# SECTION HAC

# HEATER & AIR CONDITIONING CONTROL SYSTEM

## CONTENTS

### AUTOMATIC AIR CONDITIONING

# PRECAUTION

## PRECAUTIONS

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

INFOID:0000000008143803

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 “SRS AIR BAG” and “SEAT BELT” of this Service Manual.

**WARNING:**

**Always observe the following items for preventing accidental activation.**

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that 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 “SRS AIR BAG”.**
- **Never use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.**

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

**WARNING:**

**Always observe the following items for preventing accidental activation.**

- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.**

### High Voltage Precautions

INFOID:0000000008143804

**WARNING:**

- **Because hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.**
- **Be sure to remove the service plug in order to shut off the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.**
- **To prevent the removed service plug from being connected by mistake during the procedure, always carry it in your pocket or put it in the tool box.**
- **Be sure to wear insulating protective equipment consisting of glove, shoes, face shield, and glasses before beginning work on the high voltage system.**
- **Clearly identify the persons responsible for high voltage work and ensure that other persons do not touch the vehicle. When not working, cover high voltage parts with an insulating cover sheet or similar item to prevent other persons from contacting them.**

**CAUTION:**

**There is the possibility of a malfunction occurring if the vehicle is changed to READY status while the service plug is removed. Therefore do not change the vehicle to READY status unless instructed to do so in the Service Manual.**

#### HIGH VOLTAGE HARNESS AND EQUIPMENT IDENTIFICATION

The colors of the high voltage harnesses and connectors are all orange. Orange "High Voltage" labels are applied to the Li-ion battery and other high voltage devices. Do not carelessly touch these harnesses and parts.

## HANDLING OF HIGH VOLTAGE HARNESS AND TERMINALS

Immediately insulate disconnected high voltage connectors and terminals with insulating tape.

## REGULATIONS ON WORKERS WITH MEDICAL ELECTRONICS

**WARNING:**

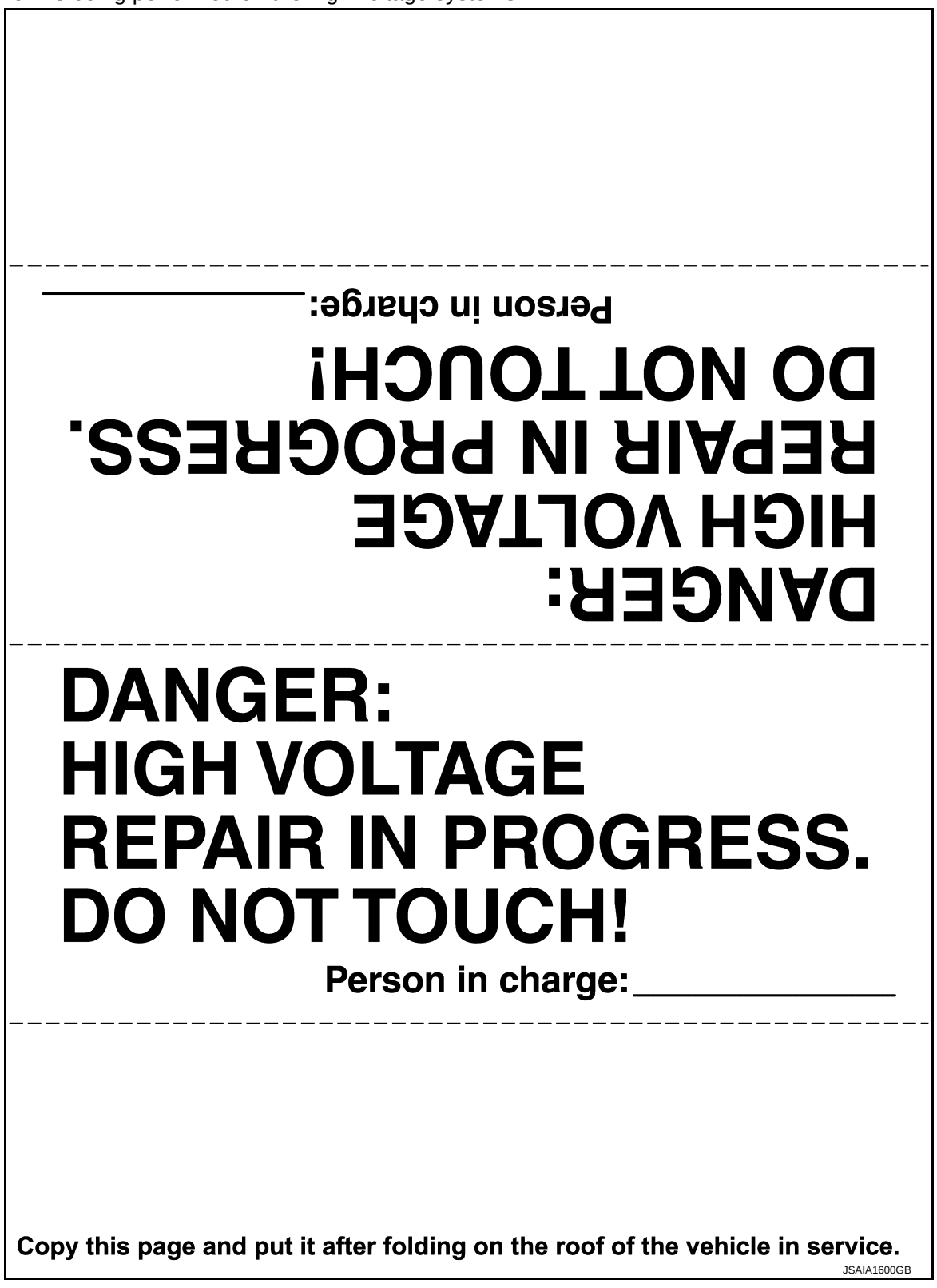
**The vehicle contains parts that contain powerful magnets. If a person who is wearing a heart pacemaker or other medical device is close to these parts, the medical device may be affected by the magnets. Such persons must not perform work on the vehicle.**

## PROHIBITED ITEMS TO CARRY DURING THE WORK

Because this vehicle uses components that contain high voltage and powerful magnetism, due not carry any metal products which may cause short circuits, or any magnetic media (cash cards, prepaid cards, etc.) which may be damaged on your person when working.

## POSTING A SIGN OF “DANGER! HIGH VOLTAGE AREA. KEEP OUT”

To call the attention of other workers, indicate "High voltage work in progress. Do not touch!" on vehicles where work is being performed on the high voltage systems.



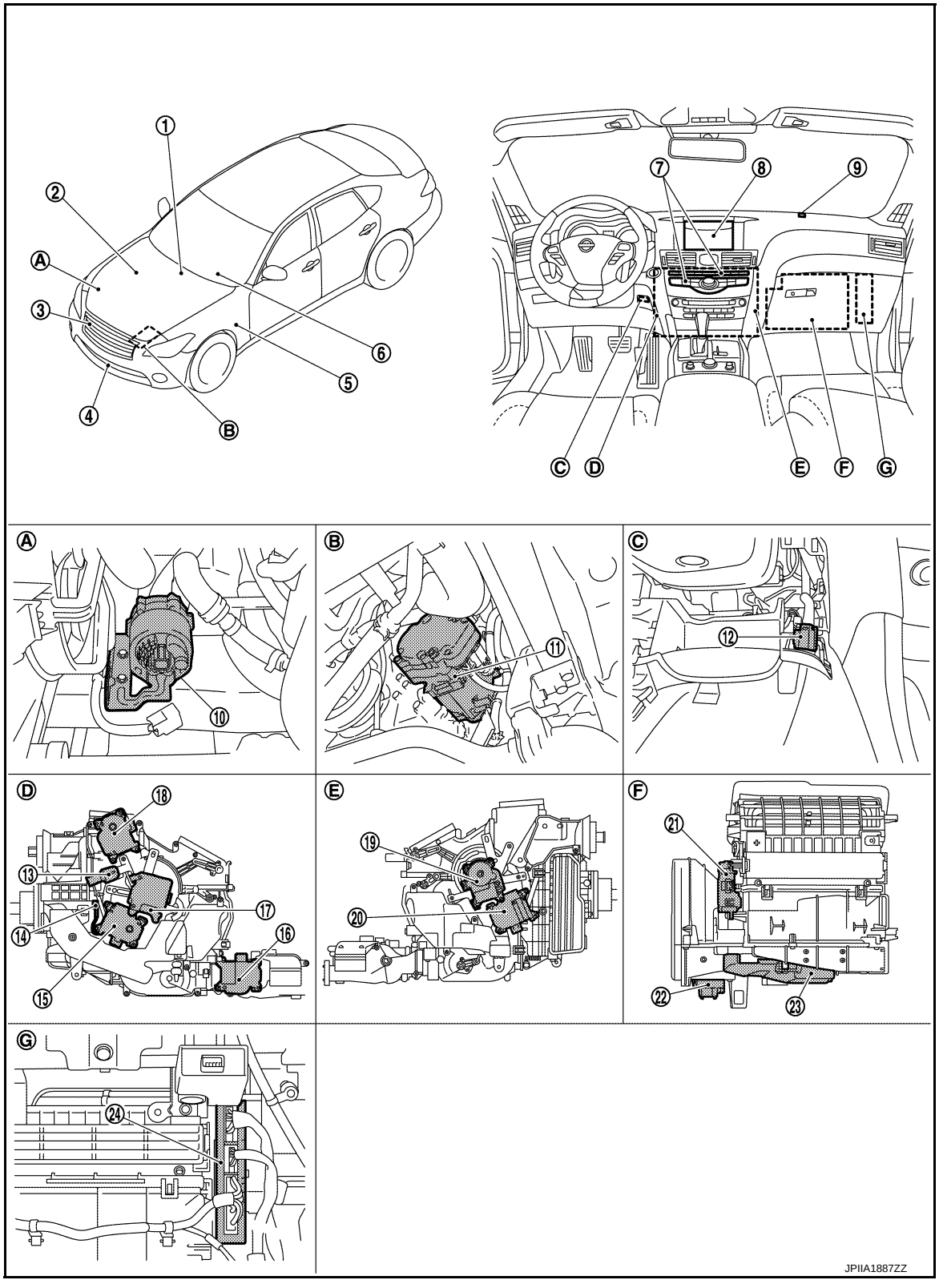
# SYSTEM DESCRIPTION

## COMPONENT PARTS

### AUTOMATIC AIR CONDITIONING SYSTEM

#### AUTOMATIC AIR CONDITIONING SYSTEM : Component Parts Location

INFOID:0000000008143805



1. AV control unit
Refer to AV-11, "Component Parts Location" (Base audio without navigation) or AV-128, "Component Parts Location" (BOSE audio with navigation).
2. ECM
Refer to EC-15, "ENGINE CONTROL SYSTEM : Component Parts Location".
3. Refrigerant pressure sensor
4. Ambient sensor
5. BCM
BCS-4, "BODY CONTROL SYSTEM : Component Parts Location".
6. Combination meter
Refer to MWI-6, "METER SYSTEM : Component Parts Location".
7. Multifunction switch
8. Display
9. Sunload sensor
10. Heater pump
11. Electric compressor
12. In-vehicle sensor
13. Aspirator
14. Intake sensor
15. Air mix door motor (Driver side)
16. Rear mode door motor
17. Mode door motor (Driver side)
18. Upper ventilator door motor
19. Mode door motor (Passenger side)
20. Air mix door motor (Passenger side)
21. Intake door motor
22. Power transistor
23. Blower motor
24. A/C auto amp.
A. Engine room right side
B. Engine left side
C. Lower instrument panel LH is removed
D. Left side of heater & cooling unit assembly
E. Right side of heater & cooling unit assembly
F. Rear side of blower unit
G. Instrument lower panel RH is removed

## AUTOMATIC AIR CONDITIONING SYSTEM : Component Description

INFOID:0000000008143806

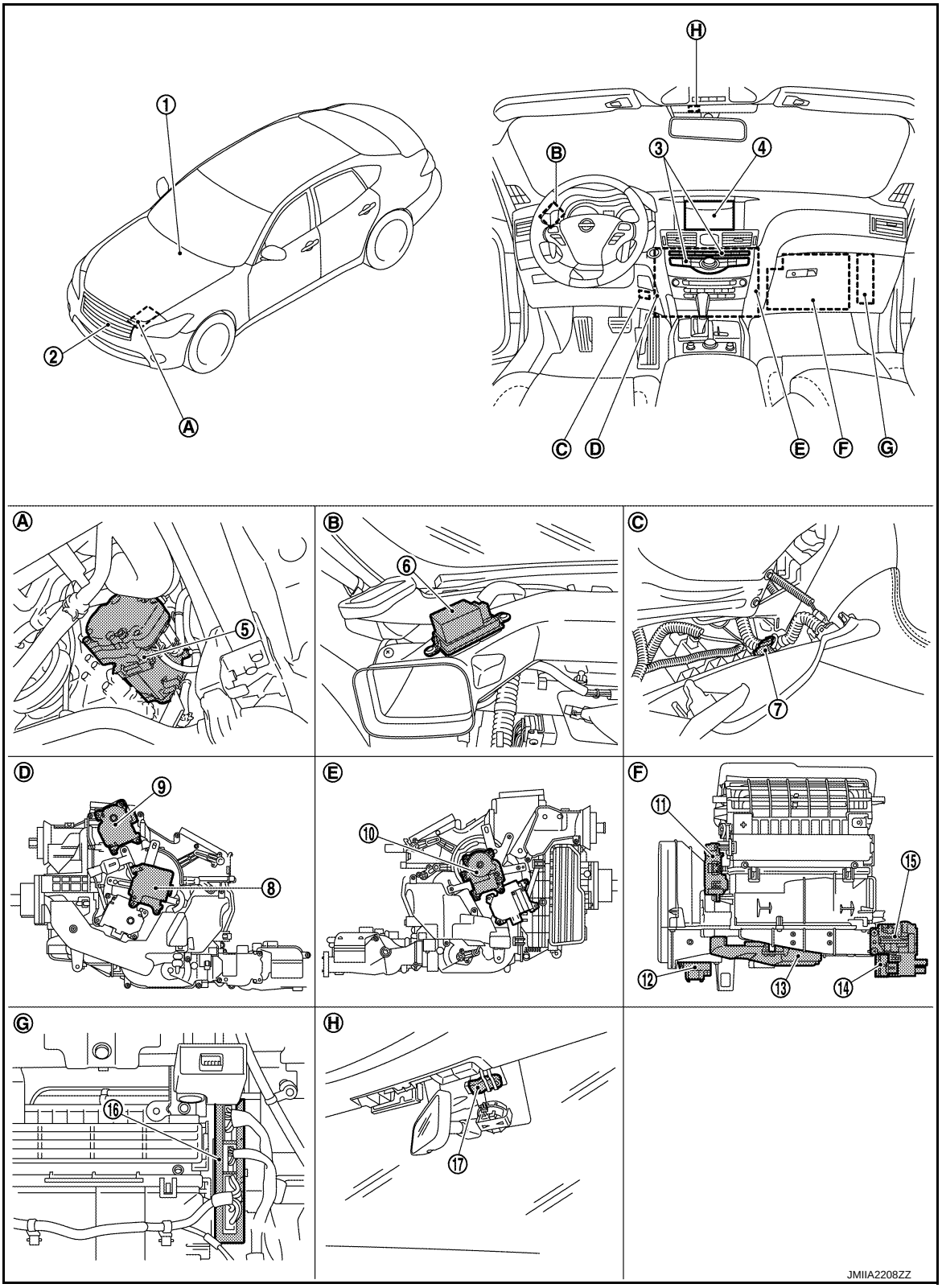
| Component parts | | Description |
|---|---|---|
| Blower unit | Blower motor | Refer to HAC-13. |
| | Intake door motor | Refer to HAC-13. |
| | Power transistor | Refer to HAC-13. |
| Electric compressor | | Performs the intake, compression, and discharge of refrigerant, and circulates the refrigerant in the cooler cycle. |
| Heater & cooling unit assembly | Air mix door motor (Driver side) | Refer to HAC-13. |
| | Air mix door motor (Passenger side) | Refer to HAC-13. |
| | Aspirator | Refer to HAC-14. |
| | Intake sensor | Intake sensor measures evaporator fin temperature. This sensor uses thermistor that decreases electrical resistance as temperature increases. |
| | Mode door motor (Driver side) | Refer to HAC-14. |
| | Mode door motor (Passenger side) | Refer to HAC-14. |
| | Rear mode door motor | Refer to HAC-14. |
| | Upper ventilator door motor | Refer to HAC-14. |
| Ambient sensor | | Ambient sensor measures ambient air temperature. This sensor uses thermistor that decreases electrical resistance as temperature increases. |
| AV control unit | | AV control unit transmits A/C switch operation signal to A/C auto amp. via CAN communication line. |
| A/C auto amp. | | A/C auto amp. controls air conditioning system by inputting and calculating signals from each sensor and each switch. A/C auto amp. has self-diagnosis function. Diagnosis of air conditioning system can be performed quickly. |
| BCM | | BCM transmits key ID signal to A/C auto amp. via CAN communication line. |
| Display | | Display indicates operation status of air conditioning system. Display has touch panel function that can be used to control air conditioning system. |

| Component parts | Description |
|---|---|
| ECM | ECM controls compressor according to status of engine and refrigerant. |
| Engine coolant temperature sensor | Engine coolant temperature sensor measures engine coolant temperature. This sensor uses thermistor that decreases electrical resistance as temperature increases. |
| In-vehicle sensor | In-vehicle sensor measures temperature of intake air through aspirator to passenger room. This sensor uses thermistor that decreases electrical resistance as temperature increases. |
| Multifunction switch | Multifunction switch integrates A/C controller and AV operation switch. A/C switch operation signal is transmitted from multifunction switch to AV control unit via communication line. |
| Refrigerant pressure sensor | Refer to HAC-14. |
| Sunload sensor | Sunload sensor measures sunload amount. This sensor is a dual system so that sunload for driver side and passenger side are measured separately. This sensor converts sunload amount to voltage signal by photodiode and transmits to A/C auto amp. |
| Heater pump | Heater pump is used to circulate the water heated by the engine cooling system when engine is stoppiing. |

## FOREST AIR SYSTEM

# FOREST AIR SYSTEM : Component Parts Location

INFOID:0000000008143807




1. AV control unit
   Refer to AV-128, "Component Parts Location" (BOSE AUDIO WITH NAVIGATION).
2. Exhaust gas/outside odor detecting sensor
3. Multifunction switch
4. Display
5. Electric compressor
6. Ionizer

7. Inside odor detecting sensor
8. Mode door motor (Driver side)
9. Upper ventilator door motor
10. Mode door motor (Passenger side)
11. Intake door motor
12. Power transistor
13. Blower motor
14. Aroma cartridge
15. Aroma motor
16. A/C auto amp.
17. Humidity sensor
A. Engine left side
B. Instrument panel assembly is removed
C. Instrument lower panel LH is removed
D. Left side of heater & cooling unit assembly
E. Right side of heater & cooling unit assembly
F. Rear side of blower unit
G. Instrument lower panel RH is removed
H. Front camera finisher is removed

## FOREST AIR SYSTEM : Component Description

INFOID:0000000008143808

| Component parts | | Description |
|---|---|---|
| Blower unit | Aroma cartridge | Aroma cartridge generates 2 kinds of aromas, leaf scent and fragrant wood, which have proven relaxing effects. |
| | Aroma motor | Refer to HAC-12. |
| | Blower motor | Refer to HAC-13. |
| | Intake door motor | Refer to HAC-13. |
| | Power transistor | Refer to HAC-13. |
| Electric compressor | | Performs the intake, compression, and discharge of refrigerant, and circulates the refrigerant in the cooler cycle. |
| Heater & cooling unit assembly | Mode door motor (Driver side) | Refer to HAC-14. |
| | Mode door motor (Passenger side) | Refer to HAC-14. |
| | Upper ventilator door motor | Refer to HAC-14. |
| AV control unit | | AV control unit transmits A/C switch operation signal to A/C auto amp. via CAN communication line. |
| A/C auto amp. | | A/C auto amp. controls Forest Air system by inputting and calculating signals from each sensor and each switch. A/C auto amp. has self-diagnosis function. Diagnosis of Forest Air system can be performed quickly. |
| Display | | Display indicates operation status of Forest Air system. Display has touch panel function that can be used to control Forest Air system. |
| Exhaust gas/outside odor detecting sensor | | Exhaust gas/outside odor detecting sensor measures unpleasant odor outside of passenger room. In addition to previous exhaust gas detection function, unpleasant odor in ambient atmosphere is measured. |
| Humidity sensor | | Humidity sensor measures windshield temperature and passenger room humidity so that fogging on windshield is judged. |
| Inside odor detecting sensor | | Inside odor detecting sensor measures odor of cigarettes, foods, and other objects in passenger room. |
| Ionizer | | Ionizer generates an approximately equal proportional amount of positive and negative ions in the air. |
| Multifunction switch (FOREST switch) | | FOREST switch is located in multifunction switch. Forest Air system can be operated when FOREST switch is pressed. |

# BLOWER UNIT

## BLOWER UNIT : Aroma Motor

INFOID:0000000008143809

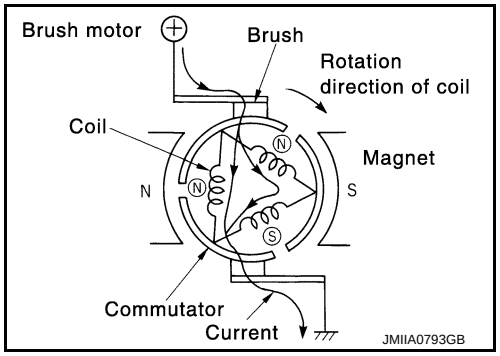
- Aroma motor consists of motor that drives door and PBR (Potentio Balance Register) that detects door position.
- Motor operates aroma door according to control signal from A/C auto amp.
- PBR (Potentio Balance Register) transmits PBR feedback signal to A/C auto amp. according to motor position.

- According to PBR feedback signal, A/C auto amp. monitors that motor is in an appropriate door position.

## BLOWER UNIT : Blower Motor

INFOID:0000000008143810

Brush motor, that rotates coil while brush functions as contact points, is adopted for blower motor. Rotation speed changes according to voltage from power transistor.




## BLOWER UNIT : Intake Door Motor

INFOID:0000000008143811

- Intake door motor consists of motor that drives door and PBR (Potentio Balance Register) that detects door position.
- Motor operates intake door according to control signal from A/C auto amp.
- PBR (Potentio Balance Register) transmits PBR feedback signal to A/C auto amp. according to motor position.
- According to PBR feedback signal, A/C auto amp. monitors that motor is in an appropriate door position.

## BLOWER UNIT : Power Transistor

INFOID:0000000008143812

- Power transistor, that uses MOS field effect transistor, is adopted for blower motor speed control.
  **NOTE:**
  MOS field effect transistor is a transistor for which the gate portion is composed of a metal electrode on an oxide layer of semiconductor. Field effect transistor is controlled by voltage, while ordinary transistor is controlled by current. Electrode of field effect transistor is called source, drain, or gate, while electrode of ordinary transistor is called emitter, collector, or base.
- Power transistor continuously controls voltage to blower motor (approximately 0 to 16 V), according to gate voltage from A/C auto amp.
- This power transistor does not require a HI relay even when the maximum voltage is applied to blower motor at HI status, because voltage drop is nominal.

# HEATER & COOLING UNIT ASSEMBLY

## HEATER & COOLING UNIT ASSEMBLY : Air Mix Door Motor (Driver Side)

INFOID:0000000008143813

- Air mix door motor (driver side) consists of motor that drives door and PBR (Potentio Balance Register) that detects door position.
- Motor operates air mix door (driver side) according to control signal from A/C auto amp.
- PBR (Potentio Balance Register) transmits PBR feedback signal to A/C auto amp. according to motor position.
- According to PBR feedback signal, A/C auto amp. monitors that motor is in an appropriate door position.

## HEATER & COOLING UNIT ASSEMBLY : Air Mix Door Motor (Passenger Side)

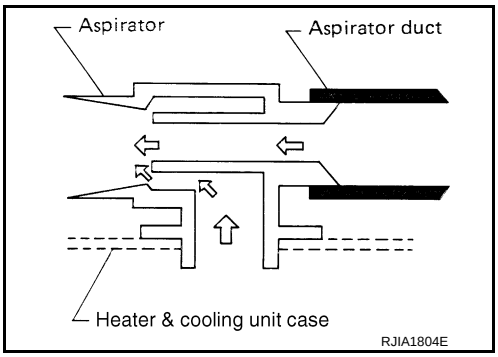
INFOID:0000000008143814

- Air mix door motor (passenger side) consists of motor that drives door and PBR (Potentio Balance Register) that detects door position.
- Motor operates air mix door (passenger side) and rear air mix door according to control signal from A/C auto amp.
- PBR (Potentio Balance Register) transmits PBR feedback signal to A/C auto amp. according to motor position.
- According to PBR feedback signal, A/C auto amp. monitors that motor is in an appropriate door position.

## HEATER & COOLING UNIT ASSEMBLY : Aspirator

INFOID:0000000008143815

The aspirator generates the vacuum by the air blown from the heater & cooling unit and draws the air of the passenger room to the in-vehicle sensor area via the aspirator duct.




## HEATER & COOLING UNIT ASSEMBLY : Mode Door Motor (Driver Side)

INFOID:0000000008143816

- Mode door motor (driver side) consists of motor that drives door and PBR (Potentio Balance Register) that detects door position.
- Motor operates ventilator door (driver side), foot door (driver side) and defroster door according to control signal from A/C auto amp.
- PBR (Potentio Balance Register) transmits PBR feedback signal to A/C auto amp. according to motor position.
- According to PBR feedback signal, A/C auto amp. monitors that motor is in an appropriate door position.

## HEATER & COOLING UNIT ASSEMBLY : Mode Door Motor (Passenger side)

INFOID:0000000008143817

- Mode door motor (passenger side) consists of motor that drives door and PBR (Potentio Balance Register) that detects door position.
- Motor operates ventilator door (passenger side) and foot door (passenger side) according to control signal from A/C auto amp.
- PBR (Potentio Balance Register) transmits PBR feedback signal to A/C auto amp. according to motor position.
- According to PBR feedback signal, A/C auto amp. monitors that motor is in an appropriate door position.

## HEATER & COOLING UNIT ASSEMBLY : Rear Mode Door Motor

INFOID:0000000008143818

- Rear mode door motor consists of motor that drives door and PBR (Potentio Balance Register) that detects door position.
- Motor operates rear mode door according to control signal from A/C auto amp.
- PBR (Potentio Balance Register) transmits PBR feedback signal to A/C auto amp. according to motor position.
- According to PBR feedback signal, A/C auto amp. monitors that motor is in an appropriate door position.

## HEATER & COOLING UNIT ASSEMBLY : Upper Ventilator Door Motor

INFOID:0000000008143819

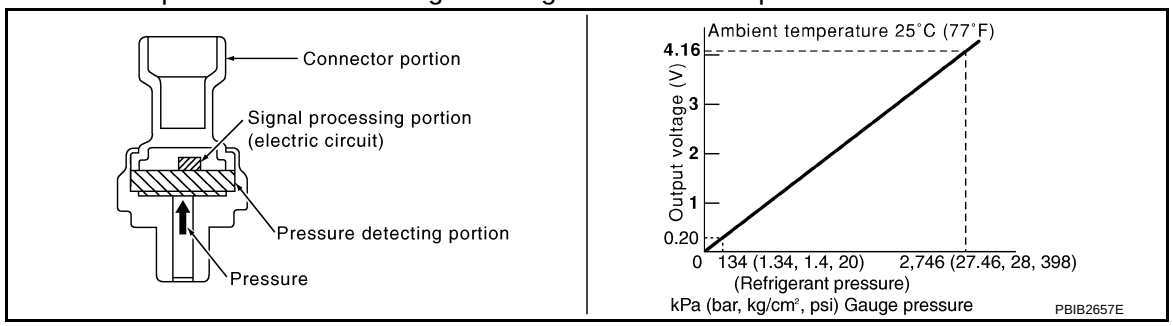
- Upper ventilator door motor consists of motor that drives door and PBR (Potentio Balance Register) that detects door position.
- Motor operates upper ventilator door according to control signal from A/C auto amp.
- PBR (Potentio Balance Register) transmits PBR feedback signal to A/C auto amp. according to motor position.
- According to PBR feedback signal, A/C auto amp. monitors that motor is in an appropriate door position.

## Refrigerant Pressure Sensor

INFOID:0000000008143822

Description

Refrigerant pressure sensor is installed to upper portion of liquid tank. The refrigerant pressure sensor converts high-pressure side refrigerant pressure into voltage and outputs it to ECM. ECM operates cooling system protection and idle speed control according to voltage value that is input.




## Structure and operation

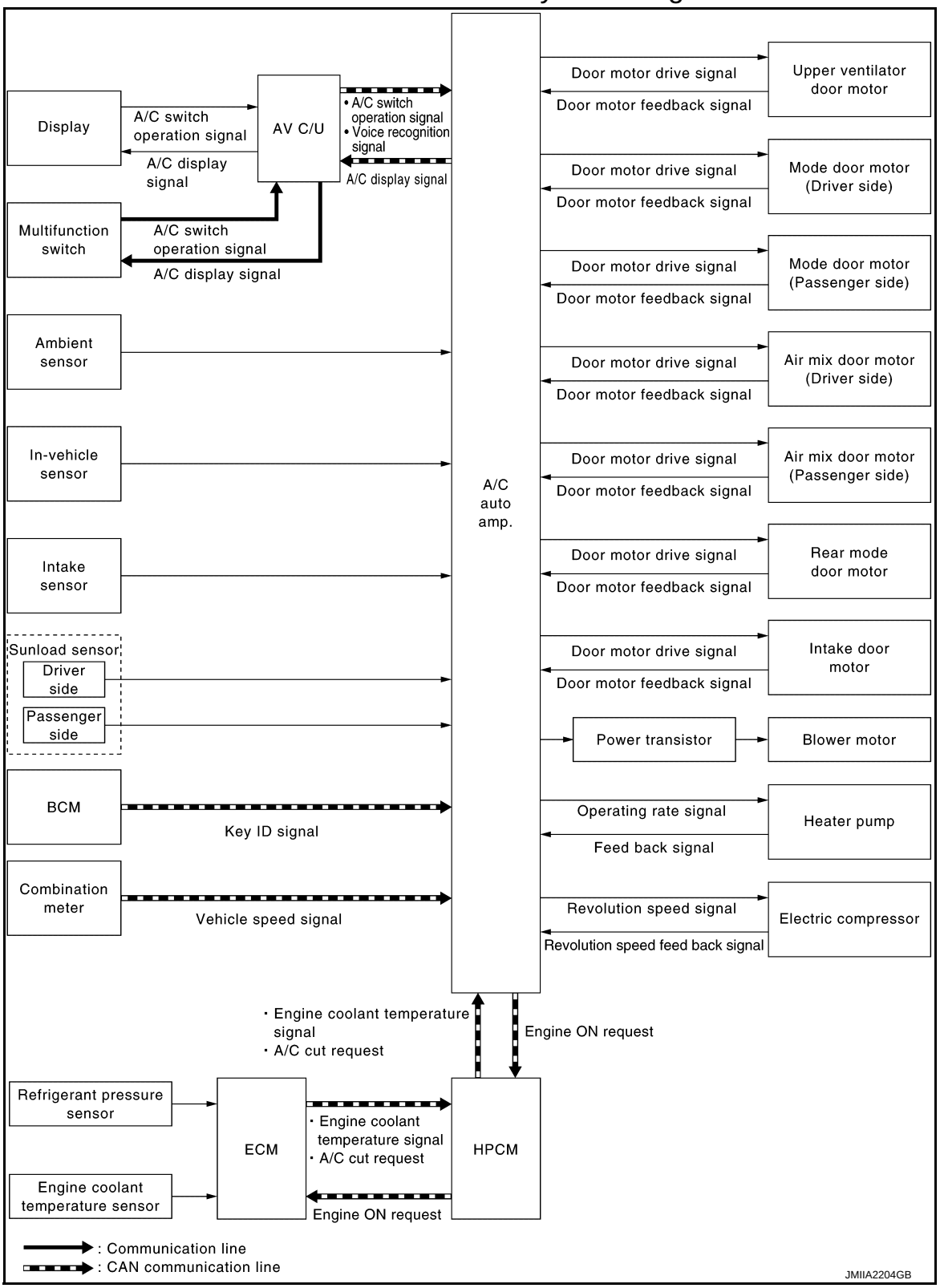
The refrigerant pressure sensor is a capacitance type sensor. It consists of a pressure detection area and a signal processing area. The pressure detection area, which is a variable capacity condenser, changes internal static capacitance according to pressure force. The signal processing area detects the static capacitance of the pressure detection area, converts the static capacitance into a voltage value, and transmits the voltage value to ECM.

# SYSTEM

## AUTOMATIC AIR CONDITIONING SYSTEM

### AUTOMATIC AIR CONDITIONING SYSTEM : System Diagram

INFOID:0000000008143823




### AUTOMATIC AIR CONDITIONING SYSTEM : System Description

INFOID:0000000008143824

- Automatic air conditioning system is controlled by each function of A/C auto amp., ECM and BCM.

Control by A/C auto amp.
- HAC-17, "AUTOMATIC AIR CONDITIONING SYSTEM : Air Flow Control"
- HAC-18, "AUTOMATIC AIR CONDITIONING SYSTEM : Air Inlet Control"
- HAC-18, "AUTOMATIC AIR CONDITIONING SYSTEM : Air Outlet Control"
- HAC-18, "AUTOMATIC AIR CONDITIONING SYSTEM : Compressor Control"
- HAC-19, "AUTOMATIC AIR CONDITIONING SYSTEM : Door Control"
- HAC-23, "AUTOMATIC AIR CONDITIONING SYSTEM : Temperature Control"
- HAC-23, "AUTOMATIC AIR CONDITIONING SYSTEM : Intelligent Key Interlock Function"
- Correction for input value of each sensor

Ambient sensor (setting temperature correction)
- A/C auto amp. controls passenger room temperature so that the optimum level always matches the temperature level that passenger may feel. Correction is applied to the target temperature that is set using temperature control dial, according to ambient temperature detected by ambient sensor.

In-vehicle sensor (setting temperature correction)
- Passenger room temperature from in-vehicle sensor is corrected for each air conditioning control (driver side and passenger side)

Intake sensor (intake temperature correction)
- A/C auto amp. performs correction to change recognition intake temperature of A/C auto amp. more quickly when difference is larger between recognition intake temperature and intake temperature from intake temperature sensor. The correction is performed to change recognition intake temperature more slowly when difference is smaller.

Sunload sensor (sunload amount correction)
- Sunload amount from sunload sensor is corrected for each air conditioning control (driver side and passenger side).
- A/C auto amp. performs correction to change recognition sunload amount of A/C auto amp. slowly when sunload amount changes excessively, for example when entering or exiting a tunnel.

Control by ECM
- Cooling fan control
  Refer to EC-36, "COOLING FAN CONTROL : System Description".
- Air conditioning cut control
  Refer to EC-35, "AIR CONDITIONING CUT CONTROL : System Description".

Control by BCM
- Intelligent key interlock function.
  Refer to DLK-13, "INTELLIGENT KEY SYSTEM : System Description".
- Various operations of air conditioning system are transmitted from multifunction switch and display to AV control unit via communication line (except display) and from AV control unit to A/C auto amp. via CAN communication. A/C auto amp. sends each indication information to AV control unit via CAN communication. AV control unit displays each type of indication information that is received.

## AUTOMATIC AIR CONDITIONING SYSTEM : Air Flow Control

INFOID:0000000008143825

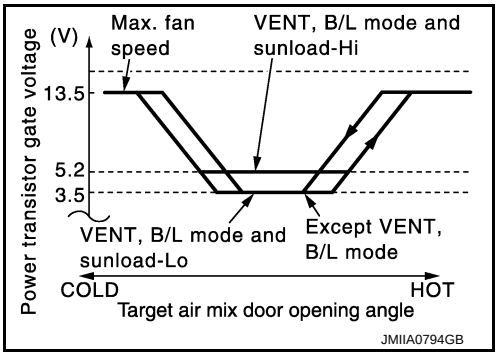
### DESCRIPTION

- A/C auto amp. changes gate voltage to power transistor and controls air flow in 31 stages based on target air flow. When air flow is to be increased, gate voltage to power transistor increases gradually for preventing excessive large amount of air flow.
- In addition to manual control and automatic control, air flow control is consist of low coolant temperature starting control, fan speed control at door motor operation and fan speed control at voice recognition.

### AUTOMATIC AIR FLOW CONTROL

- A/C auto amp. decides target air flow depending on target air mix door opening angle.
- A/C auto amp. changes voltage to power transistor gate and controls air flow in 31 stages, so that target air flow is achieved.

- When air outlet is VENT or B/L, the minimum air flow is changed depending on sunload.




LOW COOLANT TEMPERATURE STARTING CONTROL

A/C auto amp. does not operate bower motor when engine coolant temperature is approximately 37°C (99°F) or less, for preventing a cold discharged air flow. After this, gate voltage applied to power transistor gradually, and blower motor operates.

FAN SPEED CONTROL AT DOOR MOTOR OPERATION

When mode door motor is activated while air flow is more than the specified value, A/C auto amp. reduces temporarily fan speed so that mode door moves smoothly.

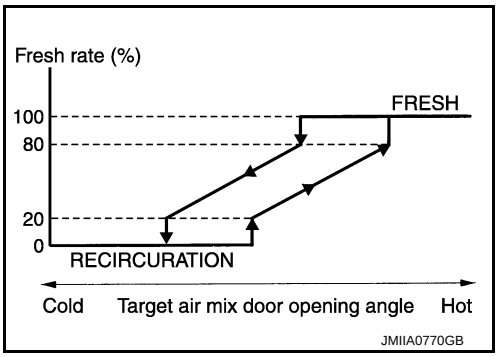
FAN SPEED CONTROL AT VOICE RECOGNITION

When the voice control (voice command) switch is operated during air flow automatic control, A/C auto amp. decreases the air flow of the blower motor once and controls the air flow so as not to disturb the voice recognition function. This control continues while voice recognition function is operating.

## AUTOMATIC AIR CONDITIONING SYSTEM : Air Inlet Control

INFOID:0000000008143826

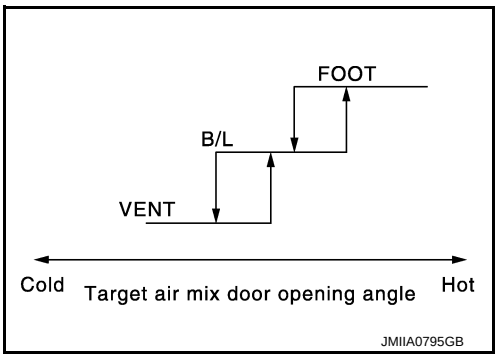
Intake door automatic control selects FRE, 20 – 80% FRE, or REC depending on a target air mix door opening angle.




## AUTOMATIC AIR CONDITIONING SYSTEM : Air Outlet Control

INFOID:0000000008143827

While air outlet is in automatic control, A/C auto amp. selects the mode door position depending on a target air mix door angle.




## AUTOMATIC AIR CONDITIONING SYSTEM : Compressor Control

INFOID:0000000008143828

DESCRIPTION

When the compressor activation condition is satisfied while blower motor is activated, A/C auto amp. transmits compressor operation signal to electric compressor via UART communication.

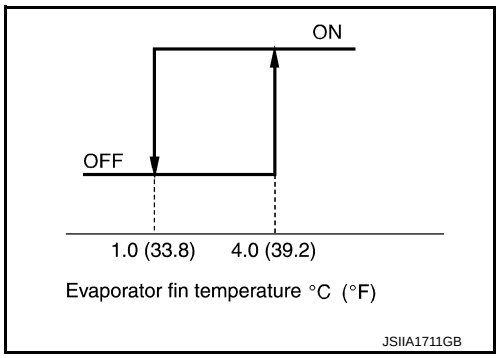
COMPRESSOR PROTECTION CONTROL AT PRESSURE MALFUNCTION

When high-pressure side value that is detected by refrigerant pressure sensor is as per the following state, ECM requests A/C auto amp. to turn A/C cut request signal.

- 2.64 MPa (26.40 bar, 26.9 kg/cm$^2$, 383 psi)
- 0.14 MPa (1.40 bar, 1.4 kg/cm$^2$, 20 psi) or less

### LOW TEMPERATURE PROTECTION CONTROL

- When intake sensor detects that evaporator fin temperature is 1°C (33.8°F) or less, A/C auto amp. requests electric compressor to turn compressor OFF, and stops the compressor.
- When the evaporator fin temperature returns to 4°C (39.2°F) or more, the compressor is activated.




## AUTOMATIC AIR CONDITIONING SYSTEM : Door Control

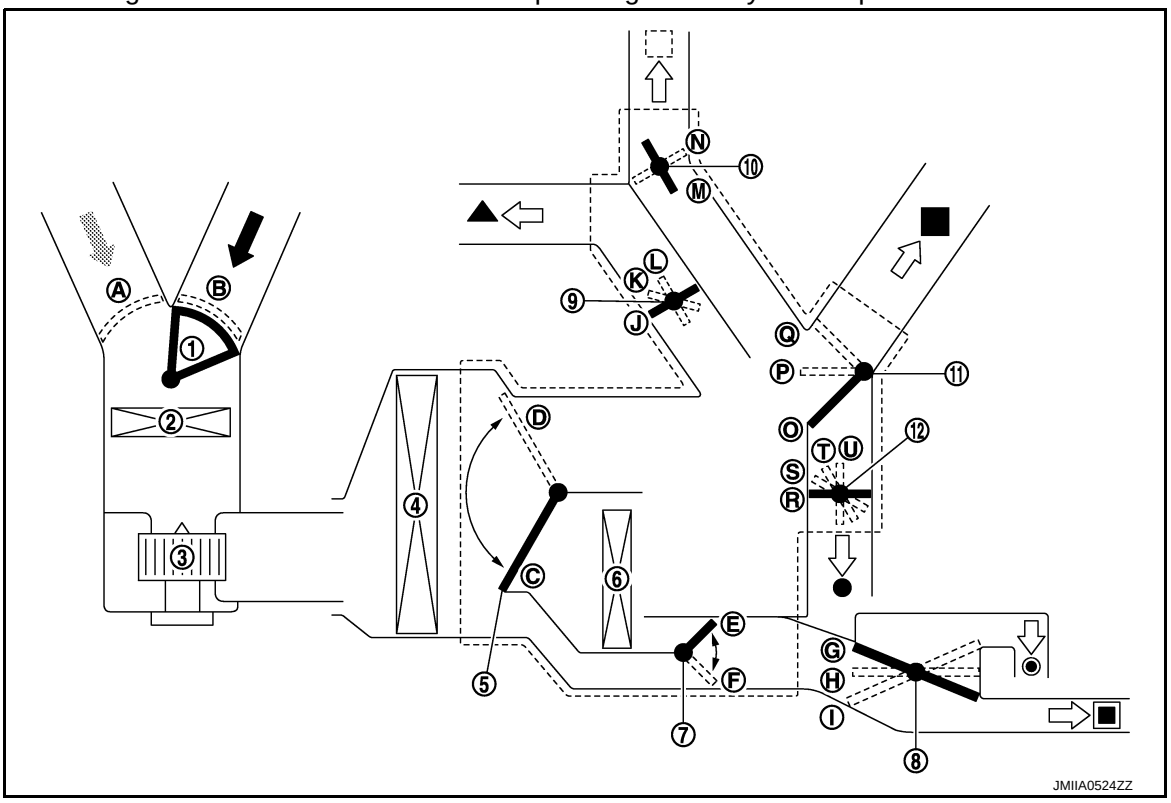
INFOID:0000000008143829

### DOOR MOTOR CONTROL

- The A/C auto amp. receives data from each sensor.
- When control signal from A/C auto amp. is received, each door motor of intake, air mix (driver side and passenger side), mode (driver side and passenger side), upper ventilator (driver side and passenger side) and rear mode operates door to the optimum position based on PBR (Potentio Balance Resistor) door position detection signal.

### SWITCHES AND THEIR CONTROL FUNCTIONS

**NOTE:**
For LH/RH independent temperature and air outlet adjustment function, construction indicated by broken line as shown in the figure is divided to driver side and passenger side by divider plate.




