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SECTION **WW**

WIPER & WASHER

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DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000001712140

DETAILED FLOW

1. LISTEN TO CUSTOMER COMPLAINT

Listen to customer complaint. Get detailed information about the conditions and environment when the symptom occurs.

>> GO TO 2

2. VERIFY THE SYMPTOM WITH OPERATIONAL CHECK

Verify the symptom with operational check. Refer to [WW-13, "Diagnosis Description"](#).

>> GO TO 3

3. GO TO APPROPRIATE TROUBLE DIAGNOSIS

Go to appropriate trouble diagnosis. Refer to [WW-42, "Symptom Table"](#).

>> GO TO 4

4. REPAIR OR REPLACE

Repair or replace the specific parts.

>> GO TO 5

5. FINAL CHECK

Final check.

Is inspection result normal?

YES >> Inspection End

NO >> Refer to [GI-51, "Intermittent Incident"](#).

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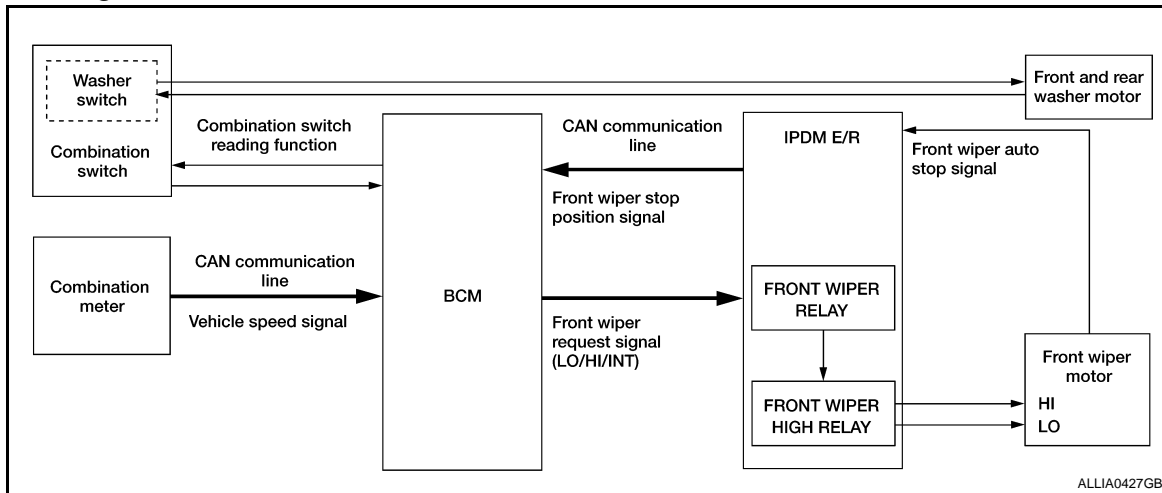
FRONT WIPER AND WASHER SYSTEM

< FUNCTION DIAGNOSIS >

FUNCTION DIAGNOSIS

FRONT WIPER AND WASHER SYSTEM

System Diagram



System Description

INFOID:000000001712142

OUTLINE

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

Control by BCM

- Combination switch reading function
- Front wiper control function

Control by IPDM E/R

- Front wiper control function
- Relay control function

FRONT WIPER BASIC OPERATION

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

FRONT WIPER LO OPERATION

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

Front wiper LO operating condition

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

FRONT WIPER HI OPERATION

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

Front wiper HI operating condition

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

FRONT WIPER INT OPERATION (LINKED WITH VEHICLE SPEED)

FRONT WIPER AND WASHER SYSTEM

< FUNCTION DIAGNOSIS >

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

Front wiper INT operating condition

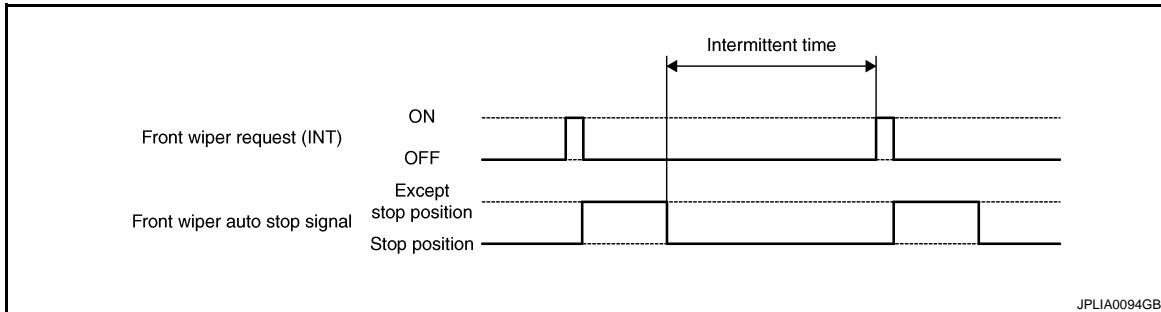
- Ignition switch ON
- Front wiper switch INT

Intermittent operation delay interval judgment

- BCM calculates the intermittent operation delay interval from the vehicle speed signal received from the wiper dial position and the combination meter with CAN communication.

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

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



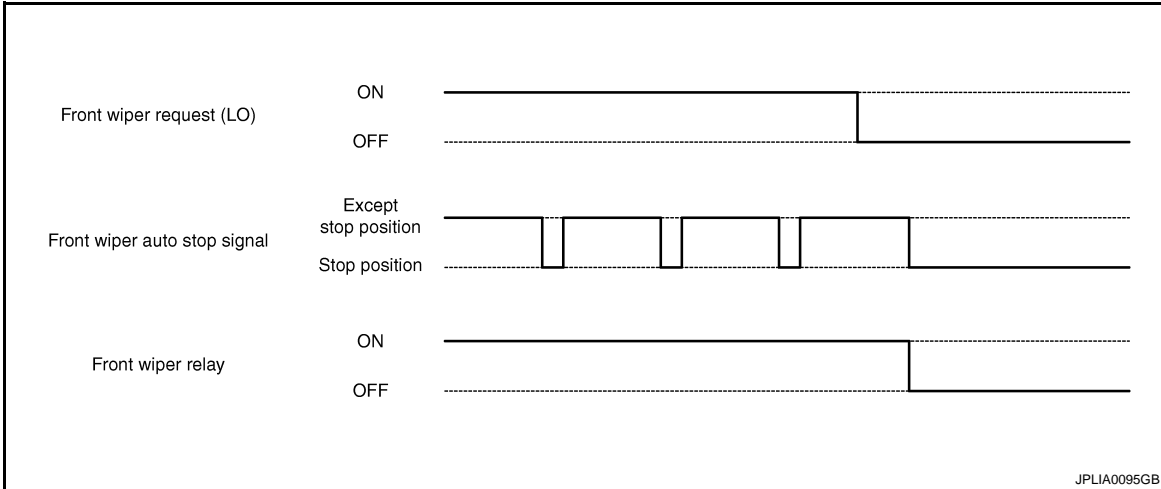
FRONT WIPER AUTO STOP OPERATION

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

FRONT WIPER AND WASHER SYSTEM

< FUNCTION DIAGNOSIS >

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



NOTE:

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

FRONT WIPER OPERATION LINKED WITH WASHER

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

Washer linked operating condition of front wiper

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

FRONT WIPER DROP WIPE OPERATION

- BCM controls the front wiper to operate once according to the conditions of front wiper drop wipe operation.

Front wiper drop wipe operating condition

- Ignition switch ON
- Front wiper switch OFF
- Front washer switch OFF
- BCM transmits the front wiper request signal (LO) to IPDM E/R with CAN communication so that the front wiper operate once three seconds after front wiper operation linked with washer.
- IPDM E/R turns ON the integrated front wiper relay according to the front wiper request signal (LO).

FRONT WIPER FAIL-SAFE OPERATION

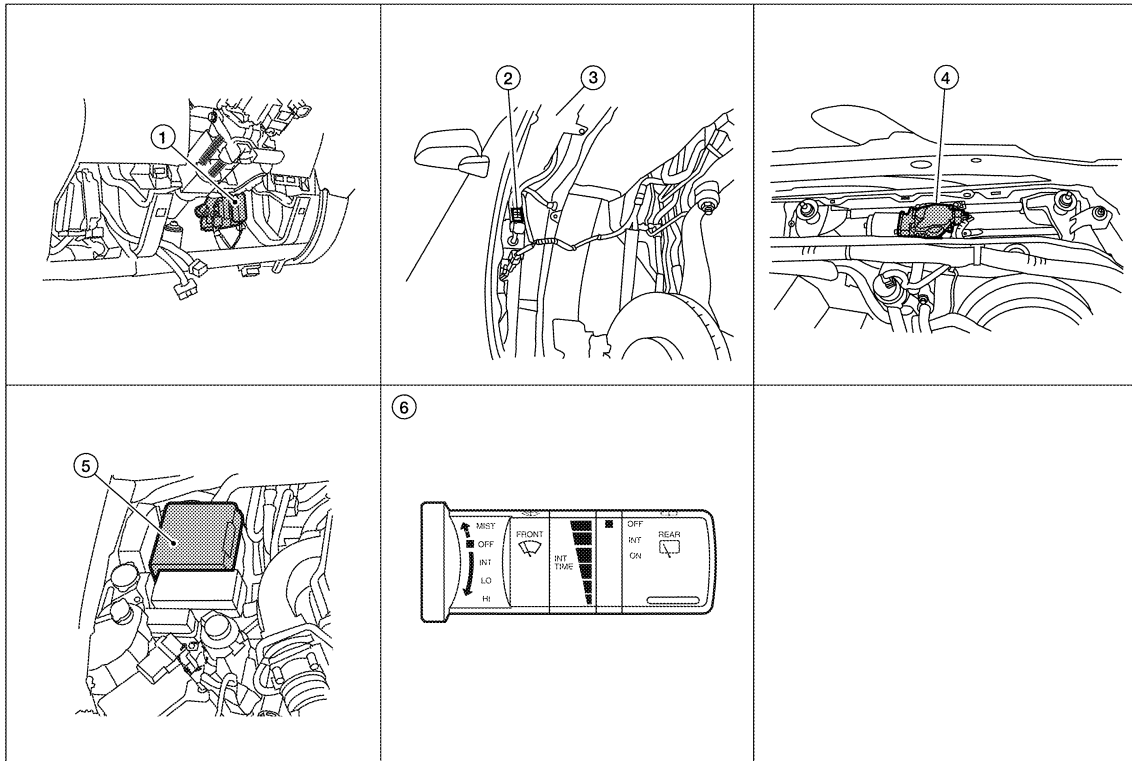
- IPDM E/R performs the fail-safe function when the front wiper auto stop circuit is malfunctioning. Refer to [WW-40. "Fail Safe"](#).

FRONT WIPER AND WASHER SYSTEM

< FUNCTION DIAGNOSIS >

Component Parts Location

INFOID:000000001712143



1. BCM M18, M20 (view with instrument lower panel LH removed)
2. Front and rear washer motor E105
3. Washer fluid reservoir
4. Front wiper motor E23 (view with cowl top removed)
5. IPDM E/R E121, E122, E124
6. Combination switch M28

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Component Description

INFOID:000000001712144

Part	Description
BCM	<ul style="list-style-type: none"> Judges 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 and washer switch)	Refer to WW-4. "System Diagram" .
Combination meter	Transmits the vehicle speed signal to BCM with CAN communication.

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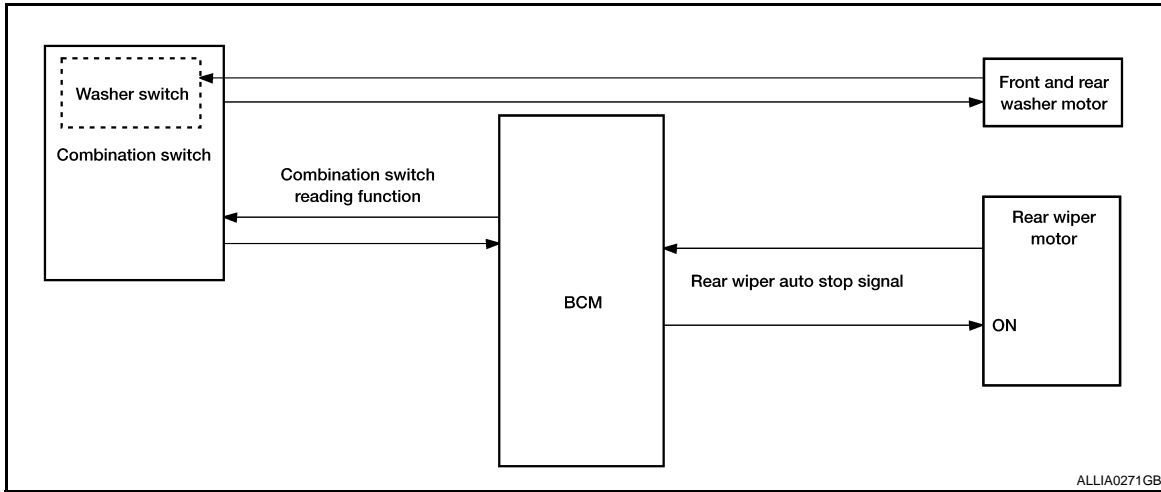
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REAR WIPER AND WASHER SYSTEM

< FUNCTION DIAGNOSIS >

REAR WIPER AND WASHER SYSTEM

System Diagram



System Description

INFOID:000000001712146

OUTLINE

The rear wiper is controlled by each function of BCM.

