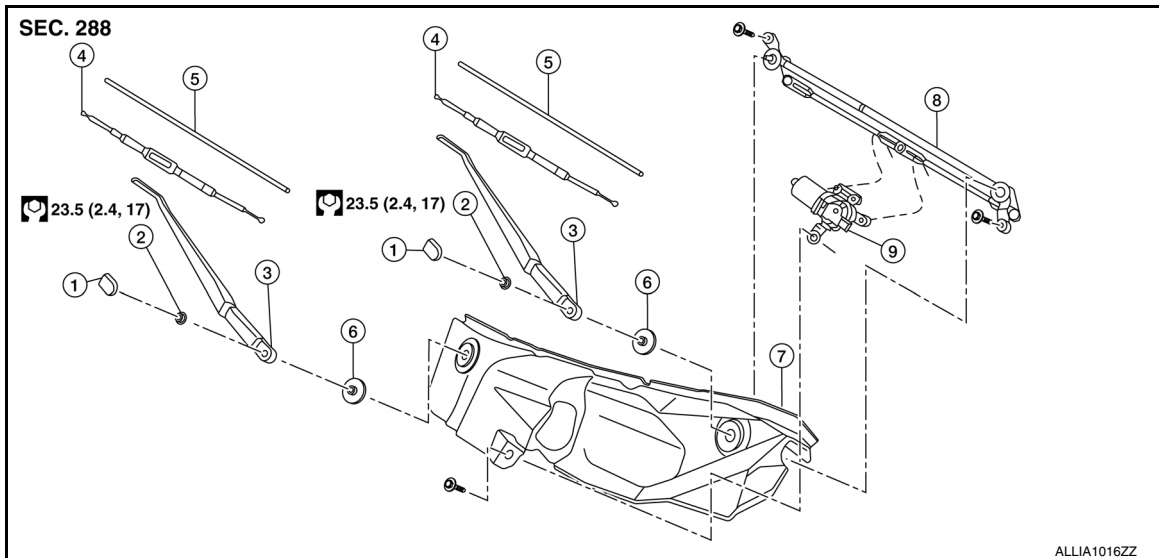
# FRONT WIPER BLADE

< REMOVAL AND INSTALLATION >

## FRONT WIPER BLADE

Exploded View

INFOID:000000012519820



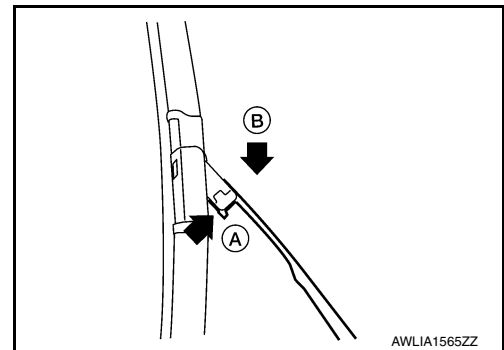
- |                            |                           |                          |
|----------------------------|---------------------------|--------------------------|
| 1. Wiper arm covers        | 2. Wiper arm nuts         | 3. Wiper arms            |
| 4. Wiper frames            | 5. Wiper blade refills    | 6. Wiper arm shaft seals |
| 7. Wiper motor water cover | 8. Wiper linkage assembly | 9. Wiper Motor           |

## Removal and Installation

INFOID:000000012519821

### REMOVAL

1. Lift the front wiper arm frame and blade assembly away from the windshield.
2. Rotate the front wiper frame assembly and push the release tab (A), then move the front wiper blade down (B) the front wiper arm.
3. Remove the front wiper blade.



### INSTALLATION

#### CAUTION:

- After the front wiper blade installation, return the front wiper arm to the original position on the windshield to prevent damage when the hood is opened.
- Check that the front wiper blade contacts the windshield properly. Refer to [WW-38, "Adjustment"](#).

1. Insert the front wiper blade onto the front wiper arm and slide it up until it clicks into place.
2. Rotate the front wiper blade so the dimple is in the groove.
3. Lay the front wiper arm and front wiper blade assembly back down on the windshield.