1. Intake door
2. In-cabin microfilter
3. Blower motor
4. Evaporator
5. Air mix door (driver side / passenger side)
6. Heater core

7. Rear air mix door
8. Rear mode door
9. Defroster door
10. Upper ventilator door
11. Ventilator door (driver side / passenger side)
12. Foot door (driver side / passenger side)

Fresh air
Recirculation air
Defroster
Upper ventilator
Ventilator
Foot
Rear foot
Rear ventilator

With Forest Air

| Switch position | | | Door position | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Ventilator door | | Foot door | | Defroster door | Rear mode door | Upper ventilator door | Intake door | Air mix door | | Rear air mix door |
| | | | Driver side | Passenger side | Driver side | Passenger side | | | | | Driver side | Passenger side | |
| AUTO switch | ON | | AUTO | | | | | | — | AUTO | | | |
| MODE switch (Driver side) | DUAL: OFF | VENT | O | | R | | J | G | — | | | | |
| | | B/L | P | | T | | J | H | — | | | | |
| | | FOOT | Q | | U | | K | I | — | | | | |
| | | D/F | Q | | T | | L | I | — | | | | |
| MODE switch (Driver side) | DUAL: ON | VENT | O | — | R | — | J | — | | | | | |
| | | B/L | P | — | T | — | J | — | | | | | |
| | | FOOT | Q | — | U | — | K | — | | | | | |
| | | D/F | Q | | T | | L | — | | | | | |
| MODE switch (Passenger side) | DUAL: ON | VENT | — | O | — | R | — | G | — | | | | |
| | | B/L | — | P | — | T | — | H | — | | | | |
| | | FOOT | — | Q | — | U | — | I | — | | | | |
| DEF switch | ON | | Q | | R | | L | I | — | | | | |
| Upper Vent | ON | **Upper Vent ON** | — | | | | | | M | — | | | |
| | OFF | Upper Vent ON | — | | | | | | N | — | | | |
| Intake switch* | FRE | | — | | | | | | | B | — | | |
| | REC | | — | | | | | | | A | — | | |
| Temperature control switch (Driver side) | DUAL: OFF | 18°C (60°F) | — | | S | | — | | | | C | | E |
| | | 18.5°C – 31.5°C (61°F – 89°F) | — | | | | | | | | AUTO | | |
| | | 32°C (90°F) | — | | | | | | | | D | | F |

| Switch position | | | Door position | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Ventilator door | | Foot door | | Defroster door | Rear mode door | Upper ventilator door | Intake door | Air mix door | | Rear air mix door |
| | | | Driver side | Passenger side | Driver side | Passenger side | | | | | Driver side | Passenger side | |
| Temperature control switch (Driver side) | DUAL: ON | 18°C (60°F) | — | | S | — | | | | | C | — | |
| | | 18.5°C – 31.5°C (61°F – 89°F) | — | | | | | | | | AUTO | — | |
| | | 32°C (90°F) | — | | | | | | | | D | — | |
| Temperature control switch (Passenger side) | | 18°C (60°F) | — | | | S | — | | | | | C | E |
| | | 18.5°C – 31.5°C (61°F – 89°F) | — | | | | | | | | | AUTO | |
| | | 32°C (90°F) | — | | | | | | | | | D | F |
| OFF switch | OFF | | Q | | U | | K | I | — | | | | |

*: Inlet status is displayed by indicator when activating automatic control.

Without Forest Air

| Switch position | | | | Door position | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ventilator door | | Foot door | | Defroster door | Rear mode door | Upper ventilator door | Intake door | Air mix door | | Rear air mix door |
| | | | | Driver side | Passenger side | Driver side | Passenger side | | | | | Driver side | Passenger side | |
| AUTO switch | ON | | | AUTO | | | | | | — | AUTO | | | |
| MODE switch (Driver side) | DUAL: OFF | VENT | | O | | R | | J | G | — | | | | |
| | | B/L | | P | | T | | J | H | — | | | | |
| | | FOOT | | Q | | U | | K | I | — | | | | |
| | | D/F | | Q | | T | | L | I | — | | | | |
| MODE switch (Driver side) | DUAL: ON | VENT | | O | — | R | — | J | — | | | | | |
| | | B/L | | P | — | T | — | J | — | | | | | |
| | | FOOT | | Q | — | U | — | K | — | | | | | |
| | | D/F | | Q | | T | | L | — | | | | | |
| MODE switch (Passenger side) | DUAL: ON | VENT | | — | O | — | R | — | G | — | | | | |
| | | B/L | | — | P | — | T | — | H | — | | | | |
| | | FOOT | | — | Q | — | U | — | I | — | | | | |
| DEF switch | ON | | | Q | | R | | L | I | — | | | | |

| Switch position | | | Door position | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Ventilator door | | Foot door | | Defroster door | Rear mode door | Upper ventilator door | Intake door | Air mix door | | Rear air mix door |
| | | | Driver side | Passenger side | Driver side | Passenger side | | | | | Driver side | Passenger side | |
| Upper Vent | ON | **Upper Vent ☀ ON** | — | | | | | | M | — | | | |
| | OFF | Upper Vent ○ ON | — | | | | | | N | — | | | |
| FRE switch* | ON | | — | | | | | | | B | — | | |
| REC switch* | ON | | — | | | | | | | A | — | | |
| Temperature control switch (Driver side) | DUAL: OFF | 18°C (60°F) | — | | S | | — | | | | C | | E |
| | | 18.5°C – 31.5°C (61°F – 89°F) | — | | | | | | | | AUTO | | |
| | | 32°C (90°F) | — | | | | | | | | D | | F |
| Temperature control switch (Driver side) | DUAL: ON | 18°C (60°F) | — | | S | | — | | | | C | | — |
| | | 18.5°C – 31.5°C (61°F – 89°F) | — | | | | | | | | AUTO | | — |
| | | 32°C (90°F) | — | | | | | | | | D | | — |
| Temperature control switch (Passenger side) | | 18°C (60°F) | — | | | S | — | | | | | C | E |
| | | 18.5°C – 31.5°C (61°F – 89°F) | — | | | | | | | | | AUTO | |
| | | 32°C (90°F) | — | | | | | | | | | D | F |
| OFF switch | OFF | | Q | | U | | K | I | — | | | | |

*: Inlet status is displayed by indicator when activating automatic control.

AIR DISTRIBUTION

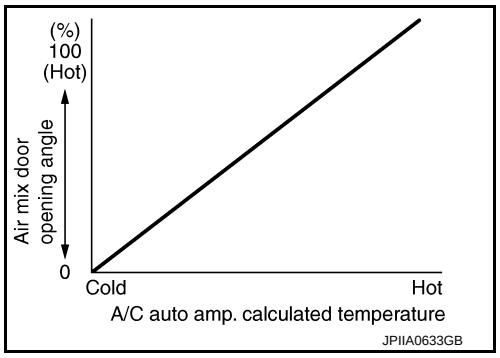
| Mode position | Condition | | | | Discharge air flow | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Air outlet / distribution | | | | | | |
| | | | | | VENT | | | | FOOT | | DEF |
| | | | | | Front | | Upper | Rear | Front | Rear | |
| | | | | | Center | Side | | | | | |
| | • DUAL: OFF<br>• Rear ventilator: Close | Upper Vent: ON | Temperature control switch (driver side) | 18°C (60°F) | 34.5% | 34.5% | 10.0% | 13.0% | 8.0% | — | — |
| | | | | Other than 18°C (60°F)*1 | 38.0% | 38.0% | 11.0% | 13.0% | — | — | — |
| | | | — | | 24.0% | 24.0% | 10.0% | 12.0% | 19.0% | 11.0% | — |
| | | | — | | — | 14.0% | 14.0% | 7.0% | 24.0% | 22.0% | 19.0% |
| | | | — | | — | 11.0% | 12.0% | 5.0% | 20.0% | 22.0% | 30.0% |
| | | — | | | — | 11.0% | — | — | — | — | 89.0% |
| *2 | | — | | | — | 9.0% | — | 7.0% | — | 20.0% | 64.0% |

- *1: Air blow is also supplied to front foot until passenger room temperature stabilizes when temperature setting is other than 18°C (60°F). At that time, air blowing is the same as 18°C (60°F) setting.
- *2: During automatic defogging control (with Forest Air). Refer to HAC-27, "FOREST AIR SYSTEM : Automatic Defogging Control".

## AUTOMATIC AIR CONDITIONING SYSTEM : Temperature Control

INFOID:0000000008143830

- When ignition switch is in the ON position, A/C auto amp. always automatically controls temperature regardless of air conditioning operational state.
- A/C auto amp. calculates the target air mix door opening angle depending on set temperature, in-vehicle temperature, ambient temperature and sunload.
- Air mix door is controlled depending on the comparison of current air mix door opening angle and target air mix door opening angle.
- Regardless of in-vehicle temperature, ambient temperature and sunload, air mix door is fixed at the fully cold position when set temperature is 18.0°C (60°F), and at the fully hot position when set temperature is 32.0°C (90°F).




## AUTOMATIC AIR CONDITIONING SYSTEM : Intelligent Key Interlock Function

INFOID:0000000008143831

### DESCRIPTION

- Setting value of air conditioning system when ignition switch is previously OFF can be memorized for each Intelligent Key. Air conditioning system is automatically operated by the setting value.
  **NOTE:**
  Setting value can be memorized for up to 3 Intelligent Keys.
- Interlock items are as per the following table.

| Operation | Conditions |
|---|---|
| Multifunction switch | AUTO switch (ON / OFF) |
| | Setting temperature (Setting value) |
| | Air flow (Setting value) |
| | Air inlet (FRE / REC) |
| | Air outlet (VENT / B/L / FOOT / D/F / DEF) |
| “Climate” menu screen | “A/C” (ON / OFF) |
| | “DUAL” (ON / OFF) |
| | “Upper Vent” (ON / OFF) |

### Operation Description

Memory

1. Unlock door using Intelligent Key or driver door request switch.
2. BCM transmits Key ID signal to A/C auto amp. via CAN communication line.
3. When ignition switch turns OFF, A/C auto amp. memorizes setting information (setting temperature, air inlet status, and others) of air conditioning system to memory for each Key ID.

Readout

1. Unlock door using Intelligent Key or driver door request switch.
2. BCM transmits Key ID signal to A/C auto amp. via CAN communication line.
3. When ignition switch turns ON, A/C auto amp. operates automatically air conditioning system according to setting information of Key ID that is received.
   **NOTE:**
   When Intelligent Key interlock function operates, “Connection with the key has been done.” is displayed.

## AUTOMATIC AIR CONDITIONING SYSTEM : Fail-safe

INFOID:0000000008479316

### FAIL-SAFE FUNCTION

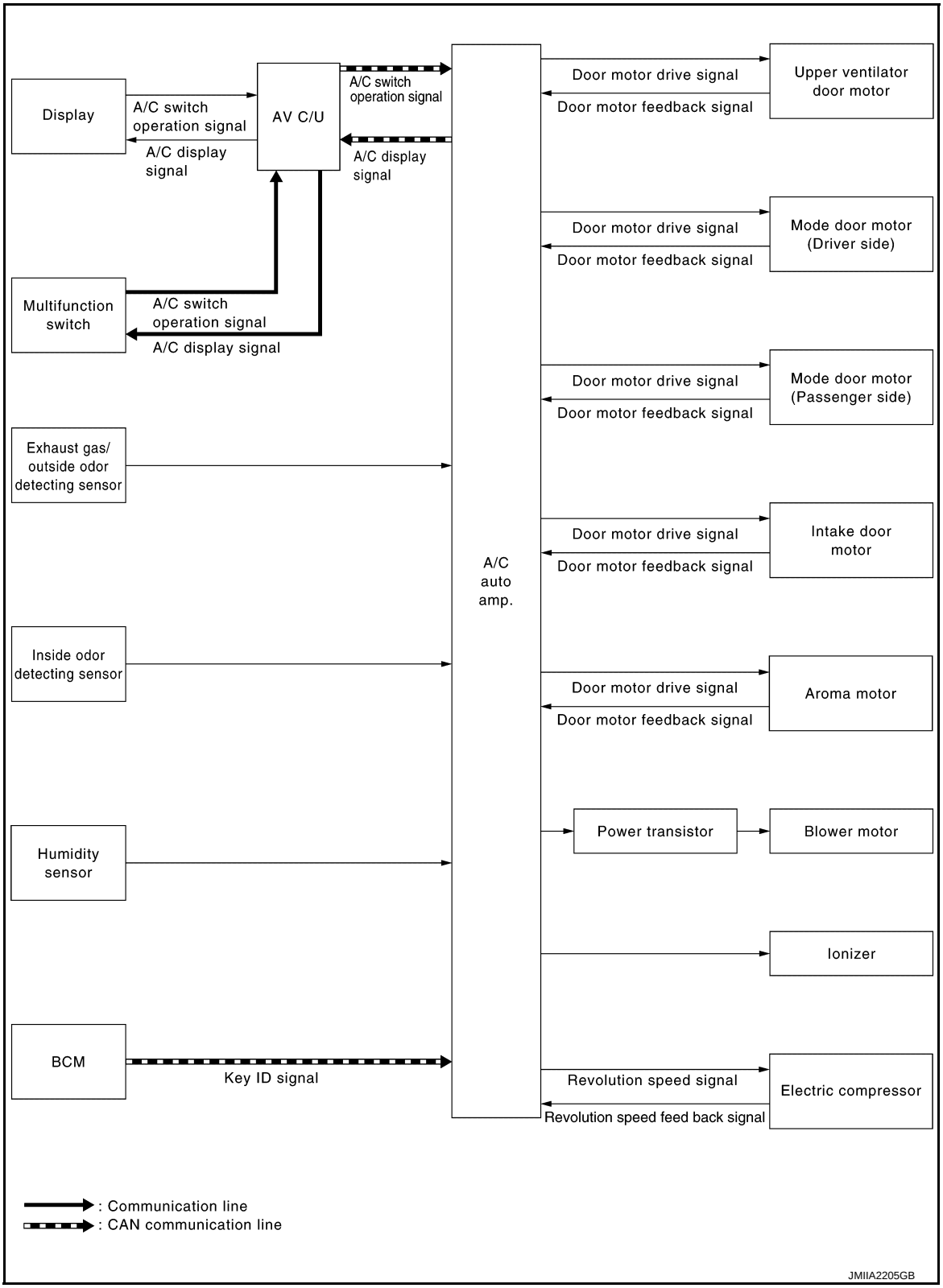
When a communication malfunction between A/C auto amp. and AV control unit and multifunction switch continued for approximately 30 seconds or more, control the air conditioning under the following conditions.

| | |
|---|---|
| **Compressor** | **: ON** |
| **Air outlet** | **: AUTO** |
| **Air inlet** | **: FRE (Fresh air intake)** |
| **Fan speed** | **: AUTO** |
| **Set temperature** | **: Setting before communication malfunction** |

## FOREST AIR SYSTEM

## FOREST AIR SYSTEM : System Diagram

INFOID:0000000008143843




## FOREST AIR SYSTEM : System Description

INFOID:0000000008143844

### DESCRIPTION

- Forest Air system controls passenger room air. It maintains the cleanliness of the passenger room air using a in-cabin microfilter and a combination of each of the following functions. Passenger room air is also con-

trolled for dehumidification, air flow, fragrance, and others, for providing comfortable space in the passenger room.

**NOTE:**

- Plasmacluster™ ion technology developed by Sharp Corporation is installed in this item.
- Plasmacluster™ is a trademark of Sharp Corporation.

- HAC-26, "FOREST AIR SYSTEM : Air Flow Control (Inside Odor Detecting Mechanism)"
- HAC-26, "FOREST AIR SYSTEM : Aroma Diffuser Control"
- HAC-27, "FOREST AIR SYSTEM : Automatic Defogging Control"
- HAC-27, "FOREST AIR SYSTEM : Automatic Intake Control (Exhaust Gas / Outside Odor Detecting Mechanism)"
- HAC-27, "FOREST AIR SYSTEM : Breezy Air Control"
- HAC-28, "FOREST AIR SYSTEM : Plasmacluster Control"

- Setting of Forest Air system can be memorized for each Intelligent Key. Refer to HAC-28, "FOREST AIR SYSTEM : Intelligent Key Interlock Function".
- “Forest Air setting” menu is displayed on screen that can operate and adjust Forest Air system [aroma diffuser control, automatic defogging control, automatic intake control (exhaust gas/outside odor detecting mechanism) and breezy air].
- “Forest Air Info” menu is displayed on screen that can be used to check operation status of Forest Air system visually.
- Various operations of Forest Air system are transmitted from multifunction switch and display to AV control unit via communication line (except display) and from AV control unit to A/C auto amp. via CAN communication. A/C auto amp. sends each indication information to AV control unit via CAN communication. AV control unit displays each indication information that is received.

## FOREST AIR SYSTEM : Air Flow Control (Inside Odor Detecting Mechanism)

INFOID:0000000008143845

### DESCRIPTION

Inside odor detecting sensor detects passenger room odor (odor of cigarettes, foods, and other objects) in air flow through aspirator. Odor, when it is detected, is removed quickly by slightly increasing air flow and by facilitating supply amount of Plasmacluster™ ions to passenger room and collection effect of in-cabin microfilter.

### OPERATION DESCRIPTION

- Air flow control (inside odor detecting mechanism) operates when odor in passenger room is detected while FOREST switch is ON.
- Control status is displayed on “Forest Air Info” screen. Refer to HAC-34, "FOREST AIR SYSTEM : Switch Name and Function".

**NOTE:**

- ON/OFF of air flow control (inside odor detecting mechanism) can be changed using “BLOWER MOTOR SETTING” in “WORK SUPPORT” mode of CONSULT. Refer to HAC-39, "CONSULT Function".
- Air flow control (inside odor detecting mechanism) does not operate when ambient temperature is –2°C (28°F) or less.

## FOREST AIR SYSTEM : Aroma Diffuser Control

INFOID:0000000008143846

### DESCRIPTION

2 kinds of aromas, leaf scent and fragrant wood, which have proven relaxing effects, are supplied alternately and intermittently to passenger room by outlet air flow of air conditioning system.

### OPERATION DESCRIPTION

- Aroma diffuser control operates automatically when FOREST switch is ON and passenger room temperature is in stable status.
- For initial 15 minutes of operation, intermittent operation operates for aroma diffusing. For next 45 minutes, operation stops, preventing effect reduction caused by habituation of sense of smell. The 2 aromas switch alternately every 1 hour.
- Control status is displayed on “Forest Air Info” screen. Refer to HAC-34, "FOREST AIR SYSTEM : Switch Name and Function".

**NOTE:**

- ON/OFF of aroma diffuser control can be changed by “Aroma” in “Forest Air Setting” menu. Refer to HAC-37, "FOREST AIR SYSTEM : Menu Displayed by Pressing Each Switch".

- Details of aroma diffuser control can be changed using “AROMA SETTING” and “AROMA DIFFUSER SETTING” in “WORK SUPPORT” mode of CONSULT. Refer to HAC-39, "CONSULT Function".

## FOREST AIR SYSTEM : Automatic Defogging Control

INFOID:0000000008143847

### DESCRIPTION

- A/C auto amp. detects fogging on windshield and front side window by calculating dew point temperature from glass temperature, passenger room temperature, and passenger room humidity that are detected by humidity sensor located on upper windshield.
- Fogging prevention mode (fresh air intake, compressor ON, and mode position DEF) automatically operates when fogging is detected.
- Previously, dehumidification control continuously operates for preventing fogging. Now, dehumidification control operates only when it is necessary. Excessive dehumidification in passenger room is prevented.

### OPERATION DESCRIPTION

- This control operates when fogging is detected while AUTO switch is ON.
- Control status is displayed on “Forest Air Info” screen. Refer to HAC-34, "FOREST AIR SYSTEM : Switch Name and Function".
- While automatic defogging function is activated, indicator lamp of DEF switch turns ON.
- When A/C auto amp. receives A/C operation signal (DEF switch ON) while automatic defogging function is activated, automatic defogging function stops, and does not activate for a specified period of time.

**NOTE:**

- ON/OFF and ON/OFF timing of automatic defogging control can be changed by “Auto Defogging Sensitivity” in “Forest Air Setting” menu. Refer to HAC-37, "FOREST AIR SYSTEM : Menu Displayed by Pressing Each Switch".
- Automatic defogging control does not operate when ambient temperature is –2°C (28°F) or less.

## FOREST AIR SYSTEM : Automatic Intake Control (Exhaust Gas / Outside Odor Detecting Mechanism)

INFOID:0000000008143848

### DESCRIPTION

In addition to air inlet automatic control of automatic air conditioning system, A/C auto amp. controls automatically air inlet according to signal from exhaust gas/outside odor detecting sensor, so that unpleasant outside odor does not enter in passenger room.

### OPERATION DESCRIPTION

- Air inlet switches to recirculation when exhaust gas or outside odor is detected while FOREST switch is ON. After that, air inlet switches to fresh air intake when exhaust gas or outside odor becomes not detectable.
- Control status is displayed on “Forest Air Info” screen. Refer to HAC-34, "FOREST AIR SYSTEM : Switch Name and Function".

**NOTE:**

- Sensitivity of exhaust gas/outside odor detecting sensor can be changed by “Outside/Inside Air Mix” in “Forest Air Setting” menu. Refer to HAC-37, "FOREST AIR SYSTEM : Menu Displayed by Pressing Each Switch".
- Automatic intake control (exhaust gas/outside odor detecting mechanism) does not operate when ambient temperature is –2°C (28°F) or less. In this case, control is only for control of automatic air inlet of automatic air conditioning system.

## FOREST AIR SYSTEM : Breezy Air Control

INFOID:0000000008143849

### DESCRIPTION

Air conditioning air flow similar to the air flow of a natural breeze is achieved through the random control of air flow switching timing from the upper ventilator and center ventilator.

### OPERATION DESCRIPTION

- This control automatically operates when FOREST switch is ON, air outlet mode is VENT or FOOT, and passenger room temperature is in stable status.
- Control status is displayed on “Forest Air Info” screen. Refer to HAC-34, "FOREST AIR SYSTEM : Switch Name and Function".

**NOTE:**

- ON/OFF of breezy air control can be changed by “Breeze Mode” in “Forest Air Setting” menu. Level of breezy air can be selected by “Fan Speed Variance” in “Forest Air Setting” menu. Refer to HAC-37, "FOREST AIR SYSTEM : Menu Displayed by Pressing Each Switch".
- Breezy air control does not operate when air outlet is B/L, D/F, or DEF mode.

## FOREST AIR SYSTEM : Plasmacluster Control

INFOID:0000000008143850

### DESCRIPTION

Plasmacluster™ control eliminates microbes and reduces odor on interior surface by including high density Plasmacluster™ ion in air conditioning outlet air flow.

### OPERATION DESCRIPTION

- Plasmacluster™ control operates by interlocking to blower motor. Plasmacluster™ control operates when blower motor operates.
- Control status is displayed on air conditioning system display screen and “Forest Air Info” screen. Refer to HAC-34, "FOREST AIR SYSTEM : Switch Name and Function".

**NOTE:**

- Plasmacluster™ ion technology developed by Sharp Corporation is installed in this item.
- Plasmacluster™ is a trademark of Sharp Corporation.

## FOREST AIR SYSTEM : Intelligent Key Interlock Function

INFOID:0000000008143851

### DESCRIPTION

- Setting value of Forest Air system when ignition switch is previously OFF can be memorized for each Intelligent Key. Forest Air system is automatically operated by the setting value.
  **NOTE:**
  Setting value can be memorized for up to 3 Intelligent Keys.
- Interlock items are as per the following table.

| Operation | Conditions |
|---|---|
| Multifunction switch | FOREST switch (ON / OFF) |
| “Forest Air Setting” menu screen | “Breeze Mode” (ON / OFF) |
| | “Fan Speed Variance” (Low / High) |
| | “Outside/Inside Air Mix” (Setting value) |
| | “Auto Defogging Sensitivity” (Setting value) |
| | “Aroma” (ON / OFF) |

### Operation Description

Memory

1. Unlock door using Intelligent Key or driver door request switch.
2. BCM transmits Key ID signal to A/C auto amp. via CAN communication line.
3. When ignition switch turns OFF, A/C auto amp. memorizes setting information (“Breeze Mode” status, “Aroma” status, and others) of Forest Air system to memory for each Key ID.

Readout

1. Unlock door using Intelligent Key or driver door request switch.
2. BCM transmits Key ID signal to A/C auto amp. via CAN communication line.
3. When ignition switch turns ON, A/C auto amp. operates automatically Forest Air system according to setting information of Key ID that is received.
   **NOTE:**
   When Intelligent Key interlock function operates, “Connection with the key has been done.” is displayed.

# OPERATION

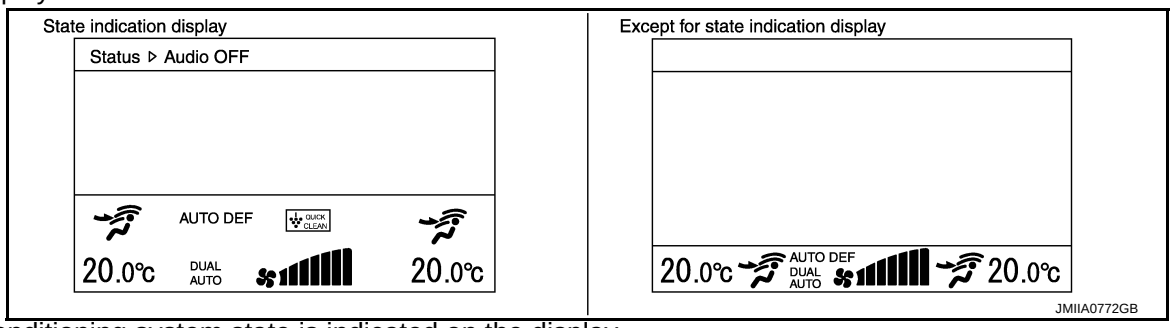
## AUTOMATIC AIR CONDITIONING SYSTEM

### AUTOMATIC AIR CONDITIONING SYSTEM : Switch Name and Function

INFOID:0000000008143852

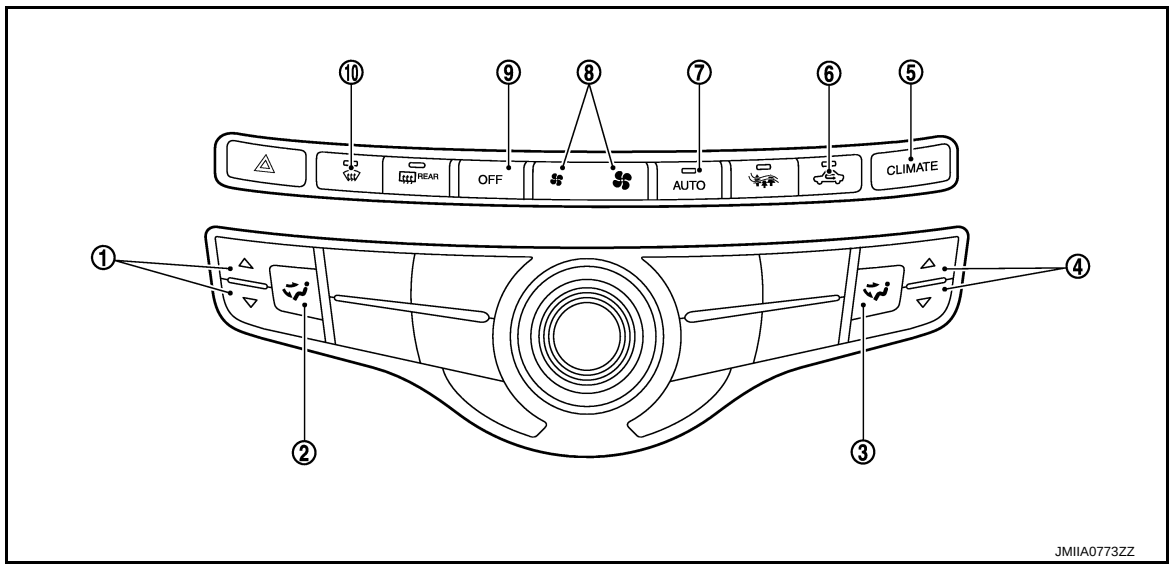
#### OPERATION AND DISPLAY (WITH FOREST AIR)

A/C Display




- Air conditioning system state is indicated on the display.
- When “Status” on multifunction switch is pressed while air conditioning system is in the ON position, the display changes to state indication display of air conditioning system. When air conditioning system is operated while navigation system or audio system is displayed, air conditioning system state is indicated in the lower portion of display for several seconds.
- When MODE switch is pressed while air conditioning system is in the OFF position, state indication display is indicated for several seconds.

A/C Controller (Multifunction switch)




1. Temperature control switch (Driver side)
2. MODE switch (Driver side)
3. MODE switch (Passenger side)
4. Temperature control switch (Passenger side)
5. CLIMATE switch
6. Intake switch
7. AUTO switch
8. Fan switch
9. OFF switch
10. DEF switch

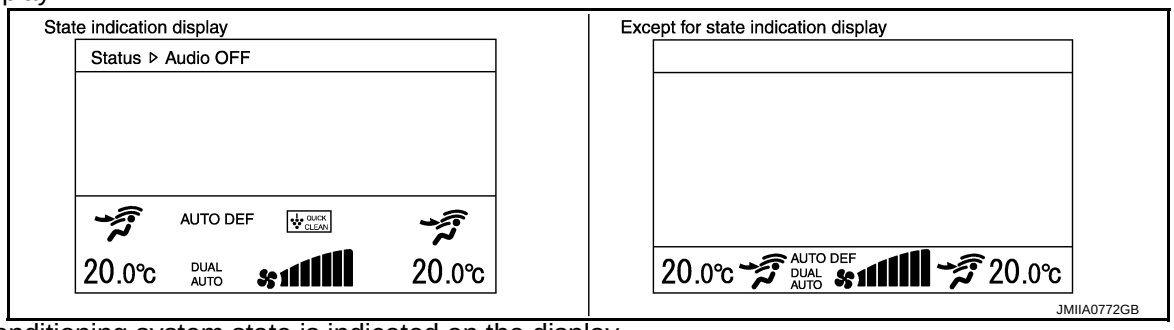
Switch Operation

| Switch name | Function |
|---|---|
| AUTO switch | When this switch is pressed, switch indicator lamp and “AUTO” indicator on display“, and then air conditioning system starts automatic control.<br>**NOTE:**<br>When air inlet is not selected manually, air inlet changes to automatic control. |
| CLIMATE switch | “Climate” menu is indicated on display when this switch is pressed. |
| DEF switch | DEF mode (switch indicator lamp) changes between ON ⇔ OFF each time this switch is pressed.<br>When DEF switch is pressed while air conditioning system is in the ON position<br>• When DEF mode turns ON, air conditioning system becomes the following status.<br>- Air flow: Automatic control (If fan speed other than “AUTO” is selected before pressing DEF switch, fan speed is manual control)<br>- Air inlet: Fresh air intake<br>- Air outlet: DEF<br>- Compressor: ON<br>• When DEF mode turns OFF, air conditioning system status returns to the previous status before DEF mode is selected.<br>When DEF switch is pressed while air conditioning system is in the OFF position<br>• Air conditioning system turns ON and becomes the following status.<br>- Air flow: Automatic control<br>- Air inlet: Fresh air intake<br>- Air outlet: DEF<br>- Compressor: ON<br>• When DEF mode turns OFF, entire air conditioning system is set to auto mode.<br>**NOTE:**<br>Automatic control is released (“AUTO” is not displayed) when this switch is pressed while air conditioning system is in automatic control (“AUTO” is displayed). |
| Fan switch | Fan speed is selected within a range of 1st – 7th speed using this switch.<br>**NOTE:**<br>• Air conditioning system turns ON when this switch is operated while air conditioning system is in OFF status.<br>• Automatic air flow control is released (“AUTO” is not displayed) when this switch is pressed while air conditioning system is in automatic control (“AUTO” is displayed). |
| Intake switch | • Air inlet changes between recirculation (REC) ⇔ fresh air intake (FRE) each time this switch is pressed.<br>- Intake switch indicator ON: Recirculation<br>- Intake switch indicator OFF: Fresh air intake<br>• Press and held for 2 seconds or more, intake switch indicator blinks 2 times and air inlet is set to automatic control. (Intake switch indicator indicates air inlet state during automatic control.)<br>**NOTE:**<br>Air inlet can be changed when air conditioning system is in the OFF position. |
| MODE switch (Driver side) | Air outlet can be changes from VENT ⇒ B/L ⇒ FOOT ⇒ D/F ⇒ VENT each time this switch is pressed.<br>**NOTE:**<br>• Air outlet can be changed when air conditioning system is in the OFF position.<br>• Automatic air outlet control is released (“AUTO” is not displayed) when this switch is pressed while air conditioning system is in automatic control (“AUTO” is displayed). |
| MODE switch (Passenger side) | • The system is set to LH/RH independent status (“DUAL” displays) by operating this switch. Air outlet of passenger side can be changed without changing air outlet of driver side.<br>• Air outlet can be changes from VENT ⇒ B/L ⇒ FOOT ⇒ VENT each time this switch is pressed.<br>**NOTE:**<br>• Air outlet can be changed when air conditioning system is in the OFF position.<br>• Automatic air outlet control is released (“AUTO” is not displayed) when this switch is pressed while air conditioning system is in automatic control (“AUTO” is displayed).<br>• When DEF mode is ON, MODE switch (passenger side) is inoperative. |
| OFF switch | • When this switch is pressed, air conditioning system turns OFF.<br>• When air conditioning system turns OFF, air inlet and air outlet become the following status.<br>- Air inlet: Automatic control<br>- Air outlet: FOOT |

| Switch name | Function |
|---|---|
| Temperature control switch (Driver side) | Setting temperature is selected using this switch within a range between 18°C (60°F) and 32°C (90°F) at a rate of 0.5°C (1.0°F) per adjustment.<br>• ▲ Press: Setting temperature increases<br>• ▼ Press: Setting temperature decreases<br>**NOTE:**<br>When air conditioning system is OFF, setting temperature can be selected only while air conditioning system status screen [only when MODE switch (driver side) is pressed] is indicated on display. |
| Temperature control switch (Passenger side) | • The system is set to LH/RH independent status (“DUAL” displays) by operating this switch. Outlet air flow temperature of passenger side can be changed without changing outlet air flow temperature of driver side.<br>• Setting temperature is selected using this switch within a range between 18°C (60°F) and 32°C (90°F) at a rate of 0.5°C (1.0°F) per adjustment.<br>- ▲ Press: Setting temperature increases<br>- ▼ Press: Setting temperature decreases<br>**NOTE:**<br>• When air conditioning system is OFF, setting temperature can be selected only while air conditioning system status screen [only when MODE switch (passenger side) is pressed] is indicated on display.<br>• When DEF mode is ON, temperature control switch (passenger side) is inoperative. |

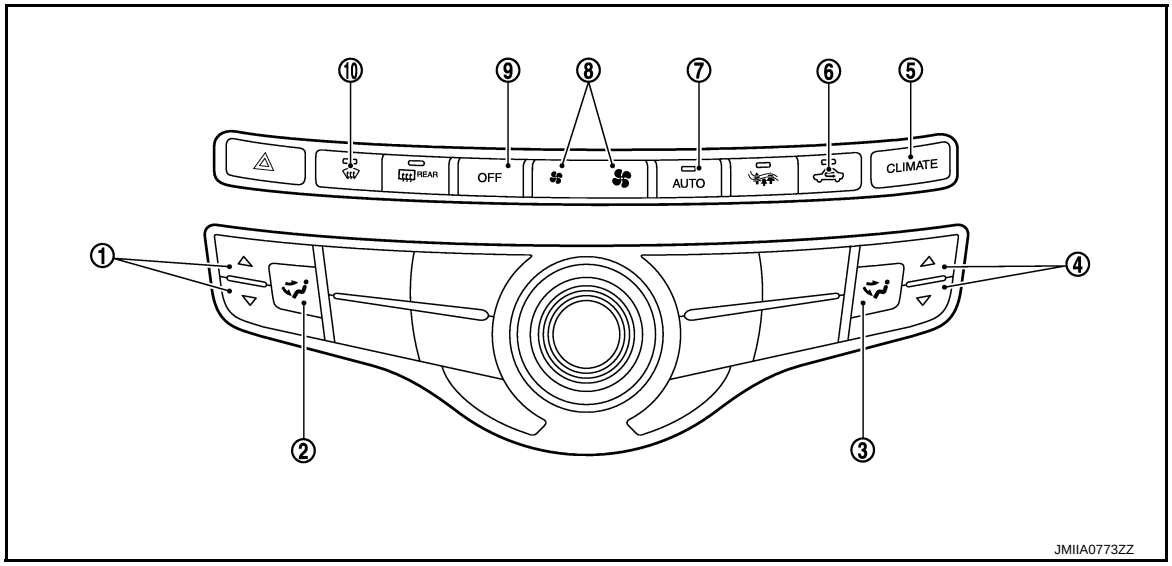
## OPERATION AND DISPLAY (WITH FOREST AIR)

A/C Display




- Air conditioning system state is indicated on the display.
- When “Status” on multifunction switch is pressed while air conditioning system is in the ON position, the display changes to state indication display of air conditioning system. When air conditioning system is operated while navigation system or audio system is displayed, air conditioning system state is indicated in the lower portion of display for several seconds.
- When MODE switch is pressed while air conditioning system is in the OFF position, state indication display is indicated for several seconds.

A/C Controller (Multifunction switch)




1. Temperature control switch (Driver side)
2. MODE switch (Driver side)
3. MODE switch (Passenger side)
4. Temperature control switch (Passenger side)
5. CLIMATE switch
6. Intake switch
7. AUTO switch
8. Fan switch
9. OFF switch
10. DEF switch

Switch Operation

| Switch name | Function |
|---|---|
| AUTO switch | When this switch is pressed, switch indicator lamp and “AUTO” indicator on display“, and then air conditioning system starts automatic control.<br>**NOTE:**<br>When air inlet is not selected manually, air inlet changes to automatic control. |
| CLIMATE switch | “Climate” menu is indicated on display when this switch is pressed. |
| DEF switch | DEF mode (switch indicator lamp) changes between ON ⇔ OFF each time this switch is pressed.<br>When DEF switch is pressed while air conditioning system is in the ON position<br>• When DEF mode turns ON, air conditioning system becomes the following status.<br>- Air flow: Automatic control (If fan speed other than “AUTO” is selected before pressing DEF switch, fan speed is manual control)<br>- Air inlet: Fresh air intake<br>- Air outlet: DEF<br>- Compressor: ON<br>• When DEF mode turns OFF, air conditioning system status returns to the previous status before DEF mode is selected.<br>When DEF switch is pressed while air conditioning system is in the OFF position<br>• Air conditioning system turns ON and becomes the following status.<br>- Air flow: Automatic control<br>- Air inlet: Fresh air intake<br>- Air outlet: DEF<br>- Compressor: ON<br>• When DEF mode turns OFF, entire air conditioning system is set to auto mode.<br>**NOTE:**<br>Automatic control is released (“AUTO” is not displayed) when this switch is pressed while air conditioning system is in automatic control (“AUTO” is displayed). |
| Fan switch | Fan speed is selected within a range of 1st – 7th speed using this switch.<br>**NOTE:**<br>• Air conditioning system turns ON when this switch is operated while air conditioning system is in OFF status.<br>• Automatic air flow control is released (“AUTO” is not displayed) when this switch is pressed while air conditioning system is in automatic control (“AUTO” is displayed). |

| Switch name | Function |
|---|---|
| Intake switch | • Air inlet changes between recirculation (REC) ⇔ fresh air intake (FRE) each time this switch is pressed.<br>- Intake switch indicator ON: Recirculation<br>- Intake switch indicator OFF: Fresh air intake<br>• Press and held for 2 seconds or more, intake switch indicator blinks 2 times and air inlet is set to automatic control. (Intake switch indicator indicates air inlet state during automatic control.)<br>**NOTE:**<br>Air inlet can be changed when air conditioning system is in the OFF position. |
| MODE switch (Driver side) | Air outlet can be changes from VENT ⇒ B/L ⇒ FOOT ⇒ D/F ⇒ VENT each time this switch is pressed.<br>**NOTE:**<br>• Air outlet can be changed when air conditioning system is in the OFF position.<br>• Automatic air outlet control is released (“AUTO” is not displayed) when this switch is pressed while air conditioning system is in automatic control (“AUTO” is displayed). |
| MODE switch (Passenger side) | • The system is set to LH/RH independent status (“DUAL” displays) by operating this switch. Air outlet of passenger side can be changed without changing air outlet of driver side.<br>• Air outlet can be changes from VENT ⇒ B/L ⇒ FOOT ⇒ VENT each time this switch is pressed.<br>**NOTE:**<br>• Air outlet can be changed when air conditioning system is in the OFF position.<br>• Automatic air outlet control is released (“AUTO” is not displayed) when this switch is pressed while air conditioning system is in automatic control (“AUTO” is displayed).<br>• When DEF mode is ON, MODE switch (passenger side) is inoperative. |
| OFF switch | • When this switch is pressed, air conditioning system turns OFF.<br>• When air conditioning system turns OFF, air inlet and air outlet become the following status.<br>- Air inlet: Automatic control<br>- Air outlet: FOOT |
| Temperature control switch (Driver side) | Setting temperature is selected using this switch within a range between 18°C (60°F) and 32°C (90°F) at a rate of 0.5°C (1.0°F) per adjustment.<br>• ▲ Press: Setting temperature increases<br>• ▼ Press: Setting temperature decreases<br>**NOTE:**<br>When air conditioning system is OFF, setting temperature can be selected only while air conditioning system status screen [only when MODE switch (driver side) is pressed] is indicated on display. |
| Temperature control switch (Passenger side) | • The system is set to LH/RH independent status (“DUAL” displays) by operating this switch. Outlet air flow temperature of passenger side can be changed without changing outlet air flow temperature of driver side.<br>• Setting temperature is selected using this switch within a range between 18°C (60°F) and 32°C (90°F) at a rate of 0.5°C (1.0°F) per adjustment.<br>- ▲ Press: Setting temperature increases<br>- ▼ Press: Setting temperature decreases<br>**NOTE:**<br>• When air conditioning system is OFF, setting temperature can be selected only while air conditioning system status screen [only when MODE switch (passenger side) is pressed] is indicated on display.<br>• When DEF mode is ON, temperature control switch (passenger side) is inoperative. |

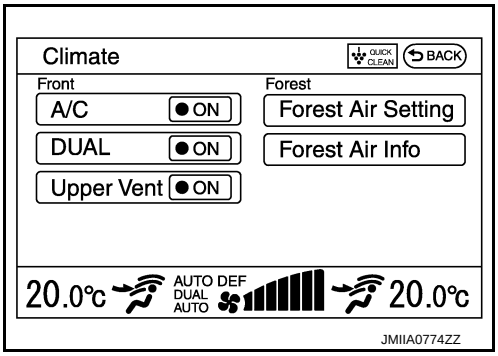
## AUTOMATIC AIR CONDITIONING SYSTEM : Menu Displayed by Pressing Each Switch

INFOID:0000000008143853

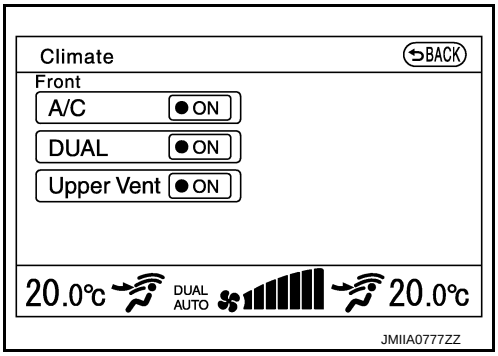
“CLIMATE” MENU

“Climate” menu screen is displayed when CLIMATE switch of multifunction switch is pressed.

