SECTION WW
WIPER & WASHER

CONTENTS

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:0000000009484680

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-63, "Description".

>> GO TO 3

3. GO TO APPROPRIATE TROUBLE DIAGNOSIS

Go to appropriate trouble diagnosis. Refer to WW-60, "Symptom Table".

>> GO TO 4

4. REPAIR OR REPLACE

Repair or replace the specific parts.

>> GO TO 5

5. FINAL CHECK

Final check.

Is inspection result normal?

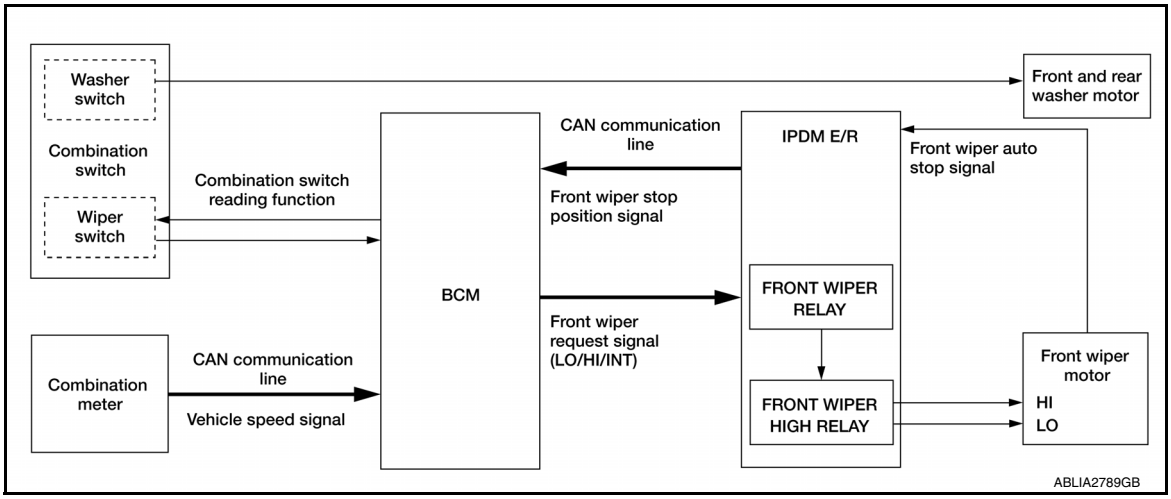
YES >> Inspection End
NO >> Refer to GI-40, "Intermittent Incident".

SYSTEM DESCRIPTION

FRONT WIPER AND WASHER SYSTEM

System Diagram

INFOID:0000000009484681



System Description

INFOID:0000000009484682

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)

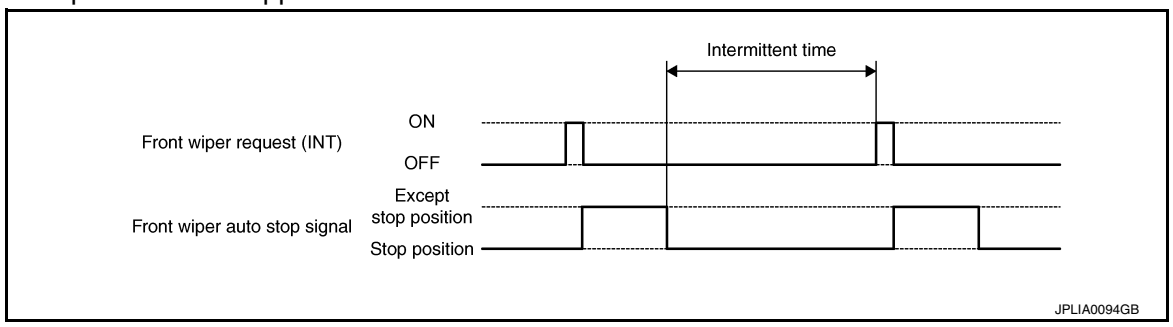
- BCM transmits the front wiper request signal (INT) to IPDM E/R with CAN communication according to the front wiper INT operation condition and the intermittent operation delay interval judged value.

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	↓	32	24	16	9.6
7	Long	42	31.5	21	12.6

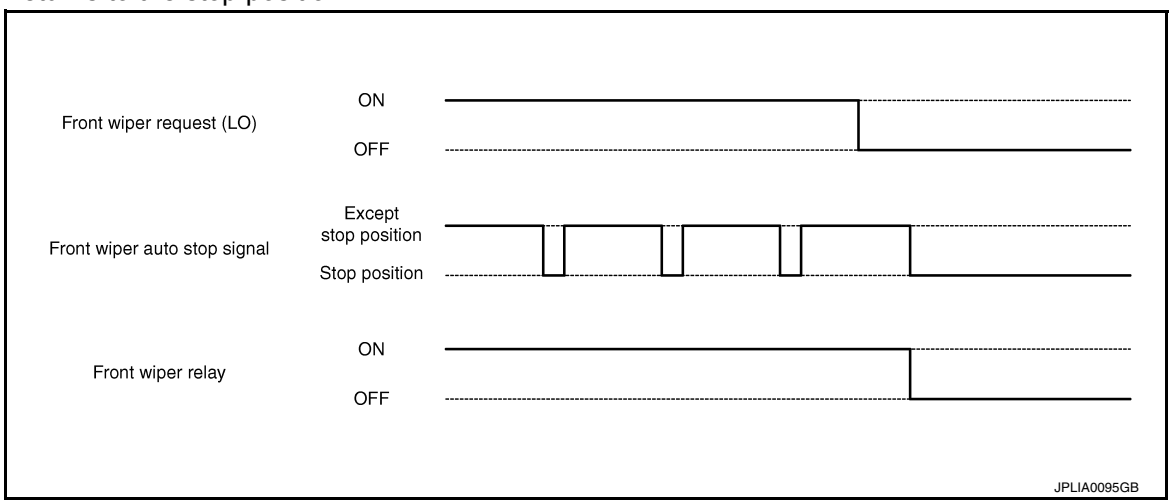
- IPDM E/R turns the integrated front wiper relay ON so that the front wiper is operated only once according to the front wiper request signal (INT).
- BCM detects stop position/except stop position of the front wiper motor according to the front wiper stop position signal received from IPDM E/R with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



FRONT WIPER AUTO STOP OPERATION

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

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



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

FRONT WIPER OPERATION LINKED WITH WASHER

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

Washer linked operating condition of front wiper
- Ignition switch ON
- Front washer switch ON (0.4 second or more)

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

FRONT WIPER DROP WIPE OPERATION

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

Front wiper drop wipe operating condition
- Ignition switch ON
- Front wiper switch OFF
- Front washer switch OFF

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

FRONT WIPER FAIL−SAFE OPERATION

- IPDM E/R performs the fail-safe function when the front wiper auto stop circuit is malfunctioning. Refer to PCS-20, "Fail Safe".

Component Parts Location

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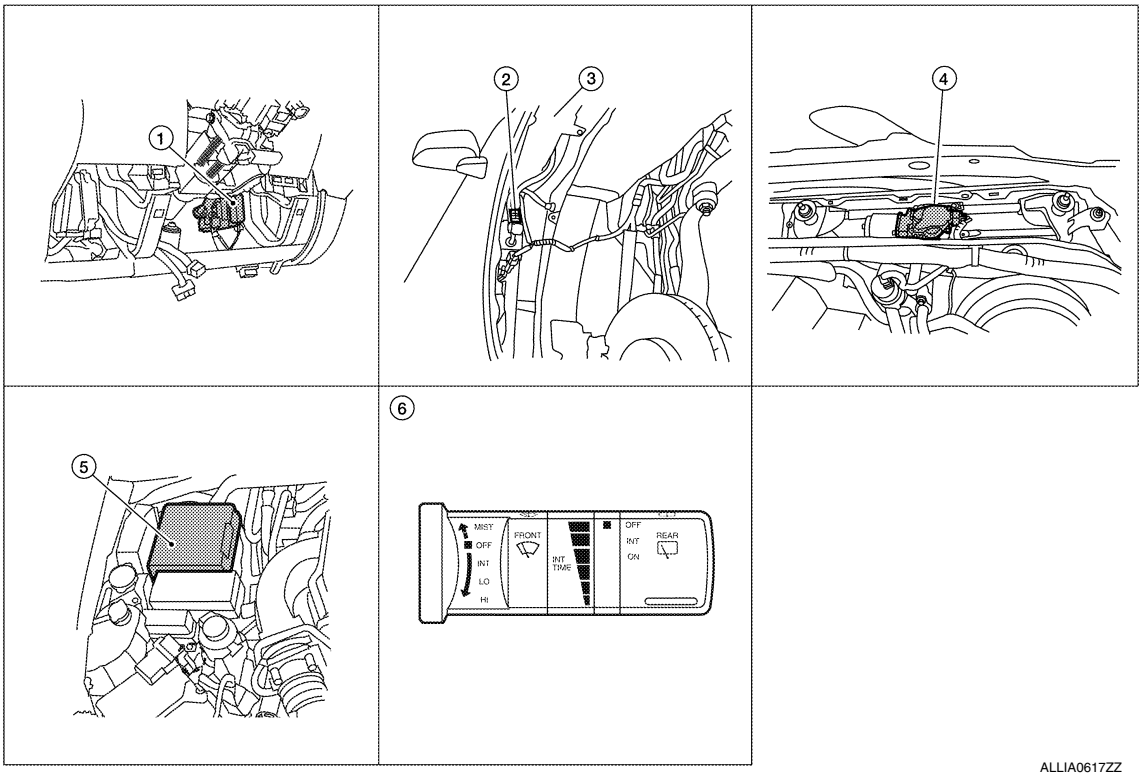

ALLIA0617ZZ

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

Component Description

INFOID:0000000009484684

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.
Front wiper motor	• IPDM E/R controls front wiper operation. • Sends wiper stop signal to IPDM E/R.
Front and rear washer motor	Pumps washer fluid to the front or rear in wash mode.

REAR WIPER AND WASHER SYSTEM

System Diagram

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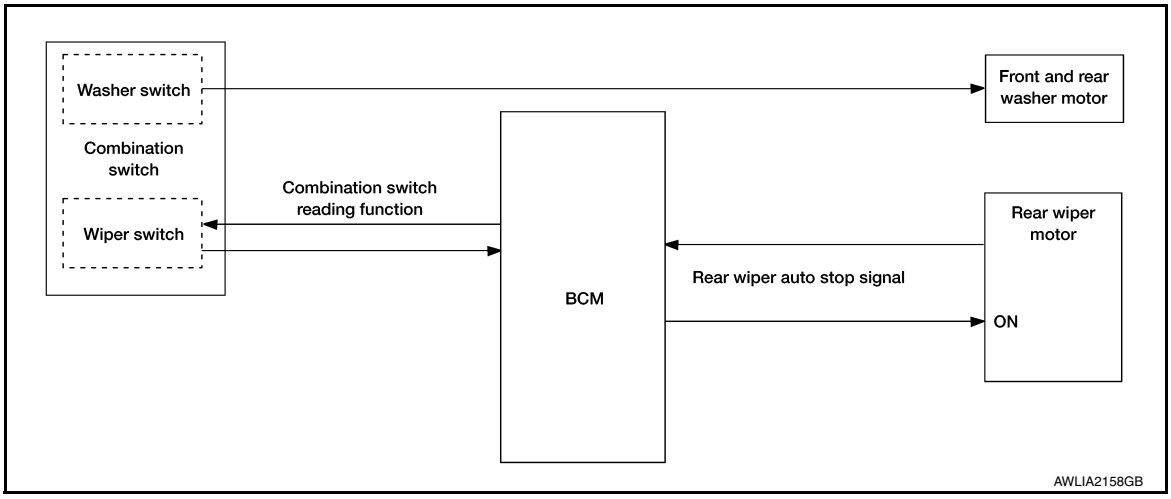


System Description

INFOID:0000000009484686

OUTLINE

The rear wiper is controlled by each function of BCM.

Control by BCM
- Combination switch reading function
- Rear wiper control function

REAR WIPER BASIC OPERATION

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

REAR WIPER ON OPERATION

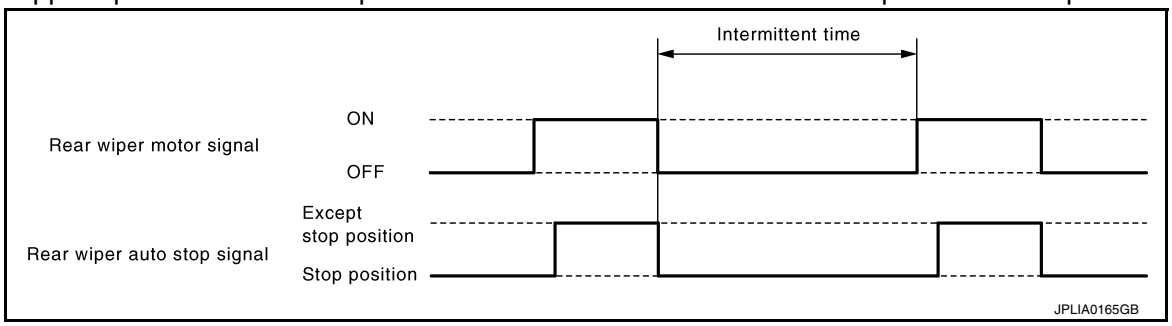
- BCM supplies power to the rear wiper motor according to the rear wiper ON operating condition.

Rear wiper ON operating condition
- Ignition switch ON
- Rear wiper switch ON

REAR WIPER INT OPERATION

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

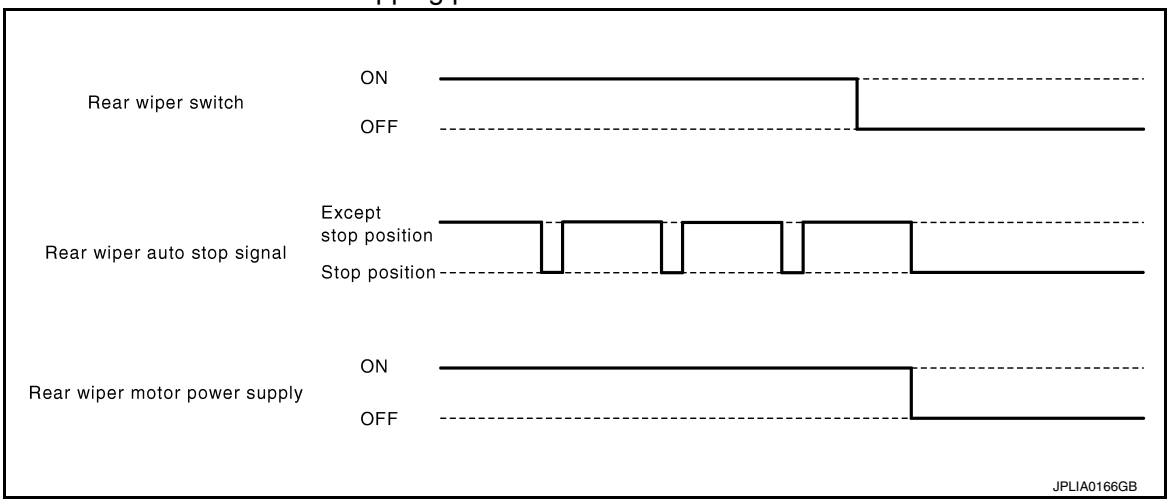
Rear wiper INT operating condition
- Ignition switch ON
- Rear wiper switch INT
- BCM controls the rear wiper to operate once.
- BCM detects the rear wiper motor stopping position.
- BCM supplies power to the rear wiper motor after an intermittent from the stop of the rear wiper motor.



REAR WIPER AUTO STOP OPERATION

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

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



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

REAR WIPER OPERATION LINKED WITH WASHER

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

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

REAR WIPER DROP WIPE OPERATION

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

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

REAR WIPER FAIL−SAFE OPERATION

BCM performs the fail-safe function when the rear wiper auto stop circuit is malfunctioning. Refer to BCS-41, "Fail Safe".

Component Parts Location

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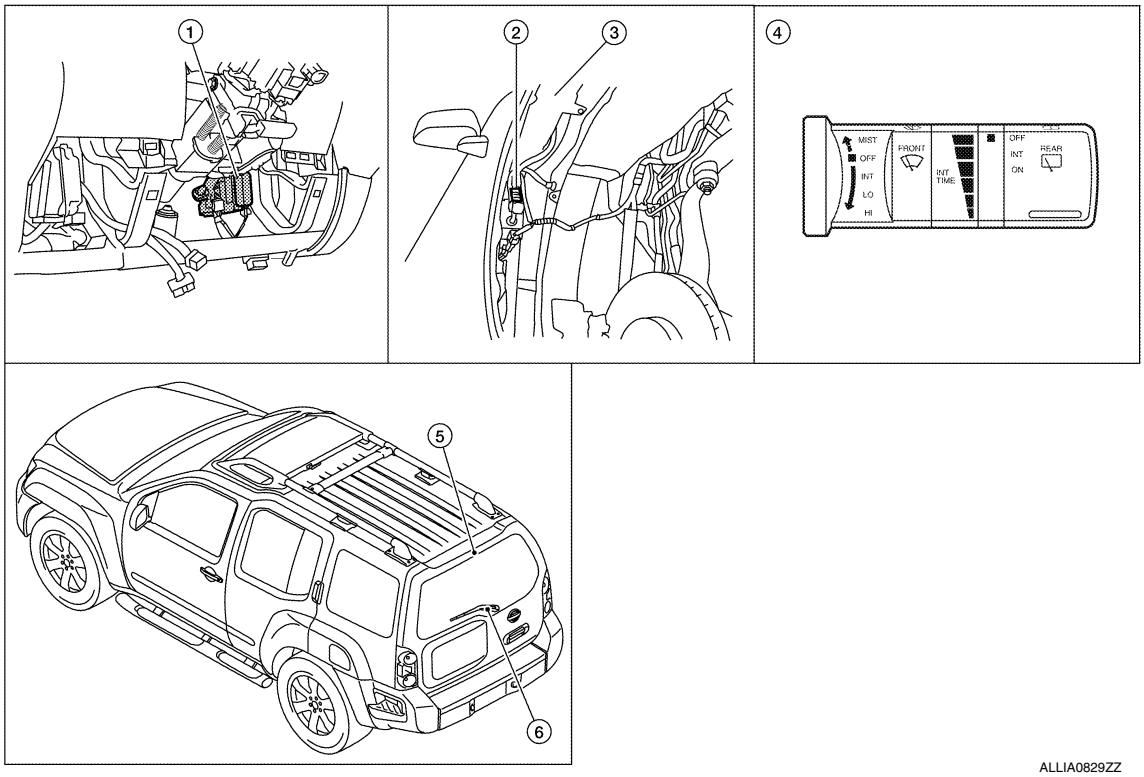

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1. BCM M18, M19, M20 (view with lower instrument panel LH removed)
2. Front and rear washer motor E105
3. Washer fluid reservoir
4. Combination switch (wiper and washer switch) M28
5. Rear washer nozzle
6. Rear wiper motor D509

Component Description

INFOID:0000000009484688

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-8, "System Diagram".
Rear wiper motor	• BCM controls rear wiper operation. • Sends wiper stop signal to BCM.
Front and rear washer motor	Pumps washer fluid to front or rear in wash mode.