Control by BCM

- Combination switch reading function
- Rear wiper control function

REAR WIPER BASIC OPERATION

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

REAR WIPER ON OPERATION

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

Rear wiper ON operating condition

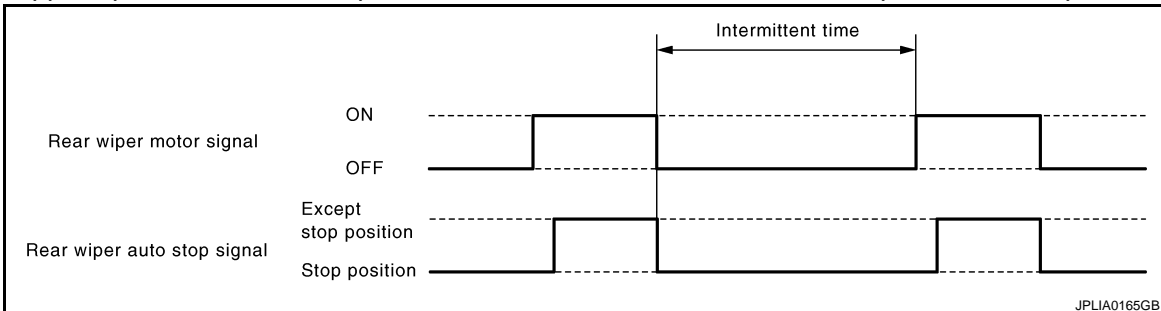
- Ignition switch ON
- Rear wiper switch ON

REAR WIPER INT OPERATION

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

Rear wiper INT operating condition

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



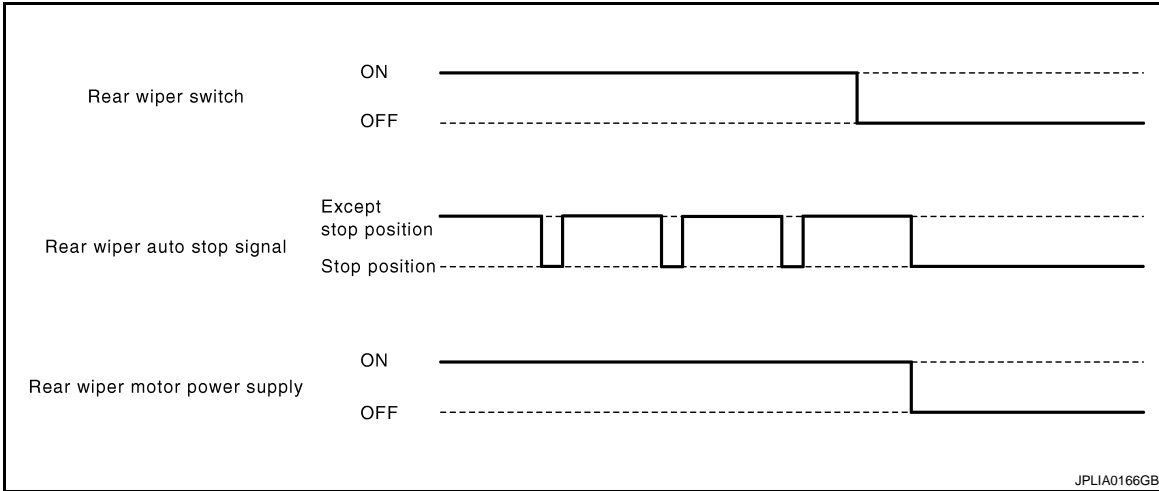
REAR WIPER AUTO STOP OPERATION

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

REAR WIPER AND WASHER SYSTEM

< FUNCTION DIAGNOSIS >

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



NOTE:

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

REAR WIPER OPERATION LINKED WITH WASHER

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

Washer linked operating condition of rear wiper

- Ignition switch ON
- Rear washer switch ON (0.4 second or more)
- Front and rear washer motor becomes grounded through the combination switch when the rear washer switch is turned ON.

REAR WIPER DROP WIPE OPERATION

- BCM controls the rear wiper to operate once according to the rear wiper drop wipe operating condition.

Rear wiper drop wipe operating condition

- Ignition switch ON
- Rear wiper switch OFF
- Rear washer switch OFF
- BCM controls the rear wiper so that it operates once time approximately three seconds later after the washer interlocking operation of the rear wiper.

REAR WIPER FAIL-SAFE OPERATION

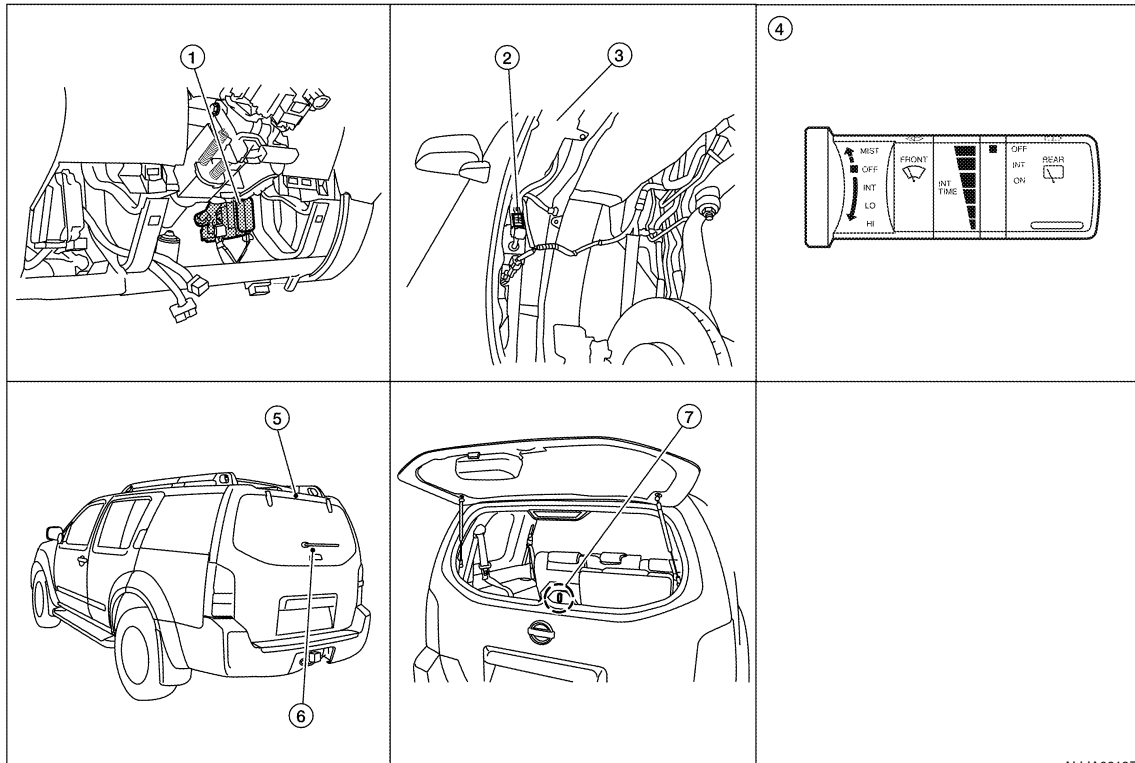
BCM performs the fail-safe function when the rear wiper auto stop circuit is malfunctioning. Refer to [WW-40](#). ["Fail Safe"](#).

REAR WIPER AND WASHER SYSTEM

< FUNCTION DIAGNOSIS >

Component Parts Location

INFOID:000000001712147



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- | | | |
|--|---|---------------------------|
| 1. BCM M18, M19, M20 (view with instrument lower panel LH removed) | 2. Front and rear washer motor connector E105 | 3. Washer fluid reservoir |
| 4. Combination switch M28 | 5. Rear washer nozzle | 6. Rear wiper motor D602 |
| 7. Glass hatch ajar switch D503 | | |

Component Description

INFOID:000000001712148

Part	Description
BCM	<ul style="list-style-type: none"> Judges each switch status by the combination switch reading function. Supplies power to the rear wiper motor. Performs the auto stop control of the rear wiper.
Combination switch (Wiper and washer switch)	Refer to WW-4. "System Diagram" .

DIAGNOSIS SYSTEM (BCM)

< FUNCTION DIAGNOSIS >

DIAGNOSIS SYSTEM (BCM)

COMMON ITEM

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

INFOID:000000001712149

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-DIAG RESULTS	Displays the diagnosis results judged by BCM. Refer to BCS-51, "DTC Index" .
CAN DIAG SUPPORT MNTR	Monitors the reception status of CAN communication viewed from BCM.
DATA MONITOR	The BCM input/output signals are displayed.
ACTIVE TEST	The signals used to activate each device are forcibly supplied from BCM.
ECU IDENTIFICATION	The BCM part number is displayed.
CONFIGURATION	<ul style="list-style-type: none"> Enables to read and save the vehicle specification. Enables to write the vehicle specification when replacing BCM.

SYSTEM APPLICATION

BCM can perform the following functions for each system.

NOTE:

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

System	Sub system selection item	Diagnosis mode		
		WORK SUPPORT	DATA MONITOR	ACTIVE TEST
—	BCM	×		
Exterior lamp	HEAD LAMP	×	×	×
Wiper and washer	WIPER	×	×	×
Combination switch	COMB SW		×	
Glass hatch ajar switch	TRUNK		×	×

WIPER

WIPER : CONSULT-III Function (BCM - WIPER)

INFOID:000000001712150

WORK SUPPORT

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

*:Factory setting

DATA MONITOR

Monitor Item [Unit]	Description
IGN ON SW	Ignition switch ON status judged from ignition power supply.
IGN SW CAN	Ignition switch ON status received from IPDM E/R with CAN communication.

DIAGNOSIS SYSTEM (BCM)

< FUNCTION DIAGNOSIS >

Monitor Item [Unit]	Description
FR WIPER HI [OFF/ON]	Each switch status that BCM judges from the combination switch reading function.
FR WIPER LOW [OFF/ON]	
FR WIPER INT [OFF/ON]	
FR WASHER SW [OFF/ON]	
INT VOLUME [1 – 7]	Each switch status that BCM judges from the combination switch reading function.
FR WIPER STOP [OFF/ON]	Front wiper motor (stop position) status received from IPDM E/R with CAN communication.
VEHICLE SPEED [km/h]	The value of the vehicle speed signal received from combination meter with CAN communication.
RR WIPER ON [OFF/ON]	Each switch status that BCM judges from the combination switch reading function.
RR WIPER INT [OFF/ON]	
RR WASHER SW [OFF/ON]	
RR WIPER STOP [OFF/ON]	Rear wiper motor (stop position) status input from the rear wiper motor.

ACTIVE TEST

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

DIAGNOSIS SYSTEM (IPDM E/R)

< FUNCTION DIAGNOSIS >

DIAGNOSIS SYSTEM (IPDM E/R)

Diagnosis Description

INFOID:000000001712151

AUTO ACTIVE TEST

Refer to PCS IPDM E/R AUTO ACTIVE TEST.

CONSULT - III Function (IPDM E/R)

INFOID:000000001712152

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

Refer to [PCS-28, "DTC Index"](#).

DATA MONITOR

Monitor item

Monitor Item [Unit]	MAIN SIGNALS	Description
FR WIP REQ [Stop/1LOW/Low/Hi]	×	Displays the status of the front wiper request signal received from BCM via CAN communication.
WIP AUTO STOP [STOP P/ACT P]	×	Displays the status of the front wiper auto stop signal judged by IPDM E/R.
WIP PROT [Off/BLOCK]	×	Displays the status of the front wiper fail-safe operation judged by IPDM E/R.
IGN RLY [Off/On]	×	Displays the status of the ignition relay judged by IPDM E/R.
IGN ON SW [Off/On]		Displays the status of the ignition switch judged by IPDM E/R.

ACTIVE TEST

Test item

Test item	Operation	Description
FRONT WIPER	Off	OFF
	Lo	Operates the front wiper relay.
	Hi	Operates the front wiper relay and front wiper high relay.