## Replacement

INFOID:000000012519822

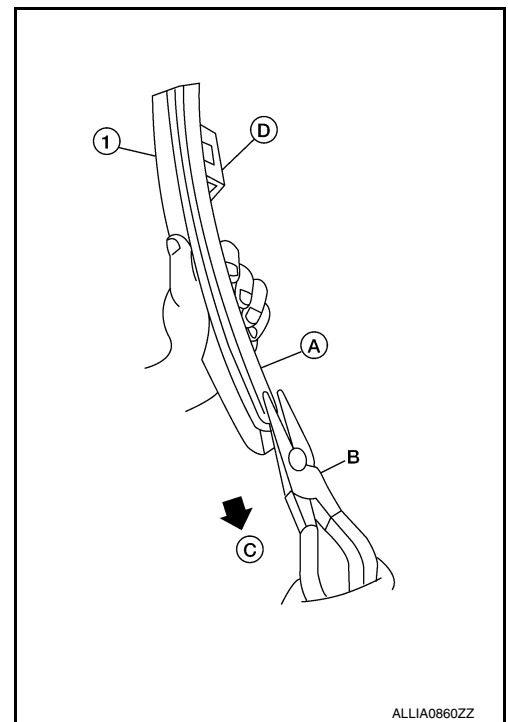
### REMOVAL

1. Remove the front wiper blade. Refer to [WW-39, "Removal and Installation"](#).

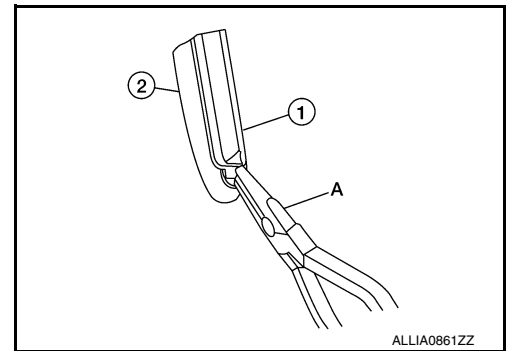
## FRONT WIPER BLADE

### < REMOVAL AND INSTALLATION >

2. Hold the wiper blade refill lip at the end (A) of the front wiper blade (1) with a suitable tool (B) as shown, and pull it firmly in the direction (C).  
(D): U clip (part of the wiper blade assembly)

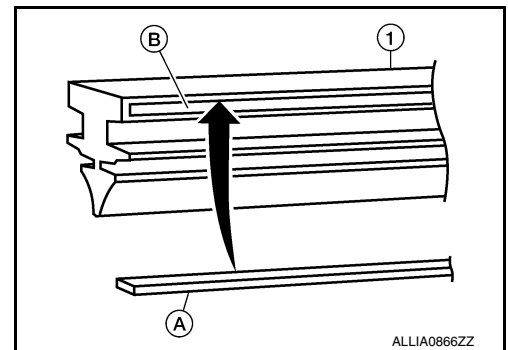


- If the wiper blade refill lip is torn due to wear, insert a suitable tool (A) into the space between the end of the wiper blade refill (1) and the front wiper blade (2) and pull the wiper blade refill (1) out as shown.



### INSTALLATION

1. If the rib (A) has become detached from the wiper blade refill (1), check that the curve of the rib (A) is in the same direction as the curve of the wiper blade refill (1) and insert the rib (A) into the slit (B) in the wiper blade refill (1) as shown.

