# SECTION WW
# WIPER & WASHER

## CONTENTS

# BASIC INSPECTION

## DIAGNOSIS AND REPAIR WORKFLOW

### Work Flow

INFOID:0000000004065643

DETAILED FLOW

#### 1. LISTEN TO CUSTOMER COMPLAINT

Listen to customer complaint. Get detailed information about the conditions and environment when the symptom occurs.

>> GO TO 2

#### 2. VERIFY THE SYMPTOM WITH OPERATIONAL CHECK

Verify the symptom with operational check. Refer to WW-13, "Diagnosis Description".

>> GO TO 3

#### 3. GO TO APPROPRIATE TROUBLE DIAGNOSIS

Go to appropriate trouble diagnosis. Refer to WW-68, "Symptom Table".

>> GO TO 4

#### 4. REPAIR OR REPLACE

Repair or replace the specific parts.

>> GO TO 5

#### 5. FINAL CHECK

Final check.

Is inspection result normal?

YES >> Inspection End
NO >> Refer to GI-37, "Intermittent Incident".

# FUNCTION DIAGNOSIS

## FRONT WIPER AND WASHER SYSTEM

### System Diagram

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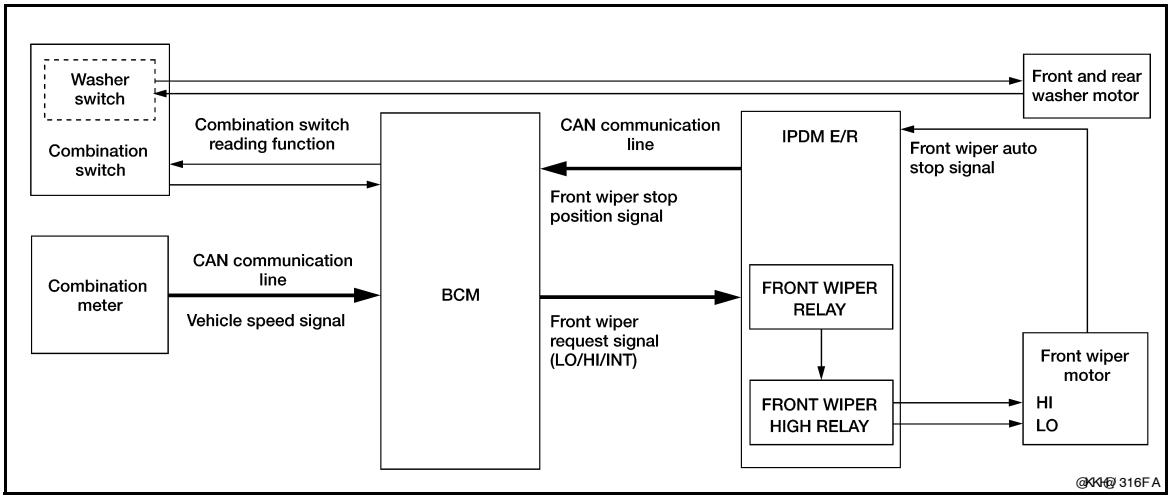



### System Description

INFOID:0000000004065645

#### OUTLINE

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

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

Control by IPDM E/R
- Front wiper control function
- Relay control function

#### FRONT WIPER BASIC OPERATION

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

#### FRONT WIPER LO OPERATION

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

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

#### FRONT WIPER HI OPERATION

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

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

#### FRONT WIPER INT OPERATION (LINKED WITH VEHICLE SPEED)

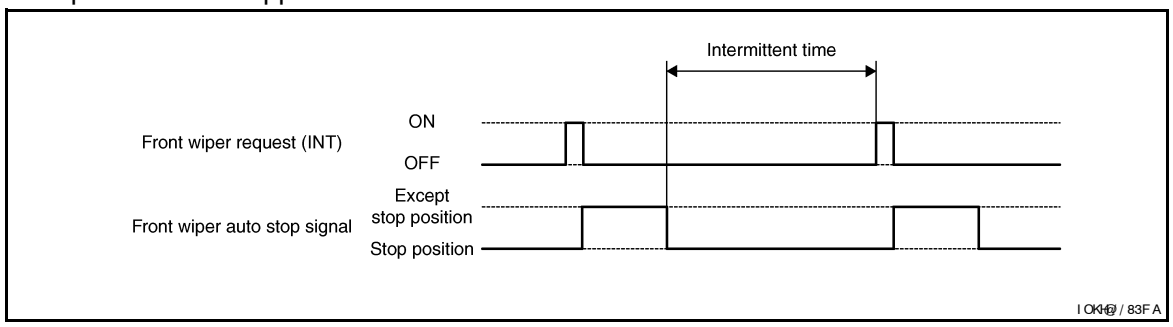
- BCM transmits the front wiper request signal (INT) to IPDM E/R with CAN communication according to the front wiper INT operation condition and the intermittent operation delay interval judged value.

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

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

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

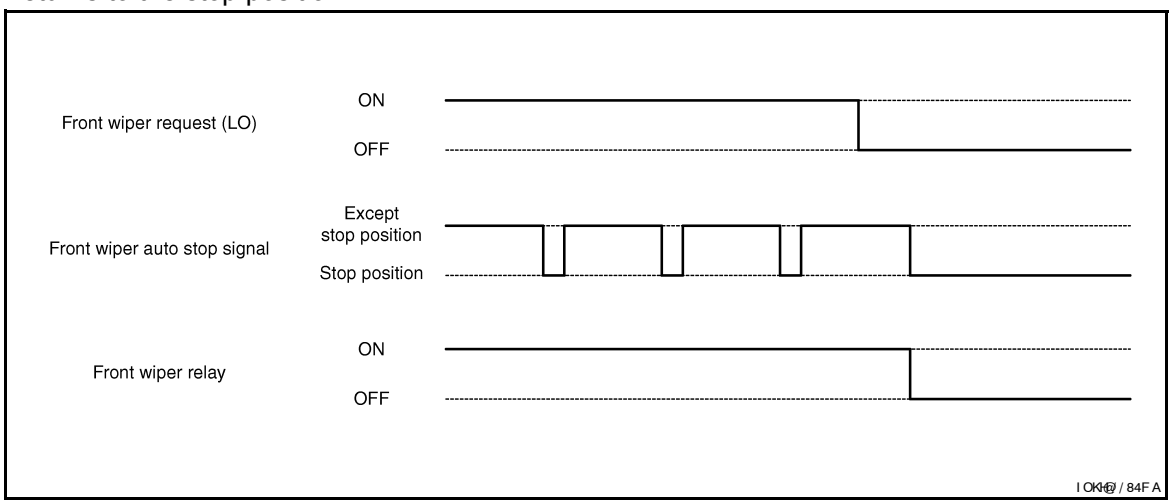
- IPDM E/R turns the integrated front wiper relay ON so that the front wiper is operated only once according to the front wiper request signal (INT).
- BCM detects stop position/except stop position of the front wiper motor according to the front wiper stop position signal received from IPDM E/R with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




## FRONT WIPER AUTO STOP OPERATION

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

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




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

## FRONT WIPER OPERATION LINKED WITH WASHER

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

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

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

## FRONT WIPER DROP WIPE OPERATION

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

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

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

## FRONT WIPER FAIL−SAFE OPERATION

- IPDM E/R performs the fail-safe function when the front wiper auto stop circuit is malfunctioning. Refer to WW-65, "Fail Safe".

## Component Parts Location

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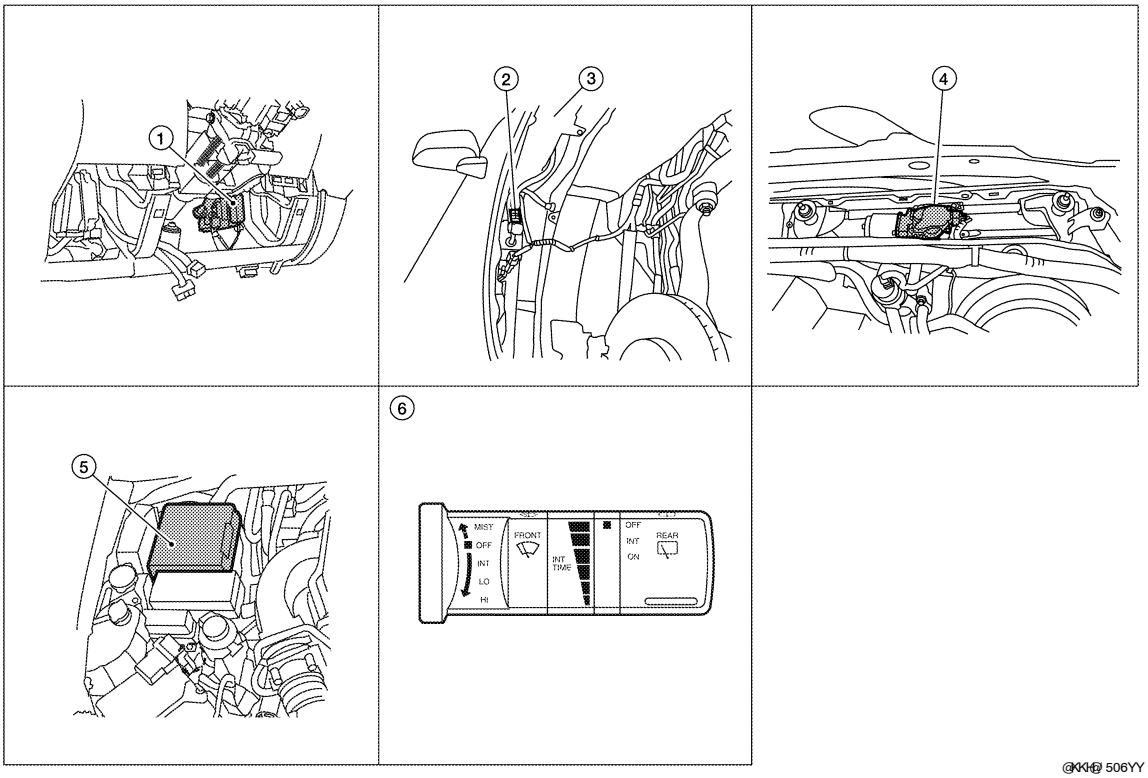


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1. BCM M18, M20 (view with lower instrument panel LH removed)
2. Front and rear washer motor E105
3. Washer fluid reservoir
4. Front wiper motor E23 (view with cowl top removed)
5. IPDM E/R E121, E122, E124
6. Combination switch M28

## Component Description

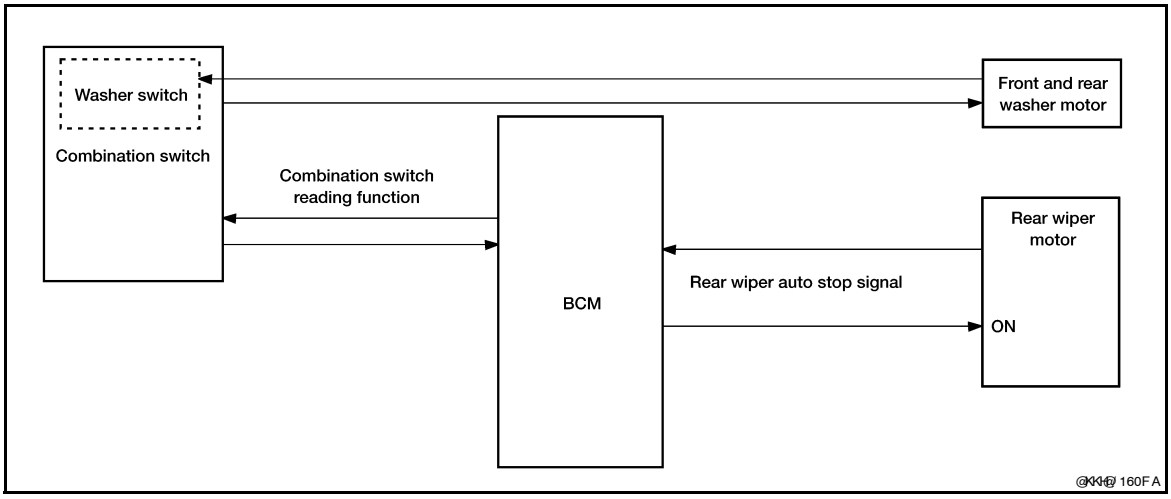
INFOID:0000000004065647

| Part | Description |
|---|---|
| BCM | • Judges each switch status by the combination switch reading function.<br>• 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.<br>• Performs the auto stop control of the front wiper. |
| Combination switch (Wiper and washer switch) | Refer to WW-4, "System Diagram". |
| Combination meter | Transmits the vehicle speed signal to BCM with CAN communication. |

# REAR WIPER AND WASHER SYSTEM

## System Diagram

INFOID:0000000004065648




## System Description

INFOID:0000000004065649

### OUTLINE

The rear wiper is controlled by each function of BCM.

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

### REAR WIPER BASIC OPERATION

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

### REAR WIPER ON OPERATION

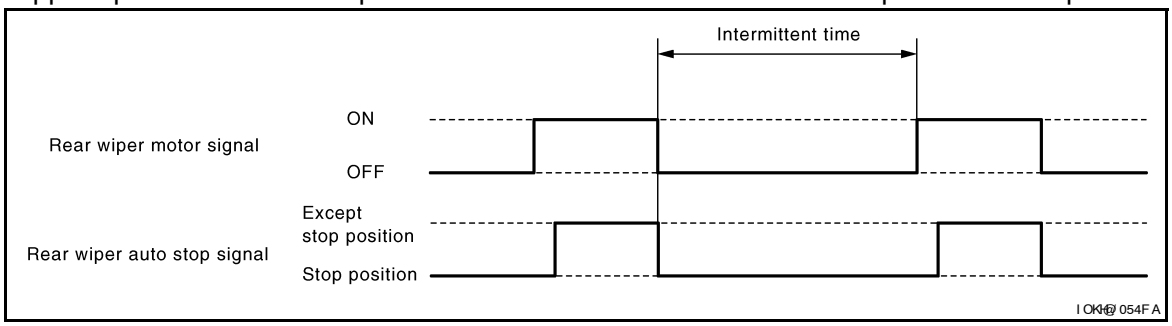
- BCM supplies power to the rear wiper motor according to the rear wiper ON operating condition.

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

### REAR WIPER INT OPERATION

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

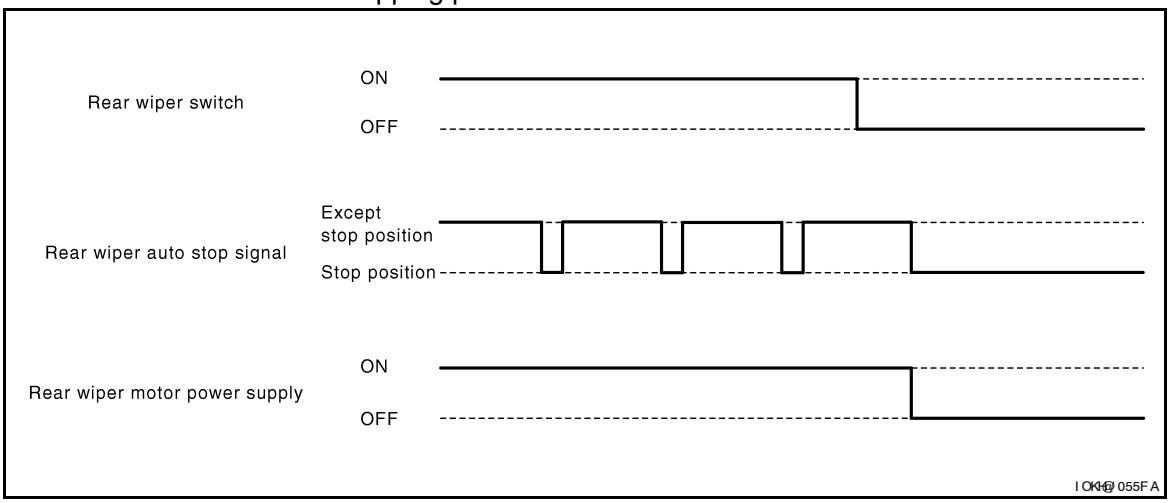
Rear wiper INT operating condition
- Ignition switch ON
- Rear wiper switch INT
- BCM controls the rear wiper to operate once.
- BCM detects the rear wiper motor stopping position.
- BCM supplies power to the rear wiper motor after an intermittent from the stop of the rear wiper motor.




### REAR WIPER AUTO STOP OPERATION

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

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




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

## REAR WIPER OPERATION LINKED WITH WASHER

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

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

## REAR WIPER DROP WIPE OPERATION

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

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

## REAR WIPER FAIL−SAFE OPERATION

BCM performs the fail-safe function when the rear wiper auto stop circuit is malfunctioning. Refer to WW-53, "Fail Safe".

## Component Parts Location

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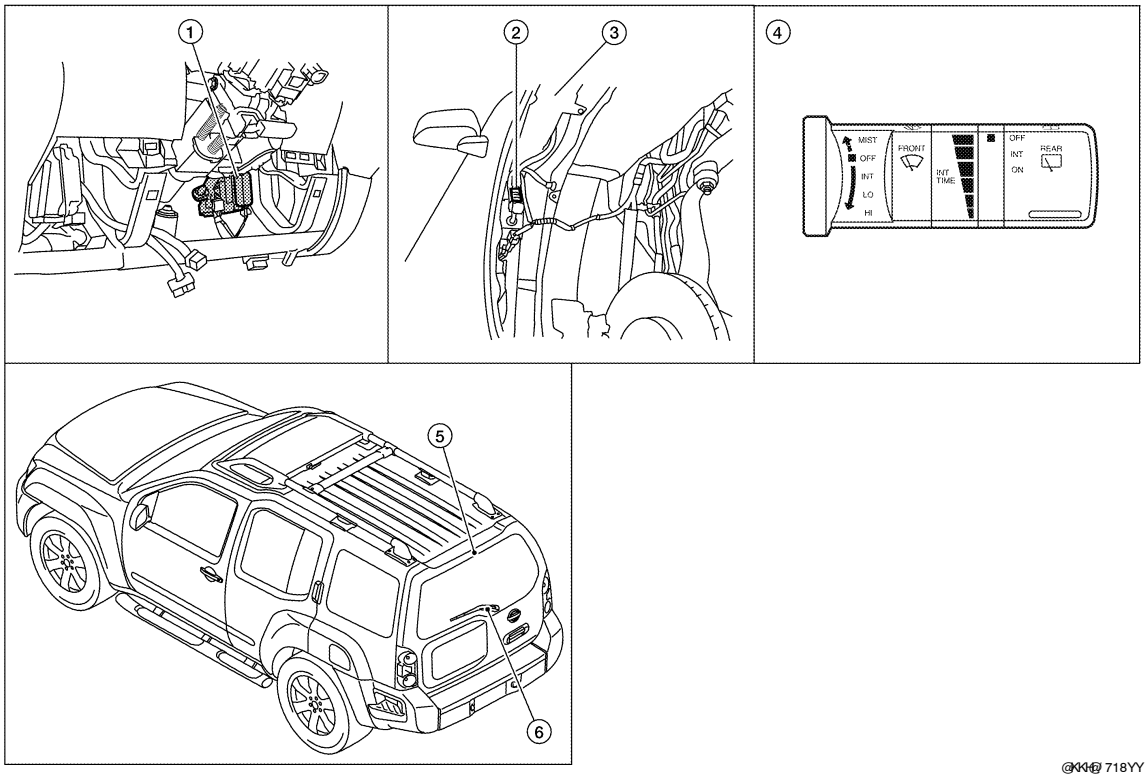


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1. BCM M18, M19, M20 (view with lower instrument panel LH removed)
2. Front and rear washer motor connector E105
3. Washer fluid reservoir
4. Combination switch M28
5. Rear washer nozzle
6. Rear wiper motor D509

## Component Description

INFOID:0000000004065651

| Part | Description |
|---|---|
| BCM | • Judges each switch status by the combination switch reading function.<br>• Supplies power to the rear wiper motor.<br>• Performs the auto stop control of the rear wiper. |
| Combination switch (Wiper and washer switch) | Refer to WW-4, "System Diagram". |

# DIAGNOSIS SYSTEM (BCM)

## COMMON ITEM

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

INFOID:0000000004459424

#### 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-53, "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.<br>• 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 | 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 | | × | |
| Combination switch | COMB SW | | × | |
| Immobilizer | IMMU | | × | × |
| Interior room lamp battery saver | BATTERY SAVER | × | × | × |
| Back door open | TRUNK | | × | × |
| Vehicle security system | THEFT ALM | × | × | × |
| RAP (retained accessory power) | RETAINED PWR | × | × | × |
| Signal buffer system | SIGNAL BUFFER | | × | × |
| TPMS (tire pressure monitoring system) | AIR PRESSURE MONITOR | × | × | × |
| Panic alarm system | PANIC ALARM | | | × |

## WIPER

### WIPER : CONSULT-III Function (BCM - WIPER)

INFOID:0000000004459425

#### WORK SUPPORT

| Work Item | Setting Item | Description |
|---|---|---|
| WIPER SPEED SETTING | ON* | With vehicle speed<br>(Front wiper intermittent time linked with the vehicle speed and wiper intermittent dial position) |
| | OFF | Without vehicle speed<br>(Front wiper intermittent time linked with the wiper intermittent dial position) |

*: Factory setting

## DATA MONITOR

| Monitor Item [Unit] | Description |
|---|---|
| IGN ON SW [ON/OFF] | Ignition switch ON status judged from ignition power supply |
| IGN SW CAN [ON/OFF] | Ignition switch ON status received from IPDM E/R with CAN communication |
| FR WIPER HI [ON/OFF] | Each switch status that BCM judges from the combination switch reading function |
| FR WIPER LOW [ON/OFF] | |
| FR WIPER INT [ON/OFF] | |
| FR WASHER SW [ON/OFF] | |
| INT VOLUME [1 - 7] | Each switch status that BCM judges from the combination switch reading function |
| FR WIPER STOP [ON/OFF] | 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 [ON/OFF] | Each switch status that BCM judges from the combination switch reading function |
| RR WIPER INT [ON/OFF] | |
| RR WASHER SW [ON/OFF] | |
| RR WIPER STOP [ON/OFF] | Rear wiper motor (stop position) status input from the rear wiper motor |
| H/L WASH SW* | — |

*: The item is indicated, not monitored.

