SECTION WW
WIPER & WASHER

CONTENTS

PRECAUTION

PRECAUTIONS

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

INFOID:0000000014388956

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, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper repair, 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

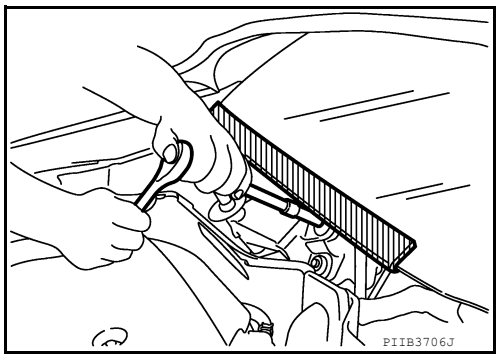
WARNING:

- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag 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 or batteries, and wait at least three minutes before performing any service.**

Precaution for Procedure without Cowl Top Cover

INFOID:0000000014388957

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



Precaution for Work

INFOID:0000000014388958

- When removing or disassembling each component, be careful not to damage or deform it. If a component may be subject to interference, be sure to protect it with a shop cloth.
- When removing (disengaging) components with a screwdriver or similar tool, be sure to wrap the component with a shop cloth or vinyl tape to protect it.
- Protect the removed parts with a shop cloth and prevent them from being dropped.
- Replace a deformed or damaged clip.
- If a part is specified as a non-reusable part, always replace it with a new one.
- Be sure to tighten bolts and nuts securely to the specified torque.
- After installation is complete, be sure to check that each part works properly.
- Follow the steps below to clean components.

- Water soluble dirt:
- Dip a soft cloth into lukewarm water, wring the water out of the cloth and wipe the dirty area.
- Then rub with a soft, dry cloth.

- Oily dirt:

< PRECAUTION >

- Dip a soft cloth into lukewarm water with mild detergent (concentration: within 2 to 3%) and wipe the dirty area.
- Then dip a cloth into fresh water, wring the water out of the cloth and wipe the detergent off.
- Then rub with a soft, dry cloth.

- Do not use organic solvent such as thinner, benzene, alcohol or gasoline.
- For genuine leather seats, use a genuine leather seat cleaner.

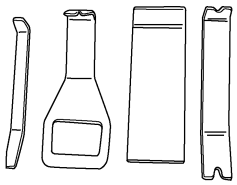
PREPARATION

PREPARATION

Special Service Tools

INFOID:0000000014388959

The actual shape of the tools may differ from those illustrated here.

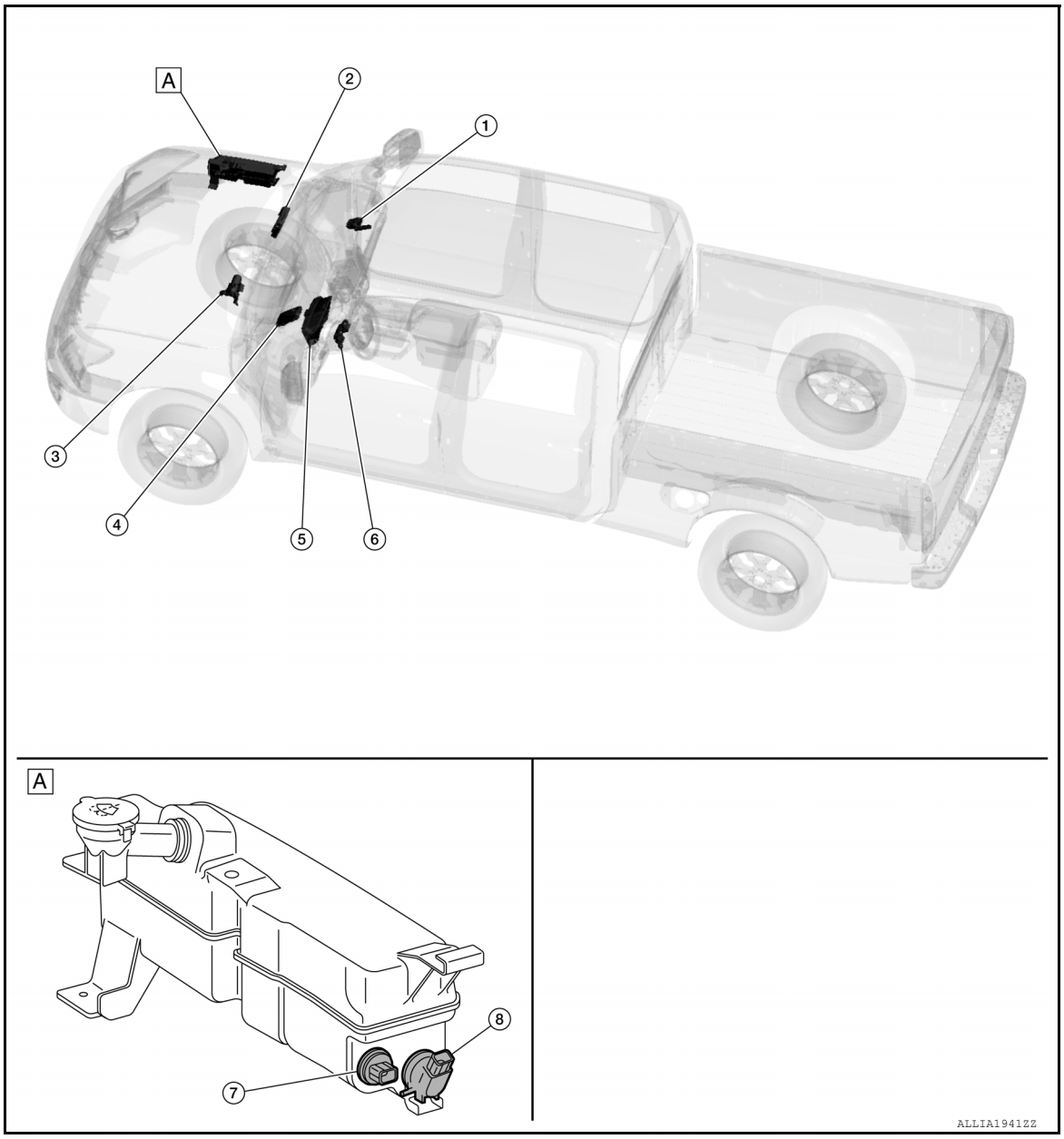
Tool number (TechMate No.) Tool name	Description
— (J-46534) Trim Tool Set  AWJIA0483ZZ	Removing trim components

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000014388960



A. View with washer tank removed from vehicle

No.	Component	Function
1.	Rain sensor*	Refer to WW-7, "Rain Sensor".
2.	IPDM E/R	• Controls integrated relays according to the request (via CAN communication) from BCM. • Performs the auto stop control of front wiper. • Refer to PCS-5, "Component Parts Location" for detailed installation location.
3.	Front wiper motor	Refer to WW-7, "Front Wiper Motor".

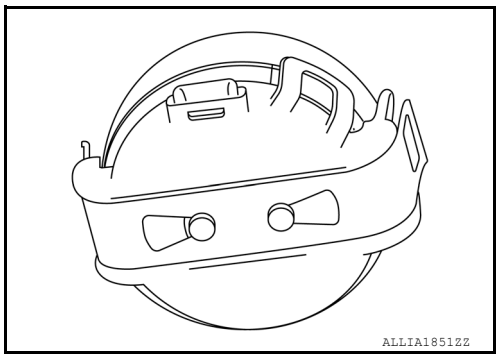
No.	Component	Function
4.	BCM	• Judges each switch status by the combination switch (wiper and washer switch) reading function. • Requests (via CAN communication) the front wiper relay and the front wiper HI/LO relay ON to IPDM E/R. • Refer to BCS-5, "BODY CONTROL SYSTEM : Component Parts Location" for detailed installation location.
5.	Combination meter	• Transmits vehicle speed signal to BCM via CAN communication. • Refer to MWI-8, "METER SYSTEM : Component Parts Location" for detailed installation location.
6.	Combination switch (wiper and washer switch)	• Combination switch (wiper and washer switch): Transmits the status of the combination switch (wiper and washer switch) to BCM. • Washer switch: Refer to BCS-5, "BODY CONTROL SYSTEM : Component Parts Location".
7.	Washer fluid level switch	Refer to WW-8, "Washer Fluid Level Switch".
8.	Front washer motor	Refer to WW-8, "Front Washer Motor".

*: For vehicles equipped with rain sensing front wipers.

Rain Sensor

INFOID:0000000014388961

Detects water droplets on the windshield with infrared rays, and transmits the rain sensor signal to BCM via the rain sensor serial link.



Washer Switch

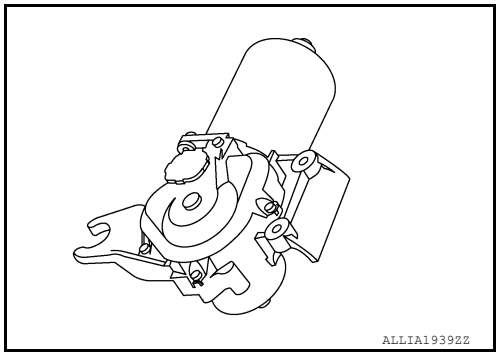
INFOID:0000000014388962

- Washer switch is integrated with combination switch (wiper and washer switch).
- Front washer motor is powered through the combination switch (wiper and washer switch) while the washer switch is ON. For a detailed description refer to BCS-7, "BODY CONTROL SYSTEM : System Description".

Front Wiper Motor

INFOID:0000000014388963

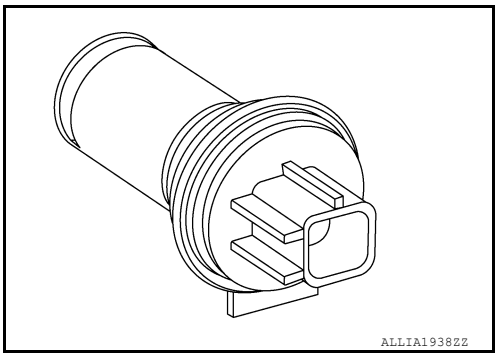
- Controls front wiper operation with IPDM E/R control.
- Transmits front wiper stop position signal to IPDM E/R.



Washer Fluid Level Switch

INFOID:0000000014388964

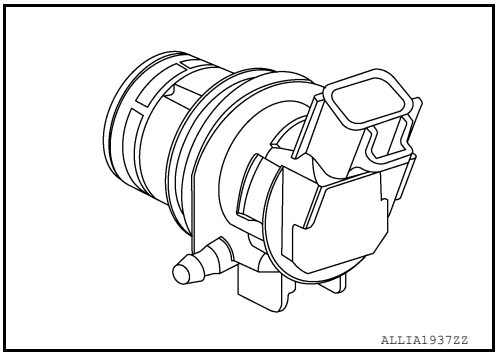
Detects that washer fluid level is low and transmits washer level signal to combination meter.



Front Washer Motor

INFOID:0000000014388965

Washer fluid is sprayed according to washer switch status.



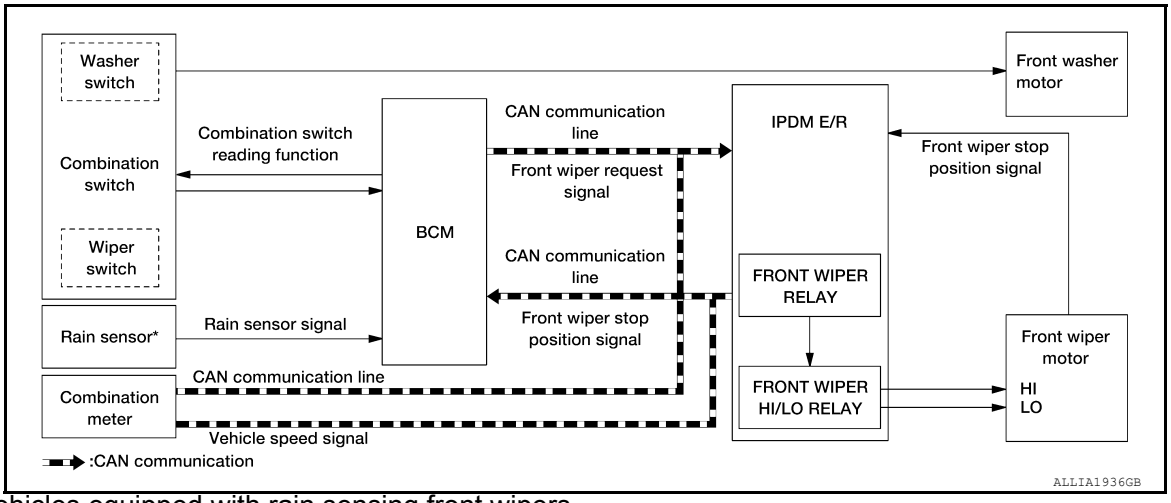
SYSTEM

FRONT WIPER AND WASHER SYSTEM

FRONT WIPER AND WASHER SYSTEM : System Description

INFOID:0000000014388966

SYSTEM DIAGRAM



*:For vehicles equipped with rain sensing front wipers.

OUTLINE

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

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

FRONT WIPER LO OPERATION

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

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

FRONT WIPER HI OPERATION

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

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

FRONT WIPER AUTO OPERATION

Rain Detection

Rain level and sensor conditions are detected by rain sensor.

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

Auto Wiping Operation

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

Front wiper AUTO operating condition

- Ignition switch ON
- Front wiper switch AUTO

NOTE:

- When the front wiper switch is turned to AUTO position, the front wiper operates once regardless of rainy conditions.
- Factory setting of the front wiper AUTO operation is the operation linked with rain sensor. Front wiper AUTO operation can be set to operation linked or not linked with rain sensor using CONSULT. Refer to BCS-24, "WIPER : CONSULT Function (BCM - WIPER)".

Rain Sensor Sensitivity Setting

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

Wiper volume dial position	Sensitivity
1	High sensitivity
2	Medium–high sensitivity
3	Low–medium sensitivity
4	Low sensitivity

NOTE:

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

Splash mode operation

The front wiper is operated at HI regardless of the wiper volume adjustment position when water drops are instantaneously sprayed over the windshield glass due to water splash from oncoming vehicles or other causes. After that, AUTO operation is performed depending on the amount of water drops.

SPLASH MODE OPERATION CONDITIONS

- Front wiper switch AUTO
- Ignition switch ON

NOTE:

Splash mode is not operated and auto wiping operation is performed while the vehicle is stopped.