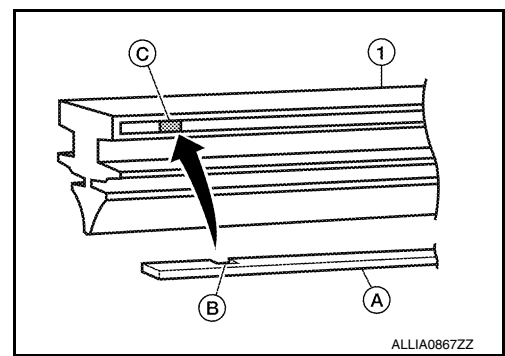




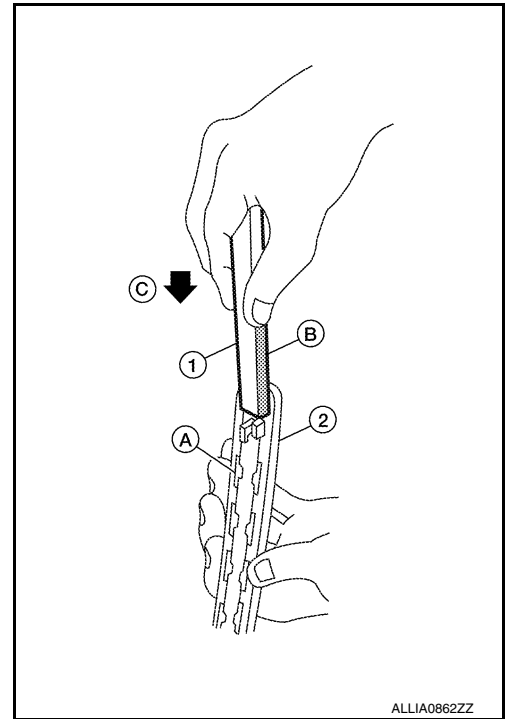
# FRONT WIPER BLADE

## < REMOVAL AND INSTALLATION >

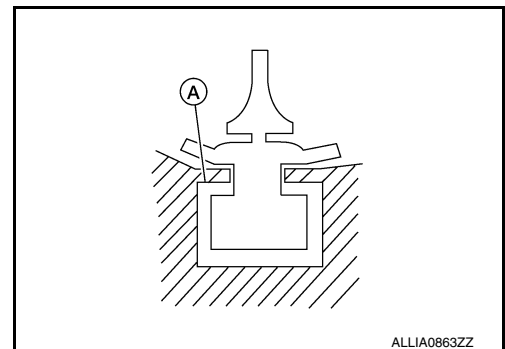
- If the rib (A) has a notch (B), insert the rib (A) into the wiper blade refill (1) so the notch (B) fits over the protrusion (C) in the wiper blade refill (1) as shown.



2. Insert the wiper blade refill (1) tip into the end of the front wiper blade (2). Push the wiper blade refill (1) in while pressing it into the end of the front wiper blade (2) as shown (C). After the wiper blade refill is fully inserted, remove the holder (B).  
(A): Tab [part of front wiper blade (2)]



- Make sure to slide the refill into the front wiper blade so that the wiper blade refill is held by the tabs (A) on the front wiper blade as shown.



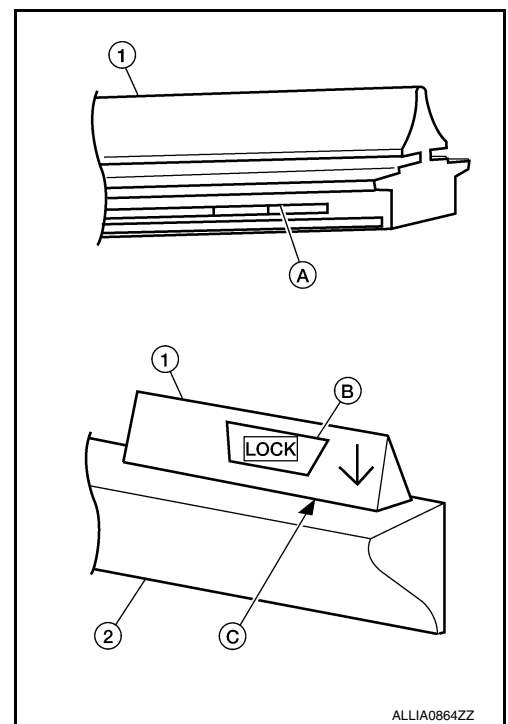
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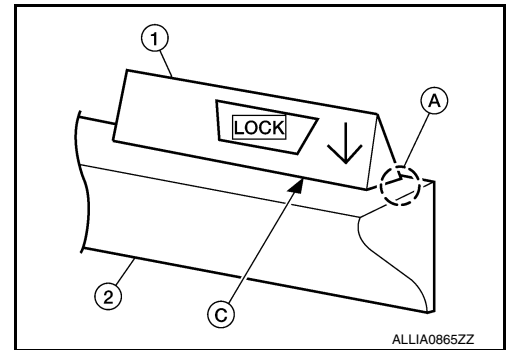
## FRONT WIPER BLADE