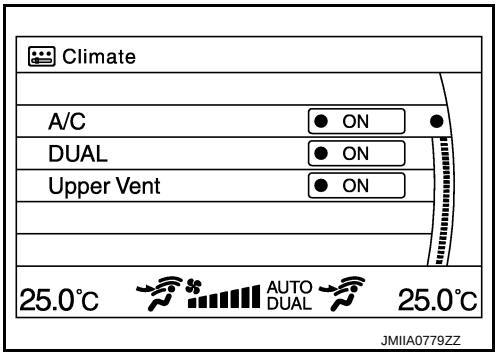
- With Forest Air




- Without Forest Air and with navigation




- Without Forest Air and navigation




| Menu | Function |
|---|---|
| A/C | ON ⇔ OFF of compressor is selected.<br>**NOTE:**<br>Selection does not operate when blower motor is OFF. |
| DUAL | ON ⇔ OFF of LH/RH independent function (temperature and air outlet) is selected.<br>**NOTE:**<br>• Setting temperature and outlet for passenger seat is the same as that for driver seat when LH/RH independent function is OFF.<br>• Selection does not operate when blower motor is OFF. |
| Upper Vent | ON ⇔ OFF of air blowing from upper ventilator is selected.<br>**NOTE:**<br>Selection does not operate when blower motor is OFF and air outlet is DEF. |

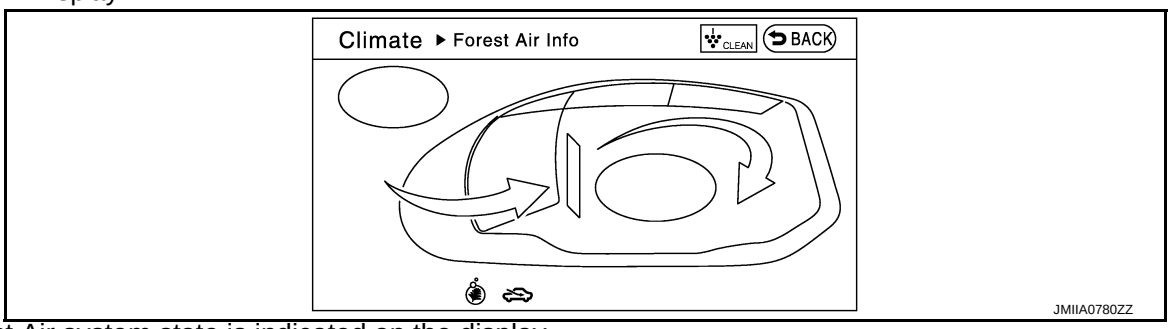
# FOREST AIR SYSTEM

## FOREST AIR SYSTEM : Switch Name and Function

INFOID:0000000008143856

### OPERATION AND DISPLAY

Forest Air Display

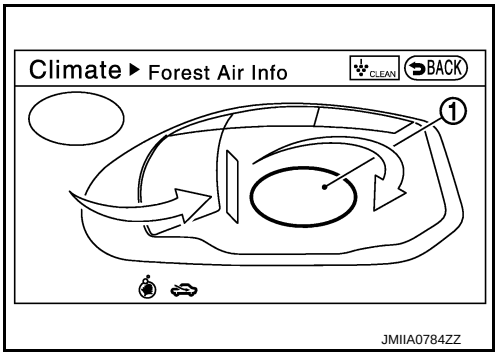



- Forest Air system state is indicated on the display.
- “Climate” menu is indicated on display when CLIMATE switch of multifunction switch is pressed while FOREST switch is ON. Operation status of Forest Air system is displayed when “Forest Air Info” is touched.

Air flow control (inside odor detecting mechanism)

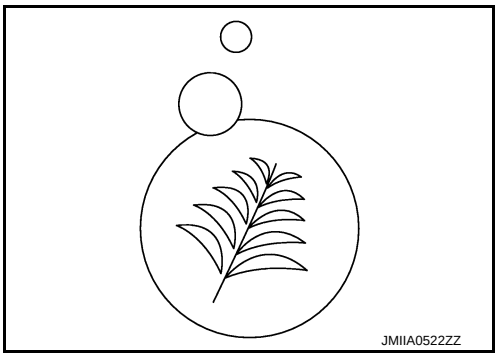
- Display is switched as per the following description depending on interior air status
- Interior air status display (1) is blue, while interior air is in clean status.
- Interior air status display (1) is orange, while interior air is in dirty status.

**NOTE:**
Interior air status display is not indicated, while air inlet is in manual control status.

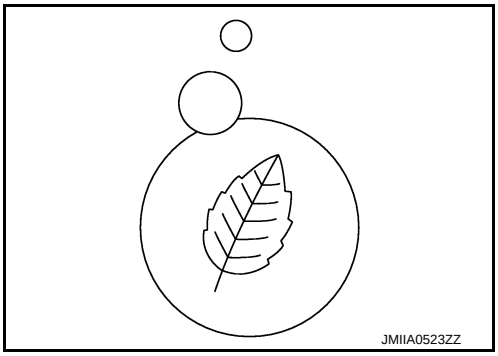



Aroma diffuser control

- Display is switched as shown in the figure, depending on type of aroma, while aroma diffuser operates.
- Leaf scent

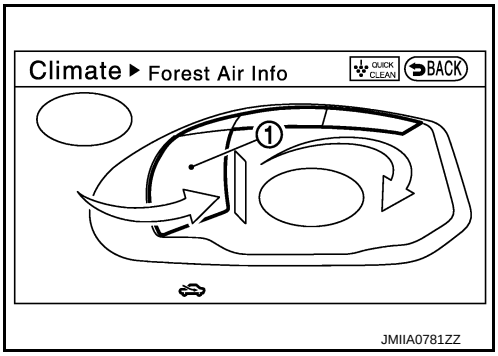



- Fragrant wood




Automatic defogging control

- Window portion (1) changes to white and automatic defogging operates, when windshield fogging is detected.

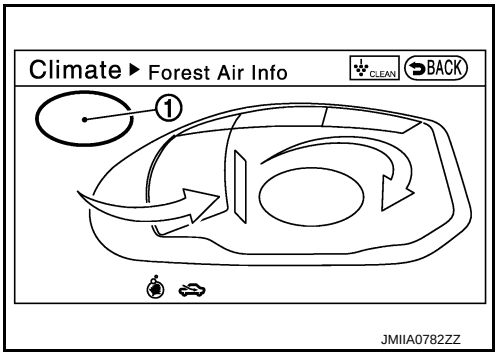



Automatic intake control (exhaust gas/outside odor detecting mechanism)

- Display is switched as per the following description depending on ambient air status, air inlet status, and switching status of recirculation and fresh air intake.

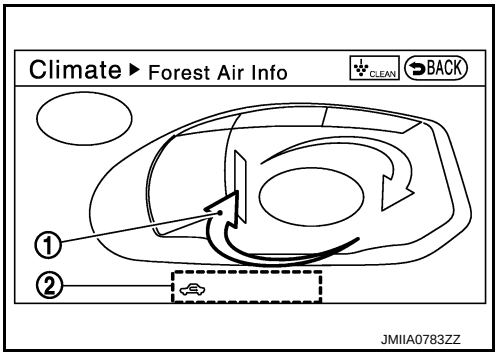
• Ambient air status display (1) is blue, while ambient air is in clean status.
• Ambient air status display (1) is orange, while ambient air is in dirty status.

**NOTE:**
Ambient air status display is not indicated, while air inlet is in manual control status.



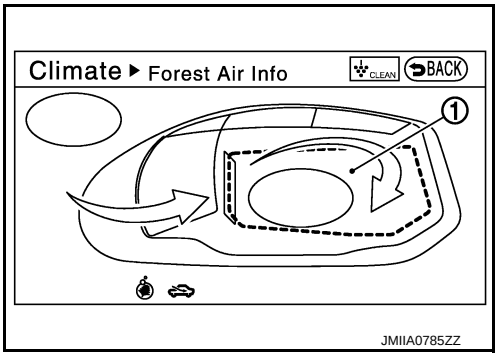

• Air inlet status is indicated by an arrow (1). Lower display (2) indicates air inlet status and control status (automatic control / manual control)

| Air inlet status | Control status | Display |
|---|---|---|
| Recirculation | Automatic control | |
| | Manual operation | Manual Mode |
| Fresh air intake | Automatic control | |
| | Manual operation | Manual Mode |




Breezy air control

- Animation that is imaged from breezy air (1) is displayed, while breezy air control is operated.

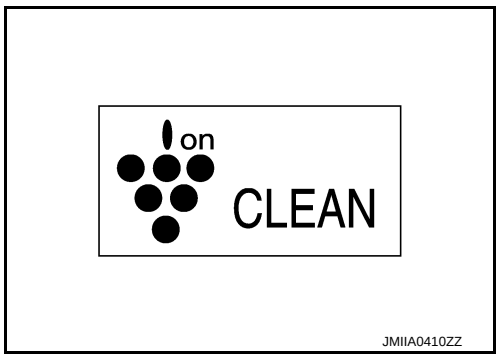



Plasmacluster™ control

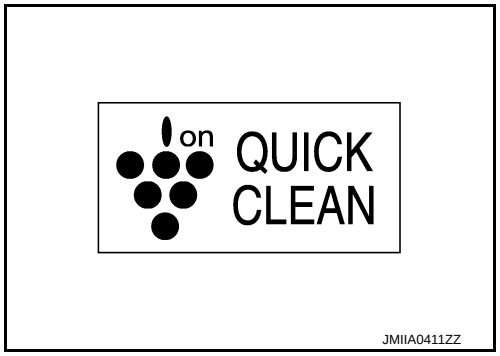
- Plasmacluster ™ ion display is switched as shown in the figure depending on air flow.

**NOTE:**
• Plasmacluster™ ion technology developed by Sharp Corporation is installed in this item.
• Plasmacluster™ is a trademark of Sharp Corporation.

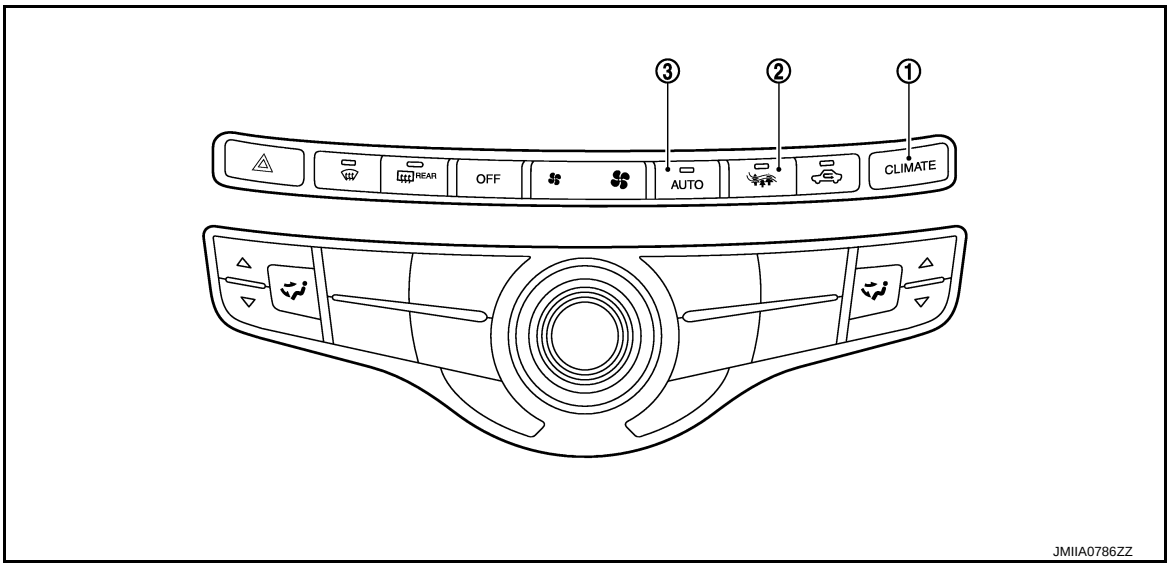
• When air flow is small




• When air flow is large




Forest Air Controller (Multifunction switch)




1. CLIMATE switch 2. FOREST switch 3. AUTO switch

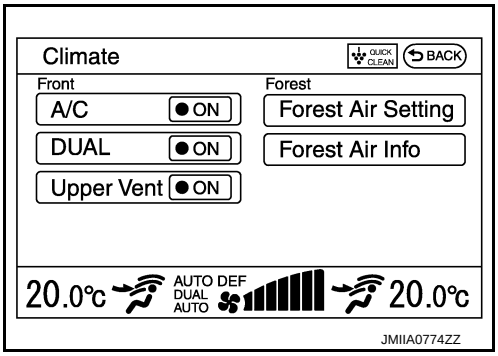
| Switch name | Function |
|---|---|
| AUTO switch | When this switch is pressed, AUTO switch indicator lamp, “AUTO”, and “AUTO DEF” on display turn ON, and then automatic defogging control starts. |
| CLIMATE switch | “Climate” menu is indicated on display when this switch is pressed. |
| FOREST switch | When this switch is pressed, AUTO switch indicator lamp, FOREST switch indicator lamp, “AUTO”, and “AUTO DEF” on display turn ON, and then Forest Air system starts automatic control. |

## FOREST AIR SYSTEM : Menu Displayed by Pressing Each Switch

INFOID:0000000008143857

“CLIMATE” MENU

"Climate" menu screen is displayed when CLIMATE switch of multi-function switch is pressed.




| Menu | | Function |
|---|---|---|
| Forest Air Setting | Breeze Mode | ON ⇔ OFF of breezy air is selected.<br>**NOTE:**<br>Selection does not operate when FOREST switch is OFF. |
| | Fan Speed Variance | Intensity of breezy air is selected.<br>**NOTE:**<br>Selection does not operate when FOREST switch is OFF or breezy air control is OFF. |
| | Outside/Inside Air Mix | Balance of automatic intake control (exhaust gas/outside odor detecting mechanism) (priority of fresh air intake or recirculation) is selected.<br>**NOTE:**<br>Selection does not operate when FOREST switch is OFF. |
| | Auto Defogging Sensitivity | Operation timing of automatic defogging control is adjusted or turned OFF.<br>**NOTE:**<br>Selection does not operate when AUTO switch is OFF. |
| | Aroma | ON ⇔ OFF of aroma diffuser is selected.<br>**NOTE:**<br>Selection does not operate when FOREST switch is OFF. |
| Forest Air Info | | Operation status of Forest Air system is indicated.<br>**NOTE:**<br>Selection does not operate when FOREST switch is OFF. |

# DIAGNOSIS SYSTEM (HVAC)

## Description

INFOID:0000000008143858

Air conditioning system performs self-diagnosis, operation check, function diagnosis, and various settings using diagnosis function of each control unit.

| ECU | Diagnostic item (CONSULT) | |
|---|---|---|
| A/C auto amp. | HVAC | Self Diagnostic Result |
| | | Data Monitor |
| | | Active Test |
| | | Work support |
| AV control unit | MULTI AV | Self Diagnostic Result |
| | Multi AV system on board diagnosis function | |
| ECM | ENGINE | Self Diagnostic Result |
| | | Data Monitor |

## CONSULT Function

INFOID:0000000008143859

### APPLICATION ITEM

CONSULT performs the following functions via CAN communication with A/C auto amp.

| Diagnostic mode | Description |
|---|---|
| Ecu Identification | Displays the part number of A/C auto amp. |
| Self Diagnostic Result | Displays the diagnosis results judged by A/C auto amp. |
| Data Monitor | Displays the input/output signal of A/C auto amp. |
| Active Test | The signals used to activate each device are forcibly supplied from A/C auto amp. |
| Work support | Changes the setting for each setting function. |
| Configuration | • The vehicle specification that is written in A/C auto amp. can be displayed or stored.<br>• The vehicle specification can be written when A/C auto amp. is replaced. |

**NOTE:**

Diagnosis should be performed with engine running. Door motor operation speeds become slower and No results may be returned even for normal operation if battery voltage drops below 12 V during self-diagnosis.

### ECU IDENTIFICATION

Part number of A/C auto amp. can be checked.

**NOTE:**

When the vehicle specification is written to A/C auto amp. using control unit setting, part number of A/C auto amp. is updated to match the vehicle specification.

### SELF DIAGNOSTIC RESULT

Diagnosis result that is judged by A/C auto amp. can be checked. Refer to HAC-51, "DTC Index".

### DATA MONITOR

Input/output signal of A/C auto amp. can be checked.

Display item list

| Monitor item [Unit] | | Description |
|---|---|---|
| COMP REQ SIG | [On/Off] | Displays A/C switch ON/OFF status transmitted to other units via CAN communication. |
| FAN REQ SIG | [On/Off] | Displays fan switch ON/OFF status transmitted to other units via CAN communication. |
| DR TARGET A/TEMP | [°C] | Target discharge air temperature (driver side) judged by A/C auto amp. depending on the temperature setting and the value from each sensor. |
| PA TARGET A/TEMP | [°C] | Target discharge air temperature (passenger side) judged by A/C auto amp. depending on the temperature setting and the value from each sensor. |

| Monitor item [Unit] | | Description |
|---|---|---|
| AMB TEMP SEN | [°C] | Ambient temperature value converted from ambient sensor signal received from ambient sensor. |
| IN-VEH TEMP | [°C] | In-vehicle temperature value converted from in-vehicle sensor signal received from in-vehicle sensor. |
| INT TEMP SEN | [°C] | Evaporator fin temperature value converted from intake sensor signal received from intake sensor. |
| AMB SEN CAL | [°C] | Ambient temperature value calculated by A/C auto amp. |
| IN-VEH CAL | [°C] | In-vehicle temperature value calculated by A/C auto amp. |
| INT TEMP CAL | [°C] | Evaporator fin temperature value calculated by A/C auto amp. |
| ENG COOL TEMP | [°C] | Engine coolant temperature signal value received from ECM via CAN communication. |
| DR SUNLOAD SEN | [$w/m^2$] | Sunload value (driver side) converted from sunload sensor signal (driver side) received from sunload sensor. |
| PASS SUNLOAD SEN | [$w/m^2$] | Sunload value (passenger side) converted from sunload sensor signal (passenger side) received from sunload sensor. |
| DR SUNL SEN CAL | [$w/m^2$] | Sunload value (driver side) calculated by A/C auto amp. |
| PASS SUNL SEN CAL | [$w/m^2$] | Sunload value (passenger side) calculated by A/C auto amp. |
| COMP ECV DUTY | [%] | Duty ratio of ECV (electrical control valve) judged by A/C auto amp. |
| BLOWER MOT VOLT | [V] | Gate voltage to power transistor that is judged by A/C auto amp. |
| VEHICLE SPEED | [Mph (km/h)] | Vehicle speed signal value received from combination meter via CAN communication. |
| RELATIVE HUMIDITY* | [%] | Relative humidity that is judged by A/C auto amp. according to value from humidity sensor. |
| AIR TEMP* | [°C] | Air temperature around humidity sensor that is judged by A/C auto amp. according to value from humidity sensor. |
| DEW POINT TEMP* | [°C] | Dew point temperature that is judged by A/C auto amp. according to value from humidity sensor. |
| GLASS TEMP* | [°C] | Glass temperature value that is converted from glass temperature sensor signal received from glass temperature sensor of humidity sensor portion. |
| GAS SEN LEVEL* | | Contamination level of ambient air that is judged by A/C auto amp. according to value from exhaust gas/outside odor detecting sensor. |
| COMPR RPM | [rpm] | Rotation speed of electric compressor |
| COMPR INPUT POWER SIG | [W] | Power consumption value of electric compressor |
| COMPR INPUT VOLT SIG | [V] | Input voltage value of electric compressor |
| COMP USAGE APPROVE PWR | [W] | Allowable power value of electric compressor |
| ENGINE On REQ | [On/Off] | State of send signal from A/C auto amp to ECM. |
| A/C PD CUT | [On/Off] | State of send signal from ECM to A/C auto amp. |

*: With Forest Air

## ACTIVE TEST

The signals used to activate each device forcibly supplied from A/C auto amp. operation check of air conditioning system can be performed.

| Test item | Description |
|---|---|
| HVAC TEST | The operation check of air conditioner system can be performed by selecting the mode. Refer to the following table for the conditions of each mode. |

Check each output device

With Forest Air

| | Test item | | | | | | |
|---|---|---|---|---|---|---|---|
| | MODE 1 | MODE 2 | MODE 3 | MODE 4 | MODE 5 | MODE 6 | MODE 7 |
| Mode door motor (driver side) position | VENT 1 | VENT 2 | B/L | B/L | FOOT | D/F | DEF |
| Mode door motor (passenger side) position | VENT 1 | VENT 2 | B/L | B/L | FOOT | D/F | DEF |
| Rear mode door motor position | VENT | VENT | B/L | B/L | FOOT | FOOT | DEF |
| Intake door motor position | REC | REC | 20% FRE | 20% FRE | FRE | FRE | FRE |
| Air mix door motor (driver side) position | FULL COLD | FULL COLD | FULL COLD | FULL HOT | FULL HOT | FULL HOT | FULL HOT |
| Air mix door motor (passenger side) position | FULL COLD | FULL COLD | FULL COLD | FULL HOT | FULL HOT | FULL HOT | FULL HOT |
| Power transistor gate voltage | 4 V | 4 V | 7 V | 7 V | 11.5 V | 11.5 V | 4 V |
| A/C request signal | ON | ON | OFF | OFF | ON | OFF | OFF |
| Electric compressor (rpm) | 2000 | 5400 | 0 | 0 | 1500 | 0 | 0 |
| Heater pump | OFF | ON | OFF | ON | OFF | ON | OFF |
| Engine on request | OFF | OFF | OFF | ON | ON | OFF | OFF |
| Upper ventilator door motor position | OPEN | CLOSE | CLOSE | OPEN | CLOSE | CLOSE | CLOSE |
| Aroma motor position | Fragrant wood | Leaf scent | OFF | Fragrant wood | Leaf scent | OFF | OFF |

Without Forest Air

| | Test item | | | | | | |
|---|---|---|---|---|---|---|---|
| | MODE 1 | MODE 2 | MODE 3 | MODE 4 | MODE 5 | MODE 6 | MODE 7 |
| Mode door motor (driver side) position | VENT 1 | VENT 2 | B/L | B/L | FOOT | D/F | DEF |
| Mode door motor (passenger side) position | VENT 1 | VENT 2 | B/L | B/L | FOOT | D/F | DEF |
| Rear mode door motor position | VENT | VENT | B/L | B/L | FOOT | FOOT | DEF |
| Intake door motor position | REC | REC | 20% FRE | 20% FRE | FRE | FRE | FRE |
| Air mix door motor (driver side) position | FULL COLD | FULL COLD | FULL COLD | FULL HOT | FULL HOT | FULL HOT | FULL HOT |
| Air mix door motor (passenger side) position | FULL COLD | FULL COLD | FULL COLD | FULL HOT | FULL HOT | FULL HOT | FULL HOT |
| Power transistor gate voltage | 4 V | 4 V | 7 V | 7 V | 11.5 V | 11.5 V | 4 V |
| A/C request signal | ON | ON | OFF | OFF | ON | OFF | OFF |
| Electric compressor (rpm) | 2000 | 5400 | 0 | 0 | 1500 | 0 | 0 |
| Heater pump | OFF | ON | OFF | ON | OFF | ON | OFF |
| Engine on request | OFF | OFF | OFF | ON | ON | OFF | OFF |
| Upper ventilator door motor position | OPEN | CLOSE | CLOSE | OPEN | CLOSE | CLOSE | CLOSE |

**NOTE:**
Perform the inspection of each output device after start in the engine because the compressor is operated.

## WORK SUPPORT

Setting change of each setting functions can be performed.

| Work item | Description | Reference |
|---|---|---|
| TEMP SET CORRECT | If the temperature felt by the customer is different from the air flow temperature controlled by the temperature setting, the A/C auto amp. control temperature can be adjusted to compensate for the temperature setting. | HAC-69, "AUTOMATIC AIR CONDITIONING SYSTEM : Temperature Setting Trimmer" |
| REC MEMORY SET | Setting change of inlet port memory function (REC) can be performed. | HAC-69, "AUTOMATIC AIR CONDITIONING SYSTEM : Inlet Port Memory Function (REC)" |

| Work item | Description | Reference |
|---|---|---|
| FRE MEMORY SET | Setting change of inlet port memory function (FRE) can be performed. | HAC-70, "AUTOMATIC AIR CONDITIONING SYSTEM : Inlet Port Memory Function (FRE)" |
| BLOW SET | Setting change of foot position setting trimmer can be performed. | HAC-70, "AUTOMATIC AIR CONDITIONING SYSTEM : Foot Position Setting Trimmer" |
| AROMA SETTING* | Setting change of aroma fragrance intensity setting can be performed. | HAC-70, "FOREST AIR SYSTEM : Aroma Fragrance Intensity Setting" |
| FRAGRANCE SETTING* | Setting change of aroma fragrance type setting can be performed. | HAC-70, "FOREST AIR SYSTEM : Aroma Fragrance Type Setting" |
| BLOWER MOTOR SETTING* | Setting change of air flow control (inside odor detecting mechanism) setting can be performed. | HAC-71, "FOREST AIR SYSTEM : Air Flow Control (Inside Odor Detecting Mechanism) Setting" |
| AROMA DIFFUSER SETTING* | Setting change of aroma diffuser presence setting can be performed. | HAC-71, "FOREST AIR SYSTEM : Aroma Diffuser Presence Setting" |

*: With Forest Air

## CONFIGURATION

The vehicle specification that is written in A/C auto amp. can be displayed or stored.
The vehicle specification can be written when A/C auto amp. is replaced.
Refer to HAC-68, "Description".

# ECU DIAGNOSIS INFORMATION

## A/C AUTO AMP.

### Reference Value(AUTOMATIC AIR CONDITIONING)

INFOID:0000000008143860

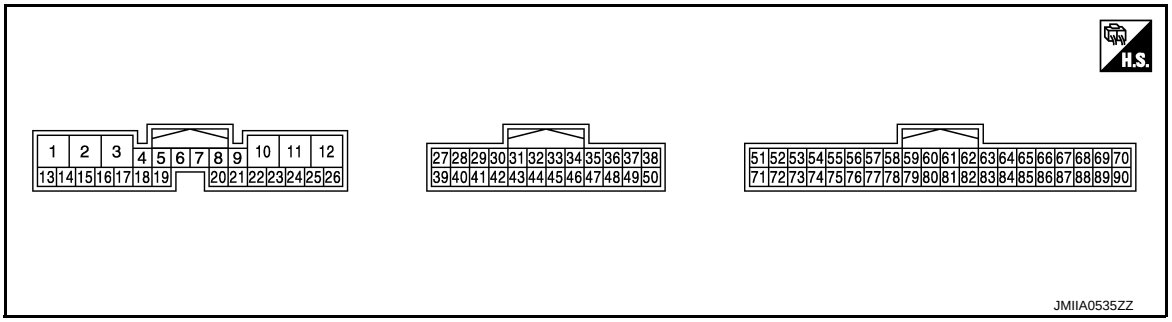
#### CONSULT DATA MONITOR REFERENCE VALUES

| Monitor item | Condition | | Value/Status |
|---|---|---|---|
| COMP REQ SIG | Engine: Run at idle after warming up | "A/C": ON (Compressor operation status) | On |
| | | "A/C": OFF | Off |
| FAN REQ SIG | Engine: Run at idle after warming up | Blower motor: ON | On |
| | | Blower motor: OFF | Off |
| DR TARGET A/TEMP | Ignition switch ON | | Values depending on target air flow temperature (driver side) |
| PA TARGET A/TEMP | Ignition switch ON | | Values depending on target air flow temperature (passenger side) |
| AMB TEMP SEN | Ignition switch ON | | Equivalent to ambient temperature |
| IN-VEH TEMP | Ignition switch ON | | Equivalent to in-vehicle temperature |
| INT TEMP SEN | Ignition switch ON | | Values depending on evaporator fin temperature |
| AMB SEN CAL | Ignition switch ON | | Equivalent to ambient temperature |
| IN-VEH CAL | Ignition switch ON | | Equivalent to in-vehicle temperature |
| INT TEMP CAL | Ignition switch ON | | Values depending on evaporator fin temperature |
| ENG COOL TEMP | Ignition switch ON | | Values depending on engine coolant temperature |
| DR SUNLOAD SEN | Ignition switch ON | | Values depending on sunload (driver side) |
| PASS SUNLOAD SEN | Ignition switch ON | | Values depending on sunload (passenger side) |
| DR SUNL SEN CAL | Ignition switch ON | | Values depending on sunload (driver side) |
| PASS SUNL SEN CAL | Ignition switch ON | | Values depending on sunload (passenger side) |
| BLOWER MOT VOLT | Engine: Run at idle after warming up | Active test (HVAC test): MODE 1 | 4 V |
| | | Active test (HVAC test): MODE 2 | 4 V |
| | | Active test (HVAC test): MODE 3 | 7 V |
| | | Active test (HVAC test): MODE 4 | 7 V |
| | | Active test (HVAC test): MODE 5 | 11.5 V |
| | | Active test (HVAC test): MODE 6 | 11.5 V |
| | | Active test (HVAC test): MODE 7 | 4 V |
| VEHICLE SPEED | Turn drive wheels and compare CONSULT value with the speedometer indication. | | Equivalent to speedometer reading |
| RELATIVE HUMIDITY* | Ignition switch ON | | Values depending on relative humidity |
| AIR TEMP* | Ignition switch ON | | Equivalent to air temperature around humidity sensor |
| DEW POINT TEMP* | Ignition switch ON | | Values depending on dew point temperature |
| GLASS TEMP* | Ignition switch ON | | Equivalent to windshield glass temperature |
| GAS SEN LEVEL* | Ignition switch ON | | Values depending on contamination of ambient air |
| COMP RPM | Ignition switch ON | A/C switch: ON (Compressor operation status) | Rotation speed of electric compressor |
| COMP INPUT POWER SIG | Ignition switch ON | A/C switch: ON (Compressor operation status) | Power consumption value of electric compressor |

| Monitor item | Condition | | Value/Status |
|---|---|---|---|
| COMP INPUT VOLT SIG | Ignition switch ON | A/C switch: ON<br>(Compressor operation status) | Input voltage value of electric compressor |
| COMP USAGE AP-PROVE PWR | Ignition switch ON | A/C switch: ON<br>(Compressor operation status) | 5.1 kW |
| ENGINE On REQ | Ignition switch ON | A/C switch: ON<br>(Compressor operation status) | Engine on request signal on: ON<br>Engine on request signal off: OFF |
| A/C PD CUT | Ignition switch ON | A/C switch: ON<br>(Compressor operation status) | Normal refrigerant pressure: OFF<br>Malfunction of refrigerant pressure: OFF |

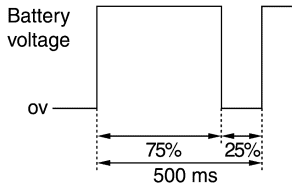
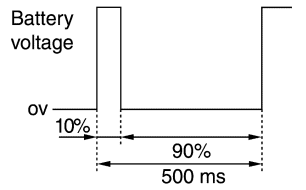
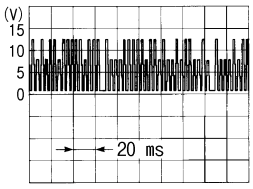
*: With Forest Air

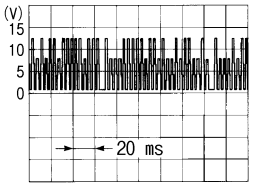
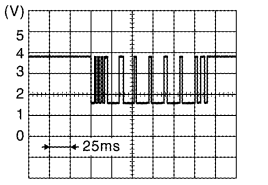
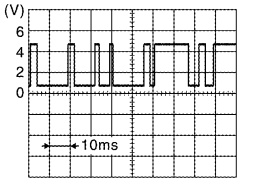
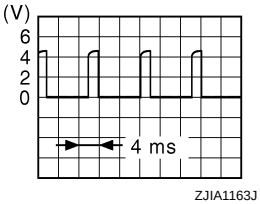
## TERMINAL LAYOUT




## PHYSICAL VALUES

| Terminal No. (Wire dolor) | | Description | | Condition | | Reference value (Approx.) |
|---|---|---|---|---|---|---|
| + | – | Signal name | Input/ Output | | | |
| 1 (L) | Ground | Battery power supply | Input | Ignition switch OFF | | Battery voltage |
| 2 (W) | Ground | Ignition power supply | Input | Ignition switch ON | | Battery voltage |
| 6 (R) | Ground | Blower motor feedback signal | Input | • Ignition switch ON<br>• Air inlet: VENT | Fan speed: OFF | Battery voltage |
| | | | | | Fan speed: 1st (manual) | 10.0 V |
| | | | | | Fan speed: 2nd (manual) | 8.3 V |
| | | | | | Fan speed: 3rd (manual) | 7.0 V |
| | | | | | Fan speed: 4th (manual) | 5.7V |
| | | | | | Fan speed: 5th (manual) | 4.3 V |
| | | | | | Fan speed: 6th (manual) | 3.0 V |
| | | | | | Fan speed: 7th (manual) | 1.0 V |

| Terminal No. (Wire dolor) | | Description | | Condition | | Reference value (Approx.) |
|---|---|---|---|---|---|---|
| + | – | Signal name | Input/ Output | | | |
| 7 (L) | Ground | Power transistor control signal | Output | • Ignition switch ON<br>• Air inlet: VENT | Fan speed: OFF | 0 V |
| | | | | | Fan speed: 1st (manual) | 3.5 V |
| | | | | | Fan speed: 2nd (manual) | 5.2 V |
| | | | | | Fan speed: 3rd (manual) | 6.5 V |
| | | | | | Fan speed: 4th (manual) | 7.8 V |
| | | | | | Fan speed: 5th (manual) | 9.2 V |
| | | | | | Fan speed: 6th (manual) | 10.5 V |
| | | | | | Fan speed: 7th (manual) | 12.5 V |
| 10 (B) | — | Ground | — | — | | — |
| 11 (P) | — | CAN-L | Input/ Output | — | | — |
| 12 (L) | — | CAN-H | Input/ Output | — | | — |
| 13 (V) | Ground | ACC power supply | Input | Ignition switch ACC | | Battery voltage |
| 17 (R) | Ground | Heater pump control signal | Output | • Ignition switch ON<br>• Heater FULL HOT operation | |  JSIIA1686GB |
| | | | | • Ignition switch ON<br>• A/C system off | |  JSIIA1687GB |
| 20*1 (R) | Ground | Humidity sensor (SCK) signal | Input/ Output | Ignition switch ON | |  SJIA1453J |

| Terminal No. (Wire dolor) | | Description | | Condition | Reference value (Approx.) |
|---|---|---|---|---|---|
| + | – | Signal name | Input/ Output | | |
| 21*1 (Y) | Ground | Humidity sensor (DATA) signal | Input/ Output | Ignition switch ON |  SJIA1453J |
| 22*1 (B) | — | Humidity sensor ground | — | — | — |
| 23 (W) | Ground | Drive mode select switch (SNOW) signal | Input | • Ignition switch ON<br>• Drive mode select switch position: SNOW | 0 V |
| | | | | Other than the above | 12 V |
| 24 (L) | Ground | Drive mode select switch (ECO) signal | Input | • Ignition switch ON<br>• Drive mode select switch position: ECO | 0 V |
| | | | | Other than the above | 12 V |
| 25 (G) | Ground | Drive mode select switch (STANDARD) signal | Input | • Ignition switch ON<br>• Drive mode select switch position: STANDARD | 0 V |
| | | | | Other than the above | 12 V |
| 26 (Y) | Ground | Drive mode select switch (SPORT) signal | Input | • Ignition switch ON<br>• Drive mode select switch position: SPORT | 0 V |
| | | | | Other than the above | 12 V |
| 27 (Y) | Ground | COMP_TX | Output | • Ignition switch ON<br>• FULL COLD<br>• Electric compressor operation |  JSIIA1658ZZ |
| 28 (G) | Ground | COMP_RX | Input | • Ignition switch ON<br>• FULL COLD<br>• Electric compressor operation |  JSIIA1660ZZ |
| 29*2 (G) | Ground | — | — | — | — |
| 30*1 (L) | Ground | Exhaust gas/outside odor detecting sensor signal | Input | Ignition switch ON<br>**NOTE:**<br>The signal is depending on measurement environment of the vehicle |  ZJIA1163J |

| Terminal No. (Wire dolor) | | Description | | Condition | | Reference value (Approx.) |
|---|---|---|---|---|---|---|
| + | – | Signal name | Input/ Output | | | |
| 31 (BG) | Ground | Ambient sensor signal | Input | Ignition switch ON | | 0 – 4.8 V Output voltage varies with ambient temperature |
| 32 (LG) | Ground | In-vehicle sensor signal | Input | Ignition switch ON | | 0 – 4.8 V Output voltage varies with in-vehicle temperature |
| 33*1 (LG) | Ground | Humidity sensor (windshield glass temperature) signal | Input | Ignition switch ON | | 0 – 4.8 V Output voltage varies with windshield glass temperature |
| 35 (L) | Ground | Sunload sensor (driver side) signal | Input | Ignition switch ON | | 0 – 4.8 V Output voltage varies with amount of sunload (driver side) |
| 36*1 (V) | Ground | Inside odor detecting sensor signal | Input | Ignition switch ON | | 0 – 4.8 V Output voltage varies with amount of passenger room odor level |
| 39 (W) | Ground | Sensor power supply | Output | Ignition switch ON | | 5 V |
| 41*3 (L) | Ground | Heated steering wheel relay control signal | Output | Ignition switch ON | Within 30 seconds after turning ON the heated steering switch. | 0 V |
| | | | | | Other than the above | 12 V |
| 42*1 (W) | Ground | Ionizer (ON/OFF) control signal | Output | • Ignition switch ON<br>• Blower motor: ON | | 0 V |
| | | | | • Ignition switch ON<br>• Blower motor: OFF | | 12 V |
| 44 (B) | — | Ground | — | — | | — |
| 45*3 (G) | Ground | Heated steering wheel switch signal | Input | Ignition switch ON | Heated steering wheel switch: While pressing | 0 V |
| | | | | | Other than the above | 12 V |
| 47 (P) | Ground | Sunload sensor (passenger side) signal | Input | Ignition switch ON | | 0 – 4.8 V Output voltage varies with amount of sunload (passenger side) |
| 51 (B) | Ground | Intake sensor signal | Input | Ignition switch ON | | 0 – 4.8 V Output voltage varies with amount of evaporator fin temperature |
| 52*1 (W/R) | Ground | Aroma motor PBR feedback signal | Input | • Ignition switch ON<br>• Aroma diffuser control: Leaf scent | | 1.0 V |
| | | | | • Ignition switch ON<br>• Aroma diffuser control: Fragrant wood | | 4.0 V |

| Terminal No. (Wire dolor) | | Description | | Condition | Reference value (Approx.) |
|---|---|---|---|---|---|
| + | – | Signal name | Input/ Output | | |
| 53 (G) | Ground | Air mix door motor (driver side) PBR feedback signal | Input | • Ignition switch ON<br>• Set temperature: 18°C (60°F)<br>• “DUAL”: OFF | 4.0 V |
| | | | | • Ignition switch ON<br>• Set temperature: 32°C (90°F)<br>• “DUAL”: OFF | 1.0 V |
| 54 (P) | Ground | Mode door motor (driver side) PBR feedback signal | Input | • Ignition switch ON<br>• Air outlet: VENT<br>• “DUAL”: OFF | 4.0 V |
| | | | | • Ignition switch ON<br>• Air outlet: DEF<br>• “DUAL”: OFF | 1.0 V |
| 55 (L/B) | Ground | Intake door motor PBR feedback signal | Input | • Ignition switch ON<br>• Air inlet: REC | 4.0 V |
| | | | | • Ignition switch ON<br>• Air inlet: FRE | 1.0 V |
| 58 (P/B) | Ground | Rear mode door motor PBR feedback signal | Input | • Ignition switch ON<br>• Air outlet: VENT<br>• “DUAL”: OFF | 4.0 V |
| | | | | • Ignition switch ON<br>• Air outlet: DEF<br>• “DUAL”: OFF | 1.0 V |
| 61 (BR) | Ground | Air mix door motor (driver side) COOL drive signal | Output | • Ignition switch ON<br>• Set temperature: 32°C (90°F)→18°C (60°F)<br>• “DUAL”: OFF | 12 V |
| | | | | • Ignition switch ON<br>• Set temperature: 18°C (60°F)→32°C (90°F)<br>• “DUAL”: OFF | 0 V |
| 62*1 (G/R) | Ground | Aroma motor (Fragrant wood) drive signal | Output | • Ignition switch ON<br>• Aroma diffuser control: Leaf scent→Fragrant wood | 12 V |
| | | | | • Ignition switch ON<br>• Aroma diffuser control: Fragrant wood→Leaf scent | 0 V |
| 63 (V) | Ground | Mode door motor (driver side) VENT drive signal | Output | • Ignition switch ON<br>• Air outlet: DEF→VENT<br>• “DUAL”: OFF | 12 V |
| | | | | • Ignition switch ON<br>• Air outlet: VENT→DEF<br>• “DUAL”: OFF | 0 V |
| 64 (R/B) | Ground | Mode door motor (passenger side) VENT drive signal | Output | • Ignition switch ON<br>• Air outlet: DEF→VENT<br>• “DUAL”: OFF | 12 V |
| | | | | • Ignition switch ON<br>• Air outlet: VENT→DEF<br>• “DUAL”: OFF | 0 V |
| 65 (L/R) | Ground | Intake door motor REC drive signal | Output | • Ignition switch ON<br>• Air inlet: FRE→REC | 12 V |
| | | | | • Ignition switch ON<br>• Air inlet: REC→FRE | 0 V |

| Terminal No. (Wire dolor) | | Description | | Condition | Reference value (Approx.) |
|---|---|---|---|---|---|
| + | – | Signal name | Input/ Output | | |
| 66 (BR/B) | Ground | Upper ventilator door motor CLOSE drive signal | Output | • Ignition switch ON<br>• “Upper Vent”: ON→OFF | 12 V |
| | | | | • Ignition switch ON<br>• “Upper Vent”: OFF→ON | 0 V |
| 67 (LG) | Ground | Air mix door motor (passenger side) HOT drive signal | Output | • Ignition switch ON<br>• Set temperature: 18°C (60°F)→32°C (90°F)<br>• “DUAL”: OFF | 12 V |
| | | | | • Ignition switch ON<br>• Set temperature: 32°C (90°F)→18°C (60°F)<br>• “DUAL”: OFF | 0 V |
| 68 (R/W) | Ground | Rear mode door motor VENT drive signal | Output | • Ignition switch ON<br>• Air outlet: DEF→VENT<br>• “DUAL”: OFF | 12 V |
| | | | | • Ignition switch ON<br>• Air outlet: VENT→DEF<br>• “DUAL”: OFF | 0 V |
| 71 (R) | Ground | Each door motor PBR power supply | Output | Ignition switch ON | 5 V |
| 73 (SB) | Ground | Mode door motor (passenger side) PBR feedback signal | Input | • Ignition switch ON<br>• Air outlet: VENT<br>• “DUAL”: OFF | 4.0 V |
| | | | | • Ignition switch ON<br>• Air outlet: DEF<br>• “DUAL”: OFF | 1.0 V |
| 74 (L) | Ground | Air mix door motor (driver side) PBR feedback signal | Input | • Ignition switch ON<br>• Set temperature: 18°C (60°F)<br>• “DUAL”: OFF | 4.0 V |
| | | | | • Ignition switch ON<br>• Set temperature: 32°C (90°F)<br>• “DUAL”: OFF | 1.0 V |
| 75 (G/B) | Ground | Upper ventilator door motor PBR feedback signal | Input | • Ignition switch ON<br>• “Upper Vent”: ON | 3.0 V |
| | | | | • Ignition switch ON<br>• “Upper Vent”: OFF | 1.0 V |
| 79 (W) | — | Intake sensor ground / Each door motor PBR ground | — | — | — |
| 81 (Y) | Ground | Air mix door motor (driver side) HOT drive signal | Output | • Ignition switch ON<br>• Set temperature: 18°C (60°F)→32°C (90°F)<br>• “DUAL”: OFF | 12 V |
| | | | | • Ignition switch ON<br>• Set temperature: 32°C (90°F)→18°C (60°F)<br>• “DUAL”: OFF | 0 V |
| 82 (LG/R) | Ground | Aroma motor (Leaf scent) drive signal | Output | • Ignition switch ON<br>• Aroma diffuser control: Fragrant wood→Leaf scent | 12 V |
| | | | | • Ignition switch ON<br>• Aroma diffuser control: Leaf scent→Fragrant wood | 0 V |

| Terminal No. (Wire dolor) | | Description | | Condition | Reference value (Approx.) |
|---|---|---|---|---|---|
| + | – | Signal name | Input/ Output | | |
| 83 (B) | Ground | Mode door motor (driver side) DEF drive signal | Output | • Ignition switch ON<br>• Air outlet: VENT→DEF<br>• “DUAL”: OFF | 12 V |
| | | | | • Ignition switch ON<br>• Air outlet: DEF→VENT<br>• “DUAL”: OFF | 0 V |
| 84 (W/B) | Ground | Mode door motor (passenger side) DEF drive signal | Output | • Ignition switch ON<br>• Air outlet: VENT→DEF<br>• “DUAL”: OFF | 12 V |
| | | | | • Ignition switch ON<br>• Air outlet: DEF→VENT<br>• “DUAL”: OFF | 0 V |
| 85 (LG/B) | Ground | Intake door motor FRE drive signal | Output | • Ignition switch ON<br>• Air inlet: REC→FRE | 12 V |
| | | | | • Ignition switch ON<br>• Air inlet: FRE→REC | 0 V |
| 86 (Y/B) | Ground | Upper ventilator door motor OPEN drive signal | Output | • Ignition switch ON<br>• “Upper Vent”: OFF→ON | 12 V |
| | | | | • Ignition switch ON<br>• “Upper Vent”: ON→OFF | 0 V |
| 87 (GR) | Ground | Air mix door motor (passenger side) COOL drive signal | Output | • Ignition switch ON<br>• Set temperature: 32°C (90°F)→18°C (60°F)<br>• “DUAL”: OFF | 12 V |
| | | | | • Ignition switch ON<br>• Set temperature: 18°C (60°F)→32°C (90°F)<br>• “DUAL”: OFF | 0 V |
| 88 (B/W) | Ground | Rear mode door motor FOOT drive signal | Output | • Ignition switch ON<br>• Air outlet: VENT→DEF<br>• “DUAL”: OFF | 12 V |
| | | | | • Ignition switch ON<br>• Air outlet: DEF→VENT<br>• “DUAL”: OFF | 0 V |

*1: With Forest Air
*2: This harness is connected but not used.
*3: With heated steering wheel

## Fail-safe

INFOID:0000000008143861

### FAIL-SAFE FUNCTION

When a communication malfunction between A/C auto amp. and AV control unit and multifunction switch continued for approximately 30 seconds or more, control the air conditioning under the following conditions.