FRONT WIPER INT OPERATION

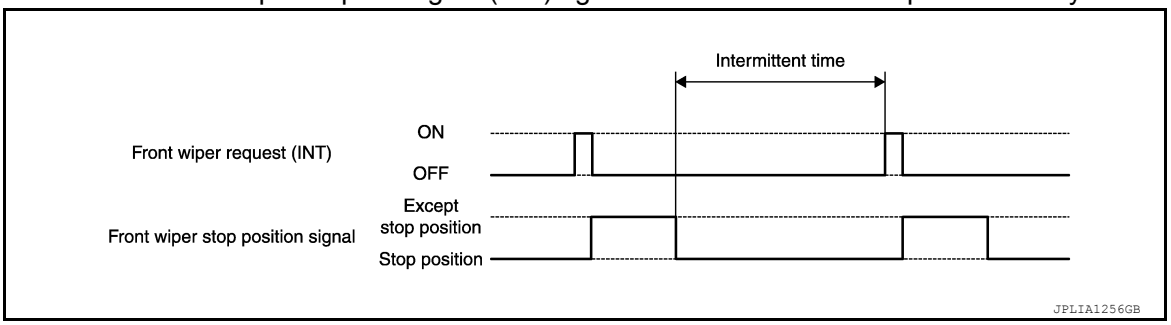
- BCM transmits the front wiper request signal (INT) to IPDM E/R via CAN communication depending on the front wiper INT operating condition and intermittent operation delay interval according to the wiper volume dial position.

Front wiper INT operating condition:

- Ignition switch ON
- Front wiper switch INT

- IPDM E/R turns ON the integrated front wiper relay so that the front wiper is operated only once according to the front wiper request signal (INT).
- BCM detects stop position/except stop position of the front wiper motor according to the front wiper stop position signal received from IPDM E/R via CAN communication.

- BCM transmits the front wiper request signal (INT) again after the intermittent operation delay interval.



NOTE:
Front wiper intermittent operation can be set to operation linked or not linked with vehicle speed using CONSULT. Refer to BCS-24, "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
- Wiper volume dial position

Intermittent operation delay Interval

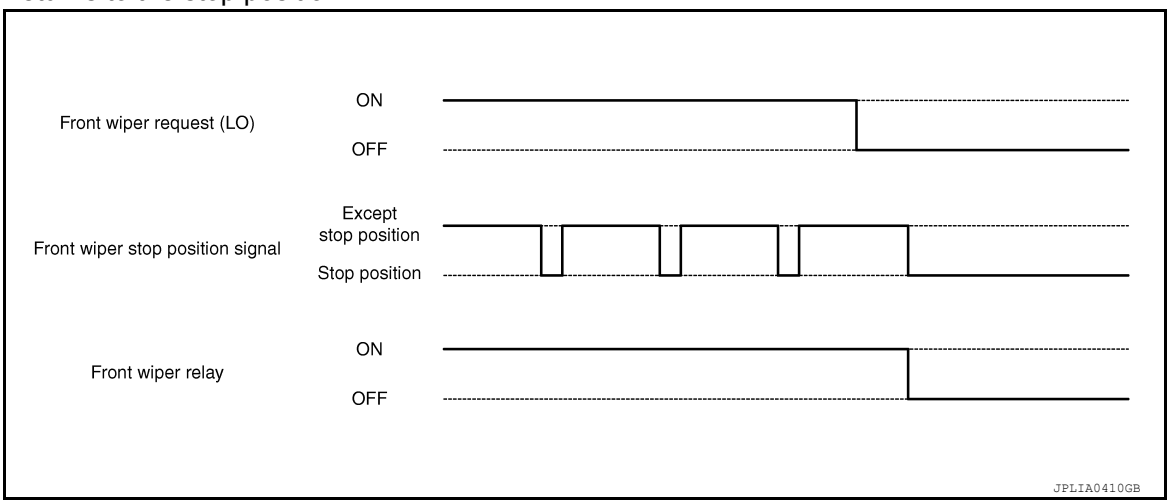
Unit: Second

Wiper volume dial position	Intermittent operation interval	Vehicle speed		
		0 – 5 km/h (0 – 3.1 MPH)	5 – 65 km/h (3.1 – 40.4 MPH)*	65 km/h (40.4 MPH) or more
1	Short ↑	1	0.4	0.24
2		2.5	1	0.6
3		5	2	1.2
4		7.5	3	1.8
5		12.5	5	3
6	↓ Long	25	10	6
7		40	16	9.6

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

FRONT WIPER AUTO STOP OPERATION

- BCM stops transmitting the front wiper request signal when the front wiper switch is turned OFF.
- IPDM E/R detects the front wiper stop position signal from the front wiper motor and detects the front wiper motor position (stop position/except stop position).
- When the front wiper request signal is stopped, IPDM E/R turns ON the front wiper relay until the front wiper motor returns to the stop position.



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

FRONT WIPER OPERATION LINKED WITH WASHER

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

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

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

FRONT WIPER AND WASHER SYSTEM : Fail-Safe

INFOID:0000000014388967

CAN COMMUNICATION CONTROL

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

If No CAN Communication Is Available With BCM

Control part	Fail-safe operation
Front wiper motor	• 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. • Automatically returns wiper to stop position when ignition switch is turned ON if fail-safe control is activated while front wiper motor is operated and wiper stop is in any other position than stop position.

FRONT WIPER PROTECTION FUNCTION

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

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

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

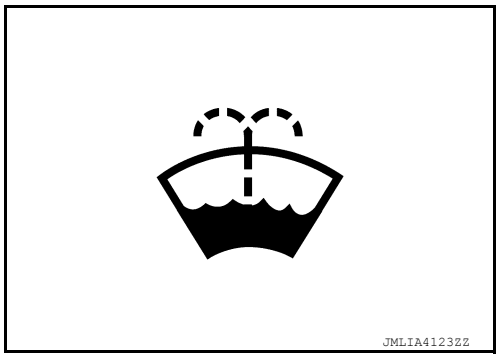
INFORMATION DISPLAY (COMBINATION METER)

INFORMATION DISPLAY (COMBINATION METER) : Washer Fluid Warning

INFOID:0000000014388968

DESIGN/PURPOSE

Washer fluid warning reminds driver the washer fluid is insufficient.

Symbol	Message
	Low Washer Fluid

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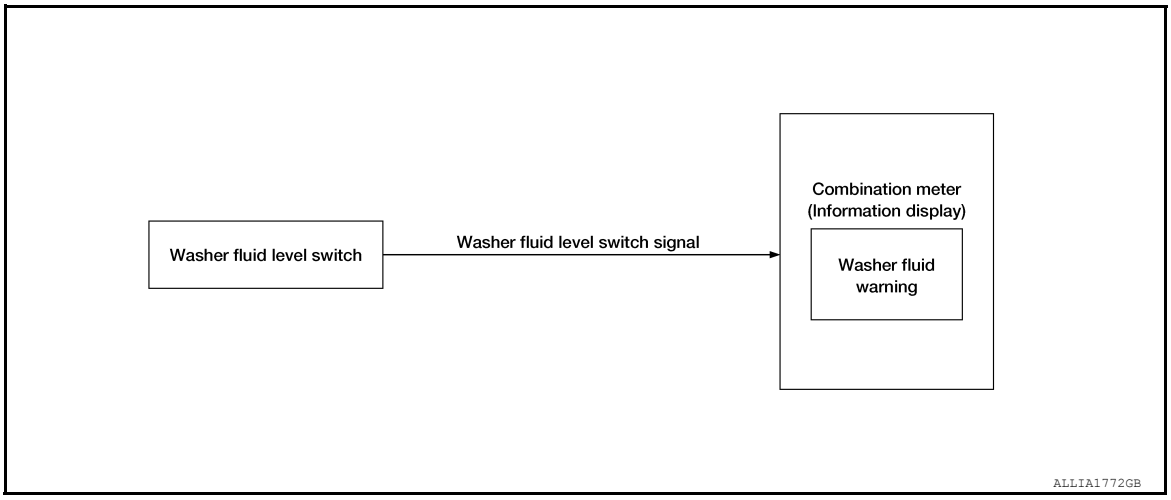
SYNCHRONIZATION WITH MASTER WARNING LAMP

Not applicable

SYSTEM DIAGRAM



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SIGNAL PATH

- When washer fluid level is low, washer fluid level switch turns ON and transmits washer fluid level switch signal to combination meter.
- Combination meter displays washer fluid warning according to washer fluid level switch signal.

WARNING/INDICATOR OPERATING CONDITION

When all of the conditions listed below are satisfied:

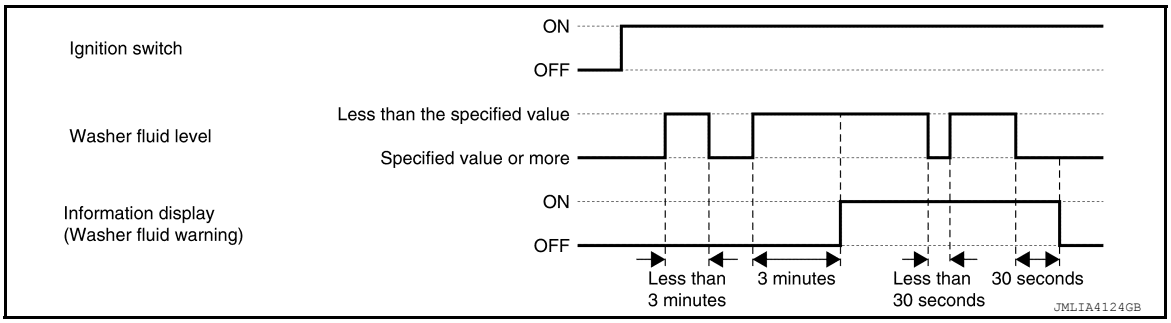
- Ignition switch is ON.
- Washer fluid is insufficient. (Washer fluid level switch is ON and 3 minutes have passed)

WARNING/INDICATOR CANCEL CONDITION

When any of the condition listed below is satisfied:

- Ignition switch is OFF.
- After the washer fluid is refilled. (Washer fluid level switch is OFF and 30 seconds have passed)

TIMING CHART



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WARNING/INDICATOR/CHIME LIST

WARNING/INDICATOR/CHIME LIST : Warning/Indicator (Information Display)

INFOID:0000000014388969

Item	Reference
Low windshield-washer fluid warning light	Refer to WW-12, "INFORMATION DISPLAY (COMBINATION METER) : Washer Fluid Warning".

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

INFOID:0000000014666390

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			×	×	×		
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			×	×			
Vehicle security system	THEFT ALM			×	×	×		
RAP system	RETAINED PWR			×				
Signal buffer system	SIGNAL BUFFER			×				

FREEZE FRAME DATA (FFD)
The BCM records the following vehicle condition at the time a particular DTC is detected, and displays it on CONSULT.

CONSULT screen item	Indication/Unit	Description	
Vehicle Speed	km/h	Vehicle speed at the moment a particular DTC is detected	
Odo/Trip Meter	km	Total mileage (Odometer value) at the moment a particular DTC is detected	
Vehicle Condition	SLEEP>LOCK	Power position status at the moment a particular DTC is detected*	While turning BCM status from low power consumption mode to normal mode (Power supply position is “LOCK”*).
	SLEEP>OFF		While turning BCM status from low power consumption mode to normal mode (Power supply position is “OFF”.)
	LOCK>ACC		While turning power supply position from “LOCK” *to “ACC”
	ACC>ON		While turning power supply position from “ACC” to “IGN”
	RUN>ACC		While turning power supply position from “RUN” to “ACC” (Vehicle is stopped and selector lever is in P position.)
	CRANK>RUN		While turning power supply position from “CRANKING” to “RUN” (From cranking up the engine to run it)
	RUN>URGENT		While turning power supply position from “RUN“ to “ACC” (Emergency stop operation)
	ACC>OFF		While turning power supply position from “ACC” to “OFF”
	OFF>LOCK		While turning power supply position from “OFF” to “LOCK”*
	OFF>ACC		While turning power supply position from “OFF” to “ACC”
	ON>CRANK		While turning power supply position from “IGN” to “CRANKING”
	OFF>SLEEP		While turning BCM status from normal mode (Power supply position is “OFF”.) to low power consumption mode
	LOCK>SLEEP		While turning BCM status from normal mode (Power supply position is “LOCK”*.) to low power consumption mode
	LOCK		Power supply position is “LOCK” (Ignition switch OFF)*
	OFF		Power supply position is “OFF” (Ignition switch OFF)
	ACC		Power supply position is “ACC” (Ignition switch ACC)
	ON		Power supply position is “IGN” (Ignition switch ON with engine stopped)
	ENGINE RUN		Power supply position is “RUN” (Ignition switch ON with engine running)
	CRANKING		Power supply position is “CRANKING” (At engine cranking)
IGN Counter	0 - 39	The number of times that ignition switch is turned ON after DTC is detected • The number is 0 when a malfunction is detected now. • The number increases like 1 → 2 → 3...38 → 39 after returning to the normal condition whenever ignition is switched OFF → ON. • The number is fixed to 39 until the self-diagnosis results are erased if it is over 39.	

NOTE:
*: Power supply position shifts to “LOCK” from “OFF”, when ignition switch is in the OFF position, selector lever is in the P position, and any of the following conditions are met:
- Closing door
- Opening door
- Door is locked using door request switch
- Door is locked using Intelligent Key

The power supply position shifts to “ACC” when the push-button ignition switch (push switch) is pushed at “LOCK”.

WIPER

WIPER : CONSULT Function (BCM - WIPER)

INFOID:0000000014666391

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 – 5]	Indicates condition of intermittent wiper [1 - 5] or auto wiper [1 - 4] operation of combination switch.
RAIN SENSOR [On/Off]	Indicates condition of rain sensor.

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.
RAIN SENSOR	On*	Rain sensor function ON.
	Off	Rain sensor function OFF.