DIAGNOSIS SYSTEM (BCM)
COMMON ITEM
COMMON ITEM : CONSULT Function (BCM - COMMON ITEM)

INFOID:0000000010247332

APPLICATION ITEM
CONSULT performs the following functions via CAN communication with BCM.

Direct Diagnostic Mode	Description
ECU Identification	The BCM part number is displayed.
Self Diagnostic Result	The BCM self diagnostic results are displayed.
Data Monitor	The BCM input/output data is displayed in real time.
Active Test	The BCM activates outputs to test components.
Work support	The settings for BCM functions can be changed.
Configuration	• The vehicle specification can be read and saved. • The vehicle specification can be written when replacing BCM.
CAN Diag Support Mntr	The result of transmit/receive diagnosis of CAN communication is displayed.

SYSTEM APPLICATION
BCM can perform the following functions.

System	Sub System	Direct Diagnostic Mode						
		ECU Identification	Self Diagnostic Result	Data Monitor	Active Test	Work support	Configuration	CAN Diag Support Mntr
Door lock	DOOR LOCK			×	×	×		
Rear window defogger	REAR DEFOGGER			×	×			
Warning chime	BUZZER			×	×			
Interior room lamp timer	INT LAMP			×	×	×		
Remote keyless entry system	MULTI REMOTE ENT			×	×	×		
Exterior lamp	HEAD LAMP			×	×	×		
Wiper and washer	WIPER			×	×	×		
Turn signal and hazard warning lamps	FLASHER			×	×			
Air conditioner	AIR CONDITIONER			×				
Combination switch	COMB SW			×				
BCM	BCM	×	×			×	×	×
Immobilizer	IMMU		×	×	×			
Interior room lamp battery saver	BATTERY SAVER			×	×	×		
Back door open	TRUNK			×	×			
Vehicle security system	THEFT ALM			×	×	×		
RAP system	RETAINED PWR			×	×	×		
Signal buffer system	SIGNAL BUFFER			×	×			
TPMS	AIR PRESSURE MONITOR		×	×	×	×		
Panic alarm system	PANIC ALARM				×			

WIPER

WIPER : CONSULT Function (BCM - WIPER)

INFOID:0000000010247334

DATA MONITOR

Monitor Item [Unit]	Description
IGN ON SW [On/Off]	Indicates condition of ignition switch ON position.
IGN SW CAN [On/Off]	Indicates ignition switch ON signal received from IPDM E/R on CAN communication line.
FR WIPER HI [On/Off]	Indicates condition of front wiper operation of combination switch.
FR WIPER LOW [On/Off]	
FR WIPER INT [On/Off]	
FR WASHER SW [On/Off]	
INT VOLUME [1 - 7]	
FR WIPER STOP [On/Off]	Indicates front wiper motor auto stop signal received from IPDM E/R on CAN communication line.
VEHICLE SPEED [km/h/mph]	Indicates vehicle speed signal received from combination meter on CAN communication line.
RR WIPER ON [On/Off]	Indicates condition of rear wiper operation of combination switch.
RR WIPER INT [On/Off]	
RR WASHER SW [On/Off]	
RR WIPER STOP [On/Off]	Indicates rear wiper motor auto stop input from rear wiper motor.

ACTIVE TEST

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

WORK SUPPORT

Support Item	Setting	Description
WIPER SPEED SETTING	Off*	Front wiper intermittent time linked with wiper dial position.
	On	Front wiper intermittent time linked with vehicle speed and wiper dial position.

* : Initial setting

DIAGNOSIS SYSTEM (IPDM E/R)

Diagnosis Description

INFOID:0000000010247969

AUTO ACTIVE TEST

Description

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

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

Operation Procedure

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

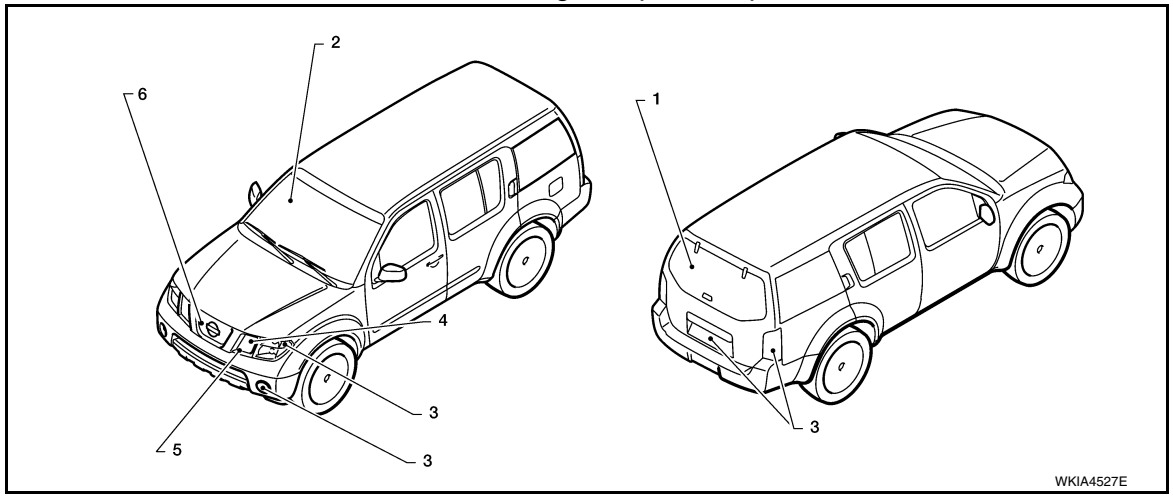
NOTE:
When auto active test mode has to be cancelled halfway through test, turn ignition switch OFF.

CAUTION:

- **If auto active test mode cannot be actuated, check door switch system. Refer to DLK-24, "Description".**
- **Do not start the engine.**

Inspection in Auto Active Test Mode

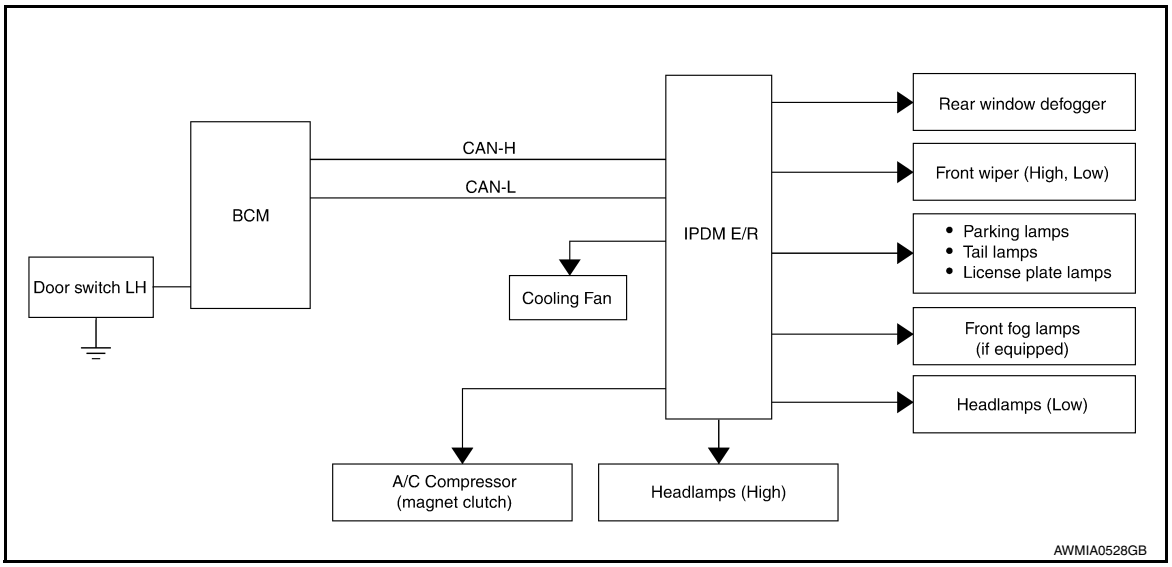
When auto active test mode is actuated, the following 7 steps are repeated 3 times.



Item Number	Test Item	Operation Time/Frequency
1	Rear window defogger	10 seconds
2	Front wipers	LOW 5 seconds then HIGH 5 seconds
3	License plate, tail, parking and fog lamps (if equipped)	10 seconds

Item Number	Test Item	Operation Time/Frequency
4	Headlamps	LOW 10 seconds then HIGH ON-OFF 5 times
5	A/C compressor (magnet clutch)	ON-OFF 5 times
6	Cooling fan	LOW 5 seconds, then HIGH 5 seconds

Concept of auto active test



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

Diagnosis chart in auto active test mode

Symptom	Inspection contents		Possible cause
Oil pressure low warning indicator does not operate	Perform auto active test. Does the oil pressure low warning indicator operate?	YES	• IPDM E/R signal input circuit • ECM signal input circuit • CAN communication signal between ECM and combination meter
		NO	• CAN communication signal between IPDM E/R, BCM and combination meter
Oil pressure gauge does not operate	Perform auto active test. Does the oil pressure gauge operate?	YES	IPDM E/R signal input circuit
		NO	• CAN communication signal between IPDM E/R, BCM and combination meter
Rear window defogger does not operate	Perform auto active test. Does the rear window defogger operate?	YES	BCM signal input circuit
		NO	• Harness or connector between front air control and BCM • CAN communication signal between BCM and IPDM E/R

Symptom	Inspection contents		Possible cause
Any of the following components do not operate • Front wipers • Tail lamps • License plate lamps • Parking lamps • Front fog lamps (if equipped) • Headlamps (Hi, Lo)	Perform auto active test. Does the applicable system operate?	YES	BCM signal input system
		NO	• Lamp or front wiper motor malfunction • Lamp or front wiper motor ground circuit • Harness or connector between IPDM E/R and applicable system • IPDM E/R (integrated relay malfunction)
A/C compressor does not operate	Perform auto active test. Does the A/C compressor operate?	YES	• BCM signal input circuit • CAN communication signal between BCM and ECM • CAN communication signal between ECM and IPDM E/R
		NO	• Magnetic clutch malfunction • Harness or connector between IPDM E/R and magnetic clutch • IPDM E/R (integrated relay malfunction)
Cooling fan does not operate	Perform auto active test. Does the cooling fan operate?	YES	• ECM signal input circuit • CAN communication signal between ECM and IPDM E/R
		NO	• Cooling fan motor malfunction • Harness or connector between IPDM E/R and cooling fan • IPDM E/R (integrated relay malfunction)

CONSULT Function (IPDM E/R)

INFOID:0000000010247970

APPLICATION ITEM

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

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

SELF DIAGNOSTIC RESULT

Refer to PCS-21, "DTC Index".

DATA MONITOR

Monitor Item [Unit]	Main Signals	Description
MOTOR FAN REQ [1/2/3/4]	×	Indicates cooling fan speed signal received from ECM on CAN communication line
AC COMP REQ [On/Off]	×	Indicates A/C compressor request signal received from ECM on CAN communication line

Monitor Item [Unit]	Main Signals	Description
TAIL&CLR REQ [On/Off]	×	Indicates position light request signal received from BCM on CAN communication line
HL LO REQ [On/Off]	×	Indicates low beam request signal received from BCM on CAN communication line
HL HI REQ [On/Off]	×	Indicates high beam request signal received from BCM on CAN communication line
FR FOG REQ [On/Off]	×	Indicates front fog light request signal received from BCM on CAN communication line
FR WIP REQ [Stop/1LOW/Low/Hi]	×	Indicates front wiper request signal received from BCM on CAN communication line
WIP AUTO STOP [STOP P/ACT P]	×	Indicates condition of front wiper auto stop signal
WIP PROT [Off/BLOCK]	×	Indicates condition of front wiper fail-safe operation
ST RLY REQ [On/Off]		Indicates starter request signal received from ECM on CAN communication line
IGN RLY [On/Off]	×	Indicates condition of ignition relay
RR DEF REQ [On/Off]	×	Indicates rear defogger request signal received from BCM on CAN communication line
OIL P SW [Open/Close]		Indicates condition of oil pressure switch
DTRL REQ [Off]		Indicates daytime light request signal received from BCM on CAN communication line
THFT HRN REQ [On/Off]		Indicates theft warning horn request signal received from BCM on CAN communication line
HORN CHIRP [On/Off]		Indicates horn reminder signal received from BCM on CAN communication line

ACTIVE TEST

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

DTC/CIRCUIT DIAGNOSIS

WIPER AND WASHER FUSE

Description

INFOID:0000000009484693

Fuse list

Unit	Location	Fuse No.	Capacity
Front wiper motor	IPDM E/R	39	30 A
Front and rear washer motor	Fuse block (J/B)	15	10 A

Diagnosis Procedure

INFOID:0000000009484694

1. CHECK FUSES

Check that the following fuses are not blown.

Unit	Location	Fuse No.	Capacity
Front wiper motor	IPDM E/R	39	30 A
Front and rear washer motor	Fuse block (J/B)	15	10 A

Is the fuse blown?

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

FRONT WIPER MOTOR LO CIRCUIT

Component Function Check

INFOID:0000000009484695

1. CHECK FRONT WIPER LO OPERATION

IPDM E/R AUTO ACTIVE TEST
1. Start IPDM E/R auto active test. Refer to PCS-9, "Diagnosis Description".
2. Check that the front wiper operates at the LO operation.

CONSULT ACTIVE TEST
1. Select "FRONT WIPER" of IPDM E/R active test item.
2. While operating the test item, check front wiper LO operation and OFF.

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:0000000009484696

Regarding Wiring Diagram information, refer to WW-50, "Wiring Diagram".

1. CHECK FRONT WIPER MOTOR FUSE

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

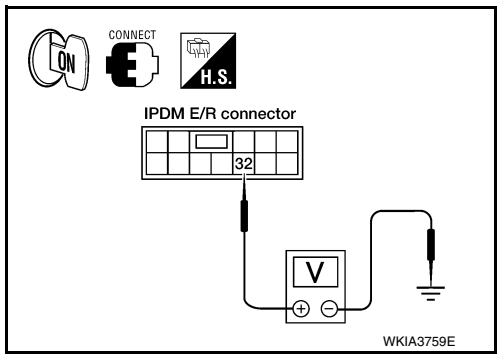
Unit	Location	Fuse No.	Capacity
Front wiper motor	IPDM E/R	39	30 A

Is the fuse blown?

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

2. CHECK FRONT WIPER MOTOR (LO) OUTPUT VOLTAGE

CONSULT ACTIVE TEST
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		Ground	FRONT WIPER	
Connector	Terminal			
E121	32		LO	Battery voltage
			OFF	0V

Is the measurement value normal?

YES >> GO TO 3
NO >> Replace IPDM E/R. Refer to PCS-27, "Removal and Installation".

3. CHECK FRONT WIPER MOTOR (LO) OPEN CIRCUIT

1. Turn the ignition switch OFF.

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

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

Does continuity exist?

YES >> Replace front wiper motor. Refer to WW-68, "Removal and Installation".
NO >> Repair or replace harness.

FRONT WIPER MOTOR HI CIRCUIT

Component Function Check

INFOID:0000000009484697

1. CHECK FRONT WIPER HI OPERATION

IPDM E/R AUTO ACTIVE TEST
1. Start IPDM E/R auto active test. Refer to PCS-9, "Diagnosis Description".
2. Check that the front wiper operates at the HI operation.

CONSULT ACTIVE TEST
1. Select "FRONT WIPER" of IPDM E/R active test item.
2. While operating the test item, check front wiper HI operation and OFF.

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:0000000009484698

Regarding Wiring Diagram information, refer to WW-50, "Wiring Diagram".

1. CHECK FRONT WIPER MOTOR FUSE

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

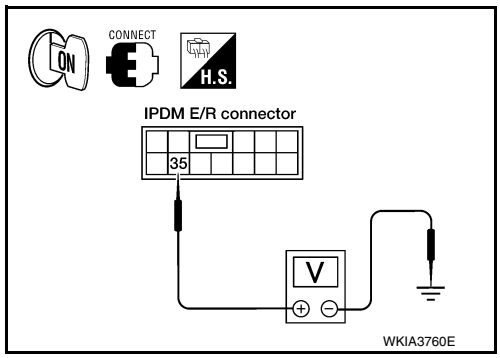
Unit	Location	Fuse No.	Capacity
Front wiper motor	IPDM E/R	39	30 A

Is the fuse blown?

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

2. CHECK FRONT WIPER MOTOR (HI) OUTPUT VOLTAGE

CONSULT ACTIVE TEST
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		Ground	FRONT WIPER	
Connector	Terminal			
E121	35		HI	Battery voltage
			OFF	0 V

Is the measurement value normal?

YES >> GO TO 3
NO >> Replace IPDM E/R. Refer to PCS-27, "Removal and Installation".

3. CHECK FRONT WIPER MOTOR (HI) OPEN CIRCUIT

1. Turn the ignition switch OFF.

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

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

Does continuity exist?