### < REMOVAL AND INSTALLATION >

3. Push the wiper blade refill (1) until the tabs on the front wiper blade (2) fit into the stoppers (A) in the end of the wiper blade refill (1). Make sure the LOCK mark (B) on the wiper blade refill (1) is aligned with the lock point symbol (C) on the front wiper blade (2) as shown.



4. Before installing the front wiper blade, make sure that the wiper blade refill (1) end is fully covered by the front wiper blade (2) in area (A) as shown.  
(C): Lock point symbol



5. Install the front wiper blade.

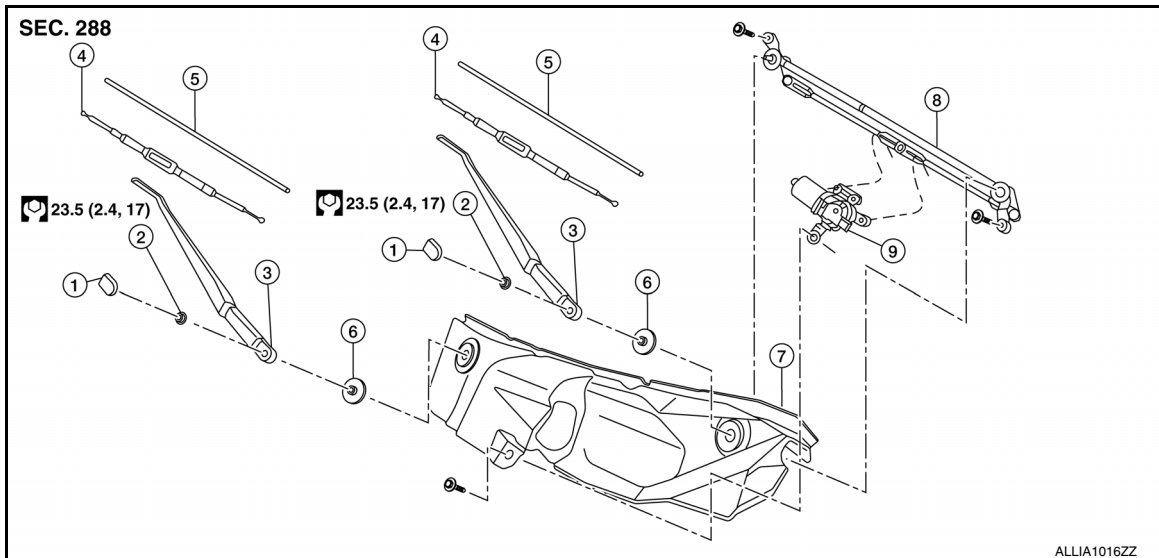
# FRONT WIPER DRIVE ASSEMBLY

< REMOVAL AND INSTALLATION >

## FRONT WIPER DRIVE ASSEMBLY

Exploded View

INFOID:000000012519823



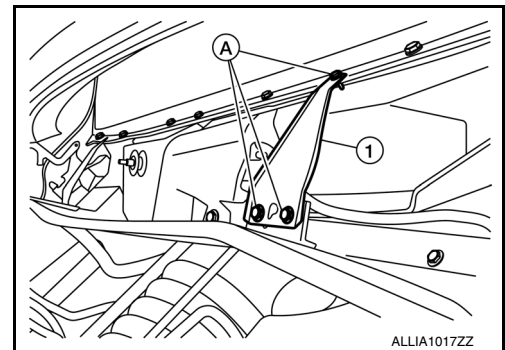
- |                            |                           |                          |
|----------------------------|---------------------------|--------------------------|
| 1. Wiper arm covers        | 2. Wiper arm nuts         | 3. Wiper arms            |
| 4. Wiper frames            | 5. Wiper blade refills    | 6. Wiper arm shaft seals |
| 7. Wiper motor water cover | 8. Wiper linkage assembly | 9. Wiper Motor           |