## 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. |

# DIAGNOSIS SYSTEM (IPDM E/R)

## Diagnosis Description

INFOID:0000000004459426

### AUTO ACTIVE TEST

Description

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

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

Operation Procedure

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

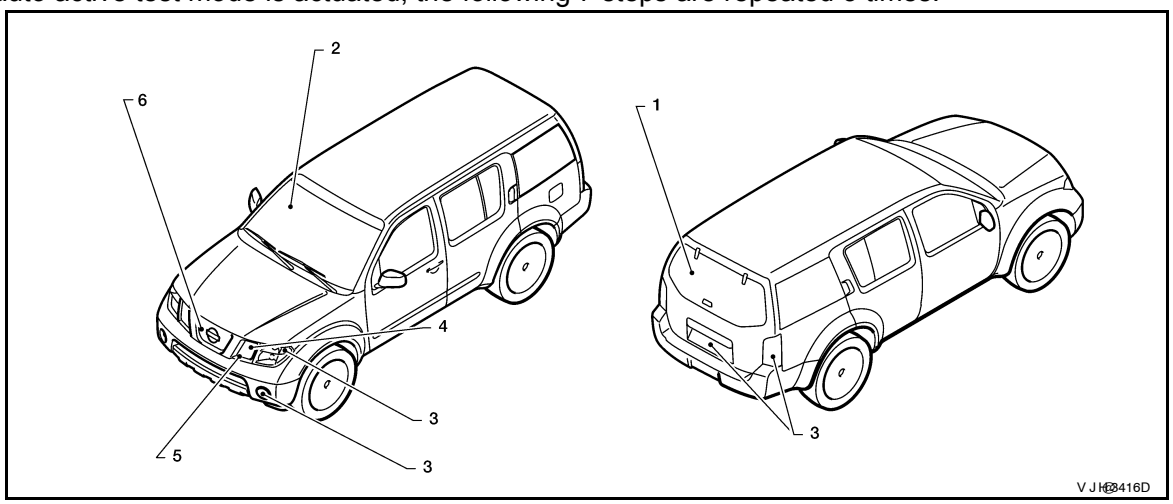
**NOTE:**
When auto active test mode has to be cancelled halfway through test, turn ignition switch OFF.

**CAUTION:**

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

Inspection in Auto Active Test Mode

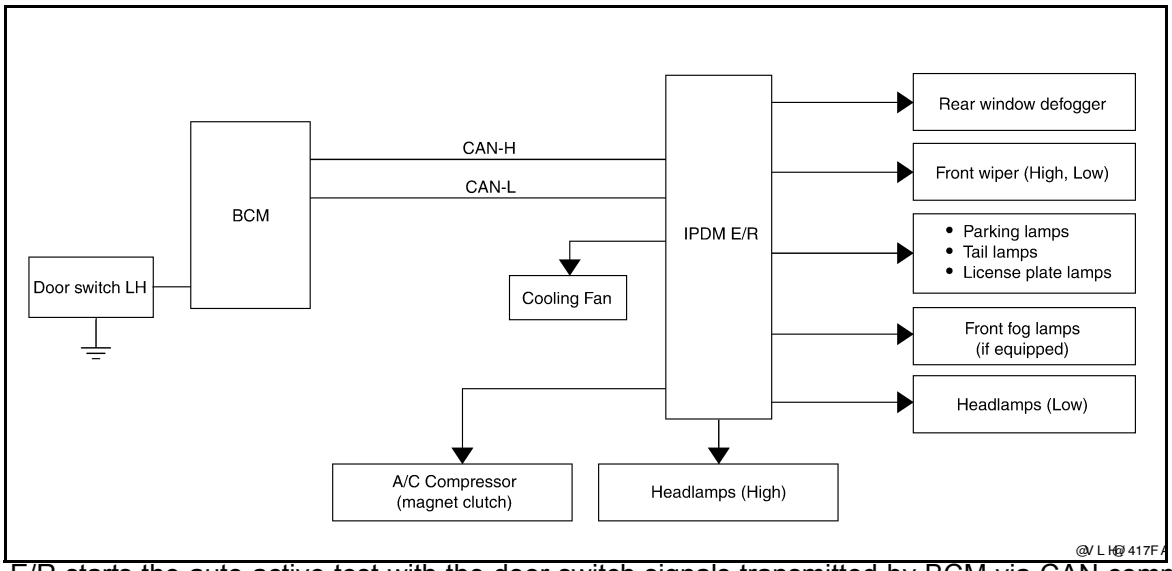
When auto active test mode is actuated, the following 7 steps are repeated 3 times.




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

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

Concept of auto active test




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

Diagnosis chart in auto active test mode

| Symptom | Inspection contents | | Possible cause |
|---|---|---|---|
| Oil pressure low warning indicator does not operate | Perform auto active test. Does the oil pressure low warning indicator operate? | YES | • IPDM E/R signal input circuit<br>• ECM signal input circuit<br>• CAN communication signal between ECM and combination meter |
| | | NO | • CAN communication signal between IPDM E/R, BCM and combination meter |
| Oil pressure gauge does not operate | Perform auto active test. Does the oil pressure gauge operate? | YES | IPDM E/R signal input circuit |
| | | NO | • CAN communication signal between IPDM E/R, BCM and combination meter |
| Rear window defogger does not operate | Perform auto active test. Does the rear window defogger operate? | YES | BCM signal input circuit |
| | | NO | • Harness or connector between A/C and AV switch assembly and AV control unit<br>• CAN communication signal between BCM and IPDM E/R |

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

## CONSULT - III Function (IPDM E/R)

INFOID:0000000004459427

### 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-31, "DTC Index".

### DATA MONITOR

Monitor item

| Monitor Item [Unit] | MAIN SIGNALS | Description |
|---|---|---|
| MOTOR FAN REQ [1/2/3/4] | × | Displays the status of the cooling fan speed request signal received from ECM via CAN communication. |
| A/C COMP REQ [OFF/ON] | × | Displays the status of the A/C request signal received from BCM 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 lamp request signal received from BCM via CAN communication. |
| HL WASHER REQ [OFF/ON] | | **NOTE:** This item is displayed, but cannot be monitored. |
| 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 starter request signal received from ECM 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 AV control unit via CAN communication. |
| OIL P SW [OPEN/CLOSE] | | Displays the status of the oil pressure switch judged by IPDM E/R. |
| DTRL REQ [OFF] | | **NOTE:** This item is displayed, but cannot be monitored. |
| HOOD SW [OPEN/CLOSE] | | **NOTE:** This item is displayed, but cannot be monitored. |
| THFT HRN REQ [OFF/ON] | | Displays the status of the theft warning horn request signal received from BCM via CAN communication. |
| HORN CHIRP [OFF/ON] | | Displays the status of the horn reminder signal received from BCM via CAN communication. |

## ACTIVE TEST

### Test item

| Test item | Operation | Description |
|---|---|---|
| REAR DEFOGGER | OFF | OFF |
| | ON | Operates 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. |
| HEAD LAMP WASHER | ON | — |

| Test item | Operation | Description |
|---|---|---|
| MOTOR FAN | 1 | OFF |
| | 2 | OFF |
| | 3 | Operates the cooling fan relay. |
| | 4 | Operates the cooling fan relay. |
| 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. |

# COMPONENT DIAGNOSIS

## WIPER AND WASHER FUSE

### Description

INFOID:0000000004065656

Fuse list

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

### Diagnosis Procedure

INFOID:0000000004065657

#### 1. CHECK FUSES

Check that the following fuses are not blown.

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

Is the fuse blown?

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

# FRONT WIPER MOTOR LO CIRCUIT

## Component Function Check

INFOID:0000000004065658

### 1. CHECK FRONT WIPER LO OPERATION

IPDM E/R AUTO ACTIVE TEST
1. Start IPDM E/R auto active test. Refer to PCS-13, "Diagnosis Description".
2. Check that the front wiper operates at the LO operation.

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

**LO : Front wiper (LO) operation**
**OFF : Stop the front wiper.**

Is front wiper (LO) operation normal?

YES >> Front wiper motor LO circuit is normal.
NO >> Refer to WW-19, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000004065659

### 1. CHECK FRONT WIPER MOTOR FUSE

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

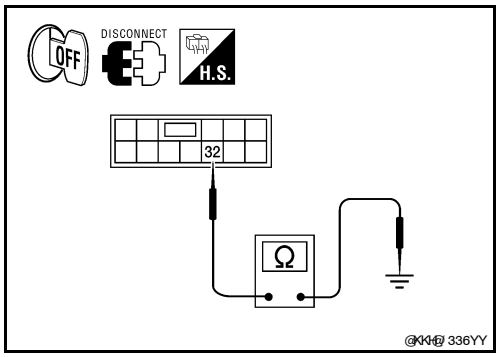
| Unit | Location | Fuse No. | Capacity |
|---|---|---|---|
| Front wiper motor | IPDM E/R | 39 | 30 A |

Is the fuse blown?

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

### 2. CHECK FRONT WIPER MOTOR (LO) SHORT CIRCUIT

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




| IPDM E/R | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E121 | 32 | | No |

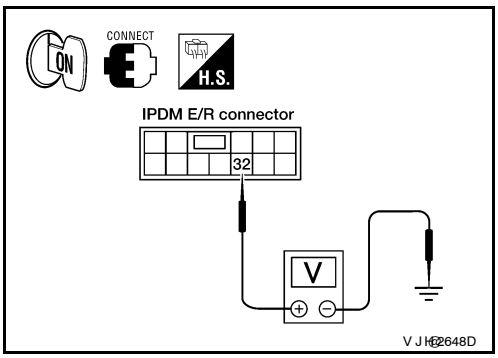
Does continuity exist?

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

### 3. CHECK FRONT WIPER MOTOR (LO) OUTPUT VOLTAGE

CONSULT-III ACTIVE TEST

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



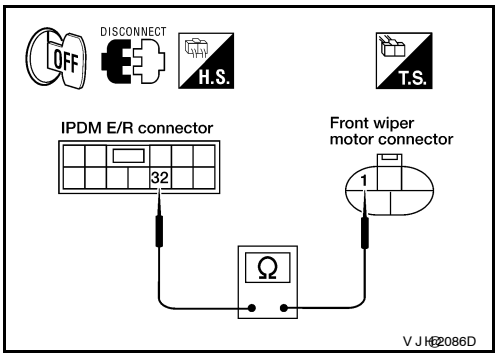

| Terminals | | | Test item | Voltage (Approx.) |
|---|---|---|---|---|
| (+) | | (-) | | |
| IPDM E/R | | Ground | FRONT WIPER | |
| Connector | Terminal | | | |
| E121 | 32 | | LO | Battery voltage |
| | | | OFF | 0V |

Is the measurement value normal?

YES >> GO TO 4
NO >> Replace IPDM E/R. Refer to PCS-34, "Removal and Installation of IPDM E/R".

## 4. CHECK FRONT WIPER MOTOR (LO) OPEN CIRCUIT

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




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

Does continuity exist?

YES >> Replace front wiper motor. Refer to WW-76, "Wiper Motor and Linkage".
NO >> Repair or replace harness.

# FRONT WIPER MOTOR HI CIRCUIT

## Component Function Check

INFOID:0000000004065660

### 1. CHECK FRONT WIPER HI OPERATION

IPDM E/R AUTO ACTIVE TEST
1. Start IPDM E/R auto active test. Refer to PCS-13, "Diagnosis Description".
2. Check that the front wiper operates at the HI operation.

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

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

Is front wiper (HI) operation normal?

YES >> Front wiper motor HI circuit is normal.
NO >> Refer to WW-21, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000004065661

### 1. CHECK FRONT WIPER MOTOR FUSE

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

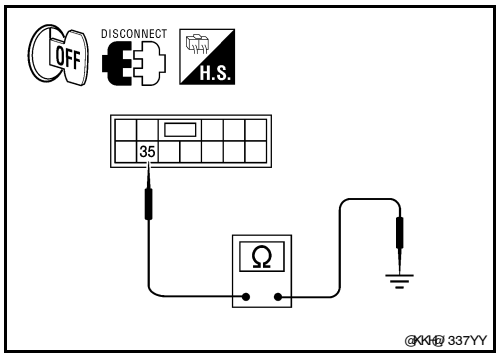
| Unit | Location | Fuse No. | Capacity |
|---|---|---|---|
| Front wiper motor | IPDM E/R | 39 | 30 A |

Is the fuse blown?

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

### 2. CHECK FRONT WIPER MOTOR (HI) SHORT CIRCUIT

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




| IPDM E/R | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E121 | 35 | | No |

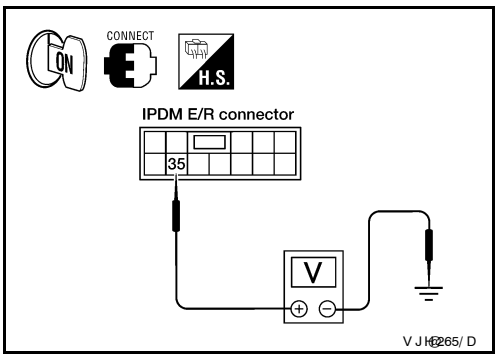
Does continuity exist?

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

### 3. CHECK FRONT WIPER MOTOR (HI) OUTPUT VOLTAGE

CONSULT-III ACTIVE TEST

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




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

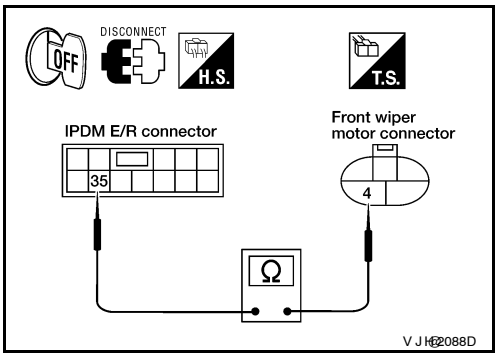
Is the measurement value normal?

YES >> GO TO 4

NO >> Replace IPDM E/R. Refer to PCS-34, "Removal and Installation of IPDM E/R".

## 4. CHECK FRONT WIPER MOTOR (HI) OPEN CIRCUIT

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




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

Does continuity exist?

YES >> Replace front wiper motor. Refer to WW-76, "Wiper Motor and Linkage".

NO >> Repair or replace harness.

# FRONT WIPER AUTO STOP SIGNAL CIRCUIT

## Component Function Check

INFOID:0000000004065662

### 1. CHECK FRONT WIPER (AUTO STOP) SIGNAL CHECK

CONSULT-III DATA MONITOR
1. Select "FR WIPER STOP" of IPDM E/R data monitor item.
2. Operate the front wiper.
3. Check that "FR WIPER STOP" changes to "ON" and "OFF" linked with the wiper operation.

| Monitor item | Condition | | Monitor status |
|---|---|---|---|
| FR WIPER STOP | Front wiper motor | Stop position | ON |
| | | Except stop position | OFF |

Is the status of item normal?

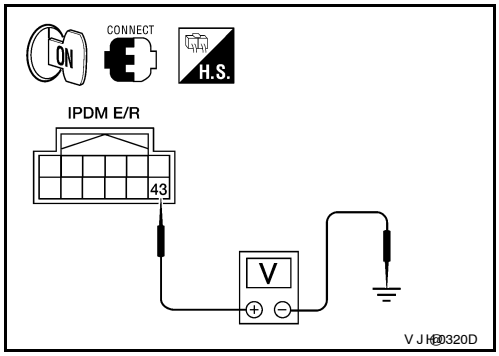
YES >> Front wiper auto stop signal circuit is normal.
NO >> Refer to WW-23, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000004065663

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

1. Turn the ignition switch ON.
2. Check voltage between IPDM E/R harness connector and ground.



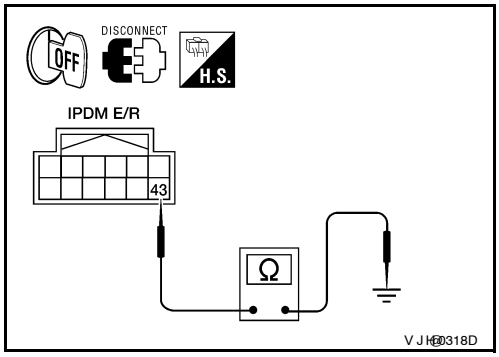

| Terminals | | | Voltage (Approx.) |
|---|---|---|---|
| (+) | | (-) | |
| IPDM E/R | | Ground | |
| Connector | Terminal | | |
| E122 | 43 | | Battery voltage |

Is the measurement value normal?

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

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

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




| IPDM E/R | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E122 | 43 | | No |

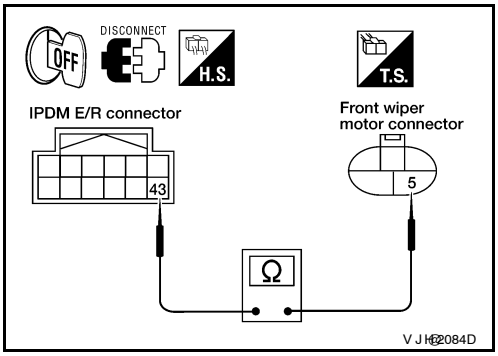
Does continuity exist?

YES >> Repair or replace harness.
NO >> Replace IPDM E/R. Refer to PCS-34, "Removal and Installation of IPDM E/R".

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

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

| IPDM E/R | | Front wiper motor | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| E122 | 43 | E23 | 5 | Yes |




Does continuity exist?

YES >> Replace front wiper motor. Refer to WW-76, "Wiper Motor and Linkage".

NO >> Repair or replace harness.

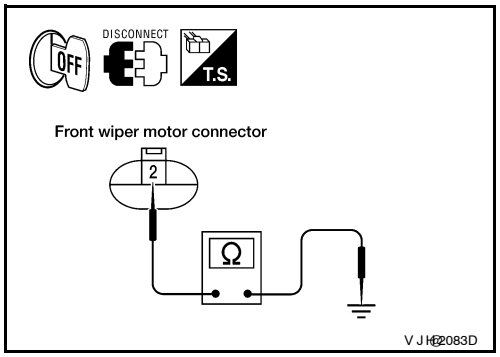
# FRONT WIPER MOTOR GROUND CIRCUIT

## Diagnosis Procedure

INFOID:0000000004065664

### 1. CHECK FRONT WIPER MOTOR (GROUND) OPEN CIRCUIT

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




| Front wiper motor | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E23 | 2 | | Yes |

Does continuity exist?

