

SECTION

WW

WIPER & WASHER

CONTENTS

BASIC INSPECTION	3	Diagnosis Procedure	24
DIAGNOSIS AND REPAIR WORKFLOW	3	FRONT WIPER MOTOR LO CIRCUIT	25
Work Flow	3	Component Function Check	25
FUNCTION DIAGNOSIS	6	Diagnosis Procedure	25
FRONT WIPER AND WASHER SYSTEM	6	FRONT WIPER MOTOR HI CIRCUIT	27
System Diagram	6	Component Function Check	27
System Description	6	Diagnosis Procedure	27
Component Parts Location	9	FRONT WIPER AUTO STOP SIGNAL CIR-	
Component Description	9	CUIT	29
REAR WIPER AND WASHER SYSTEM	11	Component Function Check	29
System Diagram	11	Diagnosis Procedure	29
System Description	11	FRONT WIPER MOTOR GROUND CIRCUIT ...	31
Component Parts Location	13	Diagnosis Procedure	31
Component Description	13	WASHER SWITCH	32
HEADLAMP WASHER SYSTEM	15	Description	32
System Diagram	15	Component Inspection	32
System Description	15	RAIN SENSOR	33
Component Parts Location	16	Description	33
Component Description	16	Diagnosis Procedure	33
DIAGNOSIS SYSTEM (BCM)	17	REAR WIPER MOTOR CIRCUIT	34
COMMON ITEM	17	Component Function Check	34
COMMON ITEM : CONSULT-III Function (BCM -		Diagnosis Procedure	34
COMMON ITEM)	17	REAR WIPER AUTO STOP SIGNAL CIRCUIT	
WIPER	17		36
WIPER : CONSULT-III Function (BCM - WIPER)...	17	Component Function Check	36
DIAGNOSIS SYSTEM (IPDM E/R)	19	Diagnosis Procedure	36
Diagnosis Description	19	HEADLAMP WASHER RELAY	38
CONSULT - III Function (IPDM E/R)	21	Component Inspection	38
COMPONENT DIAGNOSIS	24	HEADLAMP WASHER CIRCUIT	39
WIPER AND WASHER FUSE, FUSIBLE LINK		Component Function Check	39
.....	24	Diagnosis Procedure	39
Description	24	FRONT WIPER AND WASHER SYSTEM	42

Wiring Diagram - FRONT WIPER AND WASHER SYSTEM -	42	Exploded View	97
REAR WIPER AND WASHER SYSTEM	46	Hydraulic Layout	97
Wiring Diagram - REAR WIPER AND WASHER SYSTEM -	46	Removal and Installation	97
HEADLAMP WASHER SYSTEM	51	Inspection	98
Wiring Diagram - HEADLAMP WASHER SYSTEM -	51	WASHER TANK	99
ECU DIAGNOSIS	54	Exploded View	99
BCM (BODY CONTROL MODULE)	54	Removal and Installation	99
Reference Value	54	WASHER PUMP	100
Wiring Diagram - BCM -	70	Exploded View	100
Fail Safe	74	Removal and Installation	100
DTC Inspection Priority Chart	75	HEADLAMP WASHER PUMP	101
DTC Index	76	Exploded View	101
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)	77	Removal and Installation	101
Reference Value	77	FRONT WASHER NOZZLE AND TUBE	102
Wiring Diagram - IPDM E/R -	83	Hydraulic Layout	102
Fail Safe	86	Removal and Installation	102
DTC Index	88	Inspection and Adjustment	102
SYMPTOM DIAGNOSIS	89	FRONT WIPER ARM	104
WIPER AND WASHER SYSTEM SYMPTOMS	89	Exploded View	104
Symptom Table	89	Removal and Installation	104
NORMAL OPERATING CONDITION	92	Adjustment	105
Description	92	FRONT WIPER DRIVE ASSEMBLY	106
FRONT WIPER DOES NOT OPERATE	93	LHD MODELS	106
Description	93	LHD MODELS : Exploded View	106
Diagnosis Procedure	93	LHD MODELS : Removal and Installation	106
HEADLAMP WASHER DOES NOT OPERATE	95	LHD MODELS : Disassembly and Assembly	107
Description	95	RHD MODELS	107
Diagnosis Procedure	95	RHD MODELS : Exploded View	107
PRECAUTION	96	RHD MODELS : Removal and Installation	108
PRECAUTIONS	96	RHD MODELS : Disassembly and Assembly	108
Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"	96	RAIN SENSOR	110
Precaution for Procedure without Cowl Top Cover..	96	Exploded View	110
ON-VEHICLE REPAIR	97	Removal and Installation	110
HEADLAMP WASHER NOZZLE AND TUBE ...	97	WIPER AND WASHER SWITCH	111
		Exploded View	111
		Removal and Installation	111
		REAR WIPER MOTOR	112
		Exploded View	112
		Removal and Installation	112
		Adjustment	113
		REAR WASHER NOZZLE AND TUBE	114
		Hydraulic Layout	114
		Removal and Installation	114
		Inspection	115

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

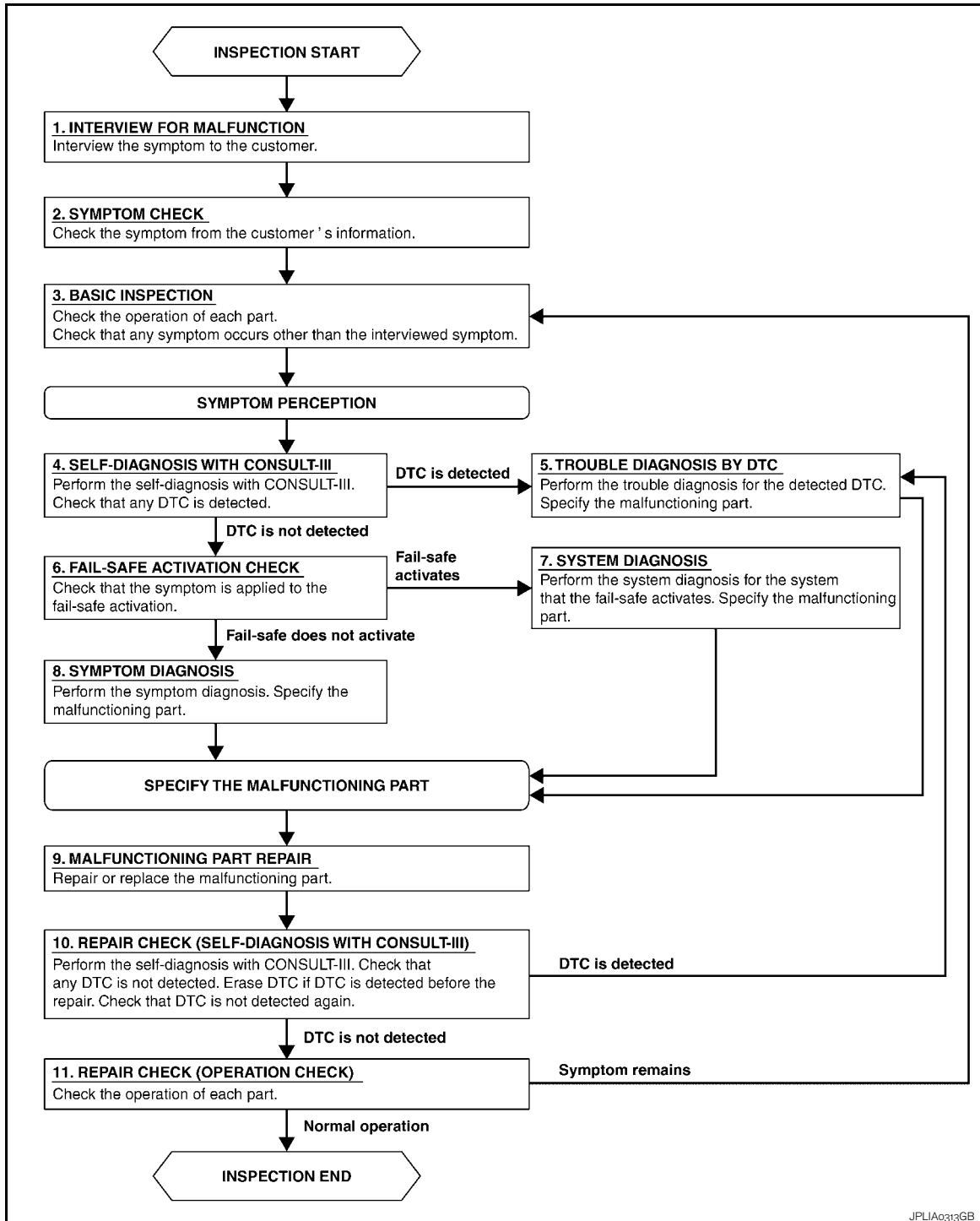
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000001109306

OVERALL SEQUENCE



DETAILED FLOW

1. INTERVIEW FOR MALFUNCTION

Interview the symptom to the customer.

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

>> GO TO 2.

2. SYMPTOM CHECK

Check the symptom from the customer's information.

>> GO TO 3.

3. BASIC INSPECTION

Check the operation of each part. Check that any symptom occurs other than the interviewed symptom.

>> GO TO 4.

4. SELF-DIAGNOSIS WITH CONSULT-III

Perform the self-diagnosis with CONSULT-III. Check that any DTC is detected.

Is any DTC detected?

YES >> GO TO 5.

NO >> GO TO 6.

5. TROUBLE DIAGNOSIS BY DTC

Perform the trouble diagnosis for the detected DTC. Specify the malfunctioning part.

>> GO TO 9.

6. FAIL-SAFE ACTIVATION CHECK

Check that the symptom is applied to the fail-safe activation.

Does the fail-safe activate?

YES >> GO TO 7.

NO >> GO TO 8.

7. SYSTEM DIAGNOSIS

Perform the system diagnosis for the system that the fail-safe activates. Specify the malfunctioning part.

>> GO TO 9.

8. SYMPTOM DIAGNOSIS

Perform the symptom diagnosis. Specify the malfunctioning part.

>> GO TO 9.

9. MALFUNCTION PART REPAIR

Repair or replace the malfunctioning part.

>> GO TO 10.

10. REPAIR CHECK (SELF-DIAGNOSIS WITH CONSULT-III)

Perform the self-diagnosis with CONSULT-III. Check that any DTC is not detected. Erase DTC if DTC is detected before the repair. Check that DTC is not detected again.

Is any DTC detected?

YES >> GO TO 5.

NO >> GO TO 11.

11. REPAIR CHECK (OPERATION CHECK)

Check the operation of each part.

Does it operate normally?

YES >> INSPECTION END

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

NO >> GO TO 3.

A

B

C

D

E

F

G

H

I

J

K

WW

M

N

O

P

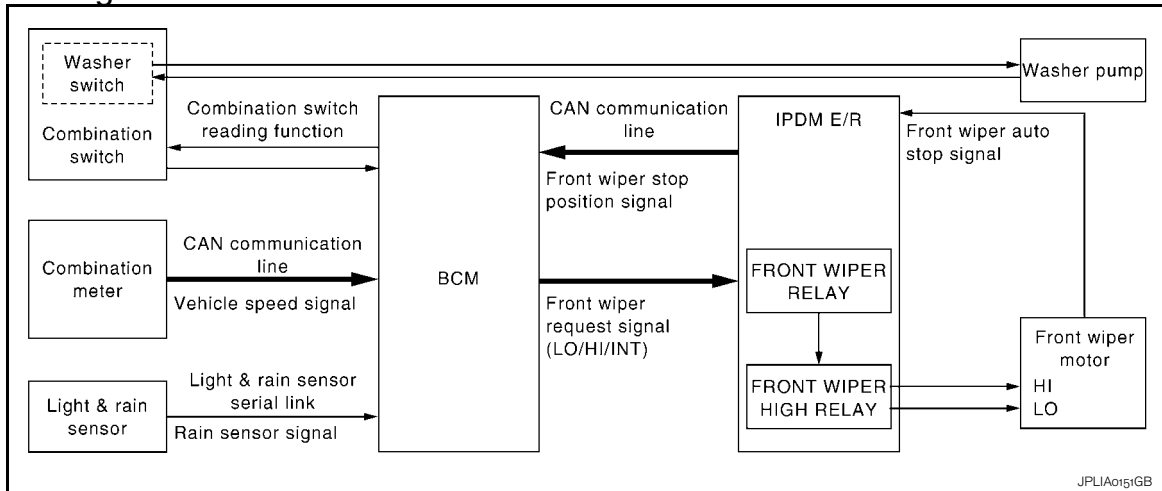
FRONT WIPER AND WASHER SYSTEM

< FUNCTION DIAGNOSIS >

FUNCTION DIAGNOSIS

FRONT WIPER AND WASHER SYSTEM

System Diagram



System Description

INFOID:000000000896755

OUTLINE

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

Control by BCM

- Combination switch reading function
- Front wiper control function

Control by IPDM E/R

- Front wiper control function
- Relay control function

FRONT WIPER BASIC OPERATION

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

FRONT WIPER LO OPERATION

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

Front wiper LO operating condition

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

FRONT WIPER HI OPERATION

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

Front wiper HI operating condition

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

FRONT WIPER INT OPERATION (LINKED WITH VEHICLE SPEED)

FRONT WIPER AND WASHER SYSTEM

< FUNCTION DIAGNOSIS >

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

Front wiper INT operating condition

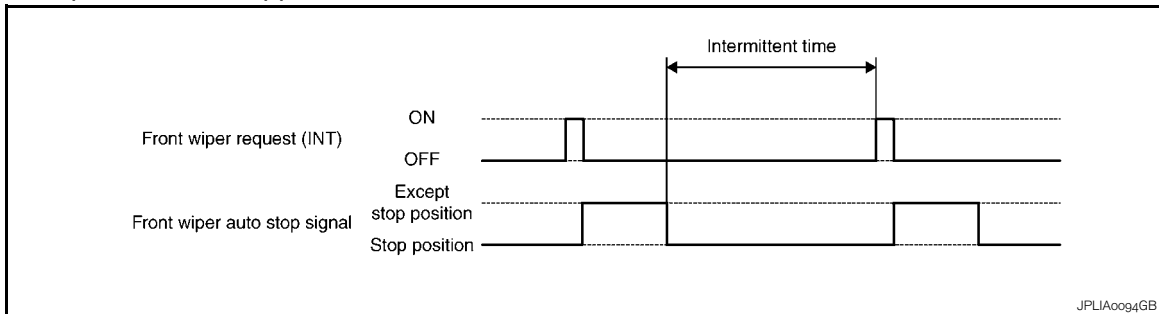
- Ignition switch ON
- Front wiper switch INT

Intermittent operation delay interval judgment

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

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

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



FRONT WIPER AUTO OPERATION

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

NOTE:

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

Front wiper AUTO operating condition

- Ignition switch ON
- Front wiper switch AUTO

Rain sensor sensitivity setting

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

FRONT WIPER AND WASHER SYSTEM

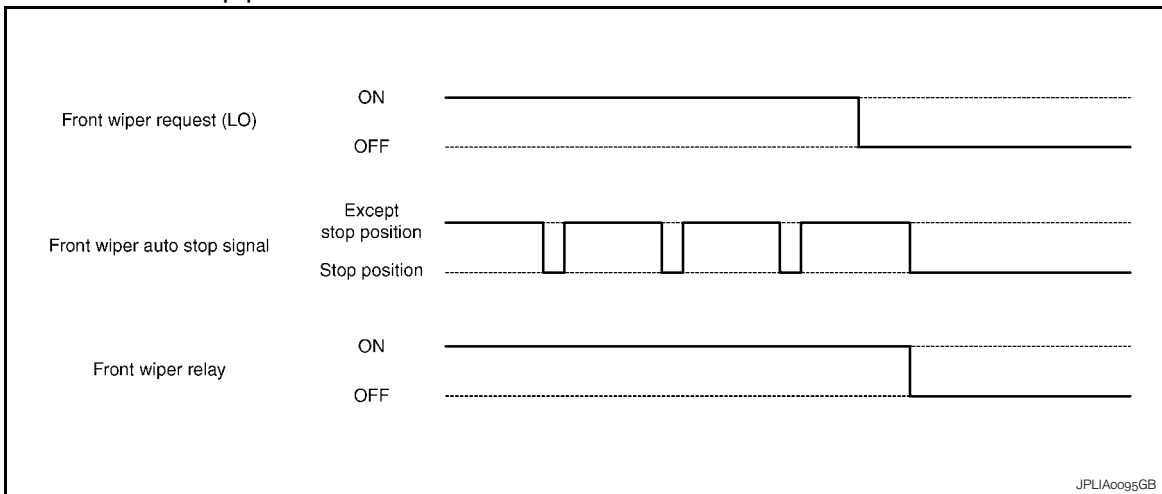
< FUNCTION DIAGNOSIS >

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

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

FRONT WIPER AUTO STOP OPERATION

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



NOTE:

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

FRONT WIPER OPERATION LINKED WITH WASHER

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

Washer linked operating condition of front wiper

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

FRONT WIPER DROP WIPE OPERATION

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

Front wiper drop wipe operating condition

- Ignition switch ON
- Front wiper switch OFF
- Front washer switch OFF

FRONT WIPER AND WASHER SYSTEM

< FUNCTION DIAGNOSIS >

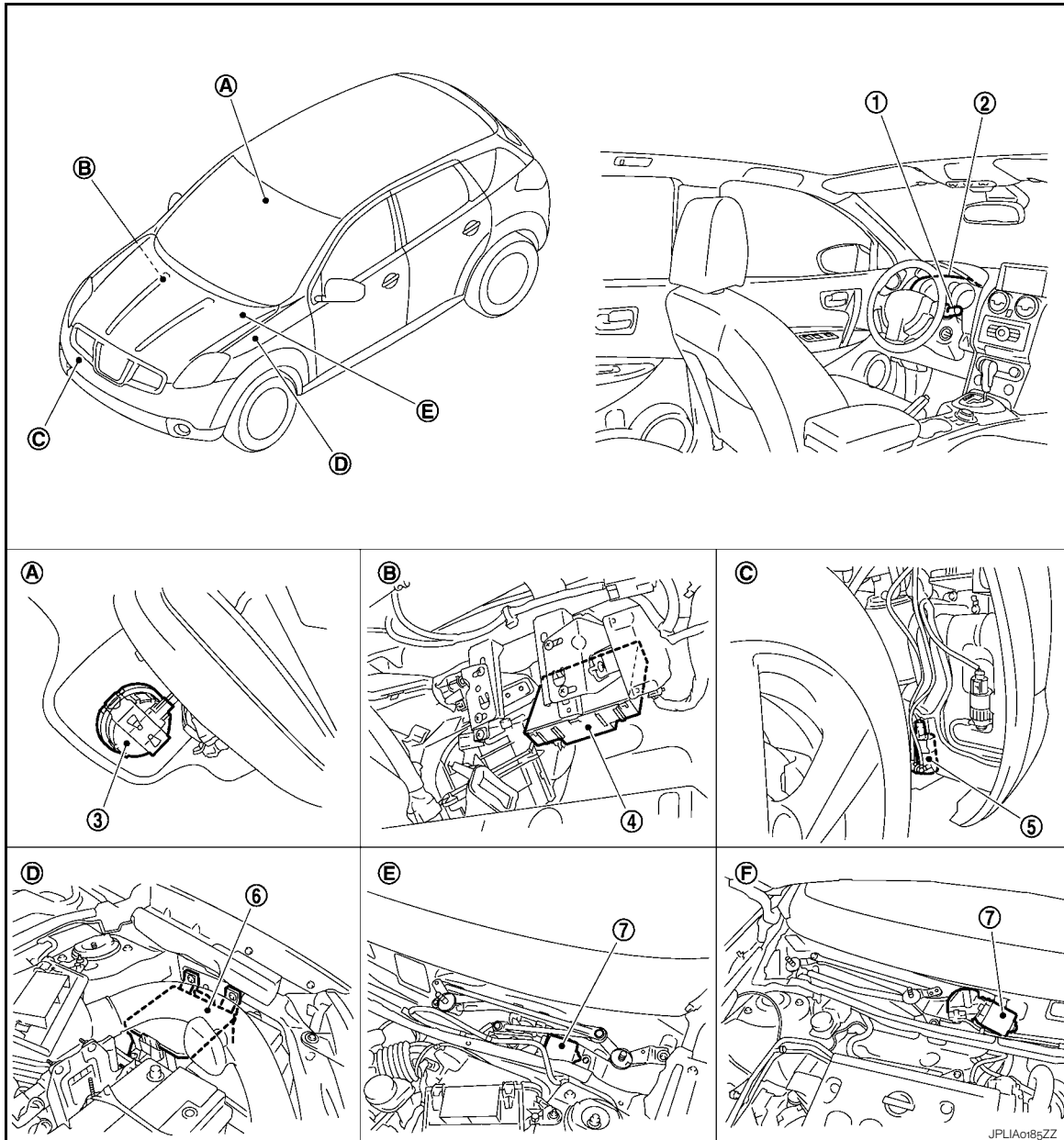
- BCM transmits the front wiper request signal (LO) to IPDM E/R with CAN communication so that the front wiper operate once three seconds after front wiper operation linked with washer.
- IPDM E/R turns ON the integrated front wiper relay according to the front wiper request signal (LO).

FRONT WIPER FAIL-SAFE OPERATION

- IPDM E/R performs the fail-safe function when the front wiper auto stop circuit is malfunctioning. Refer to [PCS-28, "Fail Safe"](#).
- BCM performs fail-safe operation when light and rain sensor or light and rain sensor-related systems are malfunctioning. Refer to [BCS-59, "Fail Safe"](#).

Component Parts Location

INFOID:000000000896757



- | | | |
|-------------------------------|---------------------------------------|--|
| 1. Combination switch | 2. Combination meter | 3. Light and rain sensor |
| 4. BCM | 5. Washer pump | 6. IPDM E/R |
| 7. Front wiper motor | | |
| A. Inside mirror cover inside | B. Over the glove box | C. Radiator core support (RH) |
| D. Engine room (left side) | E. Cowl top, left side of engine room | F. Cowl top, right side of engine room |

Component Description

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FRONT WIPER AND WASHER SYSTEM

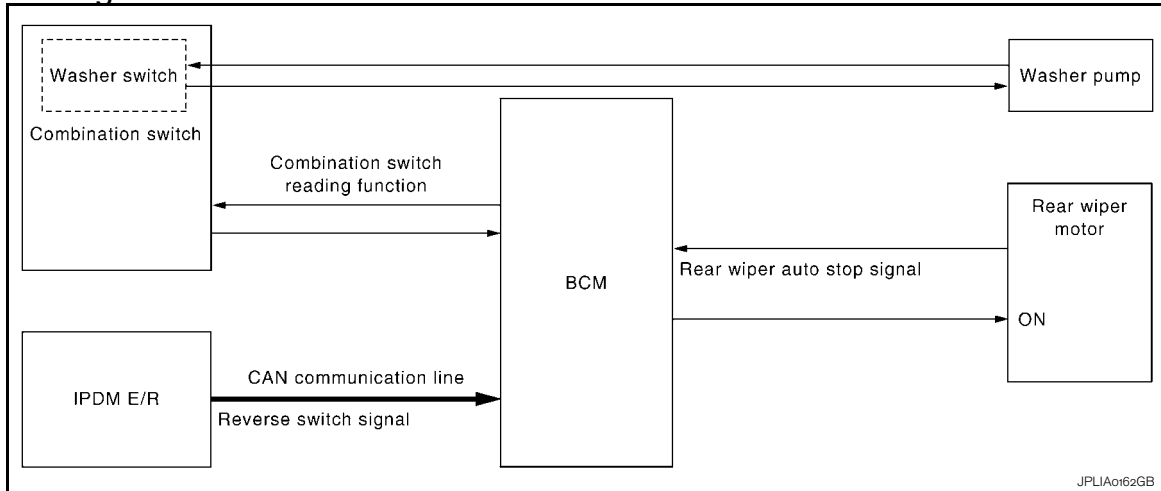
< FUNCTION DIAGNOSIS >

Part	Description
BCM	• Judges each switch status by the combination switch reading function. • Requests (with CAN communication) the front wiper relay and the front wiper high relay ON to IPDM E/R.
IPDM E/R	• Controls the integrated relay according to the request (with CAN communication) from BCM. • Performs the auto stop control of the front wiper.
Combination switch (Wiper & washer switch)	Refer to BCS-9, "System Diagram" .
Combination meter	Transmits the vehicle speed signal to BCM with CAN communication.
Light and rain sensor	Detects water droplets on the windshield with infrared rays, and transmits the rain sensor signal to BCM through the light and rain sensor serial link.

< FUNCTION DIAGNOSIS >

REAR WIPER AND WASHER SYSTEM

System Diagram



System Description

INFOID:0000000000896811

OUTLINE

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

Control by BCM

- Combination switch reading function
- Rear wiper control function

Control by IPDM E/R

- Reverse-linked rear wiper function

REAR WIPER BASIC OPERATION

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

REAR WIPER ON OPERATION

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

Rear wiper ON operating condition

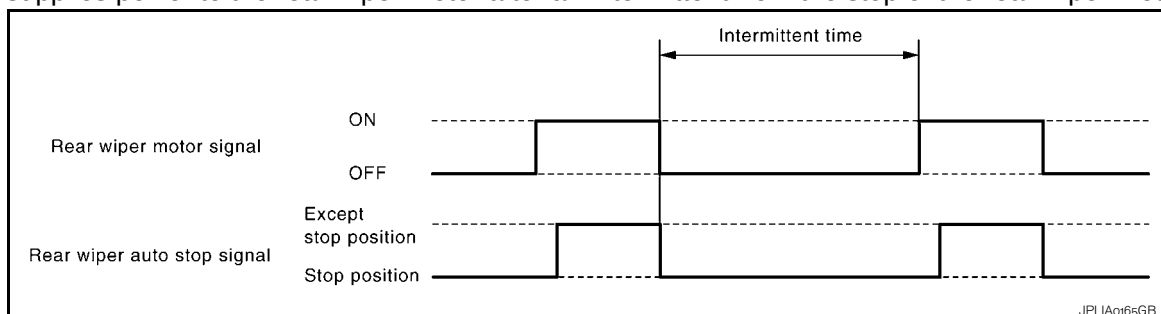
- Ignition switch ON
- Rear wiper switch ON

REAR WIPER INT OPERATION LINKED WITH VEHICLE SPEED

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

Rear wiper INT operating condition

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

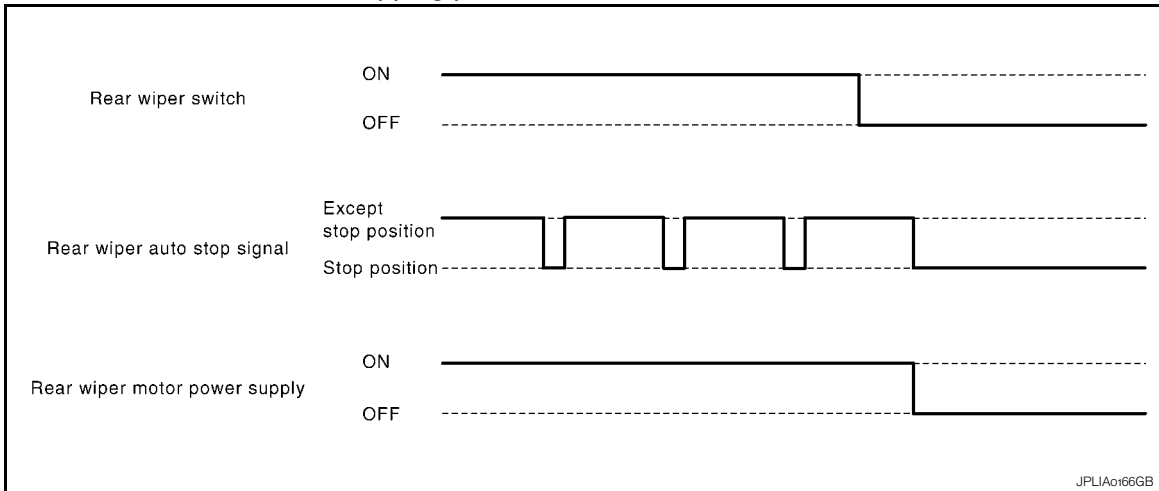


REAR WIPER AND WASHER SYSTEM

< FUNCTION DIAGNOSIS >

REAR WIPER AUTO STOP OPERATION

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



NOTE:

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

REAR WIPER OPERATION LINKED WITH WASHER

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

Washer linked operating condition of rear wiper

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

REAR WIPER OPERATION LINKED WITH REVERSE

- BCM controls rear wiper to operate once according to the conditions of rear wiper operation linked with reverse.

Condition of rear wiper operation linked with reverse

- Ignition switch ON
- Front wiper switch: LO, HI, AUTO*¹, or INT*²

NOTE:

*¹: With light and rain sensor

*²: Without light and rain sensor

- Rear wiper switch OFF
- Selector lever "R".
- IPDM E/R transmits a reverse switch signal to BCM through the CAN communication line when the selector lever is shifted to the "R".
- BCM supplies power to the rear wiper motor when receiving the reverse switch signal.

