# SECTION HAC

# HEATER & AIR CONDITIONING CONTROL SYSTEM

## CONTENTS

## MANUAL AIR CONDITIONING

# PRECAUTION

## PRECAUTIONS

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

INFOID:0000000010181618

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

**WARNING:**

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

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

**WARNING:**

- **When working near the Airbag Diagnosis Sensor Unit or other Airbag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery and wait at least three minutes before performing any service.**

### Precaution for Work

INFOID:0000000010181619

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

- Water soluble dirt:

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

- Oily dirt:

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

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

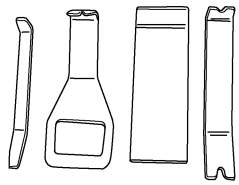
# PREPARATION

## PREPARATION

### Special Service Tool

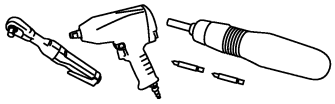
INFOID:0000000010181622

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

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

### Commercial Service Tool

INFOID:0000000010181623

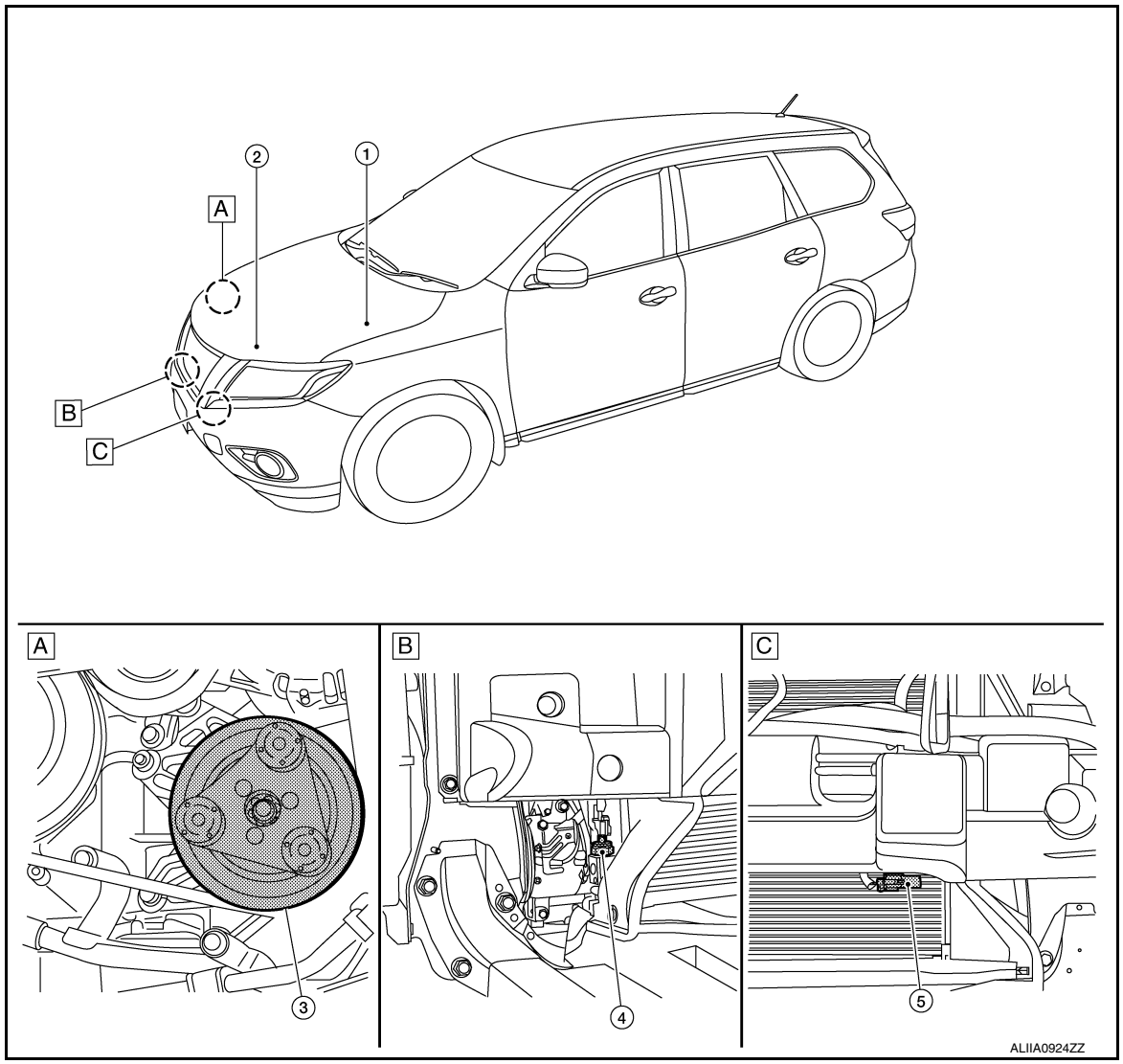
| (TechMate No.)<br>Tool name | Description |
|---|---|
| ( — )<br>Power tool<br>  <br>PIIB1407E | Loosening nuts, screws and bolts |

# SYSTEM DESCRIPTION

## COMPONENT PARTS

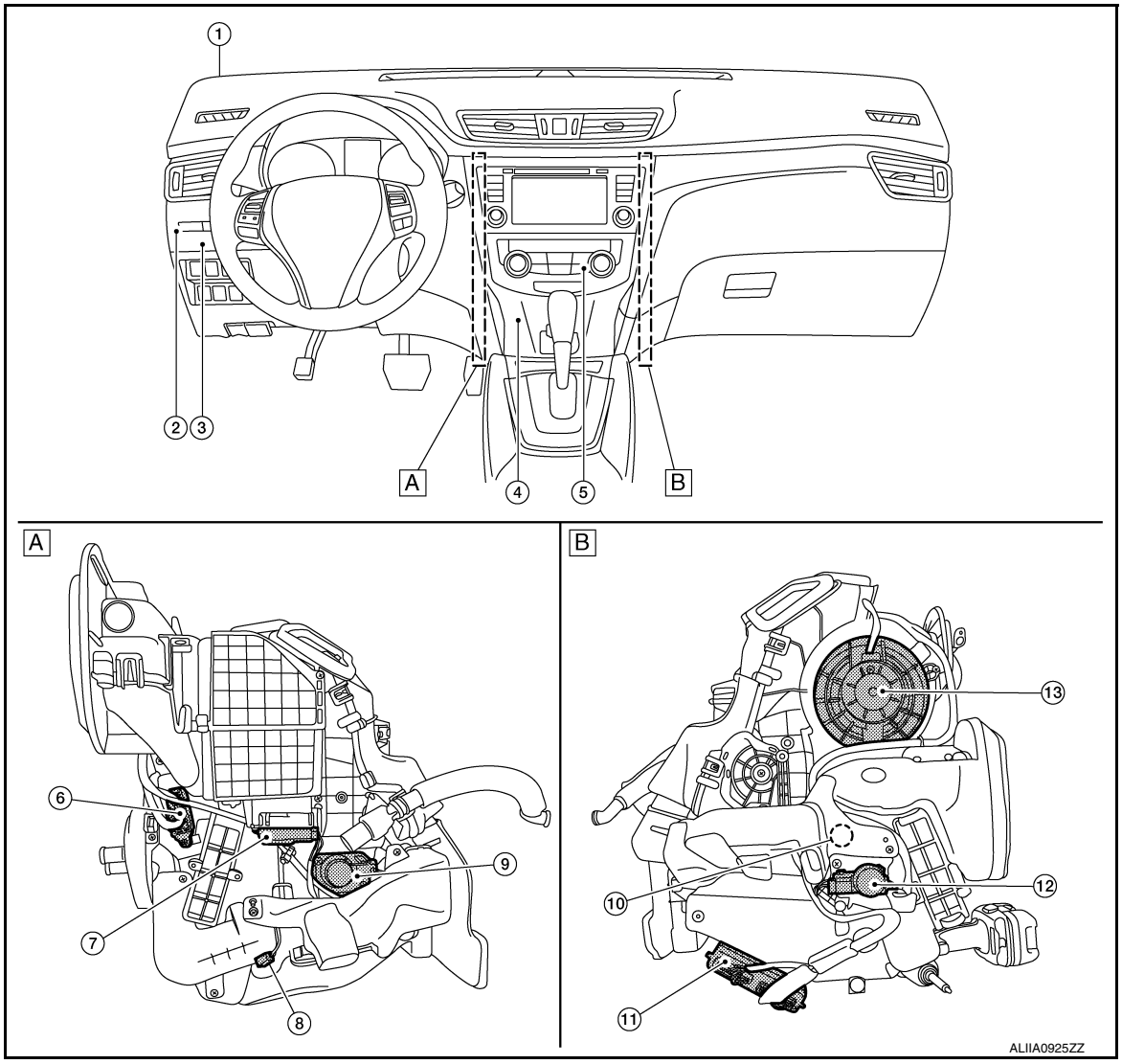
### Component Part Location

INFOID:0000000010012025




A. RH side of engine compartment
B. RH front of vehicle (view with front bumper fascia removed)
C. LH front of vehicle (view with front bumper fascia removed)

| No. | Component | Description |
|---|---|---|
| 1. | IPDM E/R | Refer to PCS-5, "RELAY CONTROL SYSTEM : System Description". |
| 2. | ECM | The ECM sends a compressor ON request to the IPDM E/R based on the status of engine operation and load as well as refrigerant pressure information. If all the conditions are met for A/C operation, the ECM transmits the compressor ON request to the IPDM E/R. |
| 3. | A/C Compressor | Vaporized refrigerant is drawn into the A/C compressor from the evaporator, where it is compressed to a high pressure, high temperature vapor. The hot, compressed vapor is then discharged to the condenser. |
| 4. | Refrigerant pressure sensor | Refer to EC-28, "Refrigerant Pressure Sensor". |
| 5. | Ambient sensor | The ambient sensor measures the temperature of the air surrounding the vehicle. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases. |




A. Left side of A/C unit B. Right side of A/C unit

| No. | Component | Description |
|---|---|---|
| 1. | 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. |
| 2. | Front blower relay | The front blower relay controls the flow of current to fuse 17 and 27 in the Fuse Block (J/B). The relay is grounded when the ignition switch is in the ON position. |
| 3. | BCM | The BCM receives the fan ON and A/C ON signals from the A/C auto amp. and sends a compressor ON request to the ECM. |
| 4. | In-vehicle sensor | In-vehicle sensor measures temperature of intake air that flows through aspirator to passenger room. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases. |
| 5. | A/C switch assembly | The A/C switch assembly controls the operation of the A/C and heating system based on inputs from the temperature control knob, the mode switches, the blower control dial, the ambient temperature sensor, the intake sensor, and inputs received from the ECM across the CAN. Diagnosis of the A/C switch assembly can be performed using the CONSULT. There is no self-diagnostic feature available. |
| 6. | Variable blower control | The variable blower control controls the speed of the blower motor by controlling the ground circuit of the blower motor. The front air control provides voltage to the gate of the variable blower control based on the position of the blower control dial. |

| No. | Component | Description |
|---|---|---|
| 7. | Intake door motor | The intake door motor controls the position of the intake door. Fresh air is allowed to enter the cabin in one position, and recirculated inside air is allowed to enter in the other position. The intake door motor receives position commands from the A/C auto amp. |
| 8. | Intake sensor | The intake sensor measures the temperature of the front evaporator fins. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases. |
| 9. | Air mix door motor (driver side) | The air mix door controls the mix of hot or cold air that enters the ventilation system. It is controlled by the A/C auto amp. based on the position of the temperature dial. The air mix door motor LH receives position commands from the A/C auto amp. |
| 10. | Mode door motor | The mode door controls the direction the conditioned air passes through the ventilation system. Through a series of levers and gears, the mode door controls the defrost door, the foot door, and the vent door. There are 5 preset positions: VENT, B/L, FOOT, D/F, and DEF. The mode door motor receives position commands from the A/C auto amp. |
| 11. | A/C auto amp. | A/C auto amp. controls front automatic air conditioning system by inputting and calculating signals from each sensor and each switch. |
| 12. | Air mix door motor (passenger side) | The air mix door controls the mix of hot or cold air that enters the ventilation system. It is controlled by the A/C auto amp. based on the position of the temperature dial. The air mix door motor LH receives position commands from the A/C auto amp. |
| 13. | Front Blower motor | The blower motor varies the speed at which the air flows through the ventilation system. |

# SYSTEM

## System Description

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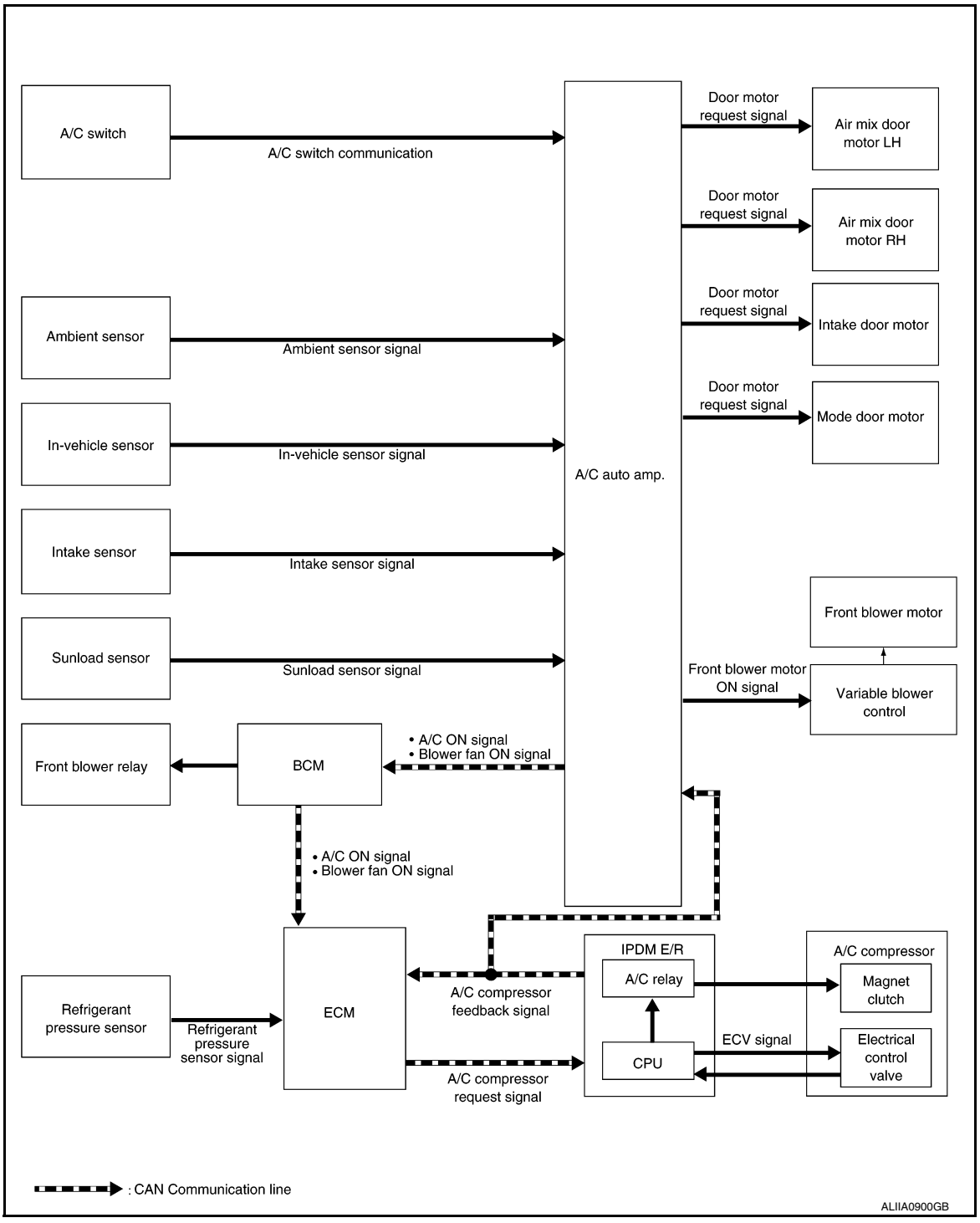
### SYSTEM DIAGRAM




### SYSTEM DESCRIPTION

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

Control by A/C auto amp.

- HAC-11, "Air Flow Control"
- HAC-12, "Air Inlet Control"
- HAC-13, "Air Outlet Control"

- HAC-13, "Compressor Control"
- HAC-13, "Door Control"
- HAC-18, "Temperature Control"
- 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 the 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 [in-vehicle temperature correction]
- Passenger room temperature detected by in-vehicle sensor is corrected for each front 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. quickly when difference is large between recognition intake temperature and intake temperature detected by intake temperature sensor. The correction is performed to change recognition intake temperature slowly when difference is small.

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

Set temperature correction
- A/C auto amp. performs correction to the target temperature set by the temperature control switch so as to match the temperature felt by the passengers depending on the ambient temperature detected by the ambient sensor, and controls it so the in-vehicle temperature is always the most suitable.

Control by ECM
- Cooling fan control
  Refer to PCS-5, "RELAY CONTROL SYSTEM : System Description".
- Air conditioning cut control
  Refer to EC-45, "AIR CONDITIONING CUT CONTROL : System Description".

Control by IPDM E/R
- Relay control
  Refer to PCS-5, "RELAY CONTROL SYSTEM : System Description".
- Cooling fan control
  Refer to PCS-5, "RELAY CONTROL SYSTEM : System Description".

Control by BCM
- Relay control
  Refer to BCS-8, "BODY CONTROL SYSTEM : System Description" (with Intelligent Key system) or BCS-80, "BODY CONTROL SYSTEM : System Description" (without Intelligent Key system).

## Air Flow Control

INFOID:0000000010012029

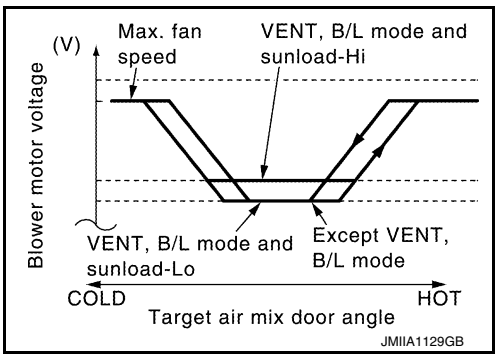
### DESCRIPTION

- A/C auto amp. changes duty ratio of blower motor drive signal and controls air flow continuously. When air flow is increased, duty ratio of blower motor control signal gradually increases to prevent a sudden increase in air flow.
- In addition to manual control and automatic control, air flow control consists of starting fan speed control, low coolant temperature starting control, high in-vehicle temperature starting control and fan speed control at door motor operation

### AUTOMATIC AIR FLOW CONTROL

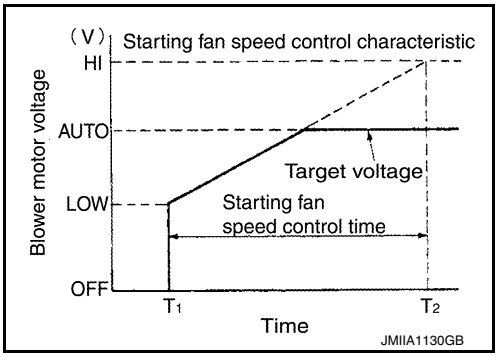
- A/C auto amp. decides target air flow depending on target air mix door opening angle.
- A/C auto amp. changes duty ratio of blower motor control signal and controls the air flow continuously so that air flow matches the target air flow.

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



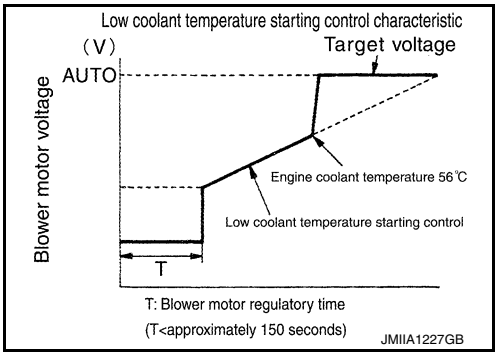

### STARTING AIR FLOW CONTROL

- When blower motor is activated, A/C auto amp. gradually increases duty ratio of blower motor control signal to prevent a sudden increase in discharge air flow.
- It takes approximately 8 seconds for air flow to reach HI from LOW.




### LOW COOLANT TEMPERATURE STARTING CONTROL

If the engine coolant temperature is 56°C (133°F) or less, to prevent a cold discharged air flow, A/C auto amp. suspends blower motor activation for a maximum of 150 seconds depending on target air mix door opening angle. After this, blower motor control signal is increased gradually, and blower motor is activated.




### HIGH IN-VEHICLE TEMPERATURE STARTING CONTROL

When front evaporator fin temperature is high [intake sensor value is 35°C (95°F) or more], to prevent a hot discharged air flow, A/C auto amp. suspends blower motor activation for approximately 3 seconds so that front evaporator is cooled by refrigerant.

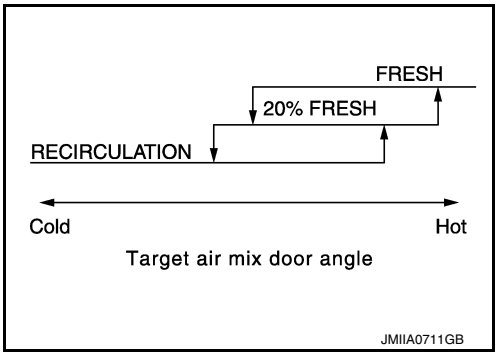
### FAN SPEED CONTROL AT DOOR MOTOR OPERATION

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

## Air Inlet Control

*INFOID:0000000010012030*

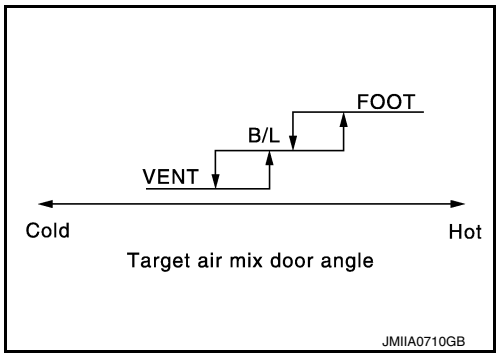
The intake door is automatically controlled by the temperature setting, ambient temperature, in-vehicle temperature, intake temperature, amount of sunload and ON/OFF operation of the compressor.
Intake door automatic control selects FRE, 20% FRE, or REC depending on a target air mix door opening angle, based on in-vehicle temperature, ambient temperature, and sunload.



## Air Outlet Control

INFOID:0000000010012031

- While air outlet is in automatic control, A/C auto amp. selects the mode door position depending on a target air mix door angle and outlet air temperature calculated from sunload.
- If ambient temperature is excessively low, D/F is selected to prevent windshield fogging when air outlet is set to FOOT.




## Compressor Control

INFOID:0000000010012032

### DESCRIPTION

- When the compressor activation condition is satisfied while blower motor is activated, A/C auto amp. transmits A/C ON signal and blower fan ON signal to BCM.
- BCM transmits the A/C ON signal and blower fan ON signal to the ECM via CAN communication line.
- ECM judges that the compressor can be activated depending on the state of each sensor (refrigerant pressure sensor signal and others) and transmits A/C compressor request signal to IPDM E/R via CAN communication.
- IPDM E/R turns A/C relay ON and activates the compressor depending on request from ECM.

### 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 IPDM E/R to turn A/C relay OFF and stops the compressor.

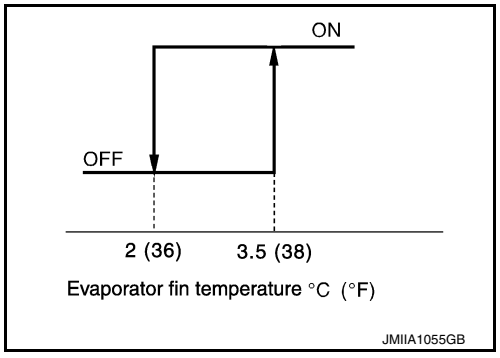
- 3.12 MPa (31.82 kg/cm$^2$, 452.4 psi) or more (When the engine speed is less than 1,500 rpm)
- 2.74 MPa (27.95 kg/cm$^2$, 397.3 psi) or more (When the engine speed is 1,500 rpm or more)
- 0.14 MPa (1.43 kg/cm$^2$, 20.3 psi) or less

### COMPRESSOR OIL CIRCULATION CONTROL

When the engine starts while the engine coolant temperature is 56°C (133°F) or less, ECM activates the compressor for approximately 6 seconds and circulates the compressor lubricant once.

### LOW TEMPERATURE PROTECTION CONTROL

- When intake sensor detects that front evaporator fin temperature is 2°C (36°F) or less, A/C auto amp. requests ECM to turn compressor OFF, and stops the compressor.
- When the front evaporator fin temperature returns to 3.5°C (38°F) or more, the compressor is activated.




### AIR CONDITIONING CUT CONTROL

When set engine is running is excessively high load condition, ECM requests IPDM E/R to turn A/C relay OFF, and stops the compressor. Refer to EC-45, "AIR CONDITIONING CUT CONTROL : System Description".

## Door Control

INFOID:0000000010012033

### AIR MIX DOOR MOTOR (DRIVER SIDE)

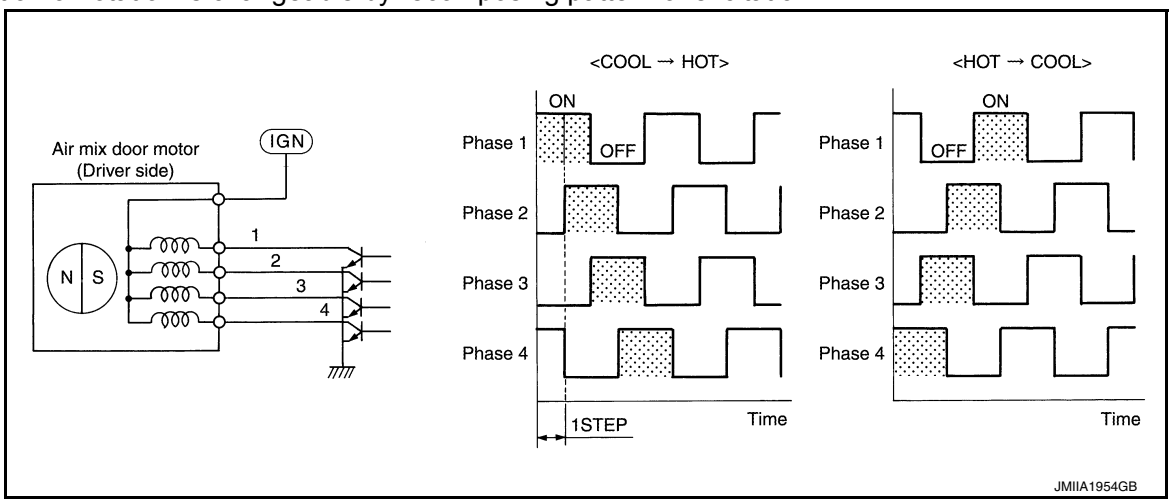
#### DESCRIPTION

- The step motor system is adopted for air mix door motor (driver side).
- When a drive signal is input from A/C auto amp. to door motor, a step motor built into the door motor rotates according to the drive signal, and then stops at the target door position.

- Rotation of motor is transmitted to air mix door (driver side) [upper air mix door (driver side) and lower air mix door (driver side)] by link, rod and lever, then air flow temperature (driver side) is switched.

DRIVE METHOD

- The 4 drive coils are excited in sequence in order to drive the motor.
- Direction of rotation is changeable by recomposing pattern of excitation.



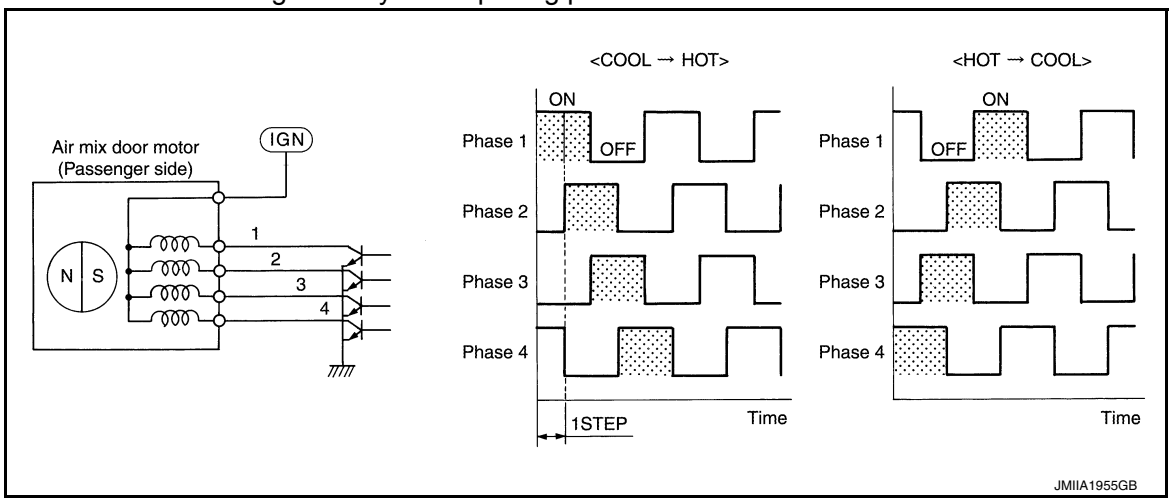

## AIR MIX DOOR MOTOR (PASSENGER SIDE)

DESCRIPTION

- The step motor system is adopted for air mix door motor (passenger side).
- When a drive signal is input from A/C auto amp. to door motor, a step motor built into the door motor rotates according to the drive signal, and then stops at the target door position.
- Rotation of motor is transmitted to air mix door (passenger side) [upper air mix door (passenger side) and lower air mix door (passenger side)] by link, rod and lever, then air flow temperature (passenger side) is switched.

DRIVE METHOD

- The 4 drive coils are excited in sequence in order to drive the motor.
- Direction of rotation is changeable by recomposing pattern of excitation.




## MODE DOOR MOTOR

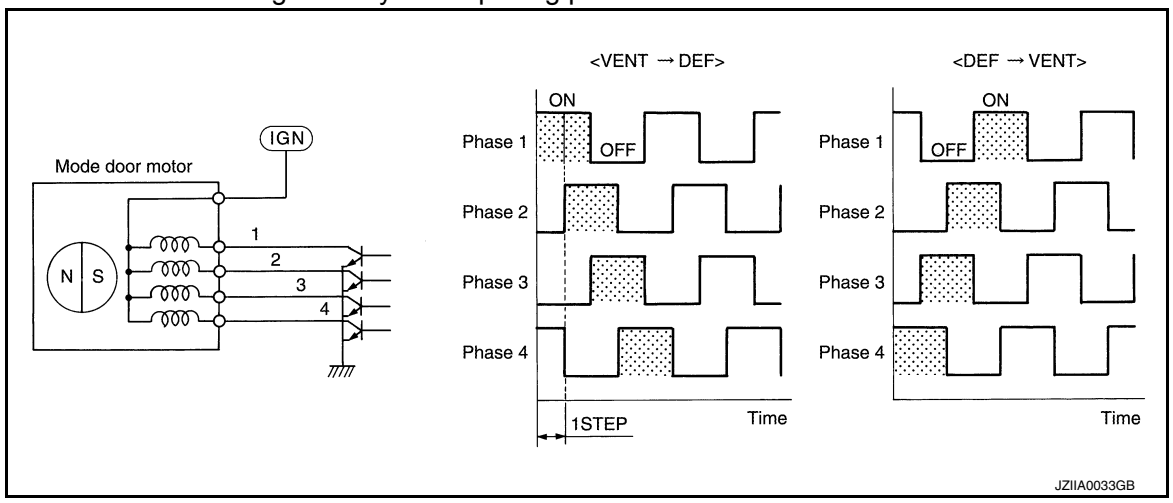
DESCRIPTION

- The step motor system is adopted for mode door motor.
- When a drive signal is input from A/C auto amp. to door motor, a step motor built into the door motor rotates according to the drive signal, and then stops at the target door position.
- Rotation of motor is transmitted to mode door (center ventilator and defroster door, sub defroster door, side ventilator door, and foot door) by link, rod, and lever, then air outlet is switched.

DRIVE METHOD

- The 4 drive coils are excited in sequence in order to drive the motor.

• Direction of rotation is changeable by recomposing pattern of excitation.



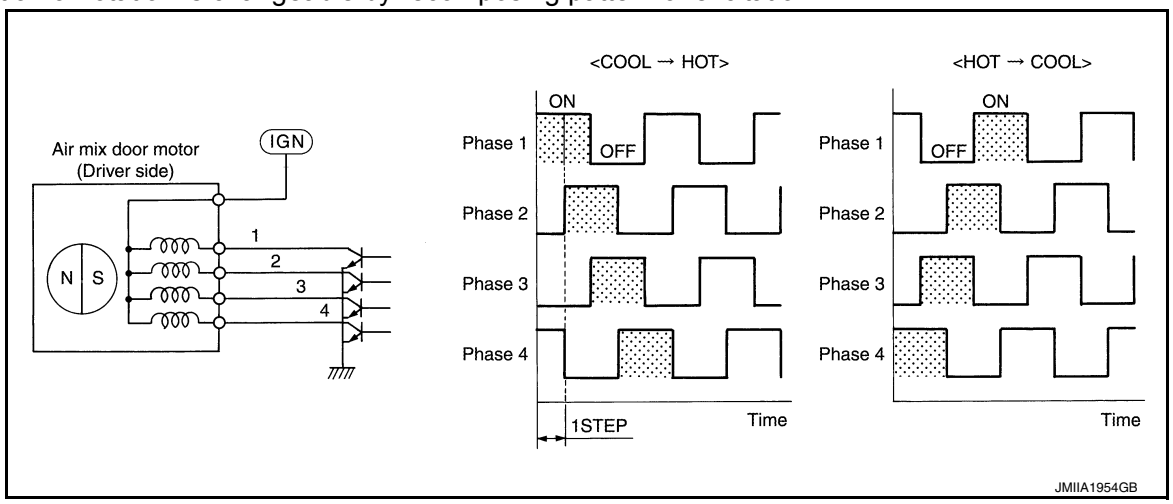

## INTAKE DOOR MOTOR

### DESCRIPTION

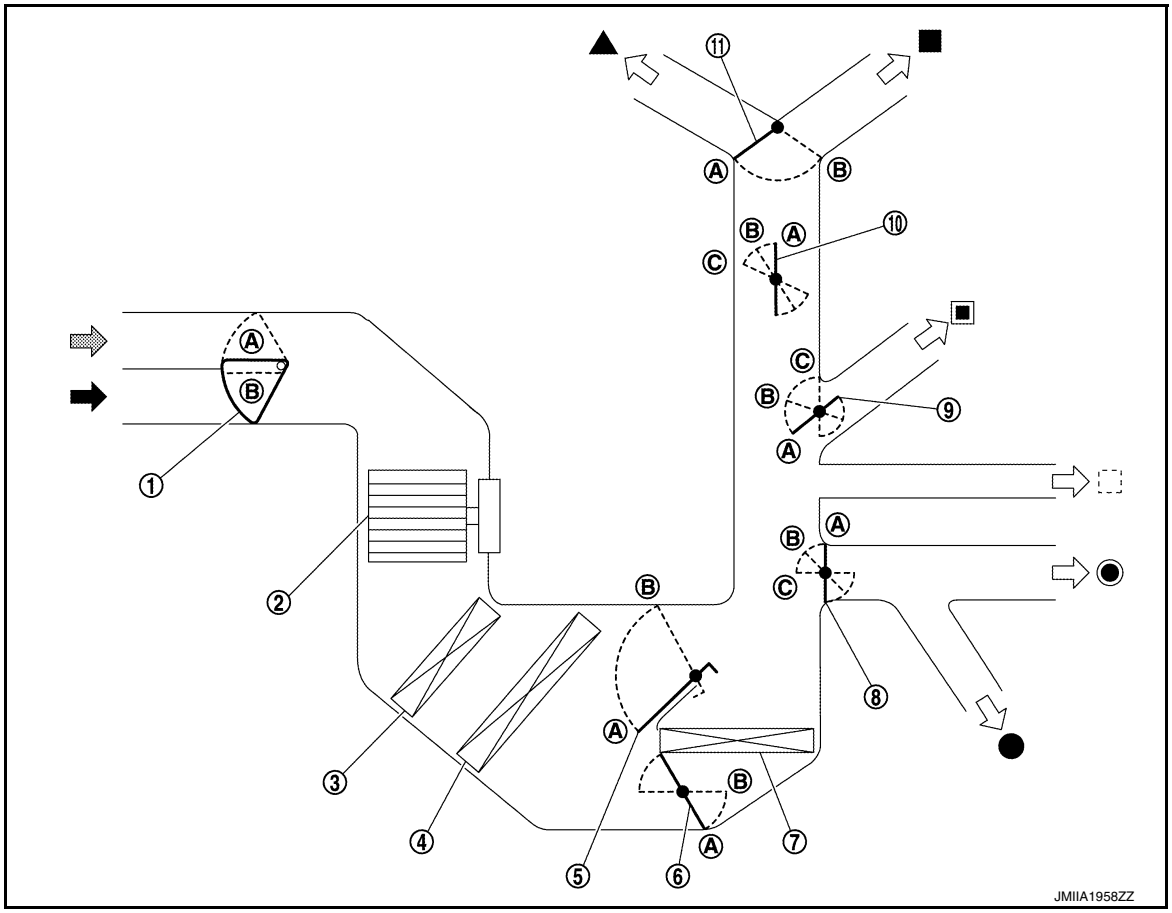
• The step motor system is adopted for intake door motor.
• When a drive signal is input from A/C auto amp. to door motor, a step motor built into the door motor rotates according to the drive signal, and then stops at the target door position.
• Rotation of motor is transmitted to intake door, then air flow is switched.

