SECTION WW
WIPER & WASHER

CONTENTS

PRECAUTION

PRECAUTIONS

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

INFOID:0000000008721367

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

WARNING:

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

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

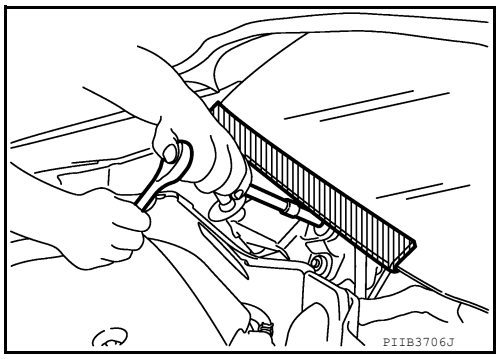
WARNING:

- **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 3 minutes before performing any service.**

Precaution for Procedure without Cowl Top Cover

INFOID:0000000007987003

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



SYSTEM DESCRIPTION

FRONT WIPER AND WASHER SYSTEM

Component Parts Location

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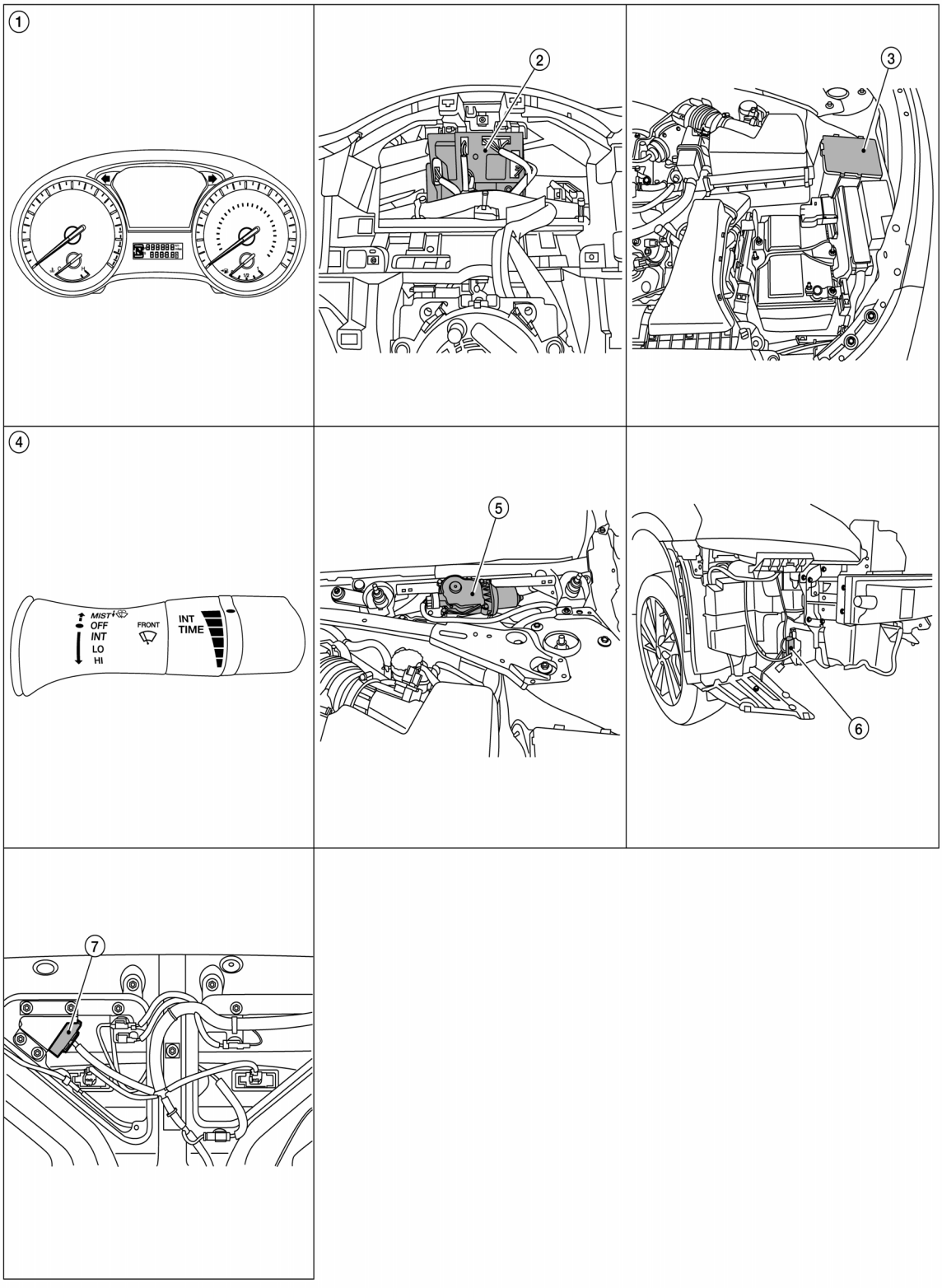
FRONT WIPER AND WASHER SYSTEM



AWLIA1985ZZ

1. Combination meter
2. BCM (view with combination meter removed)
3. IPDM E/R
4. Combination switch (wiper and washer switch)
5. Front wiper motor (with the wiper cowl removed)
6. Front washer motor (with front bumper removed)
7. Rear view camera washer control unit* (with rear trunk finisher removed)

*: For models with rear camera washer system

Component Description

INFOID:0000000007986970

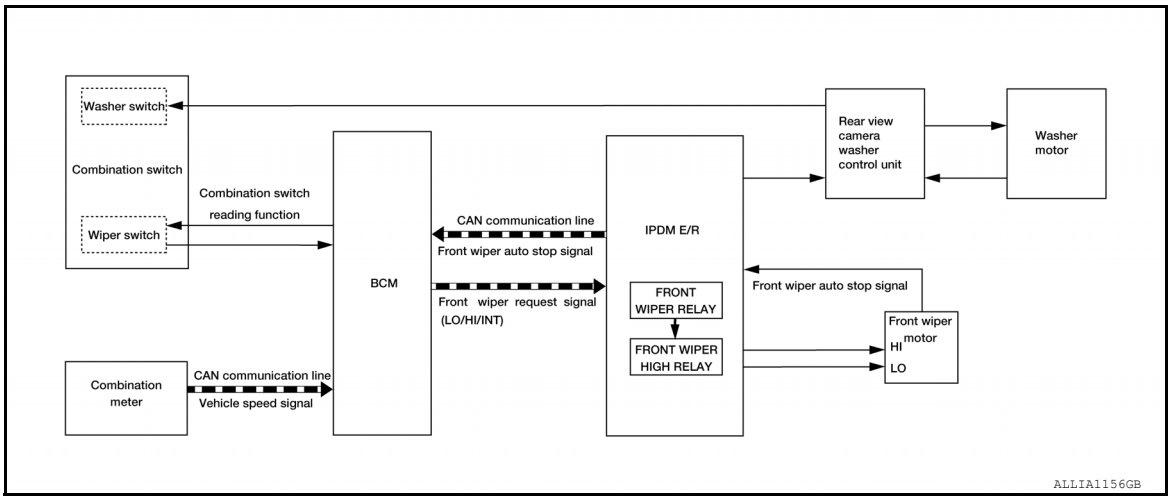
Part	Description
Combination meter	Transmits the vehicle speed signal to BCM with CAN communication.
BCM	• Judges the switch status by the combination switch reading function. • Requests (with CAN communication) the front wiper relay and the front wiper high relay ON to IPDM E/R.
IPDM E/R	• Controls the integrated relay according to the request (with CAN communication) from BCM. • Performs the auto stop control of the front wiper. • Supplies power to the rear view camera washer control unit.
Combination switch (Wiper and washer switch)	• Provides input for wiper and washer control to the BCM. • Refer to WW-6, "System Description". • Supplies signal to the rear view camera washer control unit.
Front washer motor	Washer fluid is sprayed according to combination switch signal.
Front wiper motor	• IPDM E/R controls front wiper operation. • Front wiper stop position is transmitted to IPDM E/R.
Rear view camera washer control unit (with rear view camera wash system)	• Judges the signal status from the combination switch for washer operation. • Supplies signal to the front washer motor.

SYSTEM

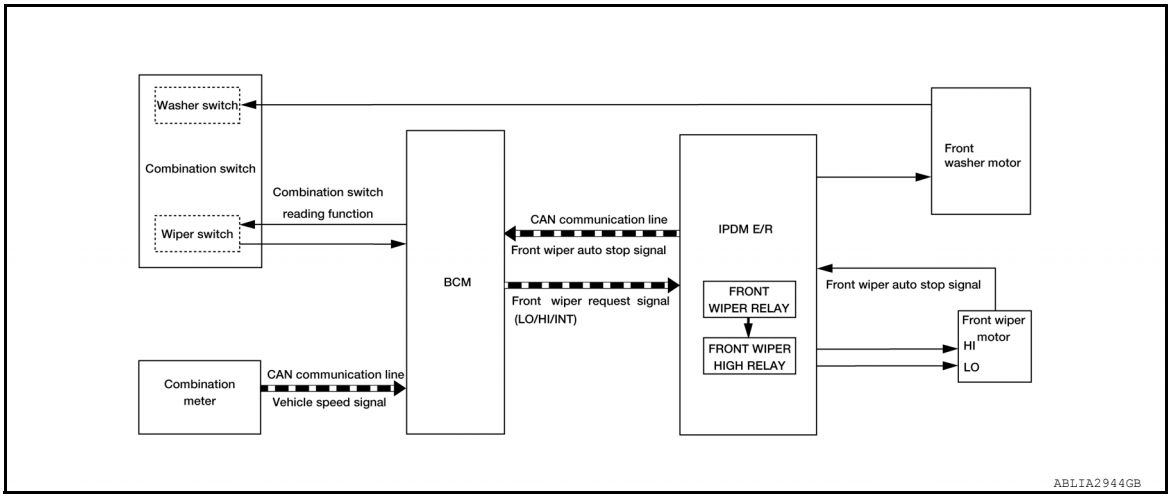
System Diagram

INFOID:0000000007986967

SYSTEM WITH REAR VIEW CAMERA WASH



SYSTEM WITHOUT REAR VIEW CAMERA WASH



System Description

INFOID:0000000007986968

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

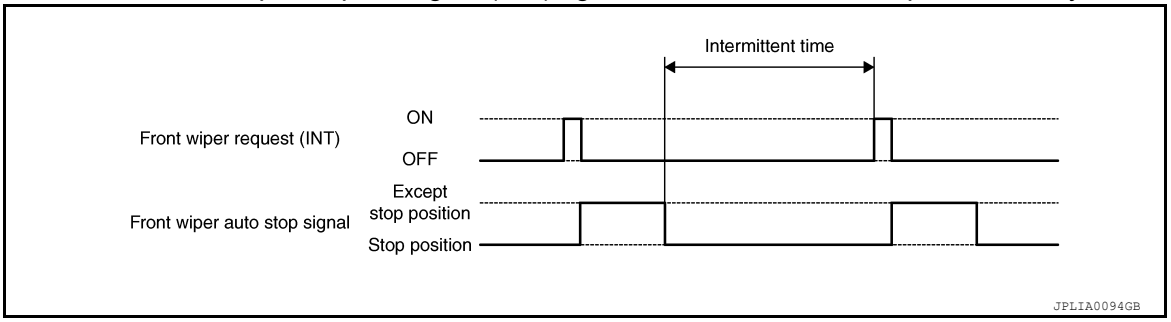
- IPDM E/R turns ON the integrated front wiper relay and the front wiper high relay according to the front wiper request signal (HI).

FRONT WIPER INT OPERATION

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

Front wiper INT operating condition
- Ignition switch ON
- Front wiper switch INT

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



NOTE:
Front wiper intermittent operation can be set to the operation with vehicle speed by CONSULT. Refer to BCS-20, "WIPER : CONSULT Function (BCM - WIPER)".

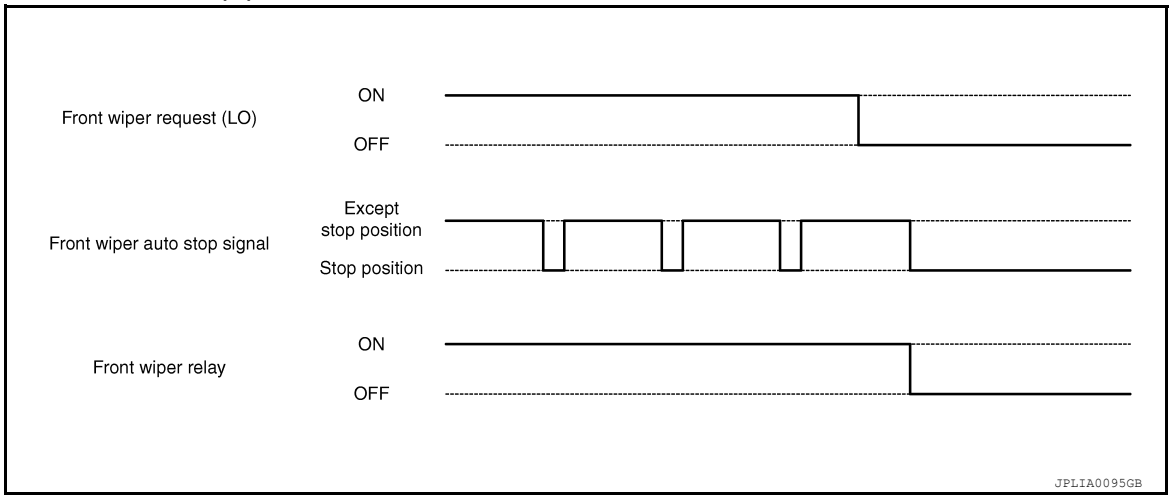
Front wiper intermittent operation with vehicle speed
- BCM calculates the intermittent operation delay interval from the following
- Vehicle speed signal (received from the combination meter with CAN communication)
- Wiper intermittent dial position

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 (3.1MPH) or more or less than 35km/h (21.7 MPH)	35 km/h (21.7 MPH) or more or less than 65km/h (40.4 MPH)*	65 km/h (40.4MPH) 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

*: When without vehicle speed setting

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 OFF.
- IPDM E/R turns the front wiper relay OFF when the ignition switch OFF.