YES >> Replace front wiper motor. Refer to WW-68, "Removal and Installation".
NO >> Repair or replace harness.

FRONT WIPER AUTO STOP SIGNAL CIRCUIT

Component Function Check

INFOID:0000000009484699

1. CHECK FRONT WIPER (AUTO STOP) SIGNAL

CONSULT DATA MONITOR
1. Select "WIP AUTO STOP" of IPDM E/R data monitor item.
2. Operate the front wiper.
3. Check that "WIP AUTO STOP" changes to "STOP P" and "ACT P" linked with the wiper operation.

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

Is the status of item normal?

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

Diagnosis Procedure

INFOID:0000000009484700

Regarding Wiring Diagram information, refer to WW-50, "Wiring Diagram".

1. CHECK IPDM E/R OUTPUT VOLTAGE

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

Terminals			Voltage (V) (Approx.)
(+)		(-)	
Front wiper motor		Ground	
Connector	Terminal		
E23	5		Battery voltage

Is the measurement normal?

YES >> Replace front wiper motor. Refer to WW-68, "Removal and Installation".
NO >> GO TO 2

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

1. Turn the ignition switch OFF.
2. Disconnect IPDM E/R connector E122.
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	
E122	43	E23	5	Yes

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

IPDM E/R		Ground	Continuity
Connector	Terminal		
E122	43		No

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-27, "Removal and Installation".
NO >> Repair or replace harness.

FRONT WIPER MOTOR GROUND CIRCUIT

Diagnosis Procedure

INFOID:0000000009484701

Regarding Wiring Diagram information, refer to WW-50, "Wiring Diagram".

1. CHECK FRONT WIPER MOTOR (GROUND) OPEN CIRCUIT

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

Front wiper motor		Ground	Continuity
Connector	Terminal		
E23	2		Yes

Does continuity exist?

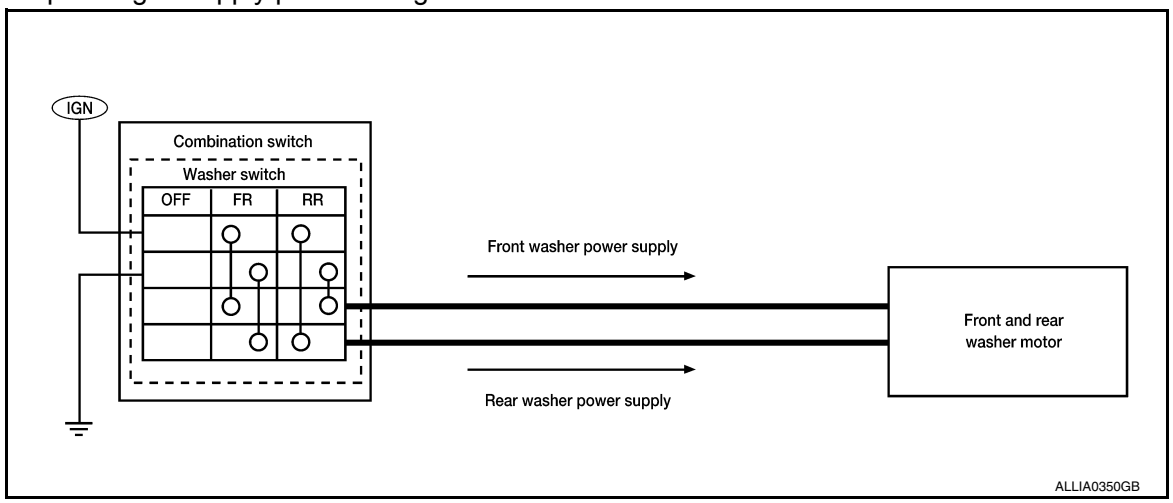
YES >> Front wiper motor ground circuit is normal.
NO >> Repair or replace harness.

WASHER SWITCH

Description

INFOID:0000000009484702

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



Component Inspection

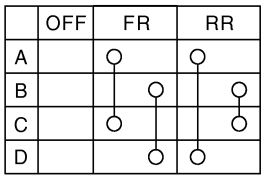
INFOID:0000000009484703

Regarding Wiring Diagram information, refer to WW-50, "Wiring Diagram".

1. CHECK FRONT WASHER SWITCH

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

A: Terminal 14
B: Terminal 12
C: Terminal 13
D: Terminal 11



Combination switch (wiper and washer switch)		Condition	Continuity
Terminal			
11	12	Front washer switch ON	Yes
13	14		

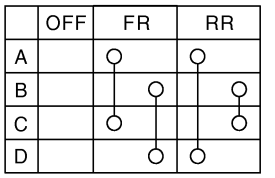
Does continuity exist?

YES >> GO TO 2.
NO >> Replace combination switch (wiper and washer switch). Refer to WW-79, "Removal and Installation".

2. CHECK REAR WASHER SWITCH

1. Check continuity between the combination switch (wiper and washer switch) terminals.

A: Terminal 14
B: Terminal 12
C: Terminal 13
D: Terminal 11



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Combination switch (wiper and washer 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 (wiper and washer switch). Refer to WW-79, "Removal and Installation".

WASHER MOTOR CIRCUIT

Diagnosis Procedure

INFOID:0000000009484704

Regarding Wiring Diagram information, refer to WW-50, "Wiring Diagram" or WW-55, "Wiring Diagram".

1. CHECK FRONT AND REAR WASHER MOTOR FUSE

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

Unit	Location	Fuse No.	Capacity
Front and rear washer motor	Fuse block (J/B)	15	10A

Is the fuse blown?

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

2. CHECK WIPER AND WASHER SWITCH INPUT VOLTAGE

1. Disconnect combination switch (wiper and washer switch).
2. Turn the ignition switch ON.
3. Check voltage between combination switch (wiper and washer switch) harness connector and ground.

Terminals			Voltage (Approx.)
(+)		(-)	
Combination switch (wiper and washer switch)		Ground	
Connector	Terminal		
M28	14		Battery voltage

Is the measurement value normal?

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

3. CHECK WIPER AND WASHER SWITCH GOURND CIRCUIT

Check continuity between combination switch (wiper and washer switch) harness connector and ground.

Combination switch (wiper and washer switch)		Ground	Continuity
Connector	Terminal		
M28	12		Yes

Does continuity exist?

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

4. CHECK WIPER AND WASHER SWITCH

Check wiper and washer switch. Refer to WW-25, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5
NO >> Replace wiper and washer switch. Refer to WW-79, "Removal and Installation".

5. CHECK FRONT AND REAR WASHER MOTOR POWER SUPPLY

1. Turn ignition switch OFF.
2. Connect combination switch (wiper and washer switch).

3. Disconnect front and rear washer motor.
4. Turn ignition switch ON.
5. Check voltage between front and rear washer motor harness connector and ground.

Terminal			Condition		Voltage (V) (Approx.)
(+)		(-)			
Front and rear washer motor	Terminal				
E105	1	2	Washer switch	Front: ON	Battery voltage
	2	1		Rear: ON	

Is the measurement value normal?

YES >> Replace front and rear washer motor. Refer to WW-78, "Removal and Installation".
NO >> Repair or replace harness.

REAR WIPER MOTOR CIRCUIT

Component Function Check

INFOID:0000000009484705

1. CHECK REAR WIPER ON OPERATION

CONSULT ACTIVE TEST
1. Select "RR WIPER" of BCM active test item.
2. While operating the test item, check rear wiper ON operation and OFF.

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-29, "Diagnosis Procedure".

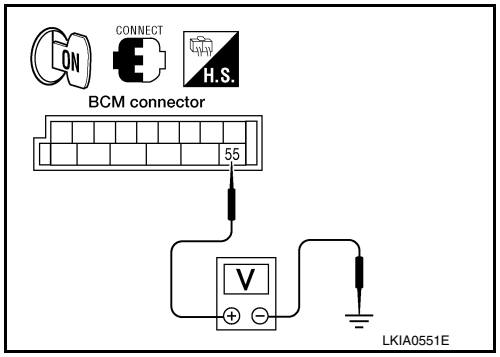
Diagnosis Procedure

INFOID:0000000009484706

Regarding Wiring Diagram information, refer to WW-55, "Wiring Diagram".

1. CHECK REAR WIPER MOTOR OUTPUT VOLTAGE

CONSULT 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.



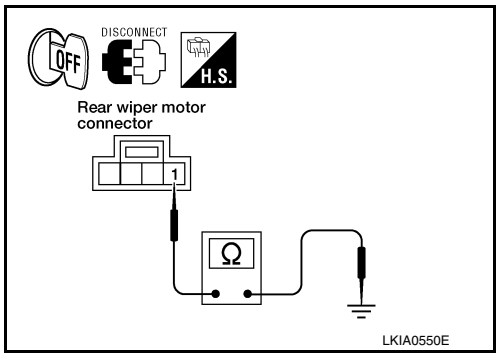
Terminals			Test item	Voltage (Approx.)
(+)		(–)	REAR WIPER	
BCM				
Connector	Terminal			
M19	55	Ground	ON	Battery voltage
			OFF	0V

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.



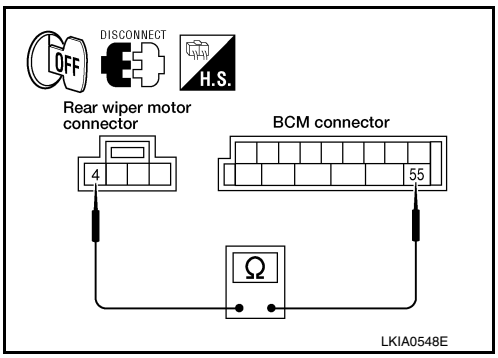
Rear wiper motor		Ground	Continuity
Connector	Terminal		
D509	1		Yes

Does continuity exist?

YES >> Replace rear wiper motor. Refer to WW-73, "Removal and Installation".
NO >> Repair or replace harness.

3. CHECK REAR WIPER MOTOR OPEN CIRCUIT

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



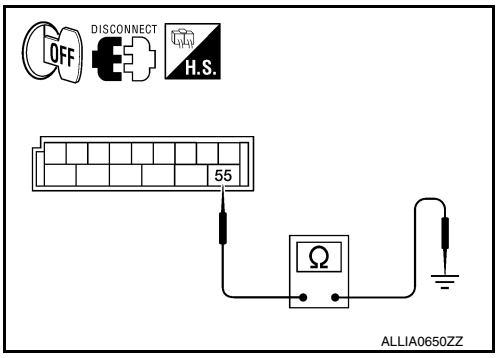
BCM		Rear wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
M19	55	D509	4	Yes

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		
M19	55		No

Does continuity exist?

YES >> Repair or replace harness.
NO >> Replace BCM. Refer to BCS-50, "Removal and Installation".

REAR WIPER AUTO STOP SIGNAL CIRCUIT

Component Function Check

INFOID:0000000009484707

1. CHECK REAR WIPER (AUTO STOP) OPERATION

CONSULT 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-31, "Diagnosis Procedure".

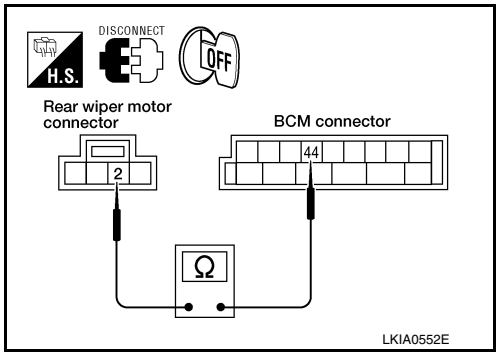
Diagnosis Procedure

INFOID:0000000009484708

Regarding Wiring Diagram information, refer to WW-55, "Wiring Diagram".

1. CHECK REAR WIPER MOTOR AUTO STOP CIRCUITS FOR OPEN

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



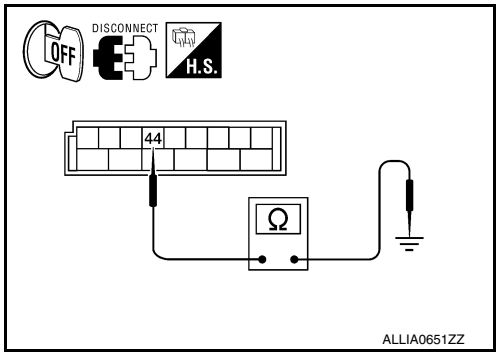
BCM		Rear wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
M19	44	D509	2	Yes

Is inspection result normal?

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

2. CHECK AUTO STOP CIRCUITS FOR SHORT TO GROUND

Check continuity between BCM harness connector terminals and ground.



BCM		Ground	Continuity
Connector	Terminal		
M19	44		No

Is inspection result normal?

YES >> Replace BCM. Refer to BCS-50, "Removal and Installation".
NO >> Repair or replace harness.

ECU DIAGNOSIS INFORMATION

BCM (BODY CONTROL MODULE)

Reference Value

INFOID:0000000010247988

NOTE:
The Signal Tech II Tool (J-50190) can be used to perform the following functions. Refer to the Signal Tech II User Guide for additional information.
- Activate and display TPMS transmitter IDs
- Display tire pressure reported by the TPMS transmitter
- Read TPMS DTCs
- Register TPMS transmitter IDs

VALUES ON THE DIAGNOSIS TOOL

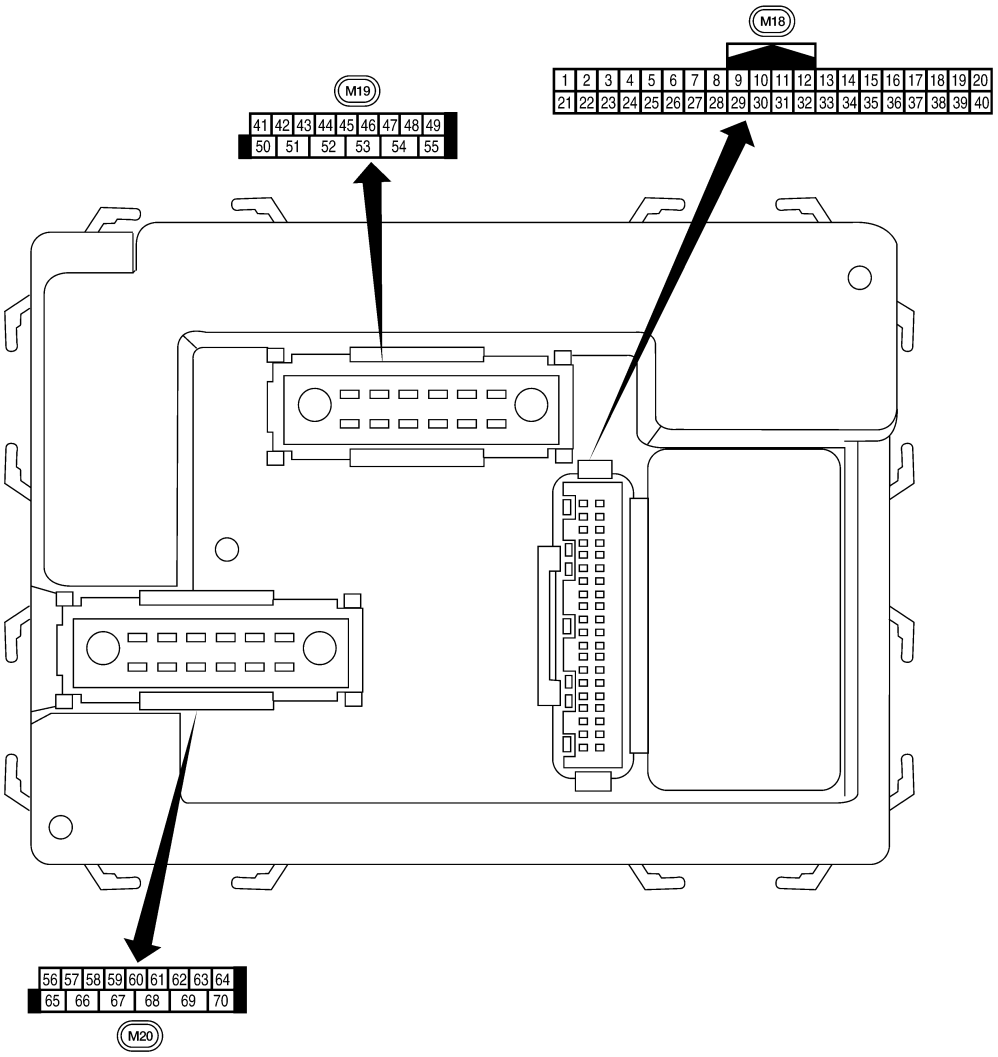
Monitor Item	Condition	Value/Status
ACC ON SW	Ignition switch OFF or ON	Off
	Ignition switch ACC	On
AIR COND SW	A/C switch OFF	Off
	A/C switch ON	On
AIR PRESS FL	Front left tire air pressure value	kPa, kg/cm^2, psi
AIR PRESS FR	Front right tire air pressure value	kPa, kg/cm^2, psi
AIR PRESS RL	Rear left tire air pressure value	kPa, kg/cm^2, psi
AIR PRESS RR	Rear right tire air pressure value	kPa, kg/cm^2, psi
AUTO LIGHT SW	Lighting switch OFF	Off
	Lighting switch AUTO	On
BACK DOOR SW	Back door closed	Off
	Back door opened	On
BRAKE SW	Brake pedal released	Off
	Brake pedal applied	On
BUCKLE SW	Seat belt buckle unfastened	Off
	Seat belt buckle fastened	On
BUZZER	Buzzer in combination meter OFF	Off
	Buzzer in combination meter ON	On
CARGO LAMP SW	Cargo lamp switch OFF	Off
	Cargo lamp switch ON	On
CDL LOCK SW	Door lock/unlock switch does not operate	Off
	Press door lock/unlock switch to the LOCK side	On
CDL UNLOCK SW	Door lock/unlock switch does not operate	Off
	Press door lock/unlock switch to the UNLOCK side	On
DOOR SW-AS	Front door RH closed	Off
	Front door RH opened	On
DOOR SW-DR	Front door LH closed	Off
	Front door LH opened	On
DOOR SW-RL	Rear door LH closed	Off
	Rear door LH opened	On
DOOR SW-RR	Rear door RH closed	Off
	Rear door RH opened	On

