

SECTION

WW

WIPER & WASHER

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DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000001381621

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-16, "Diagnosis Description"](#).

>> GO TO 3

3. GO TO APPROPRIATE TROUBLE DIAGNOSIS

Go to appropriate trouble diagnosis. Refer to [WW-54, "Symptom Table"](#).

>> GO TO 4

4. REPAIR OR REPLACE

Repair or replace the specific parts.

>> GO TO 5

5. FINAL CHECK

Final check.

Is the inspection result normal?

YES >> Inspection End

NO >> GO TO 3

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WW

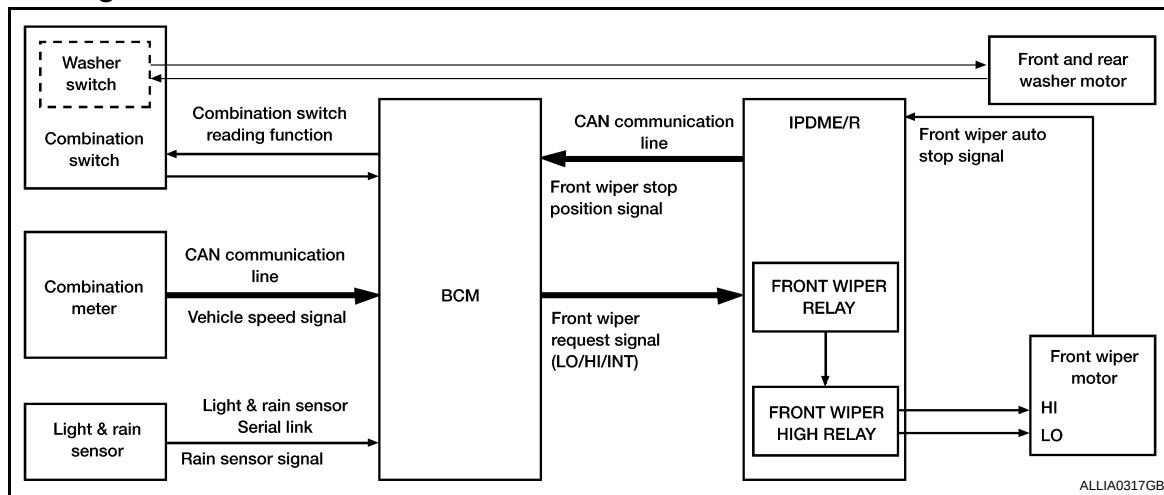
FRONT WIPER AND WASHER SYSTEM

< FUNCTION DIAGNOSIS >

FUNCTION DIAGNOSIS

FRONT WIPER AND WASHER SYSTEM

System Diagram



System Description

INFOID:000000001366593

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

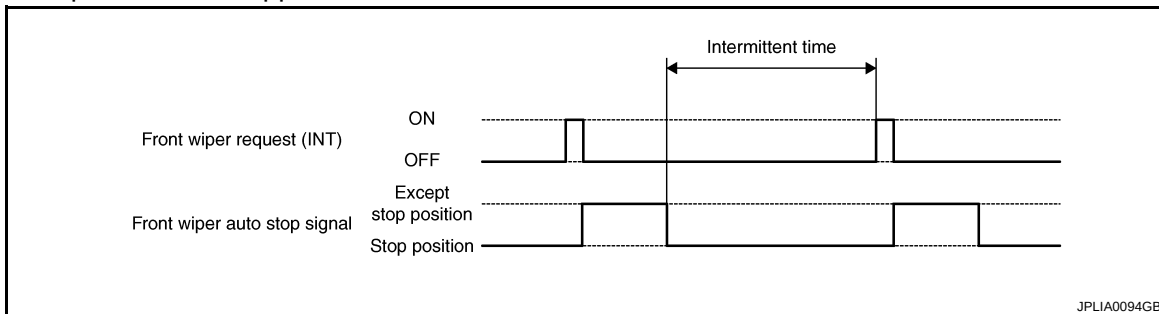
- Ignition switch ON
- Front wiper switch INT

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 OPERATION (IF EQUIPPED)

- BCM receives the wiping speed request signal from the rain sensor with the light and rain sensor serial link.
- BCM judges the auto wiping condition depending on the wiping speed request signal and the rain sensor sensitivity setting under front wiper AUTO operating condition.
- BCM transmits the front wiper request signals (LO or HI) to the IPDM E/R through CAN communication line according to the auto wiping condition.

NOTE:

When the wiper volume is turned down at 1 level with front wiper AUTO operating condition, BCM transmits front wiper request signal (LO) to IPDM E/R with CAN communication.

Front wiper AUTO operating condition

- Ignition switch ON
- Front wiper switch AUTO

Rain sensor sensitivity setting

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

FRONT WIPER AND WASHER SYSTEM

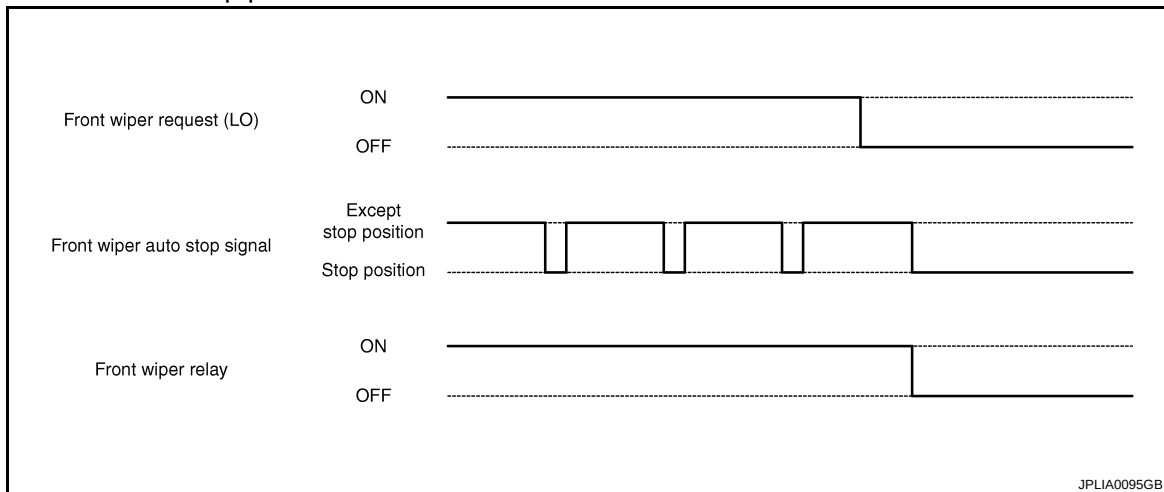
< FUNCTION DIAGNOSIS >

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

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

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).
- 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 WIPER AND WASHER SYSTEM

< FUNCTION DIAGNOSIS >

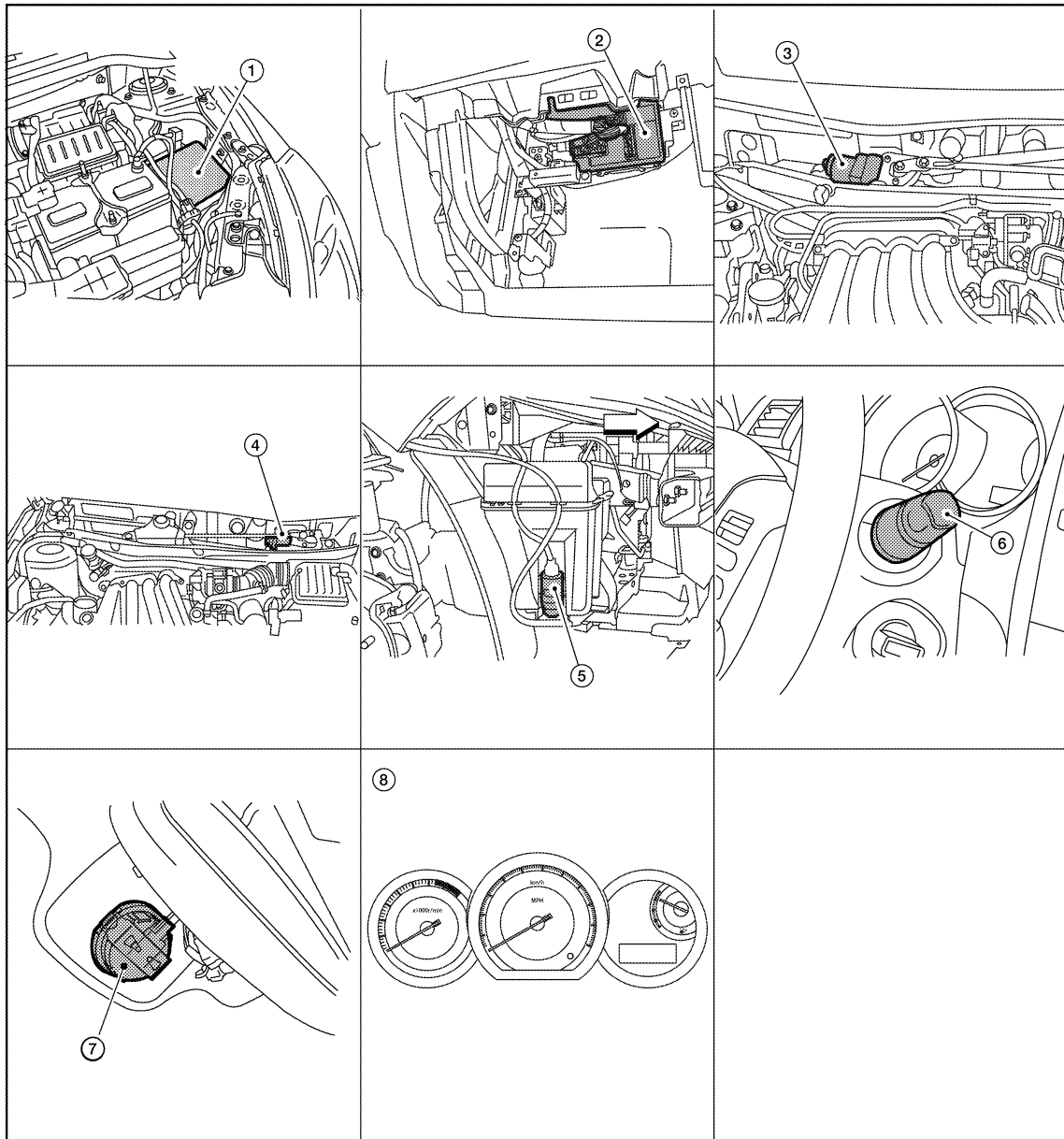
- Front washer switch OFF
- BCM transmits the front wiper request signal (LO) to IPDM E/R with CAN communication so that the front wiper operate once three seconds after front wiper operation linked with washer.
- IPDM E/R turns ON the integrated front wiper relay according to the front wiper request 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-52, "Fail Safe"](#).
- BCM performs fail-safe operation when light and rain sensor (if equipped) or light and rain sensor-related systems are malfunctioning. Refer to [EXL-55, "Description"](#).

Component Parts Location

INFOID:000000001366594



1. IPDM E/R E45, E46, E48

2. BCM M18, M20 (view with glove box removed)

3. Front wiper motor (LHD) E1 (view with cowl top cover removed)

FRONT WIPER AND WASHER SYSTEM

< FUNCTION DIAGNOSIS >

- | | | |
|---|---|---|
| 4. Front wiper motor (RHD) E1 (view with cowl top cover removed) | 5. Front and rear washer motor E2 (view with front bumper fascia removed) | 6. Combination switch (wiper and washer switch) M28 |
| 7. Light and rain sensor R11 (if equipped) (view with finisher removed) | 8. Combination meter M24 | ⇒ Front |

Component Description

INFOID:000000001366595

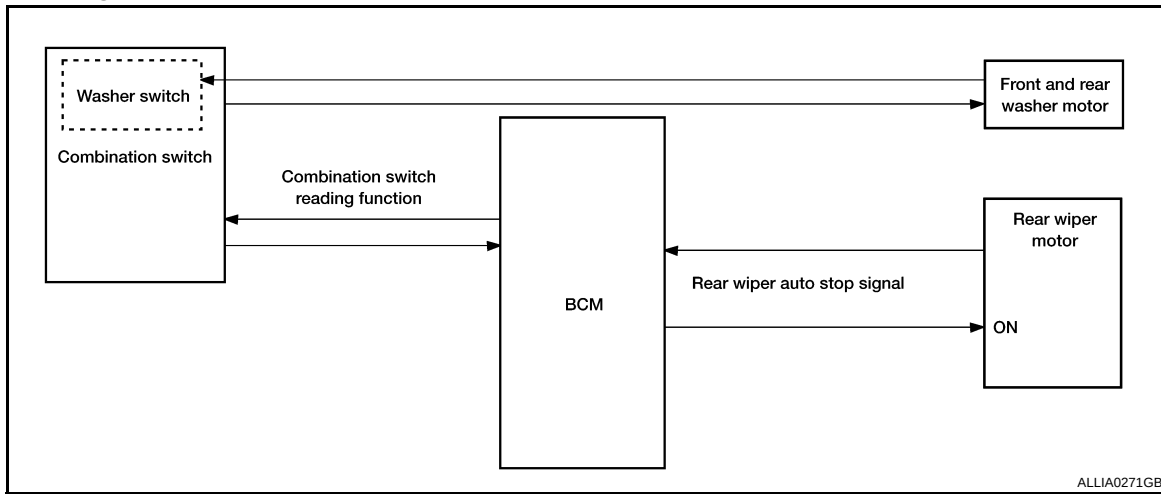
Part	Description
BCM	- Judges each switch status by the combination switch reading function. - Requests (with CAN communication) the front wiper relay and the front wiper high relay ON to IPDM E/R.
IPDM E/R	- Controls the integrated relay according to the request (with CAN communication) from BCM. - 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.
Light and rain sensor (if equipped)	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.

REAR WIPER AND WASHER SYSTEM

< FUNCTION DIAGNOSIS >

REAR WIPER AND WASHER SYSTEM

System Diagram



System Description

INFOID:000000001366597

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

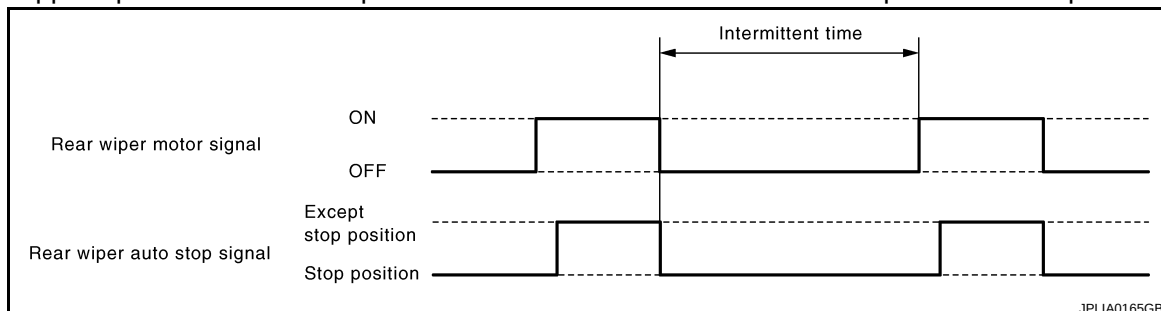
- Ignition switch ON
- Rear wiper switch ON

REAR WIPER INT OPERATION LINKED WITH VEHICLE SPEED

- 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.



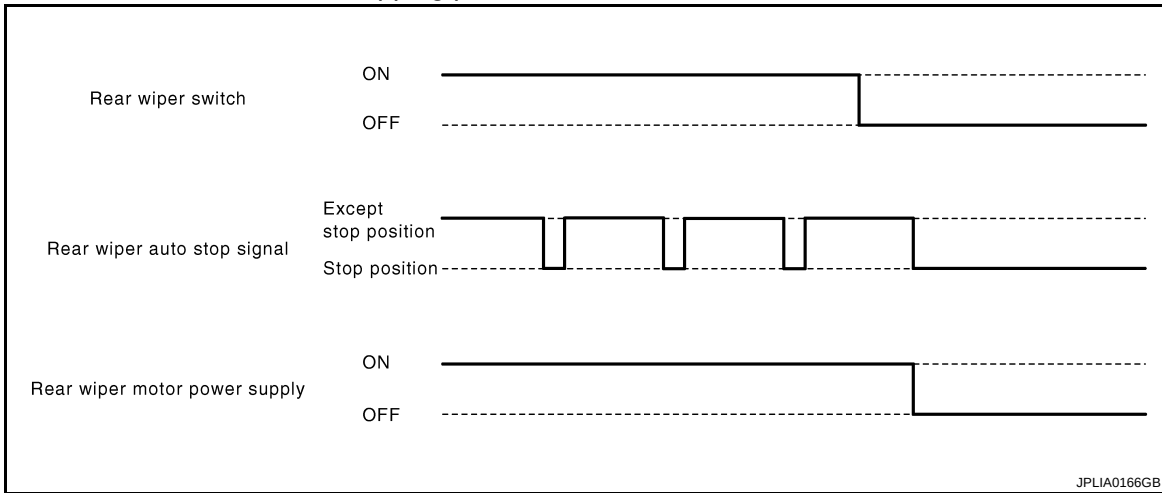
REAR WIPER AUTO STOP OPERATION

- 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)
- Washer pump 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

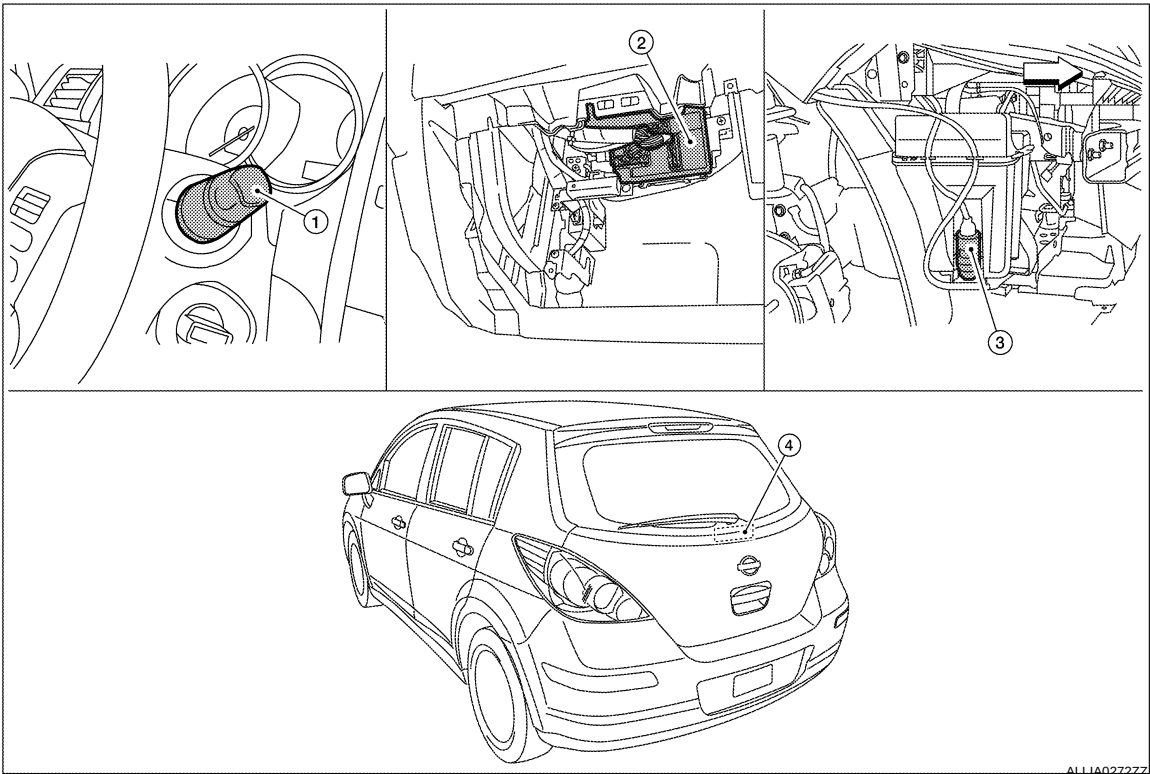
- Ignition switch ON
- Rear wiper switch OFF
- Rear washer switch OFF
- BCM controls the rear wiper so that it operates once time approximately three seconds later after the washer interlocking operation of the rear wiper.