### DRIVE METHOD

• The 4 drive coils are excited in sequence in order to drive the motor.
• Direction of rotation is changeable by recomposing pattern of excitation.




## SWITCHES AND THEIR CONTROL FUNCTION




① Intake door
② Blower motor
③ Air conditioner filter
④ Evaporator
⑤ Upper air mix door (driver side/passenger side)
⑥ Lower air mix door (driver side/passenger side)
⑦ Heater core
⑧ Foot door
⑨ Side ventilator door
⑩ Sub defroster door
⑪ Center ventilator and defroster door
Fresh air intake
Recirculation air
Discharge air
Defroster
Center ventilator
Side ventilator
Rear ventilator
Front foot
Rear foot

| Switch position | | | Door position | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Mode door | | | | | Air mix door | | | |
| | | | | | | | | (Driver side) | | (Passenger side) | |
| | | | Center ventilator and defroster door | Sub defroster door | Side ventilator door | Foot door | Intake door | Upper air mix door | Lower air mix door | Upper air mix door | Lower air mix door |
| AUTO switch | | | AUTO | | | | — | — | — | — | — |
| MODE switch | | | Ⓐ | Ⓐ | Ⓐ | Ⓐ | | | | | |
| | | | Ⓐ | Ⓑ | Ⓑ | Ⓑ | | | | | |
| | | | Ⓑ | Ⓒ | Ⓒ | Ⓒ | | | | | |
| | | | Ⓑ | Ⓑ | Ⓒ | Ⓒ | | | | | |
| DEF switch | | | Ⓑ | Ⓐ | Ⓒ | Ⓐ | | | | | |
| REC switch* | | | — | — | — | — | Ⓐ | | | | |
| FRE switch* | | | | | | | Ⓑ | | | | |
| Temperature control dial (Driver side) | DUAL switch: OFF | Full cold 18°C | | | | | — | Ⓐ | | | |
| | | 18.5°C – 31.5°C | | | | | | AUTO | | | |
| | | Full hot 32°C | | | | | | Ⓑ | | | |
| Temperature control dial (Driver side) | DUAL switch: ON | Full cold 18°C | | | | | | Ⓐ | | — | — |
| | | 18.5°C – 31.5°C | | | | | | AUTO | | | |
| | | Full hot 32°C | | | | | | Ⓑ | | | |
| Temperature control dial (Passenger side) | | Full cold 18°C | | | | | | — | — | Ⓐ | |
| | | 18.5°C – 31.5°C | | | | | | | | AUTO | |
| | | Full hot 32°C | | | | | | | | Ⓑ | |
| ON·OFF switch | | OFF | Ⓑ | Ⓒ | Ⓒ | Ⓒ | | | | — | — |

*: Inlet status is displayed by indicator during activating automatic control

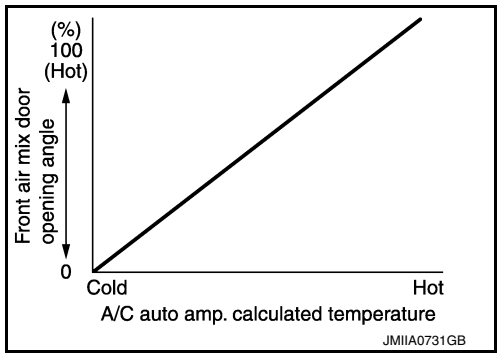
AIR DISTRIBUTION

| MODE/DEF setting position | Discharge air flow | | | | | |
|---|---|---|---|---|---|---|
| | Air outlet/distribution | | | | | |
| | Ventilator | | | Foot | | Defroster |
| | Front | | Rear | Front | Rear | |
| | Center | Side | | | | |
| | 47% | 38% | 15% | — | — | — |
| | 25% | 34% | 13% | 18% | 10% | — |
| | — | 7% | 4% | 38% | 24% | 27% |
| | — | 6% | 2% | 30% | 17% | 45% |
| | — | 8% | 2% | — | — | 90% |

## Temperature Control

INFOID:0000000010012034

- When ignition switch is in the ON position, A/C auto amp. always automatically controls temperature regardless of front 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).




## Fail-safe

INFOID:0000000010012035

### FAIL-SAFE FUNCTION

If a communication error exists between the A/C auto amp., and the AV control unit and preset switch for 30 seconds or longer, air conditioning is controlled under the following conditions:

**A/C switch : ON**
**Air outlet : AUTO**
**Air inlet : FRE (Fresh air intake)**
**Blower fan speed : AUTO**
**Set temperature : Setting before communication error occurs**

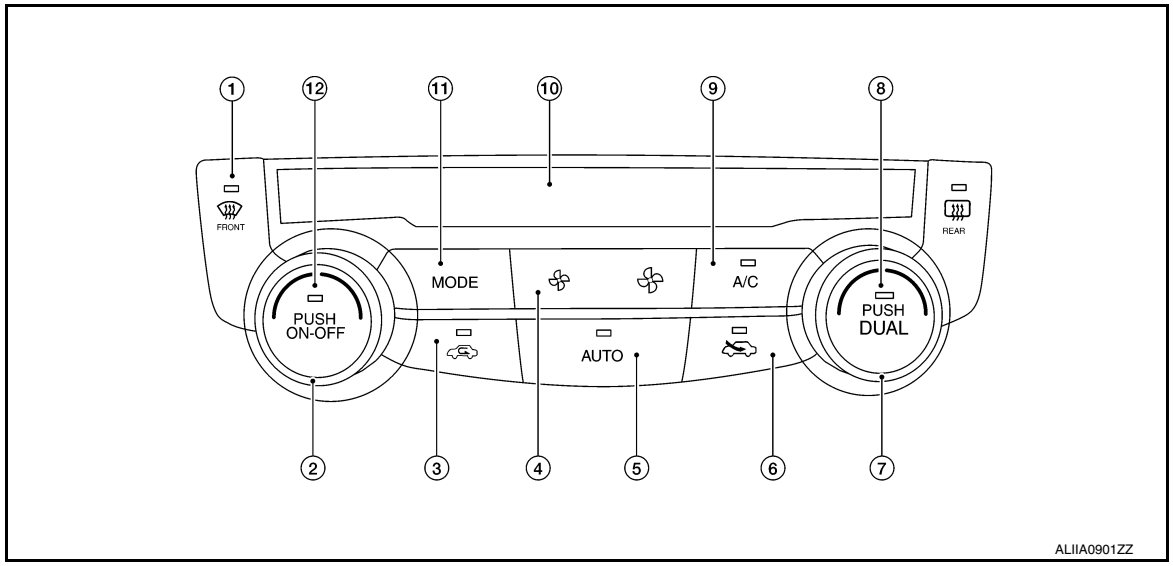
# OPERATION

## Switch Name and Function

INFOID:0000000010012036

### CONTROL OPERATION

A/C Switch Assembly




1. Defroster switch
2. Temperature control switch (driver side)
3. Recirculation switch
4. Fan control switch
5. AUTO switch
6. Fresh air switch
7. Temperature control switch (passenger side)
8. DUAL switch
9. A/C switch
10. Display
11. Mode switch
12. ON/OFF switch

Switch Operation

| Switch name | Function |
|---|---|
| Temperature control dial (Driver side) | Setting temperature is selected using this dial 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>**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. |
| ON·OFF switch | Air conditioning turns ON ⇔ OFF each time this switch is pressed.<br>• When this switch is pressed while air conditioning is ON<br>- Air conditioning turns OFF and becomes the following status, when this switch is pressed.<br>• Air outlet: FOOT<br>• Air flow: OFF<br>• Air inlet: Settings set before this switch is pressed<br>• A/C switch: OFF<br>• When this switch is pressed while air conditioning is OFF<br>- Air conditioning turns ON and operates according to the settings set before air conditioning is turned OFF, when this switch is pressed. |

| Switch name | Function |
|---|---|
| AUTO switch | • AUTO switch indicator turns ON and air conditioning becomes the following status, when this switch is pressed while air conditioning is ON.<br>- Air outlet: Automatic control<br>- Air flow: Automatic control<br>- Air inlet: Settings set before this switch is pressed<br>- A/C switch: ON<br>• Air conditioning turns ON and operates according to the following status, when this switch is pressed while air conditioning is OFF. (AUTO switch indicator turns ON)<br>- Air outlet: Automatic control<br>- Air flow: Automatic control<br>- Air inlet: Settings set before this switch is pressed<br>- A/C switch: ON<br>**NOTE:**<br>When air outlet or air flow is manually operated while AUTO switch indicator is ON, AUTO switch indicator turns OFF. However, automatic control continues for other functions than air outlet or air flow. |
| Fan switch | • Air flow can be set within a range between 1st – 7th speed according to switch operation.<br>- Press +: Air flow increases<br>- Press –: Air flow decreases<br>• Air conditioning turns ON and operates according to the following status, when this switch is pressed while air conditioning is OFF.<br>- Air outlet: Automatic control<br>- Air flow: 1st speed<br>- Air inlet: Settings set before this switch is pressed<br>- A/C switch: Settings set before air conditioning is turned OFF<br>**NOTE:**<br>Automatic air flow control is cancelled (AUTO switch indicator turns OFF), when fan switch is pressed while AUTO switch indicator is ON. |
| A/C switch | Compressor control (switch indicator) changes between ON ⇔ OFF each time this switch is pressed while blower motor is operated.<br>**NOTE:**<br>A/C switch cannot be turned ON when blower motor is OFF. |
| DUAL switch | Left and right ventilation temperature separately control (switch indicator) changes between ON ⇔ OFF each time this switch is pressed while blower motor is operated.<br>**NOTE:**<br>• Setting temperature for passenger side is the same as that for driver side when left and right ventilation temperature separately control is OFF.<br>• DUAL switch operation is not accepted when DEF mode is ON. |
| Temperature control dial (Passenger side) | • 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 dial 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>**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 dial (passenger side) is inoperative. |
| REC switch | Switch indicator turns ON and air inlet is set to recirculation (REC), when this switch is pressed.<br>**NOTE:**<br>Air inlet can be changed when air conditioning is in OFF status. |
| FRE switch | Switch indicator turns ON and air inlet is set to fresh air intake (FRE), when this switch is pressed.<br>**NOTE:**<br>Air inlet can be changed when air conditioning is in OFF status. |

| Switch name | Function |
|---|---|
| MODE switch | Air outlet 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 is in OFF status.<br>• Automatic air outlet control is cancelled (AUTO switch indicator turns OFF), when MODE switch is pressed while AUTO switch indicator is ON. |
| DEF switch | DEF mode (switch indicator) changes between ON ⇔ OFF each time switch is pressed.<br>• When this switch is pressed while air conditioning is ON<br>- Air conditioning becomes the following status when DEF mode is turned ON.<br>• Air outlet: DEF<br>• Air flow: Settings set before DEF mode is turned ON<br>• Air inlet: Fresh air intake<br>• A/C switch: ON<br>- Air conditioning becomes the following status when DEF mode is turned OFF.<br>• Air outlet: Settings set before DEF mode is turned ON<br>• Air flow: Settings set before DEF mode is turned OFF<br>• Air inlet: Settings set before DEF mode is turned OFF<br>• A/C switch: Settings set before DEF mode is turned OFF<br>• When this switch is pressed while air conditioning is OFF<br>- Air conditioning turns ON and operates in the following status, when DEF mode is turned ON.<br>• Air outlet: DEF<br>• Air flow: Automatic control<br>• Air inlet: Fresh air intake<br>• A/C switch: ON<br>- Air conditioning becomes the following status when DEF mode is turned OFF.<br>• Air outlet: Automatic control<br>• Air flow: Settings set before DEF mode is turned OFF<br>• Air inlet: Settings set before DEF mode is turned OFF<br>• A/C switch: Settings set before DEF mode is turned OFF<br>**NOTE:**<br>When DEF mode is turned ON while AUTO switch indicator is turned ON, AUTO switch indicator turns OFF. However, automatic air flow control continues. |

# DIAGNOSIS SYSTEM (A/C AUTO AMP.)

## Description

INFOID:0000000010012037

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 |
| BCM | BCM-AIR CONDITIONER | Self Diagnostic Result |
| | | Data Monitor |
| ECM | ENGINE | Self Diagnostic Result |
| | | Data Monitor |
| IPDM E/R | IPDM E/R | Self Diagnostic Result |
| | | Data Monitor |

## CONSULT Function (HVAC)

INFOID:0000000010012038

CONSULT can display each diagnosis item using the diagnosis test modes as shown.

CONSULT application items

| Diagnosis mode | Description |
|---|---|
| Self-Diagnostic Result | Displays the diagnosis results judged by A/C auto amp. |
| Data Monitor | Displays A/C auto amp. input/output data in real time. |
| Work support | Changes the setting for each system function. |
| Active Test | The signals used to activate each device are forcibly supplied from A/C auto amp. |
| ECU Identification | Displays the A/C auto amp. number. |

### SELF-DIAGNOSTIC RESULT

Refer to HAC-32, "DTC Index".

Display Item List

| DTC | Items (CONSULT screen terms) | Diagnostic item is detected when... | 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 |
| U1010 | CONTROL UNIT (CAN) | When detecting error during the initial diagnosis of CAN controller of A/C auto amp. | A/C auto amp. |
| B24A0 | A/C AUTO AMP. | A/C auto amp. EEPROM system is malfunctioning. | A/C auto amp. |
| B24A1 | A/C AUTO AMP. POWER SUPPLY | Detected power supply voltage is out of range. | • A/C auto amp.<br>• Harness and connector (Power supply circuit is open, or there is a short in the circuit) |
| B24A6 | IN-CAR SENSOR | Detected temperature at in-vehicle sensor is out of range. | • In-vehicle sensor<br>• A/C auto amp.<br>• Harness and connector (In-vehicle sensor circuit is open, or there is a short in the circuit) |

| DTC | Items (CONSULT screen terms) | Diagnostic item is detected when... | Possible cause |
|---|---|---|---|
| B24A4 | EVAP TEMP SEN | Detected temperature at intake sensor is out of range. | • Intake sensor<br>• A/C auto amp.<br>• Harness and connector (Intake sensor circuit is open, or there is a short in the circuit) |
| B24A9* | SUNLOAD SEN | Detected calorie at sunload sensor 1395 w/$m^2$ (1200 kcal/$m^2$·h). | • Sunload sensor<br>• A/C auto amp.<br>• Harness and connector (Sunload sensor circuit is open, or there is a short in the circuit) |
| B24BB | DR AIRMIX ACTR | Short or open circuit of air mix door motor drive signal. | • Air mix door motor LH<br>• A/C auto amp.<br>• Harness and connector (Air mix door motor is open or shorted) |
| B24BD | AS AIRMIX ACTR | Short or open circuit of air mix door motor drive signal. | • Air mix door motor RH<br>• A/C auto amp.<br>• Harness and connector (Air mix door motor is open or shorted) |
| B24B4 | A/C CONTROL | Short or open circuit of A/C switch communication. | • A/C switch<br>• A/C auto amp.<br>• Harness and connector (A/C switch is open or shorted) |
| B24B6 | | | |
| B24B7 | INTAKE ACTR | Short or open circuit of intake door motor drive signal. | • Intake door motor<br>• A/C auto amp.<br>• Harness and connector (Intake door motor is open or shorted) |
| B24B9 | MODE DOOR ACTR | Short or open circuit of mode door motor drive signal. | • Mode door motor<br>• A/C auto amp.<br>• Harness and connector (Mode door motor is open or shorted) |
| B24C3 | BLOWER MOTOR FEEDBACK | Short or open circuit. | • Front blower motor<br>• Front blower motor relay<br>• Variable blower control<br>• A/C auto amp.<br>• Harness and connector |
| B24C6 | BLOWER MOTOR CONTROL | | |
| B24D4 | A/C CONTROL COMMUNICATION | Short or open circuit. | • A/C switch<br>• A/C auto amp.<br>• Harness and connector (A/C switch is open or shorted) |

*: Perform self-diagnosis under sunshine. When performing indoors, aim a light (more than 60 W) at sunload sensor, otherwise self-diagnosis reports an error even though the sunload sensor is functioning normally.

## DATA MONITOR

Display item list

| Monitor item [Unit] | | Description |
|---|---|---|
| AMB TEMP SEN | [°C] | Ambient sensor value converted from ambient sensor signal received from ambient sensor |
| IN-VEH TEMP | [°] | In-vehicle sensor value converted from in-vehicle sensor signal received from in-vehicle sensor |
| INT TEMP SEN | [°C] | Intake sensor value converted from intake sensor signal received from intake sensor |
| SUNLOAD SEN | [w/$m^2$] | Sunload sensor value converted from sunload sensor signal received from sunload sensor |
| AMB SEN CAL | [°] | Ambient sensor value calculated by A/C auto amp. |

| Monitor item [Unit] | | Description |
|---|---|---|
| IN-VEH CAL | [°C] | In-vehicle sensor value calculated by A/C auto amp. |
| INT TEMP CAL | [°C] | Intake sensor value calculated by A/C auto amp. |
| 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 blower switch ON/OFF status transmitted to other units via CAN communication |
| ENG COOL TEMP | [°C] | Water temperature signal value received from ECM via CAN communication |
| VEHICLE SPEED | [km/h (mph)] | Vehicle speed signal value received from meter via CAN communication |

## WORK SUPPORT

| Work item | Description | Reference |
|---|---|---|
| TEMP SET CORRECT (Setting of difference between temperature setting and control temperature) | If the temperature felt by the customer is different than the airflow temperature controlled by the temperature setting, the auto amplifier control temperature can be adjusted to compensate for the temperature setting. | HAC-50, "Temperature Setting Trimmer" |
| REC MEMORY SET (REC memory function setting) | • If the ignition switch is turned to the OFF position while the REC switch is set to ON (recirculation), “With” or “Without” of the REC switch ON (recirculation) condition can be selected.<br>• If “With” was set, the REC switch will be ON (recirculation) when turning the ignition switch to the ON position again.<br>• If “Without” was set, the air inlets will be controlled automatically when turning the ignition switch to the ON position again. | HAC-51, "Inlet Port Memory Function (REC)" |
| FRE MEMORY SET (FRE memory function setting) | • If the ignition switch is turned to the OFF position while the FRE switch is set to ON (fresh air intake), “With” or “Without” of the FRE switch ON (fresh air intake) condition can be selected.<br>• If “With” was set, the FRE switch will be ON (fresh air intake) when turning the ignition switch to the ON position again.<br>• If “Without” was set, the air inlets will be controlled automatically when turning the ignition switch to the ON position again. | HAC-50, "Inlet Port Memory Function (FRE)" |
| BLOW SET | Setting change of foot position setting trimmer can be performed. | HAC-50, "Foot Position Setting Trimmer" |
| Door Motor Starting Position Reset | Starting position reset of air mix door motor and mode door motor can be performed. | HAC-52, "Work Procedure" |
| TARGET EVAPORATOR TEMP UPPER LIMIT SETTING | Set the target evaporator upper temperature limit. | HAC-51, "Target Evaporator Temp Upper Limit" |

**NOTE:**

When the battery cable is disconnected from the negative terminal or when the battery voltage becomes 10V or less, the setting of WORK SUPPORT may be cancelled.

## ACTIVE TEST

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

### HVAC TEST

| | Test item | | | | | | |
|---|---|---|---|---|---|---|---|
| | MODE 1 | MODE 2 | MODE 3 | MODE 4 | MODE 5 | MODE 6 | MODE 7 |
| Mode door position | VENT | VENT | B/L | B/L | D/F1 | D/F2 | DEF |
| Intake door position | REC | REC | 20%FRE | 20%FRE | FRE | FRE | FRE |
| Air mix door position (driver & passenger side) | FULL COLD | FULL COLD | FULL COLD | FULL HOT | FULL HOT | FULL HOT | FULL HOT |

| | Test item | | | | | | |
|---|---|---|---|---|---|---|---|
| | MODE 1 | MODE 2 | MODE 3 | MODE 4 | MODE 5 | MODE 6 | MODE 7 |
| Blower motor (Applied voltage) | 35% | 35% | 60% | 60% | 90% | 90% | 35% |
| A/C compressor (Magnet clutch) | ON | ON | ON | ON | OFF | OFF | ON |
| ECV duty | 80% | 80% | 40% | 40% | 0% | 0% | 90% |

**NOTE:**

Perform the inspection of each output device after starting the engine, because the A/C compressor has been operating.

# DIAGNOSIS SYSTEM (IPDM E/R)

## CONSULT Function (IPDM E/R)

INFOID:0000000010256039

### APPLICATION ITEM

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

| Direct Diagnostic Mode | Description |
|---|---|
| Ecu Identification | The IPDM E/R part number is displayed. |
| Self Diagnostic Result | The IPDM E/R self diagnostic results are displayed. |
| Data Monitor | The IPDM E/R input/output data is displayed in real time. |
| Active Test | The IPDM E/R activates outputs to test components. |
| CAN Diag Support Mntr | The result of transmit/receive diagnosis of CAN communication is displayed. |

### ECU IDENTIFICATION

The IPDM E/R part number is displayed.

### SELF DIAGNOSTIC RESULT

Refer to PCS-20, "DTC Index".

### DATA MONITOR

| Monitor Item [Unit] | Description |
|---|---|
| REVERSE SIGNAL [Open/Close] | Indicates condition of transmission range switch R (Reverse) position. |
| IGN RELAY [Open/Close] | Indicates condition of ignition relay-1. |
| PUSH SW [Open/Close] | Indicates condition of push-button ignition switch. |
| INTERLOCK/PNP SW [Open/Close] | Indicates condition of transmission range switch P (Park) and N (Neutral) positions. |
| OIL PRESSURE SW [Open/Close] | Indicates condition of oil pressure switch. |
| HOOD SW [Open/Close] | Indicates condition of hood switch. |
| COMPRESSOR [OFF/ON] | Indicates condition of A/C compressor. |
| HORN RELAY [OFF/ ON] | Indicates condition of horn relay. |
| COOLING FAN [OFF/ON] | Indicates condition of cooling fan relay-1. |
| FRONT WIPER HI/LO RELAY [OFF/ON] | Indicates condition of front wiper high relay. |
| FRONT WIPER RELAY [OFF/ON] | Indicates condition of front wiper relay. |
| IGN RELAY OFF STATUS [OFF/ON] | Indicates condition of ignition relay-1 OFF status. |
| IGN RELAY ON STATUS [OFF/ON] | Indicates condition of ignition relay-1 ON status. |
| COOLING FAN RELAY 1 [OFF/ON] | Indicates condition of cooling fan relay-1. |
| STARTER RELAY [OFF/ON] | Indicates condition of starter relay. |
| COMP ECV DUTY [%] | Indicates condition of A/C compressor. |
| COOLING FAN RELAY 2 [%] | Indicates condition of cooling fan relay-2. |
| FR FOG LAMP LH [%] | Indicates condition of front fog lamp LH. |
| FR FOG LAMP RH [%] | Indicates condition of front fog lamp RH. |
| PARKING LAMP [%] | Indicates condition of parking lamp. |
| TAIL LAMP LH [%] | Indicates condition of tail lamp LH. |
| TAIL LAMP RH [%] | Indicates condition of tail lamp RH. |
| DAYTIME RUNNING LIGHT LH [%] | Indicates condition of daytime running light LH. |
| DAYTIME RUNNING LIGHT RH [%] | Indicates condition of daytime running light RH. |
| HEADLAMP (HI) LH [%] | Indicates condition of headlamp high beam LH. |

| Monitor Item [Unit] | Description |
|---|---|
| HEADLAMP (HI) RH [%] | Indicates condition of headlamp high beam RH. |
| HEADLAMP (LO) LH [%] | Indicates condition of headlamp low beam LH. |
| HEADLAMP (LO) RH [%] | Indicates condition of headlamp low beam RH. |
| A/C RELAY STUCK [NG/OK] | Indicates condition of A/C relay. |
| A/C RELAY [Off/On] | Indicates condition of A/C relay. |
| COMP ECV STATUS [NG/OK] | Indicates condition of A/C compressor. |
| VEHICLE SECURITY HORN [Off/On] | Indicates condition of horn relay. |
| BATTERY CURRENT SENSOR [NG/OK] | Indicates condition of battery current sensor. |
| FRONT FOG LAMP [Off/On] | Indicates condition of front fog lamps. |
| COMP ECV CURRENT [A] | Indicates condition of A/C compressor current. |
| BATTERY VOLTAGE [V] | Indicates condition of battery voltage. |
| COOLING FAN DUTY [%] | Indicates condition of cooling fans. |
| HOOD SW (CAN) [OPEN/CLOSE] | Indicates condition of hood switch. |
| FRONT WIPER [STOP/LOW/HIGH] | Indicates condition of front wiper motor. |
| FR WIPER STOP POSITION [STOP P/ACTIVE P] | Indicates condition of front wiper motor stop. |
| HEADLAMP (HI) [Off/On] | Indicates condition of headlamp high beams. |
| HEADLAMP (LO) [Off/On] | Indicates condition of headlamp low beams. |
| IGNITION RELAY STATUS [Off/On] | Indicates condition of ignition relay-1. |
| IGN RELAY MONITOR [Off/On] | Indicates condition of ignition relay-1 feedback. |
| IGNITION POWER SUPPLY [Off/On] | Indicates condition of ignition relay-1. |
| INTERLOCK/PNP SW (CAN) [Off/On] | Indicates condition of transmission range switch P (Park) and N (Neutral) positions. |
| PUSH-BUTTON IGN SW (CAN) [Off/On] | Indicates condition of push-button ignition switch. |
| TAIL LAMP [Off/On] | Indicates condition of tail lamps. |
| REVERSE SIGNAL (CAN) [Off/On] | Indicates condition of transmission range switch R (Reverse) position. |
| ST&ST CONT RELAY STATUS [Off/ST R On] | Indicates condition of starter cut and starter relays. |
| STARTER MOTOR STATUS [Off/On] | Indicates condition of starter motor. |
| STARTER RELAY (CAN) [LOW/HIGH] | Indicates condition of starter relay. |
| IPDM NOT SLEEP [NO RDY/RDY] | Indicates condition of IPDM E/R sleep status. |
| AFTER COOLING TIME [No request/Request] | Indicates condition of cooling fan request. |
| AFTER COOLING SPEED [%] | Indicates condition of cooling fans. |
| COOLING FAN TYPE [NISSAN/RENAULT] | Indicates cooling fan type. |
| COMPRESSOR REQ1 [Off/On] | Indicates condition of A/C compressor request. |
| VHCL SECURITY HORN REQ [Off/On] | Indicates condition of horn relay request. |
| DTRL REQ [Off/On] | Indicates condition of daytime running light request. |
| SLEEP/WAKE UP [WAKEUP/SLEEP] | Indicates condition of IPDM E/R sleep/wake. |
| CRANKING ENABLE-TCM [NG/OK] | Indicates condition of crank enable from TCM. |
| CRANKING ENABLE-ECM [NG/OK] | Indicates condition of crank enable from ECM. |
| CAN DIAGNOSIS [NG/OK] | Indicates condition of CAN diagnosis. |
| FRONT FOG LAMP REQ [Off/On] | Indicates condition of front fog lamp request. |
| HIGH BEAM REQ [Off/On] | Indicates condition of headlamp high beam request. |
| HORN CHIRP [Off/On] | Indicates condition of horn relay request. |
| COOLING FAN REQ [%] | Indicates condition of cooling fan request. |
| ENGINE STATUS [STOP/RUN/IDLING] | Indicates condition of engine status. |

| Monitor Item [Unit] | Description |
|---|---|
| TURN SIGNAL REQ [Off/LH/RH] | Indicates condition of turn signal request. |
| FR WIPER REQ [RETURN/LOW/HIGH] | Indicates condition of front wiper motor request. |
| SHIFT POSITION [P/R/N/D/L] | Indicates condition of transmission range switch positions. |
| LOW BEAM REQ [Off/On] | Indicates condition of headlamp low beam request. |
| POSITION LIGHT REQ [Off/On] | Indicates condition of parking lamp request. |
| COMPRESSOR REQ2 [Off/On] | Indicates condition of A/C compressor request. |
| IGNITION SW [Off/On] | Indicates condition of ignition switch. |
| VEHICLE SPEED (METER) [mph/km/h] | Indicates vehicle speed. |
| BAT DISCHARGE COUNT [0-100] | Indicates condition of battery discharge. |
| BATTERY STATUS [NG/OK] | Indicates battery status. |

## ACTIVE TEST

| Test item | Description |
|---|---|
| HORN | This test is able to check horn operation [Off/On]. |
| FRONT WIPER | This test is able to check wiper motor operation [Off/Low/High]. |
| COMPRESSOR | This test is able to check A/C compressor operation [Off/On]. |
| COOLING FAN (DUAL) | This test is able to check cooling fan operation [Off/LO/HI]. |
| HEADLAMP (HI) | This test is able to check headlamp high beam operation [Off/3/5]. |
| HEADLAMP (LO) | This test is able to check headlamp low beam operation [Off/3/5]. |
| FRONT FOG LAMP | This test is able to check front fog lamp operation [Off/3/5]. |
| DAYTIME RUNNING LAMP | This test is able to check daytime running lamp operation [Off/3/5]. |
| PARKING LAMP | This test is able to check parking lamp operation [Off/3/5]. |
| TAIL LAMP | This test is able to check tail lamp operation [Off/3/5]. |

## CAN DIAG SUPPORT MNTR

Refer to LAN-14, "CAN Diagnostic Support Monitor".

# ECU DIAGNOSIS INFORMATION

## A/C AUTO AMP.

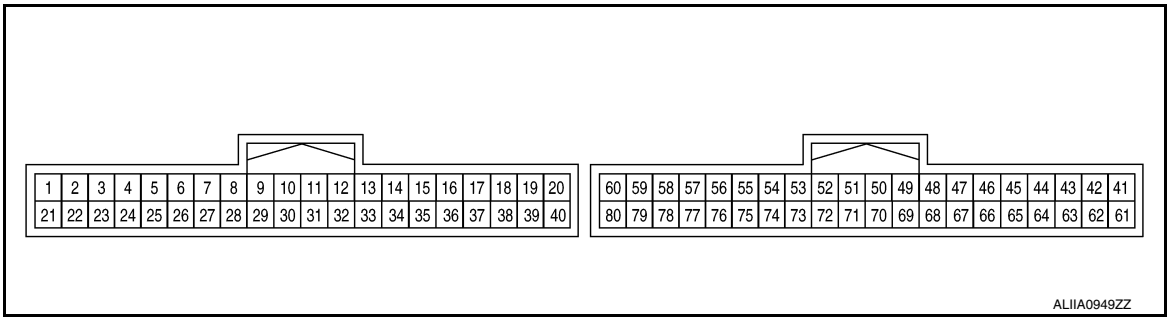
### Reference Value

INFOID:0000000010012043

#### VALUES ON THE DIAGNOSIS TOOL

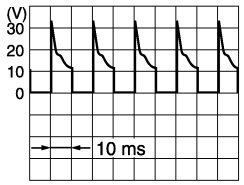
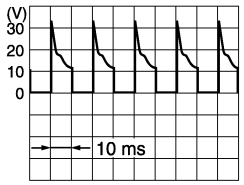
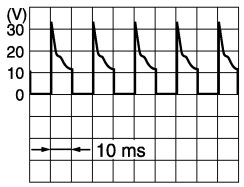
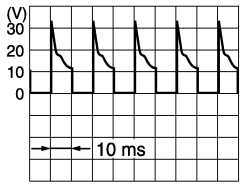
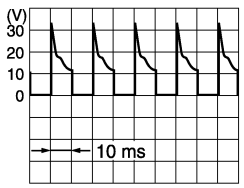
| Monitor item | Condition | | Value/Status |
|---|---|---|---|
| AMB TEMP SEN | Ignition switch ON | — | 22 - 131°F (–30 - 55°C) |
| IN-VEH TEMP | Ignition switch ON | — | 22 - 131°F (–30 - 55°C) |
| INT TEMP SEN | Ignition switch ON | — | 22 - 131°F (–30 - 55°C) |
| SUNLOAD SEN | Ignition switch ON | — | 0 - 1395 w/m$^2$<br>(0 - 1200 kcal/m$^2$·h) |
| AMB SEN CAL | Ignition switch ON | — | 22 -131°F (–30 - 55°C) |
| IN-VEH CAL | Ignition switch ON | — | 22 -131°F (–30 - 55°C) |
| INT TEMP CAL | Ignition switch ON | — | 22 -131°F (–30 - 55°C) |
| COMP REQ SIG | Engine: Run at idle after warming up | A/C switch: ON<br>(A/C compressor operation status) | On |
| | | A/C switch: OFF | Off |
| FAN REQ SIG | Engine: Run at idle after warming up | Blower fan: ON | On |
| | | Blower fan: OFF | Off |
| ENG COOL TEMP | Ignition switch ON | — | Values according to coolant temperature |
| VEHICLE SPEED | Driving | — | Equivalent to speedometer reading |

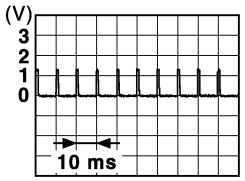
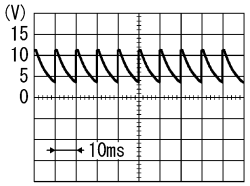
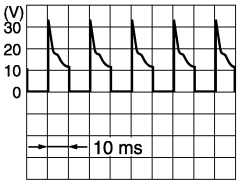
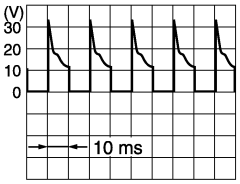
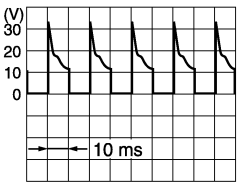
#### TERMINAL LAYOUT

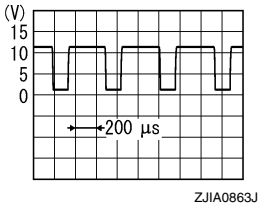
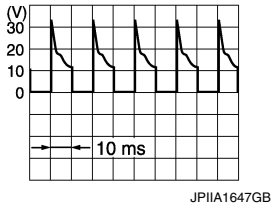



#### PHYSICAL VALUES

| Terminal No. (Wire color) | | Description | | Condition | Value |
|---|---|---|---|---|---|
| + | – | Signal name | Input/ Output | | |
| 1 (SB) | 3 (B) | Ignition power supply | Input | Ignition switch ON | Battery voltage |
| 3 (B) | Ground | Ground | — | Ignition switch ON | 0 – 0.1 V |
| 11 (L) | 3 (B) | CAN-H | Input/ Output | Ignition switch ON | — |

| Terminal No. (Wire color) | | Description | | | Condition | Value |
|---|---|---|---|---|---|---|
| + | – | Signal name | | Input/ Output | | |
| 13 (Y) | 3 (B) | In-vehicle sensor signal | | Input | Ignition switch ON | 0 – 4.8 V<br>Output voltage varies with in-vehicle temperature |
| 14 (G) | 3 (B) | Sunload sensor signal | | Input | Ignition switch ON | 0 – 4.8 V<br>Output voltage varies with sunload amount |
| 23 (BR) | 3 (B) | Sensor ground | | — | Ignition switch ON | 0 – 0.1 V |
| 31 (R) | 3 (B) | CAN-L | | Input/ Output | Ignition switch ON | — |
| 33 (LG) | 3 (B) | LIN | | Input/ Output | Ignition switch ON | — |
| 41 (W) | 3 (B) | ACTR V | | Output | Ignition switch ON | Battery voltage |
| 44 (L) | 3 (B) | INTAKE drive 1 | Intake door motor drive signal | Output | • Ignition switch ON<br>• Right after the Intake switch operation |  <br>JPIIA1647GB |
| 45 (R) | 3 (B) | INTAKE drive 2 | | | | |
| 47 (BR) | 3 (B) | INTAKE drive 3 | Intake door motor drive signal | Output | • Ignition switch ON<br>• Right after the intake switch operation |  <br>JPIIA1647GB |
| 49 (L) | 3 (B) | MODE drive 1 | Mode door motor drive signal | Output | • Ignition switch ON<br>• Right after the MODE switch operation |  <br>JPIIA1647GB |
| 50 (BR) | 3 (B) | MODE drive 2 | | | | |
| 51 (L) | 3 (B) | A/MIX drive 1 | Air mix door motor (driver side) drive signal | Output | • Ignition switch ON<br>• Right after the temperature control switch (driver side) operation |  <br>JPIIA1647GB |
| 52 (W) | 3 (B) | A/MIX drive 2 | | | | |
| 59 (L) | 3 (B) | A/MIX drive 1 | Air mix door motor (passenger side) drive signal | Output | • Ignition switch ON<br>• Right after the temperature control switch (passenger side) operation |  <br>JPIIA1647GB |
| 60 (BR) | 3 (B) | A/MIX drive 2 | | | | |

| Terminal No. (Wire color) | | Description | | | Condition | Value |
|---|---|---|---|---|---|---|
| + | – | Signal name | | Input/ Output | | |
| 61 (G) | 3 (B) | ACTR V | | Output | Ignition switch ON | Battery voltage |
| 63 (BG) | 3 (B) | Intake sensor signal | | Input | Ignition switch ON | 0 – 4.8 V<br>Output voltage varies with evaporator fin temperature |
| 64 (R) | 3 (B) | Blower fan ON signal | | Output | • Ignition switch ON<br>• Blower motor: OFF |  <br>JMIIA0941GB |
| | | | | | • Ignition switch ON<br>• Blower motor: ON |  <br>PKIB4960J |
| 65 (W) | 3 (B) | INTAKE drive 4 | Intake door motor drive signal | Output | • Ignition switch ON<br>• Right after the intake switch operation |  <br>JPIIA1647GB |
| 66 (BR) | 3 (B) | Sensor ground | | — | Ignition switch ON | 0 – 0.1 V |
| 68 (R) | 3 (B) | MODE drive 3 | Mode door motor drive signal | Output | • Ignition switch ON<br>• Right after the MODE switch operation |  <br>JPIIA1647GB |
| 69 (G) | 3 (B) | MODE drive 4 | | | | |
| 70 (R) | 3 (B) | A/MIX drive 3 | Air mix door motor (driver side) drive signal | Output | • Ignition switch ON<br>• Right after the temperature control switch (driver side) operation |  <br>JPIIA1647GB |
| 71 (BR) | 3 (B) | A/MIX drive 4 | | | | |

| Terminal No. (Wire color) | | Description | | | Condition | Value |
|---|---|---|---|---|---|---|
| + | – | Signal name | | Input/ Output | | |
| 74 (G) | 3 (B) | Power transistor control signal | | Output | • Ignition switch ON<br>• Blower motor: 1st speed (manual) |  ZJIA0863J |
| 79 (R) | 3 (B) | A/MIX drive 3 | Air mix door motor (passenger side) drive signal | Output | • Ignition switch ON<br>• Right after the temperature control switch (passenger side) operation |  JPIIA1647GB |
| 80 (G) | 3 (B) | A/MIX drive 4 | | | | |

## DTC Inspection Priority Chart

INFOID:0000000010012044

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

| Priority | Detected items (DTC) |
|---|---|
| 1 | • U1000: CAN COMM CIRCUIT<br>• U1010: CONTROL UNIT (CAN) |
| 2 | • B24A9: SUNLOAD SEN<br>• B24A0: A/C AUTO AMP.<br>• B24A1: A/C AUTO AMP. POWER SUPPLY<br>• B24A4: INTAKE TEMP SEN<br>• B24A6: IN-VEHICLE SEN<br>• B24BB: LEFT AIRMIX ACTR<br>• B24BD: RIGHT AIRMIX ACTR<br>• B24B4: A/C CONTROL<br>• B24B6: A/C CONTROL<br>• B24B7: INTAKE ACTR<br>• B24B9: MODE ACTR<br>• B24C3: BLOWER MOTOR FEEDBACK<br>• B24C6: BLOWER MOTOR CONTROL<br>• B24D4: A/C CONTROL COMMUNICATION |

## DTC Index

INFOID:0000000010012045

| DTC | Items (CONSULT screen terms) | Reference |
|---|---|---|
| U1000 | CAN COMM CIRCUIT | HAC-53, "DTC Logic" |
| U1010 | CONTROL UNIT (CAN) | HAC-54, "DTC Logic" |
| B24A0 | A/C AUTO AMP. | HAC-55, "DTC Logic" |
| B24A1 | A/C AUTO AMP. POWER SUPPLY | HAC-56, "DTC Logic" |
| B24A4 | INTAKE SENSOR | HAC-58, "DTC Logic" |
| B24A6 | IN-VEHICLE SENSOR | HAC-61, "DTC Logic" |
| B24A9* | SUNLOAD SENSOR | HAC-64, "DTC Logic" |
| B24BB | DR AIR MIX DOOR MOT | HAC-67, "DTC Logic" |

| DTC | Items (CONSULT screen terms) | Reference |
|---|---|---|
| B24BD | AS AIR MIX DOOR MOT | HAC-70, "DTC Logic" |
| B24B4 | A/C CONTROL | HAC-73, "DTC Logic" |
| B24B6 | A/C CONTROL | HAC-75, "DTC Logic" |
| B24B7 | INTAKE DOOR MOTOR | HAC-77, "DTC Logic" |
| B24B9 | MODE DOOR MOTOR | HAC-80, "DTC Logic" |
| B24C3 | BLOWER MOTOR FEEDBACK | HAC-83, "DTC Logic" |
| B24C6 | BLOWER MOTOR CONTROL | HAC-85, "DTC Logic" |
| B24D4 | A/C CONTROL COMM | HAC-89, "DTC Logic" |

*: Perform self-diagnosis under direct sunlight. When performing indoors, aim a light (more than 60 W) at sunload sensor, otherwise self-diagnosis reports an error even though the sunload sensor is functioning normally.