Monitor Item	Condition	Value/Status
ENGINE RUN	Engine stopped	Off
	Engine running	On
FAN ON SIG	Blower motor fan switch OFF	Off
	Blower motor fan switch ON	On
FR FOG SW	Front fog lamp switch OFF	Off
	Front fog lamp switch ON	On
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
HAZARD SW	When hazard switch is not pressed	Off
	When hazard switch is pressed	On
HEAD LAMP SW 1	Headlamp switch OFF	Off
	Headlamp switch 1st	On
HEAD LAMP SW 2	Headlamp switch OFF	Off
	Headlamp switch 1st	On
HI BEAM SW	High beam switch OFF	Off
	High beam switch HI	On
ID REGST FL1	ID registration of front left tire incomplete	YET
	ID registration of front left tire complete	DONE
ID REGST FR1	ID registration of front right tire incomplete	YET
	ID registration of front right tire complete	DONE
ID REGST RL1	ID registration of rear left tire incomplete	YET
	ID registration of rear left tire complete	DONE
ID REGST RR1	ID registration of rear right tire incomplete	YET
	ID registration of rear right tire complete	DONE
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
KEY CYL LK-SW	Door key cylinder LOCK position	Off
	Door key cylinder other than LOCK position	On
KEY CYL UN-SW	Door key cylinder UNLOCK position	Off
	Door key cylinder other than UNLOCK position	On
KEY ON SW	Mechanical key is removed from key cylinder	Off
	Mechanical key is inserted to key cylinder	On

Monitor Item	Condition	Value/Status
KEYLESS LOCK	LOCK button of key fob is not pressed	Off
	LOCK button of key fob is pressed	On
KEYLESS PANIC	PANIC button of key fob is not pressed	Off
	PANIC button of key fob is pressed	On
KEYLESS UNLOCK	UNLOCK button of key fob is not pressed	Off
	UNLOCK button of key fob is pressed	On
LIGHT SW 1ST	Lighting switch OFF	Off
	Lighting switch 1st	On
OIL PRESS SW	• Ignition switch OFF or ACC • Engine running	Off
	Ignition switch ON	On
OPTICAL SENSOR	Bright outside of the vehicle	Close to 5V
	Dark outside of the vehicle	Close to 0V
PASSING SW	Other than lighting switch PASS	Off
	Lighting switch PASS	On
PKB SW	Parking brake released	Off
	Parking brake engaged	On
REAR DEF SW	Rear window defogger switch OFF	Off
	Rear window defogger switch ON	On
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
TURN SIGNAL L	Turn signal switch OFF	Off
	Turn signal switch LH	On
TURN SIGNAL R	Turn signal switch OFF	Off
	Turn signal switch RH	On
VEHICLE SPEED	While driving	Equivalent to speedometer reading
WARNING LAMP	Low tire pressure warning lamp in combination meter OFF	Off
	Low tire pressure warning lamp in combination meter ON	On

Terminal Layout

INFOID:0000000010247989



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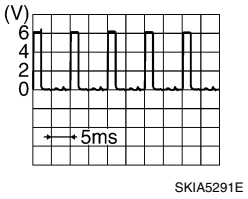
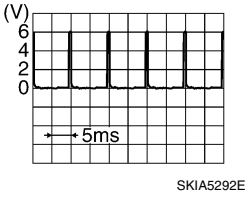
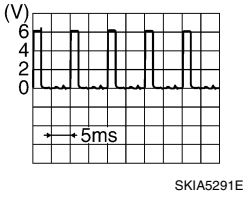
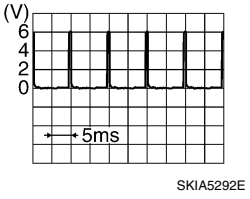
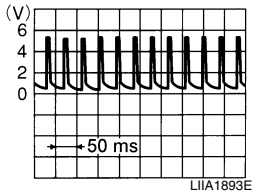
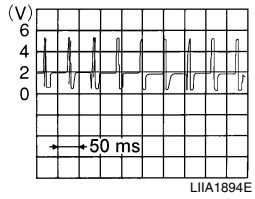
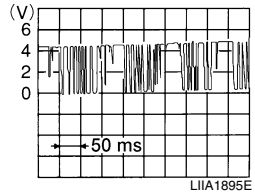
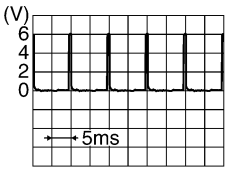
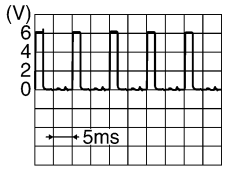
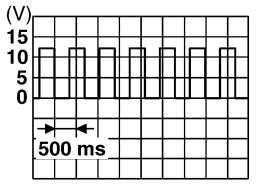
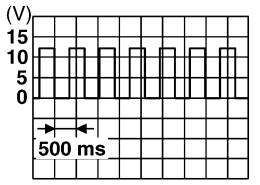
Physical Values

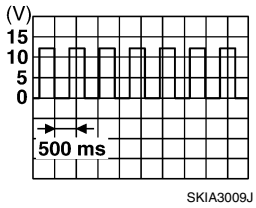
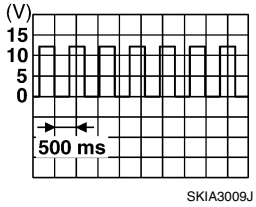
INFOID:0000000010247990

Terminal	Wire color	Signal name	Signal input/ output	Measuring condition		Reference value or waveform (Approx.)
				Ignition switch	Operation or condition	
1	BR	Ignition keyhole illumination	Output	OFF	Door is locked (SW OFF)	Battery voltage
					Door is unlocked (SW ON)	0V
2	P	Combination switch input 5	Input	ON	Lighting, turn, wiper OFF Wiper dial position 4	 SKIA5291E
3	SB	Combination switch input 4	Input	ON	Lighting, turn, wiper OFF Wiper dial position 4	 SKIA5292E
4	V	Combination switch input 3	Input	ON	Lighting, turn, wiper OFF Wiper dial position 4	 SKIA5291E
5	L	Combination switch input 2	Input	ON	Lighting, turn, wiper OFF Wiper dial position 4	 SKIA5292E
6	R	Combination switch input 1				
7	GR	Front door lock assembly LH (key cylinder switch) and back door key cylinder switch (unlock)	Input	OFF	ON (open, 2nd turn)	Momentary 1.5V
					OFF (closed)	0V
8	SB	Front door lock assembly LH (key cylinder switch) and back door key cylinder switch (lock)	Input	OFF	ON (open)	Momentary 1.5V
					OFF (closed)	0V
9	LG	Stop lamp switch	Input	OFF	Brake pedal depressed	Battery voltage
					Brake pedal released	0V
11	G/B	Ignition switch (ACC or ON)	Input	ACC or ON	Ignition switch ACC or ON	Battery voltage
12	LG	Front door switch RH	Input	OFF	ON (open)	0V
					OFF (closed)	Battery voltage
13	L	Rear door switch RH	Input	OFF	ON (open)	0V
					OFF (closed)	Battery voltage

Terminal	Wire color	Signal name	Signal input/ output	Measuring condition		Reference value or waveform (Approx.)
				Ignition switch	Operation or condition	
15	W	Tire pressure warning check connector	Input	OFF	—	5V
18	BR	Remote keyless entry receiver and optical sensor (ground)	Output	OFF	—	0V
19	V	Remote keyless entry receiver (power supply)	Output	OFF	Ignition switch OFF	
20	G	Remote keyless entry receiver (signal)	Input	OFF	Stand-by (keyfob buttons released)	
					When remote keyless entry receiver receives signal from keyfob (keyfob buttons pressed)	
21	GR	NATS antenna amp.	Input	OFF → ON	Ignition switch (OFF → ON)	Just after turning ignition switch ON: Pointer of tester should move for approx. 1 second, then return to battery voltage.
23	G	Security indicator lamp	Output	OFF	Goes OFF → illuminates (Every 2.4 seconds)	Battery voltage → 0V
25	BR	NATS antenna amp.	Input	OFF → ON	Ignition switch (OFF → ON)	Just after turning ignition switch ON: Pointer of tester should move for approx. 1 second, then return to battery voltage.
27	W	Compressor ON signal	Input	ON	A/C switch OFF	5V
					A/C switch ON	0V
28	R	Front blower monitor	Input	ON	Front blower motor OFF	Battery voltage
					Front blower motor ON	0V
29	G	Hazard switch	Input	OFF	ON	0V
					OFF	5V
31	R	Off-road lamps switch	Input	ON	ON	0V
					OFF	5V

Terminal	Wire color	Signal name	Signal input/ output	Measuring condition		Reference value or waveform (Approx.)
				Ignition switch	Operation or condition	
32	BG	Combination switch output 5	Output	ON	Lighting, turn, wiper OFF Wiper dial position 4	 SKIA5291E
33	GR	Combination switch output 4	Output	ON	Lighting, turn, wiper OFF Wiper dial position 4	 SKIA5292E
34	G	Combination switch output 3	Output	ON	Lighting, turn, wiper OFF Wiper dial position 4	 SKIA5291E
35	BR	Combination switch output 2	Output	ON	Lighting, turn, wiper OFF Wiper dial position 4	 SKIA5292E
36	LG	Combination switch output 1				
37	B	Key switch and key lock solenoid	Input	OFF	Key inserted	Battery voltage
					Key removed	0V
38	W/R	Ignition switch (ON)	Input	ON	—	Battery voltage
39	L	CAN-H	—	—	—	—
40	P	CAN-L	—	—	—	—
41	Y	Rear window defogger switch	Input	ON	Rear window defogger switch ON	0V
					Rear window defogger switch OFF	5V
42	L	Off-road lamps	Output	ON	Off-road lamps switch: ON	0V
					Off-road lamps switch: OFF	Battery voltage
43	Y	Back door switch	Input	OFF	ON (open)	0V
					OFF (closed)	Battery voltage

Terminal	Wire color	Signal name	Signal input/ output	Measuring condition		Reference value or waveform (Approx.)
				Ignition switch	Operation or condition	
44	BG	Rear wiper auto stop switch	Input	ON	Rise up position (rear wiper arm on stopper)	0V
					A Position (full clockwise stop position)	Battery voltage
					Forward sweep (counterclockwise direction)	Fluctuating
					B Position (full counterclockwise stop position)	0V
					Reverse sweep (clockwise direction)	Fluctuating
45	V	Lock switch	Input	OFF	ON (lock)	0V
					OFF	Battery voltage
46	LG	Unlock switch	Input	OFF	ON (unlock)	0V
					OFF	Battery voltage
47	GR	Front door switch LH	Input	OFF	ON (open)	0V
					OFF (closed)	Battery voltage
48	P	Rear door switch LH	Input	OFF	ON (open)	0V
					OFF (closed)	Battery voltage
49	L	Cargo lamp	Output	OFF	Any door open (ON)	0V
					All doors closed (OFF)	Battery voltage
50	W	Off-road lamps relay	Output	ON	Off-road lamps switch: ON	0V
					Off-road lamps switch: OFF	Battery voltage
51	BG	Trailer turn signal (right)	Output	ON	Turn right ON	 SKIA3009J
52	LG	Trailer turn signal (left)	Output	ON	Turn left ON	 SKIA3009J
55	W	Rear wiper output circuit 1	Output	ON	OFF	0
					ON	Battery voltage
56	R/Y	Battery saver output	Output	OFF	10 minutes after ignition switch is turned OFF	0V
				ON	—	Battery voltage
57	R/Y	Battery power supply	Input	OFF	—	Battery voltage
58	W	Optical sensor	Input	ON	When optical sensor is illuminated	3.1V or more
					When optical sensor is not illuminated	0.6V or less

Terminal	Wire color	Signal name	Signal input/ output	Measuring condition		Reference value or waveform (Approx.)
				Ignition switch	Operation or condition	
59	GR	Front door lock assembly LH actuator (unlock)	Output	OFF	OFF (neutral)	0V
					ON (unlock)	Battery voltage
60	LG	Turn signal (left)	Output	ON	Turn left ON	 SKIA3009J
61	G	Turn signal (right)	Output	ON	Turn right ON	 SKIA3009J
63	BR	Interior room/map lamp	Output	OFF	Any door switch: ON (open)	0V
					Any door switch: OFF (closed)	Battery voltage
65	V	All door lock actuators (lock)	Output	OFF	OFF (neutral)	0V
					ON (lock)	Battery voltage
66	L	Front door lock actuator RH, rear door lock actuators LH/RH and back door lock actuator (unlock)	Output	OFF	OFF (neutral)	0V
					ON (unlock)	Battery voltage
67	B	Ground	Input	ON	—	0V
68	SB	Power window power supply (RAP)	Output	—	Ignition switch ON	Battery voltage
					Within 45 seconds after ignition switch OFF	Battery voltage
					More than 45 seconds after ignition switch OFF	0V
					When front door LH or RH is open or power window timer operates	0V
70	W	Battery power supply	Input	OFF	—	Battery voltage

Fail Safe

INFOID:0000000010247992

Fail-safe index

BCM performs fail-safe control when any DTC listed below is detected.

Display contents of CONSULT	Fail-safe	Cancellation
U1000: CAN COMM CIRCUIT	Inhibit engine cranking	When the BCM re-establishes communication with the other modules.

DTC Inspection Priority Chart

INFOID:0000000010247993

If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.

Priority	DTC
1	• U1000: CAN COMM CIRCUIT
2	• B2190: NATS ANTENNA AMP • B2191: DIFFERENCE OF KEY • B2192: ID DISCORD BCM-ECM • B2193: CHAIN OF BCM-ECM
3	• C1729: VHCL SPEED SIG ERR • C1735: IGNITION SIGNAL
4	• C1704: LOW PRESSURE FL • C1705: LOW PRESSURE FR • C1706: LOW PRESSURE RR • C1707: LOW PRESSURE RL • C1708: [NO DATA] FL • C1709: [NO DATA] FR • C1710: [NO DATA] RR • C1711: [NO DATA] RL • C1712: [CHECKSUM ERR] FL • C1713: [CHECKSUM ERR] FR • C1714: [CHECKSUM ERR] RR • C1715: [CHECKSUM ERR] RL • C1716: [PRESSDATA ERR] FL • C1717: [PRESSDATA ERR] FR • C1718: [PRESSDATA ERR] RR • C1719: [PRESSDATA ERR] RL • C1720: [CODE ERR] FL • C1721: [CODE ERR] FR • C1722: [CODE ERR] RR • C1723: [CODE ERR] RL • C1724: [BATT VOLT LOW] FL • C1725: [BATT VOLT LOW] FR • C1726: [BATT VOLT LOW] RR • C1727: [BATT VOLT LOW] RL

DTC Index

INFOID:0000000010247995

NOTE:

Details of time display

- CRNT: Displays when there is a malfunction now or after returning to the normal condition until turning ignition switch OFF → ON again.
- 1 - 39: Displayed if any previous malfunction is present when current condition is normal. It increases like 1 → 2 → 3...38 → 39 after returning to the normal condition whenever ignition switch OFF → ON. The counter remains at 39 even if the number of cycles exceeds it. It is counted from 1 again when turning ignition switch OFF → ON after returning to the normal condition if the malfunction is detected again.

CONSULT display	Fail-safe	Low tire pressure warning lamp ON	Reference page
No DTC is detected. further testing may be required.	—	—	—
U1000: CAN COMM CIRCUIT	X	—	BCS-27
B2190: NATS ANTENNA AMP	—	—	SEC-18
B2191: DIFFERENCE OF KEY	—	—	SEC-21
B2192: ID DISCORD BCM-ECM	—	—	SEC-22
B2193: CHAIN OF BCM-ECM	—	—	SEC-24
C1708: [NO DATA] FL	—	X	WT-15
C1709: [NO DATA] FR	—	X	WT-15
C1710: [NO DATA] RR	—	X	WT-15
C1711: [NO DATA] RL	—	X	WT-15

CONSULT display	Fail-safe	Low tire pressure warning lamp ON	Reference page
C1712: [CHECKSUM ERR] FL	—	X	WT-17
C1713: [CHECKSUM ERR] FR	—	X	WT-17
C1714: [CHECKSUM ERR] RR	—	X	WT-17
C1715: [CHECKSUM ERR] RL	—	X	WT-17
C1716: [PRESSDATA ERR] FL	—	X	WT-19
C1717: [PRESSDATA ERR] FR	—	X	WT-19
C1718: [PRESSDATA ERR] RR	—	X	WT-19
C1719: [PRESSDATA ERR] RL	—	X	WT-19
C1720: [CODE ERR] FL	—	X	WT-17
C1721: [CODE ERR] FR	—	X	WT-17
C1722: [CODE ERR] RR	—	X	WT-17
C1723: [CODE ERR] RL	—	X	WT-17
C1724: [BATT VOLT LOW] FL	—	X	WT-17
C1725: [BATT VOLT LOW] FR	—	X	WT-17
C1726: [BATT VOLT LOW] RR	—	X	WT-17
C1727: [BATT VOLT LOW] RL	—	X	WT-17
C1729: VHCL SPEED SIG ERR	—	X	WT-21
C1735: IGNITION SIGNAL	—	X	WT-22