FRONT WIPER OPERATION LINKED WITH WASHER

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

Washer linked operating condition of front wiper

- Ignition switch ON
- Front washer switch ON (0.4 second or more)

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

REAR VIEW CAMERA WASHER CONTROL UNIT (if equipped)

- Rear view camera washer control unit detects the combination switch condition by the combination switch reading function.
- Rear view camera washer control unit supplies power and ground to operate the front washer motor.

Washer linked operating condition of rear view camera washer control unit
- Ignition switch ON
- Front washer switch ON (0.4 second or more).

• IPDM E/R turns ON the integrated front wiper relay.
• The washer motor is grounded through the rear view camera washer control unit.
• The rear view camera washer control unit decides to spray the windshield or the rear camera.

Fail-Safe

INFOID:0000000008527540

FAIL−SAFE OPERATION

IPDM E/R performs the fail-safe function when the front wiper auto stop circuit is malfunctioning. Refer to PCS-19, "Fail Safe".

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

INFOID:0000000008682971

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	HEADLAMP			×	×	×		
Wiper and washer	WIPER			×	×	×		
Turn signal and hazard warning lamps	FLASHER			×	×			
Air conditioner	AIR CONDITIONER			×				
Intelligent Key system	INTELLIGENT KEY		×	×	×	×		
Combination switch	COMB SW			×				
BCM	BCM	×	×			×	×	×
Immobilizer	IMMU		×	×	×			
Interior room lamp battery saver	BATTERY SAVER			×	×			
Trunk open	TRUNK			×				
Vehicle security system	THEFT ALM			×	×	×		
RAP system	RETAINED PWR			×				
Signal buffer system	SIGNAL BUFFER			×				
TPMS	AIR PRESSURE MONITOR		×	×	×	×		

WIPER

WIPER : CONSULT Function (BCM - WIPER)

INFOID:0000000008682972

DATA MONITOR

Monitor Item [Unit]	Description
PUSH SW [On/Off]	Indicates condition of push-button ignition switch.
VEH SPEED 1 [km/h]	Indicates vehicle speed signal received from ABS on CAN communication line.
FR WIPER HI [On/Off]	Indicates condition of wiper operation of combination switch.
FR WIPER LOW [On/Off]	
FR WASHER SW [On/Off]	
FR WIPER INT [On/Off]	
FR WIPER STOP [On/Off]	Indicates front wiper auto stop signal received from IPDM E/R on CAN communication line.
INT VOLUME [1 – 7]	Indicates condition of intermittent wiper operation of combination switch.

ACTIVE TEST

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

WORK SUPPORT

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

* : Initial setting

DIAGNOSIS SYSTEM (IPDM E/R)

Diagnosis Description

INFOID:0000000008682961

AUTO ACTIVE TEST

Description

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

- Front wiper (LO, HI)
- Front fog lamps
- Parking lamps
- Side marker lamps
- Tail lamps
- License plate lamps
- Daytime running lamps
- Headlamps (LO, HI)
- A/C compressor
- Cooling fans (LO, HI)

Operation Procedure

CAUTION:

Do not start the engine.

NOTE:

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

NOTE:

- If auto active test mode cannot be actuated, check door switch system. Refer to DLK-99, "Component Function Check".
- When auto active test mode has to be cancelled halfway through test, turn ignition switch OFF.

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

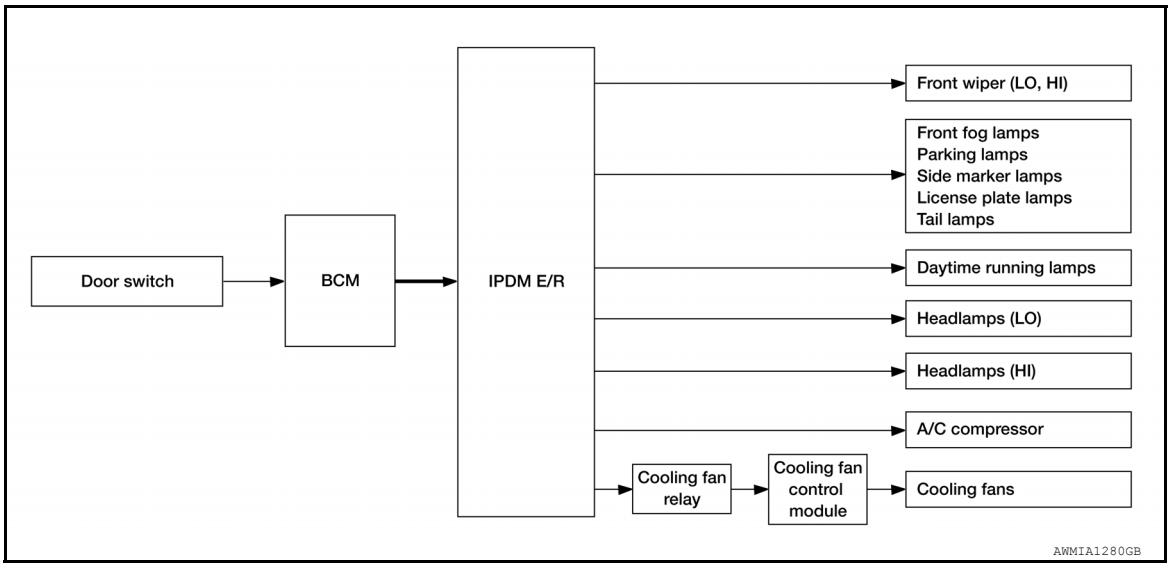
Inspection in Auto Active Test Mode

When auto active test mode is actuated, the following operation sequence is repeated 3 times.

Operation sequence	Inspection Location	Operation
1	Front wiper	LO for 3 seconds → HI for 3 seconds
2	• Front fog lamps • Parking lamps • Side marker lamps • Tail lamps • License plate lamps	10 seconds
3	Daytime running lamps	10 seconds
4	Headlamps	LO ⇔ HI 5 times
5	A/C compressor	ON ⇔ OFF 5 times
6*	Cooling fans	LO for 5 seconds → HI for 5 seconds

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

Concept of auto active test



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

Diagnosis chart in auto active test mode

Symptom	Inspection contents		Possible cause
Any of the following components do not operate • Front fog lamps • Parking lamps • Side marker lamps • License plate lamps • Tail lamps • Daytime running lamps • Headlamp (HI, LO) • Front wiper	Perform auto active test. Does the applicable system operate?	YES	BCM signal input circuit
		NO	• Lamp or motor • Lamp or motor ground circuit • Harness or connector between IPDM E/R and applicable system • IPDM E/R
Cooling fans do not operate	Perform auto active test. Do the cooling fans operate?	YES	• ECM signal input circuit • CAN communication signal between ECM and IPDM E/R
		NO	• Cooling fans • Harness or connectors between cooling fans and cooling fan control module • Cooling fan control module • Harness or connectors between cooling fan relay and cooling fan control module • Cooling fan relay • Harness or connectors between IPDM E/R and cooling fan relay • IPDM E/R

CONSULT Function (IPDM E/R)

INFOID:0000000008682962

APPLICATION ITEM

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

Direct Diagnostic Mode	Description
Ecu Identification	The IPDM E/R part number is displayed.
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.

ECU IDENTIFICATION

The IPDM E/R part number is displayed.

SELF DIAGNOSTIC RESULT

Refer to PCS-20, "DTC Index".

DATA MONITOR

Monitor Item [Unit]	Main Signals	Description
MOTOR FAN REQ [%]	×	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
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
IGN RLY1 -REQ [On/Off]		Indicates ignition switch ON signal received from BCM on CAN communication line
IGN RLY [On/Off]	×	Indicates condition of ignition relay
PUSH SW [On/Off]		Indicates condition of push-button ignition switch
INTER/NP SW [On/Off]		Indicates condition of CVT shift position
ST RLY CONT [On/Off]		Indicates starter relay status signal received from BCM on CAN communication line
IHBT RLY -REQ [On/Off]		Indicates starter control relay signal received from BCM on CAN communication line
ST/INHI RLY [Off/ ST /INHI]		Indicates condition of starter relay and starter control relay
DETENT SW [On/Off]		Indicates condition of CVT shift selector (park position switch)
DTRL REQ [Off]		Indicates daytime light request signal received from BCM on CAN communication line
HOOD SW [On/Off]		Indicates condition of hood switch
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
HOOD SW 2 [On/Off]		Indicates condition of hood switch 2

ACTIVE TEST

Test item	Description
HORN	This test is able to check horn operation [On].
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].

CAN DIAG SUPPORT MNTR

Refer to LAN-15, "CAN Diagnostic Support Monitor".

ECU DIAGNOSIS INFORMATION

BCM, IPDM E/R

List of ECU Reference

INFOID:0000000008525008

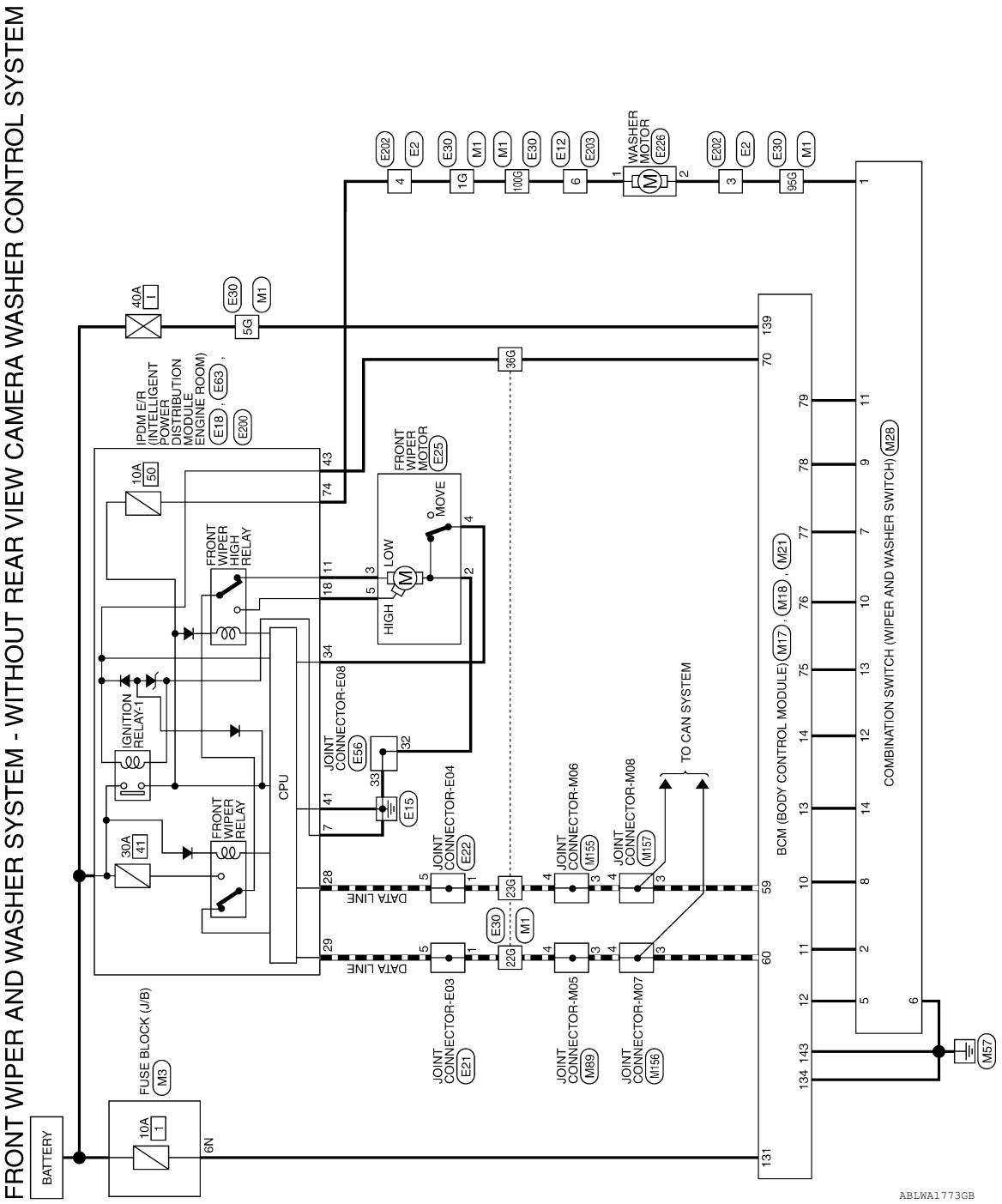
ECU	Reference
BCM	BCS-28, "Reference Value"
	BCS-47, "Fail Safe"
	BCS-47, "DTC Inspection Priority Chart"
	BCS-49, "DTC Index"
IPDM E/R	PCS-12, "Reference Value"
	PCS-19, "Fail Safe"
	PCS-20, "DTC Index"

WIRING DIAGRAM

FRONT WIPER AND WASHER SYSTEM

Wiring Diagram - Without Rear View Camera Washer Control System

INFOID:0000000007986996



FRONT WIPER AND WASHER SYSTEM CONNECTORS - WITHOUT REAR VIEW CAMERA WASHER CONTROL SYSTEM

Connector No.	M1
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
1G	LG	–
5G	W	–
22G	L	–
23G	P	–
36G	G	–
95G	BG	–
100G	LG	–

Connector No.	M3
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE

H.S.

3N	2N	1N	
8N	7N	6N	5N	4N

Terminal No.	Color of Wire	Signal Name
6N	W	–

Connector No.	M17
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	GREEN

H.S.

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

Terminal No.	Color of Wire	Signal Name
10	W	COMBI SW IN 5
11	BG	COMBI SW IN 4
12	W	COMBI SW IN 3
13	G	COMBI SW IN 2
14	P	COMBI SW IN 1

ABLIA3705GB

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

H.S.

60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41
80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61

Terminal No.	Color of Wire	Signal Name
59	P	CAN-L
60	L	CAN-H
70	G	IGN USM OUT 1
75	BG	COMBI SW OUT 5
76	W	COMBI SW OUT 4
77	R	COMBI SW OUT 3
78	P	COMBI SW OUT 2
79	G	COMBI SW OUT 1

Connector No.	M21
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	WHITE

H.S.