REAR WIPER AND WASHER SYSTEM

< FUNCTION DIAGNOSIS >

Component Parts Location

INFOID:000000001366598



1. Combination switch (wiper and washer switch) M28
2. BCM M18, M20 (view with glove box removed)
3. Front and rear washer motor E2 (view with front bumper fascia removed)
4. Rear wiper motor D404
- ⇒ Front

Component Description

INFOID:000000001366599

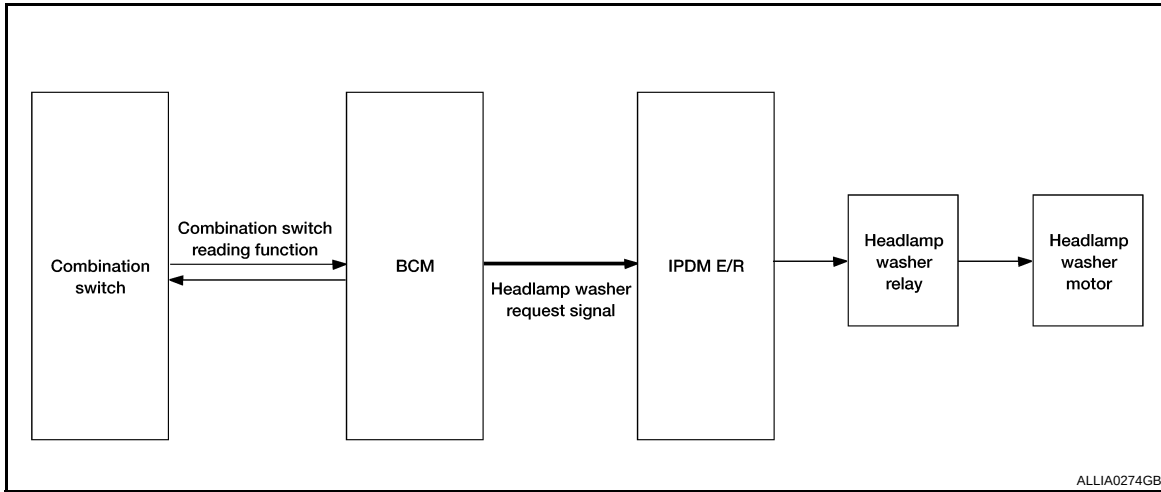
Part	Description
BCM	- Judges each switch status by the combination switch reading function. - Supplies power to the rear wiper motor. - Performs the auto stop control of the rear wiper.
Combination switch (Wiper and washer switch)	Refer to WW-9, "System Diagram" .

HEADLAMP WASHER SYSTEM

< FUNCTION DIAGNOSIS >

HEADLAMP WASHER SYSTEM

System Diagram



System Description

INFOID:00000000136601

OUTLINE

The headlamp washer is controlled by each function of BCM and IPDM E/R.

Control by BCM

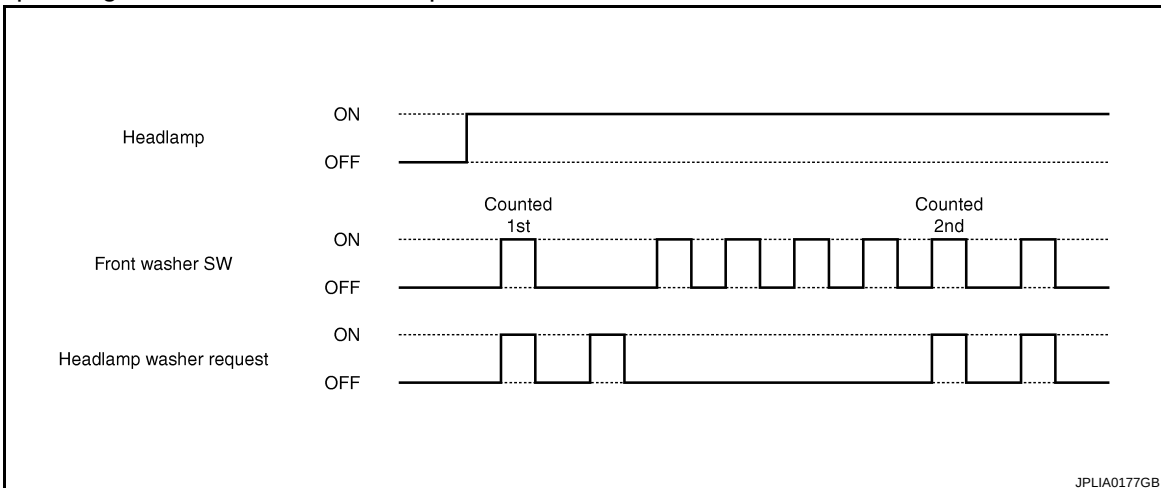
- Combination switch reading function
- Headlamp washer control function

Control by IPDM E/R

- Relay control function

HEADLAMP WASHER BASIC OPERATION

- BCM detects the combination switch condition by the combination switch reading function.
- BCM transmits the headlamp washer request signal to IPDM E/R with CAN communication depending on each operating condition of the headlamp washer.



Operating conditions (The first time)

- Ignition switch ON
- Headlamps ON (PASS excluded)
- Front washer switch ON at first time.

Operating conditions (From the second time)

- Ignition switch ON
- Headlamps ON (PASS excluded)
- Front washer switch ON at fifth time after the first time.

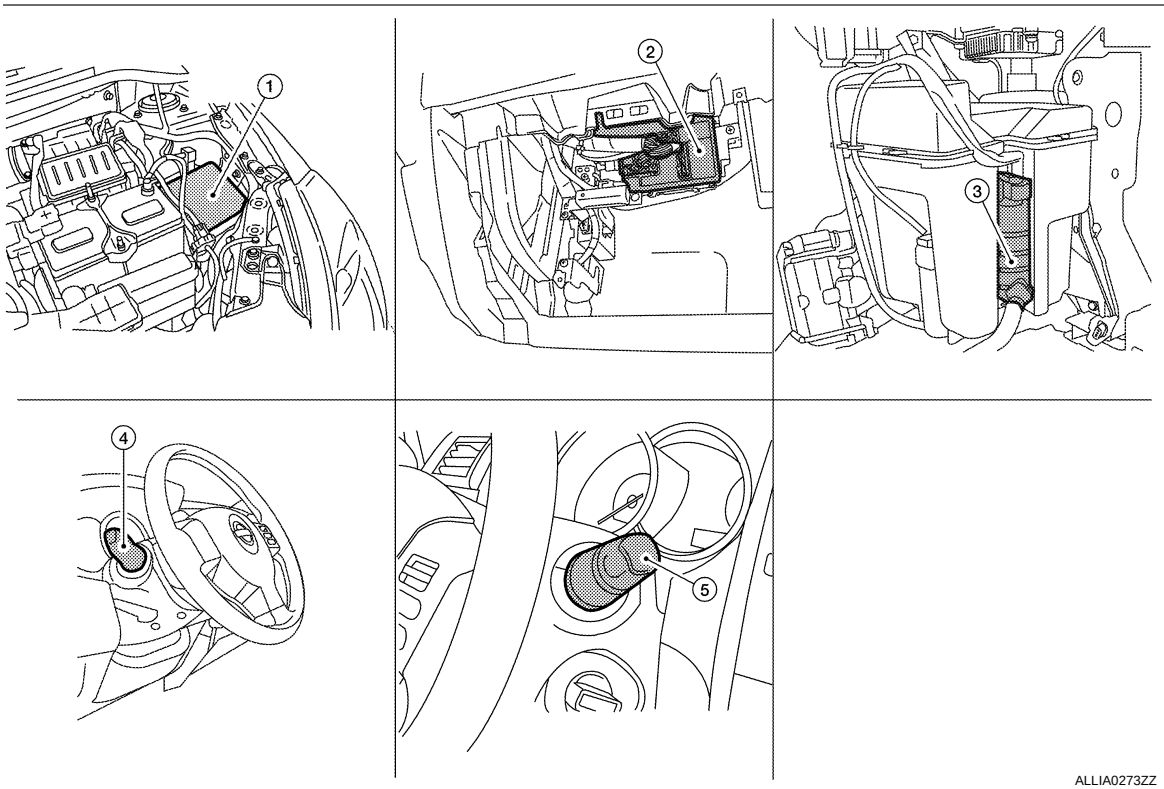
HEADLAMP WASHER SYSTEM

< FUNCTION DIAGNOSIS >

- IPDM E/R turns ON/OFF the headlamp washer relay by receiving the headlamp washer request signal, and controls the headlamp washer twice.

Component Parts Location

INFOID:000000001366602



1. IPDM E/R E45, E46, E48
2. BCM M18, M20 (view with glove box removed)
3. Headlamp washer motor E35 (view with front bumper fascia removed)
4. Combination switch (headlamp switch) M28
5. Combination switch (wiper and washer switch) M28

Component Description

INFOID:000000001366603

Part	Description
BCM	• Judges each switch status by the combination switch reading function. • Requests (with CAN communication) the headlamp washer relay ON to IPDM E/R.
IPDM E/R	Controls the headlamp washer relay according to the request (with CAN communication) from BCM.
Combination switch (Wiper and washer switch)	Refer to WW-12. "System Diagram" .

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DIAGNOSIS SYSTEM (BCM)

< FUNCTION DIAGNOSIS >

DIAGNOSIS SYSTEM (BCM)

COMMON ITEM

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

INFOID:000000001366604

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-54, "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	- 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		×	
Back door switch	DOOR LOCK		×	×

WIPER

WIPER : CONSULT-III Function (BCM - WIPER)

INFOID:000000001366605

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]	
H/L WASH SW [OFF/ON]	NOTE: The item is indicated, but not monitored.
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.
HEADLAMP WASH-ER	ON	Transmits the headlamp washer request signal to IPDM E/R with CAN communication to operate the headlamp washer operation.

DIAGNOSIS SYSTEM (IPDM E/R)

< FUNCTION DIAGNOSIS >

DIAGNOSIS SYSTEM (IPDM E/R)

Diagnosis Description

INFOID:000000001366606

AUTO ACTIVE TEST

Refer to PCS IPDM E/R AUTO ACTIVE TEST.

CONSULT - III Function (IPDM E/R)

INFOID:000000001366607

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
HL WASHER REQ [Off/On]		Displays the status of the headlamp washer request signal received from BCM via CAN communication.
FR WIP REQ [Stop/1LOW/Low/Hi]	×	Displays the status of the front wiper request signal received from BCM via CAN communication.
WIP AUTO STOP [STOP P/ACT P]	×	Displays the status of the front wiper auto stop signal judged by IPDM E/R.
WIP PROT [Off/BLOCK]	×	Displays the status of the front wiper fail-safe operation judged by IPDM E/R.
IGN RLY [Off/On]	×	Displays the status of the ignition relay judged by IPDM E/R.
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.
HEAD LAMP WASHER	On	Operates the headlamp washer relay for 1 second.
EXTERNAL LAMPS	Off	OFF
	TAIL	Operates the tail lamp relay.
	Lo	Operates the headlamp low relay.
	Hi	Operates the headlamp low relay and ON/OFF the headlamp high relay at 1 second intervals.
	Fog	Operates the front fog lamp relay.

WIPER AND WASHER FUSE, FUSIBLE LINK

< COMPONENT DIAGNOSIS >

COMPONENT DIAGNOSIS

WIPER AND WASHER FUSE, FUSIBLE LINK

Description

INFOID:000000001366608

Fuse, fusible link list

Unit	Location	Fuse No.	Capacity
Front wiper motor	IPDM E/R	39	30 A
Front and rear washer motor	Fuse block (J/B)	4	15 A
Headlamp washer motor	Fuse and fusible link box	L	30 A

Diagnosis Procedure

INFOID:000000001366609

1. CHECK FUSES AND FUSIBLE LINK

Check that the following fuses and fusible link 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)	4	15 A
Headlamp washer motor	Fuse and fusible link box	L	30 A

Is the fuse or fusible link blown?

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

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WW

FRONT WIPER MOTOR LO CIRCUIT

< COMPONENT DIAGNOSIS >

FRONT WIPER MOTOR LO CIRCUIT

Component Function Check

INFOID:000000001366610

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-18, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000001366611

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.

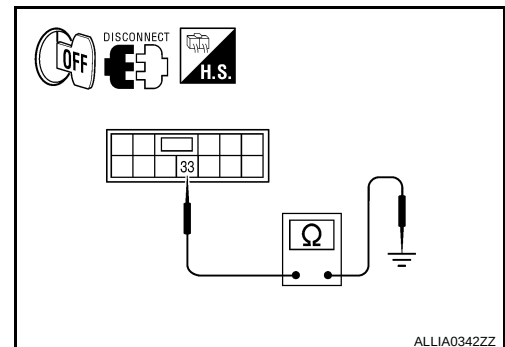
IPDM E/R		Ground	Continuity
Connector	Terminal		
E45	33		No

Does continuity exist?

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

3. CHECK FRONT WIPER MOTOR (LO) OUTPUT VOLTAGE

CONSULT-III ACTIVE TEST

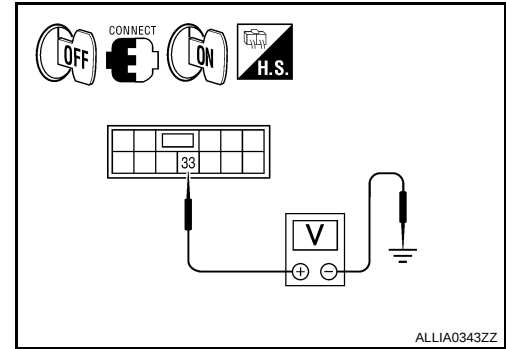


FRONT WIPER MOTOR LO CIRCUIT

< 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		
E45	33	LO	Battery voltage
		OFF	0V



Is the measurement value normal?

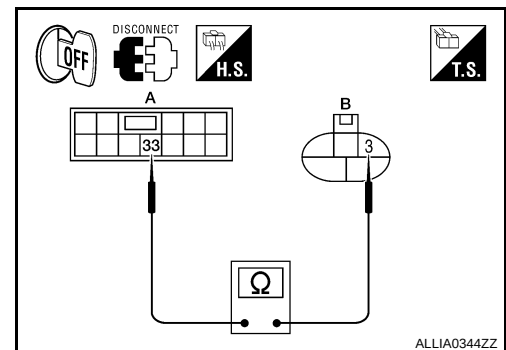
YES >> GO TO 4

NO >> Replace IPDM E/R. Refer to xxx.

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	
E45 (A)	10	E1 (B)	3	Yes



Does continuity exist?

YES >> Replace front wiper motor. Refer to [WW-73, "Removal and Installation"](#).

NO >> Repair or replace harness.

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WW

FRONT WIPER MOTOR HI CIRCUIT

< COMPONENT DIAGNOSIS >

FRONT WIPER MOTOR HI CIRCUIT

Component Function Check

INFOID:000000001366612

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-20, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000001366613

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.

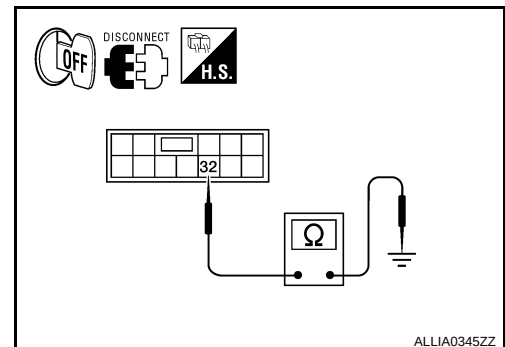
IPDM E/R		Ground	Continuity
Connector	Terminal		
E45	32		No

Does continuity exist?

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

3. CHECK FRONT WIPER MOTOR (HI) OUTPUT VOLTAGE

CONSULT-III ACTIVE TEST

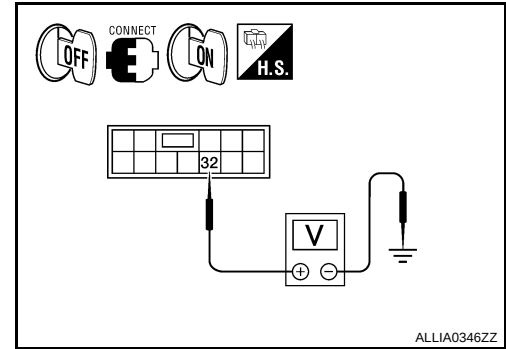


FRONT WIPER MOTOR HI CIRCUIT

< 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 WIP-ER	
Connector	Terminal		
E45	32	HI	Battery voltage
		OFF	0 V



Is the measurement value normal?

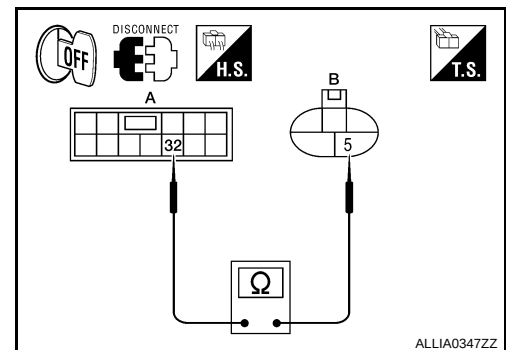
YES >> GO TO 4

NO >> Replace IPDM E/R. Refer to xxx.

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	
E45 (A)	32	E1 (B)	5	Yes



Does continuity exist?

YES >> Replace front wiper motor. Refer to [WW-73, "Removal and Installation"](#).

NO >> Repair or replace harness.

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WW

FRONT WIPER AUTO STOP SIGNAL CIRCUIT

< COMPONENT DIAGNOSIS >

FRONT WIPER AUTO STOP SIGNAL CIRCUIT

Component Function Check

INFOID:000000001366614

1. CHECK FRONT WIPER (AUTO STOP) SIGNAL CHECK

CONSULT-III DATA MONITOR

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

Monitor item	Condition		Monitor status
FR WIPER STOP	Front wiper motor	Stop position	STOP P
		Except stop position	ACT P

Is the status of item normal?

- YES >> Front wiper auto stop signal circuit is normal.
NO >> Refer to [WW-22, "Diagnosis Procedure"](#).

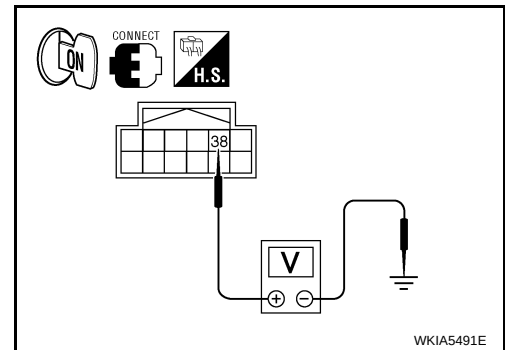
Diagnosis Procedure

INFOID:000000001366615

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			
Connector	Terminal	Ground	
E46	38		
			Battery voltage



Is the measurement value normal?

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

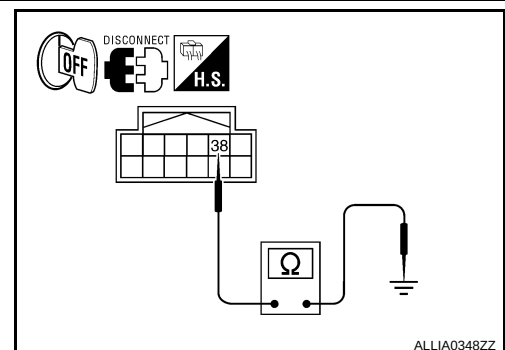
2. CHECK FRONT WIPER MOTOR (AUTO STOP) SHORT CIRCUIT

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		
E46	38		No

Does continuity exist?