## Removal and Installation

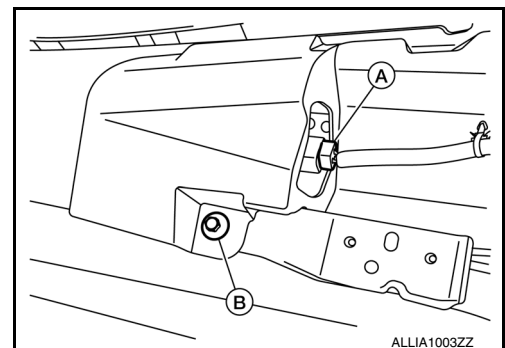
INFOID:000000012519824

### REMOVAL

1. Remove the cowl top cover. Refer to [EXT-31, "Removal and Installation"](#).
2. Remove the bolts (A) and cowl extension reinforcement (1).



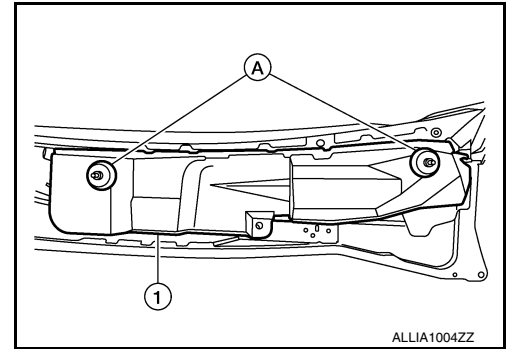
3. Disconnect the harness connector (A) and remove the bottom wiper linkage bolt (B).



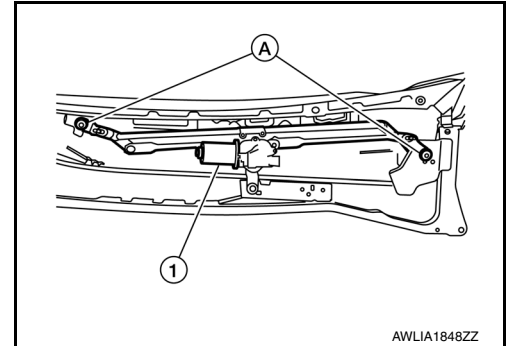
## FRONT WIPER DRIVE ASSEMBLY

### < REMOVAL AND INSTALLATION >

4. Remove the wiper arm shaft seals (A) and remove the wiper motor water cover (1).



5. Remove wiper linkage bolts (A) and remove wiper linkage assembly (1).

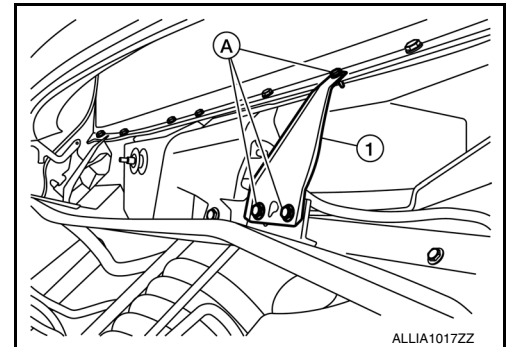


### INSTALLATION

#### **CAUTION:**

- Do not drop the wiper linkage assembly or cause it to contact other parts.
- Check the grease conditions of the motor arm and wiper link joint(s). Apply grease if necessary.

1. Install the wiper linkage assembly and secure with the bolts.
2. Install the wiper motor water cover and the wiper arm shaft seals.
3. Connect harness connector to wiper motor, then install the bottom wiper linkage assembly bolt.
4. Install the cowl extension reinforcement (1) and bolts (A).



5. Install cowl top cover. Refer to [EXT-31. "Removal and Installation"](#).
6. Turn the wiper switch ON to operate wiper motor, then turn the wiper switch OFF (auto stop).
7. Ensure that wiper blades stop within proper clearance. Refer to [WW-38. "Adjustment"](#).