137	136	135	134	133	132	131	130	129
143	142	141	140	139	138			

Terminal No.	Color of Wire	Signal Name
131	W	BAT BCM FUSE
134	B	GND2
139	W	BAT POWER F/L
143	B	GND1

Connector No.	M28
Connector Name	COMBINATION SWITCH
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
1	BG	WASH MTR (WITH REAR VIEW CAMERA)
1	LG	WASH MTR (WITHOUT REAR VIEW CAMERA)

Terminal No.	Color of Wire	Signal Name
2	BG	OUTPUT 4
5	W	OUTPUT 3
6	B	GND
7	R	INPUT 3
8	W	OUTPUT 5
9	P	INPUT 2
10	W	INPUT 4
11	G	INPUT 1
12	P	OUTPUT 1
13	BG	INPUT 5
14	G	OUTPUT 2

Connector No.	M89
Connector Name	JOINT CONNECTOR-M05
Connector Color	WHITE

H.S.

4	3	2	1

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

ABLIA3706GB

Connector No.	M155
Connector Name	JOINT CONNECTOR-M06
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
3	P	–
4	P	–

Connector No.	M156
Connector Name	JOINT CONNECTOR-M07
Connector Color	WHITE

H.S.

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

Connector No.	M157
Connector Name	JOINT CONNECTOR-M08
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
3	P	–
4	P	–

Connector No.	E2
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

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

Connector No.	E12
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
6	B	–

Connector No.	E18
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
7	B	GND (POWER)
11	Y	FR WIPER LO
18	L	FR WIPER HI

ABLIA3707GB

Connector No.	E21
Connector Name	JOINT CONNECTOR-E03
Connector Color	GRAY

H.S.

Terminal No.	Color of Wire	Signal Name
1	L	–
5	L	–

Connector No.	E22
Connector Name	JOINT CONNECTOR-E04
Connector Color	GRAY

H.S.

Terminal No.	Color of Wire	Signal Name
1	P	–
5	P	–

Connector No.	E25
Connector Name	FRONT WIPER MOTOR
Connector Color	GRAY

H.S.

Terminal No.	Color of Wire	Signal Name
2	GR	–
3	Y	–
4	SB	–
5	L	–

Connector No.	E30
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1G	BG	–
5G	P	–
22G	L	–
23G	P	–
36G	LG	–
95G	BG	–
100G	B	–

Connector No.	E56
Connector Name	JOINT CONNECTOR-E08
Connector Color	WHITE

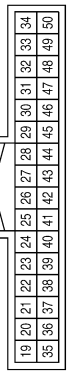
H.S.

Terminal No.	Color of Wire	Signal Name
32	GR	–
33	GR	–

ABLIA3708GB

Connector No.	E63
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

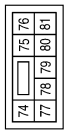
H.S.



Terminal No.	Color of Wire	Signal Name
28	P	CAN-L
29	L	CAN-H
34	SB	WIPER AUTOSTOP
41	B	GND (SIGNAL)
43	LG	IGN SIGNAL

Connector No.	E200
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

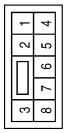
H.S.



Terminal No.	Color of Wire	Signal Name
74	V	WASH MTR

Connector No.	E202
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.



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

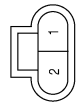
Connector No.	E203
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
6	B	–

Connector No.	E226
Connector Name	WASHER MOTOR
Connector Color	BLACK

H.S.

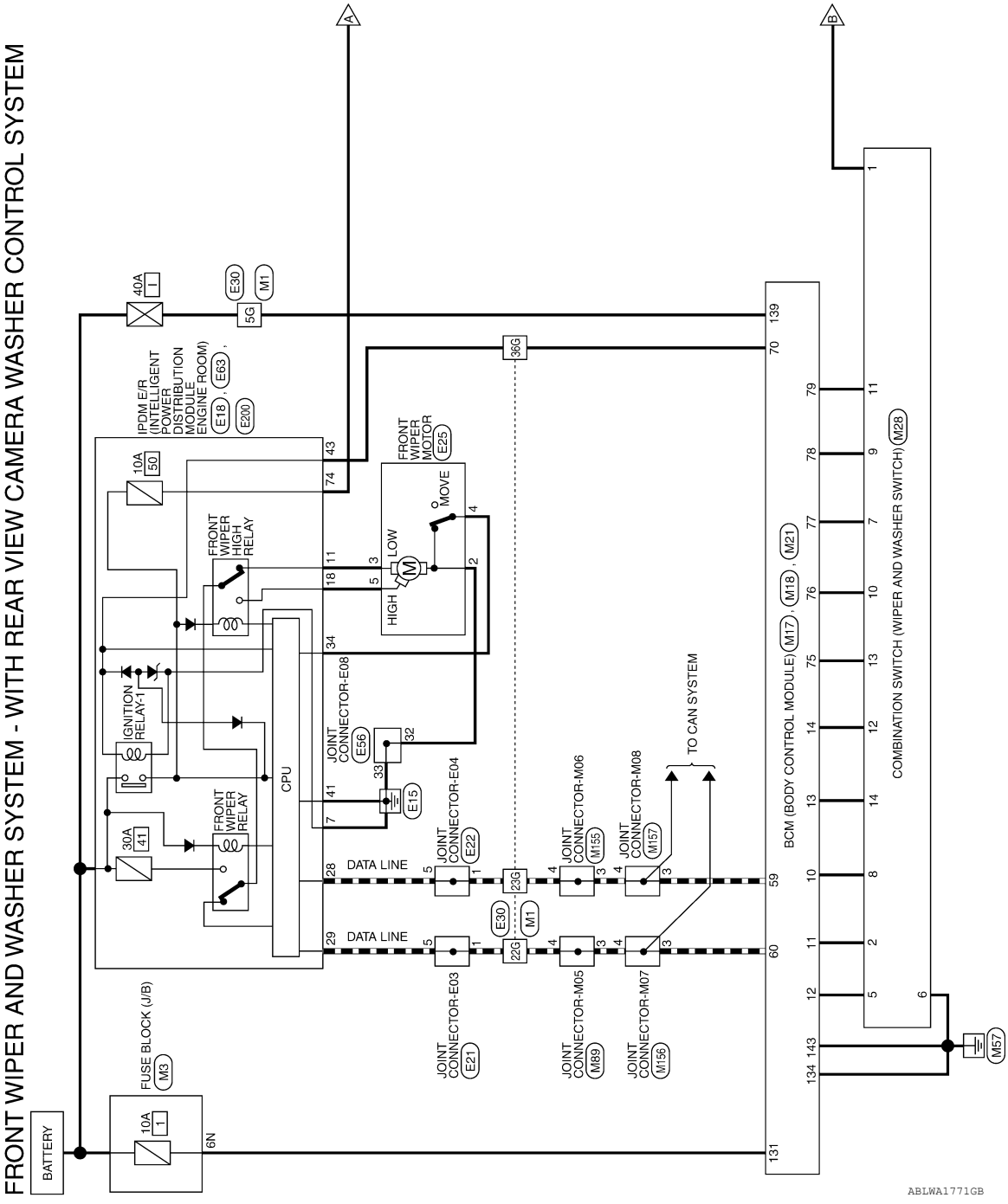


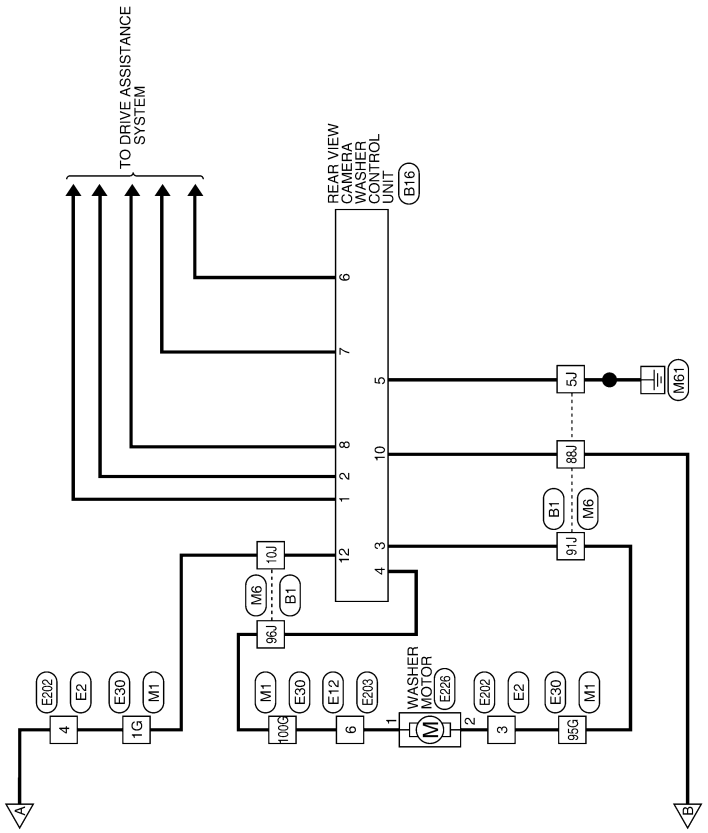
Terminal No.	Color of Wire	Signal Name
1	B	–
2	BG	–

ABLIA3709GB

Wiring Diagram - With Rear View Camera Washer Control System

INFOID:0000000007986997



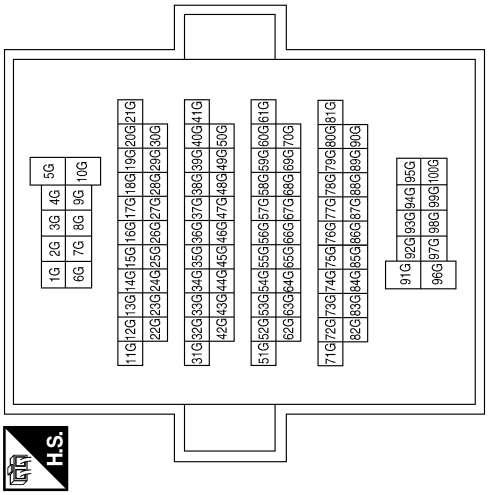


ABLWA1789GB

FRONT WIPER AND WASHER SYSTEM CONNECTORS - WITH REAR VIEW CAMERA WASHER CONTROL SYSTEM

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

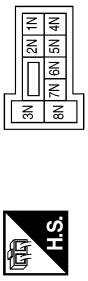
H.S.



Terminal No.	Color of Wire	Signal Name
1G	LG	–
5G	W	–
22G	L	–
23G	P	–
36G	G	–
95G	BG	–
100G	B	–

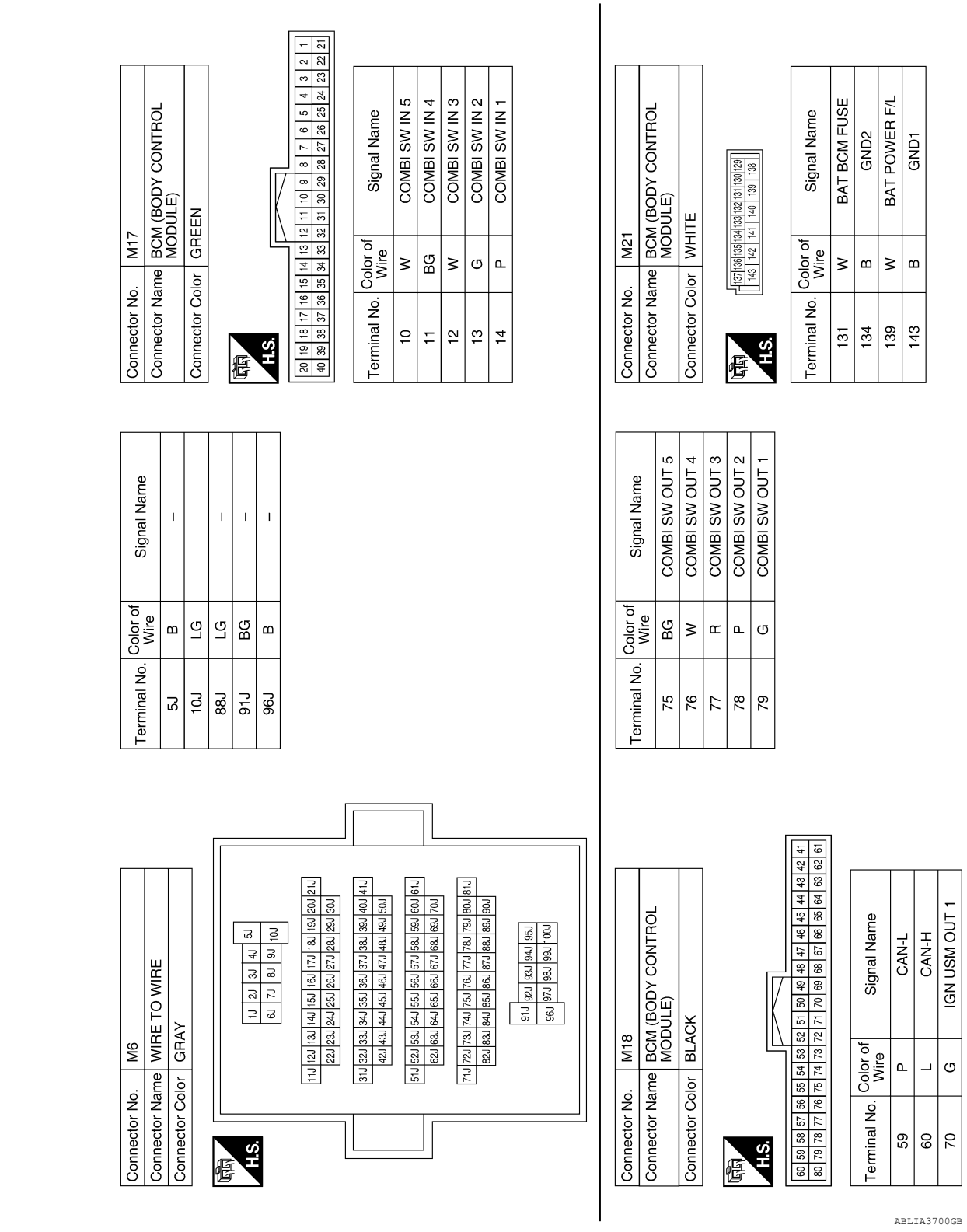
Connector No.	M3
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
6N	W	–

