

SECTION **WW** WIPER & WASHER

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PRECAUTIONS

< PRECAUTION >

PRECAUTION

PRECAUTIONS

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

INFOID:000000006452200

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 Battery Service

INFOID:000000006452201

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.

COMPONENT PARTS

< SYSTEM DESCRIPTION >

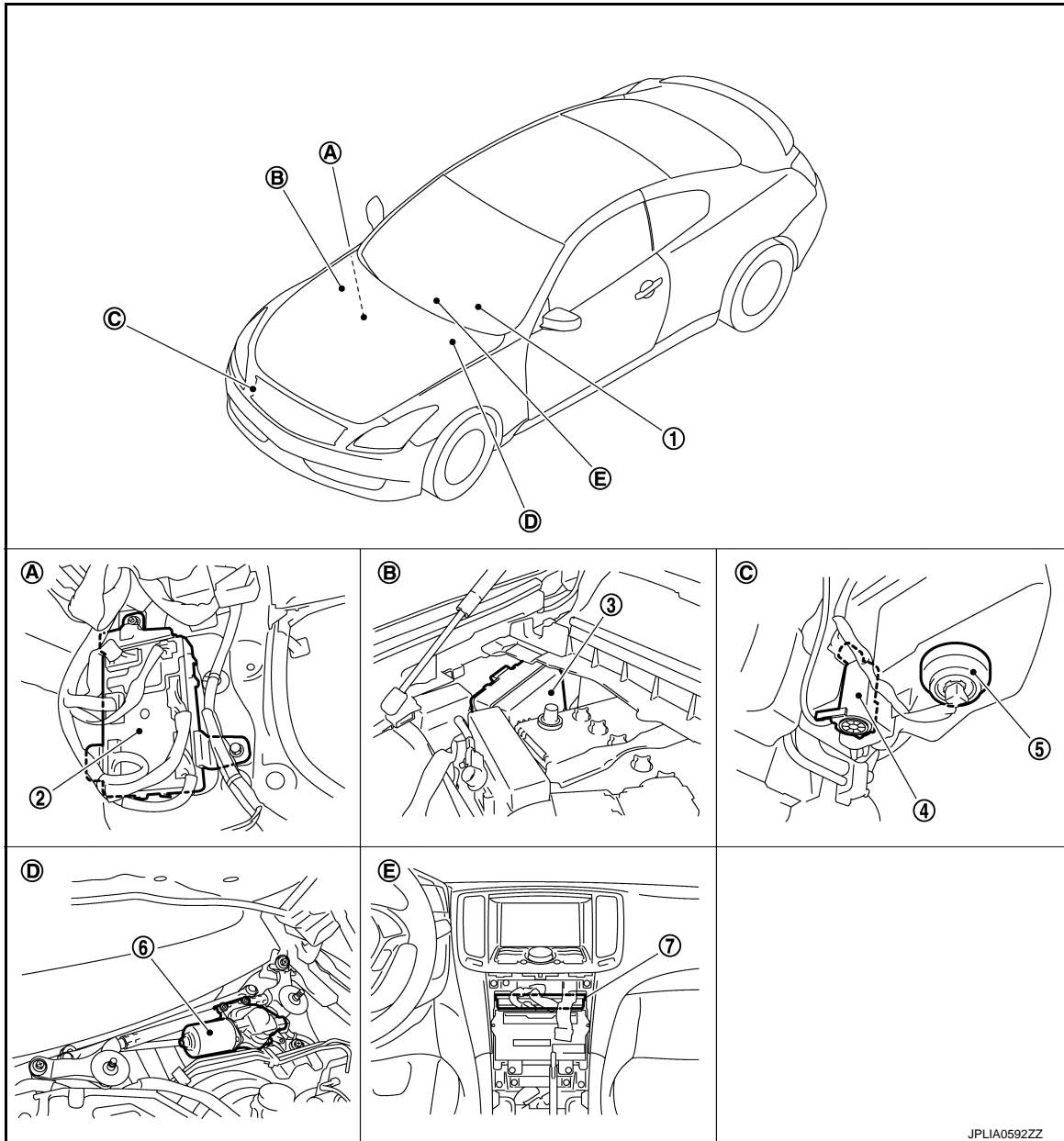
SYSTEM DESCRIPTION

COMPONENT PARTS

FRONT WIPER AND WASHER SYSTEM (WITHOUT RAIN SENSOR)

FRONT WIPER AND WASHER SYSTEM (WITHOUT RAIN SENSOR) : Component Parts Location

INFOID:000000006452202



- | | | |
|---------------------------------------|--------------------------------|-------------------------------|
| 1. Combination switch | 2. BCM | 3. IPDM E/R |
| 4. Washer pump | 5. Washer level switch | 6. Front wiper motor |
| 7. Unified meter and A/C amp. | | |
| A. Dash side lower (Passenger side) | B. Engine room dash panel (RH) | C. Radiator core support (RH) |
| D. Cowl top, left side of engine room | E. Behind cluster lid C | |

FRONT WIPER AND WASHER SYSTEM (WITHOUT RAIN SENSOR) :

COMPONENT PARTS

< SYSTEM DESCRIPTION >

Component Description

INFOID:000000006452203

Part	Description
BCM	<ul style="list-style-type: none">Judges the each switch status by the combination switch reading function.Requests (with CAN communication) the front wiper relay and the front wiper high relay ON to IPDM E/R.
IPDM E/R	<ul style="list-style-type: none">Controls the integrated relay according to the request (with CAN communication) from BCM.Performs the auto stop control of the front wiper.
Combination switch (Wiper & washer switch)	Refer to BCS-7, "System Description" .
Unified meter and A/C amp.	Transmits the vehicle speed signal to BCM with CAN communication.

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

INFOID:000000006452204

IPDM E/R

When CAN communication with ECM and BCM is impossible, IPDM E/R performs fail-safe control. After CAN communication recovers normally, it also returns to normal control.

If No CAN Communication Is Available With BCM

Control part	Fail-safe operation
Front wiper	<ul style="list-style-type: none">The status just before activation of fail-safe control is maintained until the ignition switch is turned OFF while the front wiper is operating at LO or HI speed.The wiper is operated at LO speed until the ignition switch is turned OFF if the fail-safe control is activated while the front wiper is set in the AUTO mode and the front wiper motor is operating.

IPDM E/R

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

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

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

NOTE:

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

FRONT WIPER AND WASHER SYSTEM (WITH RAIN SENSOR)

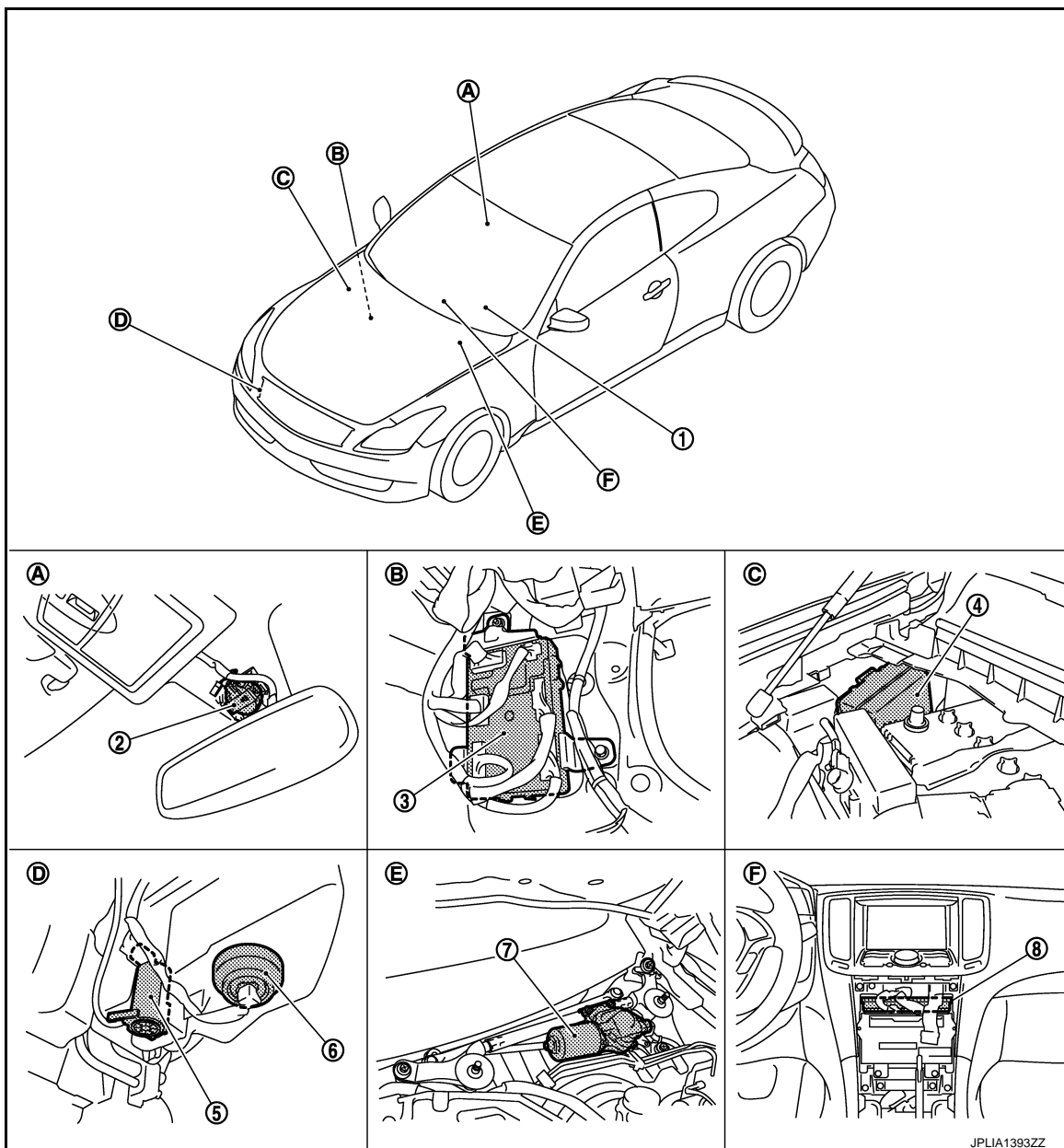
FRONT WIPER AND WASHER SYSTEM (WITH RAIN SENSOR) : Component Parts

COMPONENT PARTS

< SYSTEM DESCRIPTION >

Location

INFOID:000000006452205



- | | | |
|-------------------------------|---------------------------------------|--------------------------------|
| 1. Combination switch | 2. Rain sensor | 3. BCM |
| 4. IPDM E/R | 5. Washer pump | 6. Washer level switch |
| 7. Front wiper motor | 8. Unified meter and A/C amp. | |
| A. Wind shield upper | B. Dash side lower (Passenger side) | C. Engine room dash panel (RH) |
| D. Radiator core support (RH) | E. Cowl top, left side of engine room | F. Behind cluster lid C |

FRONT WIPER AND WASHER SYSTEM (WITH RAIN SENSOR) :

COMPONENT PARTS

< SYSTEM DESCRIPTION >

Component Description

INFOID:000000006452206

Part	Description
BCM	<ul style="list-style-type: none">Judges the each switch status by the combination switch reading function.Requests (with CAN communication) the front wiper relay and the front wiper high relay ON to IPDM E/R.
IPDM E/R	<ul style="list-style-type: none">Controls the integrated relay according to the request (with CAN communication) from BCM.Performs the auto stop control of the front wiper.
Combination switch (Wiper & washer switch)	Refer to BCS-7, "System Description" .
Unified meter and A/C amp.	Transmits the vehicle speed signal to BCM with CAN communication.
Rain sensor	Detects water droplets on the windshield with infrared rays, and transmits the rain sensor signal to BCM through the light and rain sensor serial link.

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

INFOID:000000006452207

IPDM E/R

When CAN communication with ECM and BCM is impossible, IPDM E/R performs fail-safe control. After CAN communication recovers normally, it also returns to normal control.

If No CAN Communication Is Available With BCM

Control part	Fail-safe operation
Front wiper	<ul style="list-style-type: none">The status just before activation of fail-safe control is maintained until the ignition switch is turned OFF while the front wiper is operating at LO or HI speed.The wiper is operated at LO speed until the ignition switch is turned OFF if the fail-safe control is activated while the front wiper is set in the AUTO mode and the front wiper motor is operating.

IPDM E/R

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

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

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

NOTE:

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

BCM

BCM detects the light and rain sensor serial link error and the light and rain sensor malfunction.

BCM controls the following fail-safe when light and rain sensor has a malfunction.