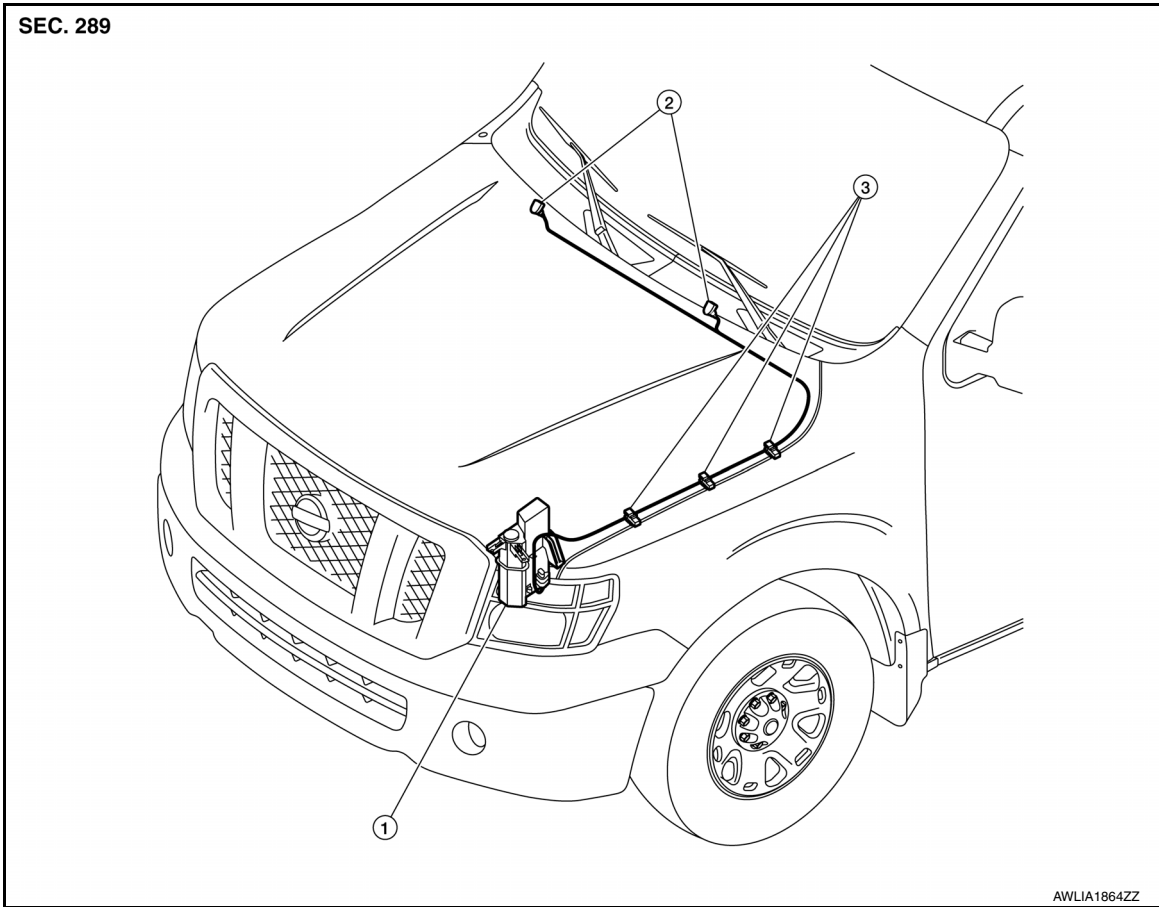
# FRONT WASHER TUBE

< REMOVAL AND INSTALLATION >

## FRONT WASHER TUBE

Exploded View

INFOID:000000012519825



1. Washer tank

2. Washer nozzles

3. Washer tube clips

## Removal and Installation

INFOID:000000012519826

### REMOVAL

1. Remove cowl top cover. Refer to [EXT-31, "Removal and Installation"](#).
2. Disconnect washer tube from washer nozzles.
3. Disconnect washer tube from washer pump.
4. Release washer tube from the washer tube clips.
5. Remove washer tube.