# ECM, IPDM E/R, BCM

## List of ECU Reference

INFOID:0000000010012046

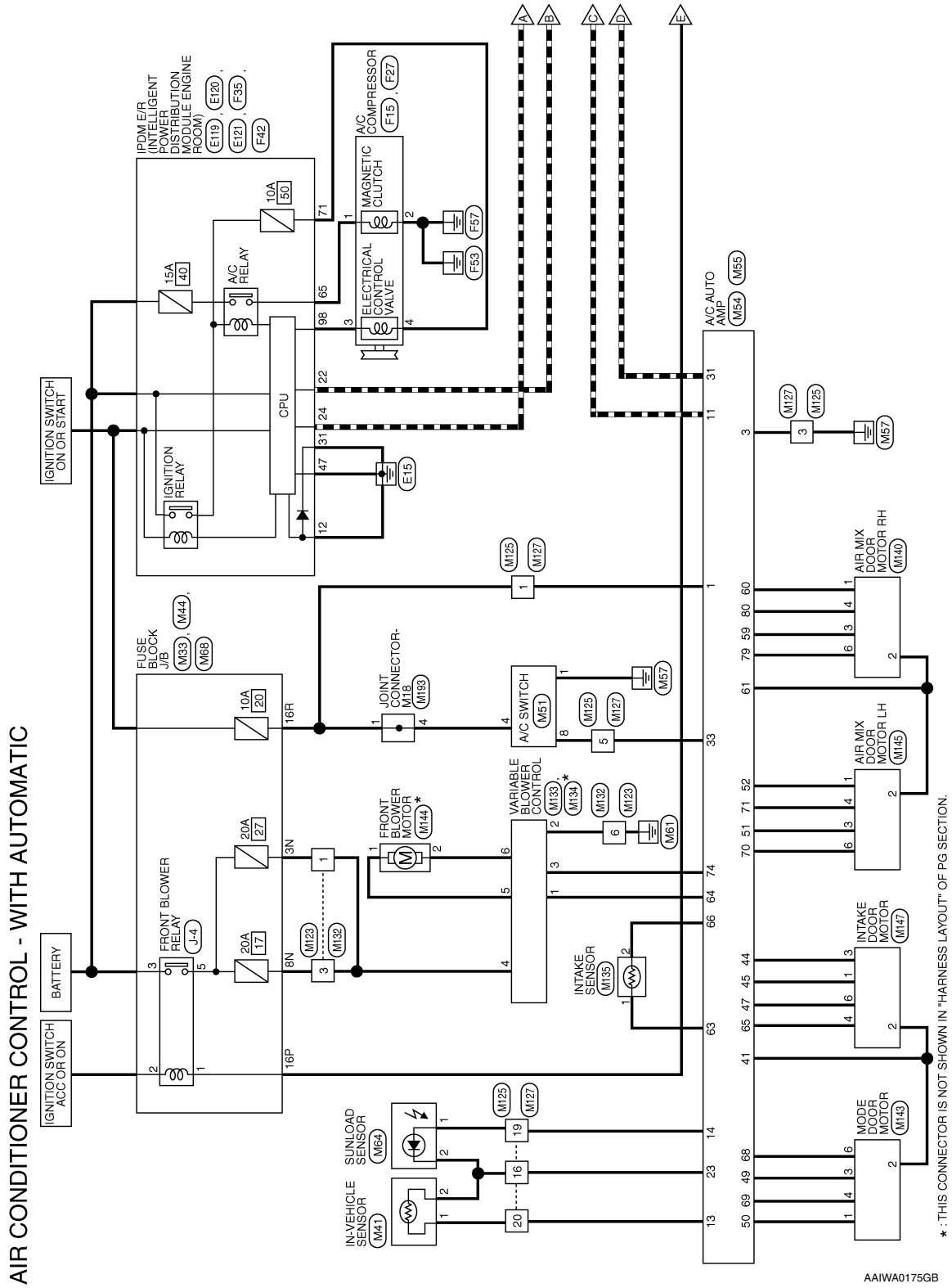
| ECU | Reference |
|---|---|
| ECM | EC-77, "Reference Value" |
| | EC-89, "Fail Safe" |
| | EC-92, "DTC Inspection Priority Chart" |
| | EC-93, "DTC Index" |
| IPDM E/R | PCS-12, "Reference Value" |
| | PCS-19, "Fail-safe" |
| | PCS-20, "DTC Index" |
| BCM (with Intelligent Key system) | BCS-28, "Reference Value" |
| | BCS-47, "Fail Safe" |
| | BCS-47, "DTC Inspection Priority Chart" |
| | BCS-48, "DTC Index" |

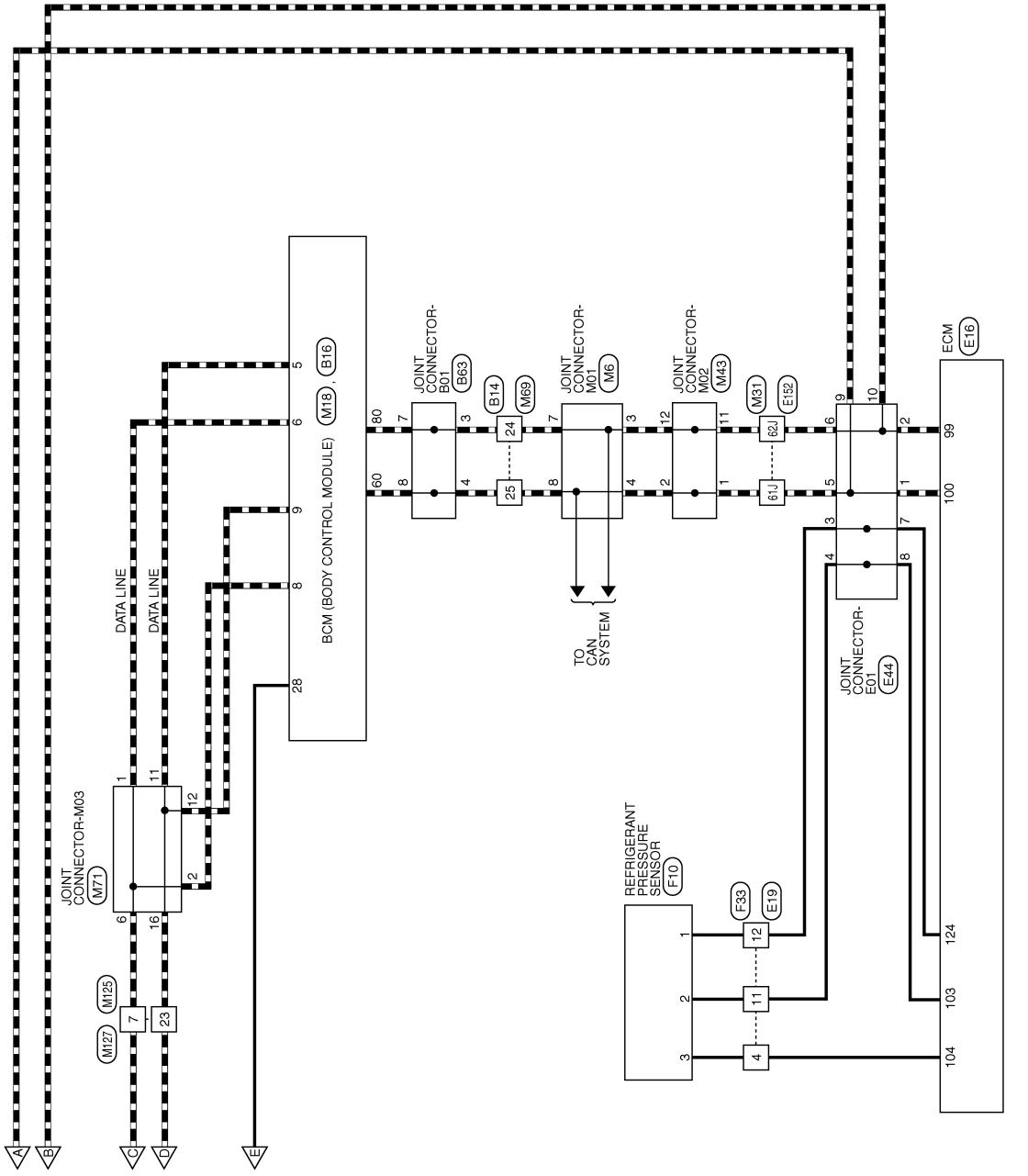
# WIRING DIAGRAM

## AUTOMATIC AIR CONDITIONING SYSTEM

### Wiring Diagram

INFOID:0000000010012047



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AIR CONDITIONER CONTROL CONNECTORS - WITH AUTOMATIC

| Connector No. | M6 |
|---|---|
| Connector Name | JOINT CONNECTOR-MO1 |
| Connector Color | GRAY |

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 3 | P | – |
| 4 | L | – |
| 7 | P | – |
| 8 | L | – |

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

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 5 | R | CAN-L |
| 6 | L | CAN-H |
| 8 | L | CAN-H |
| 9 | R | CAN-L |
| 28 | LA/W | O IGN2 RL |

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

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 61J | L | – |
| 62J | P | – |

| Connector No. | M33 |
|---|---|
| Connector Name | FUSE BLOCK (J/B) |
| Connector Color | WHITE |

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 3N | Y | – |
| 8N | SB | – |

| Connector No. | M41 |
|---|---|
| Connector Name | IN-VEHICLE SENSOR |
| Connector Color | WHITE |

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | Y | – |
| 2 | P | – |

| Connector No. | M43 |
|---|---|
| Connector Name | JOINT CONNECTOR-MO2 |
| Connector Color | BLUE |

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | L | – |
| 2 | L | – |
| 11 | P | – |
| 12 | P | – |

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| Connector No. | M44 |
|---|---|
| Connector Name | FUSE BLOCK (J/B) |
| Connector Color | WHITE |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 16P | LA/W | – |

| Connector No. | M51 |
|---|---|
| Connector Name | A/C SWITCH |
| Connector Color | BLACK |

H.S.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 6 | 7 | 8 | 9 | 10 |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | B | – |
| 4 | GR | – |
| 8 | LG | – |

| Connector No. | M54 |
|---|---|
| Connector Name | A/C AUTO AMP. |
| Connector Color | BLACK |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | SB | – |
| 3 | B | – |
| 6 | – | – |
| 7 | – | – |
| 8 | – | – |
| 9 | – | – |
| 10 | – | – |
| 11 | L | CAN-H |
| 12 | – | – |
| 13 | Y | INCAR SEN |
| 14 | G | SUN SEN |
| 15 | – | – |
| 16 | – | – |
| 17 | – | – |
| 18 | – | – |
| 19 | – | – |
| 20 | – | – |
| 21 | – | – |
| 22 | – | – |
| 23 | BR | SEN GND |
| 25 | – | – |
| 26 | – | – |
| 27 | – | – |
| 28 | – | – |
| 29 | – | – |
| 30 | – | – |
| 31 | R | CAN-L |
| 32 | – | – |
| 33 | LG | LIN SW AMP |
| 34 | – | – |
| 35 | – | – |
| 36 | – | – |
| 37 | – | – |
| 38 | – | – |
| 39 | – | – |
| 40 | – | – |

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| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 64 | R | FR FAN F/B |
| 65 | W | INTAKE4 |
| 66 | BR | INTAKE SEN GND |
| 67 | – | – |
| 68 | R | MODE3 |
| 69 | G | MODE4 |
| 70 | R | MIX DR 3 |
| 71 | BR | MIX DR 4 |
| 72 | – | – |
| 74 | G | FR FAN OUT |
| 75 | – | – |
| 76 | – | – |
| 77 | – | – |
| 78 | – | – |
| 79 | R | MIX AS 3 |
| 80 | G | MIX AS 4 |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 48 | – | – |
| 49 | L | MODE1 |
| 50 | BR | MODE2 |
| 51 | L | MIX DR1 |
| 52 | W | MIX DR 2 |
| 53 | – | – |
| 54 | – | – |
| 55 | – | – |
| 56 | – | – |
| 57 | – | – |
| 58 | – | – |
| 59 | L | MIX AS 1 |
| 60 | BR | MIX AS 2 |
| 61 | G | 12V PROT MOTOR34 |
| 62 | – | – |
| 63 | BG | INTAKE SEN |

| Connector No. | M69 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 24 | P | – |
| 25 | L | – |

| Connector No. | M55 |
|---|---|
| Connector Name | A/C AUTO AMP. |
| Connector Color | GRAY |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 41 | W | 12V PROT MOTOR 12 |
| 42 | – | – |
| 43 | – | – |
| 44 | L | INTAKE1 |
| 45 | R | INTAKE2 |
| 46 | – | – |
| 47 | BR | INTAKE3 |

| Connector No. | M68 |
|---|---|
| Connector Name | FUSE BLOCK (J/B) |
| Connector Color | BROWN |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 16R | GR | – |

| Connector No. | M64 |
|---|---|
| Connector Name | SUNLOAD SENSOR |
| Connector Color | BLACK |

H.S.

| | |
|---|---|
| 1 | 2 |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | G | – |
| 2 | BR | – |

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| Connector No. | M71 |
|---|---|
| Connector Name | JOINT CONNECTOR-M03 |
| Connector Color | BLUE |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | L | – |
| 2 | L | – |
| 6 | L | – |
| 11 | R | – |
| 12 | R | – |
| 16 | R | – |

| Connector No. | M123 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | Y | – |
| 3 | SB | – |
| 6 | B | – |

| Connector No. | M125 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | SB | – |
| 3 | B | – |
| 5 | LG | – |
| 7 | L | – |
| 16 | BR | – |
| 19 | G | – |
| 20 | Y | – |
| 23 | R | – |

| Connector No. | M127 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | SB | – |
| 3 | B | – |
| 5 | LG | – |
| 7 | L | – |
| 16 | BR | – |
| 19 | G | – |
| 20 | Y | – |
| 23 | R | – |

| Connector No. | M132 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | Y | – |
| 3 | SB | – |
| 6 | B | – |

| Connector No. | M133 |
|---|---|
| Connector Name | VARIABLE BLOWER CONTROL (WITH AUTO A/C) |
| Connector Color | GRAY |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | R | – |
| 2 | B | – |
| 3 | G | – |
| 4 | Y | – |

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| Connector No. | M134 |
|---|---|
| Connector Name | VARIABLE BLOWER CONTROL (WITH AUTO A/C) |
| Connector Color | GRAY |

H.S.




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

| Connector No. | M135 |
|---|---|
| Connector Name | INTAKE SENSOR |
| Connector Color | GRAY |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | BG | – |
| 2 | BR | – |

| Connector No. | M140 |
|---|---|
| Connector Name | AIR MIX DOOR MOTOR RH |
| Connector Color | BLACK |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | BR | – |
| 2 | G | – |
| 3 | L | – |
| 4 | G | – |
| 6 | R | – |

| Connector No. | M143 |
|---|---|
| Connector Name | MODE DOOR MOTOR |
| Connector Color | BLACK |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | BR | – |
| 2 | W | – |
| 3 | L | – |
| 4 | G | – |
| 6 | R | – |

| Connector No. | M144 |
|---|---|
| Connector Name | FRONT BLOWER MOTOR |
| Connector Color | WHITE |

H.S.




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

| Connector No. | M145 |
|---|---|
| Connector Name | AIR MIX DOOR MOTOR LH |
| Connector Color | BLACK |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | W | – |
| 2 | G | – |
| 3 | L | – |
| 4 | BR | – |
| 6 | R | – |

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| Connector No. | M147 |
|---|---|
| Connector Name | INTAKE DOOR MOTOR |
| Connector Color | BLACK |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | R | – |
| 2 | W | – |
| 3 | L | – |
| 4 | W | – |
| 6 | BR | – |

| Connector No. | M193 |
|---|---|
| Connector Name | JOINT CONNECTOR-M18 |
| Connector Color | WHITE |

H.S.

| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | GR | – |
| 4 | GR | – |

| Connector No. | E16 |
|---|---|
| Connector Name | ECM |
| Connector Color | BLACK |

H.S.

| 97 | 101 | 105 | 109 | 113 | 117 | 121 | 125 |
|---|---|---|---|---|---|---|---|
| 98 | 102 | 106 | 110 | 114 | 118 | 122 | 126 |
| 99 | 103 | 107 | 111 | 115 | 119 | 123 | 127 |
| 100 | 104 | 108 | 112 | 116 | 120 | 124 | 128 |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 99 | P | CAN-L |
| 100 | L | CAN-H |
| 103 | Y | PDPRES |
| 104 | R | AVCC1-PDPRES |
| 124 | W | GNDA-PDPRES |

| Connector No. | E19 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | BROWN |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 4 | R | – |
| 11 | Y | – |
| 12 | W | – |

| Connector No. | E44 |
|---|---|
| Connector Name | JOINT CONNECTOR-E01 |
| Connector Color | WHITE |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | L | – |
| 2 | P | – |
| 3 | W | – |
| 4 | Y | – |
| 5 | L | – |
| 6 | P | – |
| 7 | W | – |
| 8 | Y | – |
| 9 | L | – |
| 10 | P | – |

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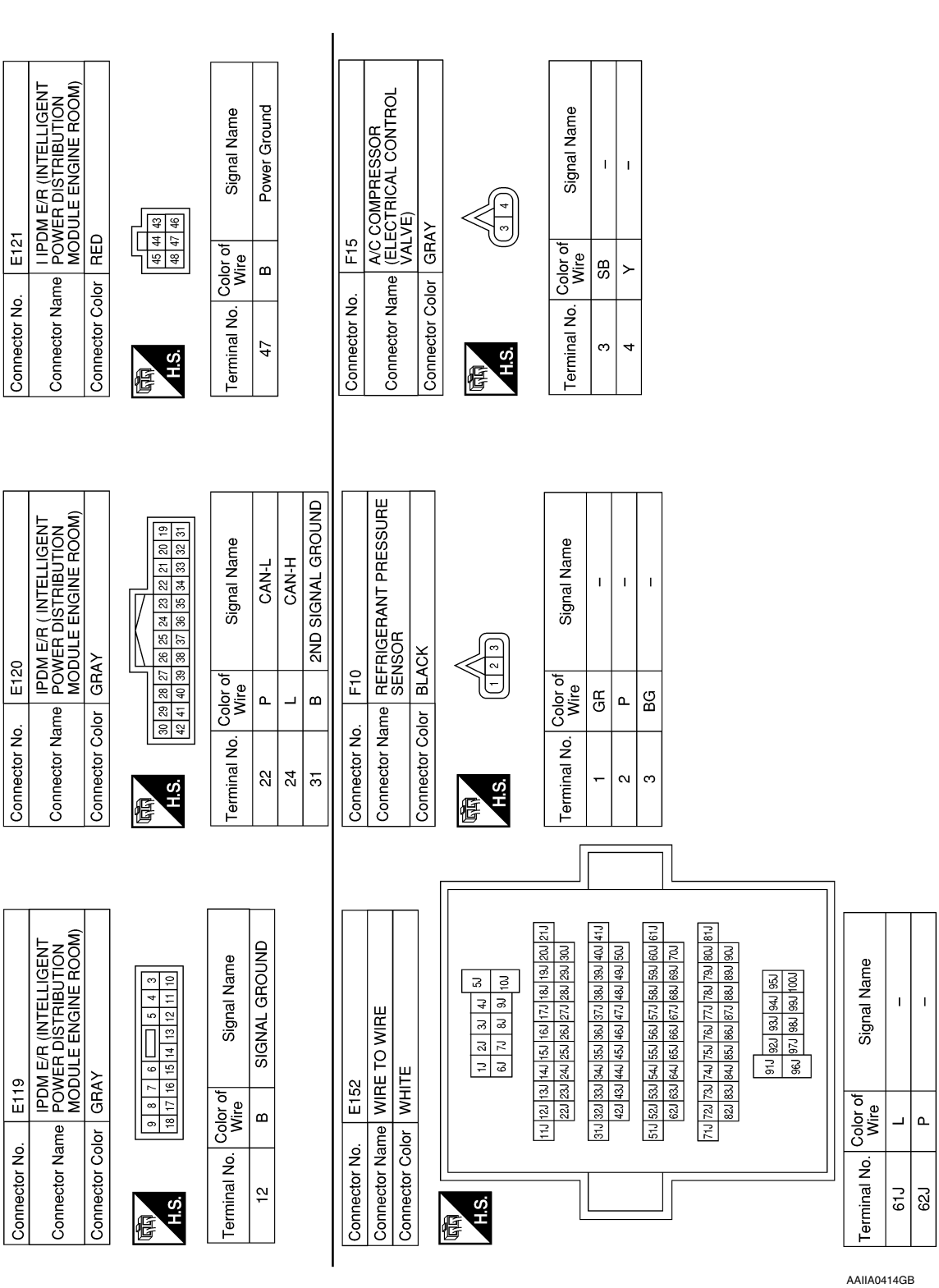

| Connector No. | E119 |
|---|---|
| Connector Name | IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) |
| Connector Color | GRAY |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 12 | B | SIGNAL GROUND |

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

H.S.

| 30 | 29 | 28 | 27 | 26 | 25 | 24 | 23 | 22 | 21 | 20 | 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 42 | 41 | 40 | 39 | 38 | 37 | 36 | 35 | 34 | 33 | 32 | 31 |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 22 | P | CAN-L |
| 24 | L | CAN-H |
| 31 | B | 2ND SIGNAL GROUND |

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

H.S.

| 45 | 44 | 43 |
|---|---|---|
| 48 | 47 | 46 |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 47 | B | Power Ground |

| Connector No. | F10 |
|---|---|
| Connector Name | REFRIGERANT PRESSURE SENSOR |
| Connector Color | BLACK |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | GR | – |
| 2 | P | – |
| 3 | BG | – |

| Connector No. | F15 |
|---|---|
| Connector Name | A/C COMPRESSOR (ELECTRICAL CONTROL VALVE) |
| Connector Color | GRAY |

H.S.

| 3 | 4 |
|---|---|

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 3 | SB | – |
| 4 | Y | – |

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

H.S.

| 1J | 2J | 3J | 4J | 5J |
|---|---|---|---|---|
| 6J | 7J | 8J | 9J | 10J |

| 11J | 12J | 13J | 14J | 15J | 16J | 17J | 18J | 19J | 20J | 21J |
|---|---|---|---|---|---|---|---|---|---|---|
| | 22J | 23J | 24J | 25J | 26J | 27J | 28J | 29J | 30J | |

| 31J | 32J | 33J | 34J | 35J | 36J | 37J | 38J | 39J | 40J | 41J |
|---|---|---|---|---|---|---|---|---|---|---|
| | 42J | 43J | 44J | 45J | 46J | 47J | 48J | 49J | 50J | |

| 51J | 52J | 53J | 54J | 55J | 56J | 57J | 58J | 59J | 60J | 61J |
|---|---|---|---|---|---|---|---|---|---|---|
| | 62J | 63J | 64J | 65J | 66J | 67J | 68J | 69J | 70J | |

| 71J | 72J | 73J | 74J | 75J | 76J | 77J | 78J | 79J | 80J | 81J |
|---|---|---|---|---|---|---|---|---|---|---|
| | 82J | 83J | 84J | 85J | 86J | 87J | 88J | 89J | 90J | |

| 91J | 92J | 93J | 94J | 95J |
|---|---|---|---|---|
| | 96J | 97J | 98J | 99J | 100J |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 61J | L | – |
| 62J | P | – |

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| Connector No. | F27 |
|---|---|
| Connector Name | A/C COMPRESSOR (MAGNETIC CLUTCH) |
| Connector Color | BLACK |

H.S.

| 1 | 2 |
|---|---|

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | P | – |
| 2 | B | – |

| Connector No. | F33 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | BROWN |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 4 | BG | – |
| 11 | P | – |
| 12 | GR | – |

| Connector No. | F35 |
|---|---|
| Connector Name | IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) |
| Connector Color | WHITE |

H.S.

| 71 | 70 | 69 | 68 | 67 | 66 | 65 |
|---|---|---|---|---|---|---|
| 80 | 79 | 78 | 77 | 76 | 75 | 74 | 73 | 72 |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 65 | P | O AC CLUTCH |
| 71 | SB | O IGN REVERSE S VALVE |

| Connector No. | F42 |
|---|---|
| Connector Name | IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) |
| Connector Color | BLACK |

H.S.

| 98 | 97 | 96 | 95 | 94 | 93 | 92 | 91 | 90 | 89 | 88 | 87 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 110 | 109 | 108 | 107 | 106 | 105 | 104 | 103 | 102 | 101 | 100 | 99 |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 98 | Y | O AC VALVE |

| Connector No. | B16 |
|---|---|
| Connector Name | BCM (BODY CONTROL MODULE) |
| Connector Color | GREEN |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 60 | L | CAN-H |
| 80 | P | CAN-L |

| Connector No. | B41 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 24 | P | – |
| 25 | L | – |

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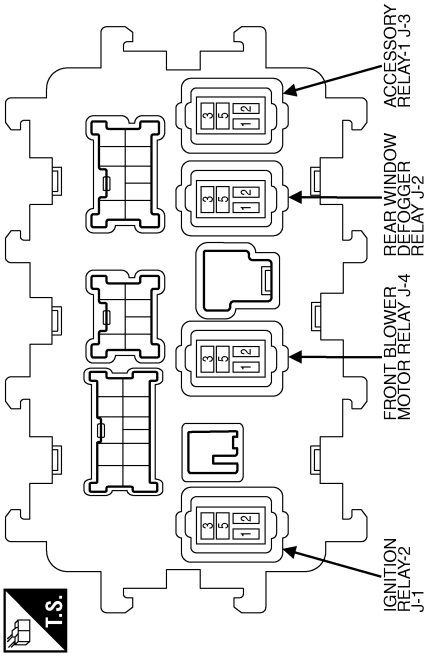
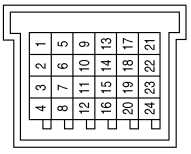
| Connector No. | J4 |
|---|---|
| Connector Name | FUSE BLOCK (J/B) (FRONT BLOWER MOTOR RELAY) |
| Connector Color | – |




| Connector No. | B63 |
|---|---|
| Connector Name | JOINT CONNECTOR-B01 |
| Connector Color | GRAY |




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 3 | P | – |
| 4 | L | – |
| 7 | P | – |
| 8 | L | – |

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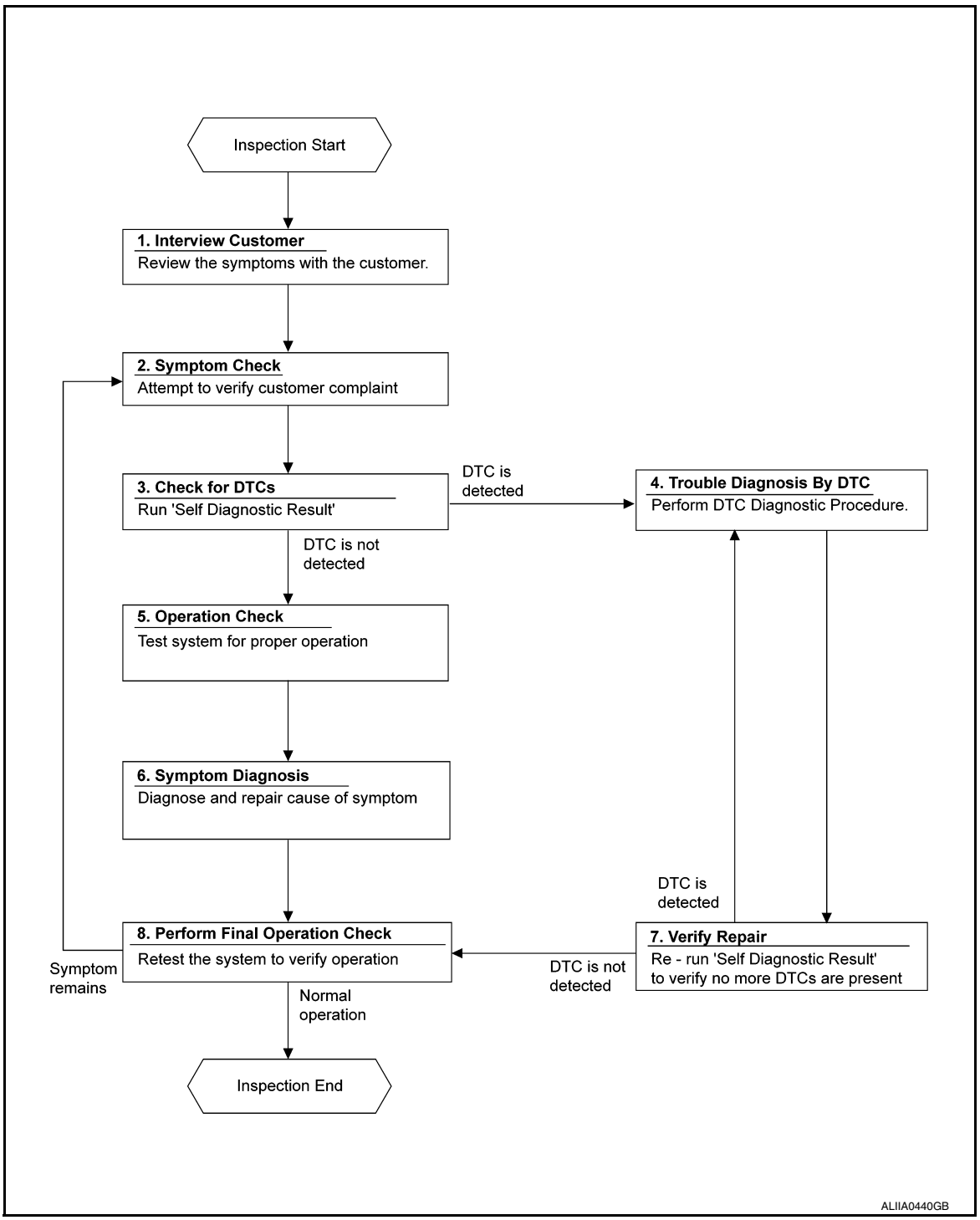
# BASIC INSPECTION

## DIAGNOSIS AND REPAIR WORKFLOW

### Work Flow

INFOID:0000000010012048

OVERALL SEQUENCE




DETAILED FLOW

### 1.INTERVIEW CUSTOMER

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

>> GO TO 2.

## 2.SYMPTOM CHECK

Verify symptoms.

>> GO TO 3.

## 3.CHECK FOR DTCS

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

Is any DTC detected?

YES >> GO TO 4.
NO >> GO TO 5.

## 4.PERFORM DTC DIAGNOSTIC PROCEDURE

Perform the diagnostic procedure for the detected DTC. Refer to HAC-32, "DTC Inspection Priority Chart".

>> GO TO 7.

## 5.OPERATION CHECK

Perform the operation check. Refer to HAC-48, "Work Procedure".

>> GO TO 6.

## 6.SYMPTOM DIAGNOSIS

Check the symptom diagnosis table. Refer to HAC-96, "Diagnosis Chart By Symptom".

>> GO TO 8.

## 7.VERIFY REPAIR.

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

Is any DTC detected?

YES >> GO TO 4.
NO >> GO TO 8.

## 8.PERFORM FINAL OPERATION CHECK

Perform the operation check. Refer to HAC-48, "Work Procedure".

Does it operate normally?

YES >> Inspection End.
NO >> GO TO 2.

# OPERATION INSPECTION

## Work Procedure

INFOID:0000000010012049

### DESCRIPTION

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

**Conditions : Engine running at normal operating temperature**

### INSPECTION PROCEDURE

#### 1. CHECK MEMORY FUNCTION

1. Start the engine.
2. Operate the temperature control switch (driver side) and raise the temperature setting to 32°C (90°F).
3. Press the OFF switch.
4. Turn the ignition switch OFF.
5. Turn the ignition switch ON.
6. Press the AUTO switch.
7. Check that the temperature setting, before turning the ignition switch OFF, is stored.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Check power and ground circuits for A/C auto amp. Refer to HAC-56, "Diagnosis Procedure".

#### 2. CHECK BLOWER MOTOR SPEED

1. Operate the fan control dial. Check that the fan speed changes.
2. Check the operation for all fan speeds.

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check blower motor system. Refer to HAC-85, "Diagnosis Procedure".

#### 3. CHECK DISCHARGE AIR (MODE SWITCH AND DEF SWITCH)

1. Press the MODE switch and the DEF switch.
2. Check that the air outlets change according to each indicated air outlet by placing a hand in front of the outlets. Refer to HAC-10, "System Description".

**NOTE:**
Confirm that the A/C compressor clutch is engaged (sound or visual inspection) and intake door position is at FRE ( ) when the D/F ( ) or DEF ( ) is selected.

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check mode door system. Refer to HAC-80, "Diagnosis Procedure".

#### 4. CHECK INTAKE AIR

1. Press the REC ( ) switch. Indicator is turned ON.
2. Press the FRE ( ) switch. Indicator is turned ON.
3. Listen for the intake door position change. (Slight change of blower sound can be heard.)

**NOTE:**
Confirm that the A/C compressor clutch is engaged (sound or visual inspection) and the FRE ( ) switch is pressed when the D/F ( ) or DEF ( ) is selected.

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check intake door system. Refer to HAC-77, "Diagnosis Procedure".

#### 5. CHECK A/C SWITCH

1. Press the A/C switch.
2. The A/C switch indicator is turned ON.
   Confirm that the A/C compressor clutch engages (sound or visual inspection).

Is the inspection result normal?

YES >> GO TO 6.

NO >> Check magnet clutch system. Refer to HAC-91, "Diagnosis Procedure".

## 6. CHECK TEMPERATURE DECREASE

1. Operate the A/C compressor.
2. Operate the temperature control dial (driver side) and lower the temperature setting to 18°C (60°F).
3. Check that the cool air blows from the outlets.

Is the inspection result normal?