Fail-safe Control

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

SYSTEM

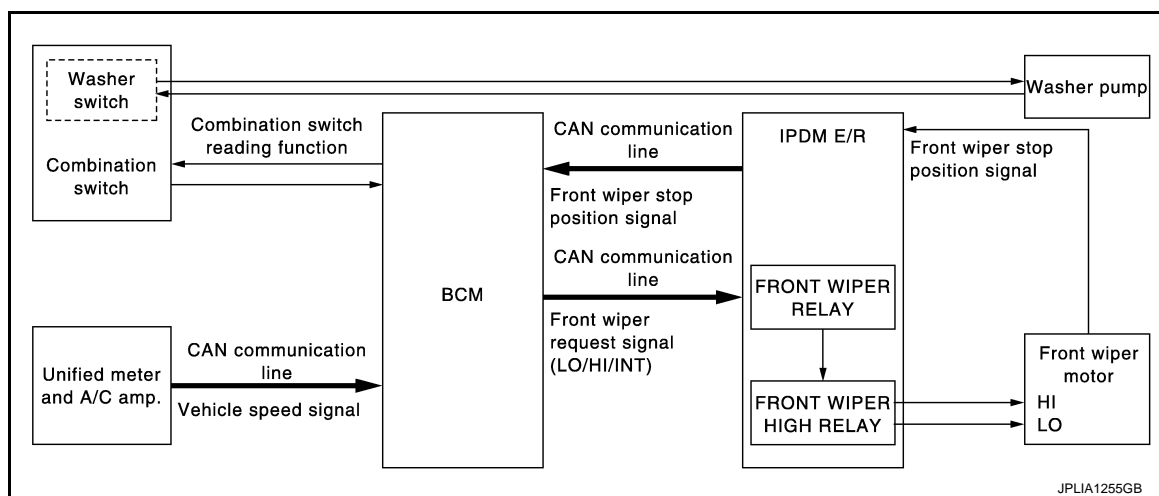
< SYSTEM DESCRIPTION >

SYSTEM

FRONT WIPER AND WASHER SYSTEM (WITHOUT RAIN SENSOR)

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

INFOID:000000006452208



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

INFOID:000000006452209

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

Combination meter indicates low washer fluid warning judged by the signal from the washer level switch. For details of low washer fluid warning, refer to [MWI-27, "INFORMATION DISPLAY : System Description"](#).

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 via 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 via 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 via CAN communication according to the front wiper HI operating condition.

Front wiper HI operating condition

- Ignition switch ON
- Front wiper switch HI

SYSTEM

< SYSTEM DESCRIPTION >

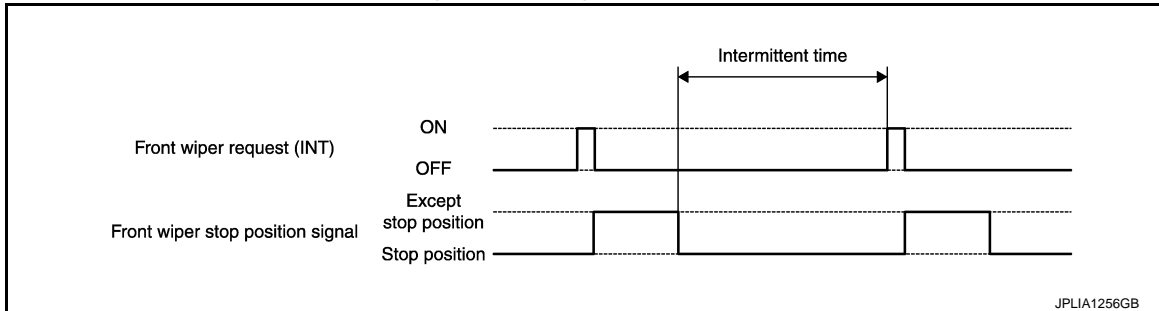
- IPDM E/R turns ON the integrated front wiper relay and the front wiper high relay according to the front wiper request signal (HI).

FRONT WIPER INT OPERATION

- BCM transmits the front wiper request signal (INT) to IPDM E/R via 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 via 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 operation with vehicle speed. Front wiper intermittent operation can be set to operation linked or not linked with vehicle speed using CONSULT-III. Refer to [WW-15, "WIPER : CONSULT-III Function \(BCM - WIPER\)"](#).

Front wiper intermittent operation with vehicle speed

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

Unit: Second

Wiper intermittent dial position	Intermittent operation interval	Intermittent operation delay Interval			
		Vehicle speed			
		0 – 5 km/h (0 – 3.1 MPH)	5 – 35 km/h (3.1 – 21.7 MPH)	35 – 65 km/h (21.7 – 40.4 MPH)*	65 km/h (40.4 MPH) or more
1	Short ↑	0.8	0.6	0.4	0.24
2		4	3	2	1.2
3		10	7.5	5	3
4		16	12	8	4.8
5		24	18	12	7.2
6	Long ↓	32	24	16	9.6
7		42	31.5	21	12.6

*: When operation setting is not linked with vehicle speed.

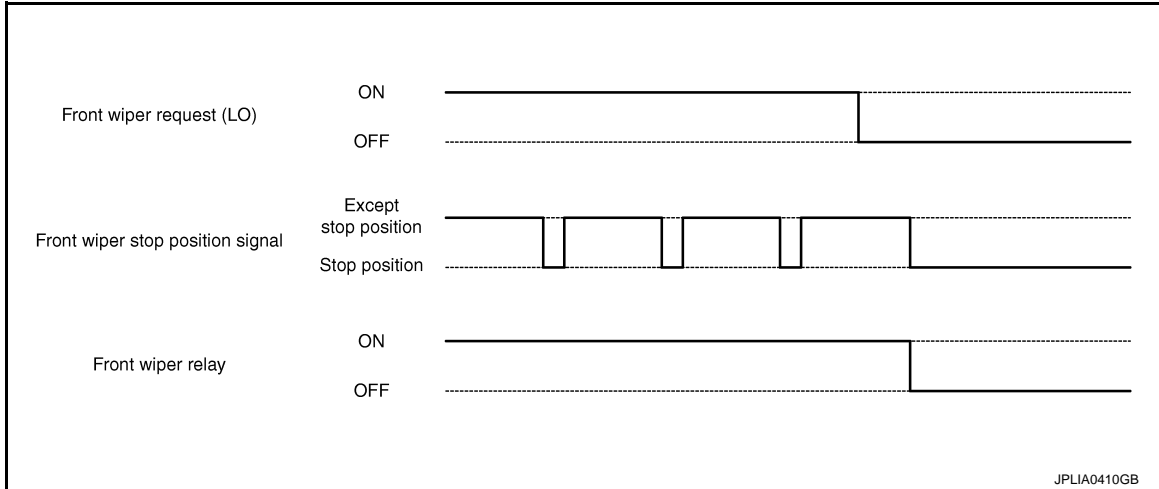
FRONT WIPER AUTO STOP OPERATION

- BCM stops transmitting the front wiper request signal when the front wiper switch is turned OFF.
- IPDM E/R detects the front wiper stop position signal from the front wiper motor and detects the front wiper motor position (stop position/except stop position).

SYSTEM

< SYSTEM DESCRIPTION >

- When the front wiper request signal is stopped, IPDM E/R turns ON the front wiper relay until the front wiper motor returns to the stop position.



NOTE:

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

FRONT WIPER OPERATION LINKED WITH WASHER

- BCM transmits the front wiper request signal (LO) to IPDM E/R via 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 with the front washer switch ON.

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

INFOID:000000006452210

IPDM E/R

When CAN communication with ECM and BCM is impossible, IPDM E/R performs fail-safe control. After CAN communication recovers normally, it also returns to normal control.

If No CAN Communication Is Available With BCM

Control part	Fail-safe operation
Front wiper	<ul style="list-style-type: none"> The status just before activation of fail-safe control is maintained until the ignition switch is turned OFF while the front wiper is operating at LO or HI speed. The wiper is operated at LO speed until the ignition switch is turned OFF if the fail-safe control is activated while the front wiper is set in the AUTO mode and the front wiper motor is operating.
Headlamp washer relay	Headlamp washer relay OFF

IPDM E/R

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

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

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

SYSTEM

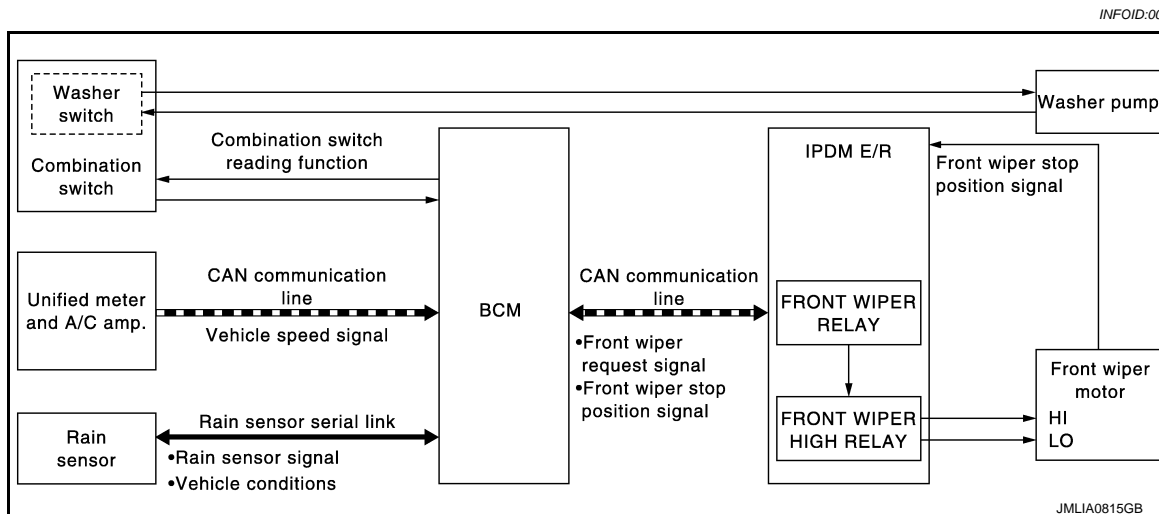
< SYSTEM DESCRIPTION >

NOTE:

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

FRONT WIPER AND WASHER SYSTEM (WITH RAIN SENSOR)

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



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

INFOID:0000000006452212

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

Combination meter indicates low washer fluid warning judged by the signal from the washer level switch. For details of low washer fluid warning, refer to [MWI-27, "INFORMATION DISPLAY : System Description"](#).

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 via 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 via 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 via CAN communication according to the front wiper HI operating condition.

Front wiper HI operating condition

- Ignition switch ON

SYSTEM

< SYSTEM DESCRIPTION >

- 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 AUTO OPERATION

Rain Detection

Rain level and sensor conditions are detected by rain sensor.

- BCM transmits the vehicle conditions (vehicle speed, front wiper condition, rain sensor sensitivity setting, etc.) to the rain sensor via the rain sensor serial link.
- Rain sensor judges a wiping speed for front wiper by rain condition and the vehicle conditions. And it transmits the wiping speed request signal to the BCM via the rain sensor serial link.

Auto Wiping Operation

- BCM receives the wiping speed request signal from the rain sensor via the rain sensor serial link.
- BCM controls front wiper operation according to the wiping speed request signals. And it transmits the front wiper request signals (LO or HI) to the IPDM E/R via CAN communication line.

Front wiper AUTO operating condition

- Ignition switch ON
- Front wiper switch INT

NOTE:

When the front wiper switch is turned to INT position, front wiper operates once regardless of rainy conditions.

Rain Sensor Sensitivity Setting

BCM determines rain sensor sensitivity according to wiper volume dial position.

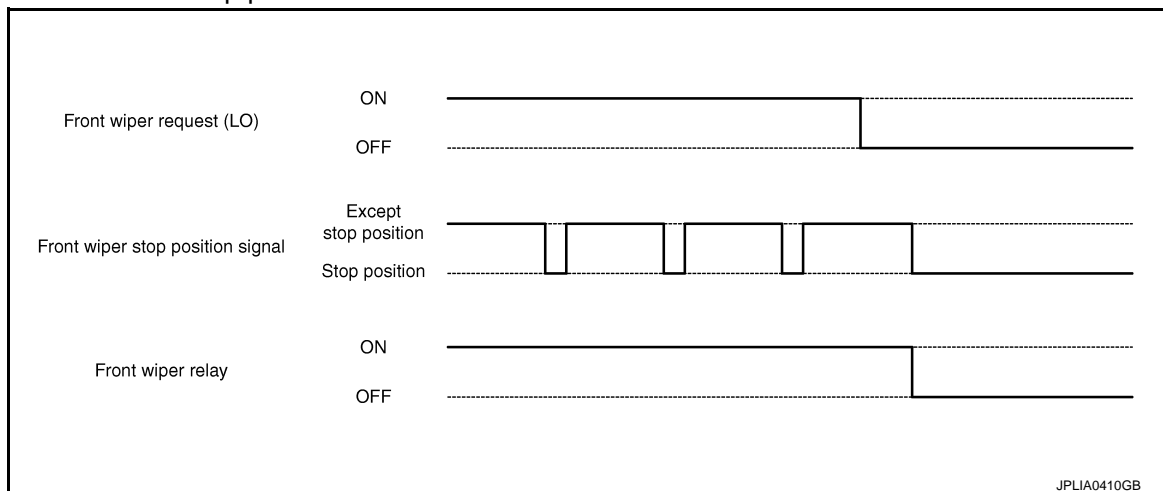
Wiper volume dial position	Sensitivity
1	High sensitivity
2	
3	Medium-high sensitivity
4	
5	Low-medium sensitivity
6	
7	Low sensitivity

NOTE:

When the wiper volume dial position is turned up by 1 level under front wiper AUTO operating condition, front wiper operates once.

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.



SYSTEM

< SYSTEM DESCRIPTION >

NOTE:

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

FRONT WIPER OPERATION LINKED WITH WASHER

- BCM transmits the front wiper request signal (LO) to IPDM E/R via 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 with the front washer switch ON.

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

INFOID:000000006452213

IPDM E/R

When CAN communication with ECM and BCM is impossible, IPDM E/R performs fail-safe control. After CAN communication recovers normally, it also returns to normal control.

If No CAN Communication Is Available With BCM

Control part	Fail-safe operation
Front wiper	<ul style="list-style-type: none">• The status just before activation of fail-safe control is maintained until the ignition switch is turned OFF while the front wiper is operating at LO or HI speed.• The wiper is operated at LO speed until the ignition switch is turned OFF if the fail-safe control is activated while the front wiper is set in the AUTO mode and the front wiper motor is operating.
Headlamp washer relay	Headlamp washer relay OFF

IPDM E/R

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

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

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

NOTE:

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

BCM

BCM detects the rain sensor serial link error and the rain sensor malfunction.