WIPER AND WASHER FUSE

< COMPONENT DIAGNOSIS >

COMPONENT DIAGNOSIS

WIPER AND WASHER FUSE

Description

INFOID:000000001712154

Fuse list

Unit	Location	Fuse No.	Capacity
Front wiper motor	IPDM E/R	39	30 A
Front and rear washer motor	Fuse block (J/B)	9	10 A

Diagnosis Procedure

INFOID:000000001712155

1. CHECK FUSES

Check that the following fuses are not blown.

Unit	Location	Fuse No.	Capacity
Front wiper motor	IPDM E/R	39	30 A
Front and rear washer motor	Fuse block (J/B)	9	10 A

Is the fuse blown?

- YES >> Replace the fuse after repairing the applicable circuit.
- NO >> The fuse is normal.

FRONT WIPER MOTOR LO CIRCUIT

< COMPONENT DIAGNOSIS >

FRONT WIPER MOTOR LO CIRCUIT

Component Function Check

INFOID:000000001712156

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. While operating the test item, check front wiper operation.

LO : Front wiper (LO) operation

OFF : Stop the front wiper.

Is front wiper (LO) operation normal?

- YES >> Front wiper motor LO circuit is normal.
 NO >> Refer to [WW-15, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000001712157

1. CHECK FRONT WIPER MOTOR FUSE

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

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

Is the fuse blown?

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

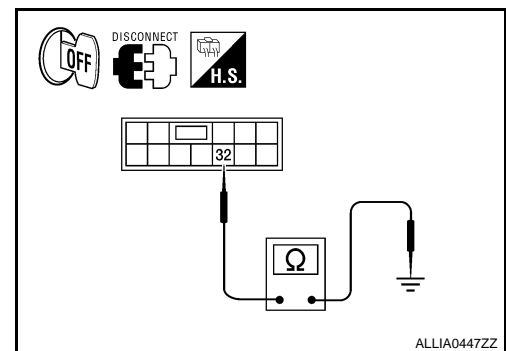
2. CHECK FRONT WIPER MOTOR (LO) SHORT CIRCUIT

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

IPDM E/R		Ground	Continuity
Connector	Terminal		
E121	32		No

Does continuity exist?

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



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3. CHECK FRONT WIPER MOTOR (LO) OUTPUT VOLTAGE

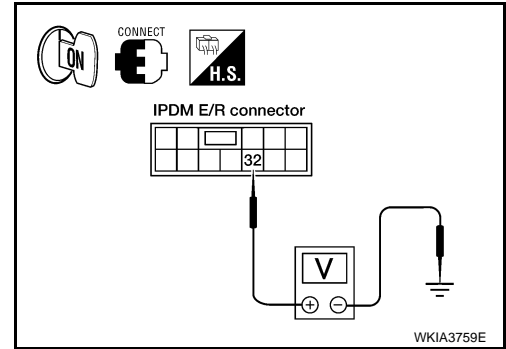
Ⓜ CONSULT-III ACTIVE TEST

FRONT WIPER MOTOR LO CIRCUIT

< COMPONENT DIAGNOSIS >

1. Turn the ignition switch ON.
2. Select "FRONT WIPER" of IPDM E/R active test item.
3. While 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		
E121	32	LO	Battery voltage
		OFF	0V



Is the measurement value normal?

- YES >> GO TO 4
 NO >> Replace IPDM E/R. Refer to [PCS-30, "Removal and Installation of IPDM E/R"](#).

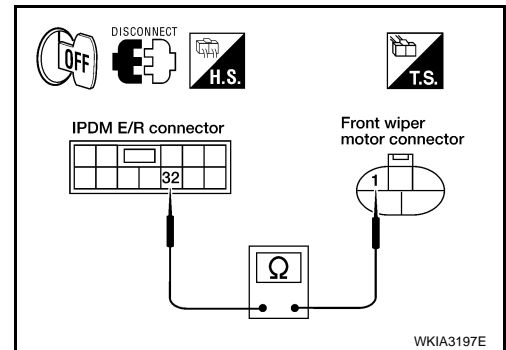
4. CHECK FRONT WIPER MOTOR (LO) OPEN CIRCUIT

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

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

Does continuity exist?

- YES >> Replace front wiper motor. Refer to [WW-49, "Removal and Installation"](#).
 NO >> Repair or replace harness.



FRONT WIPER MOTOR HI CIRCUIT

< COMPONENT DIAGNOSIS >

FRONT WIPER MOTOR HI CIRCUIT

Component Function Check

INFOID:000000001712158

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. While operating the test item, check front wiper operation.

HI : Front wiper (HI) operation
OFF : Stop the front wiper.

Is front wiper (HI) operation normal?

- YES >> Front wiper motor HI circuit is normal.
 NO >> Refer to [WW-17, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000001712159

1. CHECK FRONT WIPER MOTOR FUSE

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

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

Is the fuse blown?

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

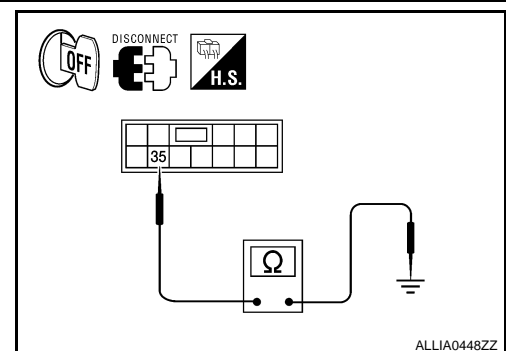
2. CHECK FRONT WIPER MOTOR (HI) SHORT CIRCUIT

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

IPDM E/R		Ground	Continuity
Connector	Terminal		
E121	35		No

Does continuity exist?

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



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3. CHECK FRONT WIPER MOTOR (HI) OUTPUT VOLTAGE

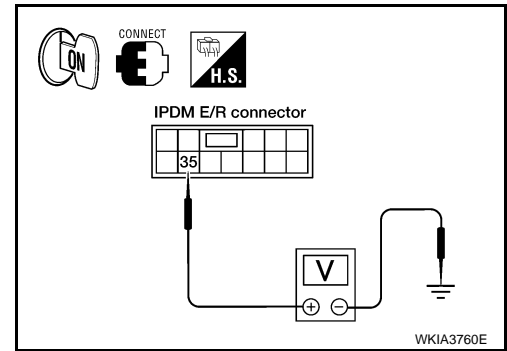
Ⓜ CONSULT-III ACTIVE TEST

FRONT WIPER MOTOR HI CIRCUIT

< COMPONENT DIAGNOSIS >

1. Turn the ignition switch ON.
2. Select "FRONT WIPER" of IPDM E/R active test item.
3. While 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		
E121	35	HI	Battery voltage
		OFF	0 V



Is the measurement value normal?

YES >> GO TO 4

NO >> Replace IPDM E/R. Refer to [PCS-30, "Removal and Installation of IPDM E/R"](#).

4. CHECK FRONT WIPER MOTOR (HI) OPEN CIRCUIT

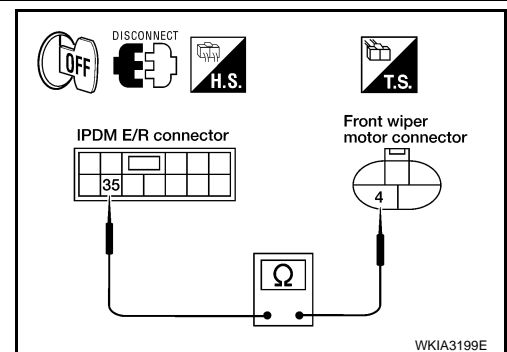
1. Turn the ignition switch OFF.
2. Disconnect IPDM E/R and front wiper motor.
3. Check continuity between IPDM E/R harness connector and front wiper motor harness connector.

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

Does continuity exist?

YES >> Replace front wiper motor. Refer to [WW-49, "Removal and Installation"](#).

NO >> Repair or replace harness.



FRONT WIPER AUTO STOP SIGNAL CIRCUIT

< COMPONENT DIAGNOSIS >

FRONT WIPER AUTO STOP SIGNAL CIRCUIT

Component Function Check

INFOID:000000001712160

1. CHECK FRONT WIPER (AUTO STOP) SIGNAL CHECK

CONSULT-III DATA MONITOR

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

Monitor item	Condition		Monitor status
FR WIPER STOP	Front wiper motor	Stop position	ON
		Except stop position	OFF

Is the status of item normal?

- YES >> Front wiper auto stop signal circuit is normal.
 NO >> Refer to [WW-19, "Diagnosis Procedure"](#).

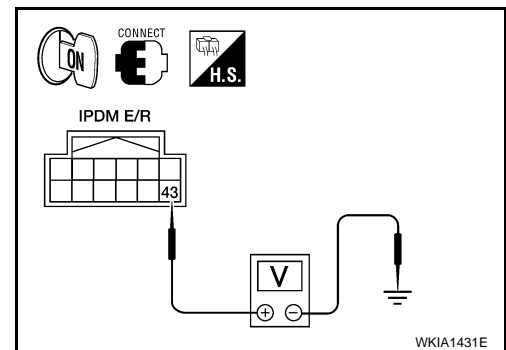
Diagnosis Procedure

INFOID:000000001712161

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

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

Terminals		Voltage (Approx.)
(+)	(-)	
IPDM E/R		Ground
Connector	Terminal	
E122	43	
		Battery voltage



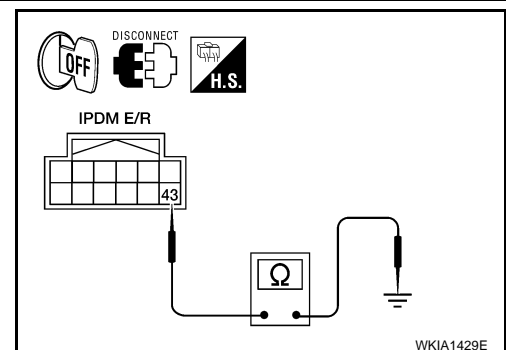
Is the measurement value normal?

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

IPDM E/R		Ground	Continuity
Connector	Terminal		
E122	43		No



Does continuity exist?

- YES >> Repair or replace harness.
 NO >> Replace IPDM E/R. Refer to [PCS-30, "Removal and Installation of IPDM E/R"](#).

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

FRONT WIPER AUTO STOP SIGNAL CIRCUIT

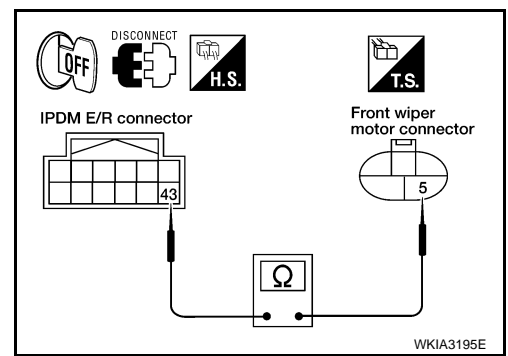
< COMPONENT DIAGNOSIS >

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	
E122	43	E23	5	Yes

Does continuity exist?

- YES >> Replace front wiper motor. Refer to [WW-49, "Removal and Installation"](#).
- NO >> Repair or replace harness.



FRONT WIPER MOTOR GROUND CIRCUIT

< COMPONENT DIAGNOSIS >

FRONT WIPER MOTOR GROUND CIRCUIT

Diagnosis Procedure

INFOID:000000001712162

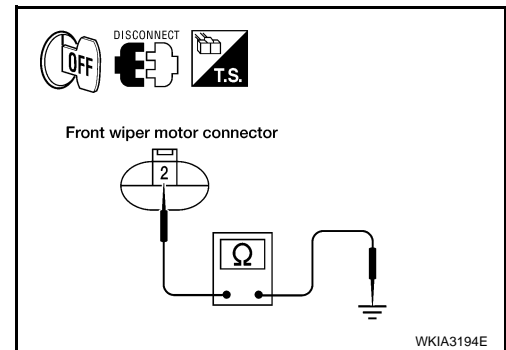
1. CHECK FRONT WIPER MOTOR (GROUND) OPEN CIRCUIT

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

Front wiper motor		Ground	Continuity
Connector	Terminal		
E23	2		Yes

Does continuity exist?