ABLIA3699GB


Connector No. M6
Connector Name WIRE TO WIRE
Connector Color GRAY
H.S.
1J 2J 3J 4J 5J
6J 7J 8J 9J 10J
11J 12J 13J 14J 15J 16J 17J 18J 19J 20J 21J
22J 23J 24J 25J 26J 27J 28J 29J 30J
31J 32J 33J 34J 35J 36J 37J 38J 39J 40J 41J
42J 43J 44J 45J 46J 47J 48J 49J 50J
51J 52J 53J 54J 55J 56J 57J 58J 59J 60J 61J
62J 63J 64J 65J 66J 67J 68J 69J 70J
71J 72J 73J 74J 75J 76J 77J 78J 79J 80J 81J
82J 83J 84J 85J 86J 87J 88J 89J 90J
91J 92J 93J 94J 95J
96J 97J 98J 99J 100J
Terminal No. Color of Wire Signal Name
5J B –
10J LG
88J LG –
91J BG –
96J B –
Connector No. M17
Connector Name BCM (BODY CONTROL MODULE)
Connector Color GREEN
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
10 W COMBI SW IN 5
11 BG COMBI SW IN 4
12 W COMBI SW IN 3
13 G COMBI SW IN 2
14 P COMBI SW IN 1
Connector No. M18
Connector Name BCM (BODY CONTROL MODULE)
Connector Color BLACK
H.S.
41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60
61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
Terminal No. Color of Wire Signal Name
59 P CAN-L
60 L CAN-H
70 G IGN USM OUT 1
Terminal No. Color of Wire Signal Name
75 BG COMBI SW OUT 5
76 W COMBI SW OUT 4
77 R COMBI SW OUT 3
78 P COMBI SW OUT 2
79 G COMBI SW OUT 1
Connector No. M21
Connector Name BCM (BODY CONTROL MODULE)
Connector Color WHITE
H.S.
129 130 131 132 133 134 135 136 137
138 139 140 141 142 143
Terminal No. Color of Wire Signal Name
131 W BAT BCM FUSE
134 B GND2
139 W BAT POWER F/L
143 B GND1
ABLIA3700GB

Connector No.	M28
Connector Name	COMBINATION SWITCH
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
1	LG	WASH MTR
2	BG	OUTPUT 4
5	W	OUTPUT 3

Terminal No.	Color of Wire	Signal Name
6	B	GND
7	R	INPUT 3
8	W	OUTPUT 5
9	P	INPUT 2
10	W	INPUT 4
11	G	INPUT 1
12	P	OUTPUT 1
13	BG	INPUT 5
14	G	OUTPUT 2

Connector No.	M89
Connector Name	JOINT CONNECTOR-M05
Connector Color	WHITE

H.S.

4	3	2	1

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

Connector No.	M155
Connector Name	JOINT CONNECTOR-M06
Connector Color	WHITE

H.S.

4	3	2	1

Terminal No.	Color of Wire	Signal Name
3	P	–
4	P	–

Connector No.	M156
Connector Name	JOINT CONNECTOR-M07
Connector Color	WHITE

H.S.

4	3	2	1

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

Connector No.	M157
Connector Name	JOINT CONNECTOR-M08
Connector Color	WHITE

H.S.

4	3	2	1

Terminal No.	Color of Wire	Signal Name
3	P	–
4	P	–

ABLIA3701GB

Connector No.	E2
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

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

Connector No.	E12
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
6	B	–

Connector No.	E18
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
7	B	GND (POWER)
11	Y	FR WIPER LO
18	L	FR WIPER HI

Connector No.	E21
Connector Name	JOINT CONNECTOR-E03
Connector Color	GRAY

H.S.

Terminal No.	Color of Wire	Signal Name
1	L	–
5	L	–

Connector No.	E22
Connector Name	JOINT CONNECTOR-E04
Connector Color	GRAY

H.S.

Terminal No.	Color of Wire	Signal Name
1	P	–
5	P	–

Connector No.	E25
Connector Name	FRONT WIPER MOTOR
Connector Color	GRAY

H.S.

Terminal No.	Color of Wire	Signal Name
2	GR	–
3	Y	–
4	SB	–
5	L	–

ABLIA3702GB

Connector No.	E30
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1G	BG	–
5G	P	–
22G	L	–
23G	P	–
36G	LG	–
95G	BG	–
100G	B	–

Connector No.	E56
Connector Name	JOINT CONNECTOR-E08
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
32	GR	–
33	GR	–

Connector No.	E202
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
3	O	–
4	Y	–

Connector No.	E63
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
28	P	CAN-L
29	L	CAN-H
34	SB	WIPER AUTOSTOP
41	B	GND (SIGNAL)
43	LG	IGN SIGNAL

Connector No.	E200
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
74	V	WASH MTR

ABLIA3703GB

Connector No.	E203
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
6	B	–

Connector No.	E226
Connector Name	WASHER MOTOR
Connector Color	BLACK

H.S.

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

Connector No.	B1
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
5J	B	–
10J	W	
88J	LG	–
91J	L	–
96J	B	–

Connector No.	B16
Connector Name	REAR VIEW CAMERA WASHER CONTROL UNIT
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	V	PUMP MOTOR+
2	BR	PUMP MOTOR-
3	L	WAHSER MOTOR -
4	B	WAHSER MOTOR +
5	B	GND
6	P	SERIAL GND
7	G	FROM PUMP TO CAMERA C/W
8	W	FROM CAMERA C/U TO PUMP
10	LG	FR WASHER SW
12	W	IGN

ABLIA3704GB

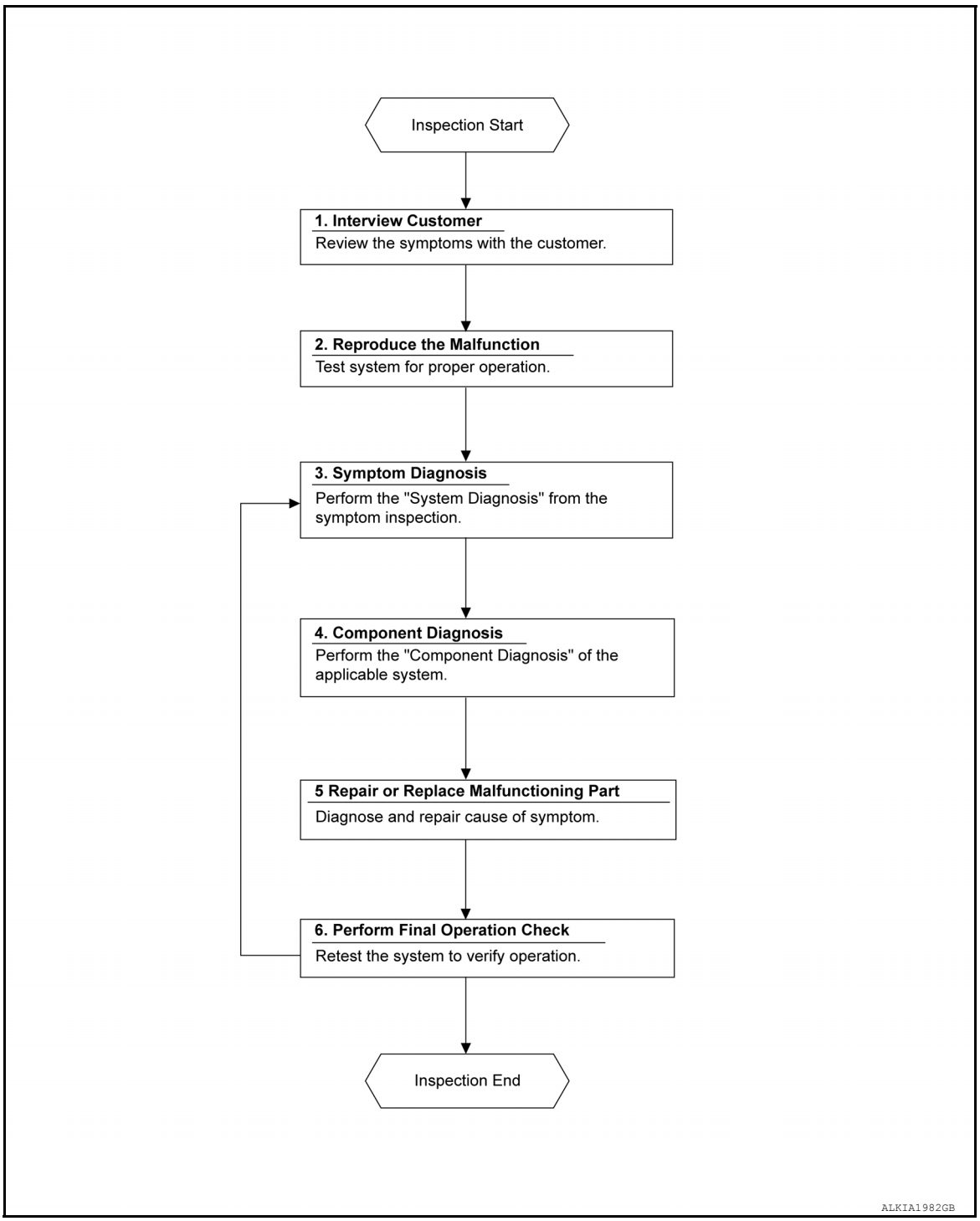
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:0000000008525584

OVERALL SEQUENCE



DETAILED FLOW

1. OBTAIN INFORMATION ABOUT SYMPTOM

Interview the customer to obtain as much information as possible about the conditions and environment under which the malfunction occurred.

>> GO TO 2.

2. CONFIRM THE SYMPTOM

Check the malfunction on the vehicle that the customer describes.
Inspect the relation of the symptoms and the condition when the symptoms occur.

>> GO TO 3.

3. IDENTIFY THE MALFUNCTIONING SYSTEM WITH SYMPTOM DIAGNOSIS

Use Symptom diagnosis from the symptom inspection result in step 2 and then identify where to start performing the diagnosis based on possible causes and symptoms. Refer to WW-45, "Symptom Table".

>> GO TO 4.

4. PERFORM THE COMPONENT DIAGNOSIS OF THE OF THE APPLICABLE SYSTEM

Perform the diagnosis with Component diagnosis of the applicable system.

>> GO TO 5.

5. REPAIR OR REPLACE THE MALFUNCTIONING PARTS

Repair or replace the specified malfunctioning parts.

>> GO TO 6.

6. FINAL CHECK

Check that malfunctions are not reproduced when obtaining the malfunction information from the customer, referring to the symptom inspection result in step 2.

Are the malfunctions corrected?

YES >> Inspection End.
NO >> GO TO 3.

DTC/CIRCUIT DIAGNOSIS

WIPER AND WASHER FUSE

Description

INFOID:0000000007986975

Fuse list

Unit	Location	Fuse No.	Capacity
Front wiper motor	IPDM E/R	41	30 A
Front washer motor	IPDM E/R	50	10 A

Diagnosis Procedure

INFOID:0000000007986976

1. CHECK FUSES

Check that the following fuses are not blown.

Unit	Location	Fuse No.	Capacity
Front wiper motor	IPDM E/R	41	30 A
Front washer motor	IPDM E/R	50	10 A

Is the fuse blown?

YES >> Replace the blown fuse after repairing the affected circuit.
NO >> Inspection End.

FRONT WIPER MOTOR LO CIRCUIT

Component Function Check

INFOID:0000000007986977

1. CHECK FRONT WIPER LO OPERATION

IPDM E/R AUTO ACTIVE TEST
1. Start IPDM E/R auto active test. Refer to PCS-8, "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 that front wiper LO operation and OFF.

Lo : Front wiper LO operation
Off : Stop the front wiper.

Is the inspection result normal?

YES >> Front wiper motor LO circuit is normal.
NO >> Refer to WW-34, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000007986978

Regarding Wiring Diagram information, refer to WW-23, "Wiring Diagram - With Rear View Camera Washer Control System".

1. CHECK FRONT WIPER MOTOR (LO) INPUT VOLTAGE

CONSULT ACTIVE TEST
1. Turn the ignition switch OFF.
2. Disconnect front wiper motor.
3. Turn the ignition switch ON.
4. Select FRONT WIPER of IPDM E/R active test item.
5. With operating the test item, check voltage between IPDM E/R harness connector E18 and ground.

Terminals			Test item	Voltage (Approx.)
(+)		(-)		
IPDM E/R		Ground	FRONT WIPER	
Connector	Terminal			
E18	11		Lo	Battery voltage
			Off	0V

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace IPDM E/R. Refer to PCS-32, "Removal and Installation".

2. CHECK FRONT WIPER MOTOR (LO) OPEN CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect IPDM E/R.
3. Check continuity between IPDM E/R harness connector E18 and front wiper motor harness connector E25.

IPDM E/R		Front wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
E18	11	E25	3	Yes

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace the harness or connectors.

3. CHECK FRONT WIPER MOTOR (LO) SHORT CIRCUIT

Check continuity between IPDM E/R harness connector E18 and ground.

IPDM E/R		Ground	Continuity
Connector	Terminal		
E18	11		No

Is the inspection result normal?

YES >> Repair or replace the harness or connectors.
NO >> Replace front wiper motor. Refer to WW-64, "Removal and Installation".

FRONT WIPER MOTOR HI CIRCUIT

Component Function Check

INFOID:0000000007986979

1. CHECK FRONT WIPER HI OPERATION

IPDM E/R AUTO ACTIVE TEST
1. Start IPDM E/R auto active test. Refer to PCS-8, "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 that front wiper HI operation and OFF.

Hi : Front wiper HI operation
Off : Stop the front wiper.

Is the inspection result normal?

YES >> The front wiper motor HI circuit is normal.
NO >> Refer to WW-36, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000007986980

Regarding Wiring Diagram information, refer to WW-23, "Wiring Diagram - With Rear View Camera Washer Control System".