YES >> GO TO 7.
NO >> Check for insufficient cooling. Refer to HAC-98, "Diagnosis Procedure".

## 7. CHECK TEMPERATURE INCREASE

1. Operate the temperature control dial (driver side) and raise the temperature setting to 32°C (90°F) after warming up the engine.
2. Check that the warm air blows from the outlets.

Is the inspection result normal?

YES >> GO TO 8.
NO >> Check for insufficient heating. Refer to HAC-99, "Diagnosis Procedure".

## 8. CHECK DUAL MODE FUNCTION

1. Press the DUAL mode switch, and then check that “DUAL” is shown on the display.
2. Operate the temperature control dial (driver side). Check that the discharge air temperature (driver side) changes.
3. Operate the temperature control dial (passenger side). Check that the discharge air temperature (passenger side) changes.
4. Press the DUAL mode switch, and then check that the temperature setting (driver/passenger) is unified to the driver side temperature setting.

Is the inspection result normal?

YES >> GO TO 9.
NO >> Refer to HAC-96, "Diagnosis Chart By Symptom" and perform the appropriate diagnosis.

## 9. CHECK AUTO MODE

1. Press the AUTO switch, and then check that “AUTO” is shown on the display.
2. Operate the temperature control dial (driver side). Check that the fan speed, outlet air or intake air changes. The discharge air temperature or fan speed varies depending on the ambient temperature, in-vehicle temperature, and temperature setting.

Is the inspection result normal?

YES >> Inspection End.
NO >> Refer to HAC-96, "Diagnosis Chart By Symptom" and perform the appropriate diagnosis.

# SYSTEM SETTING

## Temperature Setting Trimmer

INFOID:0000000010012050

### Description

If the temperature felt by the customer is different than the airflow temperature controlled by the temperature setting, the auto amplifier control temperature can be adjusted to compensate for the temperature setting.

### How to set

Using CONSULT, perform “TEMP SET CORRECT” in “WORK SUPPORT” of HVAC.

| 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 the temperature setting is set to 25.0°C (77°F) and –3.0°C (–6°F), the temperature controlled by auto amp is 25.0°C (77°F) – 3.0°C (6°F) = 22.0°C (71°F) and the temperature becomes lower than the temperature setting.
- When the battery cable is disconnected from the negative terminal or when the battery voltage becomes 10V or less, the setting of the difference between the temperature setting and control temperature may be cancelled.

## Foot Position Setting Trimmer

INFOID:0000000010228160

### 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 | Mode1 | OPEN | CLOSE |
| | Mode2 (initial status) | OPEN | OPEN |
| | Mode3 | CLOSE | OPEN |
| | Mode4 | CLOSE | CLOSE |

**NOTE:**

When the battery cable is disconnected from the negative terminal or when the battery voltage becomes 10 V or less, the setting of the discharge air mix ratio in FOOT mode may be cancelled.

## Inlet Port Memory Function (FRE)

INFOID:0000000010012051

### Description

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

Using CONSULT, perform “FRE MEMORY SET” in “WORK SUPPORT” of HVAC.

| 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) |

**NOTE:**

When the battery cable is disconnected from the negative terminal or when the battery voltage becomes 10V or less, the setting of the FRE switch memory function may be cancelled.

## Inlet Port Memory Function (REC)

INFOID:0000000010012052

### Description

- If the ignition switch is turned to the OFF position while the REC ( ) switch is set to ON (recirculation), “Perform the memory” or “Do not perform the memory” of the REC ( ) switch ON (recirculation) condition can be selected.
- If “Perform the memory” was set, the REC ( ) switch 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

Using CONSULT, perform “REC MEMORY SET” in “WORK SUPPORT” of HVAC.

| 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) |

**NOTE:**

When the battery cable is disconnected from the negative terminal or when the battery voltage becomes 10V or less, the setting of the REC switch memory function may be cancelled.

## Target Evaporator Temp Upper Limit

INFOID:0000000010012053

### DESCRIPTION

Set the target evaporator temperature upper limit.

### HOW TO SET

With CONSULT

Perform the “TARGET EVAPORATOR TEMP UPPER LIMIT SETTING” of HVAC work support item.

| Work support items | Display |
|---|---|
| TARGET EVAPORATOR TEMP UPPER LIMIT SETTING | Initial Setting |
| | Low |
| | Middle |
| | High |

# DOOR MOTOR STARTING POSITION RESET

## Description

INFOID:0000000010012054

- Reset signal is transmitted from A/C auto amp. to air mix door motor, intake door motor and mode door motor. Starting position reset can be performed.
  **NOTE:**
  During reset, DEF switch indicator blinks.
- When air mix door motor, intake door motor or mode door motor is removed and installed, always perform door motor starting position reset.

## Work Procedure

INFOID:0000000010012055

### 1.PERFORM DOOR MOTOR STARTING POSITION RESET

With CONSULT
1. Turn ignition switch ON.
2. Select “Door Motor Starting Position Reset” in “ACTIVE TEST” mode of “HVAC” using CONSULT.
3. Touch “Start” and wait a few seconds.
4. Make sure the “COMPLETED” is displayed on CONSULT screen.

>> Inspection End.

# DTC/CIRCUIT DIAGNOSIS

## U1000 CAN COMM CIRCUIT

### Description

INFOID:0000000010012056

CAN (Controller Area Network) is a serial communication system for real time application. It is an on-vehicle multiplex communication system with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto vehicles, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with two communication lines (CAN-H line, CAN-L 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-32, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart".

### DTC Logic

INFOID:0000000010012057

#### 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 SELF-DIAGNOSIS

With CONSULT
1. Turn ignition switch ON and wait for 2 seconds or more.
2. Using CONSULT, perform “Self Diagnostic Result” of “HVAC”.
3. Check if any DTC No. is displayed in the self-diagnosis results.

Is DTC detected?

YES >> Refer to HAC-53, "Diagnosis Procedure".
NO >> Refer to GI-41, "Intermittent Incident".

### Diagnosis Procedure

INFOID:0000000010012058

**1.** CHECK CAN COMMUNICATION SYSTEM

Check CAN communication system. Refer to LAN-17, "Trouble Diagnosis Flow Chart".

>> Inspection End.

# U1010 CONTROL UNIT (CAN)

## Description

INFOID:0000000010012059

Initial diagnosis of A/C auto amp.

## DTC Logic

INFOID:0000000010012060

### 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 SELF-DIAGNOSIS

With CONSULT
1. Turn ignition switch ON.
2. Using CONSULT, perform “Self Diagnostic Result” of “HVAC”.
3. Check if any DTC No. is displayed in the self-diagnosis results.

Is DTC detected?

YES >> Refer to HAC-54, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000010012061

**NOTE:**
This DTC can be set if the BCM is placed in transit mode. Confirm if the DTC is CURRENT or PAST. If PAST, perform the following steps before carrying out Diagnosis Procedure.
1. Clear DTC using CONSULT. Refer to HAC-22, "CONSULT Function (HVAC)".
2. Perform OPERATION INSPECTION. Refer to HAC-48, "Work Procedure".
3. Perform “Self Diagnostic Result” of “HVAC” using CONSULT. Refer to HAC-22, "CONSULT Function (HVAC)".
4. If DTC resets, proceed with Diagnosis Procedure.

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

Replace A/C auto amp. Refer to HAC-103, "Removal and Installation".

>> Inspection End.

# B24A0 A/C AUTO AMP.

## DTC Logic

INFOID:0000000010269614

### DTC DETECTION LOGIC

**NOTE:**

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-53, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to HAC-54, "DTC Logic".

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B24A0 | A/C AUTO AMP. | A/C auto amp. EEPROM system is malfunctioning. | A/C auto amp. |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON.
2. Using CONSULT, perform “Self Diagnostic Result” of “HVAC”.
3. Check if any DTC No. is displayed in the self-diagnosis results.

Is DTC detected?

YES >> Refer to HAC-55, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000010269615

#### 1.PERFORM SELF DIAGNOSTIC

With CONSULT

1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
3. Touch “ERASE”.
4. Turn ignition switch OFF.
5. Turn ignition switch ON.
6. Perform “DTC CONFIRMATION PROCEDURE”. Refer to HAC-55, "DTC Logic".

Is DTC detected again?

YES >> Replace A/C auto amp. Refer to HAC-103, "Removal and Installation".
NO >> Inspection End.

# B24A1 A/C AUTO AMP. POWER SUPPLY

## DTC Logic

INFOID:0000000010269628

### DTC DETECTION LOGIC

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B24A1 | A/C AUTO AMP. POWER SUPPLY | A/C auto amp. power supply is out of range | • A/C auto amp.<br>• Harness and connector (Power supply is open or shorted) |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON.
2. Using CONSULT, perform “Self Diagnostic Result” of “HVAC”.
3. Check if any DTC No. is displayed in the self-diagnosis results.

Is DTC detected?

YES >> Refer to HAC-56, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000010012087

Regarding Wiring Diagram information, refer to HAC-35, "Wiring Diagram".

#### 1.CHECK FUSE

Check 10A fuse [No. 20, located in the fuse block (J/B)].
**NOTE:**
Refer to PG-64, "Terminal Arrangement".

Is the inspection result normal?

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

#### 2.CHECK A/C AUTO AMP. POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect 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 |
| M54 | 1 | Ground | Approx. 0 V | Approx. 0 V | Battery voltage |

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair harness or connector between A/C auto amp. and fuse block (J/B).

#### 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 | | |
| M54 | 3 | Ground | Yes |

Is the inspection result normal?

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

# B24A4 INTAKE SENSOR

## DTC Logic

INFOID:0000000010012068

### DTC DETECTION LOGIC

**NOTE:**

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-53, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to HAC-54, "DTC Logic".

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B24A4 | 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.) |
| | | The intake sensor recognition temperature is too low. | |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON.
2. Using CONSULT, perform “Self Diagnostic Result” of “HVAC”.
3. Check if any DTC No. is displayed in the self-diagnosis results.

Is DTC detected?

YES >> Refer to HAC-58, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000010012069

Regarding Wiring Diagram information, refer to HAC-35, "Wiring Diagram".

#### 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 | | |
| M135 | 1 | Ground | 5 V |

Is the inspection result normal?

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

#### 2.CHECK INTAKE SENSOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between intake sensor harness connector and ground.

| Intake sensor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M135 | 2 | Ground | Yes |

Is the inspection result normal?

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

## 3.CHECK INTAKE SENSOR

Check intake sensor. Refer to HAC-59, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-103, "Removal and Installation".
NO >> Replace intake sensor. Refer to HAC-107, "Removal and Installation".

## 4.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 | |
| M135 | 1 | M55 | 63 | Yes |

Is the inspection result normal?

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

## 5.CHECK INTAKE SENSOR POWER SUPPLY CIRCUIT FOR SHORT TO GROUND

Check continuity between intake sensor harness connector and ground.

| Intake sensor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M135 | 1 | Ground | No |

Is the inspection result normal?

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

## 6.CHECK INTAKE SENSOR POWER SUPPLY CIRCUIT FOR SHORT TO VOLTAGE

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

| + | | − | Voltage (Approx.) |
|---|---|---|---|
| Intake sensor | | | |
| Connector | Terminal | | |
| M135 | 1 | Ground | 0 V |

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-103, "Removal and Installation".
NO >> Repair harness or connector.

# Component Inspection

INFOID:0000000010012070

## 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) | 17.73 |
| | | −10 (14) | 13.46 |
| | | −5 (23) | 10.33 |
| | | 0 (32) | 8.00 |
| | | 5 (41) | 6.25 |
| | | 10 (50) | 4.93 |
| | | 15 (59) | 3.92 |
| | | 20 (68) | 3.14 |
| | | 25 (77) | 2.54 |
| | | 30 (86) | 2.06 |
| | | 35 (95) | 1.69 |
| | | 40 (104) | 1.39 |
| | | 45 (113) | 1.15 |

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace intake sensor. Refer to HAC-107, "Removal and Installation".

# B24A6 IN-VEHICLE SENSOR

## DTC Logic

INFOID:0000000010012062

### DTC DETECTION LOGIC

**NOTE:**

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-53, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to HAC-54, "DTC Logic".

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B24A6 | 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.) |
| | | 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. Using CONSULT, perform “Self Diagnostic Result” of “HVAC”.
3. Check if any DTC No. is displayed in the self-diagnosis results.

Is DTC detected?

YES >> Refer to HAC-61, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000010012063

Regarding Wiring Diagram information, refer to HAC-35, "Wiring Diagram".

#### 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 | | |
| M41 | 1 | Ground | 5 V |

Is the inspection result normal?

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

#### 2.CHECK CONTINUITY BETWEEN IN-VEHICLE SENSOR AND A/C AUTO AMP.

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 | |
| M41 | 2 | M54 | 23 | Yes |

Is the inspection result normal?

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

## 3.CHECK IN-VEHICLE SENSOR

Check in-vehicle sensor. Refer to HAC-62, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-103, "Removal and Installation".
NO >> Replace in-vehicle sensor. Refer to HAC-105, "Removal and Installation".

## 4.CHECK IN-VEHCILE 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 | |
| M41 | 1 | M54 | 13 | Yes |

Is the inspection result normal?

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

## 5.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 | | |
| M41 | 1 | Ground | No |

Is the inspection result normal?

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

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

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

| + | | − | Voltage (Approx.) |
|---|---|---|---|
| In-vehicle sensor | | | |
| Connector | Terminal | | |
| M41 | 1 | Ground | 0 V |

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-103, "Removal and Installation".
NO >> Repair harness or connector.

# Component Inspection

INFOID:0000000010012064

## 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) | 12.73 |
| | | −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 in-vehicle sensor. Refer to HAC-105, "Removal and Installation".

# B24A9 SUNLOAD SENSOR

## DTC Logic

INFOID:0000000010012071

### DTC DETECTION LOGIC

**NOTE:**

- If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-53, "DTC Logic" (U1000) or HAC-54, "DTC Logic" (U1010).
- Sunload sensor may register a malfunction when indoors, at dusk, or at other times when light is insufficient. When performing the diagnosis indoors, light the sunload sensor with a lamp (60W or more).

| DTC | Items (CONSULT screen terms) | Diagnostic item is detected when... | Possible cause |
|---|---|---|---|
| B24A9 | SUNLOAD SEN (SHORT) | Detected calorie at sunload sensor 1677 w/$m^2$ (1442 kcal/$m^2$·h) or more | • Sunload sensor<br>• A/C auto amp.<br>• Harness and connector (Sunload sensor circuit is open, or there is a short in the circuit) |
| | SUNLOAD SEN (OPEN) | Detected calorie at sunload sensor 33 w/$m^2$ (28 kcal/$m^2$·h) | |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT

1. Using CONSULT, perform “Self Diagnostic Result” of “HVAC”.
2. Check if any DTC No. is displayed in the self-diagnosis results.

**NOTE:**

- If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-53, "DTC Logic" (U1000) or HAC-54, "DTC Logic" (U1010).
- Sunload sensor may register a malfunction when indoors, at dusk, or at other times when light is insufficient. When performing the diagnosis indoors, light the sunload sensor with a lamp (60W or more).

Is DTC No.“B24A9” displayed?

YES >> Perform trouble diagnosis for the sunload sensor. Refer to HAC-64, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000010012072

Regarding Wiring Diagram information, refer to HAC-35, "Wiring Diagram".

**NOTE:**
This DTC can be set if the BCM is placed in transit mode. Confirm if the DTC is CURRENT or PAST. If PAST, perform the following steps before carrying out Diagnosis Procedure.

1. Clear DTC using CONSULT. Refer to HAC-22, "CONSULT Function (HVAC)".
2. Perform OPERATION INSPECTION. Refer to HAC-48, "Work Procedure".
3. Perform “Self Diagnostic Result” of “HVAC” using CONSULT. Refer to HAC-22, "CONSULT Function (HVAC)".
4. If DTC resets, proceed with Diagnosis Procedure.

#### 1.CHECK SUNLOAD SENSOR POWER SUPPLY

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

| + | | − | Voltage (Approx.) |
|---|---|---|---|
| Sunload sensor | | | |
| Connector | Terminal | | |
| M64 | 1 | Ground | 5 V |

Is the inspection result normal?

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

## 2.CHECK CONTINUITY BETWEEN SUNLOAD SENSOR AND A/C AUTO AMP.

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 | |
| M64 | 2 | M54 | 23 | Yes |

Is the inspection result normal?

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

## 3.CHECK SUNLOAD SENSOR

1. Reconnect sunload sensor connector and A/C auto amp. connector.
2. Check sunload sensor. Refer to HAC-65, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-103, "Removal and Installation".
NO >> Replace sunload sensor. Refer to HAC-106, "Removal and Installation".

## 4.CHECK CONTINUITY BETWEEN SUNLOAD SENSOR AND A/C AUTO AMP.

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 | |
| M64 | 1 | M54 | 14 | Yes |

4. Check continuity between sunload sensor harness connector and ground.

| Sunload sensor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M64 | 1 | Ground | No |

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-103, "Removal and Installation".
NO >> Repair harness or connector.

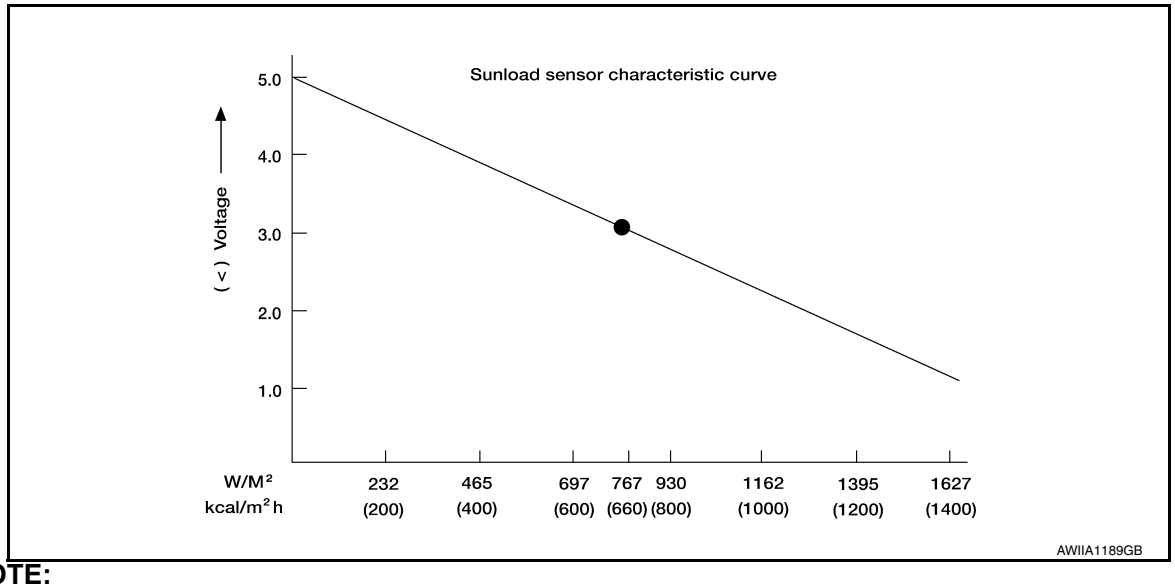
# Component Inspection

INFOID:0000000010012073

## 1.CHECK SUNLOAD SENSOR

1. Turn ignition switch ON.
2. Check voltage between A/C auto amp. harness connector and ground.

| (+) | | (–) |
|---|---|---|
| A/C auto amp. | | — |
| Connector | Terminal | |
| M54 | 14 | Ground |




**NOTE:**
Select a place in direct sunlight when checking sunload sensor.

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace sunload sensor. Refer to HAC-106, "Removal and Installation".

# B24BB LEFT AIR MIX DOOR MOTOR

## DTC Logic

INFOID:0000000010012074

### DTC DETECTION LOGIC

**NOTE:**

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-53, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-54, "DTC Logic".
- If air mix door motors DTC (B24BB – B24BD) are detected, there is probably a disconnected connector or an open circuit in air mix door motor drive power supply harness.

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B24BB | DR AIR MIX DOOR MOT | Short or open circuit of air mix door motor drive signal. | • Air mix door motor<br>• A/C auto amp.<br>• Harness or connectors (The motor circuit is open or shorted.) |

### 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-70, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000010012075

Regarding Wiring Diagram information, refer to HAC-35, "Wiring Diagram".

#### 1.CHECK AIR MIX DOOR MOTOR LH POWER SUPPLY

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

| + | | – | Voltage |
|---|---|---|---|
| Air mix door motor LH | | | |
| Connector | Terminal | | |
| M145 | 2 | Ground | Battery voltage |

Is the inspection result normal?

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

#### 2.CHECK AIR MIX DOOR MOTOR LH POWER SUPPLY CIRCUIT FOR OPEN

1. Disconnect A/C auto amp. connector.
2. 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 | |
| M145 | 2 | M55 | 61 | Yes |

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-103, "Removal and Installation".
NO >> Repair harness or connector.

## 3.CHECK AIR MIX DOOR MOTOR LH DRIVE SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. 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 | |
| M145 | 1 | M55 | 52 | Yes |
| | 3 | | 51 | |
| | 4 | | 71 | |
| | 6 | | 70 | |

Is the inspection result normal?

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

## 4.CHECK AIR MIX DOOR MOTOR LH DRIVE SIGNAL CIRCUIT FOR SHORT

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

| Air mix door motor LH | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M145 | 1 | Ground | No |
| | 3 | | |
| | 4 | | |
| | 6 | | |

Is the inspection result normal?

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

## 5.CHECK AIR MIX DOOR MOTOR LH

Check air mix door motor LH. Refer to HAC-71, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-103, "Removal and Installation".
NO >> Replace air mix door motor LH. Refer to HAC-110, "AIR MIX DOOR MOTOR : Removal and Installation".

# Component Inspection

INFOID:0000000010012076

## 1.CHECK AIR MIX DOOR MOTOR LH

1. Remove air mix door motor LH. Refer to HAC-110, "AIR MIX DOOR MOTOR : Removal and Installation".
2. Check resistance between air mix door motor LH terminals. Refer to applicable table for the normal value.

| Terminal | | Resistance (Ω) (Approx.) |
|---|---|---|
| 2 | 1 | 90 |
| | 3 | |
| | 4 | |
| | 6 | |

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace air mix door motor LH. Refer to HAC-110, "AIR MIX DOOR MOTOR : Removal and Installation".

# B24BD RIGHT AIR MIX DOOR MOTOR

## DTC Logic

INFOID:0000000010012077

### DTC DETECTION LOGIC

**NOTE:**

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-53, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-54, "DTC Logic".
- If air mix door motors DTC (B24BB – B24BD) are detected, there is probably a disconnected connector or an open circuit in air mix door motor drive power supply harness.

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B24BD | AS AIR MIX DOOR MOT | Short or open circuit of air mix door motor drive signal. | • Air mix door motor<br>• A/C auto amp.<br>• Harness or connectors (The motor circuit is open or shorted.) |

### 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-70, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000010012078

Regarding Wiring Diagram information, refer to HAC-35, "Wiring Diagram".

#### 1.CHECK AIR MIX DOOR MOTOR RH POWER SUPPLY

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

| + | | – | Voltage |
|---|---|---|---|
| Air mix door motor RH | | | |
| Connector | Terminal | | |
| M140 | 2 | Ground | Battery voltage |

Is the inspection result normal?

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

#### 2.CHECK AIR MIX DOOR MOTOR RH POWER SUPPLY CIRCUIT FOR OPEN

1. Disconnect A/C auto amp. connector.
2. 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 | |
| M140 | 2 | M55 | 61 | Yes |

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-103, "Removal and Installation".
NO >> Repair harness or connector.

## 3.CHECK AIR MIX DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. 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 | |
| M140 | 1 | M55 | 60 | Yes |
| | 3 | | 59 | |
| | 4 | | 80 | |
| | 6 | | 79 | |

Is the inspection result normal?

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

## 4.CHECK AIR MIX DOOR MOTOR RH DRIVE SIGNAL CIRCUIT FOR SHORT

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

| Air mix door motor RH | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M140 | 1 | Ground | No |
| | 3 | | |
| | 4 | | |
| | 6 | | |

Is the inspection result normal?

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

## 5.CHECK AIR MIX DOOR MOTOR RH

Check air mix door motor RH. Refer to HAC-71, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-103, "Removal and Installation".
NO >> Replace air mix door motor RH. Refer to HAC-110, "AIR MIX DOOR MOTOR : Removal and Installation".

# Component Inspection

INFOID:0000000010012079

## 1.CHECK AIR MIX DOOR MOTOR RH

1. Remove air mix door motor RH. Refer to HAC-110, "AIR MIX DOOR MOTOR : Removal and Installation".
2. Check resistance between air mix door motor RH terminals. Refer to applicable table for the normal value.

| Terminal | | Resistance (Ω) (Approx.) |
|---|---|---|
| 2 | 1 | 90 |
| | 3 | |
| | 4 | |
| | 6 | |

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace air mix door motor RH. Refer to HAC-110, "AIR MIX DOOR MOTOR : Removal and Installation".

# B24B4 A/C CONTROL

## DTC Logic

INFOID:0000000010350714

### DTC DETECTION LOGIC

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B24B4 | A/C CONTROL COMM | When A/C auto amp. is not transmitting or receiving communication signal for 2 or more seconds. | • A/C switch<br>• A/C auto amp.<br>• Harness and connector (Communication line is open or short-ed) |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON.
2. Using CONSULT, perform “Self Diagnostic Result” of “HVAC”.
3. Check if any DTC No. is displayed in the self-diagnosis results.

Is DTC detected?

YES >> Refer to HAC-73, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000010350715

Regarding Wiring Diagram information, refer to HAC-35, "Wiring Diagram".

#### 1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT

1. Using CONSULT, perform “Self Diagnostic Result” of “HVAC”.
2. Check if any DTC No. is displayed in the self-diagnosis results.

**NOTE:**
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-53, "DTC Logic" (U1000) or HAC-54, "DTC Logic" (U1010).

Is any DTC No. displayed?

YES >> Perform diagnosis for the applicable DTC. Refer to HAC-32, "DTC Index".
NO >> GO TO 2.

#### 2.CHECK A/C SWITCH COMMUNICATION CIRCUIT CONTINUITY

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

| A/C switch | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M51 | 8 | M54 | 33 | Yes |

4. Check continuity between A/C switch harness connector and ground.

| A/C switch | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M51 | 8 | Ground | No |

Is the inspection result normal?

YES >> Replace A/C switch. Refer to HAC-102, "Removal and Installation".
NO >> Repair harness or connector.

# B24B6 A/C CONTROL

## DTC Logic

INFOID:0000000010350716

### DTC DETECTION LOGIC

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B24B6 | A/C CONTROL COMM | When A/C auto amp. is not transmitting or receiving communication signal for 2 or more seconds. | • A/C switch<br>• A/C auto amp.<br>• Harness and connector (Communication line is open or short-ed) |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON.
2. Using CONSULT, perform “Self Diagnostic Result” of “HVAC”.
3. Check if any DTC No. is displayed in the self-diagnosis results.

Is DTC detected?

YES >> Refer to HAC-75, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000010350717

Regarding Wiring Diagram information, refer to HAC-35, "Wiring Diagram".

#### 1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT

1. Using CONSULT, perform “Self Diagnostic Result” of “HVAC”.
2. Check if any DTC No. is displayed in the self-diagnosis results.

**NOTE:**
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-53, "DTC Logic" (U1000) or HAC-54, "DTC Logic" (U1010).

Is any DTC No. displayed?

YES >> Perform diagnosis for the applicable DTC. Refer to HAC-32, "DTC Index".
NO >> GO TO 2.

#### 2.CHECK A/C SWITCH COMMUNICATION CIRCUIT CONTINUITY

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

| A/C switch | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M51 | 8 | M54 | 33 | Yes |

4. Check continuity between A/C switch harness connector and ground.

| A/C switch | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M51 | 8 | Ground | No |

Is the inspection result normal?

YES >> Replace A/C switch. Refer to HAC-102, "Removal and Installation".
NO >> Repair harness or connector.

# B24B7 INTAKE DOOR MOTOR

## DTC Logic

INFOID:0000000010012083

### DTC DETECTION LOGIC

**NOTE:**

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-53, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-54, "DTC Logic".
- If mode door motors DTC (B24B7 – B24B9) are detected, there is probably a disconnected connector or an open circuit in mode door motor drive power supply harness.

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B24B7 | INTAKE DOOR MOTOR | Short or open circuit of intake door motor drive signal. | • Intake door motor<br>• A/C auto amp.<br>• Harness or connectors (The motor circuit is open or shorted.) |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Start engine.
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:0000000010012084

Regarding Wiring Diagram information, refer to HAC-35, "Wiring Diagram".

#### 1.CHECK INTAKE DOOR MOTOR POWER SUPPLY

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

| + | | – | Voltage |
|---|---|---|---|
| Intake door motor | | | |
| Connector | Terminal | | |
| M147 | 2 | Ground | Battery voltage |

Is the inspection result normal?

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

#### 2.CHECK INTAKE DOOR MOTOR DRIVE SIGNAL 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 | |
| M147 | 2 | M55 | 41 | Yes |

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-103, "Removal and Installation".
NO >> Repair harness or connector.

## 3.CHECK INTAKE DOOR MOTOR DRIVE SIGNAL 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 | |
| M147 | 1 | M55 | 45 | Yes |
| | 3 | | 44 | |
| | 4 | | 65 | |
| | 6 | | 47 | |

Is the inspection result normal?

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

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

Check continuity between intake door motor harness connector and A/C auto amp. harness connector.

| Intake door motor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M147 | 1 | Ground | No |
| | 3 | | |
| | 4 | | |
| | 6 | | |

Is the inspection result normal?

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

## 5.CHECK INTAKE DOOR MOTOR

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

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-103, "Removal and Installation".
NO >> Replace intake door motor. Refer to HAC-110, "INTAKE DOOR MOTOR : Removal and Installation".

# Component Inspection (Motor)

INFOID:0000000010012086

## 1.CHECK INTAKE DOOR MOTOR

1. Remove intake door motor. Refer to HAC-110, "INTAKE DOOR MOTOR : Removal and Installation".
2. Check resistance between intake door motor terminals. Refer to applicable table for the normal value.

| Terminal | | Resistance (Ω) (Approx.) |
|---|---|---|
| 2 | 1 | 90 |
| | 3 | |
| | 4 | |
| | 6 | |

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace intake door motor. Refer to HAC-110, "INTAKE DOOR MOTOR : Removal and Installation".

# B24B9 MODE DOOR MOTOR

## DTC Logic

INFOID:0000000010012080

### DTC DETECTION LOGIC

**NOTE:**

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-53, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-54, "DTC Logic".
- If mode door motors DTC (B24B7 – B24B9) are detected, there is probably a disconnected connector or an open circuit in mode door motor drive power supply harness.

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B24B9 | MODE DOOR MOTOR | Short or open circuit of mode door motor drive signal. | • Mode door motor<br>• A/C auto amp.<br>• Harness or connectors (The motor circuit is open or shorted.) |

### 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:0000000010012081

Regarding Wiring Diagram information, refer to HAC-35, "Wiring Diagram".

#### 1.CHECK MODE DOOR MOTOR POWER SUPPLY

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

| + | | – | Voltage |
|---|---|---|---|
| Mode door motor | | | |
| Connector | Terminal | | |
| M143 | 2 | Ground | Battery voltage |

Is the inspection result normal?

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

#### 2.CHECK MODE DOOR MOTOR POWER SUPPLY CIRCUIT FOR OPEN

1. Disconnect A/C auto amp. connector.
2. Check continuity between mode door motor harness connector and A/C auto amp. harness connector.

| Mode door motor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M143 | 2 | M55 | 41 | Yes |

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-103, "Removal and Installation".
NO >> Repair harness or connector.

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

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

| Mode door motor | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M143 | 1 | M55 | 50 | Yes |
| | 3 | | 49 | |
| | 4 | | 69 | |
| | 6 | | 68 | |

Is the inspection result normal?

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

## 4.CHECK MODE DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR SHORT

Check continuity between mode door motor harness connector and A/C auto amp. harness connector.

| Mode door motor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M143 | 1 | Ground | No |
| | 3 | | |
| | 4 | | |
| | 6 | | |

Is the inspection result normal?

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

## 5.CHECK MODE DOOR MOTOR

Check mode door motor. Refer to HAC-81, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-103, "Removal and Installation".
NO >> Replace mode door motor. Refer to HAC-110, "MODE DOOR MOTOR : Removal and Installation".

# Component Inspection

INFOID:0000000010012082

## 1.CHECK MODE DOOR MOTOR

1. Remove mode door motor. Refer to HAC-110, "MODE DOOR MOTOR : Removal and Installation".
2. Check resistance between mode door motor terminals. Refer to applicable table for the normal value.

| Terminal | | Resistance (Ω) (Approx.) |
|---|---|---|
| 2 | 1 | 90 |
| | 3 | |
| | 4 | |
| | 6 | |

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace mode door motor. Refer to HAC-110, "MODE DOOR MOTOR : Removal and Installation".

# B24C3 BLOWER MOTOR FEEDBACK

## DTC Logic

INFOID:0000000010350710

### DTC DETECTION LOGIC

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B24C3 | BLOWER MOTOR FEEDBACK | Short or open circuit of blower motor feedback circuit. | • Variable blower control<br>• A/C auto amp.<br>• Harness and connector |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON.
2. Using CONSULT, perform “Self Diagnostic Result” of “HVAC”.
3. Check if any DTC No. is displayed in the self-diagnosis results.

Is DTC detected?

YES >> Refer to HAC-83, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

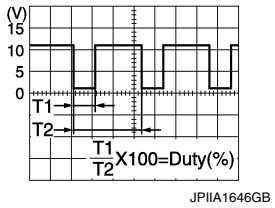
INFOID:0000000010350711

Regarding Wiring Diagram information, refer to HAC-35, "Wiring Diagram".

**NOTE:**
This DTC can be set if the BCM is placed in transit mode. Confirm if the DTC is CURRENT or PAST. If PAST, perform the following steps before carrying out Diagnosis Procedure.
1. Clear DTC using CONSULT. Refer to HAC-22, "CONSULT Function (HVAC)".
2. Perform OPERATION INSPECTION. Refer to HAC-48, "Work Procedure".
3. Perform “Self Diagnostic Result” of “HVAC” using CONSULT. Refer to HAC-22, "CONSULT Function (HVAC)".
4. If DTC resets, proceed with Diagnosis Procedure.

#### 1.CHECK FRONT BLOWER FEEDBACK SIGNAL

1. Turn ignition switch ON.
2. Set air outlet to VENT.
3. Change fan speed from 1st – 7th, and check duty ratios between variable blower control harness connector and ground by using an oscilloscope.
   **NOTE:**
   Calculate the drive signal duty ratio as shown in the figure.
   T2 = Approx. 1.6 ms

| + | | − | Condition | Duty ratio (Approx.) | Output waveform |
|---|---|---|---|---|---|
| Variable blower control | | | | | |
| Connector | Terminal | | Fan speed (manual) Air outlet: VENT | | |
| M133 | 1 | Ground | 1st | 25% |  |
| | | | 2nd | 35% | |
| | | | 3rd | 47% | |
| | | | 4th | 57% | |
| | | | 5th | 69% | |
| | | | 6th | 79% | |
| | | | 7th | 91% | |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Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace variable blower control. Refer to HAC-112, "Removal and Installation".

## 2.CHECK FRONT BLOWER MOTOR FEEDBACK CIRCUIT FOR OPEN

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

| Variable blower control | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M133 | 1 | M55 | 64 | Yes |

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to VTL-16, "Removal and Installation".
NO >> Repair harness or connector.

# B24C6 BLOWER MOTOR CONTROL

## DTC Logic

INFOID:0000000010269624

### DTC DETECTION LOGIC

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B24C6 | BLOWER MOTOR CONTROL | Short or open circuit of blower motor control circuit. | • Front blower motor<br>• Front blower relay<br>• Variable blower control<br>• A/C auto amp.<br>• Harness and connector |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON.
2. Using CONSULT, perform “Self Diagnostic Result” of “HVAC”.
3. Check if any DTC No. is displayed in the self-diagnosis results.

Is DTC detected?

YES >> Refer to HAC-85, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000010269546

Regarding Wiring Diagram information, refer to HAC-35, "Wiring Diagram".

**NOTE:**
This DTC can be set if the BCM is placed in transit mode. Confirm if the DTC is CURRENT or PAST. If PAST, perform the following steps before carrying out Diagnosis Procedure.
1. Clear DTC using CONSULT. Refer to HAC-22, "CONSULT Function (HVAC)".
2. Perform OPERATION INSPECTION. Refer to HAC-48, "Work Procedure".
3. Perform “Self Diagnostic Result” of “HVAC” using CONSULT. Refer to HAC-22, "CONSULT Function (HVAC)".
4. If DTC resets, proceed with Diagnosis Procedure.

#### 1.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 20A fuses. [Nos. 17 and 27, located in fuse block (J/B)].
   **NOTE:**
   Refer to PG-64, "Terminal Arrangement".

Is the inspection result normal?

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

#### 2.CHECK VARIABLE BLOWER CONTROL POWER SUPPLY

1. Disconnect variable blower control connector.
2. Turn ignition switch ON.
3. Check voltage between variable blower control harness connector and ground.

| + | | – | Voltage |
|---|---|---|---|
| Variable blower control | | | |
| Connector | Terminal | | |
| M133 | 4 | Ground | Battery voltage |

Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 3.

## 3.CHECK FRONT BLOWER RELAY

1. Turn ignition switch OFF.
2. Check front blower relay. Refer to HAC-88, "Component Inspection (Front Blower Relay)".

Is the inspection result normal?

YES >> Repair harness or connector between variable blower control and fuse.
NO >> Replace front blower relay.