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



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WASHER SWITCH

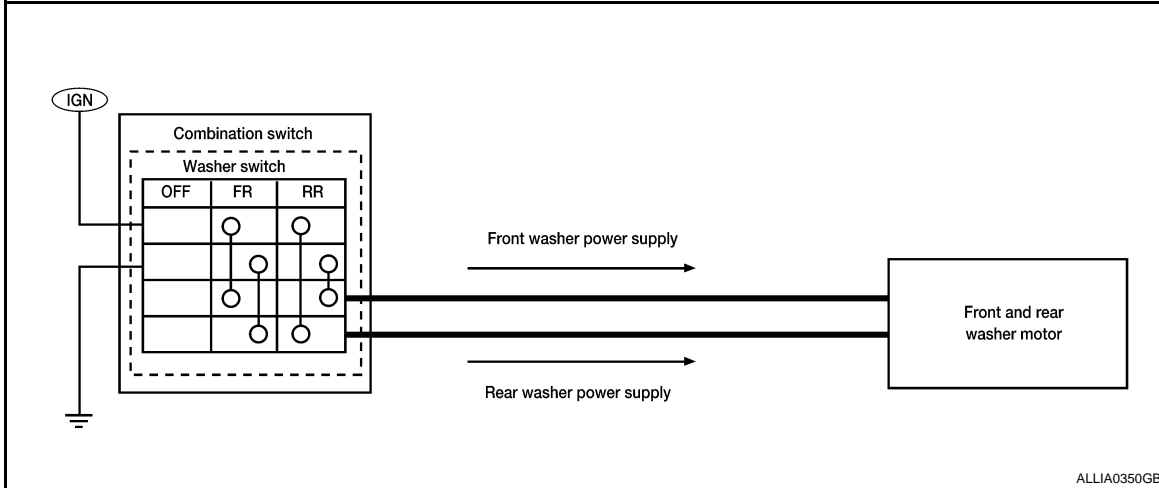
< COMPONENT DIAGNOSIS >

WASHER SWITCH

Description

INFOID:000000001712163

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



Component Inspection

INFOID:000000001712164

1. CHECK FRONT WASHER SWITCH

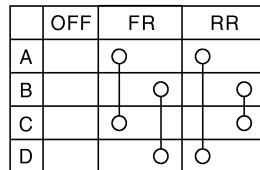
1. Turn the ignition switch OFF.
2. Disconnect combination switch.
3. Check continuity between the combination switch terminals.

A: Terminal 14

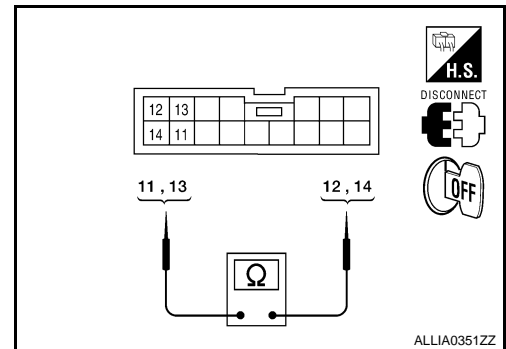
B: Terminal 12

C: Terminal 13

D: Terminal 11



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

Does continuity exist?

YES >> GO TO 2.

NO >> Replace combination switch. Refer to [WW-49, "Removal and Installation"](#).

2. CHECK REAR WASHER SWITCH

WASHER SWITCH

< COMPONENT DIAGNOSIS >

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

A: Terminal 14

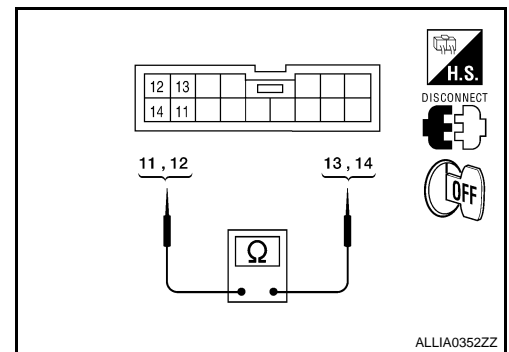
B: Terminal 12

C: Terminal 13

D: Terminal 11

	OFF	FR	RR
A		○	○
B		○	○
C		○	○
D		○	○

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

Does continuity exist?

YES >> Wiper and washer switch is normal.

NO >> Replace combination switch. Refer to [WW-49, "Removal and Installation"](#).

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REAR WIPER MOTOR CIRCUIT

< COMPONENT DIAGNOSIS >

REAR WIPER MOTOR CIRCUIT

Component Function Check

INFOID:000000001712165

1. CHECK REAR WIPER ON OPERATION

CONSULT-III ACTIVE TEST

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

ON : Rear wiper ON operation

OFF : Stop the rear wiper.

Is rear wiper operation normal?

- YES >> Rear wiper motor circuit is normal.
 NO >> Refer to [WW-24, "Diagnosis Procedure"](#).

Diagnosis Procedure

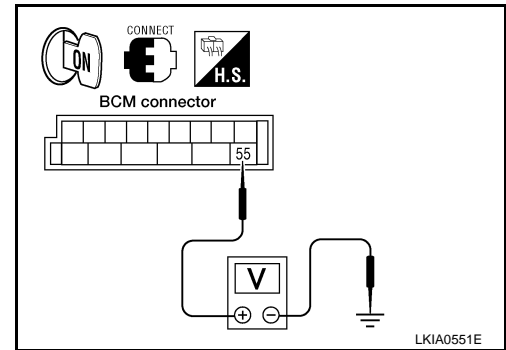
INFOID:000000001712166

1. CHECK REAR WIPER MOTOR OUTPUT VOLTAGE

CONSULT-III ACTIVE TEST

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

Terminals		Test item	Voltage (Approx.)
(+)	(-)		
BCM		REAR WIPER	Battery voltage
Connector	Terminal		
M19	55	ON	Battery voltage
		OFF	0V



Is the measurement value normal?

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

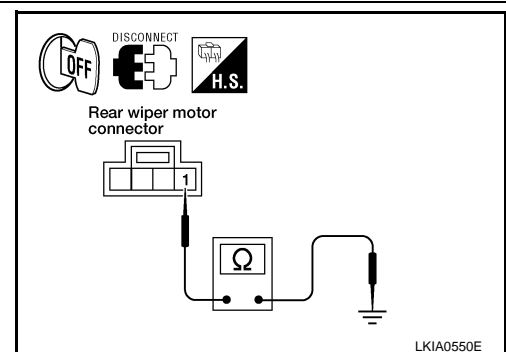
2. CHECK REAR WIPER MOTOR GROUND CIRCUIT

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

Rear wiper motor		Ground	Continuity
Connector	Terminal		
D602	42		Yes

Does continuity exist?

- YES >> Replace rear wiper motor. Refer to [WW-54, "Removal and Installation"](#).
 NO >> Repair or replace harness.



3. CHECK GLASS HATCH AJAR SWITCH CIRCUIT

1. Disconnect BCM harness connector M19.
2. Turn ignition switch OFF.

REAR WIPER MOTOR CIRCUIT

< COMPONENT DIAGNOSIS >

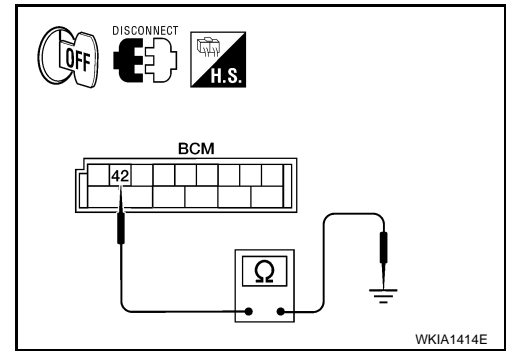
3. Make sure hatch glass is closed
4. Check continuity between BCM harness connector and ground.

BCM		Ground	Continuity
Connector	Terminal		
M19	42		No

Does continuity exist?

YES >> GO TO 4.

NO >> Repair harness if shorted. If not, refer to [SEC-44, "Diagnosis Procedure"](#) (with Intelligent Key system) or [SEC-122, "Diagnosis Procedure"](#) (without Intelligent Key system).



4. CHECK REAR WIPER MOTOR OPEN CIRCUIT

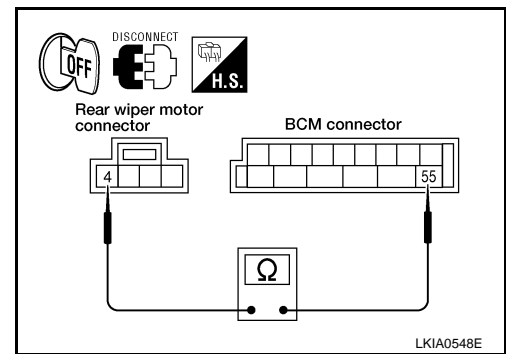
1. Check continuity between BCM harness connector and rear wiper motor harness connector.

BCM		Rear wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
M19	42	D602	4	Yes

Does continuity exist?

YES >> GO TO 5

NO >> Repair or replace harness.



5. CHECK REAR WIPER MOTOR SHORT CIRCUIT

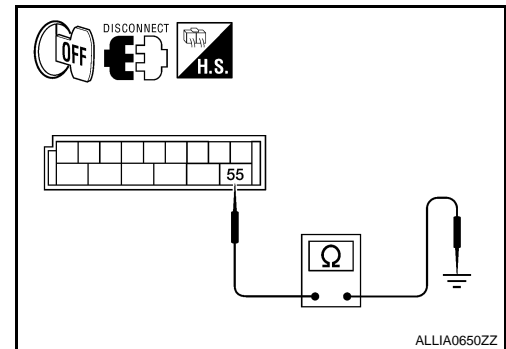
Check continuity between BCM harness connector and ground.

BCM		Ground	Continuity
Connector	Terminal		
M19	55		No

Does continuity exist?

YES >> Repair or replace harness.

NO >> Replace BCM. Refer to [BCS-54, "Removal and Installation"](#).



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REAR WIPER AUTO STOP SIGNAL CIRCUIT

< COMPONENT DIAGNOSIS >

REAR WIPER AUTO STOP SIGNAL CIRCUIT

Component Function Check

INFOID:000000001712167

1. CHECK REAR WIPER (AUTO STOP) OPERATION

CONSULT-III DATA MONITOR

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

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

Is the status of item normal?

- YES >> Rear wiper auto stop signal circuit is normal.
 NO >> Refer to [WW-26, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000001712168

1. CHECK REAR WIPER MOTOR AUTO STOP CIRCUITS

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

BCM		Rear wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
M19	44	D602	2	Yes

Is inspection result normal?

- YES >> GO TO 2
 NO >> Repair or replace harness.

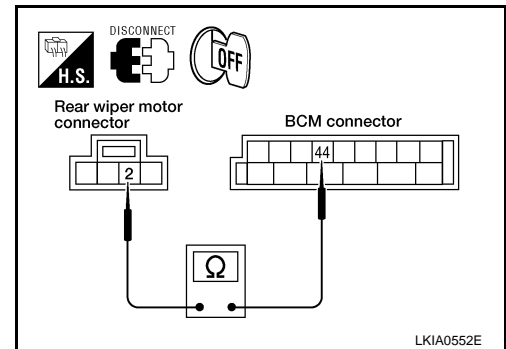
2. CHECK AUTO STOP CIRCUITS FOR SHORT TO GROUND

Check continuity between BCM harness connector terminals and ground.

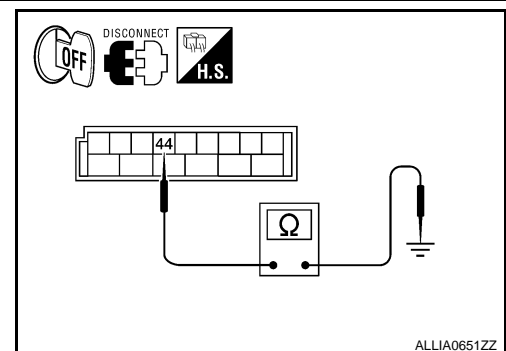
BCM		Ground	Continuity
Connector	Terminal		
M19	44		No

Is inspection result normal?

- YES >> Replace BCM. Refer to [BCS-54, "Removal and Installation"](#).
 NO >> Repair or replace harness.