*: Initial setting

DIAGNOSIS SYSTEM (IPDM E/R)

Diagnosis Description

INFOID:0000000014663797

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:

- Rear window defogger
- Front wipers (HI, LO)
- Front fog lamps (if equipped)
- Tail, license and parking lamps
- Daytime running lamps (if equipped)
- Headlamps (HI, LO)
- A/C compressor (magnetic clutch)

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:

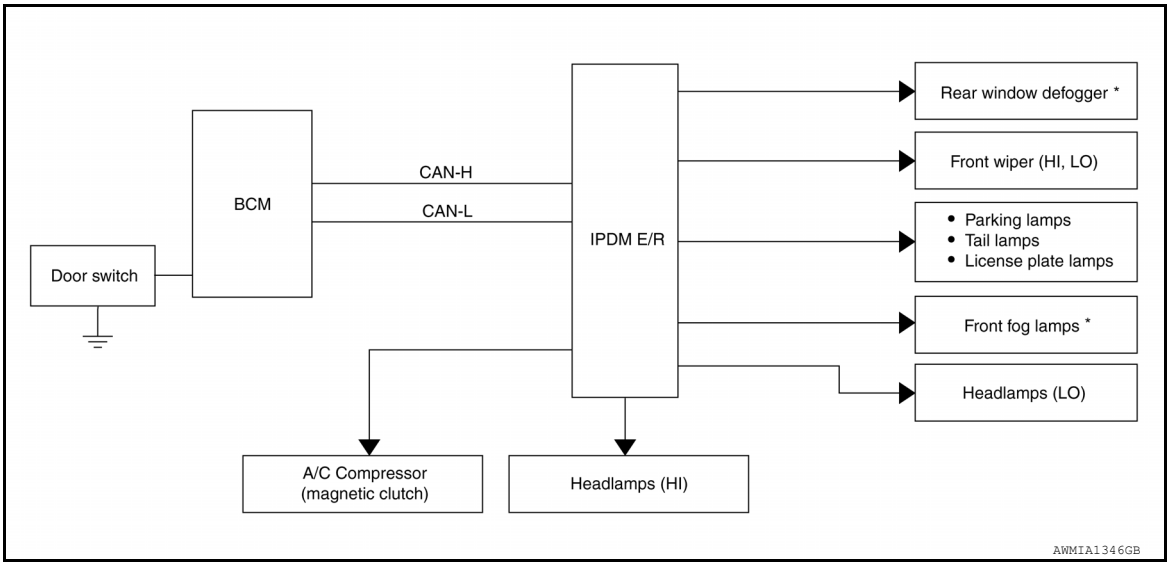
- **If auto active test mode cannot be actuated, check door switch system. Refer to DLK-98, "Component Function Check".**
- **Do not start the engine.**

Inspection in Auto Active Test Mode

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

Operation sequence	Inspection Location	Operation
1	Rear window defogger	10 seconds
2	Front wipers	HI for 5 seconds → LO for 5 seconds
3	Front fog lamps (if equipped), tail, license and parking lamps and daytime running lamps (if equipped)	10 seconds
4	Headlamps	LO for 10 seconds → HI on-off for 5 seconds
5	A/C compressor (magnetic clutch)	ON ⇔ OFF 5 times

Concept of auto active test



*: If equipped

- 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
Rear window defogger does not operate	Perform auto active test. Does the rear window defogger (if equipped) operate?	YES	BCM signal input circuit
		NO	CAN communication signal between BCM and IPDM E/R
Any of the following components do not operate: • Front wipers (HI, LO) • Front fog lamps (if equipped) • Tail lamps • License plate lamps • Parking lamps • Daytime running 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)

CONSULT Function (IPDM E/R)

INFOID:0000000014663798

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-23, "DTC Index".

DATA MONITOR

Monitor Item [Unit]	Main Signals	Description
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 AT 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 AT 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
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].

Test item	Description
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].

ECU DIAGNOSIS INFORMATION

BCM, IPDM E/R

List of ECU Reference

INFOID:0000000014388974

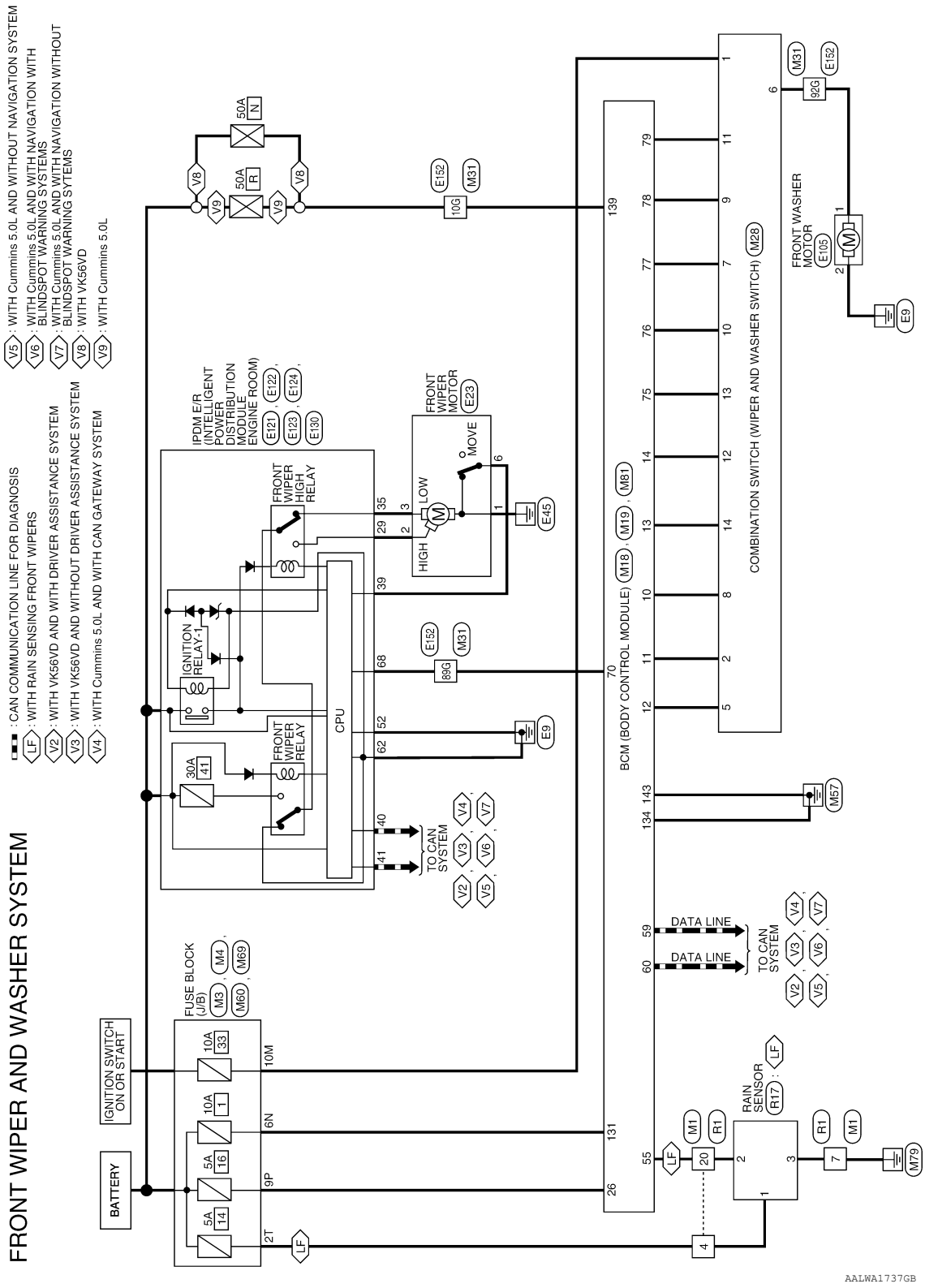
ECU	Reference
BCM	BCS-32, "Reference Value"
	BCS-51, "Fail Safe"
	BCS-51, "DTC Inspection Priority Chart"
	BCS-52, "DTC Index"
IPDM E/R	PCS-14, "Reference Value"
	PCS-22, "Fail Safe"
	PCS-23, "DTC Index"

WIRING DIAGRAM

FRONT WIPER AND WASHER SYSTEM

Wiring Diagram

INFOID:0000000014388975



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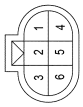
FRONT WIPER AND WASHER SYSTEM CONNECTORS

Connector No.	E23
Connector Name	FRONT WIPER MOTOR
Connector Type	RS06FGY-PR
Connector Color	GRAY

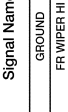
H.S.



Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	Y	FR WIPER HI
3	BR	FR WIPER LO
4	–	–
5	–	–
6	L/Y	WIPER AUTOSTOP

Connector No.	E105
Connector Name	FRONT WASHER MOTOR
Connector Type	HS02FGY-1V
Connector Color	GRAY

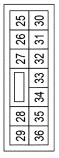
H.S.



Terminal No.	Color of Wire	Signal Name
1	V/W	POWER
2	B	GROUND

Connector No.	E121
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS12FBR-CS
Connector Color	BROWN

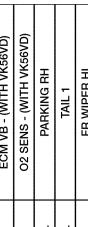
H.S.



Terminal No.	Color of Wire	Signal Name
25	BR	ECM VB - (WITH CUMMINS 5.0L)
25	W	ECM VB - (WITH VK56VD)
26	V	O2 SENS - (WITH VK56VD)
27	R/L	PARKING RH
28	R/L	TAIL 1
29	Y	FR WIPER HI
30	–	–
31	L	ECM RLY CONT
32	L	ECM BAT - (WITH VK56VD)
33	R/L	PARKING LH
34	R/W	TAIL 2
35	BR	FR WIPER LO
36	–	–

Connector No.	E122
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH12FW-NH
Connector Color	WHITE

H.S.

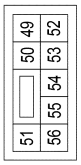


Terminal No.	Color of Wire	Signal Name
37	–	–
38	–	–
39	L/Y	WIPER AUTO STOP SW
40	P	CAN-L
41	L	CAN-H
42	BR	DTRL RLY

43	–
44	W/B
45	GR
46	Y
47	Y
48	R/W

Connector No.	E123
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS08FBR-CS
Connector Color	BROWN

H.S.



Terminal No.	Color of Wire	Signal Name
49	Y/B	A/C COMP - (WITH CUMMINS 5.0L)
49	GR/R	A/C COMP - (WITH VK56VD)
50	BR	TRAILER TOW
51	–	–
52	B	S-GND
53	–	–
54	–	–
55	–	–
56	–	–

Connector No.	E124
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	M06FB-LC
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
57	W/B	RR DEF
58	BR	FUEL PUMP - (WITH CUMMINS 5.0L)

58	B/Y
59	–
60	–
61	–
62	B

Connector No.	E130
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH10FB-NH
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
63	–	–
64	R	DETENT SW
65	–	–
66	P	PUSH START SW
67	–	–
68	L	IGN SIGNAL
69	–	–
70	–	–
71	SB	HOOD SW2
72	W	E-CPLG - (WITH VK56VD)

58	FUEL PUMP - (WITH VK56VD)
59	–
60	–
61	–
62	P GND

43	–
44	START CONT
45	FUEL RLY CONT
46	HOOD SW
47	ALT C - (WITH VK56VD)
48	HORN RLY CONT

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FRONT WIPER AND WASHER SYSTEM CONNECTORS

Connector No.	E152
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1G	G	TO MAIN HARNESS
2G	B/R	TO MAIN HARNESS
3G	W/B	TO MAIN HARNESS
4G	BR/W	TO MAIN HARNESS
5G	BR	TO MAIN HARNESS
6G	P	TO MAIN HARNESS - (WITH VK56VD)
6G	R/W	TO MAIN HARNESS - (WITH CUMMINS 5.0L)
7G	Y	TO MAIN HARNESS
8G	G	TO MAIN HARNESS
9G	R	TO MAIN HARNESS
10G	W	TO MAIN HARNESS
11G	R/G	TO MAIN HARNESS
12G	W/B	TO MAIN HARNESS
13G	BR	TO MAIN HARNESS
14G	Y/B	TO MAIN HARNESS
15G	G/W	TO MAIN HARNESS
16G	G	TO MAIN HARNESS
17G	G/Y	TO MAIN HARNESS
18G	G/Y	TO MAIN HARNESS
19G	Y/V	TO MAIN HARNESS
20G	G/Y	TO MAIN HARNESS
21G	B/Y	TO MAIN HARNESS
22G	G/R	TO MAIN HARNESS
23G	Y/R	TO MAIN HARNESS
24G	G/B	TO MAIN HARNESS
25G	R/W	TO MAIN HARNESS
26G	R	TO MAIN HARNESS
27G	LG	TO MAIN HARNESS
28G	G/B	TO MAIN HARNESS
29G	G/B	TO MAIN HARNESS
30G	BR/Y	TO MAIN HARNESS
31G	P	TO MAIN HARNESS - (WITH CUMMINS 5.0L)
31G	R	TO MAIN HARNESS - (WITH VK56VD)
32G	P	TO MAIN HARNESS
33G	Y/L	TO MAIN HARNESS
34G	GR	TO MAIN HARNESS
35G	G/R	TO MAIN HARNESS
36G	SB	TO MAIN HARNESS
37G	R/W	TO MAIN HARNESS
38G	BR	TO MAIN HARNESS
39G	BR	TO MAIN HARNESS
40G	–	TO MAIN HARNESS
41G	R/G	TO MAIN HARNESS
42G	O	TO MAIN HARNESS
43G	B	TO MAIN HARNESS - (WITH CUMMINS 5.0L)
43G	G	TO MAIN HARNESS - (WITH VK56VD)
44G	R/Y	TO MAIN HARNESS
45G	G	TO MAIN HARNESS
46G	LG	TO MAIN HARNESS
47G	R	TO MAIN HARNESS
48G	W	TO MAIN HARNESS
49G	–	TO MAIN HARNESS
50G	BR	TO MAIN HARNESS
51G	R	TO MAIN HARNESS
52G	L	TO MAIN HARNESS
53G	W	TO MAIN HARNESS
54G	W	TO MAIN HARNESS
55G	G	TO MAIN HARNESS
56G	W	TO MAIN HARNESS
57G	Y	TO MAIN HARNESS
58G	BG	TO MAIN HARNESS
59G	BG	TO MAIN HARNESS
60G	BG	TO MAIN HARNESS
61G	B	TO MAIN HARNESS
62G	W	TO MAIN HARNESS
63G	R	TO MAIN HARNESS
64G	W/L	TO MAIN HARNESS
65G	W/R	TO MAIN HARNESS
66G	BG	TO MAIN HARNESS
67G	BG	TO MAIN HARNESS
68G	B	TO MAIN HARNESS
69G	Y	TO MAIN HARNESS
70G	L	TO MAIN HARNESS
71G	R/W	TO MAIN HARNESS
72G	L/W	TO MAIN HARNESS
73G	SHIELD	TO MAIN HARNESS
74G	W	TO MAIN HARNESS
75G	R	TO MAIN HARNESS
76G	R/G	TO MAIN HARNESS
77G	G	TO MAIN HARNESS
78G	W	TO MAIN HARNESS
79G	–	TO MAIN HARNESS
80G	R	TO MAIN HARNESS
81G	L	TO MAIN HARNESS
82G	R	TO MAIN HARNESS
83G	L	TO MAIN HARNESS
84G	L	TO MAIN HARNESS
85G	W/B	TO MAIN HARNESS
86G	B/R	TO MAIN HARNESS
87G	W/B	TO MAIN HARNESS
88G	P	TO MAIN HARNESS
89G	L	TO MAIN HARNESS
90G	G	TO MAIN HARNESS
91G	G	TO MAIN HARNESS
92G	V/W	TO MAIN HARNESS
93G	BR	TO MAIN HARNESS
94G	G	TO MAIN HARNESS
95G	G	TO MAIN HARNESS
96G	W	TO MAIN HARNESS
97G	R	TO MAIN HARNESS
98G	W/B	TO MAIN HARNESS
99G	BR	TO MAIN HARNESS
100G	GR/W	TO MAIN HARNESS