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

Reference Value

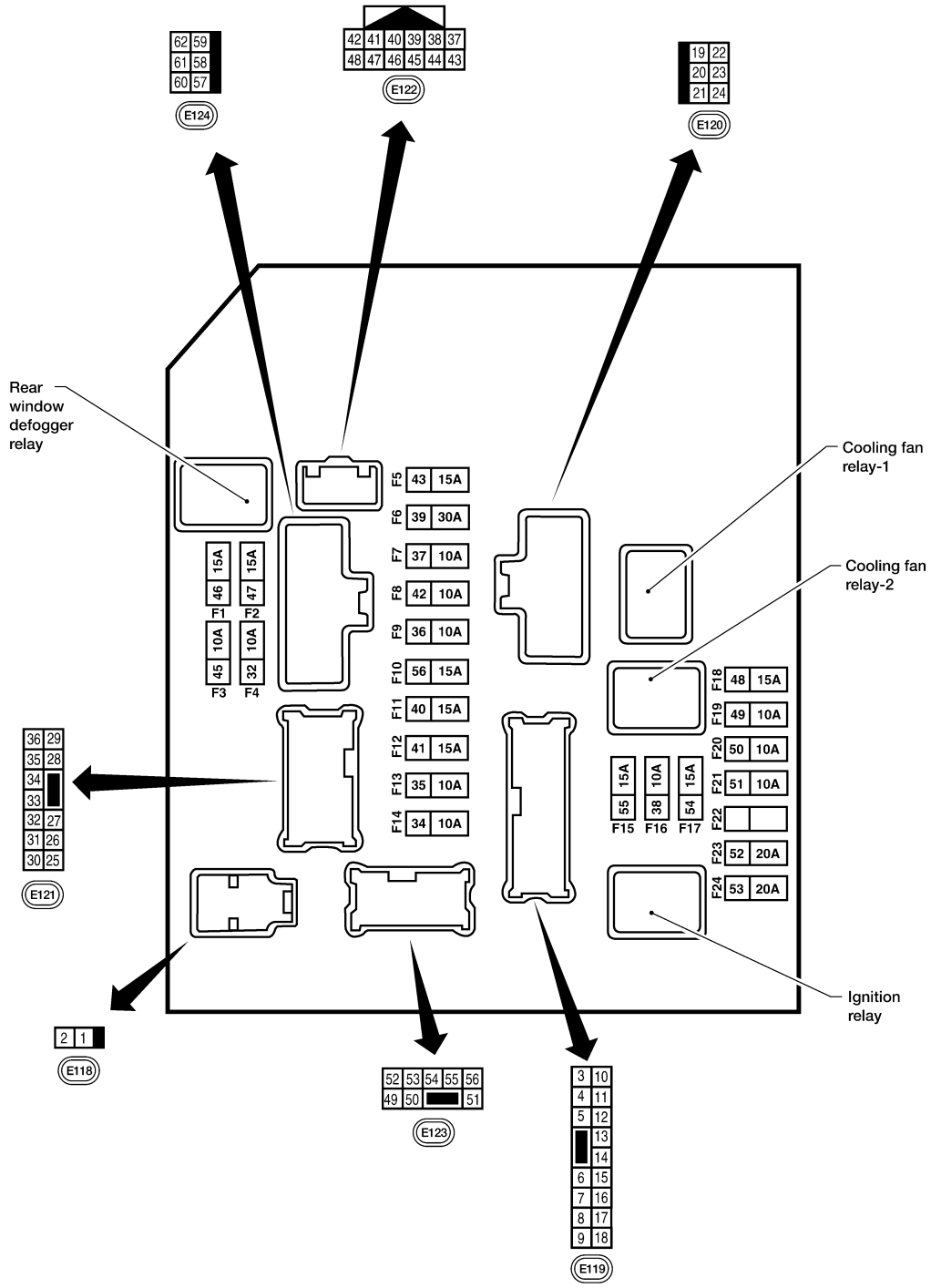
INFOID:0000000010248003

VALUES ON THE DIAGNOSIS TOOL

Monitor Item	Condition		Value/Status
MOTOR FAN REQ	Engine idle speed	Changes depending on engine coolant temperature, air conditioner operation status, vehicle speed, etc.	1, 2, 3, 4
A/C COMP REQ	A/C switch OFF		Off
	A/C switch ON		On
TAIL&CLR REQ	Lighting switch OFF		Off
	Lighting switch 1ST, 2ND, HI or AUTO (Light is illuminated)		On
HL LO REQ	Lighting switch OFF		Off
	Lighting switch 2ND HI or AUTO (Light is illuminated)		On
HL HI REQ	Lighting switch OFF		Off
	Lighting switch HI		On
FR FOG REQ	Lighting switch 2ND	Front fog lamp switch OFF	Off
		Front fog lamp switch ON	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
ST RLY REQ	Ignition switch OFF or ACC		Off
	Ignition switch START		On
IGN RLY	Ignition switch OFF or ACC		Off
	Ignition switch ON		On
RR DEF REQ	Rear defogger switch OFF		Off
	Rear defogger switch ON		On
OIL P SW	Ignition switch OFF, ACC or engine running		Open
	Ignition switch ON		Close
DTRL REQ	Daytime light system requested OFF with CONSULT.		Off
	Daytime light system requested ON with CONSULT.		On
THFT HRN REQ	Not operated		Off
	• Panic alarm is activated • Horn is activated with VEHICLE SECURITY (THEFT WARNING) SYSTEM		On
HORN CHIRP	Not operated		Off
	Door locking with keyfob (horn chirp mode)		On

Terminal Layout

INFOID:0000000010248005



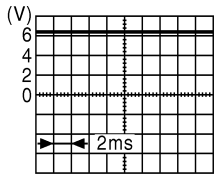
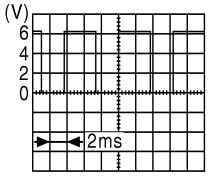
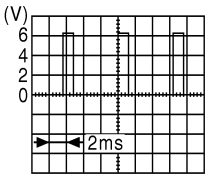
AAMIA0386GB

Physical Values

INFOID:0000000010248006

PHYSICAL VALUES

Terminal	Wire color	Signal name	Signal input/ output	Measuring condition		Reference value (Approx.)
				Ignition switch	Operation or condition	
1	W	Battery power supply	Input	OFF	—	Battery voltage
2	R	Battery power supply	Input	OFF	—	Battery voltage
3	G	ECM relay	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
4	R	ECM relay	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
6	V	Throttle control motor relay	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
7	BR	ECM relay control	Input	—	Ignition switch ON or START	0V
					Ignition switch OFF or ACC	Battery voltage
8	W/R	Fuse 54	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
10	R/B	Fuse 45	Output	ON	Daytime light system active	0V
					Daytime light system inactive	Battery voltage
11	Y	A/C compressor	Output	ON or START	A/C switch ON or defrost A/C switch	Battery voltage
					A/C switch OFF or defrost A/C switch	0V
12	W/G	Ignition switch supplied power	Input	—	OFF or ACC	0V
					ON or START	Battery voltage
13	R	Fuel pump relay	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
14	W/G	Fuse 49	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
15	W/R	Fuse 50 (ABS)	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
16	W/G	Fuse 51	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
17	W/G	Fuse 55	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
19	W	Starter motor	Output	START	—	Battery voltage
20	BR	Cooling fan motor (low)	Output	ON or START	—	Battery voltage
21	GR	Ignition switch supplied power	Input	—	OFF or ACC	0V
					START	Battery voltage
22	G	Battery power supply	Output	OFF	—	Battery voltage
23	LG	Door mirror defogger output signal	Output	—	When rear defogger switch is ON	Battery voltage
					When raker defogger switch is OFF	0V

Terminal	Wire color	Signal name	Signal input/ output	Measuring condition			Reference value (Approx.)
				Ignition switch	Operation or condition		
24	P	Cooling fan motor (high)	Output	—	Conditions correct for cooling fan operation		Battery voltage
					Conditions not correct for cooling fan operation		0V
27	W/G	Fuse 38	Output	—	Ignition switch ON or START		Battery voltage
					Ignition switch OFF or ACC		0V
28	R	LH front parking and front side marker lamp	Output	OFF	Lighting switch 1st position	OFF	0V
						ON	Battery voltage
29	G	Trailer tow relay	Output	ON	Lighting switch 1st position	OFF	0V
						ON	Battery voltage
30	R/B	Fuse 53	Output	—	Ignition switch ON or START		Battery voltage
					Ignition switch OFF or ACC		0V
32	GR	Wiper low speed signal	Output	ON or START	Wiper switch	OFF	0V
						LO or INT	Battery voltage
35	L	Wiper high speed signal	Output	ON or START	Wiper switch	OFF, LO, INT	0V
						HI	Battery voltage
37	Y	Power generation command signal	Output	—	Ignition switch ON		 JPMIA0001GB 6.3 V
					40% is set on "Active test," "ALTERNATOR DUTY" of "ENGINE"		 JPMIA0002GB 3.8 V
					40% is set on "Active test," "ALTERNATOR DUTY" of "ENGINE"		 JPMIA0003GB 1.4 V
38	B	Ground	Input	—	—		0V
39	L	CAN-H	—	ON	—		—
40	P	CAN-L	—	ON	—		—
42	GR	Oil pressure switch	Input	—	Engine running		Battery voltage
					Engine stopped		0V

Terminal	Wire color	Signal name	Signal input/ output	Measuring condition			Reference value (Approx.)
				Ignition switch	Operation or condition		
43	G	Wiper auto stop signal	Input	ON or START	Wiper switch	OFF, LO, INT	Battery voltage
44	R	Daytime light relay control (Canada only)	Input	ON	Daytime light system active		0V
					Daytime light system inactive		Battery voltage
45	LG	Horn relay control	Input	ON	When door locks are operated using keyfob (OFF → ON)*		Battery voltage → 0V
46	V	Fuel pump relay control	Input	—	Ignition switch ON or START		0V
					Ignition switch OFF or ACC		Battery voltage
47	BG	Throttle control motor relay control	Input	—	Ignition switch ON or START		0V
					Ignition switch OFF or ACC		Battery voltage
48	R	Starter relay (range switch)	Input	ON or START	Selector lever in "P" or "N"		0V
					Selector lever any other position		Battery voltage
49	GR	Front RH parking and front side marker lamp	Output	OFF	Lighting switch 1st position	OFF	0V
						ON	Battery voltage
50	W	Front fog lamp (LH)	Output	ON or START	Lighting switch must be in the 2nd position (LOW beam is ON) and the front fog lamp switch	OFF	0V
						ON	Battery voltage
51	V	Front fog lamp (RH)	Output	ON or START	Lighting switch must be in the 2nd position (LOW beam is ON) and the front fog lamp switch	OFF	0V
						ON	Battery voltage
52	P	LH low beam headlamp	Output	—	Lighting switch in 2nd position		Battery voltage
54	R	RH low beam headlamp	Output	—	Lighting switch in 2nd position		Battery voltage
55	G	LH high beam headlamp	Output	—	Lighting switch in 2nd position and placed in HIGH or PASS position		Battery voltage
56	L	RH high beam headlamp	Output	—	Lighting switch in 2nd position and placed in HIGH or PASS position		Battery voltage
57	GR	Parking, license and tail lamps and off-road lamp switch	Output	ON	Lighting switch 1st position	OFF	0V
						ON	Battery voltage
59	B	Ground	Input	—	—		0V
60	GR	Rear window defogger relay	Output	ON or START	Rear defogger switch ON		Battery voltage
					Rear defogger switch OFF		0V
61	R/B	Fuse 32	Output	OFF	—		Battery voltage

*: When horn reminder is ON

Fail Safe

INFOID:0000000010248007

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 ECM

Control part	Fail-safe in operation
Cooling fan	• Turns ON the cooling fan relay when the ignition switch is turned ON • Turns OFF the cooling fan relay when the ignition switch is turned OFF

If No CAN Communication Is Available With BCM

Control part	Fail-safe in operation
Headlamp	• Turns ON the headlamp low relay when the ignition switch is turned ON • Turns OFF the headlamp low relay when the ignition switch is turned OFF • Headlamp high relay OFF
• Parking lamps • License plate lamps • Tail lamps	• Turns ON the tail lamp relay when the ignition switch is turned ON • Turns OFF the tail lamp relay when the ignition switch is turned OFF
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 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.
Rear window defogger	Rear window defogger relay OFF
A/C compressor	A/C relay OFF
Front fog lamps (if equipped)	Front fog lamp relay OFF

IGNITION RELAY MALFUNCTION DETECTION FUNCTION

- IPDM E/R monitors the voltage at the contact circuit and excitation coil circuit of the ignition relay inside it.
- IPDM E/R judges the ignition relay error if the voltage differs between the contact circuit and the excitation coil circuit.
- If the ignition relay cannot turn OFF due to contact seizure, it activates the tail lamp relay for 10 minutes to alert the user to the ignition relay malfunction when the ignition switch is turned OFF.

Ignition switch	Ignition relay	Tail lamp relay
ON	ON	—
OFF	OFF	—

NOTE:

The tail lamp turns OFF when the ignition switch is turned ON.

FRONT WIPER CONTROL

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

Ignition switch	Front wiper switch	Auto stop signal
ON	OFF	Front wiper stop position signal cannot be input 10 seconds.
	ON	The 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.

STARTER MOTOR PROTECTION FUNCTION

IPDM E/R turns OFF the starter control relay to protect the starter motor when the starter control relay remains active for 90 seconds.

DTC Index

INFOID:0000000010248009

CONSULT display	Fail-safe	TIME[NOTE]		Refer to
No DTC is detected. further testing may be required.	—	—	—	—
U1000: CAN COMM CIRCUIT	×	CRNT	1 – 39	PCS-13

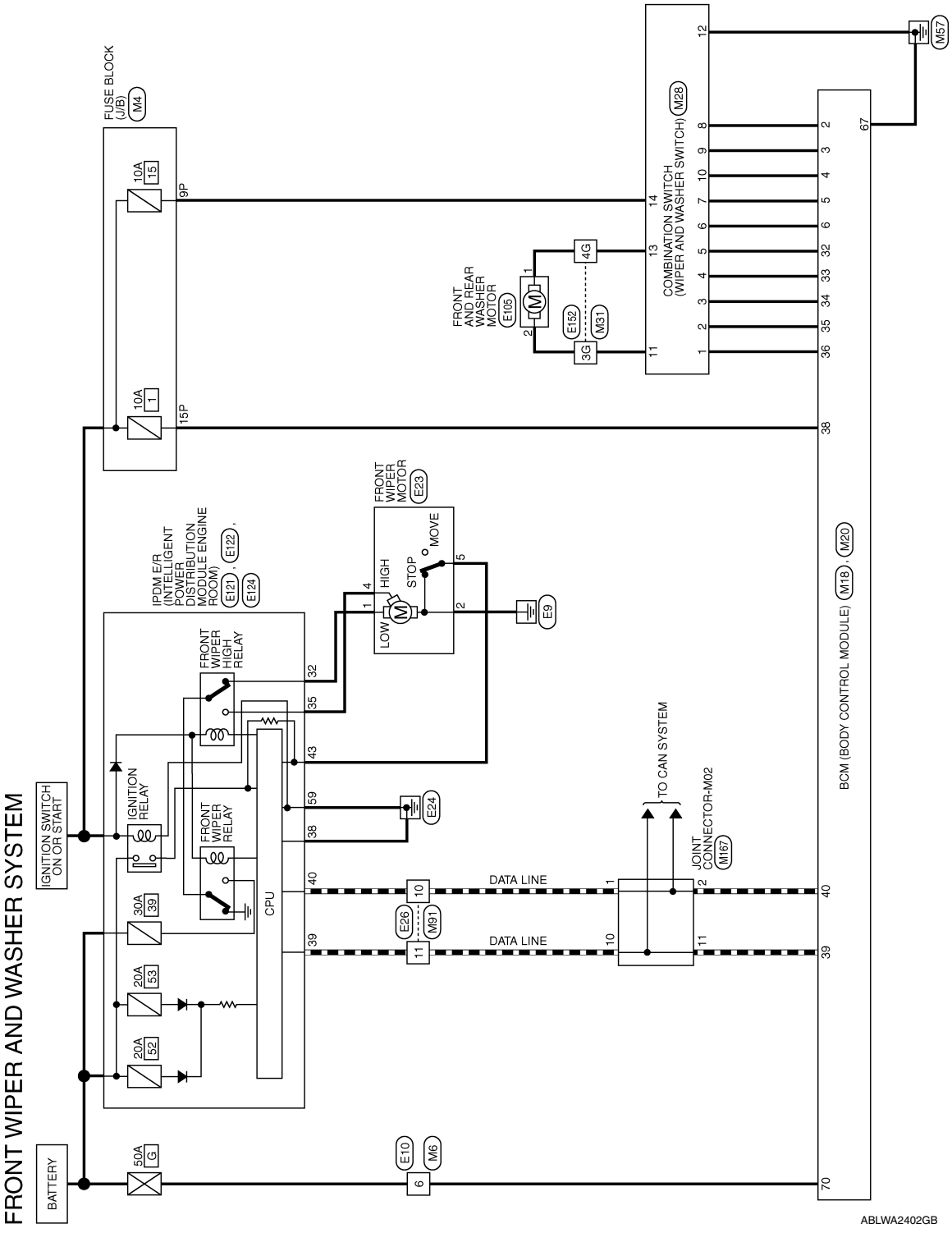
NOTE:
The details of TIME display are as follows.
- CRNT: The malfunctions that are detected now
- 1 - 39: The number is indicated when it is normal at present and a malfunction was detected in the past. It increases like 0 → 1 → 2 · · · 38 → 39 after returning to the normal condition whenever IGN OFF → ON. It is fixed to 39 until the self-diagnosis results are erased if it is over 39. It returns to 0 when a malfunction is detected again in the process.

WIRING DIAGRAM

FRONT WIPER AND WASHER SYSTEM

Wiring Diagram

INFOID:0000000009484720



FRONT WIPER AND WASHER SYSTEM CONNECTORS

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

H.S.

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

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

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

H.S.

3	2	1
6	5	4

Terminal No.	Color of Wire	Signal Name
6	W	–

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

H.S.

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

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

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

H.S.