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



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

FRONT WIPER AUTO STOP SIGNAL CIRCUIT

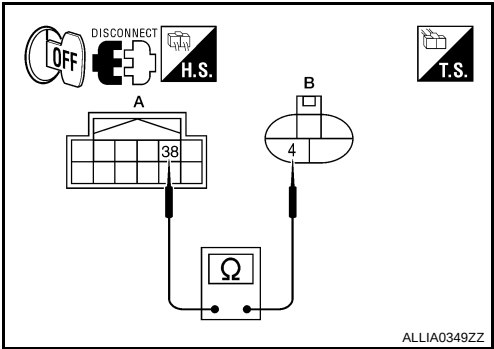
< COMPONENT DIAGNOSIS >

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	
E46 (A)	38	E1 (B)	4	Yes

Does continuity exist?

- YES >> Replace front wiper motor. Refer to [WW-73. "Removal and Installation"](#).
- NO >> Repair or replace harness.



WW

FRONT WIPER MOTOR GROUND CIRCUIT

< COMPONENT DIAGNOSIS >

FRONT WIPER MOTOR GROUND CIRCUIT

Diagnosis Procedure

INFOID:000000001366616

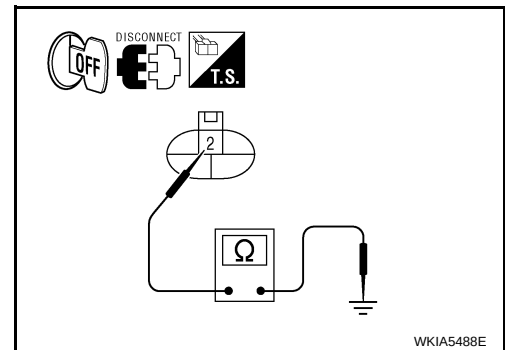
1. CHECK FRONT WIPER MOTOR (GROUND) OPEN CIRCUIT

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		
E1	2		Yes

Does continuity exist?

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



WASHER SWITCH

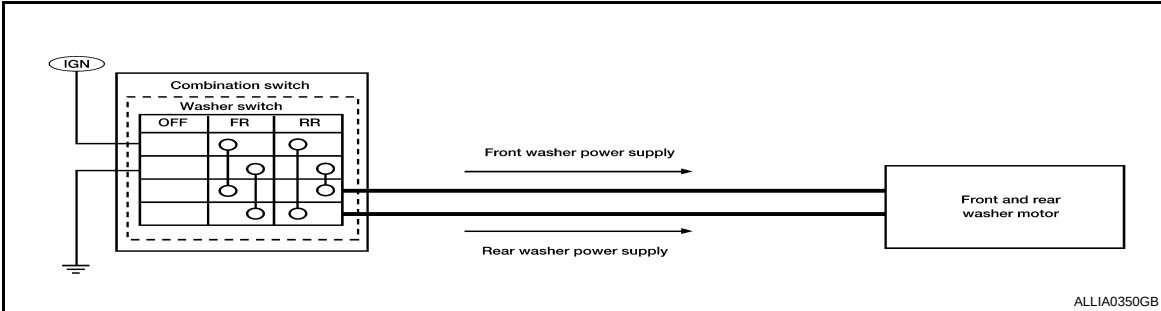
< COMPONENT DIAGNOSIS >

WASHER SWITCH

Description

INFOID:000000001366617

- 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:000000001366618

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

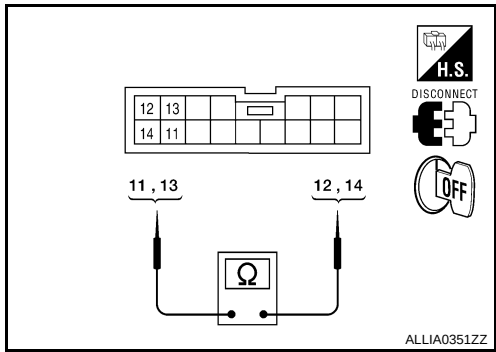
B: Terminal 12

C: Terminal 13

D: Terminal 11

	OFF	FR	RR
A			
B			
C			
D			

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

Does continuity exist?

YES >> Wiper and washer switch is normal.

NO >> Replace combination switch. Refer to [EXL-101, "Removal and Installation"](#).

2. CHECK REAR WASHER SWITCH

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

A: Terminal 14

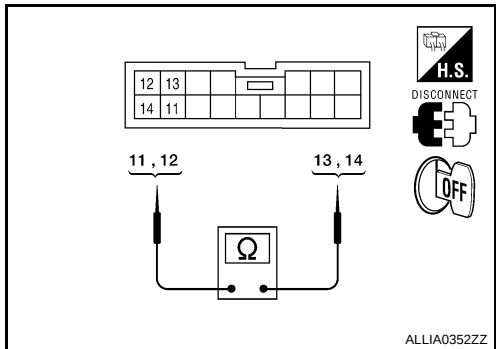
B: Terminal 12

C: Terminal 13

D: Terminal 11

	OFF	FR	RR
A			
B			
C			
D			

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WASHER SWITCH

< COMPONENT DIAGNOSIS >

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 [EXL-101. "Removal and Installation"](#).

LIGHT & RAIN SENSOR

< COMPONENT DIAGNOSIS >

LIGHT & RAIN SENSOR

Description

INFOID:000000001366619

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.

Diagnosis Procedure

INFOID:000000001366620

Refer to [EXL-55. "Component Function Check"](#).

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REAR WIPER MOTOR CIRCUIT

< COMPONENT DIAGNOSIS >

REAR WIPER MOTOR CIRCUIT

Component Function Check

INFOID:000000001366621

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-28, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000001366622

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	
Connector	Terminal		
M20	71	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

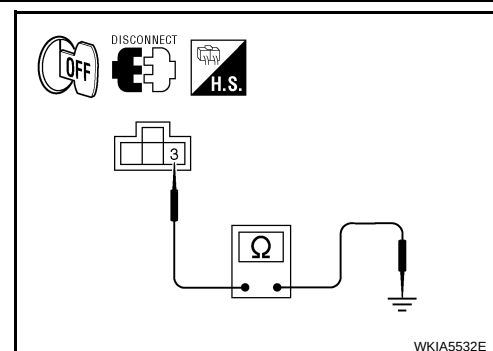
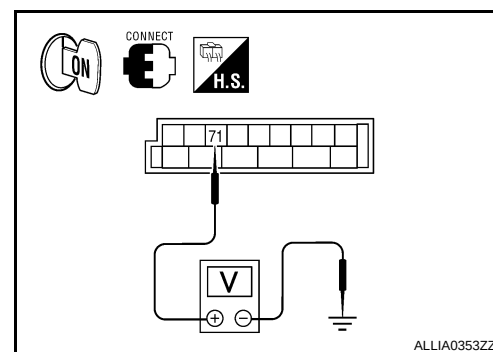
1. Turn the ignition switch OFF.
2. Check continuity between rear wiper motor harness connector and ground.

Rear wiper motor		Ground	Continuity
Connector	Terminal		
D404	3		Yes

Does continuity exist?

- YES >> Replace rear wiper motor. Refer to [WW-77, "Removal and Installation"](#).
NO >> Repair or replace harness.

3. CHECK REAR WIPER MOTOR OPEN CIRCUIT



REAR WIPER MOTOR CIRCUIT

< COMPONENT DIAGNOSIS >

1. Turn the ignition switch OFF.
2. Disconnect BCM.
3. Check continuity between rear wiper motor harness connector (A) and BCM harness connector (B).

Rear wiper motor		BCM		Continuity
Connector	Terminal	Connector	Terminal	
D404 (A)	1	M20 (B)	71	Yes

Does continuity exist?

YES >> GO TO 4

NO >> Repair or replace harness.

4. CHECK REAR WIPER MOTOR SHORT CIRCUIT

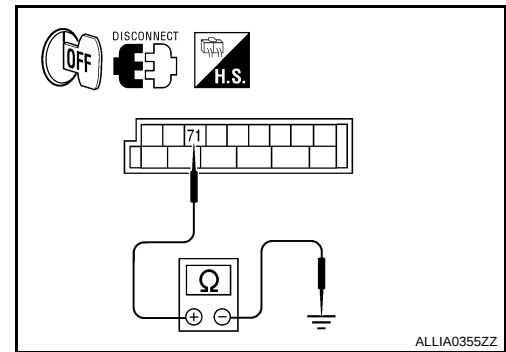
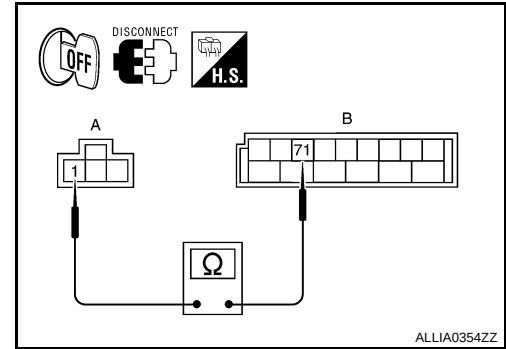
Check continuity between BCM harness connector and ground.

BCM		Ground	Continuity
Connector	Terminal		
M20	71		No

Does continuity exist?

YES >> Repair or replace harness.

NO >> Replace BCM. Refer to [BCS-57, "Removal and Installation of BCM"](#).



REAR WIPER AUTO STOP SIGNAL CIRCUIT

< COMPONENT DIAGNOSIS >

REAR WIPER AUTO STOP SIGNAL CIRCUIT

Component Function Check

INFOID:000000001366623

1. CHECK REAR WIPER (AUTO STOP) OPERATION

CONSULT-III DATA MONITOR

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

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

Is the status of item normal?

- YES >> Rear wiper auto stop signal circuit is normal.
NO >> Refer to [WW-30, "Diagnosis Procedure"](#).

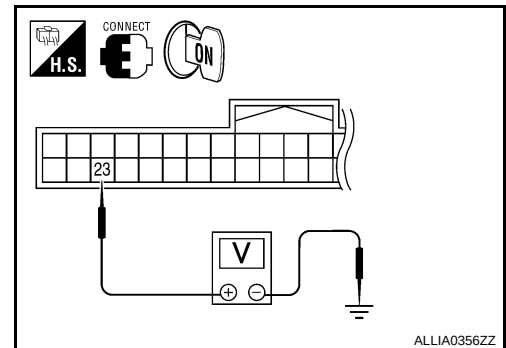
Diagnosis Procedure

INFOID:000000001366624

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

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

Terminals		Voltage (Approx.)
(+)	(-)	
BCM		Ground
Connector	Terminal	
M18	23	
		Battery voltage



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Is the measurement value normal?

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

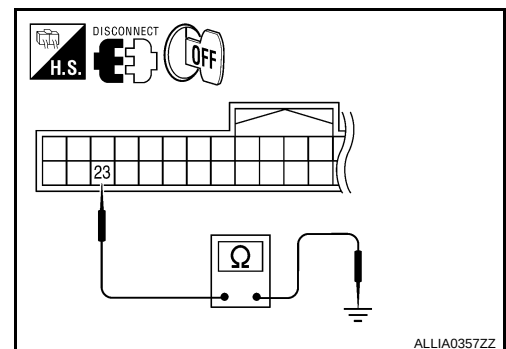
2. CHECK REAR WIPER MOTOR (AUTO STOP) SHORT CIRCUIT

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

BCM		Ground	Continuity
Connector	Terminal		
M18	23		No

Does continuity exist?

- YES >> Repair or replace harness.
NO >> Replace BCM. Refer to [BCS-57, "Removal and Installation of BCM"](#).



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

REAR WIPER AUTO STOP SIGNAL CIRCUIT

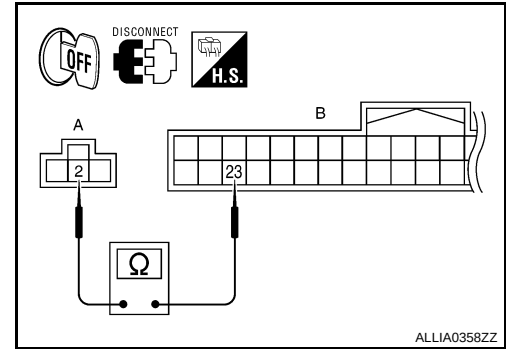
< COMPONENT DIAGNOSIS >

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

Rear wiper motor		BCM		Continuity
Connector	Terminal	Connector	Terminal	
D404 (A)	2	M18 (B)	23	Yes

Does continuity exist?

- YES >> Replace rear wiper motor. Refer to [WW-77. "Removal and Installation"](#).
- NO >> Repair or replace harness.



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HEADLAMP WASHER RELAY

< COMPONENT DIAGNOSIS >

HEADLAMP WASHER RELAY

Component Inspection

INFOID:000000001366625

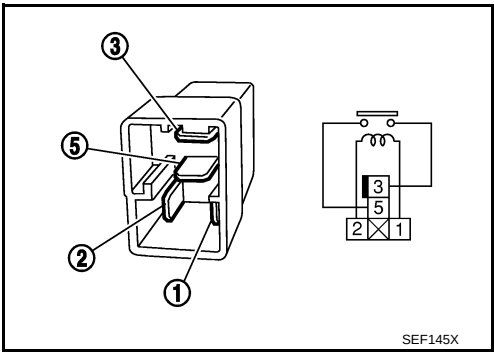
1. CHECK HEADLAMP WASHER RELAY

- 1. Turn the ignition switch OFF.
- 2. Disconnect headlamp washer relay.
- 3. Apply battery voltage to headlamp washer relay between terminals 1 and 2.
- 4. Check continuity of headlamp washer relay.

Headlamp washer relay		Condition	Continuity
Terminal		Voltage	
3	5	Apply	Yes
		Not Apply	No

Does continuity exist?

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



HEADLAMP WASHER CIRCUIT

< COMPONENT DIAGNOSIS >

HEADLAMP WASHER CIRCUIT

Component Function Check

INFOID:000000001366626

1. CHECK HEADLAMP WASHER OPERATION

CONSULT-III ACTIVE TEST

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

ON : Headlamp washer ON operation

OFF : Stop the headlamp washer.

Is the headlamp washer operation normal?

- YES >> Headlamp washer circuit is normal.
NO >> Refer to [WW-33, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000001366627

1. CHECK HEADLAMP WASHER FUSIBLE LINK

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

Unit	Location	Fusible Link No.	Capacity
Headlamp washer motor	Fuse and fusible link box	L	30 A

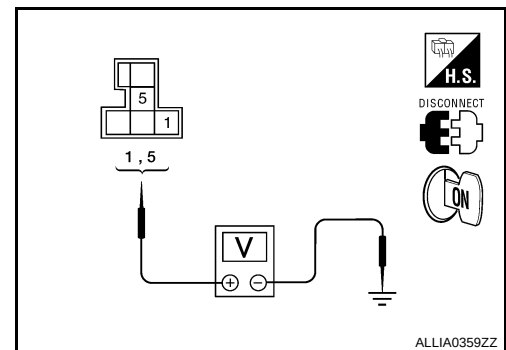
Is the fusible link blown?

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

2. CHECK HEADLAMP WASHER RELAY POWER SUPPLY

1. Remove headlamp washer relay.
2. Turn the ignition switch ON.
3. Check voltage between headlamp washer relay harness connector and ground.

Terminals		Voltage (Approx.)
(+)	(-)	
Headlamp washer relay		Ground
Connector	Terminal	
E34	1	
	5	Battery voltage



Is the measurement value normal?

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

3. CHECK HEADLAMP WASHER RELAY

1. Check headlamp washer relay. Refer to [WW-32, "Component Inspection"](#).

Is the headlamp washer relay normal?

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

4. CHECK HEADLAMP WASHER RELAY SIGNAL OUTPUT

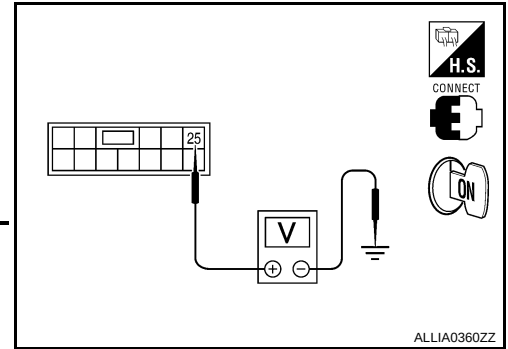
CONSULT-III ACTIVE TEST

HEADLAMP WASHER CIRCUIT

< COMPONENT DIAGNOSIS >

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

Terminals		Test item	Voltage (Approx.)
(+)	(-)		
IPDM E/R		HEADLAMP WASHER	
Connector	Terminal		
E45	25		
		ON	0V
		OFF	Battery voltage



Is the measurement value normal?

YES >> GO TO 7

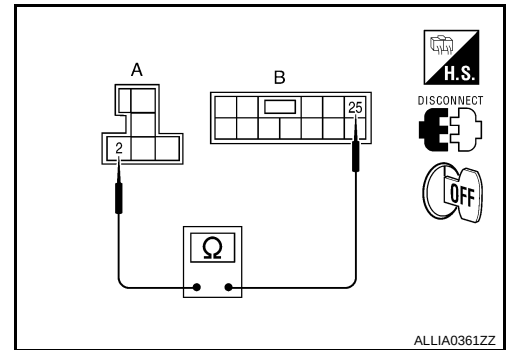
Fixed at 0V >> GO TO 5

Fixed at battery voltage >> Replace IPDM E/R. Refer to xxx.

5. CHECK HEADLAMP WASHER RELAY CONTROL SIGNAL OPEN CIRCUIT

1. Remove headlamp washer relay.
2. Disconnect IPDM E/R.
3. Check continuity between headlamp washer relay harness connector (A) and IPDM E/R harness connector (B).

Headlamp washer relay		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
E34 (A)	2	E45 (B)	25	Yes



Does continuity exist?

YES >> GO TO 6

NO >> Repair or replace harness.

6. CHECK HEADLAMP WASHER RELAY CONTROL SIGNAL SHORT CIRCUIT

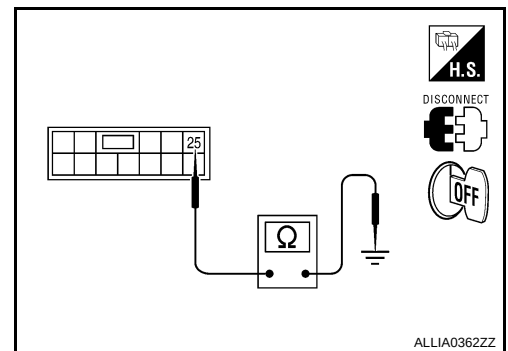
Check continuity between IPDM E/R harness connector and ground.

IPDM E/R		Ground	Continuity
Connector	Terminal		
E45	25		No

Does continuity exist?

YES >> Repair or replace harness.

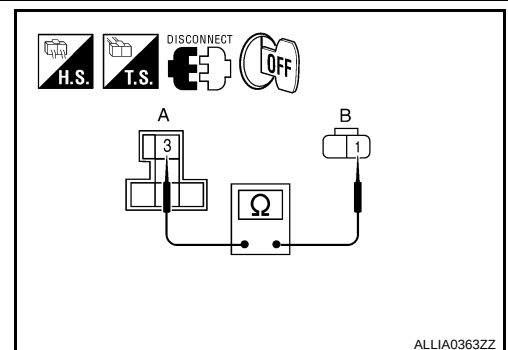
NO >> Replace IPDM E/R. Refer to xxx.



7. CHECK HEADLAMP WASHER PUMP OPEN CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect headlamp washer pump.
3. Remove headlamp washer relay.
4. Check continuity between headlamp washer relay harness connector and headlamp washer pump harness connector.

Headlamp washer relay		Headlamp washer pump		Continuity
Connector	Terminal	Connector	Terminal	
E34 (A)	3	E35 (B)	1	Yes



HEADLAMP WASHER CIRCUIT

< COMPONENT DIAGNOSIS >

Does continuity exist?

YES >> GO TO 8

NO >> Repair or replace harness.