Connector No.	M1
Connector Name	WIRE TO WIRE
Connector Type	TH32FW-NH
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
1	SHIELD	TO ROOM LAMP HARNESS
2	R	TO ROOM LAMP HARNESS
3	W	TO ROOM LAMP HARNESS
4	SB	TO ROOM LAMP HARNESS
5	G/W	TO ROOM LAMP HARNESS
6	G/R	TO ROOM LAMP HARNESS
7	B	TO ROOM LAMP HARNESS
8	L	TO ROOM LAMP HARNESS
9	R/G	TO ROOM LAMP HARNESS
10	G	TO ROOM LAMP HARNESS
11	L/W	TO ROOM LAMP HARNESS
12	L	TO ROOM LAMP HARNESS
13	GR	TO ROOM LAMP HARNESS
14	R	TO ROOM LAMP HARNESS
15	W/B	TO ROOM LAMP HARNESS
16	L/B	TO ROOM LAMP HARNESS
17	–	TO ROOM LAMP HARNESS
18	P	TO ROOM LAMP HARNESS
19	W/L	TO ROOM LAMP HARNESS
20	W/B	TO ROOM LAMP HARNESS
21	–	TO ROOM LAMP HARNESS
22	–	TO ROOM LAMP HARNESS
23	–	TO ROOM LAMP HARNESS
24	–	TO ROOM LAMP HARNESS
25	–	TO ROOM LAMP HARNESS
26	–	TO ROOM LAMP HARNESS
27	–	TO ROOM LAMP HARNESS
28	Y/R	TO ROOM LAMP HARNESS
29	G/R	TO ROOM LAMP HARNESS
30	G/W	TO ROOM LAMP HARNESS
31	LG/B	TO ROOM LAMP HARNESS
32	Y/V	TO ROOM LAMP HARNESS

Connector No.	M3
Connector Name	FUSE BLOCK (J/B)
Connector Type	CS06FW-M2
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
1N	–	–
2N	W	BATTERY
3N	W	BLOWER FAN RELAY OUT
4N	V	BATTERY
5N	Y	BATTERY
6N	W	BATTERY
7N	L	ACC RELAY OUT
8N	W	IGNITION

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FRONT WIPER AND WASHER SYSTEM CONNECTORS

Connector No.	M4
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS16FW-CS
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
1P	R	IGNITION
2P	Y	IGNITION
3P	G	IGNITION RELAY OUT
4P	B/W	RR DEF RLY
5P	B/W	RR DEF RLY
6P	O	RR DEF RLY OUT
7P	G	IGNITION
8P	W	IGNITION
9P	L	BATTERY
10P	–	–
11P	–	–
12P	–	–
13P	R	BATTERY
14P	Y	BATTERY
15P	Y/LG	BATTERY
16P	W	BLOWER FAN RELAY OUT

Connector No.	M18
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FG-NH
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
1	G	ENG START SW NO ESCL
2	–	–
3	R	A/L POWER SUPPLY 5V
4	W/R	A/L SIGNAL
5	–	–
6	–	–

7	–	–
8	–	–
9	–	–
10	SB	COMBI SW IN 5
11	G/Y	COMBI SW IN 4
12	Y	COMBI SW IN 3
13	G/B	COMBI SW IN 2
14	V	COMBI SW IN 1
15	–	–
16	–	–
17	P	GND RF A/L
18	V	SECURITY INDICATOR
19	–	–
20	R	SHIFT P
21	R/W	STEP LAMP CONT
22	–	–
23	Y	AIRCON SW
24	–	–
25	W	BRAKE SW FUSE
26	L	SHORT IN PIN INPUT
27	R/G	BRAKE SW LAMP
28	–	–
29	W	BLOWER FAN SW
30	P	DR DOOR LOCK STATUS
31	–	–
32	Y	REAR DEFOGGER SW
33	–	–
34	–	–
35	R/G	REVERSE SW
36	W/B	HAZARD SW
37	–	–
38	–	–
39	B/R	SHIFT N/P
40	–	–

Connector No.	M19
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FB-NH
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
41	Y/L	TRAILER LIGHT CHECK RELAY OUT
42	R/Y	CARGO LAMP OUT

43	–	–
44	–	–
45	–	–
46	–	–
47	–	–
48	R	HIGH SIDE START SW LED
49	–	–
50	–	–
51	–	–
52	W	AUDIO DONGLE
53	–	–
54	W/L	PW UART
55	W/B	L&R SENSOR K-LINE
56	–	–
57	–	–
58	–	–
59	P	CAN-L
60	L	CAN-H
61	O	REAR DEFOGGER RELAY OUT
62	W	STARTER RELAY OUT
63	–	–
64	P	BUZZER OUT
65	–	–
66	W	BLOWER FAN RELAY OUT
67	G	IGN ELEC RELAY OUT 2
68	L	MR OUTPUT
69	R/B	AT DEVICE OUT
70	P	IGN USM OUT 1
71	O	DR REQUEST SW
72	G	AS REQUEST SW
73	–	–
74	–	–
75	L/W	COMBI SW OUT 5
76	P	COMBI SW OUT 4
77	L	COMBI SW OUT 3
78	O/B	COMBI SW OUT 2
79	R/W	COMBI SW OUT 1
80	–	–

Connector No.	M28
Connector Name	COMBINATION SWITCH
Connector Type	TH16FW-NH
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	W/R	IGNITION
2	G/Y	COMBI SW OUTPUT 4
3	–	–
4	–	–
5	Y	COMBI SW OUTPUT 3
6	V/W	FRONT WASHER MOTOR +
7	L	COMBI SW INPUT 3
8	SB	COMBI SW OUTPUT 5
9	O/B	COMBI SW INPUT 2
10	P	COMBI SW INPUT 4
11	R/W	COMBI SW INPUT 1
12	V	COMBI SW OUTPUT 1
13	L/W	COMBI SW INPUT 5
14	G/B	COMBI SW OUTPUT 2

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FRONT WIPER AND WASHER SYSTEM CONNECTORS

Connector No.	M31
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1G	G	TO ENGINE ROOM HARNESS
2G	B/R	TO ENGINE ROOM HARNESS
3G	W	TO ENGINE ROOM HARNESS
4G	BR/W	TO ENGINE ROOM HARNESS
5G	–	TO ENGINE ROOM HARNESS
6G	R/W	TO ENGINE ROOM HARNESS
7G	Y	TO ENGINE ROOM HARNESS
8G	G	TO ENGINE ROOM HARNESS
9G	R	TO ENGINE ROOM HARNESS
10G	W	TO ENGINE ROOM HARNESS
11G	R/G	TO ENGINE ROOM HARNESS
12G	W/B	TO ENGINE ROOM HARNESS
13G	BR	TO ENGINE ROOM HARNESS
14G	Y/B	TO ENGINE ROOM HARNESS
15G	G/W	TO ENGINE ROOM HARNESS
16G	G	TO ENGINE ROOM HARNESS
17G	O	TO ENGINE ROOM HARNESS
18G	G/Y	TO ENGINE ROOM HARNESS
19G	Y/V	TO ENGINE ROOM HARNESS
20G	G/Y	TO ENGINE ROOM HARNESS
21G	B/Y	TO ENGINE ROOM HARNESS
22G	G/R	TO ENGINE ROOM HARNESS
23G	Y/R	TO ENGINE ROOM HARNESS
24G	G/B	TO ENGINE ROOM HARNESS
25G	R/W	TO ENGINE ROOM HARNESS
26G	R	TO ENGINE ROOM HARNESS
27G	LG	TO ENGINE ROOM HARNESS
28G	G/B	TO ENGINE ROOM HARNESS
29G	G/B	TO ENGINE ROOM HARNESS
30G	BR/Y	TO ENGINE ROOM HARNESS
31G	R	TO ENGINE ROOM HARNESS
32G	R	TO ENGINE ROOM HARNESS
33G	Y/L	TO ENGINE ROOM HARNESS
34G	GR	TO ENGINE ROOM HARNESS
35G	G/R	TO ENGINE ROOM HARNESS
36G	SB	TO ENGINE ROOM HARNESS
37G	R/W	TO ENGINE ROOM HARNESS
38G	BR	TO ENGINE ROOM HARNESS
39G	BR	TO ENGINE ROOM HARNESS
40G	–	TO ENGINE ROOM HARNESS
41G	R/G	TO ENGINE ROOM HARNESS
42G	O	TO ENGINE ROOM HARNESS
43G	G	TO ENGINE ROOM HARNESS
44G	R/Y	TO ENGINE ROOM HARNESS
45G	G	TO ENGINE ROOM HARNESS
46G	LG	TO ENGINE ROOM HARNESS
47G	R	TO ENGINE ROOM HARNESS
48G	W	TO ENGINE ROOM HARNESS
49G	–	TO ENGINE ROOM HARNESS
50G	BR	TO ENGINE ROOM HARNESS
51G	R	TO ENGINE ROOM HARNESS
52G	L	TO ENGINE ROOM HARNESS
53G	W	TO ENGINE ROOM HARNESS
54G	W	TO ENGINE ROOM HARNESS
55G	G	TO ENGINE ROOM HARNESS
56G	W	TO ENGINE ROOM HARNESS
57G	Y	TO ENGINE ROOM HARNESS
58G	BG	TO ENGINE ROOM HARNESS
59G	BG	TO ENGINE ROOM HARNESS
60G	BG	TO ENGINE ROOM HARNESS
61G	O	TO ENGINE ROOM HARNESS
62G	W	TO ENGINE ROOM HARNESS
63G	O	TO ENGINE ROOM HARNESS
64G	W/L	TO ENGINE ROOM HARNESS
65G	W/R	TO ENGINE ROOM HARNESS
66G	BG	TO ENGINE ROOM HARNESS
67G	O	TO ENGINE ROOM HARNESS
68G	B	TO ENGINE ROOM HARNESS
69G	Y	TO ENGINE ROOM HARNESS
70G	L	TO ENGINE ROOM HARNESS
71G	R/W	TO ENGINE ROOM HARNESS
72G	L/W	TO ENGINE ROOM HARNESS
73G	SHIELD	TO ENGINE ROOM HARNESS
74G	W	TO ENGINE ROOM HARNESS
75G	R	TO ENGINE ROOM HARNESS
76G	R/G	TO ENGINE ROOM HARNESS
77G	BG	TO ENGINE ROOM HARNESS
78G	P	TO ENGINE ROOM HARNESS
79G	–	TO ENGINE ROOM HARNESS
80G	R	TO ENGINE ROOM HARNESS
81G	L	TO ENGINE ROOM HARNESS
82G	R	TO ENGINE ROOM HARNESS
83G	L	TO ENGINE ROOM HARNESS
84G	L	TO ENGINE ROOM HARNESS
85G	W	TO ENGINE ROOM HARNESS
86G	B/R	TO ENGINE ROOM HARNESS
87G	W	TO ENGINE ROOM HARNESS
88G	G	TO ENGINE ROOM HARNESS
89G	P	TO ENGINE ROOM HARNESS
90G	G	TO ENGINE ROOM HARNESS
91G	P	TO ENGINE ROOM HARNESS
92G	V/W	TO ENGINE ROOM HARNESS
93G	BR	TO ENGINE ROOM HARNESS
94G	B	TO ENGINE ROOM HARNESS
95G	G	TO ENGINE ROOM HARNESS
96G	R	TO ENGINE ROOM HARNESS
97G	R	TO ENGINE ROOM HARNESS
98G	W/B	TO ENGINE ROOM HARNESS
99G	R	TO ENGINE ROOM HARNESS
100G	GR/W	TO ENGINE ROOM HARNESS

Connector No.	M60
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS06FW-CS
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1T	–	–
2T	SB	BATTERY
3T	R	RR DEF RLY
4T	G	BATTERY
5T	–	–
6T	–	–

Connector No.	M69
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS10FW-CS
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1M	GR	IGNITION
2M	–	–
3M	–	–
4M	–	–
5M	R/Y	BATTERY
6M	R/W	TAIL LAMP 2
7M	–	–
8M	–	–
9M	–	–
10M	W/R	IGNITION

AALIA5569GB

FRONT WIPER AND WASHER SYSTEM CONNECTORS

Connector No.	M81
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FEA09FW-FHA6-SA
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
129	R/G	BATTERY SAVER OUT
130	LG	SUPER LOCK/DOOR UNLOCK AS
131	W	BAT BCM FUSE
132	Y	DOOR LOCK AS/RR/RL
133	BR	DOOR UNLOCK AS/RR/RL
134	B	GND2
135	O	DOOR LOCK DR/AS/FL
136	L	ROOM LAMP CONT
137	V	DOOR UNLOCK DR/AS/FL
138	V	BAT REAR DOOR
139	W	BAT-POWER F/L
140	LG	P/W POWER SUPPLY IGN
141	V	P/W POWER SUPPLY BAT
142	Y	BAT FRONT DOOR
143	B	GND1

Connector No.	R1
Connector Name	WIRE TO WIRE
Connector Type	TH32MW-NH
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

Terminal No.	Color of Wire	Signal Name
1	SHIELD	TO MAIN HARNESS
2	R	TO MAIN HARNESS
3	W	TO MAIN HARNESS
4	Y/R	TO MAIN HARNESS
5	G/W	TO MAIN HARNESS
6	G/R	TO MAIN HARNESS
7	B	TO MAIN HARNESS
8	L	TO MAIN HARNESS
9	R/G	TO MAIN HARNESS
10	G	TO MAIN HARNESS
11	L/W	TO MAIN HARNESS
12	L	TO MAIN HARNESS
13	GR	TO MAIN HARNESS
14	R	TO MAIN HARNESS
15	W/B	TO MAIN HARNESS
16	L/B	TO MAIN HARNESS
17	–	TO MAIN HARNESS
18	P	TO MAIN HARNESS
19	W/L	TO MAIN HARNESS
20	W/B	TO MAIN HARNESS
21	–	TO MAIN HARNESS
22	–	TO MAIN HARNESS
23	–	TO MAIN HARNESS
24	–	TO MAIN HARNESS
25	–	TO MAIN HARNESS
26	–	TO MAIN HARNESS
27	–	TO MAIN HARNESS
28	Y/R	TO MAIN HARNESS
29	G/R	TO MAIN HARNESS
30	G/W	TO MAIN HARNESS
31	LG/B	TO MAIN HARNESS
32	Y/V	TO MAIN HARNESS

Connector No.	R17
Connector Name	RAIN SENSOR
Connector Type	AAB03FB
Connector Color	BLACK

H.S.

