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# SECTION **WW**

## WIPER & WASHER

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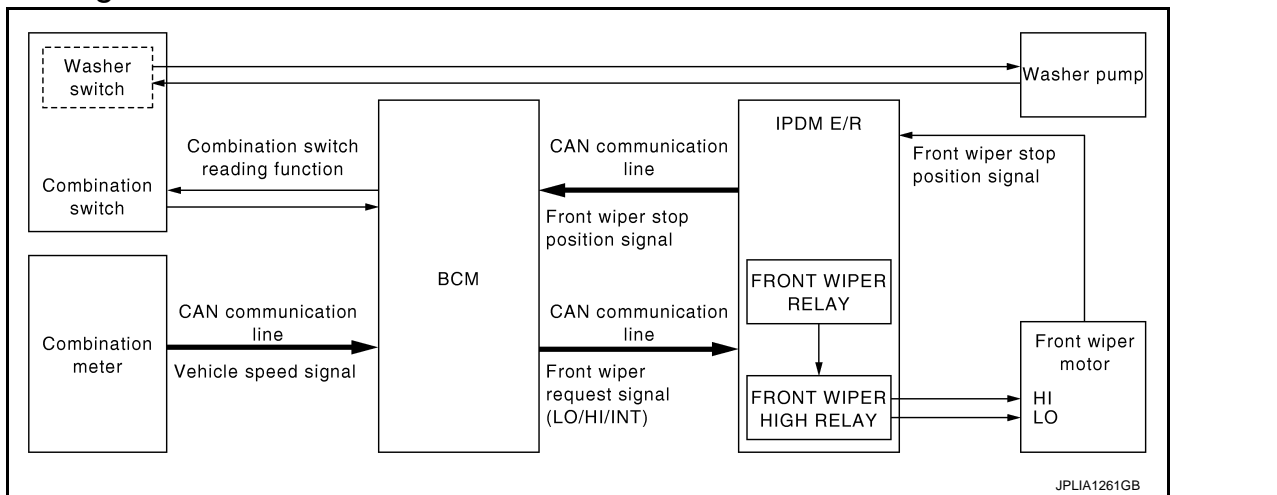
# FRONT WIPER AND WASHER SYSTEM

< SYSTEM DESCRIPTION >

## SYSTEM DESCRIPTION

### FRONT WIPER AND WASHER SYSTEM

#### System Diagram



#### System Description

INFOID:000000009161831

#### OUTLINE

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

##### Control by BCM

- Combination switch reading function
- Front wiper control function

##### Control by IPDM E/R

- Front wiper control function
- Relay control function

#### FRONT WIPER BASIC OPERATION

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

#### FRONT WIPER LO OPERATION

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

##### Front wiper LO operating condition

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

#### FRONT WIPER HI OPERATION

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

##### Front wiper HI operating condition

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

#### FRONT WIPER INT OPERATION

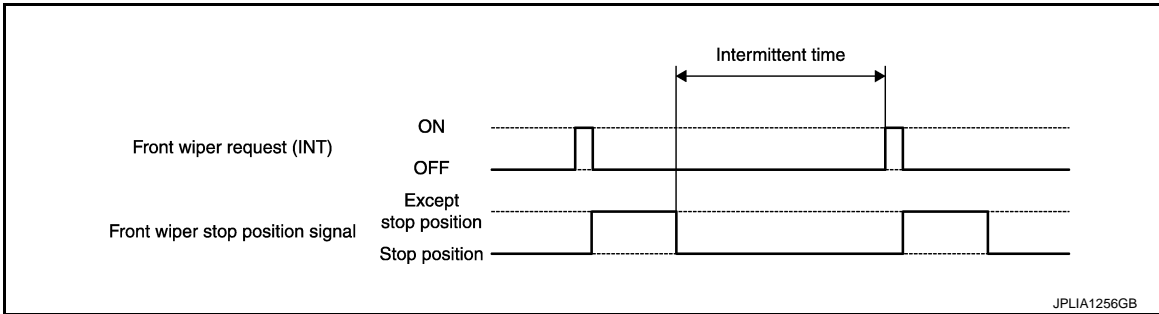
# FRONT WIPER AND WASHER SYSTEM

## < SYSTEM DESCRIPTION >

- BCM transmits the front wiper request signal (INT) to IPDM E/R with CAN communication depending on the front wiper INT operating condition and intermittent operation delay interval according to the wiper intermittent dial position.

Front wiper INT operating condition

- Ignition switch ON
- Front wiper switch INT
- IPDM E/R turns ON the integrated front wiper relay 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.



### NOTE:

Factory setting of the front wiper intermittent operation is the operation without vehicle speed.

Front wiper intermittent operation

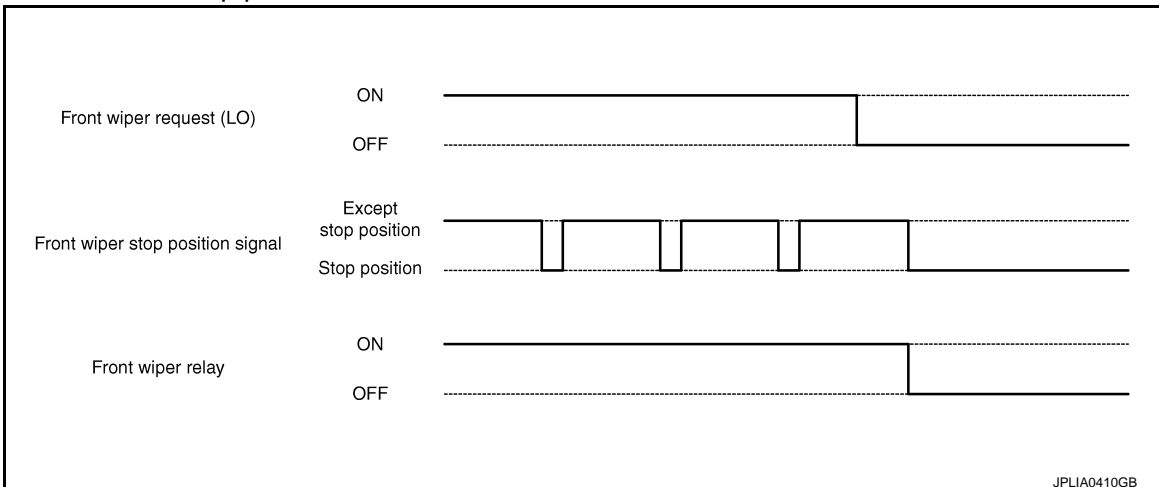
BCM determines intermittent operation delay interval according to a wiper volume.