**Compressor : ON**
**Air outlet : AUTO**
**Air inlet : FRE (Fresh air intake)**
**Fan speed : AUTO**
**Set temperature : Setting before communication malfunction**

# DTC Index

INFOID:0000000008143862

| DTC | Items (CONSULT screen terms) | Reference |
|---|---|---|
| U1000 | CAN COMM CIRCUIT | HAC-72, "DTC Logic" |
| U1010 | CONTROL UNIT(CAN) | HAC-73, "DTC Logic" |
| B2578 | IN-VEHICLE SENSOR | HAC-74, "DTC Logic" |
| B2579 | IN-VEHICLE SENSOR | HAC-74, "DTC Logic" |
| B257B | AMBIENT SENSOR | HAC-77, "DTC Logic" |
| B257C | AMBIENT SENSOR | HAC-77, "DTC Logic" |
| B2581 | INTAKE SENSOR | HAC-80, "DTC Logic" |
| B2582 | INTAKE SENSOR | HAC-80, "DTC Logic" |
| B262A*1 | GAS SENSOR*2 | HAC-83, "DTC Logic" |
| B262B*1 | GAS SENSOR*2 | HAC-83, "DTC Logic" |
| B2630*3 | SUNLOAD SENSOR | HAC-85, "DTC Logic" |
| B2631*3 | SUNLOAD SENSOR | HAC-85, "DTC Logic" |
| B2657*1 | GAS SENSOR CIRCUIT*2 | HAC-83, "DTC Logic" |
| B2658*1 | GAS SENSOR CIRCUIT*2 | HAC-83, "DTC Logic" |
| B2750 | DR AIR MIX DOOR MOT | HAC-88, "DTC Logic" |
| B2751 | DR AIR MIX DOOR MOT | HAC-88, "DTC Logic" |
| B2752 | DR AIR MIX DOOR MOT | HAC-88, "DTC Logic" |
| B2753 | PASS AIR MIX DOOR MOT | HAC-93, "DTC Logic" |
| B2754 | PASS AIR MIX DOOR MOT | HAC-93, "DTC Logic" |
| B2755 | PASS AIR MIX DOOR MOT | HAC-93, "DTC Logic" |
| B2756 | DR MODE DOOR MOTOR | HAC-98, "DTC Logic" |
| B2757 | DR MODE DOOR MOTOR | HAC-98, "DTC Logic" |
| B2758 | DR MODE DOOR MOTOR | HAC-98, "DTC Logic" |
| B2759 | PASS MODE DOOR MOT | HAC-103, "DTC Logic" |
| B275A | PASS MODE DOOR MOT | HAC-103, "DTC Logic" |
| B275B | PASS MODE DOOR MOT | HAC-103, "DTC Logic" |
| B275C | INTAKE DOOR MOTOR | HAC-108, "DTC Logic" |
| B275D | INTAKE DOOR MOTOR | HAC-108, "DTC Logic" |
| B275E | INTAKE DOOR MOTOR | HAC-108, "DTC Logic" |
| B275F | DR UP VENT DOOR MOT | HAC-113, "DTC Logic" |
| B2760 | DR UP VENT DOOR MOT | HAC-113, "DTC Logic" |
| B2761 | DR UP VENT DOOR MOT | HAC-113, "DTC Logic" |
| B2762 | REAR MODE DOOR MOT | HAC-119, "DTC Logic" |
| B2763 | REAR MODE DOOR MOT | HAC-119, "DTC Logic" |
| B2764 | REAR MODE DOOR MOT | HAC-119, "DTC Logic" |
| B2768*1 | AROMA MOTOR | HAC-124, "DTC Logic" |
| B2769*1 | AROMA MOTOR | HAC-124, "DTC Logic" |
| B276A*1 | AROMA MOTOR | HAC-124, "DTC Logic" |
| B276B*1 | HUMIDITY SENSOR | HAC-129, "DTC Logic" |
| B276C*1 | HUMIDITY SENSOR | HAC-129, "DTC Logic" |

| DTC | Items (CONSULT screen terms) | Reference |
|---|---|---|
| B276D*1 | HUMIDITY SENSOR | HAC-129, "DTC Logic" |
| B2780 | COMPRESSOR ROM,RAM,AD | HAC-134, "DTC Logic" |
| B2781 | COMP IPM TEMP SENSOR | HAC-135, "DTC Logic" |
| B2782 | COMP SHUNT SIGNAL OFFSET | HAC-136, "DTC Logic" |
| B2783 | COMP DISCHARGE TEMP OVER HEAT | HAC-137, "DTC Logic" |
| B2784 | COMP DISCHARGE TEMP LIMIT | HAC-137, "DTC Logic" |
| B2785 | COMP IPM OVER HEAT | HAC-139, "DTC Logic" |
| B2786 | COMP IPM DISCHARGE TEMP LIMIT | HAC-139, "DTC Logic" |
| B2787 | COMP VOLTAGE SATURATION | HAC-141, "DTC Logic" |
| B2788 | COMP OVER CURRENT | HAC-142, "DTC Logic" |
| B2789 | COMP OVER LOADED | HAC-143, "DTC Logic" |
| B278A | COMP LOW VOLTAGE | HAC-144, "DTC Logic" |
| B278B | COMP HIGH VOLTAGE | HAC-144, "DTC Logic" |
| B278C | COMP COMM ERROR HVAC→COMP | HAC-147, "DTC Logic" |
| B278D | COMP COMM ERROR COMP→HVAC | HAC-147, "DTC Logic" |
| B2791 | COMP LOW SPEED HIGH LOAD | HAC-151, "DTC Logic" |

*1: With Forest Air
*2: This item indicates the exhaust gas/outside odor detecting sensor.
*3: Perform self-diagnosis under sunshine. When performing indoors, aim a light (more than 60 W) at sunload sensor, otherwise self-diagnosis indicates even though the sunload sensor is functioning normally.

**NOTE:**

- If all of door motors DTC (B2750 – B276A) are detected, check door motor PBR circuit (With Forest Air). Refer to HAC-153, "DOOR MOTOR PBR (WITH FOREST AIR) : Diagnosis Procedure".
- If all of door motors DTC (B2750 – B2764) are detected, check door motor PBR circuit (Without Forest Air). Refer to HAC-153, "DOOR MOTOR PBR (WITH FOREST AIR) : Diagnosis Procedure".

# ECM

## List of ECU Reference

INFOID:0000000008143863

| ECU | Reference |
|---|---|
| ECM | EC-62, "Reference Value" |
| | EC-78, "Fail safe" |
| | EC-80, "DTC Inspection Priority Chart" |
| | EC-81, "DTC Index" |

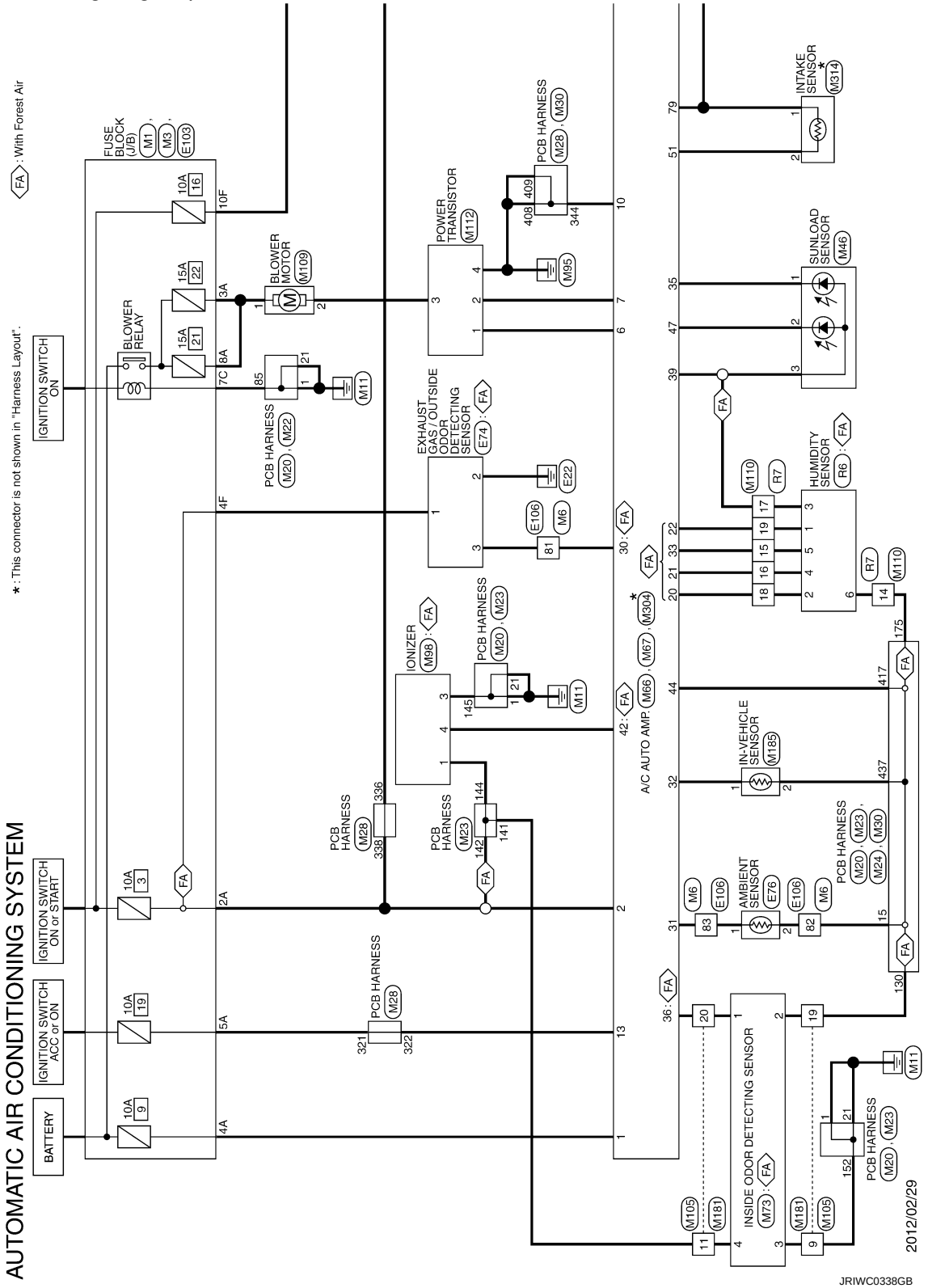
# WIRING DIAGRAM

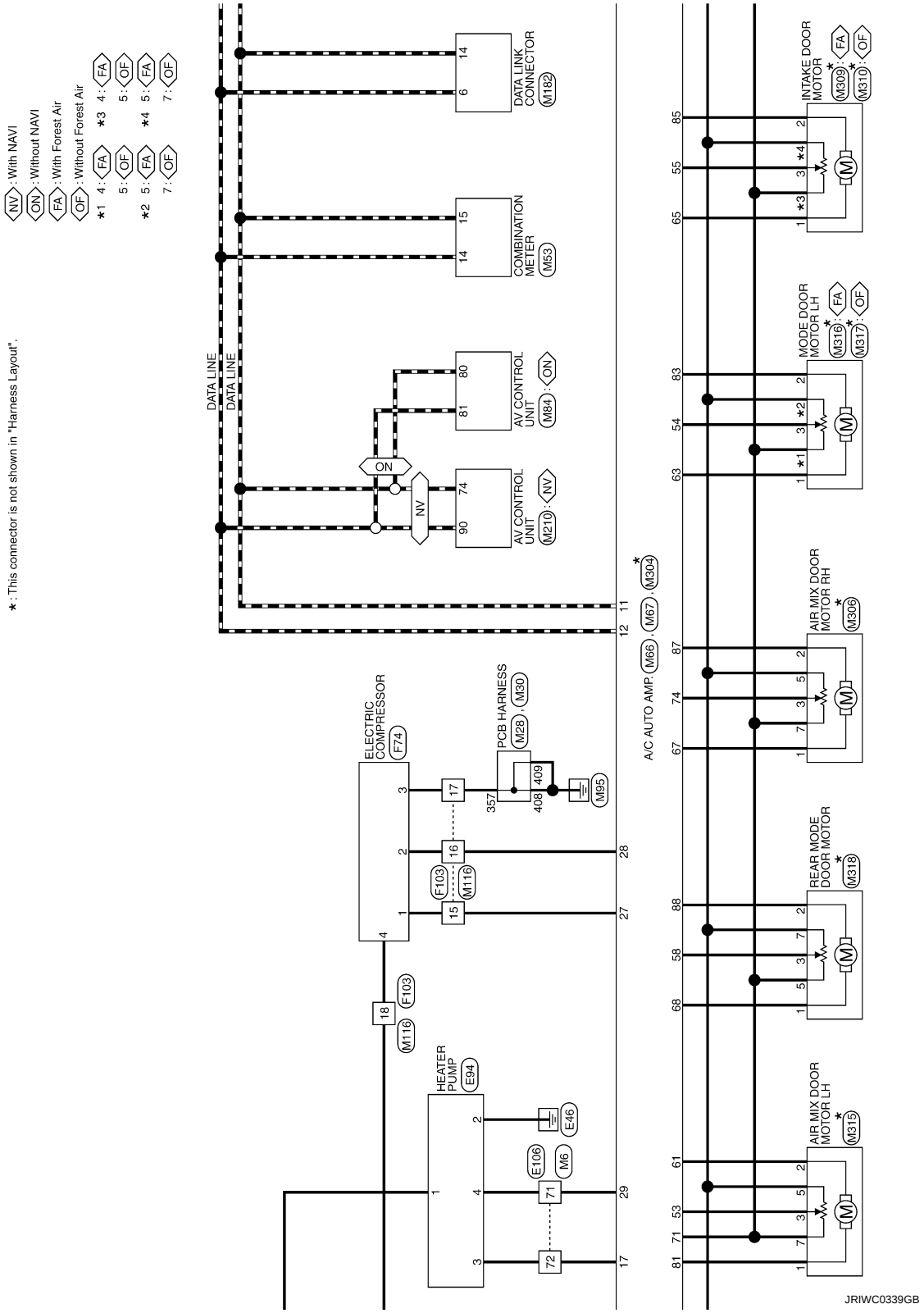
## AUTOMATIC AIR CONDITIONING SYSTEM

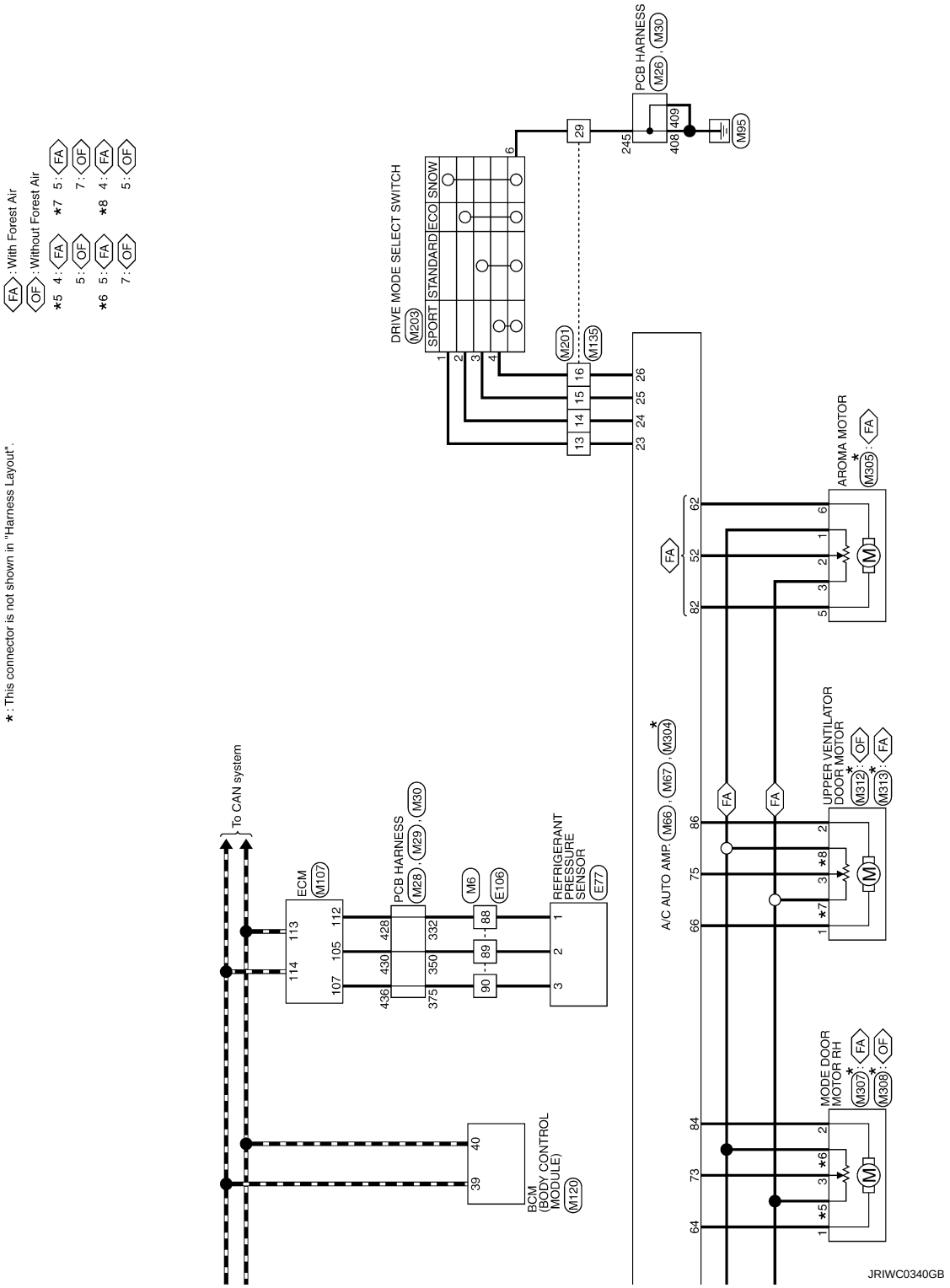
### Wiring Diagram

INFOID:0000000008143864

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-49, "Intermittent Incident".




NV : With NAVI
ON : Without NAVI
FA : With Forest Air
OF : Without Forest Air
*1 4 : FA 5 : OF
*2 5 : FA 7 : OF
*3 4 : FA 5 : OF
*4 5 : FA 7 : OF
*: This connector is not shown in "Harness Layout".
DATA LINE
DATA LINE
DATA LINK CONNECTOR M182
COMBINATION METER M53
AV CONTROL UNIT M84 : ON
AV CONTROL UNIT M210 : NV
ON
NV
A/C AUTO AMP M66, M67, *M304
ELECTRIC COMPRESSOR F74
PCB HARNESS M28, M30
M95
F103
M116
HEATER PUMP E94
E46
E106
M6
INTAKE DOOR MOTOR *M309 : FA *M310 : OF
MODE DOOR MOTOR LH *M316 : FA *M317 : OF
AIR MIX DOOR MOTOR RH *M306
REAR MODE DOOR MOTOR *M318
AIR MIX DOOR MOTOR LH *M315
JRIWC0339GB


FA : With Forest Air
OF : Without Forest Air
*5 4 : FA 5 : OF
*6 5 : FA 7 : OF
*7 5 : FA 7 : OF
*8 4 : FA 5 : OF
*: This connector is not shown in "Harness Layout".
To CAN system
ECM M107
PCB HARNESS M28, M29, M30
M6
E106
REFRIGERANT PRESSURE SENSOR E77
BCM (BODY CONTROL MODULE) M120
DRIVE MODE SELECT SWITCH M203
SPORT STANDARD ECO SNOW
M201
M135
PCB HARNESS M26, M30
M95
A/C AUTO AMP. M66, M67, *M304
AROMA MOTOR *M305 FA
UPPER VENTILATOR DOOR MOTOR *M312 OF *M313 FA
MODE DOOR MOTOR RH *M307 FA *M308 OF
JRIWC0340GB

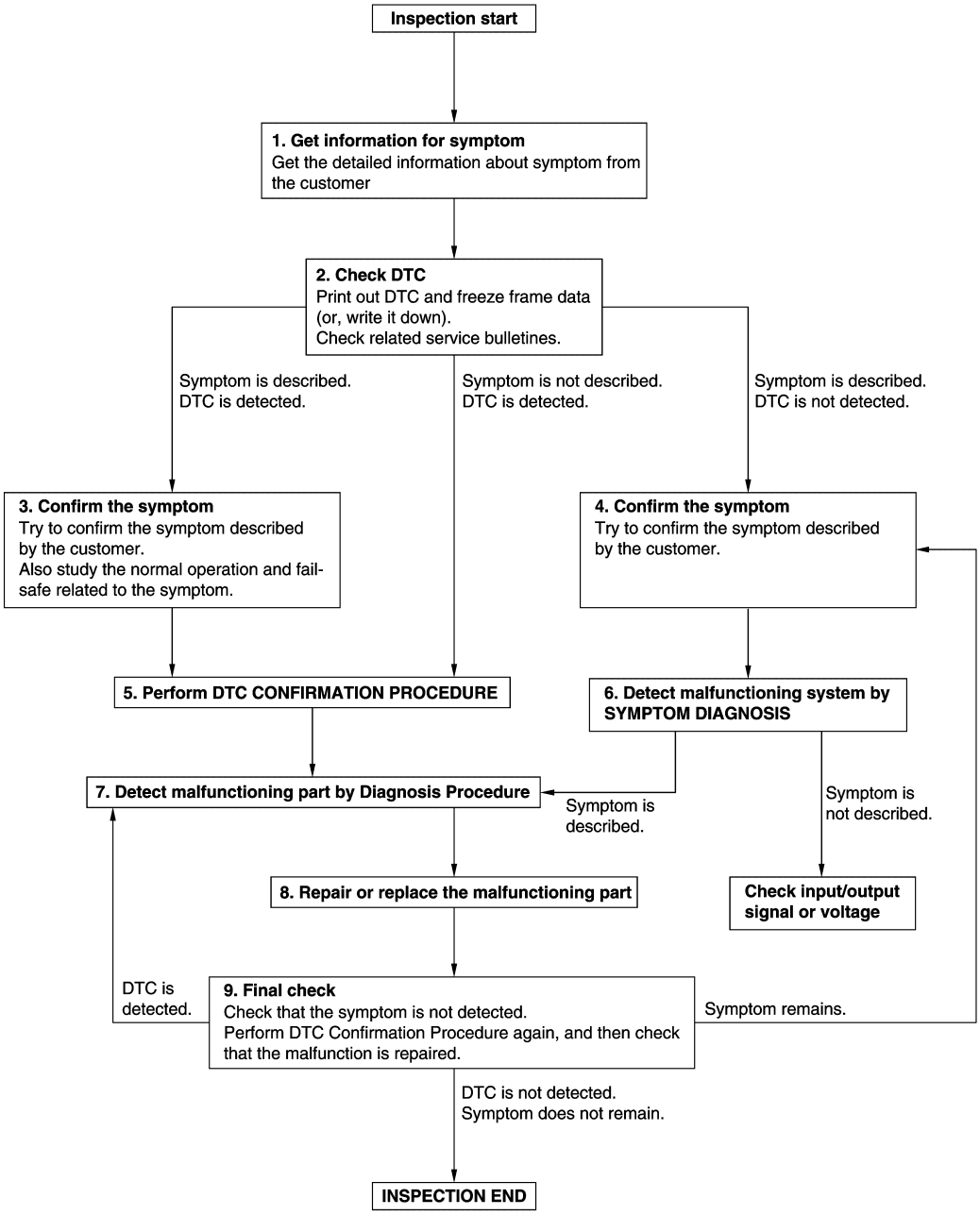
# BASIC INSPECTION

## DIAGNOSIS AND REPAIR WORK FLOW

### Work Flow

INFOID:0000000008143865

#### OVERALL SEQUENCE




JMKIA8652GB

#### DETAILED FLOW

## 1.GET INFORMATION FOR SYMPTOM

1. Get detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurs).
2. Check operation condition of the function that is malfunctioning.

>> GO TO 2.

## 2.CHECK DTC

1. Check DTC.
2. Perform the following procedure if DTC is detected.

- Record DTC and freeze frame data (Print them out using CONSULT.)
- Erase DTC.
- Study the relationship between the cause detected by DTC and the symptom described by the customer.

3. Check related service bulletins for information.

Are any symptoms described and any DTC detected?

Symptom is described, DTC is detected>>GO TO 3.
Symptom is described, DTC is not detected>>GO TO 4.
Symptom is not described, DTC is detected>>GO TO 5.

## 3.CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer.
Also study the normal operation and fail-safe related to the symptom.
Verify relation between the symptom and the condition when the symptom is detected.

>> GO TO 5.

## 4.CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer.
Verify relation between the symptom and the condition when the symptom is detected.

>> GO TO 6.

## 5.PERFORM DTC CONFIRMATION PROCEDURE

Perform DTC CONFIRMATION PROCEDURE for the detected DTC, and then check that DTC is detected again. At this time, always connect CONSULT to the vehicle, and check self diagnostic results in real time.
If two or more DTCs are detected, refer to DTC INSPECTION PRIORITY CHART, and determine trouble diagnosis order.

**NOTE:**

- Freeze frame data is useful if the DTC is not detected.
- Perform Component Function Check if DTC CONFIRMATION PROCEDURE is not included on Service Manual. This simplified check procedure is an effective alternative though DTC cannot be detected during this check.
  If the result of Component Function Check is NG, it is the same as the detection of DTC by DTC CONFIRMATION PROCEDURE.

Is DTC detected?

YES >> GO TO 7.
NO >> Check according to GI-49, "Intermittent Incident".

## 6.DETECT MALFUNCTIONING SYSTEM BY SYMPTOM DIAGNOSIS

Detect malfunctioning system according to SYMPTOM DIAGNOSIS based on the confirmed symptom in step 4, and determine the trouble diagnosis order based on possible causes and symptom.

Is the symptom described?

YES >> GO TO 7.
NO >> Monitor input data from related sensors or check voltage of related module terminals using CONSULT.

## 7.DETECT MALFUNCTIONING PART BY DIAGNOSTIC PROCEDURE

Inspect according to Diagnostic Procedure of the system.

Is malfunctioning part detected?

YES >> GO TO 8.
NO >> Check according to GI-49, "Intermittent Incident".

## 8. REPAIR OR REPLACE THE MALFUNCTIONING PART

1. Repair or replace the malfunctioning part.
2. Reconnect parts or connectors disconnected during Diagnostic Procedure again after repair and replacement.
3. Check DTC. If DTC is detected, erase it.

>> GO TO 9.

## 9. FINAL CHECK

When DTC is detected in step 2, perform DTC CONFIRMATION PROCEDURE again, and then check that the malfunction is repaired securely.
When symptom is described by the customer, refer to confirmed symptom in step 3 or 4, and check that the symptom is not detected.

Is DTC detected and does symptom remain?

YES-1 >> DTC is detected: GO TO 7.
YES-2 >> Symptom remains: GO TO 4.
NO >> Before returning the vehicle to the customer, always erase DTC.

# OPERATION INSPECTION
## AUTOMATIC AIR CONDITIONING SYSTEM (WITH FOREST AIR)
## AUTOMATIC AIR CONDITIONING SYSTEM (WITH FOREST AIR) : Work Procedure

INFOID:0000000008143866

### DESCRIPTION
The purpose of the operational check is to check that the individual system operates normally.

### OPERATION INSPECTION
#### 1.CHECK BLOWER MOTOR

Operate the fan switch. Check that the fan speed changes. Check the operation for all fan speeds.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Blower motor system malfunction. Refer to HAC-158, "Diagnosis Procedure".

#### 2.CHECK LH/RH INDEPENDENT AIR OUTLET ADJUSTMENT FUNCTION

1. Operate MODE switch (driver side) and the DEF switch. Check that the air outlets change according to each indicated air outlet by placing a hand in front of the outlets (driver side). Refer to VTL-6, "System Description".
2. Operate MODE switch (passenger side) and the DEF switch. Check that the air outlets change according to each indicated air outlet by placing a hand in front of the outlets (passenger side). Refer to VTL-6, "System Description".
3. Press CLIMATE switch. The “Climate” menu screen is indicated on display.
4. Touch “DUAL”. Check that the air outlet setting (LH/RH) is unified to the driver side air outlet setting.

Is the inspection result normal?

YES >> GO TO 3.
NO >> Refer to HAC-172, "Symptom Table" and perform the appropriate diagnosis.

#### 3.CHECK DISCHARGE AIR (“UPPER VENT”)

1. Press MODE switch to set the air outlet to other than D/F or DEF.
2. Touch “Upper Vent”. Check that air flow blows from upper ventilator.
3. Touch “Upper Vent” again. Check that air flow from upper ventilator stops.

Is the inspection result normal?

YES >> GO TO 4.
NO >> Refer to HAC-172, "Symptom Table" and perform the appropriate diagnosis.

#### 4.CHECK INTAKE AIR

1. Press intake switch to set the air inlet to recirculation. The intake switch indicator turns ON.
2. Listen to intake sound and confirm air inlets change.
3. Press intake switch again to set the air inlet to fresh air intake. The intake switch indicator turns OFF.
4. Listen to intake sound and confirm air inlets change.

Is the inspection result normal?

YES >> GO TO 5.
NO >> Intake door system malfunction. Refer to HAC-108, "Diagnosis Procedure".

#### 5.CHECK COMPRESSOR

1. Touch “A/C”. Check visually and by sound that the compressor operates.
2. Touch “A/C” again. Check that the compressor stops.

Is the inspection result normal?

YES >> GO TO 6.
NO >> Compressor does not operate. Refer to HAC-179, "Diagnosis Procedure".

#### 6.CHECK LH/RH INDEPENDENT TEMPERATURE ADJUSTMENT FUNCTION

1. Operate the temperature control switch (driver side). Check that the discharge air temperature (driver side) changes.

2. Operate the temperature control switch (passenger side). Check that the discharge air temperature (passenger side) changes.
3. Touch “DUAL”. Check that the air temperature setting (LH/RH) is unified to the driver side temperature setting.

Is the inspection result normal?

YES >> GO TO 7.
NO >> Refer to HAC-172, "Symptom Table" and perform the appropriate diagnosis.

## 7. CHECK WITH TEMPERATURE SETTING LOWERED

1. Operate the compressor.
2. Operate the temperature control switch and lower the set temperature to 18.0°C (60°F).
3. Check that the cool air blows from the outlets.

Is the inspection result normal?

YES >> GO TO 8.
NO >> Insufficient cooling. Refer to HAC-176, "Diagnosis Procedure".

## 8. CHECK TEMPERATURE INCREASE

1. Turn temperature control switch to raise temperature setting at 32.0°C (90°F).
2. Check that warm air blows from outlets.

Is the inspection result normal?

YES >> GO TO 9.
NO >> Insufficient heating. Refer to HAC-177, "Diagnosis Procedure".

## 9. CHECK AUTO MODE

1. Press AUTO switch to confirm that “AUTO” is indicated on the display.
2. Operate the temperature control switch to check that the fan speed or air outlet changes (the air flow temperature or fan speed varies depending on the ambient temperature, in-vehicle temperature, and set temperature).

Is the inspection result normal?

YES >> GO TO 10.
NO >> Refer to HAC-172, "Symptom Table" and perform the appropriate diagnosis.

## 10. CHECK MEMORY FUNCTION

1. Set temperature control switch to 32.0°C (90°F).
2. Press the OFF switch.
3. Turn ignition switch OFF.
4. Turn ignition switch ON.
5. Press AUTO switch.
6. Check that the set temperature is maintained.

Is the inspection result normal?

YES >> GO TO 11.
NO >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".

## 11. CHECK INTELLIGENT KEY INTERLOCK FUNCTION

1. Operate fan switch. Set fan speed to 1st speed.
2. Turn ignition switch OFF.
3. Lock door using Intelligent Key or driver door request switch.
4. Switch to another Intelligent Key and unlock door using Intelligent Key or driver door request switch.
5. Turn ignition switch ON.
6. Operate fan switch. Set fan speed to 7th speed.
7. Operate temperature control switch (driver side). Decrease setting temperature to 18.0°C (60°F).
8. Turn ignition switch OFF.
9. Lock door using Intelligent Key or driver door request switch.
10. Switch to another Intelligent Key and unlock door using Intelligent Key or driver door request switch.
11. Turn ignition switch ON.
12. Check that “Connection with the key has been done.” is indicated on display and that air conditioning system starts to operate automatically by setting temperature to 32.0°C (90°F) and fan speed to 1st.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Intelligent Key interlock function malfunctioning. Refer to HAC-180, "Diagnosis Procedure".

# AUTOMATIC AIR CONDITIONING SYSTEM (WITHOUT FOREST AIR)

## AUTOMATIC AIR CONDITIONING SYSTEM (WITHOUT FOREST AIR) : Work Procedure

INFOID:0000000008143867

### DESCRIPTION

The purpose of the operational check is to check that the individual system operates normally.

### OPERATION INSPECTION

#### 1. CHECK BLOWER MOTOR

Operate the fan switch. Check that the fan speed changes. Check the operation for all fan speeds.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Blower motor system malfunction. Refer to HAC-158, "Diagnosis Procedure".

#### 2. CHECK LH/RH INDEPENDENT AIR OUTLET ADJUSTMENT FUNCTION

1. Operate MODE switch (driver side) and the DEF switch. Check that the air outlets change according to each indicated air outlet by placing a hand in front of the outlets (driver side). Refer to VTL-6, "System Description".
2. Operate MODE switch (passenger side) and the DEF switch. Check that the air outlets change according to each indicated air outlet by placing a hand in front of the outlets (passenger side). Refer to VTL-6, "System Description".
3. Press CLIMATE switch. The “Climate” menu screen is indicated on display.
4. Touch “DUAL”. Check that the air outlet setting (LH/RH) is unified to the driver side air outlet setting.

Is the inspection result normal?

YES >> GO TO 3.
NO >> Refer to HAC-172, "Symptom Table" and perform the appropriate diagnosis.

#### 3. CHECK DISCHARGE AIR (“UPPER VENT”)

1. Press MODE switch to set the air outlet to other than D/F or DEF.
2. Touch “Upper Vent”. Check that air flow blows from upper ventilator.
3. Touch “Upper Vent” again. Check that air flow from upper ventilator stops.

Is the inspection result normal?

YES >> GO TO 4.
NO >> Upper ventilator system malfunction. Refer to HAC-113, "Diagnosis Procedure".

#### 4. CHECK INTAKE AIR

1. Press REC switch to set the air inlet to recirculation. The REC switch indicator turns ON.
2. Listen to intake sound and confirm air inlets change.
3. Press FRE switch again to set the air inlet to fresh air intake. The FRE switch indicator turns ON.
4. Listen to intake sound and confirm air inlets change.

Is the inspection result normal?

YES >> GO TO 5.
NO >> Intake door system malfunction. Refer to HAC-108, "Diagnosis Procedure".

#### 5. CHECK COMPRESSOR

1. Touch “A/C”. Check visually and by sound that the compressor operates.
2. Touch “A/C” again. Check that the compressor stops.

Is the inspection result normal?

YES >> GO TO 6.
NO >> Compressor does not operate. Refer to HAC-179, "Diagnosis Procedure".

#### 6. CHECK LH/RH INDEPENDENT TEMPERATURE ADJUSTMENT FUNCTION

1. Operate the temperature control switch (driver side). Check that the discharge air temperature (driver side) changes.

2. Operate the temperature control switch (passenger side). Check that the discharge air temperature (passenger side) changes.
3. Touch “DUAL”. Check that the air temperature setting (LH/RH) is unified to the driver side temperature setting.

Is the inspection result normal?

YES >> GO TO 7.
NO >> Refer to HAC-172, "Symptom Table" and perform the appropriate diagnosis.

## 7. CHECK WITH TEMPERATURE SETTING LOWERED

1. Operate the compressor.
2. Operate the temperature control switch and lower the set temperature to 18.0°C (60°F).
3. Check that the cool air blows from the outlets.

Is the inspection result normal?

YES >> GO TO 8.
NO >> Insufficient cooling. Refer to HAC-176, "Diagnosis Procedure".

## 8. CHECK TEMPERATURE INCREASE

1. Turn temperature control switch to raise temperature setting at 32.0°C (90°F).
2. Check that warm air blows from outlets.

Is the inspection result normal?

YES >> GO TO 9.
NO >> Insufficient heating. Refer to HAC-177, "Diagnosis Procedure".

## 9. CHECK AUTO MODE

1. Press AUTO switch to confirm that “AUTO” is indicated on the display.
2. Operate the temperature control switch to check that the fan speed or air outlet changes (the air flow temperature or fan speed varies depending on the ambient temperature, in-vehicle temperature, and set temperature).

Is the inspection result normal?

YES >> GO TO 10.
NO >> Refer to HAC-172, "Symptom Table" and perform the appropriate diagnosis.

## 10. CHECK MEMORY FUNCTION

1. Set temperature control switch to 32.0°C (90°F).
2. Press the OFF switch.
3. Turn ignition switch OFF.
4. Turn ignition switch ON.
5. Press AUTO switch.
6. Check that the set temperature is maintained.

Is the inspection result normal?

YES >> GO TO 11.
NO >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".

## 11. CHECK INTELLIGENT KEY INTERLOCK FUNCTION

1. Operate fan switch. Set fan speed to 1st speed.
2. Turn ignition switch OFF.
3. Lock door using Intelligent Key or driver door request switch.
4. Switch to another Intelligent Key and unlock door using Intelligent Key or driver door request switch.
5. Turn ignition switch ON.
6. Operate fan switch. Set fan speed to 7th speed.
7. Operate temperature control switch (driver side). Decrease setting temperature to 18.0°C (60°F).
8. Turn ignition switch OFF.
9. Lock door using Intelligent Key or driver door request switch.
10. Switch to another Intelligent Key and unlock door using Intelligent Key or driver door request switch.
11. Turn ignition switch ON.
12. Check that “Connection with the key has been done.” is indicated on display and that air conditioning system starts to operate automatically by setting temperature to 32.0°C (90°F) and fan speed to 1st.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Intelligent Key interlock function malfunctioning. Refer to HAC-180, "Diagnosis Procedure".

# FOREST AIR SYSTEM

## FOREST AIR SYSTEM : Work Procedure

INFOID:0000000008143868

### DESCRIPTION

The purpose of the operational check is to check that the individual system operates normally.

**NOTE:**

Check that automatic air conditioning system operates normally. Refer to HAC-60, "AUTOMATIC AIR CONDITIONING SYSTEM (WITH FOREST AIR) : Work Procedure".

**Check condition : Turn FOREST switch ON and turn it OFF once. Turn FOREST switch ON again and wait for 5 minutes or more.**

### OPERATION INSPECTION

#### 1. CHECK PLASMACLUSTER™ CONTROL

Check the ionizer operation sound (whirring sound) in the duct by putting an ear to the side ventilator grille (driver side) outlet while pressing fan switch and OFF switch alternately.

**NOTE:**

- Plasmacluster™ ion technology developed by Sharp Corporation is installed in this item.
- Plasmacluster™ is a trademark of Sharp Corporation.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Ionizer system malfunction. Refer to HAC-166, "Diagnosis Procedure".

#### 2. CHECK PLASMACLUSTER™ CONTROL OPERATION STATUS

Operate fan switch. Visually check that status indicator in display changes in accordance with the following table.

| Fan speed | Display (ion indicator) |
|---|---|
| 2nd | CLEAN |
| 5th | QUICK CLEAN |

**NOTE:**

- Plasmacluster™ ion technology developed by Sharp Corporation is installed in this item.
- Plasmacluster™ is a trademark of Sharp Corporation.

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".

#### 3. CHECK BREEZY AIR CONTROL

Place a hand to air outlet. Check that breezy air control operates when air outlet is VENT or FOOT mode and temperature in passenger room is stable (in the status that fan speed lowers to 3rd speed)

**NOTE:**

Breezy air control does not operate when air outlet is B/L.

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".

#### 4. CHECK BREEZY AIR CONTROL OPERATION STATUS

1. Press CLIMATE switch. The “Climate” menu screen is indicated on display.
2. Touch “Forest Air Info”. The “Forest Air Info” screen is indicated on display.
3. Check that breezy air animation that is imaged from breezy air is indicated on display while breezy air control is operated.

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".

## 5. CHECK AUTOMATIC INTAKE CONTROL (EXHAUST GAS/OUTSIDE ODOR DETECTING MECHANISM)

1. Check that the operation is in fresh air intake mode.
2. Apply cigarette smoke or similar substance to exhaust gas/outside odor detecting sensor portion.
3. Listen to intake sound and confirm air inlets change.

Is the inspection result normal?

YES >> GO TO 6.
NO >> Exhaust gas/outside odor detecting sensor system malfunction. Refer to HAC-83, "Diagnosis Procedure".

## 6. CHECK AMBIENT AIR JUDGEMENT STATUS

1. Apply cigarette smoke or similar substance to exhaust gas/outside odor detecting sensor portion.
2. Visually check that indicator of ambient air status in display changes to orange.

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".

## 7. AIR FLOW CONTROL (INSIDE ODOR DETECTING MECHANISM)

1. Operate temperature control switch (driver side). Set temperature to 20°C (68°F).
2. Apply cigarette smoke or similar substance to air inlet while fan speed is in 5th or 6th speed status.
3. Place a hand to air outlet. Check that air flow increases.

Is the inspection result normal?

YES >> GO TO 8.
NO >> Inside odor detecting sensor system malfunction. Refer to HAC-163, "Diagnosis Procedure".

## 8. CHECK INTERIOR AIR JUDGEMENT STATUS

1. Apply cigarette smoke or similar substance to air inlet.
2. Visually check that indicator of interior air status in display changes to orange.

Is the inspection result normal?

YES >> GO TO 9.
NO >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".

## 9. CHECK AUTOMATIC DEFOGGING CONTROL

1. Apply vapor to humidity sensor portion.
2. Check that the operation is in accordance with the following status.

- Air outlet: DEF
- Air inlet: Fresh air intake
- Compressor: ON

Is the inspection result normal?

YES >> GO TO 10.
NO >> Humidity sensor system malfunction. Refer to HAC-129, "Diagnosis Procedure".

## 10. CHECK AUTOMATIC DEFOGGING CONTROL OPERATION STATUS

1. Apply vapor to humidity sensor portion.
2. Visually check that indicator of windshield in display is indicated in white.

Is the inspection result normal?

YES >> GO TO 11.
NO >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".

## 11. CHECK AROMA DIFFUSER CONTROL (AROMA MOTOR OPERATION)

1. Operate FOREST switch and OFF switch alternately so that aroma diffuser control switches between ON and OFF.
2. Perform this operation for 2 sets. Check by operation sound that aroma motor operates.

**NOTE:**

Operation of aroma diffuser control can be checked immediately after FOREST switch is turned OFF once, and then is turned ON again. Operation direction of motor is switched by turning it ON again after turning it OFF. (Leaf scent ⇔ Fragrant wood)

Is the inspection result normal?

YES >> GO TO 12.
NO >> Aroma motor system malfunction. Refer to HAC-124, "Diagnosis Procedure".

## 12. CHECK AROMA DIFFUSER CONTROL (FRAGRANCE)

1. Operate FOREST switch and OFF switch alternately so that aroma diffuser control switches between ON and OFF.
2. Perform this operation for 2 sets. Check by fragrance that 2 kinds of aroma are diffused alternately.
   **NOTE:**
   Operation of aroma diffuser control can be checked immediately after FOREST switch is turned OFF once, and then is turned ON again. Operation direction of motor is switched by turning it ON again after turning it OFF. (Leaf scent ⇔ Fragrant wood)

Is the inspection result normal?

YES >> GO TO 13.
NO >> Replace aroma cartridge. Refer to HAC-183, "Removal and Installation".

## 13. CHECK AROMA DIFFUSER CONTROL OPERATION STATUS

1. Operate FOREST switch and OFF switch alternately so that aroma diffuser control switches between ON and OFF.
2. Perform this operation for 2 sets. Visually check that indication of fragrance (Leaf scent ⇔ Fragrant wood) in display switches alternately.
   **NOTE:**
   Operation of aroma diffuser control can be checked immediately after FOREST switch is turned OFF once, and then is turned ON again. Operation direction of motor is switched by turning it ON again after turning it OFF. (Leaf scent ⇔ Fragrant wood)

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".

# ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT (A/C AUTO AMP.)

## Description

INFOID:0000000008143869

When replacing A/C auto amp., save or print current vehicle specification with CONSULT “Configuration” before replacement.

### BEFORE REPLACEMENT

**NOTE:**
If “READ CONFIGURATION” can not be used, use the “WRITE CONFIGURATION - Manual setting” after replacing A/C auto amp.

### AFTER REPLACEMENT

**CAUTION:**
- **When replacing A/C auto amp., you must perform “WRITE CONFIGURATION” with CONSULT.**
- **Never perform “WRITE CONFIGURATION” except for new A/C auto amp.**

## Work Procedure

INFOID:0000000008143870

### 1.SAVING VEHICLE SPECIFICATION

CONSULT Configuration
Perform “READ CONFIGURATION” to save or print current vehicle specification. Refer to HAC-68, "Description".
**NOTE:**
If “READ CONFIGURATION” can not be used, use the “WRITE CONFIGURATION - Manual setting” after replacing A/C auto amp.

>> GO TO 2.

### 2.REPLACE A/C AUTO AMP.

Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".

>> GO TO 3.

### 3.WRITING VEHICLE SPECIFICATION

CONSULT Configuration
Perform “WRITE CONFIGURATION - Config file” or “WRITE CONFIGURATION - Manual setting” to write vehicle specification. Refer to HAC-68, "Work Procedure".

>> WORK END

# CONFIGURATION (HVAC)

## Description

INFOID:0000000008143871

Vehicle specification needs to be written with CONSULT because it is not written after replacing A/C auto amp. Configuration has three functions as follows

| Function | Description |
|---|---|
| READ CONFIGURATION | • Reads the vehicle configuration of current A/C auto amp.<br>• Saves the read vehicle configuration. |
| WRITE CONFIGURATION - Manual setting | Writes the vehicle configuration with manual setting. |
| WRITE CONFIGURATION - Config file | Writes the vehicle configuration with saved data. |

**CAUTION:**

- **When replacing A/C auto amp., you must perform “WRITE CONFIGURATION” with CONSULT.**
- **Never perform “WRITE CONFIGURATION” except for new A/C auto amp.**

## Work Procedure

INFOID:0000000008143872

### 1.WRITING MODE SELECTION

CONSULT Configuration
Select “CONFIGURATION” of A/C auto amp.

When writing saved data>>GO TO 2.
When writing manually>>GO TO 3.

### 2.PERFORM “WRITE CONFIGURATION - CONFIG FILE”

CONSULT Configuration
Perform “WRITE CONFIGURATION - Config file”.

>> WORK END

### 3.PERFORM “WRITE CONFIGURATION - MANUAL SETTING”

CONSULT Configuration
1. Select "WRITE CONFIGURATION - Manual setting".
2. Select "SETTING".
3. Select "OK".
4. When "COMMAND FINISHED", select "END".

>> GO TO 4.

### 4.OPERATION CHECK

Confirm that each function controlled by A/C auto amp. operates normally.

>> WORK END

# SYSTEM SETTING

## AUTOMATIC AIR CONDITIONING SYSTEM

### AUTOMATIC AIR CONDITIONING SYSTEM : Temperature Setting Trimmer

INFOID:0000000008143873

#### DESCRIPTION

If the temperature felt by the customer is different from the air flow temperature controlled by the temperature setting, the A/C auto amp. control temperature can be adjusted to compensate for the temperature setting.

#### HOW TO SET

With CONSULT

Perform “TEMP SET CORRECT” of HVAC work support item.

| Work support items | Display (°F) | Display (°C) |
|---|---|---|
| TEMP SET CORRECT | 6 | 3.0 |
| | 5 | 2.5 |
| | 4 | 2.0 |
| | 3 | 1.5 |
| | 2 | 1.0 |
| | 1 | 0.5 |
| | 0 (initial status) | 0 (initial status) |
| | –1 | –0.5 |
| | –2 | –1.0 |
| | –3 | –1.5 |
| | –4 | –2.0 |
| | –5 | –2.5 |
| | –6 | –3.0 |

**NOTE:**

When –3.0°C (–6°F) is corrected on the temperature setting set as 25.0°C (77°F), the temperature controlled by A/C auto amp. is 25.0°C (77°F) – 3.0°C (–6°F) = 22.0°C (72°F) and the temperature becomes lower than the temperature setting.

### AUTOMATIC AIR CONDITIONING SYSTEM : Inlet Port Memory Function (REC)

INFOID:0000000008143874

#### DESCRIPTION

- If the ignition switch is turned to the OFF position while the REC indicator is set to ON (recirculation), “Perform the memory” or “Do not perform the memory” of REC indicator ON (recirculation) condition can be selected.
- If “Perform the memory” was set, the REC indicator will be ON (recirculation) when turning the ignition switch to the ON position again.
- If “Do not perform the memory” was set, the air inlets will be controlled automatically when turning the ignition switch to the ON position again.

#### HOW TO SET

With CONSULT

Perform the “REC MEMORY SET” of HVAC work support item.

| Work support items | Display | Setting |
|---|---|---|
| REC MEMORY SET | WITHOUT (initial status) | Perform the memory of manual REC |
| | WITH | Do not perform the memory of manual REC (auto control) |

## AUTOMATIC AIR CONDITIONING SYSTEM : Inlet Port Memory Function (FRE)

INFOID:0000000008143875

### DESCRIPTION

- If the ignition switch is turned to the OFF position while the FRE indicator is set to ON (fresh air intake), “Perform the memory” or “Do not perform the memory” of FRE indicator ON (fresh air intake) condition can be selected.
- If “Perform the memory” was set, the FRE indicator will be ON (fresh air intake) when turning the ignition switch to the ON position again.
- If “Do not perform the memory” was set, the air inlets will be controlled automatically when turning the ignition switch to the ON position again.

### HOW TO SET

With CONSULT

Perform the “FRE MEMORY SET” of HVAC work support item.

| Work support items | Display | Setting |
|---|---|---|
| FRE MEMORY SET | WITHOUT | Perform the memory of manual FRE |
| | WITH (initial status) | Do not perform the memory of manual FRE (auto control) |

## AUTOMATIC AIR CONDITIONING SYSTEM : Foot Position Setting Trimmer

INFOID:0000000008143876

### DESCRIPTION

In FOOT mode, the air blowing to DEF can change ON/OFF.

### HOW TO SET

With CONSULT

Perform the “BLOW SET” of HVAC work support item.

| Work support items | Display | Defroster door position | |
|---|---|---|---|
| | | Auto control | Manual control |
| BLOW SET | Mode 1 (initial status) | OPEN | CLOSE |
| | Mode 2 | OPEN | OPEN |
| | Mode 3 | CLOSE | OPEN |
| | Mode 4 | CLOSE | CLOSE |

# FOREST AIR SYSTEM

## FOREST AIR SYSTEM : Aroma Fragrance Intensity Setting

INFOID:0000000008143877

### DESCRIPTION

Amount of fragrance that is supplied to passenger room can be adjusted by aroma diffuser control.

### HOW TO SET

With CONSULT

Perform “AROMA SETTING” or HVAC work support item.

| Work support items | Display | Setting |
|---|---|---|
| AROMA SETTING | WEAK | Fragrance is decreased from the standard status. |
| | STRONG | Fragrance is increased from the standard status. |
| | NORMAL (initial status) | Standard status. |

## FOREST AIR SYSTEM : Aroma Fragrance Type Setting

INFOID:0000000008143878

### DESCRIPTION

Type of fragrance that is supplied to passenger room can be selected using aroma diffuser control.

### HOW TO SET

With CONSULT
Perform “FRAGRANCE SETTING” or HVAC work support item.

| Work support items | Display | Setting |
|---|---|---|
| FRAGRANCE SETTING | A + B (initial status) | 2 kinds of fragrance, fragrant wood and leaf scent, are used. |
| | A | Only fragrant wood is used. |
| | B | Only leaf scent is used. |

## FOREST AIR SYSTEM : Air Flow Control (Inside Odor Detecting Mechanism) Setting

INFOID:0000000008143879

### DESCRIPTION

Setting change of air flow control can be changed by inside odor detecting mechanism.

### HOW TO SET

With CONSULT
Perform “BLOWER MOTOR SETTING” or HVAC work support item.

| Work support items | Display | Setting |
|---|---|---|
| BLOWER MOTOR SETTING | NORMAL | Air flow is not slightly increased when odor in passenger room is detected. |
| | INCREASE (initial status) | Air flow is slightly increased when odor in passenger room is detected. |

## FOREST AIR SYSTEM : Aroma Diffuser Presence Setting

INFOID:0000000008143880

### DESCRIPTION

Setting change of aroma diffuser presence setting can be performed.

### HOW TO SET

With CONSULT
Perform “AROMA DIFFUSER SETTING” or HVAC work support item.

| Work support items | Display | Setting |
|---|---|---|
| AROMA DIFFUSER SETTING | WITHOUT | Without aroma diffuser. |
| | WITH | With aroma diffuser. |

# DTC/CIRCUIT DIAGNOSIS

## U1000 CAN COMM CIRCUIT

### Description

INFOID:0000000008143881

CAN (Controller Area Network) is a serial communication line for real time applications. It is an on-board multiplex communication line with high data communication speed and excellent error detection ability. A modern vehicle is equipped with many ECMs, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, 2 control units are connected with 2 communication lines (CAN-L line and CAN-H line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.
Refer to LAN-36, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart" for details of the communication signal.

### DTC Logic

INFOID:0000000008143882

#### DTC DETECTION LOGIC

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| U1000 | CAN COMM CIRCUIT | When A/C auto amp. is not transmitting or receiving CAN communication signal for 2 or more seconds. | CAN communication system |

#### DTC CONFIRMATION PROCEDURE

##### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON and wait at least 2 seconds or more.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to HAC-72, "Diagnosis Procedure".
NO >> Refer to GI-49, "Intermittent Incident".

### Diagnosis Procedure

INFOID:0000000008143883

#### 1.CHECK CAN COMMUNICATION SYSTEM

Check CAN communication system. Refer to LAN-19, "Trouble Diagnosis Flow Chart".

>> INSPECTION END

# U1010 CONTROL UNIT (CAN)

## Description

INFOID:0000000008143884

Initial diagnosis of A/C auto amp.

## DTC Logic

INFOID:0000000008143885

### DTC DETECTION LOGIC

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| U1010 | CONTROL UNIT(CAN) | When detecting error during the initial diagnosis of CAN controller of A/C auto amp. | A/C auto amp. |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to HAC-73, "Diagnosis Procedure".
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000008143886

#### 1.REPLACE A/C AUTO AMP.

Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".

>> INSPECTION END

# B2578, B2579 IN-VEHICLE SENSOR

## DTC Logic

INFOID:0000000008143887

### DTC DETECTION LOGIC

**NOTE:**

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-72, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-73, "DTC Logic".

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B2578 | IN-VEHICLE SENSOR | The in-vehicle sensor recognition temperature is too high. | • In-vehicle sensor<br>• A/C auto amp.<br>• Harness or connectors (The sensor circuit is open or shorted.) |
| B2579 | | The in-vehicle sensor recognition temperature is too low. | |

### DTC CONFIRMATION PROCEDURE

#### 1. PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to HAC-74, "Diagnosis Procedure".
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000008143888

#### 1. CHECK IN-VEHICLE SENSOR POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect in-vehicle sensor connector.
3. Turn ignition switch ON.
4. Check voltage between in-vehicle sensor harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| In-vehicle sensor | | | |
| Connector | Terminal | | |
| M185 | 1 | Ground | 5 V |

Is the inspection result normal?

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

#### 2. CHECK IN-VEHICLE SENSOR POWER SUPPLY CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between in-vehicle sensor harness connector and A/C auto amp. harness connector.

| In-vehicle sensor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M185 | 1 | M67 | 32 | Existed |

Is the inspection result normal?

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

## 3. CHECK IN-VEHICLE SENSOR POWER SUPPLY CIRCUIT FOR GROUND SHORT

Check continuity between in-vehicle sensor harness connector and ground.

| In-vehicle sensor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M185 | 1 | Ground | Not existed |

Is the inspection result normal?

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

## 4. CHECK IN-VEHICLE SENSOR POWER SUPPLY CIRCUIT FOR BATTERY SHORT

1. Turn ignition switch ON.
2. Check voltage between in-vehicle sensor harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| In-vehicle sensor | | | |
| Connector | Terminal | | |
| M185 | 1 | Ground | 0 V |

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair harness or connector.

## 5. CHECK IN-VEHICLE SENSOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between in-vehicle sensor harness connector and A/C auto amp. harness connector.

| In-vehicle sensor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M185 | 2 | M67 | 44 | Existed |

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair harness or connector.

## 6. CHECK IN-VEHICLE SENSOR

Check in-vehicle sensor. Refer to HAC-75, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace in-vehicle sensor. Refer to HAC-185, "Removal and Installation".

## 7. CHECK INTERMITTENT INCIDENT

Refer to GI-49, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

# Component Inspection

INFOID:0000000008143889

## 1. CHECK IN-VEHICLE SENSOR

1. Turn ignition switch OFF.
2. Disconnect in-vehicle sensor connector.

3. Check resistance between in-vehicle sensor terminals.

| Terminal | | Condition | Resistance: kΩ |
|---|---|---|---|
| | | Temperature: °C (°F) | |
| 1 | 2 | –15 (5) | 12.90 |
| | | –10 (14) | 9.68 |
| | | –5 (23) | 7.35 |
| | | 0 (32) | 5.63 |
| | | 5 (41) | 4.35 |
| | | 10 (50) | 3.40 |
| | | 15 (59) | 2.68 |
| | | 20 (68) | 2.12 |
| | | 25 (77) | 1.70 |
| | | 30 (86) | 1.37 |
| | | 35 (95) | 1.11 |
| | | 40 (104) | 0.91 |
| | | 45 (113) | 0.75 |

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace in-vehicle sensor. Refer to HAC-185, "Removal and Installation".

# B257B, B257C AMBIENT SENSOR

## DTC Logic

INFOID:0000000008143890

### DTC DETECTION LOGIC

**NOTE:**

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-72, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-73, "DTC Logic".

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B257B | AMBIENT SENSOR | The ambient sensor recognition temperature is too high. | • Ambient sensor<br>• A/C auto amp.<br>• Harness or connectors (The sensor circuit is open or shorted.) |
| B257C | | The ambient sensor recognition temperature is too low. | |

### DTC CONFIRMATION PROCEDURE

#### 1. PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to HAC-77, "Diagnosis Procedure".
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000008143891

#### 1. CHECK AMBIENT SENSOR POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect ambient sensor connector.
3. Turn ignition switch ON.
4. Check voltage between ambient sensor harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Ambient sensor | | | |
| Connector | Terminal | | |
| E76 | 1 | Ground | 5 V |

Is the inspection result normal?

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

#### 2. CHECK AMBIENT SENSOR POWER SUPPLY CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp.connector.
3. Check continuity between ambient sensor harness connector and A/C auto amp. harness connector.

| Ambient sensor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| E76 | 1 | M67 | 31 | Existed |

Is the inspection result normal?

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

## 3.CHECK AMBIENT SENSOR POWER SUPPLY CIRCUIT FOR GROUND SHORT

Check continuity between ambient sensor harness connector and ground.

| Ambient sensor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E76 | 1 | Ground | Not existed |

Is the inspection result normal?

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

## 4.CHECK AMBIENT SENSOR POWER SUPPLY CIRCUIT FOR BATTERY SHORT

1. Turn ignition switch ON.
2. Check voltage between ambient sensor harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Ambient sensor | | | |
| Connector | Terminal | | |
| E76 | 1 | Ground | 0 V |

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair harness or connector.

## 5.CHECK AMBIENT SENSOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp.connector.
3. Check continuity between ambient sensor harness connector and A/C auto amp. harness connector.

| Ambient sensor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| E76 | 2 | M67 | 44 | Existed |

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair harness or connector.

## 6.CHECK AMBIENT SENSOR

Check ambient sensor. Refer to HAC-78, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace ambient sensor. Refer to HAC-184, "Removal and Installation".

## 7.CHECK INTERMITTENT INCIDENT

Refer to GI-49, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

# Component Inspection

INFOID:0000000008143892

## 1.CHECK AMBIENT SENSOR

1. Turn ignition switch OFF.
2. Disconnect ambient sensor connector.

3. Check resistance between the ambient sensor terminals.

| Terminal | | Condition | Resistance: kΩ |
|---|---|---|---|
| | | Temperature: °C (°F) | |
| 1 | 2 | –15 (5) | 12.73 |
| | | –10 (14) | 9.92 |
| | | –5 (23) | 7.80 |
| | | 0 (32) | 6.19 |
| | | 5 (41) | 4.95 |
| | | 10 (50) | 3.99 |
| | | 15 (59) | 3.24 |
| | | 20 (68) | 2.65 |
| | | 25 (77) | 2.19 |
| | | 30 (86) | 1.81 |
| | | 35 (95) | 1.51 |
| | | 40 (104) | 1.27 |
| | | 45 (113) | 1.07 |

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace ambient sensor. Refer to HAC-184, "Removal and Installation".

# B2581, B2582 INTAKE SENSOR

## DTC Logic

INFOID:0000000008143893

### DTC DETECTION LOGIC

**NOTE:**

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-72, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-73, "DTC Logic".

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B2581 | INTAKE SENSOR | The intake sensor recognition temperature is too high. | • Intake sensor<br>• A/C auto amp.<br>• Harness or connectors (The sensor circuit is open or shorted.) |
| B2582 | | The intake sensor recognition temperature is too low. | |

### DTC CONFIRMATION PROCEDURE

#### 1. PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to HAC-80, "Diagnosis Procedure".
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000008143894

#### 1. CHECK INTAKE SENSOR POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect intake sensor connector.
3. Turn ignition switch ON.
4. Check voltage between intake sensor harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Intake sensor | | | |
| Connector | Terminal | | |
| M314 | 2 | Ground | 5 V |

Is the inspection result normal?

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

#### 2. CHECK INTAKE SENSOR POWER SUPPLY CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between intake sensor harness connector and A/C auto amp. harness connector.

| Intake sensor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M314 | 2 | M304 | 51 | Existed |

Is the inspection result normal?

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

## 3. CHECK INTAKE SENSOR POWER SUPPLY CIRCUIT FOR GROUND SHORT

Check continuity between intake sensor harness connector and ground.

| Intake sensor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M314 | 2 | Ground | Not existed |

Is the inspection result normal?

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

## 4. CHECK INTAKE SENSOR POWER SUPPLY CIRCUIT FOR BATTERY SHORT

1. Turn ignition switch ON.
2. Check voltage between intake sensor harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Intake sensor | | | |
| Connector | Terminal | | |
| M314 | 2 | Ground | 0 V |

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair harness or connector.

## 5. CHECK INTAKE SENSOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between intake sensor harness connector and A/C auto amp. harness connector.

| Intake sensor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M314 | 1 | M304 | 79 | Existed |

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair harness or connector.

## 6. CHECK INTAKE SENSOR

Check intake sensor. Refer to HAC-81, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace intake sensor. Refer to HAC-188, "Removal and Installation".

## 7. CHECK INTERMITTENT INCIDENT

Refer to GI-49, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

# Component Inspection

INFOID:0000000008143895

## 1. CHECK INTAKE SENSOR

1. Turn ignition switch OFF.
2. Disconnect intake sensor connector.

3. Check resistance between intake sensor terminals.

| Terminal | | Condition | Resistance: kΩ |
|---|---|---|---|
| | | Temperature: °C (°F) | |
| 1 | 2 | –15 (5) | 10.92 |
| | | –10 (14) | 8.24 |
| | | –5 (23) | 6.29 |
| | | 0 (32) | 4.85 |
| | | 5 (41) | 3.77 |
| | | 10 (50) | 2.96 |
| | | 15 (59) | 2.34 |
| | | 20 (68) | 1.87 |
| | | 25 (77) | 1.50 |
| | | 30 (86) | 1.21 |
| | | 35 (95) | 0.99 |
| | | 40 (104) | 0.81 |
| | | 45 (113) | 0.67 |

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace intake sensor. Refer to HAC-188, "Removal and Installation".

# B262A, B262B, B2657, B2658 EXHAUST GAS/OUTSIDE ODOR DETECTING SENSOR

## DTC Logic

INFOID:0000000008143896

### DTC DETECTION LOGIC

**NOTE:**

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-72, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-73, "DTC Logic".

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B262A | GAS SENSOR | Exhaust gas/outside odor detecting sensor duty ratio 15% or less. | • Exhaust gas/outside odor detecting sensor<br>• A/C auto amp.<br>• Harness or connectors (The sensor circuit is open or shorted.) |
| B262B | | Exhaust gas/outside odor detecting sensor duty ratio 85% or more. | |
| B2657 | GAS SENSOR CIRCUIT | Exhaust gas/outside odor detecting sensor duty ratio 0%. | |
| B2658 | | Exhaust gas/outside odor detecting sensor duty ratio 100%. | |

### DTC CONFIRMATION PROCEDURE

#### 1. PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to HAC-83, "Diagnosis Procedure".
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000008143897

#### 1. CHECK FUSE

1. Turn ignition switch OFF.
2. Check 10A fuse [No. 3, located in fuse block (J/B)]
   **NOTE:**
   Refer to PG-43, "Fuse and Fusible Link Arrangement".

Is the inspection result normal?

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

#### 2. CHECK EXHAUST GAS/OUTSIDE ODOR DETECTING SENSOR POWER SUPPLY

1. Disconnect exhaust gas/outside odor detecting sensor connector.
2. Turn ignition switch ON.
3. Check voltage between exhaust gas/outside odor detecting sensor harness connector and ground.

| + | | − | Voltage (Approx.) |
|---|---|---|---|
| Exhaust gas/outside odor detecting sensor | | | |
| Connector | Terminal | | |
| E74 | 1 | Ground | Battery voltage |

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair harness or connector between exhaust gas/outside odor detecting sensor and fuse.

## 3. CHECK EXHAUST GAS/OUTSIDE ODOR DETECTING SENSOR GROUND CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Check continuity between exhaust gas/outside odor detecting sensor harness connector and ground.

| Exhaust gas/outside odor detecting sensor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E74 | 2 | Ground | Existed |

Is the inspection result normal?

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

## 4. CHECK EXHAUST GAS/OUTSIDE ODOR DETECTING SENSOR SIGNAL CIRCUIT

1. Turn ignition switch ON.
2. Check voltage between exhaust gas/outside odor detecting sensor harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Exhaust gas/outside odor detecting sensor | | | |
| Connector | Terminal | | |
| E74 | 3 | Ground | 5 V |

Is the inspection result normal?

YES >> Replace exhaust gas/outside odor detecting sensor. Refer to HAC-190, "Removal and Installation".
NO >> GO TO 5.

## 5. CHECK EXHAUST GAS/OUTSIDE ODOR DETECTING SENSOR SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp.connector.
3. Check continuity between exhaust gas/outside odor detecting sensor harness connector and A/C auto amp. harness connector.

| Exhaust gas/outside odor detecting sensor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| E74 | 3 | M67 | 30 | Existed |

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair harness or connector.

## 6. CHECK EXHAUST GAS/OUTSIDE ODOR DETECTING SENSOR INPUT SIGNAL CIRCUIT FOR SHORT

Check continuity between exhaust gas/outside odor detecting sensor harness connector and ground.

| Exhaust gas/outside odor detecting sensor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E74 | 3 | Ground | Not existed |

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".
NO >> Repair harness or connector.

# B2630, B2631 SUNLOAD SENSOR

## DTC Logic

INFOID:0000000008143898

### DTC DETECTION LOGIC

**NOTE:**

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-72, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-73, "DTC Logic".
- Sunload sensor may register a malfunction when indoors, at dusk, or at other times when light is insufficient. When performing the diagnosis indoors, use a lamp (60 W or more) that is pointed at the sunload sensor.

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B2630 | SUNLOAD SENSOR | Detected calorie at sunload sensor 4793 W/m$^2$ (4121 kcal/m$^2$·h) or more. | • Sunload sensor<br>• A/C auto amp.<br>• Harness or connectors (The sensor circuit is open or shorted.) |
| B2631 | | Detected calorie at sunload sensor 75.6 W/m$^2$ (64.97 kcal/m$^2$·h) or less. | |

### DTC CONFIRMATION PROCEDURE

#### 1. PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to HAC-85, "Diagnosis Procedure".
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000008143899

#### 1. CHECK SUNLOAD SENSOR POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect sunload sensor connector.
3. Turn ignition switch ON.
4. Check voltage between sunload sensor harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Sunload sensor | | | |
| Connector | Terminal | | |
| M46 | 3 | Ground | 5 V |

Is the inspection result normal?

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

#### 2. CHECK SUNLOAD SENSOR POWER SUPPLY CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between sunload sensor harness connector and A/C auto amp. harness connector.

| Sunload sensor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M46 | 3 | M67 | 39 | Existed |

Is the inspection result normal?

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

## 3. CHECK SUNLOAD SENSOR POWER SUPPLY CIRCUIT FOR GROUND SHORT

Check continuity between sunload sensor harness connector and ground.

| Sunload sensor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M46 | 3 | Ground | Existed |

Is the inspection result normal?

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

## 4. CHECK SUNLOAD SENSOR POWER SUPPLY CIRCUIT FOR BATTERY SHORT

1. Turn ignition switch ON.
2. Check voltage between sunload sensor harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Sunload sensor | | | |
| Connector | Terminal | | |
| M46 | 3 | Ground | 0 V |

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair harness or connector.

## 5. CHECK SUNLOAD SENSOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between sunload sensor harness connector and A/C auto amp. harness connector.

| Sunload sensor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M46 | 1 | M67 | 47 | Existed |
| | 2 | | 35 | |

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair harness or connector.

## 6. CHECK SUNLOAD SENSOR

Check sunload sensor. Refer to HAC-87, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace sunload sensor. Refer to HAC-186, "Removal and Installation".

## 7. CHECK INTERMITTENT INCIDENT

Refer to GI-49, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

## Component Inspection

INFOID:0000000008143900

### 1. CHECK SUNLOAD SENSOR

1. Turn ignition switch OFF.
2. Disconnect sunload sensor connector.
3. Check resistance between the sunload sensor terminals.

| Terminal | | Condition | Resistance: kΩ |
|---|---|---|---|
| | | Sunload amount: kW/m$^2$ kcal/m$^2$·h) | |
| 1 (Passenger side)<br>2 (Driver side) | 3 | 0 | More than 17000 |
| | | 0.233 (200) | 59.9 |
| | | 0.465 (400) | 49.9 |
| | | 0.698 (600) | 39.9 |
| | | 0.770 (662) | 36.8 |
| | | 0.930 (800) | 29.9 |
| | | 1.163 (1,000) | 19.9 |
| | | 1.396 (1,200) | 9.8 |

**NOTE:**

- When checking indoors, use a lamp of approximately 60 W. Move the lamp towards and away from the sensor to check.
- The sunload amount produced by direct sunshine fair weather is equivalent to approximately 0.77 kW/m$^2$ (662 kcal/m$^2$·h).

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace sunload sensor. Refer to HAC-186, "Removal and Installation".

# B2750, B2751, B2752 AIR MIX DOOR MOTOR (DRIVER SIDE)

## DTC Logic

INFOID:0000000008143901

### DTC DETECTION LOGIC

**NOTE:**

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-72, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-73, "DTC Logic".
- If all of door motors DTC (B2750 – B276A) are detected, check door motor PBR power supply and ground circuit. Refer to HAC-153, "DOOR MOTOR PBR (WITH FOREST AIR) : Diagnosis Procedure" (With Forest Air).
- If all of door motors DTC (B2750 – B2764) are detected, check door motor PBR power supply and ground circuit. Refer to HAC-155, "DOOR MOTOR PBR (WITHOUT FOREST AIR) : Diagnosis Procedure" (Without Forest Air).

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B2750 | DR AIR MIX DOOR MOT | Air mix door motor (driver side) PBR feedback signal voltage is too low. | • Air mix door motor (driver side)<br>• Air mix door motor (driver side) control linkage installation condition<br>• A/C auto amp.<br>• Harness or connectors (The motor circuit is open or shorted.) |
| B2751 | | Air mix door motor (driver side) PBR feedback signal voltage is too high. | |
| B2752 | | Stop position of air mix door motor (driver side) is malfunctioning. | |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to HAC-88, "Diagnosis Procedure".
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000008143902

#### 1.CHECK AIR MIX DOOR MOTOR (DRIVER SIDE) OPERATION

1. Turn ignition switch ON.
2. Operate temperature control switch (driver side) and check by operation sound that air mix door motor (driver side) operates.

Is the inspection result normal?

YES >> GO TO 8.
NO >> GO TO 2.

#### 2.CHECK AIR MIX DOOR MOTOR (DRIVER SIDE) DRIVE SIGNAL

Check voltage between air mix door motor (LH) harness connector and ground.

| + | | – | Condition | | Voltage (Approx.) |
|---|---|---|---|---|---|
| Air mix door motor (LH) | | | | | |
| Connector | Terminal | | | | |
| M315 | 1 | Ground | Set temperature (driver side) | 18°C (60°F) → 32°C (90°F) | 12 V |
| | 2 | | | 32°C (90°F) → 18°C (60°F) | |

Is the inspection result normal?

YES >> GO TO 6.
NO >> GO TO 3.

## 3. CHECK AIR MIX DOOR MOTOR (DRIVER SIDE) DRIVE SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect air mix door motor LH harness connector and A/C auto amp. harness connector.
3. Check continuity between air mix door motor LH harness connector and A/C auto amp. harness connector.

| Air mix door motor LH | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M315 | 1 | M304 | 81 | Existed |
| | 2 | | 61 | |

Is the inspection result normal?

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

## 4. CHECK AIR MIX DOOR MOTOR (DRIVER SIDE) DRIVE SIGNAL CIRCUIT FOR GROUND SHORT

Check continuity between air mix door motor LH harness connector and ground.

| Air mix door motor LH | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M315 | 1 | Ground | Not existed |
| | 2 | | |

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair harness or connector.

## 5. CHECK AIR MIX DOOR MOTOR (DRIVER SIDE) DRIVE SIGNAL CIRCUIT FOR BATTERY SHORT

1. Turn ignition switch ON.
2. Check voltage between air mix door motor LH harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Air mix door motor LH | | | |
| Connector | Terminal | | |
| M315 | 1 | Ground | 0 V |
| | 2 | | |

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair harness or connector.

## 6. CHECK AIR MIX DOOR MOTOR (DRIVER SIDE)

Check air mix door motor (driver side). Refer to HAC-91, "Component Inspection (Motor)".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace air mix door motor (driver side). Refer to HAC-192, "AIR MIX DOOR MOTOR : Removal and Installation".

## 7. CHECK INSTALLATION OF AIR MIX DOOR MOTOR (DRIVER SIDE) CONTROL LINKAGE

Check air mix door motor (driver side) control linkage is properly installed. Refer to HAC-191, "Exploded View".

Is the inspection result normal?

YES >> GO TO 15.

NO >> Repair or replace malfunctioning parts.

## 8. CHECK AIR MIX DOOR MOTOR (DRIVER SIDE) PBR FEEDBACK SIGNAL

Operate temperature control switch (driver side) and check by voltage between A/C auto amp. harness connector and ground.

| + | | – | Condition | | Voltage (Approx.) |
|---|---|---|---|---|---|
| A/C auto amp. | | | | | |
| Connector | Terminal | | | | |
| M304 | 53 | Ground | Set temperature (driver side) | 18°C (60°F) | 4 V |
| | | | | 32°C (90°F) | 1 V |

Is the inspection result normal?

YES >> GO TO 15.
NO >> GO TO 9.

## 9. CHECK AIR MIX DOOR MOTOR (DRIVER SIDE) PBR FEEDBACK SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect air mix door motor LH harness connector and A/C auto amp. harness connector.
3. Check continuity between air mix door motor LH harness connector and A/C auto amp. harness connector.

| Air mix door motor LH | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M315 | 3 | M304 | 53 | Existed |

Is the inspection result normal?

YES >> GO TO 10.
NO >> Repair harness or connector.

## 10. CHECK AIR MIX DOOR MOTOR (DRIVER SIDE) PBR FEEDBACK SIGNAL CIRCUIT FOR SHORT

Check continuity between air mix door motor LH harness connector and ground.

| Air mix door motor LH | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M315 | 3 | Ground | Not existed |

Is the inspection result normal?

YES >> GO TO 11.
NO >> Repair harness or connector.

## 11. CHECK AIR MIX DOOR MOTOR (DRIVER SIDE) PBR POWER SUPPLY

1. Reconnect A/C auto amp. harness connector.
2. Turn ignition switch ON.
3. Check voltage between air mix door motor LH harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Air mix door motor LH | | | |
| Connector | Terminal | | |
| M315 | 7 | Ground | 5 V |

Is the inspection result normal?

YES >> GO TO 13.
NO >> GO TO 12.

## 12. CHECK AIR MIX DOOR MOTOR (DRIVER SIDE) PBR POWER SUPPLY CIRCUIT FOR OPEN

1. Turn ignition switch OFF.

2. Disconnect A/C auto amp. harness connector.
3. Check continuity between air mix door motor LH harness connector and A/C auto amp. harness connector.

| Air mix door motor LH | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M315 | 7 | M304 | 71 | Existed |

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair harness or connector.

## 13. CHECK AIR MIX DOOR MOTOR (DRIVER SIDE) PBR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. harness connector.
3. Check continuity between air mix door motor LH harness connector and A/C auto amp. harness connector.

| Air mix door motor LH | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M315 | 5 | M304 | 79 | Existed |

Is the inspection result normal?

YES >> GO TO 14.
NO >> Repair harness or connector.

## 14. CHECK AIR MIX DOOR MOTOR (DRIVER SIDE) PBR

Check air mix door motor (driver side) PBR. Refer to HAC-92, "Component Inspection (PBR)".

Is the inspection result normal?

YES >> GO TO 15.
NO >> Replace air mix door motor (driver side). Refer to HAC-192, "AIR MIX DOOR MOTOR : Removal and Installation".

## 15. CHECK INTERMITTENT INCIDENT

Refer to GI-49, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

# Component Inspection (Motor)

INFOID:0000000008143903

## 1. CHECK AIR MIX DOOR MOTOR (DRIVER SIDE)

1. Turn ignition switch OFF.
2. Disconnect the air mix door motor LH harness connector.
3. Supply air mix door motor (driver side) terminals with battery voltage and check by visually and operation sound that air mix door motor (driver side) operates.

| Terminal | | Operation direction |
|---|---|---|
| + | – | |
| 1 | 2 | Full hot |
| 2 | 1 | Full cold |

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace air mix door motor (driver side). Refer to HAC-192, "AIR MIX DOOR MOTOR : Removal and Installation".

## Component Inspection (PBR)

INFOID:0000000008143904

### 1. CHECK AIR MIX DOOR MOTOR (DRIVER SIDE) PBR

Check resistance between air mix door motor (driver side) PBR terminals.

| Terminal | | Resistance (Ω) |
|---|---|---|
| 5 | 3 | Except 0 or ∞ |
| | 7 | |

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace air mix door motor (driver side). Refer to HAC-192, "AIR MIX DOOR MOTOR : Removal and Installation".

# B2753, B2754, B2755 AIR MIX DOOR MOTOR (PASSENGER SIDE)

## DTC Logic

INFOID:0000000008143905

### DTC DETECTION LOGIC

**NOTE:**

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-72, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-73, "DTC Logic".
- If all of door motors DTC (B2750 – B276A) are detected, check door motor PBR power supply and ground circuit. Refer to HAC-153, "DOOR MOTOR PBR (WITH FOREST AIR) : Diagnosis Procedure" (With Forest Air).
- If all of door motors DTC (B2750 – B2764) are detected, check door motor PBR power supply and ground circuit. Refer to HAC-155, "DOOR MOTOR PBR (WITHOUT FOREST AIR) : Diagnosis Procedure" (Without Forest Air).

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B2753 | PASS AIR MIX DOOR MOT | Air mix door motor (passenger side) PBR feedback signal voltage is too low. | • Air mix door motor (passenger side)<br>• Air mix door motor (passenger side) control linkage installation condition<br>• A/C auto amp.<br>• Harness or connectors (The motor circuit is open or shorted.) |
| B2754 | | Air mix door motor (passenger side) PBR feedback signal voltage is too high. | |
| B2755 | | Stop position of air mix door motor (passenger side) is malfunctioning. | |

### DTC CONFIRMATION PROCEDURE

#### 1. PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to HAC-93, "Diagnosis Procedure".
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000008143906

#### 1. CHECK AIR MIX DOOR MOTOR (PASSENGER SIDE) OPERATION

1. Turn ignition switch ON.
2. Operate temperature control switch (passenger side) and check by operation sound that air mix door motor (passenger side) operates.

Is the inspection result normal?

YES >> GO TO 8.
NO >> GO TO 2.

#### 2. CHECK AIR MIX DOOR MOTOR (PASSENGER SIDE) DRIVE SIGNAL

Check voltage between air mix door motor RH harness connector and ground.

| + | | – | Condition | | Voltage (Approx.) |
|---|---|---|---|---|---|
| Air mix door motor RH | | | | | |
| Connector | Terminal | | | | |
| M306 | 1 | Ground | Set temperature (passenger side) | 18°C (60°F) → 32°C (90°F) | 12 V |
| | 2 | | | 32°C (90°F) → 18°C (60°F) | |

Is the inspection result normal?

YES >> GO TO 6.
NO >> GO TO 3.

## 3. CHECK AIR MIX DOOR MOTOR (PASSENGER SIDE) DRIVE SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect air mix door motor RH harness connector and A/C auto amp. harness connector.
3. Check continuity between air mix door motor RH harness connector and A/C auto amp. harness connector.

| Air mix door motor RH | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M306 | 1 | M304 | 67 | Existed |
| | 2 | | 87 | |

Is the inspection result normal?

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

## 4. CHECK AIR MIX DOOR MOTOR (PASSENGER SIDE) DRIVE SIGNAL CIRCUIT FOR GROUND SHORT

Check continuity between air mix door motor RH harness connector and ground.

| Air mix door motor RH | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M306 | 1 | Ground | Not existed |
| | 2 | | |

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair harness or connector.

## 5. CHECK AIR MIX DOOR MOTOR (PASSENGER SIDE) DRIVE SIGNAL CIRCUIT FOR BATTERY SHORT

1. Turn ignition switch ON.
2. Check voltage between air mix door motor RH harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Air mix door motor RH | | | |
| Connector | Terminal | | |
| M315 | 1 | Ground | 0 V |
| | 2 | | |

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair harness or connector.

## 6. CHECK AIR MIX DOOR MOTOR (PASSENGER SIDE)

Check air mix door motor (passenger side). Refer to HAC-96, "Component Inspection (Motor)".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace air mix door motor (passenger side). Refer to HAC-192, "AIR MIX DOOR MOTOR : Removal and Installation".

## 7. CHECK INSTALLATION OF AIR MIX DOOR MOTOR (PASSENGER SIDE) CONTROL LINKAGE

Check air mix door motor (passenger side) control linkage is properly installed. Refer to HAC-191, "Exploded View".

Is the inspection result normal?

YES >> GO TO 15.

NO >> Repair or replace malfunctioning parts.

## 8. CHECK AIR MIX DOOR MOTOR (PASSENGER SIDE) PBR FEEDBACK SIGNAL

Operate temperature control switch (passenger side) and check by voltage between A/C auto amp. harness connector and ground.

| + | | – | Condition | | Voltage (Approx.) |
|---|---|---|---|---|---|
| A/C auto amp. | | | | | |
| Connector | Terminal | | | | |
| M304 | 74 | Ground | Set temperature (passenger side) | 18°C (60°F) | 4 V |
| | | | | 32°C (90°F) | 1 V |

Is the inspection result normal?

YES >> GO TO 15.
NO >> GO TO 9.

## 9. CHECK AIR MIX DOOR MOTOR (PASSENGER SIDE) PBR FEEDBACK SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect air mix door motor RH harness connector and A/C auto amp. harness connector.
3. Check continuity between air mix door motor RH harness connector and A/C auto amp. harness connector.

| Air mix door motor RH | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M306 | 3 | M304 | 74 | Existed |

Is the inspection result normal?

YES >> GO TO 10.
NO >> Repair harness or connector.

## 10. CHECK AIR MIX DOOR MOTOR (PASSENGER SIDE) PBR FEEDBACK SIGNAL CIRCUIT FOR SHORT

Check continuity between air mix door motor RH harness connector and ground.

| Air mix door motor RH | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M306 | 3 | Ground | Not existed |

Is the inspection result normal?

YES >> GO TO 11.
NO >> Repair harness or connector.

## 11. CHECK AIR MIX DOOR MOTOR (PASSENGER SIDE) PBR POWER SUPPLY

1. Reconnect A/C auto amp. harness connector.
2. Turn ignition switch ON.
3. Check voltage between air mix door motor RH harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Air mix door motor RH | | | |
| Connector | Terminal | | |
| M306 | 7 | Ground | 5 V |

Is the inspection result normal?

YES >> GO TO 13.
NO >> GO TO 12.

## 12. CHECK AIR MIX DOOR MOTOR (PASSENGER SIDE) PBR POWER SUPPLY CIRCUIT FOR OPEN

1. Turn ignition switch OFF.

2. Disconnect A/C auto amp. harness connector.
3. Check continuity between air mix door motor RH harness connector and A/C auto amp. harness connector.

| Air mix door motor RH | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M306 | 7 | M304 | 71 | Existed |

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair harness or connector.

## 13. CHECK AIR MIX DOOR MOTOR (PASSENGER SIDE) PBR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. harness connector.
3. Check continuity between air mix door motor RH harness connector and A/C auto amp. harness connector.

| Air mix door motor RH | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M306 | 5 | M304 | 79 | Existed |

Is the inspection result normal?

YES >> GO TO 14.
NO >> Repair harness or connector.

## 14. CHECK AIR MIX DOOR MOTOR (PASSENGER SIDE) PBR

Check air mix door motor (passenger side) PBR. Refer to HAC-97, "Component Inspection (PBR)".

Is the inspection result normal?

YES >> GO TO 15.
NO >> Replace air mix door motor (passenger side). Refer to HAC-192, "AIR MIX DOOR MOTOR : Removal and Installation".

## 15. CHECK INTERMITTENT INCIDENT

Refer to GI-49, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

# Component Inspection (Motor)

INFOID:0000000008143907

## 1. CHECK AIR MIX DOOR MOTOR (PASSENGER SIDE)

1. Turn ignition switch OFF.
2. Disconnect air mix door motor RH harness connector.
3. Supply air mix door motor (passenger side) terminals with battery voltage and check by visually and operation sound that air mix door motor (passenger side) operates.

| Terminal | | Operation direction |
|---|---|---|
| + | – | |
| 1 | 2 | Full hot |
| 2 | 1 | Full cold |

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace air mix door motor (passenger side). Refer to HAC-192, "AIR MIX DOOR MOTOR : Removal and Installation".

## Component Inspection (PBR)

INFOID:0000000008143908

### 1. CHECK AIR MIX DOOR MOTOR (PASSENGER SIDE) PBR

Check resistance between air mix door motor (passenger side) PBR terminals.

| Terminal | | Resistance (Ω) |
|---|---|---|
| 5 | 3 | Except 0 or ∞ |
| | 7 | |

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace air mix door motor (passenger side). Refer to HAC-192, "AIR MIX DOOR MOTOR : Removal and Installation".

# B2756, B2757, B2758 MODE DOOR MOTOR (DRIVER SIDE)

## DTC Logic

INFOID:0000000008143909

### DTC DETECTION LOGIC

**NOTE:**

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-72, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-73, "DTC Logic".
- If all of door motors DTC (B2750 – B276A) are detected, check door motor PBR power supply and ground circuit. Refer to HAC-153, "DOOR MOTOR PBR (WITH FOREST AIR) : Diagnosis Procedure" (With Forest Air).
- If all of door motors DTC (B2750 – B2764) are detected, check door motor PBR power supply and ground circuit. Refer to HAC-155, "DOOR MOTOR PBR (WITHOUT FOREST AIR) : Diagnosis Procedure" (Without Forest Air).

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B2756 | DR MODE DOOR MOTOR | Mode door motor (driver side) PBR feedback signal voltage is too low. | • Mode door motor (driver side)<br>• Mode door motor (driver side) control linkage installation condition<br>• A/C auto amp.<br>• Harness or connectors (The motor circuit is open or shorted.) |
| B2757 | | Mode door motor (driver side) PBR feedback signal voltage is too high. | |
| B2758 | | Stop position of mode door motor (driver side) is malfunctioning. | |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to HAC-98, "Diagnosis Procedure".
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000008143910

#### 1.CHECK MODE DOOR MOTOR (DRIVER SIDE) OPERATION

1. Turn ignition switch ON.
2. Operate MODE switch (driver side) and check by operation sound that mode door motor (driver side) operates.