1	2	3

Terminal No.	Color of Wire	Signal Name
1	Y/R	BATTERY
2	W/B	L&R SENSOR K LINE
3	B	GROUND

AALIA5570GB

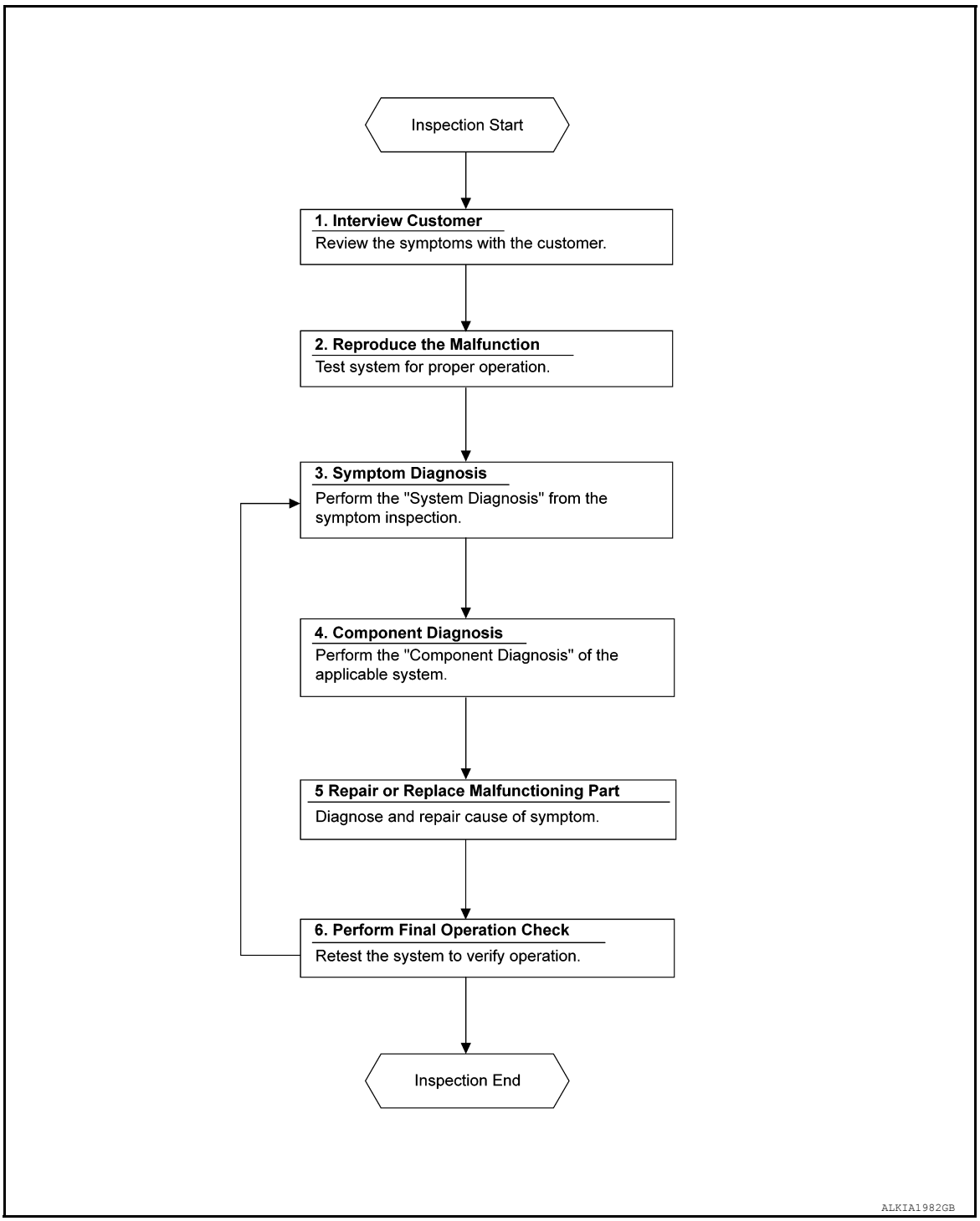
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:0000000014388976

OVERALL SEQUENCE



DETAILED FLOW

1. INTERVIEW CUSTOMER

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

>> GO TO 2.

2. REPRODUCE THE MALFUNCTION

Reproduce 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. 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.

>> GO TO 4.

4. COMPONENT DIAGNOSIS

Perform the diagnosis with Component diagnosis of the applicable system.

>> GO TO 5.

5. REPAIR OR REPLACE THE MALFUNCTIONING PART

Repair or replace the specified malfunctioning parts.

>> GO TO 6.

6. PERFORM FINAL OPERATIONAL 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

Diagnosis Procedure

INFOID:0000000014388977

1. CHECK FUSES

Check that the following fuses are not blown:

Component	Capacity	Fuse No.	Location
Front wiper motor	30A	41	IPDM E/R
Front washer motor	10A	33	Fuse block J/B

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:0000000014388978

1.CHECK FRONT WIPER LO OPERATION

CONSULT
1. Select ““FRONT WIPER” in “Active Test” mode of “IPDM E/R”.
2. While operating the test item, check front wiper operation.

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

Is front wiper (LO) operation normal?

YES >> Front wiper motor LO circuit is normal.
NO >> Refer to WW-32, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000014388979

Regarding Wiring Diagram information, refer to WW-23, "Wiring Diagram".

1.CHECK FRONT WIPER MOTOR (LO) OUTPUT VOLTAGE

CONSULT
1. Turn ignition switch OFF.
2. Disconnect front wiper motor connector.
3. Turn ignition switch ON.
4. Select ”FRONT WIPER” in “Active Test” mode of “IPDM E/R”.
5. While operating the test item, check voltage between front wiper motor harness connector and ground.

(+)		(–)	Condition		Voltage (Approx.)
Front wiper motor					
Connector	Terminal				
E23	3	Ground	FRONT WIPER	Lo	Battery voltage
				Off	0 V

Is the inspection result normal?

YES >> Replace front wiper motor. Refer to WW-50, "WIPER MOTOR : Removal and Installation".
NO >> GO TO 2.

2.CHECK FRONT WIPER MOTOR (LO) CIRCUIT

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

IPDM E/R		Front wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
E121	35	E23	3	Yes

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

IPDM E/R		—	Continuity
Connector	Terminal		
E121	35	Ground	No

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".

NO >> Repair or replace harness.

FRONT WIPER MOTOR HI CIRCUIT

Component Function Check

INFOID:0000000014388980

1.CHECK FRONT WIPER HI OPERATION

CONSULT
1. Select “FRONT WIPER” in “Active Test” mode of “IPDM E/R”.
2. While operating the test item, check front wiper operation.

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

Is front wiper (HI) operation normal?

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

Diagnosis Procedure

INFOID:0000000014388981

Regarding Wiring Diagram information, refer to WW-23, "Wiring Diagram".

1.CHECK FRONT WIPER MOTOR (HI) OUTPUT VOLTAGE

CONSULT
1. Turn ignition switch OFF.
2. Disconnect front wiper motor connector.
3. Turn ignition switch ON.
4. Select “FRONT WIPER” in “Active Test” mode of “IPDM E/R”.
5. While operating the test item, check voltage between front wiper motor harness connector and ground.

(+)		(–)	Condition		Voltage (Approx.)
Front wiper motor					
Connector	Terminal				
E23	2	Ground	FRONT WIPER	Hi	Battery voltage
				Off	0 V

Is the inspection result normal?

YES >> Replace front wiper motor. Refer to WW-50, "WIPER MOTOR : Removal and Installation".
NO >> GO TO 2.

2.CHECK FRONT WIPER MOTOR (HI) CIRCUIT

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

IPDM E/R		Front wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
E121	29	E23	2	Yes

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

IPDM E/R		—	Continuity
Connector	Terminal		
E121	29	Ground	No

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".

NO >> Repair or replace harness.

FRONT WIPER STOP POSITION SIGNAL CIRCUIT

Component Function Check

INFOID:0000000014388982

1.CHECK FRONT WIPER STOP POSITION SIGNAL

CONSULT
1. Select “WIP AUTO STOP” in “Data Monitor” mode of “IPDM E/R”.
2. Operate the front wiper.
3. Check that the function operates normally according to the following conditions:

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 stop position signal circuit is normal.
NO >> Refer to WW-36, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000014388983

Regarding Wiring Diagram information, refer to WW-23, "Wiring Diagram".

1.CHECK IPDM E/R OUTPUT VOLTAGE

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

(+)		(−)	Voltage (Approx.)
Front wiper motor			
Connector	Terminal		
E23	6	Ground	Battery voltage

Is the inspection result normal?

YES >> Replace front wiper motor. Refer to WW-50, "WIPER MOTOR : Removal and Installation".
NO >> GO TO 2.

2.CHECK FRONT WIPER MOTOR CIRCUIT

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

IPDM E/R		Front wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
E122	39	E23	6	Yes

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

IPDM E/R		—	Continuity
Connector	Terminal		
E122	39	Ground	No

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
NO >> Repair or replace harness.

FRONT WIPER MOTOR GROUND CIRCUIT

Diagnosis Procedure

INFOID:0000000014388984

Regarding Wiring Diagram information, refer to WW-23, "Wiring Diagram".

1.CHECK FRONT WIPER MOTOR GROUND CIRCUIT

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

Front wiper motor		—	Continuity
Connector	Terminal		
E23	1	Ground	Yes

Is the inspection result normal?

YES >> Inspection End.
NO >> Repair or replace harness.

WASHER MOTOR CIRCUIT

Diagnosis Procedure

INFOID:0000000014388985

Regarding Wiring Diagram information, refer to WW-23, "Wiring Diagram"

1. CHECK FRONT WASHER MOTOR FUSE

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

Component	Capacity	Fuse No.	Location
Front washer motor	10A	33	Fuse block J/B

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

(+)		(-)	Washer switch	Voltage (Approx.)
Front washer motor		Ground		
Connector	Terminal			
E105	1		ON	Battery voltage
			OFF	0 V

Is the inspection result normal?

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

3. CHECK WASHER SWITCH

Check washer switch. Refer to WW-62, "Removal and Installation".

Is the inspection result normal?

YES >> Repair harness between fuse and the front washer motor.
NO >> Replace washer switch. Refer to WW-62, "Removal and Installation".

RAIN SENSOR

Component Function Check

INFOID:0000000014388986

1.CHECK FRONT WIPER AUTO OPERATION

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

Is the inspection result normal?

YES >> Rain sensor circuit is normal.
NO >> Refer to WW-39, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000014388987

Regarding Wiring Diagram information, refer to WW-23, "Wiring Diagram".

1.CHECK RAIN SENSOR FUSE

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

Component	Location	Fuse No.	Capacity
Rain sensor	Fuse block (J/B)	14	5A

Is the inspection result normal?

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

2.CHECK RAIN SENSOR POWER SUPPLY

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

(+)		(–)	Voltage (Approx.)
Rain sensor			
Connector	Terminal		
R17	1	Ground	Battery voltage

Is the inspection result normal?

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

3.CHECK RAIN SENSOR GROUND CIRCUIT

Check continuity between rain sensor harness connector and ground.

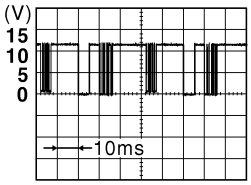
Rain sensor		–	Continuity
Connector	Terminal		
R17	3	Ground	Yes

Is the inspection result normal?

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

4.CHECK RAIN SENSOR SIGNAL

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

(+)		(–)	Condition	Signal (Reference value)
BCM				
Connector	Terminal			
M19	55	Ground	Ignition switch ON	 JPMIA0156GB Approx. 8.7V

Is the inspection result normal?

YES >> Replace rain sensor. Refer to WW-60, "Removal and Installation".
NO >> GO TO 5.

5.CHECK RAIN SENSOR SIGNAL CIRCUIT FOR OPEN

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

BCM		Rain sensor		Continuity
Connector	Terminal	Connector	Terminal	
M19	55	R17	2	Yes

Is the inspection result normal?

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

6.CHECK RAIN SENSOR SIGNAL CIRCUIT FOR SHORT

Check continuity between BCM harness connector and ground.

BCM		–	Continuity
Connector	Terminal		
M19	55	Ground	No

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-79, "Removal and Installation".
NO >> Repair or replace the harness connectors.

WASHER SWITCH

Component Inspection

INFOID:0000000014388988

Regarding Wiring Diagram information, refer to WW-23, "Wiring Diagram"

1. CHECK COMBINATION SWITCH (WIPER AND WASHER SWITCH) FUSE

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

Component	Capacity	Fuse No.	Location
Front washer motor	10A	33	Fuse block J/B

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

(+)		(-)	Washer switch	Voltage (Approx.)
Front washer motor		Ground		
Connector	Terminal			
E105	1		ON	Battery voltage
			OFF	0 V

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace washer switch. Refer to WW-62, "Removal and Installation".

SYMPTOM DIAGNOSIS

WIPER AND WASHER SYSTEM SYMPTOMS

Symptom Table

INFOID:0000000014388989

NOTE:
Perform the “Self Diagnostic Result” with CONSULT before the symptom diagnosis. Perform the trouble diagnosis if any 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-77, "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-34, "Component Function Check".
		Front wiper request signal • BCM • IPDM E/R	IPDM E/R “Data Monitor” “FR WIP REQ”
	LO and INT	• IPDM E/R • Harness between IPDM E/R and front wiper motor • Front wiper motor	Front wiper motor (LO) circuit Refer to WW-32, "Component Function Check".
	LO only	• Combination switch (wiper and washer switch) • Harness between combination switch and BCM • BCM	Combination switch (wiper and washer switch) Refer to BCS-77, "Symptom Table".
		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-77, "Symptom Table".
		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-45, "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-77, "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-77, "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-77, "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 and BCM • BCM	Combination switch (wiper and washer switch) Refer to BCS-77, "Symptom Table".
		BCM	—
	Intermittent control linked with vehicle speed cannot be performed	Check the wiper setting is linked with vehicle speed. Refer to BCS-24, "WIPER : CONSULT Function (BCM - WIPER)".	
	Wiper is not linked to the washer operation	• Combination switch (wiper and washer switch) • Harness between combination switch and BCM • BCM	Combination switch (wiper and washer switch) Refer to BCS-77, "Symptom Table".
		BCM	—
	Does not return to stop position [Repeatedly operates for 10 seconds and then stops for 20 seconds. (Fail-safe)]	• IPDM E/R • Harness between IPDM E/R and front wiper motor • Front wiper motor	Front wiper stop position signal circuit Refer to WW-36, "Component Function Check".

NORMAL OPERATING CONDITION

Description

INFOID:0000000014388990

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.

FRONT WIPER DOES NOT OPERATE

Description

INFOID:0000000014388991

The front wiper does not operate under any operation conditions.

Diagnosis Procedure

INFOID:0000000014388992

Regarding Wiring Diagram information, refer to WW-23, "Wiring Diagram".

1.CHECK WIPER RELAY OPERATION

CONSULT
1. Select “FRONT WIPER” in “Active Test” mode of “IPDM E/R”.
2. While operating the test item, check front wiper operation.

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

Is front wiper operation normally?

YES >> GO TO 4.
NO >> GO TO 2.

2.CHECK FRONT WIPER MOTOR FUSE

Check that the following IPDM E/R fuse is not blown:

Component	Location	Fuse No.	Capacity
Front wiper motor	IPDM E/R	41	30A

Is the fuse blown?

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

3.CHECK FRONT WIPER MOTOR GROUND CIRCUIT

Check front wiper motor ground circuit. Refer to WW-37, "Diagnosis Procedure".

Is the inspection result normal?

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

4.CHECK FRONT WIPER REQUEST SIGNAL INPUT

CONSULT
1. Select “FR WIP REQ” in “Data Monitor” mode of “IPDM E/R”.
2. Switch the front wiper switch to HI and LO.
3. While 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
		LO	Low
		INT	1Low
		OFF	Stop

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
NO >> GO TO 5.

5.CHECK COMBINATION SWITCH (WIPER AND WASHER SWITCH)

Perform the inspection of the combination switch (wiper and washer switch). Refer to WW-42, "Symptom Table".