BCM controls the following fail-safe when rain sensor has a malfunction.

Fail-safe Control

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

DIAGNOSIS SYSTEM (BCM)

< SYSTEM DESCRIPTION >

DIAGNOSIS SYSTEM (BCM)

COMMON ITEM

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

INFOID:000000006933310

APPLICATION ITEM

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

Diagnosis mode	Function Description
Work Support	Changes the setting for each system function.
Self Diagnostic Result	Displays the diagnosis results judged by BCM.
CAN Diag Support Monitor	Monitors the reception status of CAN communication viewed from BCM. Refer to CONSULT-III operation manual.
Data Monitor	The BCM input/output signals are displayed.
Active Test	The signals used to activate each device are forcibly supplied from BCM.
Ecu Identification	The BCM part number is displayed.
Configuration	This function is not used even though it is displayed.

SYSTEM APPLICATION

BCM can perform the following functions for each system.

NOTE:

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

×: Applicable item

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

NOTE:

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

FREEZE FRAME DATA (FFD)

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

DIAGNOSIS SYSTEM (BCM)

< SYSTEM DESCRIPTION >

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

NOTE:

*: For models without steering lock unit, power supply position changes from "OFF" to "LOCK" when steering lock conditions are satisfied.

WIPER

WIPER : CONSULT-III Function (BCM - WIPER)

INFOID:000000006452215

WORK SUPPORT

Service item	Setting item	Description
WIPER SPEED SETTING*1	On	Linked with vehicle speed (Front wiper intermittent time linked with the vehicle speed and wiper intermittent dial position)
	Off*2	Not linked with vehicle speed (Front wiper intermittent time linked with the wiper intermittent dial position)

DIAGNOSIS SYSTEM (BCM)

< SYSTEM DESCRIPTION >

*1:Without rain sensor

*2:Initial setting

DATA MONITOR

Monitor Item [Unit]	Description
VEH SPEED 1 [km/h]	Displays the value of the vehicle speed signal received from unified meter and A/C amp. with CAN communication.
PUSH SW [Off/On]	The switch status input from push-button ignition switch.
FR WIPER HI [Off/On]	Status of each switch judged by BCM using the combination switch reading function
FR WIPER LOW [Off/On]	
FR WASHER SW [Off/On]	
FR WIPER INT [Off/On]	
FR WIPER STOP [Off/On]	Displays the status of the front wiper stop position signal received from IPDM E/R with CAN communication.
INT VOLUME [1 – 7]	Status of each switch judged by BCM using the combination switch reading function

ACTIVE TEST

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

DIAGNOSIS SYSTEM (IPDM E/R)

< SYSTEM DESCRIPTION >

DIAGNOSIS SYSTEM (IPDM E/R)

Diagnosis Description

INFOID:000000006933311

AUTO ACTIVE TEST

Description

In auto active test mode, the IPDM E/R sends a drive signal to the following systems to check their operation.

- Oil pressure warning lamp
- Front wiper (LO, HI)
- Parking lamps
- License plate lamps
- Side maker lamps
- Tail lamps
- Front fog 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 front door switch (driver side) 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. The oil pressure warning lamp starts blinking when the auto active test starts.
6. After a series of the following operations is repeated 3 times, auto active test is completed.

NOTE:

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

CAUTION:

- If auto active test mode cannot be actuated, check door switch system. Refer to [DLK-63, "Component Function Check"](#).
- Do not start the engine.

Inspection in Auto Active Test Mode

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

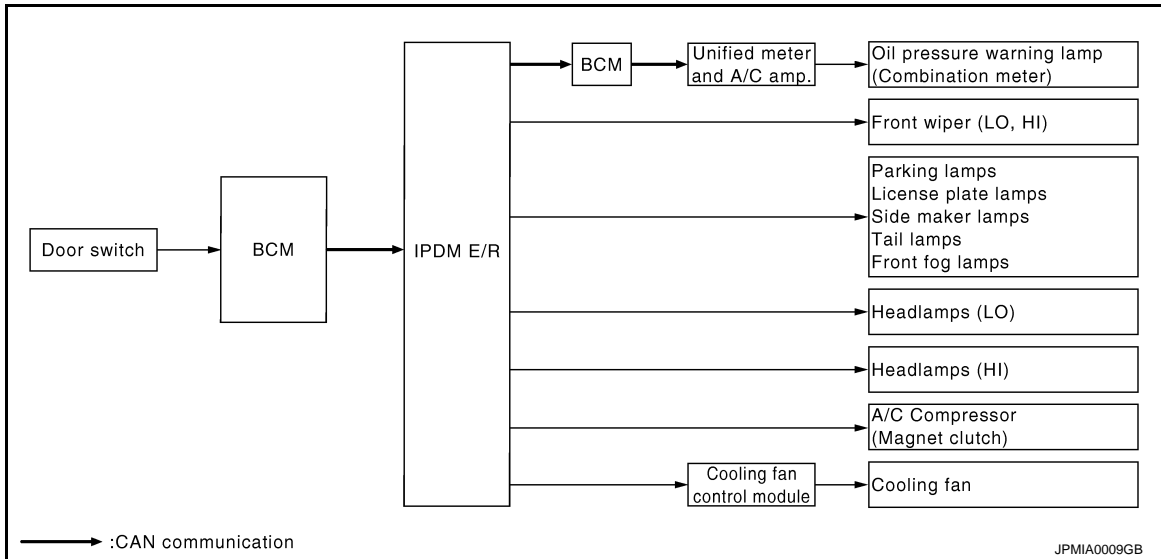
Operation sequence	Inspection location	Operation
1	Oil pressure warning lamp	Blinks continuously during operation of auto active test
2	Front wiper	LO for 5 seconds → HI for 5 seconds
3	<ul style="list-style-type: none">• Parking lamps• License plate lamps• Side maker lamps• Tail lamps• Front fog lamps	10 seconds
4	Headlamps	LO ↔ HI 5 times
5	A/C compressor (magnet clutch)	ON ↔ OFF 5 times
6*	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"> Parking lamps License plate lamps Side maker lamps Tail lamps Front fog lamps Headlamp (HI, LO) Front wiper (HI, LO) 	Perform auto active test. Does the applicable system operate?	YES BCM signal input circuit
		NO <ul style="list-style-type: none"> Lamp or motor Lamp or motor ground circuit Harness or connector between IPDM E/R and applicable system IPDM E/R
A/C compressor does not operate	Perform auto active test. Does the magnet clutch operate?	YES <ul style="list-style-type: none"> Unified meter and A/C amp. signal input circuit CAN communication signal between unified meter and A/C amp. and ECM CAN communication signal between ECM and IPDM E/R
		NO <ul style="list-style-type: none"> Magnet clutch Harness or connector between IPDM E/R and magnet clutch IPDM E/R
Oil pressure warning lamp does not operate	Perform auto active test. Does the oil pressure warning lamp blink?	YES <ul style="list-style-type: none"> Harness or connector between IPDM E/R and oil pressure switch Oil pressure switch IPDM E/R
		NO <ul style="list-style-type: none"> CAN communication signal between IPDM E/R and BCM CAN communication signal between BCM and unified meter and A/C amp. Combination meter

DIAGNOSIS SYSTEM (IPDM E/R)

< SYSTEM DESCRIPTION >

Symptom	Inspection contents		Possible cause
Cooling fan does not operate	Perform auto active test. Does the cooling fan operate?	YES	<ul style="list-style-type: none"> ECM signal input circuit CAN communication signal between ECM and IPDM E/R
		NO	<ul style="list-style-type: none"> Cooling fan Harness or connector between cooling fan and cooling fan control module Cooling fan control module Harness or connector between IPDM E/R and cooling fan control module Cooling fan relay Harness or connector between IPDM E/R and cooling fan relay IPDM E/R

CONSULT-III Function (IPDM E/R)

INFOID:000000006933312

APPLICATION ITEM

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

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

SELF DIAGNOSTIC RESULT

Refer to [PCS-31, "DTC Index"](#).

DATA MONITOR

Monitor item

Monitor Item [Unit]	MAIN SIG- NALS	Description
RAD FAN REQ [%]	×	Displays the value of the cooling fan speed signal received from ECM via CAN communication.
AC COMP REQ [Off/On]	×	Displays the status of the A/C compressor request signal received from ECM via CAN communication.
TAIL&CLR REQ [Off/On]	×	Displays the status of the position light request signal received from BCM via CAN communication.
HL LO REQ [Off/On]	×	Displays the status of the low beam request signal received from BCM via CAN communication.
HL HI REQ [Off/On]	×	Displays the status of the high beam request signal received from BCM via CAN communication.
FR FOG REQ [Off/On]	×	Displays the status of the front fog light request signal received from BCM via CAN communication.
FR WIP REQ [Stop/1LOW/Low/Hi]	×	Displays the status of the front wiper request signal received from BCM via CAN communication.
WIP AUTO STOP [STOP P/ACT P]	×	Displays the status of the front wiper auto stop signal judged by IPDM E/R.
WIP PROT [Off/BLOCK]	×	Displays the status of the front wiper fail-safe operation judged by IPDM E/R.

DIAGNOSIS SYSTEM (IPDM E/R)

< SYSTEM DESCRIPTION >

Monitor Item [Unit]	MAIN SIG- NALS	Description
IGN RLY1 -REQ [Off/On]		Displays the status of the ignition switch ON signal received from BCM via CAN communication.
IGN RLY [Off/On]	×	Displays the status of the ignition relay judged by IPDM E/R.
PUSH SW [Off/On]		Displays the status of the push-button ignition switch judged by IPDM E/R.
INTER/NP SW [Off/On]		Displays the status of the clutch interlock switch (M/T models) or shift position (A/T models) judged by IPDM E/R.
ST RLY CONT [Off/On]		Displays the status of the starter relay status signal received from BCM via CAN communication.
IHBT RLY -REQ [Off/On]		Displays the status of the starter control relay signal received from BCM via CAN communication.
ST/INHI RLY [Off/ ST ON/INHI ON/UNKWN]		Displays the status of the starter relay and starter control relay judged by IPDM E/R.
DETENT SW [Off/On]		Displays the status of the A/T shift selector (detention switch) judged by IPDM E/R.
S/L RLY -REQ [Off/On]		Displays the status of the steering lock relay request received from BCM via CAN communication. NOTE: For models without steering lock unit, this item is not monitored.
S/L STATE [LOCK/UNLOCK/UNKWN]		Displays the status of the steering lock judged by IPDM E/R. NOTE: For models without steering lock unit, this item is not monitored.
DTRL REQ [Off/On]		NOTE: The item is indicated, but not monitored.
OIL P SW [Open/Close]		Displays the status of the oil pressure switch judged by IPDM E/R.
HOOD SW [Off/On]		Displays the status of the hood switch judged by IPDM E/R.
HL WASHER REQ [Off/On]		NOTE: The item is indicated, but not monitored.
THFT HRN REQ [Off/On]		Displays the status of the theft warning horn request signal received from BCM via CAN communication.
HORN CHIRP [Off/On]		Displays the status of the horn reminder signal received from BCM via CAN communication.
CRNRNG LMP REQ [Off/On]		NOTE: The item is indicated, but not monitored.

ACTIVE TEST

Test item

Test item	Operation	Description
CORNERING LAMP	Off	NOTE: The item is indicated, but cannot be tested.
	LH	
	RH	
HORN	On	Operates horn relay 1 and horn relay 2 for 20 ms.
FRONT WIPER	Off	OFF
	Lo	Operates the front wiper relay.
	Hi	Operates the front wiper relay and front wiper high relay.

DIAGNOSIS SYSTEM (IPDM E/R)

< SYSTEM DESCRIPTION >

Test item	Operation	Description
MOTOR FAN	1	OFF
	2	Outputs 50% pulse duty signal (PWM signal) to the cooling fan control module.
	3	Outputs 80% pulse duty signal (PWM signal) to the cooling fan control module.
	4	Outputs 100% pulse duty signal (PWM signal) to the cooling fan control module.
HEAD LAMP WASHER	On	NOTE: The item is indicated, but cannot be tested.
EXTERNAL LAMPS	Off	OFF
	TAIL	Operates the tail lamp relay.
	Lo	Operates the headlamp low relay.
	Hi	Operates the headlamp low relay and ON/OFF the headlamp high relay at 1 second intervals.
	Fog	Operates the front fog lamp relay.