Is the inspection result normal?

YES >> GO TO 8.
NO >> GO TO 2.

#### 2.CHECK MODE DOOR MOTOR (DRIVER SIDE) DRIVE SIGNAL

1. Press MODE switch (driver side) and DEF switch.
2. Check voltage between mode door motor LH harness connector and ground.

| + | | – | Condition | | Voltage (Approx.) |
|---|---|---|---|---|---|
| Mode door motor LH | | | | | |
| Connector | Terminal | | | | |
| M316 (with Forest Air)<br>M317 (without Forest Air) | 1 | Ground | Air outlet | DEF → VENT | 12 V |
| | 2 | | | VENT → DEF | |

Is the inspection result normal?

YES >> GO TO 6.
NO >> GO TO 3.

## 3. CHECK MODE DOOR MOTOR (DRIVER SIDE) DRIVE SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect mode door motor LH harness connector and A/C auto amp. harness connector.
3. Check continuity between mode door motor LH harness connector and A/C auto amp. harness connector.

| Mode door motor LH | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M316 (with Forest Air)<br>M317 (without Forest Air) | 1 | M304 | 63 | Existed |
| | 2 | | 83 | |

Is the inspection result normal?

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

## 4. CHECK MODE DOOR MOTOR (DRIVER SIDE) DRIVE SIGNAL CIRCUIT FOR GROUND SHORT

Check continuity between mode door motor LH harness connector and ground.

| Mode door motor LH | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M316 (with Forest Air)<br>M317 (without Forest Air) | 1 | Ground | Not existed |
| | 2 | | |

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair harness or connector.

## 5. CHECK MODE DOOR MOTOR (DRIVER SIDE) DRIVE SIGNAL CIRCUIT FOR BATTERY SHORT

1. Turn ignition switch ON.
2. Check voltage between mode door motor LH harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Mode door motor LH | | | |
| Connector | Terminal | | |
| M316 (with Forest Air)<br>M317 (without Forest Air) | 1 | Ground | 0 V |
| | 2 | | |

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair harness or connector.

## 6. CHECK MODE DOOR MOTOR (DRIVER SIDE)

Check mode door motor (driver side). Refer to HAC-101, "Component Inspection (Motor)".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace mode door motor (driver side). Refer to HAC-191, "MODE DOOR MOTOR : Removal and Installation".

## 7. CHECK INSTALLATION OF MODE DOOR MOTOR (DRIVER SIDE) CONTROL LINKAGE

Check mode door motor (driver side) control linkage is properly installed. Refer to HAC-191, "Exploded View".

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair or replace malfunctioning parts.

## 8. CHECK MODE DOOR MOTOR (DRIVER SIDE) PBR FEEDBACK SIGNAL

1. Operate MODE switch (driver side) and DEF switch.
2. Check voltage between A/C auto amp. harness connector and ground.

| + | | – | Condition | | Voltage (Approx.) |
|---|---|---|---|---|---|
| A/C auto amp. | | | | | |
| Connector | Terminal | | | | |
| M304 | 54 | Ground | Air outlet | VENT | 4 V |
| | | | | DEF | 1 V |

Is the inspection result normal?

YES >> GO TO 15.
NO >> GO TO 9.

## 9. CHECK MODE DOOR MOTOR (DRIVER SIDE) PBR FEEDBACK SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect mode door motor LH harness connector and A/C auto amp. harness connector.
3. Check continuity between mode door motor LH harness connector and A/C auto amp. harness connector.

| Mode door motor LH | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M316 (with Forest Air)<br>M317 (without Forest Air) | 3 | M304 | 54 | Existed |

Is the inspection result normal?

YES >> GO TO 10.
NO >> Repair harness or connector.

## 10. CHECK MODE DOOR MOTOR (DRIVER SIDE) PBR FEEDBACK SIGNAL CIRCUIT FOR SHORT

Check continuity between mode door motor LH harness connector and ground.

| Mode door motor LH | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M316 (with Forest Air)<br>M317 (without Forest Air) | 3 | Ground | Not existed |

Is the inspection result normal?

YES >> GO TO 11.
NO >> Repair harness or connector.

## 11. CHECK MODE DOOR MOTOR (DRIVER SIDE) PBR POWER SUPPLY

1. Reconnect A/C auto amp. harness connector.
2. Turn ignition switch ON.
3. Check voltage between mode door motor LH harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Mode door motor LH | | | |
| Connector | Terminal | | |
| M316 (with Forest Air) | 4 | Ground | 5 V |
| M317 (without Forest Air) | 5 | | |

Is the inspection result normal?

YES >> GO TO 13.
NO >> GO TO 12.

## 12. CHECK MODE DOOR MOTOR (DRIVER SIDE) PBR POWER SUPPLY CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. harness connector.
3. Check continuity between mode door motor LH harness connector and A/C auto amp. harness connector.

| Mode door motor LH | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M316 (with Forest Air) | 4 | M304 | 71 | Existed |
| M317 (without Forest Air) | 5 | | | |

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair harness or connector.

## 13. CHECK MODE DOOR MOTOR (DRIVER SIDE) PBR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. harness connector.
3. Check continuity between mode door motor LH harness connector and A/C auto amp. harness connector.

| Mode door motor LH | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M316 (with Forest Air) | 5 | M304 | 79 | Existed |
| M317 (without Forest Air) | 7 | | | |

Is the inspection result normal?

YES >> GO TO 14.
NO >> Repair harness or connector.

## 14. CHECK MODE DOOR MOTOR (DRIVER SIDE) PBR

Check mode door motor (driver side) PBR. Refer to HAC-102, "Component Inspection (PBR)".

Is the inspection result normal?

YES >> GO TO 15.
NO >> Replace mode door motor (driver side). Refer to HAC-191, "MODE DOOR MOTOR : Removal and Installation".

## 15. CHECK INTERMITTENT INCIDENT

Refer to GI-49, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

# Component Inspection (Motor)

INFOID:0000000008143911

## 1. CHECK MODE DOOR MOTOR (DRIVER SIDE)

1. Turn ignition switch OFF.
2. Disconnect the mode door motor LH harness connector.
3. Supply mode door motor (driver side) terminals with battery voltage and check by visually and operation sound that mode door motor (driver side) operates.

| Terminal | | Operation direction |
|---|---|---|
| + | – | |
| 1 | 2 | VENT |
| 2 | 1 | DEF |

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace mode door motor (driver side). Refer to HAC-191, "MODE DOOR MOTOR : Removal and Installation".

## Component Inspection (PBR)

INFOID:0000000008143912

### 1. CHECK MODE DOOR MOTOR (DRIVER SIDE) PBR

Check resistance between mode door motor (driver side) PBR terminals.

| Terminal | | Resistance (Ω) |
|---|---|---|
| 5 (with Forest Air) | 3 | Except 0 or ∞ |
| | 4 | |
| 7 (without Forest Air) | 3 | |
| | 5 | |

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace mode door motor (driver side). Refer to HAC-192, "AIR MIX DOOR MOTOR : Removal and Installation".

# B2759, B275A, B275B MODE DOOR MOTOR (PASSENGER SIDE)

## DTC Logic

INFOID:0000000008143913

### DTC DETECTION LOGIC

**NOTE:**

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-72, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-73, "DTC Logic".
- If all of door motors DTC (B2750 – B276A) are detected, check door motor PBR power supply and ground circuit. Refer to HAC-153, "DOOR MOTOR PBR (WITH FOREST AIR) : Diagnosis Procedure" (With Forest Air).
- If all of door motors DTC (B2750 – B2764) are detected, check door motor PBR power supply and ground circuit. Refer to HAC-155, "DOOR MOTOR PBR (WITHOUT FOREST AIR) : Diagnosis Procedure" (Without Forest Air).

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B2759 | PASS MODE DOOR MOT | Mode door motor (passenger side) PBR feedback signal voltage is too low. | • Mode door motor (passenger side)<br>• Mode door motor (passenger side) control linkage installation condition<br>• A/C auto amp.<br>• Harness or connectors (The motor circuit is open or shorted.) |
| B275A | | Mode door motor (passenger side) PBR feedback signal voltage is too high. | |
| B275B | | Stop position of mode door motor (passenger side) is malfunctioning. | |

### DTC CONFIRMATION PROCEDURE

#### 1. PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to HAC-103, "Diagnosis Procedure".
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000008143914

#### 1. CHECK MODE DOOR MOTOR (PASSENGER SIDE) OPERATION

1. Turn ignition switch ON.
2. Operate MODE switch (driver side) and DEF switch.
   **NOTE:**
   “DUAL”: OFF
3. Check operation sound that mode door motor (passenger side) operates.

Is the inspection result normal?

YES >> GO TO 8.
NO >> GO TO 2.

#### 2. CHECK MODE DOOR MOTOR (PASSENGER SIDE) DRIVE SIGNAL

1. Press MODE switch (driver side) and DEF switch.
   **NOTE:**
   “DUAL”: OFF
2. Check voltage between mode door motor RH harness connector and ground.

| + | | – | Condition | | Voltage (Approx.) |
|---|---|---|---|---|---|
| Mode door motor RH | | | | | |
| Connector | Terminal | | | | |
| M307 (with Forest Air) M308 (without Forest Air) | 1 | Ground | Air outlet | DEF → VENT | 12 V |
| | 2 | | | VENT → DEF | |

Is the inspection result normal?

YES >> GO TO 6.
NO >> GO TO 3.

## 3. CHECK MODE DOOR MOTOR (PASSENGER SIDE) DRIVE SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect mode door motor RH harness connector and A/C auto amp. harness connector.
3. Check continuity between mode door motor RH harness connector and A/C auto amp. harness connector.

| Mode door motor RH | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M307 (with Forest Air) M308 (without Forest Air) | 1 | M304 | 64 | Existed |
| | 2 | | 84 | |

Is the inspection result normal?

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

## 4. CHECK MODE DOOR MOTOR (PASSENGER SIDE) DRIVE SIGNAL CIRCUIT FOR GROUND SHORT

Check continuity between mode door motor RH harness connector and ground.

| Mode door motor RH | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M307 (with Forest Air) M308 (without Forest Air) | 1 | Ground | Not existed |
| | 2 | | |

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair harness or connector.

## 5. CHECK MODE DOOR MOTOR (PASSENGER SIDE) DRIVE SIGNAL CIRCUIT FOR BATTERY SHORT

1. Turn ignition switch ON.
2. Check voltage between mode door motor RH harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Mode door motor RH | | | |
| Connector | Terminal | | |
| M307 (with Forest Air) M308 (without Forest Air) | 1 | Ground | 0 V |
| | 2 | | |

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair harness or connector.

## 6. CHECK MODE DOOR MOTOR (PASSENGER SIDE)

Check mode door motor (passenger side). Refer to HAC-107, "Component Inspection (Motor)".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace mode door motor (passenger side). Refer to HAC-191, "MODE DOOR MOTOR : Removal and Installation".

## 7. CHECK INSTALLATION OF MODE DOOR MOTOR (PASSENGER SIDE) CONTROL LINKAGE

Check mode door motor (passenger side) control linkage is properly installed. Refer to HAC-191, "Exploded View".

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair or replace malfunctioning parts.

## 8. CHECK MODE DOOR MOTOR (PASSENGER SIDE) PBR FEEDBACK SIGNAL

1. Operate MODE switch (driver side) and DEF switch.
   **NOTE:**
   "DUAL": OFF
2. Check voltage between A/C auto amp. harness connector and ground.

| + | | – | Condition | | Voltage (Approx.) |
|---|---|---|---|---|---|
| A/C auto amp. | | | | | |
| Connector | Terminal | | | | |
| M304 | 73 | Ground | Air outlet | VENT | 4 V |
| | | | | DEF | 1 V |

Is the inspection result normal?

YES >> GO TO 15.
NO >> GO TO 9.

## 9. CHECK MODE DOOR MOTOR (PASSENGER SIDE) PBR FEEDBACK SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect mode door motor RH harness connector and A/C auto amp. harness connector.
3. Check continuity between mode door motor RH harness connector and A/C auto amp. harness connector.

| Mode door motor RH | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M307 (with Forest Air)<br>M308 (without Forest Air) | 3 | M304 | 73 | Existed |

Is the inspection result normal?

YES >> GO TO 10.
NO >> Repair harness or connector.

## 10. CHECK MODE DOOR MOTOR (PASSENGER SIDE) PBR FEEDBACK SIGNAL CIRCUIT FOR SHORT

Check continuity between mode door motor RH harness connector and ground.

| Mode door motor RH | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M307 (with Forest Air)<br>M308 (without Forest Air) | 3 | Ground | Not existed |

Is the inspection result normal?

YES >> GO TO 11.
NO >> Repair harness or connector.

## 11. CHECK MODE DOOR MOTOR (PASSENGER SIDE) PBR POWER SUPPLY

1. Reconnect A/C auto amp. harness connector.
2. Turn ignition switch ON.
3. Check voltage between mode door motor RH harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Mode door motor RH | | | |
| Connector | Terminal | | |
| M307 (with Forest Air) | 4 | Ground | 5 V |
| M308 (without Forest Air) | 5 | | |

Is the inspection result normal?

YES >> GO TO 13.
NO >> GO TO 12.

## 12. CHECK MODE DOOR MOTOR (PASSENGER SIDE) PBR POWER SUPPLY CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. harness connector.
3. Check continuity between mode door motor RH harness connector and A/C auto amp. harness connector.

| Mode door motor RH | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M307 (with Forest Air) | 4 | M304 | 71 | Existed |
| M308 (without Forest Air) | 5 | | | |

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair harness or connector.

## 13. CHECK MODE DOOR MOTOR (PASSENGER SIDE) PBR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. harness connector.
3. Check continuity between mode door motor RH harness connector and A/C auto amp. harness connector.

| Mode door motor RH | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M307 (with Forest Air) | 5 | M304 | 79 | Existed |
| M308 (without Forest Air) | 7 | | | |

Is the inspection result normal?

YES >> GO TO 14.
NO >> Repair harness or connector.

## 14. CHECK MODE DOOR MOTOR (PASSENGER SIDE) PBR

Check mode door motor (passenger side) PBR. Refer to HAC-107, "Component Inspection (PBR)".

Is the inspection result normal?

YES >> GO TO 15.
NO >> Replace mode door motor (passenger side). Refer to HAC-191, "MODE DOOR MOTOR : Removal and Installation".

## 15. CHECK INTERMITTENT INCIDENT

Refer to GI-49, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

## Component Inspection (Motor)

INFOID:0000000008143915

### 1. CHECK MODE DOOR MOTOR (PASSENGER SIDE)

1. Turn ignition switch OFF.
2. Disconnect mode door motor RH harness connector.
3. Supply mode door motor (passenger side) terminals with battery voltage and check by visually and operation sound that mode door motor (passenger side) operates.

| Terminal | | Operation direction |
|---|---|---|
| + | – | |
| 1 | 2 | VENT |
| 2 | 1 | DEF |

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace mode door motor (passenger side). Refer to HAC-191, "MODE DOOR MOTOR : Removal and Installation".

## Component Inspection (PBR)

INFOID:0000000008143916

### 1. CHECK MODE DOOR MOTOR (PASSENGER SIDE) PBR

Check resistance between mode door motor (passenger side) PBR terminals.

| Terminal | | Resistance (Ω) |
|---|---|---|
| 5 (with Forest Air) | 3 | Except 0 or ∞ |
| | 4 | |
| 7 (without Forest Air) | 3 | |
| | 5 | |

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace mode door motor (passenger side). Refer to HAC-192, "AIR MIX DOOR MOTOR : Removal and Installation".

# B275C, B275D, B275E INTAKE DOOR MOTOR

## DTC Logic

INFOID:0000000008143917

### DTC DETECTION LOGIC

**NOTE:**

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-72, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-73, "DTC Logic".
- If all of door motors DTC (B2750 – B276A) are detected, check door motor PBR power supply and ground circuit. Refer to HAC-153, "DOOR MOTOR PBR (WITH FOREST AIR) : Diagnosis Procedure" (With Forest Air).
- If all of door motors DTC (B2750 – B2764) are detected, check door motor PBR power supply and ground circuit. Refer to HAC-155, "DOOR MOTOR PBR (WITHOUT FOREST AIR) : Diagnosis Procedure" (Without Forest Air).

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B275C | INTAKE DOOR MOTOR | Intake door motor PBR feedback signal voltage is too low. | • Intake door motor<br>• Intake door motor control linkage installation condition<br>• A/C auto amp.<br>• Harness or connectors (The motor circuit is open or shorted.) |
| B275D | | Intake door motor PBR feedback signal voltage is too high. | |
| B275E | | Stop position of intake door motor is malfunctioning. | |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to HAC-108, "Diagnosis Procedure".
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000008143918

#### 1.CHECK INTAKE DOOR MOTOR OPERATION

1. Turn ignition switch ON.
2. Operate FRE switch and REC switch (with Forest Air) or intake switch (without Forest Air).
3. Listen to intake sound and confirm air inlets change.

Does it operate normally?

YES >> GO TO 8.
NO >> GO TO 2.

#### 2.CHECK INTAKE DOOR MOTOR DRIVE SIGNAL

1. Operate FRE switch and REC switch (with Forest Air) or intake switch (without Forest Air).
2. Check voltage between intake door motor harness connector and ground.

| + | | – | Condition | | Voltage (Approx.) |
|---|---|---|---|---|---|
| Intake door motor | | | | | |
| Connector | Terminal | | | | |
| M310 (without Forest Air) | 1 | Ground | Inlet duct | REC → FRE | 12 V |
| | 2 | | | FRE → REC | |
| M309 (with Forest Air) | 1 | | | REC → FRE | |
| | 2 | | | FRE → REC | |

Is the inspection result normal?

YES >> GO TO 6.
NO >> GO TO 3.

## 3.CHECK INTAKE DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Disconnect intake door motor connector.
4. Check continuity between intake door motor harness connector and A/C auto amp. harness connector.

| Intake door motor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M310 (without Forest Air) | 1 | M304 | 85 | Existed |
| | 2 | | 65 | |
| M309 (with Forest Air) | 1 | | 85 | |
| | 2 | | 65 | |

Is the inspection result normal?

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

## 4.CHECK INTAKE DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR GROUND SHORT

Check continuity between intake door motor harness connector and ground.

| Intake door motor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M310 (without Forest Air) | 1 | Ground | Not existed |
| | 2 | | |
| M309 (with Forest Air) | 1 | | |
| | 2 | | |

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair harness or connector.

## 5.CHECK INTAKE DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR BATTERY SHORT

1. Turn ignition switch ON.
2. Check voltage between intake door motor harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Intake door motor | | | |
| Connector | Terminal | | |
| M310 (without Forest Air) | 1 | Ground | 0 V |
| | 2 | | |
| M309 (with Forest Air) | 1 | | |
| | 2 | | |

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair harness or connector.

## 6.CHECK INTAKE DOOR MOTOR

Check intake door motor. Refer to HAC-112, "Component Inspection (Motor)".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace intake door motor. Refer to HAC-192, "INTAKE DOOR MOTOR : Removal and Installation".

## 7.CHECK INSTALLATION OF INTAKE DOOR MOTOR CONTROL LINKAGE

Check intake door motor control linkage is properly installed. Refer to HAC-191, "Exploded View".

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair or replace malfunctioning parts.

## 8.CHECK INTAKE DOOR MOTOR PBR FEEDBACK SIGNAL

1. Operate FRE switch and REC switch (with Forest Air) or intake switch (without Forest Air).
2. Check voltage between A/C auto amp. harness connector and ground.

| + | | – | Condition | | Voltage (Approx.) |
|---|---|---|---|---|---|
| A/C auto amp. | | | | | |
| Connector | Terminal | | | | |
| M304 | 55 | Ground | Inlet duct | REC | 4 V |
| | | | | FRE | 1 V |

Is the inspection result normal?

YES >> GO TO 15.
NO >> GO TO 9.

## 9.CHECK INTAKE DOOR MOTOR PBR FEEDBACK SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Disconnect intake door motor connector.
4. Check continuity between intake door motor harness connector and A/C auto amp. harness connector.

| Intake door motor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M310 (without Forest Air) | 3 | M304 | 55 | Existed |
| M309 (with Forest Air) | | | | |

Is the inspection result normal?

YES >> GO TO 10.
NO >> Repair harness or connector.

## 10. CHECK INTAKE DOOR MOTOR PBR FEEDBACK SIGNAL CIRCUIT FOR SHORT

Check continuity between intake door motor harness connector and ground.

| Intake door motor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M310 (without Forest Air) | 3 | Ground | Not existed |
| M309 (with Forest Air) | | | |

Is the inspection result normal?

YES >> GO TO 11.
NO >> Repair harness or connector.

## 11. CHECK INTAKE DOOR MOTOR PBR POWER SUPPLY

1. Connect A/C auto amp. connector.
2. Turn ignition switch ON.
3. Check voltage between intake door motor harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Intake door motor | | | |
| Connector | Terminal | | |
| M310 (without Forest Air) | 5 | Ground | 5 V |
| M309 (with Forest Air) | 4 | | |

Is the inspection result normal?

YES >> GO TO 13.
NO >> GO TO 12.

## 12. CHECK INTAKE DOOR MOTOR PBR FEEDBACK PBR POWER SUPPLY CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between intake door motor harness connector and A/C auto amp. harness connector.

| Intake door motor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M310 (without Forest Air) | 5 | M304 | 71 | Existed |
| M309 (with Forest Air) | 4 | | | |

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair harness or connector.

## 13. CHECK INTAKE DOOR MOTOR PBR FEEDBACK PBR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between intake door motor harness connector and A/C auto amp. harness connector.

| Intake door motor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M310 (without Forest Air) | 7 | M304 | 79 | Existed |
| M309 (with Forest Air) | 5 | | | |

Is the inspection result normal?

YES >> GO TO14.
NO >> Repair harness or connector.

## 14. CHECK INTAKE DOOR MOTOR PBR

Check intake door motor PBR. Refer to HAC-112, "Component Inspection (PBR)".

Is the inspection result normal?

YES >> GO TO 15.
NO >> Replace intake door motor. Refer to HAC-192, "INTAKE DOOR MOTOR : Removal and Installation".

## 15. CHECK INTERMITTENT INCIDENT

Refer to GI-49, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

# Component Inspection (Motor)

INFOID:0000000008143919

## 1. CHECK INTAKE DOOR MOTOR

1. Turn ignition switch OFF.
2. Disconnect intake door motor connector.
3. Supply intake door motor terminals with battery voltage and check by visually and operation sound that intake door motor operates.

| Terminal | | Operation direction |
|---|---|---|
| + | – | |
| 1 | 2 | FRE |
| 2 | 1 | REC |

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace intake door motor. Refer to HAC-192, "INTAKE DOOR MOTOR : Removal and Installation".

# Component Inspection (PBR)

INFOID:0000000008143920

## 1. CHECK INTAKE DOOR MOTOR PBR

Check resistance between intake door motor terminals.

| Terminal | | Resistance (Approx.) |
|---|---|---|
| 7 (without forest A/C) | 3 | Except 0 or ∞ |
| | 5 | |
| 5 (with forest A/C) | 3 | |
| | 4 | |

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace intake door motor. Refer to HAC-192, "INTAKE DOOR MOTOR : Removal and Installation".

# B275F, B2760, B2761 UPPER VENTILATOR DOOR MOTOR

## DTC Logic

INFOID:0000000008143921

### DTC DETECTION LOGIC

**NOTE:**

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-72, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-73, "DTC Logic".
- If all of door motors DTC (B2750 – B276A) are detected, check door motor PBR power supply and ground circuit. Refer to HAC-153, "DOOR MOTOR PBR (WITH FOREST AIR) : Diagnosis Procedure" (With Forest Air).
- If all of door motors DTC (B2750 – B2764) are detected, check door motor PBR power supply and ground circuit. Refer to HAC-155, "DOOR MOTOR PBR (WITHOUT FOREST AIR) : Diagnosis Procedure" (Without Forest Air).

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B275F | DR UP VENT DOOR MOT | Upper ventilator door motor PBR feedback signal voltage is too low. | • Upper ventilator door motor<br>• Upper ventilator door motor installation condition<br>• A/C auto amp.<br>• Harness or connectors (The motor circuit is open or shorted.) |
| B2760 | | Upper ventilator door motor PBR feedback signal voltage is too high. | |
| B2761 | | Stop position of upper ventilator door motor is malfunctioning. | |

### DTC CONFIRMATION PROCEDURE

#### 1. PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to HAC-113, "Diagnosis Procedure".
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000008143922

#### 1. CHECK UPPER VENTILATOR DOOR MOTOR OPERATION

1. Turn ignition switch ON.
2. Touch “Upper Vent” in “Climate” screen and check by operation sound that upper ventilator door motor operates.

Does upper ventilator door motor operate?

YES >> GO TO 8.
NO >> GO TO 2.

#### 2. CHECK UPPER VENTILATOR DOOR MOTOR DRIVE SIGNAL

Check voltage between upper ventilator door motor harness connector and ground when “Upper Vent” in “Climate” screen is touched.

With Forest Air

| + | | – | Condition | | Voltage (Approx.) |
|---|---|---|---|---|---|
| Upper ventilator door motor | | | | | |
| Connector | Terminal | | | | |
| M313 | 1 | Ground | Upper Vent | ON → OFF | 12 V |
| | 2 | | | OFF → ON | |

Without Forest Air

| + | | – | Condition | | Voltage (Approx.) |
|---|---|---|---|---|---|
| Upper ventilator door motor | | | | | |
| Connector | Terminal | | | | |
| M312 | 1 | Ground | Upper Vent | ON → OFF | 12 V |
| | 2 | | | OFF → ON | |

Is the inspection result normal?

YES >> GO TO 6.
NO >> GO TO 3.

## 3.CHECK UPPER VENTILATOR DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Disconnect upper ventilator door motor connector.
4. Check continuity between upper ventilator door motor harness connector and A/C auto amp. harness connector.

With Forest Air

| Upper ventilator door motor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M313 | 1 | M304 | 66 | Existed |
| | 2 | | 86 | |

Without Forest Air

| Upper ventilator door motor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M312 | 1 | M304 | 66 | Existed |
| | 2 | | 86 | |

Is the inspection result normal?

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

## 4.CHECK UPPER VENTILATOR DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR GROUND SHORT

Check continuity between upper ventilator door motor harness connector and ground.

With Forest Air

| Upper ventilator door motor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M313 | 1 | Ground | Not existed |
| | 2 | | |

Without Forest Air

| Upper ventilator door motor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M312 | 1 | Ground | Not existed |
| | 2 | | |

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair harness or connector.

## 5.CHECK UPPER VENTILATOR DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR BATTERY SHORT

1. Turn ignition switch ON.
2. Check voltage between upper ventilator door motor harness connector and ground.

With Forest Air

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Upper ventilator door motor | | | |
| Connector | Terminal | | |
| M313 | 1 | Ground | 0 V |
| | 2 | | |

Without Forest Air

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Upper ventilator door motor | | | |
| Connector | Terminal | | |
| M312 | 1 | Ground | 0 V |
| | 2 | | |

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair harness or connector.

## 6. CHECK UPPER VENTILATOR DOOR MOTOR

Check upper ventilator door motor. Refer to HAC-117, "Component Inspection (Motor)".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace upper ventilator door motor. Refer to HAC-192, "UPPER VENTILATOR DOOR MOTOR : Removal and Installation".

## 7. CHECK INSTALLATION OF UPPER VENTILATOR DOOR MOTOR

Check upper ventilator door motor is properly installed. Refer to HAC-191, "Exploded View".

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair or replace malfunctioning parts.

## 8. CHECK UPPER VENTILATOR DOOR MOTOR PBR FEEDBACK SIGNAL

Check voltage between A/C auto amp. harness connector and ground when “Upper Vent” in “Climate” screen is touched.

| + | | – | Condition | | Voltage (Approx.) |
|---|---|---|---|---|---|
| A/C auto amp. | | | | | |
| Connector | Terminal | | | | |
| M304 | 75 | Ground | Upper Vent | ON | 4 V |
| | | | | OFF | 1 V |

Is the inspection result normal?

YES >> GO TO 15.
NO >> GO TO 9.

## 9. CHECK UPPER VENTILATOR DOOR MOTOR PBR FEEDBACK SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Disconnect upper ventilator door motor connector.
4. Check continuity between upper ventilator door motor harness connector and A/C auto amp. harness connector.

With Forest Air

| Upper ventilator door motor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M313 | 3 | M304 | 75 | Existed |

Without Forest Air

| Upper ventilator door motor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M312 | 3 | M304 | 75 | Existed |

Is the inspection result normal?

YES >> GO TO 10.
NO >> Repair harness or connector.

## 10. CHECK UPPER VENTILATOR DOOR MOTOR PBR FEEDBACK SIGNAL CIRCUIT FOR SHORT

Check continuity between upper ventilator door motor harness connector and ground.

With Forest Air

| Upper ventilator door motor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M313 | 3 | Ground | Not existed |

Without Forest Air

| Upper ventilator door motor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M312 | 3 | Ground | Not existed |

Is the inspection result normal?

YES >> GO TO 11.
NO >> Repair harness or connector.

## 11. CHECK UPPER VENTILATOR DOOR MOTOR PBR POWER SUPPLY

1. Connect A/C auto amp. connector.
2. Turn ignition switch ON.
3. Check voltage between upper ventilator door motor harness connector and ground.

With Forest Air

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Upper ventilator door motor | | | |
| Connector | Terminal | | |
| M313 | 5 | Ground | 5 V |

Without Forest Air

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Upper ventilator door motor | | | |
| Connector | Terminal | | |
| M312 | 7 | Ground | 5 V |

Is the inspection result normal?

YES >> GO TO 13.
NO >> GO TO 12.

## 12. CHECK UPPER VENTILATOR DOOR MOTOR PBR POWER SUPPLY CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between upper ventilator door motor harness connector and A/C auto amp. harness connector.

With Forest Air

| Upper ventilator door motor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M313 | 5 | M304 | 71 | Existed |

Without Forest Air

| Upper ventilator door motor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M312 | 7 | M304 | 71 | Existed |

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair harness or connector.

## 13. CHECK UPPER VENTILATOR DOOR MOTOR PBR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between upper ventilator door motor harness connector and A/C auto amp. harness connector.

With Forest Air

| Upper ventilator door motor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M313 | 4 | M304 | 79 | Existed |

Without Forest Air

| Upper ventilator door motor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M312 | 5 | M304 | 79 | Existed |

Is the inspection result normal?

YES >> GO TO 14.
NO >> Repair harness or connector.

## 14. CHECK UPPER VENTILATOR DOOR MOTOR PBR

Check upper ventilator door motor PBR. Refer to HAC-118, "Component Inspection (PBR)".

Is the inspection result normal?

YES >> GO TO 15.
NO >> Replace upper ventilator door motor. Refer to HAC-192, "UPPER VENTILATOR DOOR MOTOR : Removal and Installation".

## 15. CHECK INTERMITTENT INCIDENT

Refer to GI-49, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".
NO >> Repair or replace malfunction parts.

# Component Inspection (Motor)

INFOID:0000000008143923

## 1. CHECK UPPER VENTILATOR DOOR MOTOR

1. Turn ignition switch OFF.
2. Disconnect upper ventilator door motor connector.
3. Supply upper ventilator door motor terminals with battery voltage and check by visually and operation sound that upper ventilator door motor operates.

| Terminal | | Operation direction |
|---|---|---|
| + | – | |
| 1 | 2 | Close |
| 2 | 1 | Open |

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace upper ventilator door motor. Refer toHAC-192, "UPPER VENTILATOR DOOR MOTOR : Removal and Installation".

## Component Inspection (PBR)

INFOID:0000000008143924

### 1.CHECK UPPER VENTILATOR DOOR MOTOR PBR

Check resistance between upper ventilator door motor terminals.

With Forest Air

| Terminal | | Resistance (Ω) |
|---|---|---|
| 4 | 3 | Other than 0 or ∞ |
| | 5 | |

Without Forest Air

| Terminal | | Resistance (Ω) |
|---|---|---|
| 5 | 3 | Other than 0 or ∞ |
| | 7 | |

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace upper ventilator door motor. Refer toHAC-192, "UPPER VENTILATOR DOOR MOTOR : Removal and Installation".

# B2762, B2763, B2764 REAR MODE DOOR MOTOR

## DTC Logic

INFOID:0000000008143929

### DTC DETECTION LOGIC

**NOTE:**

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-72, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-73, "DTC Logic".
- If all of door motors DTC (B2750 – B276A) are detected, check door motor PBR power supply and ground circuit. Refer to HAC-153, "DOOR MOTOR PBR (WITH FOREST AIR) : Diagnosis Procedure" (With Forest Air).
- If all of door motors DTC (B2750 – B2764) are detected, check door motor PBR power supply and ground circuit. Refer to HAC-155, "DOOR MOTOR PBR (WITHOUT FOREST AIR) : Diagnosis Procedure" (Without Forest Air).

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B2762 | REAR MODE DOOR MOT | Rear mode door motor PBR feedback signal voltage is too low. | • Rear mode door motor<br>• Rear mode door motor installation condition<br>• A/C auto amp.<br>• Harness or connectors (The motor circuit is open or shorted.) |
| B2763 | | Rear mode door motor PBR feedback signal voltage is too high. | |
| B2764 | | Stop position of rear mode door motor is malfunctioning. | |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to HAC-119, "Diagnosis Procedure".
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000008143930

#### 1.CHECK REAR MODE DOOR MOTOR OPERATION

1. Turn ignition switch ON.
2. Operate MODE switch (driver side) and DEF switch and check by operation sound that rear mode door motor.
   **NOTE:**
   “DUAL”: OFF

Does rear mode door motor operate?

YES >> GO TO 8.
NO >> GO TO 2.

#### 2.CHECK REAR MODE DOOR MOTOR DRIVE SIGNAL

Check voltage between rear mode door motor harness connector and ground, when MODE switch (driver side) and DEF switch are operated.

**NOTE:**
“DUAL”: OFF

| + | | – | Condition | | Voltage (Approx.) |
|---|---|---|---|---|---|
| Rear mode door motor | | | | | |
| Connector | Terminal | | | | |
| M318 | 1 | Ground | Air outlet | DEF → VENT | 12 V |
| | 2 | | | VENT → DEF | |

Is the inspection result normal?

YES >> GO TO 6.
NO >> GO TO 3.

## 3.CHECK REAR MODE DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Disconnect rear mode door motor connector.
4. Check continuity between rear mode door motor harness connector and A/C auto amp. harness connector.

| Rear mode door motor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M318 | 1 | M304 | 68 | Existed |
| | 2 | | 88 | |

Is the inspection result normal?

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

## 4.CHECK REAR MODE DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR GROUND SHORT

Check continuity between rear mode door motor harness connector and ground.

| Rear mode door motor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M318 | 1 | Ground | Not existed |
| | 2 | | |

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair harness or connector.

## 5.CHECK REAR MODE DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR BATTERY SHORT

1. Turn ignition switch ON.
2. rear mode door motor harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Rear mode door motor | | | |
| Connector | Terminal | | |
| M318 | 1 | Ground | 0 V |
| | 2 | | |

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair harness or connector.

## 6.CHECK REAR MODE DOOR MOTOR

Check rear mode door motor. Refer to HAC-122, "Component Inspection (Motor)".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace rear mode door motor. Refer to HAC-192, "REAR MODE DOOR MOTOR : Removal and Installation".

## 7. CHECK INSTALLATION OF REAR MODE DOOR MOTOR

Check rear mode door motor is properly installed. Refer to HAC-191, "Exploded View".

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair or replace malfunctioning parts.

## 8. CHECK REAR MODE DOOR MOTOR PBR FEEDBACK SIGNAL

Check voltage between A/C auto amp. harness connector and ground when operate MODE switch (driver side) and DEF switch.

**NOTE:**
"DUAL": OFF

| + | | – | Condition | | Voltage (Approx.) |
|---|---|---|---|---|---|
| A/C auto amp. | | | | | |
| Connector | Terminal | | | | |
| M304 | 58 | Ground | Air outlet | VENT | 4 V |
| | | | | DEF | 1 V |

Is the inspection result normal?

YES >> GO TO 15.
NO >> GO TO 9.

## 9. CHECK REAR MODE DOOR MOTOR PBR FEEDBACK SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Disconnect rear mode door motor connector.
4. Check continuity between rear mode door motor harness connector and A/C auto amp. harness connector.

| Rear mode door motor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M318 | 3 | M304 | 58 | Existed |

Is the inspection result normal?

YES >> GO TO 10.
NO >> Repair harness or connector.

## 10. CHECK REAR MODE DOOR MOTOR PBR FEEDBACK SIGNAL CIRCUIT FOR SHORT

Check continuity between rear mode door motor harness connector and ground.

| Rear mode door motor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M318 | 3 | Ground | Not existed |

Is the inspection result normal?

YES >> GO TO 11.
NO >> Repair harness or connector.

## 11. CHECK REAR MODE DOOR MOTOR PBR POWER SUPPLY

1. Connect A/C auto amp. connector.
2. Turn ignition switch ON.
3. Check voltage between rear mode door motor harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Rear mode door motor | | | |
| Connector | Terminal | | |
| M318 | 5 | Ground | 5 V |

Is the inspection result normal?

YES >> GO TO 13.
NO >> GO TO 12.

## 12. CHECK REAR MODE DOOR MOTOR PBR POWER SUPPLY CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between rear mode door motor harness connector and A/C auto amp. harness connector.

| Rear mode door motor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M318 | 5 | M304 | 71 | Existed |

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair harness or connector.

## 13. CHECK REAR MODE DOOR MOTOR PBR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between rear mode door motor harness connector and A/C auto amp. harness connector.

| Rear mode door motor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M318 | 7 | M304 | 79 | Existed |

Is the inspection result normal?

YES >> GO TO 14.
NO >> Repair harness or connector.

## 14. CHECK REAR MODE DOOR MOTOR PBR

Check rear mode door motor PBR.Refer to HAC-123, "Component Inspection (PBR)".

Is the inspection result normal?

YES >> GO TO 15.
NO >> Replace rear mode door motor. Refer to HAC-192, "REAR MODE DOOR MOTOR : Removal and Installation".

## 15. CHECK INTERMITTENT INCIDENT

Refer to GI-49, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".
NO >> Repair or replace malfunction parts.

# Component Inspection (Motor)

INFOID:0000000008143931

## 1. CHECK REAR MODE DOOR MOTOR

1. Turn ignition switch OFF.
2. Disconnect rear mode door motor connector.

3. Supply rear mode door motor terminals with battery voltage and check by visually and operation sound that rear mode door motor operates.

| Terminal | | Operation direction |
|---|---|---|
| + | – | |
| 1 | 2 | VENT |
| 2 | 1 | FOOT |

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace rear mode door motor. Refer toHAC-192, "UPPER VENTILATOR DOOR MOTOR : Removal and Installation".

## Component Inspection (PBR)

INFOID:0000000008143932

### 1.CHECK REAR MODE DOOR MOTOR PBR

Check resistance between rear mode door motor terminals.

| Terminal | | Resistance (Ω) |
|---|---|---|
| 7 | 3 | Other than 0 or ∞ |
| | 5 | |

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace rear mode door motor. Refer toHAC-192, "UPPER VENTILATOR DOOR MOTOR : Removal and Installation".

# B2768, B2769, B276A AROMA MOTOR

## DTC Logic

INFOID:0000000008143937

### DTC DETECTION LOGIC

**NOTE:**

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-72, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-73, "DTC Logic".
- If all of door motors DTC (B2750 – B276A) are detected, check door motor PBR power supply and ground circuit. Refer to HAC-153, "DOOR MOTOR PBR (WITH FOREST AIR) : Diagnosis Procedure".

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B2768 | AROMA MOTOR | Aroma motor PBR feedback signal voltage is too low. | • Aroma motor<br>• A/C auto amp.<br>• Harness or connectors (The motor circuit is open or shorted.) |
| B2769 | | Aroma motor PBR feedback signal voltage is too high. | |
| B276A | | Stop position of aroma motor is malfunctioning. | |

### DTC CONFIRMATION PROCEDURE

#### 1. PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to HAC-124, "Diagnosis Procedure".
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000008143938

#### 1. CHECK AROMA MOTOR OPERATION

1. Turn ignition switch ON.
2. Operate temperature control switch and set the temperature setting to the same level as ambient temperature.
3. Operate FOREST switch and OFF switch alternately so that aroma diffuser control switches between ON ⇔ OFF.
4. Perform this operation for 2 sets. Check by operation sound that aroma motor operates.
   **NOTE:**
   Operation of aroma diffuser control can be checked immediately after FOREST switch is turned OFF once, and then is turned ON again. Operation direction of motor is switched by turning in ON again after turning it off. (Leaf scent ⇔ Fragrant wood)

Is the inspection result normal?

YES >> GO TO 7.
NO >> GO TO 2.

#### 2. CHECK AROMA MOTOR DRIVE SIGNAL

1. Operate FOREST switch and OFF switch alternately so that aroma diffuser control switches between ON ⇔ OFF.
2. Check voltage between aroma motor harness connector and ground, when this operation is performed for 2 sets.
   **NOTE:**
   Operation of aroma diffuser control can be checked immediately after FOREST switch is turned off once, and then is turned ON again. Operation direction of motor is switched by turning in ON again after turning it off. (Leaf scent ⇔ Fragrant wood)

| + | | – | Condition | | Voltage (Approx.) |
|---|---|---|---|---|---|
| Aroma motor | | | | | |
| Connector | Terminal | | | | |
| M305 | 5 | Ground | Aroma diffuser control | Fragrant wood | 12 V |
| | 6 | | | Leaf scent | |

Is the inspection result normal?

YES >> GO TO 6.
NO >> GO TO 3.

## 3. CHECK AROMA MOTOR DRIVE SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Disconnect aroma motor connector.
4. Check continuity between aroma motor harness connector and A/C auto amp. harness connector.

| Aroma motor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M305 | 5 | M304 | 82 | Existed |
| | 6 | | 62 | |

Is the inspection result normal?

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

## 4. CHECK AROMA MOTOR DRIVE SIGNAL CIRCUIT FOR GROUND SHORT

Check continuity between aroma motor harness connector and ground.

| Aroma motor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M305 | 5 | Ground | Not existed |
| | 6 | | |

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair harness or connector.

## 5. CHECK AROMA MOTOR DRIVE SIGNAL CIRCUIT FOR BATTERY SHORT

1. Turn ignition switch ON.
2. Check voltage between aroma motor harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Aroma motor | | | |
| Connector | Terminal | | |
| M305 | 5 | Ground | 0 V |
| | 6 | | |

Is the inspection result normal?

YES >> GO TO 14.
NO >> Repair harness or connector.

## 6. CHECK AROMA MOTOR

Check aroma motor. Refer to HAC-127, "Component Inspection (Motor)".

Is the inspection result normal?

YES >> GO TO 14.
NO >> Replace aroma motor. Refer to HAC-195, "Removal and Installation".

## 7. CHECK AROMA MOTOR PBR FEEDBACK SIGNAL

1. Operate FOREST switch and OFF switch alternately so that aroma diffuser control switches between ON ⇔ OFF.
2. Check voltage between A/C auto amp. connector and ground, when this operation is performed for 2 sets.
   **NOTE:**
   Operation of aroma diffuser control can be checked immediately after FOREST switch is turned off once, and then is turned ON again. Operation direction of motor is switched by turning in ON again after turning it off. (Leaf scent ⇔ Fragrant wood)

| + | | – | Condition | | Voltage (Approx.) |
|---|---|---|---|---|---|
| A/C auto amp. | | | | | |
| Connector | Terminal | | | | |
| M304 | 52 | Ground | Aroma diffuser control | Fragrant wood | 4 V |
| | | | | Leaf scent | 1 V |

Is the inspection result normal?

YES >> GO TO 14.
NO >> GO TO 8.

## 8. CHECK AROMA MOTOR PBR FEEDBACK SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Disconnect aroma motor connector.
4. Check continuity between aroma motor harness connector and A/C auto amp. harness connector.

| Aroma motor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M305 | 2 | M304 | 52 | Existed |

Is the inspection result normal?

YES >> GO TO 9.
NO >> Repair harness or connector.

## 9. CHECK AROMA MOTOR PBR FEEDBACK SIGNAL CIRCUIT FOR SHORT

Check continuity between aroma motor harness connector and ground.

| Aroma motor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M305 | 2 | Ground | Not existed |

Is the inspection result normal?

YES >> GO TO 10.
NO >> Repair harness or connector.

## 10. CHECK AROMA MOTOR PBR POWER SUPPLY

1. Connect A/C auto amp. connector.
2. Turn ignition switch ON.
3. Check voltage between aroma motor harness connector and Ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Aroma motor | | | |
| Connector | Terminal | | |
| M305 | 3 | Ground | 5 V |

Is the inspection result normal?