REAR WIPER DROP WIPE OPERATION

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

Rear wiper drop wipe operating condition

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

REAR WIPER FAIL-SAFE OPERATION

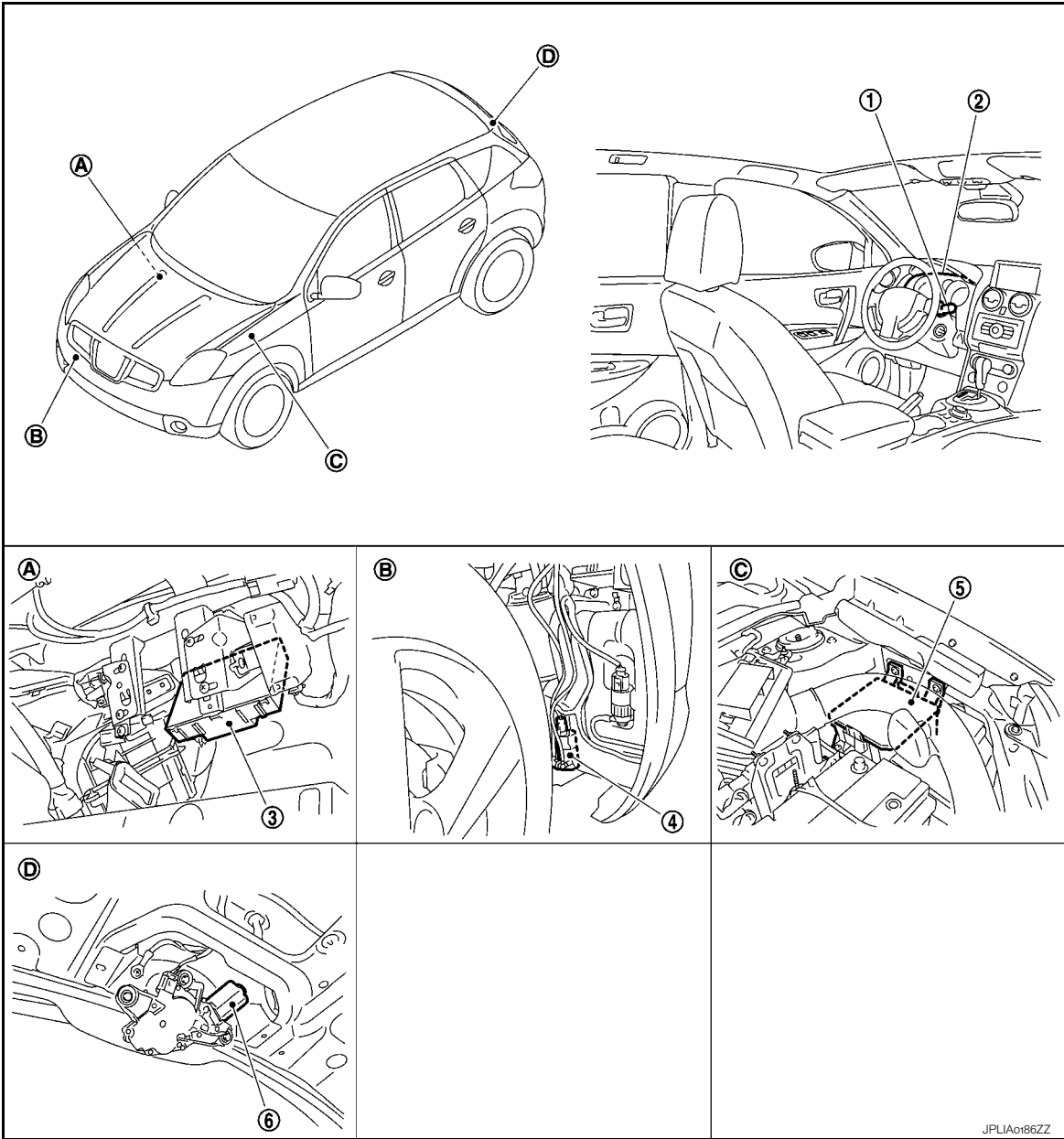
REAR WIPER AND WASHER SYSTEM

< FUNCTION DIAGNOSIS >

BCM performs the fail-safe function when the rear wiper auto stop circuit is malfunctioning. Refer to [BCS-59](#), "Fail Safe".

Component Parts Location

INFOID:000000000896812



1. Combination switch

4. Washer pump

A. Over the glove box

D. Back door trim finisher lower inside
2. Combination meter

5. IPDM E/R

B. Radiator core support (RH)
3. BCM

6. Rear wiper motor

C. Engine room (left side)

Component Description

INFOID:000000000896819

Part	Description
BCM	- Judges each switch status by the combination switch reading function. - Supplies power to the rear wiper motor. - Performs the auto stop control of the rear wiper.

REAR WIPER AND WASHER SYSTEM

< FUNCTION DIAGNOSIS >

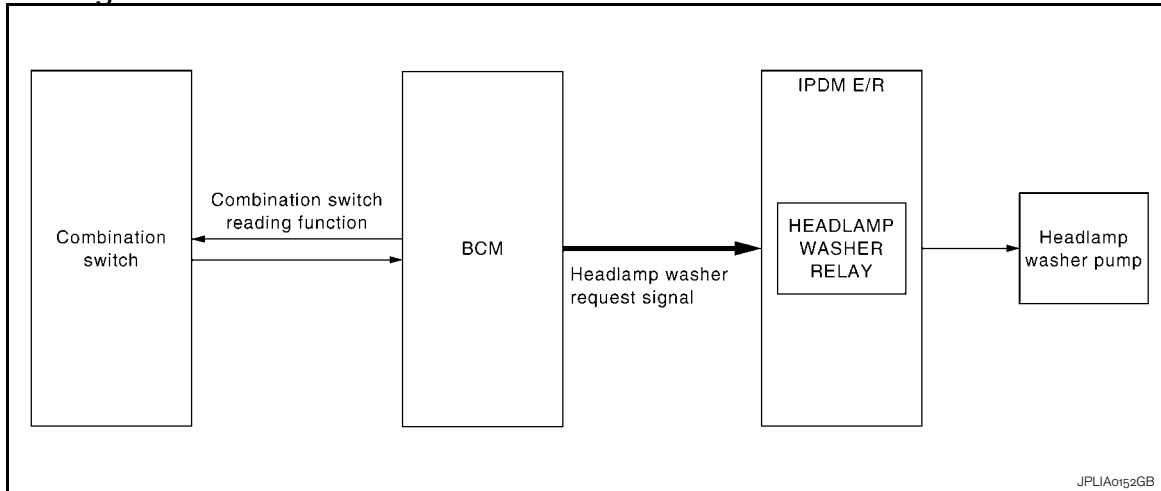
Part	Description
IPDM E/R	Transmits the reverse switch signal to BCM with CAN communication.
Combination switch (Wiper & washer switch)	Refer to BCS-9, "System Diagram" .

HEADLAMP WASHER SYSTEM

< FUNCTION DIAGNOSIS >

HEADLAMP WASHER SYSTEM

System Diagram



System Description

INFOID:0000000000896815

OUTLINE

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

Control by BCM

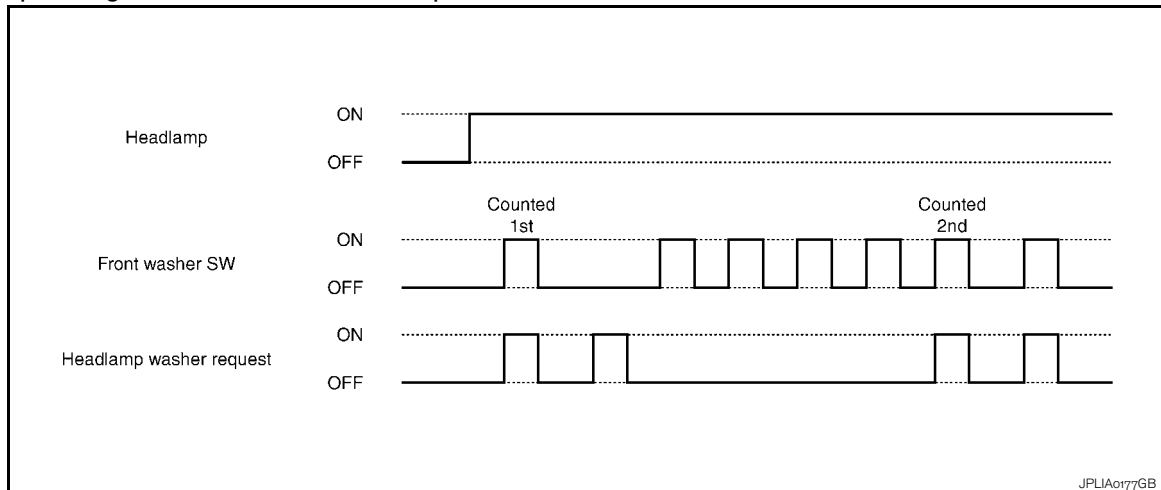
- Combination switch reading function
- Headlamp washer control function

Control by IPDM E/R

- Relay control function

HEADLAMP WASHER BASIC OPERATION

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



Operating conditions (The first time)

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

Operating conditions (From the second time)

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

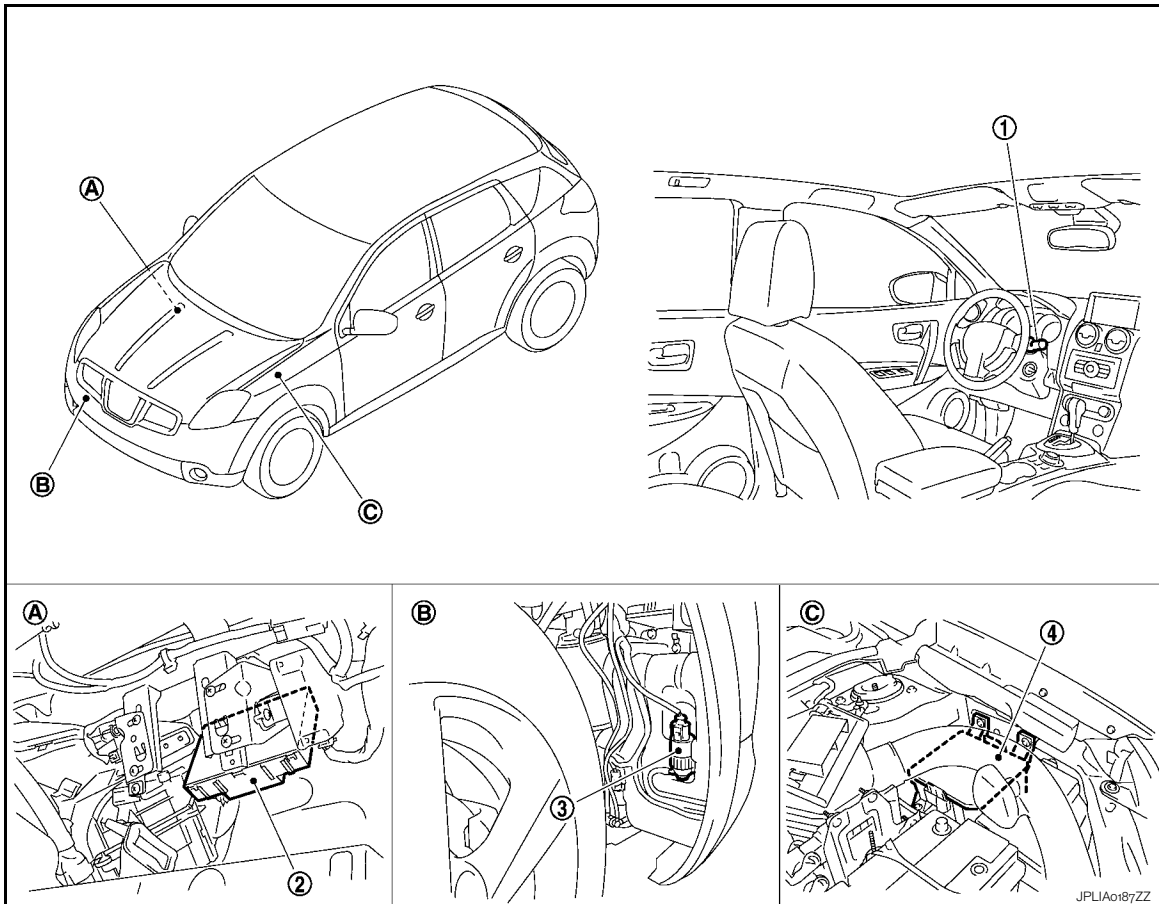
HEADLAMP WASHER SYSTEM

< FUNCTION DIAGNOSIS >

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

Component Parts Location

INFOID:000000000896816



1. Combination switch

4. IPDM E/R

A. Over the glove box

2. BCM

B. Radiator core support (RH)

3. Headlamp washer pump

C. Engine room (left side)

Component Description

INFOID:000000000896820

Part	Description
BCM	• Judges each switch status by the combination switch reading function. • Requests (with CAN communication) the headlamp washer relay ON to IPDM E/R.
IPDM E/R	Controls the integrated relay according to the request (with CAN communication) from BCM.
Combination switch (Wiper & washer switch)	Refer to BCS-9, "System Diagram" .

DIAGNOSIS SYSTEM (BCM)

< FUNCTION DIAGNOSIS >

DIAGNOSIS SYSTEM (BCM)

COMMON ITEM

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

INFOID:000000001054857

APPLICATION ITEM

CONSULT-III performs the following functions via CAN communication with BCM.

Diagnosis mode	Function Description
WORK SUPPORT	Changes the setting for each system function.
SELF-DIAG RESULTS	Displays the diagnosis results judged by BCM. Refer to BCS-61, "DTC Index" .
CAN DIAG SUPPORT MNTR	Monitors the reception status of CAN communication viewed from BCM.
DATA MONITOR	The BCM input/output signals are displayed.
ACTIVE TEST	The signals used to activate each device are forcibly supplied from BCM.
ECU IDENTIFICATION	The BCM part number is displayed.
CONFIGURATION	- Enables to read and save the vehicle specification. - Enables to write the vehicle specification when replacing BCM.

SYSTEM APPLICATION

BCM can perform the following functions for each system.

NOTE:

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

System	Sub system selection item	Diagnosis mode		
		WORK SUPPORT	DATA MONITOR	ACTIVE TEST
—	BCM	×		
Door lock	DOOR LOCK	×	×	×
Rear window defogger	REAR DEFOGGER		×	×
Warning chime	BUZZER		×	×
Interior room lamp timer	INT LAMP	×	×	×
Remote keyless entry system	MULTI REMOTE ENT	×	×	×
Exterior lamp	HEAD LAMP	×	×	×
Wiper and washer	WIPER	×	×	×
Turn signal and hazard warning lamps	FLASHER		×	×
Air conditioner	AIR CONDITONER		×	
Intelligent Key system	INTELLIGENT KEY		×	
Combination switch	COMB SW		×	
Immobilizer	IMMU		×	×
Interior room lamp battery saver	BATTERY SAVER	×	×	×
Trunk open	TRUNK		×	
Vehicle security system	THEFT ALM	×	×	×
Signal buffer system	SIGNAL BUFFER		×	×
PTC heater system	PTC HEATER		×	×

WIPER

WIPER : CONSULT-III Function (BCM - WIPER)

INFOID:0000000000896761

WORK SUPPORT

DIAGNOSIS SYSTEM (BCM)

< FUNCTION DIAGNOSIS >

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

*:Factory setting

DATA MONITOR

Monitor Item [Unit]	Description
IGN ON SW	Ignition switch ON status judged from ignition power supply.
IGN SW CAN	Ignition switch ON status received from IPDM E/R with CAN communication.
FR WIPER HI [OFF/ON]	Each switch status that BCM judges from the combination switch reading function.
FR WIPER LOW [OFF/ON]	
FR WIPER INT [OFF/ON]	
FR WASHER SW [OFF/ON]	
H/L WASH SW [OFF/ON]	NOTE: The item is indicated, but not monitored.
INT VOLUME [1 – 7]	Each switch status that BCM judges from the combination switch reading function.
FR WIPER STOP [OFF/ON]	Front wiper motor (stop position) status received from IPDM E/R with CAN communication.
VEHICLE SPEED [km/h]	The value of the vehicle speed signal received from combination meter with CAN communication.
RR WIPER ON [OFF/ON]	Each switch status that BCM judges from the combination switch reading function.
RR WIPER INT [OFF/ON]	
RR WASHER SW [OFF/ON]	
RR WIPER STOP [OFF/ON]	Rear wiper motor (stop position) status input from the rear wiper motor.

ACTIVE TEST

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

DIAGNOSIS SYSTEM (IPDM E/R)

Diagnosis Description

INFOID:000000001054858

Auto active test

Description

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

- Oil pressure warning lamp
- Rear window defogger
- Front wiper (LO, HI)
- Parking lamps
- License plate lamps
- Tail lamps
- Front fog lamps
- Headlamps (LO, HI)
- A/C compressor (magnet clutch)
- Cooling fan (LO, HI)

Operation procedure

1. Close the hood and lift the wiper arms from the windshield. (Prevent windshield damage due to wiper operation)
NOTE:
When auto active test is performed with hood opened, sprinkle water on windshield beforehand.
2. Turn ignition switch OFF.
3. Turn the ignition switch ON, and within 20 seconds, press the driver door switch 10 times. Then turn the ignition switch OFF.

CAUTION:

Close passenger door.

4. Turn the ignition switch ON within 10 seconds. Then the horn sounds once and the auto active test starts.
5. The oil pressure warning lamp starts blinking when the auto active test starts.
6. After a series of the following operations is repeated 3 times, auto active test is completed.

NOTE:

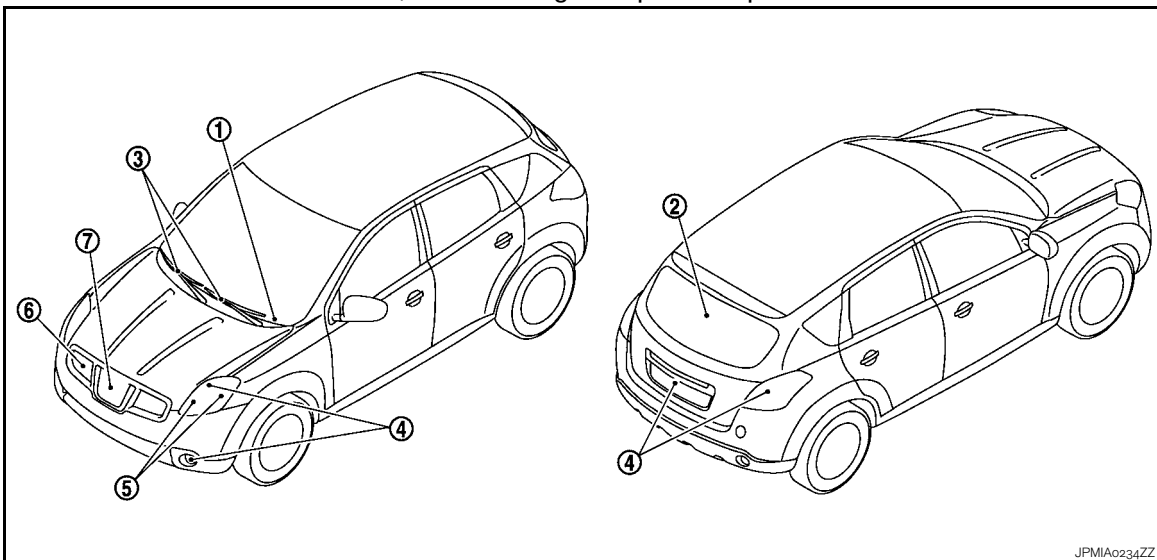
When auto active test mode has to be cancelled halfway through test, turn ignition switch OFF.

CAUTION:

- If auto active test mode cannot be actuated, check door switch system.
- Never start the engine.

Inspection in auto active test mode

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



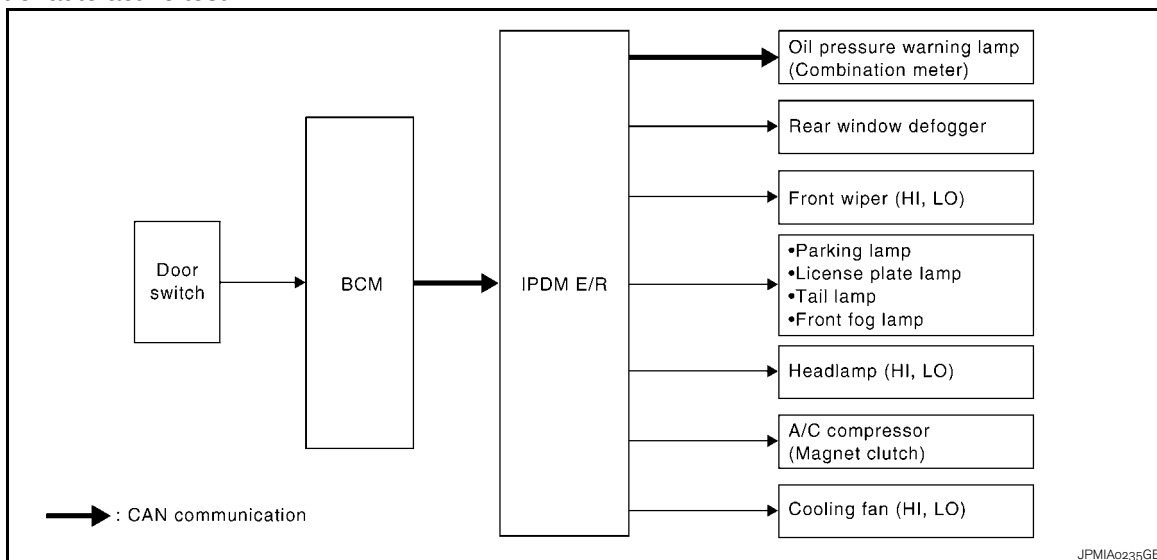
JPMIA0234ZZ

DIAGNOSIS SYSTEM (IPDM E/R)

< FUNCTION DIAGNOSIS >

Operation sequence	Inspection location	Operation
1	Oil pressure warning lamp	Blinks continuously during operation of auto active test.
2	Rear window defogger	10 seconds
3	Front wiper	LO for 5 seconds → HI for 5 seconds
4	• Parking lamps • License plate lamps • Tail lamps • Front fog lamps	10 seconds
5	Headlamps	LO ⇔ HI 5 times
6	A/C compressor (magnet clutch)	ON ⇔ OFF 5 times
7	Cooling fan	LO for 5 seconds → HI for 5 seconds

Concept of auto active test



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

Diagnosis chart in auto active test mode

Symptom	Inspection contents	Possible cause
Rear window defogger does not operate	Perform auto active test. Does the rear window defogger operate?	YES BCM signal input circuit
		NO • Rear window defogger • Rear window defogger ground circuit • Harness or connector between IPDM E/R and rear window defogger • IPDM E/R
Any of the following components do not operate • Parking lamps • License plate lamps • Tail lamps • Front fog lamps • Headlamp (HI, LO) • Front wiper (HI, LO)	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

DIAGNOSIS SYSTEM (IPDM E/R)

< FUNCTION DIAGNOSIS >

Symptom	Inspection contents		Possible cause
A/C compressor does not operate	Perform auto active test. Does the magnet clutch operate?	YES	• Communication signal between BCM and auto amp. (with auto A/C) • Communication signal between BCM and heater control panel (without auto A/C, with manual A/C) • BCM • CAN communication signal between BCM and ECM • CAN communication signal between ECM and IPDM E/R
		NO	• Magnet clutch • Harness or connector between IPDM E/R and magnet clutch • IPDM E/R
Oil pressure warning lamp does not operate	Perform auto active test. Does the oil pressure warning lamp blink?	YES	• Harness or connector between IPDM E/R and oil pressure switch • Oil pressure switch • IPDM E/R
		NO	• CAN communication signal between IPDM E/R and BCM • CAN communication signal between BCM and combination meter • Combination meter
Cooling fan does not operate	Perform auto active test. Does the cooling fan operate?	YES	• ECM signal input circuit • CAN communication signal between ECM and IPDM E/R
		NO	• Cooling fan • Cooling fan ground circuit • Harness or connector between IPDM E/R and cooling fan • IPDM E/R • Cooling fan relay-3* • Harness or connector between IPDM E/R and cooling fan relay-3* • Harness or connector between cooling fan and cooling fan relay-3*

NOTE:

*: MR engine and K9K engine models

CONSULT - III Function (IPDM E/R)

INFOID:000000001054859

APPLICATION ITEM

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

Diagnosis mode	Description
Ecu Identification	Allows confirmation of IPDM E/R part number.
Self Diagnostic Result	Displays the diagnosis results judged by IPDM E/R.
Data Monitor	Displays the real-time input/output data from IPDM E/R input/output data.
Active Test	IPDM E/R can provide a drive signal to electronic components to check their operations.
CAN Diag Support Monitor	The results of transmit/receive diagnosis of CAN communication can be read.

SELF DIAGNOSTIC

Refer to [PCS-30, "DTC Index"](#).

DATA MONITOR

Monitor item

DIAGNOSIS SYSTEM (IPDM E/R)

< FUNCTION DIAGNOSIS >

Monitor Item [Unit]	MAIN SIGNALS	Description
MOTOR FAN REQ [1 - 4]	×	Displays the value of the cooling fan speed signal received from ECM via CAN communication.
AC COMP REQ [Off/On]	×	Displays the status of the A/C compressor request signal received from ECM via CAN communication.
TAIL&CLR REQ [Off/On]	×	Displays the status of the position light request signal received from BCM via CAN communication.
HL LO REQ [Off/On]	×	Displays the status of the low beam request signal received from BCM via CAN communication.
HL HI REQ [Off/On]	×	Displays the status of the high beam request signal received from BCM via CAN communication.
FR FOG REQ [Off/On]	×	Displays the status of the front fog light request signal received from BCM via CAN communication.
HL WASHER REQ [Off/On]		Displays the status of the headlamp washer request signal received from BCM via CAN communication.
FR WIP REQ [Stop/1LOW/Low/Hi]	×	Displays the status of the front wiper request signal received from BCM via CAN communication.
WIP AUTO STOP [STOP P/ACT P]	×	Displays the status of the front wiper auto stop signal judged by IPDM E/R.
WIP PROT [Off/BLOCK]	×	Displays the status of the front wiper fail-safe operation judged by IPDM E/R.
ST RLY REQ [Off/On]		Displays the status of the ignition and starter request signal received from BCM via CAN communication.
IGN RLY [Off/On]	×	Displays the status of the ignition relay judged by IPDM E/R.
RR DEF REQ [Off/On]	×	Displays the status of the rear defogger request signal received from BCM via CAN communication.
OIL P SW [Open/Close]		Displays the status of the oil pressure switch judged by IPDM E/R.
REV SW [Off/On]		Displays the status of the reverse switch judged by IPDM E/R.
HOOD SW [Off/On]		Displays the status of the hood switch judged by IPDM E/R. NOTE: This item is monitored only the vehicle with the Vehicle Security (Theft Warning) system.
THFT HRN REQ [Off/On]		Displays the status of the theft warning horn request signal received from BCM via CAN communication. NOTE: This item is monitored only the vehicle with the Vehicle Security (Theft Warning) system.
HORN CHIRP [Off/On]		NOTE: This item is indicated, but not monitored.
IGN ON SW [Off/On]		Displays the status of the ignition switch judged by IPDM E/R.

ACTIVE TEST

Test item

Test item	Operation	Description
REAR DEFOGGER	Off	OFF
	On	Operates the rear window defogger relay.
FRONT WIPER	Off	OFF
	Lo	Operates the front wiper relay.
	Hi	Operates the front wiper relay and front wiper high relay.

DIAGNOSIS SYSTEM (IPDM E/R)

< FUNCTION DIAGNOSIS >

Test item	Operation	Description
MOTOR FAN	1	OFF
	2	Operates the cooling fan relay (low operation).
	3	Operates the cooling fan relay (high operation).
	4	
HEAD LAMP WASHER	On	Operates the headlamp washer relay for 1 second.
EXTERNAL LAMPS	Off	OFF
	TAIL	Operates the tail lamp relay.
	Lo	Operates the headlamp low relay.
	Hi	Operates the headlamp low relay and ON/OFF the headlamp high relay at 1 second intervals.
	Fog	Operates the front fog lamp relay.
HORN	On	Operates horn relay for 20 ms.

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WIPER AND WASHER FUSE, FUSIBLE LINK

< COMPONENT DIAGNOSIS >

COMPONENT DIAGNOSIS

WIPER AND WASHER FUSE, FUSIBLE LINK

Description

INFOID:000000000896764

Fuse, fusible link list

Unit	Location	No.	Capacity
Front wiper motor	IPDM E/R	#44	30 A
Washer pump	Fuse block	#3	20 A
Headlamp washer pump	Fuse and fusible link block	#G	30 A

Diagnosis Procedure

INFOID:000000000896765

1. CHECK FUSES AND FUSIBLE LINK

Check that the following fuses and fusible link are not fusing.

Unit	Location	No.	Capacity
Front wiper motor	IPDM E/R	#44	30 A
Washer pump	Fuse block	#3	20 A
Headlamp washer pump	Fuse and fusible link block	#G	30 A

Is the fuse or fusible link fusing?

- YES >> Replace the fuse block or fusible link with a new one after repairing the applicable circuit.
NO >> The fuse or fusible link is normal.

FRONT WIPER MOTOR LO CIRCUIT

< COMPONENT DIAGNOSIS >

FRONT WIPER MOTOR LO CIRCUIT

Component Function Check

INFOID:000000000924447

1.CHECK FRONT WIPER LO OPERATION

IPDM E/R AUTO ACTIVE TEST

1. Start IPDM E/R auto active test. Refer to [PCS-9, "Diagnosis Description"](#).
2. Check that the front wiper operates at the LO operation.

CONSULT-III ACTIVE TEST

1. Select "FRONT WIPER" of IPDM E/R active test item.
2. With operating the test item, check front wiper operation.

LO : Front wiper (LO) operation

OFF : Stop the front wiper.

Is front wiper (LO) operation normally?

- YES >> Front wiper motor LO circuit is normal.
NO >> Refer to [WW-25, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000000924448

1.CHECK FRONT WIPER MOTOR FUSE

1. Turn the ignition switch OFF.
2. Check that the following fuses are not fusing.

Unit	Location	Fuse No.	Capacity
Front wiper motor	IPDM E/R	#44	30 A

Is the fuse fusing?

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

2.CHECK FRONT WIPER MOTOR (LO) SHORT CIRCUIT

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

IPDM E/R		Ground	Continuity
Connector	Terminal		
E10	7		Not existed

Does continuity exist?

- YES >> Repair the harnesses or connectors. And then replace the fuse.
NO >> Replace the fuse. (Replace IPDM E/R if the fuse is fusing again.)

3.CHECK FRONT WIPER MOTOR (LO) OUTPUT VOLTAGE

CONSULT-III ACTIVE TEST

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

FRONT WIPER MOTOR LO CIRCUIT

< COMPONENT DIAGNOSIS >

Terminals		Test item	Voltage (Approx.)
(+)	(-)		
IPDM E/R		FRONT WIP- ER	Battery voltage
Connector	Terminal		
E10	7	Ground	LO
		OFF	0 V

Is the measurement value normal?