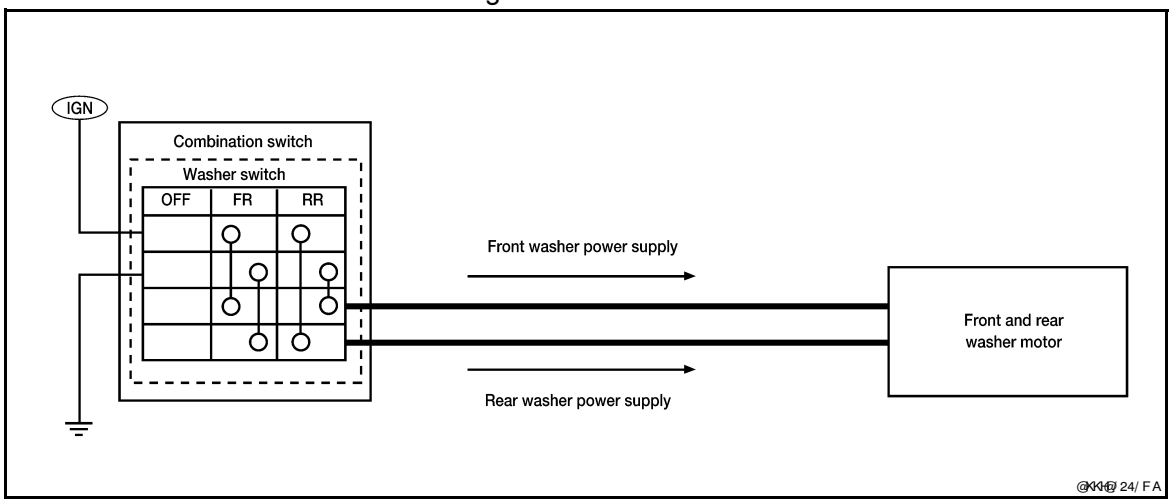
YES >> Front wiper motor ground circuit is normal.
NO >> Repair or replace harness.

# WASHER SWITCH

## Description

INFOID:0000000004065665

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




## Component Inspection

INFOID:0000000004065666

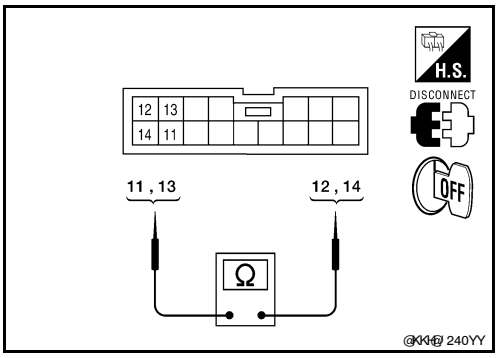
### 1. CHECK FRONT WASHER SWITCH

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

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

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

I OKH@ 053F A



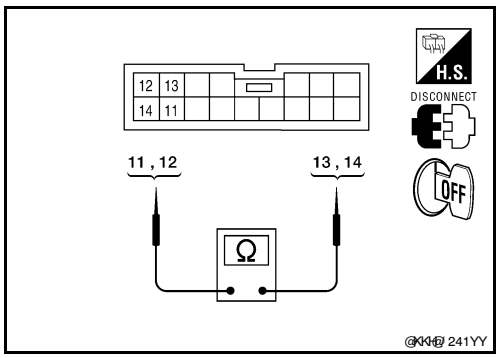

| Combination switch | | Condition | Continuity |
|---|---|---|---|
| Terminal | | | |
| 11 | 12 | Front washer switch ON | Yes |
| 13 | 14 | | |

Does continuity exist?

YES >> GO TO 2.
NO >> Replace combination switch. Refer to WW-89, "Wiper and Washer Switch".

### 2. CHECK REAR WASHER SWITCH

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




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

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

KKH@ 053F A

| Combination switch | | Condition | Continuity |
|---|---|---|---|
| Terminal | | | |
| 11 | 14 | Rear washer switch ON | Yes |
| 12 | 13 | | |

Does continuity exist?

YES >> Wiper and washer switch is normal.
NO >> Replace combination switch. Refer to WW-89, "Wiper and Washer Switch".

# REAR WIPER MOTOR CIRCUIT

## Component Function Check

INFOID:0000000004065667

### 1. CHECK REAR WIPER ON OPERATION

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

**ON : Rear wiper ON operation**
**OFF : Stop the rear wiper.**

Is rear wiper operation normal?

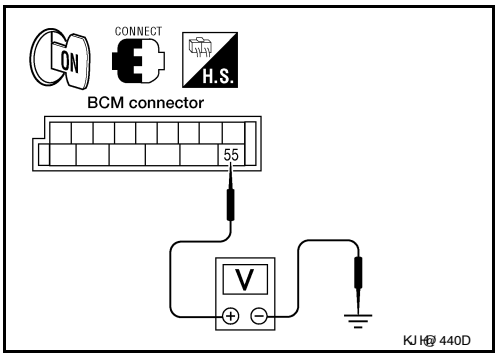
YES >> Rear wiper motor circuit is normal.
NO >> Refer to WW-28, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000004065668

### 1. CHECK REAR WIPER MOTOR OUTPUT VOLTAGE

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



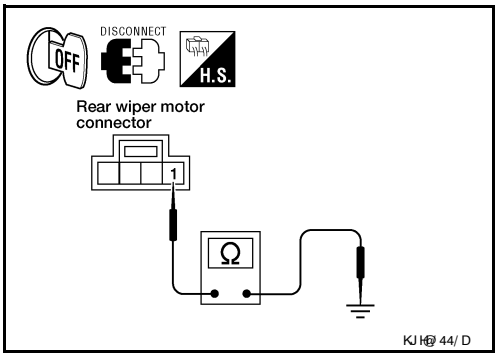

| Terminals | | | Test item | Voltage (Approx.) |
|---|---|---|---|---|
| (+) | | (–) | REAR WIPER | |
| BCM | | | | |
| Connector | Terminal | | | |
| M19 | 55 | Ground | ON | Battery voltage |
| | | | OFF | 0V |

Is the measurement value normal?

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

### 2. CHECK REAR WIPER MOTOR GROUND CIRCUIT

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




| Rear wiper motor | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| D509 | 1 | | Yes |

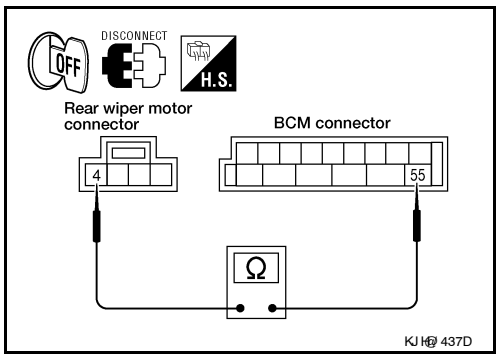
Does continuity exist?

YES >> Replace rear wiper motor. Refer to WW-81, "Removal and Installation".
NO >> Repair or replace harness.

### 3. CHECK REAR WIPER MOTOR OPEN CIRCUIT

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

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



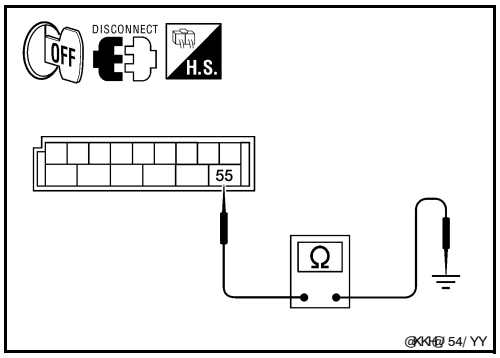

Does continuity exist?

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

## 4. CHECK REAR WIPER MOTOR SHORT CIRCUIT

Check continuity between BCM harness connector and ground.

| BCM | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M19 | 55 | | No |




Does continuity exist?

YES >> Repair or replace harness.
NO >> Replace BCM. Refer to BCS-57, "Removal and Installation".

# REAR WIPER AUTO STOP SIGNAL CIRCUIT

## Component Function Check

INFOID:0000000004065669

### 1. CHECK REAR WIPER (AUTO STOP) OPERATION

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

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

Is the status of item normal?

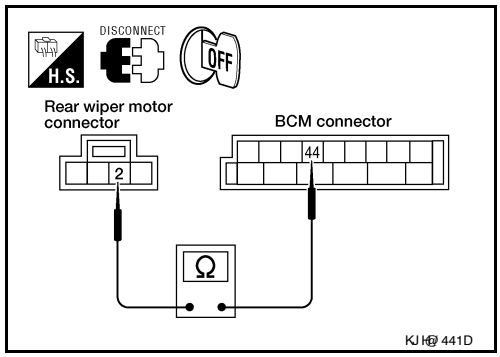
YES >> Rear wiper auto stop signal circuit is normal.
NO >> Refer to WW-30, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000004065670

### 1. CHECK REAR WIPER MOTOR AUTO STOP CIRCUITS

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



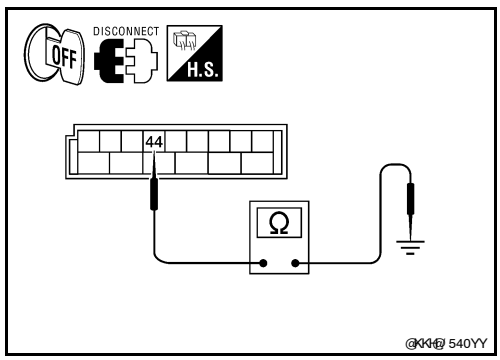

| BCM | | Rear wiper motor | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M19 | 44 | D509 | 2 | Yes |

Is inspection result normal?

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

### 2. CHECK AUTO STOP CIRCUITS FOR SHORT TO GROUND

Check continuity between BCM harness connector terminals and ground.




| BCM | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M19 | 44 | | No |

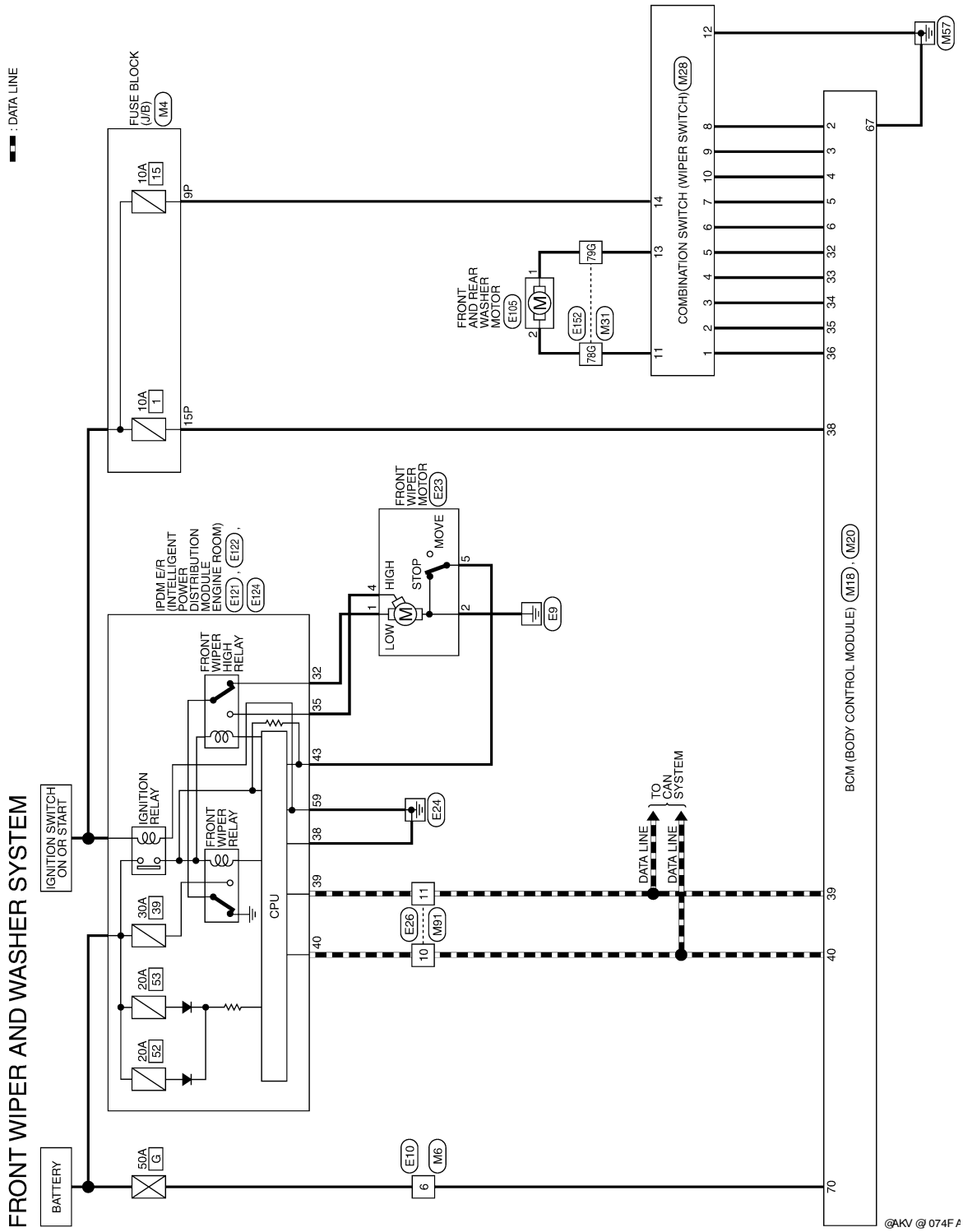
Is inspection result normal?

YES >> Replace BCM. Refer to BCS-57, "Removal and Installation".
NO >> Repair or replace harness.

# FRONT WIPER AND WASHER SYSTEM

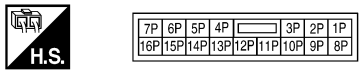
## Wiring Diagram

INFOID:0000000004065671



## FRONT WIPER AND WASHER SYSTEM CONNECTORS

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

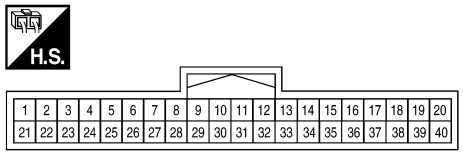



| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 9P | W/G | – |
| 15P | W/R | – |

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

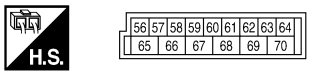

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 6 | W | – |

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




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

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




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

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| Connector No. | M28 |
|---|---|
| Connector Name | COMBINATION SWITCH |
| Connector Color | WHITE |

H.S.

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

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

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

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 78G | O | – |
| 79G | L | – |

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

H.S.

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

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

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

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 6 | W | – |

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

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | GR | – |
| 2 | B | – |
| 3 | – | – |
| 4 | L | – |
| 5 | G | – |

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

H.S.




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

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

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | L | – |
| 2 | O | – |

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

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 32 | GR | FR_WIPER_LO |
| 35 | L | FR_WIPER_HI |

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

H.S.




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

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| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 78G | O | – |
| 79G | L | – |

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

H.S.

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | 5G |
| | | | | | | | | | | | | | | | | | | 4G | 10G |
| 1G | 2G | 3G | 4G | 5G | | | | | | | | | | | | | | 9G | |
| 6G | 7G | 8G | 9G | 10G | | | | | | | | | | | | | | | |
| | | | | | 11G | 12G | 13G | 14G | 15G | 16G | 17G | 18G | 19G | 20G | 21G | | | | |
| | | | | | | 22G | 23G | 24G | 25G | 26G | 27G | 28G | 29G | 30G | | | | | |
| | | | | | 31G | 32G | 33G | 34G | 35G | 36G | 37G | 38G | 39G | 40G | 41G | | | | |
| | | | | | | 42G | 43G | 44G | 45G | 46G | 47G | 48G | 49G | 50G | | | | | |
| | | | | | 51G | 52G | 53G | 54G | 55G | 56G | 57G | 58G | 59G | 60G | 61G | | | | |
| | | | | | | 62G | 63G | 64G | 65G | 66G | 67G | 68G | 69G | 70G | | | | | |
| | | | | | | | | | | | | | | | | 71G | 72G | 73G | 74G | 75G |
| | | | | | | | | | | | | | | | | 76G | 77G | 78G | 79G | 80G |

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

H.S.

| | | | |
|---|---|---|---|
| 59 | 58 | 57 |
| 62 | 61 | 60 |

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

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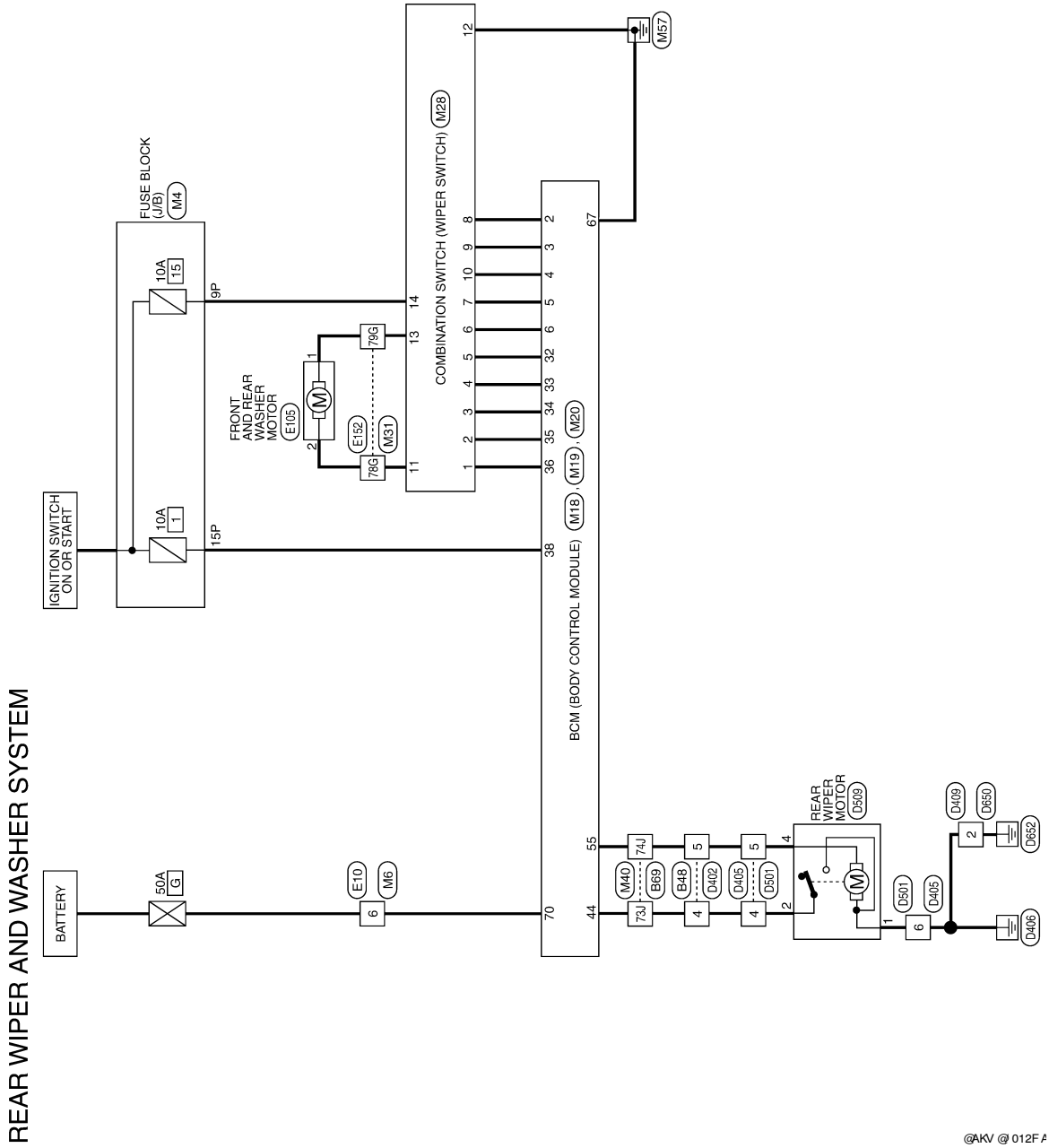
# REAR WIPER AND WASHER SYSTEM

## Wiring Diagram

INFOID:0000000004065672



REAR WIPER AND WASHER SYSTEM CONNECTORS

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

H.S.

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

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

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

H.S.

| 3 | 2 | 1 |
|---|---|---|
| 6 | 5 | 4 |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 6 | W | – |

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

H.S.

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

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

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

H.S.

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

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

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

H.S.

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

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

| Connector No. | M28 |
|---|---|
| Connector Name | COMBINATION SWITCH |
| Connector Color | WHITE |

H.S.