Unit: Second

Wiper intermittent dial position	Intermittent operation interval	Intermittent operation delay Interval (s)
1	Short ↑	0.4
2		2
3		5
4		8
5		12
6	↓ Long	16
7		21

## 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.



# FRONT WIPER AND WASHER SYSTEM

## < SYSTEM DESCRIPTION >

### NOTE:

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

### FRONT WIPER OPERATION LINKED WITH WASHER

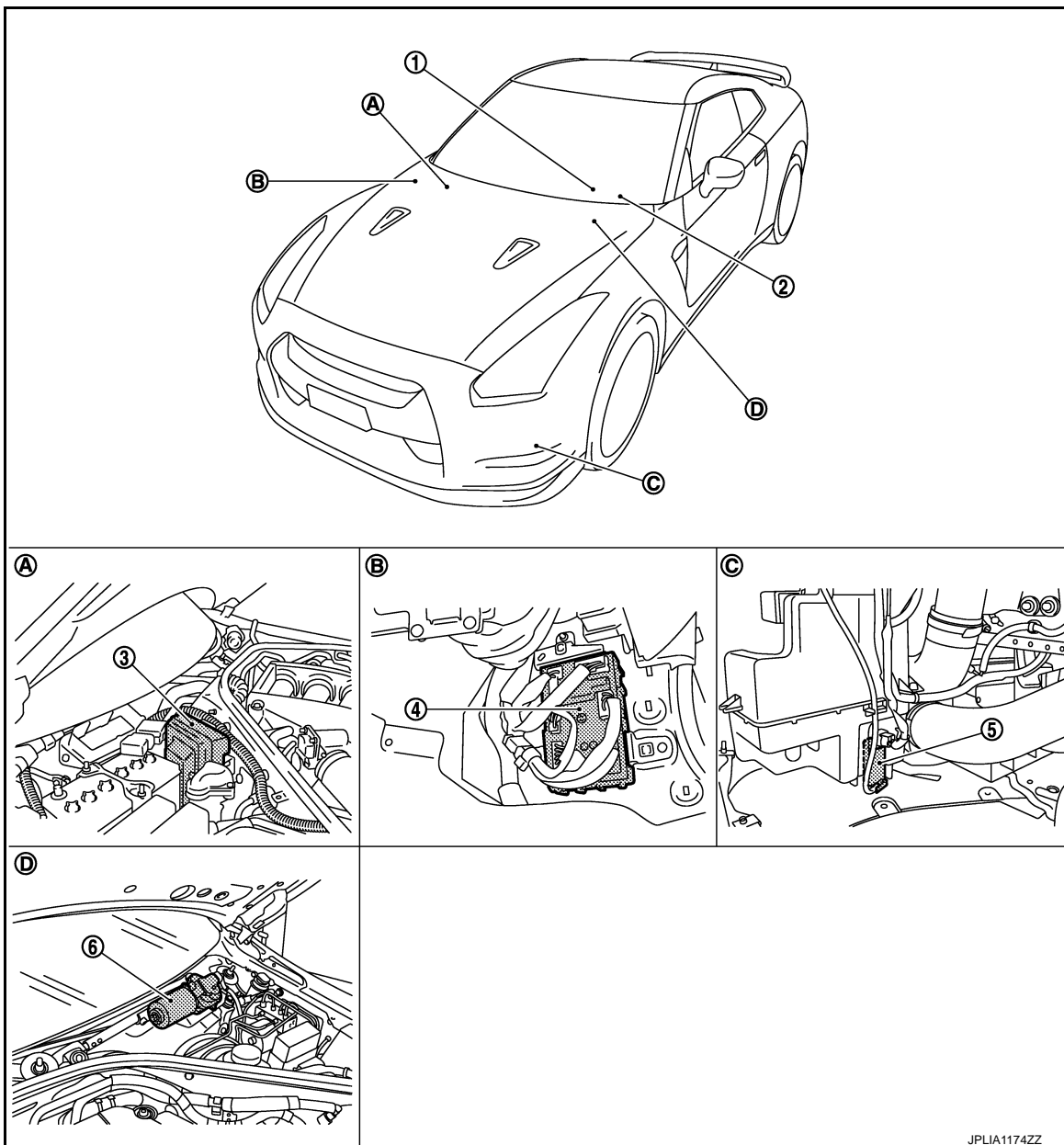
- BCM transmits the front wiper request signal (LO) to IPDM E/R with CAN communication according to the washer linked operating condition of the front wiper.
- BCM transmits the front wiper request signal (LO) so that the front wiper operates approximately 2 times when the front washer switch OFF is 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 when the front washer switch ON.

## Component Parts Location

INFOID:000000009161832



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# FRONT WIPER AND WASHER SYSTEM

## < SYSTEM DESCRIPTION >

- |                                       |                                     |                               |   |
|---------------------------------------|-------------------------------------|-------------------------------|---|
| 1. Combination switch                 | 2. Combination meter                | 3. IPDM E/R                   |   |
| 4. BCM                                | 5. Washer pump                      | 6. Front wiper motor          | A |
| A. Engine room dash panel (RH)        | B. Dash side lower (Passenger side) | C. Radiator core support (RH) |   |
| D. Cowl top, left side of engine room |                                     |                               | B |

## Component Description

INFOID:000000009161833

Part	Description
BCM	<ul style="list-style-type: none"> <li>Detects the each switch status by the combination switch reading function.</li> <li>Requests (with CAN communication) the front wiper relay and the front wiper high relay ON to IPDM E/R.</li> </ul>
IPDM E/R	<ul style="list-style-type: none"> <li>Controls the integrated relay according to the request (with CAN communication) from BCM.</li> <li>Performs the auto stop control of the front wiper.</li> </ul>
Combination switch (Wiper & washer switch)	Refer to <a href="#">BCS-5, "System Description"</a> .
Combination meter	Transmits the vehicle speed signal to BCM with CAN communication.

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# DIAGNOSIS SYSTEM (IPDM E/R)

< SYSTEM DESCRIPTION >

## DIAGNOSIS SYSTEM (IPDM E/R)

### Diagnosis Description

INFOID:000000009161836

#### 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.

- Front wiper (LO, HI)
- Parking lamps
- License plate lamps
- Side marker lamps
- Tail lamps
- Headlamps (LO, HI)
- A/C compressor (magnet clutch)
- Cooling fan (cooling fan control module)

##### Operation Procedure

1. Close the hood and lift the wiper arms from the windshield. (Prevent windshield damage due to wiper operation)

**NOTE:**

When auto active test is performed with hood opened, sprinkle water on windshield beforehand.

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

**CAUTION:**

**Close passenger door.**

4. Turn the ignition switch ON within 10 seconds. 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 the ignition switch OFF.

**CAUTION:**

- If auto active test mode cannot be actuated, check door switch system. Refer to [DLK-44, "Component Function Check"](#).
- Do not start the engine.

##### Inspection in Auto Active Test Mode

When auto active test mode is actuated, the following 5 steps are repeated 3 times.

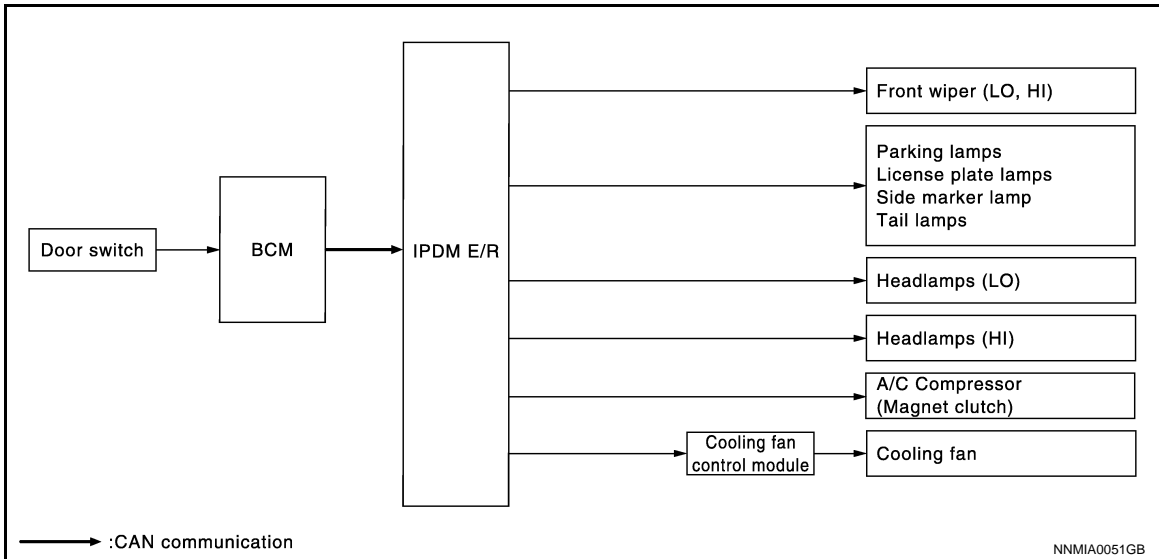
Operation sequence	Inspection location	Operation
1	Front wiper	LO for 5 seconds → HI for 5 seconds
2	<ul style="list-style-type: none"><li>• Parking lamps</li><li>• License plate lamps</li><li>• Side marker lamps</li><li>• Tail lamps</li></ul>	10 seconds
3	Headlamps	LO ↔ HI 5 times
4	A/C compressor (magnet clutch)	ON ↔ OFF 5 times
5*	Cooling fan	MID for 5 seconds → HI for 5 seconds