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FRONT WIPER AND WASHER SYSTEM

< COMPONENT DIAGNOSIS >

FRONT WIPER AND WASHER SYSTEM CONNECTORS

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



7P	8P	5P	4P	3P	2P	1P		
16P	15P	14P	13P	12P	11P	10P	9P	8P

Terminal No.	Color of Wire	Signal Name
9P	W/G	-
15P	W/R	-


Connector No.	M6
Connector Name	WIRE TO WIRE
Connector Color	WHITE



4	3	2	1
8	7	6	5

Terminal No.	Color of Wire	Signal Name
7	W	-

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



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

Terminal No.	Color of Wire	Signal Name
2	P	COMBI SW INPUT5
3	SB	COMBI SW INPUT4

Terminal No.	Color of Wire	Signal Name
4	V	COMBI SW INPUT3
5	L	COMBI SW INPUT2
6	R	COMBI SW INPUT1
32	O	COMBI SW OUTPUT5
33	GR	COMBI SW OUTPUT4
34	G	COMBI SW OUTPUT3
35	BR	COMBI SW OUTPUT2
36	LG	COMBI SW OUTPUT1
38	W/R	IGN SW
39	L	CAN-H
40	P	CAN-L

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



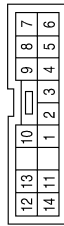
56	57	58	59	60	61	62	63	64
65	66	67	68	69	70			

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

FRONT WIPER AND WASHER SYSTEM

< COMPONENT DIAGNOSIS >

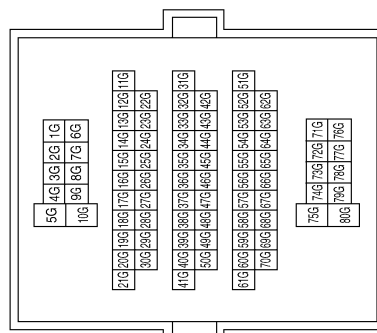
Connector No.	M28
Connector Name	COMBINATION SWITCH
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
4	GR	INPUT 4
5	O	INPUT 5
6	R	OUT PUT 1
7	L	OUT PUT 2
8	P	OUT PUT 5
9	SB	OUT PUT 4
10	V	OUT PUT 3
11	O	WASHER MOTOR (RR+)
12	B	GND
13	L	WASHER MOTOR (RR-)
14	W/G	IGN

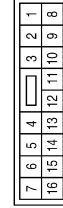
Terminal No.	Color of Wire	Signal Name
1	LG	INPUT 1
2	BR	INPUT 2
3	G	INPUT 3

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



Terminal No.	Color of Wire	Signal Name
78G	O	-
79G	L	-

Connector No.	M91
Connector Name	WIRE TO WIRE
Connector Color	WHITE




Terminal No.	Color of Wire	Signal Name
10	P	-
11	L	-

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FRONT WIPER AND WASHER SYSTEM

< COMPONENT DIAGNOSIS >

Connector No.	E10
Connector Name	WIRE TO WIRE
Connector Color	WHITE



1	2	3	4
5	6	7	8

Terminal No.	Color of Wire	Signal Name
7	W	-


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



3	2	1
5	4	

Terminal No.	Color of Wire	Signal Name
1	GR	-
2	B	-
4	L	-
5	G	-

Connector No.	E26
Connector Name	WIRE TO WIRE
Connector Color	WHITE



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

Terminal No.	Color of Wire	Signal Name
10	P	-
11	L	-

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



2	1
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Terminal No.	Color of Wire	Signal Name
1	L	-
2	O	-


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



29	28	27	26	25
36	35	34	33	32
31	30			

Terminal No.	Color of Wire	Signal Name
32	GR	FR_WIPER_LO
35	L	FR_WIPER_HI

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



42	41	40	39	38	37
46	47	46	45	44	43

Terminal No.	Color of Wire	Signal Name
38	B	SIGNAL_GND
39	L	CAN-H
40	P	CAN-L
43	G	AUTO_STOP_SW

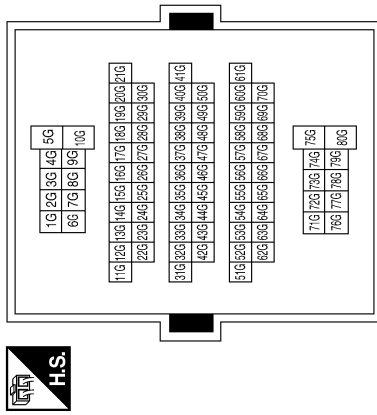
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FRONT WIPER AND WASHER SYSTEM

< COMPONENT DIAGNOSIS >

Terminal No.	Color of Wire	Signal Name
78G	O	-
79G	L	-

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



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



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

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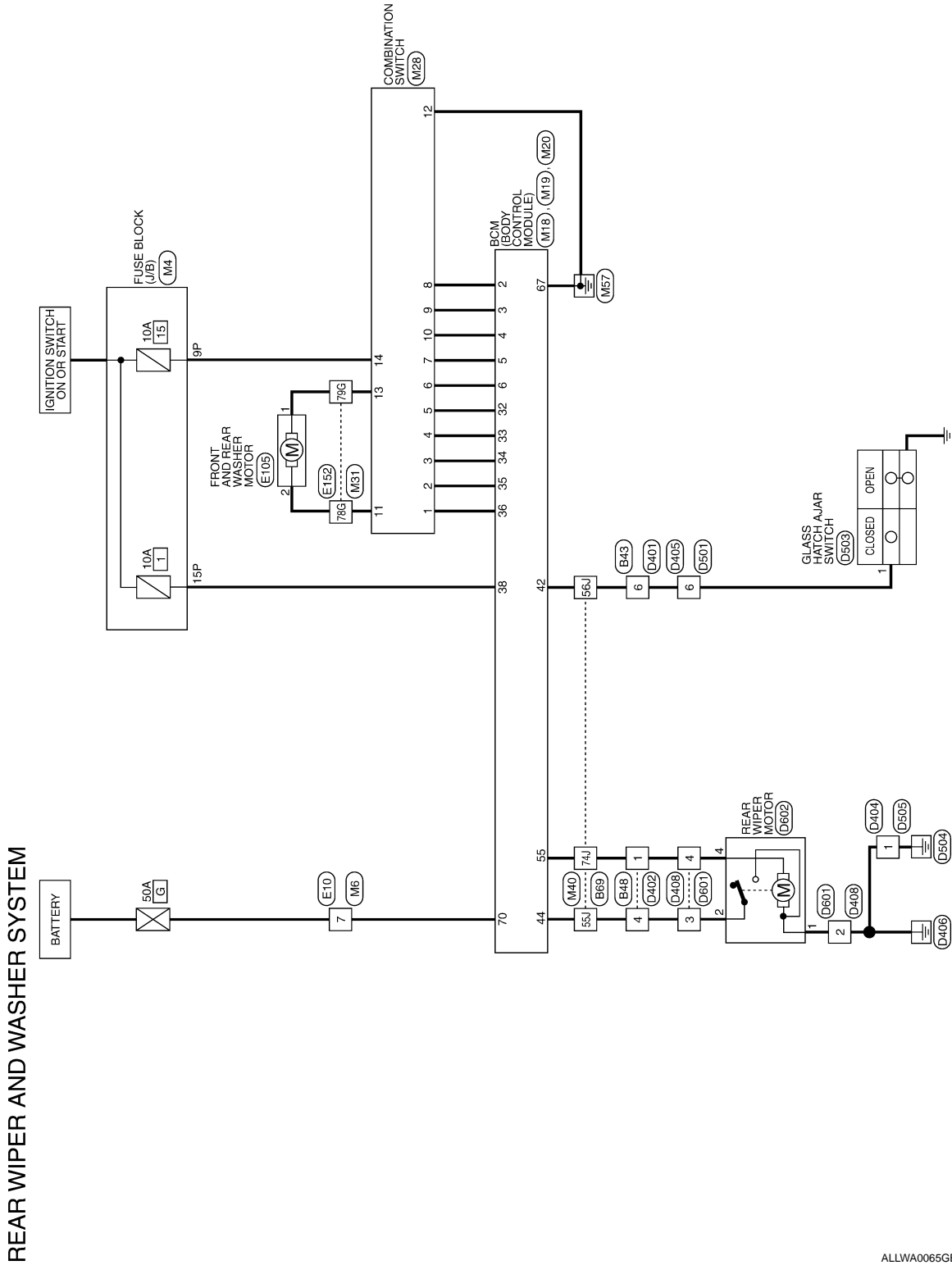
REAR WIPER AND WASHER SYSTEM

< COMPONENT DIAGNOSIS >

REAR WIPER AND WASHER SYSTEM

Wiring Diagram

INFOID:000000001712170



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REAR WIPER AND WASHER SYSTEM

< COMPONENT DIAGNOSIS >

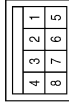
REAR WIPER AND WASHER SYSTEM CONNECTORS

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



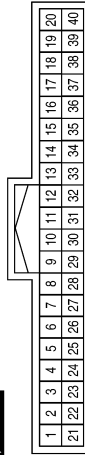
Terminal No.	Color of Wire	Signal Name
9P	W/G	-
15P	W/R	-

Connector No.	M6
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
7	W	-

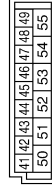
Connector No.	M18
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
2	P	COMBI SW INPUT 5
3	SB	COMBI SW INPUT 4

Terminal No.	Color of Wire	Signal Name
4	V	COMBI SW INPUT 3
5	L	COMBI SW INPUT 2
6	R	COMBI SW INPUT 1
32	O	COMBI SW OUTPUT 5
33	GR	COMBI SW OUTPUT 4
34	G	COMBI SW OUTPUT 3
35	BR	COMBI SW OUTPUT 2
36	LG	COMBI SW OUTPUT 1
38	W/R	IGN SW

Connector No.	M19
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
42	LG	GLASS HATCH AJAR
44	SB	AUTO-STOP
55	W	RR WIPER O/P (MTR)

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REAR WIPER AND WASHER SYSTEM

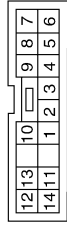
< COMPONENT DIAGNOSIS >

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



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

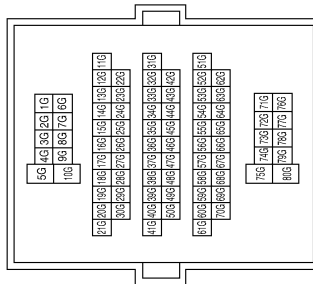
Connector No.	M28
Connector Name	COMBINATION SWITCH
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	LG	INPUT 1
2	BR	INPUT 2
3	G	INPUT 3

Terminal No.	Color of Wire	Signal Name
4	GR	INPUT 4
5	O	INPUT 5
6	R	OUT PUT 1
7	L	OUT PUT 2
8	P	OUT PUT 5
9	SB	OUT PUT 4
10	V	OUT PUT 3
11	O	WASHER MOTO (RR+)
12	B	GND
13	L	WASHER MOTO (RR-)
14	W/G	IGN

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

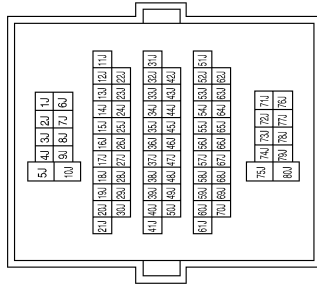


Terminal No.	Color of Wire	Signal Name
78G	O	-
79G	L	-

REAR WIPER AND WASHER SYSTEM

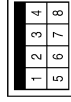
< COMPONENT DIAGNOSIS >

Connector No.	M40
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
55J	O	-
56J	LG	-
74J	W	-

Connector No.	E10
Connector Name	WIRE TO WIRE
Connector Color	WHITE



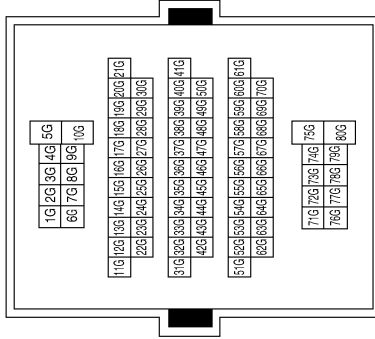
Terminal No.	Color of Wire	Signal Name
7	W	-

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



Terminal No.	Color of Wire	Signal Name
1	L	-
2	O	-

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



Terminal No.	Color of Wire	Signal Name
78G	O	-
79G	L	-

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REAR WIPER AND WASHER SYSTEM

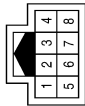
< COMPONENT DIAGNOSIS >

Connector No.	B48
Connector Name	WIRE TO WIRE
Connector Color	WHITE



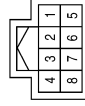
Terminal No.	Color of Wire	Signal Name
1	W	-
4	O	-

Connector No.	B43
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
6	LG	-

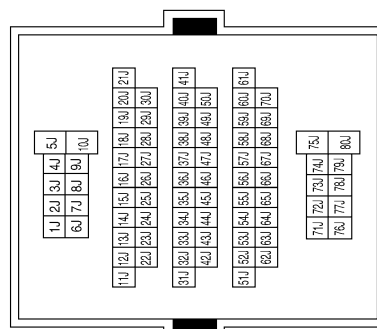
Connector No.	D401
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
6	LG	-

Terminal No.	Color of Wire	Signal Name
55J	O	-
56J	LG	-
74J	W	-

Connector No.	B69
Connector Name	WIRE TO WIRE
Connector Color	WHITE

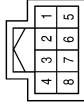


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REAR WIPER AND WASHER SYSTEM

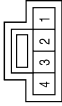
< COMPONENT DIAGNOSIS >

Connector No.	D405
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
6	LG	-

Connector No.	D404
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	B	-

Connector No.	D402
Connector Name	WIRE TO WIRE
Connector Color	WHITE



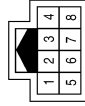
Terminal No.	Color of Wire	Signal Name
1	W	-
4	O	-