8. CHECK HEADLAMP WASHER PUMP SHORT CIRCUIT

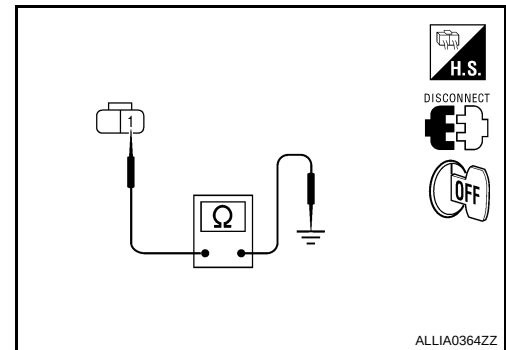
Check continuity between headlamp washer pump harness connector and ground.

Headlamp washer pump		Ground	Continuity
Connector	Terminal		
E35	1		No

Does continuity exist?

YES >> Repair or replace harness.

NO >> GO TO 9



9. CHECK HEADLAMP WASHER PUMP (GROUND) OPEN CIRCUIT

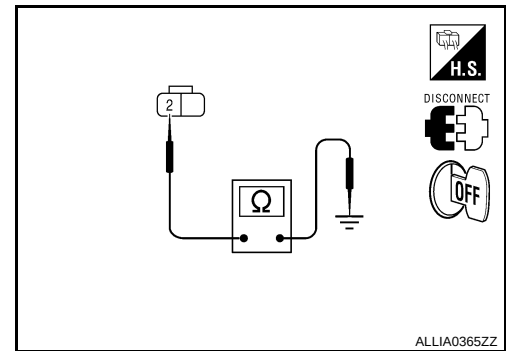
Check continuity between headlamp washer pump harness connector and ground.

Headlamp washer pump		Ground	Continuity
Connector	Terminal		
E35	2		Yes

Does continuity exist?

YES >> Replace the headlamp washer pump. Refer to [WW-66. "Removal and Installation"](#).

NO >> Repair or replace harness.



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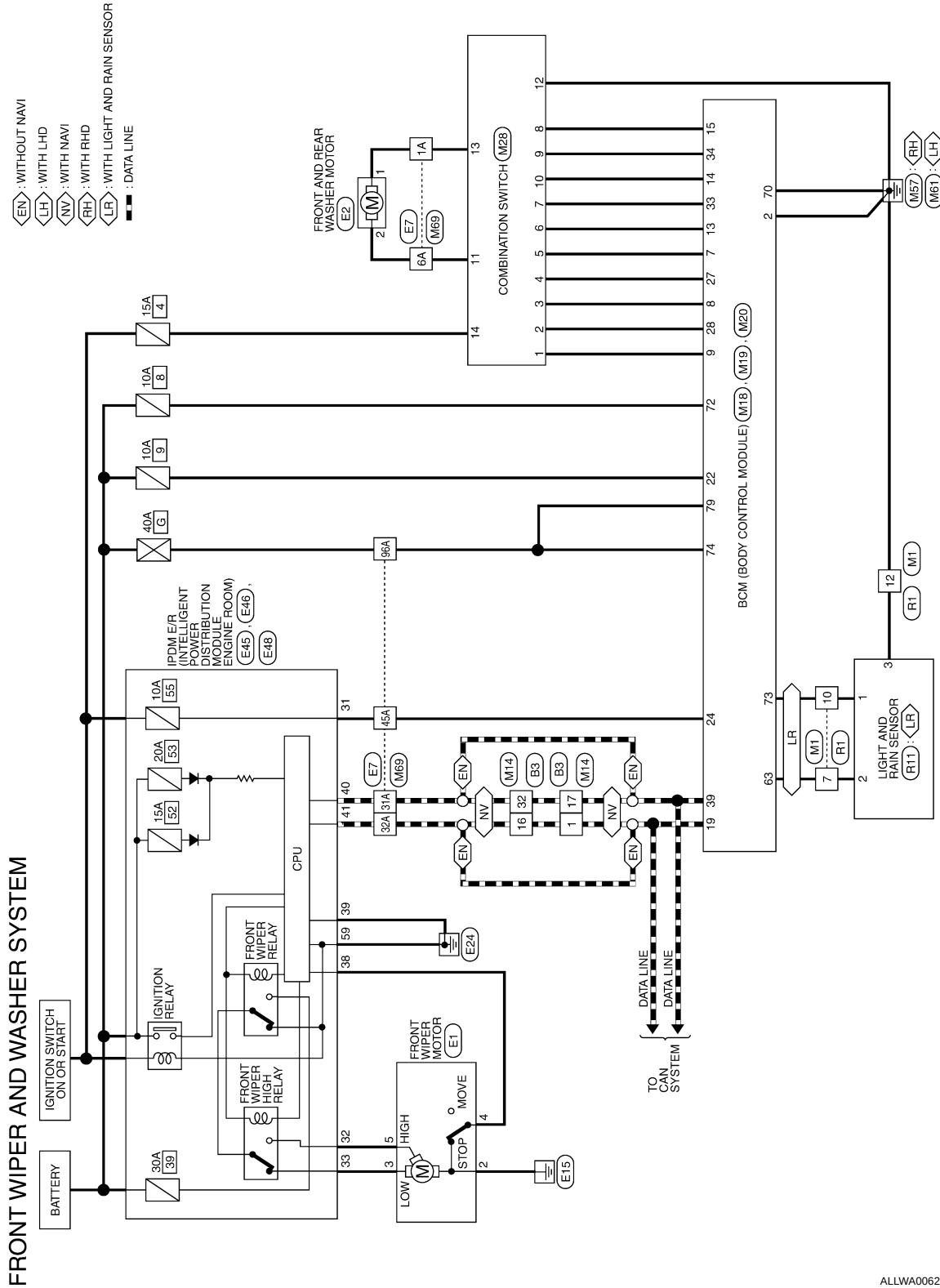
FRONT WIPER AND WASHER SYSTEM

< COMPONENT DIAGNOSIS >

FRONT WIPER AND WASHER SYSTEM

Wiring Diagram

INFOID:000000001366628



ALLWA0062GB

FRONT WIPER AND WASHER SYSTEM

< COMPONENT DIAGNOSIS >

FRONT WIPER AND WASHER SYSTEM CONNECTORS

Connector No.	M1
Connector Name	WIRE TO WIRE
Connector Color	WHITE

1	2	3	4	5
6	7	8	9	10
11	12			



Terminal No.	Color of Wire	Signal Name
7	R	-
10	R	-
12	B	-

Connector No.	M14
Connector Name	WIRE TO WIRE
Connector Color	WHITE



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

Terminal No.	Color of Wire	Signal Name
1	L	-
16	L	-
17	P	-
32	P	-

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



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

Terminal No.	Color of Wire	Signal Name
2	B	GND
7	LG	COMBI SW OUTPUT 5
8	V	COMBI SW OUTPUT 3

Terminal No.	Color of Wire	Signal Name
9	P	COMBI SW OUTPUT 1
13	V	COMBI SW INPUT 1
14	L	COMBI SW INPUT 3
15	BR	COMBI SW INPUT 5
19	L	CAN-H
22	P	BATT SAFETY LINE
24	O	IGN SW
27	Y	COMBI SW OUTPUT 4
28	R	COMBI SW OUTPUT 2
33	G	COMBI SW INPUT 2
34	GR	COMBI SW INPUT 4
39	P	CAN-L

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



52	51	50	49	48	47	46	45	44	43	42	41
64	63	62	61	60	59	58	57	56	55	54	53

Terminal No.	Color of Wire	Signal Name
63	R	LIGHT/RAIN SENSOR

ALLIA0607GB

FRONT WIPER AND WASHER SYSTEM

< COMPONENT DIAGNOSIS >

Terminal No.	Color of Wire	Signal Name
5	LG	INPUT 5
6	V	OUTPUT 1
7	G	OUTPUT 2
8	BR	OUTPUT 5
9	GR	OUTPUT 4
10	L	OUTPUT 3
11	O	WASH (RR)
12	B	WASH MTR GND
13	SB	WASH (FR)
14	W	WASH MTR

Connector No.	M28
Connector Name	COMBINATION SWITCH
Connector Color	WHITE

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



Terminal No.	Color of Wire	Signal Name
1	P	INPUT 1
2	R	INPUT 2
3	V	INPUT 3
4	Y	INPUT 4

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

65	66	67	68	69	70	71	72	73
74	75	76	77	78	79			



Terminal No.	Color of Wire	Signal Name
70	B	POWER GND
72	LG	BATT RL
73	R	ROOM LAMP POWER
74	Y	BATT BCM
79	Y	BATT PW

Connector No.	E1
Connector Name	FRONT WIPER MOTOR
Connector Color	GRAY



3	2	1
5		4

Terminal No.	Color of Wire	Signal Name
2	B	-
3	Y	-
4	R	-
5	L	-

Terminal No.	Color of Wire	Signal Name
1A	SB	-
6A	O	-
31A	P	-
32A	L	-
45A	O	-
96A	Y	-

Connector No.	M69
Connector Name	WIRE TO WIRE
Connector Color	WHITE



1A	2A	3A	4A	5A
6A	7A	8A	9A	10A
11A	12A	13A	14A	15A
16A	17A	18A	19A	20A
21A	22A	23A	24A	25A
26A	27A	28A	29A	30A
31A	32A	33A	34A	35A
36A	37A	38A	39A	40A
41A	42A	43A	44A	45A
46A	47A	48A	49A	50A
51A	52A	53A	54A	55A
56A	57A	58A	59A	60A
61A	62A	63A	64A	65A
66A	67A	68A	69A	70A
71A	72A	73A	74A	75A
76A	77A	78A	79A	80A
81A	82A	83A	84A	85A
86A	87A	88A	89A	90A
91A	92A	93A	94A	95A
96A	97A	98A	99A	100A

ALLIA0608GB

FRONT WIPER AND WASHER SYSTEM

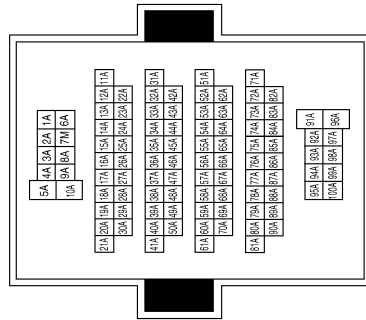
< COMPONENT DIAGNOSIS >

Connector No.	E2
Connector Name	FRONT AND REAR WASHER MOTOR
Connector Color	BLACK



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

Connector No.	E7
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1A	SB	-
6A	O	-
31A	P	-
32A	L	-
45A	O	-
96A	Y	-

Connector No.	E45
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) (WITHOUT DIESEL)
Connector Color	BROWN



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

Connector No.	E45
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) (WITH DIESEL)
Connector Color	BROWN



29	28		27	26	25
36	35	34	33	31	30

Connector No.	E46
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE



42	41	40	39	38	37
48	47	46	45	44	43

Terminal No.	Color of Wire	Signal Name
31	O	INJ ECU
32	L	FR WIP (HI)
33	Y	FR WIP (LO)

Terminal No.	Color of Wire	Signal Name
31	O	INJ
32	LG	H/L WASH RLY
33	Y	FR WIP (HI)

Terminal No.	Color of Wire	Signal Name
38	R	AUTO STOP
39	B	SIGNAL GND
40	P	CAN-L
41	L	CAN-H

ALLIA0609GB

FRONT WIPER AND WASHER SYSTEM

< COMPONENT DIAGNOSIS >

Connector No.	R1
Connector Name	WIRE TO WIRE
Connector Color	WHITE



5	4	3	2	1		
12	11	10	9	8	7	6

Terminal No.	Color of Wire	Signal Name
7	R	-
10	Y	-
12	B	-

Connector No.	B3
Connector Name	WIRE TO WIRE
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

Terminal No.	Color of Wire	Signal Name
1	L	-
16	L	-
17	P	-
32	P	-

Connector No.	E48
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	BLACK



59	58	57
52	61	60

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

Connector No.	R11
Connector Name	LIGHT AND RAIN SENSOR
Connector Color	WHITE



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

ALLIA0610GB

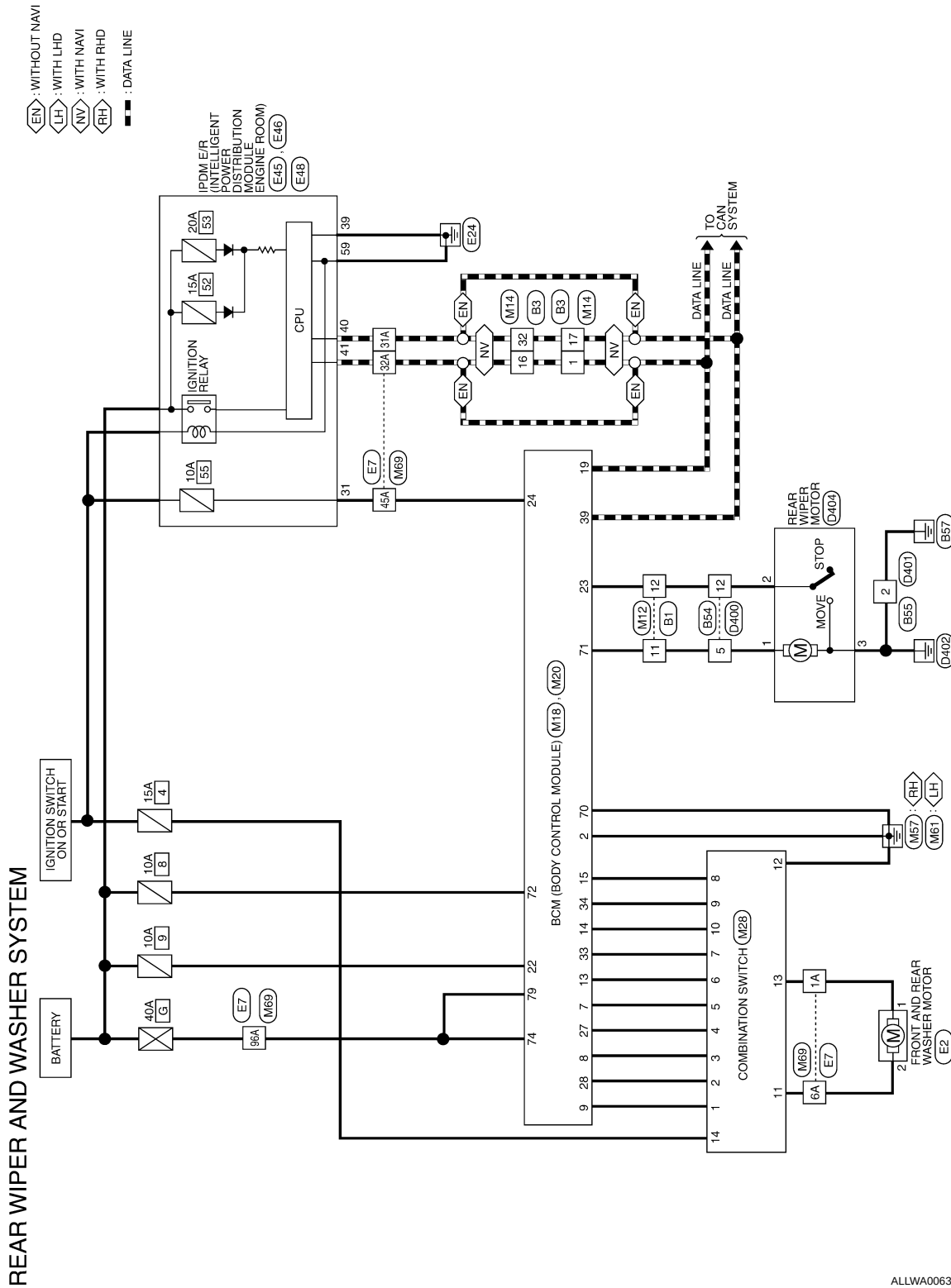
REAR WIPER AND WASHER SYSTEM

< COMPONENT DIAGNOSIS >

REAR WIPER AND WASHER SYSTEM

Wiring Diagram

INFOID:000000001366629



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REAR WIPER AND WASHER SYSTEM

< COMPONENT DIAGNOSIS >

REAR WIPER AND WASHER SYSTEM CONNECTORS

Connector No.	M12
Connector Name	WIRE TO WIRE
Connector Color	WHITE



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



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

Connector No.	M14
Connector Name	WIRE TO WIRE
Connector Color	WHITE

Terminal No.	Color of Wire	Signal Name
1	L	-
16	L	-
17	P	-
32	P	-

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



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

Terminal No.	Color of Wire	Signal Name
2	B	GND
7	LG	COMBI SW OUTPUT 5
8	V	COMBI SW OUTPUT 3

Terminal No.	Color of Wire	Signal Name
9	P	COMBI SW OUTPUT 1
13	V	COMBI SW INPUT 1
14	L	COMBI SW INPUT 3
15	BR	COMBI SW INPUT 5
19	L	CAN-H
22	P	BATT SAFETY LINE
23	LG	REAR WIPER AUTO STOP SW
24	O	IGN SW
27	Y	COMBI SW OUTPUT 4
28	R	COMBI SW OUTPUT 2
33	G	COMBI SW INPUT 2
34	GR	COMBI SW INPUT 4
39	P	CAN-L

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



65	66	67	68	69	70	71	72	73
74	75	76	77	78	79			

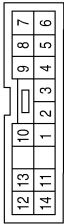
Terminal No.	Color of Wire	Signal Name
70	B	POWER GND
71	V	REAR WIPER MOTOR OUT
72	LG	BATT RL
74	Y	BATT BCM
79	Y	BATT PW

ALLIA0611GB

REAR WIPER AND WASHER SYSTEM

< COMPONENT DIAGNOSIS >

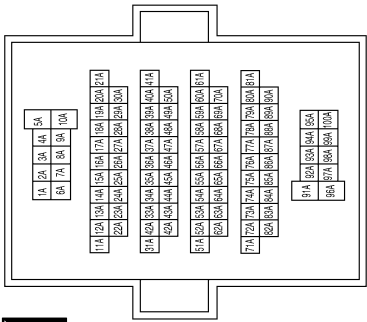
Connector No.	M28
Connector Name	COMBINATION SWITCH
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	P	INPUT 1
2	R	INPUT 2
3	V	INPUT 3
4	Y	INPUT 4

Terminal No.	Color of Wire	Signal Name
5	LG	INPUT 5
6	V	OUTPUT 1
7	G	OUTPUT 2
8	BR	OUTPUT 5
9	GR	OUTPUT 4
10	L	OUTPUT 3
11	O	WASH (RR)
12	B	WASH MTR GND
13	SB	WASH (FR)
14	W	WASH MTR

Connector No.	M69
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1A	SB	-
6A	O	-
31A	P	-
32A	L	-
45A	O	-
96A	Y	-

Connector No.	E2
Connector Name	FRONT AND REAR WASHER MOTOR
Connector Color	BLACK



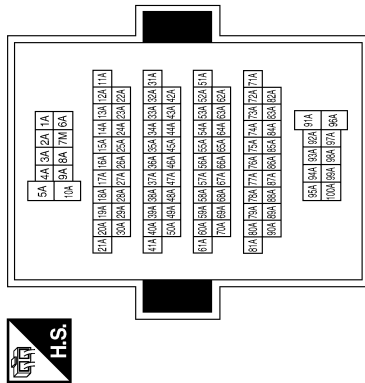
Terminal No.	Color of Wire	Signal Name
1	SB	-
2	O	-

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REAR WIPER AND WASHER SYSTEM

< COMPONENT DIAGNOSIS >

Connector No.	E7
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1A	SB	-
6A	O	-
31A	P	-
32A	L	-
45A	O	-
96A	Y	-

Connector No.	E45
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	BROWN



28	29	30	31	32	33	34	35	36	37	38	39	40	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	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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Terminal No.	Color of Wire	Signal Name
31	O	INJ

Connector No.	E46
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE



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	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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Connector No.	E48
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	BLACK