1. CHECK FRONT WIPER MOTOR (HI) INPUT VOLTAGE

CONSULT ACTIVE TEST
1. Turn the ignition switch OFF.
2. Disconnect front wiper motor.
3. Turn the ignition switch ON.
4. Select FRONT WIPER of IPDM E/R active test item.
5. With operating the test item, check voltage between IPDM E/R harness connector E18 and ground.

Terminals			Test item	Voltage (Approx.)
(+)		(-)		
IPDM E/R		Ground	FRONT WIPER	
Connector	Terminal			
E18	18		Hi	Battery voltage
			Off	0V

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace IPDM E/R. Refer to PCS-32, "Removal and Installation".

2. CHECK FRONT WIPER MOTOR (HI) OPEN CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect IPDM E/R.
3. Check continuity between IPDM E/R harness connector E18 and front wiper motor harness connector E25.

IPDM E/R		Front wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
E18	18	E25	5	Yes

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace the harness or connectors.

3. CHECK FRONT WIPER MOTOR (HI) SHORT CIRCUIT

Check continuity between IPDM E/R harness connector E18 and ground.

IPDM E/R		Ground	Continuity
Connector	Terminal		
E18	18		No

Is the inspection result normal?

YES >> Repair or replace the harness or connectors.
NO >> Replace front wiper motor. Refer to WW-64, "Removal and Installation".

FRONT WIPER AUTO STOP SIGNAL CIRCUIT

Component Function Check

INFOID:0000000007986981

1. CHECK FRONT WIPER (AUTO STOP) OPERATION

CONSULT DATA MONITOR
1. Select “WIP AUTO STOP” of IPDM E/R DATA MONITOR item.
2. Operate the front wiper.
3. With the front wiper operation, check the monitor status.

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

Is the inspection result normal?

YES >> Auto stop signal circuit is normal.
NO >> Refer to WW-38, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000007986982

Regarding Wiring Diagram information, refer to WW-23, "Wiring Diagram - With Rear View Camera Washer Control System".

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 connector E25 and ground.

Front wiper motor		Ground	Voltage (Approx.)
Connector	Terminal		
E25	4		Battery voltage

Is the inspection result normal?

YES >> Replace front wiper motor. Refer to WW-64, "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.
3. Check continuity between IPDM E/R harness connector E63 and front wiper motor harness connector E25.

IPDM E/R		Front wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
E63	34	E25	4	Yes

4. Check continuity between IPDM E/R harness connector E18 and ground.

IPDM E/R		Ground	Continuity
Connector	Terminal		
E63	34		No

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-32, "Removal and Installation".
NO >> Repair or replace the harness or connectors.

FRONT WIPER MOTOR GROUND CIRCUIT

Diagnosis Procedure

INFOID:0000000007986983

Regarding Wiring Diagram information, refer to WW-23, "Wiring Diagram - With Rear View Camera Washer Control System".

1.CHECK FRONT WIPER MOTOR (GND) OPEN CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect front wiper motor.
3. Check continuity between front wiper motor harness connector E25 and ground.

Front wiper motor		Ground	Continuity
Connector	Terminal		
E25	2		Yes

Is the inspection result normal?

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

WASHER MOTOR CIRCUIT

Diagnosis Procedure

INFOID:0000000007986986

WITHOUT REAR VIEW CAMERA WASHER CONTROL SYSTEM

Regarding Wiring Diagram information, refer to WW-23, "Wiring Diagram - With Rear View Camera Washer Control System".

1. CHECK FRONT WASHER MOTOR FUSE

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

Unit	Location	Fuse No.	Capacity
Front washer motor	IPDM E/R	50	10A

Is the fuse blown?

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

2. CHECK FRONT WASHER MOTOR POWER SUPPLY

1. Disconnect front washer motor.
2. Turn ignition switch ON.
3. Check voltage between front washer motor harness connector E226 and ground.

Front washer motor		Ground	Voltage (Approx.)
Connector	Terminal		
E226	1		Battery voltage

Is the inspection result normal?

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

3. CHECK FRONT WASHER MOTOR CIRCUIT CONTINUITY

1. Turn the ignition switch OFF.
2. Disconnect combination switch (wiper and washer switch).
3. Check continuity between combination switch (wiper and washer switch) harness connector M28 and front washer motor E226.

Combination switch (wiper and washer switch)		Front washer motor		Continuity
Connector	Terminal	Connector	Terminal	
M28	1	E226	2	Yes

Is the inspection result normal?

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

4. CHECK WIPER AND WASHER SWITCH GROUND CIRCUIT

Check continuity between combination switch (wiper and washer switch) harness connector M28 and ground.

Combination switch (wiper and washer switch)		Ground	Continuity
Connector	Terminal		
M28	6		Yes

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace the harness or connectors.

5. CHECK WIPER AND WASHER SWITCH

Check wiper and washer switch. Refer to WW-44, "Component Inspection".

Is the inspection result normal?

YES >> Replace front washer motor. Refer to WW-52, "Removal and Installation".
NO >> Replace wiper and washer switch. Refer to WW-65, "Removal and Installation".

WITH REAR VIEW CAMERA WASHER CONTROL SYSTEM

Regarding Wiring Diagram information, refer to WW-23, "Wiring Diagram - With Rear View Camera Washer Control System".

1. CHECK WASHER MOTOR FUSE

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

Unit	Location	Fuse No.	Capacity
Front washer motor	IPDM E/R	50	10A

Is the fuse blown?

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

2. CHECK WASHER SWITCH OPERATION

With CONSULT
1. Select FRONT WASHER SW of BCM active test item.
2. While operating the test, check front wiper operation.

Is the inspection result normal?

YES >> GO TO 3.
NO >> Refer to WW-44, "Component Inspection".

3. CHECK COMBINATION SWITCH CIRCUIT CONTINUITY

1. Turn the ignition switch OFF.
2. Disconnect the combination switch and rear view camera washer control unit.
3. Check continuity between rear view camera washer control unit harness connector B16 and combination switch harness connector M28.

Rear view camera washer control unit		Combination switch		Continuity
Connector	Terminal	Connector	Terminal	
B16	10	M28	1	Yes

Is the inspection result normal?

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

4. CHECK WASHER MOTOR POWER SUPPLY

1. Disconnect the washer motor.
2. Turn ignition switch ON.
3. Check voltage between washer motor harness connector E226 and ground.

Front washer motor		Ground	Voltage (Approx.)
Connector	Terminal		
E226	1		Battery voltage

Is the inspection result normal?

YES >> GO TO 9.

NO >> GO TO 5.

5. CHECK WASHER MOTOR POWER SUPPLY CONTINUITY

1. Turn ignition OFF.
2. Disconnect the washer motor connector harness.
3. Check continuity between the washer motor harness connector E226 and the rear view camera washer control unit harness connector B16.

Rear view camera washer control unit		Washer motor		Continuity
Connector	Terminal	Connector	Terminal	
B16	4	E226	1	Yes

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair or replace the harness or connectors.

6. CHECK REAR VIEW CAMERA WASHER CONTROL UNIT POWER SUPPLY

1. Disconnect the rear view camera washer control unit.
2. Turn ignition switch ON.
3. Check voltage between the rear view camera washer control unit harness connector B16 and ground.

Rear view camera washer control unit		Ground	Voltage (Approx.)
Connector	Terminal		
B16	12		Battery voltage

Is the inspection result normal?

YES >> GO TO 10.
NO >> Repair or replace the harness or connectors.

7. CHECK REAR VIEW CAMERA WASHER CONTROL UNIT POWER SUPPLY CONTINUITY

1. Turn ignition OFF.
2. Check continuity between rear view camera washer control unit harness connector B16 and IPDM E/R harness connector E200.

Rear view camera washer control unit		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
B16	12	E200	74	Yes

Is the inspection result normal?

Yes >> Refer to PCS-31, "Diagnosis Procedure".
NO >> GO TO 8.

8. CHECK WASHER MOTOR GROUND CIRCUIT

Check continuity between combination switch harness connector E226 and ground.

Washer motor		Ground	Continuity
Connector	Terminal		
E226	2		Yes

Is the inspection result normal?

YES >> Replace the washer pump. Refer to WW-52, "Removal and Installation".
NO >> GO TO 9.

9. CHECK WASHER MOTOR GROUND CIRCUIT CONTINUITY

1. Turn the ignition switch OFF.
2. Check continuity between rear view camera washer control unit harness connector B16 and front washer motor E226.

Rear view camera washer control unit		Washer motor		Continuity
Connector	Terminal	Connector	Terminal	
B16	3	E226	2	Yes

Is the inspection result normal?

YES >> GO TO 10.
NO >> Repair or replace the harness or connectors.

10. CHECK REAR VIEW CAMERA WASHER CONTROL UNIT GROUND CIRCUIT.

Check continuity between rear view camera washer control unit connector B16 and ground.

Rear view camera washer control unit		Ground	Continuity
Connector	Terminal		
B16	5		Yes

Is the inspection result normal?

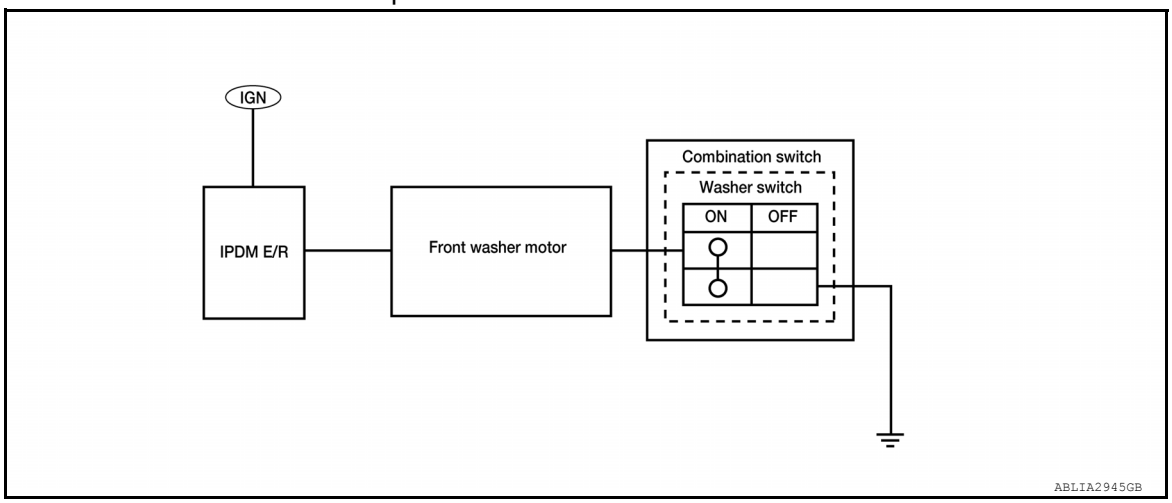
YES >> Replace rear view camera washer control unit.
NO >> Repair or replace the harness or connectors.

WASHER SWITCH

Description

INFOID:0000000007986984

- Washer switch is integrated with combination switch (wiper and washer switch).
- Combination switch (wiper and washer switch) supplies ground and fuse # 38 from the IPDM E/R supplies power for the front washer motor to operate.



Component Inspection

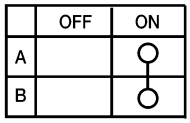
INFOID:0000000007986985

Regarding Wiring Diagram information, refer to WW-23, "Wiring Diagram - With Rear View Camera Washer Control System".

1. CHECK WASHER SWITCH

1. Turn the ignition switch OFF.
2. Disconnect combination switch (wiper and washer switch) connector M28.
3. Check continuity between the combination switch (wiper and washer switch) terminals.

A: Terminal 1
B: Terminal 6



Combination switch (wiper and washer switch)		Condition	Continuity
Terminal			
1	6	Washer switch ON	Yes

Does continuity exist?

YES >> Washer switch is normal.
NO >> Replace combination switch (wiper and washer switch). Refer to WW-65, "Removal and Installation".

SYMPTOM DIAGNOSIS

WIPER AND WASHER SYSTEM SYMPTOMS

Symptom Table

INFOID:0000000007986998

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-8, "COMBINATION SWITCH READING SYSTEM : System Description".
		• IPDM E/R • Harness between IPDM E/R and front wiper motor • Front wiper motor	Front wiper motor (HI) circuit Refer to WW-36, "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-8, "COMBINATION SWITCH READING SYSTEM : System Description".
		• IPDM E/R • Harness between IPDM E/R and front wiper motor • Front wiper motor	Front wiper motor (LO) circuit Refer to WW-34, "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-8, "COMBINATION SWITCH READING SYSTEM : System Description".
		Front wiper request signal • BCM • IPDM E/R	IPDM E/R Data monitor “FR WIP REQ”
	HI, LO, and INT	SYMPTOM DIAGNOSIS Refer to WW-48, "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-8, "COMBINATION SWITCH READING SYSTEM : System Description".
		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-8, "COMBINATION SWITCH READING SYSTEM : System Description".
		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-8, "COMBINATION SWITCH READING SYSTEM : System Description".
		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-8, "COMBINATION SWITCH READING SYSTEM : System Diagram".
		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-8, "COMBINATION SWITCH READING SYSTEM : System Diagram".
		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-38, "Component Function Check".

Symptom		Probable malfunction location	Inspection item
Washer motor does not operate (with rear view camera wash system)	Washer motor does not operate when washing the windshield.	• Combination switch • Harness between combination switch and BCM • BCM	Combination switch. Refer to BCS-76, "Symptom Table".
		• Harness between IPDM E/R and rear view camera washer control unit • IPDM E/R • Harness between Combination switch and rear view camera washer control unit • Rear view camera washer control unit	Washer motor circuit. Refer to WW-40, "Diagnosis Procedure".
		BCM	—

FRONT WIPER DOES NOT OPERATE

Description

INFOID:0000000007986999

The front wiper does not operate under any operation conditions

Diagnosis Procedure

INFOID:0000000007987000

Regarding Wiring Diagram information, refer to WW-23, "Wiring Diagram - With Rear View Camera Washer Control System".

1. CHECK WIPER RELAY OPERATION

IPDM E/R AUTO ACTIVE TEST
1. Start IPDM E/R auto active test. Refer to PCS-8, "Diagnosis Description".
2. Check that the front wiper operates at the LO/HI operation.