## 4.CHECK FRONT BLOWER MOTOR POWER SUPPLY

1. Connect variable blower control connector.
2. Disconnect front blower motor connector.
3. Turn ignition switch ON.
4. Check voltage between front blower motor harness connector and ground.

| + | | – | Voltage |
|---|---|---|---|
| Front blower motor | | | |
| Connector | Terminal | | |
| M144 | 1 | Ground | Battery voltage |

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace variable blower control. Refer to HAC-112, "Removal and Installation".

## 5.CHECK FRONT BLOWER MOTOR CONTROL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect variable blower control connector.
3. Check continuity between variable blower control harness connector and front blower motor harness connector.

| Variable blower control | | Front blower motor | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M134 | 6 | M144 | 2 | Yes |

Is the inspection result normal?

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

## 6.CHECK FRONT BLOWER MOTOR OPERATION

Check front blower motor operation. Refer to HAC-88, "Component Inspection (Front Blower Motor)".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace front blower motor. Refer to VTL-16, "Removal and Installation".

## 7.CHECK VARIABLE BLOWER CONTROL GROUND CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Check continuity between variable blower control harness connector and ground.

| Variable blower control | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M133 | 2 | Ground | Yes |

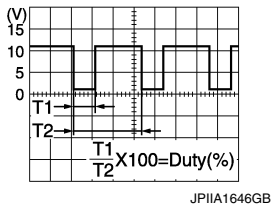
Is the inspection result normal?

YES >> GO TO 8.
NO >> Repair harness or connector.

## 8. CHECK VARIABLE BLOWER CONTROL SIGNAL

1. Connect variable blower control connector and A/C auto amp. connector.
2. Turn ignition switch ON.
3. Set air outlet to VENT.
4. Change fan speed from 1st – 7th, and check duty ratios between variable blower control harness connector and ground by using an oscilloscope.

**NOTE:**
Calculate the drive signal duty ratio as shown in the figure.
T2 = Approx. 1.6 ms

| + Variable blower control | | – | Condition | Duty ratio (Approx.) | Output waveform |
|---|---|---|---|---|---|
| Connector | Terminal | | Fan speed (manual) Air outlet: VENT | | |
| M133 | 3 | Ground | 1st | 25% |  |
| | | | 2nd | 35% | |
| | | | 3rd | 47% | |
| | | | 4th | 57% | |
| | | | 5th | 69% | |
| | | | 6th | 79% | |
| | | | 7th | 91% | |



Is the inspection result normal?

YES >> Replace variable blower control. Refer to HAC-112, "Removal and Installation".
NO >> GO TO 9.

## 9. CHECK VARIABLE BLOWER CONTROL SIGNAL CIRCUIT FOR OPEN

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

| Variable blower control | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M133 | 3 | M55 | 74 | Yes |

Is the inspection result normal?

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

## 10. CHECK VARIABLE BLOWER CONTROL SIGNAL CIRCUIT FOR SHORT

Check continuity between variable blower control harness connector and ground.

| Variable blower control | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M133 | 3 | Ground | No |

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-103, "Removal and Installation".
NO >> Repair harness or connector.

## Component Inspection (Front Blower Motor)

INFOID:0000000010269547

### 1.CHECK BLOWER MOTOR

1. Connect battery voltage to terminal 1 of blower motor.
2. Connect ground to terminal 2 of blower motor.

Does the blower fan operate?

YES >> Intermittent incident. Refer to GI-41, "Intermittent Incident".
NO >> Replace blower motor. Refer to VTL-16, "Removal and Installation".

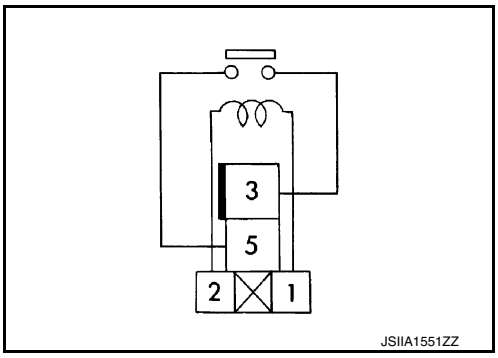
## Component Inspection (Front Blower Relay)

INFOID:0000000010269548

### 1.CHECK FRONT BLOWER RELAY

1. Remove front blower relay. Refer to PG-64, "Terminal Arrangement".
2. Check continuity between blower relay terminal 3 and 5 when the voltage is supplied between terminal 1 and 2.

| Terminal | | Voltage | Continuity |
|---|---|---|---|
| 3 | 5 | ON | Yes |
| | | OFF | No |




Is the inspection result normal?

YES >> Inspection End.
NO >> Replace front blower relay.

# B24D4 A/C CONTROL COMMUNICATION

## DTC Logic

INFOID:0000000010269627

### DTC DETECTION LOGIC

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B24D4 | A/C CONTROL COMM | When A/C auto amp. is not transmitting or receiving communication signal for 2 or more seconds. | • A/C switch<br>• A/C auto amp.<br>• Harness and connector (Communication line is open or short-ed) |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON.
2. Using CONSULT, perform “Self Diagnostic Result” of “HVAC”.
3. Check if any DTC No. is displayed in the self-diagnosis results.

Is DTC detected?

YES >> Refer to HAC-89, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000010012090

Regarding Wiring Diagram information, refer to HAC-35, "Wiring Diagram".

#### 1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT

1. Using CONSULT, perform “Self Diagnostic Result” of “HVAC”.
2. Check if any DTC No. is displayed in the self-diagnosis results.

**NOTE:**
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-53, "DTC Logic" (U1000) or HAC-54, "DTC Logic" (U1010).

Is any DTC No. displayed?

YES >> Perform diagnosis for the applicable DTC. Refer to HAC-32, "DTC Index".
NO >> GO TO 2.

#### 2.CHECK A/C SWITCH COMMUNICATION CIRCUIT CONTINUITY

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

| A/C switch | | A/C auto amp. | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M51 | 8 | M54 | 33 | Yes |

4. Check continuity between A/C switch harness connector and ground.

| A/C switch | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M51 | 8 | Ground | No |

Is the inspection result normal?

YES >> Replace A/C switch. Refer to HAC-102, "Removal and Installation".
NO >> Repair harness or connector.

# MAGNET CLUTCH

## Component Function Check

INFOID:0000000010012098

### 1.CHECK MAGNET CLUTCH OPERATION

Perform “COMPRESSOR” in “Active Test” of “IPDM E/R”. Refer to PCS-9, "CONSULT Function (IPDM E/R)".

Does it operate normally?

YES >> Inspection End.
NO >> Refer to HAC-91, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000010012099

Regarding Wiring Diagram information, refer to HAC-35, "Wiring Diagram".

### 1.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 10A fuse (No. 50, located in IPDM E/R).
   **NOTE:**
   Refer to PG-68, "IPDM E/R Terminal Arrangement".

Is the inspection result normal?

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

### 2.CHECK MAGNET CLUTCH POWER SUPPLY CIRCUIT

1. Disconnect compressor connector and IPDM E/R connector.
2. Check continuity between compressor harness connector and IPDM E/R harness connector.

| Compressor | | IPDM E/R | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| F27 | 1 | F35 | 65 | Yes |

Is the inspection result normal?

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

### 3.CHECK MAGNET CLUTCH GROUND CIRCUIT

1. Disconnect compressor connector.
2. Check continuity between compressor harness connector and ground.

| Compressor | | | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| F27 | 2 | Ground | Yes |

Is the inspection result normal?

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

### 4.CHECK MAGNET CLUTCH

Directly apply battery voltage to the magnet clutch. Check operation visually and by sound.

Does it operate normally?

YES >> Replace IPDM E/R. Refer to PCS-35, "Removal and Installation".
NO >> Replace magnet clutch. Refer to HA-30, "Removal and Installation".

# ECV (ELECTRICAL CONTROL VALVE)

## Diagnosis Procedure

INFOID:0000000010012100

Regarding Wiring Diagram information, refer to HAC-35, "Wiring Diagram".

### 1.CHECK ECV (ELECTRICAL CONTROL VALVE) POWER SUPPLY

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

| + | | – | Voltage |
|---|---|---|---|
| Compressor | | | |
| Connector | Terminal | | |
| F15 | 4 | Ground | Battery voltage |

Is the inspection result normal?

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

### 2.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 10 A fuse [No. 50, located in IPDM E/R]. Refer to PCS-35, "Removal and Installation".

Is the inspection result normal?

YES >> Repair harness or connector.
NO >> Replace the blown fuse after repairing the affected circuit.

### 3.CHECK ECV CONTROL SIGNAL CIRCUIT FOR OPEN

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

| Compressor | | IPDM E/R | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| F15 | 3 | F42 | 98 | Yes |

Is the inspection result normal?

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

### 4.CHECK ECV CONTROL SIGNAL CIRCUIT FOR SHORT

Check continuity between compressor harness connector and ground.

| Compressor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| F15 | 3 | Ground | No |

Is the inspection result normal?

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

### 5.CHECK ECV

Check ECV. Refer to HAC-93, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Replace compressor. Refer to HA-30, "Removal and Installation".

## 6. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-35, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

# Component Inspection

INFOID:0000000010012101

## 1. CHECK ECV (ELECTRICAL CONTROL VALVE)

1. Turn ignition switch OFF.
2. Disconnect compressor connector.
3. Check continuity between compressor connector F88 terminals.

| Terminals | | Condition | Resistance (kΩ) |
|---|---|---|---|
| | | Temperature: °C (°F) | |
| 3 | 4 | 20 (68) | 10.1 – 11.1 |

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace compressor. Refer to HA-30, "Removal and Installation".

# POWER SUPPLY AND GROUND CIRCUIT
## A/C SWITCH ASSEMBLY

### A/C SWITCH ASSEMBLY : Component Function Check

INFOID:0000000010012088

#### 1.CHECK OPERATION

1. Press the AUTO switch, and then check that “AUTO” is shown on the display.
2. Operate the temperature control dial (driver side). Check that the fan speed or outlet changes. (The discharge air temperature or fan speed varies depending on the ambient temperature, in-vehicle temperature, and temperature setting.)

Does it operate normally?

YES >> Inspection End.
NO >> Perform trouble diagnosis for the A/C switch. Refer to HAC-94, "A/C SWITCH ASSEMBLY : Diagnosis Procedure".

### A/C SWITCH ASSEMBLY : Diagnosis Procedure

INFOID:0000000010012089

Regarding Wiring Diagram information, refer to HAC-35, "Wiring Diagram".

#### 1.CHECK A/C SWITCH POWER SUPPLY

1. Disconnect the A/C switch connector.
2. Turn ignition switch ON.
3. Check voltage between A/C switch harness connector and ground.

| (+) | | (−) | Voltage (Approx.) |
|---|---|---|---|
| A/C switch | | | |
| Connector | Terminal | | |
| M51 | 4 | Ground | Battery voltage |

Is the inspection result normal?

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

#### 2.CHECK FUSE

Check 10A fuse [No. 20, located in the fuse block (J/B)].

**NOTE:**
Refer to PG-64, "Terminal Arrangement".

Is the inspection result normal?

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

#### 3.CHECK A/C SWITCH POWER SUPPLY CIRCUIT FOR OPEN

1. Check continuity between A/C switch harness connector and fuse block (J/B) harness connector.

| A/C switch | | Fuse block (J/B) | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M51 | 4 | M34 | 16R | Yes |

Is the inspection result normal?

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

#### 4.CHECK A/C SWITCH GROUND CIRCUIT

1. Turn ignition switch OFF.

2. Check continuity between A/C switch harness connector and ground.

| A/C switch | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M51 | 3 | Ground | Yes |

Is the inspection result normal?

YES >> Replace the A/C switch. Refer to HAC-102, "Removal and Installation".
NO >> Repair the harness or connectors.

# SYMPTOM DIAGNOSIS

## HEATER AND AIR CONDITIONING SYSTEM CONTROL SYMPTOMS

### Diagnosis Chart By Symptom

INFOID:0000000010012102

**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 |
|---|---|---|
| • Air conditioning does not activate.<br>• Air conditioning cannot be controlled.<br>• Operation status of air conditioning is not indicated on display. | • A/C auto amp. ignition power supply circuit<br>• Front A/C control (A/C auto amp.) | HAC-56, "Diagnosis Procedure" |
| • Air outlet does not change.<br>• Mode door motor does not operate normally. | • Circuit between mode door motor and A/C auto amp.<br>• Mode door motor control linkage<br>• Mode door motor<br>• A/C auto amp. | HAC-80, "Diagnosis Procedure" |
| • Discharge air temperature of driver side does not change.<br>• Air mix door motor LH does not operate normally. | • Circuit between air mix door motor LH and A/C auto amp.<br>• Air mix door motor LH installation condition<br>• Air mix door motor LH<br>• A/C auto amp. | HAC-67, "Diagnosis Procedure" |
| • Discharge air temperature of passenger side does not change.<br>• Air mix door motor RH does not operate normally. | • Circuit between air mix door motor RH and A/C auto amp.<br>• Air mix door motor RH installation condition<br>• Air mix door motor RH<br>• A/C auto amp. | HAC-70, "Diagnosis Procedure" |
| • Intake door does not change.<br>• Intake door motor does not operate normally. | • Circuit between intake door motor and A/C auto amp.<br>• Intake door motor control linkage<br>• Intake door motor<br>• A/C auto amp. | HAC-77, "Diagnosis Procedure" |
| Blower motor operation is malfunctioning. | • Power supply system of front blower motor<br>• Circuit between front blower motor and A/C auto amp.<br>• Front blower motor<br>• A/C auto amp. | HAC-85, "Diagnosis Procedure" |
| Compressor does not operate. | • Circuit between magnet clutch and IPDM E/R<br>• Magnet clutch<br>• IPDM E/R (A/C relay)<br>• Circuit between ECM and refrigerant pressure sensor<br>• Refrigerant pressure sensor<br>• CAN communication circuit<br>• A/C auto amp. | HAC-91, "Diagnosis Procedure" |
| • Insufficient cooling.<br>• No cool air comes out. (Air flow volume is normal.) | • Magnet clutch control system<br>• Drive belt slipping<br>• Refrigerant cycle<br>• ECV (electrical control valve)<br>• Air leakage from each duct<br>• A/C auto amp. connection recognition signal circuit<br>• Temperature setting trimmer (front) | HAC-98, "Diagnosis Procedure" |

| Symptom | | Corresponding malfunction part | Reference |
|---|---|---|---|
| • Insufficient heating.<br>• No warm air comes out. (Air flow volume is normal.) | | • Engine cooling system<br>• Heater hose<br>• Heater core<br>• Air leakage from each duct<br>• Temperature setting trimmer (front) | HAC-99, "Diagnosis Procedure" |
| Noise is heard when front air conditioning system operates. | During compressor operation | Refrigerant cycle | HA-20, "Symptom Table" |
| | During front blower motor operation | • Mixing any foreign object in front blower motor<br>• Front blower motor fan breakage<br>• Front blower motor rotation inferiority | HAC-88, "Component Inspection (Front Blower Motor)" |
| • Memory function does not operate.<br>• Setting temperature is not memorized. | | • Battery power supply system of A/C auto amp.<br>• A/C auto amp. | HAC-56, "Diagnosis Procedure" |

# INSUFFICIENT COOLING

## Description

INFOID:0000000010012103

Symptom
- Insufficient cooling
- No cool air comes out. (Air flow volume is normal.)

## Diagnosis Procedure

INFOID:0000000010012104

**NOTE:**
Perform self-diagnoses with CONSULT before performing symptom diagnosis. If any DTC is detected, perform the corresponding diagnosis.

### 1.CHECK MAGNET CLUTCH OPERATION

1. Turn ignition switch ON.
2. Operate fan switch.
3. Press A/C switch.
4. Check that A/C indicator turns ON. Check visually and by sound that compressor operates.
5. Press A/C switch again.
6. Check that A/C indicator turns OFF. Check that compressor stops.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Perform diagnosis of “COMPRESSOR DOES NOT OPERATE” in “SYMPTOM DIAGNOSIS”. Refer to HAC-100, "Diagnosis Procedure".

### 2.CHECK DRIVE BELT

Check tension of drive belt. Refer to EM-13, "Checking".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Adjust or replace drive belt depending on the inspection results.

### 3.CHECK REFRIGERANT CYCLE

Connect recovery/recycling recharging equipment to the vehicle and perform pressure inspection with gauge. Refer to HA-17, "Symptom Table".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace parts depending on the inspection results.

### 4.CHECK AIR LEAKAGE FROM EACH DUCT

Check duct and nozzle, etc. of the front air conditioning system for leakage.

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace parts depending on the inspection results.

### 5.CHECK SETTING OF TEMPERATURE SETTING TRIMMER (FRONT)

1. Check setting value of temperature setting trimmer (front). Refer to HAC-50, "Temperature Setting Trimmer".
2. Check that temperature setting trimmer (front) is set to “+ direction”.
   **NOTE:**
   The control temperature can be set with the setting of the temperature setting trimmer (front).
3. Set difference between set temperature and control temperature to “0”.

Is inspection result normal?

YES >> Inspection End.
NO >> Replace A/C auto amp. Refer to HAC-103, "Removal and Installation".

# INSUFFICIENT HEATING

## Description

INFOID:0000000010012105

Symptom
- Insufficient heating
- No warm air comes out. (Air flow volume is normal.)

## Diagnosis Procedure

INFOID:0000000010012106

**NOTE:**
Perform self-diagnosis with CONSULT before performing symptom diagnosis. If DTC is detected, perform the corresponding diagnosis.

### 1.CHECK COOLING SYSTEM

1. Check engine coolant level and check leakage. Refer to CO-8, "Inspection".
2. Check reservoir tank cap. Refer to CO-12, "RADIATOR CAP : Inspection".
3. Check water flow sounds of the engine coolant. Refer to CO-8, "Inspection".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Refill engine coolant and repair or replace parts depending on the inspection results.

### 2.CHECK HEATER HOSE

Check installation of heater hose visually or by touching.

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace parts depending on the inspection results.

### 3.CHECK HEATER CORE

1. Check temperature of inlet hose and outlet hose of front heater core.
2. Check that inlet side of heater core is hot and the outlet side is slightly lower than/almost equal to the inlet side.
   **CAUTION:**
   **Always perform the temperature inspection in a short period of time because the engine coolant temperature is very hot.**

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace heater core. Refer to HA-43, "HEATER CORE : Removal and Installation".

### 4.CHECK AIR LEAKAGE FROM EACH DUCT

Check duct and nozzle, etc. of front air conditioning system for air leakage.

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace parts depending on the inspection results.

### 5.CHECK SETTING OF TEMPERATURE SETTING TRIMMER (FRONT)

1. Check setting value of temperature setting trimmer (front). Refer to HAC-50, "Temperature Setting Trimmer".
2. Check that temperature setting trimmer (front) is set to “– direction”.
   **NOTE:**
   The control temperature can be set by the temperature setting trimmer (front).
3. Set difference between the set temperature and control temperature to “0”.

Are the symptoms solved?

YES >> Inspection End.
NO >> Replace A/C auto amp. Refer to HAC-103, "Removal and Installation".

# COMPRESSOR DOES NOT OPERATE

## Description

INFOID:0000000010012107

Symptom: Compressor does not operate.

## Diagnosis Procedure

INFOID:0000000010012108

**NOTE:**
- Perform self-diagnoses with CONSULT before performing symptom diagnosis. If DTC is detected, perform the corresponding diagnosis.
- Check that refrigerant system is properly charged. If refrigerant amount is below the proper amount, perform inspection of refrigerant leakage.

### 1.CHECK MAGNET CLUTCH OPERATION

Check magnet clutch. Refer to HAC-91, "Component Function Check".

Does it operate normally?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts.

### 2.CHECK REFRIGERANT PRESSURE SENSOR

Check refrigerant pressure sensor. Refer to EC-482, "Component Function Check".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace malfunctioning parts.

### 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 | A/C switch | 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-103, "Removal and Installation".

### 4.CHECK ECM INPUT SIGNAL

With CONSULT
Check “AIR COND SIG” and “HEATER FAN SW” in “DATA MONITOR” mode of “ECM” using CONSULT.

| Monitor item | Condition | | Status |
|---|---|---|---|
| AIR COND SIG | A/C switch | ON | On |
| | | OFF | Off |
| HEATER FAN SW | Blower motor | ON | On |
| | | OFF | Off |

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check CAN communication system. Refer to LAN-17, "Trouble Diagnosis Flow Chart".

### 5.CHECK IPDM E/R INPUT SIGNAL

With CONSULT
1. Start engine.

2. Check “AC COMP REQ” in “DATA MONITOR” mode of “IPDM E/R” using CONSULT.

| Monitor item | Condition | | Status |
|---|---|---|---|
| AC COMP REQ | A/C switch | ON | On |
| | | OFF | Off |

Is the inspection result normal?

YES >> Inspection End.
NO >> Check CAN communication system. Refer to LAN-17, "Trouble Diagnosis Flow Chart".

# REMOVAL AND INSTALLATION

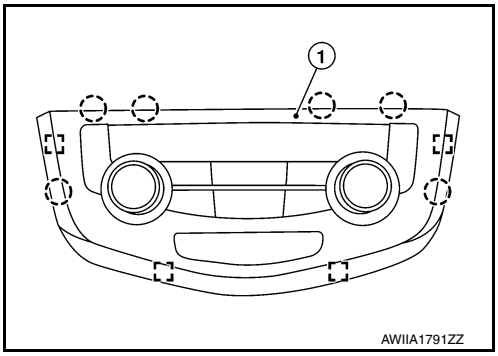
## A/C SWITCH ASSEMBLY

### Removal and Installation

INFOID:0000000009797860

REMOVAL

1. Release the A/C switch assembly clips and pawls using a suitable tool.
   : Metal clip
   : Pawl
2. Disconnect the harness connector from the A/C switch assembly (1) and remove.




INSTALLATION

Installation is in the reverse order of removal.

# A/C AUTO AMP.

## Removal and Installation

INFOID:0000000010193941

### REMOVAL

1. Remove heating and cooling unit assembly. Refer to HA-42, "HEATING AND COOLING UNIT ASSEMBLY : Removal and Installation".
2. Disconnect the harness connectors from the A/C auto amp.
3. Release pawls and remove A/C auto amp.

### INSTALLATION

Installation is in the reverse order of removal.

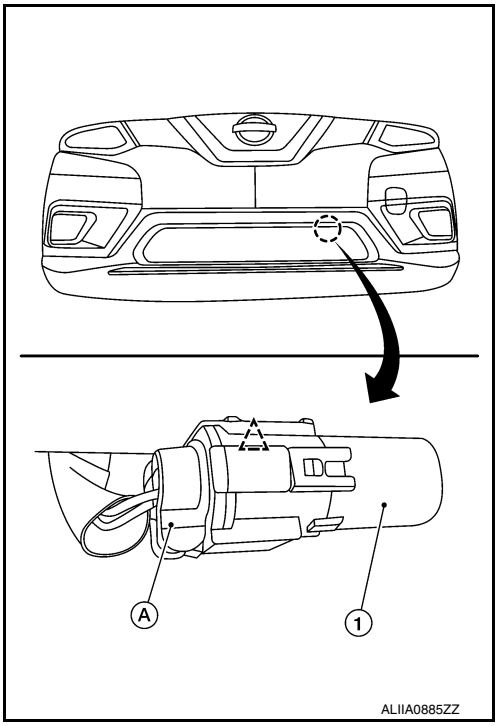
# AMBIENT SENSOR

## Removal and Installation

INFOID:0000000009797861

### REMOVAL

1. Disconnect the harness connector (A) from the ambient sensor (1).
2. Release the clip and remove ambient sensor.
   : Clip




### INSTALLATION

Installation is in the reverse order of removal.

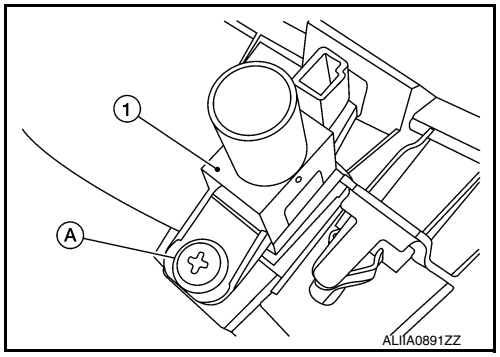
# IN-VEHICLE SENSOR

## Removal and Installation

INFOID:0000000009797862

### REMOVAL

1. Remove cluster lid C. Refer to IP-21, "Removal and Installation".
2. Remove screw (A) and in-vehicle sensor (1).




### INSTALLATION

Installation is in the reverse order of removal.

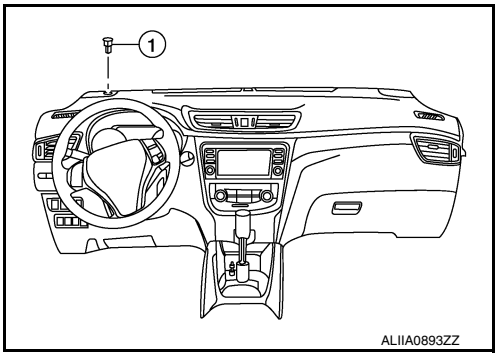
# SUNLOAD SENSOR

## Removal and Installation

INFOID:0000000009797863

### REMOVAL

1. Release the sunload sensor pawls using a suitable tool.
2. Disconnect the harness connector from the sunload sensor (1) and remove.



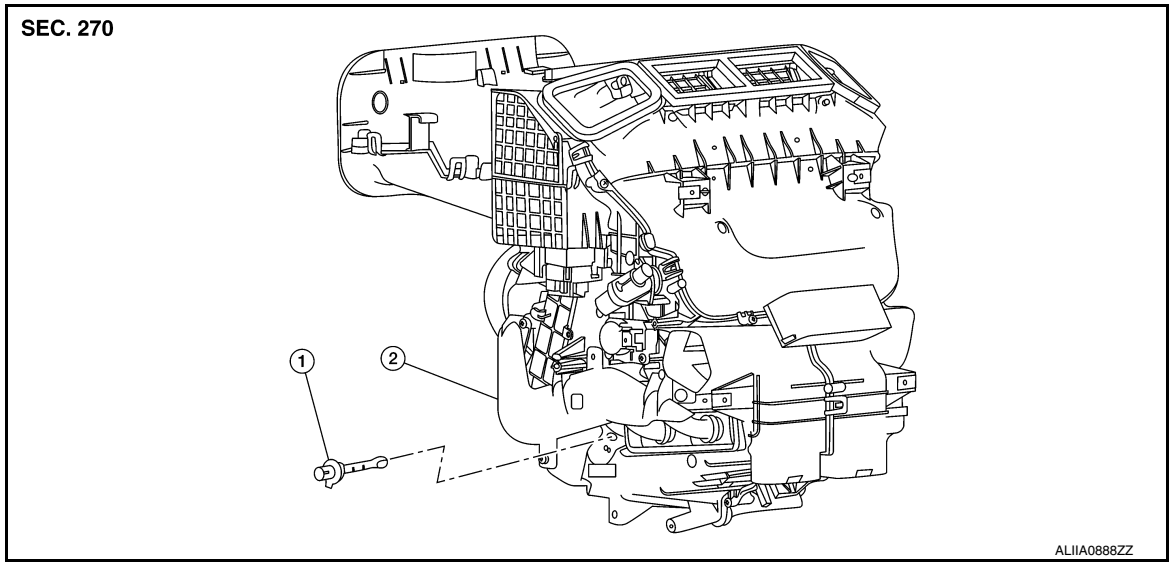

### INSTALLATION

Installation is in the reverse order of removal.

# INTAKE SENSOR

## Exploded View

INFOID:0000000009797864




1. Intake sensor
2. Heating and cooling unit assembly

## Removal and Installation

INFOID:0000000009797865

### REMOVAL

1. Remove front foot duct (LH). Refer to VTL-10, "FRONT FOOT DUCT : Removal and Installation".
2. Disconnect the harness connector and remove intake sensor.

### INSTALLATION

Installation is in the reverse order of removal.

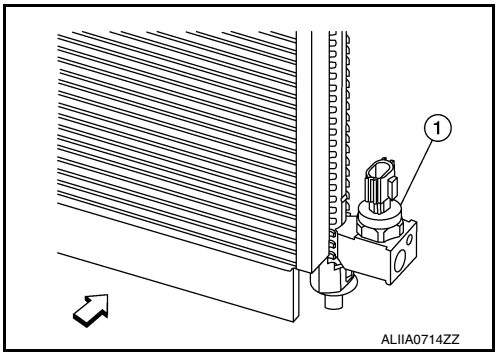
# REFRIGERANT PRESSURE SENSOR

## Removal and Installation

INFOID:0000000009797867

### REMOVAL

1. Discharge the refrigerant. Refer to HA-23, "Recycle Refrigerant".
2. Remove front bumper fascia. Refer to EXT-17, "Removal and Installation".
3. Disconnect the harness connector from the refrigerant pressure sensor.
4. Remove the refrigerant pressure sensor (1) from the condenser.
   ⇦: Front
   **CAUTION:**
   **Cap or wrap the opening of the refrigerant pressure sensor with suitable material such as vinyl tape to avoid the entry of air.**




### INSTALLATION

Installation is in the reverse order of removal.

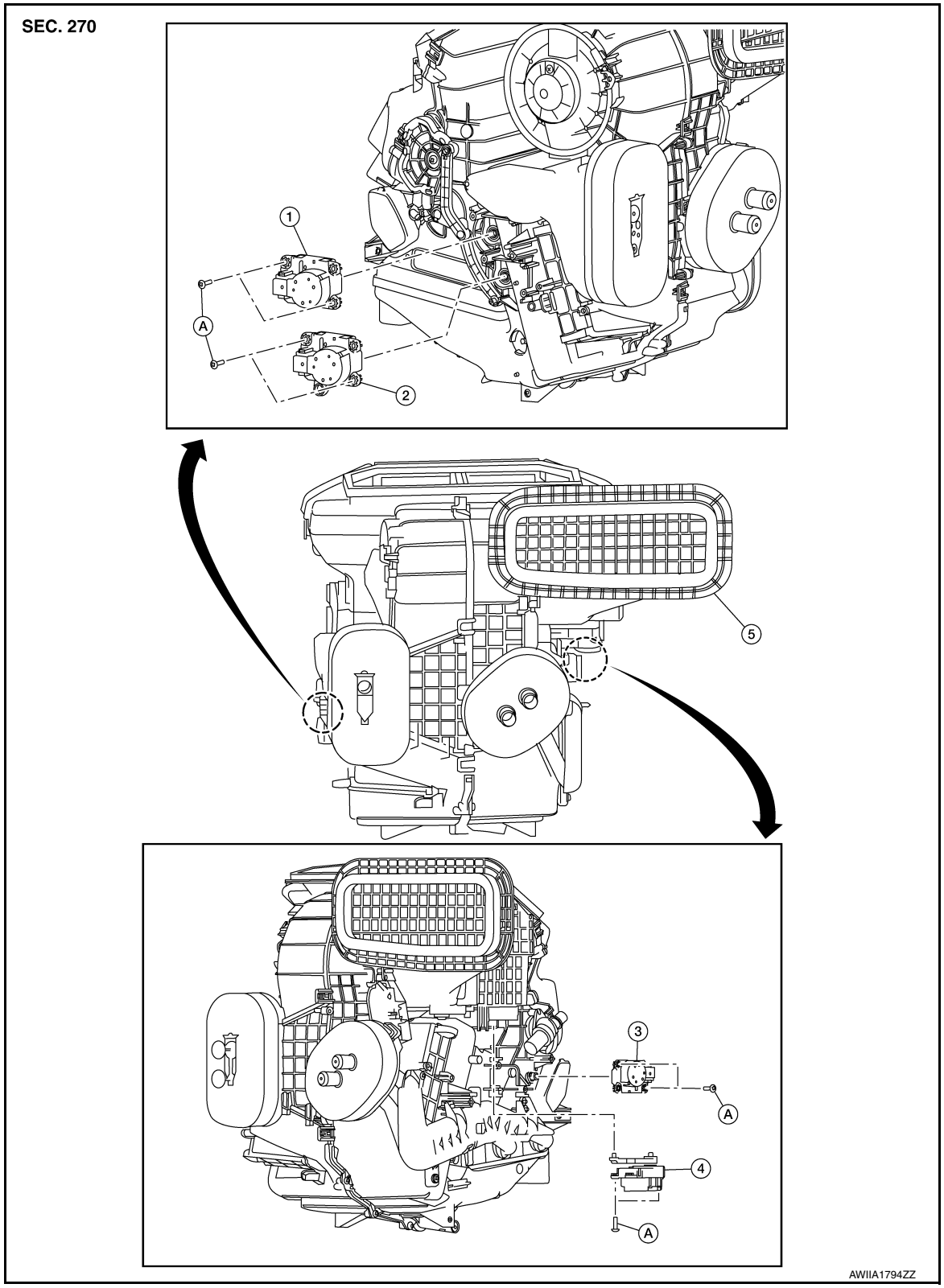
**CAUTION:**

- **Do not reuse O-ring.**
- **Apply A/C oil to new O-ring for installation.**
- **After charging refrigerant, check for leaks. Refer to HA-21, "Leak Test".**

# DOOR MOTOR

## Component Parts Location

INFOID:0000000009797868




1. Mode door motor
2. Air mix door motor (RH)
3. Air mix door motor (LH)
4. Intake door motor
5. Heating and cooling unit assembly
A. Screw

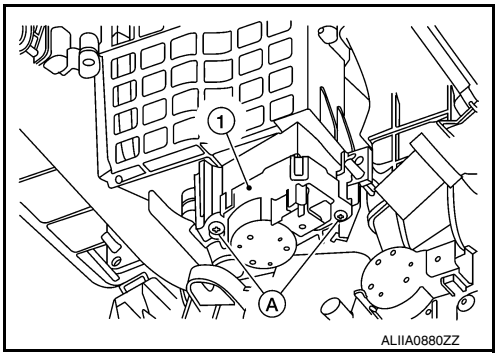
# INTAKE DOOR MOTOR

## INTAKE DOOR MOTOR : Removal and Installation

INFOID:0000000009797869

### REMOVAL

1. Remove front foot duct (LH). Refer to VTL-10, "FRONT FOOT DUCT : Removal and Installation".
2. Disconnect the harness connector from the intake door motor.
3. Remove screws (A) and intake door motor (1).




### INSTALLATION

Installation is in the reverse order of removal.

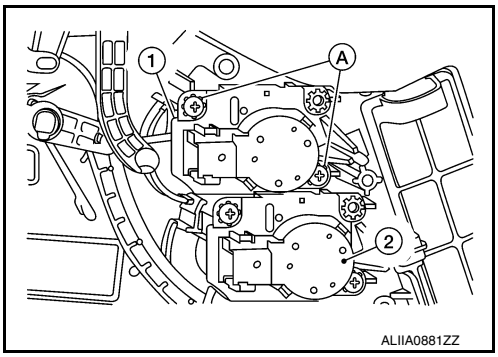
# MODE DOOR MOTOR

## MODE DOOR MOTOR : Removal and Installation

INFOID:0000000009797870

### REMOVAL

1. Remove front foot duct (RH). Refer to VTL-10, "FRONT FOOT DUCT : Removal and Installation".
2. Disconnect the harness connector from the mode door motor.
3. Remove screws (A) and mode door motor (1).
   (2): Air mix doot motor (RH)




### INSTALLATION

Installation is in the reverse order of removal.

# AIR MIX DOOR MOTOR

## AIR MIX DOOR MOTOR : Removal and Installation

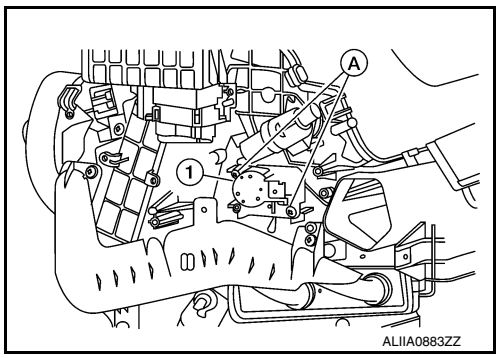
INFOID:0000000009797871

### REMOVAL

Air Mix Door Motor (LH)

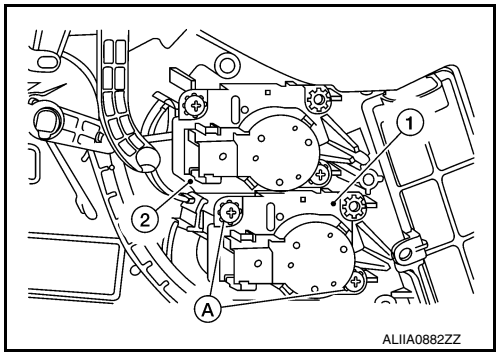
1. Remove front foot duct (LH). Refer to VTL-10, "FRONT FOOT DUCT : Removal and Installation".
2. Disconnect the harness connector from the air mix door motor (LH).

3. Remove screws (A) and air mix door motor (LH) (1).




Air Mix Door Motor (RH)

1. Remove front foot duct (RH). Refer to VTL-10, "FRONT FOOT DUCT : Removal and Installation".
2. Disconnect the harness connector from the air mix door motor (RH).
3. Remove screws (A) and air mix door motor (RH) (1).
   (2): Mode door motor




## INSTALLATION

Installation is in the reverse order of removal.

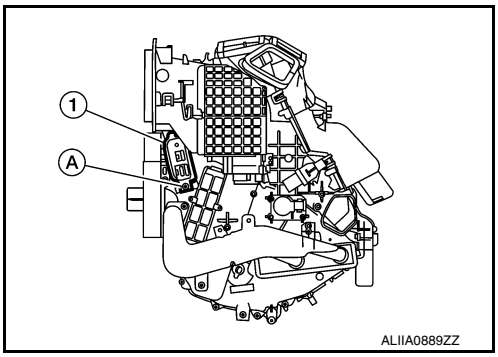
# VARIABLE BLOWER CONTROL

## Removal and Installation

INFOID:0000000010193942

### REMOVAL

1. Remove center console side finisher (LH). Refer to IP-18, "Exploded View".
2. Disconnect the harness connector from the variable blower control.
3. Remove screw (A) and variable blower control (1).