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BCM, IPDM E/R

< ECU DIAGNOSIS INFORMATION >

ECU DIAGNOSIS INFORMATION

BCM, IPDM E/R

List of ECU Reference

INFOID:000000006452218

ECU	Reference
BCM	BCS-43, "Reference Value"
	BCS-71, "Fail-safe"
	BCS-73, "DTC Inspection Priority Chart"
	BCS-74, "DTC Index"
IPDM E/R	PCS-19, "Reference Value"
	PCS-29, "Fail-safe"
	PCS-31, "DTC Index"

FRONT WIPER AND WASHER SYSTEM

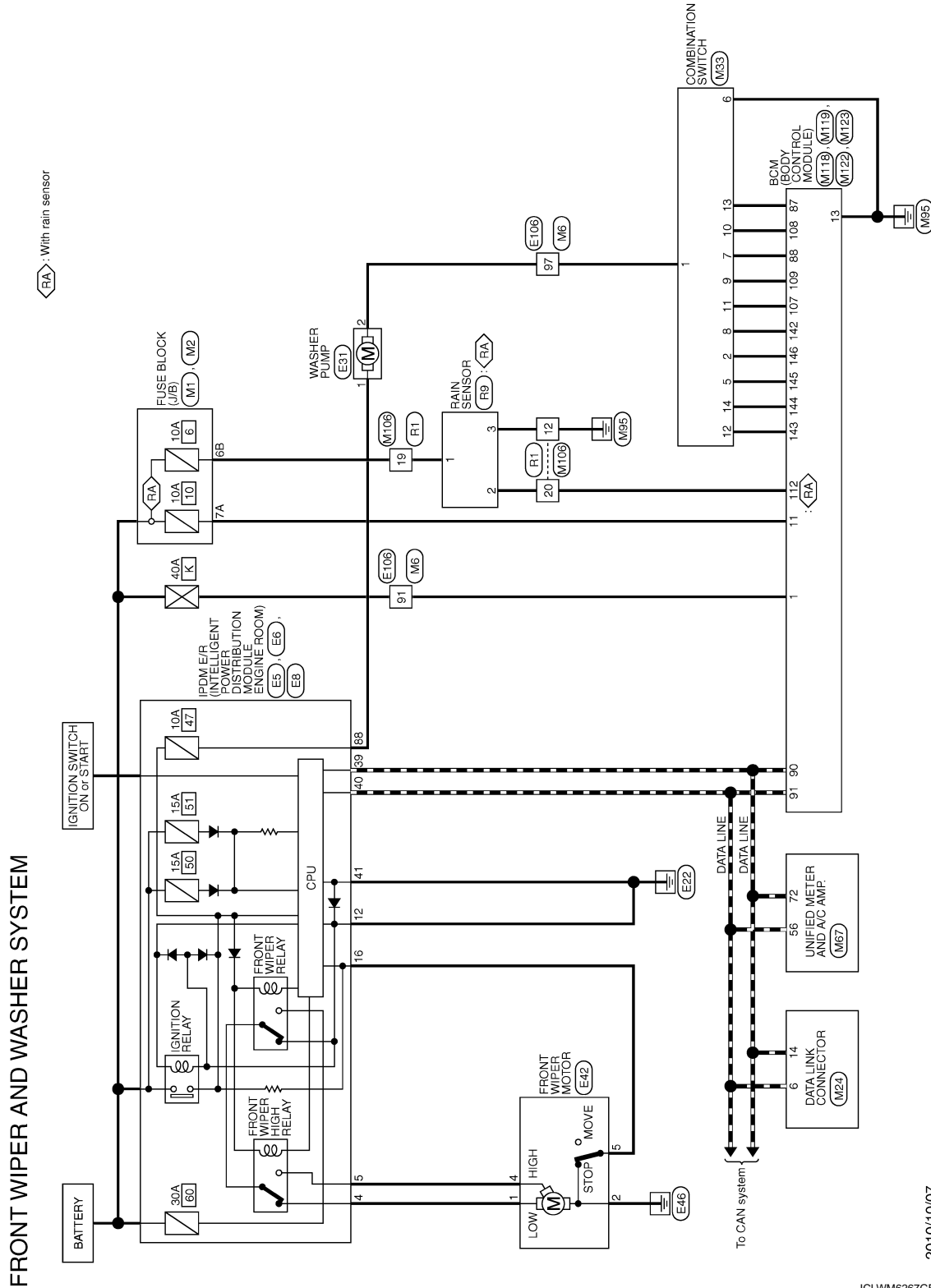
< WIRING DIAGRAM >

WIRING DIAGRAM

FRONT WIPER AND WASHER SYSTEM

Wiring Diagram

INFOID:000000006452219



FRONT WIPER AND WASHER SYSTEM

< WIRING DIAGRAM >

FRONT WIPER AND WASHER SYSTEM

Connector No.	E5
Connector Name	WIPER & INTELLIGENT POWER DISTRIBUTION MODULE (ENGINE ROOM)
Connector Type	TH02FW-CS12-M4-1V



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

FRONT WIPER AND WASHER SYSTEM

< WIRING DIAGRAM >

FRONT WIPER AND WASHER SYSTEM

Connector No.	M1
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS08FW-M2



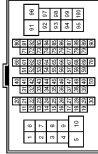
Terminal No.	Color of Wire	Signal Name [Specification]
1A	V	-
2A	G	-
3A	L	-
4A	P	-
5A	L	-
6A	Y	-
7A	R	-
8A	L	-

Connector No.	M2
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS10FW-CS



Terminal No.	Color of Wire	Signal Name [Specification]
1B	SB	-
3B	P	-
4B	G	-
5B	BG	-
6B	Y	-
7B	P	-
8B	R	-
9B	SB	-

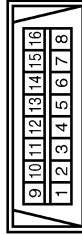
Connector No.	M6
Connector Name	WIRE TO WIRE
Connector Type	TH60MH-CS16-TM4



Terminal No.	Color of Wire	Signal Name [Specification]
1	BG	-
3	R	-
5	G	-
6	LG	-
7	W	-
9	G	-
10	W	-
11	V	-
12	R	-
13	L	-
14	GR	-
15	P	-
16	W	-
17	BR	-
18	P	-
19	L	-
20	L	-
30	BR	-
31	L	-
32	Y	-
33	BG	-
34	W	-
35	BR	-
36	R	-
37	Y	-
38	R	-
39	SB	-
40	G	-
41	V	-
42	LG	-
43	P	-
44	B	- [With A/T]
44	R	- [With M/T]
45	BG	-
46	G	-
47	L	-
48	P	-
49	L	-

59	B	-
66	Y	-
67	G	-
68	R	-
69	W	-
70	G	-
80	SB	-
81	B	-
82	V	-
83	W	-
84	L	-
85	GR	-
86	G	-
87	R	-
88	B	-
89	LG	-
91	W	-
93	Y	-
95	Y	-
96	R	-
97	GR	-
98	SHIELD	-
99	V	-
100	SB	-

Connector No.	M24
Connector Name	DATA LINK CONNECTOR
Connector Type	BD16FW-P



Terminal No.	Color of Wire	Signal Name [Specification]
3	LG	-
4	B	-
5	B	-
6	L	-
7	V	-
8	G	-
11	SB	-
14	P	-
16	R	-

Connector No.	M33
Connector Name	COMBINATION SWITCH
Connector Type	TH16FW-NH



Terminal No.	Color of Wire	Signal Name [Specification]
1	GR	FR WASHER (-)
2	SB	OUTPUT 4
5	L	OUTPUT 3
6	B	GND
7	BG	INPUT 3
8	BR	OUTPUT 5
9	W	INPUT 2
10	R	INPUT 4
11	LG	INPUT 1
12	P	OUTPUT 1
13	Y	INPUT 5
14	G	OUTPUT 2

JCLWM6269GB

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WW

FRONT WIPER AND WASHER SYSTEM

< WIRING DIAGRAM >

FRONT WIPER AND WASHER SYSTEM

Connector No.	M67
Connector Name	UNIFIED METER AND A/C AMP.
Connector Type	TH22FW-NH



41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
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Terminal No.	Color of Wire	Signal Name [Specification]
41	L	ACC POWER SUPPLY
42	BR	FUEL LEVEL SENSOR SIGNAL
43	BR	INTAKE SENSOR SIGNAL
44	LG	IN-VEHICLE SENSOR SIGNAL
45	V	AMBIENT SENSOR SIGNAL
46	Y	SUNLOAD SENSOR SIGNAL
47	G	PARALLEL GATE DRIVER GND DETECTOR SIGNAL
53	W	IGNITION POWER SUPPLY
54	SB	BATTERY POWER SUPPLY
55	B	GROUND
56	L	CAN-H
57	LG	BRAKE FLUID LEVEL SWITCH
58	Y	FUEL LEVEL SENSOR GROUND
59	GR	INTAKE SENSOR GROUND
60	W	IN-VEHICLE SENSOR GROUND
61	B	AMBIENT SENSOR GROUND
62	SB	SUNLOAD SENSOR GROUND
63	L	ION CONTROL MODE OUTPUT SIGNAL
65	EG	ECV SIGNAL
66	P	A/C LAN SIGNAL
70	R	EACH DOOR MOTOR POWER SUPPLY
71	GR	GROUND
72	P	CAN-L

Connector No.	M106
Connector Name	WIRE TO WIRE
Connector Type	NH10MW-CS10



1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20				

Terminal No.	Color of Wire	Signal Name [Specification]
2	L	—
3	SHIELD	—
4	G	—
5	BR	—
6	EG	—
7	Y	—
8	P	—
9	LG	—
10	V	—
11	B	—
12	B	—
13	R	—
15	R	—
16	G	—
17	SHIELD	—
18	B	—
19	Y	—
20	R	—

Connector No.	M118
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	M03FB-LC



1	2	3
---	---	---

Terminal No.	Color of Wire	Signal Name [Specification]
1	W	BAT (E/L)
2	Y	POWER WINDOW POWER SUPPLY (BAT)
3	EG	POWER WINDOW POWER SUPPLY (RAP)

Connector No.	M119
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	NS16FW-CS



4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19					

Terminal No.	Color of Wire	Signal Name [Specification]
4	LG	INTERIOR ROOM LAMP POWER SUPPLY
5	P	PASSENGER DOOR UNLOCK OUTPUT
7	SB	STEP LAMP OUTPUT
8	V	ALL DOOR FUEL LID LOCK OUTPUT
9	G	DRIVER DOOR FUEL LID UNLOCK OUTPUT
11	R	BAT (FUSE)
13	B	—
14	W	PUSH-BUTTON IGNITION SW ILL GND
15	EG	ACC IND
17	W	TURN SIGNAL RH (FRONT)
18	BG	TURN SIGNAL LH (FRONT)
19	V	INT ROOM LAMP CONT

Connector No.	M122
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FB-NH



41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
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Terminal No.	Color of Wire	Signal Name [Specification]
72	R	ROOM ANT 2-
73	G	ROOM ANT 2+
74	SB	PASSENGER DOOR ANT-
75	BR	PASSENGER DOOR ANT+
76	V	DRIVER DOOR ANT-
77	LG	DRIVER DOOR ANT+
78	Y	ROOM ANT 1-
79	BR	ROOM ANT 1+
80	GR	NATS ANT AMP
81	W	NATS ANT AMP

82	SB	IGN RELAY (F/B) CONT
83	Y	KEYLESS ENTRY RECEIVER COMM
87	Y	COMBI SW INPUT 5
88	EG	COMBI SW INPUT 3
89	BR	PUSH SW
90	P	CAN-L
91	L	CAN-H
92	LG	KEY SLOT ILL
93	GR	ON IND
95	EG	ACC RELAY CONT
96	GR	A/T SHIFT SELECTOR POWER SUPPLY
97	L	S/L CONDITION 1
98	P	S/L CONDITION 2
99	R	SHIFT P [With A/T]
99	BR	ASGD CLUTCH SW [With M/T]
100	Y	PASSENGER DOOR REQUEST SW
101	P	DRIVER DOOR REQUEST SW
102	EG	BLOWER FAN MOTOR RELAY CONT
103	P	KEYLESS ENTRY RECEIVER POWER SUPPLY
106	SB	S/L UNIT POWER SUPPLY
107	LG	COMBI SW INPUT 1
108	R	COMBI SW INPUT 4
109	W	COMBI SW INPUT 2
110	G	HAZARD SW
111	Y	S/L UNIT COMM

FRONT WIPER AND WASHER SYSTEM

< WIRING DIAGRAM >

FRONT WIPER AND WASHER SYSTEM

Connector No.	M123
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FG-NH



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----

Connector No.	R1
Connector Name	WIRE TO WIRE
Connector Type	NH10FF-CS10



6	5	4	3	2	1
20	19	18	17	16	15
14	13	12	11	10	9
8	7				

Terminal No.	Color of Wire	Signal Name [Specification]
112	R	RAIN SENSOR SERIAL LINK
113	BG	OPTICAL SENSOR
114	R	CLUTCH INTERLOCK SW
116	SB	STOP LAMP SW 1
118	BR	STOP LAMP SW 2
119	SB	DR DOOR UNLOCK SENSOR
121	SB	KEY SWITCH
123	V	IGN P/B
124	R	PASSENGER DOOR SW
129	BG	TRUNK CANCEL SW
132	V	POWER WINDOW SW COMM
133	L	PUSH-BUTTON IGNITION SW ILL POWER
134	LG	LOCK IND
137	BG	RECEIVER / SENSOR GND
138	V	RECEIVER / SENSOR POWER SUPPLY
139	L	TIRE PRESSURE RECEIVER COMM
140	B	SHIFT N/P
141	W	SECURITY INDICATOR LAMP
142	BR	COMBI SW OUTPUT 5
143	P	COMBI SW OUTPUT 1
144	G	COMBI SW OUTPUT 2
145	L	COMBI SW OUTPUT 3
146	SB	COMBI SW OUTPUT 4
150	GR	DRIVER DOOR SW
151	G	REAR WINDOW DEF-OGGER RELAY CONT

Terminal No.	Color of Wire	Signal Name [Specification]
2	GR	-
3	SHIELD	-
4	G	-
5	BR	-
6	Y	-
7	G	-
8	BR	-
9	R	-
10	V	-
11	B	-
12	B	-
13	Y	-
15	O	-
16	W	-
17	SHIELD	-
18	B	-
19	Y	-
20	R	-

Connector No.	R9
Connector Name	RAIN SENSOR
Connector Type	JAB38FB



1	2	3
---	---	---

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

JCLWM6271GB

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DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