59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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Connector No.	B1
Connector Name	WIRE TO WIRE
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	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	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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Terminal No.	Color of Wire	Signal Name
39	B	SIGNAL GND
40	P	CAN-L
41	L	CAN-H

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

Terminal No.	Color of Wire	Signal Name
11	P	-
12	LG	-

REAR WIPER AND WASHER SYSTEM

< COMPONENT DIAGNOSIS >

Connector No.	B3
Connector Name	WIRE TO WIRE
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

Terminal No.	Color of Wire	Signal Name
1	L	-
16	L	-
17	P	-
32	P	-

Connector No.	B54
Connector Name	WIRE TO WIRE
Connector Color	WHITE



1	2	3	4	5
6	7	8	9	10
11	12			

Terminal No.	Color of Wire	Signal Name
5	P	-
12	LG	-

Connector No.	B55
Connector Name	WIRE TO WIRE
Connector Color	WHITE



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

Connector No.	D400
Connector Name	WIRE TO WIRE (LHD)
Connector Color	WHITE



5	4	3	2	1
12	11	10	9	8
7	6			

Terminal No.	Color of Wire	Signal Name
5	R	-
12	LG	-

Connector No.	D400
Connector Name	WIRE TO WIRE (RHD)
Connector Color	WHITE



5	4	3	2	1
12	11	10	9	8
7	6			

Terminal No.	Color of Wire	Signal Name
5	W	-
12	W	-

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



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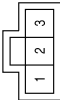
Terminal No.	Color of Wire	Signal Name
2	B	-

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REAR WIPER AND WASHER SYSTEM

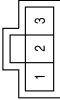
< COMPONENT DIAGNOSIS >

Connector No.	D404
Connector Name	REAR WIPER MOTOR (RHD)
Connector Color	WHITE



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

Connector No.	D404
Connector Name	REAR WIPER MOTOR (LHD)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	R	-
2	LG	-
3	B	-

ALLIA0615GB

HEADLAMP WASHER SYSTEM

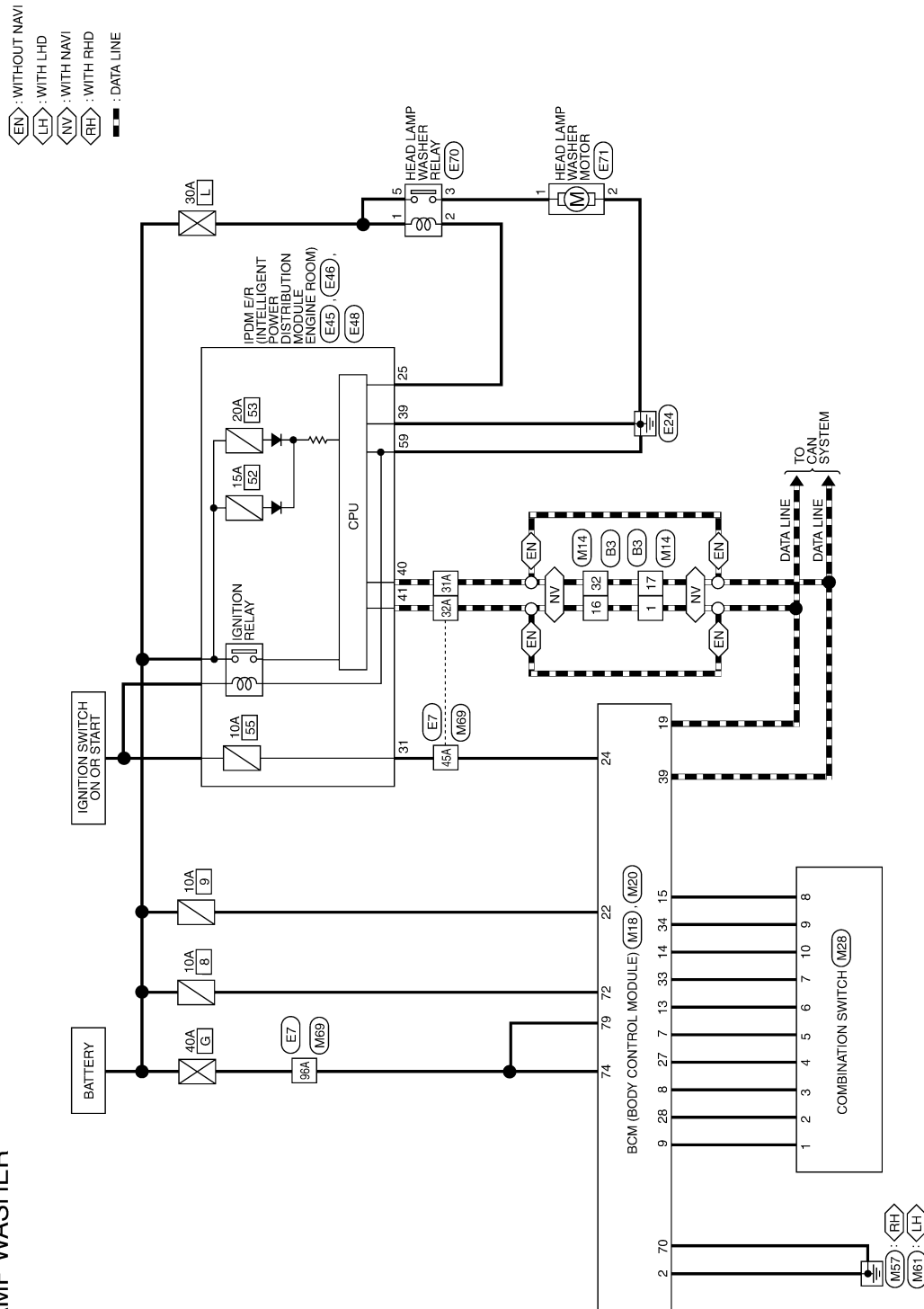
< COMPONENT DIAGNOSIS >

HEADLAMP WASHER SYSTEM

Wiring Diagram

INFOID:000000001366630

HEADLAMP WASHER



ALLWA0064GB

HEADLAMP WASHER SYSTEM

< COMPONENT DIAGNOSIS >

HEADLAMP WASHER CONNECTORS

Connector No.	M14
Connector Name	WIRE TO WIRE
Connector Color	WHITE



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

Terminal No.	Color of Wire	Signal Name
1	L	-
16	L	-
17	P	-
32	P	-

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



65	66	67	68	69	70	71	72	73
74	75	76	77	78	79			

Terminal No.	Color of Wire	Signal Name
70	B	POWER GND
72	LG	BATT RL
74	Y	BATT BCM
79	Y	BATT PW

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



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

Terminal No.	Color of Wire	Signal Name
2	B	GND
7	LG	COMBI SW OUTPUT 5
8	V	COMBI SW OUTPUT 3

Connector No.	M28
Connector Name	COMBINATION SWITCH
Connector Color	WHITE



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

Terminal No.	Color of Wire	Signal Name
1	P	INPUT 1
2	R	INPUT 2
3	V	INPUT 3
4	Y	INPUT 4
5	LG	INPUT 5
6	V	OUTPUT 1
7	G	OUTPUT 2
8	BR	OUTPUT 5
9	GR	OUTPUT 4
10	L	OUTPUT 3

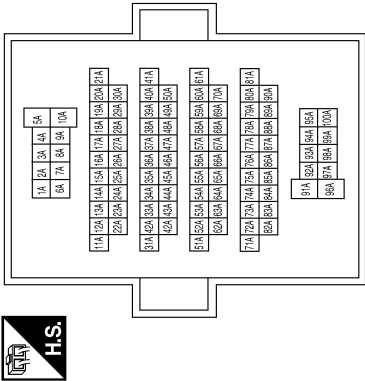
Terminal No.	Color of Wire	Signal Name
9	P	COMBI SW OUTPUT 1
13	V	COMBI SW INPUT 1
14	L	COMBI SW INPUT 3
15	BR	COMBI SW INPUT 5
19	L	CAN-H
22	P	BATT SAFETY LINE
24	O	IGN SW
27	Y	COMBI SW OUTPUT 4
28	R	COMBI SW OUTPUT 2
33	G	COMBI SW INPUT 2
34	GR	COMBI SW INPUT 4
39	P	CAN-L

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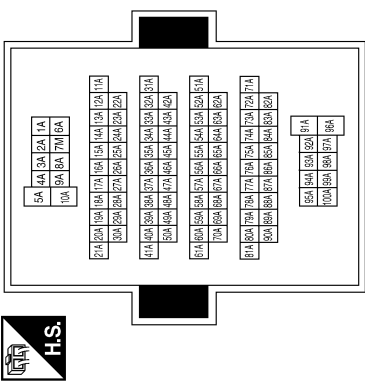
HEADLAMP WASHER SYSTEM

< COMPONENT DIAGNOSIS >

Connector No.	M69
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Connector No.	E7
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
31A	P	-
32A	L	-
45A	O	-
96A	Y	-

Terminal No.	Color of Wire	Signal Name
31A	P	-
32A	L	-
45A	O	-
96A	Y	-

Connector No.	E45
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
25	LG	H/L WASH RLY
31	O	INJ ECU

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HEADLAMP WASHER SYSTEM

< COMPONENT DIAGNOSIS >

Connector No.	E70
Connector Name	HEADLAMP WASHER RELAY
Connector Color	BLACK



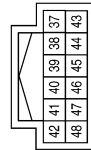
Terminal No.	Color of Wire	Signal Name
1	G	-
2	LG	-
3	GR	-
5	G	-

Connector No.	E48
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	BLACK



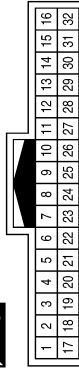
Terminal No.	Color of Wire	Signal Name
59	B	POWER GND

Connector No.	E46
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
39	B	SIGNAL GND
40	P	CAN-L
41	L	CAN-H

Connector No.	B3
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	L	-
16	L	-
17	P	-
32	P	-

Connector No.	E71
Connector Name	HEADLAMP WASHER MOTOR
Connector Color	BLACK



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

ALLIA0649GB

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

ECU DIAGNOSIS

BCM (BODY CONTROL MODULE)

Reference Value

INFOID:000000001366631

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
H/L SW POS	Lighting switch OFF	OFF
	Lighting switch 2ND	ON
LIGHT SW 1ST	Lighting switch OFF	OFF
	Lighting switch 2ND	ON
HI BEAM SW	Lighting switch OFF	OFF
	Lighting switch HI	ON
H/L WASH SW	NOTE: The item is indicated, but not monitored	OFF
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-38, "Terminal Layout"](#).

PHYSICAL VALUES

Refer to [BCS-39, "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:0000000001366636

VALUES ON THE DIAGNOSIS TOOL

Monitor Item	Condition		Value/Status
HL WASHER REQ	Ignition switch ON, and low beam headlamp is ON	Front washer switch OFF	Off
		Front washer switch ON (When headlamp washer is operating)	On
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 xxx.

PHYSICAL VALUES

Refer to xxx.

Fail Safe

INFOID:0000000001366638

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	- 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.
Headlamp washer	Headlamp washer relay OFF

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.

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

< ECU DIAGNOSIS >

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:

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:000000001366640

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	- Combination switch - Harness between combination switch and BCM - BCM	Combination switch Refer to BCS-55, "Symptom Table" .
		- IPDM E/R - Harness between IPDM E/R and front wiper motor - Front wiper motor	Front wiper motor (HI) circuit Refer to WW-20, "Component Function Check" .
		Front wiper request signal - BCM - IPDM E/R	IPDM E/R DATA MONITOR "FR WIP REQ"
	LO and INT	- Combination switch - Harness between combination switch and BCM - BCM	Combination switch Refer to BCS-55, "Symptom Table" .
		- IPDM E/R - Harness between IPDM E/R and front wiper motor - Front wiper motor	Front wiper motor (LO) circuit Refer to WW-18, "Component Function Check" .
		Front wiper request signal - BCM - IPDM E/R	IPDM E/R DATA MONITOR "FR WIP REQ"
	INT only	- Combination switch - Harness between combination switch and BCM - BCM	Combination switch Refer to BCS-55, "Symptom Table" .
		Front wiper request signal - 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-58, "Diagnosis Procedure" .	

WIPER AND WASHER SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

Symptom	Probable malfunction location	Inspection item
Front wiper does not stop.	HI only	- Combination switch - BCM Refer to BCS-55, "Symptom Table" .
		Front wiper request signal - BCM - IPDM E/R IPDM E/R DATA MONITOR "FR WIP REQ"
		IPDM E/R —
	LO only	- Combination switch - BCM Refer to BCS-55, "Symptom Table" .
		Front wiper request signal - BCM - IPDM E/R IPDM E/R DATA MONITOR "FR WIP REQ"
		IPDM E/R —
	INT only	- Combination switch - BCM Refer to XX-XX, "*****" .
		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.	- Combination switch - Harness between combination switch and BCM - BCM Refer to BCS-55, "Symptom Table" .
		BCM —
	Intermittent control linked with vehicle speed cannot be performed.	Check the vehicle speed detection wiper setting. Refer to WW-14, "WIPER : CONSULT-III Function (BCM - WIPER)" .
	Wiper is not linked to the washer operation.	- Combination switch - Harness between combination switch and BCM - BCM Refer to BCS-55, "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).	- IPDM E/R - Harness between IPDM E/R and front wiper motor - Front wiper motor Front wiper auto stop signal circuit Refer to WW-22, "Component Function Check" .
Front wiper auto operation does not operate. (If equipped)	Any	- Light and rain sensor - Harness between combination switch and BCM - BCM Light and rain sensor Refer to EXL-55, "Diagnosis Procedure" .
		- IPDM E/R - Harness between IPDM E/R and front wiper motor - Front wiper motor IPDM E/R Refer to xxx.
		BCM —
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WIPER AND WASHER SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

Symptom		Probable malfunction location	Inspection item
Rear wiper does not operate.	ON only	- Combination switch - Harness between combination switch and BCM - BCM	Combination switch Refer to BCS-55, "Symptom Table" .
	INT only	- Combination switch - Harness between combination switch and BCM - BCM	Combination switch Refer to BCS-55, "Symptom Table" .
	ON and INT	- Combination switch - Harness between combination switch and BCM - BCM	Combination switch Refer to BCS-55, "Symptom Table" .
		- BCM - Harness between rear wiper motor and BCM - Harness between rear wiper motor and ground - Rear wiper motor	Combination switch Refer to WW-28, "Component Function Check" .
Rear wiper does not stop.	ON only	- Combination switch - BCM	Rear wiper motor circuit Refer to WW-30, "Component Function Check" .
	INT only	- Combination switch - BCM	Combination switch Refer to BCS-55, "Symptom Table" .
Rear wiper does not operate normally.	Wiper is not linked to the washer operation.	- Combination switch - Harness between rear wiper motor and BCM - BCM	Combination switch Refer to BCS-55, "Symptom Table" .
		BCM	—
	Rear wiper does not return to the Stop position (Stops after a five-second operation).	- BCM - Harness between rear wiper motor and BCM - Rear wiper motor	Rear wiper auto stop signal circuit Refer to WW-30, "Component Function Check" .
	Rear wiper stops after operating for five seconds when ignition switch is turned ON.		
Headlamp washer does not operate.	Headlamp washer does not operate with the front washer when headlamps are turned ON.	- Combination switch - Harness between combination switch and BCM - BCM - Headlamp washer pump	Combination switch Refer to BCS-55, "Symptom Table" .
		- Fusible link - Harness between fusible link and headlamp washer relay - Headlamp washer relay - Harness between headlamp washer relay and IPDM E/R - IPDM E/R - Harness between headlamp washer relay and headlamp washer pump - Harness between headlamp washer pump and ground - Headlamp washer pump	Headlamp washer circuit Refer to WW-33, "Component Function Check" .
		BCM	—

NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS >

NORMAL OPERATING CONDITION

Description

INFOID:000000001366641

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:000000001366642

The front wiper does not operate under any operation conditions.

Diagnosis Procedure

INFOID:000000001366643

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		
E1	2		Yes

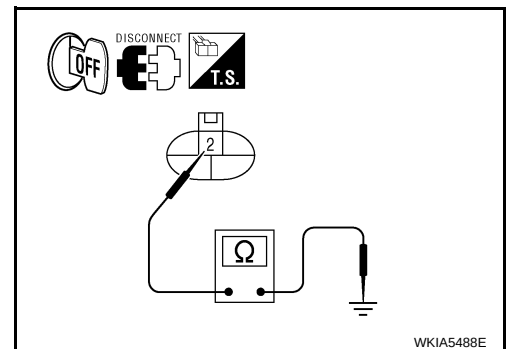
Does continuity exist?

YES >> GO TO 4

NO >> Repair or replace harness.

4. CHECK FRONT WIPER MOTOR OUTPUT VOLTAGE

Ⓟ CONSULT-III ACTIVE TEST

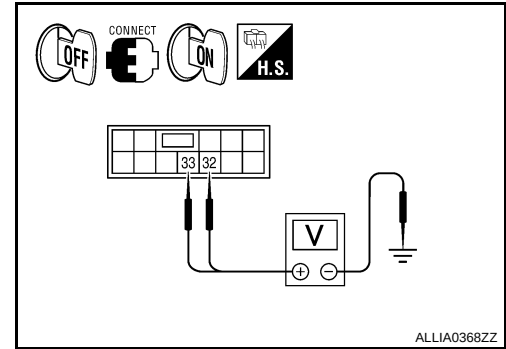


FRONT WIPER DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

1. Disconnect front wiper motor.
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.

Terminals		Test item	Voltage (Approx.)
(+)	(-)		
IPDM E/R		FRONT WIP-ER	
Connector	Terminal		
E45	32	LO	Battery voltage
		OFF	0 V
	33	HI	Battery voltage
		OFF	0 V



Is the measurement value normal?

- YES >> Replace front wiper motor. Refer to [WW-73, "Removal and Installation"](#).
 NO >> Replace IPDM E/R. Refer to xxx.

5. CHECK FRONT WIPER REQUEST SIGNAL INPUT

CONSULT-III DATA MONITOR

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

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

Is the status of item normal?

- YES >> Replace IPDM E/R. Refer to xxx.
 NO >> GO TO 6

6. CHECK COMBINATION SWITCH

1. Perform the inspection of the combination switch. Refer to [BCS-55, "Symptom Table"](#).

Is combination switch normal?

- YES >> Replace BCM. Refer to [BCS-57, "Removal and Installation of BCM"](#).
 NO >> Repair or replace the applicable parts.

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HEADLAMP WASHER DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

HEADLAMP WASHER DOES NOT OPERATE

Description

INFOID:00000000136644

Headlamp washer does not operate linked to front washer operation.

Diagnosis Procedure

INFOID:00000000136645

1. CHECK IPDM E/R

CONSULT-III DATA MONITOR

1. Turn the lighting switch to the 2ND position.
2. Select "HL WASHER REQ" of IPDM E/R data monitor item.
3. Operate the headlamp washer.
4. Check the status of "HL WASHER REQ".

Monitor item	Condition		Monitor status
HL WASHER REQ	Headlamp washer	Operating	ON
		Stopped	OFF

Is the status of item normal?

- YES >> Refer to [WW-33, "Component Function Check"](#).
NO >> GO TO 2

2. CHECK COMBINATION SWITCH

1. Perform the inspection of the combination switch. Refer to [BCS-55, "Symptom Table"](#).

Is combination switch normal?

- YES >> Replace BCM. Refer to [BCS-57, "Removal and Installation of BCM"](#).
NO >> Repair or replace the applicable parts.

PRECAUTIONS

< PRECAUTION >

PRECAUTION

PRECAUTIONS

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

INFOID:000000001538893

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

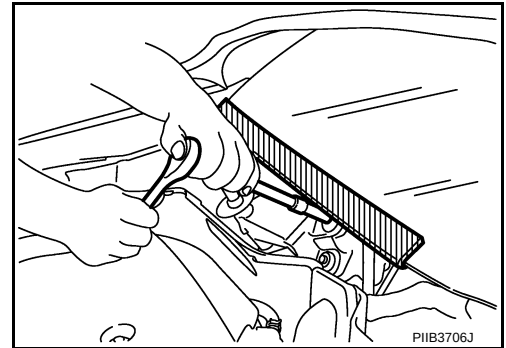
WARNING:

- 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.