### INSTALLATION

Installation is in the reverse order of removal.

# PRECAUTION

## PRECAUTIONS

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

INFOID:0000000010181620

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

**WARNING:**

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

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

**WARNING:**

- **When working near the Airbag Diagnosis Sensor Unit or other Airbag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery and wait at least three minutes before performing any service.**

### Precaution for Work

INFOID:0000000010181621

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

- Water soluble dirt:

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

- Oily dirt:

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

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

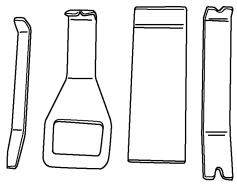
# PREPARATION

## PREPARATION

### Special Service Tool

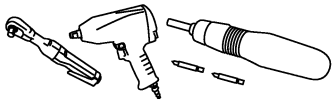
INFOID:0000000010181624

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

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

### Commercial Service Tool

INFOID:0000000010181625

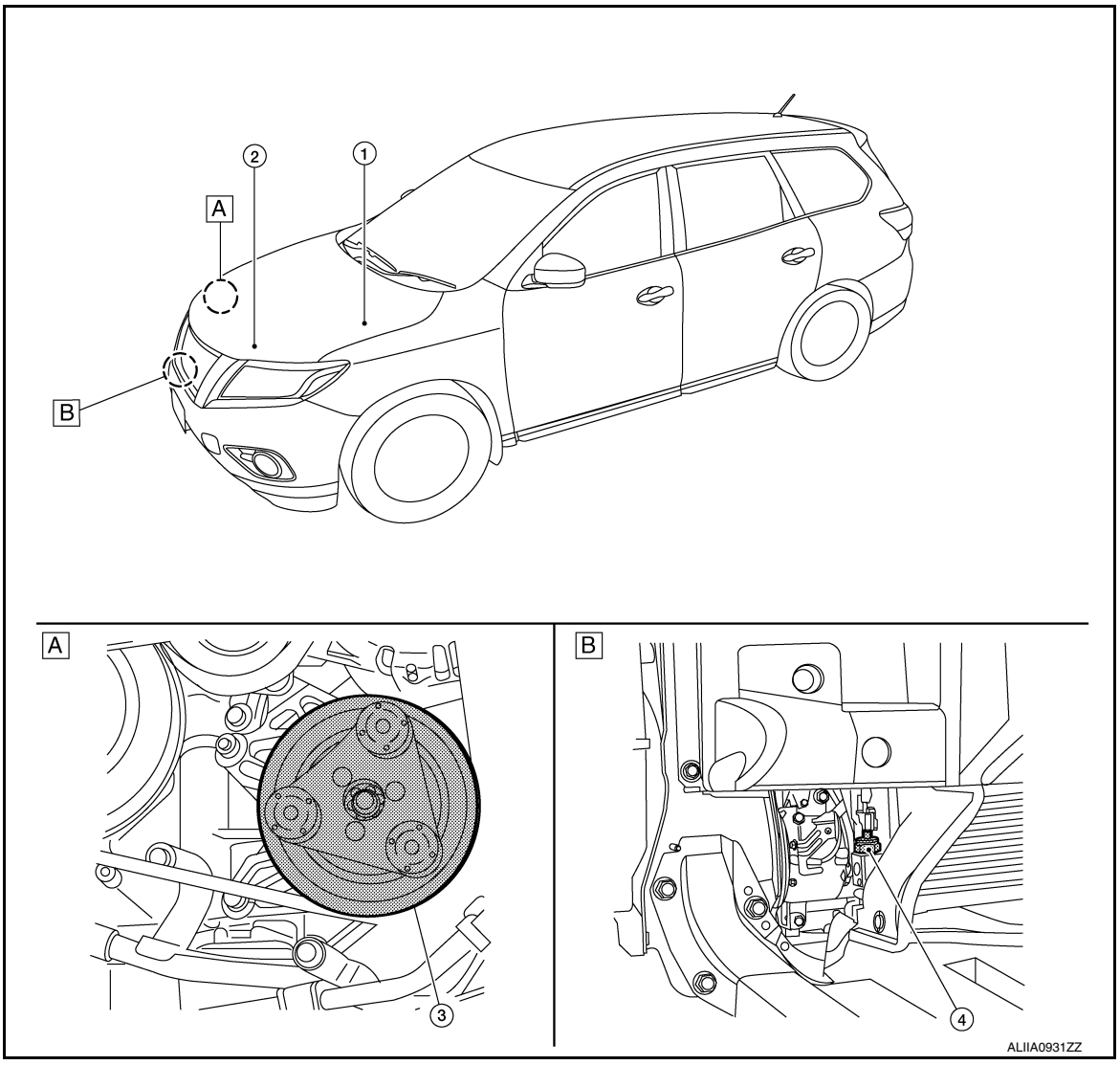
| (TechMate No.)<br>Tool name | Description |
|---|---|
| ( — )<br>Power tool<br>  <br>PIIB1407E | Loosening nuts, screws and bolts |

# SYSTEM DESCRIPTION

## COMPONENT PARTS

### Component Part Location

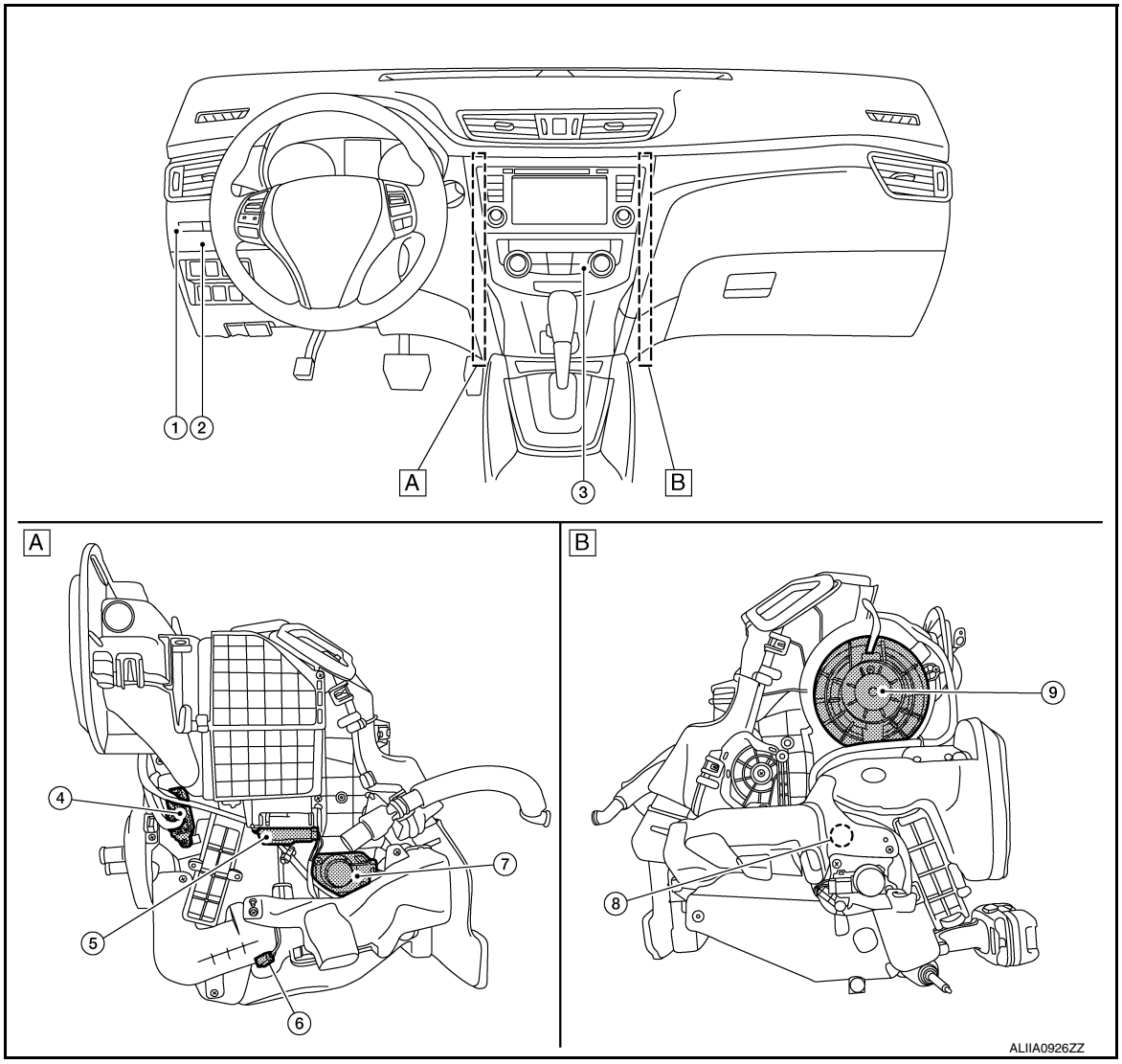
INFOID:0000000010012109




A. RH side of engine compartment

B. RH front of vehicle (view with front bumper fascia removed)

| No. | Component | Description |
|---|---|---|
| 1. | IPDM E/R | Refer to PCS-5, "RELAY CONTROL SYSTEM : System Description". |
| 2. | ECM | The ECM sends a compressor ON request to the IPDM E/R based on the status of engine operation and load as well as refrigerant pressure information. If all the conditions are met for A/C operation, the ECM transmits the compressor ON request to the IPDM E/R. |
| 3. | A/C Compressor | Vaporized refrigerant is drawn into the A/C compressor from the evaporator, where it is compressed to a high pressure, high temperature vapor. The hot, compressed vapor is then discharged to the condenser. |
| 4. | Refrigerant pressure sensor | Refer to EC-28, "Refrigerant Pressure Sensor". |




A. Left side of A/C unit B. Right side of A/C unit

| No. | Component | Description |
|---|---|---|
| 1. | Front blower relay | The front blower relay controls the flow of current to fuse 17 and 27 in the Fuse Block (J/B). The relay is grounded when the ignition switch is in the ON position. |
| 2. | BCM | The BCM receives the fan ON and A/C ON signals from the front air control and sends a compressor ON request to the ECM. |
| 3. | Front air control | The front air control controls the operation of the A/C and heating system based on inputs from the temperature control knob, the mode switches, the blower control dial, the intake sensor, and inputs received from the ECM across the CAN. Diagnosis of the front air control can be performed using the CONSULT. There is no self-diagnostic feature available. |
| 4. | Variable blower control | The variable blower control controls the speed of the blower motor by controlling the ground circuit of the blower motor. The front air control provides voltage to the gate of the variable blower control based on the position of the blower control dial. |
| 5. | Intake door motor | The intake door motor controls the position of the intake door. Fresh air is allowed to enter the cabin in one position, and recirculated inside air is allowed to enter in the other position. The intake door motor receives position commands from the front air control. |
| 6. | Intake sensor | The intake sensor measures the temperature of the front evaporator fins. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases. |

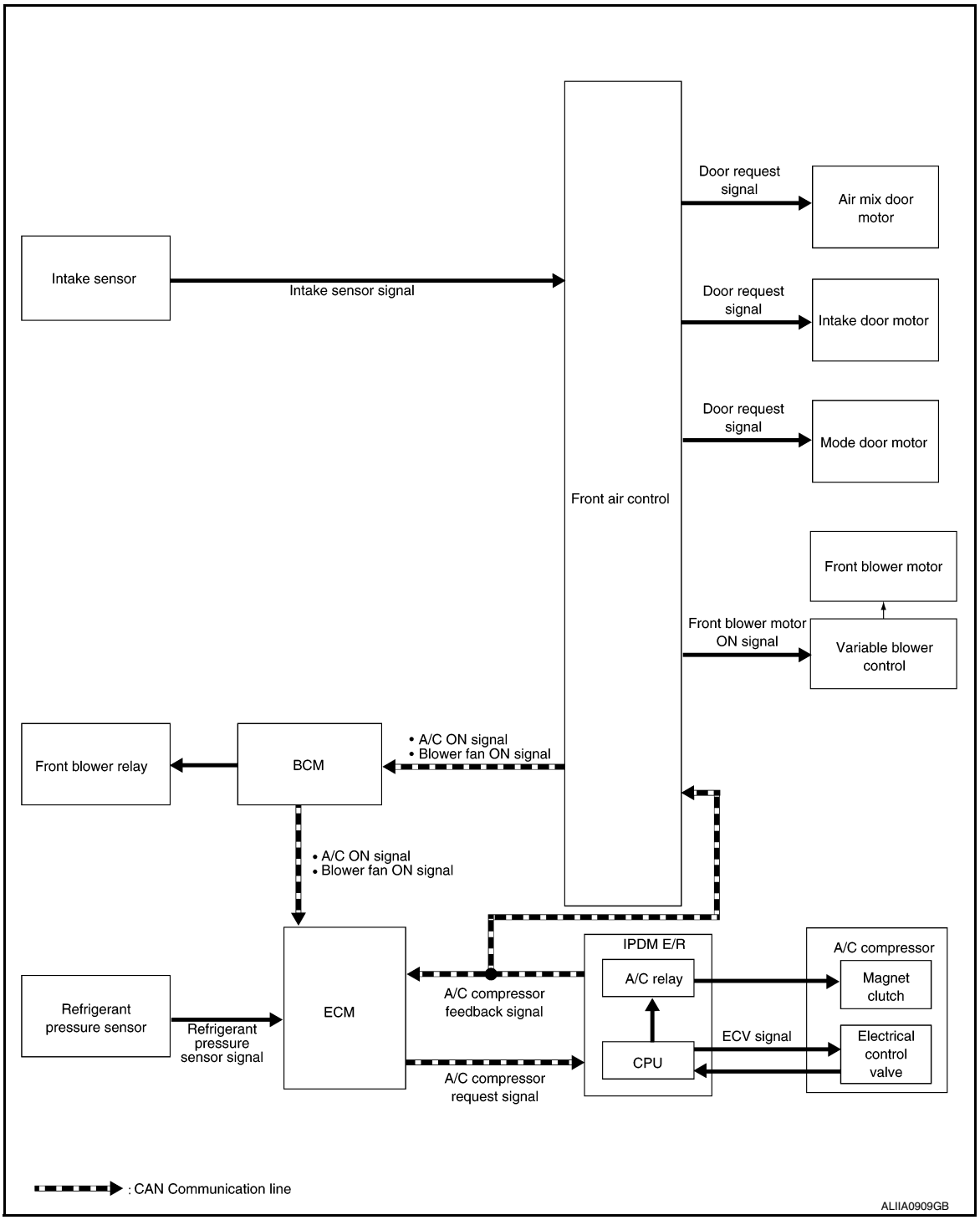
| No. | Component | Description |
|---|---|---|
| 7. | Air mix door motor | The air mix door controls the mix of hot or cold air that enters the ventilation system. It is controlled by the front air control based on the position of the temperature dial. The air mix door motor LH receives position commands from the front air control. |
| 8. | Mode door motor | The mode door controls the direction the conditioned air passes through the ventilation system. Through a series of levers and gears, the mode door controls the defrost door, the foot door, and the vent door. There are 5 preset positions: VENT, B/L, FOOT, D/F, and DEF. The mode door motor receives position commands from the front air control. |
| 9. | Front blower motor | The blower motor varies the speed at which the air flows through the ventilation system. |

# SYSTEM

## System Description

INFOID:0000000010012112

### SYSTEM DIAGRAM




### SYSTEM DESCRIPTION

- The manual air conditioning system is controlled by a sequence of functions from the front air control, BCM, ECM, and IPDM E/R.

Controlled by front air control:

- HAC-119, "Air Flow Control"
- HAC-119, "Air Inlet Control"
- HAC-119, "Air Outlet Control"

- HAC-119, "Compressor Control"
- HAC-120, "Door Control"
- HAC-123, "Temperature Control"

Controlled by BCM:
- Air conditioning request signal.
  Refer to BCS-8, "BODY CONTROL SYSTEM : System Description" (with Intelligent Key system) or BCS-80, "BODY CONTROL SYSTEM : System Description" (without Intelligent Key system).

Control by ECM
- Cooling fan control
  Refer to EC-46, "COOLING FAN CONTROL : System Description".
- Air conditioning cut control
  Refer to EC-45, "AIR CONDITIONING CUT CONTROL : System Description".

Control by IPDM E/R
- Relay control
  Refer to PCS-5, "RELAY CONTROL SYSTEM : System Description".
- Cooling fan control
  Refer to EC-46, "COOLING FAN CONTROL : System Description".

## Air Flow Control

INFOID:0000000010012113

### DESCRIPTION

- Front air control changes duty ratio of front blower motor control signal to control air flow continuously. When air flow is increased, duty ratio of front blower motor control signal gradually increases to prevent a sudden increase in air flow.
- In addition to manual control, air flow control is composed of fan speed control at door motor operation.

### FAN SPEED CONTROL AT DOOR MOTOR OPERATION

When mode door motor is activated while air flow is more than the specified value, front air control temporarily reduces fan speed so that mode door moves smoothly.

## Air Inlet Control

INFOID:0000000010012114

The intake door position is automatically controlled in MAX A/C and DEF modes. The intake door is controlled by customer input in the other modes.

## Air Outlet Control

INFOID:0000000010012115

Air outlet control is controlled by customer input. When the A/C is turned off by turning the blower control dial fully counterclockwise, the front air control retains the current selections and returns to these selections the next time the blower control dial is turned to any fan position.

**NOTE:**
If ambient temperature is excessively low, D/F is selected to prevent windshield fogging when air outlet is set to FOOT.

## Compressor Control

INFOID:0000000010012116

### DESCRIPTION

In order for the IPDM E/R to complete a compressor ON request, the following conditions must be met:

1. The BCM detects a Fan ON signal from the front air control. The front air control grounds the fan ON signal monitored by the BCM when the blower speed dial is in any of the fan speed positions.
2. The BCM detects an A/C ON signal from the front air control. The front air control grounds the A/C ON signal monitored by the BCM when:

- The A/C switch is pressed. The A/C switch LED illuminates and the front air control grounds the A/C ON signal monitored by the BCM. Any mode control button except D/F may be selected.
- The A/C switch is OFF, and the MAX A/C button is pressed. The A/C switch LED will automatically illuminate and the front air control grounds the A/C ON signal monitored by the BCM.
- The A/C switch is OFF, and the mode button for either D/F or DEF is selected. The front air control grounds the A/C ON signal monitored by the BCM, but it does not illuminate the A/C switch LED

**NOTE:**
If the compressor was engaged by pressing the D/F or DEF mode buttons, and the time spent in either mode exceeds 1 minute, then the compressor stays requested, even when modes other than D/F or DEF are selected, until either:
1. The ignition switch is turned OFF.
2. The blower speed dial is turned completely counterclockwise to the OFF position.
3. The A/C switch is manually turned OFF.

In other words, the compressor ON request cannot be turned off in D/F or DEF modes.

### REFRIGERANT PRESSURE PROTECTION

The refrigerant system is protected against excessively high- or low-pressures by the refrigerant pressure sensor, located on the liquid tank on the condenser. The refrigerant pressure sensor detects the pressure inside the refrigerant line and sends a voltage signal to the ECM. If the system pressure rises above or falls below the following values, the ECM requests the IPDM E/R to de-energize the A/C relay and disengage the compressor.

- 3.12 MPa (31.82 kg/cm$^2$, 452.4 psi) or more (When the engine speed is less than 1,500 rpm)
- 2.74 MPa (27.95 kg/cm$^2$, 397.3 psi) or more (When the engine speed is 1,500 rpm or more)
- 0.14 MPa (1.43 kg/cm$^2$, 20.3 psi) or less

### PRESSURE RELIEF VALVE

The refrigerant system is also protected by a pressure relief valve, located in the rear head of the compressor. When the pressure of refrigerant in the system increases to an abnormal level [more than 2,990 kPa (30.5 kg/cm$^2$, 433.6 psi)], the release port on the pressure relief valve automatically opens and releases refrigerant into the atmosphere.

### COMPRESSOR OIL CIRCULATION CONTROL

When the engine starts while the engine coolant temperature is 56°C (133°F) or less, ECM activates the compressor for approximately 6 seconds and circulates the compressor lubricant once.

### LOW TEMPERATURE PROTECTION CONTROL

- When the intake sensor detects that the front evaporator fin temperature is 1.5°C (35°F) or less, the front air control requests the BCM to turn the compressor OFF, and stops the compressor.
- When the front evaporator fin temperature returns to 5.0°C (41°F) or more, the compressor is activated.

### OPERATING RATE CONTROL

When the set temperature is other than fully cold or the air outlet is “VENT”, “B/L” or “FOOT”, the front air control controls the compressor activation depending on ambient temperature.

## Door Control

*INFOID:0000000010012117*

### AIR MIX DOOR MOTOR

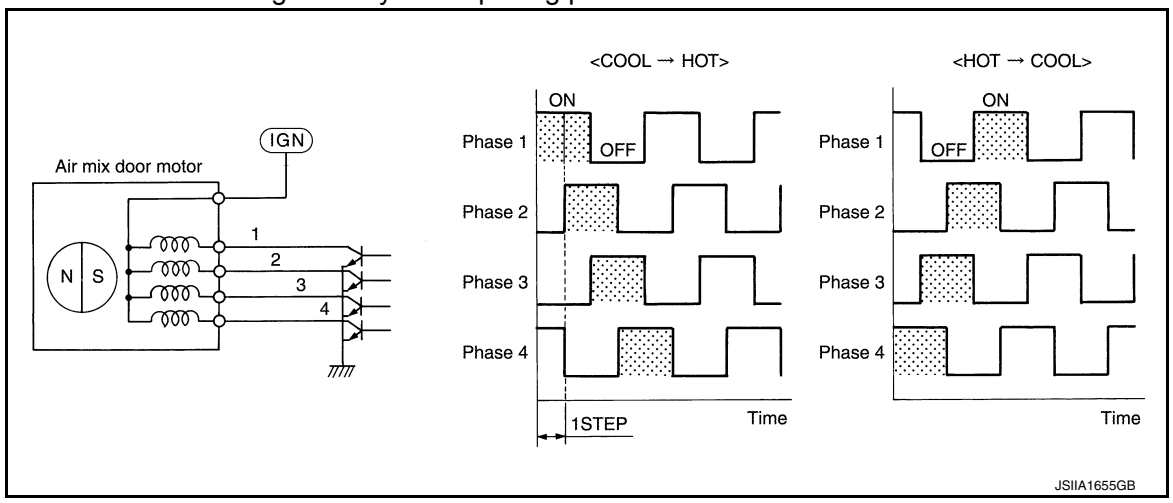
#### DESCRIPTION

- The step motor system is adopted for air mix door motor.
- When a drive signal is input from front air control to door motor, a step motor built into the door motor rotates according to the drive signal, and then stops at the target door position.
- Rotation of motor is transmitted to air mix door (upper air mix door and lower air mix door) by link, rod and lever, then air flow temperature is switched.

#### DRIVE METHOD

- The 4 drive coils are excited in sequence in order to drive the motor.

• Direction of rotation is changeable by recomposing pattern of excitation.



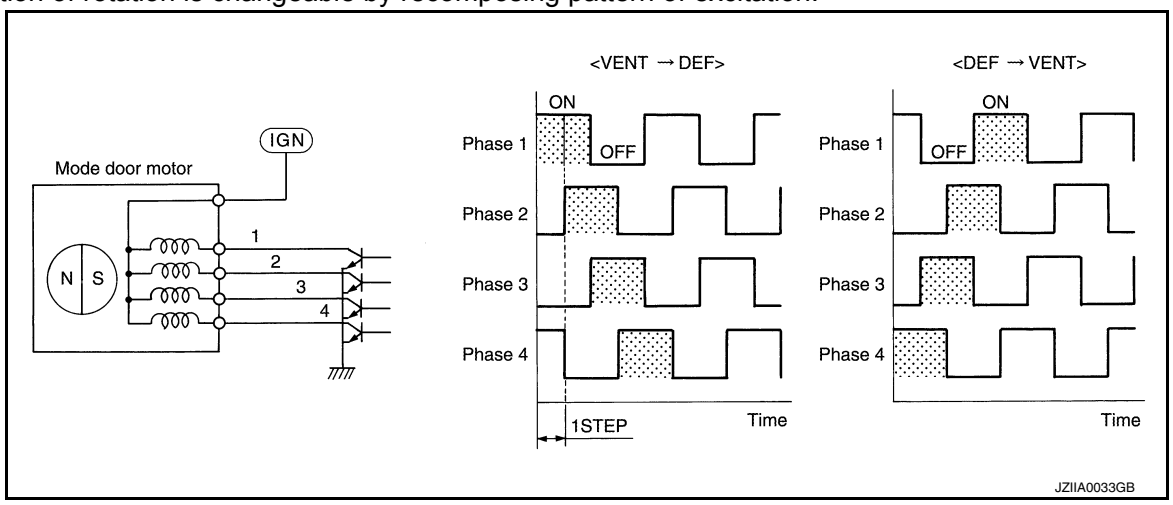

## MODE DOOR MOTOR

### DESCRIPTION

• The step motor system is adopted for mode door motor.
• When a drive signal is input from front air control to door motor, a step motor built into the door motor rotates according to the drive signal, and then stops at the target door position.
• Rotation of motor is transmitted to mode door (center ventilator and defroster door, sub defroster door, side ventilator door, and foot door) by link, rod, and lever, then air outlet is switched.

### DRIVE METHOD

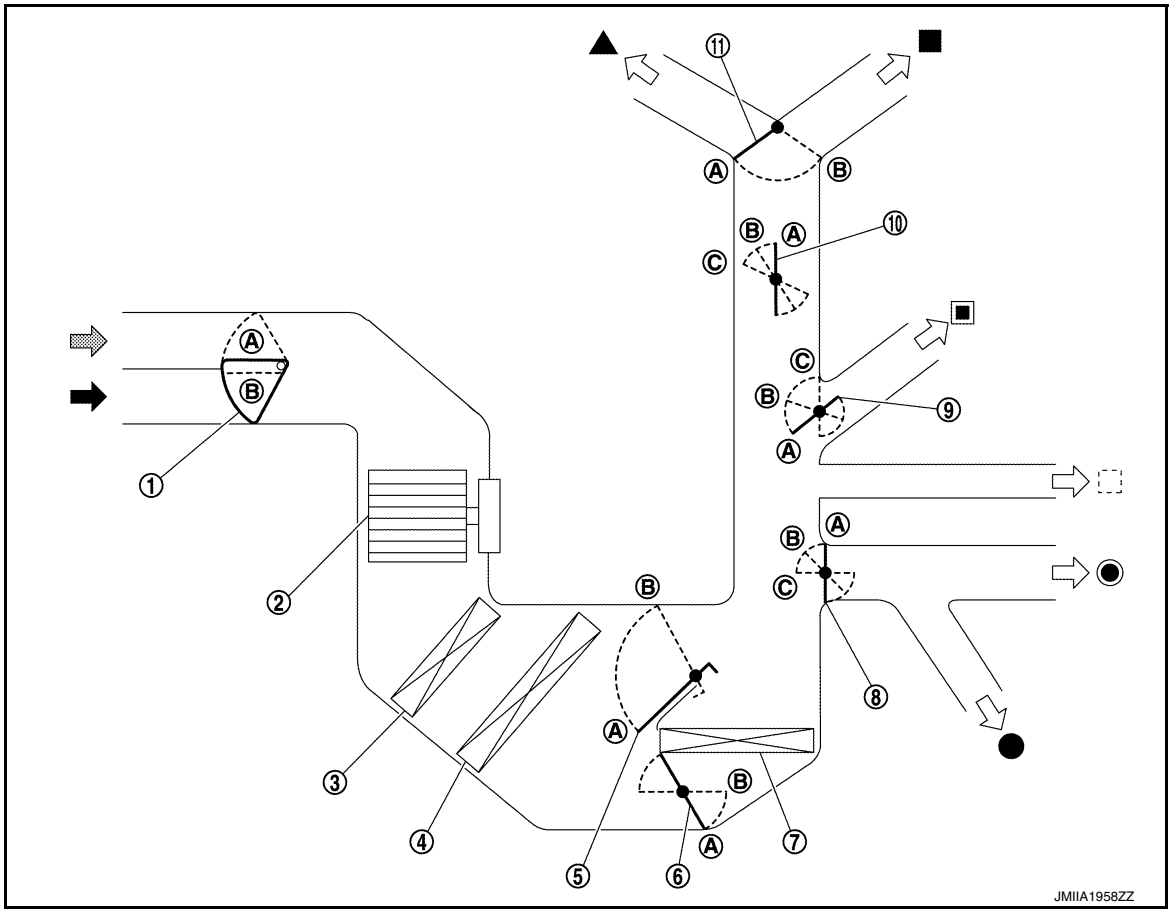
• The 4 drive coils are excited in sequence in order to drive the motor.
• Direction of rotation is changeable by recomposing pattern of excitation.




## INTAKE DOOR MOTOR

• Motor operates intake door according to control signal from front air control.
• Rotation of motor is transmitted to intake door by lever, then air inlet is switched.

## SWITCHES AND THEIR CONTROL FUNCTION




① Intake door
② Blower motor
③ Air conditioner filter
④ Evaporator
⑤ Upper air mix door (driver side/passenger side)
⑥ Lower air mix door (driver side/passenger side)
⑦ Heater core
⑧ Foot door
⑨ Side ventilator door
⑩ Sub defroster door
⑪ Center ventilator and defroster door
Fresh air intake
Recirculation air
Discharge air
Defroster
Center ventilator
Side ventilator
Rear ventilator
Front foot
Rear foot

| Switch position | | | Door position | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Mode door | | | | | Air mix door | |
| | | | Center ventilator and defroster door | Sub defroster door | Side ventilator door | Foot door | Intake door | Upper air mix door | Lower air mix door |
| MODE switch | | | Ⓐ | Ⓐ | Ⓐ | Ⓐ | — | — | — |
| | | | Ⓐ | Ⓑ | Ⓑ | Ⓑ | | | |
| | | | Ⓑ | Ⓒ | Ⓒ | Ⓒ | | | |
| | | | Ⓑ | Ⓑ | Ⓒ | Ⓒ | | | |
| DEF switch | | | Ⓑ | Ⓐ | Ⓒ | Ⓐ | | | |
| REC switch | | | — | — | — | — | Ⓐ | | |
| FRE switch | | | | | | | Ⓑ | | |
| Temperature control switch | Full cold 18°C | | | | | | — | Ⓐ | |
| | Full hot 32°C | | | | | | | Ⓑ | |
| ON·OFF switch | OFF | | Ⓑ | Ⓒ | Ⓒ | Ⓒ | | — | — |

## AIR DISTRIBUTION

| MODE/DEF setting position | Discharge air flow | | | | | |
|---|---|---|---|---|---|---|
| | Air outlet/distribution | | | | | |
| | Ventilator | | | Foot | | Defroster |
| | Front | | Rear | Front | Rear | |
| | Center | Side | | | | |
| | 47% | 38% | 15% | — | — | — |
| | 25% | 34% | 13% | 18% | 10% | — |
| | — | 7% | 4% | 38% | 24% | 27% |
| | — | 6% | 2% | 30% | 17% | 45% |
| | — | 8% | 2% | — | — | 90% |

## Temperature Control

INFOID:0000000010012118

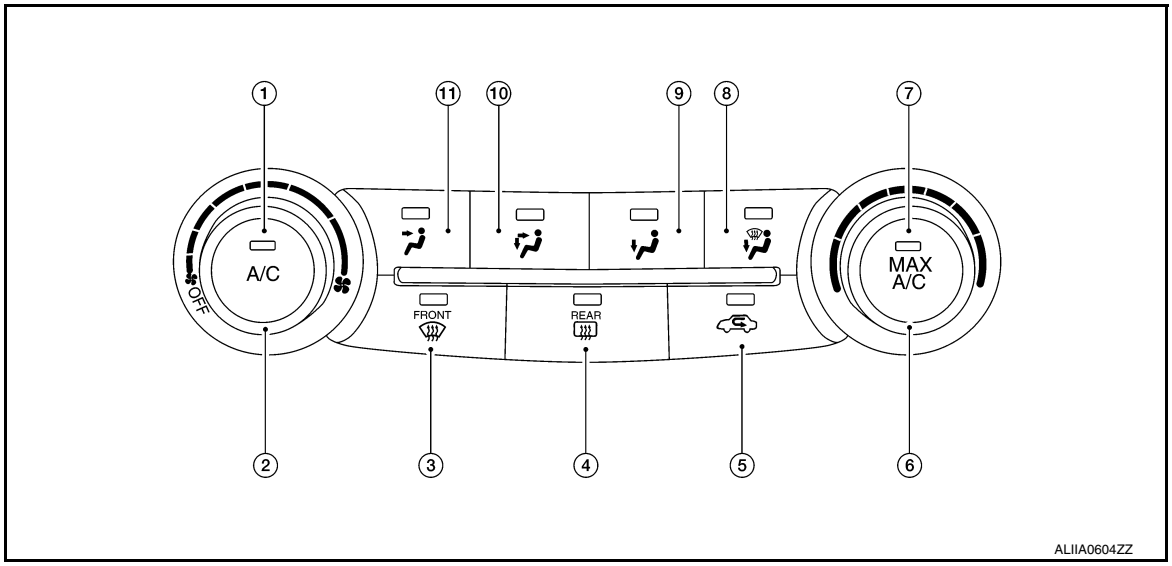
- When the ignition switch is in the ON position, the customer uses the front air control temperature control dial to set the desired temperature.
- The front air control calculates the target front air mix door opening angle depending on the selected temperature, intake temperature sensor, engine coolant temperature and rpm, and ambient temperature.
- Front air mix door is controlled depending on the comparison of current front air mix door opening angle and target front air mix door opening angle.
- Regardless of ambient temperature, the front air mix door is fixed at the fully cold position when the temperature control dial is set at the full cold position and fixed at the fully hot position when the temperature control dial is set at the full hot position.

# OPERATION

## Switch Name and Function

INFOID:0000000010012119

A/C Switch Assembly




1. A/C switch
2. Blower control dial (with OFF switch)
3. DEF switch
4. Rear DEF switch
5. REC switch
6. Temperature control dial
7. MAX A/C switch
8. D/F switch
9. FOOT switch
10. B/L switch
11. VENT switch

Switch Operation

| | |
|---|---|
| A/C switch | Switches the compressor control switch indicator between ON ⇔ OFF with each press while front blower fan is activated. The circuit used by the BCM to detect an A/C ON request is grounded.<br>**NOTE:**<br>When front blower fan is OFF, the compressor control cannot be activated. |
| Blower control dial (with OFF switch) | • Blower fan speed is manually controlled with the dial for varying blower speed. When ON, the circuit used by the BCM to detect a fan ON request signal is grounded.<br>• Turns air conditioning system OFF.<br>**NOTE:**<br>When blower control dial is turned to any ON position the air conditioning system is activated. (Compressor control state returns to the previous state before air conditioning system was turned OFF.) |
| DEF switch | Switches DEF mode (switch indicator) between ON ⇔ OFF with each press.<br>• When DEF mode is turned ON, the air conditioning system changes to the following state.<br>- Air inlet: Fresh air intake<br>- Air outlet: DEF<br>- Blower fan: Manual setting.<br>- Compressor: ON<br>• When DEF mode is turned OFF, the air conditioning system state returns to the previous state before DEF mode was selected, but the following state is continued:<br>- Air inlet: Fresh air intake<br>- Compressor: ON<br>**NOTE:**<br>When front blower fan is OFF, DEF cannot be activated. |

| | |
|---|---|
| MAX A/C switch | Switches the MAX A/C and compressor control switch indicators between ON ⇔ OFF with each press while front blower fan is activated.<br>• When MAX A/C mode is turned ON, the air conditioning system changes to the following state.<br>- Air inlet: Recirculation air intake<br>- Air outlet: Manual setting<br>- Blower fan: Manual setting.<br>- Compressor: ON<br>• When MAX A/C mode is turned OFF, the air conditioning system state returns to the previous state before MAX A/C mode is selected. But, the following state is changed:<br>- Air inlet: Fresh air intake<br>- Compressor: ON<br>**NOTE:**<br>When front blower fan is OFF, the compressor control cannot be activated. |
| MODE switches | Selects air outlet from VENT, B/L, FOOT, and D/F.<br>**NOTE:**<br>When the air conditioning system is OFF, the air outlet can still be selected. |
| REC switch | • Air inlet is selected to fresh air intake (REC) by pressing this switch.<br>- REC indicator: ON<br>**NOTE:**<br>• When the air conditioning system is OFF, the air inlet can still be selected.<br>• When D/F mode or DEF is selected, the REC button is disabled. |
| Temperature control dial | • Selects desired temperature between full cold and full hot.<br>- Clockwise rotation: Temperature increases.<br>- Counterclockwise rotation: Temperature decreases. |

# DIAGNOSIS SYSTEM (HVAC)

## Description

INFOID:0000000010262906

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

| ECU | Diagnostic item (CONSULT) | |
|---|---|---|
| Front air control | HVAC | Self Diagnostic Result |
| | | Data Monitor |
| | | Active Test |
| | | Work support |
| BCM | BCM-AIR CONDITIONER | Self Diagnostic Result |
| | | Data Monitor |
| ECM | ENGINE | Self Diagnostic Result |
| | | Data Monitor |
| IPDM E/R | IPDM E/R | Self Diagnostic Result |
| | | Data Monitor |

## CONSULT Function (HVAC)

INFOID:0000000010262907

CONSULT can display each diagnosis item using the diagnosis test modes as shown.