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

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

# WIPER AND WASHER FUSE

< DTC/CIRCUIT DIAGNOSIS >

## DTC/CIRCUIT DIAGNOSIS

### WIPER AND WASHER FUSE

#### Description

INFOID:000000009161838

#### Fuse list

Unit	Location	No.	Capacity
Front wiper motor	IPDM E/R	60	30 A
Washer pump	IPDM E/R	47	10 A

#### Diagnosis Procedure

INFOID:000000009161839

#### 1. CHECK FUSES

Check that the following fuses are not fusing.

Unit	Location	No.	Capacity
Front wiper motor	IPDM E/R	60	30 A
Washer pump	IPDM E/R	47	10 A

#### Is the fuse fusing?

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



# FRONT WIPER STOP POSITION SIGNAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

## FRONT WIPER STOP POSITION SIGNAL CIRCUIT

### Diagnosis Procedure

INFOID:000000009161845

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

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

Terminals		Voltage (Approx.)
(+)	(-)	
IPDM E/R		Battery voltage
Connector	Terminal	
E5	16	

Is the measurement value normal?

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

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

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

IPDM E/R		Ground	Continuity
Connector	Terminal		
E5	16		Not existed

Does continuity exist?

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

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

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

IPDM E/R		Front wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
E5	16	E42	5	Existed

Does continuity exist?

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

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# FRONT WIPER MOTOR GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

## FRONT WIPER MOTOR GROUND CIRCUIT

### Diagnosis Procedure

INFOID:000000009161846

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

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

Front wiper motor		Ground	Continuity
Connector	Terminal		Existed
E42	2		

#### Does continuity exist?

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

# WASHER SWITCH

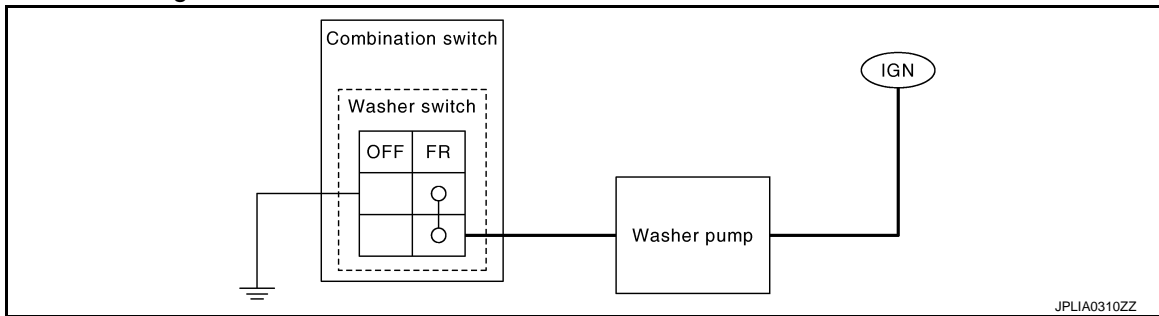
< DTC/CIRCUIT DIAGNOSIS >

## WASHER SWITCH

### Description

INFOID:000000009161847

Washer switch is integrated with combination switch.



### Component Inspection

INFOID:000000009161848

#### 1. CHECK WIPER SWITCH

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

Combination switch		Condition	Continuity
Terminal			
1	6	Front washer switch ON	Existed

#### Does continuity exist?

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

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
# FRONT WIPER AND WASHER SYSTEM