Precaution for Procedure without Cowl Top Cover

INFOID:000000001366647

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



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HEADLAMP WASHER NOZZLE AND TUBE

< ON-VEHICLE REPAIR >

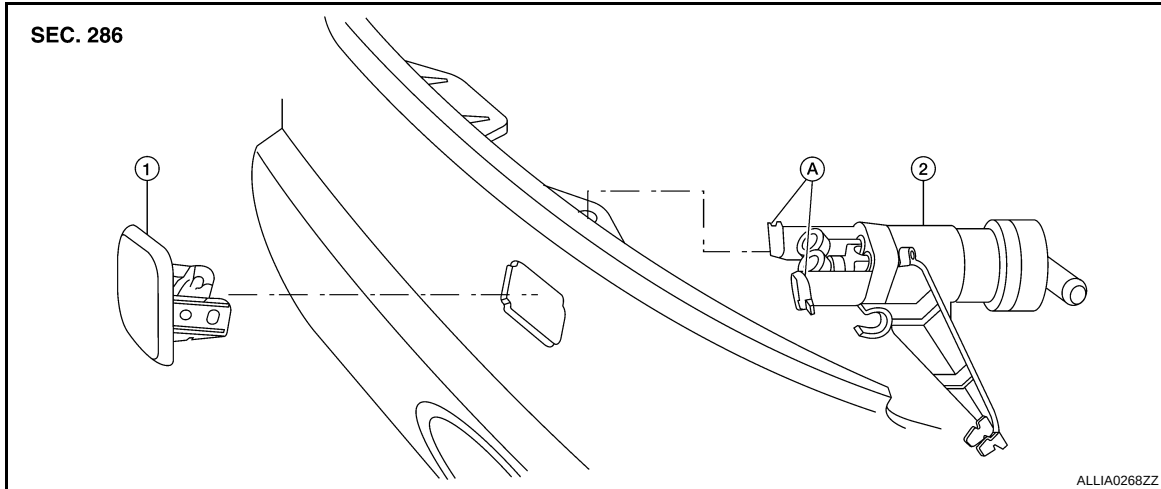
ON-VEHICLE REPAIR

HEADLAMP WASHER NOZZLE AND TUBE

Exploded View

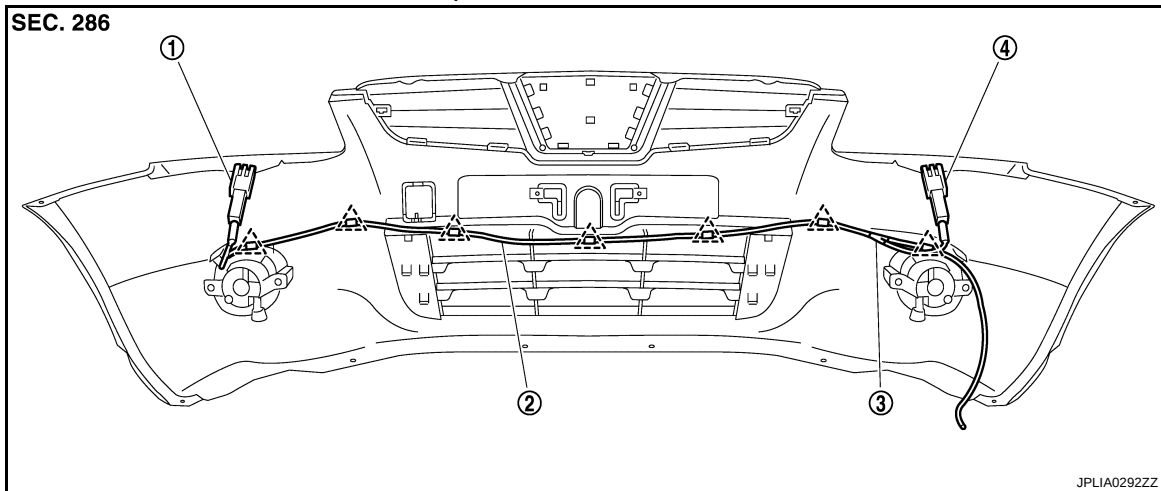
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Headlamp Washer



1. Headlamp washer nozzle cover 2. Headlamp washer nozzle assembly A. Pawl

Headlamp Washer Hoses and Nozzles



1. Headlamp washer nozzle assembly (LH) 2. Headlamp washer tube 3. Headlamp washer tube joint
4. Headlamp washer nozzle assembly (RH) △△△ : Clip

Removal and Installation

INFOID:000000001366650

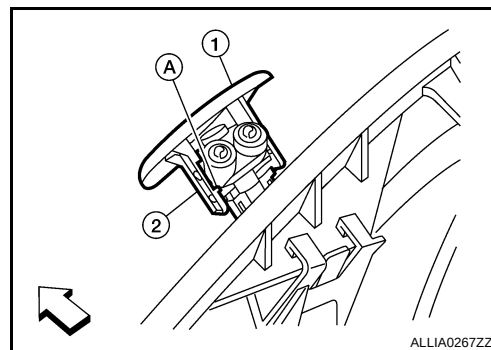
REMOVAL

1. Remove the front bumper fascia. Refer to [EXT-13, "Removal and Installation"](#).

HEADLAMP WASHER NOZZLE AND TUBE

< ON-VEHICLE REPAIR >

2. Remove headlamp washer tube from headlamp washer nozzle assembly (2).
3. Detach headlamp washer nozzle cover pawl (A), and remove headlamp washer nozzle cover (1).
4. Push pawl, and remove headlamp washer nozzle assembly (2) from the front bumper fascia.
 - ⇐ :Front



INSTALLATION

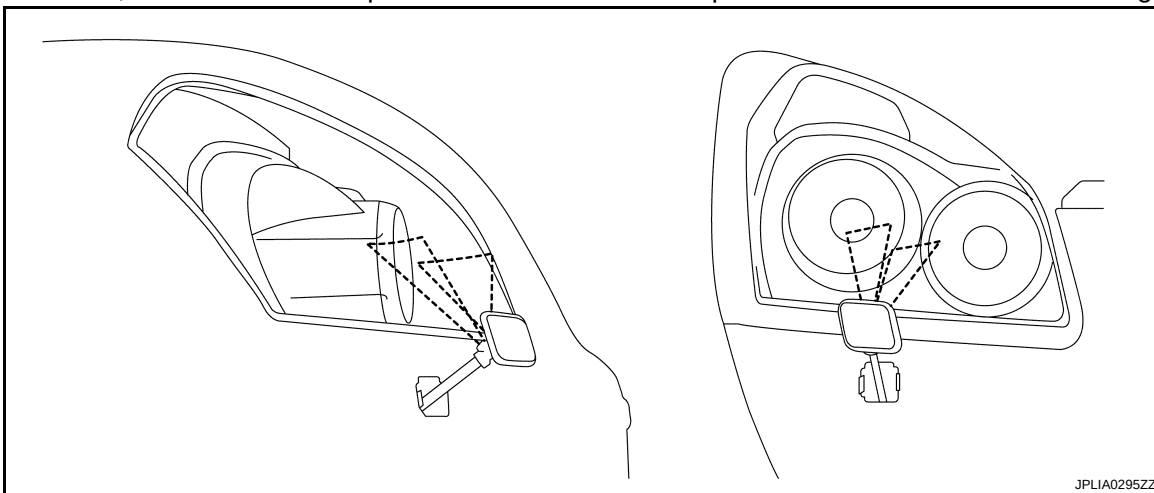
Installation is in the reverse order of removal.

Inspection

INFOID:0000000001366651

HEADLAMP WASHER NOZZLE SPRAY POSITION INSPECTION

Check that the headlamp washer injection is centered on the headlamp (LO) illuminating area. If the injection is out of the area, check the headlamp washer tube and headlamp washer nozzle for leaks or damage.



WW

WASHER TANK

< ON-VEHICLE REPAIR >

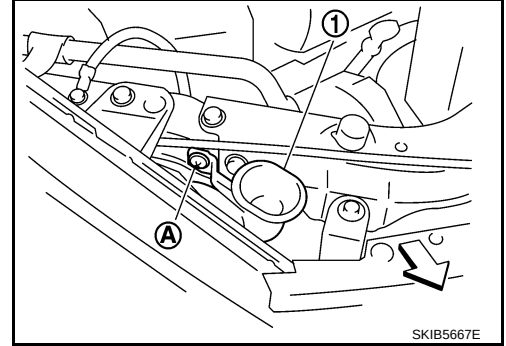
WASHER TANK

Removal and Installation

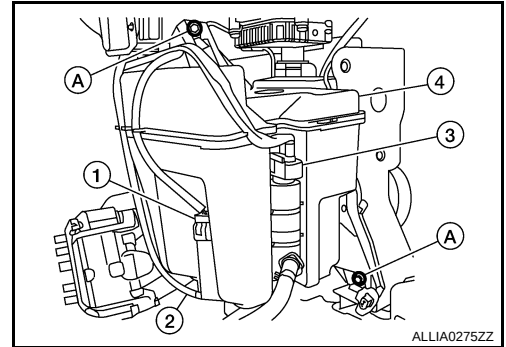
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REMOVAL

1. Remove the upper radiator cover. Refer to [EXT-19, "Removal and Installation"](#).
2. Remove the clip (A), then pull the washer tank inlet (1) out of the washer tank.
 - ⇐:Front



3. Remove the front bumper fascia. Refer to [EXT-13, "Removal and Installation"](#).
4. Disconnect the washer pump connector (1).
5. Disconnect the washer tube (2) from the washer pump.
6. Disconnect the headlamp washer pump connector (3).
7. Remove the washer tank bolts (A).
8. Remove the washer tank (4).



INSTALLATION

Installation is in the reverse order of removal.

- Add the specified washer fluid up to the top of the washer tank inlet after installation. Check that there are no leaks.

WASHER PUMP

< ON-VEHICLE REPAIR >

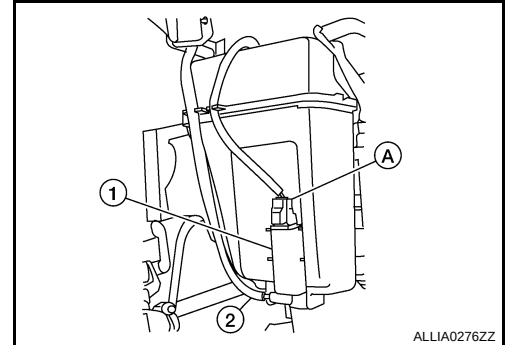
WASHER PUMP

Removal and Installation

INFOID:00000000136655

REMOVAL

1. Remove the front bumper fascia. Refer to [EXT-13, "Removal and Installation"](#).
2. Disconnect the washer pump connector (A).
3. Disconnect the washer tube (2) from the washer pump.
4. Remove the washer pump (1) from the washer tank.



INSTALLATION

Installation is in the reverse order of removal.

- Add the specified washer fluid up to the top of the washer tank inlet after installation. Check that there are no leaks.

CAUTION:

Never twist the grommet when installing the washer pump.

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HEADLAMP WASHER PUMP

< ON-VEHICLE REPAIR >

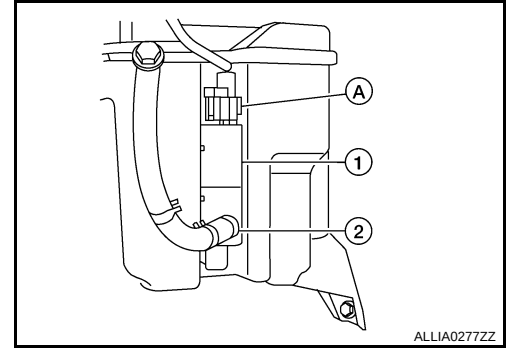
HEADLAMP WASHER PUMP

Removal and Installation

INFOID:00000000136657

REMOVAL

1. Remove the front bumper fascia. Refer to [EXT-13, "Removal and Installation"](#).
2. Disconnect the headlamp washer pump connector (A).
3. Disconnect the headlamp washer pump hose (2) from the headlamp washer pump.
4. Remove the headlamp washer pump (1).



INSTALLATION

Installation is in the reverse order of removal.

- Add the specified washer fluid up to the top of the washer tank inlet after installation. Check that there are no leaks.

CAUTION:

Never twist the grommet when installing the washer pump.

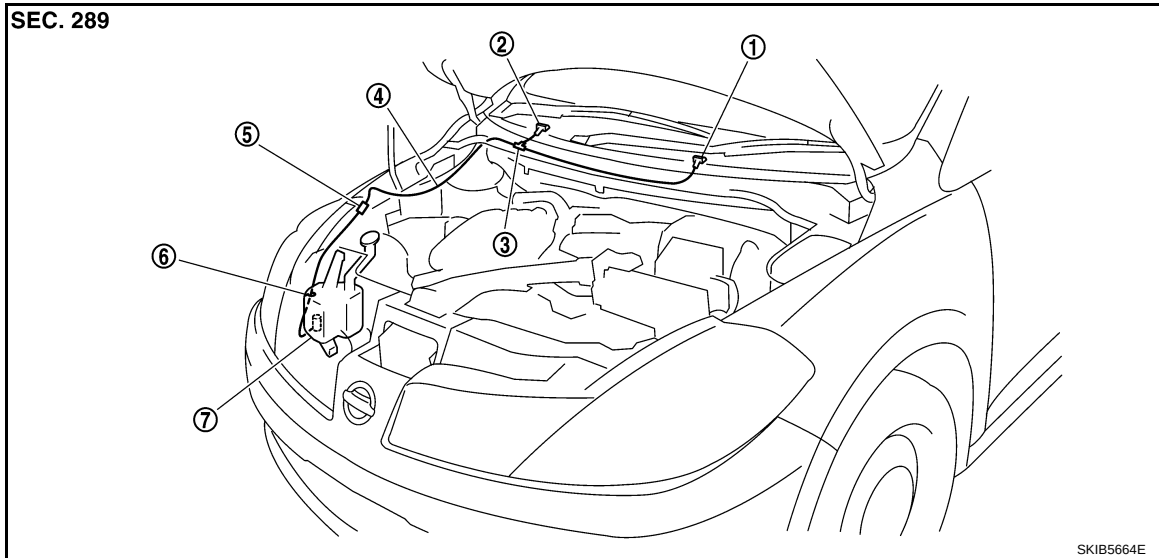
FRONT WASHER NOZZLE AND TUBE

< ON-VEHICLE REPAIR >

FRONT WASHER NOZZLE AND TUBE

Washer Tube Layout

INFOID:000000001396458



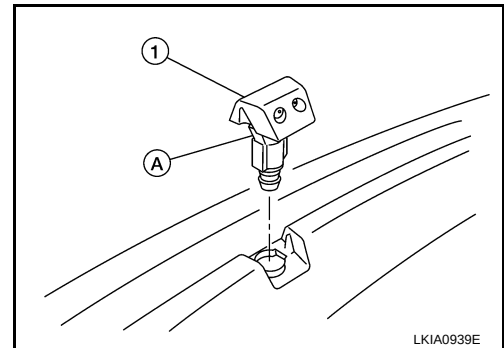
- | | | |
|-----------------------------|-----------------------------|----------------------|
| 1. Front washer nozzle (LH) | 2. Front washer nozzle (RH) | 3. Joint washer tube |
| 4. Washer tube | 5. Clip | 6. Clamp |
| 7. Washer tank | | |

Removal and Installation

INFOID:000000001404271

REMOVAL

1. Remove the cowl top cover. Refer to [EXT-20, "Removal and Installation"](#).
2. Disconnect the washer tube from the front washer nozzle.
3. While pressing pawl (A) on the reverse side of front washer nozzle (1), remove front washer nozzle (1) from cowl top cover.



INSTALLATION

1. Attach the washer tube to the front washer nozzle.
2. Install the front washer nozzle in the cowl top cover.
3. Install the cowl top cover. Refer to [EXT-20, "Removal and Installation"](#).
4. Adjust the front washer nozzle spray pattern. Refer to [WW-68, "Adjustment"](#).

CAUTION:

The spray points are different from side to side, so install the left and right front washer nozzles in the correct positions.

Inspection

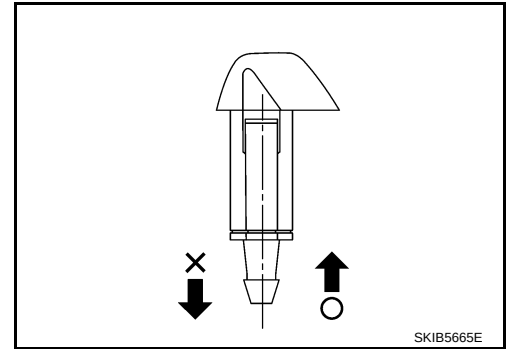
INFOID:000000001404272

CHECK VALVE INSPECTION

FRONT WASHER NOZZLE AND TUBE

< ON-VEHICLE REPAIR >

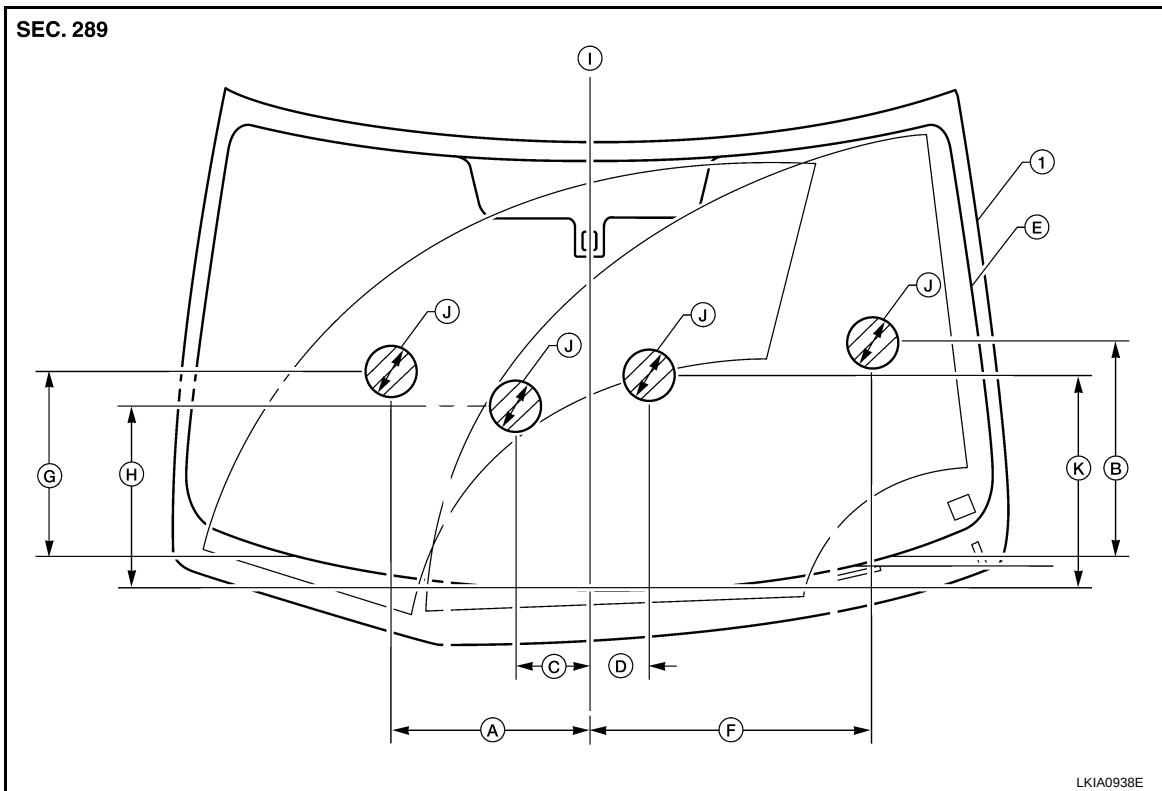
Blow air in the injection direction, and make sure that air flows only one way. Make sure that the reverse direction is not possible.