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

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

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

H.S.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 5G | 4G | 3G | 2G | 1G | | | |
| | | | 10G | 9G | 8G | 7G | 6G | | | |
| 21G | 20G | 19G | 18G | 17G | 16G | 15G | 14G | 13G | 12G | 11G |
| | 30G | 29G | 28G | 27G | 26G | 25G | 24G | 23G | 22G | |
| 41G | 40G | 39G | 38G | 37G | 36G | 35G | 34G | 33G | 32G | 31G |
| | 50G | 49G | 48G | 47G | 46G | 45G | 44G | 43G | 42G | |
| 61G | 60G | 59G | 58G | 57G | 56G | 55G | 54G | 53G | 52G | 51G |
| | 70G | 69G | 68G | 67G | 66G | 65G | 64G | 63G | 62G | |
| | | | 75G | 74G | 73G | 72G | 71G | | | |
| | | | 80G | 79G | 78G | 77G | 76G | | | |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 78G | O | – |
| 79G | L | – |

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

H.S.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 5J | 4J | 3J | 2J | 1J | | | |
| | | | 10J | 9J | 8J | 7J | 6J | | | |
| 21J | 20J | 19J | 18J | 17J | 16J | 15J | 14J | 13J | 12J | 11J |
| | 30J | 29J | 28J | 27J | 26J | 25J | 24J | 23J | 22J | |
| 41J | 40J | 39J | 38J | 37J | 36J | 35J | 34J | 33J | 32J | 31J |
| | 50J | 49J | 48J | 47J | 46J | 45J | 44J | 43J | 42J | |
| 61J | 60J | 59J | 58J | 57J | 56J | 55J | 54J | 53J | 52J | 51J |
| | 70J | 69J | 68J | 67J | 66J | 65J | 64J | 63J | 62J | |
| | | | 75J | 74J | 73J | 72J | 71J | | | |
| | | | 80J | 79J | 78J | 77J | 76J | | | |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 73J | O | – |
| 74J | W | – |

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

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 6 | W | – |

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

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | L | – |
| 2 | O | – |

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

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 78G | O | – |
| 79G | L | – |

| Connector No. | B48 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 4 | O | – |
| 5 | W | – |

| Connector No. | B69 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 73J | O | – |
| 74J | W | – |

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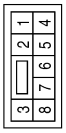
| Connector No. | D402 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

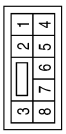
H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 4 | O | – |
| 5 | W | – |

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

H.S.




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

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

H.S.


| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 2 | B | – |

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

H.S.


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

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

H.S.


| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | B | – |
| 2 | O | – |
| 3 | – | – |
| 4 | W | – |

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

H.S.


| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 2 | B | – |

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# ECU DIAGNOSIS

## BCM (BODY CONTROL MODULE)

### Reference Value

INFOID:0000000004459432

#### VALUES ON THE DIAGNOSIS TOOL

| Monitor Item | Condition | Value/Status |
|---|---|---|
| IGN ON SW | Ignition switch OFF or ACC | OFF |
| | Ignition switch ON | ON |
| KEY ON SW | Mechanical key is removed from key cylinder | OFF |
| | Mechanical key is inserted to key cylinder | 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-DR | Driver's door closed | OFF |
| | Driver's door opened | ON |
| DOOR SW-AS | Passenger door closed | OFF |
| | Passenger door opened | ON |
| DOOR SW-RR | Rear RH door closed | OFF |
| | Rear RH door opened | ON |
| DOOR SW-RL | Rear LH door closed | OFF |
| | Rear LH door opened | ON |
| BACK DOOR SW | Back door closed | OFF |
| | Back door opened | ON |
| KEY CYL LK-SW | Other than driver door key cylinder LOCK position | OFF |
| | Driver door key cylinder LOCK position | ON |
| KEY CYL UN-SW | Other than driver door key cylinder UNLOCK position | OFF |
| | Driver door key cylinder UNLOCK position | 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 |
| ACC ON SW | Ignition switch OFF | OFF |
| | Ignition switch ACC or ON | ON |
| REAR DEF SW | Rear window defogger switch OFF | OFF |
| | Rear window defogger switch ON | ON |
| LIGHT SW 1ST | Lighting switch OFF | OFF |
| | Lighting switch 1ST | ON |
| BUCKLE SW | The seat belt (driver side) is unfastened. [Seat belt switch (driver side) OFF] | OFF |
| | The seat belt (driver side) is fastened. [Seat belt switch (driver side) ON] | ON |
| KEYLESS PANIC | PANIC button of key fob is not pressed | OFF |
| | PANIC button of key fob is pressed | ON |

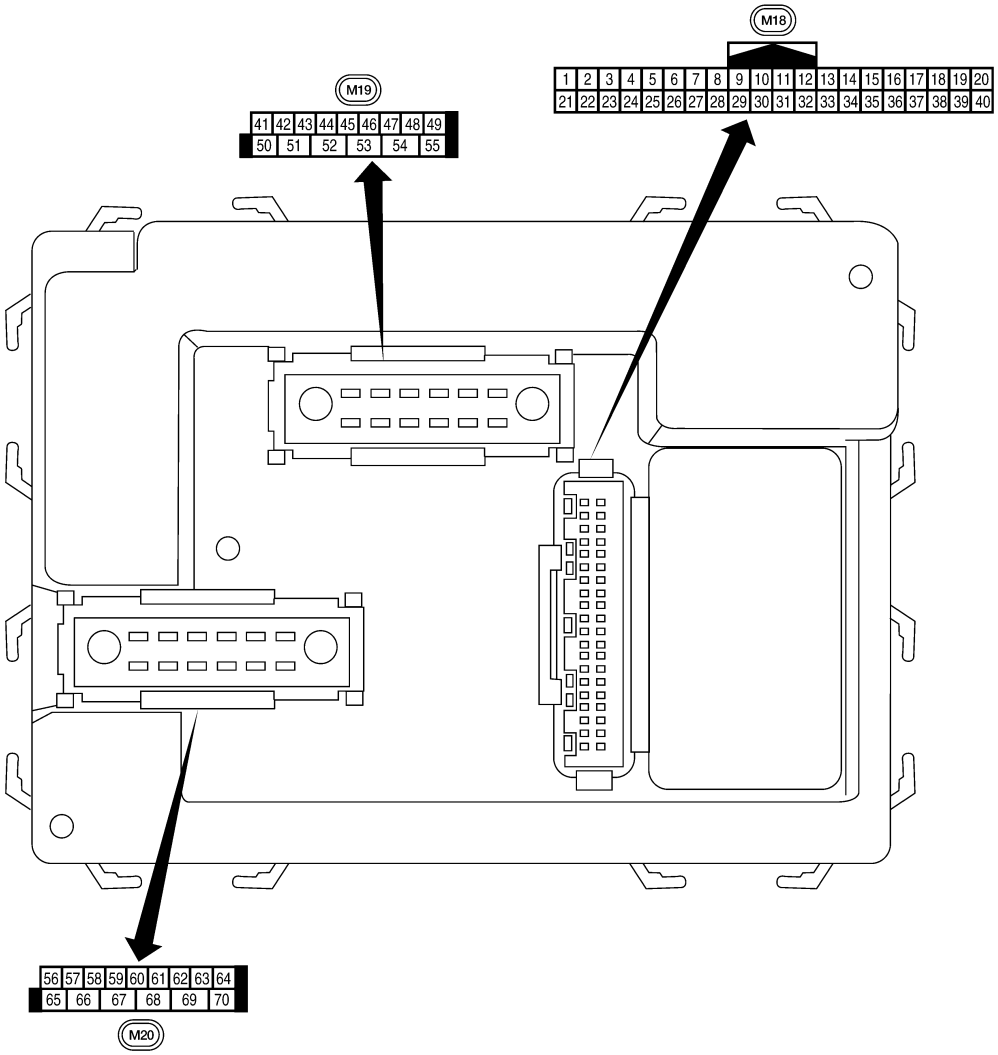
| Monitor Item | Condition | Value/Status |
|---|---|---|
| KEYLESS TRUNK | **NOTE:**<br>The item is indicated, but not monitored. | OFF |
| TRNK OPN MNTR | **NOTE:**<br>The item is indicated, but not monitored. | OFF |
| RKE LCK-UNLCK | LOCK/UNLOCK button of key fob is not pressed and held simultaneously | OFF |
| | LOCK/UNLOCK button of key fob is pressed and held simultaneously | ON |
| RKE KEEP UNLK | UNLOCK button of key fob is not pressed | OFF |
| | UNLOCK button of key fob is pressed and held | ON |
| HI BEAM SW | Lighting switch OFF | OFF |
| | Lighting switch HI | 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 |
| AUTO LIGHT SW | **NOTE:**<br>The item is indicated, but not monitored. | OFF |
| PASSING SW | Other than lighting switch PASS | OFF |
| | Lighting switch PASS | ON |
| FR FOG SW | Front fog lamp switch OFF | OFF |
| | Front fog lamp switch ON | ON |
| RR FOG SW | **NOTE:**<br>The item is indicated, but not monitored. | OFF |
| TURN SIGNAL R | Turn signal switch OFF | OFF |
| | Turn signal switch RH | ON |
| TURN SIGNAL L | Turn signal switch OFF | OFF |
| | Turn signal switch LH | ON |
| CARGO LAMP SW | Cargo lamp switch OFF | OFF |
| | Cargo lamp switch ON | ON |
| OPTICAL SENSOR | **NOTE:**<br>The item is indicated, but not monitored. | OFF |
| IGN SW CAN | Ignition switch OFF or ACC | OFF |
| | Ignition switch ON | ON |
| FR WIPER HI | Front wiper switch OFF | OFF |
| | Front wiper switch HI | ON |
| FR WIPER LOW | Front wiper switch OFF | OFF |
| | Front wiper switch LO | ON |
| FR WIPER INT | Front wiper switch OFF | OFF |
| | Front wiper switch INT | ON |
| FR WASHER SW | Front washer switch OFF | OFF |
| | Front washer switch ON | ON |
| INT VOLUME | Wiper intermittent dial is in a dial position 1 - 7 | 1 - 7 |
| FR WIPER STOP | Any position other than front wiper stop position | OFF |
| | Front wiper stop position | ON |
| VEHICLE SPEED | While driving | Equivalent to speedometer reading |

| Monitor Item | Condition | Value/Status |
|---|---|---|
| RR WIPER ON | Rear wiper switch OFF | OFF |
| | Rear wiper switch ON | ON |
| RR WIPER INT | Rear wiper switch OFF | OFF |
| | Rear wiper switch INT | ON |
| RR WASHER SW | Rear washer switch OFF | OFF |
| | Rear washer switch ON | ON |
| RR WIPER STOP | Any position other than rear wiper stop position | OFF |
| | Rear wiper stop position | ON |
| H/L WASH SW | **NOTE:**<br>The item is indicated, but not monitored. | OFF |
| HAZARD SW | Hazard switch OFF | OFF |
| | Hazard switch ON | ON |
| BRAKE SW | Brake pedal is not depressed | OFF |
| | Brake pedal is depressed | ON |
| FAN ON SIG | Blower fan motor switch OFF | OFF |
| | Blower fan motor switch ON (other than OFF) | ON |
| AIR COND SW | Compressor ON is not requested from auto amp.<br>(A/C indicator OFF, blower fan motor switch OFF or etc.) | OFF |
| | Compressor ON is requested from auto amp.<br>(A/C indicator ON and blower fan motor switch ON). | ON |
| TRNK OPNR SW | **NOTE:**<br>The item is indicated, but not monitored. | OFF |
| TRUNK CYL SW | **NOTE:**<br>The item is indicated, but not monitored. | OFF |
| HOOD SW | **NOTE:**<br>The item is indicated, but not monitored. | OFF |
| OIL PRESS SW | • Ignition switch OFF or ACC<br>• Engine running | OFF |
| | Ignition switch ON | ON |
| AIR PRESS FL | Ignition switch ON (Only when the signal from the transmitter is received) | Air pressure of front LH tire |
| AIR PRESS FR | Ignition switch ON (Only when the signal from the transmitter is received) | Air pressure of front RH tire |
| AIR PRESS RR | Ignition switch ON (Only when the signal from the transmitter is received) | Air pressure of rear RH tire |
| AIR PRESS RL | Ignition switch ON (Only when the signal from the transmitter is received) | Air pressure of rear LH tire |
| ID REGST FL1 | ID of front LH tire transmitter is registered | DONE |
| | ID of front LH tire transmitter is not registered | YET |
| ID REGST FR1 | ID of front RH tire transmitter is registered | DONE |
| | ID of front RH tire transmitter is not registered | YET |
| ID REGST RR1 | ID of rear RH tire transmitter is registered | DONE |
| | ID of rear RH tire transmitter is not registered | YET |
| ID REGST RL1 | ID of rear LH tire transmitter is registered | DONE |
| | ID of rear LH tire transmitter is not registered | YET |
| WARNING LAMP | Tire pressure indicator OFF | OFF |
| | Tire pressure indicator ON | ON |

| Monitor Item | Condition | Value/Status |
|---|---|---|
| BUZZER | Tire pressure warning alarm is not sounding | OFF |
| | Tire pressure warning alarm is sounding | ON |

## Terminal Layout

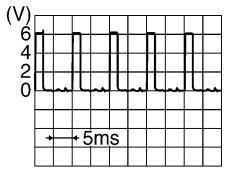
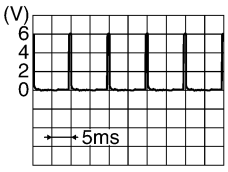
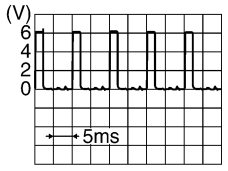
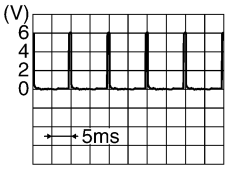
INFOID:0000000004459433

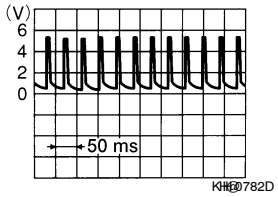
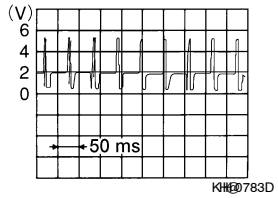
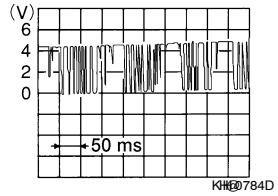


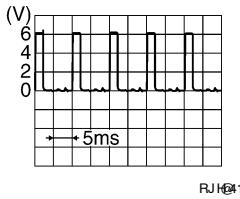
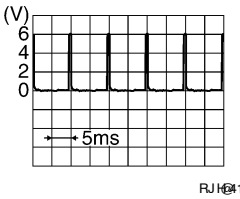
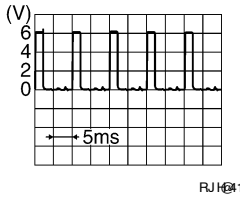

KHF1332D

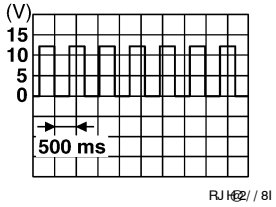
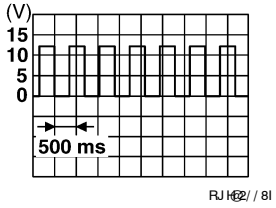
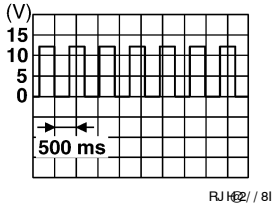
## Physical Values

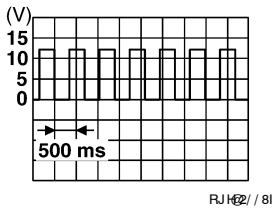
INFOID:0000000004459434

| Terminal | Wire color | Signal name | Signal input/ output | Measuring condition | | Reference value or waveform (Approx.) |
|---|---|---|---|---|---|---|
| | | | | Ignition switch | Operation or condition | |
| 1 | BR | Ignition keyhole illumination | Output | OFF | Door is locked (SW OFF) | Battery voltage |
| | | | | | Door is unlocked (SW ON) | 0V |
| 2 | P | Combination switch input 5 | Input | ON | Lighting, turn, wiper OFF<br>Wiper dial position 4 |  RJIA4180D |
| 3 | SB | Combination switch input 4 | Input | ON | Lighting, turn, wiper OFF<br>Wiper dial position 4 |  RJIA4181D |
| 4 | V | Combination switch input 3 | Input | ON | Lighting, turn, wiper OFF<br>Wiper dial position 4 |  RJIA4180D |
| 5 | L | Combination switch input 2 | Input | ON | Lighting, turn, wiper OFF<br>Wiper dial position 4 |  RJIA4181D |
| 6 | R | Combination switch input 1 | | | | |
| 7 | GR | Front door lock assembly LH (key cylinder switch) and back door key cylinder switch (unlock) | Input | OFF | ON (open, 2nd turn) | Momentary 1.5V |
| | | | | | OFF (closed) | 0V |
| 8 | SB | Front door lock assembly LH (key cylinder switch) and back door key cylinder switch (lock) | Input | OFF | ON (open) | Momentary 1.5V |
| | | | | | OFF (closed) | 0V |
| 9 | Y | Rear window defogger switch | Input | ON | Rear window defogger switch ON | 0V |
| | | | | | Rear window defogger switch OFF | 5V |
| 11 | G/B | Ignition switch (ACC or ON) | Input | ACC or ON | Ignition switch ACC or ON | Battery voltage |

| Terminal | Wire color | Signal name | Signal input/ output | Measuring condition | | Reference value or waveform (Approx.) |
|---|---|---|---|---|---|---|
| | | | | Ignition switch | Operation or condition | |
| 12 | LG | Front door switch RH | Input | OFF | ON (open) | 0V |
| | | | | | OFF (closed) | Battery voltage |
| 13 | L | Rear door switch RH | Input | OFF | ON (open) | 0V |
| | | | | | OFF (closed) | Battery voltage |
| 15 | W | Tire pressure warning check connector | Input | OFF | — | 5V |
| 18 | BR | Remote keyless entry receiver and optical sensor (ground) | Output | OFF | — | 0V |
| 19 | V | Remote keyless entry receiver (power supply) | Output | OFF | Ignition switch OFF |  |
| 20 | G | Remote keyless entry receiver (signal) | Input | OFF | Stand-by (keyfob buttons released) |  |
| | | | | | When remote keyless entry receiver receives signal from keyfob (keyfob buttons pressed) |  |
| 21 | GR | NATS antenna amp. | Input | OFF → ON | Ignition switch (OFF → ON) | Just after turning ignition switch ON: Pointer of tester should move for approx. 1 second, then return to battery voltage. |
| 23 | G | Security indicator lamp | Output | OFF | Goes OFF → illuminates (Every 2.4 seconds) | Battery voltage → 0V |
| 25 | BR | NATS antenna amp. | Input | OFF → ON | Ignition switch (OFF → ON) | Just after turning ignition switch ON: Pointer of tester should move for approx. 1 second, then return to battery voltage. |
| 27 | W | Compressor ON signal | Input | ON | A/C switch OFF | 5V |
| | | | | | A/C switch ON | 0V |
| 28 | R | Front blower monitor | Input | ON | Front blower motor OFF | Battery voltage |
| | | | | | Front blower motor ON | 0V |
| 29 | G | Hazard switch | Input | OFF | ON | 0V |
| | | | | | OFF | 5V |
| 31 | R | Off-road lamps switch | Input | ON | ON | 0V |
| | | | | | OFF | 5V |