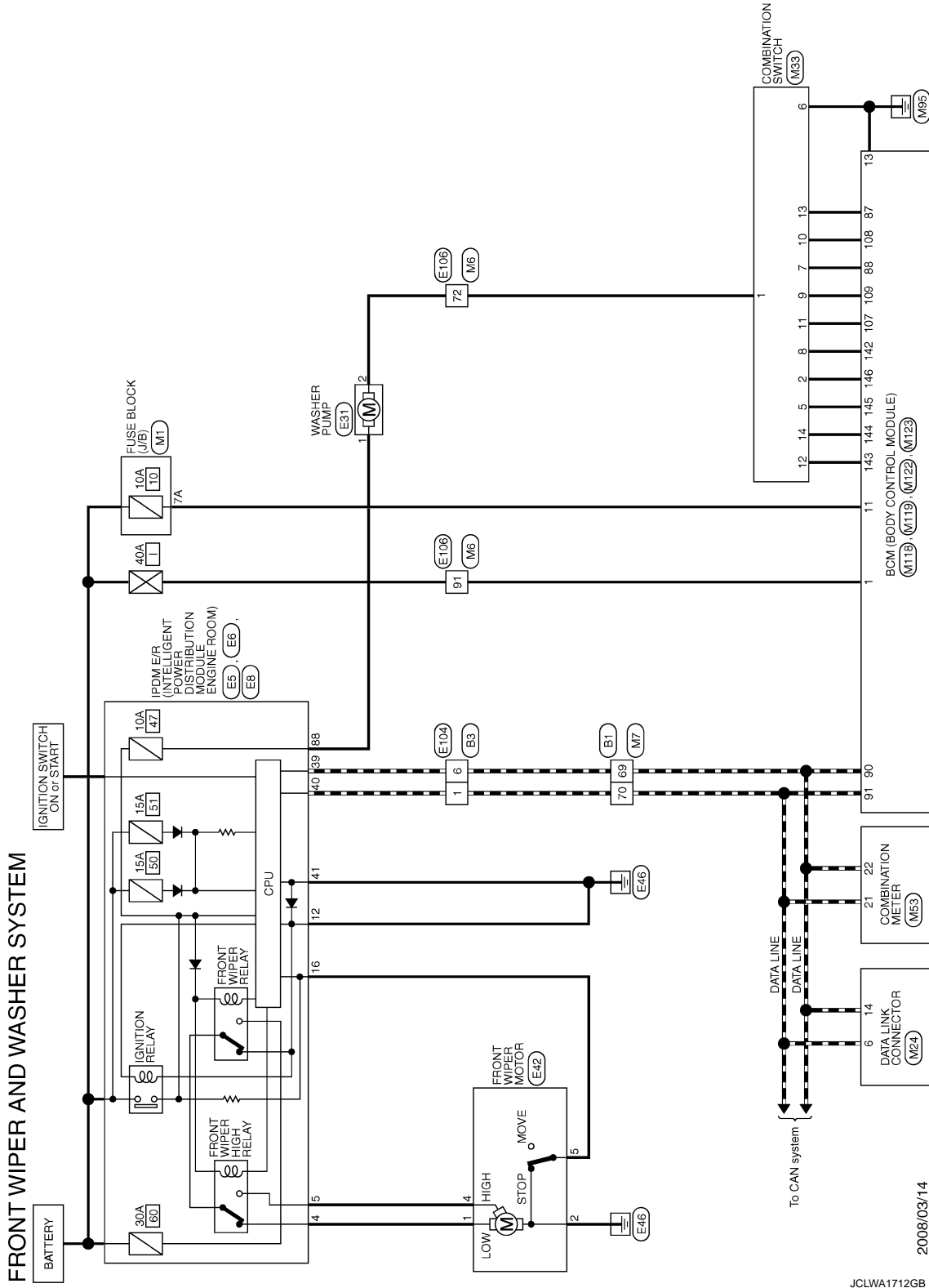
< DTC/CIRCUIT DIAGNOSIS >

## FRONT WIPER AND WASHER SYSTEM

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

INFOID:000000009161849

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



2008/03/14

JCLWA1712GB

# NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS >

## SYMPTOM DIAGNOSIS

### NORMAL OPERATING CONDITION

#### Description

INFOID:000000009161860

#### 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.

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# PRECAUTIONS

< PRECAUTION >

## PRECAUTION

### PRECAUTIONS

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

INFOID:000000009161863

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

#### **WARNING:**

Always observe the following items for preventing accidental activation.

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

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

#### **WARNING:**

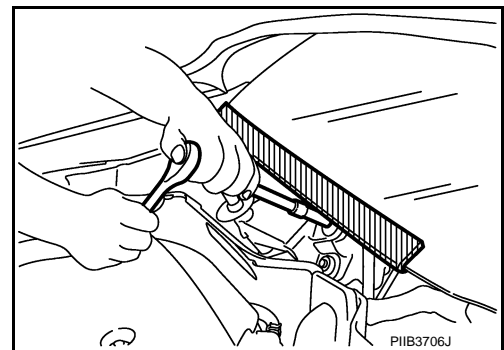
Always observe the following items for preventing accidental activation.

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

#### Precaution for Procedure without Cowl Top Cover

INFOID:000000009161864

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



#### Precaution for Battery Service

INFOID:000000009161865

Before disconnecting the battery, lower both the driver and passenger windows. This will prevent any interference between the window edge and the vehicle when the door is opened/closed. During normal operation, the window slightly raises and lowers automatically to prevent any window to vehicle interference. The automatic window function will not work with the battery disconnected.

# WASHER TANK

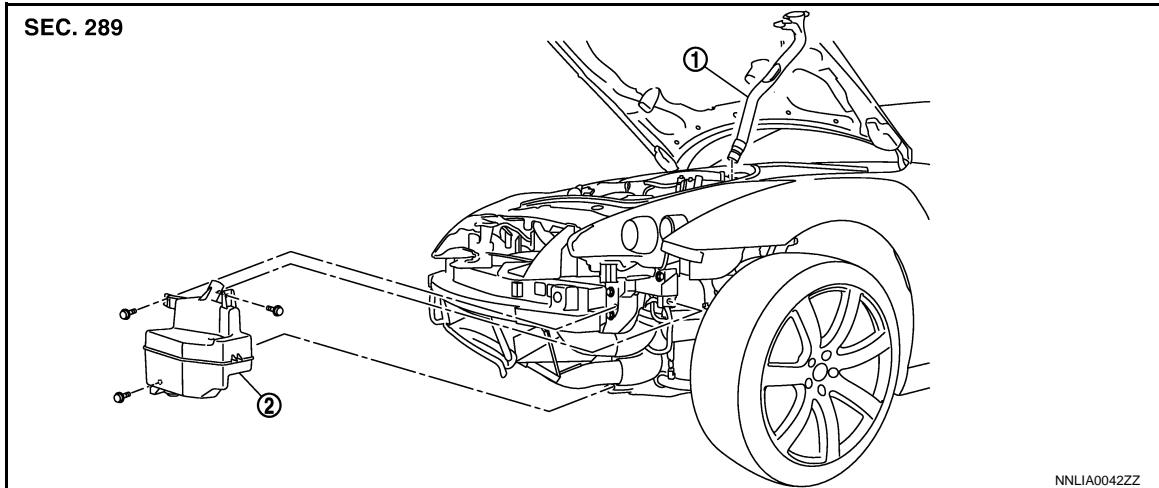
< REMOVAL AND INSTALLATION >

## REMOVAL AND INSTALLATION

### WASHER TANK

#### Exploded View

INFOID:000000009161866



1. Washer tank inlet

2. Washer tank

### Removal and Installation

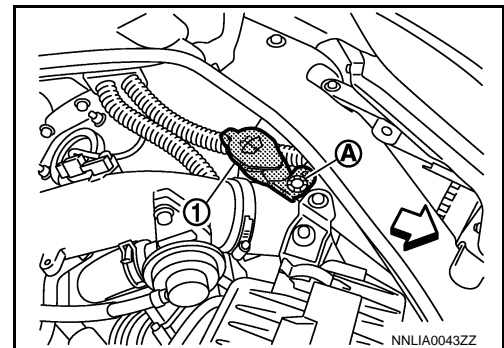
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#### REMOVAL

1. Remove the clip (A)

← : Vehicle front

2. Pull out the washer tank inlet from the washer tank.
3. Remove the front bumper fascia. Refer to [EXT-14, "Exploded View"](#).
4. Disconnect the washer pump connector.
5. Disconnect the washer level switch connector.
6. Disconnect the front washer tube.
7. Remove the washer tank mounting bolts.
8. Remove the washer tank from the vehicle.



#### INSTALLATION

Install in the reverse order of removal.

#### **CAUTION:**

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

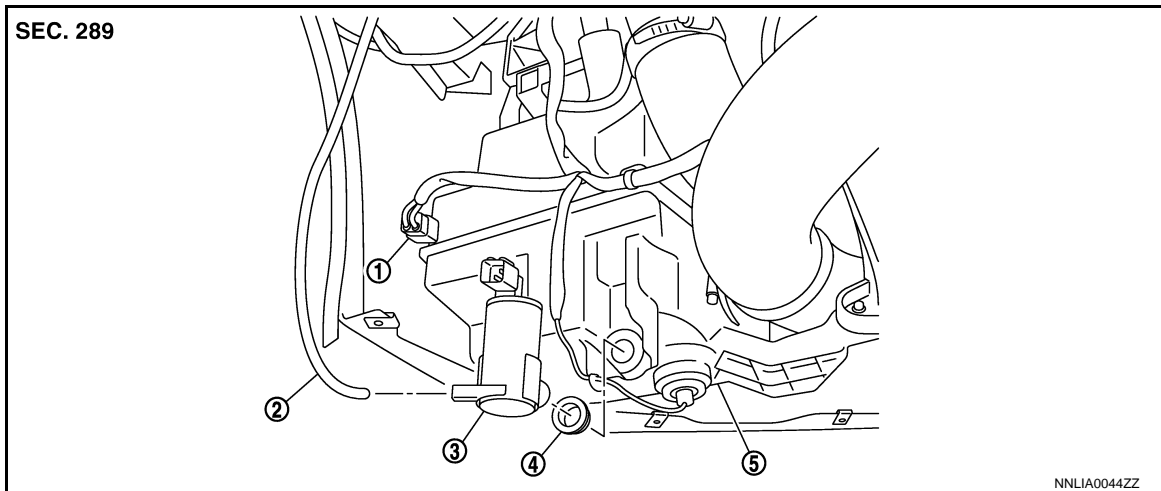
# WASHER PUMP

< REMOVAL AND INSTALLATION >

## WASHER PUMP

Exploded View

INFOID:000000009161868



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

## Removal and Installation

INFOID:000000009161869

### REMOVAL

1. Remove the fender protector LH (front). Refer to [EXT-29. "FENDER PROTECTOR : Exploded View"](#).
2. Disconnect the washer pump connector.
3. Disconnect the front washer tube.
4. Remove the washer pump from the washer tank.
5. Remove the packing from the washer tank.