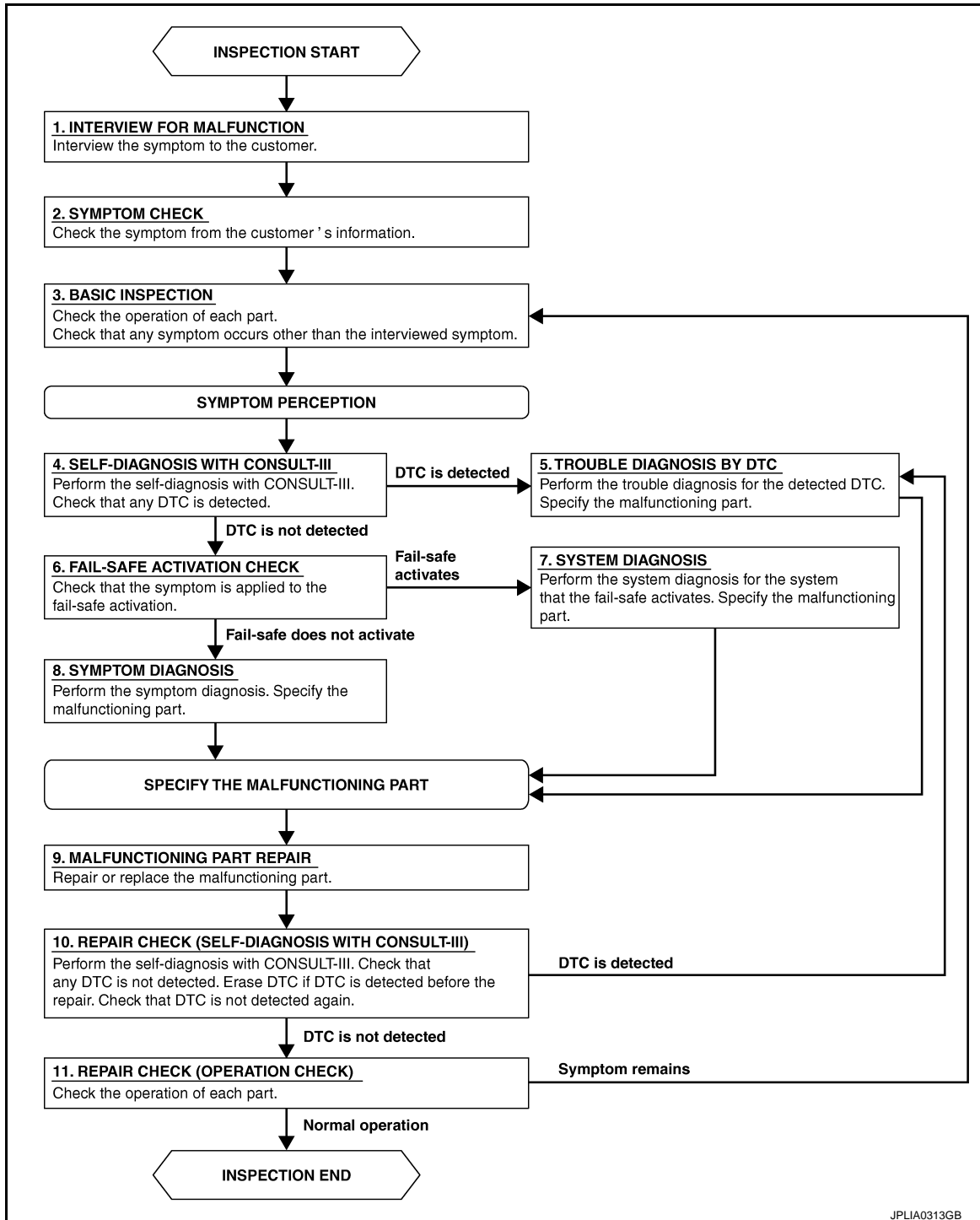
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000006452220

OVERALL SEQUENCE



DETAILED FLOW

1. INTERVIEW FOR MALFUNCTION

Interview the symptom to the customer.

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

>> GO TO 2.

2. SYMPTOM CHECK

Check the symptom from the customer's information.

>> GO TO 3.

3. BASIC INSPECTION

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

>> GO TO 4.

4. SELF-DIAGNOSIS WITH CONSULT-III

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

Is any DTC detected?

YES >> GO TO 5.

NO >> GO TO 6.

5. TROUBLE DIAGNOSIS BY DTC

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

>> GO TO 9.

6. FAIL-SAFE ACTIVATION CHECK

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

Does the fail-safe activate?

YES >> GO TO 7.

NO >> GO TO 8.

7. SYSTEM DIAGNOSIS

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

>> GO TO 9.

8. SYMPTOM DIAGNOSIS

Perform the symptom diagnosis. Specify the malfunctioning part.

>> GO TO 9.

9. MALFUNCTION PART REPAIR

Repair or replace the malfunctioning part.

>> GO TO 10.

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

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

Is any DTC detected?

YES >> GO TO 5.

NO >> GO TO 11.

11. REPAIR CHECK (OPERATION CHECK)

Check the operation of each part.

Does it operate normally?

YES >> INSPECTION END

NO >> GO TO 3.

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WIPER AND WASHER FUSE

< DTC/CIRCUIT DIAGNOSIS >

DTC/CIRCUIT DIAGNOSIS

WIPER AND WASHER FUSE

Diagnosis Procedure

INFOID:000000006452221

1.CHECK FUSES

Check that the following fuses are not fusing.

Unit	Location	Fuse 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 MOTOR LO CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

FRONT WIPER MOTOR LO CIRCUIT

Component Function Check

INFOID:000000006452222

1.CHECK FRONT WIPER LO OPERATION

☒ IPDM E/R AUTO ACTIVE TEST

1. Start IPDM E/R auto active test. Refer to [PCS-10, "Diagnosis Description"](#).
2. Check that the front wiper operates at the LO operation.

☐ CONSULT-III ACTIVE TEST

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

Lo : Front wiper (LO) operation

Off : Stop the front wiper.

Is front wiper (LO) operation normally?

- YES >> Front wiper motor LO circuit is normal.
NO >> Refer to [WW-31, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000006452223

1.CHECK FRONT WIPER MOTOR (LO) OUTPUT VOLTAGE

☐ CONSULT-III ACTIVE TEST

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

Terminals		Test item	Voltage (Approx.)
(+)	(-)		
IPDM E/R		FRONT WIPER	Battery voltage
Connector	Terminal		
E5	4	Lo	Battery voltage
		Off	0 V

Is the measurement value normal?

- YES >> GO TO 2.
NO >> Replace IPDM E/R.

2.CHECK FRONT WIPER MOTOR (LO) OPEN CIRCUIT

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

IPDM E/R		Front wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
E5	4	E42	1	Existed

Does continuity exist?

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

3.CHECK FRONT WIPER MOTOR (LO) SHORT CIRCUIT

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

FRONT WIPER MOTOR LO CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

IPDM E/R		Ground	Continuity
Connector	Terminal		
E5	4		Not existed

Does continuity exist?

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

FRONT WIPER MOTOR HI CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

FRONT WIPER MOTOR HI CIRCUIT

Component Function Check

INFOID:000000006452224

1.CHECK FRONT WIPER HI OPERATION

☒ IPDM E/R AUTO ACTIVE TEST

1. Start IPDM E/R auto active test. Refer to [PCS-10, "Diagnosis Description"](#).
2. Check that the front wiper operates at the HI operation.

☐ CONSULT-III ACTIVE TEST

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

Hi : Front wiper (HI) operation

Off : Stop the front wiper.

Is front wiper (HI) operation normally?

- YES >> Front wiper motor HI circuit is normal.
NO >> Refer to [WW-33, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000006452225

1.CHECK FRONT WIPER MOTOR (HI) OUTPUT VOLTAGE

☐ CONSULT-III ACTIVE TEST

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

Terminals		Test item	Voltage (Approx.)
(+)	(-)		
IPDM E/R		FRONT WIPER	
Connector	Terminal		
E5	5	Hi	Battery voltage
		Off	0 V

Is the measurement value normal?

- YES >> GO TO 2.
NO >> Replace IPDM E/R.

2.CHECK FRONT WIPER MOTOR (HI) OPEN CIRCUIT

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

IPDM E/R		Front wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
E5	5	E42	4	Existed

Does continuity exist?

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

3.CHECK FRONT WIPER MOTOR (HI) SHORT CIRCUIT

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

FRONT WIPER MOTOR HI CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

IPDM E/R		Ground	Continuity
Connector	Terminal		
E5	5		Not existed

Does continuity exist?

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

FRONT WIPER AUTO STOP SIGNAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

FRONT WIPER AUTO STOP SIGNAL CIRCUIT

Component Function Check

INFOID:000000006452226

1.CHECK FRONT WIPER (AUTO STOP) SIGNAL

CONSULT-III DATA MONITOR

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

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

Is the status of item normal?

- YES >> Auto stop signal circuit is normal.
NO >> Refer to [WW-35, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000006452227

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

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

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

Is the measurement value normal?

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

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

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

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

Does continuity exist?

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

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

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

FRONT WIPER AUTO STOP SIGNAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

Does continuity exist?

- YES >> Replace front wiper motor.
- NO >> Repair the harnesses or connectors.

FRONT WIPER MOTOR GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

FRONT WIPER MOTOR GROUND CIRCUIT

Diagnosis Procedure

INFOID:000000006452228

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		
E42	2		Existed

Does continuity exist?

- YES >> Front wiper motor ground circuit is normal.
NO >> Repair the harnesses or connectors.

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WASHER SWITCH

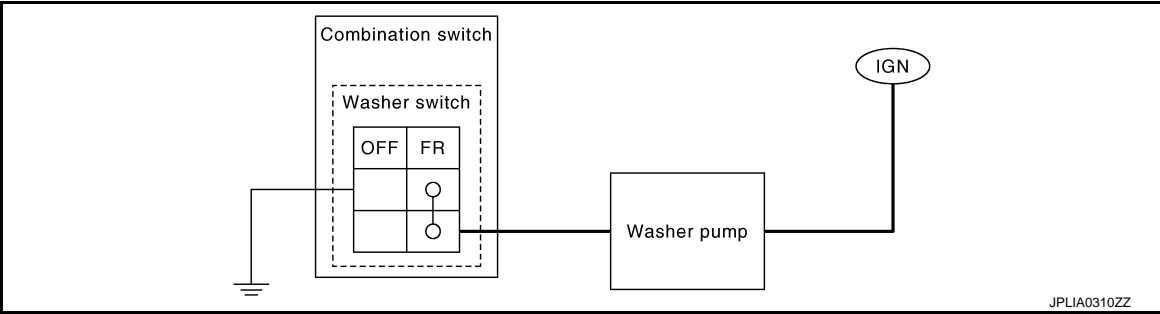
< DTC/CIRCUIT DIAGNOSIS >

WASHER SWITCH

Description

INFOID:000000006452229

Washer switch is integrated with combination switch.



Component Inspection

INFOID:000000006452230

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 wiper and washer switch.

RAIN SENSOR

< DTC/CIRCUIT DIAGNOSIS >

RAIN SENSOR

Description

INFOID:000000006452231

Rain sensor judges a wiping speed for front wiper by rain condition and the vehicle conditions. And it transmits the wiping speed request signal to the BCM via the rain sensor serial link.

Component Function Check

INFOID:000000006452232

1.CHECK FRONT WIPER AUTO OPERATION

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

Is front wiper (AUTO) operation normally?

- YES >> Rain sensor circuit is normal.
NO >> Refer to [WW-39, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000006452233

1.CHECK RAIN SENSOR FUSE

1. Turn the ignition switch OFF.
2. Check that the rain sensor 10 A fuse (#6) is not fusing.

Is the fuse fusing?

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

2.CHECK RAIN SENSOR POWER SUPPLY

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

Terminal		Voltage (Approx.)
(+)	(-)	
Rain sensor connector	Terminal	
R9	1	Ground Battery voltage

Is the measurement value normal?

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

3.CHECK RAIN SENSOR GROUND CIRCUIT

Check continuity between rain sensor harness connector and ground.

Rain sensor		Ground	Continuity
Connector	Terminal		
R9	3		Existed

Does continuity exist?

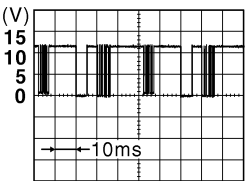
- YES >> GO TO 4.
NO >> Repair or replace harness.

4.CHECK RAIN SENSOR SIGNAL

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

RAIN SENSOR

< DTC/CIRCUIT DIAGNOSIS >

Terminal		Condition	Signal (Reference value)
(+)	(-)		
BCM connector	Terminal		
M123	112	Ground Ignition switch ON	 <p>JPMIA0156GB Approx. 8.7V</p>

Is the measurement value normal?

YES >> Replace rain sensor.

NO >> GO TO 5.

5.CHECK RAIN SENSOR SIGNAL CIRCUIT FOR OPEN

1. Disconnect BCM connector and rain sensor connector.
2. Check continuity between BCM harness connector and rain sensor harness connector.

BCM		Rain sensor		Continuity
Connector	Terminal	Connector	Terminal	
M123	112	R9	2	Existed

Does continuity exist?

YES >> GO TO 6.

NO >> Repair or replace harness.

6.CHECK RAIN SENSOR SIGNAL CIRCUIT FOR SHORT

Check continuity between BCM harness connector and ground.

BCM		Ground	Continuity
Connector	Terminal		
M123	112		Not existed

Does continuity exist?

YES >> Repair or replace harness.

NO >> Replace BCM. Refer to [WW-60, "Exploded View"](#).