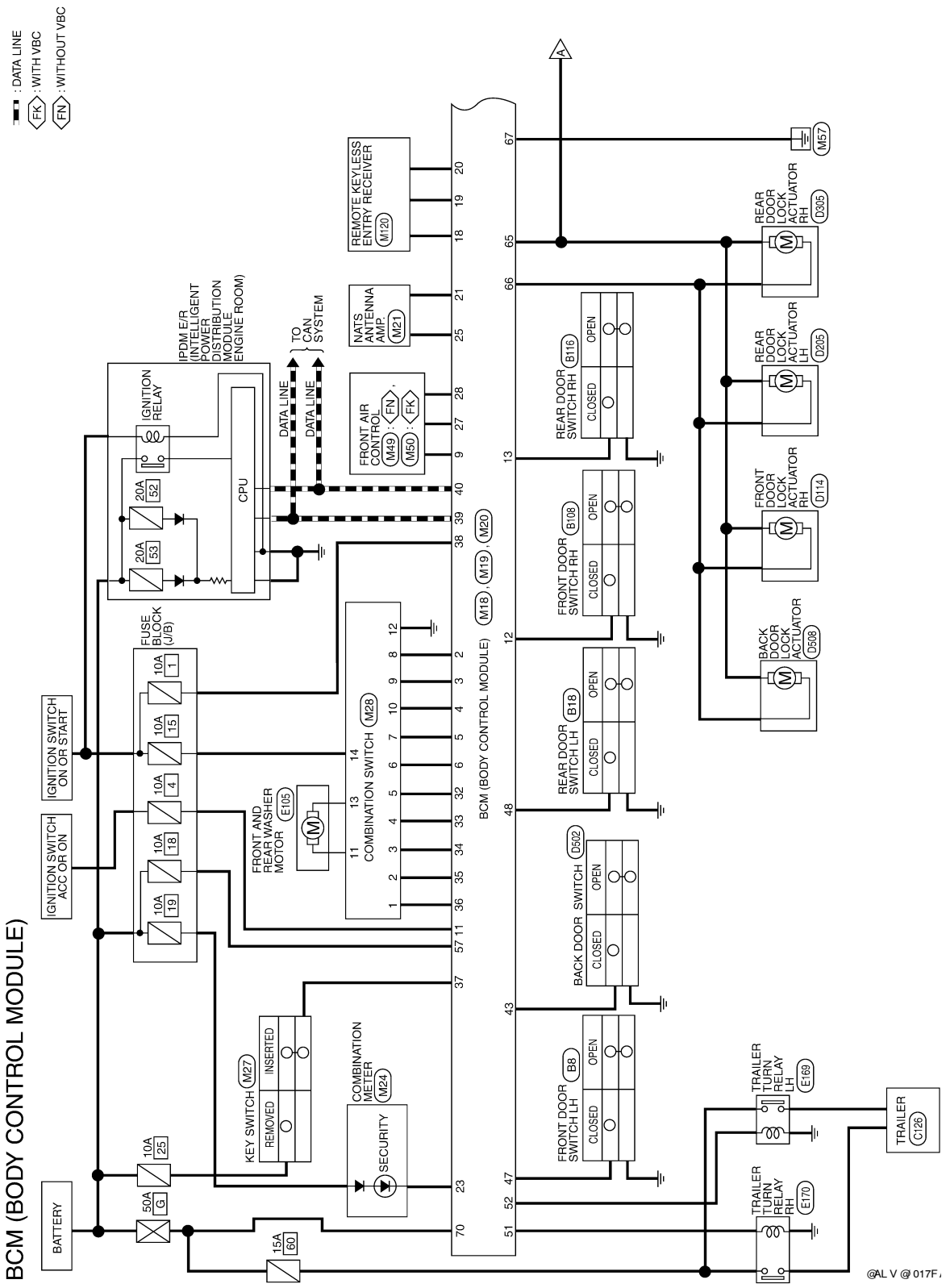
| Terminal | Wire color | Signal name | Signal input/ output | Measuring condition | | Reference value or waveform (Approx.) |
|---|---|---|---|---|---|---|
| | | | | Ignition switch | Operation or condition | |
| 32 | O | Combination switch output 5 | Output | ON | Lighting, turn, wiper OFF<br>Wiper dial position 4 |  RJIA4180D |
| 33 | GR | Combination switch output 4 | Output | ON | Lighting, turn, wiper OFF<br>Wiper dial position 4 |  RJIA4181D |
| 34 | G | Combination switch output 3 | Output | ON | Lighting, turn, wiper OFF<br>Wiper dial position 4 |  RJIA4180D |
| 35 | BR | Combination switch output 2 | Output | ON | Lighting, turn, wiper OFF<br>Wiper dial position 4 |  RJIA4181D |
| 36 | LG | Combination switch output 1 | | | | |
| 37 | B | Key switch and key lock solenoid | Input | OFF | Key inserted | Battery voltage |
| | | | | | Key inserted | 0V |
| 38 | W/R | Ignition switch (ON) | Input | ON | — | Battery voltage |
| 39 | L | CAN-H | — | — | — | — |
| 40 | P | CAN-L | — | — | — | — |
| 42 | L | Off-road lamps | Output | ON | Off-road lamps switch: ON | 0V |
| | | | | | Off-road lamps switch: OFF | Battery voltage |
| 43 | Y | Back door switch | Input | OFF | ON (open) | 0V |
| | | | | | OFF (closed) | Battery voltage |
| 44 | O | Rear wiper auto stop switch | Input | ON | Rise up position (rear wiper arm on stopper) | 0V |
| | | | | | A Position (full clockwise stop position) | Battery voltage |
| | | | | | Forward sweep (counterclockwise direction) | Fluctuating |
| | | | | | B Position (full counterclockwise stop position) | 0V |
| | | | | | Reverse sweep (clockwise direction) | Fluctuating |

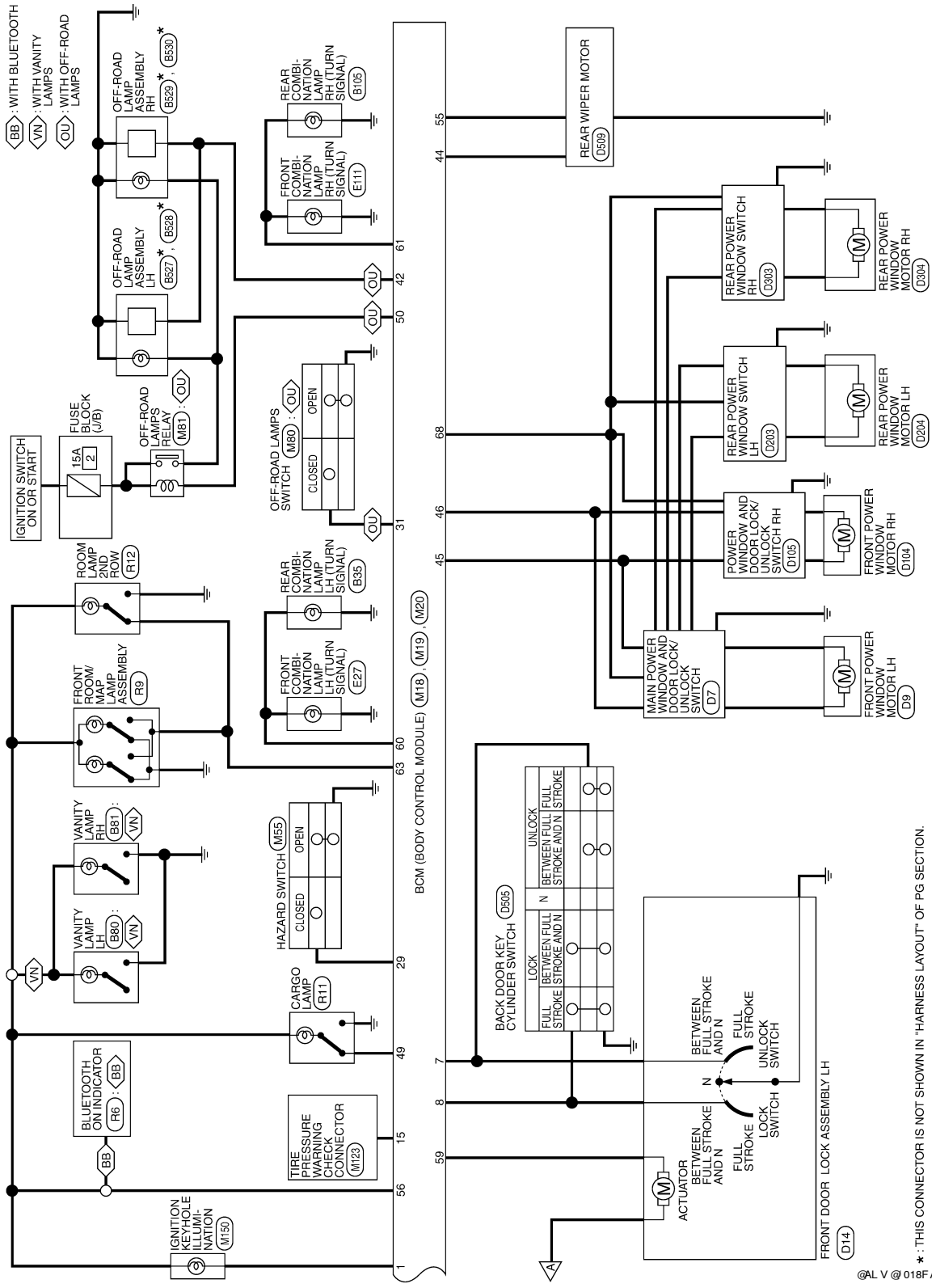
| Terminal | Wire color | Signal name | Signal input/ output | Measuring condition | | Reference value or waveform (Approx.) |
|---|---|---|---|---|---|---|
| | | | | Ignition switch | Operation or condition | |
| 45 | V | Lock switch | Input | OFF | ON (lock) | 0V |
| | | | | | OFF | Battery voltage |
| 46 | LG | Unlock switch | Input | OFF | ON (unlock) | 0V |
| | | | | | OFF | Battery voltage |
| 47 | GR | Front door switch LH | Input | OFF | ON (open) | 0V |
| | | | | | OFF (closed) | Battery voltage |
| 48 | P | Rear door switch LH | Input | OFF | ON (open) | 0V |
| | | | | | OFF (closed) | Battery voltage |
| 49 | L | Cargo lamp | Output | OFF | Any door open (ON) | 0V |
| | | | | | All doors closed (OFF) | Battery voltage |
| 50 | W | Off-road lamps relay | Output | ON | Off-road lamps switch: ON | 0V |
| | | | | | Off-road lamps switch: OFF | Battery voltage |
| 51 | G | Trailer turn signal (right) | Output | ON | Turn right ON |   |
| 52 | V | Trailer turn signal (left) | Output | ON | Turn left ON |   |
| 55 | W | Rear wiper output circuit 1 | Output | ON | OFF | 0 |
| | | | | | ON | Battery voltage |
| 56 | V | Battery saver output | Output | OFF | 30 minutes after ignition switch is turned OFF | 0V |
| | | | | ON | — | Battery voltage |
| 57 | R/Y | Battery power supply | Input | OFF | — | Battery voltage |
| 59 | GR | Front door lock assembly LH actuator (unlock) | Output | OFF | OFF (neutral) | 0V |
| | | | | | ON (unlock) | Battery voltage |
| 60 | LG | Turn signal (left) | Output | ON | Turn left ON |   |

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

## Wiring Diagram

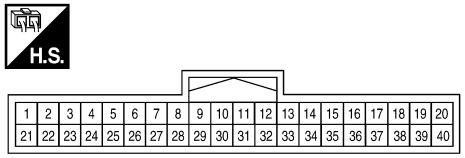
INFOID:0000000004459435




BB : WITH BLUETOOTH
VN : WITH VANITY LAMPS
OU : WITH OFF-ROAD LAMPS
OFF-ROAD LAMP ASSEMBLY RH * (B529) * (B530)
OFF-ROAD LAMP ASSEMBLY LH * (B527), * (B528)
FUSE BLOCK (J/B)
15A 2
IGNITION SWITCH ON OR START
OFF-ROAD LAMPS RELAY (M81) : OU
OFF-ROAD LAMPS SWITCH (M80) : OU
CLOSED
OPEN
REAR COMBI-NATION LAMP RH (TURN SIGNAL) (B105)
FRONT COMBI-NATION LAMP RH (TURN SIGNAL) (E111)
REAR COMBI-NATION LAMP LH (TURN SIGNAL) (B35)
FRONT COMBI-NATION LAMP LH (TURN SIGNAL) (E27)
ROOM LAMP 2ND ROW (R12)
FRONT ROOM/ MAP LAMP ASSEMBLY (R9)
VANITY LAMP RH (B81) : VN
VANITY LAMP LH (B80) : VN
HAZARD SWITCH (M55)
CARGO LAMP (R11)
BLUETOOTH ON INDICATOR (R6) : BB
TIRE PRESSURE WARNING CHECK CONNECTOR (M123)
IGNITION KEYHOLE ILLUMI-NATION (M150)
BCM (BODY CONTROL MODULE) (M18), (M19), (M20)
1 56 15 49 29 63 60 31 50 42 61 7 8 59 68 46 45 55 44
REAR WIPER MOTOR (D509)
REAR POWER WINDOW SWITCH RH (D303)
REAR POWER WINDOW MOTOR RH (D304)
REAR POWER WINDOW SWITCH LH (D203)
REAR POWER WINDOW MOTOR LH (D204)
POWER WINDOW AND DOOR LOCK/ UNLOCK SWITCH RH (D105)
FRONT POWER WINDOW MOTOR RH (D104)
MAIN POWER WINDOW AND DOOR LOCK/ UNLOCK SWITCH (D7)
FRONT POWER WINDOW MOTOR LH (D9)
BACK DOOR KEY CYLINDER SWITCH (D505)
LOCK
UNLOCK
FULL STROKE
BETWEEN FULL STROKE AND N
N
BETWEEN FULL STROKE AND N
FULL STROKE
UNLOCK SWITCH
FULL STROKE
LOCK SWITCH
ACTUATOR
FRONT DOOR LOCK ASSEMBLY LH (D14)
A
* : THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT" OF PG SECTION.
@AL V @ 018F

## BCM (BODY CONTROL MODULE) CONNECTORS

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




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | BR | KEY RING OUTPUT |
| 2 | P | INPUT 5 |
| 3 | SB | INPUT 4 |
| 4 | V | INPUT 3 |
| 5 | L | INPUT 2 |
| 6 | R | INPUT 1 |
| 7 | GR | KEY CYLINDER UNLOCK SW |
| 8 | SB | KEY CYLINDER LOCK SW |
| 9 | Y | DEFOGGER SW |
| 10 | – | – |
| 11 | G/B | ACC_SW |
| 12 | LG | DOOR SW (AS) |
| 13 | L | DOOR SW (RR) |
| 14 | – | – |
| 15 | W | TPMS MODE TRIGGER SW |
| 16 | – | – |
| 17 | – | – |
| 18 | BR | KEYLESS & AUTO LIGHT SENSOR GND |
| 19 | V | KEYLESS TUNER POWER SUPPLY OUTPUT |
| 20 | G | KEYLESS TUNER SIGNAL |
| 21 | GR | IMMOBILIZER ANTENNA SIGNAL (CLOCK) |
| 22 | – | – |
| 23 | G | SECURITY INDICATOR OUTPUT |
| 24 | – | – |
| 25 | BR | IMMOBILIZER ANTENNA SIG (RX,TX) |
| 26 | – | – |
| 27 | W | AIRCON SW |
| 28 | R | BLOWER FAN SW |
| 29 | G | HAZARD SW |
| 30 | – | – |
| 31 | R | OFF ROAD LAMP SW |
| 32 | O | OUTPUT 5 |
| 33 | GR | OUTPUT 4 |
| 34 | G | OUTPUT 3 |
| 35 | BR | OUTPUT 2 |
| 36 | LG | OUTPUT 1 |
| 37 | B | KEY SW |
| 38 | W/R | IGN SW |
| 39 | L | CAN-H |
| 40 | P | CAN-L |

| Connector No. | M28 |
|---|---|
| Connector Name | COMBINATION SWITCH |
| Connector Color | WHITE |

H.S.

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

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

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

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 56 | V | BATTERY SAVER OUTPUT |
| 57 | R/Y | BAT (FUSE) |
| 58 | – | – |
| 59 | GR | DOOR UNLOCK OUTPUT (DR) |
| 60 | LG | FLASHER OUTPUT (LEFT) |
| 61 | G | FLASHER OUTPUT (RIGHT) |
| 62 | – | – |
| 63 | BR | ROOM LAMP OUTPUT |
| 64 | – | – |
| 65 | V | DOOR LOCK OUTPUT (ALL) |
| 66 | L | DOOR UNLOCK OUTPUT (OTHER) |
| 67 | B | GND (POWER) |
| 68 | O | POWER WINDOW POWER SUPPLY OUT (LINKED TO RAP) |
| 69 | – | – |
| 70 | W | BAT (F/L) |

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

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 41 | – | – |
| 42 | L | PCA OUTPUT |
| 43 | Y | BACK DOOR SW |
| 44 | O | REAR WIPER AUTO STOP SW1 |
| 45 | V | CDL LOCK SW |
| 46 | LG | CDL UNLOCK SW |
| 47 | GR | DOOR SW (DR) |
| 48 | P | DOOR SW (RL) |
| 49 | L | CARGO LAMP OUTPUT |
| 50 | W | OFF ROAD LAMP OUTPUT |
| 51 | G | TRAILER FLASHER OUTPUT (RIGHT) |
| 52 | V | TRAILER FLASHER OUTPUT (LEFT) |
| 53 | – | – |
| 54 | – | – |
| 55 | W | REAR WIPER MOTOR OUTPUT 1 |

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## Fail Safe

INFOID:0000000004459436

### Fail-safe index

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

| Display contents of CONSULT | Fail-safe | Cancellation |
|---|---|---|
| U1000: CAN COMM CIRCUIT | Inhibit engine cranking | When the BCM re-establishes communication with the other modules. |
| U1010: CONTROL UNIT (CAN) | Inhibit engine cranking | When the BCM re-start communicating with the other modules. |

## DTC Inspection Priority Chart

INFOID:0000000004459437

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

| Priority | DTC |
|---|---|
| 1 | • U1000: CAN COMM CIRCUIT<br>• U1010: CONTROL UNIT (CAN) |
| 2 | • B2190: NATS ANTENNA AMP<br>• B2191: DIFFERENCE OF KEY<br>• B2192: ID DISCORD BCM-ECM<br>• B2193: CHAIN OF BCM-ECM |
| 3 | • C1729: VHCL SPEED SIG ERR<br>• C1735: IGNITION SIGNAL |
| 4 | • C1704: LOW PRESSURE FL<br>• C1705: LOW PRESSURE FR<br>• C1706: LOW PRESSURE RR<br>• C1707: LOW PRESSURE RL<br>• C1708: [NO DATA] FL<br>• C1709: [NO DATA] FR<br>• C1710: [NO DATA] RR<br>• C1711: [NO DATA] RL<br>• C1712: [CHECKSUM ERR] FL<br>• C1713: [CHECKSUM ERR] FR<br>• C1714: [CHECKSUM ERR] RR<br>• C1715: [CHECKSUM ERR] RL<br>• C1716: [PRESSDATA ERR] FL<br>• C1717: [PRESSDATA ERR] FR<br>• C1718: [PRESSDATA ERR] RR<br>• C1719: [PRESSDATA ERR] RL<br>• C1720: [CODE ERR] FL<br>• C1721: [CODE ERR] FR<br>• C1722: [CODE ERR] RR<br>• C1723: [CODE ERR] RL<br>• C1724: [BATT VOLT LOW] FL<br>• C1725: [BATT VOLT LOW] FR<br>• C1726: [BATT VOLT LOW] RR<br>• C1727: [BATT VOLT LOW] RL |

## DTC Index

INFOID:0000000004459438

**NOTE:**

Details of time display

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

| CONSULT display | Fail-safe | Tire pressure monitor warning lamp ON | Reference page |
|---|---|---|---|
| No DTC is detected. further testing may be required. | — | — | — |
| U1000: CAN COMM CIRCUIT | — | — | BCS-31 |
| U1010: CONTROL UNIT (CAN) | — | — | BCS-32 |
| B2190: NATS ANTENNA AMP | — | — | SEC-18 |
| B2191: DIFFERENCE OF KEY | — | — | SEC-21 |
| B2192: ID DISCORD BCM-ECM | — | — | SEC-22 |
| B2193: CHAIN OF BCM-ECM | — | — | SEC-24 |
| C1708: [NO DATA] FL | — | — | WT-14 |
| C1709: [NO DATA] FR | — | — | WT-14 |
| C1710: [NO DATA] RR | — | — | WT-14 |
| C1711: [NO DATA] RL | — | — | WT-14 |
| C1712: [CHECKSUM ERR] FL | — | — | WT-16 |
| C1713: [CHECKSUM ERR] FR | — | — | WT-16 |
| C1714: [CHECKSUM ERR] RR | — | — | WT-16 |
| C1715: [CHECKSUM ERR] RL | — | — | WT-16 |
| C1716: [PRESSDATA ERR] FL | — | — | WT-18 |
| C1717: [PRESSDATA ERR] FR | — | — | WT-18 |
| C1718: [PRESSDATA ERR] RR | — | — | WT-18 |
| C1719: [PRESSDATA ERR] RL | — | — | WT-18 |
| C1720: [CODE ERR] FL | — | — | WT-16 |
| C1721: [CODE ERR] FR | — | — | WT-16 |
| C1722: [CODE ERR] RR | — | — | WT-16 |
| C1723: [CODE ERR] RL | — | — | WT-16 |
| C1724: [BATT VOLT LOW] FL | — | — | WT-16 |
| C1725: [BATT VOLT LOW] FR | — | — | WT-16 |
| C1726: [BATT VOLT LOW] RR | — | — | WT-16 |
| C1727: [BATT VOLT LOW] RL | — | — | WT-16 |
| C1729: VHCL SPEED SIG ERR | — | — | WT-19 |
| C1735: IGNITION SIGNAL | — | — | — |