### INSTALLATION

Install in the reverse order of removal.

#### **CAUTION:**

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



# WASHER LEVEL SWITCH

< REMOVAL AND INSTALLATION >

## WASHER LEVEL SWITCH

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### Removal and Installation

INFOID:000000009161870

The washer level switch must be replaced together with the washer tank as an assembly. Refer to [WW-15](#), "[Removal and Installation](#)".

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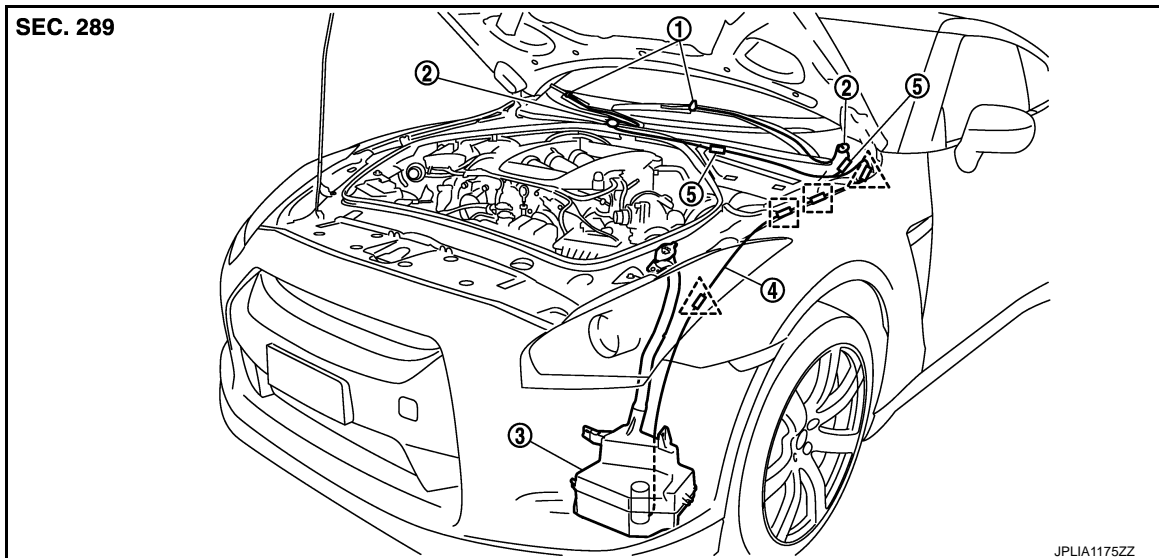
# FRONT WASHER NOZZLE AND TUBE

< REMOVAL AND INSTALLATION >



## FRONT WASHER NOZZLE AND TUBE

Hydraulic Layout

INFOID:000000009161871



- 1. Front washer nozzle
- 2. Front washer joint
- 3. Washer tank
- 4. Front washer tube
- 5. Check valve

-  Clip A
-  Clip B

## Removal and Installation

INFOID:000000009161872

### FRONT WASHER NOZZLE

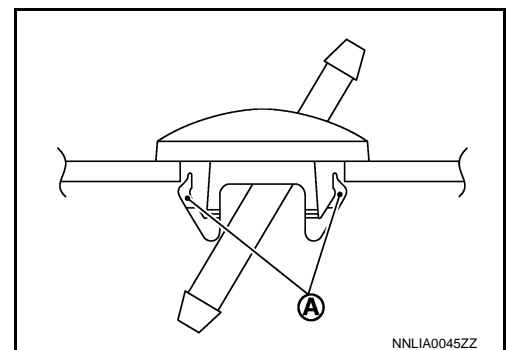
The front washer nozzle must be replaced together with the front wiper arm as an assembly. Refer to [WW-21](#), "[Exploded View](#)".