FRONT WIPER AND WASHER SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

FRONT WIPER AND WASHER SYSTEM SYMPTOMS WITHOUT RAIN SENSOR

WITHOUT RAIN SENSOR : Symptom Table

INFOID:000000006452234

CAUTION:

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

Symptom		Probable malfunction location	Inspection item
Front wiper does not operate	HI only	<ul style="list-style-type: none"> Combination switch Harness between combination switch and BCM BCM 	Combination switch Refer to BCS-77, "Symptom Table" .
		<ul style="list-style-type: none"> IPDM E/R Harness between IPDM E/R and front wiper motor Front wiper motor 	Front wiper motor (HI) circuit Refer to WW-33, "Component Function Check" .
		Front wiper request signal <ul style="list-style-type: none"> BCM IPDM E/R 	IPDM E/R Data monitor "FR WIP REQ"
	LO and INT	<ul style="list-style-type: none"> Combination switch Harness between combination switch and BCM BCM 	Combination switch Refer to BCS-77, "Symptom Table" .
		<ul style="list-style-type: none"> IPDM E/R Harness between IPDM E/R and front wiper motor Front wiper motor 	Front wiper motor (LO) circuit Refer to WW-31, "Component Function Check" .
		Front wiper request signal <ul style="list-style-type: none"> BCM IPDM E/R 	IPDM E/R Data monitor "FR WIP REQ"
	INT only	<ul style="list-style-type: none"> Combination switch Harness between combination switch and BCM BCM 	Combination switch Refer to BCS-77, "Symptom Table" .
		Front wiper request signal <ul style="list-style-type: none"> BCM IPDM E/R 	IPDM E/R Data monitor "FR WIP REQ"
	HI, LO, and INT	SYMPTOM DIAGNOSIS Refer to WW-45, "Diagnosis Procedure" .	

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FRONT WIPER AND WASHER SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

Symptom		Probable malfunction location	Inspection item
Front wiper does not stop	HI only	<ul style="list-style-type: none"> Combination switch BCM 	Combination switch Refer to BCS-77, "Symptom Table" .
		Front wiper request signal <ul style="list-style-type: none"> BCM IPDM E/R 	IPDM E/R Data monitor "FR WIP REQ"
		IPDM E/R	—
	LO only	<ul style="list-style-type: none"> Combination switch BCM 	Combination switch Refer to BCS-77, "Symptom Table" .
		Front wiper request signal <ul style="list-style-type: none"> BCM IPDM E/R 	IPDM E/R Data monitor "FR WIP REQ"
		IPDM E/R	—
	INT only	<ul style="list-style-type: none"> Combination switch BCM 	Combination switch Refer to BCS-77, "Symptom Table" .
		Front wiper request signal <ul style="list-style-type: none"> BCM IPDM E/R 	IPDM E/R Data monitor "FR WIP REQ"
Front wiper does not operate normally	Intermittent adjustment cannot be performed	<ul style="list-style-type: none"> Combination switch Harness between combination switch and BCM BCM 	Combination switch Refer to BCS-77, "Symptom Table" .
		BCM	—
	Intermittent control linked with vehicle speed cannot be performed	Check the wiper setting is linked with vehicle speed. Refer to WW-15, "WIPER : CONSULT-III Function (BCM - WIPER)" .	
	Wiper is not linked to the washer operation	<ul style="list-style-type: none"> Combination switch Harness between combination switch and BCM BCM 	Combination switch Refer to BCS-77, "Symptom Table" .
		BCM	—
	Does not return to stop position [Repeatedly operates for 10 seconds and then stops for 20 seconds. After that, it stops the operation (Fail-safe)]	<ul style="list-style-type: none"> IPDM E/R Harness between IPDM E/R and front wiper motor Front wiper motor 	Front wiper auto stop signal circuit Refer to WW-35, "Component Function Check" .

WITH RAIN SENSOR

WITH RAIN SENSOR : Symptom Table

INFOID:000000006452235

CAUTION:

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

FRONT WIPER AND WASHER SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

Symptom		Probable malfunction location	Inspection item
Front wiper does not operate	HI only	<ul style="list-style-type: none"> Combination switch Harness between combination switch and BCM BCM 	Combination switch Refer to BCS-77, "Symptom Table" .
		<ul style="list-style-type: none"> IPDM E/R Harness between IPDM E/R and front wiper motor Front wiper motor 	Front wiper motor (HI) circuit Refer to WW-33, "Component Function Check" .
		Front wiper request signal <ul style="list-style-type: none"> BCM IPDM E/R 	IPDM E/R Data monitor "FR WIP REQ"
	LO and AUTO	<ul style="list-style-type: none"> Combination switch Harness between combination switch and BCM BCM 	Combination switch Refer to BCS-77, "Symptom Table" .
		<ul style="list-style-type: none"> IPDM E/R Harness between IPDM E/R and front wiper motor Front wiper motor 	Front wiper motor (LO) circuit Refer to WW-31, "Component Function Check" .
		Front wiper request signal <ul style="list-style-type: none"> BCM IPDM E/R 	IPDM E/R Data monitor "FR WIP REQ"
	AUTO only (Auto operation)	<ul style="list-style-type: none"> Combination switch Harness between combination switch and BCM BCM 	Combination switch Refer to BCS-77, "Symptom Table" .
		<ul style="list-style-type: none"> Rain sensor Harness between rain sensor and BCM BCM 	Rain sensor Refer to WW-39, "Component Function Check" .
	HI, LO, and AUTO	SYMPTOM DIAGNOSIS "FRONT WIPER DOES NOT OPERATE" Refer to WW-45, "Diagnosis Procedure" .	
Front wiper does not stop	HI only	<ul style="list-style-type: none"> Combination switch BCM 	Combination switch Refer to BCS-77, "Symptom Table" .
		Front wiper request signal <ul style="list-style-type: none"> BCM IPDM E/R 	IPDM E/R Data monitor "FR WIP REQ"
		IPDM E/R	—
	LO only	<ul style="list-style-type: none"> Combination switch BCM 	Combination switch Refer to BCS-77, "Symptom Table" .
		Front wiper request signal <ul style="list-style-type: none"> BCM IPDM E/R 	IPDM E/R Data monitor "FR WIP REQ"
		IPDM E/R	—
	AUTO only	<ul style="list-style-type: none"> Combination switch BCM 	Combination switch Refer to BCS-77, "Symptom Table" .
		<ul style="list-style-type: none"> Rain sensor Harness between rain sensor and BCM BCM 	Rain sensor Refer to WW-39, "Component Function Check" .

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FRONT WIPER AND WASHER SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

Symptom		Probable malfunction location	Inspection item
Front wiper does not operate normally	Sensitivity adjustment cannot be performed	<ul style="list-style-type: none"> Combination switch Harness between combination switch and BCM BCM 	Combination switch Refer to BCS-77, "Symptom Table" .
		BCM	—
	Wiper is not linked to the washer operation	<ul style="list-style-type: none"> Combination switch Harness between combination switch and BCM BCM 	Combination switch Refer to BCS-77, "Symptom Table" .
		BCM	—
	Does not return to stop position [Repeatedly operates for 10 seconds and then stops for 20 seconds. After that, it stops the operation (Fail-safe)]	<ul style="list-style-type: none"> IPDM E/R Harness between IPDM E/R and front wiper motor Front wiper motor 	Front wiper auto stop signal circuit Refer to WW-35, "Component Function Check" .

FRONT WIPER DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

FRONT WIPER DOES NOT OPERATE

Description

INFOID:000000006452236

The front wiper does not operate under any operating conditions.

Diagnosis Procedure

INFOID:000000006452237

1.CHECK WIPER RELAY OPERATION

☒ IPDM E/R AUTO ACTIVE TEST

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

☐ CONSULT-III ACTIVE TEST

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

Lo : Front wiper LO operation

Hi : Front wiper HI operation

Off : Stop the front wiper.

Does the front wiper operate?

YES >> GO TO 5.

NO >> GO TO 2.

2.CHECK FRONT WIPER MOTOR FUSE

1. Turn the ignition switch OFF.
2. Check that the front wiper motor 30 A (#60) fuse is not fusing.

Is the fuse fusing?

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

NO >> GO TO 3.

3.CHECK FRONT WIPER MOTOR (GND) OPEN CIRCUIT

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

Front wiper motor		Ground	Continuity
Connector	Terminal		
E42	2		Existed

Does continuity exist?

YES >> GO TO 4.

NO >> Repair the harnesses or connectors.

4.CHECK FRONT WIPER MOTOR OUTPUT VOLTAGE

☐ CONSULT-III ACTIVE TEST

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

FRONT WIPER DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

Terminals		Test item	Voltage (Approx.)
(+)	(-)		
IPDM E/R		FRONT WIPER	
Connector	Terminal		
E5	4	Lo	Battery voltage
		Off	0 V
	5	Hi	Battery voltage
		Off	0 V

Is the measurement normal?

YES >> Replace front wiper motor.

NO >> Replace IPDM E/R.

5.CHECK FRONT WIPER REQUEST SIGNAL INPUT

CONSULT-III DATA MONITOR

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

Monitor item	Condition		Monitor status
FR WIPER REQ	Front wiper switch HI	ON	Hi
		OFF	Stop
	Front wiper switch LO	ON	Low
		OFF	Stop

Is the status of item normal?

YES >> Replace IPDM E/R.

NO >> GO TO 6.

6.CHECK COMBINATION SWITCH

Perform the inspection of the combination switch. Refer to [BCS-77, "Symptom Table"](#).

Is combination switch normal?

YES >> Replace BCM. Refer to [BCS-80, "Exploded View"](#).

NO >> Repair or replace the applicable parts.

NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS >

NORMAL OPERATING CONDITION

Description

INFOID:000000006452238

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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WASHER TANK

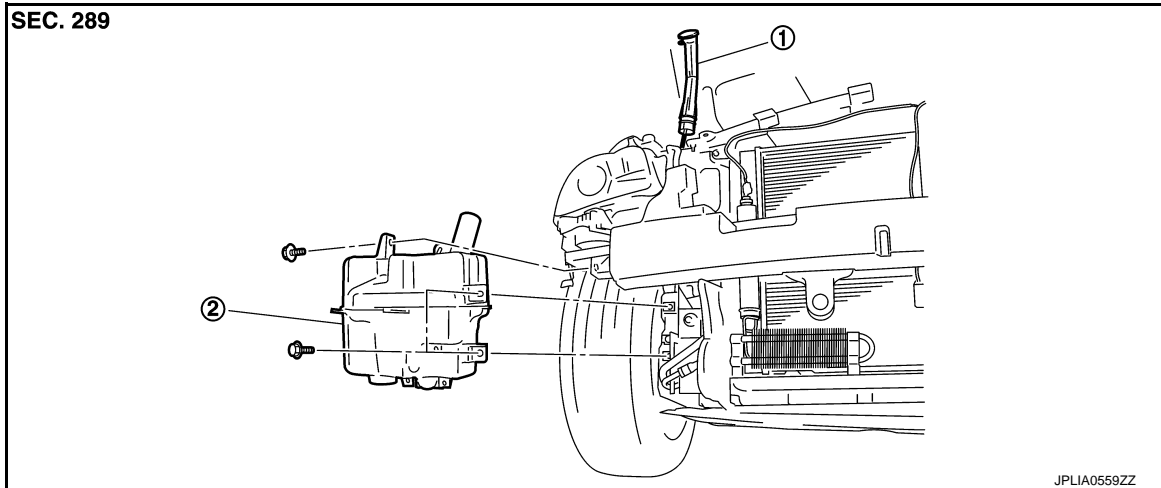
< REMOVAL AND INSTALLATION >

REMOVAL AND INSTALLATION

WASHER TANK

Exploded View

INFOID:000000006452239



1. Washer tank inlet

2. Washer tank

Removal and Installation

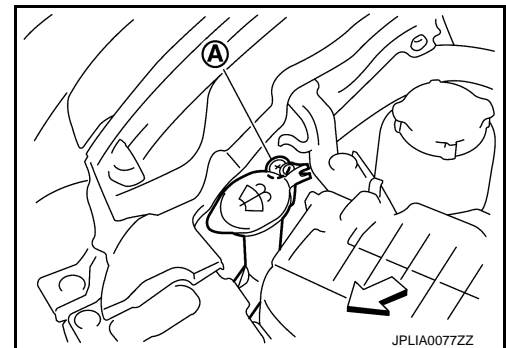
INFOID:000000006452240

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-12, "Exploded View"](#).
4. Disconnect the washer pump connector.
5. Disconnect the washer level switch connector.
6. Disconnect the 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.

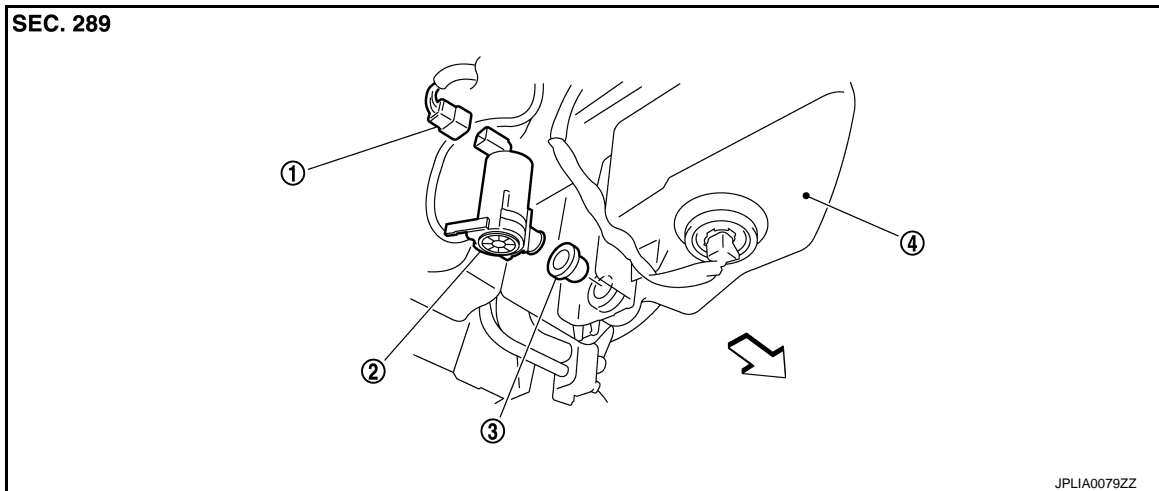
FRONT WASHER PUMP

< REMOVAL AND INSTALLATION >

FRONT WASHER PUMP

Exploded View

INFOID:000000006452241



1. Washer pump connector
2. Washer pump
3. Packing
4. Washer tank

↩ : Vehicle front

Removal and Installation

INFOID:000000006452242

REMOVAL

1. Remove the fender protector RH (front). Refer to [EXT-26, "FENDER PROTECTOR : Exploded View"](#).
2. Disconnect the washer pump connector.
3. Disconnect the 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.