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

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

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Connector No.	M28
Connector Name	COMBINATION SWITCH
Connector Color	WHITE

H.S

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

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

Terminal No.	Color of Wire	Signal Name
4	GR	–
5	BG	–
6	R	–
7	L	–
8	P	–
9	SB	–
10	V	–
11	BG	–
12	B	–
13	L	–
14	W/G	–

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

H.S

1G	2G	3G	4G	5G
6G	7G	8G	9G	10G

11G	12G	13G	14G	15G	16G	17G	18G	19G	20G	21G
22G	23G	24G	25G	26G	27G	28G	29G	30G		

31G	32G	33G	34G	35G	36G	37G	38G	39G	40G	41G
42G	43G	44G	45G	46G	47G	48G	49G	50G		

51G	52G	53G	54G	55G	56G	57G	58G	59G	60G	61G
62G	63G	64G	65G	66G	67G	68G	69G	70G		

71G	72G	73G	74G	75G	76G	77G	78G	79G	80G	81G
82G	83G	84G	85G	86G	87G	88G	89G	90G		

91G	92G	93G	94G	95G
96G	97G	98G	99G	100G

Terminal No.	Color of Wire	Signal Name
3G	BG	–
4G	L	–

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

H.S

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

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

ABLIA5703GB

Connector No.	M167
Connector Name	JOINT CONNECTOR-M02
Connector Color	BLUE

Terminal No.	Color of Wire	Signal Name
1	P	–
2	P	–
10	L	–
11	L	–

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

Terminal No.	Color of Wire	Signal Name
6	W	–

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

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

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

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

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

Terminal No.	Color of Wire	Signal Name
1	L	–
2	BG	–

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

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

ABLIA5704GB

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

H.S.

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

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

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

H.S.

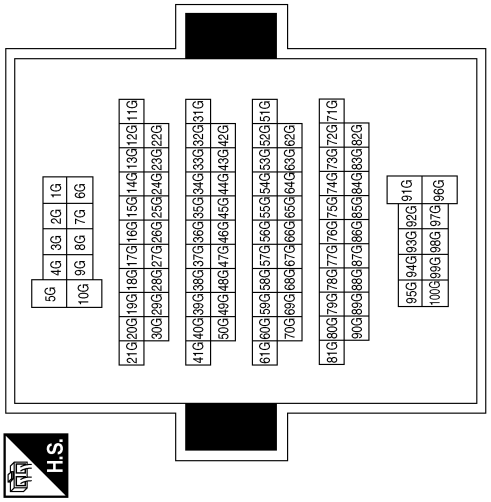
59	58	57
62	61	60

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

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

H.S.

Terminal No.	Color of Wire	Signal Name
3G	BG	–
4G	L	–



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REAR WIPER AND WASHER SYSTEM

Wiring Diagram

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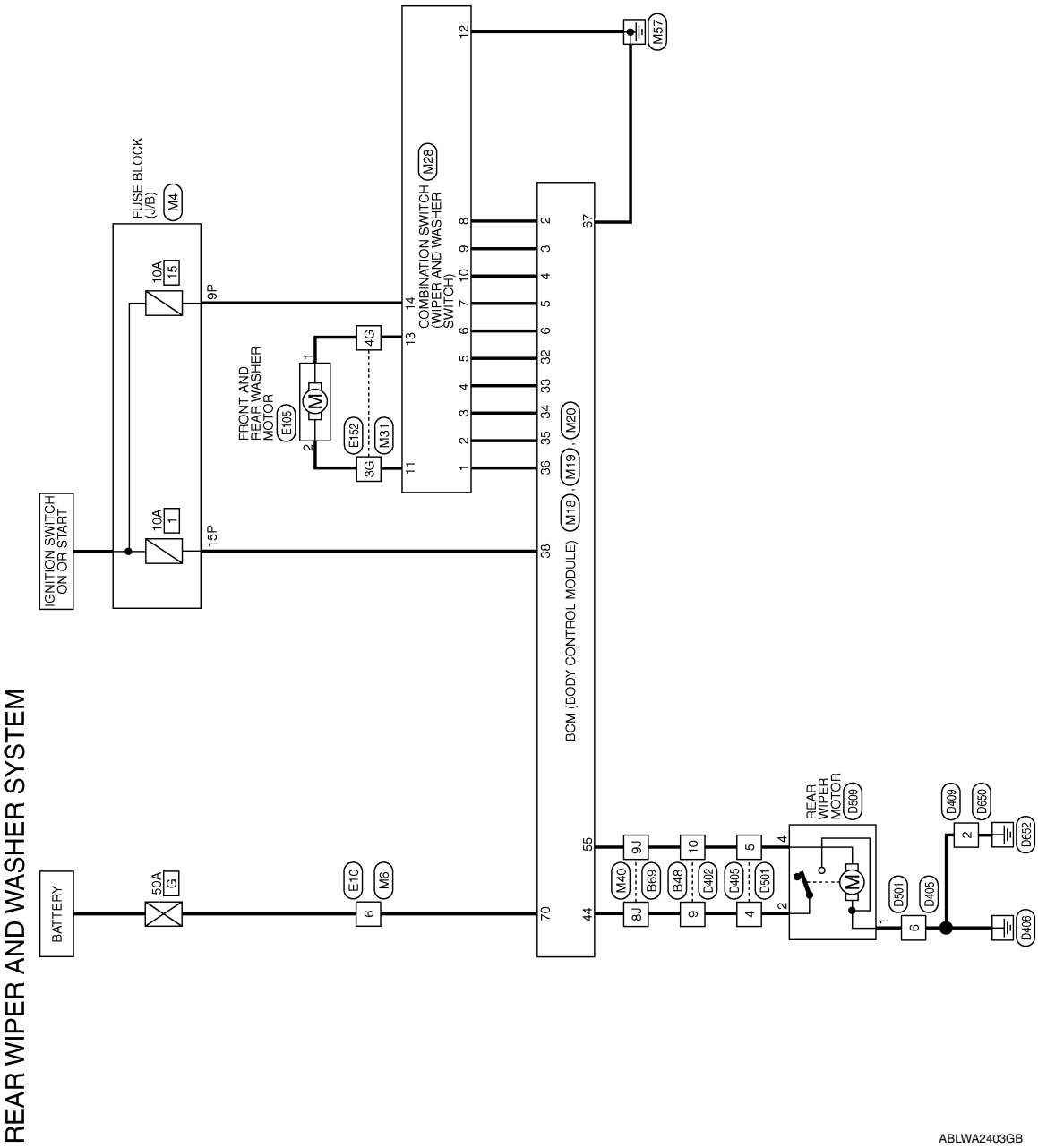

REAR WIPER AND WASHER SYSTEM CONNECTORS

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

H.S.

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

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

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

H.S.

3	2	1
6	5	4

Terminal No.	Color of Wire	Signal Name
6	W	–

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

H.S.

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

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

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

H.S.

41	42	43	44	45	46	47	48	49
50	51	52	53	54	55			

Terminal No.	Color of Wire	Signal Name
44	BG	REAR WIPER AUTO STOP SW 1
55	W	REAR WIPER MOTOR OUTPUT 1

ABLIA5706GB

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

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

Connector No.	M28
Connector Name	COMBINATION SWITCH
Connector Color	WHITE

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

Terminal No.	Color of Wire	Signal Name
4	GR	–
5	BG	–
6	R	–
7	L	–
8	P	–
9	SB	–
10	V	–
11	BG	–
12	B	–
13	L	–
14	W/G	–

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

Terminal No.	Color of Wire	Signal Name
3G	BG	–
4G	L	–

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

Terminal No.	Color of Wire	Signal Name
8J	BG	–
9J	W	–

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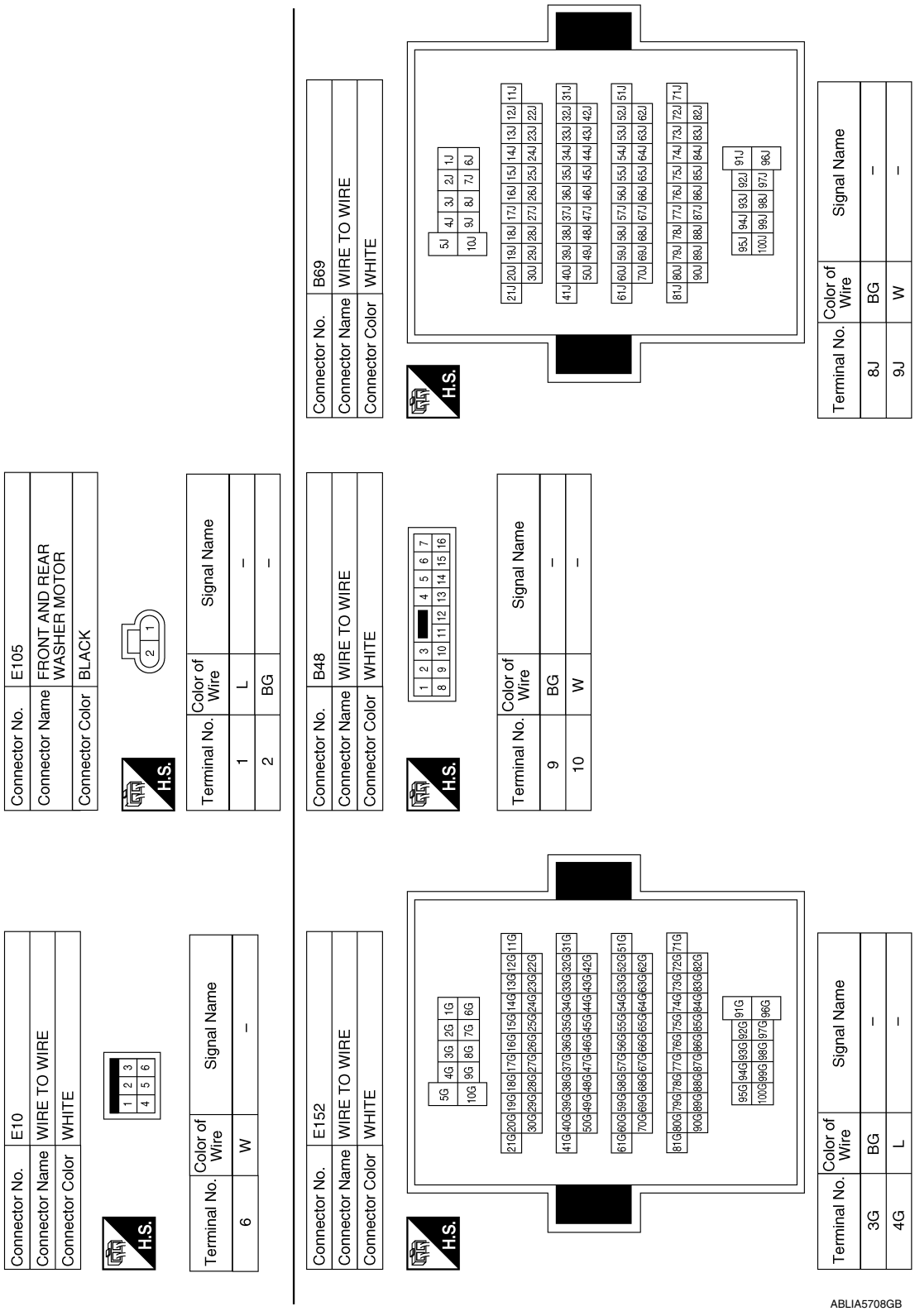
Connector No. E10
Connector Name WIRE TO WIRE
Connector Color WHITE
H.S.
1 2 3
4 5 6
Terminal No. Color of Wire Signal Name
6 W –
Connector No. E105
Connector Name FRONT AND REAR WASHER MOTOR
Connector Color BLACK
H.S.
2 1
Terminal No. Color of Wire Signal Name
1 L –
2 BG –
Connector No. E152
Connector Name WIRE TO WIRE
Connector Color WHITE
H.S.
5G 4G 3G 2G 1G
10G 9G 8G 7G 6G
21G 20G 19G 18G 17G 16G 15G 14G 13G 12G 11G
30G 29G 28G 27G 26G 25G 24G 23G 22G
41G 40G 39G 38G 37G 36G 35G 34G 33G 32G 31G
50G 49G 48G 47G 46G 45G 44G 43G 42G
61G 60G 59G 58G 57G 56G 55G 54G 53G 52G 51G
70G 69G 68G 67G 66G 65G 64G 63G 62G
81G 80G 79G 78G 77G 76G 75G 74G 73G 72G 71G
90G 89G 88G 87G 86G 85G 84G 83G 82G
95G 94G 93G 92G 91G
100G 99G 98G 97G 96G
Terminal No. Color of Wire Signal Name
3G BG –
4G L –
Connector No. B48
Connector Name WIRE TO WIRE
Connector Color WHITE
H.S.
1 2 3 4 5 6 7
8 9 10 11 12 13 14 15 16
Terminal No. Color of Wire Signal Name
9 BG –
10 W –
Connector No. B69
Connector Name WIRE TO WIRE
Connector Color WHITE
H.S.
5J 4J 3J 2J 1J
10J 9J 8J 7J 6J
21J 20J 19J 18J 17J 16J 15J 14J 13J 12J 11J
30J 29J 28J 27J 26J 25J 24J 23J 22J
41J 40J 39J 38J 37J 36J 35J 34J 33J 32J 31J
50J 49J 48J 47J 46J 45J 44J 43J 42J
61J 60J 59J 58J 57J 56J 55J 54J 53J 52J 51J
70J 69J 68J 67J 66J 65J 64J 63J 62J
81J 80J 79J 78J 77J 76J 75J 74J 73J 72J 71J
90J 89J 88J 87J 86J 85J 84J 83J 82J
95J 94J 93J 92J 91J
100J 99J 98J 97J 96J
Terminal No. Color of Wire Signal Name
8J BG –
9J W –
ABLIA5708GB

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

H.S.

Terminal No.	Color of Wire	Signal Name
9	O	–
10	W	–

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

H.S.

Terminal No.	Color of Wire	Signal Name
4	O	–
5	W	–
6	B	–

Connector No.	D409
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
2	B	–

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

H.S.

Terminal No.	Color of Wire	Signal Name
4	O	–
5	W	–
6	B	–

Connector No.	D509
Connector Name	REAR WIPER MOTOR
Connector Color	WHITE

H.S.

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

Connector No.	D650
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
2	B	–

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SYMPTOM DIAGNOSIS

WIPER AND WASHER SYSTEM SYMPTOMS

Symptom Table

INFOID:0000000009484722

CAUTION:
Perform the self-diagnosis with CONSULT 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 (wiper and washer switch) • Harness between combination switch (wiper and washer switch) and BCM • BCM	Combination switch (wiper and washer switch) Refer to BCS-48, "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 (wiper and washer switch) • Harness between combination switch (wiper and washer switch) and BCM • BCM	Combination switch (wiper and washer switch) Refer to BCS-48, "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 (wiper and washer switch) • Harness between combination switch (wiper and washer switch) and BCM • BCM	Combination switch (wiper and washer switch) Refer to BCS-48, "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-64, "Diagnosis Procedure".	

Symptom		Probable malfunction location	Inspection item
Front wiper does not stop.	HI only	• Combination switch (wiper and washer switch) • BCM	Combination switch (wiper and washer switch) Refer to BCS-48, "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 (wiper and washer switch) • BCM	Combination switch (wiper and washer switch) Refer to BCS-48, "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 (wiper and washer switch) • BCM	Combination switch (wiper and washer switch) Refer to BCS-48, "Symptom Table".
		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 (wiper and washer switch) • Harness between combination switch (wiper and washer switch) and BCM • BCM	Combination switch (wiper and washer switch) Refer to BCS-48, "Symptom Table".
		BCM	—
	Intermittent control linked with vehicle speed cannot be performed.	Check the vehicle speed detection wiper setting. Refer to BCS-20, "WIPER : CONSULT Function (BCM - WIPER)".	
	Wiper is not linked to the washer operation.	• Combination switch (wiper and washer switch) • Harness between combination switch (wiper and washer switch) and BCM • BCM	Combination switch (wiper and washer switch) Refer to BCS-48, "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".

Symptom		Probable malfunction location	Inspection item
Rear wiper does not operate.	ON only	• Combination switch (wiper and washer switch) • Harness between combination switch (wiper and washer switch) and BCM • BCM	Combination switch (wiper and washer switch) Refer to BCS-48, "Symptom Table".
	INT only	• Combination switch (wiper and washer switch) • Harness between combination switch (wiper and washer switch) and BCM • BCM	Combination switch (wiper and washer switch) Refer to BCS-48, "Symptom Table".
	ON and INT	• Combination switch (wiper and washer switch) • Harness between combination switch (wiper and washer switch) and BCM • BCM	Combination switch (wiper and washer switch) Refer to BCS-48, "Symptom Table".
		• BCM • Harness between rear wiper motor and BCM • Harness between rear wiper motor and ground • Rear wiper motor	Rear wiper motor circuit Refer to WW-29, "Component Function Check".
Rear wiper does not stop.	ON only	• Combination switch (wiper and washer switch) • BCM	Rear wiper motor circuit Refer to WW-29, "Component Function Check".
	INT only	• Combination switch (wiper and washer switch) • BCM	Combination switch (wiper and washer switch) Refer to BCS-48, "Symptom Table".
Rear wiper does not operate normally.	Wiper is not linked to the washer operation.	• Combination switch (wiper and washer switch) • Harness between rear wiper motor and BCM • BCM	Combination switch (wiper and washer switch) Refer to BCS-48, "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-31, "Component Function Check".
	Rear wiper stops after operating for five seconds when ignition switch is turned ON.		
Front and rear washer motor does not operate.	Front and rear washer motor does not operate when the washing windshield.	• Combination switch (wiper and washer switch) • Harness between combination switch (wiper and washer switch) and BCM • BCM	Combination switch (wiper and washer switch) Refer to BCS-48, "Symptom Table".
		• Harness between rear combination switch (wiper and washer switch) and front and rear washer motor. • Front and rear washer motor	Front and rear washer motor circuit Refer to WW-27, "Diagnosis Procedure".

NORMAL OPERATING CONDITION

Description

INFOID:0000000009484723

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.

FRONT WIPER DOES NOT OPERATE

Description

INFOID:0000000009484724

The front wiper does not operate under any operation conditions.

Diagnosis Procedure

INFOID:0000000009484725

Regarding Wiring Diagram information, refer to WW-50, "Wiring Diagram".

1. CHECK WIPER RELAY OPERATION

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

LO : Front wiper LO operation
HI : Front wiper HI operation
OFF : Stop the front wiper.

IPDM E/R AUTO ACTIVE TEST
1. Start IPDM E/R auto active test. Refer to PCS-9, "Diagnosis Description".
2. Check that the front wiper operates at the LO/HI operation.