YES >> GO TO 12.
NO >> GO TO 11.

## 11. CHECK AROMA MOTOR PBR POWER SUPPLY CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between aroma motor harness connector and A/C auto amp. harness connector.

| Aroma motor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M305 | 3 | M304 | 71 | Existed |

Is the inspection result normal?

YES >> GO TO 14.
NO >> Repair harness or connector.

## 12. CHECK AROMA MOTOR PBR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between aroma motor harness connector and A/C auto amp. harness connector.

| Aroma motor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M305 | 1 | M304 | 79 | Existed |

Is the inspection result normal?

YES >> GO TO 13.
NO >> Repair harness or connector.

## 13. CHECK AROMA MOTOR PBR

Check aroma motor PBR. Refer to HAC-128, "Component Inspection (PBR)".

Is the inspection result normal?

YES >> GO TO 14.
NO >> Replace aroma motor. Refer to HAC-195, "Removal and Installation".

## 14. CHECK INTERMITTENT INCIDENT

Refer to GI-49, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".
NO >> Repair or replace malfunction parts.

# Component Inspection (Motor)

INFOID:0000000008143939

## 1. CHECK AROMA MOTOR

1. Turn ignition switch OFF.
2. Disconnect aroma motor connector.
3. Supply aroma motor terminals with battery voltage and check by visually and operation sound that aroma motor operates.

| Terminals | | Operation direction |
|---|---|---|
| + | – | |
| 5 | 6 | Fragrant wood |
| 6 | 5 | Leaf scent |

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace aroma motor. Refer to HAC-195, "Removal and Installation".

## Component Inspection (PBR)

INFOID:0000000008143940

### 1. CHECK AROMA MOTOR PBR

Check resistance between aroma motor terminals.

| Terminals | | Resistance (Ω) |
|---|---|---|
| 1 | 2 | Other than 0 or ∞ |
| | 3 | |

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace aroma motor. Refer to HAC-195, "Removal and Installation".

# B276B, B276C, B276D HUMIDITY SENSOR

## DTC Logic

INFOID:0000000008143941

### DTC DETECTION LOGIC

**NOTE:**

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-72, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-73, "DTC Logic".

| DTC | Items (CONSULT screen terms) | DTC detection condition | | Possible cause |
|---|---|---|---|---|
| B276B | HUMIDITY SENSOR | (A) | The humidity sensor (glass temperature sensor) recognition temperature is too high. | • Humidity sensor<br>• A/C auto amp.<br>• Harness or connectors (The sensor circuit is open or shorted.) |
| B276C | | | The humidity sensor (glass temperature sensor) recognition temperature is too low. | |
| B276D | | (B) | Communication malfunction of humidity sensor | |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to HAC-129, "Diagnosis Procedure".
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000008143942

#### 1.INSPECTION START

Confirm detected malfunction (A or B). Refer to HAC-129, "DTC Logic".

Which malfunction is detected?

A >> GO TO 2.
B >> GO TO 8.

#### 2.CHECK HUMIDITY SENSOR (GLASS TEMPERATURE SENSOR) POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect humidity sensor connector.
3. Turn ignition switch ON.
4. Check voltage between humidity sensor harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Humidity sensor | | | |
| Connector | Terminal | | |
| R6 | 5 | Ground | 5 V |

Is the inspection result normal?

YES >> GO TO 6.
NO >> GO TO 3.

#### 3.CHECK HUMIDITY SENSOR (GLASS TEMPERATURE SENSOR) POWER SUPPLY CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between humidity sensor harness connector and A/C auto amp. harness connector.

| Humidity sensor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| R6 | 5 | M67 | 33 | Existed |

Is the inspection result normal?

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

## 4. CHECK HUMIDITY SENSOR (GLASS TEMPERATURE SENSOR) POWER SUPPLY CIRCUIT FOR GROUND SHORT

Check continuity between humidity sensor harness connector and ground.

| Humidity sensor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| R6 | 5 | Ground | Not existed |

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair harness or connector.

## 5. CHECK HUMIDITY SENSOR (GLASS TEMPERATURE SENSOR) POWER SUPPLY CIRCUIT FOR BATTERY SHORT

1. Turn ignition switch ON.
2. Check voltage between humidity sensor harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Humidity sensor | | | |
| Connector | Terminal | | |
| R6 | 5 | Ground | 0 V |

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair harness or connector.

## 6. CHECK HUMIDITY SENSOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between humidity sensor harness connector and A/C auto amp. harness connector.

| Humidity sensor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| R6 | 6 | M67 | 44 | Existed |

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair harness or connector.

## 7. CHECK HUMIDITY SENSOR (GLASS TEMPERATURE SENSOR)

Check humidity sensor. Refer to HAC-132, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 15.
NO >> Replace humidity sensor. Refer to HAC-187, "Removal and Installation".

## 8. CHECK HUMIDITY SENSOR POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect humidity sensor connector.

3. Turn ignition switch ON.
4. Check voltage between humidity sensor harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Humidity sensor | | | |
| Connector | Terminal | | |
| R6 | 3 | Ground | 5 V |

Is the inspection result normal?

YES >> GO TO 12.
NO >> GO TO 9.

## 9. CHECK HUMIDITY SENSOR POWER SUPPLY CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between humidity sensor harness connector and A/C auto amp. harness connector.

| Humidity sensor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| R6 | 3 | M67 | 39 | Existed |

Is the inspection result normal?

YES >> GO TO 10.
NO >> Repair harness or connector.

## 10. CHECK HUMIDITY SENSOR POWER SUPPLY CIRCUIT FOR GROUND SHORT

Check continuity between humidity sensor harness connector and ground.

| Humidity sensor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| R6 | 3 | Ground | Not existed |

Is the inspection result normal?

YES >> GO TO 11.
NO >> Repair harness or connector.

## 11. CHECK HUMIDITY SENSOR POWER SUPPLY CIRCUIT FOR BATTERY SHORT

1. Turn ignition switch ON.
2. Check voltage between humidity sensor harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Humidity sensor | | | |
| Connector | Terminal | | |
| R6 | 3 | Ground | 0 V |

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair harness or connector.

## 12. CHECK HUMIDITY SENSOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between humidity sensor harness connector and A/C auto amp. harness connector.

| Humidity sensor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| R6 | 1 | M66 | 22 | Existed |

Is the inspection result normal?

YES >> GO TO 13.
NO >> Repair harness or connector.

## 13. CHECK HUMIDITY SENSOR COMMUNICATION SIGNAL CIRCUIT FOR OPEN

Check continuity between humidity sensor harness connector and A/C auto amp. harness connector.

| Humidity sensor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| R6 | 2 | M66 | 20 | Existed |
| | 4 | | 21 | |

Is the inspection result normal?

YES >> GO TO 14.
NO >> Repair harness or connector.

## 14. REPLACE HUMIDITY SENSOR

Replace humidity sensor. Refer to HAC-187, "Removal and Installation".

Is the inspection result normal?

YES >> INSPECTION END
NO >> GO TO 15.

## 15. CHECK INTERMITTENT INCIDENT

Refer to GI-49, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

# Component Inspection

INFOID:0000000008143943

## 1. CHECK HUMIDITY SENSOR (GLASS TEMPERATURE SENSOR)

1. Turn ignition switch OFF.
2. Disconnect humidity sensor connector.
3. Check resistance between humidity sensor terminals. Refer to applicable table for normal value.

| Terminal | | Condition | Resistance: kΩ |
|---|---|---|---|
| | | Temperature: °C (°F) | |
| 5 | 6 | –15 | 59.61 |
| | | –10 | 46.29 |
| | | –5 | 36.29 |
| | | 0 | 28.70 |
| | | 5 | 22.20 |
| | | 10 | 18.41 |
| | | 15 | 14.92 |
| | | 20 | 12.17 |
| | | 25 | 10.00 |
| | | 30 | 8.27 |
| | | 35 | 6.88 |
| | | 40 | 5.76 |
| | | 45 | 4.85 |

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace humidity sensor. Refer to HAC-187, "Removal and Installation".

# B2780 ELECTRIC COMPRESSOR

## DTC Logic

INFOID:0000000008143944

### DTC DETECTION LOGIC

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B2780 | COMPRESSOR ROM,RAM,AD | • When an error is detected in the ROM and RAM area data<br>• When an error is detected in the AD value (circuit that converts the analog value to a digital value) | Electric compressor |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch OFF.
2. Set the vehicle to READY.
3. Operate the automatic air conditioning system.
4. Set the temperature to full cold and wait at least 2 seconds.
5. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-134, "Diagnosis Procedure".
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000008143945

#### 1.REPLACE ELECTRIC COMPRESSOR

Replace electric compressor. Refer to HA-30, "Removal and Installation".

>> INSPECTION END

# B2781 ELECTRIC COMPRESSOR

## DTC Logic

INFOID:0000000008143946

### DTC DETECTION LOGIC

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B2781 | COMP IPM TEMP SENSOR | IPM temp sensor is open or shorted. | Electric compressor |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch OFF.
2. Set the vehicle to READY.
3. Operate the automatic air conditioning system.
4. Set the temperature to full cold and wait at least 2 seconds.
5. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-135, "Diagnosis Procedure".
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000008143947

#### 1.REPLACE ELECTRIC COMPRESSOR

Replace electric compressor. Refer to HA-30, "Removal and Installation".

>> INSPECTION END

# B2782 ELECTRIC COMPRESSOR

## DTC Logic

INFOID:0000000008143948

### DTC DETECTION LOGIC

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B2782 | COMP SHUNT SIGNAL OFFSET | When an error is detected in the shunt signal (current value in the A/C inverter) | Electric compressor |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch OFF.
2. Set the vehicle to READY.
3. Operate the automatic air conditioning system.
4. Set the temperature to full cold and wait at least 2 seconds.
5. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-136, "Diagnosis Procedure".
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000008143949

#### 1.REPLACE ELECTRIC COMPRESSOR

Replace electric compressor. Refer to HA-30, "Removal and Installation".

>> INSPECTION END

# B2783, B2784 ELECTRIC COMPRESSOR

## DTC Logic

INFOID:0000000008143950

### DTC DETECTION LOGIC

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B2783 | COMP DISCHARGE TEMP OVER HEAT | When the estimated refrigerant temperature discharged from the electric compressor 130°C (266°F) or more | • Electric compressor (Discharge pressure increase)<br>• Cooling fan<br>• Refrigerant leakage<br>• Refrigerant insufficient |
| B2784 | COMP DISCHARGE TEMP LIMIT | When the estimated refrigerant temperature discharged from the electric compressor 110°C (230°F) or more | |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch OFF.
2. Set the vehicle to READY.
3. Operate the automatic air conditioning system.
4. Set the temperature to full cold and wait at least 2 seconds.
5. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-137, "Diagnosis Procedure".
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000008143951

#### 1.CHECK REFRIGERANT FOR LEAKAGES

Check refrigerant for leakages. Refer to HA-20, "Check Refrigerant Leakage".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts.

#### 2.CHECK COOLING FAN OPERATION

1. Set the vehicle to READY.
2. Operate the automatic air conditioning system.
3. Check that the cooling fan is operating.

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check cooling fan. Refer to EC-406, "Component Function Check".

#### 3.CHECK REFRIGERANT CYCLE

Check refrigerant cycle. Refer to HA-25, "Inspection".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace malfunctioning parts.

#### 4.CHECK AIR CONDITIONING SYSTEM BY RE-FILLING REFRIGERANT

1. Collect refrigerant, and charge the air conditioning system from a new service can with the specified amount refrigerant.
2. After operate air conditioning system 15 minutes or more, perform DTC confirmation procedure, and check that DTC [B2783] or DTC [B2784] is not detected.

Is the inspection result normal?

YES >> Replace electric compressor. Refer toHA-30, "Removal and Installation".

NO >> Repair or replace malfunctioning parts.

# B2785, B2786 ELECTRIC COMPRESSOR

## DTC Logic

INFOID:0000000008143952

### DTC DETECTION LOGIC

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B2785 | COMP IPM OVER HEAT | • When the IPM temperature 125°C (257°F) or more within 1 min after starting the electric compressor<br>• When the IPM temperature 88°C (190°F) or more after 1 min or longer after starting the electric compressor | • Electric compressor (Discharge pressure increase)<br>• Cooling fan<br>• Refrigerant leakage<br>• Refrigerant insufficient |
| B2786 | COMP IPM DISCHARGE TEMP LIMIT | When the IPM temperature 83°C (181°F) or more | |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch OFF.
2. Set the vehicle to READY.
3. Operate the automatic air conditioning system.
4. Set the temperature to full cold and wait at least 2 seconds.
5. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-139, "Diagnosis Procedure".
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000008143953

#### 1.CHECK REFRIGERANT FOR LEAKAGES

Check refrigerant for leakages. Refer to HA-20, "Check Refrigerant Leakage".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts.

#### 2.CHECK COOLING FAN OPERATION

1. Set the vehicle to READY.
2. Operate the automatic air conditioning system.
3. Check that the cooling fan is operating.

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check cooling fan. Refer to EC-406, "Component Function Check".

#### 3.CHECK REFRIGERANT CYCLE

Check refrigerant cycle. Refer to HA-25, "Inspection".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace malfunctioning parts.

#### 4.CHECK AIR CONDITIONING SYSTEM BY RE-FILLING REFRIGERANT

1. Collect refrigerant, and charge the air conditioning system from a new service can with the specified amount refrigerant.
2. After operate air conditioning system 15 minutes or more, perform DTC confirmation procedure, and check that DTC [B2785] or DTC [B2786] is not detected.

Is the inspection result normal?

YES >> Replace electric compressor. Refer to HA-30, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

# B2787 ELECTRIC COMPRESSOR

## DTC Logic

INFOID:0000000008143954

### DTC DETECTION LOGIC

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B2787 | COMP VOLTAGE SATURATION | When the motor voltage 140% or more relative to the inverter output voltage | • Li-ion battery<br>• Electric compressor (Discharge pressure increase)<br>• Cooling fan<br>• Overfilled refrigerant |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch OFF.
2. Set the vehicle to READY.
3. Operate the automatic air conditioning system.
4. Set the temperature to full cold and wait at least 2 seconds.
5. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-141, "Diagnosis Procedure".
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000008143955

#### 1.CHECK LI-ION BATTERY

Check li-ion battery. Refer to HBB-44, "Work Flow".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts.

#### 2.CHECK REFRIGERANT FOR LEAKAGES

Check refrigerant for leakages. Refer to HA-20, "Check Refrigerant Leakage".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace malfunctioning parts.

#### 3.CHECK COOLING FAN OPERATION

1. Set the vehicle to READY.
2. Operate the automatic air conditioning system.
3. Check that the cooling fan is operating.

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check cooling fan. Refer to EC-406, "Component Function Check".

#### 4.CHECK REFRIGERANT CYCLE

Check refrigerant cycle. Refer to HA-25, "Inspection".

Is the inspection result normal?

YES >> Replace electric compressor. Refer to HA-30, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

# B2788 ELECTRIC COMPRESSOR

## DTC Logic

INFOID:0000000008143956

### DTC DETECTION LOGIC

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B2788 | COMP OVER CURRENT | When the electric compressor is not operated under the following conditions:<br>• Within 90 seconds after starting<br>• Motor current is 35.1 A or more<br>• 3 times in a 5 second interval | • Electric compressor (Discharge pressure increase) (Inverter internal short-circuit) (Stuck compressor)<br>• Cooling fan |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch OFF.
2. Set the vehicle to READY.
3. Operate the automatic air conditioning system.
4. Set the temperature to full cold and wait at least 2 seconds.
5. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-142, "Diagnosis Procedure".
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000008143957

#### 1.CHECK REFRIGERANT FOR LEAKAGES

Check refrigerant for leakages. Refer to HA-20, "Check Refrigerant Leakage".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts.

#### 2.CHECK COOLING FAN OPERATION

1. Set the vehicle to READY.
2. Operate the automatic air conditioning system.
3. Check that the cooling fan is operating.

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check cooling fan. Refer to EC-406, "Component Function Check".

#### 3.CHECK ELECTRIC COMPRESSOR OPERATION

Check electric compressor operation.

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace electric compressor. Refer to HA-30, "Removal and Installation".

#### 4.CHECK REFRIGERANT CYCLE

Check refrigerant cycle. Refer to HA-25, "Inspection".

Is the inspection result normal?

YES >> Replace electric compressor. Refer to HA-30, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

# B2789 ELECTRIC COMPRESSOR

## DTC Logic

INFOID:0000000008143958

### DTC DETECTION LOGIC

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B2789 | COMP OVER LOADED | When a current of 13.5 A or more is input to the electric compressor | • Electric compressor (Discharge pressure increase)<br>• Cooling fan |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch OFF.
2. Set the vehicle to READY.
3. Operate the automatic air conditioning system.
4. Set the temperature to full cold and wait at least 2 seconds.
5. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-143, "Diagnosis Procedure".
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000008143959

#### 1.CHECK REFRIGERANT FOR LEAKAGES

Check refrigerant for leakages. Refer to HA-20, "Check Refrigerant Leakage".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts.

#### 2.CHECK COOLING FAN OPERATION

1. Set the vehicle to READY.
2. Operate the automatic air conditioning system.
3. Check that the cooling fan is operating.

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check cooling fan. Refer to EC-406, "Component Function Check".

#### 3.CHECK REFRIGERANT CYCLE

Check refrigerant cycle. Refer to HA-25, "Inspection".

Is the inspection result normal?

YES >> Replace electric compressor. Refer toHA-30, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

# B278A, B278B ELECTRIC COMPRESSOR

## DTC Logic

INFOID:0000000008143960

### DTC DETECTION LOGIC

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B278A | COMP LOW VOLTAGE | When the high voltage system input voltage is less than 230 V | • Electric compressor<br>• Li-ion battery<br>• Battery-J/B<br>• High voltage harness or connectors (Electric compressor high voltage circuit is open or shorted.) |
| B278B | COMP HIGH VOLTAGE | When the high voltage system input voltage is more than 420 V | |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch OFF.
2. Set the vehicle to READY.
3. Operate the automatic air conditioning system.
4. Set the temperature to full cold and wait at least 2 seconds.
5. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-144, "Diagnosis Procedure".
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000008143961

**WARNING:**
- **Because hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.**
- **Be sure to remove the service plug in order to shut off the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.**
- **Be sure to put the removed service plug in your pocket and carry it with you so that another person does not accidentally connect it while work is in progress.**
- **Be sure to wear insulating protective equipment consisting of glove, shoes and glasses/face shield before beginning work on the high voltage system.**
- **Clearly identify the persons responsible for high voltage work and ensure that other persons do not touch the vehicle. When not working, cover high voltage parts with an insulating cover sheet or similar item to prevent other persons from contacting them.**
- **Refer to HAC-5, "High Voltage Precautions".**

**CAUTION:**
**There is the possibility of a malfunction occurring if the vehicle is changed to READY status while the service plug is removed. Therefore do not change the vehicle to READY status unless instructed to do so in the Service Manual.**

### DIAGNOSIS PROCEDURE

**CAUTION:**
**Erase DTC after the work is completed.**

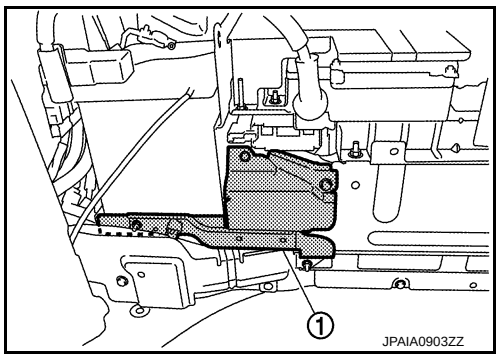
#### 1.PRECONDITIONING

**WARNING:**
**Shut off high voltage circuit. Refer to GI-30, "How to Cut Off High Voltage".**
Check voltage in high voltage circuit. (Check that condenser are discharged.)
1. Remove trunk finisher front. Refer to INT-51, "Exploded View".

2. Remove harness cover (1).

**DANGER:**

**Touching high voltage components without using the appropriate protective equipment will cause electrocution.**

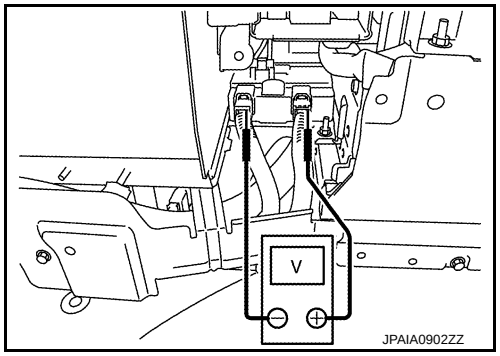



3. Measure voltage between high voltage harness terminals.

**Standard : 5 V or less**

**DANGER:**

**Touching high voltage components without using the appropriate protective equipment will cause electrocution.**




**CAUTION:**

**For voltage measurements, use a tester which can measure to 500 V or higher.**

>> GO TO 2.

## 2. CHECK ELECTRIC COMPRESSOR HIGH VOLTAGE HARNESS POWER SUPPLY CIRCUIT FOR OPEN

1. Disconnect electric compressor and Li-ion battery connector.
2. Check continuity between Electric compressor high voltage harness connector and Li-ion battery high voltage harness connector.

| Electric compressor | | Li-ion battery | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| C12 | 2 | LB40 | 28 | Existed |

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace high voltage harness between electric compressor and Li-ion battery.

## 3. CHECK ELECTRIC COMPRESSOR HIGH VOLTAGE HARNESS GROUND CIRCUIT

Check continuity between Electric compressor high voltage harness connector and Li-ion battery high voltage harness connector.

| Electric compressor | | Li-ion battery | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| C12 | 1 | LB40 | 29 | Existed |

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace high voltage harness between electric compressor and Li-ion battery.

## 4. CHECK LI-ION BATTERY

1. Connect 12V battery negative terminal.
2. Check li-ion battery. Refer to HBB-44, "Work Flow".

Is the inspection result normal?

YES >> Replace electric compressor. Refer to HA-30, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

# B278C, B278D ELECTRIC COMPRESSOR

## DTC Logic

INFOID:0000000008143962

### DTC DETECTION LOGIC

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B278C | COMP COMM ERROR HVAC→COMP | When the electric compressor cannot receive the signal sent from the A/C auto amp. | • Electric compressor<br>• A/C auto amp.<br>• Battery-J/B<br>• Harness or connectors (Electric compressor circuit is open or shorted.)<br>• High voltage harness or connectors (Electric compressor high voltage circuit is open or shorted.) |
| B278D | COMP COMM ERROR COMP→HVAC | When the A/C auto amp. cannot receive the signal sent from the electric compressor | |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch OFF.
2. Set the vehicle to READY.
3. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-147, "Diagnosis Procedure".
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000008143963

**WARNING:**
- **Because hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.**
- **Be sure to remove the service plug in order to shut off the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.**
- **Be sure to put the removed service plug in your pocket and carry it with you so that another person does not accidentally connect it while work is in progress.**
- **Be sure to wear insulating protective equipment consisting of glove, shoes and glasses/face shield before beginning work on the high voltage system.**
- **Clearly identify the persons responsible for high voltage work and ensure that other persons do not touch the vehicle. When not working, cover high voltage parts with an insulating cover sheet or similar item to prevent other persons from contacting them.**
- **Refer to HAC-5, "High Voltage Precautions".**

**CAUTION:**
**There is the possibility of a malfunction occurring if the vehicle is changed to READY status while the service plug is removed. Therefore do not change the vehicle to READY status unless instructed to do so in the Service Manual.**

### DIAGNOSIS PROCEDURE

**CAUTION:**
**Erase DTC after the work is completed.**

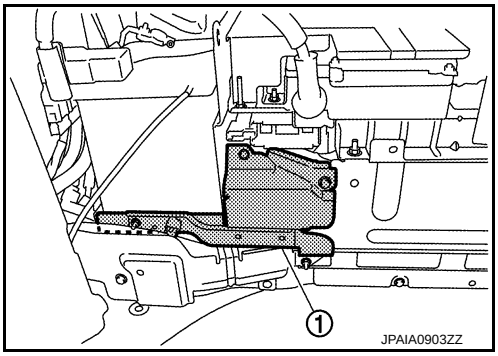
#### 1.PRECONDITIONING

**WARNING:**
**Shut off high voltage circuit. Refer to GI-30, "How to Cut Off High Voltage".**
Check voltage in high voltage circuit. (Check that condenser are discharged.)
1. Remove trunk finisher front. Refer to INT-51, "Exploded View".

2. Remove harness cover (1).

**DANGER:**

**Touching high voltage components without using the appropriate protective equipment will cause electrocution.**




3. Measure voltage between high voltage harness terminals.

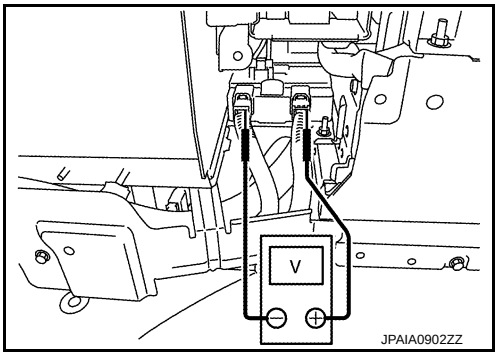
**Standard : 5 V or less**

**DANGER:**

**Touching high voltage components without using the appropriate protective equipment will cause electrocution.**

**CAUTION:**

**For voltage measurements, use a tester which can measure to 500 V or higher.**




>> GO TO 2.

## 2. CHECK ELECTRIC COMPRESSOR COMMUNICATION LINE FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect electric compressor and A/C auto amp. connector.
3. Check continuity between electric compressor harness connector and A/C auto amp. harness connector.

| Electric compressor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| F74 | 1 | M67 | 27 | Existed |
| | 2 | | 28 | |

Is the inspection result normal?

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

## 3. CHECK ELECTRIC COMPRESSOR COMMUNICATION LINE FOR SHORT

Check continuity between electric compressor harness connector and ground.

| Electric compressor | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| F74 | 1 | | Not existed |
| | 2 | | |

Is the inspection result normal?

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

## 4. CHECK ELECTRIC COMPRESSOR POWER SUPPLY

1. Turn ignition switch ON.
2. Check voltage between electric compressor harness connector and ground.

| + | | − | Voltage (Approx.) |
|---|---|---|---|
| Electric compressor | | | |
| Connector | Terminal | | |
| F74 | 4 | Ground | Battery voltage |

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair harness or connector.

## 5. CHECK ELECTRIC COMPRESSOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between electric compressor harness connector and ground.

| Electric compressor | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| F74 | 3 | | Existed |

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair harness or connector.

## 6. CHECK ELECTRIC COMPRESSOR HIGH VOLTAGE HARNESS POWER SUPPLY CIRCUIT FOR OPEN

1. Disconnect Li-ion battery connector.
2. Check continuity between electric compressor high voltage harness connector and Li-ion battery high voltage harness connector.

| Electric compressor | | Li-ion battery | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| C12 | 2 | C7 | 28 | Existed |

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace high voltage harness between electric compressor and Li-ion battery.

## 7. CHECK ELECTRIC COMPRESSOR HIGH VOLTAGE HARNESS GROUND CIRCUIT

Check continuity between Electric compressor high voltage harness connector and Li-ion battery high voltage harness connector.

| Electric compressor | | Li-ion battery | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| C12 | 1 | C7 | 29 | Existed |

Is the inspection result normal?

YES >> GO TO 8.
NO >> Replace high voltage harness between electric compressor and Li-ion battery.

## 8. CHECK LI-ION BATTERY CIRCUIT FOR OPEN

1. Disconnect battery-J/B connector.
   **NOTE:**
   Do not disconnect LB31 and LB32 connectors.
2. Check continuity between Li-ion battery terminal and battery-J/B terminal.

| Li-ion battery | | Battery-J/B | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| LB40 | 28 | LB37 | 29 | Existed |
| | 29 | LB38 | 30 | |

Is the inspection result normal?

YES >> GO TO 10.
NO >> GO TO 9.

## 9. CHECK LI-ION BATTERY HIGH VOLTAGE HARNESS CIRCUIT FOR OPEN

1. Disconnect battery-J/B connector.
2. Check continuity between Li-ion battery terminal and battery-J/B high voltage harness connector.

| Li-ion battery | | Battery-J/B | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| LB40 | 28 | LB32 | 26 | Existed |
| | 29 | LB31 | 27 | |

Is the inspection result normal?

YES >> Replace battery-J/B. Refer to HBB-198, "BATTERY JUNCTION BOX : Disassembly and Assembly".
NO >> Replace high voltage harness between Li-ion battery and battery-J/B.

## 10. CHECK A/C AUTO AMP.

With CONSULT
1. Reconnect all harness connectors disconnected.
2. Turn ignition switch ON.
3. Using CONSULT, perform “MODE 1” of “HVAC TEST” on “ACTIVE TEST” of “HVAC”. Refer to HAC-39, "CONSULT Function".
4. Check that the electric compressor operates normally.

Is the inspection result normal?

YES >> GO TO 11.
NO >> Replace A/C control (A/C auto amp.). (Refer to HAC-183, "Removal and Installation"). Then GO TO 11.

## 11. PERFORM DTC CONFIRMATION PROCEDURE

Perform DTC confirmation procedure. Refer to HAC-147, "DTC Logic".

Is DTC B278C or B278D detected?

YES >> Replace electric compressor. Refer to HA-30, "Removal and Installation".
NO >> Perform intermittent incident. Refer to GI-49, "Intermittent Incident".

# B2791 ELECTRIC COMPRESSOR

## DTC Logic

INFOID:0000000008143964

### DTC DETECTION LOGIC

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B2791 | COMP LOW SPEED HIGH LOAD | When the driving load of the electric compressor reaches a maximum value during slow rotation. | • Electric compressor<br>• Cooling fan<br>• Li-ion battery<br>• Battery-J/B<br>• Overfilled refrigerant |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch OFF.
2. Set the vehicle to READY.
3. Operate the automatic air conditioning system.
4. Set the temperature to full cold and wait at least 2 seconds.
5. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-151, "Diagnosis Procedure".
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000008143965

#### 1.CHECK REFRIGERANT FOR LEAKAGES

Check refrigerant for leakages. Refer to HA-20, "Check Refrigerant Leakage".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts.

#### 2.CHECK COOLING FAN OPERATION

1. Set the vehicle to READY.
2. Operate the automatic air conditioning system.
3. Check that the cooling fan is operating.

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check cooling fan. Refer to EC-406, "Component Function Check".

#### 3.CHECK REFRIGERANT CYCLE

Check refrigerant cycle. Refer to HA-25, "Inspection".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace malfunctioning parts.

#### 4.CHECK LI-ION BATTERY

Check li-ion battery. Refer to HBB-44, "Work Flow".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace malfunctioning parts.

#### 5.CHECK BATTERY-J/B

Check Battery-J/B. Refer to HBB-44, "Work Flow".

Is the inspection result normal?

YES >> Replace electric compressor. Refer to HA-30, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

# POWER SUPPLY AND GROUND CIRCUIT

## A/C AUTO AMP.

### A/C AUTO AMP. : Diagnosis Procedure

INFOID:0000000008143966

#### 1.CHECK FUSE

Check fuses [Nos. 3, 9 and 19, located in the fuse block (J/B)].

**NOTE:**

Refer to PG-42, "Fuse, Connector and Terminal Arrangement".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace the blown fuse after replacing the applicable circuit.

#### 2.CHECK A/C AUTO AMP. POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect the A/C auto amp. connector.
3. Check voltage between A/C auto amp. harness connector and ground.

| + | | – | Voltage | | |
|---|---|---|---|---|---|
| A/C auto amp. | | | Ignition switch position | | |
| Connector | Terminal | | OFF | ACC | ON |
| M66 | 1 | Ground | Battery voltage | Battery voltage | Battery voltage |
| | 2 | | Approx. 0 V | Approx. 0 V | Battery voltage |
| | 13 | | Approx. 0 V | Battery voltage | Battery voltage |

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair harness or connector.

#### 3.CHECK A/C AUTO AMP. GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between A/C auto amp. harness connector and ground.

| A/C auto amp. | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M66 | 10 | Ground | Existed |

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair harness or connector.

## DOOR MOTOR PBR (WITH FOREST AIR)

### DOOR MOTOR PBR (WITH FOREST AIR) : Diagnosis Procedure

INFOID:0000000008143967

**NOTE:**

Check this circuit when all DTCs of motor system (B2750 – B276A) are detected.

#### 1.CHECK EACH DOOR MOTOR PBR POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect mode door motor LH connector.
3. Turn ignition switch ON.
4. Check voltage between mode door motor LH harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Mode door motor LH | | | |
| Connector | Terminal | | |
| M316 | 4 | Ground | 5 V |

Is the inspection result normal?

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

## 2.CHECK EACH DOOR MOTOR PBR POWER SUPPLY CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between mode door motor LH harness connector and A/C auto amp. harness connector.

| Mode door motor LH | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M316 | 4 | M304 | 71 | Existed |

Is the inspection result normal?

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

## 3.CHECK EACH DOOR MOTOR PBR POWER SUPPLY CIRCUIT FOR GROUND SHORT

1. Disconnect following connectors:
- Air mix door motor LH
- Air mix door motor RH
- Aroma motor
- Intake door motor
- Mode door motor RH
- Rear mode door motor
- Upper ventilator door motor
2. Check mode door motor LH harness connector and ground.

| Mode door motor LH | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M316 | 4 | Ground | Not existed |

Is the inspection result normal?

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

## 4.CHECK EACH DOOR MOTOR PBR POWER SUPPLY CIRCUIT FOR BATTERY SHORT

1. Turn ignition switch ON.
2. Check voltage between mode door motor LH harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Mode door motor LH | | | |
| Connector | Terminal | | |
| M316 | 4 | Ground | 0 V |

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair harness or connector.

## 5.CHECK MODE DOOR MOTOR (DRIVER SIDE) PBR GROUND CIRCUIT

1. Turn ignition switch OFF.

2. Disconnect A/C auto amp. connector.
3. Check continuity between mode door motor LH harness connector and A/C auto amp. harness connector.

| Mode door motor LH | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M316 | 5 | M304 | 79 | Existed |

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair harness or connector.

## 6. CHECK COMPONENT PARTS

Check following parts:
- Air mix door motor (driver side): Refer to HAC-92, "Component Inspection (PBR)".
- Air mix door motor (passenger side): Refer to HAC-97, "Component Inspection (PBR)".
- Aroma motor: Refer to HAC-128, "Component Inspection (PBR)".
- Intake door motor: Refer to HAC-112, "Component Inspection (PBR)".
- Mode door motor (driver side): Refer to HAC-102, "Component Inspection (PBR)".
- Mode door motor (passenger side): Refer to HAC-107, "Component Inspection (PBR)".
- Rear mode door motor: Refer to HAC-123, "Component Inspection (PBR)".
- Upper ventilator door motor: Refer to HAC-118, "Component Inspection (PBR)".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace malfunctioning parts.

## 7. CHECK INTERMITTENT INCIDENT

Refer to GI-49, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

# DOOR MOTOR PBR (WITHOUT FOREST AIR)

## DOOR MOTOR PBR (WITHOUT FOREST AIR) : Diagnosis Procedure

INFOID:0000000008143968

**NOTE:**
Check this circuit when all DTCs of motor system (B2750 – B2764) are detected.

## 1. CHECK EACH DOOR MOTOR PBR POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect mode door motor LH connector.
3. Turn ignition switch ON.
4. Check voltage between mode door motor LH harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Mode door motor LH | | | |
| Connector | Terminal | | |
| M317 | 5 | Ground | 5 V |

Is the inspection result normal?

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

## 2. CHECK EACH DOOR MOTOR PBR POWER SUPPLY CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between mode door motor LH harness connector and A/C auto amp. harness connector.

| Mode door motor LH | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M317 | 5 | M304 | 71 | Existed |

Is the inspection result normal?

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

## 3.CHECK EACH DOOR MOTOR PBR POWER SUPPLY CIRCUIT FOR GROUND SHORT

1. Disconnect following connectors:
- Air mix door motor LH
- Air mix door motor RH
- Intake door motor
- Mode door motor RH
- Rear mode door motor
- Upper ventilator door motor
2. Check mode door motor LH harness connector and ground.

| Mode door motor LH | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M317 | 5 | Ground | Not existed |

Is the inspection result normal?

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

## 4.CHECK EACH DOOR MOTOR PBR POWER SUPPLY CIRCUIT FOR BATTERY SHORT

1. Turn ignition switch ON.
2. Check voltage between mode door motor LH harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Mode door motor LH | | | |
| Connector | Terminal | | |
| M317 | 5 | Ground | 0 V |

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair harness or connector.

## 5.CHECK MODE DOOR MOTOR (DRIVER SIDE) PBR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between mode door motor LH harness connector and A/C auto amp. harness connector.

| Mode door motor LH | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M317 | 7 | M304 | 79 | Existed |

s the inspection result normal?

YES >> GO TO 6.
NO >> Repair harness or connector.

## 6.CHECK COMPONENT PARTS

Check following parts:
- Air mix door motor (driver side): Refer to HAC-92, "Component Inspection (PBR)".
- Air mix door motor (passenger side): Refer to HAC-97, "Component Inspection (PBR)".
- Intake door motor: Refer to HAC-112, "Component Inspection (PBR)".

- Mode door motor (driver side): Refer to HAC-102, "Component Inspection (PBR)".
- Mode door motor (passenger side): Refer to HAC-107, "Component Inspection (PBR)".
- Rear mode door motor: Refer to HAC-123, "Component Inspection (PBR)".
- Upper ventilator door motor: Refer to HAC-118, "Component Inspection (PBR)".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace malfunctioning parts.

## 7. CHECK INTERMITTENT INCIDENT

Refer to GI-49, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

# BLOWER MOTOR

## Diagnosis Procedure

INFOID:0000000008143969

### 1.CHECK BLOWER MOTOR POWER SUPPLY

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

| + | | – | Voltage |
|---|---|---|---|
| Blower motor | | | |
| Connector | Terminal | | |
| M109 | 1 | Ground | Battery voltage |

Is the inspection result normal?

YES >> GO TO 7.
NO >> GO TO 2.

### 2.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 15 A fuses [Nos. 21 and 22, located in fuse block (J/B)].
   **NOTE:**
   Refer to PG-42, "Fuse, Connector and Terminal Arrangement".

Is the inspection result normal?

YES >> GO TO 3.
NG >> Replace the fuse after repairing the applicable circuit.

### 3.CHECK BLOWER MOTOR POWER SUPPLY CIRCUIT FOR OPEN

1. Disconnect fuse block (J/B) connector.
2. Check continuity between blower motor harness connector and fuse block (J/B) harness connector.

| Blower motor | | Fuse block (J/B) | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M109 | 1 | M1 | 3A | Existed |
| | | | 8A | |

Is the inspection result normal?

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

### 4.CHECK BLOWER MOTOR POWER SUPPLY CIRCUIT FOR SHORT

Check continuity between blower motor harness connector and ground.

| Blower motor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M109 | 1 | Ground | Not existed |

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair harness or connector.

### 5.CHECK BLOWER RELAY GROUND CIRCUIT

1. Disconnect fuse block (J/B) connector.
2. Check continuity between fuse block (J/B) harness connector and ground.

| Fuse block (J/B) | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M3 | 7C | Ground | Existed |

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair harness or connector.

## 6. CHECK BLOWER RELAY

Check blower relay. Refer to HAC-162, "Component Inspection (Blower Relay)".

Is the inspection result normal?

YES >> Check ignition power supply circuit. Refer to PG-30, "Wiring Diagram - IGNITION POWER SUPPLY -".
NO >> Replace blower relay.

## 7. CHECK POWER TRANSISTOR POWER SUPPLY

1. Turn ignition switch OFF.
2. Connect blower motor connector.
3. Disconnect power transistor connector.
4. Turn ignition switch ON.
5. Check voltage between power transistor harness connector and ground.

| + | | – | Voltage |
|---|---|---|---|
| Power transistor | | | |
| Connector | Terminal | | |
| M112 | 3 | Ground | Battery voltage |

Is the inspection result normal?

YES >> GO TO 11.
NO >> GO TO 8.

## 8. CHECK POWER TRANSISTOR POWER SUPPLY CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect blower motor connector.
3. Check continuity between power transistor harness connector and blower motor harness connector.

| Power transistor | | Blower motor | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M112 | 3 | M109 | 2 | Existed |

Is the inspection result normal?

YES >> GO TO 9.
NO >> Repair harness or connector.

## 9. CHECK POWER TRANSISTOR POWER SUPPLY CIRCUIT FOR SHORT

Check continuity between power transistor harness connector and ground.

| Power transistor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M112 | 3 | Ground | Not existed |

Is the inspection result normal?

YES >> GO TO 10.
NO >> Repair harness or connector.

## 10. REPLACE BLOWER MOTOR

Replace blower motor. Refer to VTL-18, "BLOWER MOTOR : Removal and Installation".

Is the inspection result normal?

YES >> INSPECTION END
NO >> GO TO 19.

## 11. CHECK POWER TRANSISTOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between power transistor harness connector and ground.

| Power transistor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M112 | 4 | Ground | Existed |

Is the inspection result normal?

YES >> GO TO 12.
NO >> Repair harness or connector.

## 12. CHECK POWER TRANSISTOR CONTROL SIGNAL

1. Connect power transistor connector.
2. Turn ignition switch ON.
3. Operate mode switch to set VENT position.
4. Change fan speed from 1 to 7, and check voltage between power transistor harness connector and ground.

| + | | − | Condition | Voltage (Approx.) |
|---|---|---|---|---|
| Power transistor | | | Fan speed (manual) VENT mode | |
| Connector | Terminal | | | |
| M112 | 2 | Ground | OFF | 0 V |
| | | | 1st | 3.5 V |
| | | | 2nd | 5.2 V |
| | | | 3rd | 6.5 V |
| | | | 4th | 7.8 V |
| | | | 5th | 9.2 V |
| | | | 6th | 10.5 V |
| | | | 7th | 12.5 V |

Is the inspection result normal?

YES >> GO TO 15.
NO >> GO TO 13.

## 13. CHECK POWER TRANSISTOR CONTROL SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect power transistor connector.
3. Connect A/C auto amp. connector.
4. Check continuity between power transistor harness connector and A/C auto amp. harness connector.

| Power transistor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M112 | 2 | M66 | 7 | Existed |

Is the inspection result normal?

YES >> GO TO 14.
NO >> Repair harness or connector.

## 14. CHECK POWER TRANSISTOR CONTROL SIGNAL CIRCUIT FOR SHORT

Check continuity between power transistor harness connector and ground.

| Power transistor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M112 | 2 | Ground | Not existed |

Is the inspection result normal?

YES >> GO TO 18.
NO >> Repair harness or connector.

## 15. CHECK BLOWER MOTOR FEEDBACK SIGNAL

Change fan speed from 1 to 7, and check voltage between power transistor harness connector and ground.

| + | | – | Condition | Voltage (Approx.) |
|---|---|---|---|---|
| A/C auto amp. | | | Fan speed (manual) VENT mode | |
| Connector | Terminal | | | |
| M66 | 6 | Ground | OFF | Battery voltage |
| | | | 1st | 10.0 V |
| | | | 2nd | 8.3 V |
| | | | 3rd | 7.0 V |
| | | | 4th | 5.7 V |
| | | | 5th | 4.3 V |
| | | | 6th | 3.0 V |
| | | | 7th | 1.0 V |

Is the inspection result normal?

YES >> GO TO 18.
NO >> GO TO 16.

## 16. CHECK BLOWER MOTOR FEEDBACK SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect power transistor connector.
3. Disconnect A/C auto amp. connector.
4. Check continuity between A/C auto amp. harness connector and power transistor harness connector.

| A/C auto amp. | | Power transistor | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M66 | 6 | M112 | 1 | Existed |

Is the inspection result normal?

YES >> GO TO 17.
NO >> Repair harness or connector.

## 17. CHECK BLOWER MOTOR FEEDBACK SIGNAL CIRCUIT FOR SHORT

Check continuity between A/C auto amp. harness connector and ground.

| A/C auto amp. | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M66 | 6 | Ground | Not existed |

Is the inspection result normal?

YES >> GO TO 18.
NO >> Repair harness or connector.

## 18. REPLACE POWER TRANSISTOR

Replace power transistor. Refer to HAC-193, "Removal and Installation".

Is the inspection result normal?

YES >> INSPECTION END
NO >> GO TO 19.

## 19. CHECK INTERMITTENT INCIDENT

Refer to GI-49, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

## Component Inspection (Blower Motor)

INFOID:0000000008143970

## 1. CHECK BLOWER MOTOR-I

1. Remove blower motor. Refer to VTL-18, "BLOWER MOTOR : Removal and Installation".
2. Check that there is not any mixing foreign materials in blower motor.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Remove foreign materials.