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

## Reference Value

INFOID:0000000004459439

### VALUES ON THE DIAGNOSIS TOOL

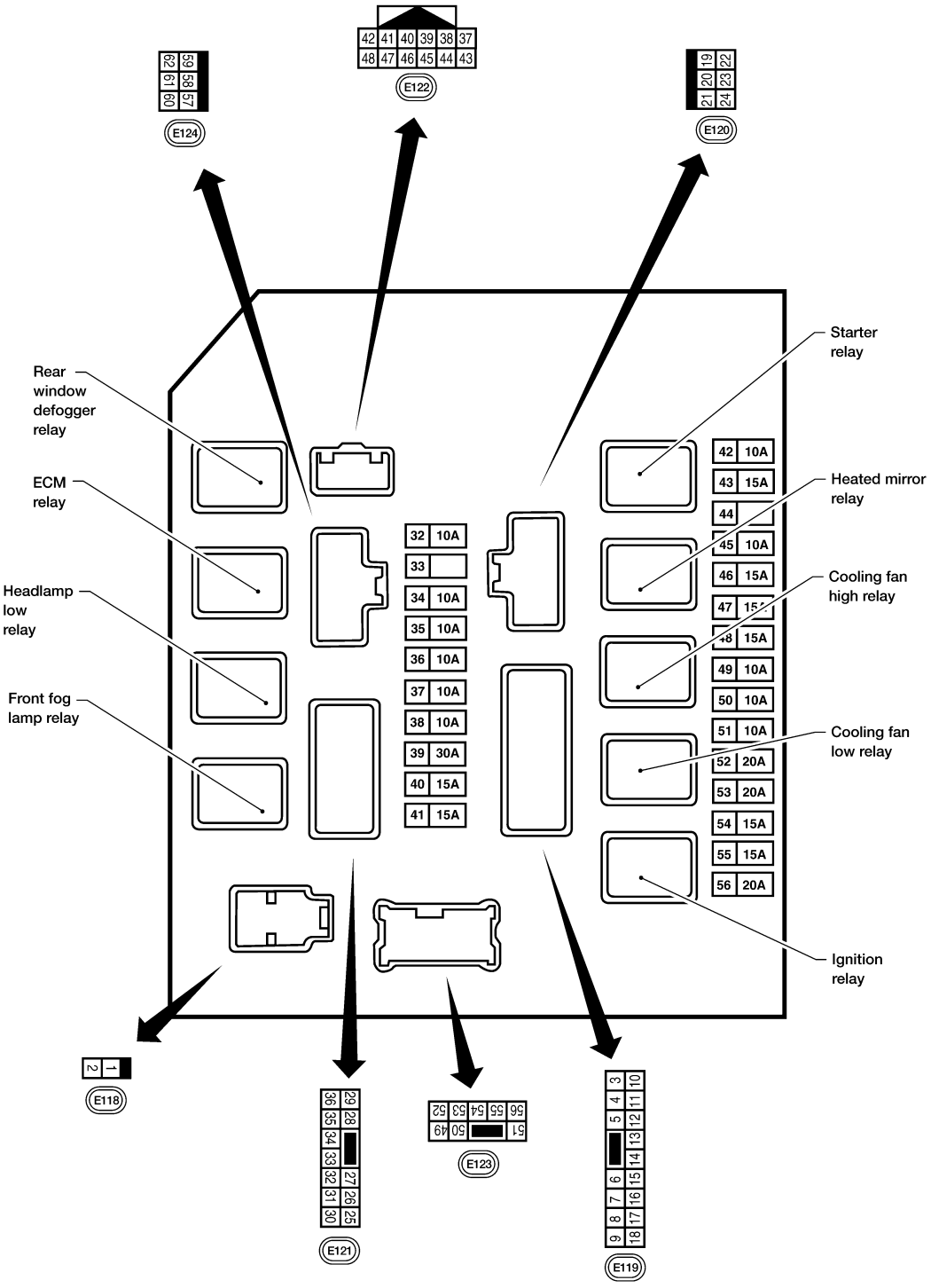
| Monitor Item | Condition | | Value/Status |
|---|---|---|---|
| MOTOR FAN REQ | Engine idle speed | Changes depending on engine coolant temperature, air conditioner operation status, vehicle speed, etc. | 0 - 100 % |
| A/C COMP REQ | A/C switch OFF | | OFF |
| | A/C switch ON | | ON |
| TAIL&CLR REQ | Lighting switch OFF | | OFF |
| | Lighting switch 1ST, 2ND, HI or AUTO (Light is illuminated) | | ON |
| HL LO REQ | Lighting switch OFF | | OFF |
| | Lighting switch 2ND HI or AUTO (Light is illuminated) | | ON |
| HL HI REQ | Lighting switch OFF | | OFF |
| | Lighting switch HI | | ON |
| FR FOG REQ | Lighting switch 2ND | Front fog lamp switch OFF | OFF |
| | | Front fog lamp switch ON | ON |
| HL WASHER REQ | **NOTE:**<br>This item is displayed, but cannot be monitored. | | OFF |
| FR WIP REQ | Ignition switch ON | Front wiper switch OFF | STOP |
| | | Front wiper switch INT | 1LOW |
| | | Front wiper switch LO | LOW |
| | | Front wiper switch HI | HI |
| WIP AUTO STOP | Ignition switch ON | Front wiper stop position | STOP P |
| | | Any position other than front wiper stop position | ACT P |
| WIP PROT | Ignition switch ON | Front wiper operates normally | OFF |
| | | Front wiper stops at fail-safe operation | BLOCK |
| ST RLY REQ | Ignition switch OFF or ACC | | OFF |
| | Ignition switch START | | ON |
| IGN RLY | Ignition switch OFF or ACC | | OFF |
| | Ignition switch ON | | ON |
| RR DEF REQ | Rear defogger switch OFF | | OFF |
| | Rear defogger switch ON | | ON |
| OIL P SW | Ignition switch OFF, ACC or engine running | | OPEN |
| | Ignition switch ON | | CLOSE |
| DTRL REQ | **NOTE:**<br>This item is displayed, but cannot be monitored. | | OFF |
| HOOD SW | **NOTE:**<br>This item is displayed, but cannot be monitored. | | OFF |

| Monitor Item | Condition | Value/Status |
|---|---|---|
| THFT HRN REQ | Not operated | OFF |
| | • Panic alarm is activated<br>• Horn is activated with VEHICLE SECURITY (THEFT WARNING) SYSTEM | ON |
| HORN CHIRP | Not operated | OFF |
| | Door locking with keyfob (horn chirp mode) | ON |

## Terminal Layout

INFOID:0000000004459440

TERMINAL LAYOUT



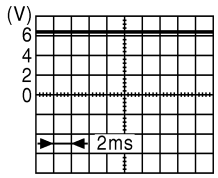
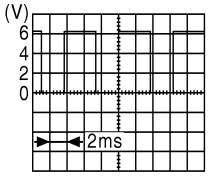
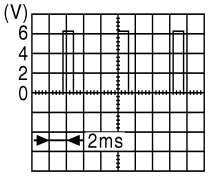

V J H 4772D

## Physical Values

INFOID:0000000004459441

PHYSICAL VALUES

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

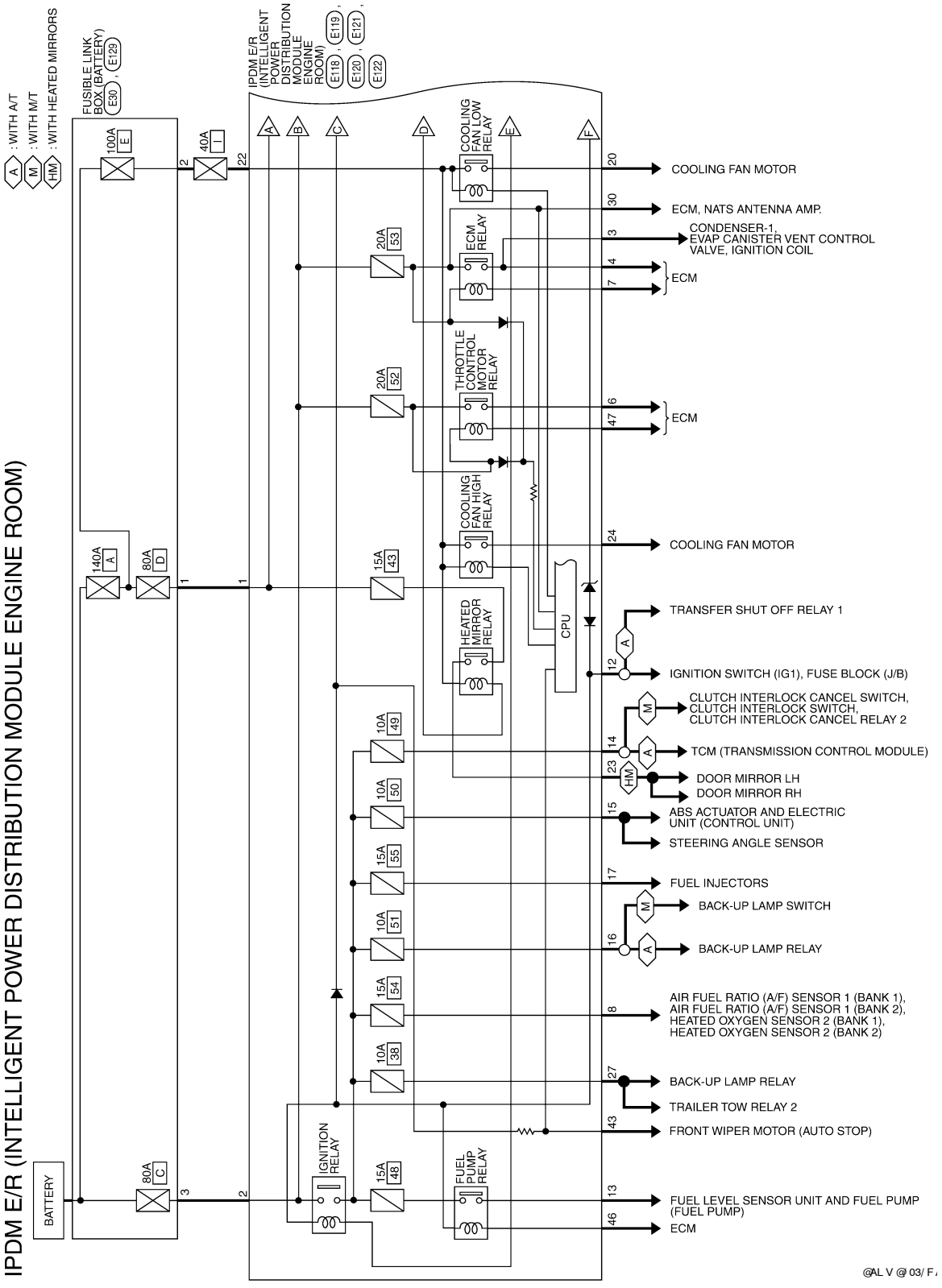
| Terminal | Wire color | Signal name | Signal input/ output | Measuring condition | | | Reference value (Approx.) |
|---|---|---|---|---|---|---|---|
| | | | | Ignition switch | Operation or condition | | |
| 24 | P | Cooling fan motor (high) | Output | — | Conditions correct for cooling fan operation | | Battery voltage |
| | | | | | Conditions not correct for cooling fan operation | | 0V |
| 27 | W | Fuse 38 | Output | — | Ignition switch ON or START | | Battery voltage |
| | | | | | Ignition switch OFF or ACC | | 0V |
| 28 | R | LH front parking and front side marker lamp | Output | OFF | Lighting switch 1st position | OFF | 0V |
| | | | | | | ON | Battery voltage |
| 29 | G | Trailer tow relay | Output | ON | Lighting switch 1st position | OFF | 0V |
| | | | | | | ON | Battery voltage |
| 30 | R/B | Fuse 53 | Output | — | Ignition switch ON or START | | Battery voltage |
| | | | | | Ignition switch OFF or ACC | | 0V |
| 32 | GR | Wiper low speed signal | Output | ON or START | Wiper switch | OFF | Battery voltage |
| | | | | | | LO or INT | 0V |
| 35 | L | Wiper high speed signal | Output | ON or START | Wiper switch | OFF, LO, INT | Battery voltage |
| | | | | | | HI | 0V |
| 37 | Y | Power generation command signal | Output | — | Ignition switch ON | |   IOLH@//0FA 6.3 V |
| | | | | | 40% is set on "Active test," "ALTERNATOR DUTY" of "ENGINE" | |   IOLH@//1FA 3.8 V |
| | | | | | 40% is set on "Active test," "ALTERNATOR DUTY" of "ENGINE" | |   IOLH@//2FA 1.4 V |
| 38 | B | Ground | Input | — | — | | 0V |
| 39 | L | CAN-H | — | ON | — | | — |
| 40 | P | CAN-L | — | ON | — | | — |
| 42 | GR | Oil pressure switch | Input | — | Engine running | | Battery voltage |
| | | | | | Engine stopped | | 0V |

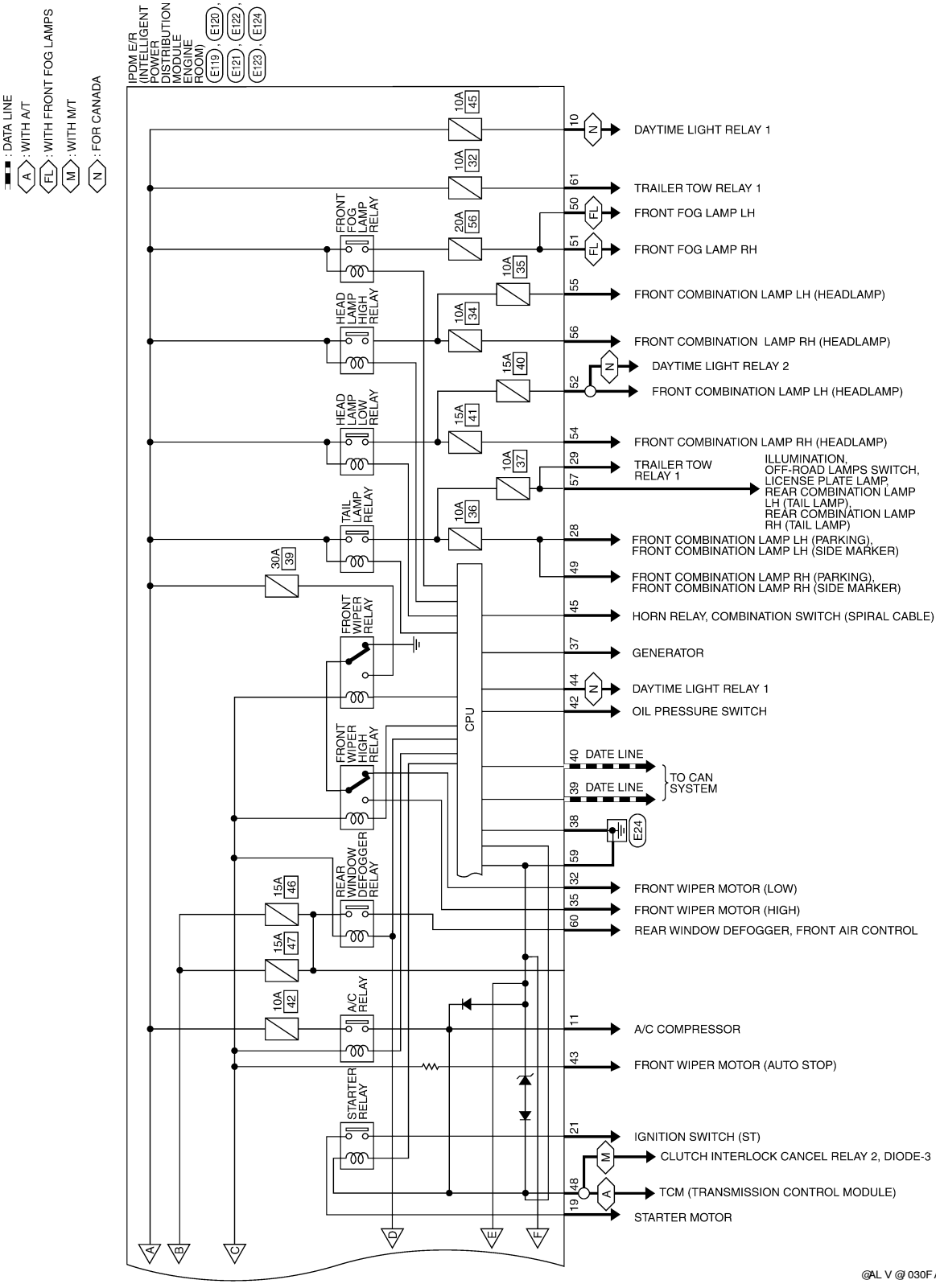
| Terminal | Wire color | Signal name | Signal input/ output | Measuring condition | | | Reference value (Approx.) |
|---|---|---|---|---|---|---|---|
| | | | | Ignition switch | Operation or condition | | |
| 43 | G | Wiper auto stop signal | Input | ON or START | Wiper switch | OFF, LO, INT | Battery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

*: When horn reminder is ON

## Wiring Diagram

INFOID:0000000004459442




: DATA LINE
A : WITH A/T
FL : WITH FRONT FOG LAMPS
M : WITH M/T
N : FOR CANADA
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E119, E120, E121, E122, E123, E124
FRONT FOG LAMP RELAY
HEAD LAMP HIGH RELAY
HEAD LAMP LOW RELAY
TAIL LAMP RELAY
FRONT WIPER RELAY
FRONT WIPER HIGH RELAY
REAR WINDOW DEFOGGER RELAY
A/C RELAY
STARTER RELAY
CPU
10A 45
10A 32
20A 56
10A 35
10A 34
15A 40
15A 41
10A 37
10A 36
30A 39
15A 46
15A 47
10A 42
10 DAYTIME LIGHT RELAY 1
61 TRAILER TOW RELAY 1
50 FRONT FOG LAMP LH
51 FRONT FOG LAMP RH
55 FRONT COMBINATION LAMP LH (HEADLAMP)
56 FRONT COMBINATION LAMP RH (HEADLAMP)
52 DAYTIME LIGHT RELAY 2
FRONT COMBINATION LAMP LH (HEADLAMP)
54 FRONT COMBINATION LAMP RH (HEADLAMP)
29 TRAILER TOW RELAY 1
57 ILLUMINATION, OFF-ROAD LAMPS SWITCH, LICENSE PLATE LAMP, REAR COMBINATION LAMP LH (TAIL LAMP), REAR COMBINATION LAMP RH (TAIL LAMP)
28 FRONT COMBINATION LAMP LH (PARKING), FRONT COMBINATION LAMP LH (SIDE MARKER)
49 FRONT COMBINATION LAMP RH (PARKING), FRONT COMBINATION LAMP RH (SIDE MARKER)
45 HORN RELAY, COMBINATION SWITCH (SPIRAL CABLE)
37 GENERATOR
44 DAYTIME LIGHT RELAY 1
42 OIL PRESSURE SWITCH
40 DATE LINE
39 DATE LINE
TO CAN SYSTEM
38 E24
59
32 FRONT WIPER MOTOR (LOW)
35 FRONT WIPER MOTOR (HIGH)
60 REAR WINDOW DEFOGGER, FRONT AIR CONTROL
11 A/C COMPRESSOR
43 FRONT WIPER MOTOR (AUTO STOP)
21 IGNITION SWITCH (ST)
CLUTCH INTERLOCK CANCEL RELAY 2, DIODE-3
48
TCM (TRANSMISSION CONTROL MODULE)
19 STARTER MOTOR
A B C D E F
@AL V @ 030F

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

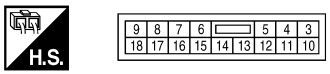
| | |
|---|---|
| Connector No. | E30 |
| Connector Name | FUSIBLE LINK BOX (BATTERY) |
| Connector Color | – |


| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 3 | R | – |

| | |
|---|---|
| Connector No. | E118 |
| Connector Name | IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) |
| Connector Color | BLACK |

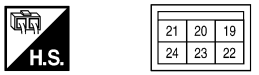

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | W | F/L USM |
| 2 | R | F/L MAIN |

| | |
|---|---|
| Connector No. | E119 |
| Connector Name | IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) |
| Connector Color | WHITE |




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 3 | G | IGN COIL |
| 4 | P | ECM |
| 5 | – | – |
| 6 | V | ETC |
| 7 | BR | ECM RLY CONT |
| 8 | W/R | O2 SENSOR |
| 9 | – | – |
| 10 | R/B | DTRL RLY SUPPLY |
| 11 | Y | A/C COMPRESSOR |
| 12 | W/G | IGN SW (IG1) |
| 13 | R | FUEL PUMP |
| 14 | W/G | A/T ECU IGN SUPPLY |
| 15 | W/R | ABS IGN SUPPLY |
| 16 | W/G | REVERSE LAMP |
| 17 | W/G | INJECTOR |
| 18 | – | – |

| | |
|---|---|
| Connector No. | E120 |
| Connector Name | IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) |
| Connector Color | WHITE |




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 19 | W | STARTER MTR |
| 20 | BR | MOTOR FAN 1 |
| 21 | GR | IGN SW (ST) |
| 22 | G | F/L M/FAN |
| 23 | LG | HEATED MIRROR |
| 24 | P | MOTOR FAN 2 |

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

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 25 | – | – |
| 26 | – | – |
| 27 | W | T TOW REV LAMP |
| 28 | R | ILLUMINATION |
| 29 | G | TRAILER RLY CONT |
| 30 | R/B | ECM BATT |
| 31 | – | – |
| 32 | GR | FR WIPER LO |
| 33 | – | – |
| 34 | – | – |
| 35 | L | FR WIPER HI |
| 36 | – | – |