YES >> GO TO 4.

NO >> Replace IPDM E/R.

4. CHECK FRONT WIPER MOTOR (LO) OPEN CIRCUIT

1. Turn the 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	
E10	7	E20	2	Existed

Does continuity exist?

YES >> Replace front wiper motor.

NO >> Repair the harnesses or connectors.

FRONT WIPER MOTOR HI CIRCUIT

< COMPONENT DIAGNOSIS >

FRONT WIPER MOTOR HI CIRCUIT

Component Function Check

INFOID:000000000924449

1.CHECK FRONT WIPER HI OPERATION

IPDM E/R AUTO ACTIVE TEST

1. Start IPDM E/R auto active test. Refer to [PCS-9, "Diagnosis Description"](#).
2. Check that the front wiper operates at the HI operation.

CONSULT-III ACTIVE TEST

1. Select "FRONT WIPER" of IPDM E/R active test item.
2. With operating the test item, check front wiper operation.

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

Is front wiper (HI) operation normally?

- YES >> Front wiper motor HI circuit is normal.
NO >> Refer to [WW-27, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000000924450

1.CHECK FRONT WIPER MOTOR FUSE

1. Turn the ignition switch OFF.
2. Check that the following fuses are not fusing.

Unit	Location	Fuse No.	Capacity
Front wiper motor	IPDM E/R	#44	30 A

Is the fuse fusing?

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

2.CHECK FRONT WIPER MOTOR (HI) SHORT CIRCUIT

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

IPDM E/R		Ground	Continuity
Connector	Terminal		
E10	8		Not existed

Does continuity exist?

- YES >> Repair the harnesses or connectors. And then replace the fuse.
NO >> Replace the fuse. (Replace IPDM E/R if the fuse is fusing again.)

3.CHECK FRONT WIPER MOTOR (HI) OUTPUT VOLTAGE

CONSULT-III ACTIVE TEST

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

FRONT WIPER MOTOR HI CIRCUIT

< COMPONENT DIAGNOSIS >

Terminals		Test item	Voltage (Approx.)
(+)	(-)		
IPDM E/R		FRONT WIP- ER	Battery voltage
Connector	Terminal		
E10	8	HI	Battery voltage
		OFF	0 V

Is the measurement value normal?

YES >> GO TO 4.

NO >> Replace IPDM E/R.

4. CHECK FRONT WIPER MOTOR (HI) OPEN CIRCUIT

1. Turn the 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	
E10	8	E20	1	Existed

Does continuity exist?

YES >> Replace front wiper motor.

NO >> Repair the harnesses or connectors.

FRONT WIPER AUTO STOP SIGNAL CIRCUIT

< COMPONENT DIAGNOSIS >

FRONT WIPER AUTO STOP SIGNAL CIRCUIT

Component Function Check

INFOID:000000000924451

1.CHECK FRONT WIPER (AUTO STOP) SIGNAL CHECK

CONSULT-III DATA MONITOR

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

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

Is the status of item normal?

- YES >> Front wiper auto stop signal circuit is normal.
NO >> Refer to [WW-29, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000000924452

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

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

Terminals			Voltage (Approx.)
(+)		(-)	
IPDM E/R		Ground	
Connector	Terminal		
E12	26		
			Battery voltage

Is the measurement value normal?

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

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

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

IPDM E/R		Ground	Continuity
Connector	Terminal		
E12	26		
			Not existed

Does continuity exist?

- YES >> Repair the harnesses or connectors.
NO >> Replace IPDM E/R.

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

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

FRONT WIPER AUTO STOP SIGNAL CIRCUIT

< COMPONENT DIAGNOSIS >

IPDM E/R		Front wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
E12	26	E20	4	Existed

Does continuity exist?

- YES >> Replace front wiper motor.
NO >> Repair the harnesses or connectors.

FRONT WIPER MOTOR GROUND CIRCUIT

< COMPONENT DIAGNOSIS >

FRONT WIPER MOTOR GROUND CIRCUIT

Diagnosis Procedure

INFOID:000000000924453

1. CHECK FRONT WIPER MOTOR (GROUND) OPEN CIRCUIT

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

Front wiper motor		Ground	Continuity
Connector	Terminal		
E20	5		Existed

Does continuity exist?

- YES >> Front wiper motor ground circuit is normal.
NO >> Repair the harnesses or connectors.

WASHER SWITCH

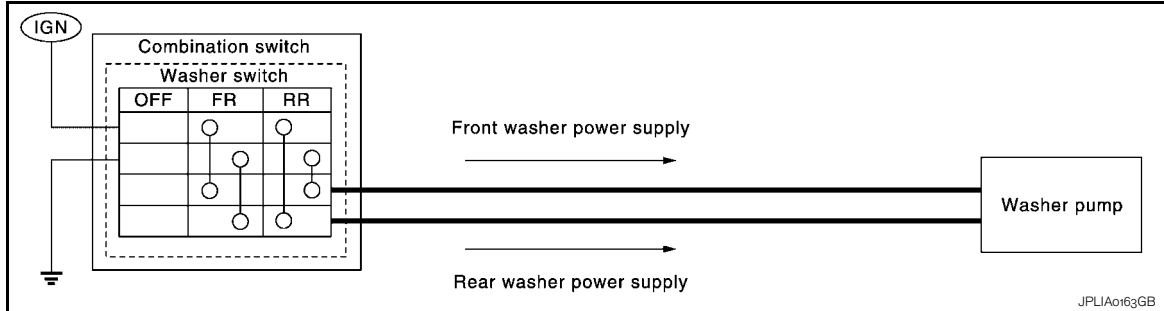
< COMPONENT DIAGNOSIS >

WASHER SWITCH

Description

INFOID:000000000896851

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



Component Inspection

INFOID:000000000896852

1. CHECK WIPER SWITCH

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

- A : Terminal 14
B : Terminal 12
C : Terminal 13

D : Terminal 11

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

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

Does continuity exist?

- YES >> Wiper and washer switch is normal.
NO >> Replace wiper and washer switch.

RAIN SENSOR

< COMPONENT DIAGNOSIS >

RAIN SENSOR

Description

INFOID:000000000984465

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

Diagnosis Procedure

INFOID:000000000907640

Refer to [EXL-69, "Component Function Check"](#).

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REAR WIPER MOTOR CIRCUIT

< COMPONENT DIAGNOSIS >

REAR WIPER MOTOR CIRCUIT

Component Function Check

INFOID:000000000903198

1.CHECK REAR WIPER ON OPERATION

CONSULT-III ACTIVE TEST

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

ON : Rear wiper ON operation

OFF : Stop the rear wiper.

Is rear wiper operation normally?

- YES >> Rear wiper motor circuit is normal.
NO >> Refer to [WW-34, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000000903199

1.CHECK REAR WIPER MOTOR OUTPUT VOLTAGE

CONSULT-III ACTIVE TEST

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

Terminals		Test item	Voltage (Approx.)
(+)	(-)		
BCM		REAR WIPER	
Connector	Terminal		
M66	43	ON	Battery voltage
		OFF	0 V

Is the measurement value normal?

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

2.CHECK REAR WIPER MOTOR GROUND OPEN CIRCUIT

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

Rear wiper motor		Ground	Continuity
Connector	Terminal		
D156	1		Existed

Does continuity exist?

- YES >> Replace rear wiper motor.
NO >> Repair the harnesses or connectors.

3.CHECK REAR WIPER MOTOR OPEN CIRCUIT

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

REAR WIPER MOTOR CIRCUIT

< COMPONENT DIAGNOSIS >

BCM		Rear wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
M66	43	D156	3	Existed

Does continuity exist?

YES >> GO TO 4.

NO >> Repair the harnesses or connectors.

4.CHECK REAR WIPER MOTOR SHORT CIRCUIT

Check continuity between BCM harness connector and ground.

BCM		Ground	Continuity
Connector	Terminal		
M66	43		Not existed

Does continuity exist?

YES >> Repair the harnesses or connectors.

NO >> Replace BCM. Rrefer to [BCS-64. "Exploded View"](#).

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REAR WIPER AUTO STOP SIGNAL CIRCUIT

< COMPONENT DIAGNOSIS >

REAR WIPER AUTO STOP SIGNAL CIRCUIT

Component Function Check

INFOID:000000000903201

1.CHECK REAR WIPER (AUTO STOP) OPERATION

CONSULT-III DATA MONITOR

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

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

Is the status of item normal?

- YES >> Rear wiper auto stop signal circuit is normal.
NO >> Refer to [WW-36, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000000903200

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

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

Terminals			Voltage (Approx.)
(+)		(-)	
BCM		Ground	
Connector	Terminal		
M66	44		
			Battery voltage

Is the measurement value normal?

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

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

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

BCM		Ground	Continuity
Connector	Terminal		
M66	44		
			Not existed

Does continuity exist?

- YES >> Repair the harnesses or connectors.
NO >> Replace BCM. Refer to [BCS-64, "Exploded View"](#).

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

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

REAR WIPER AUTO STOP SIGNAL CIRCUIT

< COMPONENT DIAGNOSIS >

BCM		Rear wiper motor		Continuity
Connector	Terminal	Connector	Terminal	
M66	44	D156	2	Existed

Does continuity exist?

- YES >> Replace rear wiper motor.
NO >> Repair the harnesses or connectors.

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HEADLAMP WASHER RELAY

< COMPONENT DIAGNOSIS >

HEADLAMP WASHER RELAY

Component Inspection

INFOID:000000000903229

1.CHECK HEADLAMP WASHER RELAY

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

Headlamp washer relay		Condition	Continuity
Terminal		Voltage	
1	2	Apply	Existed
		Not Apply	Not existed

Does continuity exist?

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

HEADLAMP WASHER CIRCUIT

< COMPONENT DIAGNOSIS >

HEADLAMP WASHER CIRCUIT

Component Function Check

INFOID:000000000904047

1.CHECK HEADLAMP WASHER OPERATION

CONSULT-III ACTIVE TEST

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

ON : Headlamp washer ON operation

OFF : Stop the headlamp washer.

Is the headlamp washer operation normally?

- YES >> Headlamp washer circuit is normal.
NO >> Refer to [WW-39, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000000903230

1.CHECK HEADLAMP WASHER FUSIBLE LINK

1. Turn the ignition switch OFF.
2. Check that the headlamp washer 30A fusible link (#G) is not fusing.

Is the fusible link fusing?

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

2.CHECK HEADLAMP WASHER RELAY POWER SUPPLY

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

Terminals		Voltage (Approx.)
(+)	(-)	
Headlamp washer relay		Ground
Connector	Terminal	
E32	2	Battery voltage
	3	

Is the measurement value normal?

- YES >> GO TO 3.
NO >> Repair the harnesses or connectors.

3.CHECK HEADLAMP WASHER RELAY

1. Check headlamp washer relay. Refer to [WW-38, "Component Inspection"](#).

Is the headlamp washer relay normal?

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

4.CHECK HEADLAMP WASHER RELAY SIGNAL OUTPUT

CONSULT-III ACTIVE TEST

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

HEADLAMP WASHER CIRCUIT

< COMPONENT DIAGNOSIS >

Terminals		Test item	Voltage (Approx.)
(+)	(-)		
IPDM E/R		HEAD-LAMP WASHER	0 V
Connector	Terminal		
E13	39	ON	0 V
		OFF	Battery voltage

Is the measurement value normal?

YES >> GO TO 7.

Fixed at 0 V >> GO TO 5.

Fixed at Battery voltage >> Replace IPDM E/R.

5.CHECK HEADLAMP WASHER RELAY CONTROL SIGNAL OPEN CIRCUIT

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

IPDM E/R		Headlamp washer relay		Continuity
Connector	Terminal	Connector	Terminal	
E13	39	E32	4	Existed

Does continuity exist?

YES >> GO TO 6.

NO >> Repair the harnesses or connectors.

6.CHECK HEADLAMP WASHER RELAY CONTROL SIGNAL SHORT CIRCUIT

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

IPDM E/R		Ground	Continuity
Connector	Terminal		
E13	39		Not existed

Does continuity exist?

YES >> Repair the harnesses or connectors.

NO >> Replace IPDM E/R.

7.CHECK HEADLAMP WASHER PUMP OPEN CIRCUIT

1. Disconnect headlamp washer pump connector.
2. Remove headlamp washer relay.
3. Check continuity between headlamp washer relay harness connector and headlamp washer pump harness connector.

Headlamp washer relay		Headlamp washer pump		Continuity
Connector	Terminal	Connector	Terminal	
E32	1	E42	1	Existed

Does continuity exist?

YES >> GO TO 8.

NO >> Repair the harnesses or connectors.

8.CHECK HEADLAMP WASHER PUMP SHORT CIRCUIT

Check continuity between headlamp washer pump harness connector and ground.

HEADLAMP WASHER CIRCUIT

< COMPONENT DIAGNOSIS >

Headlamp washer pump		Ground	Continuity
Connector	Terminal		
E42	1		Not existed

Does continuity exist?

YES >> Repair the harnesses or connectors.

NO >> GO TO 9.

9.CHECK HEADLAMP WASHER PUMP (GROUND) OPEN CIRCUIT

1. Check continuity between headlamp washer pump harness connector and ground.

Headlamp washer pump		Ground	Continuity
Connector	Terminal		
E42	2		Existed

Does continuity exist?

YES >> Replace the headlamp washer pump.

NO >> Repair the harnesses or connectors.

A

B

C

D

E

F

G

H

I

J

K

WW

M

N

O

P

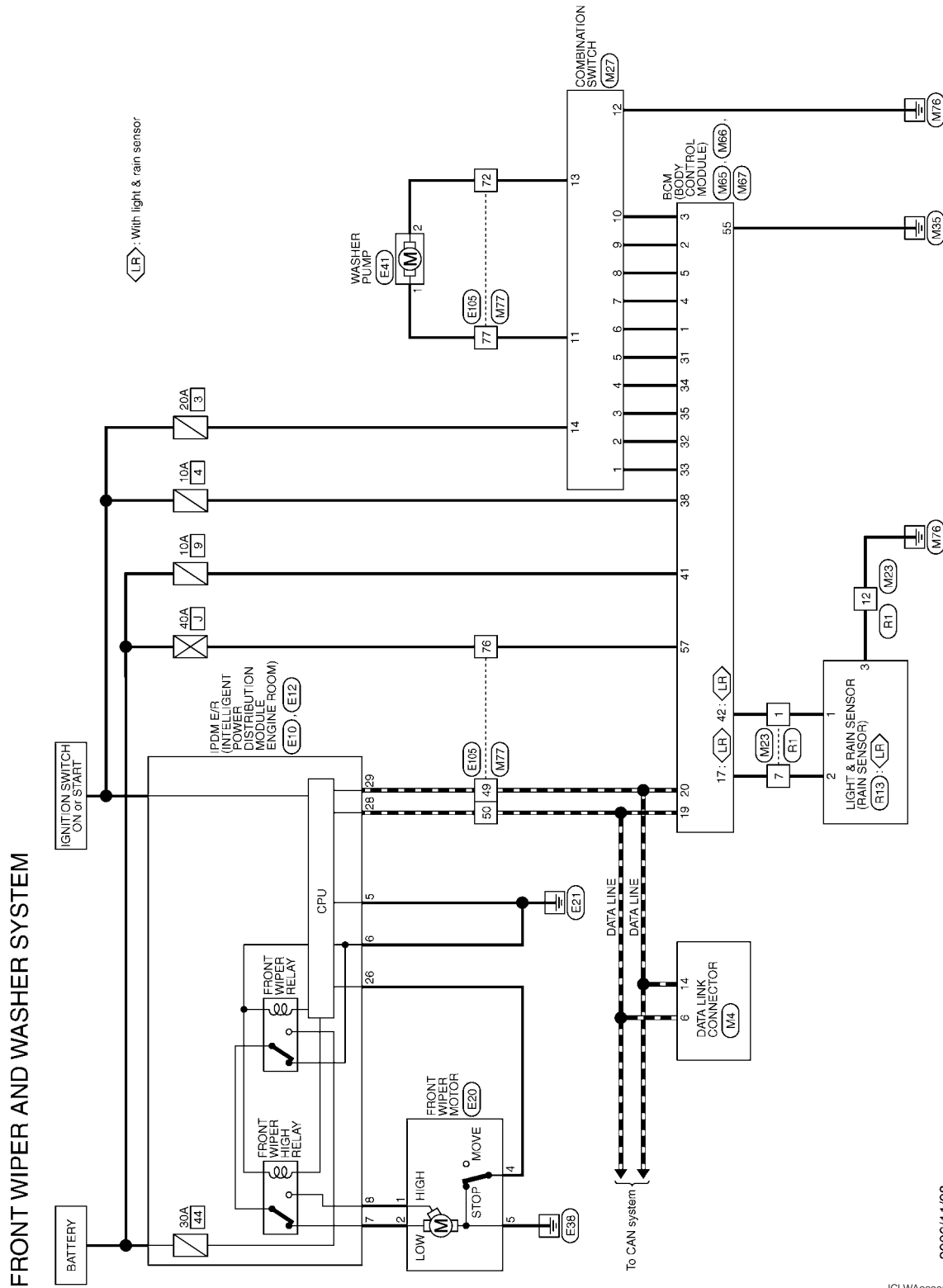
FRONT WIPER AND WASHER SYSTEM

< COMPONENT DIAGNOSIS >

FRONT WIPER AND WASHER SYSTEM

Wiring Diagram - FRONT WIPER AND WASHER SYSTEM -

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FRONT WIPER AND WASHER SYSTEM

< COMPONENT DIAGNOSIS >

FRONT WIPER AND WASHER SYSTEM

Connector No.	E10
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	MOORE-LC



5	4	3
8	7	6

Terminal No.	Color of Wire	Signal Name [Specification]
5	B	-
6	B	-
7	Y	-
8	Y/R	-

Connector No.	E12
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS12FW-CS



25	24		23	22	21	
32	31	30	29	28	27	26

Terminal No.	Color of Wire	Signal Name [Specification]
26	O	-
28	L	-
29	P	-

Connector No.	E20
Connector Name	FRONT WIPER MOTOR
Connector Type	AMP 953600-1



5	4	3	2	1
---	---	---	---	---

Terminal No.	Color of Wire	Signal Name [Specification]
1	Y/R	-
2	Y	-
4	O	-
5	B	-

Connector No.	E41
Connector Name	WASHER PUMP
Connector Type	FEA02FB



1	2
---	---

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

Connector No.	E105
Connector Name	WIRE TO WIRE
Connector Type	TH00MW-NS16-TM4



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

Terminal No.	Color of Wire	Signal Name [Specification]
49	P	-
50	L	-
72	SB	-
76	Y	-
77	SB	-

Connector No.	IM4
Connector Name	DATA LINK CONNECTOR
Connector Type	BD16FW



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

Terminal No.	Color of Wire	Signal Name [Specification]
6	L	-
14	P	-

Connector No.	IM23
Connector Name	WIRE TO WIRE
Connector Type	TR10FW-NS8



10	9	8	7	6	5	4	3	2	1
18	17	16	15	14	13	12	11		

Terminal No.	Color of Wire	Signal Name [Specification]
1	V	-
7	BR	-
12	B	-

FRONT WIPER AND WASHER SYSTEM

< COMPONENT DIAGNOSIS >

FRONT WIPER AND WASHER SYSTEM

Connector No.	M27
Connector Name	COMBINATION SWITCH
Connector Type	TK16FW



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

Terminal No.	Color of Wire	Signal Name [Specification]
1	V	INPUT1
2	G	INPUT2
3	L	INPUT3
4	GR	INPUT4
5	BR	INPUT5
6	P	OUTPUT1
7	R	OUTPUT2
8	W	OUTPUT5
9	Y	OUTPUT4
10	LG	OUTPUT3
11	O	WASHER PUMP

Connector No.	M66
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FC121PC12S1017



52	51	50	49	48	47	46	45	44	43	42	41
----	----	----	----	----	----	----	----	----	----	----	----

Terminal No.	Color of Wire	Signal Name [Specification]
41	V	BAT(FUSE)
42	V	ROOM LAMP POWER SUPPLY

12	B	GND
13	SB	WASHER PUMP
14	GR	IGN



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

Terminal No.	Color of Wire	Signal Name [Specification]
1	P	COMBI SW OUTPUT 1
2	Y	COMBI SW OUTPUT 4
3	LG	COMBI SW OUTPUT 3
4	R	COMBI SW OUTPUT 2
5	W	COMBI SW OUTPUT 5
17	BR	LIGHT & RAIN SENS
19	L	CAN-H
20	P	CAN-L
31	BR	COMBI SW INPUT 5
32	G	COMBI SW INPUT 2
33	V	COMBI SW INPUT 1

Connector No.	M77
Connector Name	WIRE TO WIRE
Connector Type	TH66FW-NS16-TM4



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

Terminal No.	Color of Wire	Signal Name [Specification]
49	P	-
50	L	-
72	SB	-
76	Y	-
77	SB	-

34	GR	COMBI SW INPUT 4
35	L	COMBI SW INPUT 3
38	W/L	IGN SW

Connector No.	M65
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	A4B40FB



Connector No.	R1
Connector Name	WIRE TO WIRE
Connector Type	TK10MF-NS8



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Terminal No.	Color of Wire	Signal Name [Specification]
1	V	-
7	BR	-
12	B	-

FRONT WIPER AND WASHER SYSTEM

< COMPONENT DIAGNOSIS >

FRONT WIPER AND WASHER SYSTEM

Connector No.	R13
Connector Name	LIGHT & RAIN SENSOR
Connector Type	AMP 309705-1

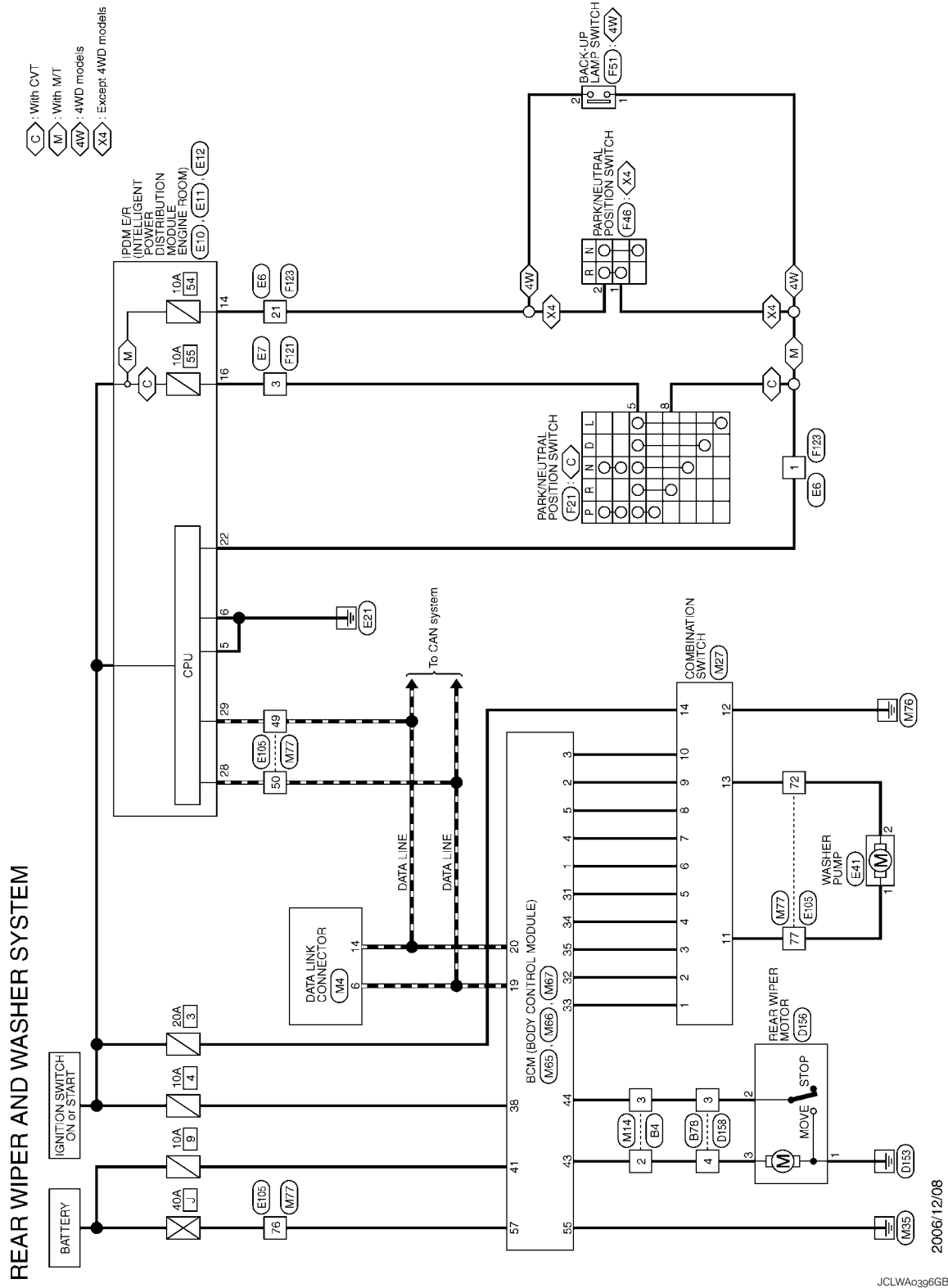


Terminal No.	Color of Wire	Signal Name (Specification)
1	V	HG
2	BR	SG
3	B	GND

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REAR WIPER AND WASHER SYSTEM

< COMPONENT DIAGNOSIS >

REAR WIPER AND WASHER SYSTEM

Connector No.	B4
Connector Name	WIRE TO WIRE
Connector Type	NS08MW-CS



Terminal No.	Color of Wire	Signal Name [Specification]
2	L	-
3	L/W	-

Connector No.	B78
Connector Name	WIRE TO WIRE
Connector Type	NS04FW-CS



Terminal No.	Color of Wire	Signal Name [Specification]
3	L/W	-
4	L	-

Connector No.	D156
Connector Name	REAR WIPER MOTOR
Connector Type	CINCH 4960BX/GM8



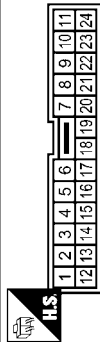
Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
2	L/W	-
3	L	-

Connector No.	D158
Connector Name	WIRE TO WIRE
Connector Type	NS04MW-CS



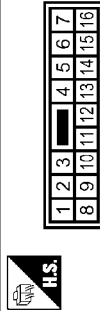
Terminal No.	Color of Wire	Signal Name [Specification]
3	L/W	-
4	L	-

Connector No.	E6
Connector Name	WIRE TO WIRE
Connector Type	TK24MW-1V



Terminal No.	Color of Wire	Signal Name [Specification]
1	Y/G	-
21	R/B	-

Connector No.	E7
Connector Name	WIRE TO WIRE
Connector Type	NS16MW-CS



Terminal No.	Color of Wire	Signal Name [Specification]
3	Y/R	-

Connector No.	E10
Connector Name	IPDWE/R INTELLIGENT POWER DISTRIBUTION MODULE (ENGINE ROOM)
Connector Type	M08FB-LG



Terminal No.	Color of Wire	Signal Name [Specification]
5	B	-
6	B	-

Connector No.	E11
Connector Name	IPDWE/R INTELLIGENT POWER DISTRIBUTION MODULE (ENGINE ROOM)
Connector Type	NS12PBR-CS



Terminal No.	Color of Wire	Signal Name [Specification]
14	R/B	-
16	Y/R	-

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REAR WIPER AND WASHER SYSTEM

< COMPONENT DIAGNOSIS >

REAR WIPER AND WASHER SYSTEM

Connector No.	E12
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS12FW-CS



25	24	23	22	21		
32	31	30	29	28	27	26

Terminal No.	Color of Wire	Signal Name [Specification]
22	Y/G	-
28	L	-
29	P	-

Connector No.	E41
Connector Name	WASHER PUMP
Connector Type	FEA02FE



1	2
---	---

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

Connector No.	E105
Connector Name	WIRE TO WIRE
Connector Type	TS60MW-NS16-TM4



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

Connector No.	F21
Connector Name	PARK/NEUTRAL POSITION SWITCH
Connector Type	RK08FG



4	3	2	1
8	7	6	5

Terminal No.	Color of Wire	Signal Name [Specification]
5	Y/R	-
8	Y/G	-

Connector No.	F46
Connector Name	PARK/NEUTRAL POSITION SWITCH
Connector Type	FEA03FG



1	2	3
---	---	---

Terminal No.	Color of Wire	Signal Name [Specification]
1	Y/G	-
2	R/B	-

Connector No.	F51
Connector Name	BACK-UP LAMP SWITCH
Connector Type	RK02FB



1	2
---	---

Terminal No.	Color of Wire	Signal Name [Specification]
1	Y/G	-
2	R/B	-

Connector No.	F121
Connector Name	WIRE TO WIRE
Connector Type	NS16FW-CS



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

Terminal No.	Color of Wire	Signal Name [Specification]
3	Y/R	-

Connector No.	F123
Connector Name	WIRE TO WIRE
Connector Type	TS24FW-IV



11	10	9	8	7	6	5	4	3	2	1		
24	23	22	21	20	19	18	17	16	15	14	13	12

Terminal No.	Color of Wire	Signal Name [Specification]
1	Y/G	-
21	R/B	-

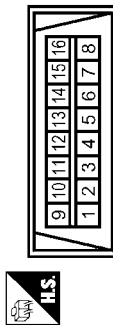
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REAR WIPER AND WASHER SYSTEM

< COMPONENT DIAGNOSIS >

REAR WIPER AND WASHER SYSTEM

Connector No.	M4
Connector Name	DATA LINK CONNECTOR
Connector Type	BD16FW



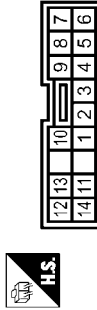
Terminal No.	Color of Wire	Signal Name [Specification]
6	L	-
14	P	-