Connector No.	D503
Connector Name	GLASS HATCH AJAR SWITCH
Connector Color	BLACK



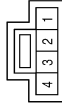
Terminal No.	Color of Wire	Signal Name
1	LG	-

Connector No.	D501
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
6	LG	-

Connector No.	D408
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
2	B	-
3	O	-
4	W	-

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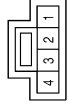
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REAR WIPER AND WASHER SYSTEM

< COMPONENT DIAGNOSIS >

Connector No.	D602
Connector Name	REAR WIPER MOTOR
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	B	-
2	O	-
4	W	-

Connector No.	D601
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
2	B	-
3	O	-
4	W	-

Connector No.	D505
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	B	-

ALLIA0331GB

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

ECU DIAGNOSIS

BCM (BODY CONTROL MODULE)

Reference Value

INFOID:000000001712171

VALUES ON THE DIAGNOSIS TOOL

Monitor Item	Condition	Value/Status
FR WASHER SW	Front washer switch OFF	OFF
	Front washer switch ON	ON
FR WIPER LOW	Front wiper switch OFF	OFF
	Front wiper switch LO	ON
FR WIPER HI	Front wiper switch OFF	OFF
	Front wiper switch HI	ON
FR WIPER INT	Front wiper switch OFF	OFF
	Front wiper switch INT	ON
FR WIPER STOP	Any position other than front wiper stop position	OFF
	Front wiper stop position	ON
IGN ON SW	Ignition switch OFF or ACC	OFF
	Ignition switch ON	ON
IGN SW CAN	Ignition switch OFF or ACC	OFF
	Ignition switch ON	ON
INT VOLUME	Wiper intermittent dial is in a dial position 1 - 7	1 - 7
RR WASHER SW	Rear washer switch OFF	OFF
	Rear washer switch ON	ON
RR WIPER INT	Rear wiper switch OFF	OFF
	Rear wiper switch INT	ON
RR WIPER ON	Rear wiper switch OFF	OFF
	Rear wiper switch ON	ON
RR WIPER STOP	Rear wiper stop position	OFF
	Other than rear wiper stop position	ON
VEHICLE SPEED	While driving	Equivalent to speedometer reading

TERMINAL LAYOUT

Refer to [BCS-41, "Terminal Layout"](#).

PHYSICAL VALUES

Refer to [BCS-41, "Physical Values"](#).

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

< ECU DIAGNOSIS >

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

Reference Value

INFOID:000000001712172

VALUES ON THE DIAGNOSIS TOOL

Monitor Item	Condition	Value/Status	
FR WIP REQ	Ignition switch ON	Front wiper switch OFF	STOP
		Front wiper switch INT	1LOW
		Front wiper switch LO	Low
		Front wiper switch HI	Hi
WIP AUTO STOP	Ignition switch ON	Front wiper stop position	STOP P
		Any position other than front wiper stop position	ACT P
WIP PROT	Ignition switch ON	Front wiper operates normally	Off
		Front wiper stops at fail-safe operation	BLOCK
IGN RLY	Ignition switch OFF or ACC		Off
	Ignition switch ON		On
IGN ON SW	Ignition switch OFF or ACC		Off
	Ignition switch ON		On

TERMINAL LAYOUT

Refer to [PCS-19, "Terminal Layout"](#).

PHYSICAL VALUES

Refer to [PCS-19, "Physical Values"](#).

Fail Safe

INFOID:000000001712173

CAN communication control

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

If no CAN communication is available with BCM

Control part	Fail-safe in 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 front wiper is operated at LO speed until the ignition switch is turned OFF if the fail-safe control is activated while the front wiper is set in the INT mode and the front wiper motor is operating.

Front wiper control

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

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

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

NOTE:

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

< ECU DIAGNOSIS >

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.

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WIPER AND WASHER SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

WIPER AND WASHER SYSTEM SYMPTOMS

Symptom Table

INFOID:000000001712174

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-53, "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-17, "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-53, "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-15, "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-53, "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 "FRONT WIPER DOES NOT OPERATE" Refer to WW-46, "Diagnosis Procedure" .		

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-53, "Symptom Table" .
		<ul style="list-style-type: none"> Front wiper request signal • 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-53, "Symptom Table" .
		<ul style="list-style-type: none"> Front wiper request signal • 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-53, "Symptom Table" .
		<ul style="list-style-type: none"> Front wiper request signal • 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
BCM			—
Intermittent control linked with vehicle speed cannot be performed.		Check the vehicle speed detection wiper setting. Refer to WW-11, "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-53, "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).	<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-19, "Component Function Check" .	
Rear wiper does not operate.	ON only	<ul style="list-style-type: none"> • Combination switch • Harness between combination switch and BCM • BCM 	Combination switch Refer to BCS-53, "Symptom Table" .
	INT only	<ul style="list-style-type: none"> • Combination switch • Harness between combination switch and BCM • BCM 	Combination switch Refer to BCS-53, "Symptom Table" .
	ON and INT	<ul style="list-style-type: none"> • Combination switch • Harness between combination switch and BCM • BCM 	Combination switch Refer to BCS-53, "Symptom Table" .
		<ul style="list-style-type: none"> • BCM • Harness between rear wiper motor and BCM • Harness between rear wiper motor and ground • Rear wiper motor • Glass hatch ajar switch 	Combination switch Refer to WW-24, "Component Function Check" .

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WIPER AND WASHER SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

Symptom		Probable malfunction location	Inspection item
Rear wiper does not stop.	ON only	<ul style="list-style-type: none"> • Combination switch • BCM 	Rear wiper motor circuit Refer to WW-24, "Component Function Check" .
	INT only	<ul style="list-style-type: none"> • Combination switch • BCM 	Combination switch Refer to BCS-53, "Symptom Table" .
Rear wiper does not operate normally.	Wiper is not linked to the washer operation.	<ul style="list-style-type: none"> • Combination switch • Harness between rear wiper motor and BCM • BCM 	Combination switch Refer to BCS-53, "Symptom Table" .
		BCM	—
	Rear wiper does not return to the Stop position (Stops after a five-second operation). Rear wiper stops after operating for five seconds when ignition switch is turned ON.	<ul style="list-style-type: none"> • BCM • Harness between rear wiper motor and BCM • Rear wiper motor 	Rear wiper auto stop signal circuit Refer to WW-26, "Component Function Check" .

NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS >

NORMAL OPERATING CONDITION

Description

INFOID:000000001712175

FRONT WIPER MOTOR PROTECTION FUNCTION

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

REAR WIPER MOTOR PROTECTION FUNCTION

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

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FRONT WIPER DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

FRONT WIPER DOES NOT OPERATE

Description

INFOID:000000001712176

The front wiper does not operate under any operation conditions.

Diagnosis Procedure

INFOID:000000001712177

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. While operating the test item, check front wiper operation.

LO : Front wiper LO operation

HI : Front wiper HI operation

OFF : Stop the front wiper.

Is front wiper operation normal?

YES >> GO TO 5

NO >> GO TO 2

2. CHECK FRONT WIPER MOTOR FUSE

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

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

Is the fuse blown?

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

NO >> GO TO 3

3. CHECK FRONT WIPER MOTOR GROUND OPEN CIRCUIT

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

Front wiper motor		Ground	Continuity
Connector	Terminal		
E23	2		Yes

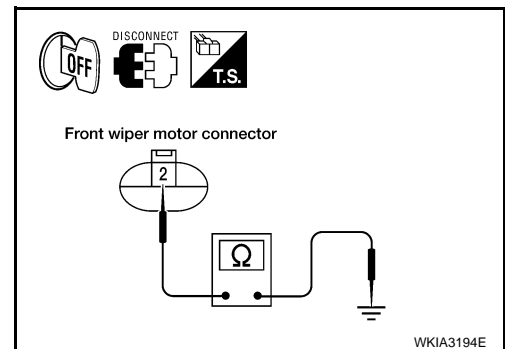
Does continuity exist?

YES >> GO TO 4

NO >> Repair or replace harness.

4. CHECK FRONT WIPER MOTOR OUTPUT VOLTAGE

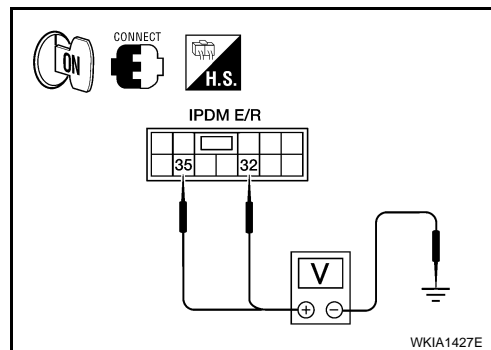
Ⓟ CONSULT-III ACTIVE TEST



FRONT WIPER DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

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



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

Is the measurement value normal?

- YES >> Replace front wiper motor. Refer to [WW-49, "Removal and Installation"](#).
 NO >> Replace IPDM E/R. Refer to [PCS-30, "Removal and Installation of IPDM E/R"](#).

5. CHECK FRONT WIPER REQUEST SIGNAL INPUT

CONSULT-III DATA MONITOR

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

Monitor item	Condition		Monitor status
FR WIP REQ	Front wiper switch HI	HI	ON
		STOP	OFF
	Front wiper switch LO	1LOW	ON
		STOP	OFF

Is the status of item normal?

- YES >> Replace IPDM E/R. Refer to [PCS-30, "Removal and Installation of IPDM E/R"](#).
 NO >> GO TO 6

6. CHECK COMBINATION SWITCH

1. Perform the inspection of the combination switch. Refer to [BCS-53, "Symptom Table"](#).

Is combination switch normal?

- YES >> Replace BCM. Refer to [BCS-54, "Removal and Installation"](#).
 NO >> Repair or replace the applicable parts.

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PRECAUTION

< PRECAUTION >

PRECAUTION

PRECAUTION

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

INFOID:000000001691120

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

WARNING:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SR section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

FRONT WIPER AND WASHER SYSTEM

< ON-VEHICLE REPAIR >

ON-VEHICLE REPAIR

FRONT WIPER AND WASHER SYSTEM

Removal and Installation

INFOID:000000001691134

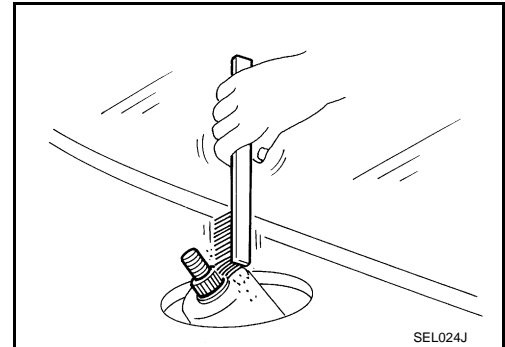
FRONT WIPER ARMS

Removal

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

Installation

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



3. Install front RH blade assembly and front LH blade assembly.
4. Install front RH wiper arm and front LH wiper arm.
5. Ensure that wiper blades stop within proper clearance. Refer to "FRONT WIPER ARM ADJUSTMENT".

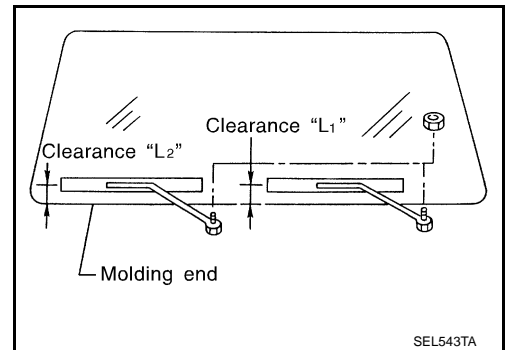
FRONT WIPER ARM ADJUSTMENT

1. Operate windshield washer and wiper motor one full cycle, then turn "OFF" (Auto Stop).
2. Lift the wiper blade up and then rest it onto glass surface, check the blade clearance "L1" and "L2".