### CAUTION:

**Never remove/install the front washer nozzle from the front wiper arm assembly.**

### FRONT WASHER JOINT

1. Remove upwards while pressing pawl (A) on reverse side.
2. Disconnect front washer tube.



## Inspection and Adjustment

INFOID:000000009161873

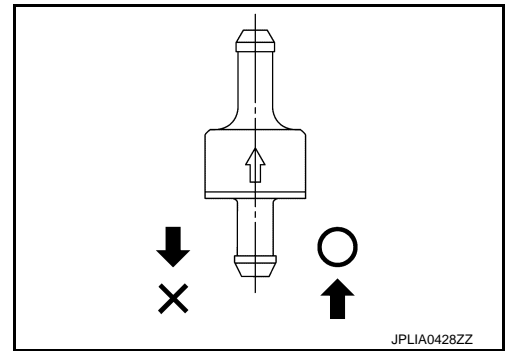
### INSPECTION

Check valve Inspection

# FRONT WASHER NOZZLE AND TUBE

## < REMOVAL AND INSTALLATION >

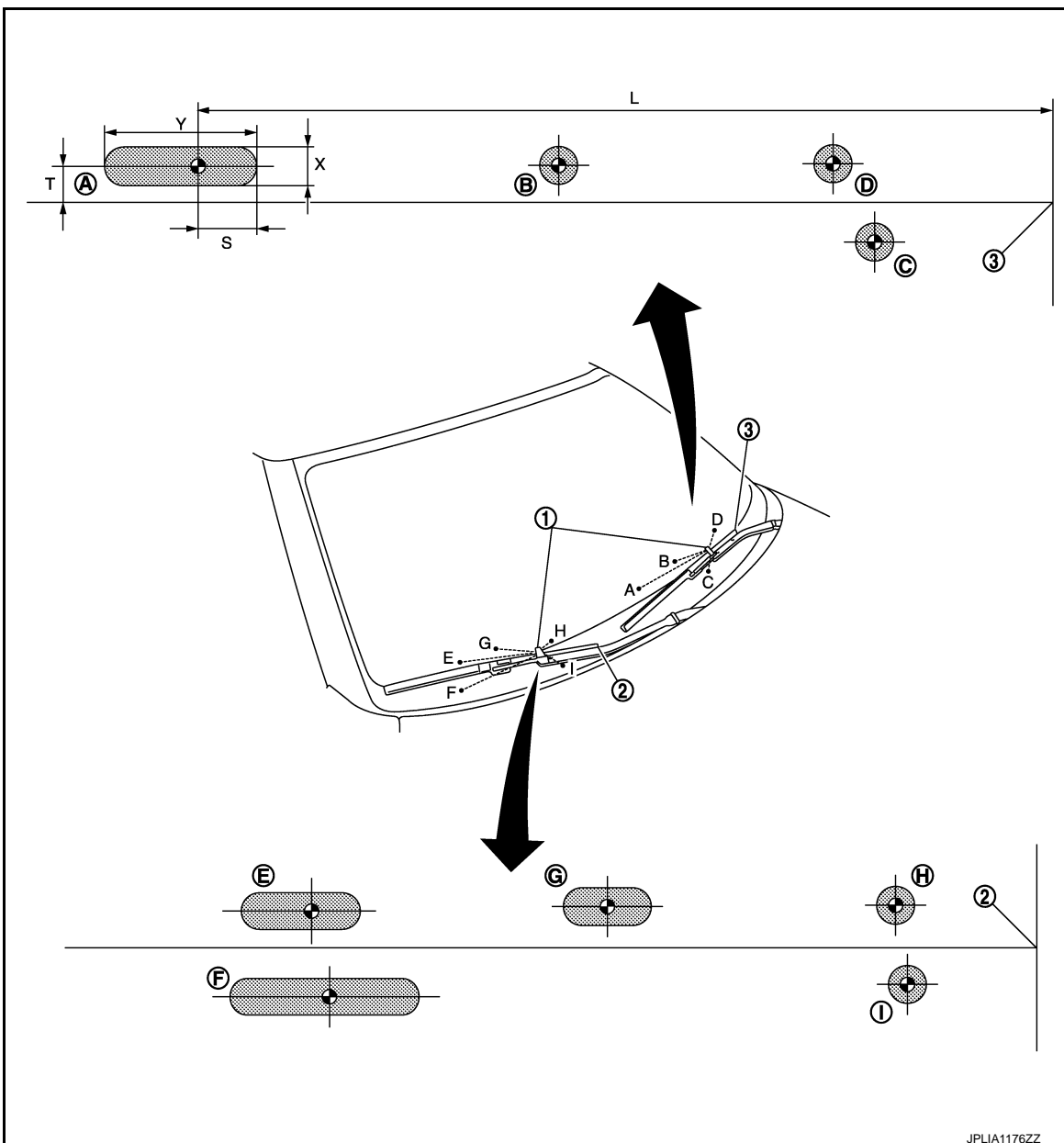
Check that air can pass through the hose by blowing forward (toward the nozzle), and check that air cannot pass through by sucking.



## ADJUSTMENT

### Front Washer Nozzle Spray Position Adjustment

Adjust spray positions to match the positions shown in the figure. Remove the wiper motor connector to ensure front wiper arms do not move.




# FRONT WASHER NOZZLE AND TUBE

## < REMOVAL AND INSTALLATION >

1. Front washer nozzle                      2. Passenger side blade rubber end                      3. Driver side blade rubber end

 : Spray area

 : Target spray position

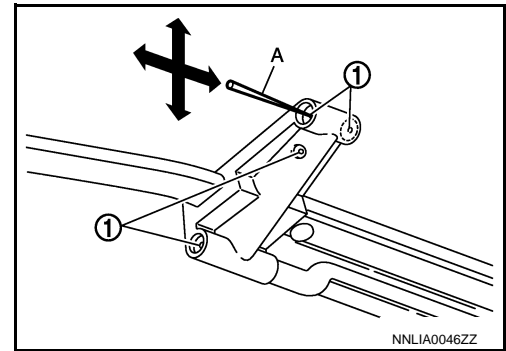
Unit: mm (in)

Spray position	T	L	X	Y	S
A	29 (1.14)	448 (17.64)	20 (0.79)	50 (1.97)	25 (0.98)
B	34 (1.34)	235 (9.25)	20 (0.79)	20 (0.79)	10 (0.39)
C	-18 (-0.71)	112 (4.41)	20 (0.79)	20 (0.79)	10 (0.39)
D	29 (1.14)	115 (4.53)	20 (0.79)	20 (0.79)	10 (0.39)
E	30 (1.18)	304 (11.97)	20 (0.79)	30 (1.18)	15 (0.59)
F	-40 (-1.57)	237 (9.33)	20 (0.79)	60 (2.36)	30 (1.18)
G	35 (1.38)	197 (7.76)	20 (0.79)	30 (1.18)	15 (0.59)
H	30 (1.18)	73 (2.87)	20 (0.79)	20 (0.79)	10 (0.39)
I	-17 (-0.67)	68 (2.68)	20 (0.79)	20 (0.79)	10 (0.39)

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.



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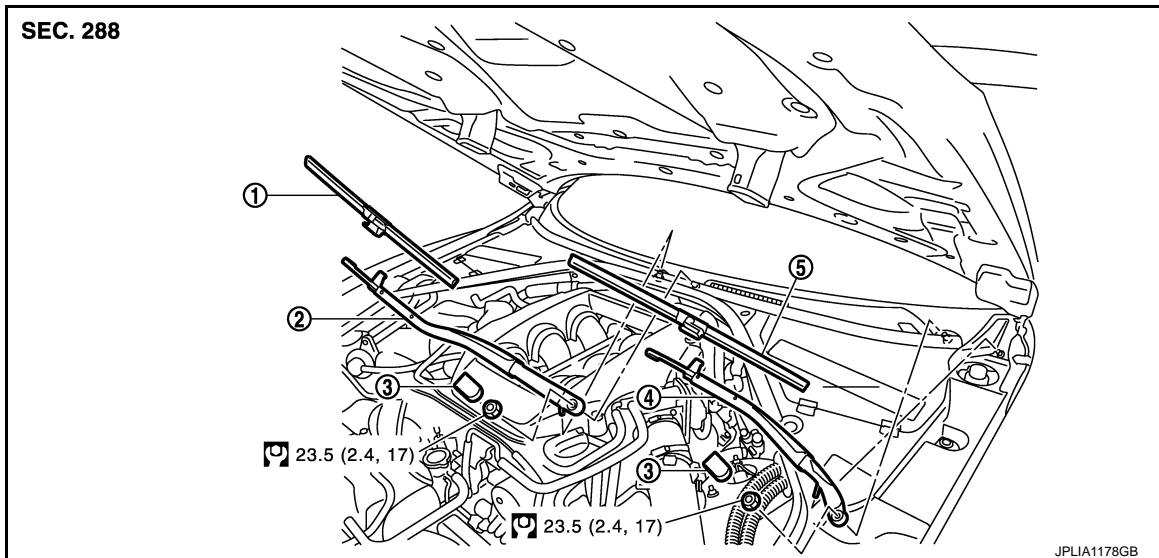
# FRONT WIPER ARM

< REMOVAL AND INSTALLATION >

## FRONT WIPER ARM

Exploded View

INFOID:000000009161874



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

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

## Removal and Installation

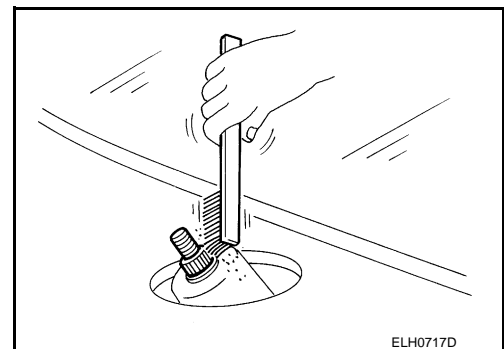
INFOID:000000009161875

### REMOVAL

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

### INSTALLATION

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



2. Operate the front wiper motor to move the front wiper to the auto stop position.
3. Adjust the front wiper blade position. Refer to [WW-22, "Adjustment"](#).
4. Install the front wiper arm by tightening the mounting nuts.
5. Connect the front washer tube to the front washer joint.
6. Inject the washer fluid.