Connector No.	M14
Connector Name	WIRE TO WIRE
Connector Type	NS08FW-CS



Terminal No.	Color of Wire	Signal Name [Specification]
2	L	-
3	L	-

Connector No.	M27
Connector Name	COMBINATION SWITCH
Connector Type	1K16FW



Terminal No.	Color of Wire	Signal Name [Specification]
1	V	INPUT1
2	G	INPUT2
3	L	INPUT3
4	GR	INPUT4
5	BR	INPUT5
6	P	OUTPUT1
7	R	OUTPUT2
8	W	OUTPUT5
9	Y	OUTPUT4
10	LG	OUTPUT3
11	O	WASHER PUMP

12	B	GND
13	SB	WASHER PUMP
14	GR	IGN

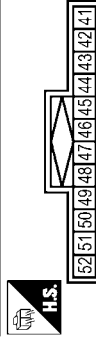
Connector No.	M65
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	XA840FB



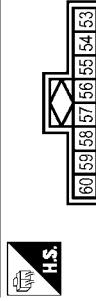
Terminal No.	Color of Wire	Signal Name [Specification]
1	P	COMBI SW OUTPUT 1
2	Y	COMBI SW OUTPUT 4
3	LG	COMBI SW OUTPUT 3
4	R	COMBI SW OUTPUT 2
5	W	COMBI SW OUTPUT 5
19	L	CAN-H
20	P	CAN-L
31	BR	COMBI SW INPUT 5
32	G	COMBI SW INPUT 2
33	V	COMBI SW INPUT 1
34	GR	COMBI SW INPUT 4

35	L	COMBI SW INPUT 3
36	W/L	IGN SW

Connector No.	M66
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FG121PC122S1017



Connector No.	M67
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FG121PC08S1017



Terminal No.	Color of Wire	Signal Name [Specification]
55	B	GND(POWER)
57	Y	BAT(F/L)

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REAR WIPER AND WASHER SYSTEM

< COMPONENT DIAGNOSIS >

REAR WIPER AND WASHER SYSTEM

Connector No.	IN77
Connector Name	WIRE TO WIRE
Connector Type	TH60FW-1S16-TM4



Terminal No.	Color of Wire	Signal Name [Specification]
49	P	-
50	L	-
72	SB	-
76	Y	-
77	SB	-

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HEADLAMP WASHER SYSTEM

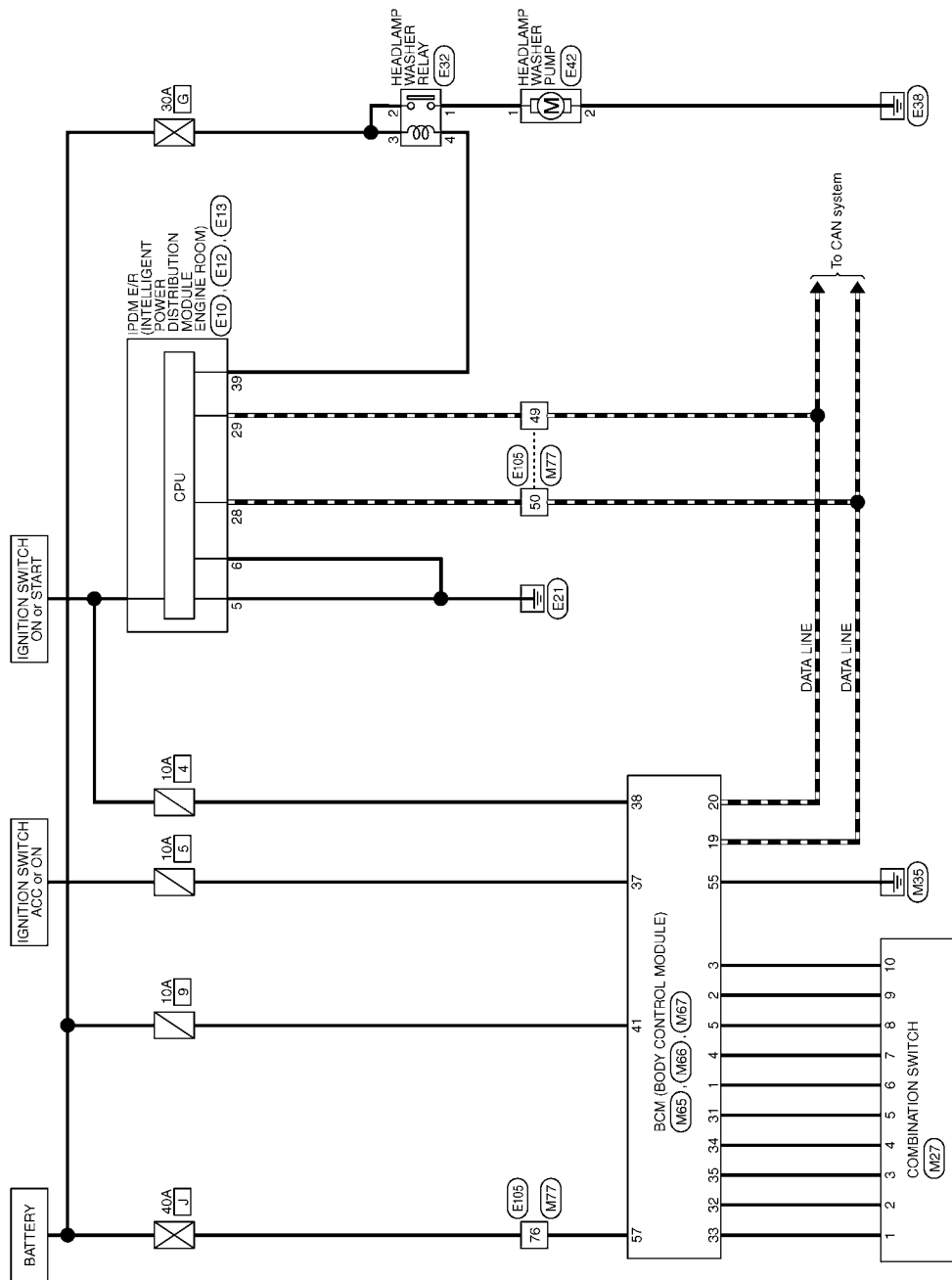
< COMPONENT DIAGNOSIS >

HEADLAMP WASHER SYSTEM

Wiring Diagram - HEADLAMP WASHER SYSTEM -

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HEADLAMP WASHER



2006/12/08

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HEADLAMP WASHER SYSTEM

< COMPONENT DIAGNOSIS >

HEADLAMP WASHER

Connector No.	E10
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	M03FE-LC



5	4	3
8	7	6

Terminal No.	Color of Wire	Signal Name [Specification]
5	B	-
6	B	-

Connector No.	E12
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS12FW-CS



25	24		23	22	21	
32	31	30	29	28	27	26

Terminal No.	Color of Wire	Signal Name [Specification]
28	L	-
29	P	-

Connector No.	E13
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS16FW-CS



39	38	37	36		35	34	33	
48	47	46	45	44	43	42	41	40

Terminal No.	Color of Wire	Signal Name [Specification]
39	GR	-

Connector No.	E32
Connector Name	HEADLAMP WASHER RELAY
Connector Type	MS02FL-M2



1	2	3	4
---	---	---	---

Terminal No.	Color of Wire	Signal Name [Specification]
1	GR/R	-
2	G	-
3	G	-
4	GR	-

Connector No.	E42
Connector Name	HEADLAMP WASHER PUMP
Connector Type	TYCO 48389-1



Terminal No.	Color of Wire	Signal Name [Specification]
1	GR/R	-
2	B	-

Connector No.	E105
Connector Name	WIRE TO WIRE
Connector Type	TH60MW-NS16-TM4



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

Connector No.	M27
Connector Name	COMBINATION SWITCH
Connector Type	TK16FW



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

Terminal No.	Color of Wire	Signal Name [Specification]
1	V	INPUT1
2	G	INPUT2
3	L	INPUT3
4	GR	INPUT4
5	BR	INPUT5
6	P	OUTPUT1
7	R	OUTPUT2
8	W	OUTPUT3
9	Y	OUTPUT4
10	LG	OUTPUT3

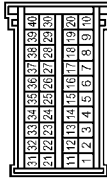
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HEADLAMP WASHER SYSTEM

< COMPONENT DIAGNOSIS >

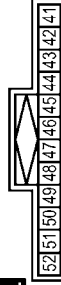
HEADLAMP WASHER

Connector No.	M85
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	AAB40FE



35	L	COMBI SW INPUT 3
37	R	ACC SW
38	W/L	IGN SW

Connector No.	M86
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FCI 211PC-22SI017



Connector No.	M87
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FCI 211PC083S0017



Terminal No.	Color of Wire	Signal Name [Specification]
1	P	COMBI SW OUTPUT 1
2	Y	COMBI SW OUTPUT 4
3	LG	COMBI SW OUTPUT 3
4	R	COMBI SW OUTPUT 2
5	W	COMBI SW OUTPUT 5
19	L	CAN-H
20	P	CAN-L
31	BR	COMBI SW INPUT 5
32	G	COMBI SW INPUT 2
33	V	COMBI SW INPUT 1
34	GR	COMBI SW INPUT 4

Terminal No.	Color of Wire	Signal Name [Specification]
41	V	BAT(FUSE)

Terminal No.	Color of Wire	Signal Name [Specification]
55	B	GND(POWER)
57	Y	BAT(F/L)

Connector No.	M77
Connector Name	WIRE TO WIRE
Connector Type	TH06FW-MS16-TM4



Terminal No.	Color of Wire	Signal Name [Specification]
48	P	-
50	L	-
76	Y	-

JCLWA0403GB

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

ECU DIAGNOSIS

BCM (BODY CONTROL MODULE)

Reference Value

INFOID:000000001116753

VALUES ON THE DIAGNOSIS TOOL

Monitor Item	Condition		Value/Status
ACC ON SW	Ignition switch OFF		OFF
	Ignition switch ACC or ON		ON
AIR COND SW	A/C switch OFF		OFF
	A/C switch ON		ON
AUT LIGHT SYS	Outside of the room is dark		OFF
	Outside of the room is bright		ON
AUTO LIGHT SW	Lighting switch OFF		OFF
	Lighting switch AUTO		ON
BACK DOOR SW	Back door closed		OFF
	Back door opened		ON
BATTERY VOLT NOTE: Diesel engine models only	Ignition switch ON		Approximately the same as power supply voltage
BUCKLE SW	Driver's seat belt unfastened		OFF
	Driver's seat belt fastened		ON
CDL LOCK SW	Door lock/unlock switch does not operate		OFF
	Press door lock/unlock switch to the LOCK side		ON
CDL UNLOCK SW	Door lock/unlock switch does not operate		OFF
	Press door lock/unlock switch to the UNLOCK side		ON
DOOR SW-AS	Passenger door closed		OFF
	Passenger door opened		ON
DOOR SW-DR	Driver door closed		OFF
	Driver door opened		ON
DOOR SW-RL	Rear LH door closed		OFF
	Rear LH door opened		ON
DOOR SW-RR	Rear RH door closed		OFF
	Rear RH door opened		ON
ELEC PWR CUT NOTE: Diesel engine models only	Engine running	Fan switch ON (when engine coolant is cool) NOTE: Depending on the ambient temperature, battery voltage, etc.	OFF
		The current status maintained with the signal from ECM received.	FREEZ
		- Fan switch OFF - Fan switch ON after engine warming UP NOTE: Depending on the engine coolant temperature, ambient temperature, battery voltage, etc.	INHBT

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Monitor Item	Condition	Value/Status
ENG COOLNT T NOTE: Diesel engine models only	Engine running	Approximately the same as water temperature gauge reading
ENGINE RPM NOTE: Diesel engine models only	Engine running	Approximately the same as tachometer reading
ENGINE RUN	Engine stopped	OFF
	Engine running	ON
ENGINE STATUS NOTE: Diesel engine models only	Engine stopped	STOP
	While the engine stalls	STALL
	Engine running	RUN
	At engine cranking	CRA
FAN ON SIG	Fan switch OFF	OFF
	Fan switch ON	ON
FR FOG SW	Front fog lamp switch OFF	OFF
	Front fog lamp switch ON	ON
FR WASHER SW	Front washer switch OFF	OFF
	Front washer switch ON	ON
FR WIPER LOW	Front wiper switch OFF	OFF
	Front wiper switch LO	ON
FR WIPER HI	Front wiper switch OFF	OFF
	Front wiper switch HI	ON
FR WIPER INT	Front wiper switch OFF	OFF
	Front wiper switch INT	ON
FR WIPER STOP	Any position other than front wiper stop position	OFF
	Front wiper stop position	ON
HAZARD SW	When hazard switch is not pressed	OFF
	When hazard switch is pressed	ON
HEAD LAMP SW 1	Lighting switch OFF	OFF
	Lighting switch 2ND	ON
HEAD LAMP SW 2	Lighting switch OFF	OFF
	Lighting switch 2ND	ON
HI BEAM SW	Lighting switch OFF	OFF
	Lighting switch HI	ON
HOOD SW	Close the hood NOTE: Vehicles without theft warning system are OFF-fixed	OFF
	Open the hood	ON
H/L WASH SW	NOTE: The item is indicated, but not monitored	OFF
IGN ON SW	Ignition switch OFF or ACC	OFF
	Ignition switch ON	ON
IGN SW CAN	Ignition switch OFF or ACC	OFF
	Ignition switch ON	ON
INT VOLUME	Wiper intermittent dial is in a dial position 1 - 7	1 - 7

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BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Monitor Item	Condition	Value/Status
I-KEY LOCK	LOCK button of Intelligent Key is not pressed	OFF
	LOCK button of Intelligent Key is pressed	ON
I-KEY UNLOCK	UNLOCK button of Intelligent Key is not pressed	OFF
	UNLOCK button of Intelligent Key is pressed	ON
KEY ON SW	Mechanical key is removed from key cylinder	OFF
	Mechanical key is inserted to key cylinder	ON
KEYLESS LOCK	LOCK button of key fob is not pressed	OFF
	LOCK button of key fob is pressed	ON
KEYLESS UNLOCK	UNLOCK button of key fob is not pressed	OFF
	UNLOCK button of key fob is pressed	ON
LIT-SEN FAIL	Light & rain sensor is in normal condition	OK
	Light & rain sensor is with internal error	NOTOK
OIL PRESS SW	- Ignition switch OFF or ACC - Engine running	OFF
	Ignition switch ON	ON
OUT SIDE TEMP NOTE: Diesel engine models	Ignition switch ON	Approximately the same as outside air temperature
PASSING SW	Other than lighting switch PASS	OFF
	Lighting switch PASS	ON
PUSH SW	Return to ignition switch to LOCK position	OFF
	Press ignition switch	ON
REAR DEF SW	Rear window defogger switch OFF	OFF
	Rear window defogger switch ON	ON
RKE LOCK AND UN-LOCK	NOTE: The item is indicated, but not monitored	OFF
		ON
RR FOG SW	Rear fog lamp switch OFF	OFF
	Rear fog lamp switch ON	ON
RR WASHER SW	Rear washer switch OFF	OFF
	Rear washer switch ON	ON
RR WIPER INT	Rear wiper switch OFF	OFF
	Rear wiper switch INT	ON
RR WIPER ON	Rear wiper switch OFF	OFF
	Rear wiper switch ON	ON
RR WIPER STOP	Rear wiper stop position	OFF
	Other than rear wiper stop position	ON
SHOCK SENSOR	Ignition switch ON	NOMAL
	After the reception of air bag deployment signal from air bag diagnosis sensor unit	OFF
	During the reception of air bag deployment signal from air bag diagnosis sensor unit	ON
TAIL LAMP SW	Lighting switch OFF	OFF
	Lighting switch 1ST	ON
TRNK OPNR SW	When back door opener switch is not pressed	OFF
	When back door opener switch is pressed	ON

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Monitor Item	Condition	Value/Status
TURN SIGNAL L	Turn signal switch OFF	OFF
	Turn signal switch LH	ON
TURN SIGNAL R	Turn signal switch OFF	OFF
	Turn signal switch RH	ON
UNLOCK WITH DR	NOTE: The item is indicated, but not monitored	OFF
		ON
UNLOCK SHOCK	Other than the following	OFF
	During the unlock operation interlocked with air bag	ON
VEHICLE SPEED	While driving	Equivalent to speedometer reading

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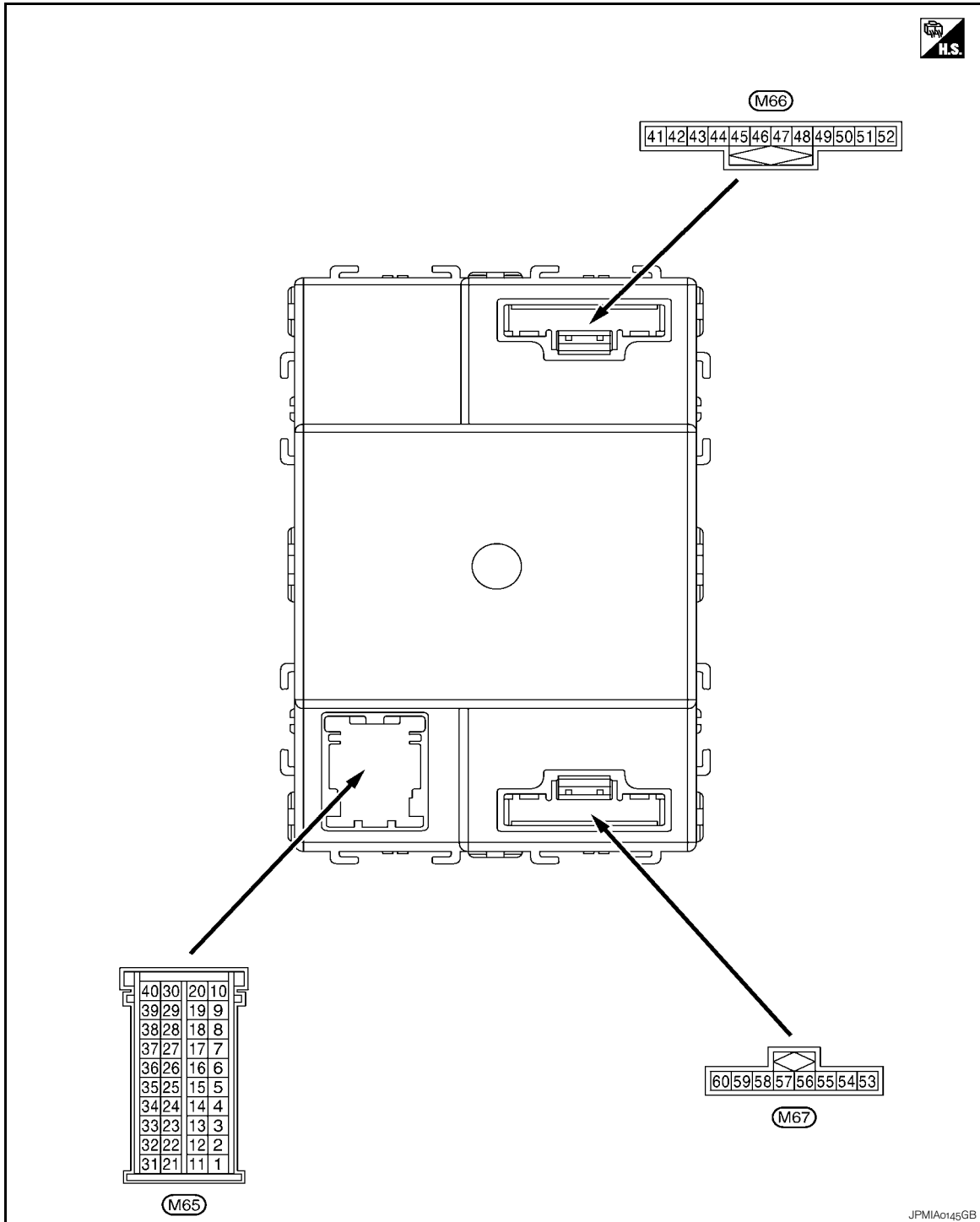
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BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

TERMINAL LAYOUT



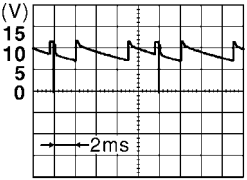
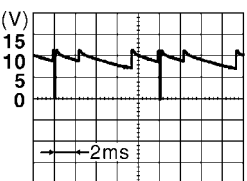
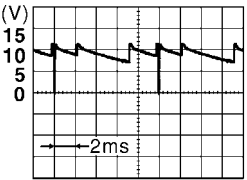
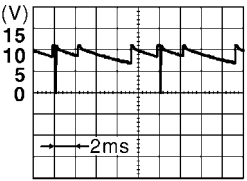
PHYSICAL VALUES

CAUTION:

- Check combination switch system terminal waveform under the loaded condition with lighting switch, turn signal switch and wiper switch OFF is not to be fluctuated by being overloaded.
- Turn wiper intermittent dial position to 4 except when checking waveform or voltage of wiper intermittent dial position. Wiper intermittent dial position can be confirmed on CONSULT -III. Refer to [BCS-26, "COMB SW : CONSULT-III Function \(BCM - COMB SW\)"](#).
- BCM reads the status of the combination switch at 10 ms internal normally. Refer to [BCS-7, "System Description"](#).

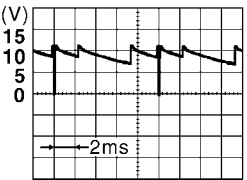
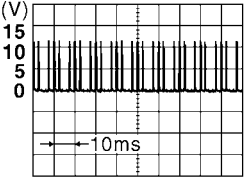
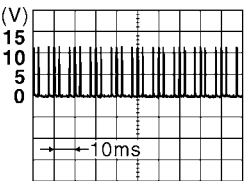
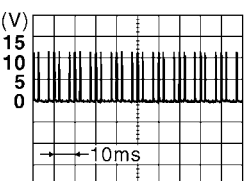
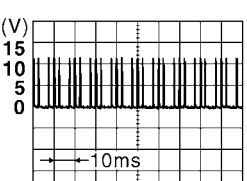
BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
1 (P)	Ground	Combination switch OUTPUT 1	Output	Combination switch	All switch OFF (Wiper intermittent dial 4)	0 V
					Front wiper switch HI (Wiper intermittent dial 4)	 9.1 V
					Rear wiper switch INT (Wiper intermittent dial 4)	
					Any of the condition below with all switch OFF	
					• Wiper intermittent dial 1 • Wiper intermittent dial 2 • Wiper intermittent dial 3 • Wiper intermittent dial 6 • Wiper intermittent dial 7	
2 (Y)	Ground	Combination switch OUTPUT 4	Output	Combination switch (Wiper intermit- tent dial 4)	All switch OFF	0 V
					Lighting switch 2ND	 9.3 V
					Lighting switch PASS	
					Front fog lamp switch ON	
					Turn signal switch LH	
3 (LG)	Ground	Combination switch OUTPUT 3	Output	Combination switch (Wiper intermit- tent dial 4)	All switch OFF	0 V
					Lighting switch AUTO	 9.3 V
					Rear fog lamp switch OFF	
					Front wiper switch MIST	
					Front wiper switch INT	
					Front wiper switch LO	
4 (R)	Ground	Combination switch OUTPUT 2	Output	Combination switch	All switch OFF (Wiper intermittent dial 4)	0 V
					Front washer switch ON (Wiper intermittent dial 4)	 9.1 V
					Rear wiper switch ON (Wiper intermittent dial 4)	
					Rear washer switch ON (Wiper intermittent dial 4)	
					Any of the condition below with all switch OFF	
					• Wiper intermittent dial 1 • Wiper intermittent dial 5 • Wiper intermittent dial 6	

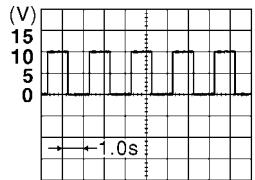
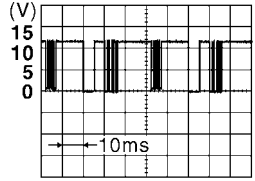
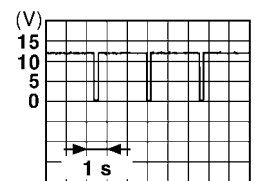
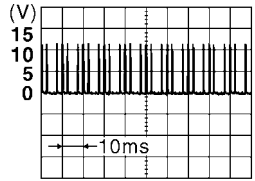
BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
5 (W)	Ground	Combination switch OUTPUT 5	Output	Combination switch (Wiper intermit- tent dial 4)	All switch OFF	0 V
					Lighting switch 1ST	 JPMIA0164GB 9.1 V
					Lighting switch 2ND	
					Lighting switch HI	
					Turn signal switch RH	
7 (P)	Ground	Door lock/unlock switch (Lock)	Output	Door lock/un- lock switch	Not pressed	 JPMIA0154GB 1.2 V
					Pressed to the lock side	0 V
8 (LG)	Ground	Hazard switch	Output	Hazard switch	Not pressed	 JPMIA0154GB 1.3 V
					Pressed	0 V
9 (BR)	Ground	Door lock/unlock switch (Unlock)	Output	Door lock/un- lock switch	Not pressed	 JPMIA0154GB 1.2 V
					Pressed to the unlock side	0 V
12 (P)	Ground	Back door opener switch	Output	Back door opener switch	Not pressed	 JPMIA0154GB 1.2 V
					Pressed	0 V

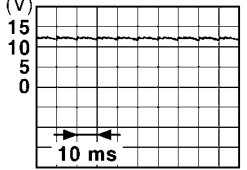
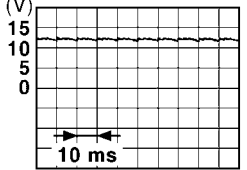
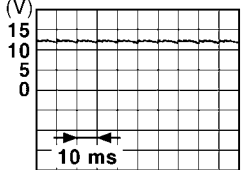
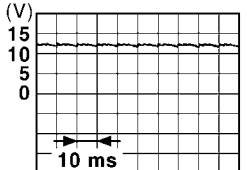
BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
13 (R)	Ground	Shock detect sensor	Input	Ignition switch OFF or ACC		0 V
				Ignition switch ON		 6.0 V
14 (L/R)	Ground	A/C switch	Output	A/C switch	Not pressed	Battery voltage
					Pressed	0 V
15 (LG/B)	Ground	Fan switch	Output	Fan switch	Not pressed	Battery voltage
					Pressed	0 V
16 (GR)	Ground	Alarm link	Input	—		—
17 (BR)	Ground	Light & rain sensor serial link	Output	Ignition switch OFF or ACC		Battery voltage
				Ignition switch ON		 8.7 V
18 (SB)	Ground	Security indicator	Output	Security indicator	ON	0 V
					Blinking	 10.3 V
					OFF	Battery voltage
19 (L)	—	CAN-H	Input/ Output	—		—
20 (P)	—	CAN-L	Input/ Output	—		—
21 (SB)	Ground	Rear window defog- ger switch	Output	Rear window defogger switch	Not pressed	 1.1 V
					While pressing	0 V

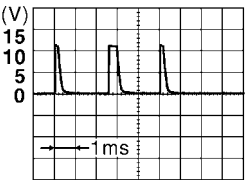
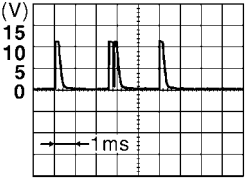
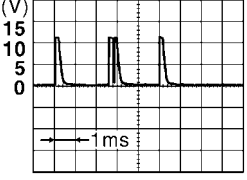
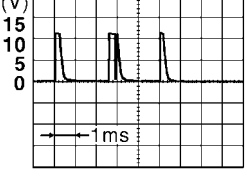
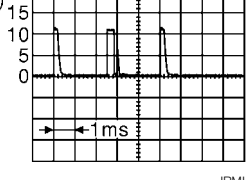
BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
24 (GR)	Ground	Door lock status indicator	Output	Door lock status indicator	ON	Battery voltage
					OFF	0 V
25 (GR)	Ground	Rear door switch LH	Input	Rear door switch LH	OFF (When rear door LH closed)	 11.2 V
					ON (When rear door LH opened)	0 V
26 (R)	Ground	Driver door switch	Input	Driver door switch	OFF (When driver door closed)	 11.2 V
					ON (When driver door opened)	0 V
27 (BR)	Ground	Passenger door switch	Input	Passenger door switch	OFF (When passenger door closed)	 11.2 V
					ON (When passenger door opened)	0 V
28 (G)	Ground	Back door switch	Input	Back door switch	OFF (When back door closed)	Battery voltage
					ON (When back door opened)	0 V
29 (LG)	Ground	Rear door switch RH	Input	Rear door switch RH	OFF (When rear door RH closed)	 11.2 V
					ON (When rear door RH opened)	0 V
30 (SB)	Ground	Audio link	Output	—	—	—

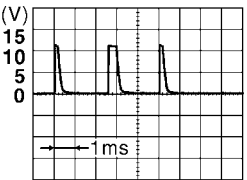
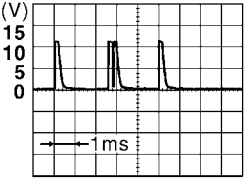
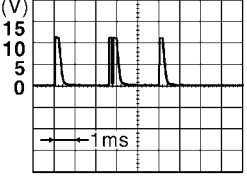
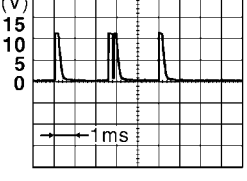
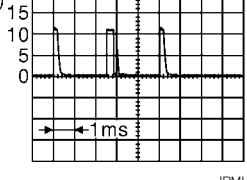
BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
31 (BR)	Ground	Combination switch INPUT 5	Input	Combination switch	All switch OFF (Wiper intermittent dial 4)  1.3 V
					Front fog lamp switch ON (Wiper intermittent dial 4)  1.3 V
					Rear fog lamp switch ON (Wiper intermittent dial 4)  1.3 V
					Rear wiper switch ON (Wiper intermittent dial 4)  1.3 V
					Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 2 • Wiper intermittent dial 6 • Wiper intermittent dial 7  1.3 V