Is combination switch normal?

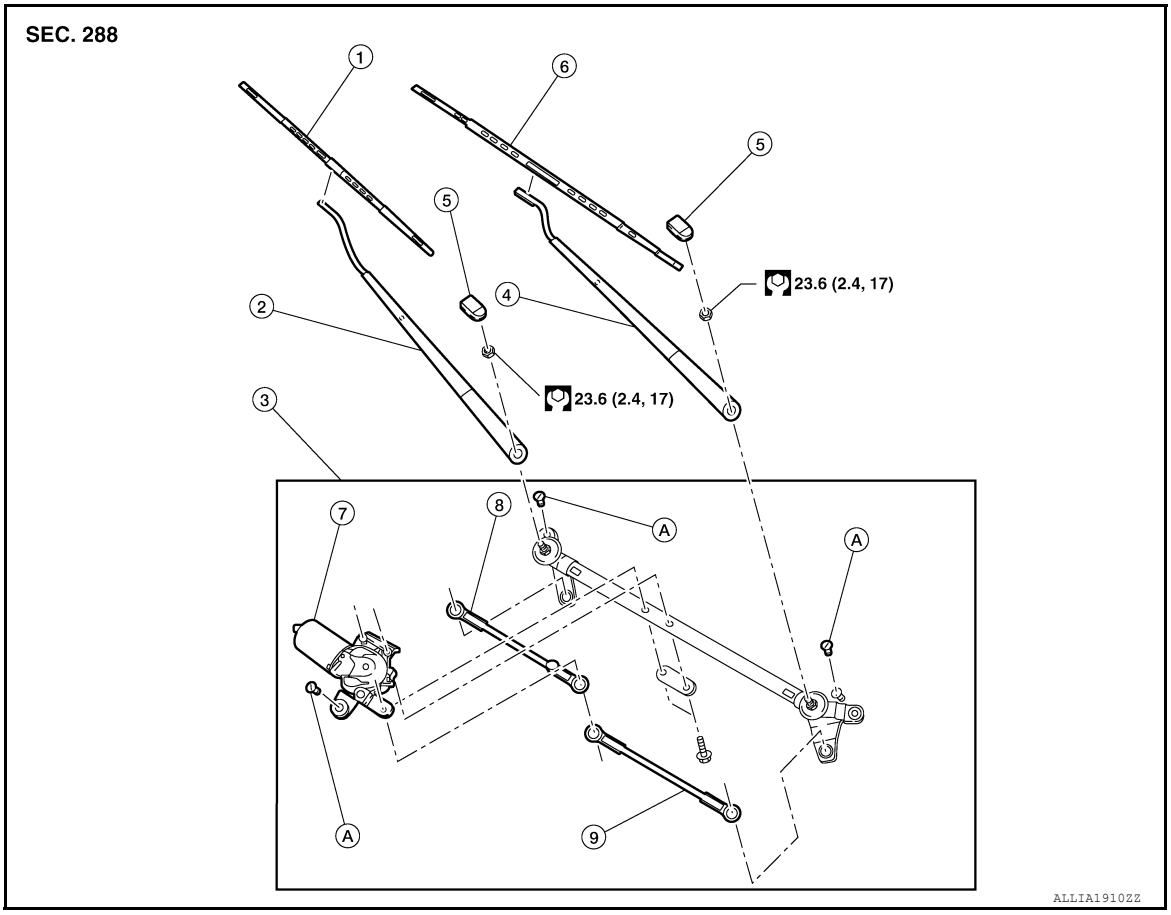
YES >> Replace BCM. Refer to BCS-79, "Removal and Installation".
NO >> Repair or replace the applicable parts.

REMOVAL AND INSTALLATION

FRONT WIPER

Exploded View

INFOID:0000000014388993



1. Wiper blade (RH)
2. Wiper arm (RH)
3. Wiper drive assembly
4. Wiper arm (LH)
5. Wiper arm cover
6. Wiper blade (LH)
7. Wiper motor
8. Link 1
9. Link 2
A. Refer to INSTALLATION

WIPER ARM

WIPER ARM : Removal and Installation

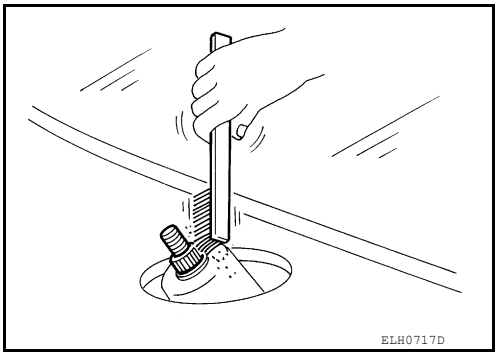
INFOID:0000000014388994

REMOVAL

1. Operate wiper arms into the auto stop position.
2. Open hood.
3. Remove wiper arm cover.
4. Remove wiper arm nut.
5. Raise wiper arm, then remove wiper arm.

INSTALLATION

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



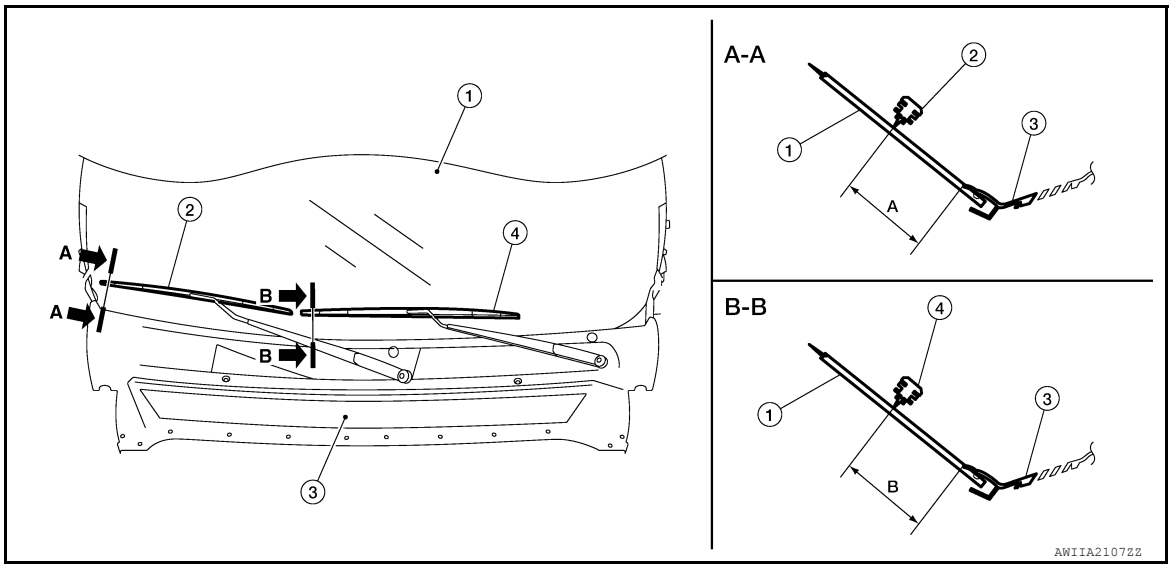
2. Operate wiper motor to move the wiper to the auto stop position.
3. Adjust wiper blade position. Refer to WW-48, "WIPER ARM : Adjustment".
4. Install wiper arm and wiper arm nut.
5. Install wiper arm cover.
6. Check that the wiper blades stop at the specified position. Refer to WW-48, "WIPER ARM : Adjustment".

WIPER ARM : Adjustment

INFOID:0000000014388995

WIPER BLADE POSITION ADJUSTMENT

Clearance between the end of cowl top cover/ front fender cover and the top of wiper blade center.



1. Windshield glass
2. Wiper blade (RH)
3. Cowl top cover
4. Wiper blade (LH)
A. 78 mm (3.1 in)
B. 40 mm (1.6 in)

WIPER BLADE

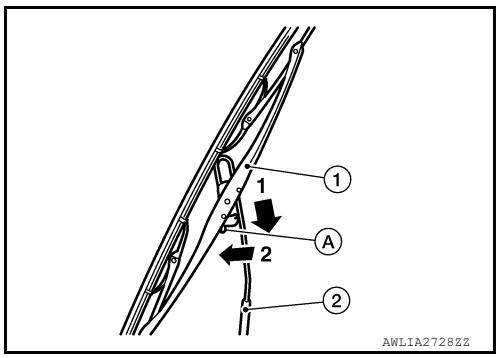
WIPER BLADE : Removal and Installation

INFOID:0000000014388996

REMOVAL

1. Lift wiper arm and blade assembly away from the windshield glass.

2. Rotate wiper blade and push the release tab (A) of wiper blade (1), slide wiper blade in the sequence shown and remove from wiper arm (2).
CAUTION:
Be careful not to drop the wiper arm onto the windshield glass.



INSTALLATION

1. Insert wiper blade onto wiper arm until it clicks into place.
2. Lower wiper arm and blade assembly onto windshield glass.

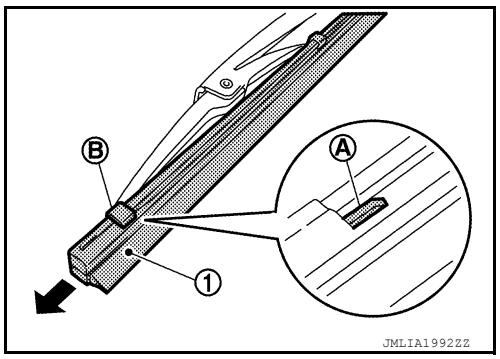
WIPER REFILL

WIPER REFILL : Removal and Installation

INFOID:0000000014388997

REMOVAL

1. Remove wiper blade. Refer to WW-48, "WIPER BLADE : Removal and Installation".
2. Release portion (A) of wiper refill (1), from wiper blade portion (B) and remove wiper refill as shown.



INSTALLATION

Installation is in the reverse order of removal.
CAUTION:
Check that wiper refill is inserted properly.

WIPER DRIVE ASSEMBLY

WIPER DRIVE ASSEMBLY : Removal and Installation

INFOID:0000000014388998

REMOVAL

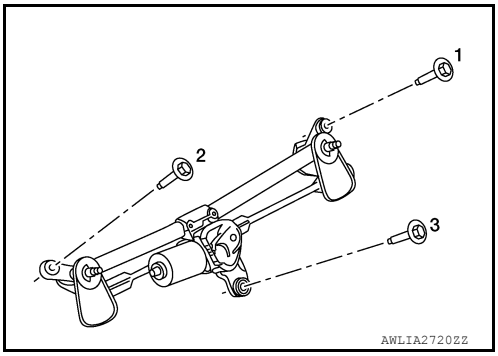
1. Remove cowl top cover. Refer to EXT-35, "Removal and Installation - Cowl Top Cover".
2. Remove cowl top extension bracket. Refer to EXT-35, "Exploded View"
3. Disconnect harness connector from wiper motor.
4. Remove bolts from wiper drive assembly.
5. Remove wiper drive assembly.
6. Disconnect link 1 from wiper motor and wiper drive (if necessary).
7. Disconnect link 2 from wiper drive (if necessary).

INSTALLATION

Installation is in the reverse order of removal.
CAUTION:

Tighten the bolts to specification in the sequence shown.

Bolts 1-3 : 5.74 N·m (0.59 kg-m, 51 in-lb)



WIPER MOTOR

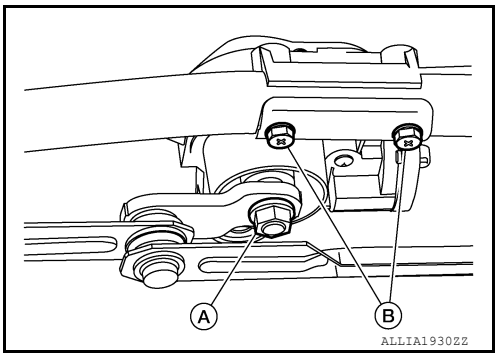
WIPER MOTOR : Removal and Installation

INFOID:0000000014388999

REMOVAL

1. Remove front wiper drive assembly. Refer to WW-49, "WIPER DRIVE ASSEMBLY : Removal and Installation".
2. Disconnect link 1 from wiper motor.
3. Remove wiper motor bolts (B) and remove wiper motor.

(A) : Wiper motor bracket bolt



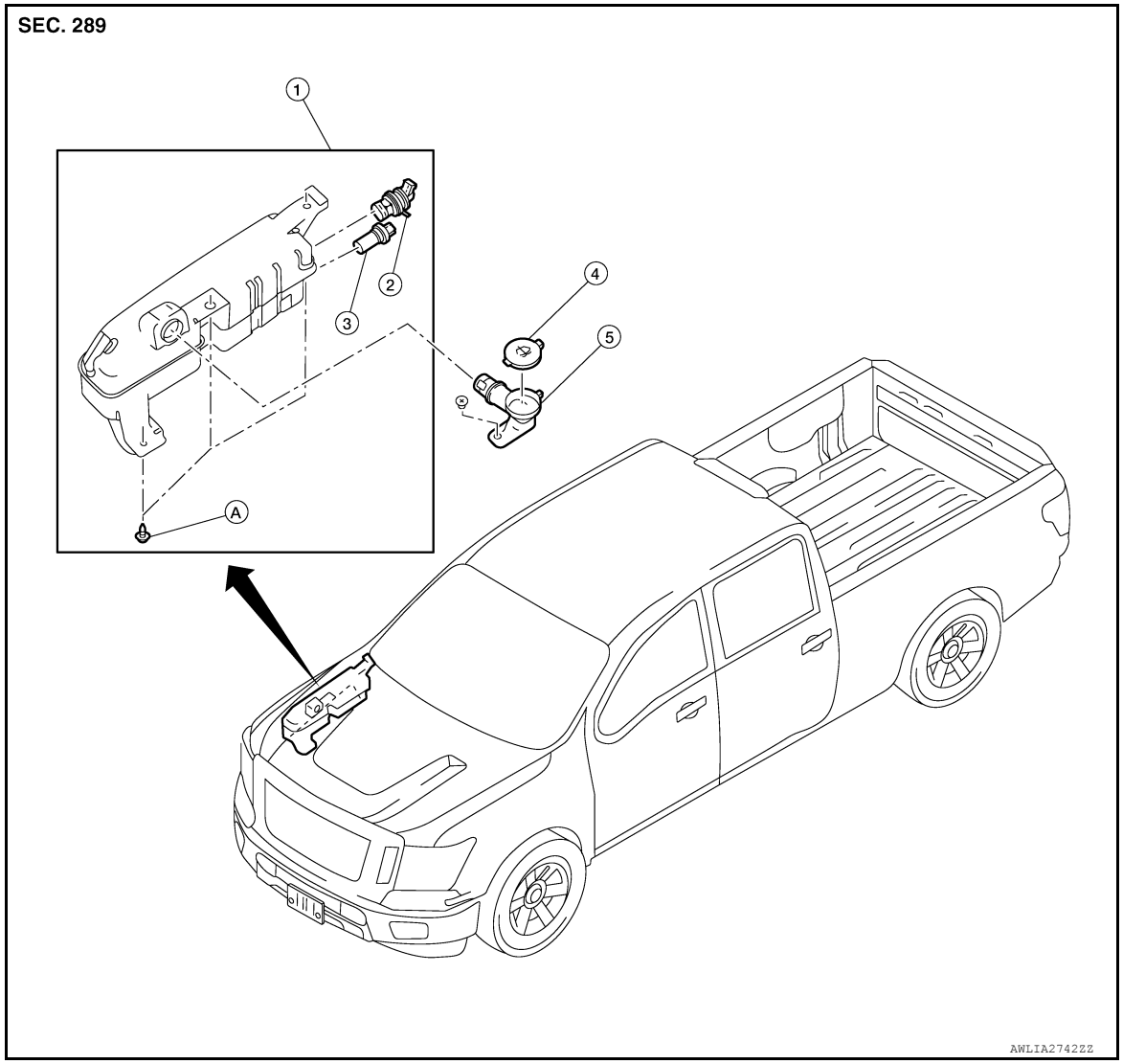
INSTALLATION

Installation is in the reverse order of removal.