SKIB5665E

Adjustment

INFOID:000000001404273



- | | | |
|-------------------------|-----------------------|----------------------|
| 1. Windshield | A. 395 mm (15.55 in) | B. 216 mm (8.50 in) |
| C. 100 mm (3.94 in) | D. 85 mm (3.35 in) | E. Black mask |
| F. 303 mm (11.93 in) | G. 212 mm (8.35 in) | H. 249 mm (9.80 in) |
| I. Center of windsheild | J. Spray pattern area | K. 286 mm (11.26 in) |

- Adjust spray positions to match the positions as shown.
- Insert a suitable tool into the nozzle hole and move up/down and left/right to adjust to the specified spray position.

FRONT WIPER ARM

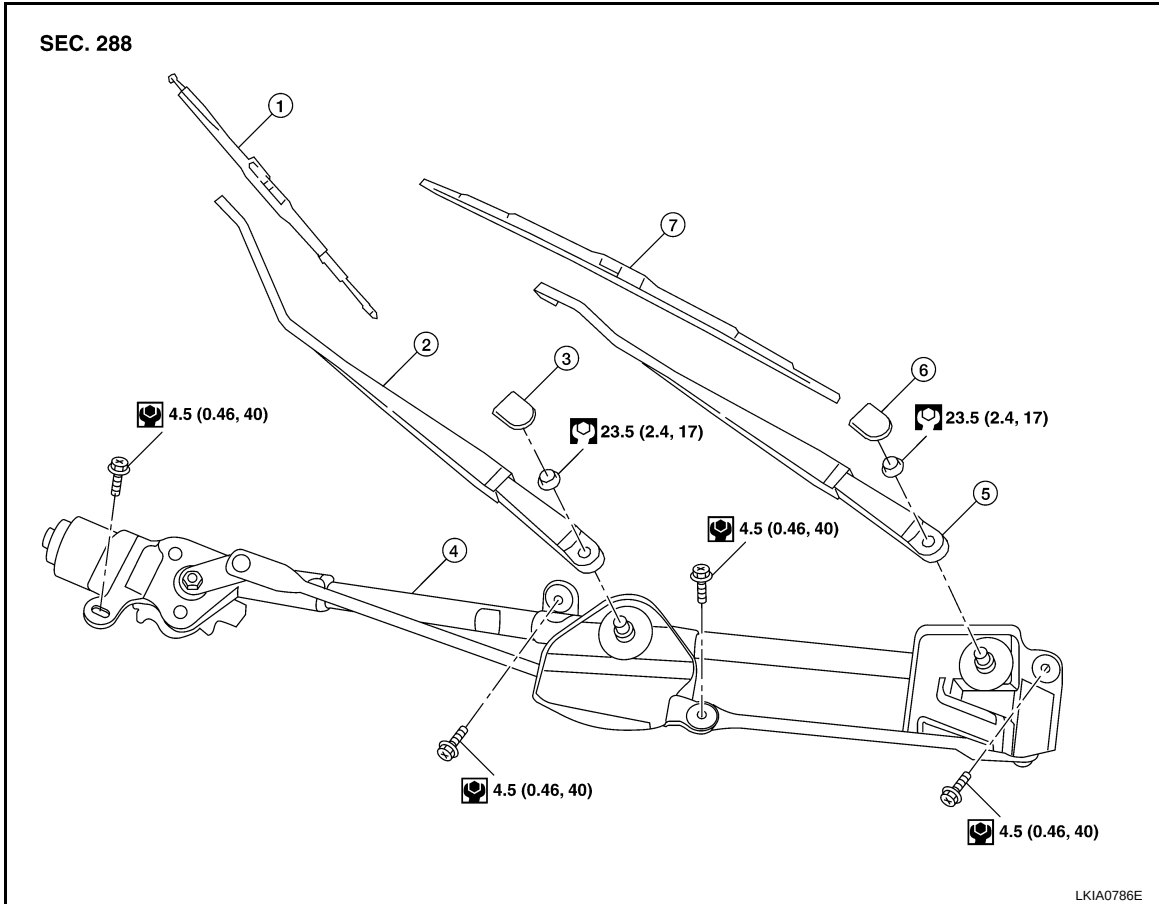
< ON-VEHICLE REPAIR >

FRONT WIPER ARM

Exploded View

INFOID:000000001366661

LHD Models

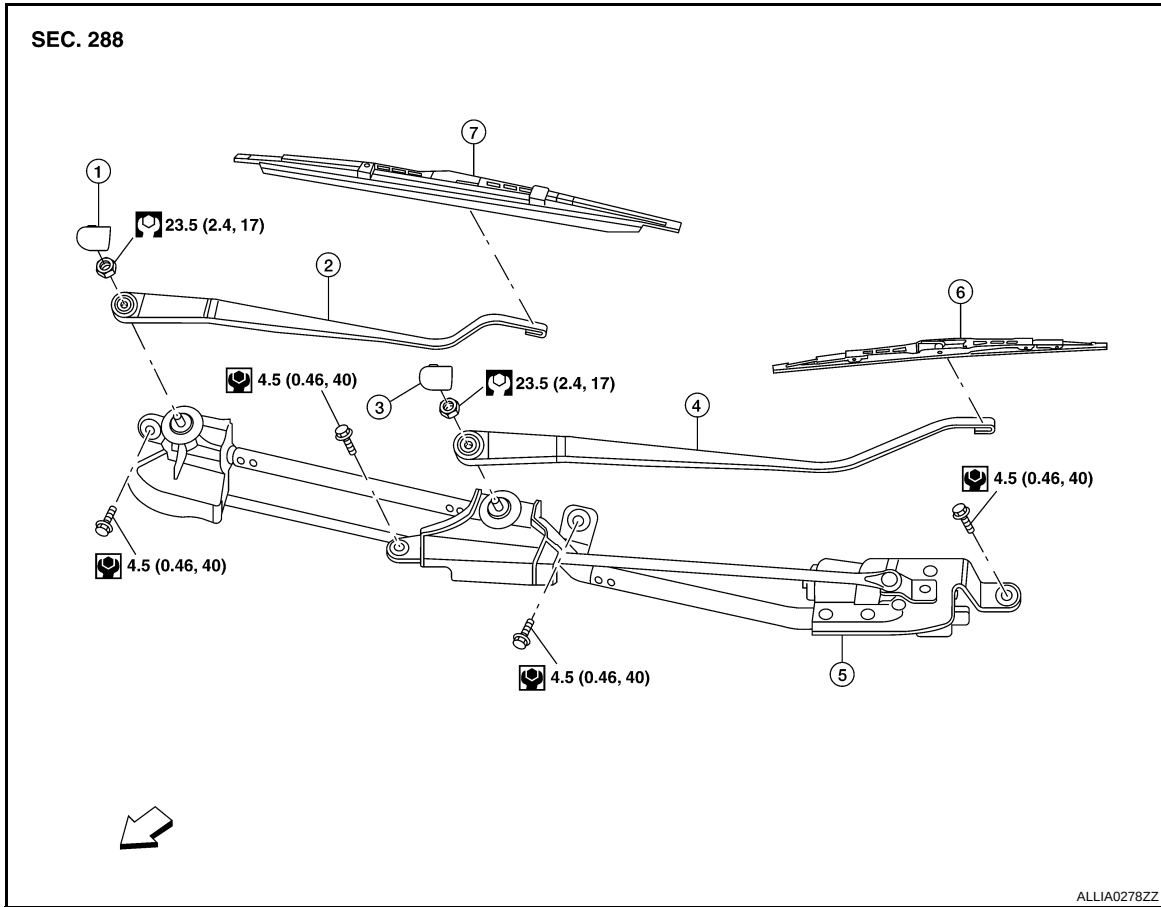


- | | | |
|-------------------------------|-----------------------|------------------|
| 1. Front RH wiper blade | 2. Front RH wiper arm | 3. Wiper arm cap |
| 4. Front wiper drive assembly | 5. Front LH wiper arm | 6. Wiper arm cap |
| 7. Front LH wiper blade | | |

FRONT WIPER ARM

< ON-VEHICLE REPAIR >

RHD Models



Removal and Installation

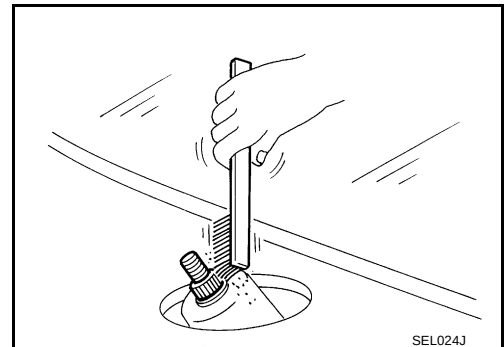
INFOID:000000001449632

REMOVAL

1. Operate the front wiper to move it to the auto stop position.
2. Open the hood.
3. Remove the front wiper arm caps.
4. Remove the front wiper arm nuts.
5. Raise the front wiper arms, and remove the front wiper arms.

INSTALLATION

1. Clean up the pivot area as shown. This will reduce possibility of wiper arm looseness.
2. Prior to wiper arm installation, turn on wiper switch to operate wiper motor and then turn it off (auto stop).
3. Push wiper arm onto pivot shaft, make sure it is correctly meshed and fully seated on the spline.



FRONT WIPER ARM

< ON-VEHICLE REPAIR >

4. Lift the blade up and then set it down onto glass surface to set the blade center to clearance "L1" and "L2" (LHD) or "L3" and "L4" (RHD) immediately before temporarily tightening the wiper arm nuts.

L1 (LHD) : 37.5 ± 7.5 mm (1.48 ± 0.295 in)

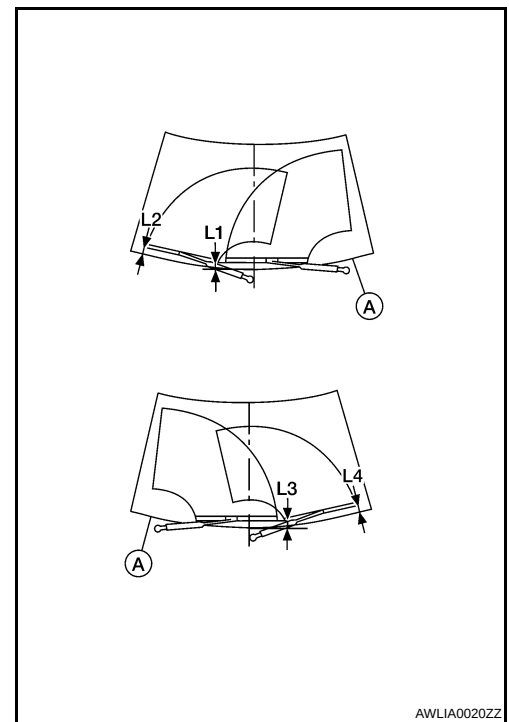
L2 (LHD) : 42.7 ± 7.5 mm (1.68 ± 0.295 in)

L3 (RHD) : 38.0 ± 7.5 mm (1.50 ± 0.295 in)

L4 (RHD) : 39.0 ± 7.5 mm (1.54 ± 0.295 in)

A Cowl top cover top edge

5. Spray washer fluid. Turn on wiper switch to operate wiper motor and then turn it off.
6. Make sure that wiper blades stop are within specifications. Refer to [WW-73. "Adjustment"](#).
7. Tighten wiper arm nuts to specification.
8. Attach wiper arm caps.



Adjustment

INFOID:000000001366663

WIPER BLADE POSITION ADJUSTMENT

To adjust the wiper arm stop location, the wiper arm must be removed and installed. Clearance between the top edge of cowl top cover and the tip of the front wiper blade as shown.

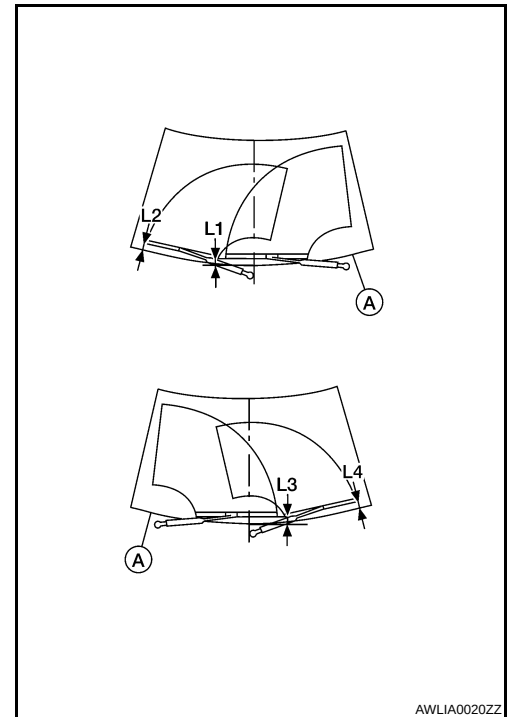
L1 (LHD) : 37.5 ± 7.5 mm (1.48 ± 0.295 in)

L2 (LHD) : 42.7 ± 7.5 mm (1.68 ± 0.295 in)

L3 (RHD) : 38.0 ± 7.5 mm (1.50 ± 0.295 in)

L4 (RHD) : 39.0 ± 7.5 mm (1.54 ± 0.295 in)

A Cowl top cover top edge



FRONT WIPER DRIVE ASSEMBLY

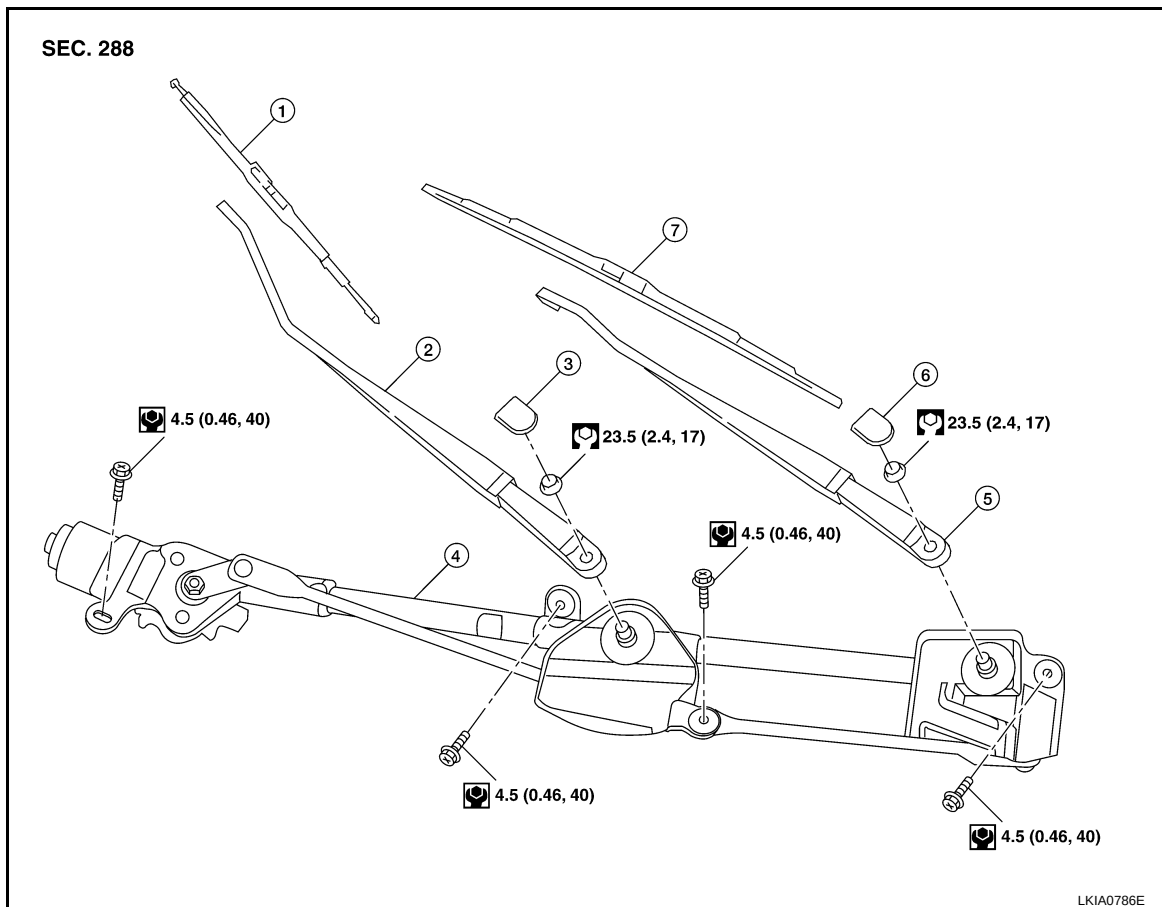
< ON-VEHICLE REPAIR >

FRONT WIPER DRIVE ASSEMBLY

Exploded View

INFOID:000000001450763

LHD Models

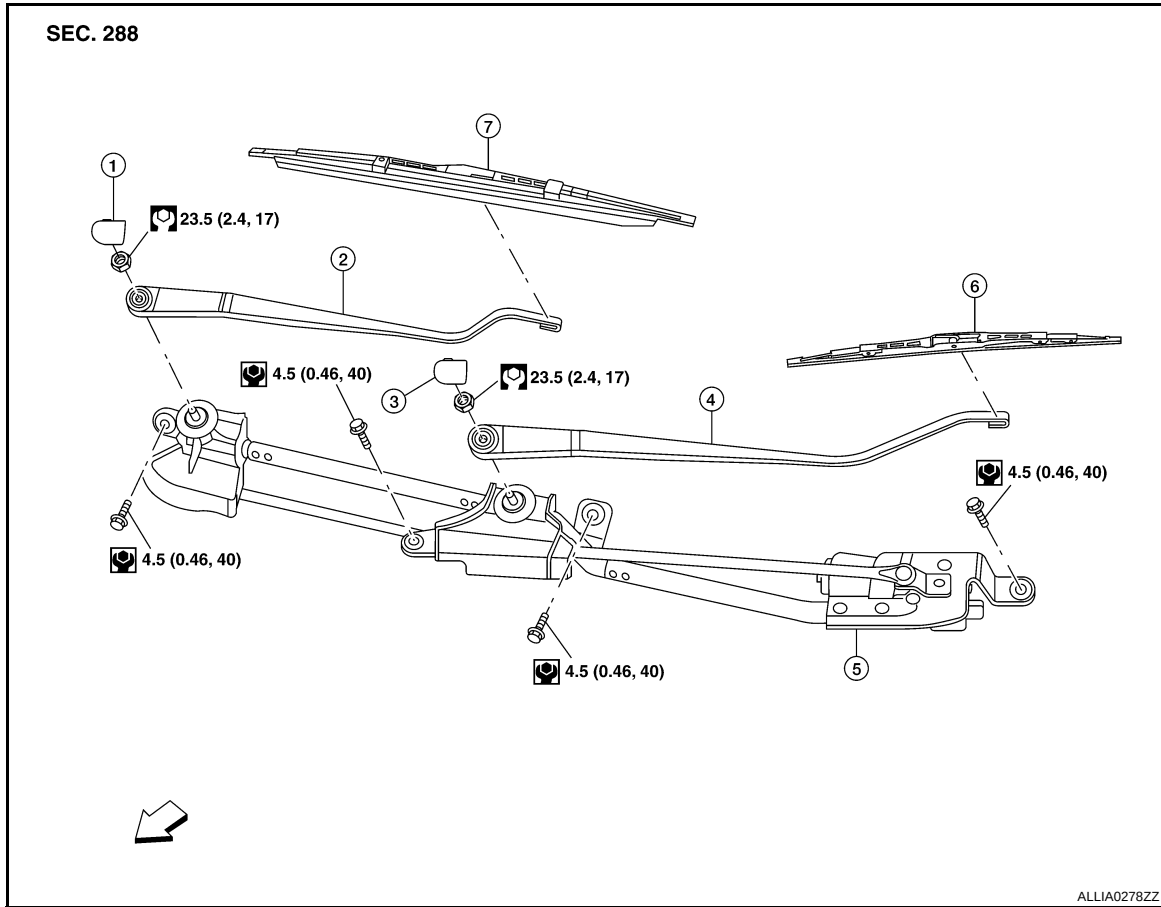


- | | | |
|-------------------------------|-----------------------|------------------|
| 1. Front RH wiper blade | 2. Front RH wiper arm | 3. Wiper arm cap |
| 4. Front wiper drive assembly | 5. Front LH wiper arm | 6. Wiper arm cap |
| 7. Front LH wiper blade | | |

FRONT WIPER DRIVE ASSEMBLY

< ON-VEHICLE REPAIR >

RHD Models



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

Removal and Installation

INFOID:0000000001450837

REMOVAL

1. Operate the front wiper motor, and then turn off (auto stop).
2. Remove wiper arms. Refer to [WW-70, "Removal and Installation"](#).
3. Remove cowl top cover. Refer to [EXT-20, "Removal and Installation"](#).
4. Disconnect wiper motor connector.
5. Remove front wiper drive assembly bolts, and remove front wiper drive assembly.