# FRONT WIPER ARM

## < REMOVAL AND INSTALLATION >

7. Operate the front wiper to move it to the auto stop position.
8. Check that the front wiper blades stop at the specified position.
9. Install the front wiper arm caps.

## Adjustment

INFOID:000000009161876

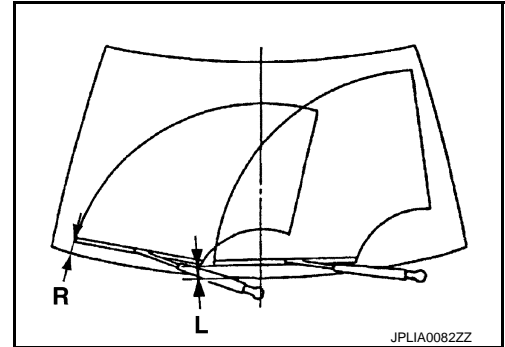
### WIPER BLADE POSITION ADJUSTMENT

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

Standard clearance

**R** :  $35.1 \pm 7.5 \text{ mm}$  ( $1.382 \pm 0.295 \text{ in}$ )

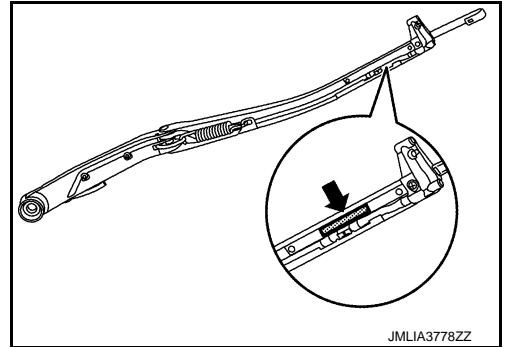
**L** :  $46.9 \pm 7.5 \text{ mm}$  ( $1.846 \pm 0.295 \text{ in}$ )



### NOTE:

For the passenger side wiper arm the corresponding parts differ according to the length of the wiper blade, and are distinguished by the beginning number identification stamped on the portion indicated by the arrow as shown in the figure.

Wiper blade	Beginning number
475 mm (18.70 in)	—
525 mm (20.67 in)	39



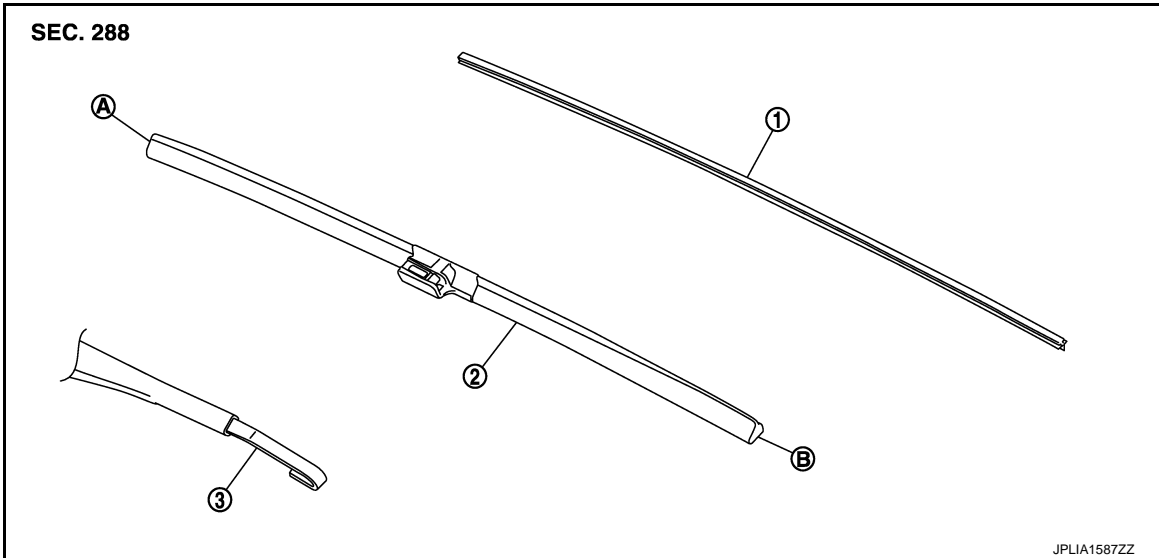
# WIPER BLADE

< REMOVAL AND INSTALLATION >

## WIPER BLADE

Exploded View

INFOID:000000009161877



- |                    |                    |              |
|--------------------|--------------------|--------------|
| 1. Wiper refill    | 2. Wiper blade     | 3. Wiper arm |
| A. Wiper blade end | B. Wiper blade tip |              |

## Removal and Installation

INFOID:000000009161878

### REMOVAL

Remove the wiper blade from the wiper arm.

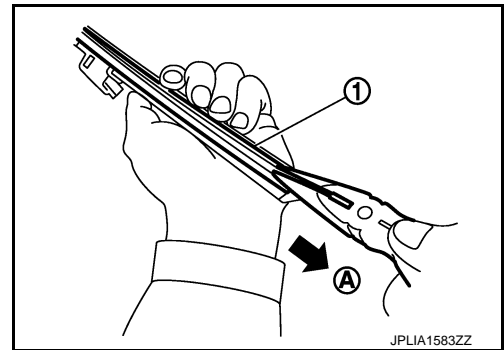
### INSTALLATION

Install the front wiper blade to the wiper arm.

## Replacement

INFOID:000000009161879

1. Hold the rip of old wiper refill (1) at the rear end of the wiper blade with long-nose pliers, and pull out the wiper refill to the direction (A).

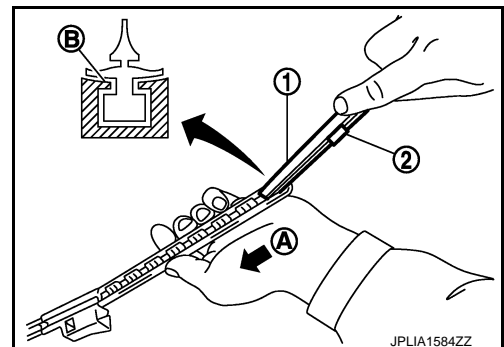


2. Insert the tip of new wiper refill (1) into the rear end of wiper blade. Slide the wiper refill to the direction (A) while pressing the wiper refill onto the wiper blade rear end.

### NOTE:

- Insert the wiper refill to be held securely by tab (B) of wiper blade.
- After the wiper refill is fully inserted, remove the holder\* (2).

\*: Attached to service parts.



A

B

C

D

E

F

G

H

I

J

K

WW

M

N

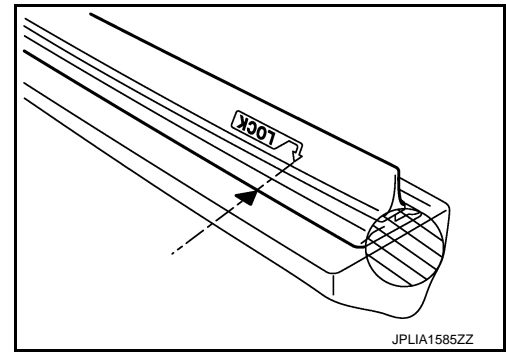
O

P

## WIPER BLADE

### < REMOVAL AND INSTALLATION >

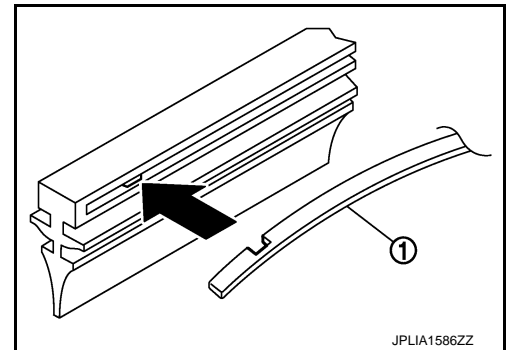
3. Insert the wiper refill until the stopper at the rear end of wiper refill fits in the tab. Check that "LOCK" mark on wiper refill is aligned with "▼" mark on wiper blade.
4. Untwist the twisted wiper refill (▨) at the rear end of wiper blade, if any.
5. Check the following items after replacing wiper refill.
  - Wiper refill is not twisted at all.
  - Wiper refill thoroughly fits in the tab on wiper blade.
  - Wiper refill is inserted from the proper direction.