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 affected circuit.
NO >> GO TO 3

3. CHECK FRONT WIPER MOTOR GROUND OPEN CIRCUIT

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

Front wiper motor		Ground	Continuity
Connector	Terminal		
E23	2		Yes

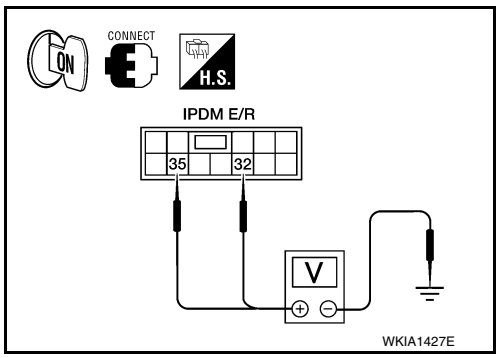
Does continuity exist?

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

4. CHECK FRONT WIPER MOTOR OUTPUT VOLTAGE

CONSULT ACTIVE TEST

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



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

Is the measurement value normal?

YES >> Replace front wiper motor. Refer to WW-68, "Removal and Installation".
NO >> Replace IPDM E/R. Refer to PCS-27, "Removal and Installation".

5. CHECK FRONT WIPER REQUEST SIGNAL INPUT

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

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

Is the status of item normal?

YES >> Replace IPDM E/R. Refer to PCS-27, "Removal and Installation".
NO >> GO TO 6

6. CHECK COMBINATION SWITCH (WIPER AND WASHER SWITCH)

1. Perform the inspection of the combination switch (wiper and washer switch). Refer to BCS-48, "Symptom Table".

Is combination switch (wiper and washer switch) normal?

YES >> Replace BCM. Refer to BCS-50, "Removal and Installation".
NO >> Repair or replace the affected parts.

PRECAUTION

PRECAUTION

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

INFOID:0000000010219981

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

WARNING:

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

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

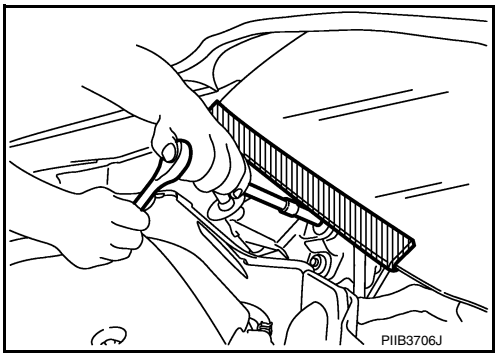
WARNING:

- **When working near the Airbag Diagnosis Sensor Unit or other Airbag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery and wait at least three minutes before performing any service.**

Precaution for Procedure without Cowl Top Cover

INFOID:0000000009484727

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



REMOVAL AND INSTALLATION

FRONT WIPER ARM

Removal and Installation

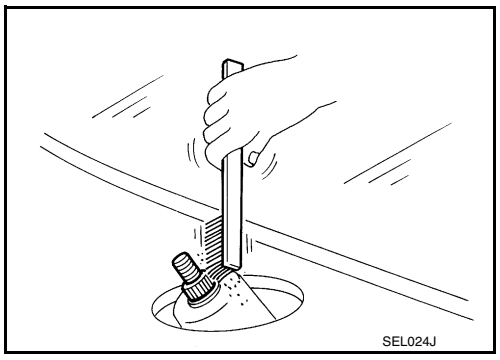
INFOID:0000000009484728

REMOVAL

1. Remove wiper arm cover and wiper arm nut.
2. Remove front wiper arm.
3. Remove front blade assembly from the front wiper arm (if necessary).

INSTALLATION

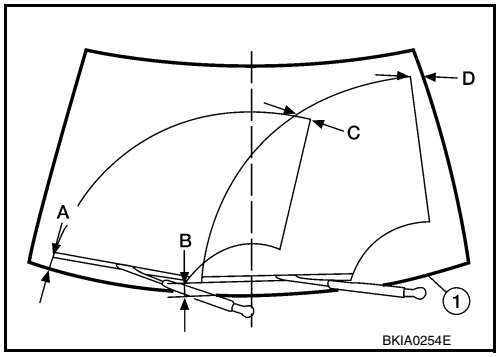
1. Operate wiper motor one full cycle, then turn "OFF" (Auto Stop).
2. Clean up the pivot area as shown.
   NOTE:
   This will reduce possibility of wiper arm looseness.



3. Install front blade assembly to the front wiper arm (if removed).
4. Install front wiper arm.
5. Ensure that wiper blades stop within proper clearance. Perform "FRONT WIPER ARM ADJUSTMENT".
6. Tighten wiper arm nut to specified torque and install wiper arm cover. Refer to WW-68, "Removal and Installation".

FRONT WIPER ARM ADJUSTMENT

1. Operate wiper motor one full cycle, then turn "OFF" (Auto Stop).
2. Lift the wiper blade up and then rest it onto windshield (1) surface, then check the blade clearances at (A) and (B).
3. Operate wiper motor one half cycle so that the wiper arms are in the upright position and stop arms there, then check the blade clearances at (C) and (D).



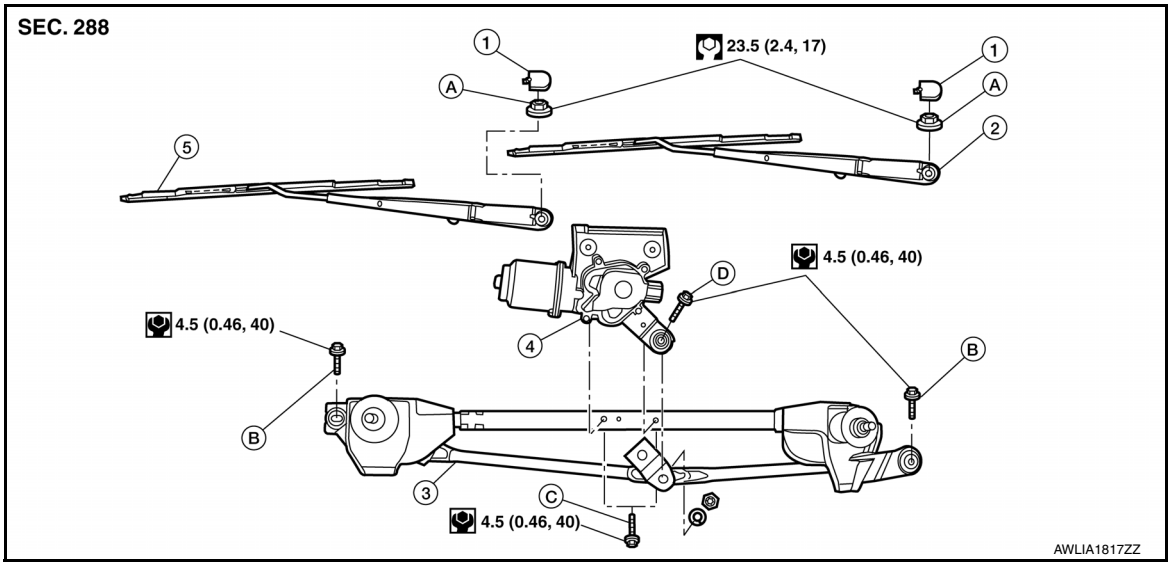
Clearance (A) : 23.5 - 38.5 mm (0.925 - 1.516 in)
Clearance (B) : 24.5 - 39.5 mm (0.965 - 1.555 in)
Clearance (C) : 35.7 mm (1.406 in)
Clearance (D) : 51 mm (2.008 in)

4. Remove wiper arm cover and wiper arm nut.
5. Adjust front wiper arm on wiper motor pivot shaft to obtain above specified blade clearances.
6. Tighten wiper arm nut to specified torque and install wiper arm cover. Refer to WW-68, "Removal and Installation".

FRONT WIPER DRIVE ASSEMBLY

Removal and Installation

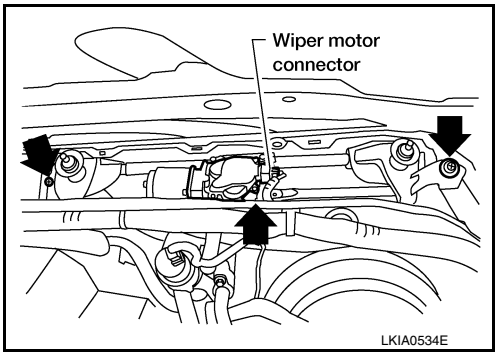
INFOID:0000000009484729



1. Wiper arm covers
2. Front wiper arm and blade assembly (LH)
3. Wiper frame assembly
4. Wiper motor
5. Front wiper arm and blade assembly (RH)
A. Wiper arm nuts
B. Wiper arm frame bolts
C. Wiper motor bolts
D. Wiper motor pivot arm bolt

REMOVAL

1. Remove the cowl top cover. Refer to EXT-20, "Removal and Installation".
2. Remove wiper frame bolts, disconnect the harness connector from the wiper motor and remove wiper frame assembly.



3. Remove wiper motor bolts and the wiper motor from wiper frame assembly.

INSTALLATION

CAUTION:

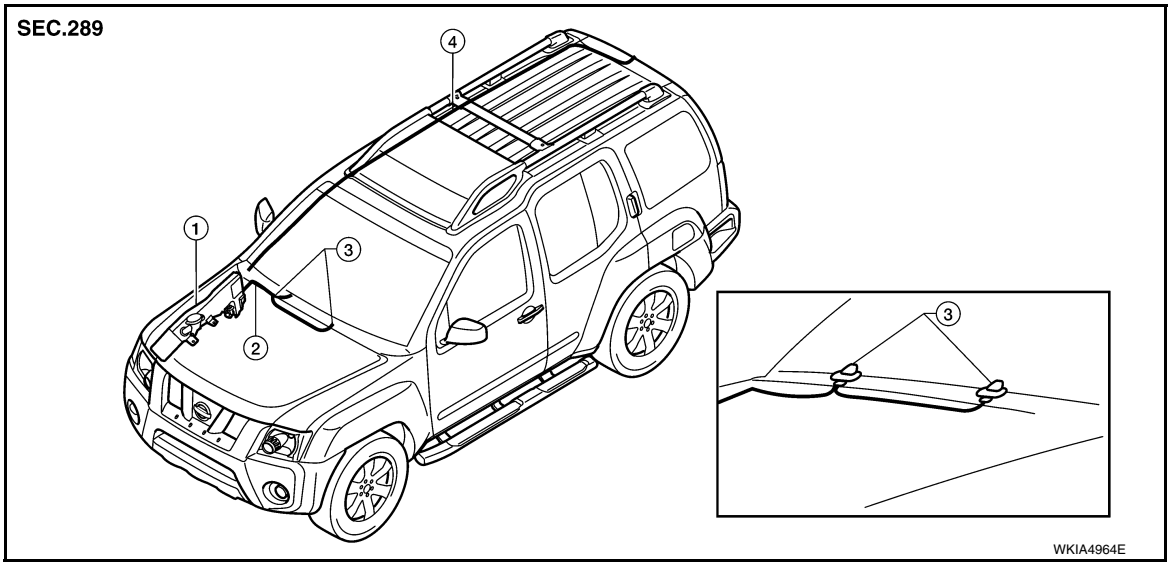
- **Do not drop the wiper motor or cause it to contact other parts.**
- **Check the grease conditions of the motor arm and wiper link joint(s). Apply grease if necessary.**

1. Connect the harness connector to the wiper motor. Turn the wiper switch ON to operate wiper motor, then turn the wiper switch OFF (auto stop).
2. Disconnect the harness connector from the wiper motor.
3. Install wiper motor to wiper frame assembly and install wiper frame assembly.
4. Connect the harness connector to the wiper motor.
5. Install cowl top cover. Refer to EXT-20, "Removal and Installation".
6. Ensure that wiper blades stop within proper clearance. Refer to WW-67, "Removal and Installation".

FRONT WASHER TUBE

Washer Tube Layout

INFOID:0000000009484730



1. Washer tank
2. Front washer hose
3. Washer nozzles
4. Rear washer hose

FRONT WASHER NOZZLE

Removal and Installation

INFOID:0000000009484731

REMOVAL

1. Remove cowl top cover. Refer to EXT-20, "Removal and Installation".
2. Remove washer nozzles.

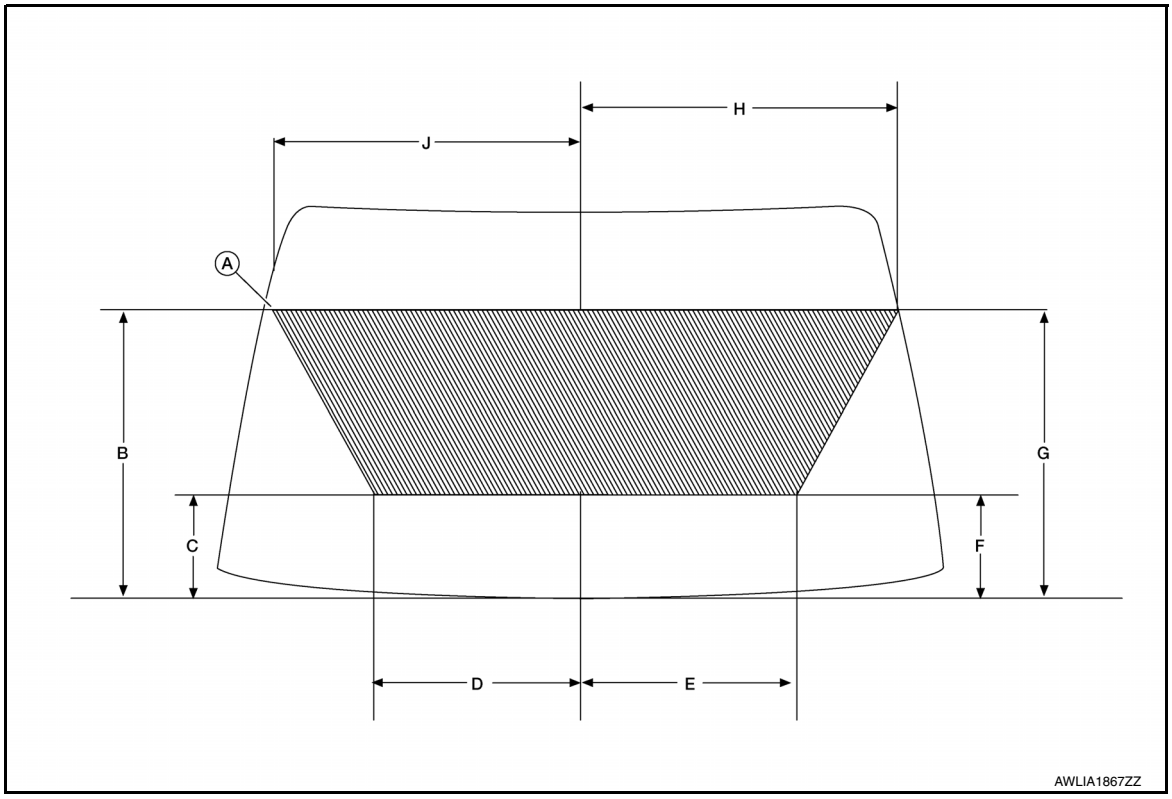
INSTALLATION

Installation is in the reverse order of removal.

Washer Nozzle Adjustment

INFOID:0000000009484732

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

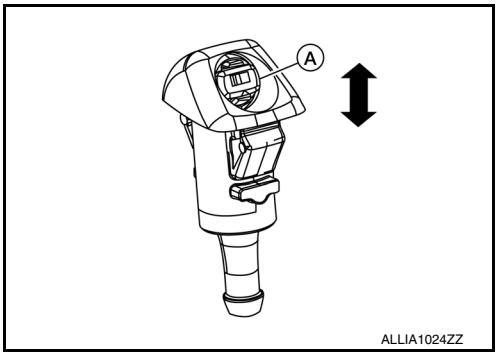


A.	Aiming target zone	B.	615 mm (24.21 in)	C.	223 mm (8.78 in)
D.	432 mm (17.01 in)	E.	456 mm (17.95 in)	F.	232 mm (9.13 in)
G.	620 mm (24.41 in)	H.	662 mm (26.06 in)	J.	644 mm (25.35 in)

CAUTION:

Do not insert anything into the spray nozzle to adjust.

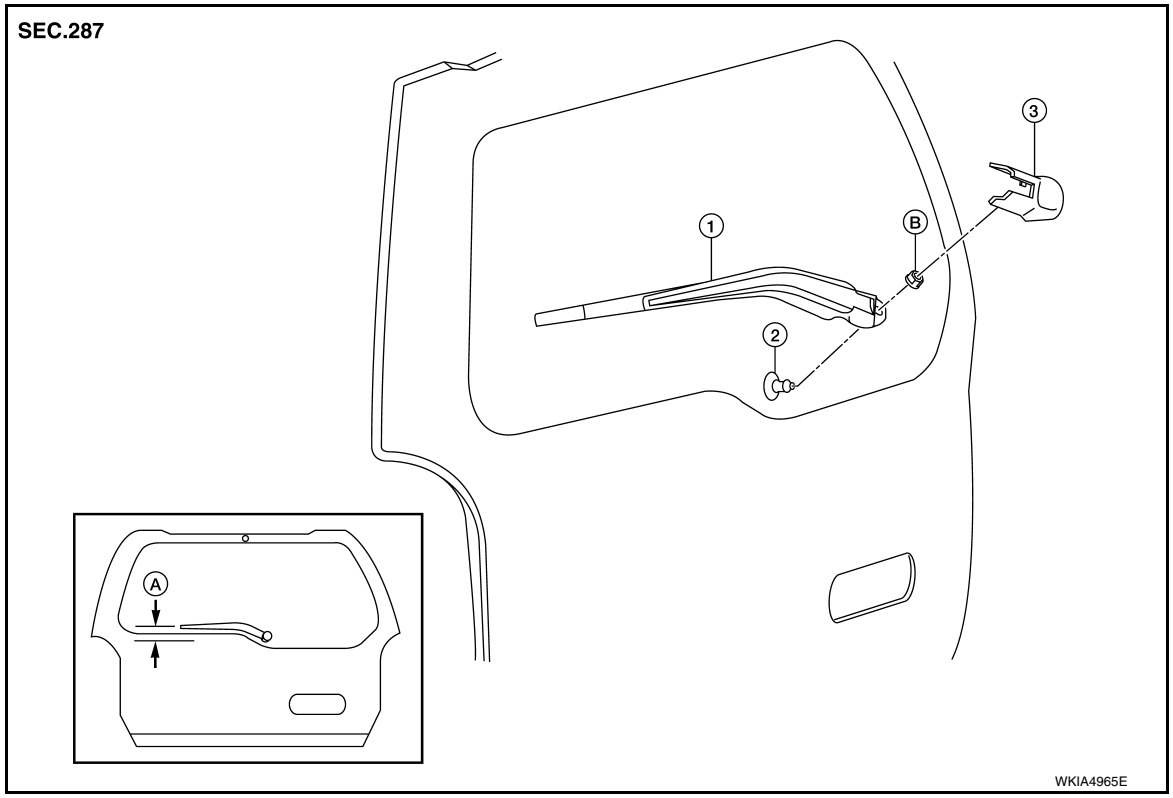
Move the spray nozzle (A) up/down to adjust spray pattern using suitable tool.