INSTALLATION

1. Install front wiper drive assembly.
2. Connect wiper motor connector. Turn wiper switch on to operate wiper motor, then turn wiper switch off (auto stop).
3. Install cowl top cover. Refer to [EXT-20, "Removal and Installation"](#).
4. Install the wiper arms and adjust as necessary. Refer to [WW-71, "Adjustment"](#).

Adjustment

INFOID:0000000001450764

WIPER BLADE POSITION ADJUSTMENT

FRONT WIPER DRIVE ASSEMBLY

< ON-VEHICLE REPAIR >

To adjust the wiper arm stop location, the wiper arm must be removed and installed.

Clearance between the top edge of the cowl top cover and the tip of the front wiper blade as shown.

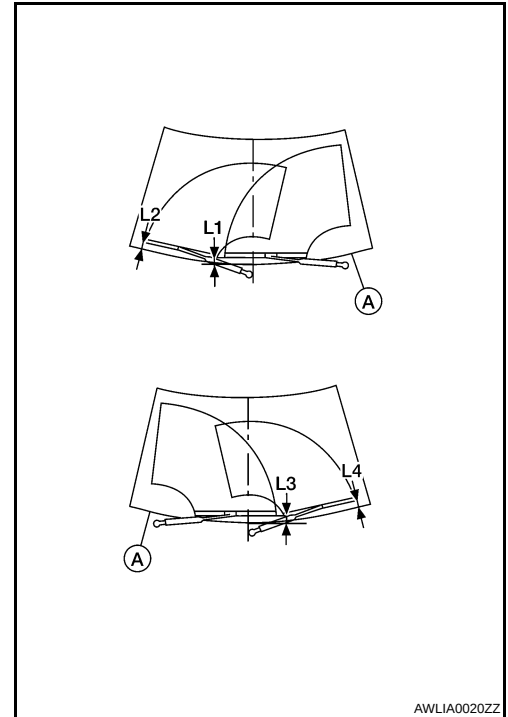
L1 (LHD) : 37.5 ± 7.5 mm (1.48 ± 0.295 in)

L2 (LHD) : 42.7 ± 7.5 mm (1.68 ± 0.295 in)

L3 (RHD) : 38.0 ± 7.5 mm (1.50 ± 0.295 in)

L4 (RHD) : 39.0 ± 7.5 mm (1.54 ± 0.295 in)

A Cowl top cover top edge



AWLIA0020ZZ

RAIN SENSOR

< ON-VEHICLE REPAIR >

RAIN SENSOR

Exploded View

INFOID:000000001366670

Refer to XX-XX. "*****".

Removal and Installation

INFOID:000000001366671

Refer to XX-XX. "*****".

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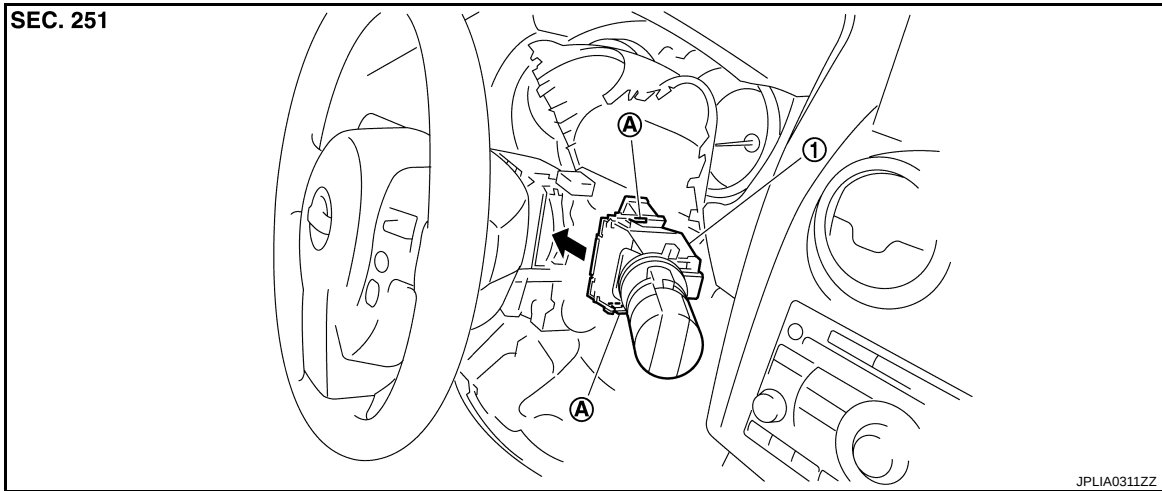
WIPER AND WASHER SWITCH

< ON-VEHICLE REPAIR >

WIPER AND WASHER SWITCH

Exploded View

INFOID:00000000136672



1. Wiper & washer switch

A. Pawl

NOTE:

The LHD model shown, RHD model similar.

Removal and Installation

INFOID:00000000136673

REMOVAL

1. Remove the steering column cover. Refer to [IP-10. "Component Parts"](#).
2. While pressing in on the pawls, pull the wiper and washer switch straight out to disconnect it from the switch base.

INSTALLATION

Installation is in the reverse order of removal.

REAR WIPER MOTOR

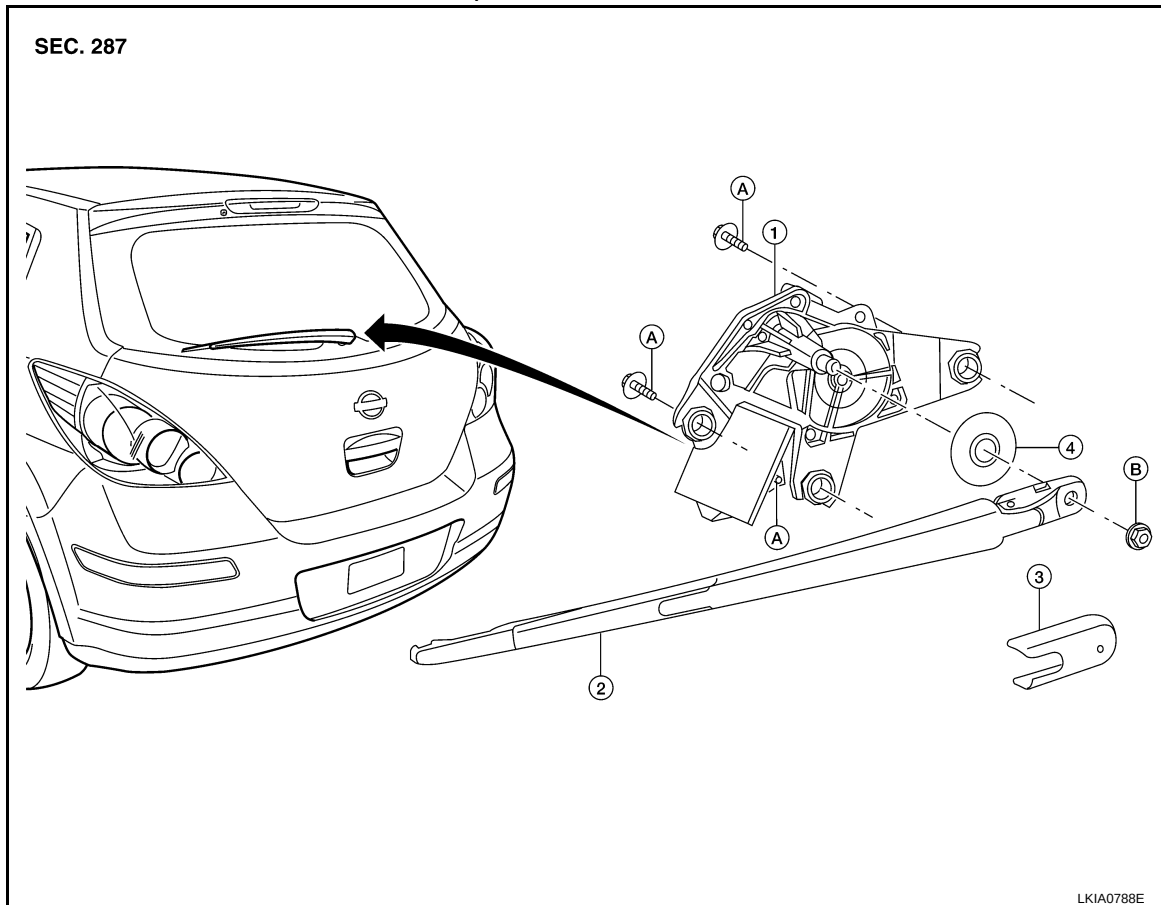
< ON-VEHICLE REPAIR >

REAR WIPER MOTOR

Exploded View

INFOID:000000001366674

Rear Wiper Motor, Arm and Blade



- | | | |
|---------------------|-----------------------------|-------------------------|
| 1. Rear wiper motor | 2. Rear wiper arm and blade | 3. Wiper arm cover |
| 4. Pivot cap | A. Wiper motor bolts | B. Rear wiper motor nut |

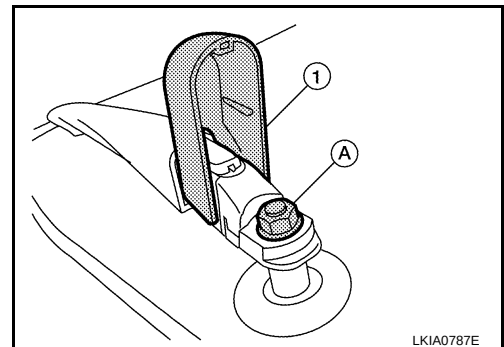
Removal and Installation

INFOID:000000001538675

REAR WIPER ARM

Removal

1. Raise wiper arm cover (1), and remove the rear wiper arm nut (A).
2. Remove the wiper arm.
3. Remove wiper blade.



Installation

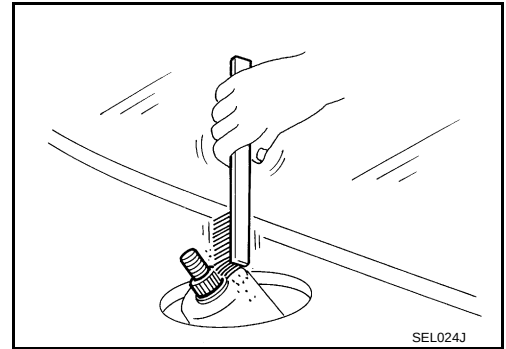
1. Operate rear wiper motor one full cycle, then turn off (auto stop).

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REAR WIPER MOTOR

< ON-VEHICLE REPAIR >

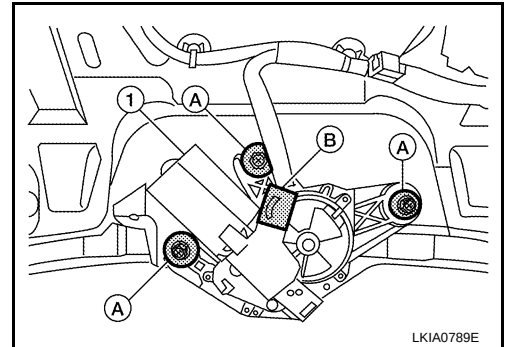
2. Clean pivot area as shown. This will reduce the possibility of wiper arm looseness.
3. Install wiper blade.
4. Install wiper arm so that the arm rests in the stopper and tighten rear wiper arm nut.
5. Install wiper arm cover.



REAR WIPER MOTOR

Removal

1. Remove wiper arm. Refer to [WW-77, "Removal and Installation"](#).
2. Raise arm cap.
3. Remove the rear wiper motor nut, remove the rear wiper arm and blade.
4. Remove the back door lower finisher. Refer to [INT-18, "Removal and Installation"](#).
5. Disconnect the rear wiper motor connector (B).
6. Remove the bolts (A) and remove the rear wiper motor (1).



Installation

Installation is in the reverse order of removal.

CAUTION:

Do not drop the wiper motor or allow it to contact other parts.

Adjustment

INFOID:0000000001366676

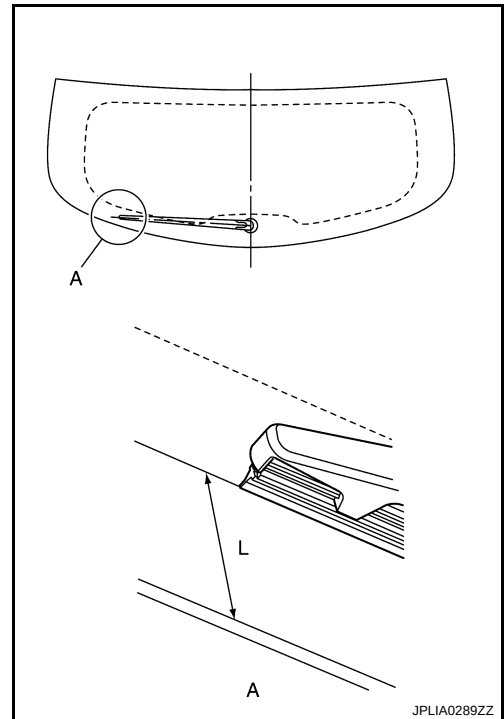
REAR WIPER BLADE POSITION ADJUSTMENT

REAR WIPER MOTOR

< ON-VEHICLE REPAIR >

Clearance "L" is between the edge of the back door glass and the tip of the rear wiper blade as shown.

L : 26.5 ± 10.3 mm (1.04 ± 0.406 in)



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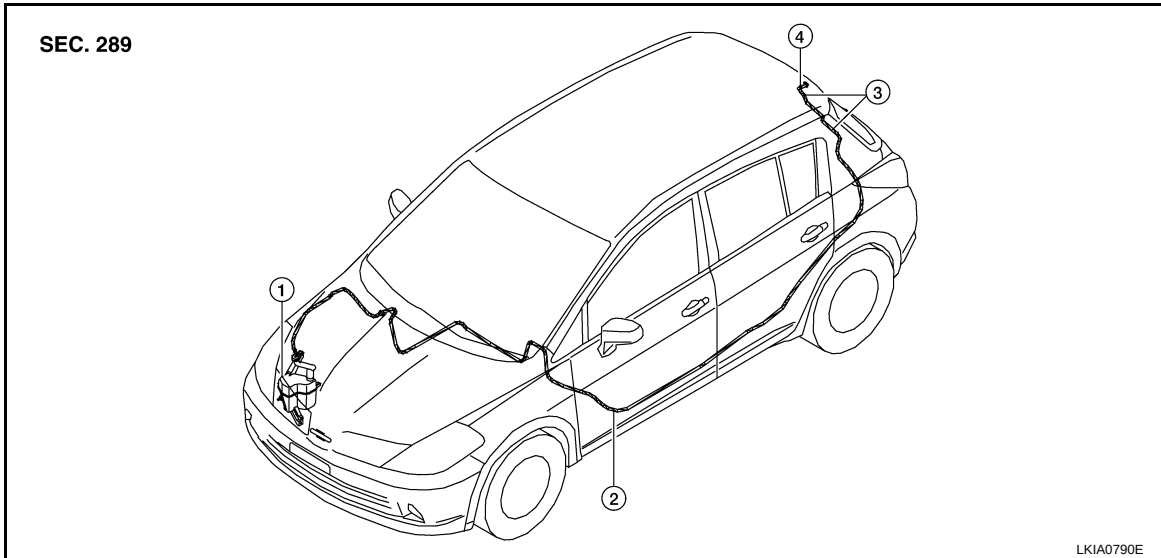
REAR WASHER NOZZLE AND TUBE

< ON-VEHICLE REPAIR >

REAR WASHER NOZZLE AND TUBE

Washer Tube Layout

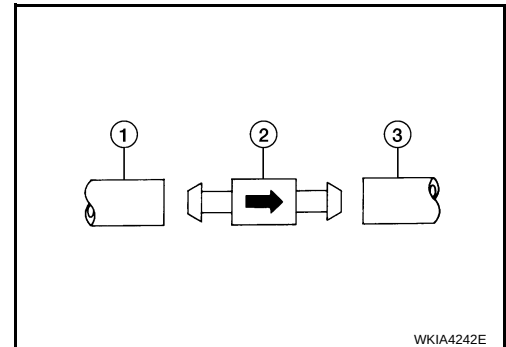
INFOID:000000001366677



- | | | | | | |
|---|------------------------|---|--------------------------------|---|--------------------|
| 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).



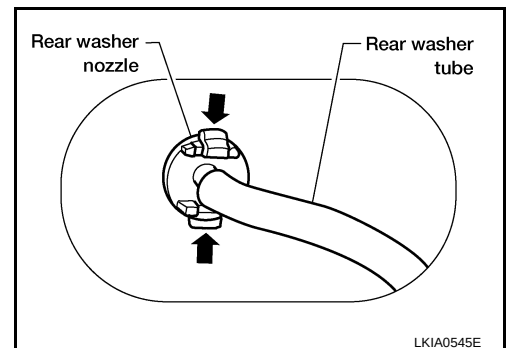
Removal and Installation

INFOID:000000001366678

REAR WASHER NOZZLE

Removal

1. Remove the back door window garnish. Refer to XX-XX, "*****".
2. Disconnect rear washer tube from rear washer nozzle.
3. Release retaining clips and remove washer nozzle.



Installation

REAR WASHER NOZZLE AND TUBE

< ON-VEHICLE REPAIR >

Installation is in the reverse order of removal.

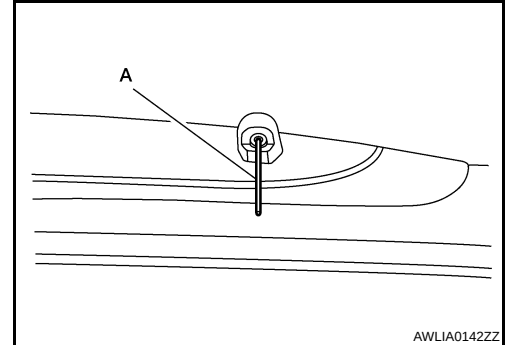
NOTE:

Inspect rear washer nozzle for proper spray pattern, adjust as necessary. Refer to XX-XX, "*****".

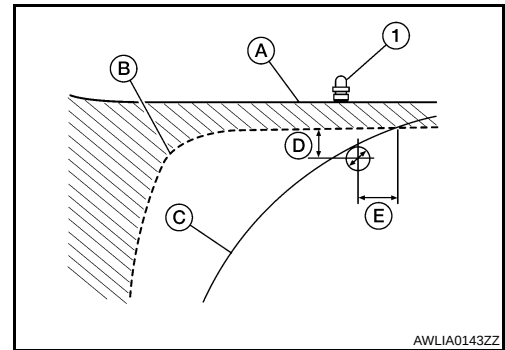
Adjustment

INFOID:000000001366679

- Adjust the washer nozzle (1) to specification (A) using suitable tool as shown.



- Washer nozzle (1)
- Washer spray area (A)
- Black print area (B)
- Wiping area edge (C)
- 30 mm (1.18 in) (D)
- 161 mm (6.34 in) (E)



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