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

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 37 | Y | ALT-C CONT |
| 38 | B | GND (SIGNAL) |
| 39 | L | CAN-H |
| 40 | P | CAN-L |
| 41 | – | – |
| 42 | GR | OIL PRESSURE SW |
| 43 | G | AUTO STOP SW |
| 44 | R | DTRL RLY CONT |
| 45 | LG | ANT THEFT HORN |
| 46 | V | FUEL PUMP RLY CONT |
| 47 | O | ETC RLY CONT |
| 48 | R | INHIBIT SW |

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

H.S.

| 51 | | 50 | 49 |
|---|---|---|---|
| 56 | 55 | 54 | 53 | 52 |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 49 | GR | ILLUMINATION |
| 50 | W | FR FOG LAMP LH |
| 51 | V | FR FOG LAMP RH |
| 52 | P | H/LAMP LO LH |
| 53 | – | – |
| 54 | R | H/LAMP LO RH |
| 55 | G | H/LAMP HI LH |
| 56 | L | H/LAMP HI RH |

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

H.S.

| 59 | 58 | 57 |
|---|---|---|
| 62 | 61 | 60 |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 57 | GR | TAIL LAMP |
| 58 | – | – |
| 59 | B | GND (POWER) |
| 60 | GR | RR DEF |
| 61 | R/B | TRAIL_RLY SUPPLY |
| 62 | – | – |

| Connector No. | E129 |
|---|---|
| Connector Name | FUSIBLE LINK BOX (BATTERY) |
| Connector Color | BROWN |

H.S.

| 2 |
|---|
| 1 |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | W | – |
| 2 | R | – |

@AL H@ 283F A

## Fail Safe

INFOID:0000000004459443

### CAN COMMUNICATION CONTROL

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

If No CAN Communication Is Available With ECM

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

If No CAN Communication Is Available With BCM

| Control part | Fail-safe in operation |
|---|---|
| Headlamp | • Turns ON the headlamp low relay when the ignition switch is turned ON<br>• Turns OFF the headlamp low relay when the ignition switch is turned OFF<br>• Headlamp (LH/RH) high relays OFF |
| • Parking lamps<br>• License plate lamps<br>• Tail lamps | • Turns ON the tail lamp relay when the ignition switch is turned ON<br>• Turns OFF the tail lamp relay when the ignition switch is turned OFF |
| Front wiper | • The status just before activation of fail-safe control is maintained until the ignition switch is turned OFF while the front wiper is operating at LO or HI speed.<br>• The wiper is operated at LO speed until the ignition switch is turned OFF if the fail-safe control is activated while the front wiper is set in the INT mode and the front wiper motor is operating. |
| Rear window defogger | Rear window defogger relay OFF |
| A/C compressor | A/C relay OFF |
| Front fog lamps (if equipped) | Front fog lamp relay OFF |

## IGNITION RELAY MALFUNCTION DETECTION FUNCTION

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

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

**NOTE:**

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

## FRONT WIPER CONTROL

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

| Ignition switch | Front wiper switch | Auto stop signal |
|---|---|---|
| ON | OFF | Front wiper stop position signal cannot be input 10 seconds. |
| | ON | The signal does not change for 10 seconds. |

**NOTE:**

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

## STARTER MOTOR PROTECTION FUNCTION

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

## DTC Index

INFOID:0000000004459444

| CONSULT-III display | Fail-safe | TIME[NOTE] | | Refer to |
|---|---|---|---|---|
| No DTC is detected. further testing may be required. | — | — | — | — |
| U1000: CAN COMM CIRCUIT | × | CRNT | 1 – 39 | PCS-18 |

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

# SYMPTOM DIAGNOSIS

## WIPER AND WASHER SYSTEM SYMPTOMS

### Symptom Table

INFOID:0000000004065676

**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<br>• Harness between combination switch and BCM<br>• BCM | Combination switch<br>Refer to BCS-55, "Symptom Table". |
| | | • IPDM E/R<br>• Harness between IPDM E/R and front wiper motor<br>• Front wiper motor | Front wiper motor (HI) circuit<br>Refer to WW-21, "Component Function Check". |
| | | Front wiper request signal<br>• BCM<br>• IPDM E/R | IPDM E/R DATA MONITOR<br>"FR WIP REQ" |
| | LO and INT | • Combination switch<br>• Harness between combination switch and BCM<br>• BCM | Combination switch<br>Refer to BCS-55, "Symptom Table". |
| | | • IPDM E/R<br>• Harness between IPDM E/R and front wiper motor<br>• Front wiper motor | Front wiper motor (LO) circuit<br>Refer to WW-19, "Component Function Check". |
| | | Front wiper request signal<br>• BCM<br>• IPDM E/R | IPDM E/R DATA MONITOR<br>"FR WIP REQ" |
| | INT only | • Combination switch<br>• Harness between combination switch and BCM<br>• BCM | Combination switch<br>Refer to BCS-55, "Symptom Table". |
| | | Front wiper request signal<br>• BCM<br>• IPDM E/R | IPDM E/R DATA MONITOR<br>"FR WIP REQ" |
| | HI, LO, and INT | SYMPTOM DIAGNOSIS<br>“FRONT WIPER DOES NOT OPERATE”<br>Refer to WW-72, "Diagnosis Procedure". | |

| Symptom | | Probable malfunction location | Inspection item |
|---|---|---|---|
| Front wiper does not stop. | HI only | • Combination switch<br>• BCM | Combination switch<br>Refer to BCS-55, "Symptom Table". |
| | | Front wiper request signal<br>• BCM<br>• IPDM E/R | IPDM E/R DATA MONITOR<br>"FR WIP REQ" |
| | | IPDM E/R | — |
| | LO only | • Combination switch<br>• BCM | Combination switch<br>Refer to BCS-55, "Symptom Table". |
| | | Front wiper request signal<br>• BCM<br>• IPDM E/R | IPDM E/R DATA MONITOR<br>"FR WIP REQ" |
| | | IPDM E/R | — |
| | INT only | • Combination switch<br>• BCM | Combination switch<br>Refer to BCS-55, "Symptom Table". |
| | | Front wiper request signal<br>• BCM<br>• IPDM E/R | IPDM E/R DATA MONITOR<br>"FR WIP REQ" |
| Front wiper does not operate normally. | Intermittent adjustment cannot be performed. | • Combination switch<br>• Harness between combination switch and BCM<br>• BCM | Combination switch<br>Refer to BCS-55, "Symptom Table". |
| | | BCM | — |
| | Intermittent control linked with vehicle speed cannot be performed. | Check the vehicle speed detection wiper setting.<br>Refer to WW-11, "WIPER : CONSULT-III Function (BCM - WIPER)". | |
| | Wiper is not linked to the washer operation. | • Combination switch<br>• Harness between combination switch and BCM<br>• BCM | Combination switch<br>Refer to BCS-55, "Symptom Table". |
| | | BCM | — |
| | Does not return to stop position (Repeatedly operates for 10 seconds and then stops for 20 seconds. After that, it stops the operation). | • IPDM E/R<br>• Harness between IPDM E/R and front wiper motor<br>• Front wiper motor | Front wiper auto stop signal circuit<br>Refer to WW-23, "Component Function Check". |
| Rear wiper does not operate. | ON only | • Combination switch<br>• Harness between combination switch and BCM<br>• BCM | Combination switch<br>Refer to BCS-55, "Symptom Table". |
| | INT only | • Combination switch<br>• Harness between combination switch and BCM<br>• BCM | Combination switch<br>Refer to BCS-55, "Symptom Table". |
| | ON and INT | • Combination switch<br>• Harness between combination switch and BCM<br>• BCM | Combination switch<br>Refer to BCS-55, "Symptom Table". |
| | | • BCM<br>• Harness between rear wiper motor and BCM<br>• Harness between rear wiper motor and ground<br>• Rear wiper motor | Combination switch<br>Refer to WW-28, "Component Function Check". |

| Symptom | | Probable malfunction location | Inspection item |
|---|---|---|---|
| Rear wiper does not stop. | ON only | • Combination switch<br>• BCM | Rear wiper motor circuit<br>Refer to WW-28, "Component Function Check". |
| | INT only | • Combination switch<br>• BCM | Combination switch<br>Refer to BCS-55, "Symptom Table". |
| Rear wiper does not operate normally. | Wiper is not linked to the washer operation. | • Combination switch<br>• Harness between rear wiper motor and BCM<br>• BCM | Combination switch<br>Refer to BCS-55, "Symptom Table". |
| | | BCM | — |
| | Rear wiper does not return to the Stop position (Stops after a five-second operation). | • BCM<br>• Harness between rear wiper motor and BCM<br>• Rear wiper motor | Rear wiper auto stop signal circuit<br>Refer to WW-30, "Component Function Check". |
| | Rear wiper stops after operating for five seconds when ignition switch is turned ON. | | |

# NORMAL OPERATING CONDITION

## Description

INFOID:0000000004065677

### FRONT WIPER MOTOR PROTECTION FUNCTION

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

### REAR WIPER MOTOR PROTECTION FUNCTION

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

# FRONT WIPER DOES NOT OPERATE

## Description

INFOID:0000000004065678

The front wiper does not operate under any operation conditions.

## Diagnosis Procedure

INFOID:0000000004065679

### 1. CHECK WIPER RELAY OPERATION

IPDM E/R AUTO ACTIVE TEST
1. Start IPDM E/R auto active test. Refer to PCS-13, "Diagnosis Description".
2. Check that the front wiper operates at the LO/HI operation.

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

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

Is front wiper operation normal?

YES >> GO TO 5
NO >> GO TO 2

### 2. CHECK FRONT WIPER MOTOR FUSE

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

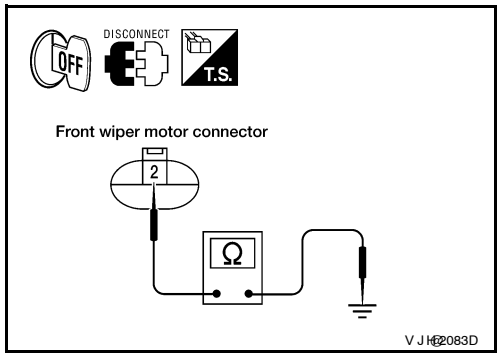
| Unit | Location | Fuse No. | Capacity |
|---|---|---|---|
| Front wiper motor | IPDM E/R | 39 | 30 A |

Is the fuse blown?

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

### 3. CHECK FRONT WIPER MOTOR GROUND OPEN CIRCUIT

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




| Front wiper motor | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E23 | 2 | | Yes |

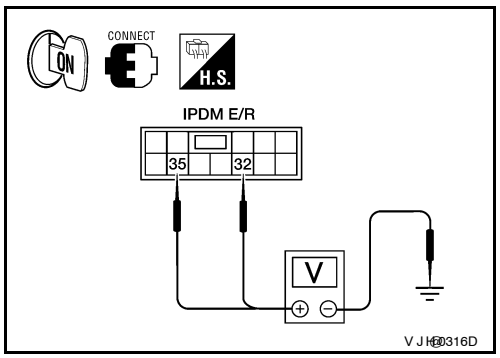
Does continuity exist?

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

### 4. CHECK FRONT WIPER MOTOR OUTPUT VOLTAGE

CONSULT-III ACTIVE TEST

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




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

Is the measurement value normal?

YES >> Replace front wiper motor. Refer to WW-76, "Wiper Motor and Linkage".
NO >> Replace IPDM E/R. Refer to PCS-34, "Removal and Installation of 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 | HI | ON |
| | | STOP | OFF |
| | Front wiper switch LO | 1LOW | ON |
| | | STOP | OFF |

Is the status of item normal?

YES >> Replace IPDM E/R. Refer to PCS-34, "Removal and Installation of IPDM E/R".
NO >> GO TO 6

## 6. CHECK COMBINATION SWITCH

1. Perform the inspection of the combination switch. Refer to BCS-55, "Symptom Table".

Is combination switch normal?

YES >> Replace BCM. Refer to BCS-57, "Removal and Installation".
NO >> Repair or replace the applicable parts.

# PRECAUTION

## PRECAUTION

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

INFOID:0000000004065680

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

**WARNING:**

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

# ON-VEHICLE REPAIR

## FRONT WIPER ARM

### Front Wiper Arms

INFOID:0000000004476258

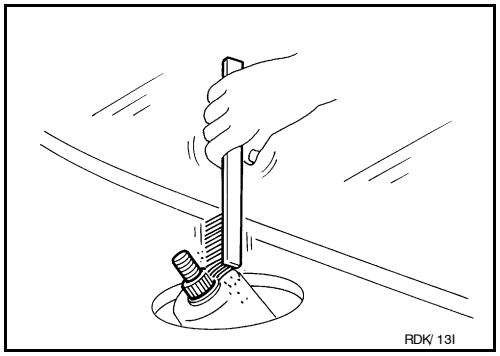
#### REMOVAL AND INSTALLATION

Removal

1. Remove wiper arm covers and wiper arm nuts.
2. Remove front RH wiper arm and front LH wiper arm.
3. Remove front RH blade assembly and front LH blade assembly.

Installation

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

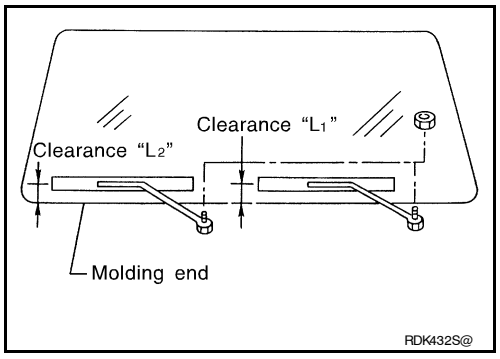



3. Install front RH blade assembly and front LH blade assembly.
4. Install front RH wiper arm and front LH wiper arm.
5. Ensure that wiper blades stop within proper clearance. Perform "FRONT WIPER ARM ADJUSTMENT" .
6. Tighten wiper arm nuts to specified torque, and install wiper arm covers. Refer to WW-76, "Wiper Motor and Linkage".

#### FRONT WIPER ARM ADJUSTMENT

1. Operate wiper motor one full cycle, then turn "OFF" (Auto Stop).
2. Lift the wiper blade up and then rest it onto glass surface, check the blade clearance "L1" and "L2".

**Clearance "L1" : 24.5 - 39.5 mm (0.965 - 1.555 in)**
**Clearance "L2" : 23.5 - 38.5 mm (0.925 - 1.516 in)**



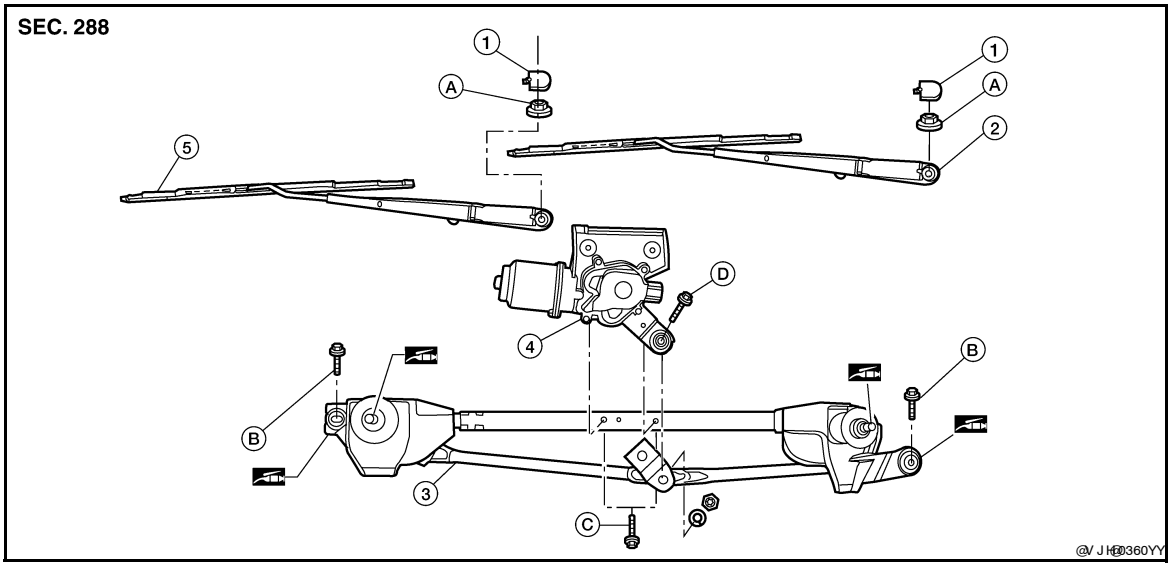

3. Remove wiper arm covers and wiper arm nuts.
4. Adjust front wiper arms on wiper motor pivot shafts to obtain above specified blade clearances.
5. Tighten wiper arm nuts to specified torque, and install wiper arm covers. Refer to WW-76, "Wiper Motor and Linkage".

# FRONT WIPER DRIVE ASSEMBLY

## Wiper Motor and Linkage

INFOID:0000000004476259

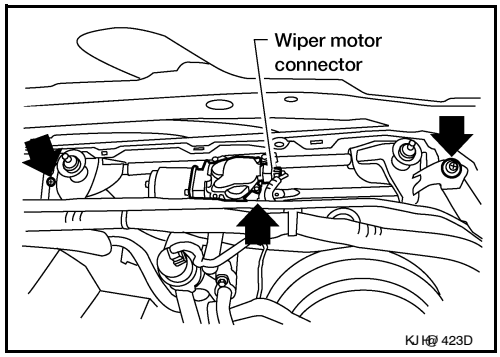
### REMOVAL AND INSTALLATION




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

#### Removal

1. Remove the cowl top. Refer to EXT-17, "Removal and Installation".
2. Remove wiper frame bolts, disconnect wiper motor connector and remove wiper frame assembly.




3. Remove wiper motor from wiper frame assembly.

#### Installation

**CAUTION:**

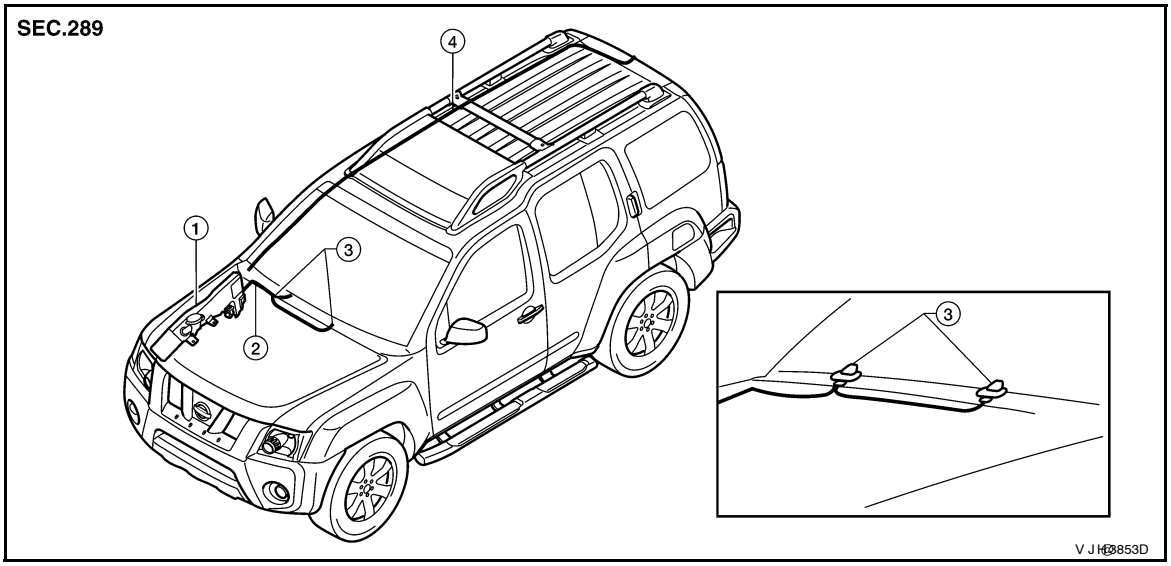
- **Do not drop the wiper motor or cause it to contact other parts.**
- **Check the grease conditions of the motor arm and wiper link joint(s). Apply grease if necessary.**

1. Connect wiper motor to connector. Turn the wiper switch ON to operate wiper motor, then turn the wiper switch OFF (auto stop).
2. Disconnect wiper motor electrical connector.
3. Install wiper motor to wiper frame assembly, and install wiper frame assembly.
4. Connect wiper motor electrical connector.
5. Install cowl top. Refer to EXT-17, "Removal and Installation".
6. Ensure that wiper blades stop within proper clearance. Refer to WW-75, "Front Wiper Arms".