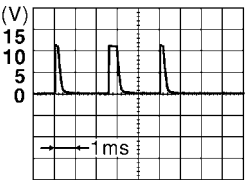
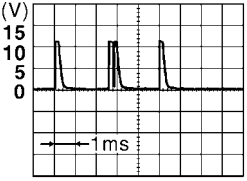
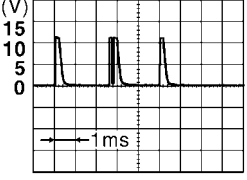
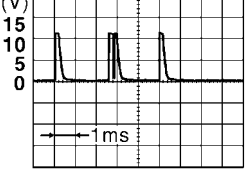
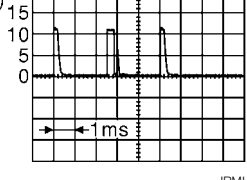
BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
32 (G)	Ground	Combination switch INPUT 2	Input	Combination switch (Wiper intermit- tent dial 4)	 1.4 V JPMIAor165GB
					 1.3 V JPMIAor167GB
					 1.3 V JPMIAor166GB
					 1.3 V JPMIAor168GB
					 1.3 V JPMIAor196GB

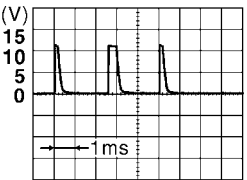
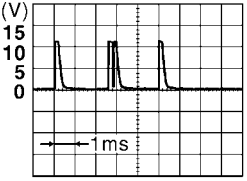
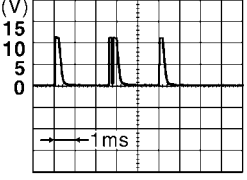
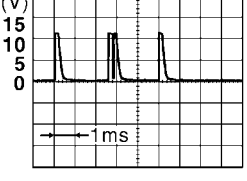
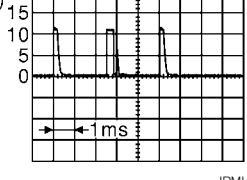
BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
33 (V)	Ground	Combination switch INPUT 1	Input	Combination switch (Wiper intermit- tent dial 4)	All switch OFF  JPMIA0165GB 1.4 V
					Turn signal switch LH  JPMIA0167GB 1.3 V
					Turn signal switch RH  JPMIA0166GB 1.3 V
					Front wiper switch LO  JPMIA0168GB 1.3 V
					Front washer switch ON  JPMIA0196GB 1.3 V

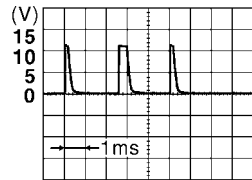
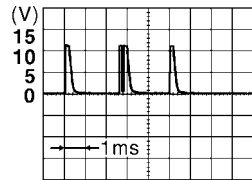
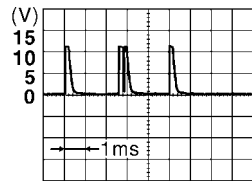
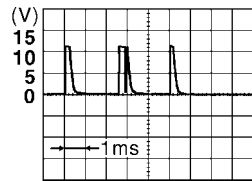
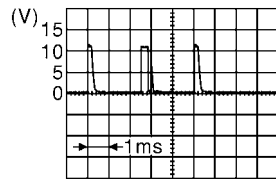
BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
34 (GR)	Ground	Combination switch INPUT 4	Input	Combination switch	All switch OFF (Wiper intermittent dial 4)  JPMIAor165GB 1.4 V
					Lighting switch AUTO (Wiper intermittent dial 4)  JPMIAor167GB 1.3 V
					Lighting switch 1ST (Wiper intermittent dial 4)  JPMIAor166GB 1.3 V
					Rear wiper INT (Wiper intermittent dial 4)  JPMIAor167GB 1.3 V
					Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 6  JPMIAor166GB 1.3 V

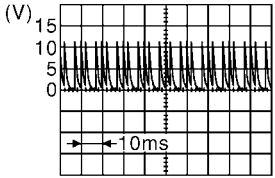
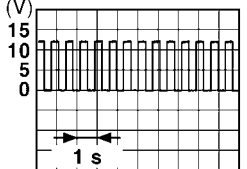
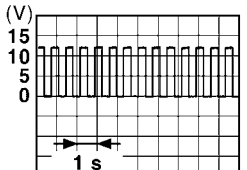
BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	−	Signal name	Input/ Output			
35 (L)	Ground	Combination switch INPUT 3	Input	Combination switch	All switch OFF (Wiper intermittent dial 4)	 JPMIAor165GB 1.4 V
					Lighting switch HI (Wiper intermittent dial 4)	 JPMIAor166GB 1.3 V
					Lighting switch 2ND (Wiper intermittent dial 4)	 JPMIAor167GB 1.3 V
					Rear wiper switch ON	 JPMIAor169GB 1.3 V
					Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 2 • Wiper intermittent dial 3	 JPMIAor196GB 1.3 V
36 (V)	Ground	Key switch	Output	Insert mechanical key into ignition key cylinder	Battery voltage	
				Remove mechanical key from ignition key cylinder	0 V	
37 (R)	Ground	ACC power supply	Output	Ignition switch OFF	0 V	
				Ignition switch ACC or ON	Battery voltage	
38 (W/L)	Ground	Ignition power supply	Output	Ignition switch OFF or ACC	0 V	
				Ignition switch ON	Battery voltage	

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
39 (P)	Ground	NATS antenna amp.	Input/ Output	Insert mechanical key into ignition key cylinder		Just after Insert mechanical key into ignition key cylinder. Pointer of tester should move
40 (LG)	Ground	NATS antenna amp.	Input/ Output	Insert mechanical key into ignition key cylinder		Just after Insert mechanical key into ignition key cylinder. Pointer of tester should move
41 (V)	Ground	Battery power supply	Input	Ignition switch OFF		Battery voltage
42 (V)	Ground	Interior room lamp power supply	Output	After passing the interior room lamp battery saver operation time		0 V
				Any other time after passing the interior room lamp battery saver operation time		Battery voltage
43 (L)	Ground	Rear wiper motor	Output	Rear wiper switch OFF		0 V
				Rear wiper switch ON		Battery voltage
44 (L/W)	Ground	Rear wiper auto stop	Output	Ignition switch ON	Rear wiper stop position	0 V
					Any position other than rear wiper stop position	 JPMIA0197GB
45 (GR)	Ground	Back door lock actuator	Output	Back door opener switch	Pressed	Battery voltage (300ms)
					Not pressed	0 V
47 (G/Y)	Ground	Turn signal LH	Output	Ignition switch ON	Turn signal switch OFF	0 V
					Turn signal switch LH	 6.5 V
48 (G/B)	Ground	Turn signal RH	Output	Ignition switch ON	Turn signal switch OFF	0 V
					Turn signal switch RH	 6.5 V
49 (Y)	Ground	Rear fog lamp	Output	Lighting switch 1ST and front fog lamp switch ON	Rear fog lamp switch OFF	0 V
					Rear fog lamp switch ON	Battery voltage
51 (R/W)*1 (R)*2	Ground	Stop lamp switch	Output	Depress the brake pedal		Battery voltage
				Release the brake pedal		0 V

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
52 (R)	Ground	Room lamp timer control	Output	Interior room lamp	OFF	Battery voltage
					ON	0 V
53 (L)	Ground	Power window pow- er supply	Output	Ignition switch	OFF or ACC	0 V
					ON	Battery voltage
54 (O)	Ground	Door unlock (All)	Output	Door lock/un- lock switch	Pressed to the unlock side	Battery voltage
					Pressed to the lock side	0 V
55 (B)	Ground	Ground	—	Ignition switch ON		0 V
56 (Y)*1 (SB)*2	Ground	Door lock (All)	Output	Door lock/un- lock switch	Pressed to the unlock side	0 V
					Pressed to the lock side	Battery voltage
57 (Y)	Ground	Battery power sup- ply	Output	Ignition switch OFF		Battery voltage
58 (P)	Ground	Power window pow- er supply	Output	Ignition switch OFF		Battery voltage
59 (BR)	Ground	Super lock	Output	When lock button of key fob or Intelligent Key is not pressed		0 V
				When lock button of key fob or Intelligent Key is pressed		Battery voltage
60 (GR)	Ground	Driver door unlock	Output	Door lock/un- lock switch	Pressed to the unlock side	Battery voltage
					Pressed to the lock side	0 V

*1: With Intelligent Key system

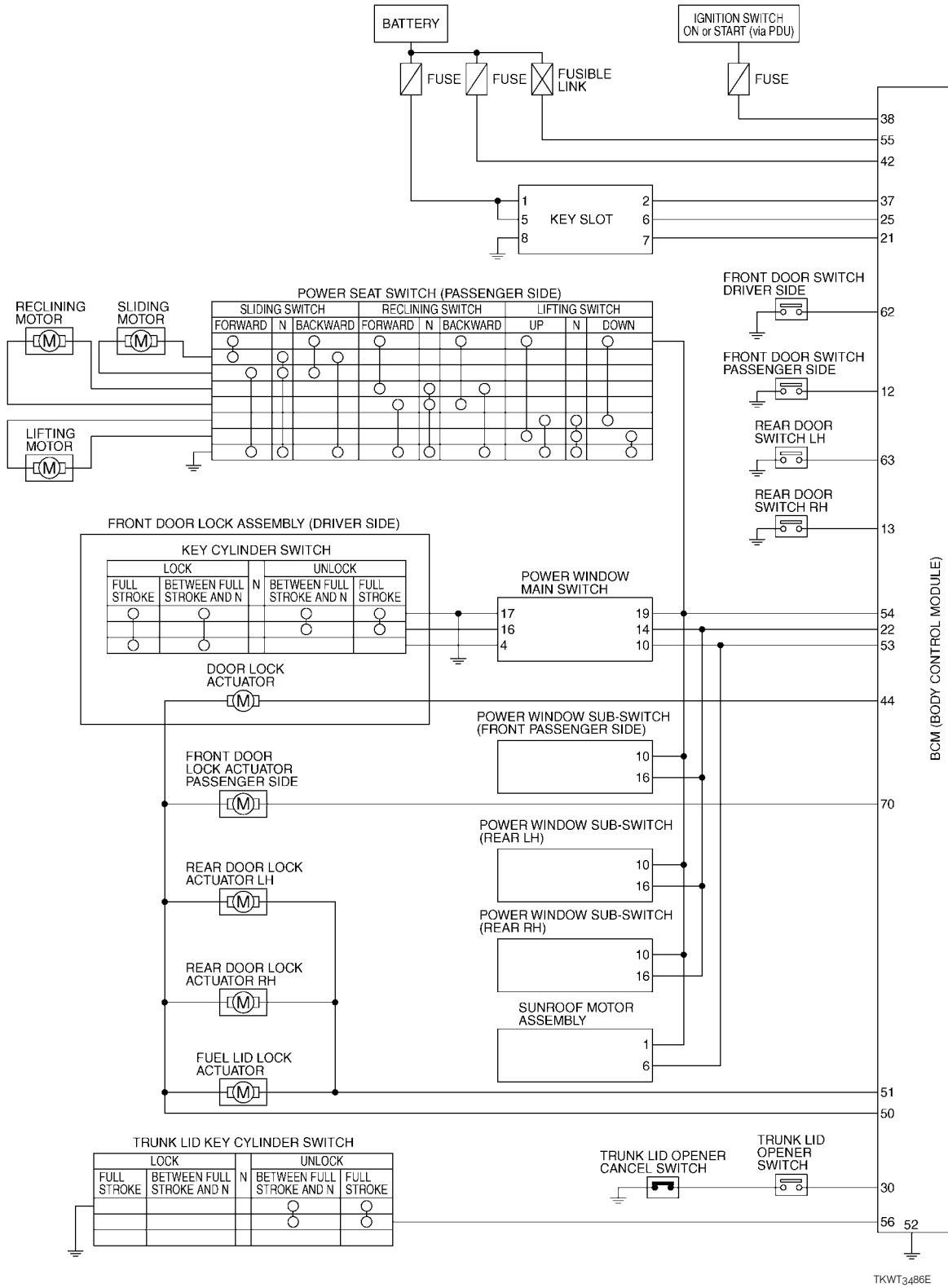
*2: Without Intelligent Key system

BCM (BODY CONTROL MODULE)

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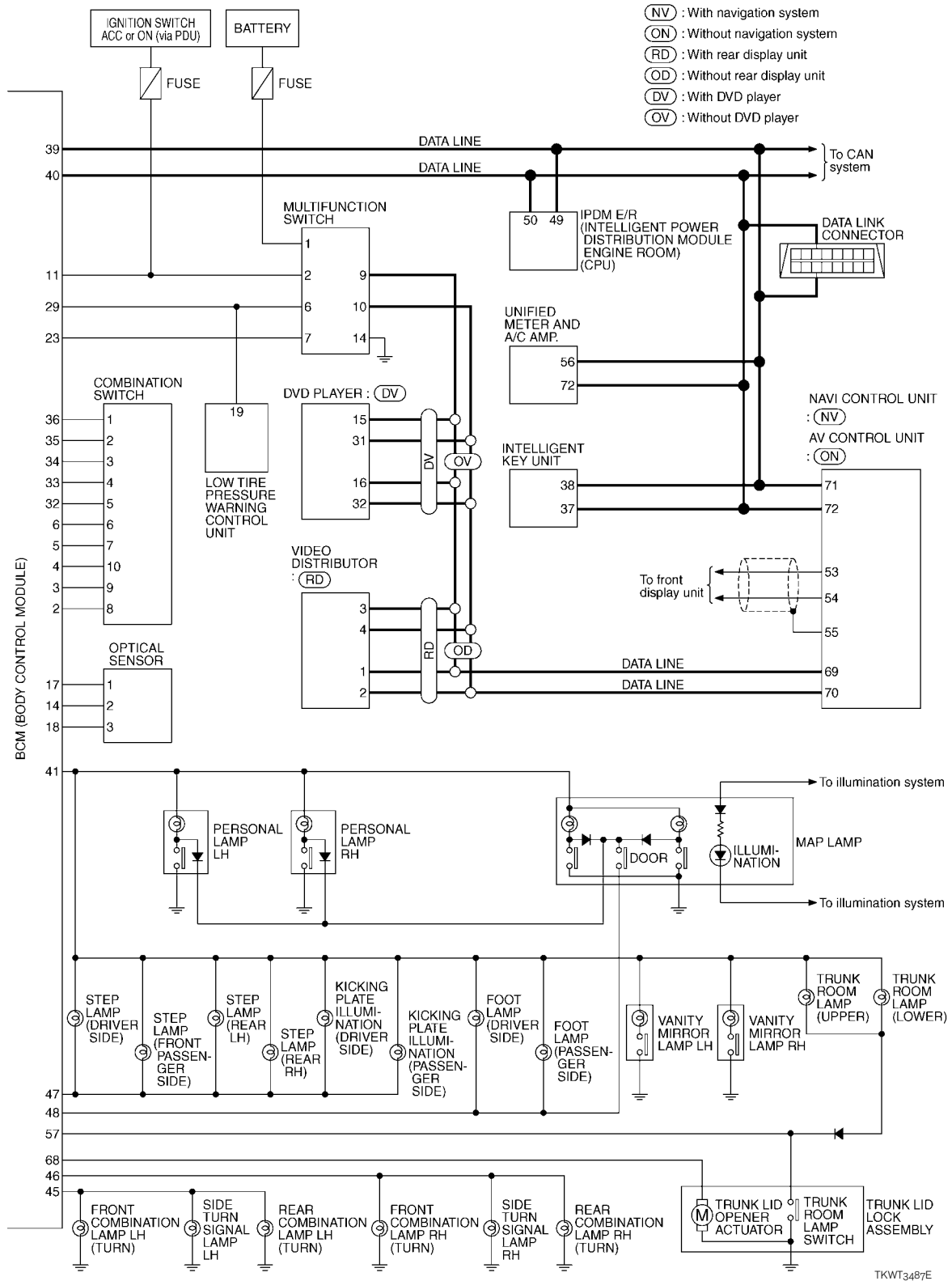
Wiring Diagram - BCM -

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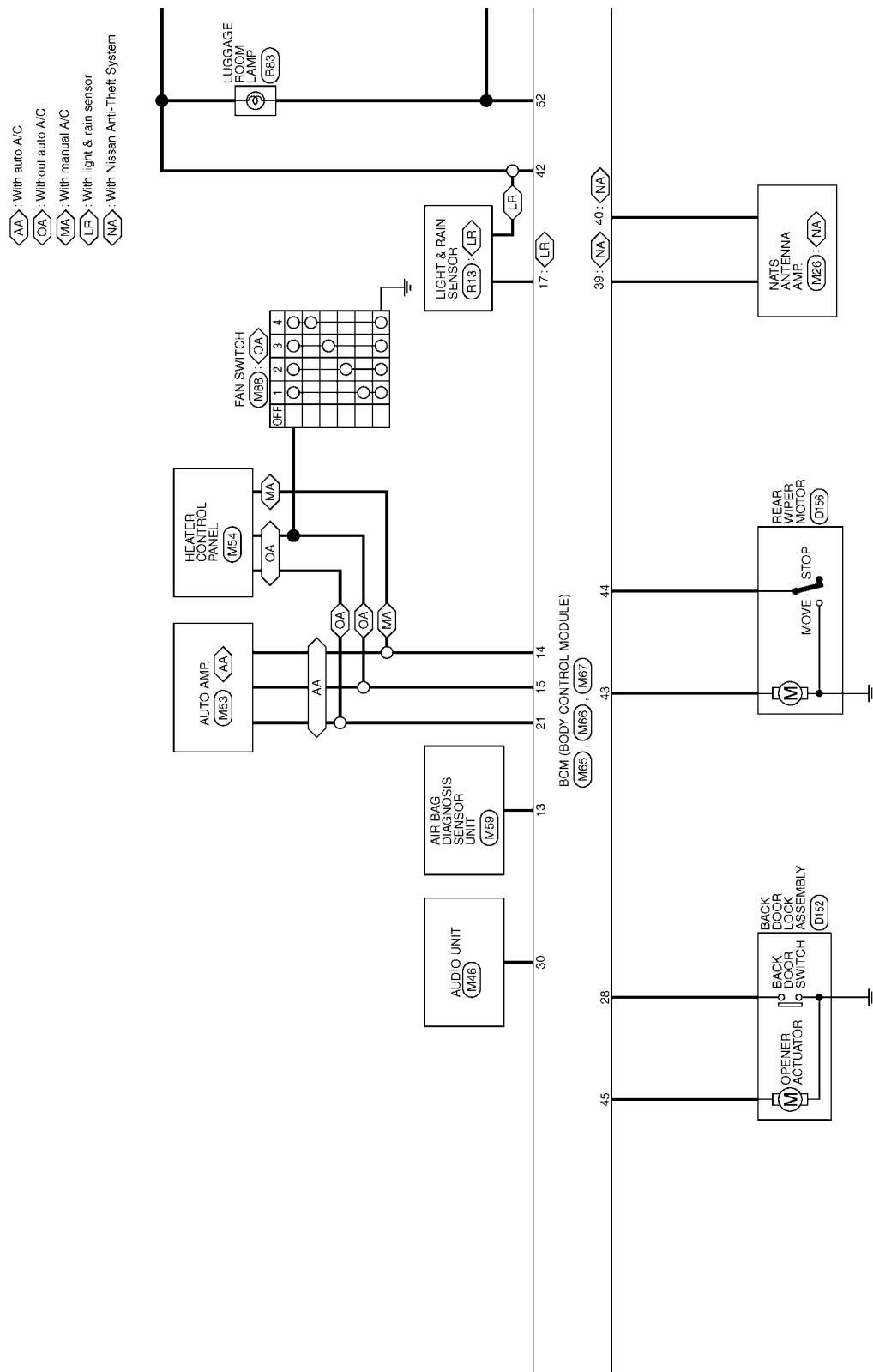
BCM (BODY CONTROL MODULE)

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BCM (BODY CONTROL MODULE)

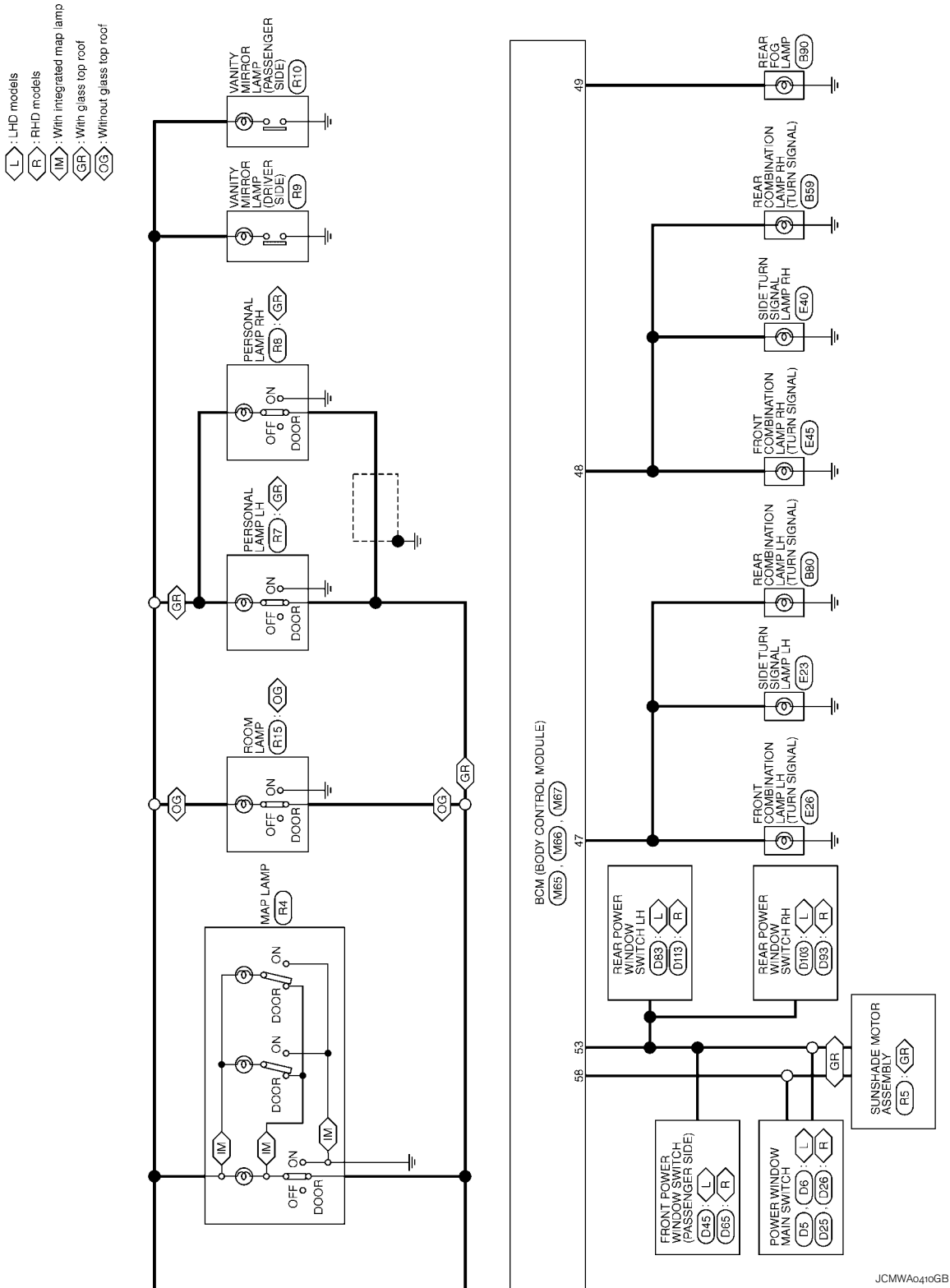
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JCMWAo4ogGB

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >



JCMWA0410GB

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

BCM (BODY CONTROL MODULE)

Connector No.	M27
Connector Name	COMBINATION SWITCH
Connector Type	TK16FW



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

Terminal No.	Color of Wire	Signal Name [Specification]
1	V	INPUT1
2	G	INPUT2
3	L	INPUT3
4	GR	INPUT4
5	BR	INPUT5
6	P	OUTPUT1
7	R	OUTPUT2
8	W	OUTPUT5
9	Y	OUTPUT4
10	LG	OUTPUT3

Connector No.	M67
Connector Name	BOM (BODY CONTROL MODULE)
Connector Type	FCI 211P03BS0017



60	59	58	57	56	55	54	53
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Terminal No.	Color of Wire	Signal Name [Specification]
53	L	POWER WDW PWR SUPPLY (LINKED TO IGN)
54	O	DOOR UNLOCK OUTPUT (OTHER)
55	B	GNUP (POWER)
56	Y	DOOR LOCK OUTPUT (ALL) (With Intelligent Key)
58	SB	DOOR LOCK OUTPUT (ALL) (Without Intelligent Key)
57	Y	BAT (F/L)
58	P	POWER WDW PWR SUPPLY (BAT)
59	BR	SUPER LOCK SET OUTPUT
60	GR	UNLOCK (DR)

Connector No.	M65
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	AAABJ0FB



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

Terminal No.	Color of Wire	Signal Name [Specification]
1	P	COMBI SW OUTPUT 1
2	Y	COMBI SW OUTPUT 4
3	LG	COMBI SW OUTPUT 3
4	R	COMBI SW OUTPUT 2
5	W	COMBI SW OUTPUT 5
7	P	LOCK/UNLOCK SW (LOCK)
8	LG	HAZARD SW
9	BR	LOCK/UNLOCK SW (UNLOCK)
12	P	TRUNK/BACK DOOR OPEN SW
13	R	SHOCK DETECT SIG
14	L/R	A/C SW

15	LG/B	BLOWER FAN SW
16	GR	ALARM LINK
17	BR	LIGHT & RAIN SENS
18	SB	SECURITY INDICATOR
19	L	CAN-H
20	P	CAN-L
21	SB	REAR DEFFOGER SW
24	GR	DOOR LOCK STATUS IND
25	GR	DOOR SW (RL)
26	R	DOOR SW (DR)
27	BR	DOOR SW (AS)
28	G	DOOR SW (BACK)
29	LG	DOOR SW (FR)
30	SB	AUDIO LINK
31	BR	COMBI SW INPUT 5
32	G	COMBI SW INPUT 2
33	V	COMBI SW INPUT 1
34	GR	COMBI SW INPUT 4
35	L	COMBI SW INPUT 3
36	V	KEY SW
37	R	ACC SW
38	W/L	IGN SW
39	P	NATS ANTENNA AMP.
40	LG	NATS ANTENNA AMP.

Connector No.	M66
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FCI 211P03BS0017



62	61	60	59	48	47	46	45	44	43	42	41
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Terminal No.	Color of Wire	Signal Name [Specification]
41	V	BAT (USE)
42	V	ROOM LAMP POWER SUPPLY
43	L	REAR WIPER MOTOR OUTPUT
44	L/W	REAR WIPER AUTO STOP
45	GR	BACK DOOR OPENER
47	G/Y	FLASHER OUTPUT (LEFT)
48	G/B	FLASHER OUTPUT (RIGHT)
49	Y	REAR FOG LAMP
51	R/W	STOP LAMP SW (With Intelligent Key)
51	R	STOP LAMP SW (Without Intelligent Key)
52	R	ROOM LAMP OUTPUT

Fail Safe

Fail-safe index

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

JCMWA0411GB

INFOID:0000000001116755

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Display contents of CONSULT	Fail-safe	Cancellation
B2190: NATS ANTENNA AMP	- Inhibits engine cranking - Inhibits steering lock unlocking (Intelligent Key unit) - Fuel cut (ECM)	Erase DTC
B2191: DIFFERENCE OF KEY	- Inhibits engine cranking - Inhibits steering lock unlocking (Intelligent Key unit) - Fuel cut (ECM)	Erase DTC
B2192: ID DISCORD BCM-ECM	Fuel cut (ECM)	Erase DTC
B2193: CHAIN OF BCM-ECM	Fuel cut (ECM)	Erase DTC
B2194: DISCORD BCM-I-KEY	- Inhibits engine cranking - Inhibits steering lock unlocking (Intelligent Key unit) - Fuel cut (ECM)	Erase DTC
B2195: ANTI SCANNING	- Inhibits engine cranking - Inhibits steering lock unlocking (Intelligent Key unit) - Fuel cut (ECM)	Erase DTC
B2196: DONGLE NG	- Inhibits engine cranking - Inhibits steering lock unlocking (Intelligent Key unit) - Fuel cut (ECM)	Erase DTC

REAR WIPER CONTROL

BCM detects a rear wiper stopping position according to a rear wiper auto stop signal.

When a rear wiper auto stop signal is in the condition listed below, BCM stops power supply to rear wiper after rear wiper is activated for five seconds.

Ignition switch	Rear wiper switch	Auto stop signal
ON	OFF	Rear wiper stop position signal cannot be input 5 seconds.
	ON	The signal does not change for 5 seconds.

NOTE:

The above operation is repeated when operating the rear wiper switch one minute after the stop of the rear wiper caused by Fail-safe.

TURN SIGNAL LAMP CONTROL

BCM detects the turn signal lamp circuit status from the terminal voltage.

BCM increases the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp operating.

NOTE:

The blinking speed is normal while activating the hazard warning lamp.

LIGHT & RAIN SENSOR MALFUNCTION DETECTION FUNCTION

BCM controls the following items when LIGHT & RAIN sensor has a malfunction.

Auto Light Control

Headlamp is turned ON.

Front Wiper Control

The condition just before the activation of Fail-safe is maintained until the front wiper switch is turned OFF.