### INSTALLATION

Installation is in the reverse order of removal.

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# FRONT WASHER NOZZLE

< REMOVAL AND INSTALLATION >

## FRONT WASHER NOZZLE

### Removal and Installation

INFOID:000000012519827

#### REMOVAL

1. Remove cowl top cover. Refer to [EXT-31, "Removal and Installation"](#).
2. Disconnect washer tube from the washer nozzle.
3. Remove washer nozzle from cowl top cover (LH/RH).

#### INSTALLATION

Installation is in the reverse order of removal.

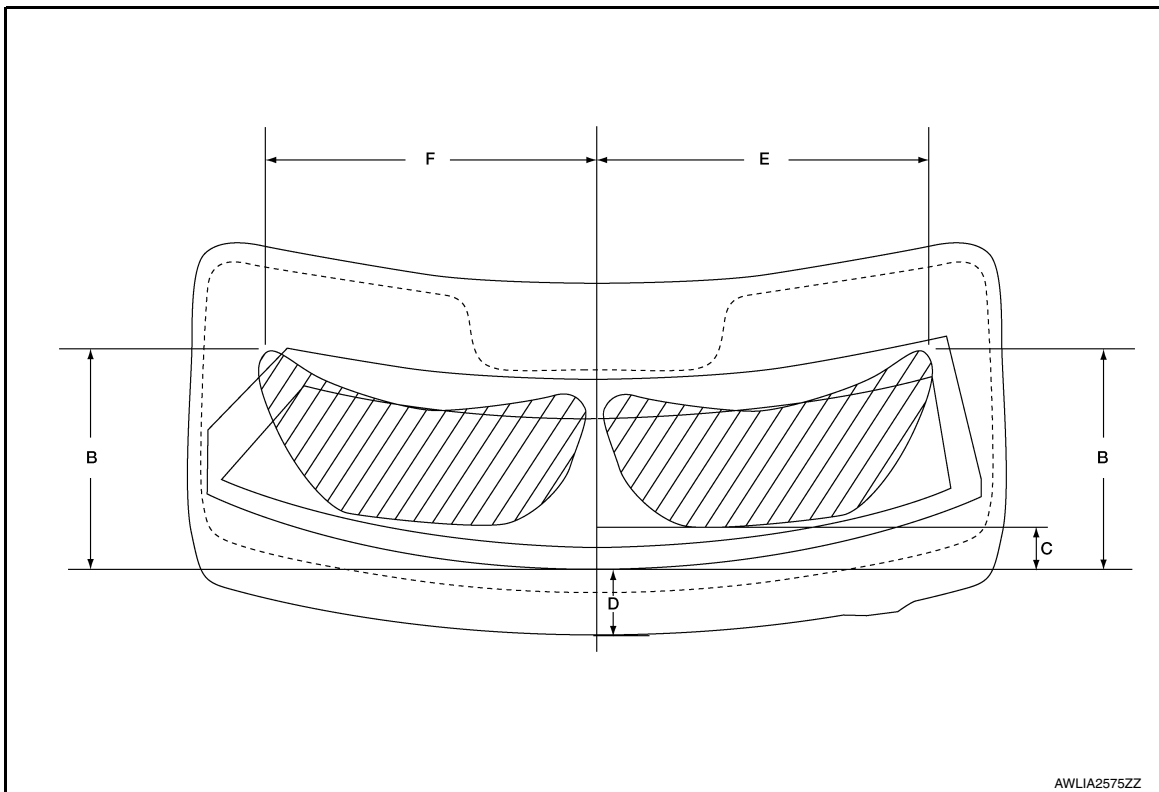
#### NOTE:

After installation be sure to adjust spray pattern. Refer to [WW-46, "Adjustment"](#).

### Adjustment

INFOID:000000012519828

Adjust spray pattern to hit the aiming target zone as shown.