WASHER TANK

Exploded View

INFOID:0000000014389000



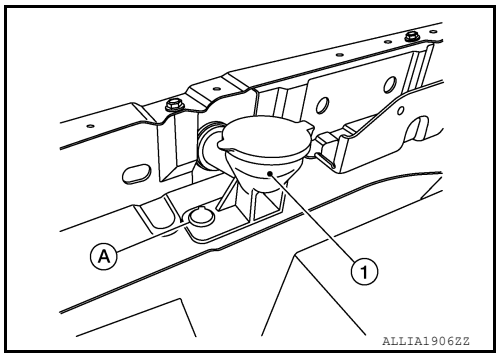
1. Washer tank
2. Front washer motor
3. Washer fluid level switch
4. Washer tank inlet cap
5. Washer tank inlet
A. Refer to INSTALLATION

Removal and Installation

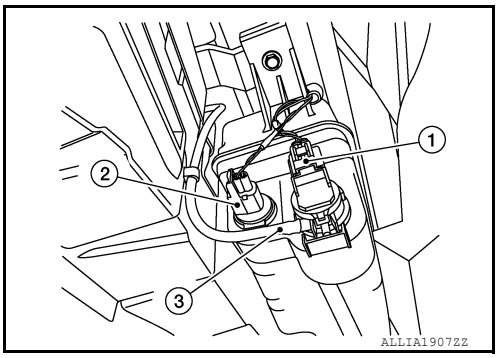
INFOID:0000000014389001

REMOVAL

1. Remove clip (A) and pull washer tank inlet (1) out of washer tank.

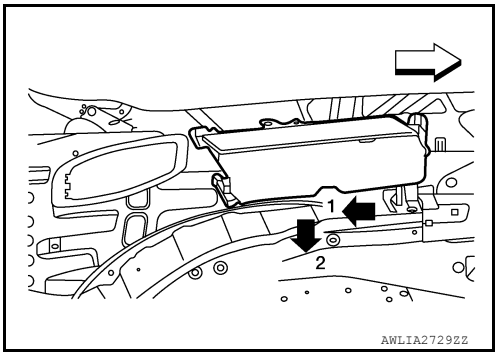


2. Remove front fender protector (RH). Refer to EXT-41, "Removal and Installation - Front Fender Protector".
3. Disconnect washer tube (3).
4. Disconnect harness connector from front washer motor (1) and washer fluid level switch (2).



5. Remove washer tank bolts.
6. Remove washer tank as shown.

⇦ :Front



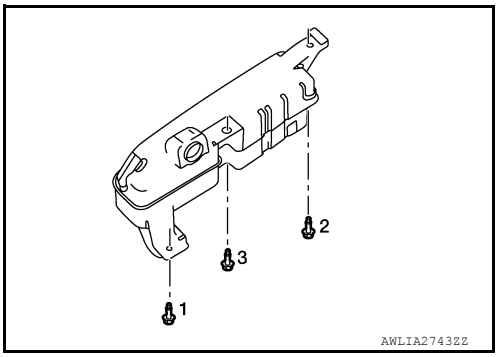
INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- **Lubricate washer tank inlet tip with suitable water-based lubricant before installing.**
- **Add water up to the top of washer tank inlet after installing. Check that no leaks exist.**
- **Fill washer tank with specified amount of fluid. Refer to WW-63, "Specifications".**
- **Tighten the bolts to specification in the sequence shown.**

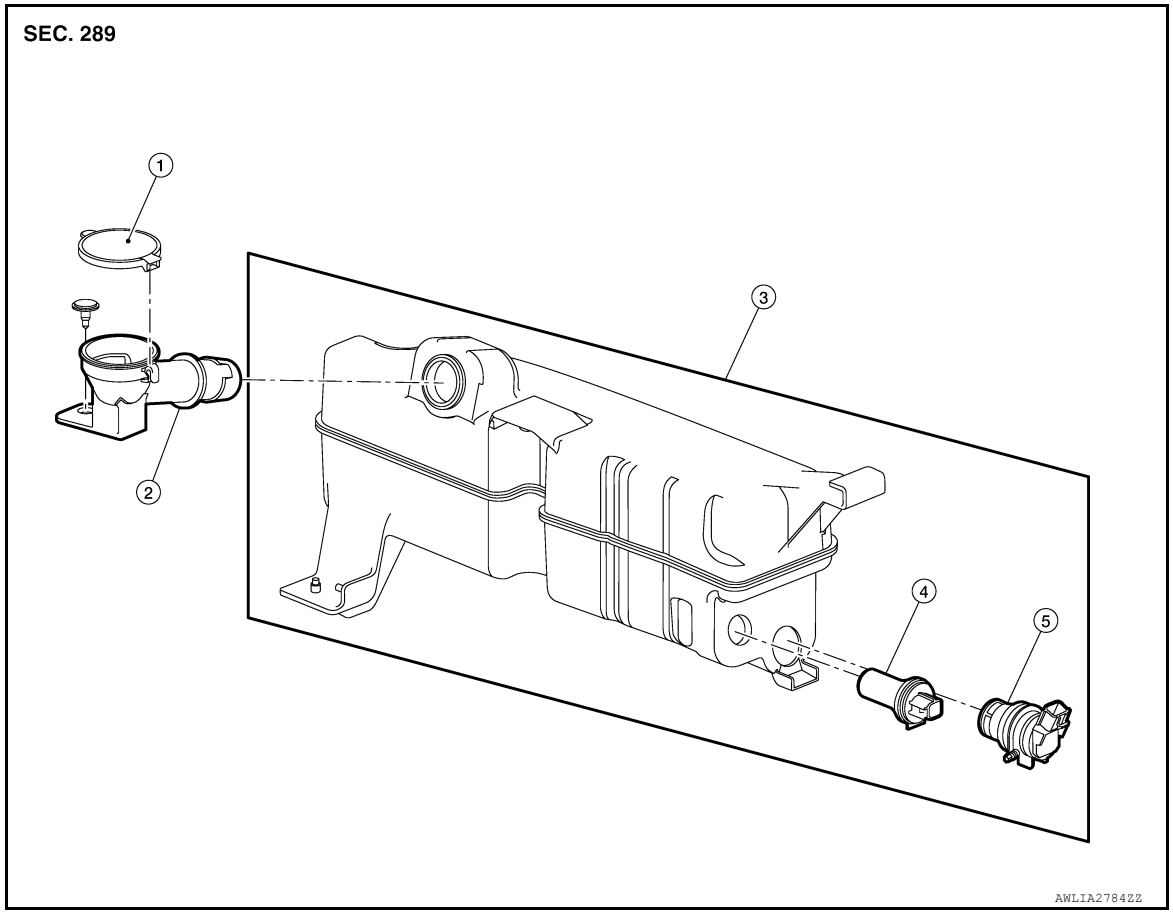
Bolts 1-3 : 4.5 N·m (0.46 kg-m, 40 in-lb)



WASHER FLUID LEVEL SWITCH

Exploded View

INFOID:0000000014389002



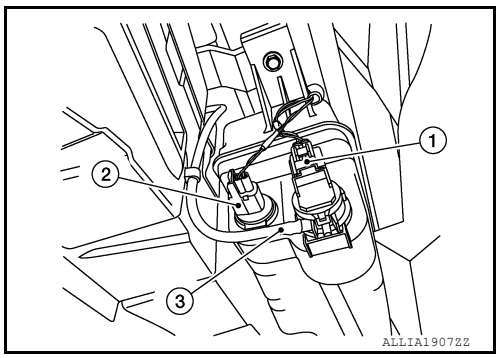
1. Washer tank inlet cap
2. Washer tank inlet
3. Washer tank
4. Washer fluid level switch
5. Front washer motor

Removal and Installation

INFOID:0000000014389003

REMOVAL

1. Drain washer fluid.
2. Remove fender protector. Refer to EXT-41, "Removal and Installation - Front Fender Protector".
3. Disconnect harness connector from washer fluid level switch (2).



(1) : Front washer motor
(3) : Washer tube

4. Remove washer fluid level switch from washer tank.

INSTALLATION

Installation is in the reverse order of removal.

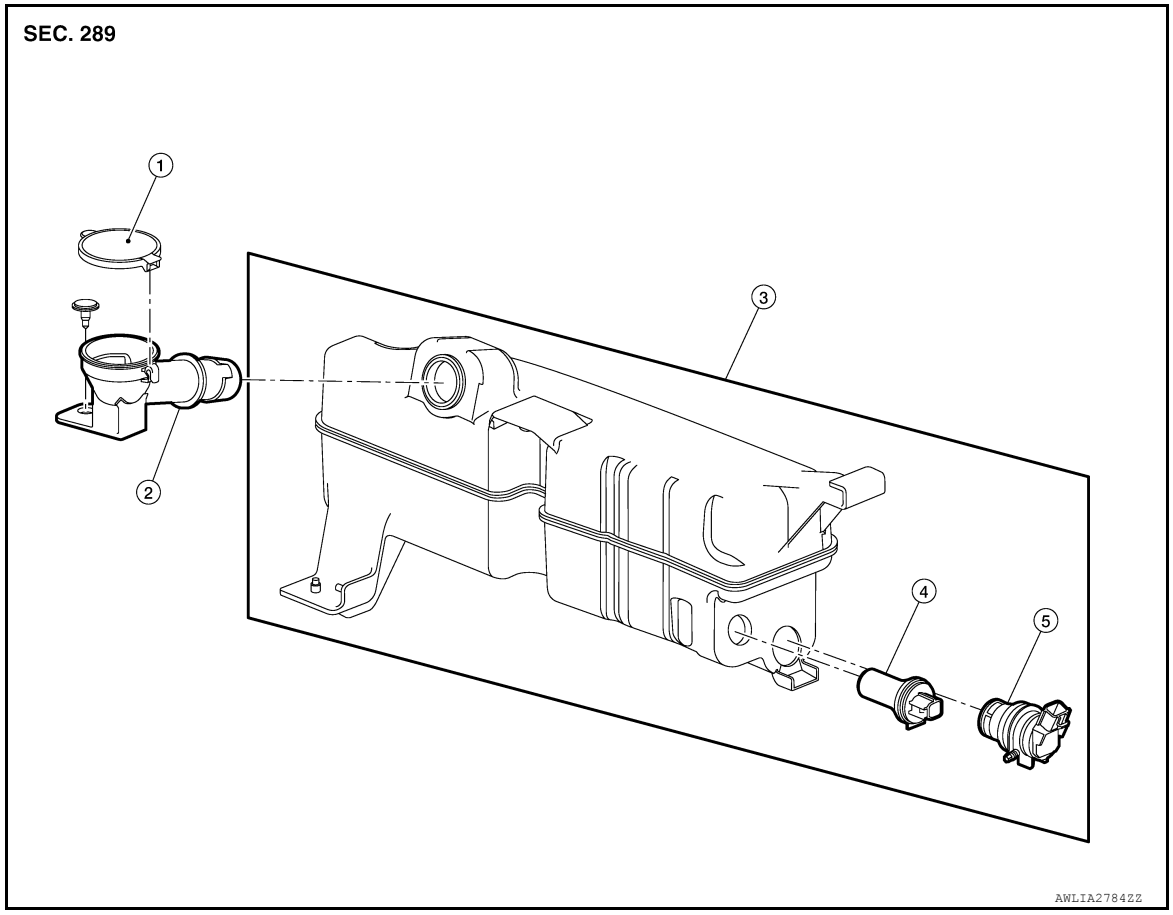
CAUTION:

- **Add water up to the top of washer tank inlet after installing. Check that no leaks exist.**
- **Fill washer tank with specified amount of fluid. Refer to WW-63, "Specifications".**

FRONT WASHER MOTOR

Exploded View

INFOID:0000000014389004



1. Washer tank inlet cap
2. Washer tank inlet
3. Washer tank
4. Washer fluid level switch
5. Front washer motor

Removal and Installation

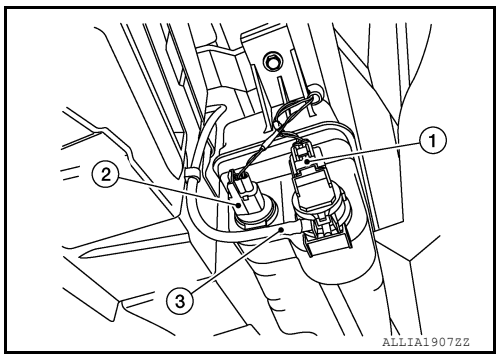
INFOID:0000000014389005

REMOVAL

1. Remove fender protector. Refer to EXT-41, "Removal and Installation - Front Fender Protector".
2. Drain washer fluid.
3. Disconnect harness connector from front washer motor (1).