CONSULT application items

| Diagnosis mode | Description |
|---|---|
| Self-Diagnostic Result | Displays the diagnosis results judged by A/C auto amp. |
| Data Monitor | Displays A/C auto amp. input/output data in real time. |
| Work support | Changes the setting for each system function. |
| Active Test | The signals used to activate each device are forcibly supplied from front air control. |
| ECU Identification | Displays the A/C auto amp. number. |

### SELF-DIAGNOSTIC RESULT

Refer to HAC-134, "DTC Index".

Display Item List

| DTC | Items (CONSULT screen terms) | Diagnostic item is detected when... | 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 |
| U1010 | CONTROL UNIT (CAN) | When detecting error during the initial diagnosis of CAN controller of front air control. | Front air control |
| B24A4 | INTAKE TEMP SEN | Short or open circuit of the intake temperature sensor signal. | • Intake sensor<br>• Front air control<br>• Harness and connector (Intake sensor circuit is open, or there is a short in the circuit) |
| B24BB | AIRMIX ACTR | Short or open circuit of air mix door motor drive signal. | • Air mix door motor LH<br>• Front air control<br>• Harness and connector (Air mix door motor is open or shorted) |

| DTC | Items (CONSULT screen terms) | Diagnostic item is detected when... | Possible cause |
|---|---|---|---|
| B24B7 | INTAKE ACTR | Short or open circuit of intake door motor drive signal. | • Intake door motor<br>• Front air control<br>• Harness and connector (Intake door motor is open or shorted) |
| B27B9 | MODE DOOR ACTR | Short or open circuit of mode door motor drive signal. | • Mode door motor<br>• Front air control<br>• Harness and connector (Mode door motor is open or shorted) |

## DATA MONITOR

Display item list

| Monitor item [Unit] | | Description |
|---|---|---|
| AMB TEMP SEN | [°C] | Ambient sensor value converted from ambient sensor signal received from ambient sensor |
| INT TEMP SEN | [°C] | Intake sensor value converted from intake sensor signal received from intake sensor |
| AMB SEN CAL | [°] | Ambient sensor value calculated by A/C auto amp. |
| INT TEMP CAL | [°C] | Intake sensor value calculated by A/C auto amp. |
| 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 blower switch ON/OFF status transmitted to other units via CAN communication |
| FAN DUTY | [%] | Duty ratio of blower motor judged by A/C auto amp. |
| VEHICLE SPEED | [km/h (mph)] | Vehicle speed signal value received from meter via CAN communication |

## WORK SUPPORT

| Work item | Description | Reference |
|---|---|---|
| Door Motor Starting Position Reset | Starting position reset of air mix door motor and mode door motor can be performed. | HAC-151, "Work Procedure" |
| TARGET EVAPORATOR TEMP UPPER LIMIT SETTING | Set the target evaporator upper temperature limit. | HAC-150, "Target Evaporator Temp Upper Limit" |

**NOTE:**

When the battery cable is disconnected from the negative terminal or when the battery voltage becomes 10V or less, the setting of WORK SUPPORT may be cancelled.

## ACTIVE TEST

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

### HVAC TEST

| | Test item | | | | | | |
|---|---|---|---|---|---|---|---|
| | MODE 1 | MODE 2 | MODE 3 | MODE 4 | MODE 5 | MODE 6 | MODE 7 |
| Mode door position | VENT | VENT | B/L | B/L | D/F1 | D/F2 | DEF |
| Intake door position | REC | REC | 20%FRE | 20%FRE | FRE | FRE | FRE |
| Air mix door position | FULL COLD | FULL COLD | FULL COLD | FULL HOT | FULL HOT | FULL HOT | FULL HOT |
| Blower motor (Applied voltage) | 35% | 35% | 60% | 60% | 90% | 90% | 35% |

| | Test item | | | | | | |
|---|---|---|---|---|---|---|---|
| | MODE 1 | MODE 2 | MODE 3 | MODE 4 | MODE 5 | MODE 6 | MODE 7 |
| A/C compressor (Magnet clutch) | ON | ON | ON | ON | OFF | OFF | ON |
| ECV duty | 80% | 80% | 40% | 40% | 0% | 0% | 90% |

**NOTE:**

Perform the inspection of each output device after starting the engine, because the A/C compressor has been operating.

# DIAGNOSIS SYSTEM (IPDM E/R)

## CONSULT Function (IPDM E/R)

INFOID:0000000010256044

### APPLICATION ITEM

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

| Direct Diagnostic Mode | Description |
|---|---|
| Ecu Identification | The IPDM E/R part number is displayed. |
| Self Diagnostic Result | The IPDM E/R self diagnostic results are displayed. |
| Data Monitor | The IPDM E/R input/output data is displayed in real time. |
| Active Test | The IPDM E/R activates outputs to test components. |
| CAN Diag Support Mntr | The result of transmit/receive diagnosis of CAN communication is displayed. |

### ECU IDENTIFICATION

The IPDM E/R part number is displayed.

### SELF DIAGNOSTIC RESULT

Refer to PCS-20, "DTC Index".

### DATA MONITOR

| Monitor Item [Unit] | Description |
|---|---|
| REVERSE SIGNAL [Open/Close] | Indicates condition of transmission range switch R (Reverse) position. |
| IGN RELAY [Open/Close] | Indicates condition of ignition relay-1. |
| PUSH SW [Open/Close] | Indicates condition of push-button ignition switch. |
| INTERLOCK/PNP SW [Open/Close] | Indicates condition of transmission range switch P (Park) and N (Neutral) positions. |
| OIL PRESSURE SW [Open/Close] | Indicates condition of oil pressure switch. |
| HOOD SW [Open/Close] | Indicates condition of hood switch. |
| COMPRESSOR [OFF/ON] | Indicates condition of A/C compressor. |
| HORN RELAY [OFF/ ON] | Indicates condition of horn relay. |
| COOLING FAN [OFF/ON] | Indicates condition of cooling fan relay-1. |
| FRONT WIPER HI/LO RELAY [OFF/ON] | Indicates condition of front wiper high relay. |
| FRONT WIPER RELAY [OFF/ON] | Indicates condition of front wiper relay. |
| IGN RELAY OFF STATUS [OFF/ON] | Indicates condition of ignition relay-1 OFF status. |
| IGN RELAY ON STATUS [OFF/ON] | Indicates condition of ignition relay-1 ON status. |
| COOLING FAN RELAY 1 [OFF/ON] | Indicates condition of cooling fan relay-1. |
| STARTER RELAY [OFF/ON] | Indicates condition of starter relay. |
| COMP ECV DUTY [%] | Indicates condition of A/C compressor. |
| COOLING FAN RELAY 2 [%] | Indicates condition of cooling fan relay-2. |
| FR FOG LAMP LH [%] | Indicates condition of front fog lamp LH. |
| FR FOG LAMP RH [%] | Indicates condition of front fog lamp RH. |
| PARKING LAMP [%] | Indicates condition of parking lamp. |
| TAIL LAMP LH [%] | Indicates condition of tail lamp LH. |
| TAIL LAMP RH [%] | Indicates condition of tail lamp RH. |
| DAYTIME RUNNING LIGHT LH [%] | Indicates condition of daytime running light LH. |
| DAYTIME RUNNING LIGHT RH [%] | Indicates condition of daytime running light RH. |
| HEADLAMP (HI) LH [%] | Indicates condition of headlamp high beam LH. |

| Monitor Item [Unit] | Description |
|---|---|
| HEADLAMP (HI) RH [%] | Indicates condition of headlamp high beam RH. |
| HEADLAMP (LO) LH [%] | Indicates condition of headlamp low beam LH. |
| HEADLAMP (LO) RH [%] | Indicates condition of headlamp low beam RH. |
| A/C RELAY STUCK [NG/OK] | Indicates condition of A/C relay. |
| A/C RELAY [Off/On] | Indicates condition of A/C relay. |
| COMP ECV STATUS [NG/OK] | Indicates condition of A/C compressor. |
| VEHICLE SECURITY HORN [Off/On] | Indicates condition of horn relay. |
| BATTERY CURRENT SENSOR [NG/OK] | Indicates condition of battery current sensor. |
| FRONT FOG LAMP [Off/On] | Indicates condition of front fog lamps. |
| COMP ECV CURRENT [A] | Indicates condition of A/C compressor current. |
| BATTERY VOLTAGE [V] | Indicates condition of battery voltage. |
| COOLING FAN DUTY [%] | Indicates condition of cooling fans. |
| HOOD SW (CAN) [OPEN/CLOSE] | Indicates condition of hood switch. |
| FRONT WIPER [STOP/LOW/HIGH] | Indicates condition of front wiper motor. |
| FR WIPER STOP POSITION [STOP P/ACTIVE P] | Indicates condition of front wiper motor stop. |
| HEADLAMP (HI) [Off/On] | Indicates condition of headlamp high beams. |
| HEADLAMP (LO) [Off/On] | Indicates condition of headlamp low beams. |
| IGNITION RELAY STATUS [Off/On] | Indicates condition of ignition relay-1. |
| IGN RELAY MONITOR [Off/On] | Indicates condition of ignition relay-1 feedback. |
| IGNITION POWER SUPPLY [Off/On] | Indicates condition of ignition relay-1. |
| INTERLOCK/PNP SW (CAN) [Off/On] | Indicates condition of transmission range switch P (Park) and N (Neutral) positions. |
| PUSH-BUTTON IGN SW (CAN) [Off/On] | Indicates condition of push-button ignition switch. |
| TAIL LAMP [Off/On] | Indicates condition of tail lamps. |
| REVERSE SIGNAL (CAN) [Off/On] | Indicates condition of transmission range switch R (Reverse) position. |
| ST&ST CONT RELAY STATUS [Off/ST R On] | Indicates condition of starter cut and starter relays. |
| STARTER MOTOR STATUS [Off/On] | Indicates condition of starter motor. |
| STARTER RELAY (CAN) [LOW/HIGH] | Indicates condition of starter relay. |
| IPDM NOT SLEEP [NO RDY/RDY] | Indicates condition of IPDM E/R sleep status. |
| AFTER COOLING TIME [No request/Request] | Indicates condition of cooling fan request. |
| AFTER COOLING SPEED [%] | Indicates condition of cooling fans. |
| COOLING FAN TYPE [NISSAN/RENAULT] | Indicates cooling fan type. |
| COMPRESSOR REQ1 [Off/On] | Indicates condition of A/C compressor request. |
| VHCL SECURITY HORN REQ [Off/On] | Indicates condition of horn relay request. |
| DTRL REQ [Off/On] | Indicates condition of daytime running light request. |
| SLEEP/WAKE UP [WAKEUP/SLEEP] | Indicates condition of IPDM E/R sleep/wake. |
| CRANKING ENABLE-TCM [NG/OK] | Indicates condition of crank enable from TCM. |
| CRANKING ENABLE-ECM [NG/OK] | Indicates condition of crank enable from ECM. |
| CAN DIAGNOSIS [NG/OK] | Indicates condition of CAN diagnosis. |
| FRONT FOG LAMP REQ [Off/On] | Indicates condition of front fog lamp request. |
| HIGH BEAM REQ [Off/On] | Indicates condition of headlamp high beam request. |
| HORN CHIRP [Off/On] | Indicates condition of horn relay request. |
| COOLING FAN REQ [%] | Indicates condition of cooling fan request. |
| ENGINE STATUS [STOP/RUN/IDLING] | Indicates condition of engine status. |

| Monitor Item [Unit] | Description |
|---|---|
| TURN SIGNAL REQ [Off/LH/RH] | Indicates condition of turn signal request. |
| FR WIPER REQ [RETURN/LOW/HIGH] | Indicates condition of front wiper motor request. |
| SHIFT POSITION [P/R/N/D/L] | Indicates condition of transmission range switch positions. |
| LOW BEAM REQ [Off/On] | Indicates condition of headlamp low beam request. |
| POSITION LIGHT REQ [Off/On] | Indicates condition of parking lamp request. |
| COMPRESSOR REQ2 [Off/On] | Indicates condition of A/C compressor request. |
| IGNITION SW [Off/On] | Indicates condition of ignition switch. |
| VEHICLE SPEED (METER) [mph/km/h] | Indicates vehicle speed. |
| BAT DISCHARGE COUNT [0-100] | Indicates condition of battery discharge. |
| BATTERY STATUS [NG/OK] | Indicates battery status. |

## ACTIVE TEST

| Test item | Description |
|---|---|
| HORN | This test is able to check horn operation [Off/On]. |
| FRONT WIPER | This test is able to check wiper motor operation [Off/Low/High]. |
| COMPRESSOR | This test is able to check A/C compressor operation [Off/On]. |
| COOLING FAN (DUAL) | This test is able to check cooling fan operation [Off/LO/HI]. |
| HEADLAMP (HI) | This test is able to check headlamp high beam operation [Off/3/5]. |
| HEADLAMP (LO) | This test is able to check headlamp low beam operation [Off/3/5]. |
| FRONT FOG LAMP | This test is able to check front fog lamp operation [Off/3/5]. |
| DAYTIME RUNNING LAMP | This test is able to check daytime running lamp operation [Off/3/5]. |
| PARKING LAMP | This test is able to check parking lamp operation [Off/3/5]. |
| TAIL LAMP | This test is able to check tail lamp operation [Off/3/5]. |

## CAN DIAG SUPPORT MNTR

Refer to LAN-14, "CAN Diagnostic Support Monitor".

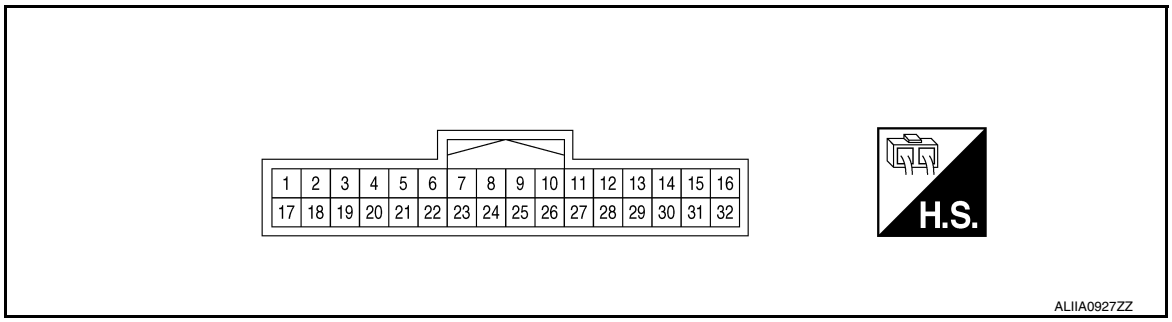
# ECU DIAGNOSIS INFORMATION

## FRONT AIR CONTROL

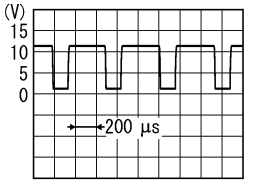
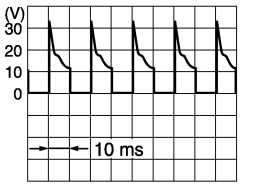
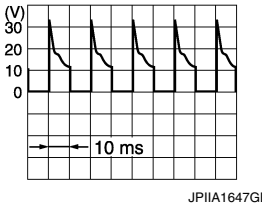
### Reference Value

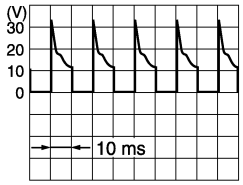
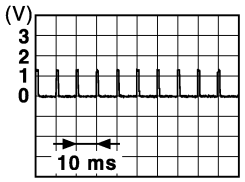
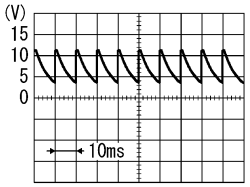
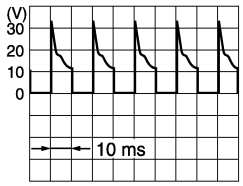
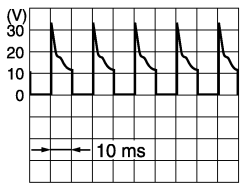
INFOID:0000000010012128

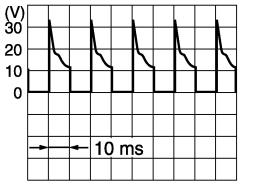
TERMINAL LAYOUT




PHYSICAL VALUES

| Terminal No. (Wire color) | | Description | | | Condition | Value |
|---|---|---|---|---|---|---|
| + | – | Signal name | | Input/ Output | | |
| 1 (G) | 19 (B) | Power transistor control signal | | Output | • Ignition switch ON<br>• Blower motor: 1st speed (manual) |  ZJIA0863J |
| 3 (SB) | 19 (B) | Ignition power supply | | Input | Ignition switch ON | Battery voltage |
| 4 (V) | 19 (B) | Ignition power supply | | Output | Ignition switch ON | Battery voltage |
| 7 (L) | 19 (B) | CAN-H | | Input/ Output | Ignition switch ON | — |
| 8 (W) | 19 (B) | ACTR V | | Output | Ignition switch ON | Battery voltage |
| 9 (BG) | 19 (B) | A/MIX drive 1 | Air mix door motor (passenger side) drive signal | Output | • Ignition switch ON<br>• Right after the temperature control switch (passenger side) operation |  JPIIA1647GB |
| 10 (Y) | 19 (B) | A/MIX drive 2 | | | | |
| 11 (V) | 19 (B) | INTAKE drive 1 | Intake door motor drive signal | Output | • Ignition switch ON<br>• Right after the Intake switch operation |  JPIIA1647GB |
| 12 (GR) | 19 (B) | INTAKE drive 2 | | | | |

| Terminal No. (Wire color) | | Description | | | Condition | Value |
|---|---|---|---|---|---|---|
| + | – | Signal name | | Input/ Output | | |
| 13 (LG) | 19 (B) | MODE drive 1 | Mode door motor drive signal | Output | • Ignition switch ON<br>• Right after the MODE switch operation |  JPIIA1647GB |
| 14 (SB) | 19 (B) | MODE drive 2 | | | | |
| 17 (W) | 19 (B) | Blower fan ON signal | | Output | • Ignition switch ON<br>• Blower motor: OFF |  JMIIA0941GB |
| | | | | | • Ignition switch ON<br>• Blower motor: ON |  PKIB4960J |
| 18 (BR) | 19 (B) | Sensor ground | | — | Ignition switch ON | 0 – 0.1 V |
| 19 (B) | Ground | Ground | | — | Ignition switch ON | 0 – 0.1 V |
| 21 (BG) | 19 (B) | Intake sensor signal | | Input | Ignition switch ON | 0 – 4.8 V<br>Output voltage varies with evaporator fin temperature |
| 23 (R) | 19 (B) | CAN-L | | Input/ Output | Ignition switch ON | — |
| 24 (SB) | 19 (B) | ACTR V | | Output | Ignition switch ON | Battery voltage |
| 25 (GR) | 19 (B) | A/MIX drive 3 | Air mix door motor (passenger side) drive signal | Output | • Ignition switch ON<br>• Right after the temperature control switch (passenger side) operation |  JPIIA1647GB |
| 26 (BR) | 19 (B) | A/MIX drive 4 | | | | |
| 27 (LG) | 19 (B) | INTAKE drive 3 | Intake door motor drive signal | Output | • Ignition switch ON<br>• Right after the intake switch operation |  JPIIA1647GB |
| 28 (W) | 19 (B) | INTAKE drive 4 | | | | |

| Terminal No. (Wire color) | | Description | | | Condition | Value |
|---|---|---|---|---|---|---|
| + | – | Signal name | | Input/ Output | | |
| 29 (BG) | 19 (B) | MODE drive 3 | Mode door motor drive signal | Output | • Ignition switch ON<br>• Right after the MODE switch operation |  JPIIA1647GB |
| 30 (G) | 19 (B) | MODE drive 4 | | | | |

## DTC Inspection Priority Chart

INFOID:0000000010262904

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

| Priority | Detected items (DTC) |
|---|---|
| 1 | • U1000: CAN COMM CIRCUIT<br>• U1010: CONTROL UNIT (CAN) |
| 2 | • B24A4: INTAKE TEMP SEN<br>• B24BB: AIRMIX ACTR<br>• B24B7: INTAKE ACTR<br>• B24B9: MODE ACTR |

## DTC Index

INFOID:0000000010262905

| DTC | Items (CONSULT screen terms) | Reference |
|---|---|---|
| U1000 | CAN COMM CIRCUIT | HAC-53, "DTC Logic" |
| U1010 | CONTROL UNIT (CAN) | HAC-54, "DTC Logic" |
| B24A4 | INTAKE SENSOR | HAC-58, "DTC Logic" |
| B24B7 | INTAKE DOOR MOTOR | HAC-77, "DTC Logic" |
| B24B9 | MODE DOOR MOTOR | HAC-80, "DTC Logic" |
| B24BB | LEFT AIR MIX DOOR MOTOR | HAC-67, "DTC Logic" |

# ECM, IPDM E/R, BCM

## List of ECU Reference

INFOID:0000000010012129

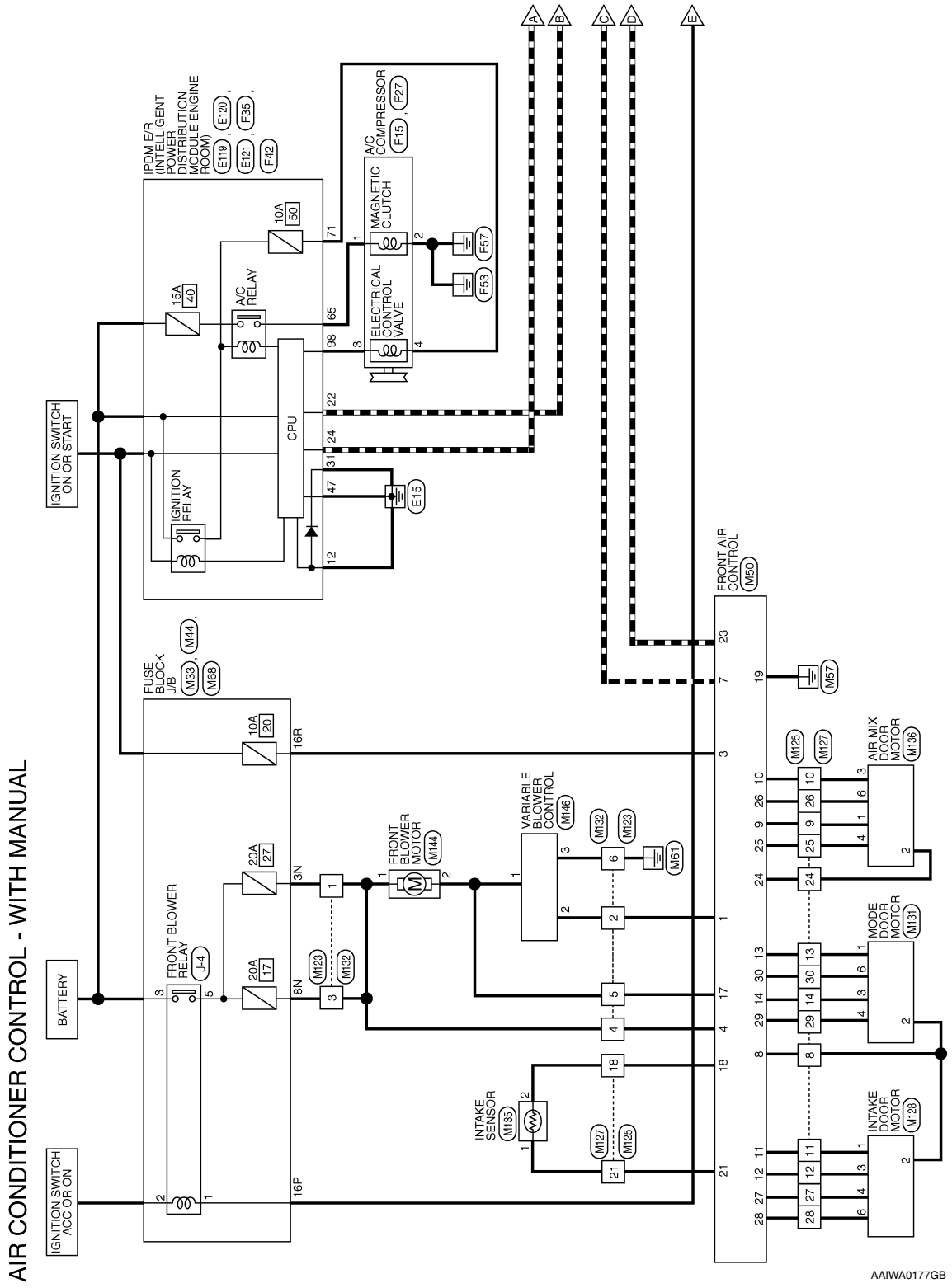
| ECU | Reference |
|---|---|
| ECM | EC-77, "Reference Value" |
| | EC-89, "Fail Safe" |
| | EC-92, "DTC Inspection Priority Chart" |
| | EC-93, "DTC Index" |
| IPDM E/R | PCS-12, "Reference Value" |
| | PCS-19, "Fail-safe" |
| | PCS-20, "DTC Index" |
| BCM (with Intelligent Key system) | BCS-28, "Reference Value" |
| | BCS-47, "Fail Safe" |
| | BCS-47, "DTC Inspection Priority Chart" |
| | BCS-48, "DTC Index" |
| BCM (without Intelligent Key system) | BCS-96, "Reference Value" |
| | BCS-107, "Fail Safe" |
| | BCS-107, "DTC Inspection Priority Chart" |
| | BCS-108, "DTC Index" |

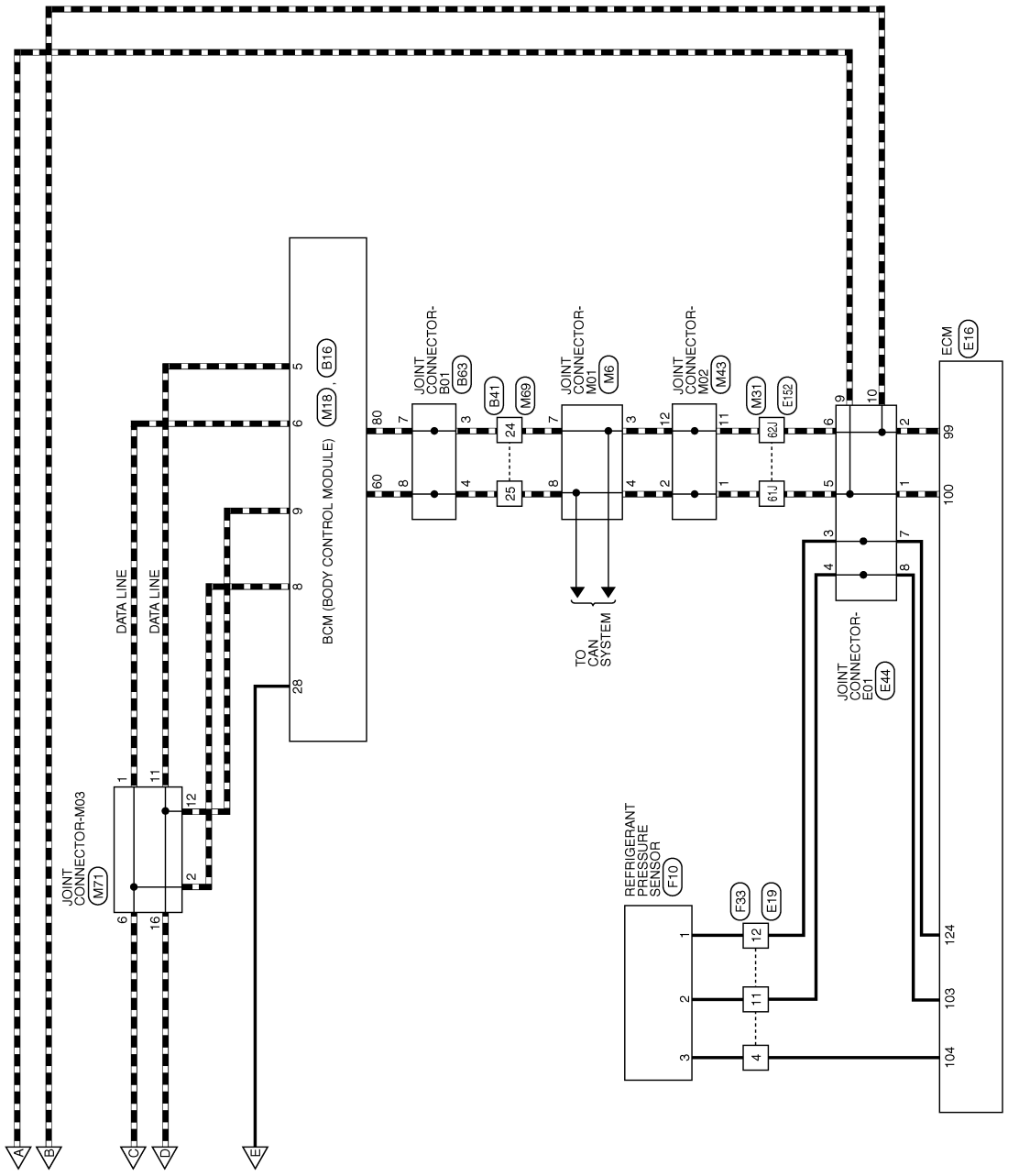
# WIRING DIAGRAM

## MANUAL AIR CONDITIONING SYSTEM

### Wiring Diagram

INFOID:0000000010012130



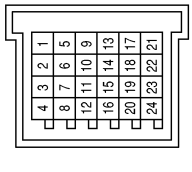



AAIWA0178GB

AIR CONDITIONER CONNECTORS - WITH MANUAL

| Connector No. | M6 |
|---|---|
| Connector Name | JOINT CONNECTOR-M01 |
| Connector Color | GRAY |

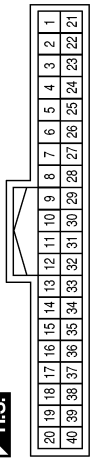
H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 3 | P | – |
| 4 | L | – |
| 7 | P | – |
| 8 | L | – |

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

H.S.

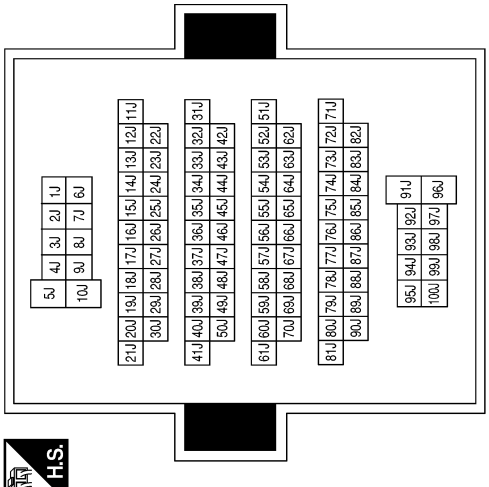



| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 5 | R | CAN-L |
| 6 | L | CAN-H |
| 8 | L | CAN-H |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 9 | R | CAN-L |
| 28 | LA/W | O IGN2 RL |

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

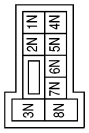
H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 61J | L | – |
| 62J | P | – |

| Connector No. | M33 |
|---|---|
| Connector Name | FUSE BLOCK (J/B) |
| Connector Color | WHITE |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 3N | Y | – |
| 8N | SB | – |

AAIIA0408GB

| Connector No. | M43 |
|---|---|
| Connector Name | JOINT CONNECTOR-M02 |
| Connector Color | BLUE |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | L | – |
| 2 | L | – |
| 11 | P | – |
| 12 | P | – |

| Connector No. | M44 |
|---|---|
| Connector Name | FUSE BLOCK (J/B) |
| Connector Color | WHITE |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 16P | LA/W | – |

| Connector No. | M50 |
|---|---|
| Connector Name | FRONT AIR CONTROL |
| Connector Color | WHITE |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | G | FR FAN OUT |
| 2 | – | – |
| 3 | SB | ING TEMPO |
| 4 | V | IGNW |
| 5 | – | – |
| 6 | – | – |
| 7 | L | CAN-H |
| 8 | W | 12V PROT MOTOR |
| 9 | BG | MIX DR 1 |
| 10 | Y | MIX DR 2 |
| 11 | V | INTAKE 1 |
| 12 | GR | INTAKE 2 |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 13 | LG | MODE 1 |
| 14 | SB | MODE 2 |
| 15 | – | – |
| 16 | – | – |
| 17 | W | FR FAN F/B |
| 18 | BR | INTAKE SEN GND |
| 19 | B | GND |
| 20 | – | – |
| 21 | BG | INTAKE SEN |
| 22 | – | – |
| 23 | R | CAN-L |
| 24 | SB | 12V PROT MOTOR |
| 25 | GR | MIX DR 3 |
| 26 | BR | MIX DR 4 |
| 27 | LG | INTAKE 3 |
| 28 | W | INTAKE 4 |
| 29 | BG | MODE 3 |
| 30 | G | MODE 4 |
| 31 | – | – |
| 32 | – | – |

| Connector No. | M68 |
|---|---|
| Connector Name | FUSE BLOCK (J/B) |
| Connector Color | BROWN |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 16R | GR | – |

AAIIA0409GB

| Connector No. | M69 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 24 | P | – |
| 25 | L | – |

| Connector No. | M71 |
|---|---|
| Connector Name | JOINT CONNECTOR-M03 |
| Connector Color | BLUE |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | L | – |
| 2 | L | – |
| 6 | L | – |
| 11 | R | – |
| 12 | R | – |
| 16 | R | – |

| Connector No. | M123 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | Y | – |
| 2 | G | – |
| 3 | SB | – |
| 4 | V | – |
| 5 | W | – |
| 6 | B | – |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 18 | BR | – |
| 21 | BG | – |
| 24 | SB | – |
| 25 | GR | – |
| 26 | BR | – |
| 27 | LG | – |
| 28 | W | – |
| 29 | BG | – |
| 30 | G | – |

| Connector No. | M125 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 8 | W | – |
| 9 | BG | – |
| 10 | Y | – |
| 11 | V | – |
| 12 | GR | – |
| 13 | LG | – |
| 14 | SB | – |

AAIIA0410GB

| Connector No. | M128 |
|---|---|
| Connector Name | INTAKE DOOR MOTOR |
| Connector Color | BLACK |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | L | – |
| 2 | W | – |
| 3 | R | – |
| 4 | BR | – |
| 6 | W | – |

| Connector No. | M135 |
|---|---|
| Connector Name | INTAKE SENSOR |
| Connector Color | GRAY |

H.S.

| 1 | 2 |
|---|---|

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | BG | – |
| 2 | BR | – |

| Connector No. | M127 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 8 | W | – |
| 9 | L | – |
| 10 | W | – |
| 11 | L | – |
| 12 | R | – |
| 13 | L | – |
| 14 | BR | – |
| 18 | BR | – |
| 21 | BG | – |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 24 | G | – |
| 25 | R | – |
| 26 | BR | – |
| 27 | BR | – |
| 28 | W | – |
| 29 | R | – |
| 30 | G | – |

| Connector No. | M132 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | Y | – |
| 2 | G | – |
| 3 | SB | – |
| 4 | V | – |
| 5 | W | – |
| 6 | B | – |

| Connector No. | M131 |
|---|---|
| Connector Name | MODE DOOR MOTOR |
| Connector Color | BLACK |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | L | – |
| 2 | W | – |
| 3 | BR | – |
| 4 | R | – |
| 6 | G | – |

AAIIA0411GB

| Connector No. | M136 |
|---|---|
| Connector Name | AIR MIX DOOR MOTOR |
| Connector Color | BLACK |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | L | – |
| 2 | G | – |
| 3 | W | – |
| 4 | R | – |
| 6 | BR | – |

| Connector No. | M144 |
|---|---|
| Connector Name | FRONT BLOWER MOTOR |
| Connector Color | GRAY |

H.S.




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

| Connector No. | M146 |
|---|---|
| Connector Name | VARIABLE BLOWER CONTROL (WITH MANUAL A/C) |
| Connector Color | GRAY |

H.S.




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

| Connector No. | E16 |
|---|---|
| Connector Name | ECM |
| Connector Color | BLACK |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 99 | P | CAN-L |
| 100 | L | CAN-H |
| 103 | Y | REFRIGERANT PRESSURE SENSOR |
| 104 | R | AVCC1-PDPRES |
| 124 | W | GNDA-PDPRES |

| Connector No. | E19 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | BROWN |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 4 | BG | – |
| 11 | Y | – |
| 12 | GR | – |

AAIIA0412GB

| Connector No. | E44 |
|---|---|
| Connector Name | JOINT CONNECTOR-E01 |
| Connector Color | WHITE |

H.S.