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

Lo : Front wiper LO operation
Hi : Front wiper HI operation
Off : Stop the front wiper.

is the inspection result 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 front wiper motor fuse 30A (No. 41, located in the IPDM E/R) is not blown.

Is the fuse blown?

YES >> Replace the fuse after repairing the affected circuit.
NO >> GO TO 3.

3. CHECK FRONT WIPER MOTOR (GND) OPEN CIRCUIT

1. Disconnect front wiper motor.
2. Check continuity between front wiper motor harness connector E25 and ground.

Front wiper motor		Ground	Continuity
Connector	Terminal		
E25	2		Yes

Is the inspection result normal?

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

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 E18 and ground.

Terminals			Test item	Voltage (Approx.)
(+)		(-)		
IPDM E/R		Ground	FRONT WIPER	
Connector	Terminal			
E18	11		Lo	Battery voltage
			Off	0 V
	18		Hi	Battery voltage
			Off	0 V

Is the inspection result normal?

YES LO circuit>>Refer to WW-34, "Diagnosis Procedure".
YES HI circuit>>Refer to WW-36, "Diagnosis Procedure".
NO >> Replace IPDM E/R. Refer to PCS-32, "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 monitor status.

Monitor item	With operating the front wiper switch condition		Monitor status
FR WIP REQ	Front wiper switch HI	ON	Hi
		OFF	Stop
	Front wiper switch LO	ON	Low
		OFF	Stop

Is the status of item normal?

YES >> Replace IPDM E/R. Refer to PCS-32, "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-8, "COMBINATION SWITCH READING SYSTEM : System Description".

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-77, "Removal and Installation".
NO >> Repair or replace the malfunctioning parts.

NORMAL OPERATING CONDITION

Description

INFOID:0000000007987001

FRONT WIPER MOTOR PROTECTION FUNCTION

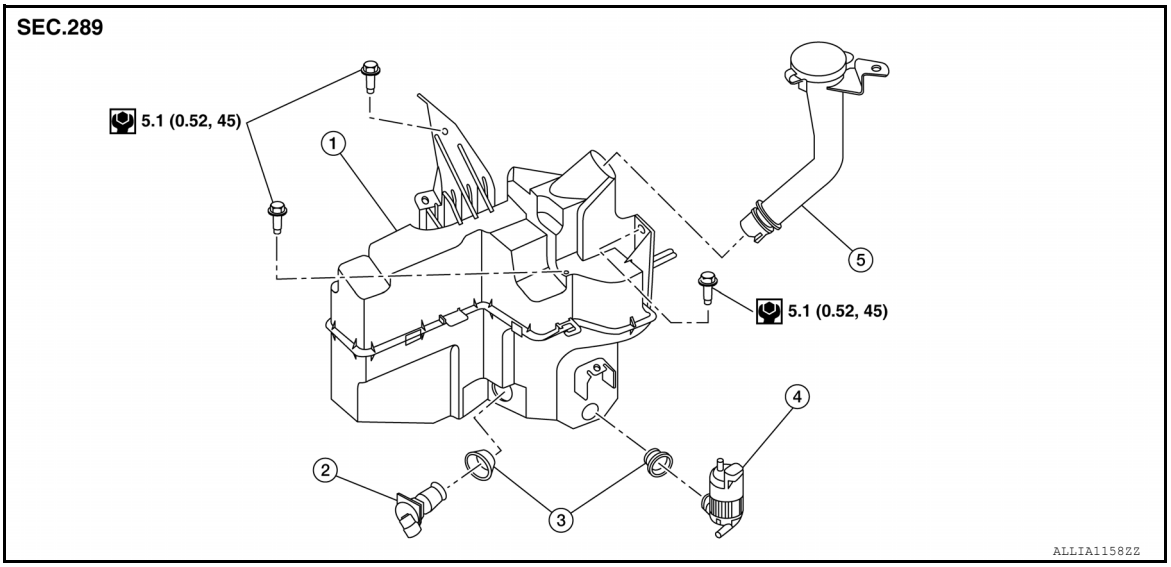
- IPDM E/R may stop the front wiper to protect the front wiper motor if any obstruction (operation resistance) such as a large amount of snow is detected during the front wiper operation.
- At that time turn OFF the front wiper and remove the foreign object. Then wait for approximately 20 seconds or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

REMOVAL AND INSTALLATION

WASHER TANK

Exploded View

INFOID:0000000008707365



1. Washer tank
2. Washer level switch
3. Washer tank seal
4. Washer pump
5. Washer tank inlet

Removal and Installation

INFOID:0000000007987012

REMOVAL

1. Drain the washer fluid.
2. Remove the front under cover. Refer to EXT-28, "Removal and Installation".
3. Remove the fender protector (RH). Refer to EXT-26, "FENDER PROTECTOR : Removal and Installation".
4. Disconnect the harness connectors from the washer pump and washer level switch.
5. Disconnect the washer tube from the washer pump.
6. Remove the washer tank bolts, then remove the washer tank.
7. Remove the washer pump, washer level switch, and washer tank seals from the washer tank (if necessary).

INSTALLATION

Installation is in the reverse order of removal.

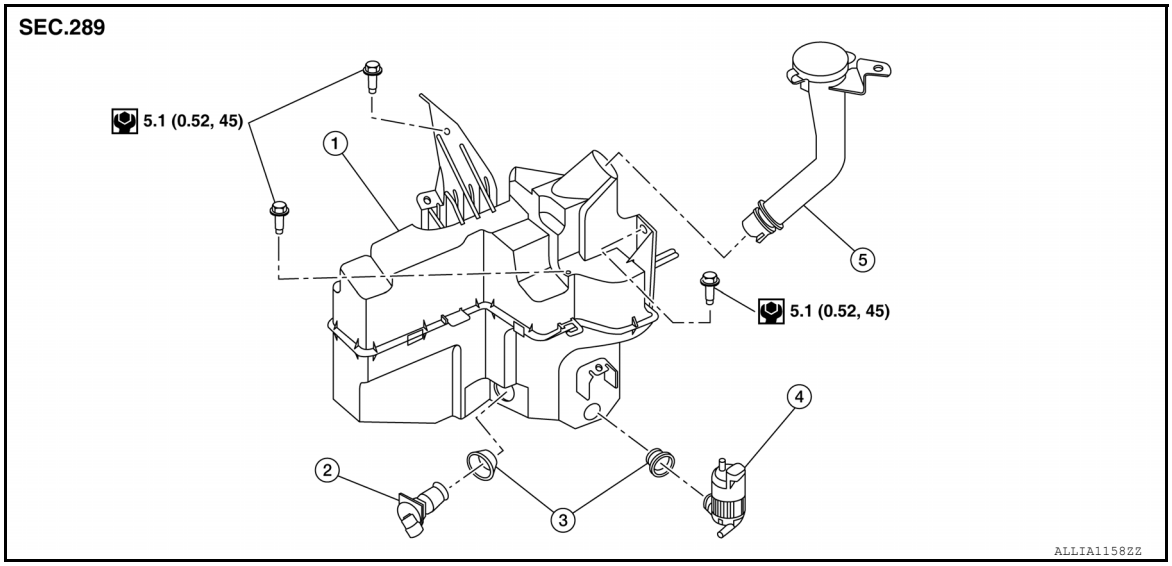
NOTE:

- After installation, add water to the top of the washer tank inlet to check that no leaks exist.
- Fill washer tank with specified amount of fluid. Refer to WW-66, "Specifications".

WASHER PUMP

Exploded View

INFOID:0000000008707366



1. Washer tank
2. Washer level switch
3. Washer tank seal
4. Washer pump
5. Washer tank inlet

Removal and Installation

INFOID:0000000007987013

REMOVAL

1. Drain the washer fluid.
2. Remove the front under cover. Refer to EXT-28, "Removal and Installation".
3. Remove the fender protector (RH). Refer to EXT-26, "FENDER PROTECTOR : Removal and Installation".
4. Disconnect the harness connector from the washer pump.
5. Disconnect the washer tube from the washer pump.
6. Remove the washer pump.
7. Remove the washer tank seal (if necessary).

INSTALLATION

Installation is in the reverse order of removal.

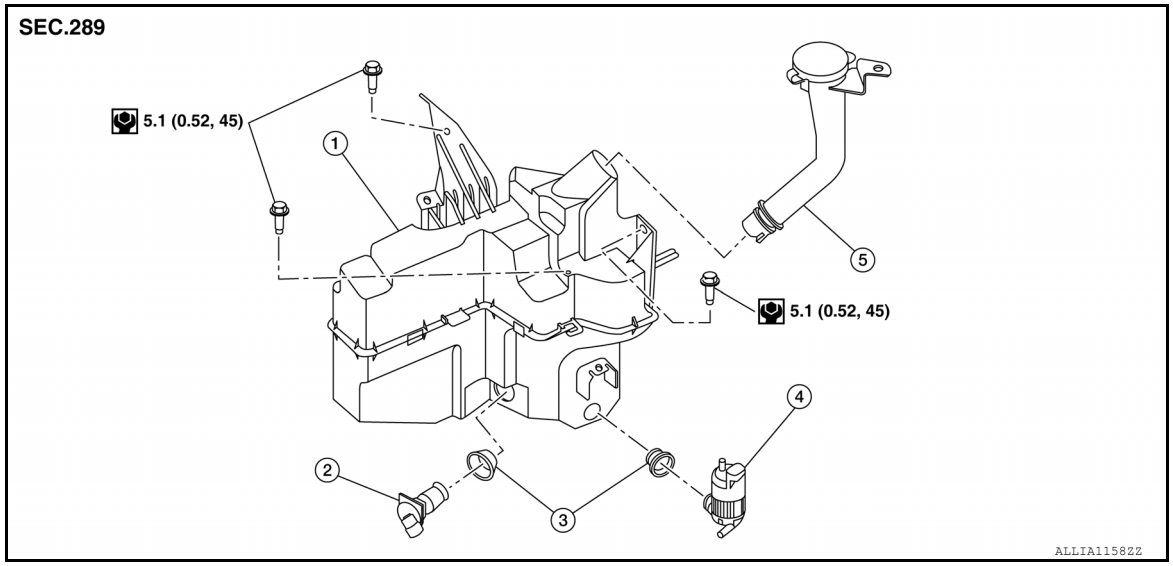
NOTE:

- After installation, add water to the top of the washer tank inlet to check that no leaks exist.
- Fill washer tank with specified amount of fluid. Refer to WW-66, "Specifications".

WASHER LEVEL SWITCH

Exploded View

INFOID:0000000008707367



1. Washer tank
2. Washer level switch
3. Washer tank seal
4. Washer pump
5. Washer tank inlet

Removal and Installation

INFOID:0000000007987015

REMOVAL

1. Drain the washer fluid.
2. Remove the front under cover. Refer to EXT-28, "Removal and Installation".
3. Remove the fender protector (RH). Refer to EXT-26, "FENDER PROTECTOR : Removal and Installation".
4. Disconnect the harness connector from the washer level switch.
5. Remove the washer level switch.
6. Remove the washer tank seal (if necessary).

INSTALLATION

Installation is in the reverse order of removal.

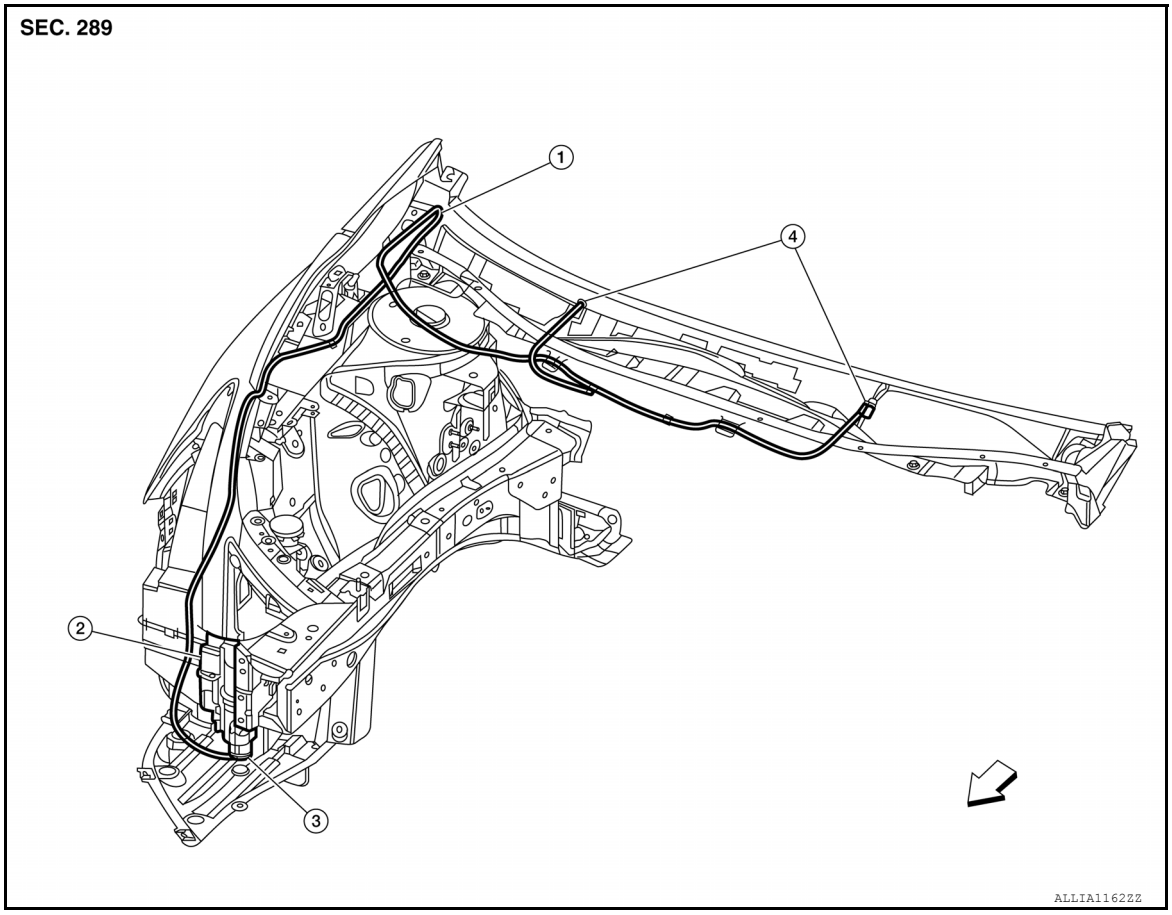
NOTE:

- After installation, add water to the top of the washer tank inlet to check that no leaks exist.
- Fill washer tank with specified amount of fluid. Refer to WW-66, "Specifications".