REAR WIPER ARM

Removal and Installation

INFOID:0000000009484733



1. Rear wiper arm and blade
2. Rear wiper motor pivot seal
3. Rear wiper arm cover
A. Wiper arm parallel to back glass edge
B. Rear wiper arm nut

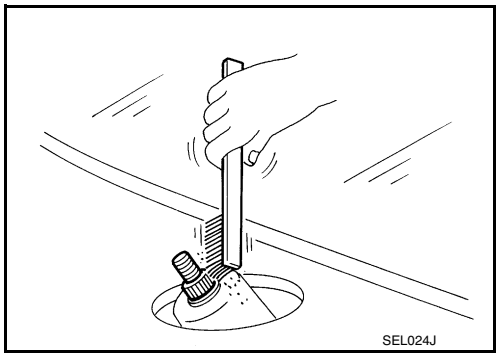
REAR WIPER ARM

Removal

1. Remove rear wiper arm cover and the rear wiper arm nut.
2. Remove rear wiper arm.
3. Remove wiper blade from the wiper arm (if necessary).

Installation

1. Operate rear wiper motor one full cycle then turn “OFF” (AUTO STOP).
2. Clean up the pivot area as shown.
   NOTE:
   This will reduce the possibility of wiper arm looseness



3. Install rear wiper blade on the wiper arm.
4. Install rear wiper arm so that it is parallel to the back glass edge.
5. Install wiper arm nut and cover.

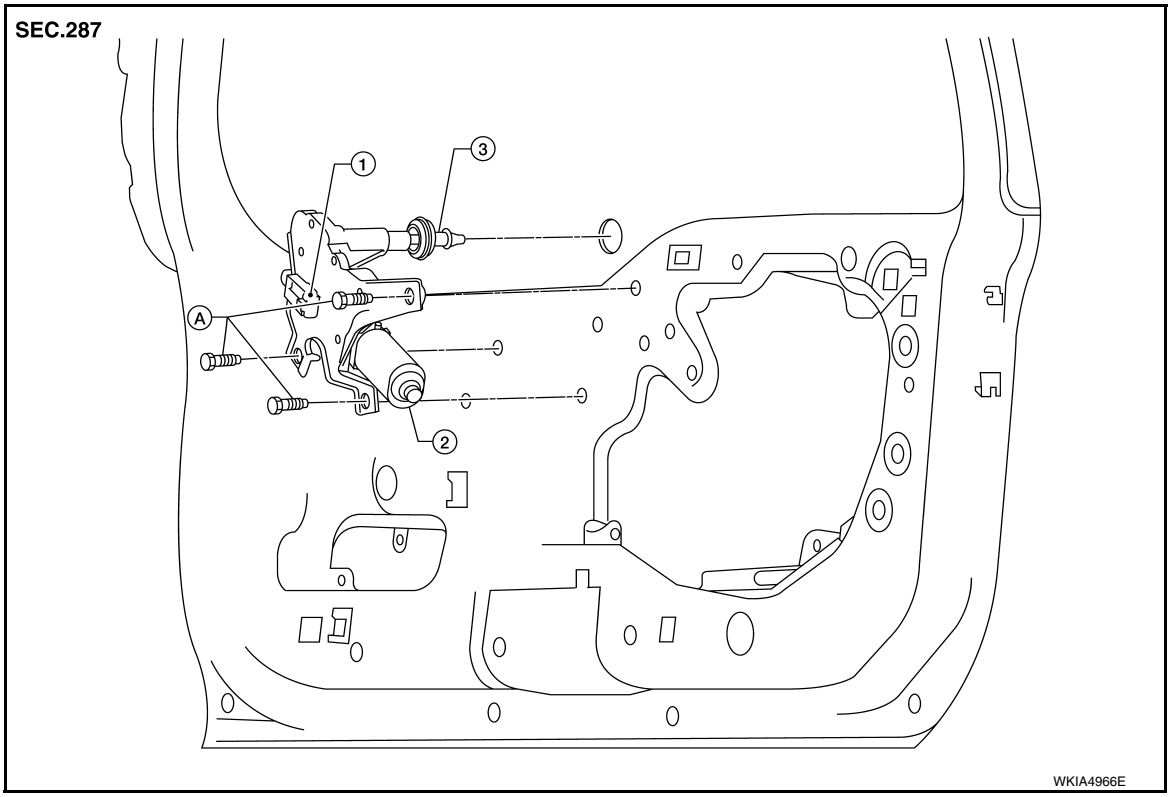
REAR WIPER ARM ADJUSTMENT

1. Operate rear wiper motor one full cycle, then turn “OFF” (Auto Stop).
2. Adjust rear wiper arm so that wiper arm and blade is parallel with lower edge of back glass.
3. Install rear wiper arm nut and rear wiper arm cover.

REAR WIPER MOTOR

Removal and Installation

INFOID:0000000009484734



1. Rear wiper motor harness connector
2. Rear wiper motor
3. Rear motor pivot seal
A. Rear wiper motor bolts

REMOVAL

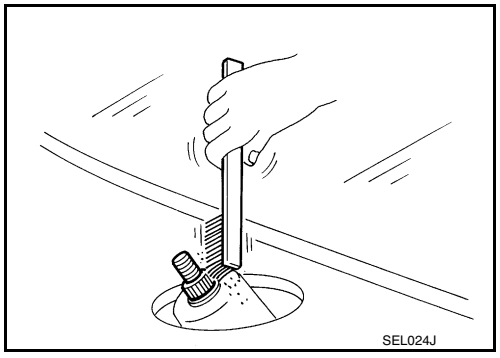
CAUTION:

Do not drop rear wiper motor or cause it to contact other parts.

1. Remove rear wiper arm and blade. Refer to WW-71, "Removal and Installation".
2. Remove back door lower finisher. Refer to INT-26, "Removal and Installation".
3. Position the vapor barrier aside.
4. Disconnect the harness connector from the rear wiper motor.
5. Remove rear wiper motor.
6. Remove rear motor pivot seal.

INSTALLATION

1. Clean up the pivot area as shown.
   NOTE:
   This will reduce possibility of wiper arm looseness.



2. Install rear motor pivot seal.
3. Install rear wiper motor.
4. Connect the harness connector to the rear wiper motor.

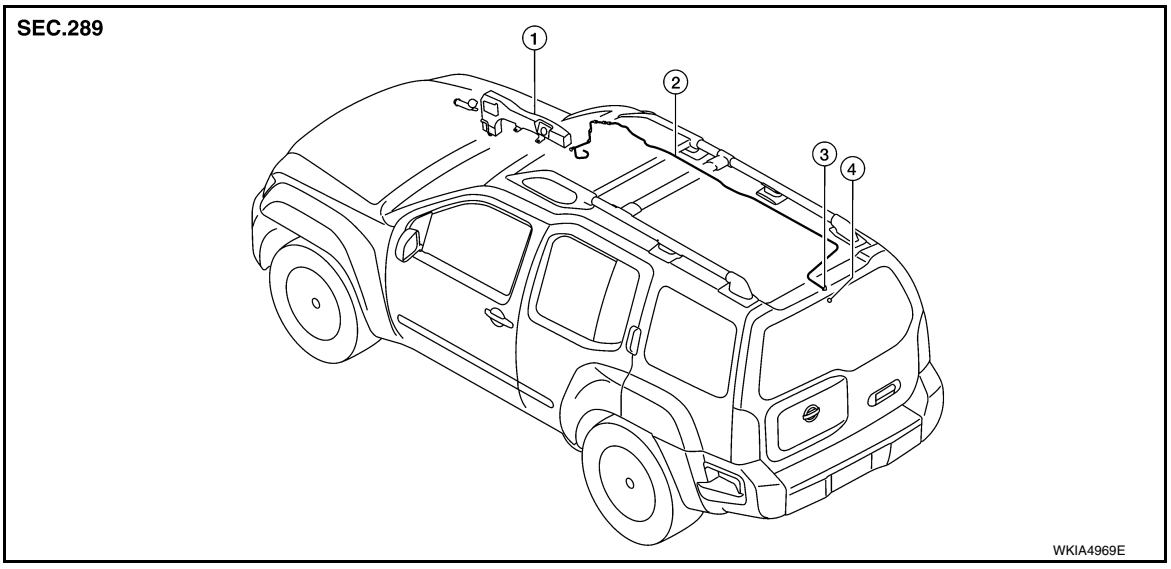
5. Install rear wiper motor cover.
6. Reposition the vapor barrier.
7. Install back door lower finisher. Refer to INT-26, "Removal and Installation".
8. Install and adjust the rear wiper arm and blade. Refer to WW-71, "Removal and Installation".

REAR WASHER TUBE

Removal and Installation

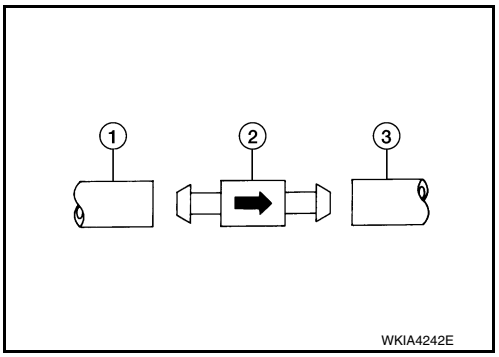
INFOID:0000000009484735

REAR WASHER HOSE LAYOUT



1. Washer tank
2. Rear washer hose
3. Check valve
4. Rear washer nozzle

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



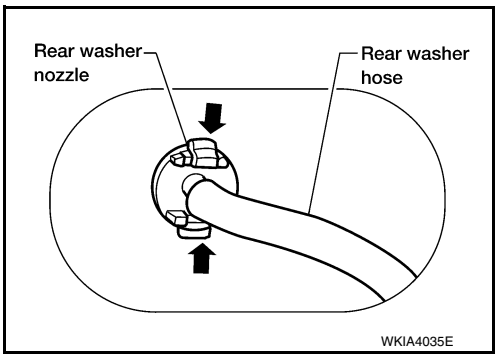
REAR WASHER NOZZLE

Removal and Installation

INFOID:0000000009484736

REMOVAL

1. Disconnect rear washer hose from rear washer nozzle.
2. Release retaining clips and remove rear washer nozzle.



INSTALLATION

1. Install rear washer nozzle.
2. Connect rear washer hose.

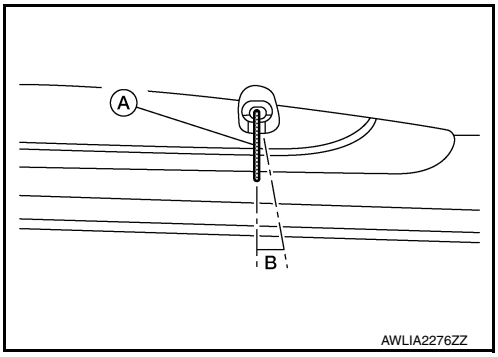
• Adjust washer nozzle, Refer to WW-76, "Rear Washer Nozzle Adjustment".

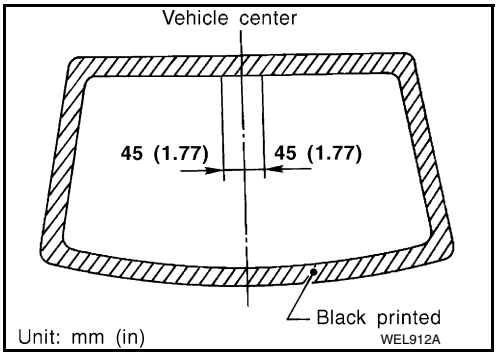
Rear Washer Nozzle Adjustment

INFOID:0000000009484737

Adjust washer nozzle with suitable tool (A) as shown.

Adjustable range (B) : ± 10°





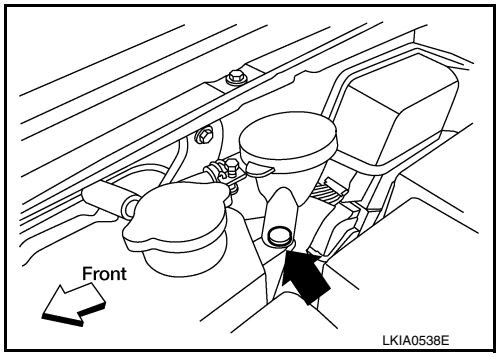
WASHER TANK

Removal and Installation

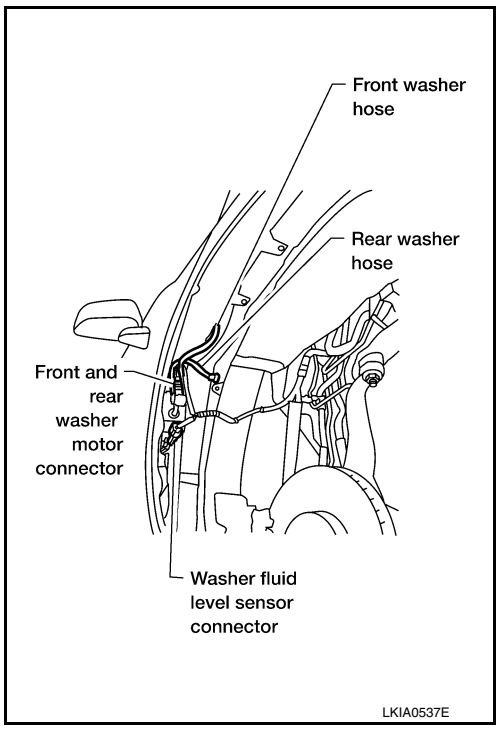
INFOID:0000000009484738

REMOVAL

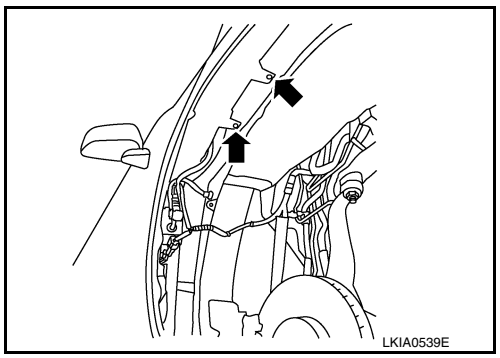
1. Remove front fender protector (RH). Refer to EXT-22, "Removal and Installation".
2. Remove clip and the washer tank filler neck from washer tank.



3. Disconnect washer hoses.
4. Disconnect the harness connector from the washer motor.
5. Disconnect the harness connector from the washer fluid level sensor (if equipped).



6. Remove washer tank screws and the washer tank.



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

After installation, add water up to the upper level of the washer tank filler neck and check for water leaks.

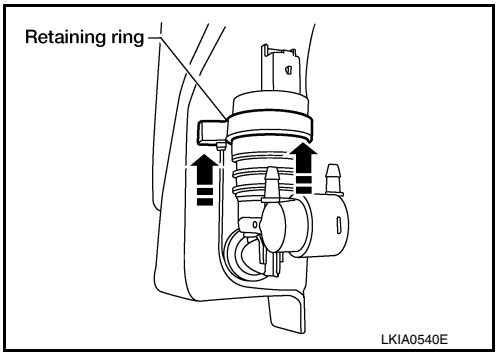
WASHER PUMP

Removal and Installation

INFOID:0000000009484739

REMOVAL

1. Remove front fender protector (RH). Refer to EXT-22, "Removal and Installation".
2. Disconnect the washer hoses.
3. Disconnect the harness connector from the washer motor.
4. Slide retaining ring upward to release washer motor.



5. Disconnect the harness connector from the washer fluid level sensor (if equipped).
6. Remove washer motor from washer tank.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

Do not twist the seal when installing the washer motor.

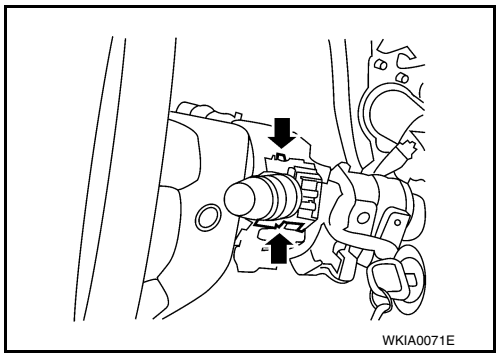
WIPER & WASHER SWITCH

Removal and Installation

INFOID:0000000009484740

REMOVAL

1. Remove the steering column upper and lower covers. Refer to IP-12, "Removal and Installation".
2. Disconnect the harness connector from the wiper washer switch.
3. Release pawls at wiper and washer switch base and slide switch away from steering column.



INSTALLATION

Installation is in the reverse order of removal.

WASHER LEVEL SWITCH

Removal and Installation

INFOID:0000000009484741

The washer level switch is part of the washer tank. To replace the washer level switch, refer to WW-77, "Removal and Installation".

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Specifications

INFOID:0000000009484742

Windshield Washer Fluid

Windshield washer fluid capacity	4.5 ℓ (1 1/4 US gal, 1 Imp gal)
Windshield washer fluid specification	Refer to MA-12, "Fluids and Lubricants".