(2) : Washer fluid level switch

4. Disconnect washer tube (3).
5. Remove front washer motor from washer tank.



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

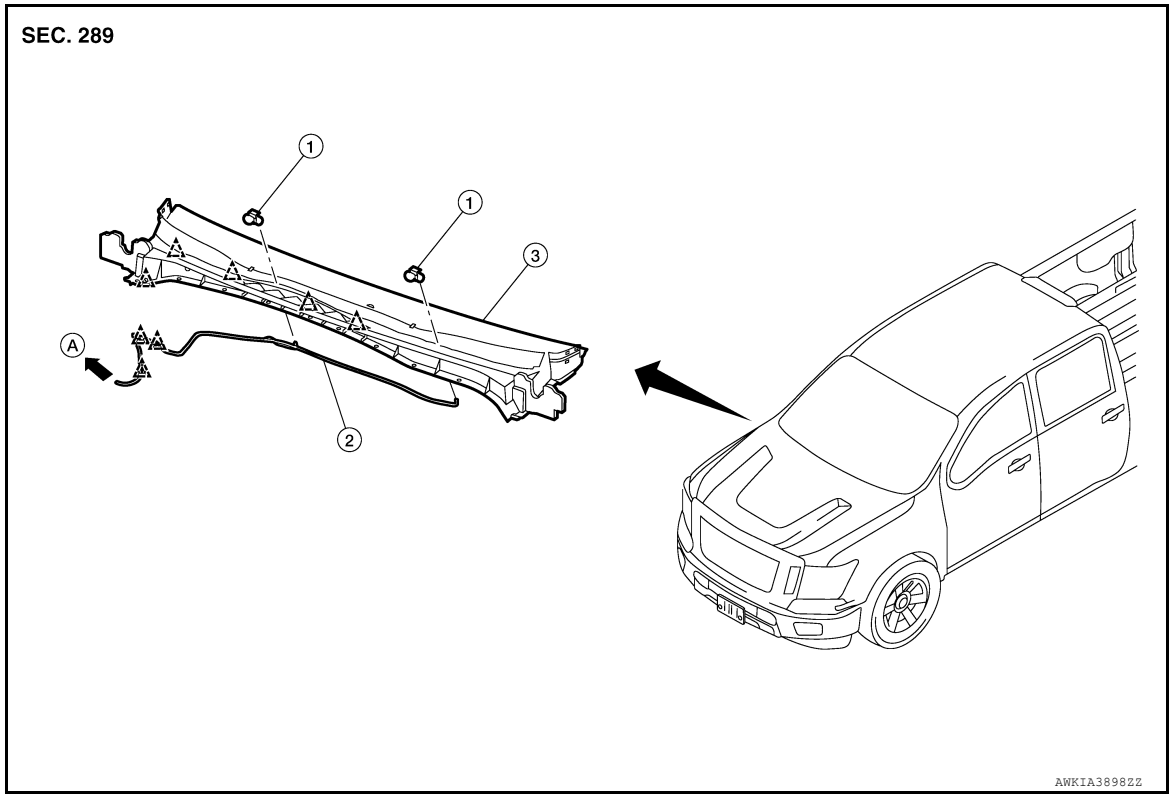
- **Add water up to the top of washer tank inlet after installing. Check that no leaks exist.**

- **Fill washer tank with specified amount of fluid. Refer to WW-63, "Specifications".**

WASHER NOZZLE AND TUBE

Exploded View

INFOID:0000000014389006



1. Washer nozzle
2. Washer tube
3. Cowl top cover
A. To front washer motor
Clip
Pawl

WASHER NOZZLE

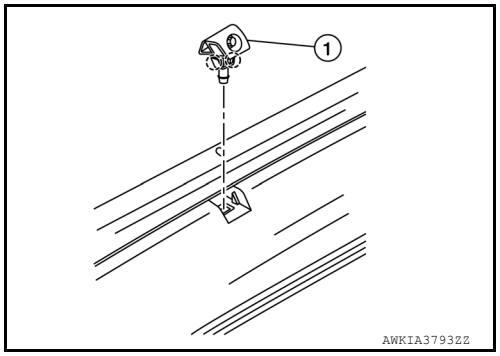
WASHER NOZZLE : Removal and Installation

INFOID:0000000014389007

REMOVAL

1. Remove cowl top cover. Refer to EXT-35, "Removal and Installation - Cowl Top Cover".
2. Disconnect washer tube from washer nozzle.
3. While pressing pawls on washer nozzle (1), remove washer nozzle from cowl top cover.

: Pawl



INSTALLATION

Installation is in the reverse order of removal.

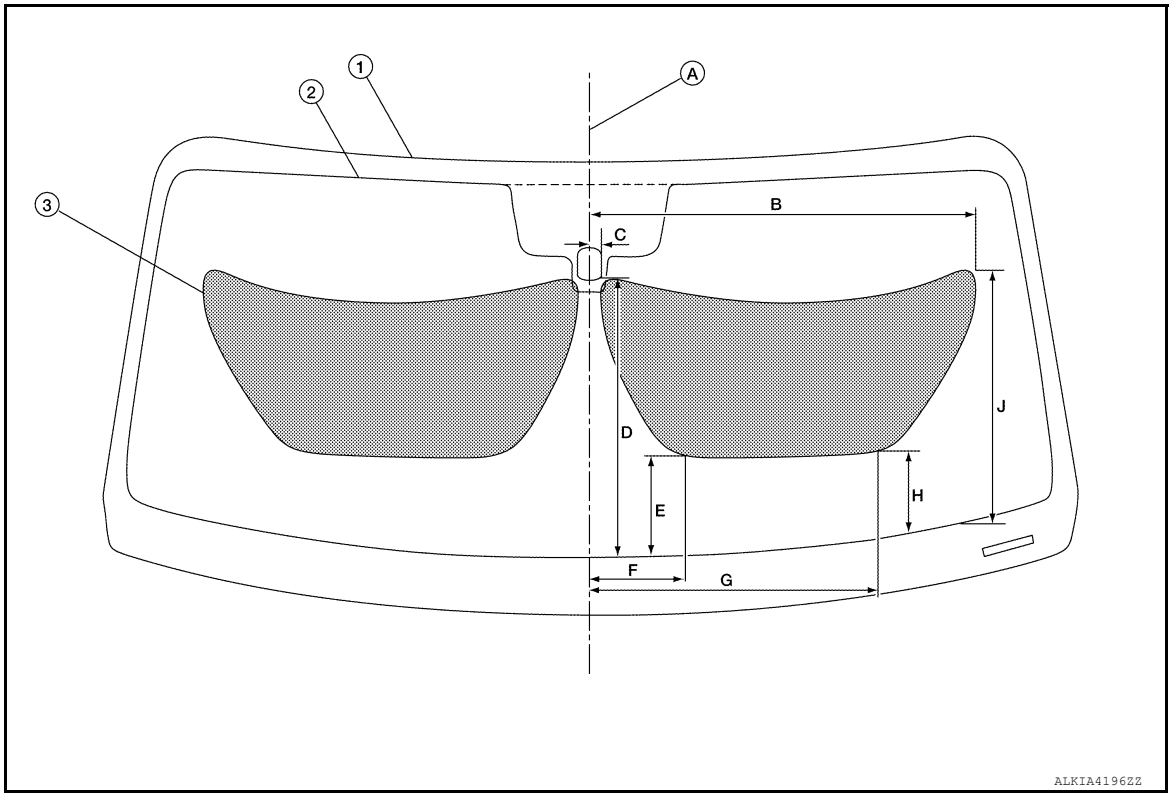
CAUTION:

Adjust the front nozzles to their proper position. Refer to WW-58, "WASHER NOZZLE : Adjustment".

WASHER NOZZLE : Adjustment

INFOID:0000000014389008

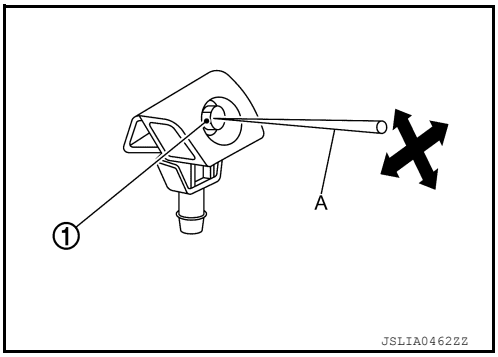
ADJUSTMENT



1. Windshield glass	2. Black printed area line	3. Wiping area
A. Center line	B. 568 mm (22.4 in)	C. 58 mm (2.3 in)
D. 618 mm (24.3 in)	E. 208 mm (8.2 in)	F. 135 mm (5.3 in)
G. 436 mm (17.2 in)	H. 170 mm (6.7 in)	J. 457 mm (18.0 in)

NOTE:
Spray positions for LH shown, RH is symmetrical.

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



WASHER TUBE

WASHER TUBE : Removal and Installation

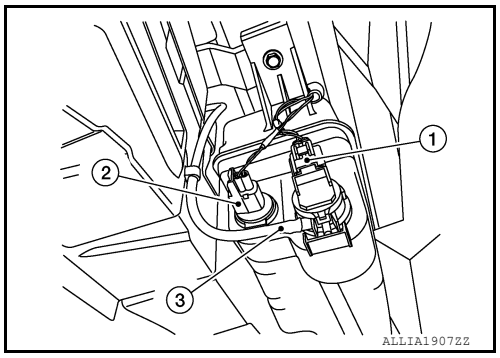
INFOID:0000000014389009

REMOVAL

1. Drain washer fluid.
2. Remove cowl top cover. Refer to EXT-35, "Removal and Installation - Cowl Top Cover".
3. Disconnect washer tube from washer nozzles (LH/RH).

4. Remove fender protector (RH). Refer to EXT-41, "Removal and Installation - Front Fender Protector".
5. Disconnect washer tube (3) from front washer motor (1).

(2) : Washer fluid level switch



6. Realease washer tube from clips and remove.

INSTALLATION

Installation is in the reverse order of removal.

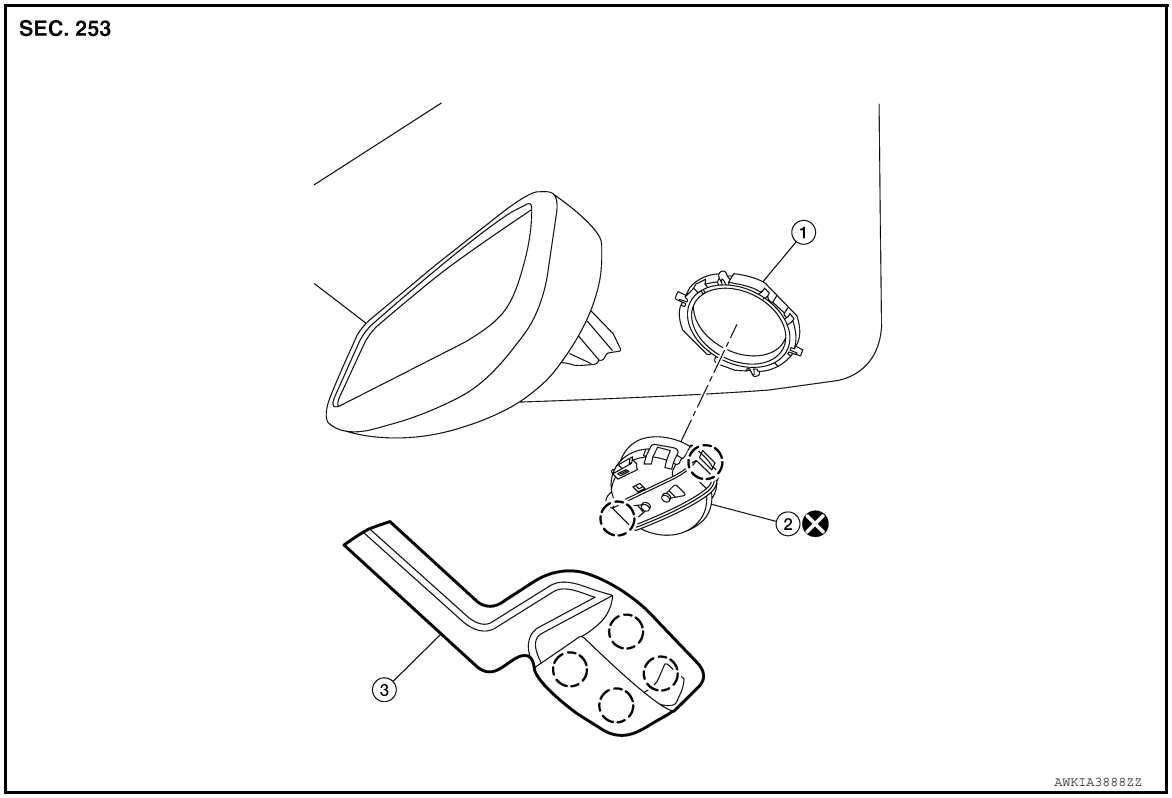
CAUTION:

- **Add water up to the top of washer tank inlet after installing. Check that no leaks exist.**
- **Fill washer tank with specified amount of fluid. Refer to WW-63, "Specifications".**

RAIN SENSOR

Exploded View

INFOID:0000000014389010



1. Rain sensor bracket
2. Rain sensor
3. Rain sensor finisher

(◌) Pawl

Removal and Installation

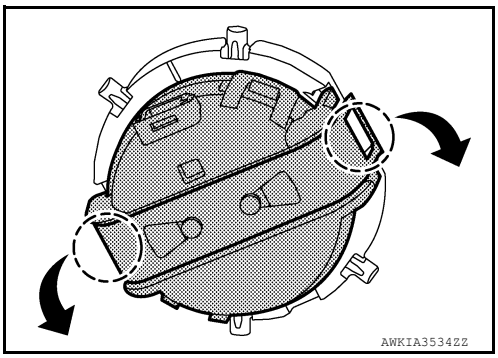
INFOID:0000000014389011

CAUTION:
When the rain sensor is removed from the windshield, the rain sensor cannot be reused.

REMOVAL

1. Release rain sensor finishers pawls using a suitable tool, then remove the rain sensor finisher.
2. Disconnect harness connector from rain sensor.
3. Release metal bracket from pawls, then remove rain sensor from the windshield glass.

(◌) : Pawl



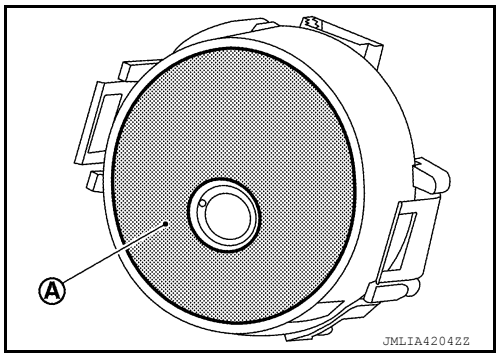
INSTALLATION

Installation is in the reverse order of removal.

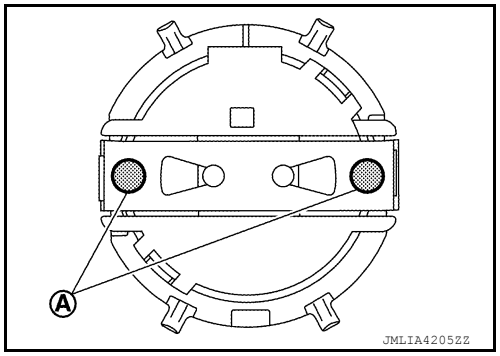
CAUTION:

- **Do not reuse rain sensor.**

- **Do not reuse rain sensor if dropped.**
- **The surface of the windshield should be cleaned.**
- **Remove protective cover from sensor just before installation.**
- **Do not touch gel/adhesive (A) after removing protective cover.**



- **Install rain sensor with connector facing upward.**
- **Press rain sensor at point (A), flush against the glass surface.**
- **Be sure the metal bracket fully engages the pawls and locked securely.**



WIPER AND WASHER SWITCH

Removal and Installation

INFOID:0000000014389012

The wiper and washer switch is serviced as an assembly with the combination switch assembly. Refer to BCS-80, "Removal and Installation".

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Specifications

INFOID:0000000014389013

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-62, "Cummins 5.0L Engine : Fluids and Lubricants" (Cummins 5.0L) or MA-13, "VK56VD Gasoline Engine : Fluids and Lubricants" (VK56VD).