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WASHER LEVEL SWITCH

< REMOVAL AND INSTALLATION >

WASHER LEVEL SWITCH

Removal and Installation

INFOID:000000006452243

The washer level switch must be replaced together with the washer tank as an assembly. Refer to [WW-48](#), "[Removal and Installation](#)".

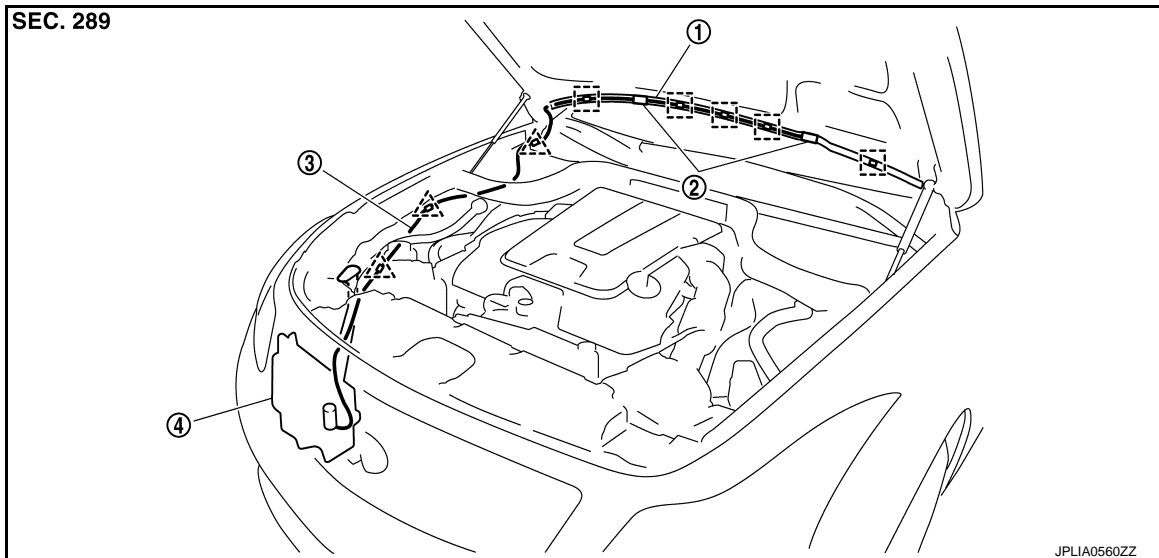
FRONT WASHER NOZZLE AND TUBE

< REMOVAL AND INSTALLATION >

FRONT WASHER NOZZLE AND TUBE

Hydraulic Layout

INFOID:000000006452244



1. Washer tube

2. Washer nozzle

3. Washer tube

4. Washer tank

△ : Clip

□ : Clip

Removal and Installation

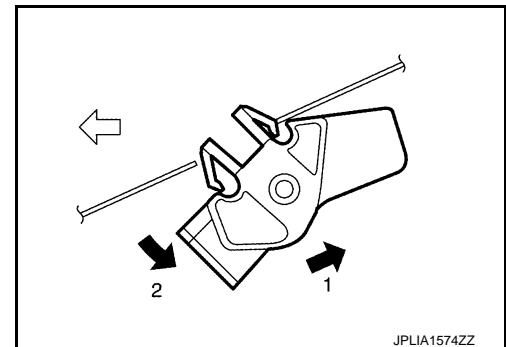
INFOID:000000006452245

REMOVAL

1. Open the hood.
2. Remove the front washer nozzle in numerical order shown in the figure.

← : Vehicle front

3. Disconnect the front washer tube from the front washer nozzle.



INSTALLATION

1. Connect the front washer tube into the front washer nozzle.
2. Install the front washer nozzle to the hood.
3. Adjust the front washer nozzle spray position. Refer to [WW-51, "Inspection and Adjustment"](#).

CAUTION:

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

Inspection and Adjustment

INFOID:000000006452246

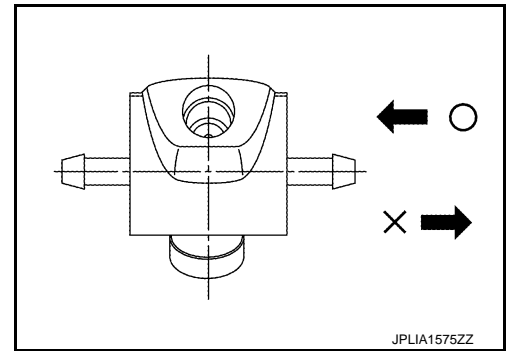
INSPECTION

Washer Nozzle 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.



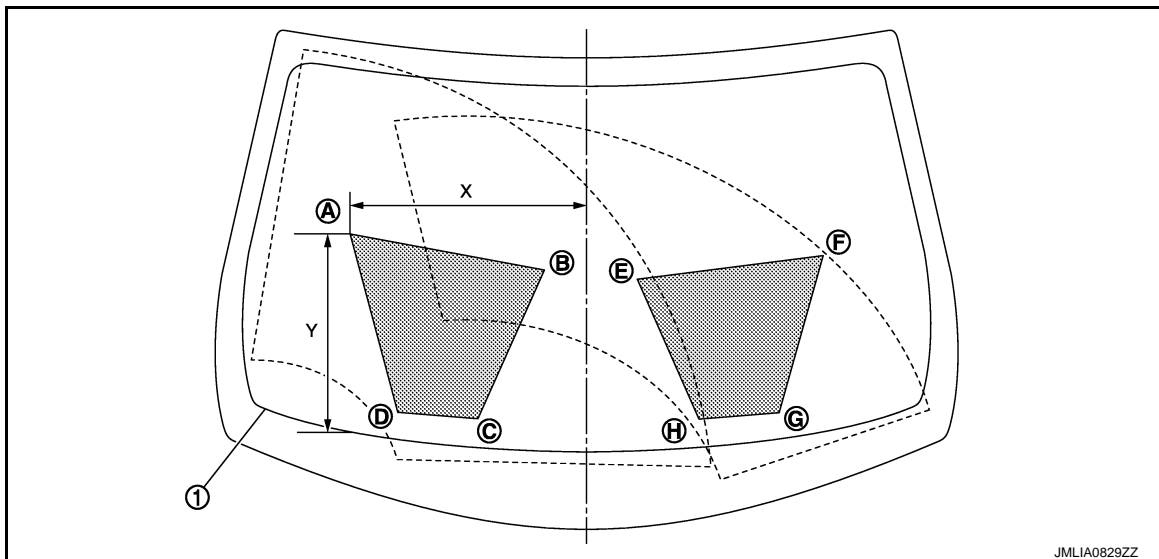
ADJUSTMENT

Washer Nozzle Spray Position Adjustment

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

NOTE:

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




1. Black printed frame line

 : Spray area

Unit: mm (in)

	Passenger side				Driver side			
	A	B	C	D	E	F	G	H
X	456 (17.95)	83 (3.27)	212 (8.35)	366 (14.41)	94 (3.70)	447 (17.60)	364 (14.33)	212 (8.35)
Y	378 (14.88)	347 (13.66)	57 (2.24)	57 (2.24)	327 (12.87)	340 (13.39)	52 (2.05)	58 (2.28)

Check that washer fluid is splayed on 80% or more the splay area () when spraying washer fluid. If the spray area deviates from the specification, adjust the washer nozzle.

CAUTION:

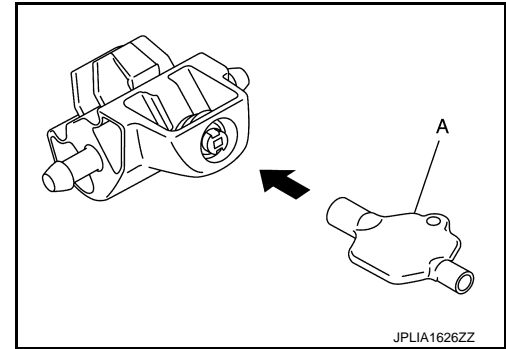
FRONT WASHER NOZZLE AND TUBE

< REMOVAL AND INSTALLATION >

- Use washer nozzle adjuster* (A) for nozzle adjustment.
- Never use needle or small pin.
- *: Washer nozzle adjuster is included with shipment of nozzle.

NOTE:

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



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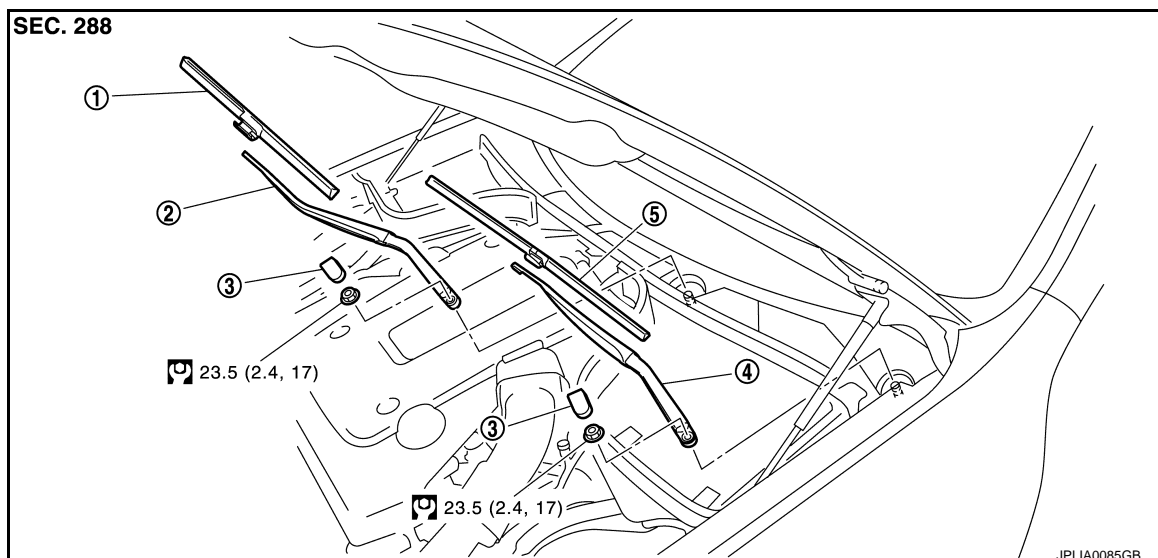
FRONT WIPER ARM

< REMOVAL AND INSTALLATION >

FRONT WIPER ARM

Exploded View

INFOID:000000006452247



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

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

Removal and Installation

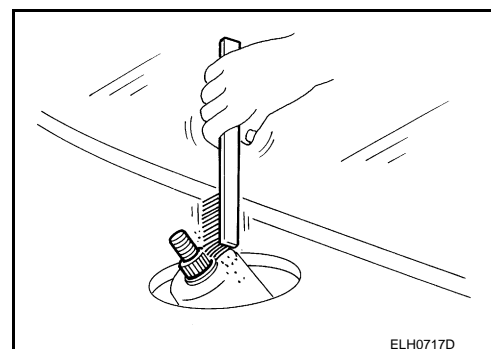
INFOID:000000006452248

REMOVAL

1. Operate the front wiper to move it to the auto stop position.
2. Open the hood.
3. Remove the wiper arm cap.
4. Remove the wiper arm mounting nut.
5. Raise wiper arm, and remove 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 wiper to the auto stop position.
3. Adjust the wiper blade position. Refer to [WW-54, "Adjustment"](#).
4. Install the wiper arm by tightening the mounting nut.
5. Inject the washer fluid.
6. Operate the front wiper to move it to the auto stop position.
7. Check that the wiper blades stop at the specified position.
8. Install the wiper arm cap.