Clearance "L1" : 24.5 - 39.5 mm (0.965 - 1.555 in)

Clearance "L2" : 23.5 - 38.5 mm (0.925 - 1.516 in)

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

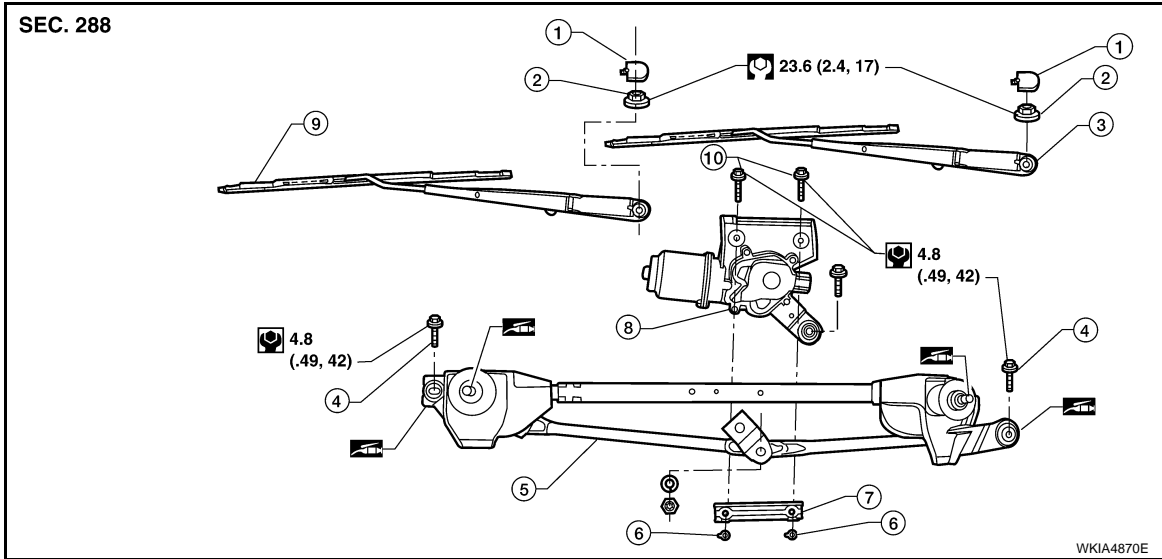


Front wiper arm nuts : 23.6 N-m (2.4 kg-m, 17 ft-lb)

WIPER MOTOR AND LINKAGE

FRONT WIPER AND WASHER SYSTEM

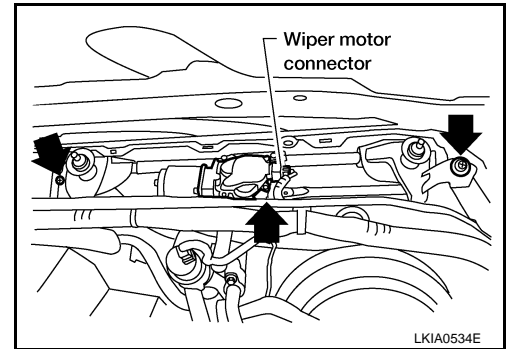
< ON-VEHICLE REPAIR >



- | | | |
|--------------------------------|-------------------------|--|
| 1. Wiper arm covers | 2. Wiper arm nuts | 3. Front LH wiper arm and blade assembly |
| 4. Wiper frame bolts | 5. Wiper frame assembly | 6. Wiper motor to frame nuts |
| 7. Wiper motor spacer | 8. Wiper motor | 9. Front RH wiper arm and blade assembly |
| 10. Wiper motor to frame bolts | | |

Removal

1. Remove the cowl top. Refer to [EXT-17, "Removal and Installation"](#).
2. Remove wiper frame bolts, and remove wiper frame assembly.



3. Remove wiper motor from wiper frame assembly.

Installation

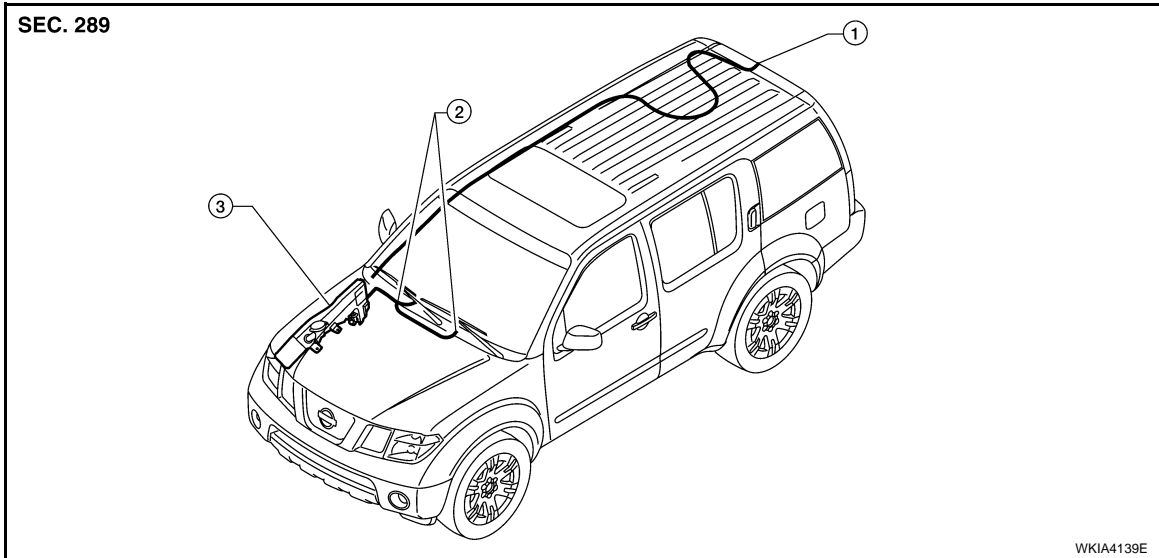
CAUTION:

- Do not drop the wiper motor or cause it to contact other parts.
 - Check the grease conditions of the motor arm and wiper link joint(s). Apply grease if necessary.
1. Connect wiper motor to connector. Turn the wiper switch ON to operate wiper motor, then turn the wiper switch OFF (auto stop).
 2. Disconnect wiper motor electrical connector.
 3. Install wiper motor to wiper frame assembly, and install wiper frame assembly.
 4. Connect wiper motor electrical connector.
 5. Install cowl top. Refer to [EXT-17, "Removal and Installation"](#).

FRONT WIPER AND WASHER SYSTEM

< ON-VEHICLE REPAIR >

WASHER HOSE LAYOUT



1. Rear washer nozzle

2. Washer nozzles

3. Washer fluid reservoir

WASHER NOZZLES

Removal

1. Remove the cowl top. Refer to [EXT-17, "Removal and Installation"](#).
2. Remove washer nozzles.

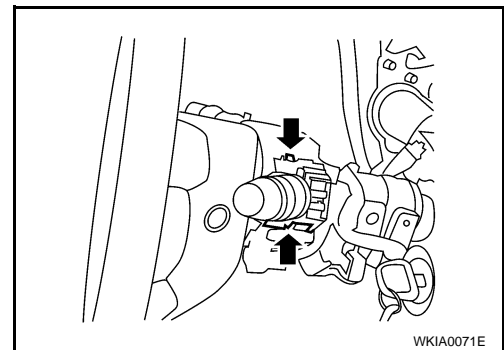
Installation

Installation is in the reverse order of removal.

WIPER AND WASHER SWITCH

Removal

1. Remove instrument lower cover LH. Refer to [IP-10, "Exploded View"](#).
2. Remove steering column cover lower and steering column cover upper.
3. Disconnect wiper and washer switch connector.
4. Pinch tabs at wiper and washer switch base and slide switch away from steering column.



Installation

Installation is in the reverse order of removal.

WASHER FLUID RESERVOIR

Removal

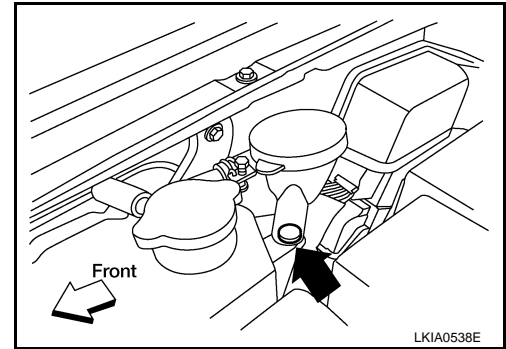
1. Remove passenger front fender protector. Refer to [EXT-20, "Removal and Installation of Front Fender Protector"](#).

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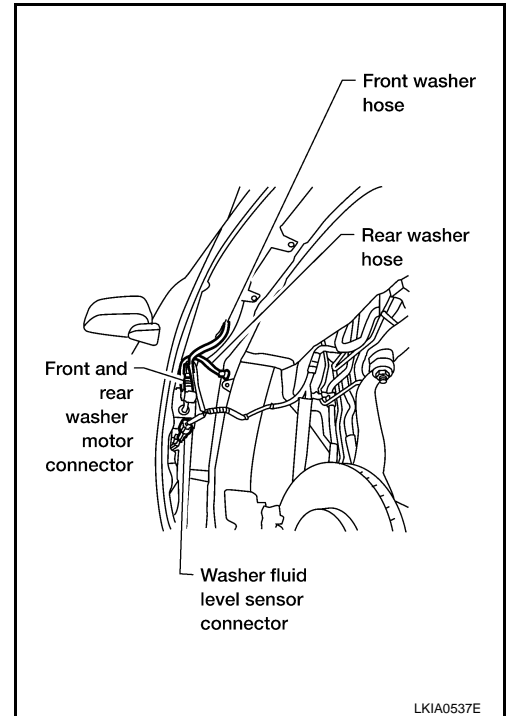
FRONT WIPER AND WASHER SYSTEM

< ON-VEHICLE REPAIR >

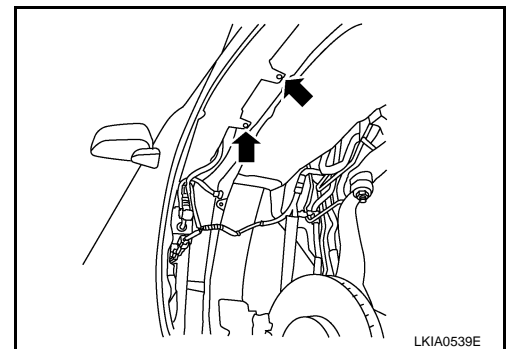
2. Remove clip, then remove washer fluid reservoir filler neck from washer fluid reservoir.



3. Disconnect front and rear washer hoses.
4. Disconnect front and rear washer motor connector.
5. Disconnect washer fluid level sensor connector.



6. Remove washer fluid reservoir screws and remove washer fluid reservoir.



Installation

Installation is in the reverse order of removal.

CAUTION:

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

WASHER MOTOR

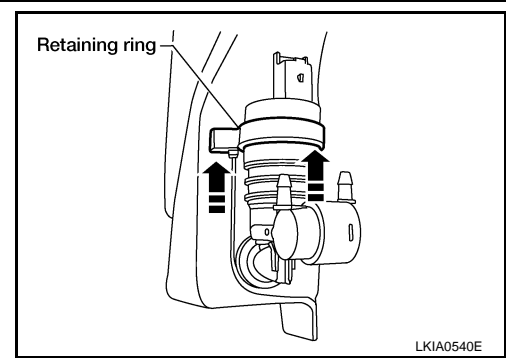
Removal

1. Remove RH front fender protector. Refer to [EXT-20. "Removal and Installation of Front Fender Protector"](#).
2. Disconnect the front and rear washer hoses.
3. Disconnect the washer motor connectors.

FRONT WIPER AND WASHER SYSTEM

< ON-VEHICLE REPAIR >

- Slide retaining ring upward to release front and rear washer motor.



- Remove front and rear washer motor from washer fluid reservoir.

Installation

Installation is in the reverse order of removal.

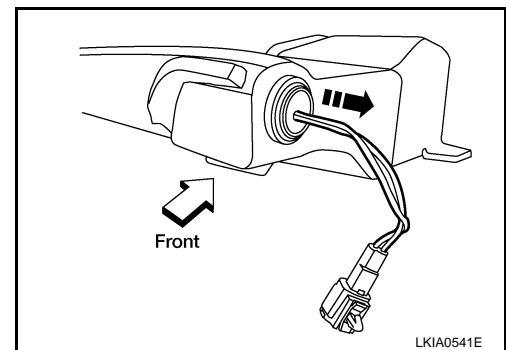
CAUTION:

When installing front and rear washer motor, there should be no packing twists, etc.

WASHER FLUID LEVEL SENSOR

Removal

- Remove washer fluid reservoir. Refer to "WASHER FLUID RESERVOIR".
- Lift level sensor out of washer fluid reservoir in the direction of the arrow as shown.



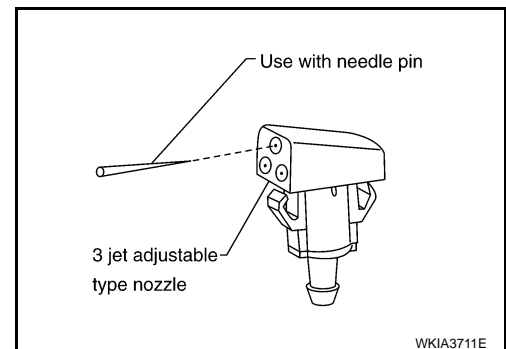
Installation

Installation is in the reverse order of removal.