DTC Inspection Priority Chart

INFOID:000000001116756

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Priority	DTC
1	• U1000: CAN COMM CIRCUIT • U1010: CONTROL UNIT (CAN)
2	• B2190: NATS ANTENNA AMP • B2191: DIFFERENCE OF KEY • B2192: ID DISCORD BCM-ECM • B2193: CHAIN OF BCM-ECM • B2194: DISCORD BCM-I-KEY • B2195: ANTI SCANNING • B2196: DONGLE NG

DTC Index

INFOID:000000001116757

NOTE:

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

CONSULT display	TIME		Fail-safe	Refer to
No DTC is detected. further testing may be required.	—	—	—	—
U1000: CAN COMM CIRCUIT	0	1 - 39	—	BCS-32
U1010: CONTROL UNIT (CAN)	0	1 - 39	—	BCS-33
B2190: NATS ANTENNA AMP	CRNT	PAST	×	• With Intelligent Key system SEC-33 • Without Intelligent Key system SEC-174
B2191: DIFFERENCE OF KEY	CRNT	PAST	×	• With Intelligent Key system SEC-35 • Without Intelligent Key system SEC-176
B2192: ID DISCORD BCM-ECM	CRNT	PAST	×	• With Intelligent Key system SEC-36 • Without Intelligent Key system SEC-177
B2193: CHAIN OF BCM-ECM	CRNT	PAST	×	• With Intelligent Key system SEC-38 • Without Intelligent Key system SEC-178
B2194: DISCORD BCM-I-KEY	CRNT	PAST	×	SEC-39
B2195: ANTI SCANNING	CRNT	PAST	×	• With Intelligent Key system SEC-179 • Without Intelligent Key system SEC-179
B2196: DONGLE NG	CRNT	PAST	×	• With Intelligent Key system SEC-41 • Without Intelligent Key system SEC-180

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

< ECU DIAGNOSIS >

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

Reference Value

INFOID:0000000001116758

VALUES ON THE DIAGNOSIS TOOL

Monitor Item	Condition		Value/Status
MOTOR FAN REQ	Engine idle speed	Changes depending on engine coolant temperature, air conditioner operation status, vehicle speed, etc.	1 - 3
AC COMP REQ	Engine running	A/C switch OFF	Off
		A/C switch ON (Compressor is operating)	On
TAIL&CLR REQ	Lighting switch OFF		Off
	Lighting switch 1ST, 2ND or AUTO (Light is illuminated)		On
HL LO REQ	Lighting switch OFF		Off
	Lighting switch 2ND or AUTO (Light is illuminated)		On
HL HI REQ	Lighting switch OFF		Off
	Lighting switch HI (Light is illuminated)		On
FR FOG REQ	Lighting switch 2ND or AUTO (Light is illuminated)	Front fog lamp switch OFF	Off
		Front fog lamp switch ON	On
HL WASHER REQ	Ignition switch ON, and low beam headlamp is ON	Front washer switch OFF	Off
		Front washer switch ON (When headlamp washer is operating)	On
FR WIP REQ	Ignition switch ON	Front wiper switch OFF	STOP
		Front wiper switch INT	1LOW
		Front wiper switch LO	Low
		Front wiper switch HI	Hi
WIP AUTO STOP	Ignition switch ON	Front wiper stop position	STOP P
		Any position other than front wiper stop position	ACT P
WIP PROT	Ignition switch ON	Front wiper operates normally	Off
		Front wiper stops at fail-safe operation	BLOCK
ST RLY REQ NOTE: Vehicle without Intelligent Key system indicates only "ON", and it does not change.	When Intelligent Key is outside the vehicle, and the push switch is pushed		Off
	When Intelligent Key is inside the vehicle, and the push switch is pushed		On
IGN RLY	Ignition switch OFF or ACC		Off
	Ignition switch ON		On
RR DEF REQ	Ignition switch ON	Rear window defogger switch OFF	Off
		Rear window defogger switch ON (Rear window defogger is operating)	On
OIL P SW	Ignition switch OFF, ACC or engine running		Open
	Ignition switch ON		Close

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

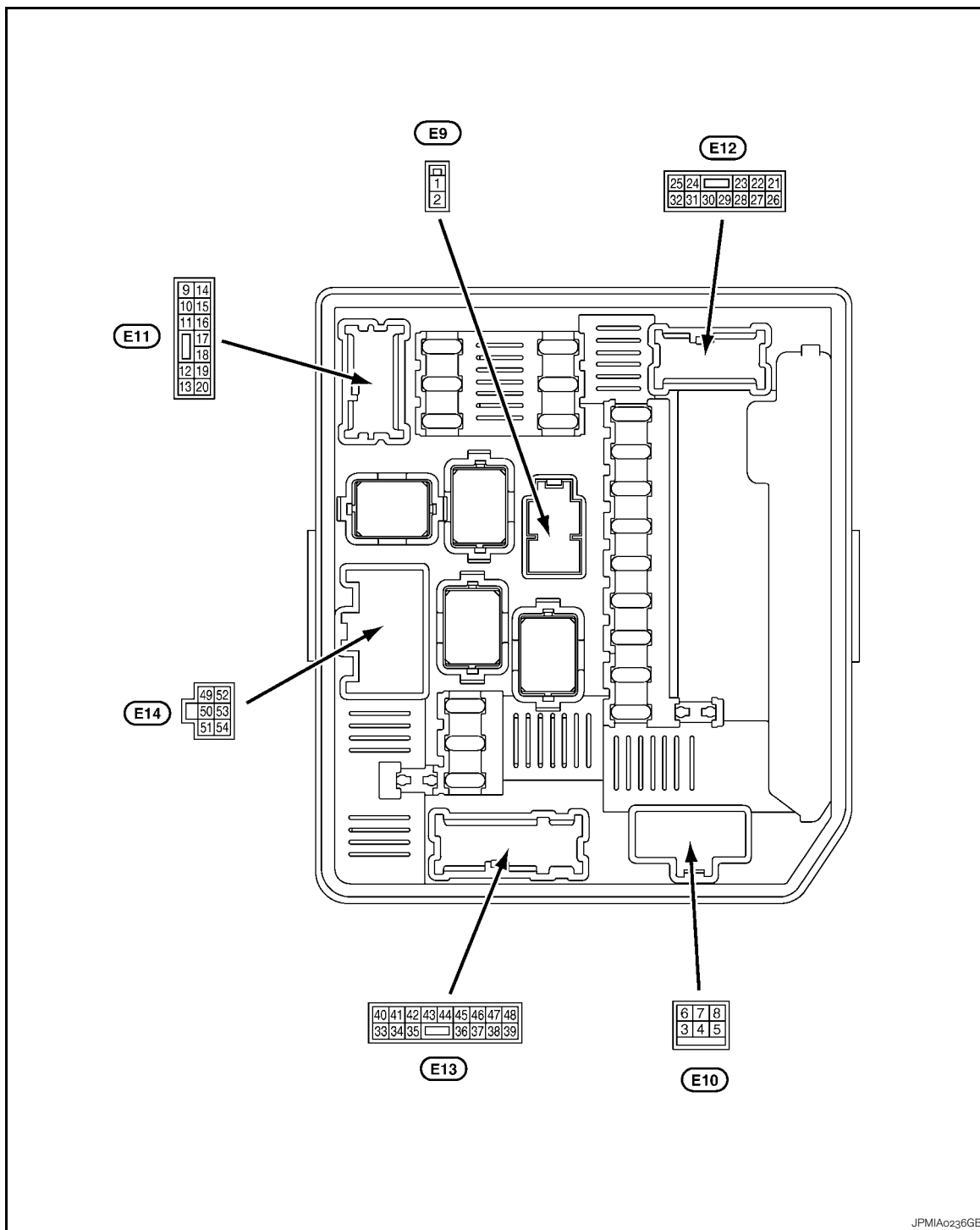
< ECU DIAGNOSIS >

Monitor Item	Condition	Value/Status
REV SW	Except selector lever R position	Off
	Selector lever R position	On
HOOD SW NOTE: This item is monitored only on the vehicle with the Vehicle Security (Theft Warning) system.	Close the hood	Off
	Open the hood	On
THFT HRN REQ NOTE: This item is monitored only on the vehicle with the Vehicle Security (Theft Warning) system.	Not operation	Off
	Horn is activated with Vehicle Security (Theft Warning) system.	On
HORN CHIRP	NOTE: This item is indicated, but not monitored.	Off
IGN ON SW	Ignition switch OFF or ACC	Off
	Ignition switch ON	On

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

< ECU DIAGNOSIS >

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
1 (G)	Ground	Battery power supply	Input	Ignition switch OFF	Battery voltage
2 (R)	Ground	Battery power supply	Input	Ignition switch OFF	Battery voltage
5 (B)	Ground	Ground	—	Ignition switch ON	0 V

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

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
6 (B)	Ground	Ground	—	Ignition switch ON		0 V
7 (Y)	Ground	Front wiper LO	Output	Ignition switch ON	Front wiper switch OFF	0 V
					Front wiper switch LO	Battery voltage
8 (Y/R)	Ground	Front wiper HI	Output	Ignition switch ON	Front wiper switch OFF	0 V
					Front wiper switch HI	Battery voltage
9 (G)	Ground	ECM relay power supply	Output	Ignition switch ON		Battery voltage
10*1 (L/R)	Ground	ECM relay power supply	Output	Ignition switch ON		Battery voltage
11*2 (O)	Ground	PTC heater 1 relay control	Output	PTC heater OFF		Battery voltage
				PTC heater ON		0 V
12*2 (G/Y)	Ground	PTC heater 2 relay control	Output	PTC heater OFF		Battery voltage
				PTC heater ON		0 V
14 (R/B)	Ground	Ignition power supply	Output	Ignition switch OFF or ACC		0 V
				Ignition switch ON		Battery voltage
15 (Y/L)*1 (B/R)*2	Ground	ECM relay control	Input	• Engine running • Ignition switch OFF (For a few seconds after turning ignition switch OFF)		0 - 1.0 V*1
						0.6 V*2
				Ignition switch OFF or ACC (More than a few seconds after turning ignition switch OFF)		Battery voltage
16*3 (Y/R)	Ground	Ignition relay power supply	Output	Ignition switch ON		Battery voltage
				Ignition switch OFF or ACC		0 V
19*1 (R/O)	Ground	Ignition relay power supply	Output	Ignition switch ON		Battery voltage
				Ignition switch OFF or ACC		0 V
21*4 (GR)	Ground	Hood switch	Input	Close the hood		Battery voltage
				Open the hood		0 V
22 (Y/G)	Ground	Reverse switch	Input	Ignition switch OFF or ACC		0 V
				Ignition switch ON	• Selector lever "R" (Except M/T models) • M/T control lever "R" (M/T models)	Battery voltage
					• Selector lever in any position other than "R" (Except M/T models) • M/T control lever in any position other than "R" (M/T models)	0 V
23 (Y/B)	Ground	A/C relay power supply	Output	Engine stopped		0 V
				Engine running	A/C switch OFF	0 V
					A/C switch ON (A/C compressor is operating)	Battery voltage
24 (R/Y)	Ground	Headlamp LO (RH)	Output	Lighting switch OFF		0 V
				Lighting switch 2ND		Battery voltage

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

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
25*1 (G/L)	Ground	ETC relay control	Input	Ignition switch OFF or ACC		Battery voltage
				Ignition switch ON		0 - 1.0 V
26 (O)	Ground	Front wiper auto stop	Input	Ignition switch ON	Front wiper stop position	0 V
					Any position other than front wiper stop position	Battery voltage
27 (W)	Ground	Oil pressure switch	Input	Engine stopped		0 V
				Engine running		Battery voltage
28 (L)	—	CAN-H	Input/ Output	—		—
29 (P)	—	CAN-L	Input/ Output	—		—
30*4 (L)	Ground	Horn relay control	Output	The horn is not activated		Battery voltage
				The horn is activated		0 V
31 (R)	Ground	Headlamp LO (sensor)	Output	Ignition switch ON	Lighting switch OFF	0 V
					Lighting switch 2ND	Battery voltage
32*1 (R/Y)	Ground	ETC relay power supply	Output	Ignition switch ON		Battery voltage
33*1 (B/O)	Ground	Fuel pump relay control	Input	- Engine running - Ignition switch ON (For 1 second after turning ignition switch ON)		0 - 1.0 V
				Ignition switch ON (More than 1 second after turning ignition switch ON)		Battery voltage
34 (R/B)	Ground	Starter relay power supply	Input	Ignition switch ON (Except M/T models)	Selector lever "P" or "N"	0 V
					Selector lever in any position other than "P" or "N"	Battery voltage
35 (W/L)	Ground	Ignition switch ON	Input	Ignition switch ON (M/T models)		
				Ignition switch OFF or ACC		0 V
36 (W)	Ground	Front fog lamp (RH)	Output	Lighting switch 1ST	Front fog lamp switch ON	Battery voltage
					Front fog lamp switch OFF	0 V
37 (R/W)	Ground	Parking lamp (RH)	Output	Lighting switch 1ST		Battery voltage
				Lighting switch OFF		0 V
38 (R/L)	Ground	Tail, license plate lamps and illuminations	Output	Lighting switch 1ST		Battery voltage
				Lighting switch OFF		0 V
39 (GR)	Ground	Headlamp washer relay control	Output	Ignition switch ON	When headlamp washer is operating	0 V
					When headlamp washer is not operating	Battery voltage
40*1 (BR/Y)*5 (SB)*6	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC		0 V
				Ignition switch ON		Battery voltage
41 (P)	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC		0 V
				Ignition switch ON		Battery voltage

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

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
42* ¹ (B/Y)	Ground	Fuel pump relay power supply	Output	- Ignition switch OFF or ACC - Approximately 1 second or more after turning the ignition switch ON		0 V
				- Approximately 1 second after turning the ignition switch ON - Engine running		Battery voltage
43 (W/B)	Ground	Front fog lamp (LH)	Output	Lighting switch 1ST	Front fog lamp switch ON	Battery voltage
					Front fog lamp switch OFF	0 V
44 (L)	Ground	Headlamp LO (LH)	Output	Lighting switch OFF		0 V
				Lighting switch 2ND		Battery voltage
45 (L/W)	Ground	Headlamp HI (RH)	Output	- Lighting switch 2ND and HI - lighting switch PASS		Battery voltage
				Lighting switch OFF		0 V
46 (G)	Ground	Headlamp HI (LH)	Output	- Lighting switch 2ND and HI - Lighting switch PASS		Battery voltage
				Lighting switch OFF		0 V
47 (R/L)	Ground	Parking lamp (LH)	Output	Lighting switch 1ST		Battery voltage
				Lighting switch OFF		0 V
48* ⁷ (Y)	Ground	Cooling fan relay-3 control	Output	When cooling fan does HI operation		0 V
				When cooling fan does OFF or LO operation		Battery voltage
49 (B)	Ground	Rear window defogger relay power supply	Output	Ignition switch ON	Rear window defogger switch ON	Battery voltage
					Rear window defogger switch OFF	0 V
50 (B/R)	Ground	Starter relay power supply	Output	When engine is clanking		Battery voltage
				When engine is not clanking		0 V
51 (P)	Ground	Ignition switch START	Input	Ignition switch START		Battery voltage
				Ignition switch OFF, ACC or ON		0 V
52 (W)	Ground	Cooling fan relay-1 power supply	Output	When cooling fan does LO or HI operation		Battery voltage
				When cooling fan does OFF operation		0 V
53 (W/B)	Ground	Battery power supply (Cooling fan relay)	Input	Ignition switch OFF		Battery voltage
54* ⁵ (R)	Ground	Cooling fan relay-2 power supply	Input	When cooling fan does HI operation		Battery voltage
				When cooling fan does OFF or LO operation		0 V

*1: HR engine and MR engine models

*2: K9K engine models

*3: Except M/T models only

*4: With vehicle security (theft warning) system

*5: HR engine models

*6: MR engine models

*7: MR engine and K9K engine models

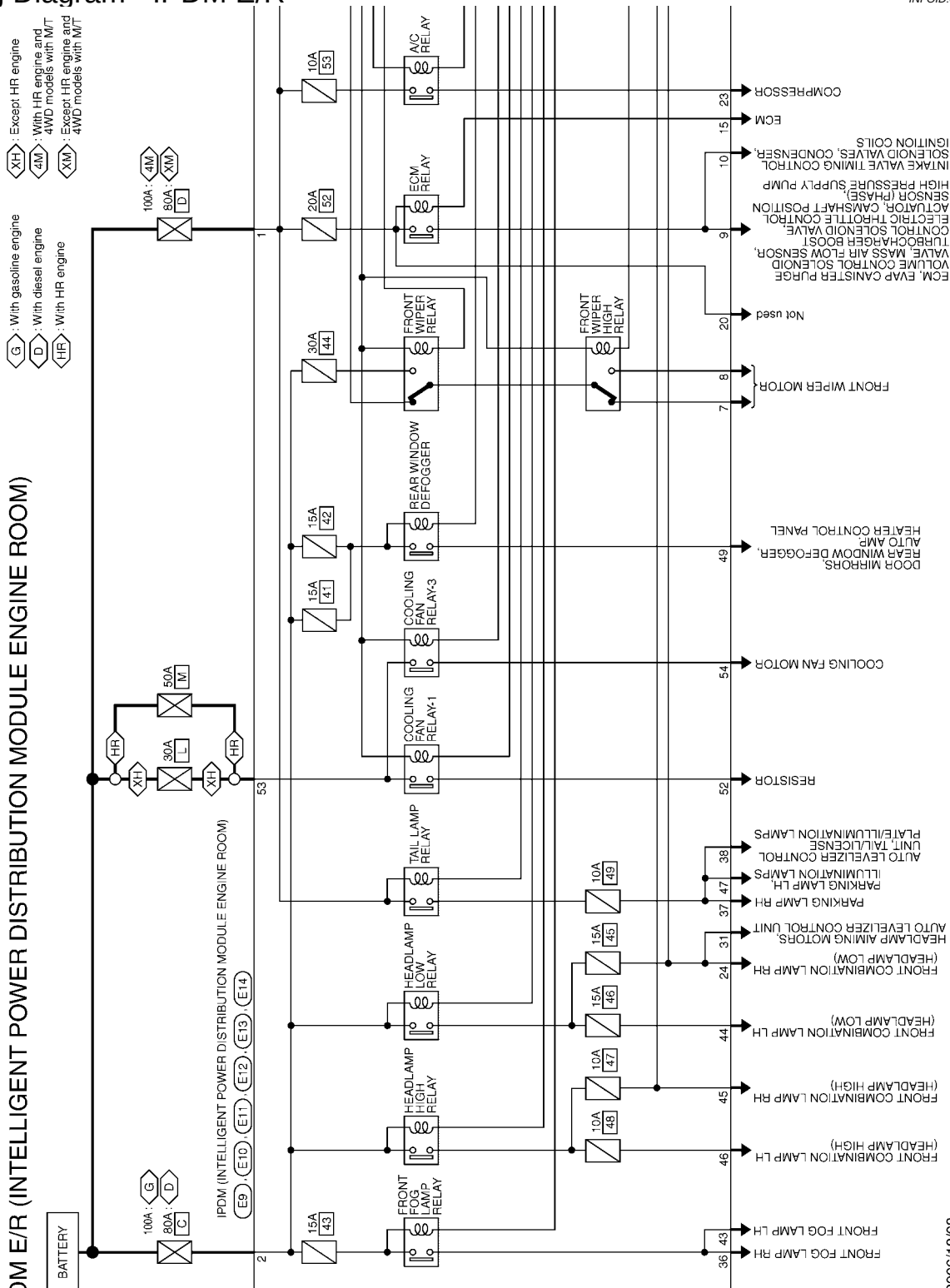
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

< ECU DIAGNOSIS >

Wiring Diagram - IPDM E/R -

INFOID:000000001116759

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

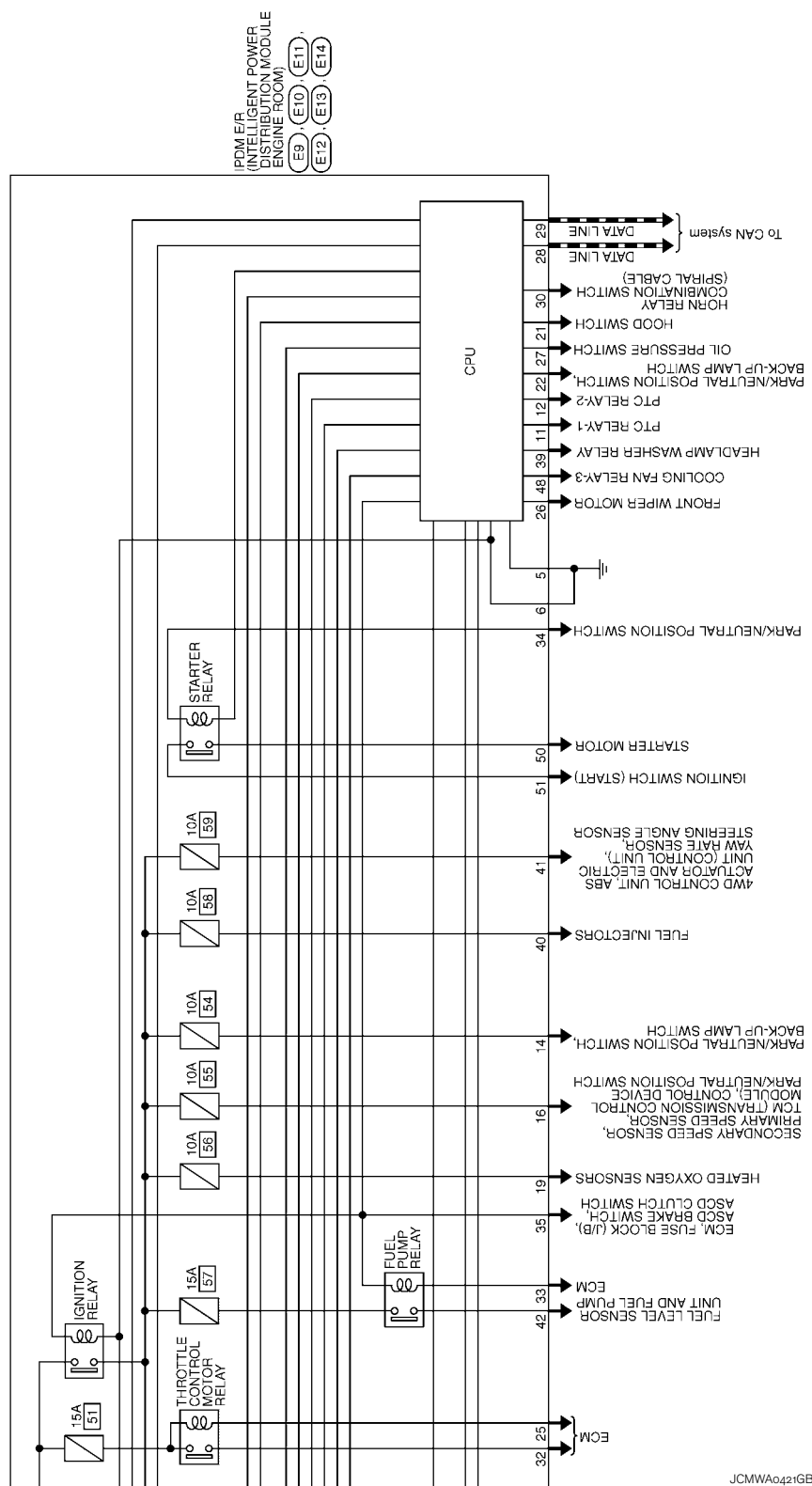


2006/12/08

JCMWA0420GB

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

< ECU DIAGNOSIS >



JCMWA0421GB

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

< ECU DIAGNOSIS >

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

Connector No.	E9
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	LO2FB-MC



1	2
---	---

Terminal No.	Color of Wire	Signal Name [Specification]
1	G	-
2	R	-

Connector No.	E10
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	M08FB-LC



5	4	3
8	7	6

Terminal No.	Color of Wire	Signal Name [Specification]
5	B	-
6	B	-
7	Y	-
8	Y/R	-

Connector No.	E11
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS12FBR-CS



13	12	11	10	9
20	19	18	17	16
15	14	13	12	11

Terminal No.	Color of Wire	Signal Name [Specification]
9	G	-
10	L/R	-
11	O	-
12	G/Y	-
14	R/B	-
15	Y/L	-
15	B/R	- [With gasoline engine]
16	Y/R	- [With diesel engine]
19	R/O	-
20	-	-

Connector No.	E12
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS12FW-CS



25	24	23	22	21
32	31	30	29	28
27	26	25	24	23

Terminal No.	Color of Wire	Signal Name [Specification]
21	GR	-
22	Y/G	-
23	Y/B	-
24	R/Y	-
25	G/L	-
26	O	-
27	W	-
28	L	-
29	P	-
30	L	-
31	R	-

32	R/Y	-
----	-----	---

Connector No.	E13
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS15FW-CS



39	38	37	36	35	34	33
48	47	46	45	44	43	42
41	40	39	38	37	36	35

Terminal No.	Color of Wire	Signal Name [Specification]
33	R/O	-
34	R/B	-
35	W/L	-
36	W	-
37	R/W	-
38	R/L	-
39	GR	-
40	SB	- [With MR engine]
40	BR/Y	- [With HR engine]
41	P	-
42	B/Y	-

43	W/S	-
44	L	-
45	L/W	-
46	G	-
47	R/L	-
48	Y	-

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

Connector No.

E14

Connector Name

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

Connector Type

YZK 7283-5391-40-F





Terminal No.	Color of Wire	Signal Name [Specification]
49	B	-
50	B/R	-
51	P	-
52	W	-
53	W/B	-
54	R	-

Fail Safe

CAN communication control

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

If no CAN communication is available with ECM

JCMWA0423GB

INFOID:000000001116760

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

< ECU DIAGNOSIS >

Control part	Fail-safe in operation
Cooling fan	- The cooling fan relay-2*¹ or the cooling fan relay-3*² turns ON when the ignition switch is turned ON - Turns off the fan motor low relay when the ignition switch is turned OFF
A/C compressor	A/C relay OFF

*1: HR engine models

*2: MR engine and K9K engine models

If no CAN communication is available with BCM

Control part	Fail-safe in operation
Headlamp	- The headlamp low relay turns ON when the ignition switch is turned ON - The headlamp low relay turns OFF when the ignition switch is turned OFF - Headlamp high relay OFF
- Parking lamps - License plate lamps - Tail lamps - Illuminations	- The tail lamp relay turns ON when the ignition switch is turned ON - The tail lamp relay turns OFF when the ignition switch is turned OFF
Front wiper	- The status just before activation of fail-safe control is maintained until the ignition switch is turned OFF while the front wiper is operating at LO or HI speed. - The front wiper is operated at LO speed until the ignition switch is turned OFF if the fail-safe control is activated while the front wiper is set in the INT mode and the front wiper motor is operating.
Front fog lamps	Front fog lamp relay OFF
Starter motor	Inhibit relay OFF
Rear window defogger	Rear window defogger relay OFF
Headlamp washer	Headlamp washer relay OFF
PTC heater	PTC heater relay OFF

Ignition relay malfunction detection function

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

DTC	Ignition switch	Ignition relay	Tail lamp relay
—	ON	ON	—
—	OFF	OFF	—
B2098: IGN RLY ON	OFF	ON	ON (10 minutes)
B2099: IGN RLY OFF	ON	OFF	—

NOTE:

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

Front wiper control

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

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

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

NOTE:

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

< ECU DIAGNOSIS >

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

DTC Index

INFOID:0000000001116761

CONSULT display	Fail-safe	Timing ^{NOTE}		Reference page
No DTC is detected. further testing may be required.	—	—	—	—
U1000: CAN COMM CIRCUIT	×	CRNT	PAST	PCS-14
B2098: IGN RELAY ON	×	CRNT	PAST	PCS-15
B2099: IGN RELAY OFF	—	CRNT	PAST	PCS-16
B2100: EEPROM	—	CRNT	PAST	PCS-17

NOTE:

The details of time display are as follows.

- CRNT: The malfunctions that are detected now.
- PAST: The number is indicated when it is normal at present and a malfunction was detected in the past.

WIPER AND WASHER SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

WIPER AND WASHER SYSTEM SYMPTOMS

Symptom Table

INFOID:000000000924455

CAUTION:

Perform the self-diagnosis with CONSULT-III before performing the diagnosis by symptom. Perform the diagnosis by DTC if DTC is detected.

Symptom		Probable malfunction location	Inspection item
Front wiper does not operate.	HI only	- Combination switch - Harness between combination switch and BCM - BCM	Combination switch Refer to BCS-63, "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-27, "Component Function Check" .
		Front wiper request signal - BCM - IPDM E/R	IPDM E/R DATA MONITOR "FR WIP REQ"
	LO and INT	- Combination switch - Harness between combination switch and BCM - BCM	Combination switch Refer to BCS-63, "Symptom Table" .
		- IPDM E/R - Harness between IPDM E/R and front wiper motor - Front wiper motor	Front wiper motor (LO) circuit Refer to WW-25, "Component Function Check" .
		Front wiper request signal - BCM - IPDM E/R	IPDM E/R DATA MONITOR "FR WIP REQ"
	INT only	- Combination switch - Harness between combination switch and BCM - BCM	Combination switch Refer to BCS-63, "Symptom Table" .
		Front wiper request signal - BCM - IPDM E/R	IPDM E/R DATA MONITOR "FR WIP REQ"
	HI, LO, and INT	SYMPTOM DIAGNOSIS "FRONT WIPER DOES NOT OPERATE" Refer to WW-93, "Diagnosis Procedure" .	

WIPER AND WASHER SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

Symptom		Probable malfunction location	Inspection item
Front wiper does not stop.	HI only	- Combination switch - BCM	Combination switch Refer to BCS-63, "Symptom Table" .
		Front wiper request signal - BCM - IPDM E/R	IPDM E/R DATA MONITOR "FR WIP REQ"
		IPDM E/R	—
	LO only	- Combination switch - BCM	Combination switch Refer to BCS-63, "Symptom Table" .
		Front wiper request signal - BCM - IPDM E/R	IPDM E/R DATA MONITOR "FR WIP REQ"
		IPDM E/R	—
	INT only	- Combination switch - BCM	Combination switch Refer to BCS-63, "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 - Harness between combination switch and BCM - BCM	Combination switch Refer to BCS-63, "Symptom Table" .
		BCM	—
	Intermittent control linked with vehicle speed cannot be performed.	Check the vehicle speed detection wiper setting. Refer to WW-17, "WIPER : CONSULT-III Function (BCM - WIPER)" .	
	Wiper is not linked to the washer operation.	- Combination switch - Harness between combination switch and BCM - BCM	Combination switch Refer to BCS-63, "Symptom Table" .
		BCM	—
	Does not return to stop position (Repeatedly operates for 10 seconds and then stops for 20 seconds. After that, it stops the operation).	- IPDM E/R - Harness between IPDM E/R and front wiper motor - Front wiper motor	Front wiper auto stop signal circuit Refer to WW-29, "Component Function Check" .
Rear wiper does not operate.	ON only	- Combination switch - Harness between combination switch and BCM - BCM	Combination switch Refer to BCS-63, "Symptom Table" .
	INT only	- Combination switch - Harness between combination switch and BCM - BCM	Combination switch Refer to BCS-63, "Symptom Table" .
	ON and INT	- Combination switch - Harness between combination switch and BCM - BCM	Combination switch Refer to BCS-63, "Symptom Table" .
		- BCM - Harness between rear wiper motor and BCM - Harness between rear wiper motor and ground - Rear wiper motor	Combination switch Refer to WW-34, "Component Function Check" .