WASHER NOZZLE & TUBE

Exploded View

INFOID:0000000008707369



1. Washer tube
2. Washer tank
3. Washer pump
4. Washer nozzle
⇦ Front

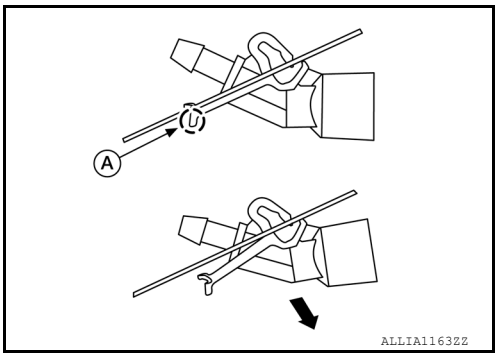
WASHER NOZZLE

WASHER NOZZLE : Removal and Installation

INFOID:0000000007987010

REMOVAL

1. Disconnect the washer tube from the washer nozzle.
2. Disconnect the washer nozzle from the hood by pushing on the pawl in the direction shown (A).
   ◌: Pawl



3. Remove the washer nozzle.

INSTALLATION

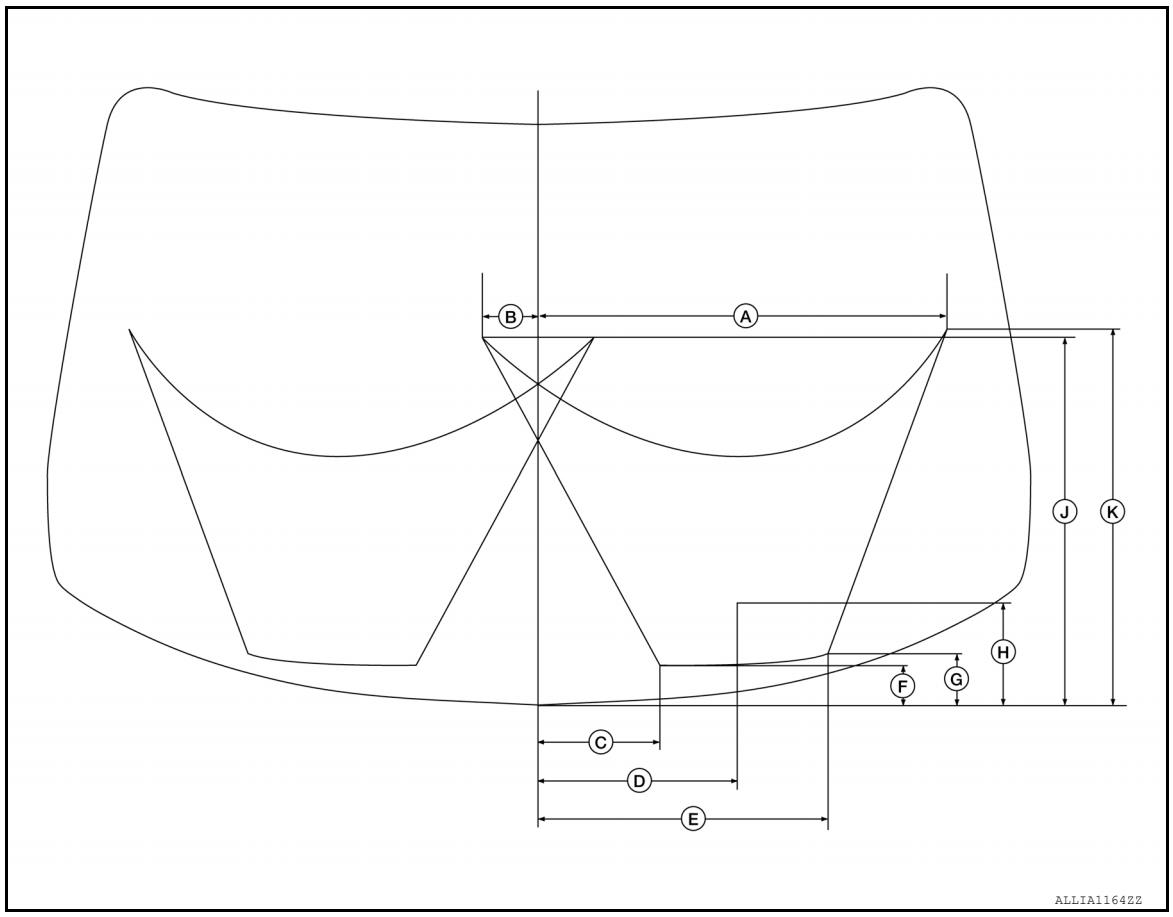
Installation is in the reverse order of removal.

CAUTION:

Adjust the nozzle spray pattern. Refer to WW-55, "WASHER NOZZLE : Adjustment".

WASHER NOZZLE : Adjustment

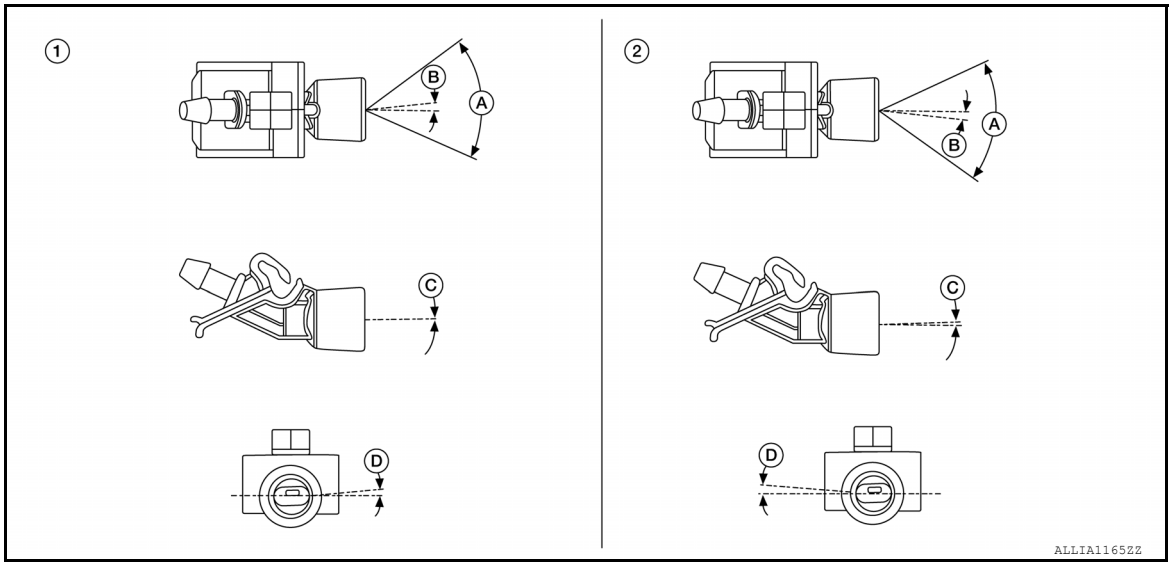
INFOID:0000000007987011



A. 553.3 mm (21.8 in)	B. 77.8 mm (3.1 in)	C. 163.2 mm (6.4 in)
D. 272.6 mm (10.7 in)	E. 393 mm (15.5 in)	F. 54.2 mm (2.1 in)
G. 71.1 mm (2.8 in)	H. 141 mm (5.6 in)	J. 500.2 mm (19.7 in)
K. 505.5 mm (19.9 in)		

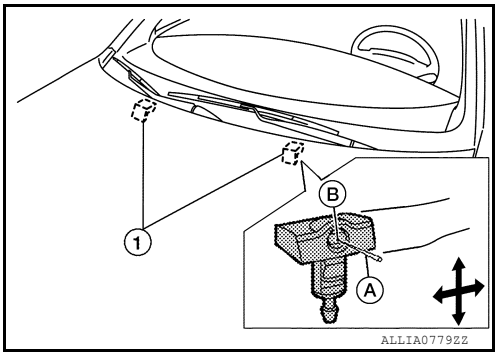
NOTE:

Spray positions for LH shown; RH is symmetrical.



1. Washer Nozzle LH
2. Washer Nozzle RH
A. 60° ± 7.5°
B. 6°
C. 1.5° ± 1.0°
D. 4°

Insert a suitable tool (A) into the nozzle hole (B) and move up/down and left/right to adjust the spray position of each nozzle (1).



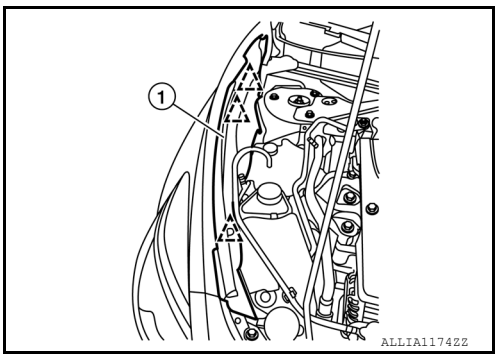
WASHER TUBE

WASHER TUBE : Removal and Installation

INFOID:0000000008707368

REMOVAL

1. Drain the washer fluid.
2. Remove the hood ledge finisher clips and the hood ledge finisher (1) (RH).
   : Clip



3. Remove the hood insulator. Refer to DLK-169, "HOOD ASSEMBLY : Exploded View".
4. Disconnect the washer tube from the washer nozzles (LH/RH).
5. Remove the front under cover. Refer to EXT-28, "Removal and Installation".
6. Remove the fender protector (RH). Refer to EXT-26, "FENDER PROTECTOR : Removal and Installation".
7. Disconnect the washer tube from the washer pump.

8. Remove the washer tube.

INSTALLATION

Installation is in the reverse order of removal.

NOTE:

Fill washer tank with specified amount of fluid. Refer to WW-66, "Specifications".

FRONT WIPER ARM

Removal and Installation

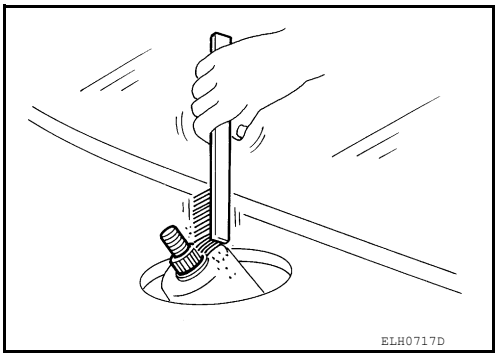
INFOID:0000000007987007

REMOVAL

1. Remove the wiper arm cap.
2. Remove the wiper arm nut.
3. Raise the wiper arm, then remove the wiper arm.

INSTALLATION

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



2. Install the wiper arm.
3. Install the wiper arm nut.
4. Install the wiper arm cap.
5. Check that the wiper blades stop at the specified position. Refer to WW-60, "WIPER BLADE : Adjustment".

WIPER BLADE

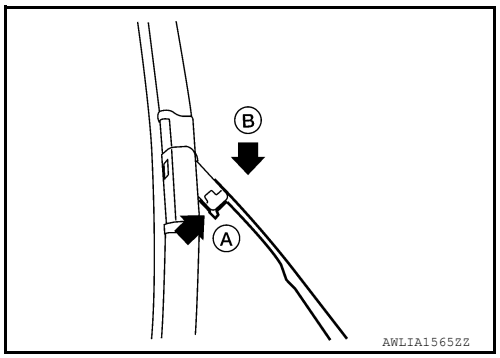
WIPER BLADE

WIPER BLADE : Removal and Installation

INFOID:0000000007987006

REMOVAL

1. Lift the wiper arm and wiper blade away from the windshield glass.
2. Rotate the wiper blade and push the release tab (A), then move the wiper blade down (B) the wiper arm.
3. Remove the wiper blade.



INSTALLATION

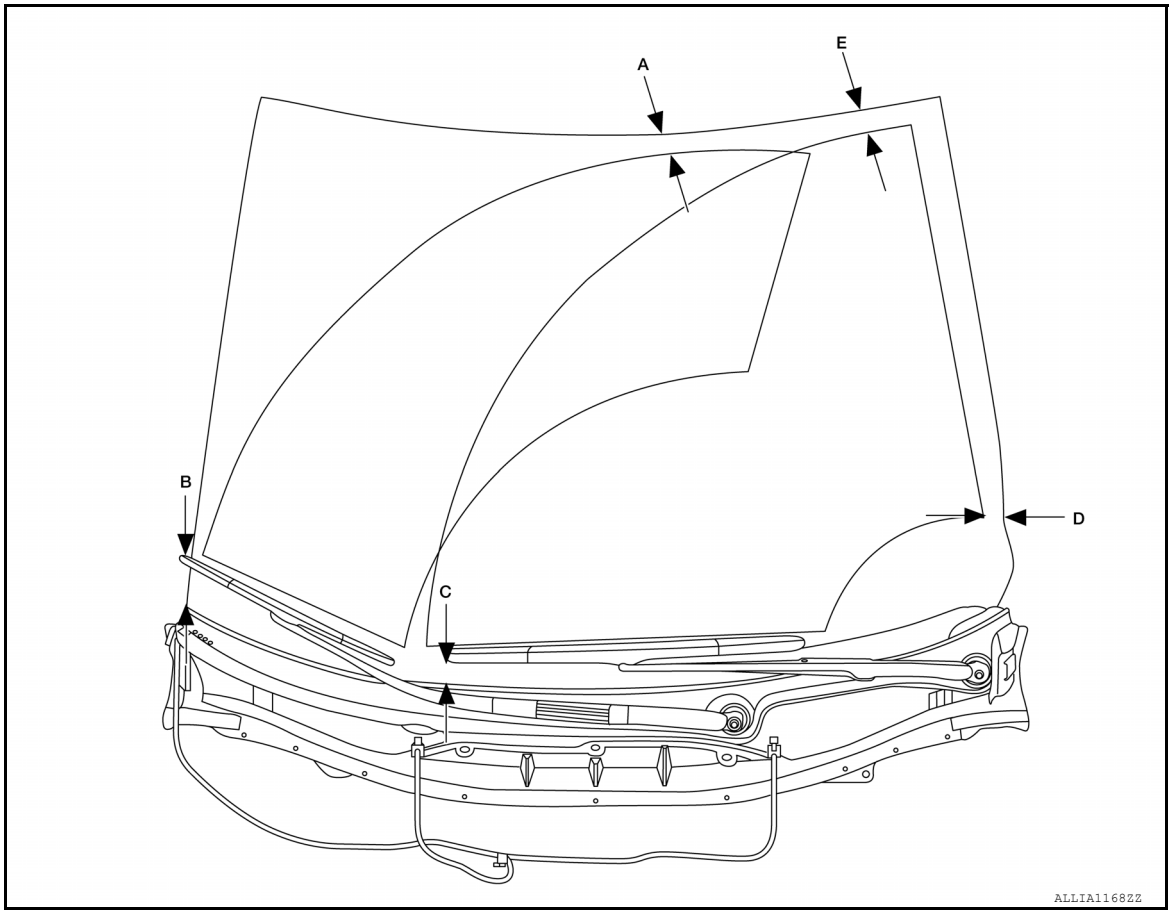
CAUTION:

- **Return the wiper arm to the original position on the windshield to prevent damage when the hood is opened.**
- **Check that the wiper blade contacts the windshield properly; otherwise the wiper arm may be damaged from wind pressure while driving.**

1. Insert the wiper blade onto the wiper arm and slide it up until it clicks into place.
2. Rotate the wiper blade so the dimple is in the groove.
3. Lay the wiper arm and wiper blade back down on the windshield.