A. Aiming target zone

B. 445 mm (17.52 in)

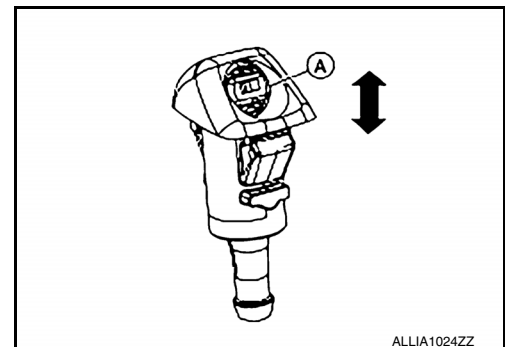
C. 121 mm (4.76 in)

D. 148 mm (5.83 in)

E. 716 mm (28.19 in)

F. 716 mm (28.19 in)

Move spray nozzle (A) up/down to adjust spray pattern using a suitable tool.



# WASHER TANK

< REMOVAL AND INSTALLATION >

## WASHER TANK

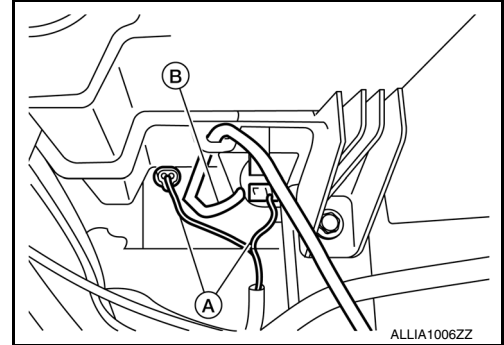
### Washer Tank

INFOID:000000012519829

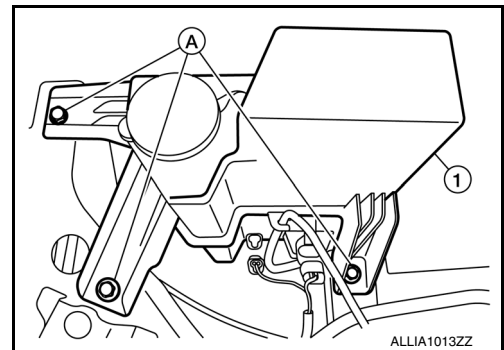
#### REMOVAL AND INSTALLATION

##### Removal

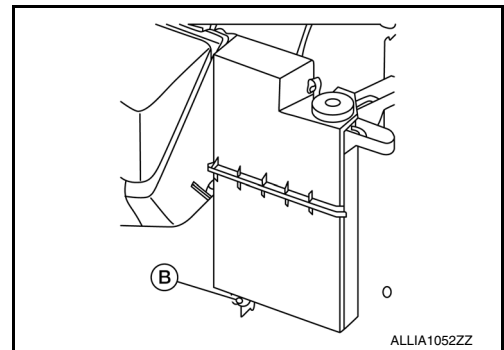
1. Disconnect the harness connector from the washer pump motor and washer fluid level sensor (if equipped) (A).
2. Disconnect the washer hose (B).



3. Remove the washer tank (1).
  - a. Remove the two upper washer tank bolts (A) and the rear washer tank bolt.



- b. Remove the lower washer tank bolt (B).



##### Installation

Installation is in the reverse order of removal.

- After installation, add washer fluid up to the upper level of the washer tank inlet and check for leaks.

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## FRONT WIPER AND WASHER SWITCH

< REMOVAL AND INSTALLATION >

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### FRONT WIPER AND WASHER SWITCH

#### Wiper and Washer Switch

INFOID:000000012519830

#### REMOVAL AND INSTALLATION

The wiper and washer switch is serviced as part of the combination switch assembly. Refer to [EXL-127](#), "[Removal and Installation](#)".



# SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

## SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Specifications

INFOID:0000000012519831

WINDSHIELD WASHER FLUID

Windshield washer fluid capacity	4.5 ℓ (4 3/4 US qt, 4 Imp qt)
Windshield washer fluid specification	Refer to <a href="#">MA-15, "FOR USA AND CANADA : Fluids and Lubricants"</a> (FOR USA AND CANADA) or <a href="#">MA-17, "FOR MEXICO : Fluids and Lubricants"</a> (FOR MEXICO).

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