WIPER AND WASHER SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

Symptom		Probable malfunction location	Inspection item
Rear wiper does not stop.	ON only	- Combination switch - BCM	Rear wiper motor circuit Refer to WW-34, "Component Function Check" .
	INT only	- Combination switch - BCM	Combination switch Refer to BCS-63, "Symptom Table" .
Rear wiper does not operate normally.	Wiper is not linked to the washer operation.	- Combination switch - Harness between rear wiper motor and BCM - BCM	Combination switch Refer to BCS-63, "Symptom Table" .
		BCM	—
	Rear wiper does not return to the Stop position (Stops after a five-second operation).	- BCM - Harness between rear wiper motor and BCM - Rear wiper motor	Rear wiper auto stop signal circuit Refer to WW-36, "Component Function Check" .
	Rear wiper stops after operating for five seconds when ignition switch is turned ON.		
	Rear wiper does not operate even when selector lever is shifted to the "R".	Reverse switch signal (CAN communication) - BCM - IPDM E/R	IPDM E/R DATA MONITOR "REV SW"
Headlamp washer does not operate.	Headlamp washer does not operate with the front washer when headlamps are turned ON.	- Combination switch - Harness between combination switch and BCM - BCM - Headlamp washer pump	Combination switch Refer to BCS-63, "Symptom Table" .
		- Fusible link - Harness between fusible link and headlamp washer relay - Headlamp washer relay - Harness between headlamp washer relay and IPDM E/R - IPDM E/R - Harness between headlamp washer relay and headlamp washer pump - Harness between headlamp washer pump and ground - Headlamp washer pump	Headlamp washer circuit Refer to WW-39, "Component Function Check" .
		BCM	—

NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS >

NORMAL OPERATING CONDITION

Description

INFOID:000000000924458

FRONT WIPER MOTOR PROTECTION FUNCTION

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

REAR WIPER MOTOR PROTECTION FUNCTION

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

FRONT WIPER DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

FRONT WIPER DOES NOT OPERATE

Description

INFOID:000000000924456

The front wiper does not operate under any operation conditions.

Diagnosis Procedure

INFOID:000000000924457

1.CHECK WIPER RELAY OPERATION

IPDM E/R AUTO ACTIVE TEST

1. Start IPDM E/R auto active test. Refer to [PCS-9, "Diagnosis Description"](#).
2. Check that the front wiper operates at the LO/HI operation.

CONSULT-III ACTIVE TEST

1. Select "FRONT WIPER" of IPDM E/R active test item.
2. With 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 5.

NO >> GO TO 2.

2.CHECK FRONT WIPER MOTOR FUSE

1. Turn the ignition switch OFF.
2. Check that the front wiper motor 30A fuse (#44) is not fusing.

Is the fuse fusing?

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

NO >> GO TO 3.

3.CHECK FRONT WIPER MOTOR GROUND OPEN CIRCUIT

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

Front wiper motor		Ground	Continuity
Connector	Terminal		
E20	5		Existed

Does continuity exist?

YES >> GO TO 4.

NO >> Repair the harnesses or connectors.

4.CHECK FRONT WIPER MOTOR OUTPUT VOLTAGE

CONSULT-III ACTIVE TEST

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

FRONT WIPER DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

Terminals		Test item	Voltage (Approx.)
(+)	(-)		
IPDM E/R		FRONT WIP- ER	
Connector	Terminal		
E10	7	LO	Battery voltage
		OFF	0 V
	8	HI	Battery voltage
		OFF	0 V

Is the measurement value normal?

YES >> Replace front wiper motor.

NO >> Replace IPDM E/R.

5.CHECK FRONT WIPER REQUEST SIGNAL INPUT

CONSULT-III DATA MONITOR

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

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

Is the status of item normal?

YES >> Replace IPDM E/R.

NO >> GO TO 6.

6.CHECK COMBINATION SWITCH

1. Perform the inspection of the combination switch. Refer to [BCS-63, "Symptom Table"](#).

Is combination switch normal?

YES >> Replace BCM. Refer to [BCS-64, "Exploded View"](#).

NO >> Repair or replace the applicable parts.

HEADLAMP WASHER DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

HEADLAMP WASHER DOES NOT OPERATE

Description

INFOID:0000000001115040

Headlamp washer does not operate linked to front washer operation.

Diagnosis Procedure

INFOID:0000000000904271

1.CHECK IPDM E/R

CONSULT-III DATA MONITOR

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

Monitor item	Condition		Monitor status
HL WASHER REQ	Headlamp washer	Operat- ing	ON
		Stopped	OFF

Is the status of item normal?

- YES >> Refer to [WW-39, "Component Function Check"](#).
NO >> GO TO 2.

2.CHECK COMBINATION SWITCH

1. Perform the inspection of the combination switch. Refer to [BCS-63, "Symptom Table"](#).

Is combination switch normal?

- YES >> Replace BCM. Refer to [BCS-64, "Exploded View"](#).
NO >> Repair or replace the applicable parts.

PRECAUTIONS

< PRECAUTION >

PRECAUTION

PRECAUTIONS

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

INFOID:000000001102412

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

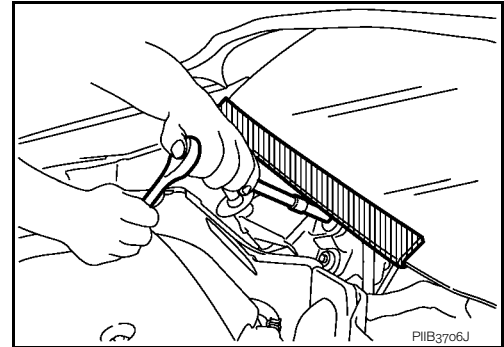
WARNING:

- 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 SRC section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

Precaution for Procedure without Cowl Top Cover

INFOID:000000001102413

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



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HEADLAMP WASHER NOZZLE AND TUBE

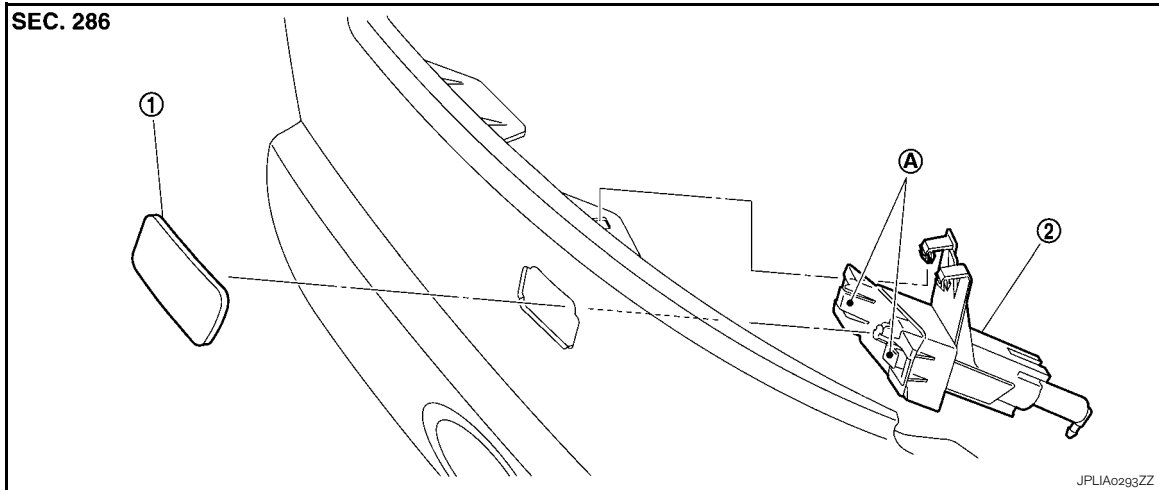
< ON-VEHICLE REPAIR >

ON-VEHICLE REPAIR

HEADLAMP WASHER NOZZLE AND TUBE

Exploded View

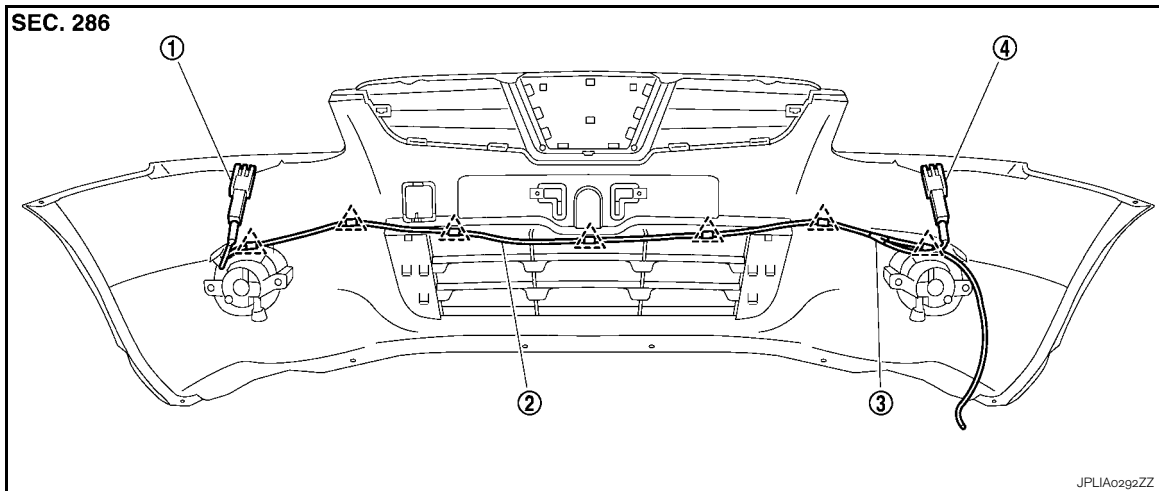
INFOID:000000000926336



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

Hydraulic Layout

INFOID:000000000926340



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

△ : Clip

Removal and Installation

INFOID:000000000926337

REMOVAL

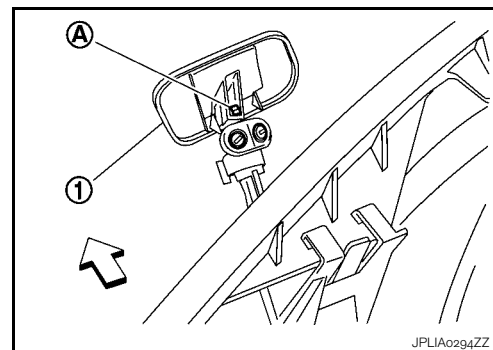
1. Remove the front bumper fascia. Refer to [EXT-11, "Exploded View"](#).
2. Remove headlamp washer tube from headlamp washer nozzle assembly.

HEADLAMP WASHER NOZZLE AND TUBE

< ON-VEHICLE REPAIR >

3. Push pawl (A), and remove headlamp washer nozzle cover (1).

⇐ : Vehicle front



4. Push pawl, and remove headlamp washer nozzle assembly from the front bumper fascia.

INSTALLATION

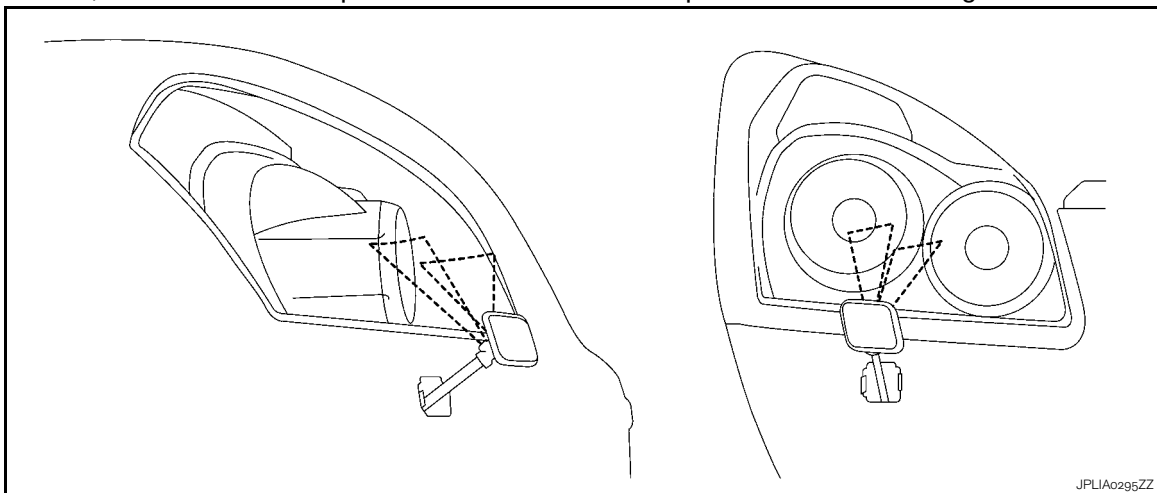
Note the following, and install in the reverse order of removal.

Inspection

INFOID:000000000906858

HEADLAMP WASHER NOZZLE SPLAY POSITION INSPECTION

Check that the headlamp washer injection is certainly on the headlamp (LO) illuminating area. If the injection is out of the area, check the headlamp washer tube and headlamp washer nozzle leakages.



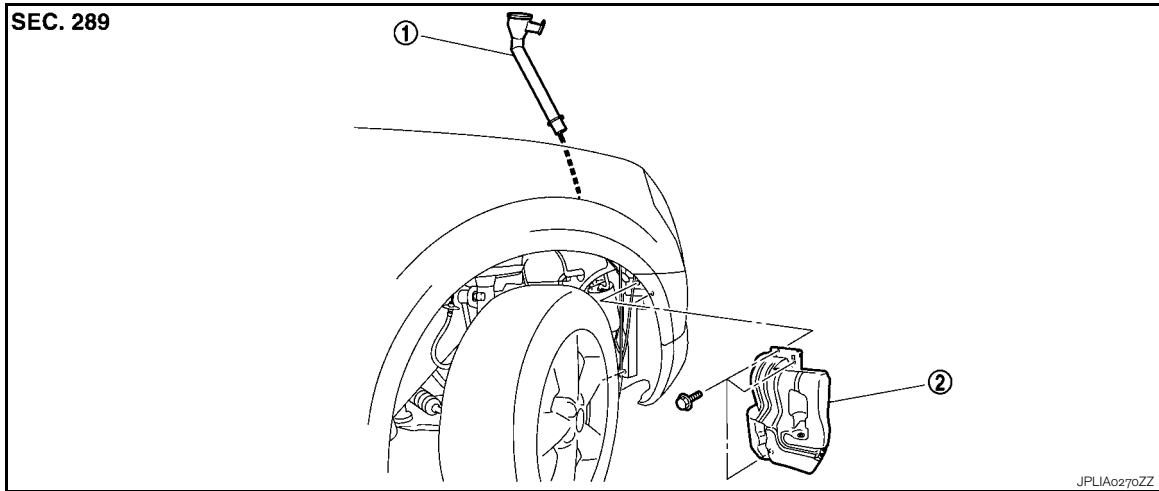
WASHER TANK

< ON-VEHICLE REPAIR >

WASHER TANK

Exploded View

INFOID:000000000896788



1. Washer tank inlet

2. Washer tank

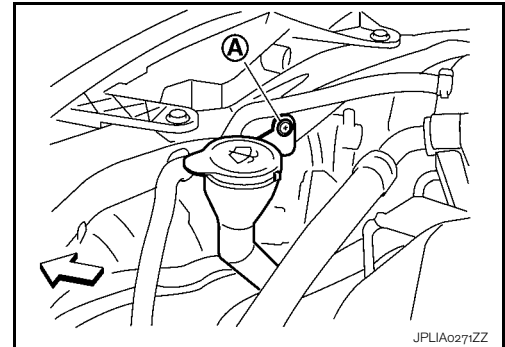
Removal and Installation

INFOID:000000000896789

REMOVAL

1. Remove the clip (A).

← : Vehicle front



2. Pull out the washer tank inlet from the washer tank.
3. Remove the splash guard. Refer to [EXT-21, "Exploded View"](#).
4. Remove the fender protector RH (front). Refer to [EXT-21, "Exploded View"](#).
5. Disconnect washer pump connector.
6. Disconnect headlamp washer pump connector.
7. Remove all washer tubes.
8. Remove washer tank mounting bolts.
9. Remove the washer tank from the vehicle.

INSTALLATION

Install in the reverse order of removal.

CAUTION:

Add water up to the top of the washer tank inlet after installing. Check that there is no leakage.

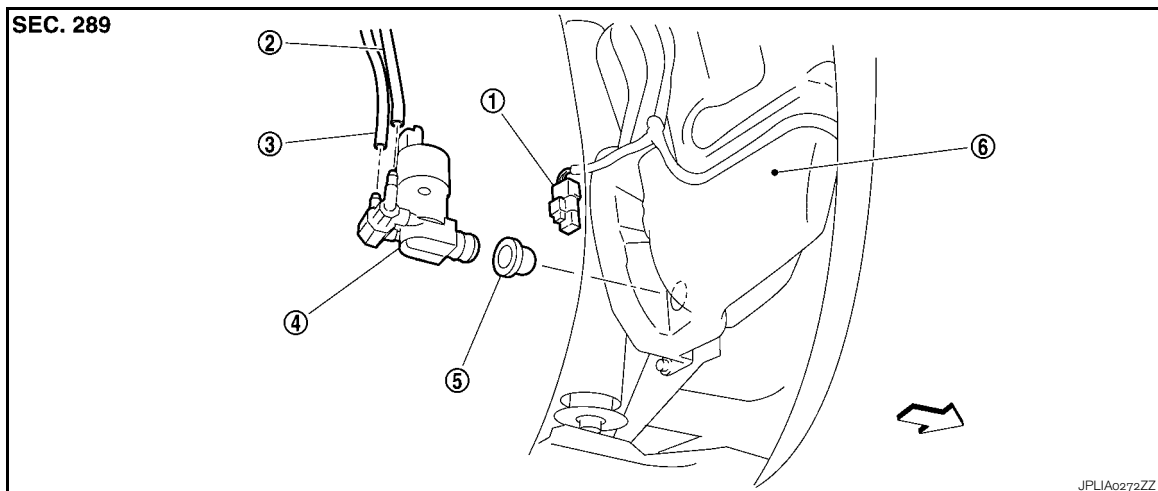
WASHER PUMP

< ON-VEHICLE REPAIR >

WASHER PUMP

Exploded View

INFOID:000000000896790



- | | | |
|--------------------------|----------------------|---------------------|
| 1. Washer pump connector | 2. Front washer tube | 3. Rear washer tube |
| 4. Washer pump | 5. Packing | 6. Washer tank |

↩ : Vehicle front

Removal and Installation

INFOID:000000000896791

REMOVAL

1. Remove the splash guard. Refer to [EXT-21, "Exploded View"](#).
2. Remove the fender protector RH (front). Refer to [EXT-21, "Exploded View"](#).
3. Disconnect washer pump connector.
4. Remove front washer tube and rear washer tube.
5. Remove washer pump from the washer tank.
6. Remove the packing from the washer tank.

INSTALLATION

Install in the reverse order of removal.

CAUTION:

Never twist the packing when installing the washer pump.

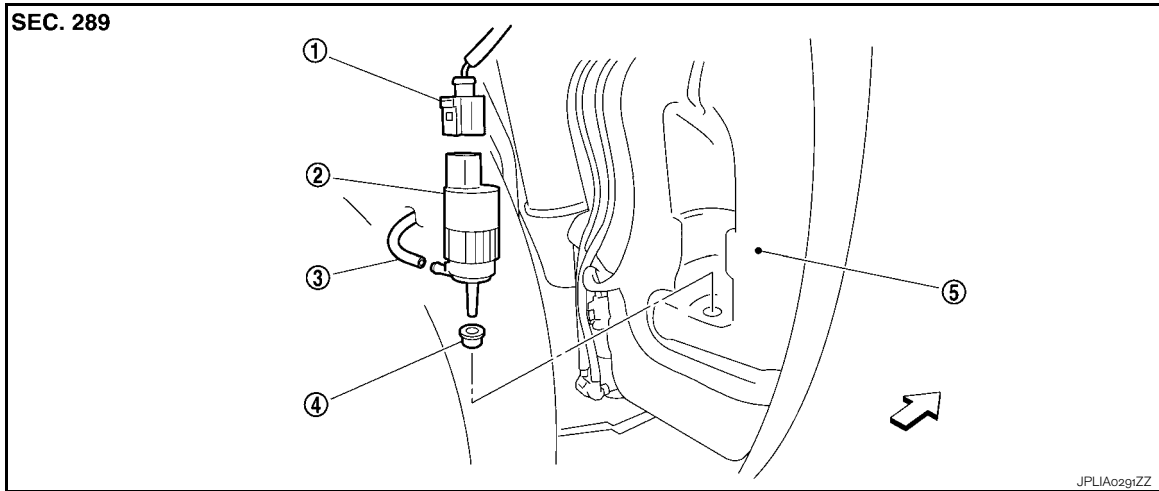
HEADLAMP WASHER PUMP

< ON-VEHICLE REPAIR >

HEADLAMP WASHER PUMP

Exploded View

INFOID:000000000936071



- | | | |
|-----------------------------------|-------------------------|-------------------------|
| 1. Headlamp washer pump connector | 2. Headlamp washer pump | 3. Headlamp washer tube |
| 4. Packing | 5. Washer tank | |

↶ : Vehicle front

Removal and Installation

INFOID:000000000936072

REMOVAL

1. Remove the splash guard. Refer to [EXT-21, "Exploded View"](#).
2. Remove the fender protector RH (front). Refer to [EXT-21, "Exploded View"](#).
3. Disconnect the headlamp washer pump connector.
4. Remove headlamp washer tube.
5. Remove headlamp washer pump from the washer tank.
6. Remove the packing from the washer tank.

INSTALLATION

Install in the reverse order of removal.

CAUTION:

Never twist the packing when installing the washer pump.

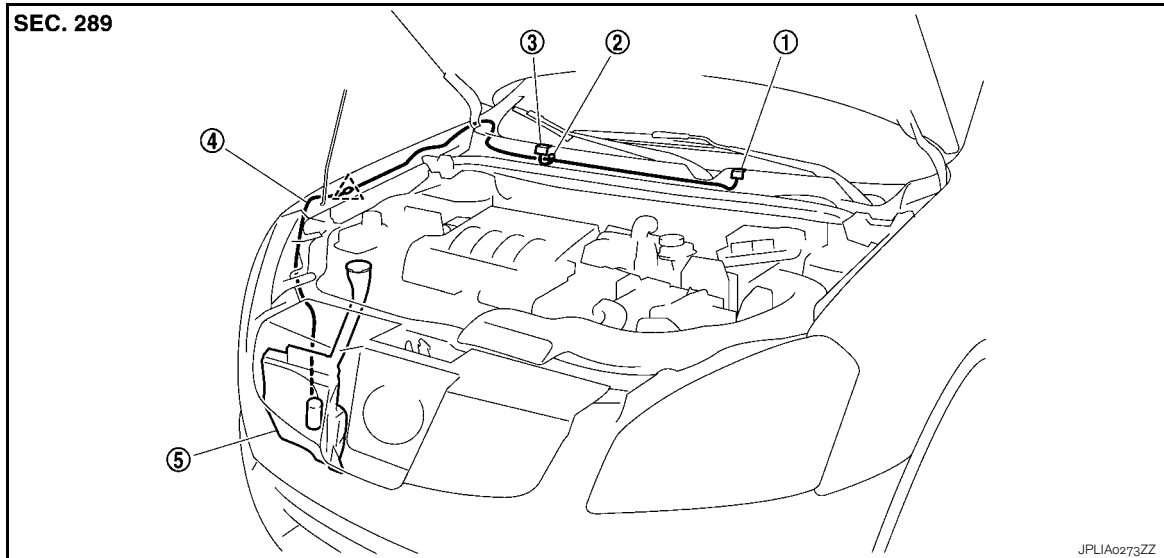
FRONT WASHER NOZZLE AND TUBE

< ON-VEHICLE REPAIR >

FRONT WASHER NOZZLE AND TUBE

Hydraulic Layout

INFOID:000000000896792



- | | | |
|-----------------------------|----------------|-----------------------------|
| 1. Front washer nozzle (LH) | 2. Check valve | 3. Front washer nozzle (RH) |
| 4. Front washer tube | 5. Washer tank | |

△ : Clip

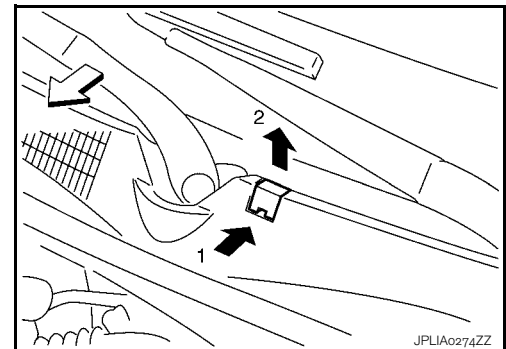
Removal and Installation

INFOID:000000000896793

REMOVAL

1. Open the hood.
2. Remove front washer nozzle in numerical order shown in the figure.
3. Remove the front washer tube from the front washer nozzle.

← : Vehicle front



INSTALLATION

Install in the reverse order of removal.

CAUTION:

The spray positions differ, check that left and right nozzles are installed correctly.

Inspection and Adjustment

INFOID:000000000926151

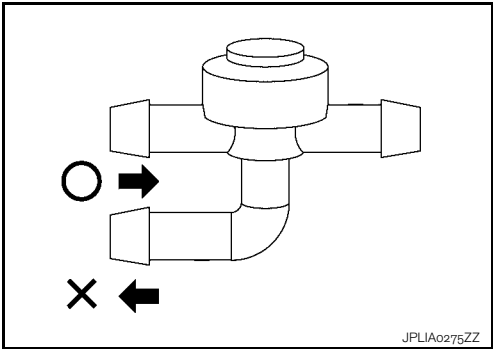
INSPECTION

Washer Nozzle Inspection

FRONT WASHER NOZZLE AND TUBE

< ON-VEHICLE REPAIR >

Check that air can pass through the hose by blowing forward (toward the nozzle), and check that air cannot pass through by sucking.



ADJUSTMENT

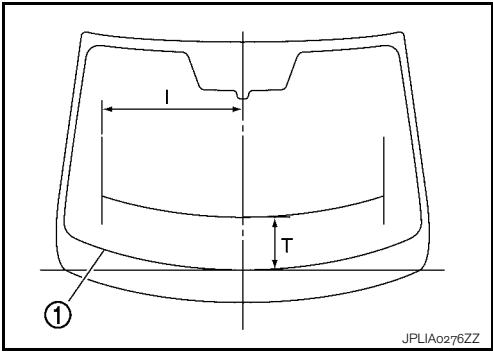
Washer Nozzle Spray Position Adjustment
Adjust spray positions to match the positions shown in the figure.

1 : Black printed frame line

Unit: mm (in)

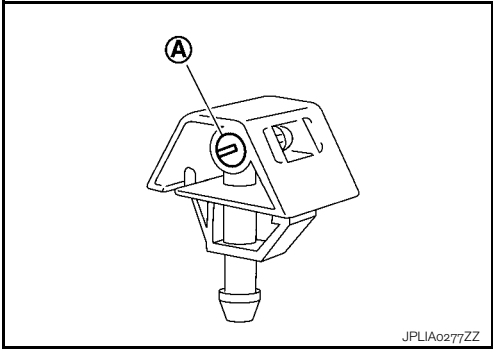
T (Standard)	I (Width)
200 (7.87)	522 (20.55)

NOTE:
Check the width is within the limit as it cannot be adjusted.



Turn an adjustment screw (A) to adjust a spray position.

NOTE:
If wax or dust gets into the nozzle, remove wax or dust with a needle or small pin.



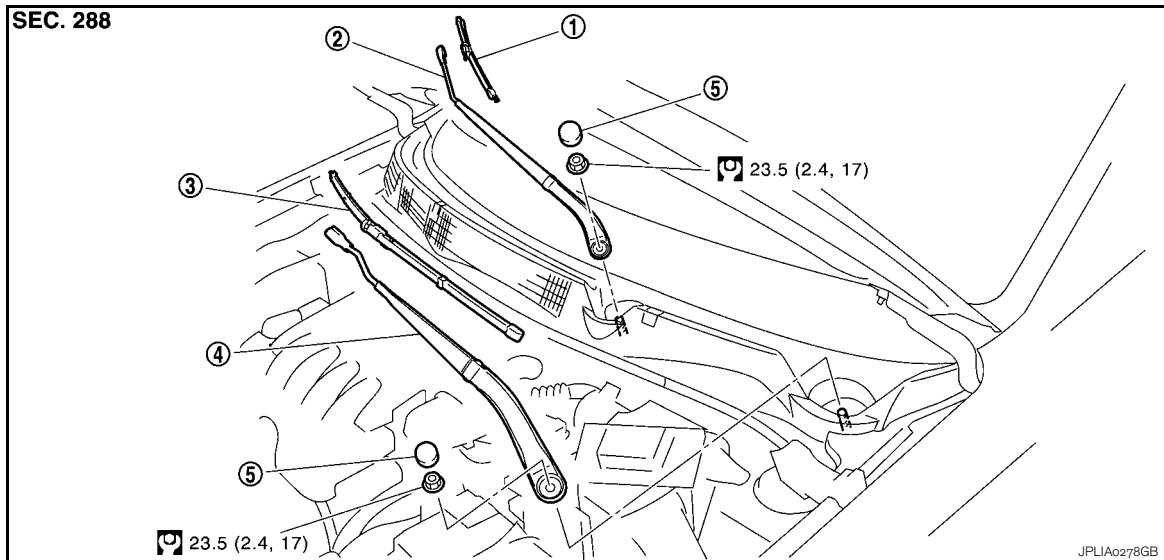
FRONT WIPER ARM

< ON-VEHICLE REPAIR >

FRONT WIPER ARM

Exploded View

INFOID:000000000924466



- | | | |
|---------------------------|-------------------------|---------------------------|
| 1. Front wiper blade (RH) | 2. Front wiper arm (RH) | 3. Front wiper blade (LH) |
| 4. Front wiper arm (LH) | 5. Front wiper arm cap | |

Refer to [GI-4, "Components"](#) for symbols in the figure.