WIPER BLADE : Adjustment

INFOID:0000000008707734



A. 25 mm (1.0 in) B. 90 mm (3.5 in) C. 40mm (1.6 in)
D. 50 mm (2.0 in) E. 25 mm (1.0 in)

Adjust the wiper blades to the specification shown above.

WIPER BLADE REFILL

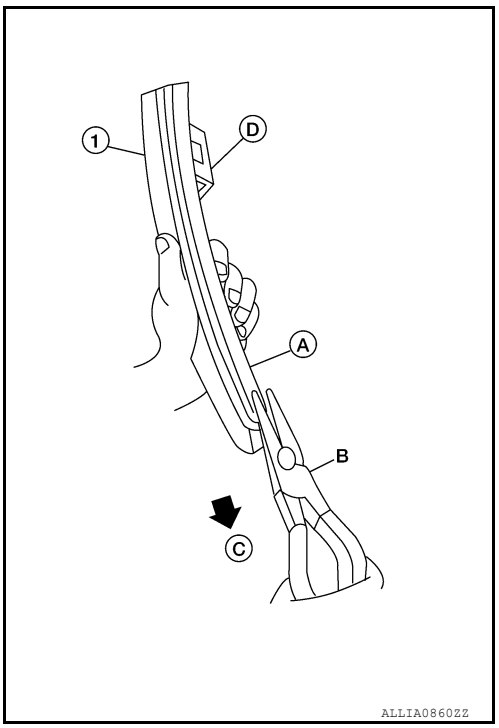
WIPER BLADE REFILL : Removal and Installation

INFOID:0000000007987005

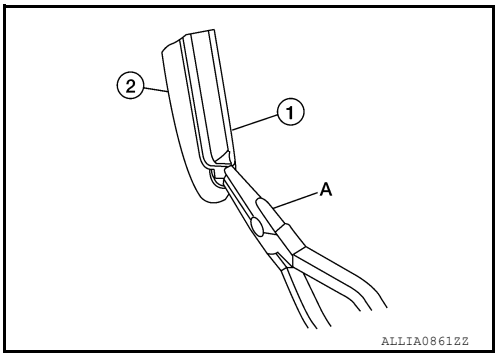
REMOVAL

1. Remove the wiper blade. Refer to WW-59, "WIPER BLADE : Removal and Installation".

2. Hold the wiper blade refill lip at the end (A) of the wiper blade (1) with a suitable tool (B) as shown, and pull it firmly in the direction (C).
(D): U clip (part of wiper blade)

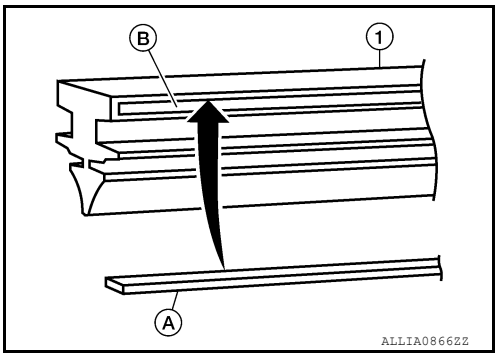


- If the wiper blade refill lip is torn due to wear, insert a suitable tool (A) into the space between the end of the wiper blade refill (1) and the wiper blade (2) and pull the wiper blade refill (1) out as shown.

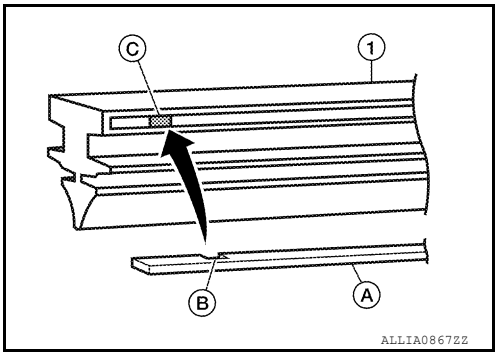


INSTALLATION

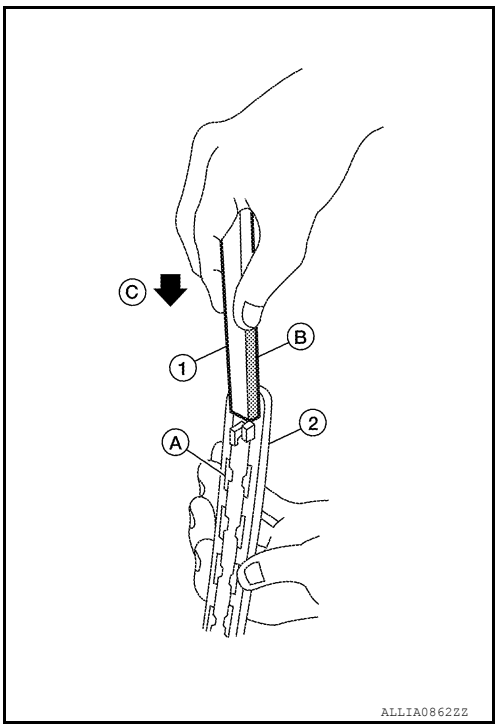
1. If the rib (A) has become detached from the wiper blade refill (1), check that the curve of the rib (A) is in the same direction as the curve of the wiper blade refill (1) and insert the rib (A) into the slit (B) in the wiper blade refill (1) as shown.



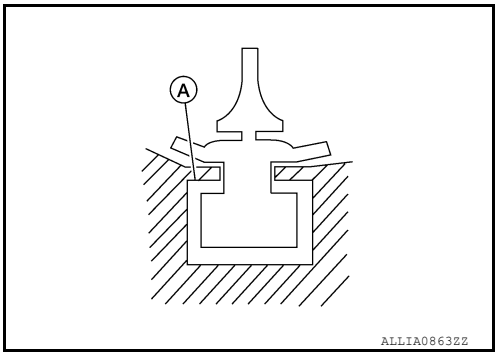
- If the rib (A) has a notch (B), insert the rib (A) into the wiper blade refill (1) so the notch (B) fits over the protrusion (C) in the wiper blade refill (1) as shown.



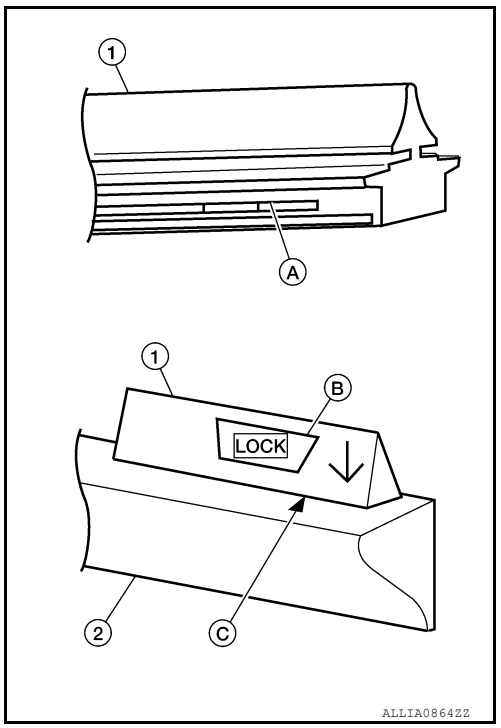
2. Insert the wiper blade refill (1) tip into the end of the wiper blade (2) in the direction (C). Push the wiper blade refill (1) in while pressing it into the end of the wiper blade (2) as shown. After the wiper blade refill is fully inserted, remove the holder (B).
(A): Tab (part of wiper blade) (2)



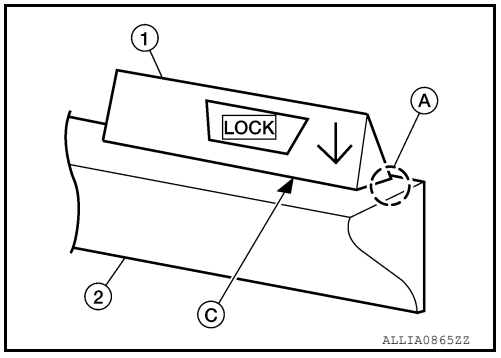
- Make sure to slide the refill into the wiper blade so that the wiper blade refill is held by the tabs (A) on the wiper blade as shown.



3. Push the wiper blade refill (1) until the tabs on the wiper blade (2) fit into the stoppers (A) in the end of the wiper blade refill (1). Make sure the LOCK mark (B) on the wiper blade refill (1) is aligned with the lock point symbol (C) on the wiper blade (2) as shown.



4. Before installing the wiper blade, make sure that the wiper blade refill (1) end is fully covered by the wiper blade (2) in area (A) as shown.

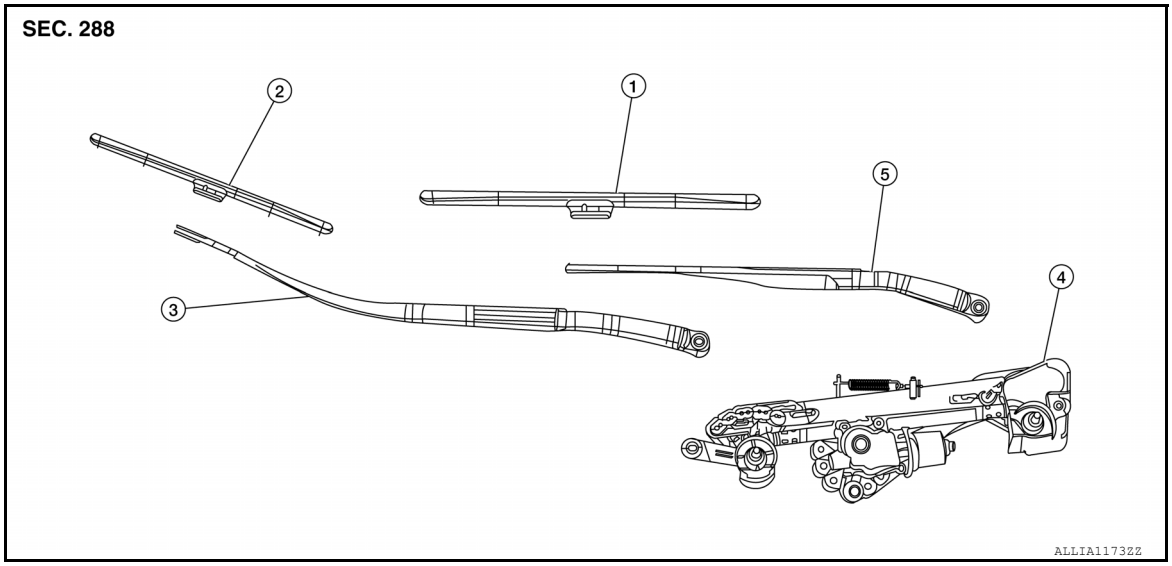


5. Install the wiper blade. Refer to WW-59, "WIPER BLADE : Removal and Installation".

FRONT WIPER DRIVE ASSEMBLY

Exploded View

INFOID:0000000007987004



1. Wiper blade LH
2. Wiper blade RH
3. Wiper arm RH
4. Wiper drive assembly
5. Wiper arm LH

Removal and Installation

INFOID:0000000007987008

REMOVAL

1. Remove the cowl top. Refer to EXT-24, "Removal and Installation".
2. Remove the strut tower bar. Refer to FSU-19, "Exploded View".
3. Disconnect the harness connector from the wiper drive assembly.
4. Remove the wiper drive assembly bolts.
5. Remove the wiper drive assembly.

INSTALLATION

1. Install the wiper drive assembly.
2. Install the wiper drive assembly bolts.
3. Connect the harness connector to the wiper drive assembly.
4. Install the strut tower bar. Refer to FSU-19, "Exploded View".
5. Install the cowl top. Refer to EXT-24, "Removal and Installation".
6. Check that the wiper blades stop at the specified position. Refer to WW-60, "WIPER BLADE : Adjustment".

WIPER AND WASHER SWITCH

Removal and Installation

INFOID:0000000007987014

The wiper and washer switch is serviced as an assembly with the combination switch. Refer to BCS-78, "Removal and Installation".

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Specifications

INFOID:0000000007987016

WINDSHIELD WASHER FLUID

Windshield washer fluid capacity	4.5 ℓ (4 3/4 US qt, 4 Imp qt)
Windshield washer fluid specification	Refer to MA-20, "FOR USA AND CANADA : Fluids and Lubricants" (United States and Canada), MA-21, "FOR MEXICO : Fluids and Lubricants" (Mexico).