Washer Nozzle Adjustment

INFOID:000000001691135

- This vehicle is equipped with adjustable washer nozzles.
- If not satisfied with washer fluid spray coverage, confirm that the washer nozzle is installed correctly.
- If the washer nozzle is installed correctly, and the washer fluid spray coverage is not satisfactory, re-aim washer nozzle.



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REAR WIPER AND WASHER SYSTEM

< ON-VEHICLE REPAIR >

REAR WIPER AND WASHER SYSTEM

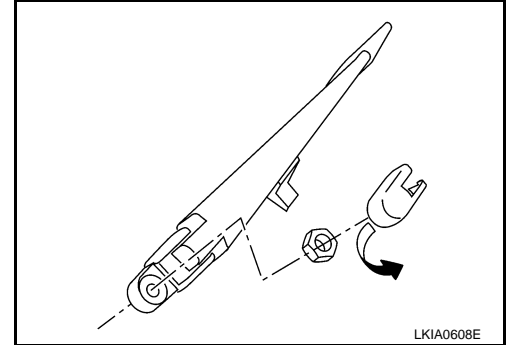
Removal and Installation

INFOID:000000001691148

REAR WIPER ARM

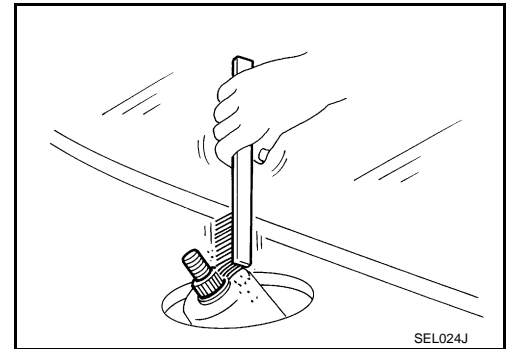
Removal

1. Remove wiper arm cover, and remove rear wiper arm nut.
2. Remove the wiper arm.
3. Remove wiper blade.



Installation

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

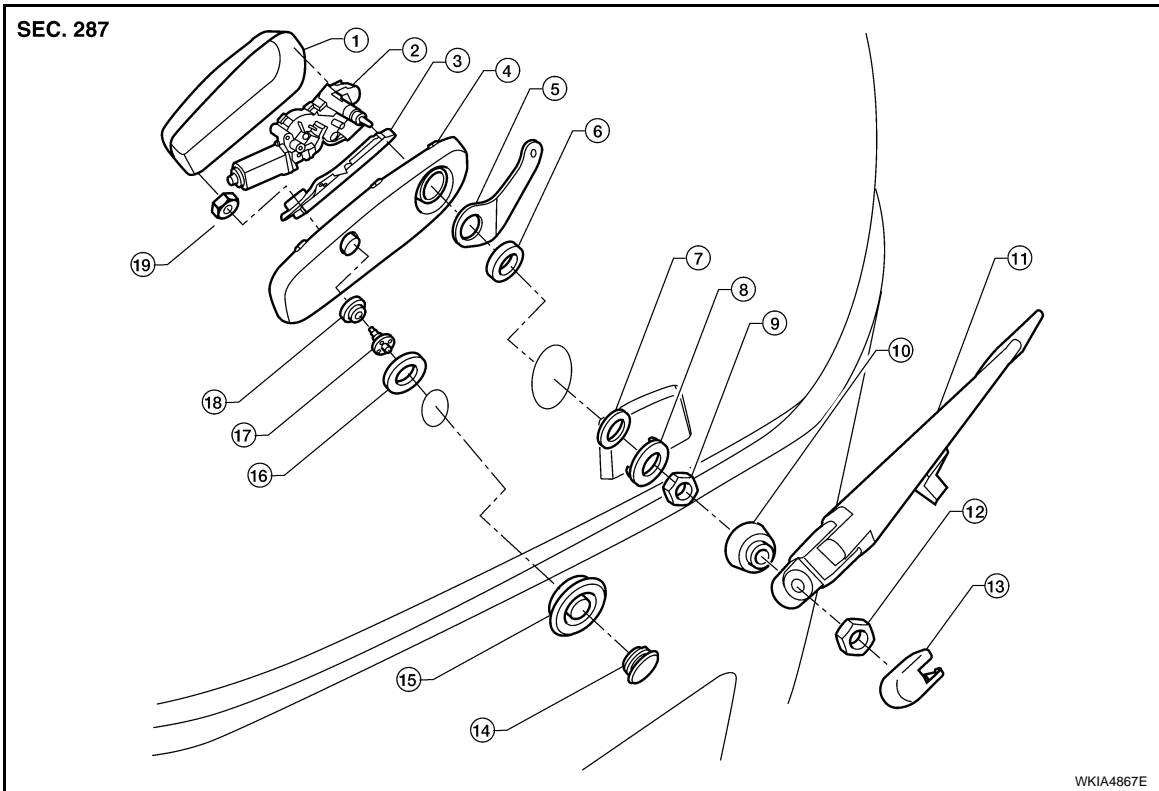


3. Install wiper blade.
4. Install wiper arm so that the arm rests in the stopper and tighten rear wiper arm nut.
5. Install wiper arm cover.

REAR WIPER MOTOR

REAR WIPER AND WASHER SYSTEM

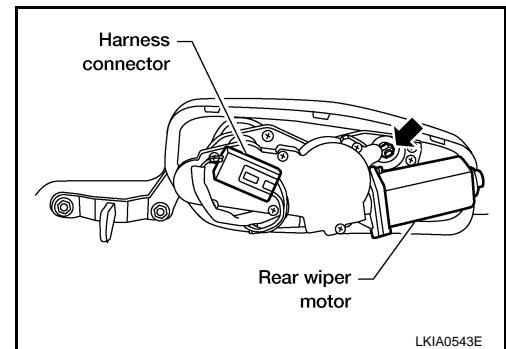
< ON-VEHICLE REPAIR >



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|--------------------------------|------------------------------|-------------------------|
| 1. Rear wiper motor cover | 2. Rear wiper motor | 3. Plate |
| 4. Rear wiper motor cover base | 5. Bracket | 6. Grommet |
| 7. Spacer | 8. Washer | 9. Rear wiper motor nut |
| 10. Pivot cap | 11. Rear wiper arm and blade | 12. Wiper arm nut |
| 13. Wiper arm cover | 14. Cap nut | 15. Gasket |
| 16. Gasket | 17. Stud | 18. Grommet |
| 19. Nut | | |

Removal

1. Remove wiper arm. Refer to [WW-54, "Removal and Installation"](#).
2. Remove pivot cap.
3. Remove rear wiper motor nut.
4. Remove rear wiper motor cover.
5. Disconnect rear wiper motor connector.
6. Remove nut and remove rear wiper motor.



7. Remove rear wiper motor cover base.
8. Remove bracket.

Installation

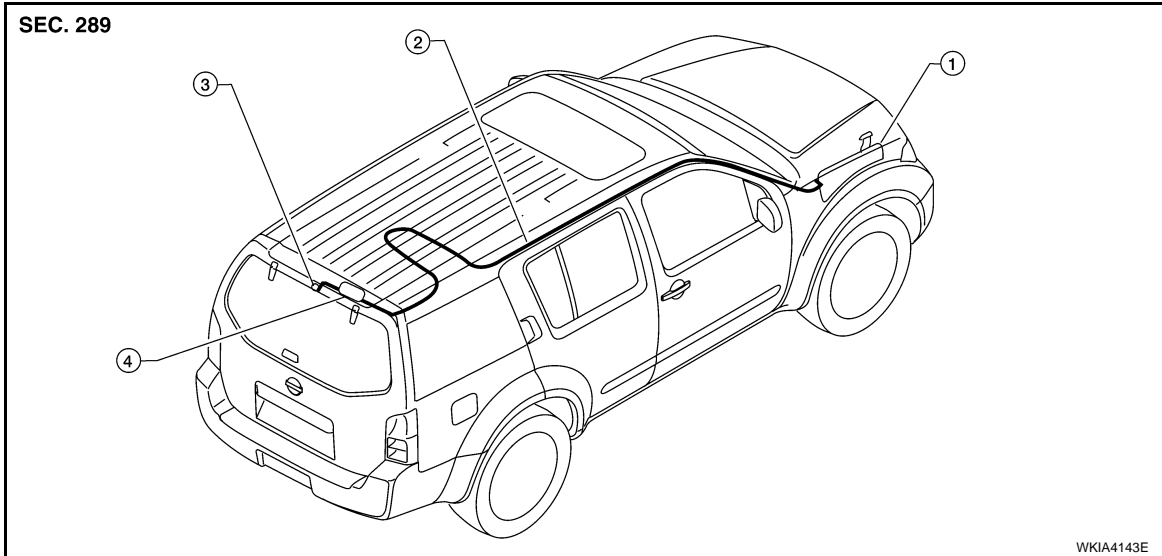
CAUTION:

- Do not drop the wiper motor or cause it to contact other parts. Installation is in the reverse order of removal.

REAR WIPER AND WASHER SYSTEM

< ON-VEHICLE REPAIR >

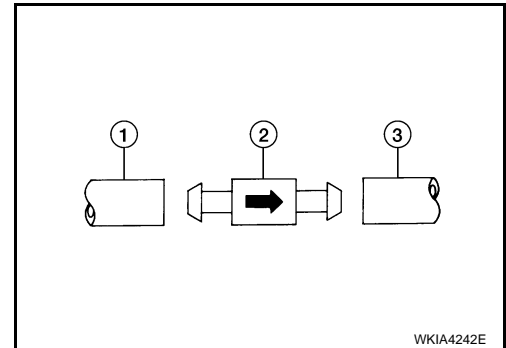
REAR WASHER TUBE LAYOUT



- 1 Washer fluid reservoir 2 Washer fluid tube to rear door 3 Rear washer nozzle
4 Check valve

NOTE:

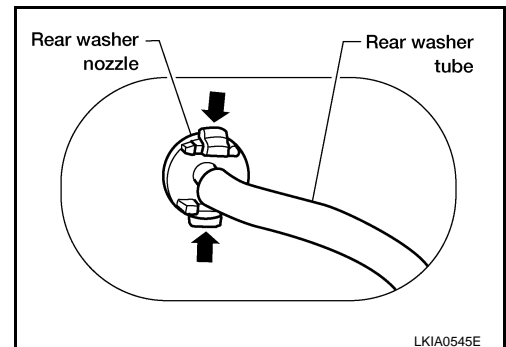
Connect the check valve (2) to the washer fluid tube (1) so that the directional arrow on the check valve (2) points towards the washer nozzle tube (3).



REAR WASHER NOZZLE

Removal

1. Remove the back door window garnish. Refer to [INT-21, "Removal and Installation"](#).
2. Disconnect rear washer tube from rear washer nozzle.
3. Release retaining clips and remove washer nozzle.



Installation

Installation is in the reverse order of removal.

NOTE:

Inspect rear washer nozzle for proper spray pattern, adjust as necessary. Refer to [WW-57, "Rear Washer Nozzle Adjustment"](#).

WASHER FLUID RESERVOIR

Refer to [WW-49](#).

WIPER AND WASHER SWITCH

REAR WIPER AND WASHER SYSTEM

< ON-VEHICLE REPAIR >

Refer to [EXL-116. "Removal and Installation"](#).

WASHER MOTOR

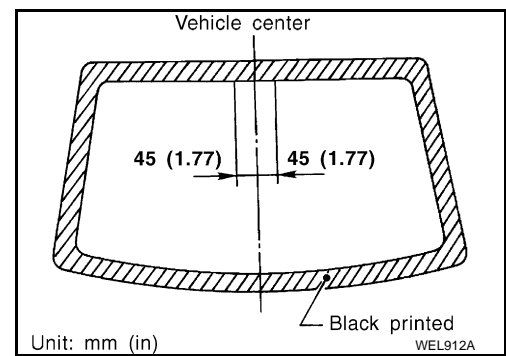
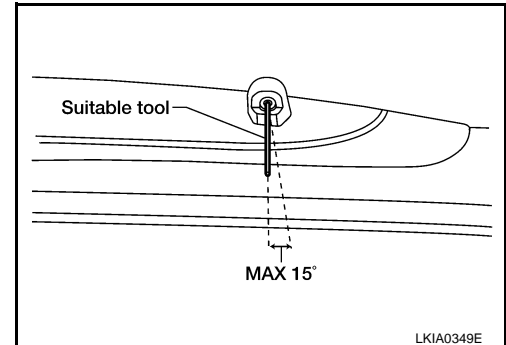
Refer to [WW-49](#).

Rear Washer Nozzle Adjustment

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- Adjust washer nozzle with suitable tool as shown in the figure.

Adjustable range : $\pm 15^\circ$ (In any direction)



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