Removal and Installation

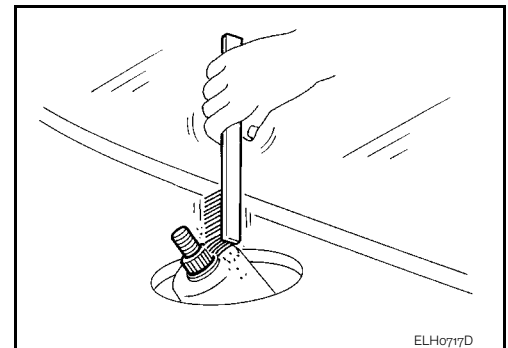
INFOID:000000000924467

REMOVAL

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

INSTALLATION

1. Clean wiper arm mount as shown in the figure to prevent nuts from being loosened.



2. Operate the front wiper motor to move the front wiper to the auto stop position.
3. Adjust the front wiper blade position. Refer to [WW-105, "Adjustment"](#).
4. Install the front wiper arm by tightening the mounting nut.
5. Inject the washer fluid.
6. Operate the front wiper to move it to the auto stop position.
7. Check that the front wiper blades stop at the specified position.
8. Install wiper arm cap.

FRONT WIPER ARM

< ON-VEHICLE REPAIR >

Adjustment

INFOID:000000000924468

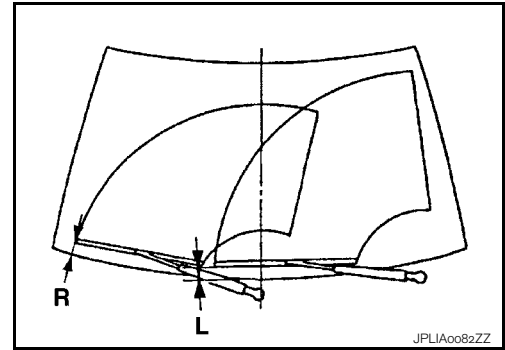
WIPER BLADE POSITION ADJUSTMENT

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

Standard clearance

R : 57.5 ± 10.3 mm (2.26 ± 0.406 in)

L : 56.1 ± 10.3 mm (2.21 ± 0.406 in)



A

B

C

D

E

F

G

H

I

J

K

WW

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N

O

P

FRONT WIPER DRIVE ASSEMBLY

< ON-VEHICLE REPAIR >

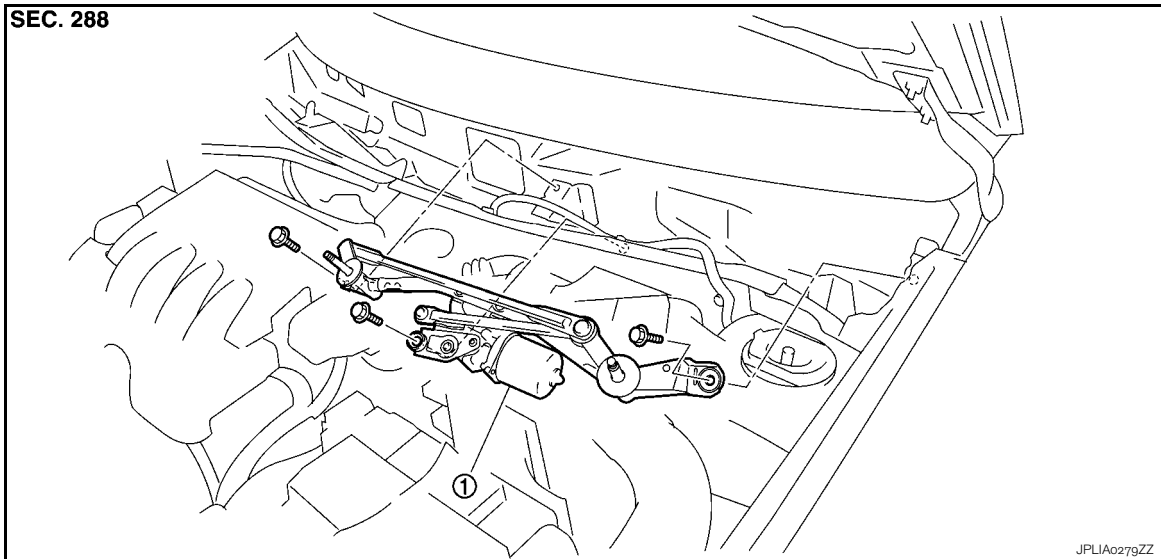
FRONT WIPER DRIVE ASSEMBLY

LHD MODELS

LHD MODELS : Exploded View

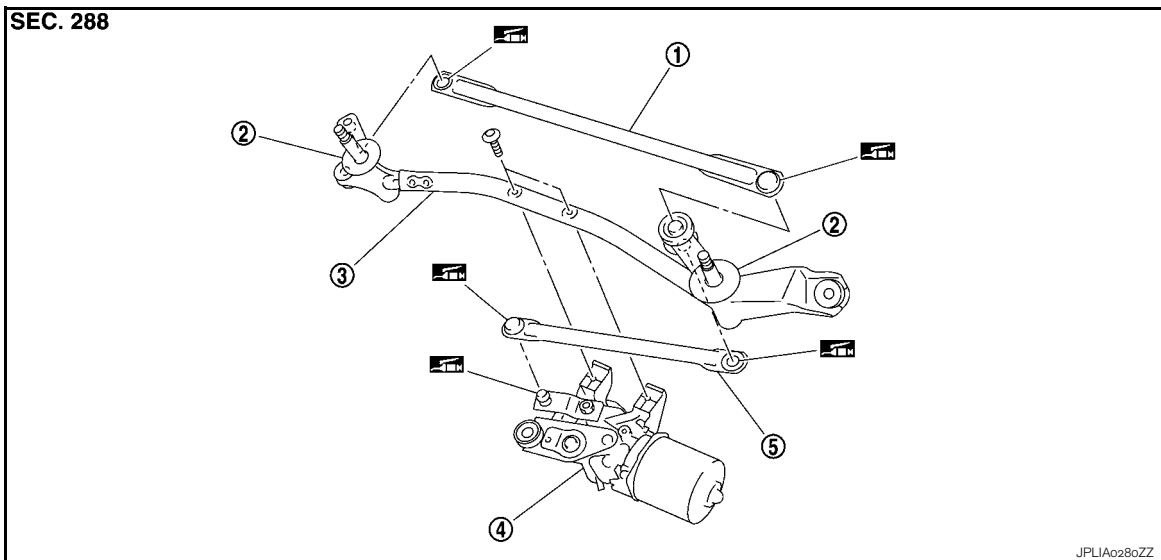
INFOID:000000000924469

REMOVAL VIEW



1. Front wiper drive assembly

DISASSEMBLY VIEW



- | | | |
|--------------------------|--------------------------|----------------------|
| 1. Front wiper linkage 1 | 2. Shaft seal | 3. Front wiper frame |
| 4. Front wiper motor | 5. Front wiper linkage 2 | |

: Multi-purpose grease or an equivalent.

LHD MODELS : Removal and Installation

INFOID:000000000924470

REMOVAL

1. Remove front wiper arm. Refer to [WW-104, "Exploded View"](#).
2. Remove cowl top cover. Refer to [EXT-19, "Exploded View"](#).

FRONT WIPER DRIVE ASSEMBLY

< ON-VEHICLE REPAIR >

3. Remove bolts from the front wiper drive assembly.
4. Disconnect the front wiper motor connector.
5. Remove front wiper drive assembly from the vehicle.

INSTALLATION

1. Install the front wiper drive assembly to the vehicle.
2. Connect the front wiper motor connector.
3. Operate the front wiper to move it to the auto stop position.
4. Install the cowl top cover. Refer to [EXT-19, "Exploded View"](#).
5. Install front wiper arms. Refer to [WW-104, "Exploded View"](#).

LHD MODELS : Disassembly and Assembly

INFOID:000000000924471

DISASSEMBLY

1. Remove the front wiper linkage 1 and 2 from the front wiper drive assembly.
CAUTION:
Do not bend the linkage or damage the plastic part of the ball joint when removing the front wiper linkage.
2. Remove the front wiper motor mounting screws, and then remove the front wiper motor from the front wiper frame.

ASSEMBLY

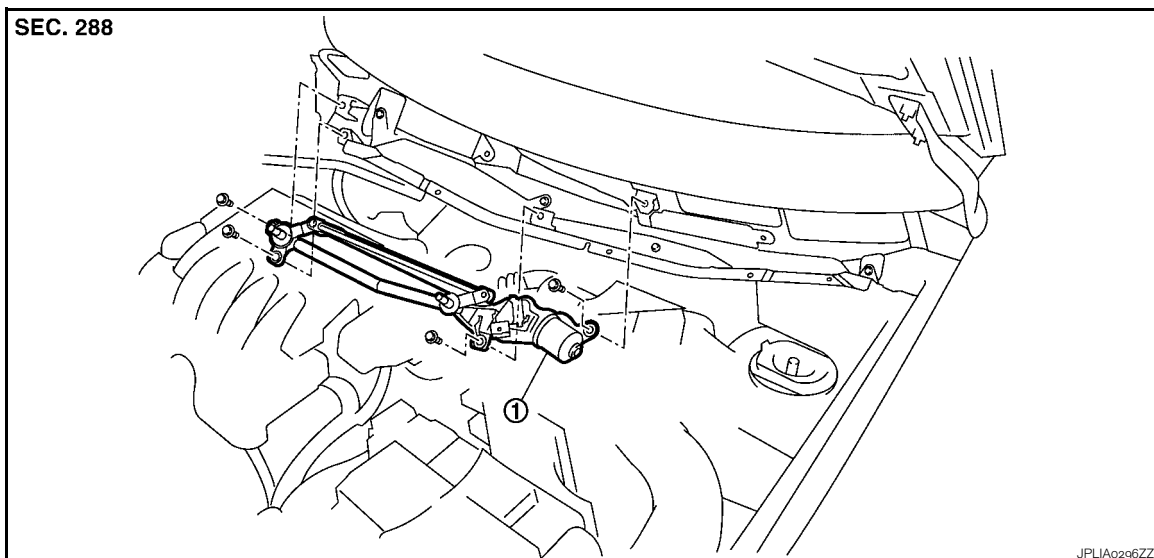
1. Connect the front wiper motor connector.
2. Operate the front wiper to move it to the auto stop position.
3. Disconnect the front wiper motor connector.
4. Install front wiper motor to front wiper frame.
5. Install the front wiper linkage 2 to the front wiper motor and the front wiper frame.
6. Install the front wiper linkage 1 to the front wiper frame.
CAUTION:
 - Do not drop front wiper motor or cause it to come into contact with other parts.
 - Be careful for the grease condition at the front wiper motor and front wiper linkage joint (retainer). Apply multi-purpose grease or an equivalent if necessary.

RHD MODELS

RHD MODELS : Exploded View

INFOID:000000000949930

REMOVAL VIEW

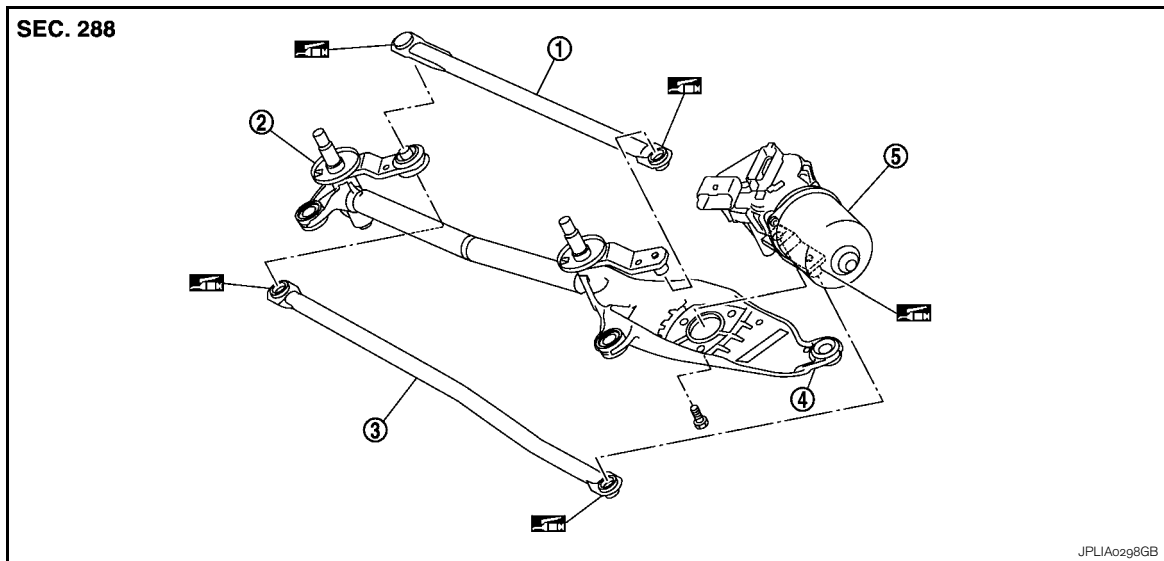


FRONT WIPER DRIVE ASSEMBLY

< ON-VEHICLE REPAIR >

1. Front wiper drive assembly

DISASSEMBLY VIEW



- | | | |
|--------------------------|----------------------|--------------------------|
| 1. Front wiper linkage 1 | 2. Shaft seal | 3. Front wiper linkage 2 |
| 4. Front wiper frame | 5. Front wiper motor | |

 : Multi-purpose grease or an equivalent.

RHD MODELS : Removal and Installation

INFOID:000000000949931

REMOVAL

1. Remove front wiper arm. Refer to [WW-104, "Exploded View"](#).
2. Remove cowl top cover. Refer to [EXT-19, "Exploded View"](#).
3. Remove bolts from the front wiper drive assembly.
4. Disconnect the front wiper motor connector.
5. Remove front wiper drive assembly from the vehicle.

INSTALLATION

1. Install the front wiper drive assembly to the vehicle.
2. Connect the front wiper motor connector.
3. Operate the front wiper to move it to the auto stop position.
4. Install the cowl top cover. Refer to [EXT-19, "Exploded View"](#).
5. Install front wiper arms. Refer to [WW-104, "Exploded View"](#).

RHD MODELS : Disassembly and Assembly

INFOID:000000000949932

DISASSEMBLY

1. Remove the front wiper linkage 1 and 2 from the front wiper drive assembly.
CAUTION:
Do not bend the linkage or damage the plastic part of the ball joint when removing the front wiper linkage.
2. Remove the front wiper motor mounting screws, and then remove the front wiper motor from the front wiper frame.

ASSEMBLY

1. Connect the front wiper motor connector.
2. Operate the front wiper to move it to the auto stop position.

FRONT WIPER DRIVE ASSEMBLY

< ON-VEHICLE REPAIR >

3. Disconnect the front wiper motor connector.
4. Install front wiper motor to front wiper frame.
5. Install the front wiper linkage 2 to the front wiper motor and the front wiper frame.
6. Install the front wiper linkage 1 to the front wiper frame.

CAUTION:

- Do not drop front wiper motor or cause it to come into contact with other parts.
- Be careful for the grease condition at the wiper motor and wiper linkage joint (retainer). Apply multi-purpose grease or an equivalent if necessary.

A

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WW

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RAIN SENSOR

< ON-VEHICLE REPAIR >

RAIN SENSOR

Exploded View

INFOID:000000000906861

Refer to [EXL-175, "Exploded View"](#).

Removal and Installation

INFOID:000000000906863

Refer to [EXL-175, "Removal and Installation"](#).

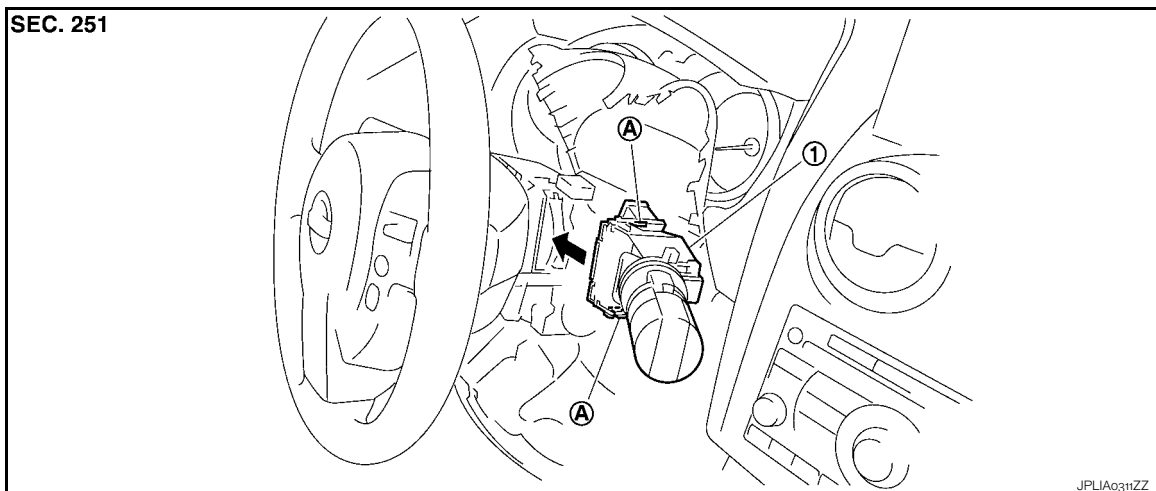
WIPER AND WASHER SWITCH

< ON-VEHICLE REPAIR >

WIPER AND WASHER SWITCH

Exploded View

INFOID:000000001083113



- 1. Wiper & washer switch
- A. Pawl

Removal and Installation

INFOID:000000001083114

REMOVAL

1. Remove steering column cover. Refer to [IP-11. "Exploded View"](#).
2. While pressing pawls, pull the wiper & washer switch. And disconnect from the switch base.

INSTALLATION

Installation is the reverse order of removal.

WW

REAR WIPER MOTOR

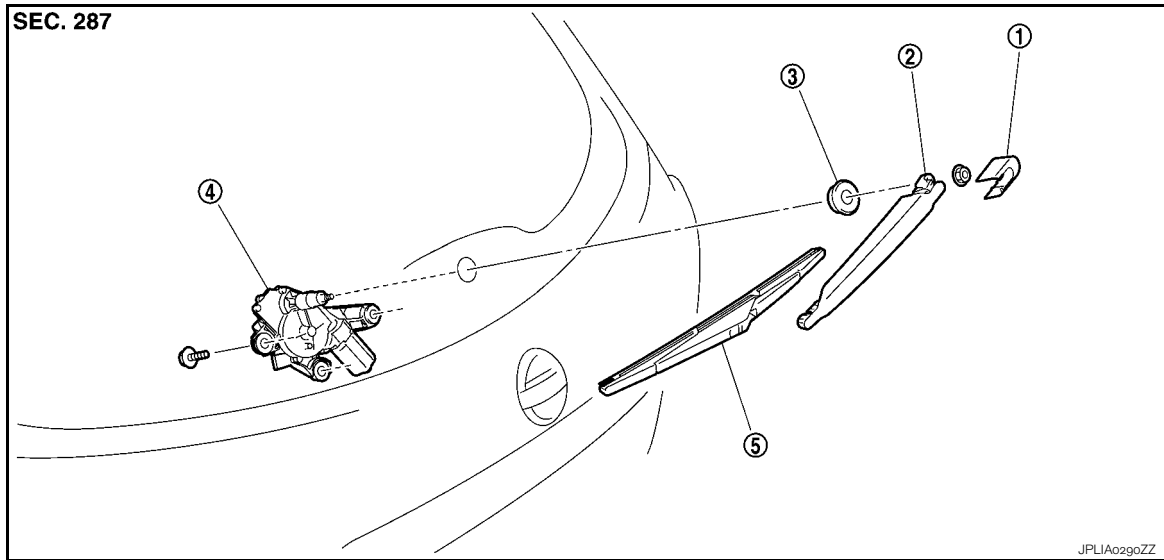
< ON-VEHICLE REPAIR >

REAR WIPER MOTOR

Exploded View

INFOID:000000000926247

REMOVAL VIEW



- | | | |
|-------------------------|---------------------|---------------|
| 1. Rear wiper arm cover | 2. Rear wiper arm | 3. Pivot seal |
| 4. Rear wiper motor | 5. Rear wiper blade | |

Removal and Installation

INFOID:000000000926248

REMOVAL

1. Operate the rear wiper to the auto stop position.
2. Remove rear wiper arm cover.
3. Remove the rear wiper arm mounting nut.
4. Raise rear wiper arm, and remove wiper arm from the vehicle.
5. Remove back door trim finisher lower. Refer to [INT-26, "Exploded View"](#).
6. Disconnect the rear wiper motor connector.
7. Remove bolts.
8. Remove rear wiper motor from the vehicle.
9. Remove pivot seal.

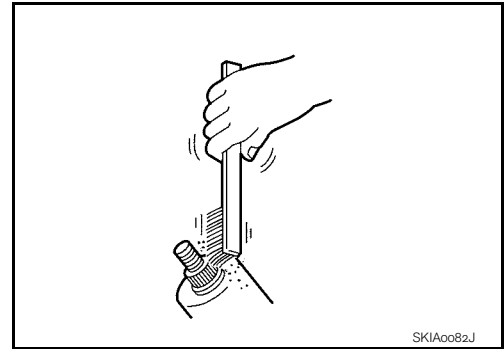
INSTALLATION

1. Install the pivot seal.
2. Install the rear wiper motor to the vehicle.
3. Connect the rear wiper motor connector.
4. Operate the rear wiper to the auto stop position.
5. Install the back door trim finisher lower. Refer to [INT-26, "Exploded View"](#).

REAR WIPER MOTOR

< ON-VEHICLE REPAIR >

6. Clean wiper arm mount as shown in the figure to prevent nut from being loosened.



7. Operate the rear wiper motor to the auto stop position.
8. Adjust the rear wiper blade position. Refer to [WW-113, "Adjustment"](#).
9. Install the rear wiper arm by tightening the mounting nut.
10. Inject the washer fluid.
11. Operate the rear wiper to the auto stop position.
12. Check that the rear wiper blades stop at the specified position.
13. Install rear wiper arm cover.

Adjustment

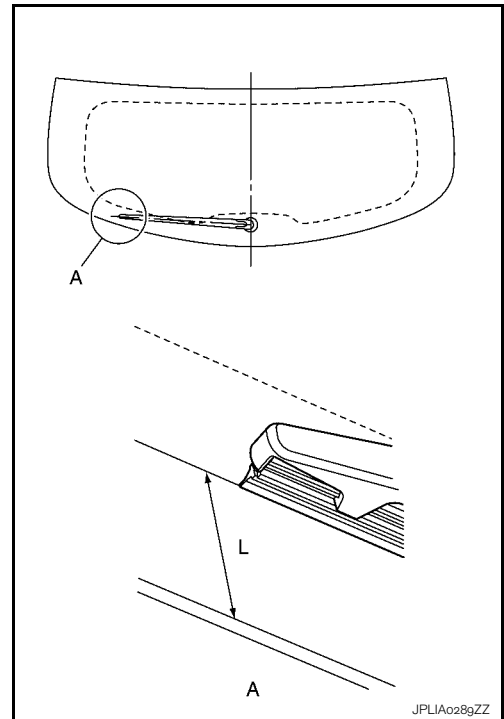
INFOID:0000000000926251

REAR WIPER BLADE POSITION ADJUSTMENT

Clearance between the end of back door glass and the top of wiper blade center.

Standard clearance

L : 26.5 ± 10.3 mm (1.04 ± 0.406 in)



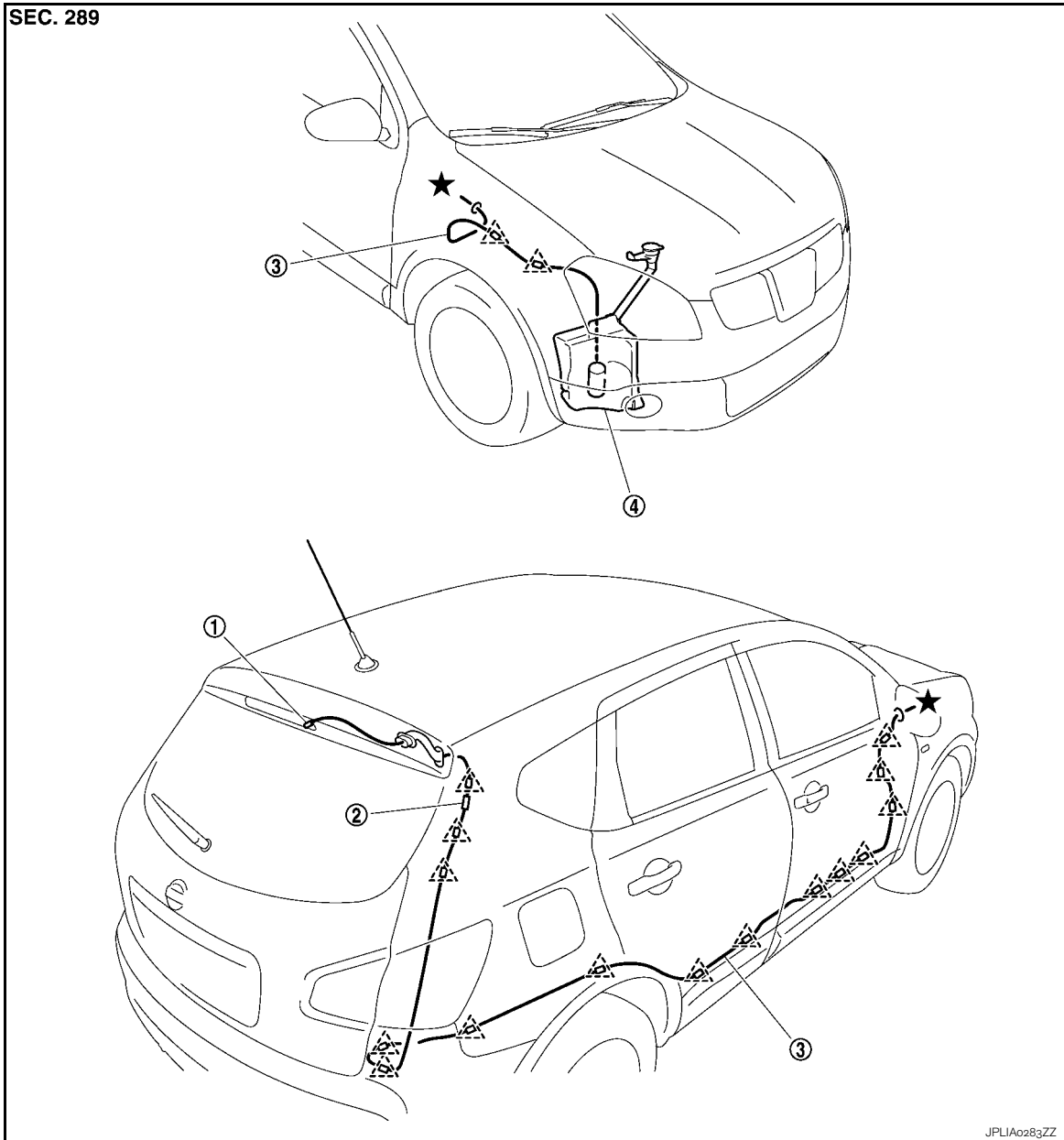
REAR WASHER NOZZLE AND TUBE

< ON-VEHICLE REPAIR >

REAR WASHER NOZZLE AND TUBE

Hydraulic Layout

INFOID:000000000926252



Removal and Installation

INFOID:000000000926253

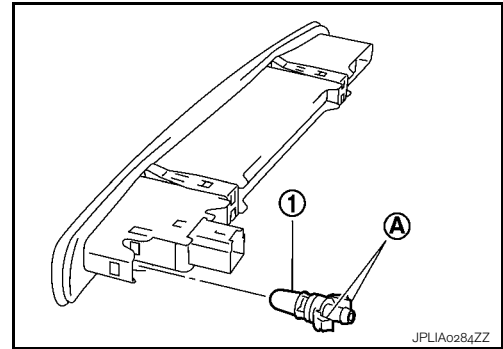
REMOVAL

1. Remove the high-mounted stop lamp. Refer to [EXL-183, "Exploded View"](#).
2. Remove the rear washer tube from the rear washer nozzle.

REAR WASHER NOZZLE AND TUBE

< ON-VEHICLE REPAIR >

3. Push pawl (A), and remove the rear washer nozzle (1) from the high-mounted stop lamp.



INSTALLATION

Install in the reverse order of removal.

Inspection

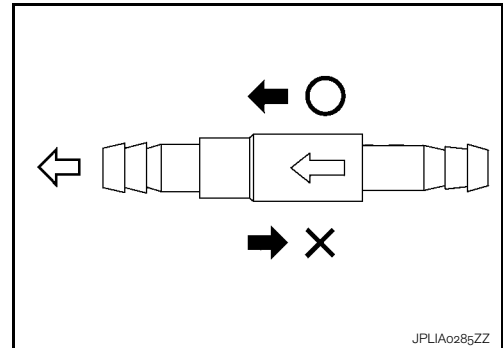
INFOID:0000000000936394

INSPECTION

Washer Nozzle Inspection

Check that air can pass through the hose by blowing forward (toward the nozzle), and check that air cannot pass through by sucking.

⇐ : To rear washer nozzle



Washer Nozzle Spray Position

Check spray positions to match the positions shown in the figure.

1 : Black printed frame line

Unit: mm (in)

Spray position	h (Height)	l (width)	ϕ (Spray position area)
A	43 (1.69)	93.6 (3.69)	30 (1.18)

NOTE:

If wax or dust gets into the nozzle, remove wax or dust with a needle or small pin.