## 2. CHECK BLOWER MOTOR-II

Check that there is not breakage or damage in blower motor.

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace blower motor. Refer to VTL-18, "BLOWER MOTOR : Removal and Installation".

## 3. CHECK BLOWER MOTOR-III

Check that blower motor turns smoothly.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace blower motor. Refer to VTL-18, "BLOWER MOTOR : Removal and Installation".

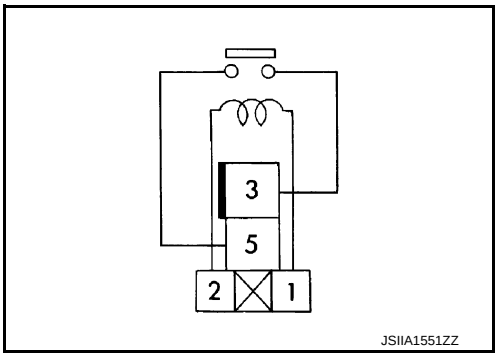
## Component Inspection (Blower Relay)

INFOID:0000000008143971

## 1. CHECK BLOWER RELAY

1. Remove blower relay.
2. Check continuity between blower relay terminals 3 and 5 when the voltage is supplied between terminals 1 and 2.

| Terminals | | Voltage | Continuity |
|---|---|---|---|
| 3 | 5 | ON | Existed |
| | | OFF | Not existed |




Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace blower relay.

# INSIDE ODOR DETECTING SENSOR

## Component Function Check

INFOID:0000000008143972

### 1.CHECK INSIDE ODOR DETECTING SENSOR FUNCTION

1. Operate fan switch. Set fan speed to 7th speed.
2. Check that voltage between A/C auto amp. vehicle side harness connector and body ground changes when cigarette smoke or similar substance is applied to air inlet.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| A/C auto amp. | | | |
| Connector | Terminal | | |
| M67 | 36 | Ground | 0 – 4.8 V<br>Output voltage differs depending on measurement environment of the vehicle. |

Is the inspection result normal?

YES >> INSPECTION END
NO >> Refer to HAC-163, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000008143973

### 1.CHECK INSIDE ODOR DETECTING SENSOR IGNITION POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect inside odor detecting sensor connector.
3. Turn ignition switch ON.
4. Check voltage between inside odor detecting sensor harness connector and ground.

| + | | – | Voltage |
|---|---|---|---|
| Inside odor detecting sensor | | | |
| Connector | Terminal | | |
| M73 | 4 | Ground | Battery voltage |

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector between inside odor detecting sensor and fuse.

### 2.CHECK INSIDE ODOR DETECTING SENSOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between inside odor detecting sensor harness connector and ground.

| Inside odor detecting sensor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M73 | 3 | Ground | Existed |

Is the inspection result normal?

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

### 3.CHECK INSIDE ODOR DETECTING SENSOR POWER SUPPLY

1. Turn ignition switch ON.
2. Check voltage between inside odor detecting sensor harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| Inside odor detecting sensor | | | |
| Connector | Terminal | | |
| M73 | 1 | Ground | 5 V |

Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 6.

## 4. CHECK INSIDE ODOR DETECTING SENSOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between inside odor detecting sensor harness connector and A/C auto amp. harness connector.

| Inside odor detecting sensor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M73 | 2 | M67 | 44 | Existed |

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair harness or connector.

## 5. CHECK INSIDE ODOR DETECTING SENSOR

Check inside odor detecting sensor. Refer to HAC-165, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".
NO >> Replace inside odor detecting sensor. Refer to HAC-189, "Removal and Installation".

## 6. CHECK INSIDE ODOR DETECTING SENSOR POWER SUPPLY CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between inside odor detecting sensor harness connector and A/C auto amp. harness connector.

| Inside odor detecting sensor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M73 | 1 | M67 | 36 | Existed |

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair harness or connector.

## 7. CHECK INSIDE ODOR DETECTING SENSOR POWER SUPPLY CIRCUIT FOR SHORT

Check continuity between inside odor detecting sensor harness connector and ground.

| Inside odor detecting sensor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M73 | 1 | Ground | Not existed |

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".
NO >> Repair harness or connector.

## Component Inspection

INFOID:0000000008143974

### 1. CHECK INSIDE ODOR DETECTING SENSOR-I

1. Turn ignition switch OFF.
2. Disconnect inside odor detecting sensor connector.
3. Apply voltage between inside odor detecting sensor terminals 4 and 3, and wait for 3 minutes.
4. Check resistance between inside odor detecting sensor terminals while applying voltage.

| Terminal | | Condition | Resistance (kΩ) |
|---|---|---|---|
| 1 | 2 | Air is clean | 2 – 670 |

**NOTE:**
Resistance value differs depending on measurement environment of the vehicle.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the inside odor detecting sensor. Refer to HAC-189, "Removal and Installation".

### 2. CHECK INSIDE ODOR DETECTING SENSOR-II

Blow sensor portion of inside odor detecting sensor. Check that resistance value between inside odor detecting sensor terminals decreases.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace the inside odor detecting sensor. Refer to HAC-189, "Removal and Installation".

# IONIZER

## Component Function Check

INFOID:0000000008143975

### 1.CHECK IONIZER OPERATION SOUND

1. Turn ignition switch ON.
2. Check ionizer operation sound (whirring sound) in duct by putting an ear to the side ventilator grille (driver side) outlet while pressing fan switch and OFF switch alternately.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Refer to HAC-166, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000008143976

### 1.CHECK IONIZER POWER SUPPLY

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

| + | | – | Voltage |
|---|---|---|---|
| Ionizer | | | |
| Connector | Terminal | | |
| M98 | 1 | Ground | Battery voltage |

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector between ionizer and fuse.

### 2.CHECK IONIZER GROUND CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Check continuity between ionizer harness connector and ground.

| Ionizer | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M98 | 3 | Ground | Existed |

Is the inspection result normal?

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

### 3.CHECK IONIZER (ON/OFF) CONTROL SIGNAL

1. Connect ionizer connector.
2. Disconnect A/C auto amp. connector.
3. Turn ignition switch ON.
4. Check voltage between A/C auto amp. harness connector and ground.

| + | | – | Voltage (Approx.) |
|---|---|---|---|
| A/C auto amp. | | | |
| Connector | Terminal | | |
| M67 | 42 | Ground | 12 V |

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".
NO >> GO TO 4.

## 4. CHECK IONIZER (ON/OFF) CONTROL SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect ionizer connector.
3. Check continuity between A/C auto amp. harness connector and ionizer harness connector.

| A/C auto amp. | | Ionizer | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M67 | 42 | M98 | 4 | Existed |

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair harness or connector.

## 5. CHECK IONIZER (ON/OFF) CONTROL SIGNAL CIRCUIT FOR SHORT

Check continuity between A/C auto amp. harness connector and ground.

| A/C auto amp. | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M67 | 42 | Ground | Not existed |

Is the inspection result normal?

YES >> Replace ionizer. Refer to HAC-194, "Removal and Installation".
NO >> Repair harness or connector.

# HEATER PUMP

## Component Function Check

INFOID:0000000008143977

### 1.CHECK HEATER PUMP OPERATING CONDITION

With CONSULT
1. Select “ACTIVE TEST” mode of “HVAC” using CONSULT.
2. Confirm heater pump operation by the sound or hose pulsation.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Refer to HAC-168, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000008143978

### 1.CHECK HEATER PUMP POWER SUPPLY-I

1. Turn ignition switch OFF.
2. Disconnect heater pump connector.
3. Turn ignition switch ON.
4. Check voltage between heater pump harness connector and ground.

| + | | − | Voltage (Approx.) |
|---|---|---|---|
| Heater pump | | | |
| Connector | Terminal | | |
| E94 | 1 | Ground | Battery voltage |

Is the inspection result normal?

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

### 2.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 10 A fuse [No.16, located in fuse block (J/B)].

**NOTE:**
Refer to PG-42, "Fuse, Connector and Terminal Arrangement".

Is the inspection result normal?

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

### 3.CHECK HEATER PUMP POWER SUPPLY-II

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector and fuse block (J/B) connector.
3. Check continuity between heater pump harness connector and fuse block (J/B) harness connector.

| Heater pump | | Fuse block (J/B) | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| E94 | 3 | M1 | 10F | Existed |

Is the inspection result normal?

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

### 4.CHECK HEATER PUMP GROUND CIRCUIT

Check continuity between heater pump harness connector and ground.

| Heater pump | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E94 | 3 | Ground | Existed |

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair harness or connector.

## 5. CHECK HEATER PUMP CONTROL CIRCUIT

1. Connect heater pump connector.
2. Disconnect heater A/C auto amp. connector.
3. Turn ignition switch ON.
4. Check voltage between A/C auto amp. harness connector and ground.

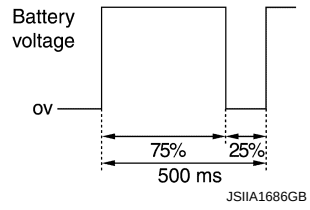
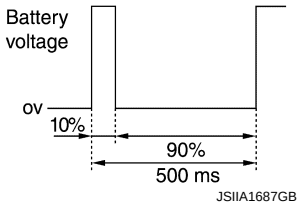
| A/C auto amp. | | – | Voltage (V) |
|---|---|---|---|
| Connector | Terminal | | |
| M66 | 17 | Ground | Battery voltage |

Is the inspection result normal?

YES >> GO TO 6.
NO >> Check harness between A/C auto amp. and heater pump, and replace heater pump if there is not malfunction.

## 6. CHECK A/C AUTO AMP. INPUT SIGNAL

1. Connect heater pump and A/C auto amp. connector.
2. Turn ignition switch ON.
3. Check signal between A/C auto amp. harness connector and ground with oscilloscope.

| A/C auto amp. | | – | Condition | Condition (Reference value) |
|---|---|---|---|---|
| Connector | + Terminal | | | |
| M66 | 17 | Ground | • Ignition switch ON<br>• Set temperature: Full hot |  JSIIA1686GB |
| | | | • Ignition switch ON<br>• A/C system stop |  JSIIA1687GB |

Is the inspection result normal?

YES >> Replace heater pump.
NO >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".

# ELECTRIC COMPRESSOR INSULATION RESISTANCE CHECK

## Component Inspection

INFOID:0000000008143979

**WARNING:**

- **Because hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.**
- **Be sure to remove the service plug in order to shut off the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.**
- **Be sure to put the removed service plug in your pocket and carry it with you so that another person does not accidentally connect it while work is in progress.**
- **Be sure to wear insulating protective equipment consisting of glove, shoes and glasses/face shield before beginning work on the high voltage system.**
- **Clearly identify the persons responsible for high voltage work and ensure that other persons do not touch the vehicle. When not working, cover high voltage parts with an insulating cover sheet or similar item to prevent other persons from contacting them.**
- **Refer to HAC-5, "High Voltage Precautions".**

**CAUTION:**

**There is the possibility of a malfunction occurring if the vehicle is changed to READY status while the service plug is removed. Therefore do not change the vehicle to READY status unless instructed to do so in the Service Manual.**

### 1. PRECONDITIONING

**WARNING:**

**Shut off high voltage circuit. Refer to GI-30, "How to Cut Off High Voltage".**

Check voltage in high voltage circuit. (Check that condenser are discharged.)

1. Disconnect high voltage connector from front side of Li-ion battery. Refer to HBB-188, "Removal and Installation".

   **DANGER:**

   **Touching high voltage components without using the appropriate protective equipment will cause electrocution.**

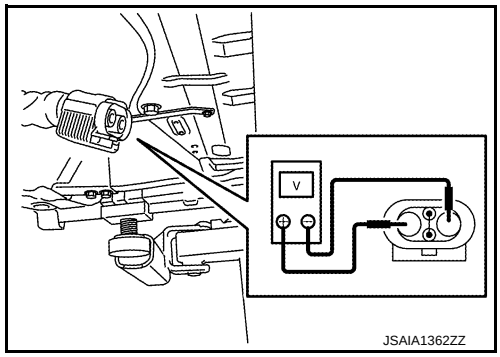
2. Measure voltage between high voltage harness terminals.

   **DANGER:**

   **Touching high voltage components without using the appropriate protective equipment will cause electrocution.**

   **Standard : 5 V or less**

   **CAUTION:**

   **For voltage measurements, use a tester which can measure to 500V or higher.**

>> GO TO 2.

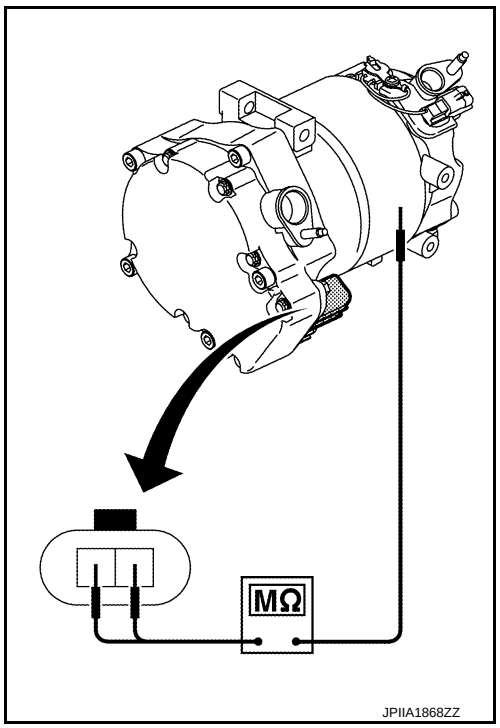
### 2. CHECK ELECTRIC COMPRESSOR INSULATION RESISTANCE

1. Disconnect high voltage harness connector from electric compressor.

2. Check the insulation resistance of the electric compressor with an insulation resistance tester.

**CAUTION:**

- **Unlike the ordinary tester, the insulation resistance tester applies 500V when measuring. If used incorrectly, there is the danger of electric shock. If used in the vehicle 12V system, there is the danger of damage to electronic devices. Read the insulation resistance tester instruction manual carefully and be sure to work safely.**
- **Use 500V range of insulation resistance tester to measure insulation resistance. Wait for 30 seconds until the value becomes stable.**




| + | | |
|---|---|---|
| Electric compressor | – | Resistance |
| Terminal | | |
| 7 | Aluminum part on side of electric compressor | 1 MΩ or more |
| 8 | | |

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace electric compressor. Refer to HA-30, "Removal and Installation".

# SYMPTOM DIAGNOSIS

## AUTOMATIC AIR CONDITIONING SYSTEM

### Symptom Table

INFOID:0000000008143980

**NOTE:**
Perform the self-diagnoses with CONSULT before performing the symptom diagnosis. If DTC is detected, perform the corresponding diagnosis.

| Symptom | | Corresponding malfunction part | Reference |
|---|---|---|---|
| A/C system does not activate. | | • Power supply and ground circuit of A/C auto amp.<br>• A/C auto amp. | HAC-153, "A/C AUTO AMP. : Diagnosis Procedure" |
| • Air conditioning system does not activate.<br>• Air conditioning system cannot be controlled (Multifunction switch).<br>• Operation status of air conditioning system is not indicated on display. | Fail-safe activates | Multi AV system | • AV-97, "Symptom Table" (Base audio without navigation)<br>• AV-253, "Symptom Table" (BOSE audio with navigation) |
| | Fail-safe does not activate | • Ignition power supply and ground circuit of A/C auto amp.<br>• A/C auto amp. | HAC-153, "A/C AUTO AMP. : Diagnosis Procedure" |
| Discharge air temperature of driver side does not change. | | Air mix door motor (driver side) system installation condition | Check air mix door motor (driver side) system is properly installed. Refer to HAC-191, "Exploded View". |
| Discharge air temperature of passenger side does not change. | | Air mix door motor (passenger side) system installation condition | Check air mix door motor (passenger side) system is properly installed. Refer to HAC-191, "Exploded View". |
| Air outlet of driver side does not change (Except upper ventilation). | | Mode door motor (driver side) system installation condition | Check mode door motor (driver side) system is properly installed. Refer to HAC-191, "Exploded View". |
| Air outlet of passenger side does not change (Except upper ventilation). | | Mode door motor (passenger side) system installation condition | Check mode door motor (passenger side) system is properly installed. Refer to HAC-191, "Exploded View". |
| Air outlet of rear side does not change. | | Rear mode door motor system installation condition | Check rear mode door motor system is properly installed. Refer to HAC-191, "Exploded View". |
| Air outlet of upper ventilator (driver side) does not change. | | Upper ventilator door motor (driver side) system installation condition | Check upper ventilator door motor (driver side) system is properly installed. Refer to HAC-191, "Exploded View". |
| Air outlet of upper ventilator (passenger side) does not change. | | Upper ventilator door motor (passenger side) system installation condition | Check upper ventilator door motor (passenger side) system is properly installed. Refer to HAC-191, "Exploded View". |
| Air inlet does not change. | | Intake door motor system installation condition | Check intake door motor system is properly installed. Refer to HAC-191, "Exploded View". |
| Blower motor operation is malfunctioning. | | • Power supply system of blower motor<br>• The circuit between blower motor and power transistor.<br>• The circuit between power transistor<br>• Blower motor<br>• Power transistor<br>• A/C auto amp. | HAC-158, "Diagnosis Procedure" |

| Symptom | | Corresponding malfunction part | Reference |
|---|---|---|---|
| Compressor does not operate. | | • The circuit between ECM and refrigerant pressure sensor<br>• Refrigerant pressure sensor<br>• CAN communication circuit<br>• A/C auto amp. | HAC-179, "Diagnosis Procedure" |
| • Insufficient cooling.<br>• No cool air comes out. (Air flow volume is normal.) | | • Cooler cycle<br>• Electric compressor<br>• Air leakage from each duct<br>• Temperature setting trimmer | HAC-176, "Diagnosis Procedure" |
| • Insufficient heating.<br>• No warm air comes out. (Air flow volume is normal.) | | • Engine cooling system<br>• Heater hose<br>• Heater core<br>• Heater pump<br>• Air leakage from each duct<br>• Temperature setting trimmer | HAC-177, "Diagnosis Procedure" |
| Noise is heard when the A/C system operates. | During compressor operation | Cooler cycle | HA-27, "Symptom Table" |
| | During blower motor operation | • Mixing any foreign object in blower motor<br>• Blower motor fan breakage<br>• Blower motor rotation inferiority | HAC-162, "Component Inspection (Blower Motor)" |
| • Memory function does not operate normally.<br>• The setting is not maintained. (It returns to the initial condition) | | • Battery power supply and ground circuit of A/C auto amp.<br>• A/C auto amp. | HAC-153, "A/C AUTO AMP. : Diagnosis Procedure" |
| Intelligent Key interlock function does not operate. | | • Door lock system<br>• CAN communication circuit<br>• A/C auto amp. | HAC-180, "Diagnosis Procedure" |

# FOREST AIR SYSTEM

## Symptom Table

INFOID:0000000008143982

**NOTE:**
- Perform the self-diagnoses with CONSULT before performing the symptom diagnosis. If DTC is detected, perform the corresponding diagnosis.
- The following table is based on the condition that automatic air conditioning system operates normally.

| Symptom | Corresponding malfunction part | Reference |
|---|---|---|
| Forest Air system cannot be controlled. | Multi AV system | AV-253, "Symptom Table" |
| Plasmacluster™ control does not operate.<br>**NOTE:**<br>• Plasmacluster™ ion technology developed by Sharp Corporation is installed in this item.<br>• Plasmacluster™ is a trademark of Sharp Corporation. | • Power supply system of ionizer<br>• The circuit between ionizer and A/C auto amp.<br>• Ionizer<br>• A/C auto amp. | HAC-166, "Diagnosis Procedure" |
| Operation status of Plasmacluster™ control does not switch according to air flow.<br>**NOTE:**<br>• Plasmacluster™ ion technology developed by Sharp Corporation is installed in this item.<br>• Plasmacluster™ is a trademark of Sharp Corporation. | A/C auto amp. | Replace A/C auto amp. Refer to HAC-183, "Removal and Installation". |
| Breezy air control does not operate normally. | A/C auto amp. | Replace A/C auto amp. Refer to HAC-183, "Removal and Installation". |
| Operation status of breezy air control is not indicated on display. (Breezy air control is normal) | | |
| Automatic intake control (exhaust gas/outside odor detecting mechanism) does not operate normally. | • Power supply system of exhaust gas/outside odor detecting sensor<br>• The circuit between exhaust gas/outside odor detecting sensor and A/C auto amp.<br>• Exhaust gas/outside odor detecting sensor<br>• A/C auto amp. | HAC-83, "Diagnosis Procedure" |
| Ambient air status indicator in display does not change from clean status or dirty status. (Exhaust gas/outside odor detecting sensor system is normal) | A/C auto amp. | Replace A/C auto amp. Refer to HAC-183, "Removal and Installation". |
| Air flow control (inside odor detecting mechanism) does not operate normally. | • Power supply system of inside odor detecting sensor<br>• The circuit between inside odor detecting sensor and A/C auto amp.<br>• Inside odor detecting sensor<br>• A/C auto amp. | HAC-163, "Diagnosis Procedure" |
| Interior air status indicator in display does not change from clean status or dirty status. (Inside odor detecting sensor system is normal) | A/C auto amp. | Replace A/C auto amp. Refer to HAC-183, "Removal and Installation". |
| Automatic defogging control does not operate normally. | • The circuit between humidity sensor and A/C auto amp.<br>• Humidity sensor<br>• A/C auto amp. | HAC-129, "Diagnosis Procedure" |
| Operation status of automatic defogging control is not indicated on display. (Humidity sensor system is normal) | A/C auto amp. | Replace A/C auto amp. Refer to HAC-183, "Removal and Installation". |
| Aroma diffuser control does not operate normally. (Aroma motor does not operate normally) | • The circuit between aroma motor and A/C auto amp.<br>• Aroma motor<br>• A/C auto amp. | HAC-124, "Diagnosis Procedure" |

| Symptom | Corresponding malfunction part | Reference |
|---|---|---|
| Aroma diffuser control does not operate normally. (Aroma motor is normal, but fragrance is not diffused.) | Aroma cartridge | Replace aroma cartridge. Refer to HAC-195, "Removal and Installation". |
| Operation status of aroma diffuser control is not indicated on display. | A/C auto amp. | Replace A/C auto amp. Refer to HAC-183, "Removal and Installation". |

# INSUFFICIENT COOLING

## Description

INFOID:0000000008143983

Symptom
- Insufficient cooling
- No cold air comes out. (Air flow volume is normal.)

## Diagnosis Procedure

INFOID:0000000008143984

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

### 1.CHECK ELECTRIC COMPRESSOR OPERATION

Check the electric compressor operation state while the air conditioner system is operated.

Does electric compressor operate?

YES >> GO TO 2.
NO >> Perform diagnosis for “COMPRESSOR DOES NOT OPERATE” in the diagnosis by symptom. Refer to HAC-179, "Diagnosis Procedure".

### 2.CHECK REFRIGERANT CYCLE

Connect recovery/recycling/recharging equipment (for HFC-134a) to the vehicle and perform the refrigerant system diagnosis. Refer to HA-27, "Symptom Table".

Is the check result normal?

YES >> GO TO 3.
NO >> Repair or replace malfunctioning part according to diagnosis result.

### 3.CHECK FOR AIR LEAKAGE FROM DUCT

Check duct and nozzle, etc. of A/C system for air leakage.

Is the check result normal?

YES >> GO TO 4.
NO >> Repair or replace parts according to the inspection results.

### 4.CHECK SETTING OF DIFFERENCE BETWEEN SET TEMPERATURE AND CONTROL TEMPERATURE

With CONSULT
1. Using CONSULT, check the setting of “TEMP SET CORRECT” on “WORK SUPPORT” of “HVAC”. Refer to HAC-69, "AUTOMATIC AIR CONDITIONING SYSTEM : Temperature Setting Trimmer".
2. Check that the difference between set temperature and control temperature is set to “+ direction”.
   **NOTE:**
   The control temperature can be set with a setting difference between the set temperature and control temperature.
3. Change the set temperature correction value to “0”.

Are the symptoms solved?

YES >> Perform the setting separately if necessary. Inspection End.
NO >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".

# INSUFFICIENT HEATING

## Description

INFOID:0000000008143985

Symptom
- Insufficient heating
- No warm air comes out. (Air flow volume is normal.)

## Diagnosis Procedure

INFOID:0000000008143986

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

### 1.CHECK HEATING SYSTEM

1. Check engine coolant level and check for leakage. Refer to CO-7, "Inspection".
2. Check the water flow sounds on coolant. Refer to CO-8, "Refilling".

Is the check result normal?

YES >> GO TO 2.
NO >> Refill the engine coolant and repair or replace the parts according to the inspection results.

### 2.CHECK HEATER PUMP

Check the heater pump operation. Refer to HAC-168, "Component Function Check".

Is the check result normal?

YES >> GO TO 3.
NO >> Repair or replace malfunctioning part according to diagnosis result.

### 3.CHECK HEATER HOSE INSTALLATION CONDITION

Check the heater hose installation condition visually (for twist, crush, etc.).

Is the check result normal?

YES >> GO TO 4.
NO >> Repair or replace malfunctioning part according to diagnosis result.

### 4.CHECK HEATER CORE

1. Check the temperature of inlet hose and outlet hose of heater core.
2. Check that the inlet side of heater core is hot and the outlet side is slightly lower than/almost equal to the inlet side.

**CAUTION:**
**The temperature inspection should be performed after a short time because the engine coolant temperature is too hot.**

Is the check result normal?

YES >> GO TO 5.
NO >> Replace the heater core.

### 5.CHECK FOR AIR LEAKAGE FROM DUCT

Check duct and nozzle, etc. of A/C system for air leakage.

Is the check result normal?

YES >> GO TO 6.
NO >> Repair or replace malfunctioning part according to diagnosis result.

### 6.CHECK SETTING OF DIFFERENCE BETWEEN SET TEMPERATURE AND CONTROL TEMPERATURE

With CONSULT
1. Using CONSULT, check the setting of “TEMP SET CORRECT” on “WORK SUPPORT” of “HVAC”. Refer to HAC-69, "AUTOMATIC AIR CONDITIONING SYSTEM : Temperature Setting Trimmer".
2. Check that the difference between set temperature and control temperature is set to “- direction”.

**NOTE:**
The control temperature can be set with a setting difference between the set temperature and control temperature.

3. Change the set temperature correction value to “0”.

Are the symptoms solved?

YES >> Perform the setting separately if necessary. Inspection End.
NO >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".

# COMPRESSOR DOES NOT OPERATE

## Description

INFOID:0000000008143987

### SYMPTOM

Compressor does not operate.

## Diagnosis Procedure

INFOID:0000000008143988

**NOTE:**

- Perform self-diagnoses with CONSULT before performing symptom diagnosis. If any DTC is detected, perform the corresponding diagnosis.
- Check that refrigerant is enclosed in cooler cycle normally. If refrigerant amount is shortage from proper amount, perform the inspection of refrigerant leakage.

### 1. CHECK REFRIGERANT PRESSURE SENSOR

Check refrigerant pressure sensor. Refer to EC-430, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts.

### 2. CHECK A/C AUTO AMP. INPUT SIGNAL

With CONSULT

1. Select “DATA MONITOR” mode of “HVAC” using CONSULT.
2. Select “A/C PD CUT”, and check status under the following conditions.

| Monitor item | Condition | | Status |
|---|---|---|---|
| A/C PD CUT | Ignition switch ON | A/C switch ON (A/C compressor activate) | Normal condition: OFF<br>Except above: ON |

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check for the ECM. Refer to EC-35, "AIR CONDITIONING CUT CONTROL : System Description".

### 3. CHECK A/C AUTO AMP. OUTPUT SIGNAL

With CONSULT

Check “COMP REQ SIG” and “FAN REQ SIG” in “DATA MONITOR” mode of “HVAC” using CONSULT.

| Monitor item | Condition | | Status |
|---|---|---|---|
| COMP REQ SIG | “Climate” menu | ON | On |
| | | OFF | Off |
| FAN REQ SIG | Blower motor | ON | On |
| | | OFF | Off |

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".

### 4. CHECK A/C AUTO AMP. OUTPUT SIGNAL

With CONSULT

1. Select “ACTIVE TEST” mode of “HVAC” using CONSULT. Refer to HAC-39, "CONSULT Function".
2. Check the electric compressor operations in each mode.

Is the inspection result normal?

YES >> Replace A/C auto amp.
NO >> Replace electric compressor.

# INTELLIGENT KEY INTERLOCK FUNCTION DOES NOT OPERATE

## Description

INFOID:0000000008143989

Symptom: Intelligent Key interlock function does not operate.

## Diagnosis Procedure

INFOID:0000000008143990

### 1.CHECK DOOR LOCK SYSTEM

Check door lock system Refer to DLK-44, "Work Flow".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts.

### 2.CHECK INTERMITTENT INCIDENT

Refer to GI-49, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-183, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

# NORMAL OPERATING CONDITION

## Description

INFOID:0000000008143991

### FOREST AIR SYSTEM

Each control of Forest Air system turns OFF automatically, when A/C auto amp. recognizes that ambient temperature is –2°C (28°F) or less.

| Control | Symptom |
|---|---|
| Automatic intake control (exhaust gas/outside odor detecting mechanism) | When Forest Air system is ON<br>• FOREST switch indicator lamp turns OFF and control turns OFF.<br>When Forest Air system is OFF<br>• Control does not turn ON when FOREST switch is pressed. |
| Air flow control (inside odor detecting mechanism) | |
| Automatic defogging control | When Forest Air system is ON<br>• FOREST switch indicator lamp and “AUTO DEF” on display turn OFF and control turns OFF.<br>**NOTE:**<br>AUTO switch indicator lamp and “AUTO” on display do not turn OFF.<br>When Forest Air system is OFF<br>• Control does not turn ON when FOREST switch or AUTO switch is pressed.<br>**NOTE:**<br>AUTO indicator lamp and “AUTO” on display turn ON. |

Each control of Forest Air system reactivates according to the following procedures, when A/C auto amp. recognizes that ambient temperature is 0°C (32°F) or more.

Control that reactivates automatically

| Control | Reactivation procedure |
|---|---|
| Automatic defogging control | When ambient temperature is 0°C (32°F) or more, FOREST switch indicator lamp does not turn ON again, but AUTO DEF on display turns ON again automatically and control reactivates automatically. |

Control that does not reactivate automatically

| Control | Reactivation procedure |
|---|---|
| Automatic intake control (exhaust gas/outside odor detecting mechanism) | When ambient temperature is 0°C (32°F) or more, FOREST switch indicator lamp does not turn ON again and control does not reactivate. It is necessary to turn FOREST switch ON again for reactivating control. |
| Air flow control (inside odor detecting mechanism) | |

**NOTE:**

Automatic control of conventional automatic air conditioning system has priority for preventing fogging of window, when ambient temperature is low.

# REMOVAL AND INSTALLATION

## MULTIFUNCTION SWITCH

### Removal and Installation

INFOID:0000000008143992

REMOVAL

Refer to AV-104, "Removal and Installation" (BASE AUDIO WITHOUT NAVIGATION) or AV-264, "Removal and Installation" (BOSE AUDIO WITH NAVIGATION)

INSTALLATION

Install in the reverse order of removal.

# A/C AUTO AMP.

## Exploded View

INFOID:0000000008143993

Refer to VTL-16, "Exploded View".

## Removal and Installation

INFOID:0000000008143994

### REMOVAL

**CAUTION:**

**Before replacing A/C auto amp., perform “READ CONFIGURATION” to save or print current vehicle specification. Refer to HAC-67, "Description".**

1. Remove glove box. Refer to IP-13, "Removal and Installation".
2. Remove screws, and then remove A/C auto amp..

### INSTALLATION

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

**CAUTION:**

**Be sure to perform “WRITE CONFIGRATION” when replacing A/C auto amp.. Refer to HAC-67, "Work Procedure".**

# AMBIENT SENSOR

## Removal and Installation

INFOID:0000000008143995

### REMOVAL

1. Remove air duct. Refer to EM-26, "Removal and Installation".
2. Disconnect harness connector, and then remove ambient sensor.

### INSTALLATION

Install in the reverse order of removal.

# IN-VEHICLE SENSOR

## Removal and Installation

INFOID:0000000008143996

### REMOVAL

1. Remove instrument lower panel LH. Refer to IP-13, "Removal and Installation".
2. Remove screws, and then remove in-vehicle sensor.

### INSTALLATION

Install in the reverse order of removal.

# SUNLOAD SENSOR

## Removal and Installation

INFOID:0000000008143997

### REMOVAL

1. Remove front defroster grille. Refer to VTL-10, "FRONT DEFROSTER GRILLE : Removal and Installation".
2. Disconnect harness connector, and then remove sunload sensor.

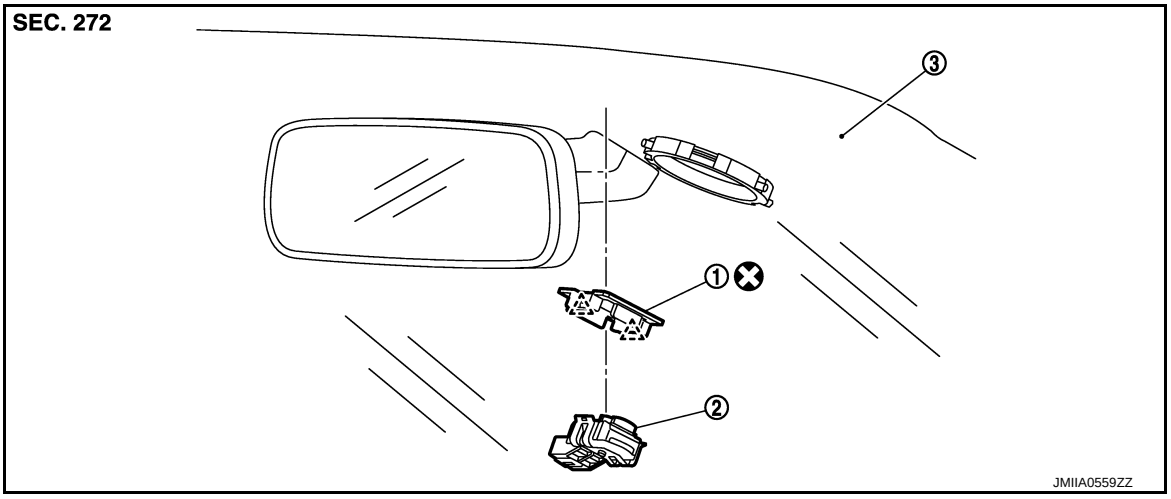
### INSTALLATION

Install in the reverse order of removal.

# HUMIDITY SENSOR

## Exploded View

INFOID:0000000008143998




1. Bracket
2. Humidity sensor
3. Windshield glass

Pawl

Refer to GI-5, "Components" for symbols in the figure.

## Removal and Installation

INFOID:0000000008143999

### REMOVAL

1. Remove front camera finisher. Refer to INT-47, "Removal and Installation".
2. Disconnect harness connector from humidity sensor.
3. Disengage the pawls, and then remove humidity sensor.

### INSTALLATION

Install in the reverse order of removal.

# INTAKE SENSOR

## Exploded View

INFOID:0000000008144000

Refer to HA-42, "Exploded View".

## Removal and Installation

INFOID:0000000008144001

### REMOVAL

1. Remove evaporator assembly. Refer to HA-44, "HEATER & COOLING UNIT ASSEMBLY : Removal and Installation".
2. Remove intake sensor from evaporator assembly.

### INSTALLATION

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

**CAUTION:**

- **Mark the mounting position of intake sensor bracket prior to removal so that the reinstalled sensor can be located in the same position.**
- **When removing or installing the intake sensor, be sure not to rotate the bracket insertion part. Failure to do this may cause damage to the evaporator.**

# INSIDE ODOR DETECTING SENSOR

## Exploded View

INFOID:0000000008144002

Refer to HA-42, "Exploded View".

## Removal and Installation

INFOID:0000000008144003

### REMOVAL

1. Remove instrument lower panel LH. Refer to IP-13, "Removal and Installation".
2. Remove aspirator duct, and then disconnect harness connector from inside odor detecting sensor.
3. Remove clip, and then remove inside odor detecting sensor.

### INSTALLATION

Install in the reverse order of removal.

# EXHAUST GAS/OUTSIDE ODOR SENSOR

## Removal and Installation

INFOID:0000000008144004

### REMOVAL

1. Remove air duct. Refer to EM-26, "Removal and Installation".
2. Remove nuts, and then remove exhaust gas/outside odor sensor.

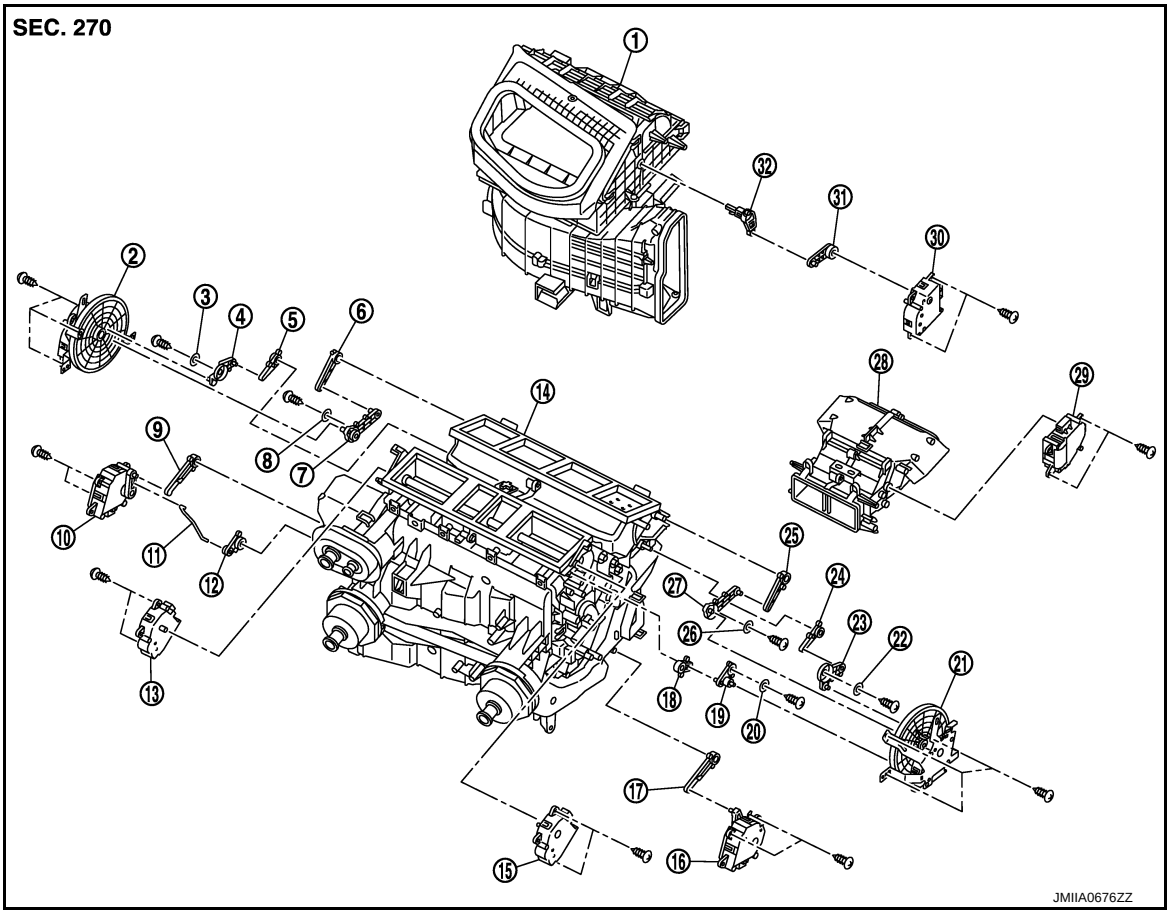
### INSTALLATION

Install in the reverse order of removal.

# DOOR MOTOR

## Exploded View

INFOID:0000000008144005




1. Blower unit
2. Mode door motor RH
3. Plate
4. Mode door link RH
5. Foot door lever RH
6. Ventilator door lever RH
7. Ventilator door link
8. Plate
9. Heater door lever
10. Air mix door motor
11. Rod
12. Air mix door lever
13. Upper ventilator door motor RH
14. Heater & cooling unit assembly
15. Upper ventilator door motor LH
16. Air mix door motor LH
17. Heater door lever LH
18. Defroster door lever
19. Defroster door link
20. Plate
21. Mode door motor LH
22. Plate
23. Mode door link LH
24. Foot door lever LH
25. Ventilator door lever LH
26. Plate
27. Ventilator door link LH
28. Rear mode door case assembly
29. Rear mode door motor
30. Intake door motor
31. Intake door lever
32. Intake door link

# MODE DOOR MOTOR

## MODE DOOR MOTOR : Removal and Installation

INFOID:0000000008144006

### REMOVAL

1. Remove heater & cooling unit assembly. Refer to HA-44, "HEATER & COOLING UNIT ASSEMBLY : Removal and Installation".
2. Remove mounting screws, and then remove mode door motor.
3. Disconnect mode door motor connector.

### INSTALLATION

Install in the reverse order of removal.

## AIR MIX DOOR MOTOR

### AIR MIX DOOR MOTOR : Removal and Installation

INFOID:0000000008144007

REMOVAL

1. Set the temperature at 18°C (60°F). Then disconnect the battery cable from the negative terminal.
   **CAUTION:**
   **The angle may be out, when installing the air mix door motor to the air mix door, unless the above procedure is performed.**
2. Remove heater & cooling unit assembly. Refer to HA-44, "HEATER & COOLING UNIT ASSEMBLY : Removal and Installation".
3. Remove blower unit assembly from heater & cooling unit assembly. Refer to VTL-17, "BLOWER UNIT : Removal and Installation". (passenger side only)
4. Remove mounting screws, and then remove air mix door motor.
5. Disconnect air mix door motor connector.

INSTALLATION

Install in the reverse order of removal.

## INTAKE DOOR MOTOR

### INTAKE DOOR MOTOR : Removal and Installation

INFOID:0000000008144008

REMOVAL

1. Remove heater & cooling unit assembly. Refer to HA-44, "HEATER & COOLING UNIT ASSEMBLY : Removal and Installation".
2. Remove mounting screws, and then remove intake door motor.
3. Disconnect intake door motor connector.

INSTALLATION

Install in the reverse order of removal.

## UPPER VENTILATOR DOOR MOTOR

### UPPER VENTILATOR DOOR MOTOR : Removal and Installation

INFOID:0000000008144009

REMOVAL

1. Remove heater & cooling unit assembly. Refer to HA-44, "HEATER & COOLING UNIT ASSEMBLY : Removal and Installation".
2. Remove mounting screws, and then remove upper ventilator door motor.
3. Disconnect upper ventilator door motor connector.

INSTALLATION

Install in the reverse order of removal.

## REAR MODE DOOR MOTOR

### REAR MODE DOOR MOTOR : Removal and Installation

INFOID:0000000008144010

REMOVAL

1. Remove instrument panel assembly. Refer to IP-13, "Removal and Installation".
2. Remove mounting screws, and then remove rear mode door motor.
3. Disconnect rear mode door motor connector.

INSTALLATION

Install in the reverse order of removal.

# POWER TRANSISTOR

## Exploded View

INFOID:0000000008144011

Refer to VTL-16, "Exploded View".

## Removal and Installation

INFOID:0000000008144012

### REMOVAL

1. Remove instrument lower cover. Refer to IP-13, "Removal and Installation".
2. Remove mounting screws, and then remove power transistor.

### INSTALLATION

Install in the reverse order of removal.

# IONIZER

## Exploded View

INFOID:0000000008144013

Refer to VTL-8, "Exploded View".

## Removal and Installation

INFOID:0000000008144014

### Removal

1. Remove instrument panel assembly. Refer to IP-13, "Removal and Installation".
2. Remove mounting screws, and then remove ionizer from ventilator duct LH.
   **CAUTION:**
   **Never tough the surface (ceramic part) of the ionizer. It is the discharge electrode.**
3. Disconnect ionizer harness connector.

### INSTALLATION

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

**CAUTION:**
**If there is dirt, use a clean cloth and clean the discharge electrode (ceramic part) of the ionizer.**

# AROMA UNIT ASSY

## Exploded View

INFOID:0000000008144015

Refer to VTL-16, "Exploded View".

## Removal and Installation

INFOID:0000000008144016

### REMOVAL

1. Remove instrument lower panel RH. Refer to IP-13, "Removal and Installation".
2. Disconnect aroma tube and harness connector.
3. Remove mounting screws, and then remove aroma unit.

### INSTALLATION

Note the following items, Install in the reverse order of removal.

**CAUTION:**

- **Install aroma tube so that it is free of kinks.**
- **Operate aroma unit after installation. Check that aroma is supplied from air outlet or passenger side ventilator.**