Adjustment

INFOID:000000006452249

WIPER BLADE POSITION ADJUSTMENT

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

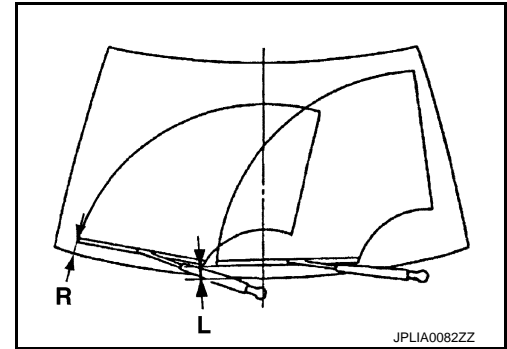
FRONT WIPER ARM

< REMOVAL AND INSTALLATION >

Standard clearance

R : $37 \pm 7.5 \text{ mm}$ ($1.457 \pm 0.295 \text{ in}$)

L : $60 \pm 7.5 \text{ mm}$ ($2.362 \pm 0.295 \text{ in}$)



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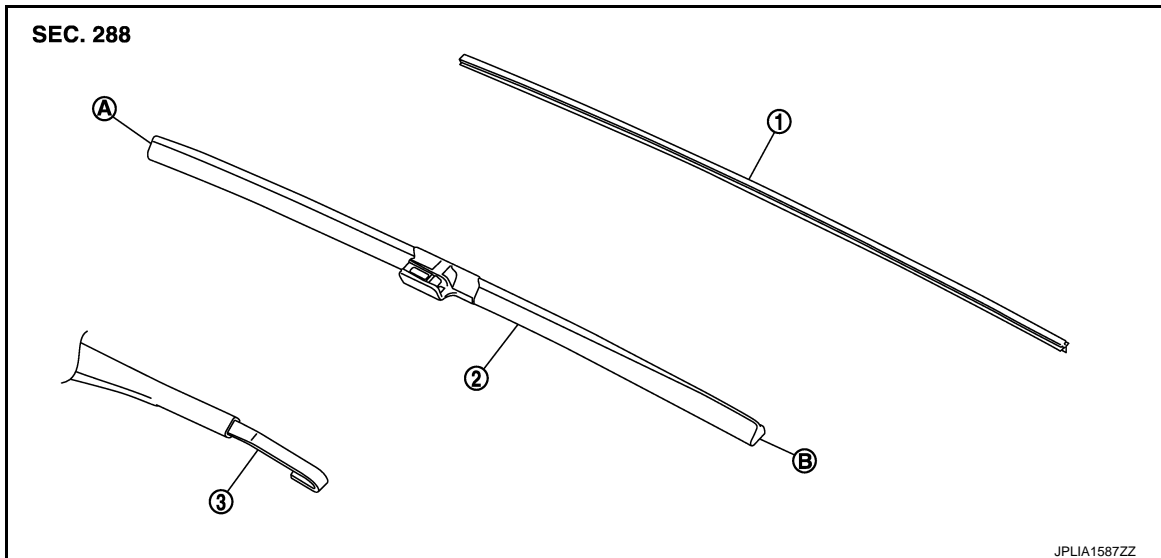
WIPER BLADE

< REMOVAL AND INSTALLATION >

WIPER BLADE

Exploded View

INFOID:000000006452250



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

Removal and Installation

INFOID:000000006452251

REMOVAL

Remove the wiper blade from the wiper arm.

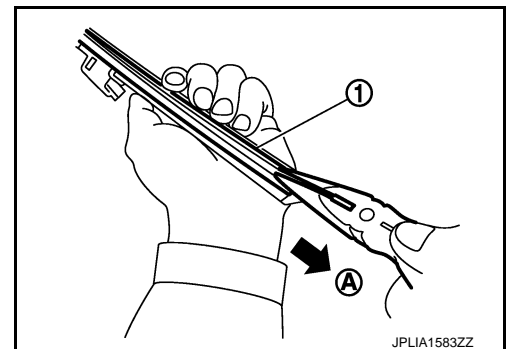
INSTALLATION

Install the front wiper blade to the wiper arm.

Replacement

INFOID:000000006452252

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).

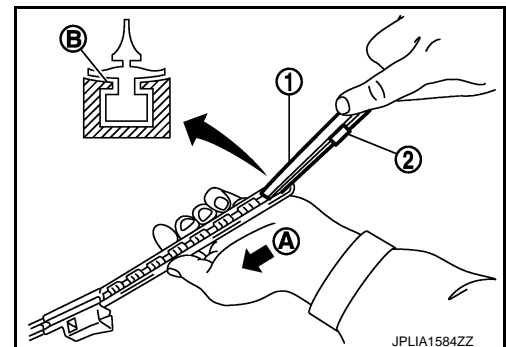


2. Insert the tip of new wiper refill (1) into the rear end of wiper blade. Slide the wiper refill to the direction (A) while pressing the wiper refill onto the wiper blade rear end.

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.



WIPER BLADE

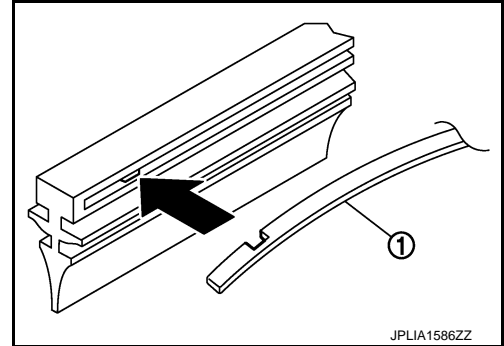
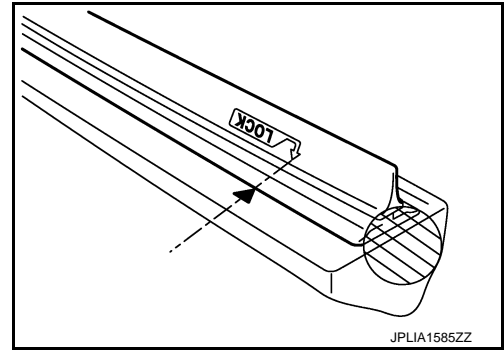
< REMOVAL AND INSTALLATION >

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.



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FRONT WIPER DRIVE ASSEMBLY

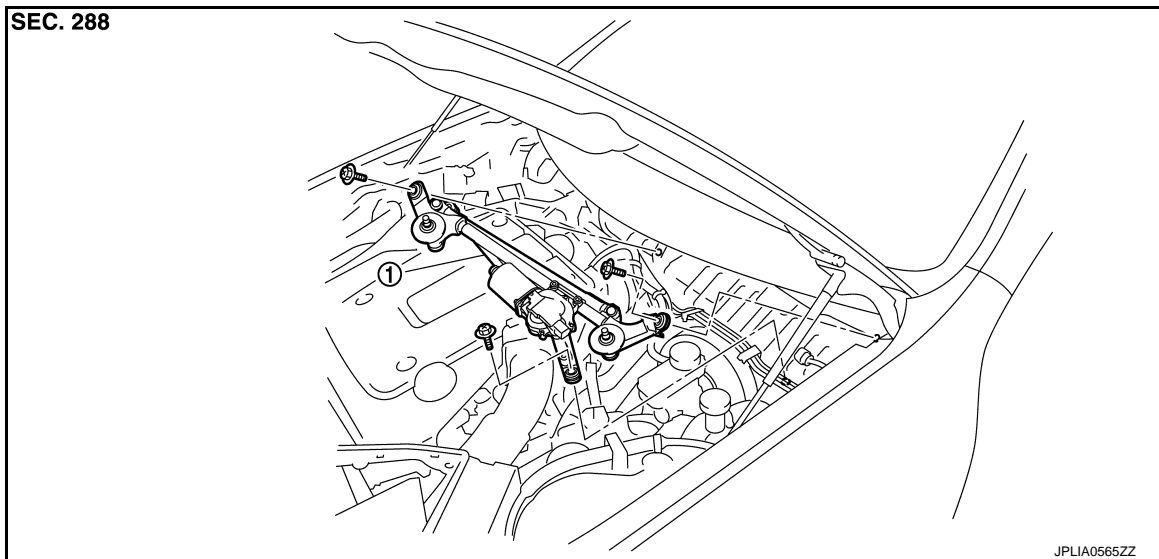
< REMOVAL AND INSTALLATION >

FRONT WIPER DRIVE ASSEMBLY

Exploded View

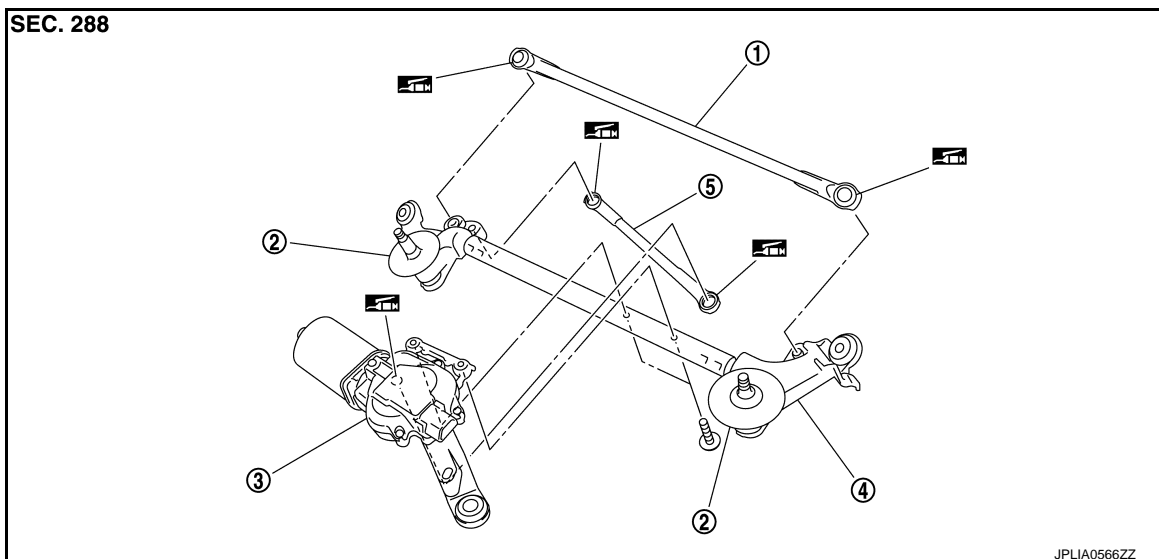
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REMOVAL VIEW




1. Front wiper drive assembly

DISASSEMBLY VIEW



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

: Multi-purpose grease or an equivalent.

Removal and Installation

INFOID:000000006452254

REMOVAL

1. Remove the wiper arm. Refer to [WW-54, "Exploded View"](#).
2. Remove the cowl top cover. Refer to [EXT-23, "Exploded View"](#).
3. Remove the bolts from the front wiper drive assembly.

FRONT WIPER DRIVE ASSEMBLY

< REMOVAL AND INSTALLATION >

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-23, "Exploded View"](#).
5. Install the wiper arms. Refer to [WW-54, "Exploded View"](#).

Disassembly and Assembly

INFOID:000000006452255

DISASSEMBLY

1. Remove the 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 wiper frame.

ASSEMBLY

1. Connect the front wiper motor connector.
2. Operate the front wiper to move it to the auto stop position.
3. Disconnect the front wiper motor connector.
4. Install front wiper motor to wiper frame.
5. Install the wiper linkage 2 to the wiper motor and the wiper frame.
6. Install the wiper linkage 1 to the 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 wiper motor and wiper linkage joint (retainer). Apply Multi-purpose grease or an equivalent if necessary.**

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RAIN SENSOR

< REMOVAL AND INSTALLATION >

RAIN SENSOR

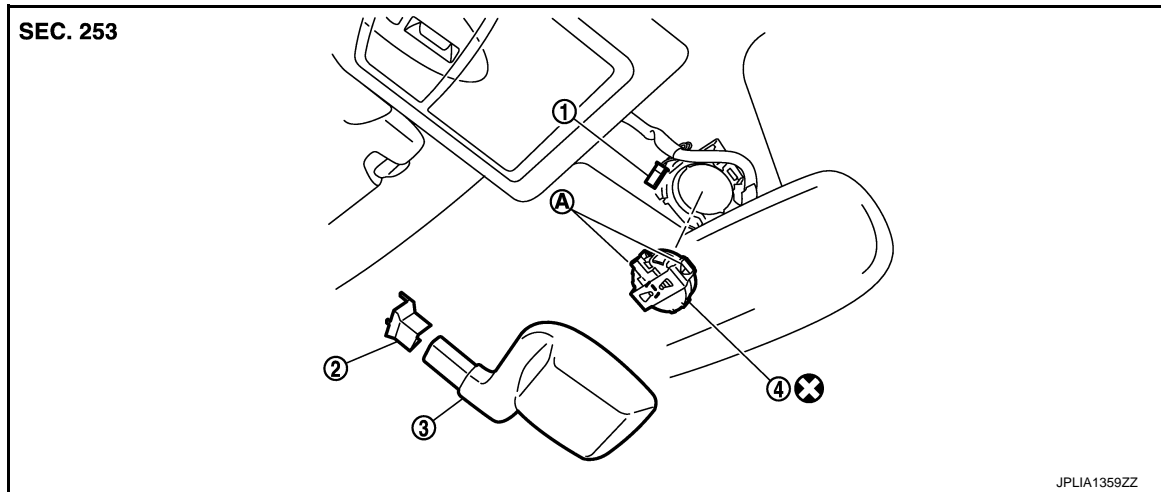
Exploded View

INFOID:000000006452256

CAUTION:

When the rain sensor is removed from windshield, the rain sensor cannot be re-used.

REMOVAL



1. Rain sensor connector
2. Inside mirror cover (upper)
3. Inside mirror cover (lower)
4. Rain sensor
- A. Metal spring clip

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

Removal and Installation

INFOID:000000006452257

REMOVAL

1. Remove the inside mirror cover (upper and lower).
2. Disengage the both sides of metal spring clips, and remove the rain sensor from the windshield.
3. Disconnect the light & rain sensor connector.

INSTALLATION

Install in the reverse order of removal.

CAUTION:

- Surface of windshield should be cleaned.
- Never touch gel/adhesive of new part.
- Lock the metal spring clips and install the rain sensor securely.

FRONT WIPER AND WASHER SWITCH

< REMOVAL AND INSTALLATION >

FRONT WIPER AND WASHER SWITCH

Exploded View

INFOID:000000006452258

Refer to [BCS-81, "Exploded View"](#).

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