**NOTE:**

When the vertebra is detached.

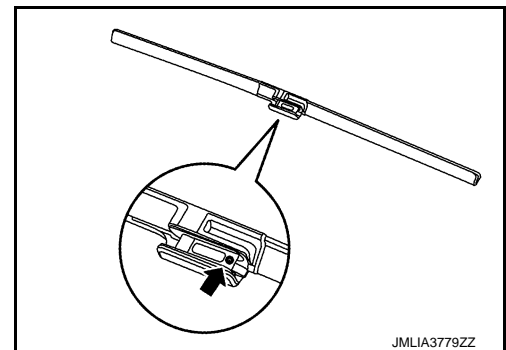
- Insert the vertebra (1) into the wiper blade to the same bending direction.
- If a vertebra has a notch, fit it to a protrusion inside the wiper refill.



**NOTE:**

For the passenger side wiper blade there are two length types. They can be identified by the arrow as shown in the figure.

Red paint mark	Without paint mark
475 mm (18.70 in)	525 mm (20.67 in)





# FRONT WIPER DRIVE ASSEMBLY

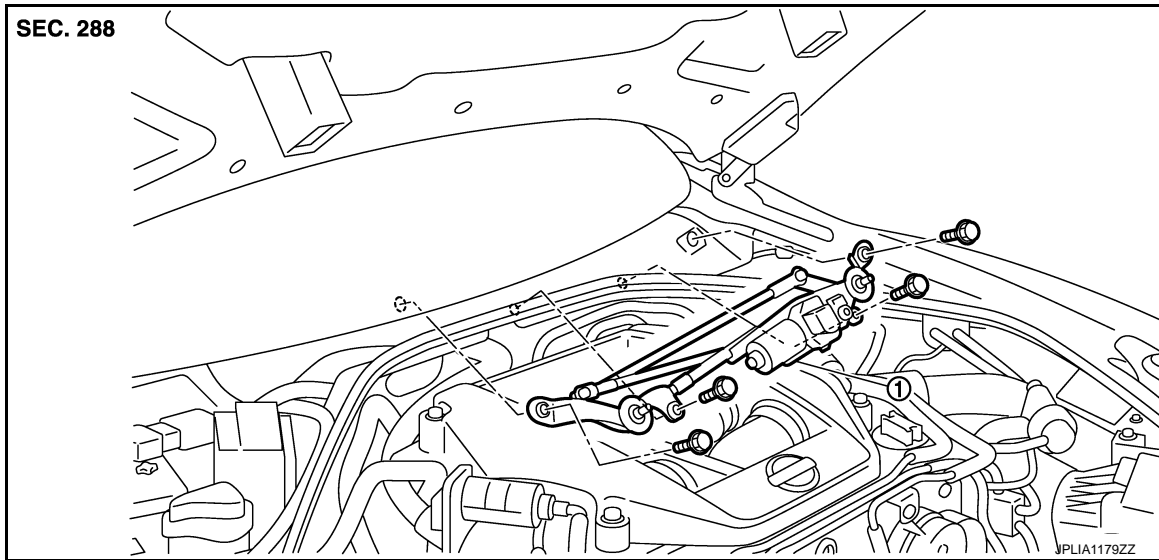
< REMOVAL AND INSTALLATION >

## FRONT WIPER DRIVE ASSEMBLY

Exploded View

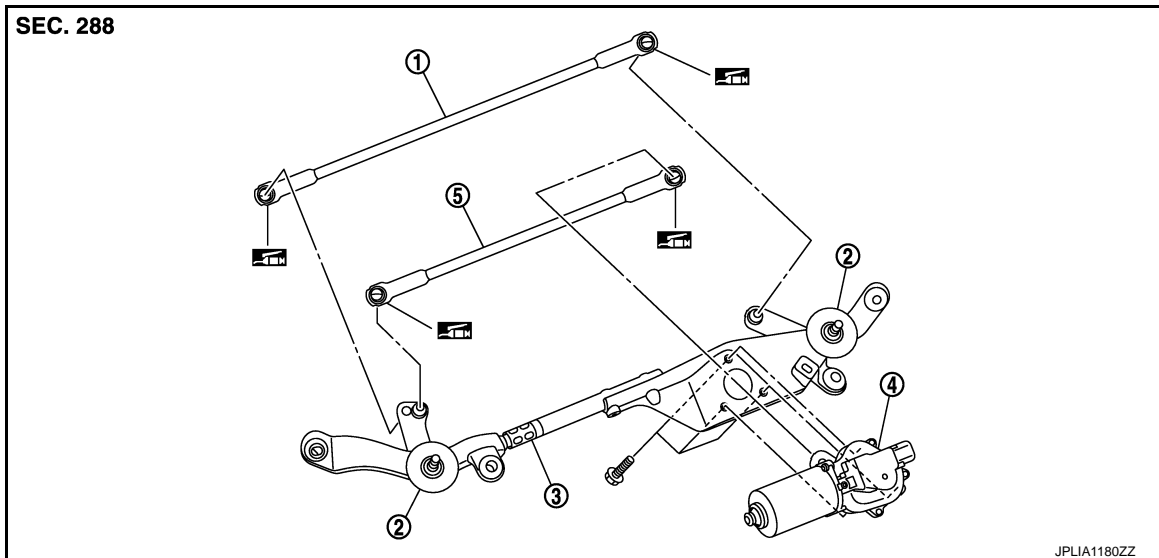
INFOID:000000009161880

### REMOVAL




1. Front wiper drive assembly

### DISASSEMBLY



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

: Multi-purpose grease or an equivalent.

### Removal and Installation

INFOID:000000009161881

#### REMOVAL

1. Remove the front wiper arm. Refer to [WW-21, "Exploded View"](#).
2. Remove the cowl top cover. Refer to [EXT-27, "Removal and Installation"](#).
3. Remove the front wiper drive assembly mounting bolts.

A  
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C  
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N  
O  
P

WW

# FRONT WIPER DRIVE ASSEMBLY

## < REMOVAL AND INSTALLATION >

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

## INSTALLATION

1. Install the front wiper drive assembly to the vehicle.
2. Connect the front wiper motor connector.
3. Operate the front wiper to move it to the auto stop position.
4. Install the cowl top cover. Refer to [EXT-27, "Removal and Installation"](#).
5. Install the front wiper arms. Refer to [WW-21, "Exploded View"](#).

## Disassembly and Assembly

INFOID:000000009161882

## 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.**

# WIPER AND WASHER SWITCH

< REMOVAL AND INSTALLATION >

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## WIPER AND WASHER SWITCH

Exploded View

INFOID:000000009161883

Refer to [BCS-21, "Exploded View"](#).

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