# FRONT WASHER TUBE

## Washer Tube Layout

INFOID:0000000004476260




1. Washerfluid reservoir
2. Front washer hose
3. Washer nozzle
4. Rear washer hose

# FRONT WASHER NOZZLE

## Removal and Installation

INFOID:0000000004476261

### REMOVAL

1. Remove cowl top. Refer to EXT-17, "Removal and Installation".
2. Remove washer nozzles.

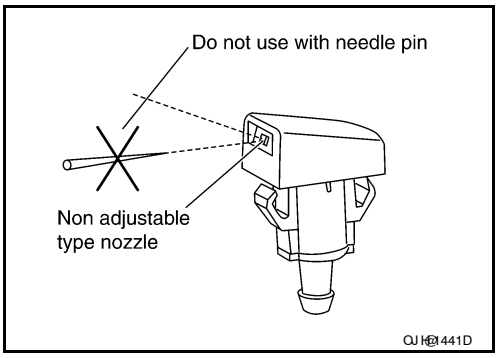
### INSTALLATION

Installation is in the reverse order of removal.

## Washer Nozzle Adjustment

INFOID:0000000004476262

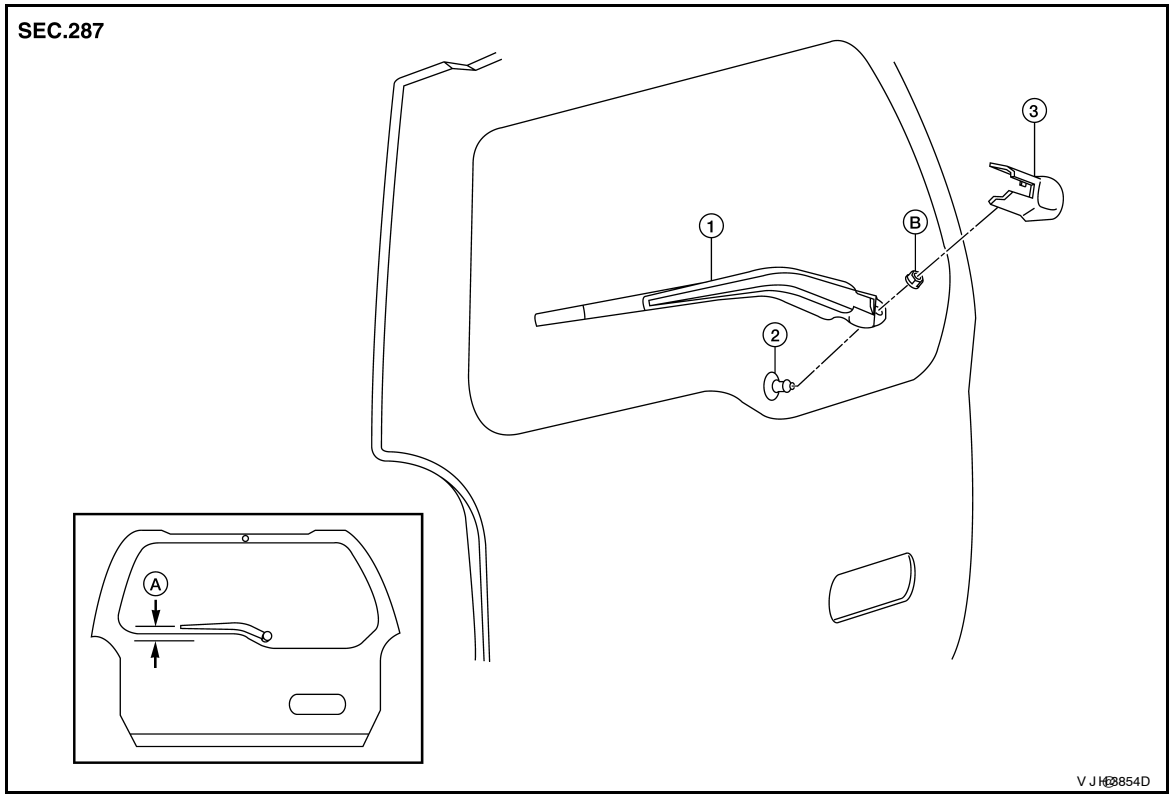
- This vehicle is equipped with non-adjustable washer nozzles.
- If not satisfied with washer fluid spray coverage, confirm that the washer nozzle is installed correctly.
- If the washer nozzle is installed correctly, and the washer fluid spray coverage is not satisfactory, replace washer nozzle.



# REAR WIPER ARM

## Removal and Installation

INFOID:0000000004476268




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

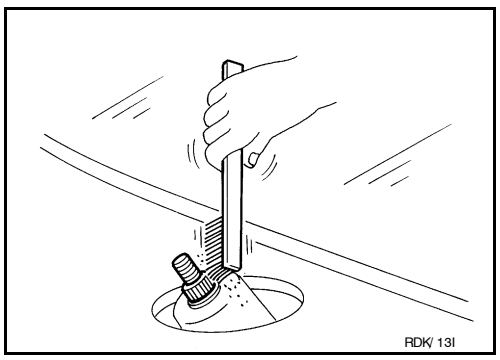
### REAR WIPER ARM

Removal

1. Remove rear wiper arm cover, and remove rear wiper arm nut.
2. Remove rear wiper arm.
3. Remove wiper blade.

Installation

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




2. Install rear wiper blade.
3. Install rear wiper arm.
4. Ensure that rear wiper blade stops at proper position. Perform "REAR WIPER ARM ADJUSTMENT".

### REAR WIPER ARM ADJUSTMENT

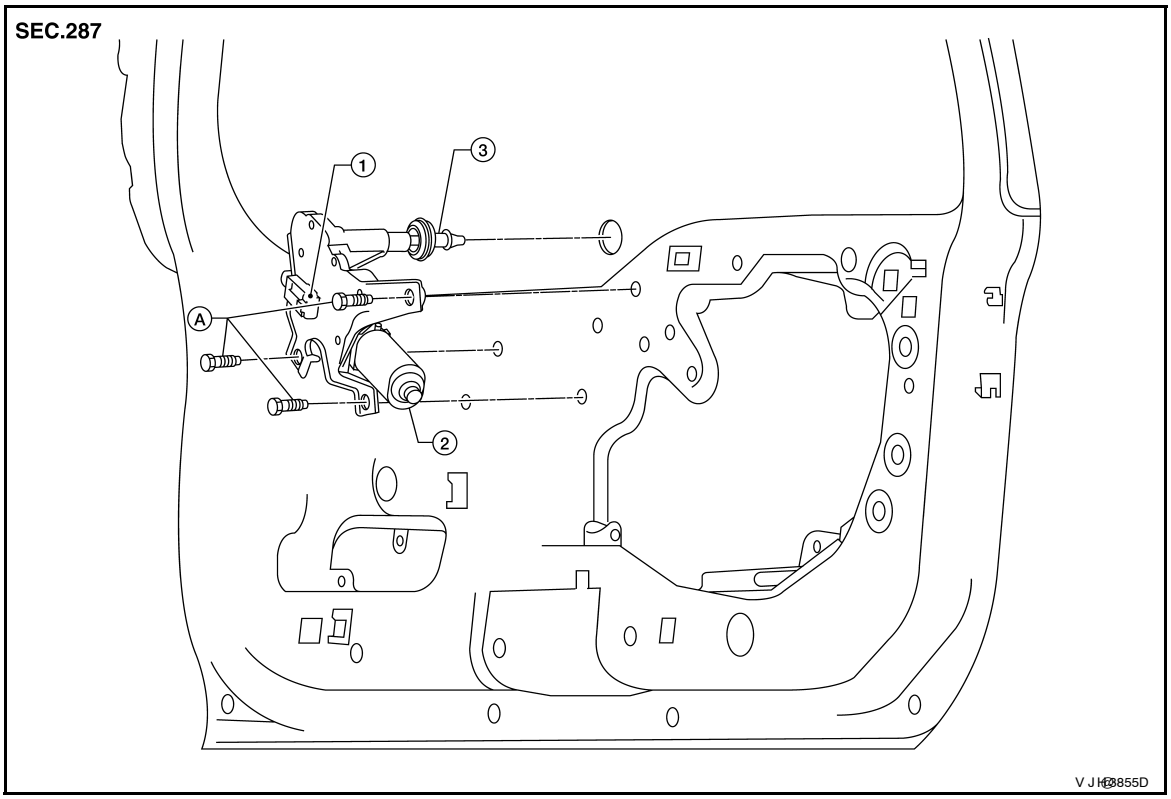
1. Operate rear wiper motor one full cycle, then turn "OFF" (Auto Stop).
2. Adjust rear wiper arm so that wiper arm and blade is parallel with lower edge of back glass, as shown.
3. Install rear wiper arm nut and rear wiper arm cover.

# REAR WIPER MOTOR

## Removal and Installation

INFOID:0000000004476269

### REAR WIPER MOTOR




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

Removal

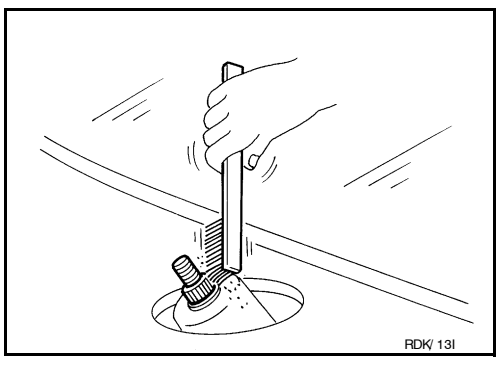
**CAUTION:**

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

1. Remove rear wiper arm and blade. Refer to WW-79, "Removal and Installation".
2. Remove back door lower finisher. Refer to INT-24, "Removal and Installation".
3. Remove rear wiper motor cover.
4. Disconnect rear wiper motor harness connector.
5. Remove rear wiper motor.
6. Remove rear motor pivot seal.

Installation

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



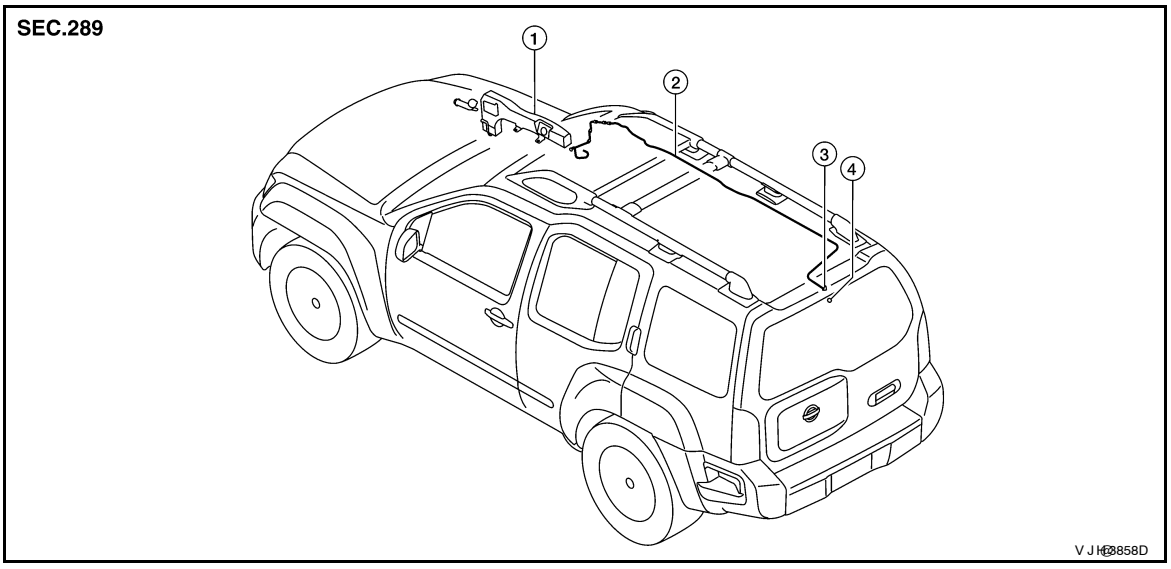
2. Install rear motor pivot seal.
3. Install rear wiper motor.
4. Connect rear wiper motor harness connector.
5. Install rear wiper motor cover.
6. Install back door lower finisher. Refer to INT-24, "Removal and Installation".
7. Ensure that rear wiper blade stops at proper position. Refer to WW-79, "Removal and Installation".

# REAR WASHER TUBE

## Removal and Installation

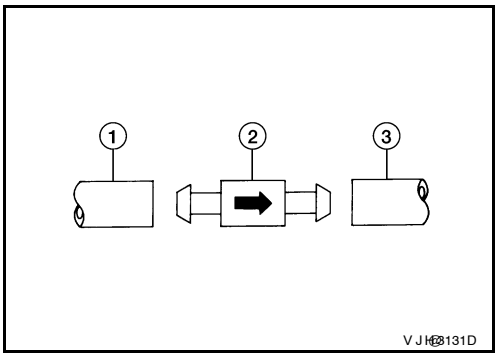
INFOID:0000000004476270

### REAR WASHER HOSE LAYOUT




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

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



# REAR WASHER NOZZLE

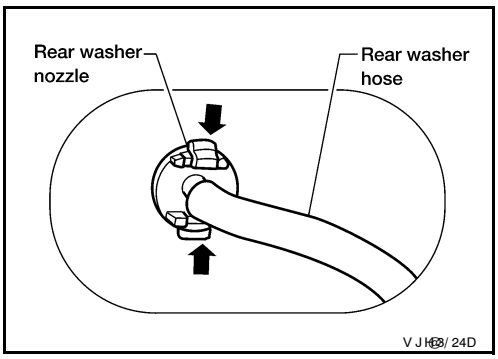
## Removal and Installation

INFOID:0000000004478553

### REMOVAL and INSTALLATION

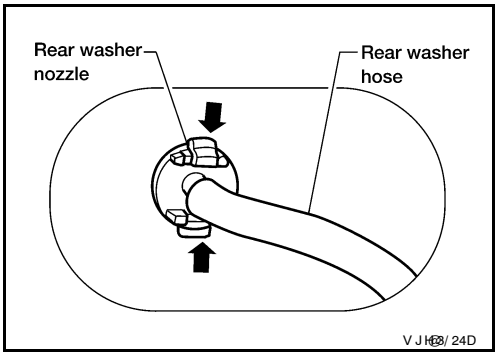
Removal

1. Remove back door upper finisher. Refer to INT-24, "Removal and Installation".
2. Disconnect rear washer hose from rear washer nozzle.
3. Release retaining clips, and remove rear washer nozzle.




Installation

1. Install rear washer nozzle.
2. Connect rear washer hose.
3. Install back door upper finisher. Refer to INT-24, "Removal and Installation".



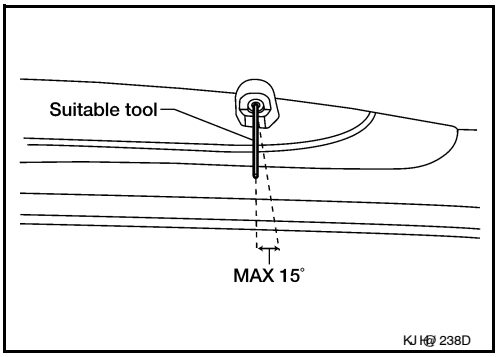

## Rear Washer Nozzle Adjustment

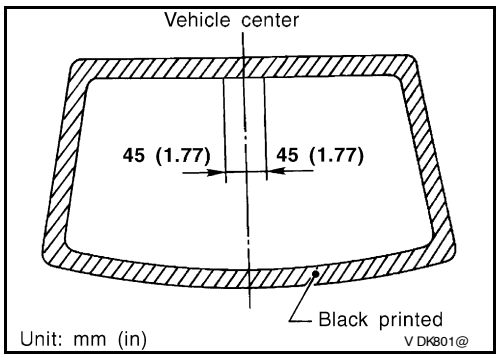
INFOID:0000000004476267

### REAR WASHER NOZZLE ADJUSTMENT

- Adjust washer nozzle with suitable tool as shown.

**Adjustable range : ±15° (In any direction)**




Vehicle center
45 (1.77)
45 (1.77)
Black printed
Unit: mm (in)
V DK801@

# WASHER TANK

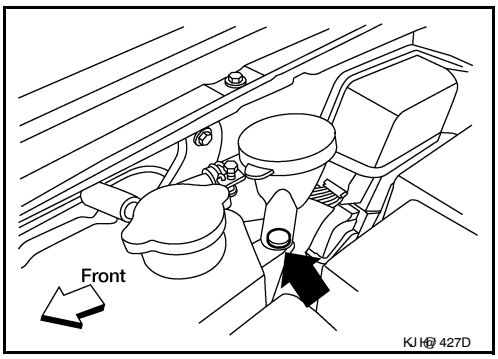
## Washer Fluid Reservoir

INFOID:0000000004476263

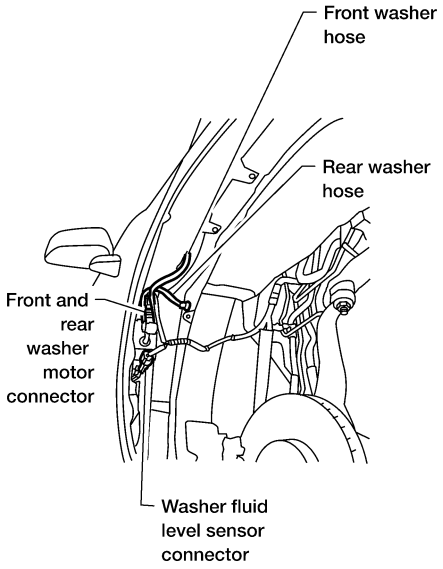
### REMOVAL AND INSTALLATION

Removal

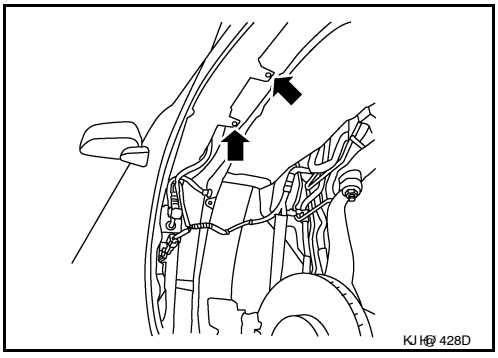
1. Remove passenger front fender protector. Refer to EXT-19, "Front Fender Protector".
2. Remove clip, then remove washer fluid reservoir filler neck from washer fluid reservoir.




3. Disconnect washer hoses.
4. Disconnect washer motor connector.
5. Disconnect washer fluid level sensor connector if equipped.




6. Remove washer fluid reservoir screws and remove washer fluid reservoir.




Installation

Installation is in the reverse order of removal.

**CAUTION:**

**After installation, add water up to the upper level of the washer fluid reservoir inlet and check for water leaks.**

# WASHER PUMP

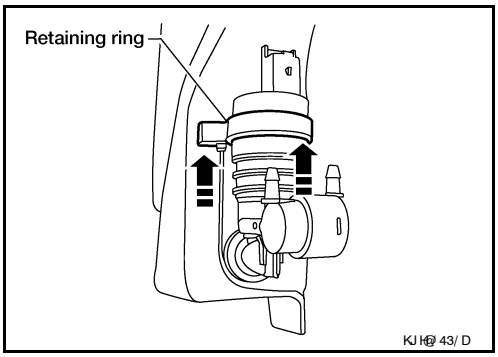
## Washer Motor

INFOID:0000000004476264

### REMOVAL AND INSTALLATION

Removal

1. Remove RH front fender protector. Refer to EXT-19, "Front Fender Protector".
2. Disconnect the washer hoses.
3. Disconnect the washer motor connector.
4. Slide retaining ring upward to release washer motor.




5. Remove washer motor from washer fluid reservoir.

Installation

Installation is in the reverse order of removal.

# WIPER & WASHER SWITCH

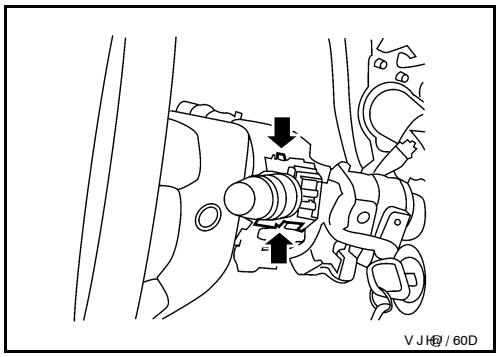
## Wiper and Washer Switch

INFOID:0000000004476265

### REMOVAL AND INSTALLATION

Removal

1. Remove instrument lower cover LH. Refer to IP-10, "Exploded View".
2. Remove column cover lower and column cover upper.
3. Disconnect wiper washer switch connector.
4. Pinch tabs at wiper and washer switch base and slide switch away from steering column.




### Installation

Installation is in the reverse order of removal.

# WASHER LEVEL SWITCH

## Removal and Installation

INFOID:0000000004476266

1. Remove washer fluid reservoir. Refer to WW-86, "Washer Fluid Reservoir".
2. Lift level sensor out of washer fluid reservoir in the direction of the arrow as shown.