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

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 22 | P | CAN-L |
| 24 | L | CAN-H |
| 31 | B | 2ND SIGNAL GROUND |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | L | – |
| 2 | P | – |
| 3 | W | – |
| 4 | Y | – |
| 5 | L | – |
| 6 | P | – |
| 7 | W | – |
| 8 | Y | – |
| 9 | L | – |
| 10 | P | – |

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

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 48 | B | POWER GROUND |

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

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 12 | B | SIGNAL GROUND |

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

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 61J | L | – |
| 62J | P | – |

AAIIA0415GB

| Connector No. | F10 |
|---|---|
| Connector Name | REFRIGERANT PRESSURE SENSOR |
| Connector Color | BLACK |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | GR | – |
| 2 | P | – |
| 3 | BG | – |

| Connector No. | F15 |
|---|---|
| Connector Name | A/C COMPRESSOR (ELECTRICAL CONTROL VALVE) |
| Connector Color | BLACK |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 3 | SB | – |
| 4 | Y | – |

| Connector No. | F27 |
|---|---|
| Connector Name | A/C COMPRESSOR (MAGNETIC CLUTCH) |
| Connector Color | BLACK |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | P | – |
| 2 | B | – |

| Connector No. | F33 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | BROWN |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 4 | BG | – |
| 11 | P | – |
| 12 | GR | – |

| Connector No. | F35 |
|---|---|
| Connector Name | IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) |
| Connector Color | WHITE |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 65 | P | O AC CLUTCH |
| 71 | SB | O IGN REVERSE SW AC VALVE |

| Connector No. | F42 |
|---|---|
| Connector Name | IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) |
| Connector Color | BLACK |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 98 | Y | O AC VALVE |

AAIIA0416GB

| Connector No. | B16 |
|---|---|
| Connector Name | BCM (BODY CONTROL MODULE) |
| Connector Color | GREEN |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 60 | L | CAN-H |
| 80 | P | CAN-L |

| Connector No. | B41 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 24 | P | – |
| 25 | L | – |

| Connector No. | B63 |
|---|---|
| Connector Name | JOINT CONNECTOR-B01 |
| Connector Color | GRAY |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 3 | P | – |
| 4 | L | – |
| 7 | P | – |
| 8 | L | – |

| Connector No. | J4 |
|---|---|
| Connector Name | FUSE BLOCK (J/B) (FRONT BLOWER MOTOR RELAY) |
| Connector Color | – |

T.S.




AAIIA0420GB

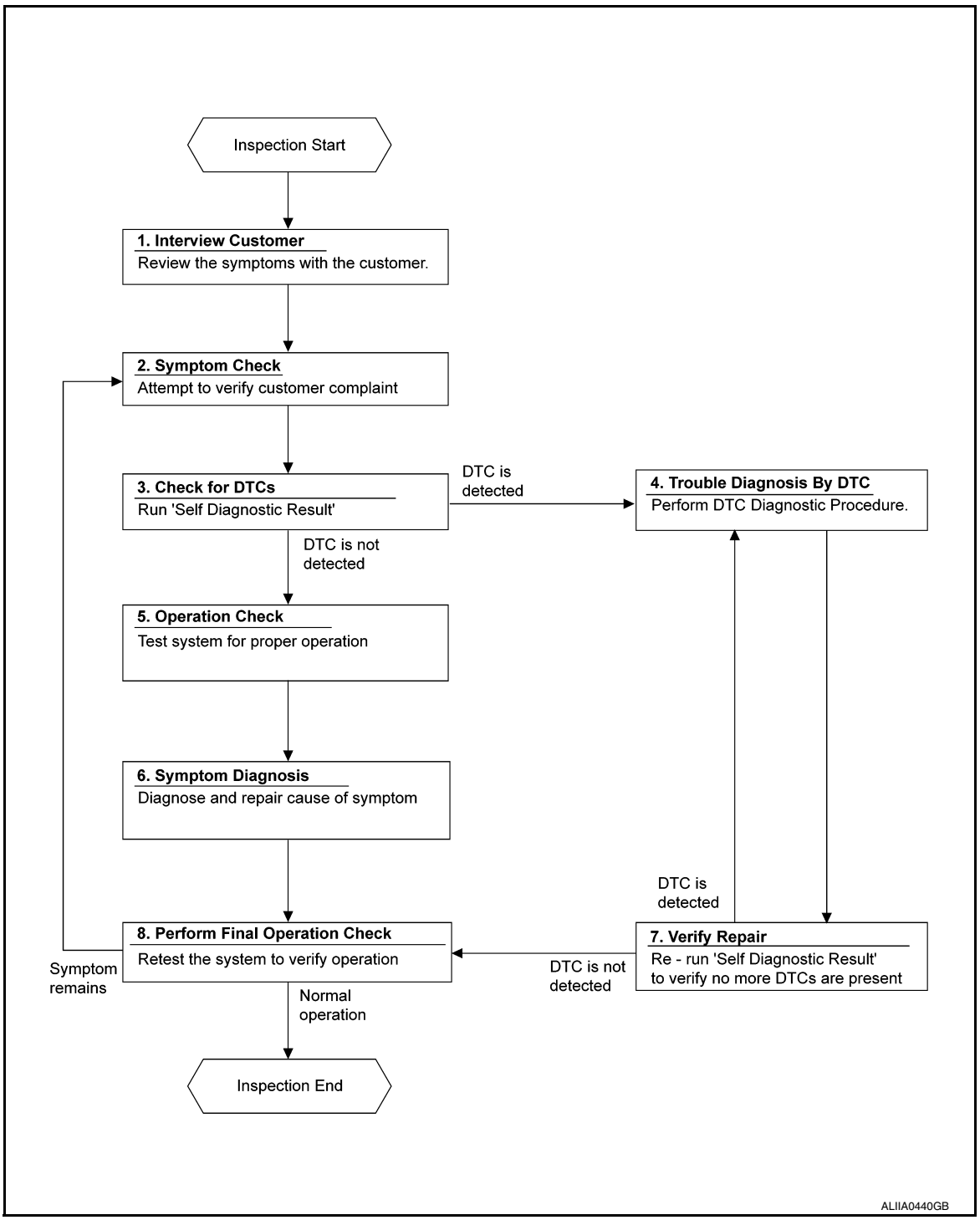
# BASIC INSPECTION

## DIAGNOSIS AND REPAIR WORKFLOW

### Work Flow

INFOID:0000000010228225

OVERALL SEQUENCE




DETAILED FLOW

### 1.INTERVIEW CUSTOMER

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

>> GO TO 2.

## 2.SYMPTOM CHECK

Verify symptoms.

>> GO TO 3.

## 3.CHECK FOR DTCS

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

Is any DTC detected?

YES >> GO TO 4.
NO >> GO TO 5.

## 4.PERFORM DTC DIAGNOSTIC PROCEDURE

Perform the diagnostic procedure for the detected DTC. Refer to HAC-134, "DTC Inspection Priority Chart".

>> GO TO 7.

## 5.OPERATION CHECK

Perform the operation check. Refer to HAC-148, "Work Procedure".

>> GO TO 6.

## 6.SYMPTOM DIAGNOSIS

Check the symptom diagnosis table. Refer to HAC-174, "Symptom Table".

>> GO TO 8.

## 7.VERIFY REPAIR.

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

Is any DTC detected?

YES >> GO TO 4.
NO >> GO TO 8.

## 8.PERFORM FINAL OPERATION CHECK

Perform the operation check. Refer to HAC-148, "Work Procedure".

Does it operate normally?

YES >> Inspection End.
NO >> GO TO 2.

# OPERATION INSPECTION

## Work Procedure

INFOID:0000000010012133

### DESCRIPTION

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

**Check condition : Engine running at normal operating temperature.**
**Check condition : Blower control dial in OFF position.**
**Check condition : REC off (LED extinguished).**
**Check condition : VENT selected (LED illuminated).**
**Check condition : DEF off (LED extinguished).**

### OPERATION INSPECTION

#### 1. CHECK BLOWER

1. Rotate the blower control dial clockwise one detent. Blower should operate on low speed.
2. Rotate the blower control dial one detent at a time, and continue checking blower speed until all speeds are checked.
3. Leave blower on maximum speed.

Is the test result normal?

YES >> GO TO 2.
NO >> Refer to HAC-167, "Diagnosis Procedure".

#### 2. CHECK A/C SWITCH LED

1. Press A/C switch.
2. A/C switch indicator should turn ON.

Is the test result normal?

YES >> GO TO 3.
NO >> Refer to HAC-166, "FRONT A/C CONTROL : Diagnosis Procedure".

#### 3. CHECK A/C SWITCH

Confirm that the compressor clutch engages (sound or visual inspection).

Is the test result normal?

YES >> GO TO 4.
NO >> Refer to HAC-171, "Diagnosis Procedure".

#### 4. CHECK FRONT AIR CONTROL MODE LEDS

1. Press D/F ( ), FOOT ( ), B/L , and VENT , MAX A/C, and DEF ( ).
2. Each button indicator should illuminate.

Is the test result normal?

YES >> GO TO 5.
NO >> Refer to HAC-166, "FRONT A/C CONTROL : Diagnosis Procedure".

#### 5. CHECK DISCHARGE AIR

1. Press D/F ( ), FOOT ( ), B/L , and VENT and DEF ( ).
2. Confirm that discharge air comes out according to the air distribution table. Refer to HAC-120, "Door Control".

Is the test result normal?

YES >> GO TO 6.
NO >> Refer to HAC-174, "Symptom Table".

#### 6. CHECK REC LED

1. Press DEF ( ) and make sure LED is off.
2. Make sure VENT ( ) or B/L ( ) is selected.
3. Press REC ( ) switch one time. REC indicator should illuminate.

4. Press REC ( ) switch one more time. REC indicator should go off.

Is the test result normal?

YES >> GO TO 7.
NO >> Refer to HAC-166, "FRONT A/C CONTROL : Diagnosis Procedure".

## 7. CHECK INTAKE DOOR OPERATION

1. Press REC ( ) switch one time. REC indicator should illuminate.
2. Listen to the sound of the air coming out of the vent.
3. Press REC ( ) switch one more time. REC indicator should go off.
4. There should be an audible change to the sound of the air flowing out of the vent.

Is the test result normal?

YES >> GO TO 8.
NO >> Refer to HAC-157, "Diagnosis Procedure".

## 8. CHECK TEMPERATURE DECREASE

1. Press A/C switch.
2. Rotate temperature control dial counterclockwise until maximum cold.
3. Check for cold air at selected discharge air outlets.

Is the test result normal?

YES >> GO TO 9.
NO >> Refer to HAC-175, "Component Function Check".

## 9. CHECK TEMPERATURE INCREASE

1. Rotate temperature control dial clockwise until maximum hot.
2. Check for hot air at appropriate discharge air outlets.

Is the test result normal?

YES >> Inspection End.
NO >> Refer to HAC-177, "Component Function Check".

# SYSTEM SETTING

## Target Evaporator Temp Upper Limit

INFOID:0000000010262912

### DESCRIPTION

Set the target evaporator temperature upper limit.

### HOW TO SET

With CONSULT

Perform the “TARGET EVAPORATOR TEMP UPPER LIMIT SETTING” of HVAC work support item.

| Work support items | Display |
|---|---|
| TARGET EVAPORATOR TEMP UPPER LIMIT SETTING | Initial Setting |
| | Low |
| | Middle |
| | High |

# DOOR MOTOR STARTING POSITION RESET

## Description

INFOID:0000000010262913

- Reset signal is transmitted from A/C auto amp. to air mix door motor, intake door motor and mode door motor. Starting position reset can be performed.
  **NOTE:**
  During reset, DEF switch indicator blinks.
- When air mix door motor, intake door motor or mode door motor is removed and installed, always perform door motor starting position reset.

## Work Procedure

INFOID:0000000010262914

### 1.PERFORM DOOR MOTOR STARTING POSITION RESET

With CONSULT
1. Turn ignition switch ON.
2. Select “Door Motor Starting Position Reset” in “ACTIVE TEST” mode of “HVAC” using CONSULT.
3. Touch “Start” and wait a few seconds.
4. Make sure the “COMPLETED” is displayed on CONSULT screen.

>> Inspection End.

# DTC/CIRCUIT DIAGNOSIS

## U1000 CAN COMM CIRCUIT

### Description

INFOID:0000000010262919

CAN (Controller Area Network) is a serial communication system for real time application. It is an on-vehicle multiplex communication system with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto vehicles, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with two communication lines (CAN-H line, CAN-L 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-32, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart".

### DTC Logic

INFOID:0000000010262920

#### 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 SELF-DIAGNOSIS

With CONSULT
1. Turn ignition switch ON and wait for 2 seconds or more.
2. Using CONSULT, perform “Self Diagnostic Result” of “HVAC”.
3. Check if any DTC No. is displayed in the self-diagnosis results.

Is DTC detected?

YES >> Refer to HAC-152, "Diagnosis Procedure".
NO >> Refer to GI-41, "Intermittent Incident".

### Diagnosis Procedure

INFOID:0000000010262921

#### 1.CHECK CAN COMMUNICATION SYSTEM

Check CAN communication system. Refer to LAN-17, "Trouble Diagnosis Flow Chart".

>> Inspection End.

# U1010 CONTROL UNIT (CAN)

## Description

INFOID:0000000010262922

Initial diagnosis of A/C auto amp.

## DTC Logic

INFOID:0000000010262923

### 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 front air control. | Front air control |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM SELF-DIAGNOSIS

With CONSULT
1. Turn ignition switch ON.
2. Using CONSULT, perform “Self Diagnostic Result” of “HVAC”.
3. Check if any DTC No. is displayed in the self-diagnosis results.

Is DTC detected?

YES >> Refer to HAC-153, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000010262924

#### 1.REPLACE FRONT AIR CONTROL

Replace front air control. Refer to HAC-181, "Removal and Installation".

>> Inspection End.

# B24A4 INTAKE SENSOR

## DTC Logic

INFOID:0000000010262915

### DTC DETECTION LOGIC

**NOTE:**

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-152, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to HAC-153, "DTC Logic".

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B24A4 | 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 short-ed.) |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON.
2. Using CONSULT, perform “Self Diagnostic Result” of “HVAC”.
3. Check if any DTC No. is displayed in the self-diagnosis results.

Is DTC detected?

YES >> Refer to HAC-154, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000010012146

Regarding Wiring Diagram information, refer to HAC-136, "Wiring Diagram".

#### 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 | | |
| M135 | 1 | Ground | 5 V |

Is the inspection result normal?

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

#### 2.CHECK INTAKE SENSOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between intake sensor harness connector and ground.

| Intake sensor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M135 | 2 | Ground | Yes |

Is the inspection result normal?

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

## 3.CHECK INTAKE SENSOR

Check intake sensor. Refer to HAC-155, "Component Inspection".

Is the inspection result normal?

YES >> Replace front air control. Refer to HAC-181, "Removal and Installation".
NO >> Replace intake sensor. Refer to HAC-182, "Removal and Installation".

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

1. Turn ignition switch OFF.
2. Disconnect front air control connector.
3. Check continuity between intake sensor harness connector and front air control harness connector.

| Intake sensor | | Front air control | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M135 | 1 | M50 | 21 | Yes |

Is the inspection result normal?

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

## 5.CHECK INTAKE SENSOR POWER SUPPLY CIRCUIT FOR SHORT TO GROUND

Check continuity between intake sensor harness connector and ground.

| Intake sensor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M135 | 1 | Ground | No |

Is the inspection result normal?

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

## 6.CHECK INTAKE SENSOR POWER SUPPLY CIRCUIT FOR SHORT TO VOLTAGE

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

| + | | − | Voltage (Approx.) |
|---|---|---|---|
| Intake sensor | | | |
| Connector | Terminal | | |
| M135 | 1 | Ground | 0 V |

Is the inspection result normal?

YES >> Replace front air control. Refer to HAC-181, "Removal and Installation".
NO >> Repair harness or connector.

# Component Inspection

INFOID:0000000010012147

## 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) | 17.73 |
| | | −10 (14) | 13.46 |
| | | −5 (23) | 10.33 |
| | | 0 (32) | 8.00 |
| | | 5 (41) | 6.25 |
| | | 10 (50) | 4.93 |
| | | 15 (59) | 3.92 |
| | | 20 (68) | 3.14 |
| | | 25 (77) | 2.54 |
| | | 30 (86) | 2.06 |
| | | 35 (95) | 1.69 |
| | | 40 (104) | 1.39 |
| | | 45 (113) | 1.15 |

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace intake sensor. Refer to HAC-182, "Removal and Installation".

# B24B7 INTAKE DOOR MOTOR

## DTC Logic

INFOID:0000000010262916

### DTC DETECTION LOGIC

**NOTE:**

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-152, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-153, "DTC Logic".

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B24B7 | INTAKE DOOR MOTOR | Short or open circuit of intake door motor drive signal. | • Intake door motor<br>• Intake door motor system installation condition<br>• Front air control<br>• Harness or connectors (The motor circuit is open or shorted.) |

### DTC CONFIRMATION PROCEDURE

#### 1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Start engine.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
3. Check DTC.

Is DTC detected?

YES >> Refer to HAC-157, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000010012141

Regarding Wiring Diagram information, refer to HAC-136, "Wiring Diagram".

**NOTE:**

This DTC can be set if the BCM is placed in transit mode. Confirm if the DTC is CURRENT or PAST. If PAST, perform the following steps before carrying out Diagnosis Procedure.

1. Clear DTC using CONSULT. Refer to HAC-22, "CONSULT Function (HVAC)".
2. Perform OPERATION INSPECTION. Refer to HAC-48, "Work Procedure".
3. Perform “Self Diagnostic Result” of “HVAC” using CONSULT. Refer to HAC-22, "CONSULT Function (HVAC)".
4. If DTC resets, proceed with Diagnosis Procedure.

#### 1.CHECK INTAKE DOOR MOTOR POWER SUPPLY

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

| + | | – | Voltage |
|---|---|---|---|
| Intake door motor | | | |
| Connector | Terminal | | |
| M128 | 2 | Ground | Battery voltage |

Is the inspection result normal?

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

## 2.CHECK INTAKE DOOR MOTOR POWER SUPPLY CIRCUIT FOR OPEN

1. Disconnect front air control connector.
2. Check continuity between intake door motor harness connector and front air control harness connector.

| Intake door motor | | Front air control | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M128 | 2 | M50 | 8 | Yes |

Is the inspection result normal?

YES >> Replace front air control. Refer to HAC-181, "Removal and Installation".
NO >> Repair harness or connector.

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

1. Turn ignition switch OFF.
2. Disconnect front air control connector.
3. Check continuity between intake door motor harness connector and front air control harness connector.

| Intake door motor | | Front air control | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M128 | 1 | M50 | 11 | Yes |
| | 3 | | 12 | |
| | 4 | | 27 | |
| | 6 | | 28 | |

Is the inspection result normal?

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

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

Check continuity between intake door motor harness connector and front air control harness connector.

| Intake door motor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M128 | 1 | Ground | No |
| | 3 | | |
| | 4 | | |
| | 6 | | |

Is the inspection result normal?

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

## 5.CHECK INTAKE DOOR MOTOR

Check intake door motor. Refer to HAC-185, "INTAKE DOOR MOTOR : Removal and Installation".

Is the inspection result normal?

YES >> Replace front air control. Refer to HAC-181, "Removal and Installation".
NO >> Replace intake door motor. Refer to HAC-185, "INTAKE DOOR MOTOR : Removal and Installation".

# Component Inspection (Motor)

INFOID:0000000010012142

## 1.CHECK INTAKE DOOR MOTOR

1. Remove intake door motor. Refer to HAC-185, "INTAKE DOOR MOTOR : Removal and Installation".
2. Check resistance between intake door motor terminals. Refer to applicable table for the normal value.

| Terminal | | Resistance (Ω) (Approx.) |
|---|---|---|
| 2 | 1 | 90 |
| | 3 | |
| | 4 | |
| | 6 | |

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace intake door motor. Refer to HAC-185, "INTAKE DOOR MOTOR : Removal and Installation".

# B24B9 MODE DOOR MOTOR

## DTC Logic

INFOID:0000000010262918

### DTC DETECTION LOGIC

**NOTE:**

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-152, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-153, "DTC Logic".
- If mode door motors DTC (B27A6 – B27A9) are detected, there is probably a disconnected connector or an open circuit in mode door motor drive power supply harness.

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B24B9 | MODE DOOR MOTOR | Short or open circuit of mode door motor drive signal. | • Mode door motor<br>• Front air control<br>• Harness or connectors (The motor circuit is open or shorted.) |

### 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-160, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000010012137

Regarding Wiring Diagram information, refer to HAC-136, "Wiring Diagram".

**NOTE:**

This DTC can be set if the BCM is placed in transit mode. Confirm if the DTC is CURRENT or PAST. If PAST, perform the following steps before carrying out Diagnosis Procedure.

1. Clear DTC using CONSULT. Refer to HAC-22, "CONSULT Function (HVAC)".
2. Perform OPERATION INSPECTION. Refer to HAC-48, "Work Procedure".
3. Perform “Self Diagnostic Result” of “HVAC” using CONSULT. Refer to HAC-22, "CONSULT Function (HVAC)".
4. If DTC resets, proceed with Diagnosis Procedure.

#### 1.CHECK MODE DOOR MOTOR POWER SUPPLY

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

| + | | – | Voltage |
|---|---|---|---|
| Mode door motor | | | |
| Connector | Terminal | | |
| M131 | 2 | Ground | Battery voltage |

Is the inspection result normal?

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

## 2.CHECK MODE DOOR MOTOR POWER SUPPLY CIRCUIT FOR OPEN

1. Disconnect front air control connector.
2. Check continuity between mode door motor harness connector and front air control harness connector.

| Mode door motor | | Front air control | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M131 | 2 | M50 | 8 | Yes |

Is the inspection result normal?

YES >> Replace front air control. Refer to HAC-181, "Removal and Installation".
NO >> Repair harness or connector.

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

1. Turn ignition switch OFF.
2. Disconnect front air control connector.
3. Check continuity between mode door motor harness connector and front air control harness connector.

| Mode door motor | | Front air control | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M131 | 4 | M50 | 29 | Yes |
| | 3 | | 14 | |
| | 6 | | 30 | |
| | 1 | | 13 | |

Is the inspection result normal?

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

## 4.CHECK MODE DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR SHORT

Check continuity between mode door motor harness connector and ground.

| Mode door motor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M131 | 4 | Ground | No |
| | 3 | | |
| | 6 | | |
| | 1 | | |

Is the inspection result normal?

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

## 5.CHECK MODE DOOR MOTOR

Check mode door motor. Refer to HAC-161, "Component Inspection".

Is the inspection result normal?

YES >> Replace front air control. Refer to HAC-181, "Removal and Installation".
NO >> Replace mode door motor. Refer to HAC-185, "MODE DOOR MOTOR : Removal and Installation".

# Component Inspection

INFOID:0000000010012138

## 1.CHECK MODE DOOR MOTOR

1. Remove mode door motor. Refer to HAC-185, "MODE DOOR MOTOR : Removal and Installation".
2. Check resistance between mode door motor terminals. Refer to applicable table for the normal value.

| Terminal | | Resistance (Ω) (Approx.) |
|---|---|---|
| 2 | 1 | 90 |
| | 6 | |
| | 3 | |
| | 4 | |

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace mode door motor. Refer to HAC-185, "MODE DOOR MOTOR : Removal and Installation".

# B24BB LEFT AIR MIX DOOR MOTOR

## DTC Logic

INFOID:0000000010262917

### DTC DETECTION LOGIC

**NOTE:**

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-152, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-153, "DTC Logic".

| DTC | Items (CONSULT screen terms) | DTC detection condition | Possible cause |
|---|---|---|---|
| B24BB | AIR MIX DOOR MOT | Short or open circuit of air mix door motor drive signal. | • Air mix door motor<br>• Front air control<br>• Harness or connectors (The motor circuit is open or shorted.) |

### 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-163, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000010012139

Regarding Wiring Diagram information, refer to HAC-136, "Wiring Diagram".

**NOTE:**

This DTC can be set if the BCM is placed in transit mode. Confirm if the DTC is CURRENT or PAST. If PAST, perform the following steps before carrying out Diagnosis Procedure.

1. Clear DTC using CONSULT. Refer to HAC-22, "CONSULT Function (HVAC)".
2. Perform OPERATION INSPECTION. Refer to HAC-48, "Work Procedure".
3. Perform “Self Diagnostic Result” of “HVAC” using CONSULT. Refer to HAC-22, "CONSULT Function (HVAC)".
4. If DTC resets, proceed with Diagnosis Procedure.

#### 1.CHECK AIR MIX DOOR MOTOR POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect air mix door motor connector.
3. Turn ignition switch ON.
4. Check voltage between air mix door motor harness connector and ground.

| + | | – | Voltage |
|---|---|---|---|
| Air mix door motor | | | |
| Connector | Terminal | | |
| M136 | 2 | Ground | Battery voltage |

Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

## 2.CHECK AIR MIX DOOR MOTOR POWER SUPPLY CIRCUIT FOR OPEN

1. Disconnect front air control connector.
2. Check continuity between air mix door motor harness connector and front air control harness connector.

| Air mix door motor | | Front air control | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M136 | 2 | M50 | 24 | Yes |

Is the inspection result normal?

YES >> Replace front air control. Refer to HAC-181, "Removal and Installation".
NO >> Repair harness or connector.

## 3.CHECK AIR MIX DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect front air control connector.
3. Check continuity between air mix door motor harness connector and front air control harness connector.

| Air mix door motor | | Front air control | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M136 | 3 | M50 | 10 | Yes |
| | 6 | | 26 | |
| | 1 | | 9 | |
| | 4 | | 25 | |

Is the inspection result normal?

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

## 4.CHECK AIR MIX DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR SHORT

Check continuity between air mix door motor harness connector and front air control harness connector.

| Air mix door motor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M131 | 3 | Ground | No |
| | 6 | | |
| | 1 | | |
| | 4 | | |

Is the inspection result normal?

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

## 5.CHECK AIR MIX DOOR MOTOR

Check air mix door motor. Refer to HAC-164, "Component Inspection".

Is the inspection result normal?

YES >> Replace front air control. Refer to HAC-181, "Removal and Installation".
NO >> Replace air mix door motor. Refer to HAC-185, "AIR MIX DOOR MOTOR : Removal and Installation".

# Component Inspection

INFOID:0000000010012140

## 1.CHECK AIR MIX DOOR MOTOR

1. Remove air mix door motor. Refer to HAC-185, "AIR MIX DOOR MOTOR : Removal and Installation".
2. Check resistance between air mix door motor terminals. Refer to applicable table for the normal value.

| Terminal | | Resistance (Ω) (Approx.) |
|---|---|---|
| 2 | 3 | 90 |
| | 6 | |
| | 1 | |
| | 4 | |

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace air mix door motor. Refer to HAC-185, "AIR MIX DOOR MOTOR : Removal and Installation".

# POWER SUPPLY AND GROUND CIRCUIT
# FRONT A/C CONTROL

## FRONT A/C CONTROL : Diagnosis Procedure

INFOID:0000000010012134

Regarding Wiring Diagram information, refer to HAC-136, "Wiring Diagram".

### 1.CHECK FUSE

Check 10A fuse [No. 20, located in the fuse block (J/B)].
**NOTE:**
Refer to PG-64, "Terminal Arrangement".

Is the inspection result normal?

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

### 2.CHECK FRONT AIR CONTROL POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect front air control connector.
3. Check voltage between front air control harness connector and ground.

| + | | – | Voltage | | |
|---|---|---|---|---|---|
| Front air control | | | Ignition switch position | | |
| Connector | Terminal | | OFF | ACC | ON |
| M50 | 3 | Ground | Approx. 0 V | Approx. 0 V | Battery voltage |

Is the inspection result normal?

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

### 3.CHECK FRONT AIR CONTROL GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between front air control harness connector and ground.

| Front air control | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M50 | 19 | Ground | Yes |

Is the inspection result normal?

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

# FRONT BLOWER MOTOR

## Diagnosis Procedure

INFOID:0000000010012150

Regarding Wiring Diagram information, refer to HAC-136, "Wiring Diagram".

### 1.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 20A fuses [Nos. 17 and 27, located in fuse block (J/B)]
   **NOTE:**
   Refer to PG-64, "Terminal Arrangement".

Is the inspection result normal?

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

### 2.CHECK FRONT BLOWER MOTOR POWER SUPPLY

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

| + | | – | Voltage |
|---|---|---|---|
| Front blower motor | | | |
| Connector | Terminal | | |
| M144 | 1 | Ground | Battery voltage |

Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 3.

### 3.CHECK FRONT BLOWER RELAY

1. Turn ignition switch OFF.
2. Check front blower relay. Refer to HAC-170, "Component Inspection (Front Blower Relay)".

Is the inspection result normal?

YES >> Repair harness or connector between front blower motor and fuse.
NO >> Replace front blower relay.

### 4.CHECK BLOWER MOTOR CONTROL CIRCUIT

1. Turn ignition switch OFF.
2. Connect front blower motor connector.
3. Disconnect variable blower control connector.
4. Turn ignition switch ON.
5. Check voltage between variable blower control harness connector and ground.

| + | | – | Voltage |
|---|---|---|---|
| Variable blower control | | | |
| Connector | Terminal | | |
| M146 | 1 | Ground | Battery voltage |

Is the inspection result normal?

YES >> GO TO 6.
NO >> GO TO 5.

### 5.CHECK FRONT BLOWER MOTOR CONTROL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.

2. Disconnect front blower motor connector.
3. Check continuity between variable blower control harness connector and front blower motor harness connector.

| Variable blower control | | Front blower motor | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M146 | 1 | M144 | 2 | Yes |

Is the inspection result normal?

YES >> Replace front blower motor. Refer to VTL-16, "Removal and Installation".
NO >> Repair harness or connector.

## 6. CHECK VARIABLE BLOWER CONTROL GROUND CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Check continuity between variable blower control harness connector and ground.

| Variable blower control | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M146 | 3 | Ground | Yes |

Is the inspection result normal?

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

## 7. CHECK VARIABLE BLOWER CONTROL SIGNAL CIRCUIT

1. Turn blower control dial fully counterclockwise to the OFF position
2. While turning the blower control dial clockwise, through each detent, check voltage between variable blower control and ground.

| Power transistor | | | Condition | | | | | |
|---|---|---|---|---|---|---|---|---|
| Connector | Terminal | | Blower control dial detents | VENT | B/L | D/F1 | D/F2 | DEF |
| | | | | Voltage | | | | |
| M146 | 2 | Ground | OFF | 0.00 volts | 0.00 volts | 0.00 volts | 0.00 volts | 0.00 volts |
| | | | 1 | 4.00 volts | 4.00 volts | 4.00 volts | 4.00 volts | 4.00 volts |
| | | | 2 | 4.75 volts | 4.75 volts | 4.75 volts | 4.75 volts | 4.75 volts |
| | | | 3 | 5.00 volts | 5.00 volts | 5.25 volts | 5.25 volts | 5.25 volts |
| | | | 4 | 5.50 volts | 5.50 volts | 5.50 volts | 5.50 volts | 5.50 volts |
| | | | 5 | 5.75 volts | 5.75 volts | 6.00 volts | 6.00 volts | 6.00 volts |
| | | | 6 | 6.25 volts | 6.25 volts | 6.25 volts | 6.25 volts | 6.25 volts |
| | | | 7 | 6.50 volts | 6.50 volts | 6.75 volts | 6.75 volts | 6.75 volts |
| | | | 8 | 6.75 volts | 6.75 volts | 7.00 volts | 7.00 volts | 7.00 volts |
| | | | 9 | 7.25 volts | 7.25 volts | 7.50 volts | 7.50 volts | 7.50 volts |
| | | | 10 | 7.50 volts | 7.50 volts | 7.75 volts | 7.75 volts | 7.75 volts |
| | | | 11 | 8.00 volts | 8.00 volts | 8.25 volts | 8.25 volts | 8.25 volts |
| | | | 12 | 8.25 volts | 8.25 volts | 8.50 volts | 8.50 volts | 8.50 volts |
| | | | 13 | 8.50 volts | 8.50 volts | 9.00 volts | 9.00 volts | 9.00 volts |
| | | | 14 | 9.00 volts | 9.00 volts | 9.25 volts | 9.25 volts | 9.25 volts |
| | | | 15 | 9.25 volts | 9.25 volts | 9.75 volts | 9.75 volts | 9.75 volts |
| | | | 16 | 9.75 volts | 9.75 volts | 10.00 volts | 10.00 volts | 10.00 volts |
| | | | 17 | 10.00 volts | 10.00 volts | 10.50 volts | 10.50 volts | 10.50 volts |
| | | | 18 | 10.50 volts | 10.50 volts | 10.75 volts | 10.75 volts | 10.75 volts |
| | | | 19 | 10.75 volts | 10.75 volts | 11.25 volts | 11.25 volts | 11.25 volts |
| | | | 20 | 11.00 volts | 11.00 volts | 11.50 volts | 11.50 volts | 11.50 volts |
| | | | 21 | 11.50 volts | 11.50 volts | 12.00 volts | 12.00 volts | 12.00 volts |
| | | | 22 | 11.75 volts | 11.75 volts | 12.25 volts | 12.25 volts | 12.25 volts |
| | | | 23 | 12.25 volts | 12.25 volts | 12.75 volts | 12.75 volts | 12.75 volts |
| | | | 24 | 12.50 volts | 12.50 volts | 13.00 volts | 13.00 volts | 13.00 volts |
| | | | 12 = Max blower voltage | | | | | |

Is the inspection result normal?

YES >> Replace variable blower control. Refer to HAC-187, "Removal and Installation".
NO >> GO TO 8.

## 8. CHECK VARIABLE BLOWER CONTROL SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect variable blower control connector and front air control connector.
3. Check continuity between variable blower control harness connector and front air control harness connector.

| Variable blower control | | Front air control | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M146 | 2 | M50 | 1 | Yes |

Is the inspection result normal?

YES >> GO TO 9.
NO >> Repair harness or connector.

## 9. CHECK VARIABLE BLOWER CONTROL SIGNAL CIRCUIT FOR SHORT

Check continuity between variable blower control harness connector and ground.

| Variable blower control | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M146 | 2 | Ground | No |

Is the inspection result normal?

YES >> Replace front air control. Refer to HAC-181, "Removal and Installation".
NO >> Repair harness or connector.

## Component Inspection (Front Blower Motor)

INFOID:0000000010012151

### 1.CHECK FRONT BLOWER MOTOR

1. Connect battery voltage to terminal 1 of front blower motor.
2. Connect ground to terminal 2 of front blower motor.

Does the blower fan operate?

YES >> Intermittent incident. Refer to GI-41, "Intermittent Incident".
NO >> Replace front blower motor. Refer to VTL-16, "Removal and Installation".

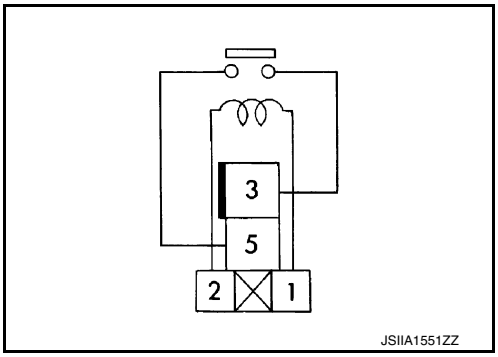
## Component Inspection (Front Blower Relay)

INFOID:0000000010012152

### 1.CHECK FRONT BLOWER RELAY

1. Turn ignition switch OFF.
2. Remove front blower relay.
3. Check continuity between front blower relay terminals 3 and 5 when voltage is supplied between terminals 1 and 2.

| Terminals | | Voltage | Continuity |
|---|---|---|---|
| 3 | 5 | ON | Yes |
| | | OFF | No |




Is the inspection result normal?

YES >> Inspection End.
NO >> Replace front blower relay.

# MAGNET CLUTCH

## Component Function Check

INFOID:0000000010012153

### 1.CHECK MAGNET CLUTCH OPERATION

Perform “COMPRESSOR” “Active Test” of “IPDM E/R”. Refer to HAC-129, "CONSULT Function (IPDM E/R)".

Does it operate normally?

YES >> Inspection End.
NO >> Refer to HAC-171, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000010012154

Regarding Wiring Diagram information, refer to HAC-136, "Wiring Diagram".

### 1.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 15A fuse (No. 40, located in IPDM E/R).
   **NOTE:**
   Refer to PG-68, "IPDM E/R Terminal Arrangement".

Is the inspection result normal?

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

### 2.CHECK MAGNET CLUTCH POWER SUPPLY CIRCUIT

1. Disconnect compressor connector and IPDM E/R connector.
2. Check continuity between compressor harness connector and IPDM E/R harness connector.

| Compressor | | IPDM E/R | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| F27 | 1 | F35 | 65 | Yes |

Is the inspection result normal?

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

### 3.CHECK MAGNET CLUTCH GROUND CIRCUIT

1. Disconnect compressor connector.
2. Check continuity between compressor harness connector and ground.

| Compressor | | | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| F27 | 2 | Ground | Yes |

Is the inspection result normal?

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

### 4.CHECK MAGNET CLUTCH

Directly apply battery voltage to the magnet clutch. Check operation visually and by sound.

Does it operate normally?

YES >> Replace IPDM E/R. Refer to PCS-35, "Removal and Installation".
NO >> Replace magnet clutch. Refer to HA-30, "Removal and Installation".

# ECV (ELECTRICAL CONTROL VALVE)

## Diagnosis Procedure

INFOID:0000000010012155

Regarding Wiring Diagram information, refer to HAC-136, "Wiring Diagram".

### 1.CHECK ECV (ELECTRICAL CONTROL VALVE) POWER SUPPLY

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

| + | | – | Voltage |
|---|---|---|---|
| Compressor | | | |
| Connector | Terminal | | |
| F15 | 4 | Ground | Battery voltage |

Is the inspection result normal?

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

### 2.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 10 A fuse [No. 50, located in IPDM E/R]. Refer to PG-68, "IPDM E/R Terminal Arrangement".

Is the inspection result normal?

YES >> Repair harness or connector.
NO >> Replace the blown fuse after repairing the affected circuit.

### 3.CHECK ECV CONTROL SIGNAL CIRCUIT FOR OPEN

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

| Compressor | | IPDM E/R | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| F15 | 3 | F42 | 98 | Yes |

Is the inspection result normal?

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

### 4.CHECK ECV CONTROL SIGNAL CIRCUIT FOR SHORT

Check continuity between compressor harness connector and ground.

| Compressor | | — | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| F15 | 3 | Ground | No |

Is the inspection result normal?

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

### 5.CHECK ECV

Check ECV. Refer to HAC-173, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Replace compressor. Refer to HA-30, "Removal and Installation".

## 6. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace front air control. Refer to HAC-181, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

# Component Inspection

INFOID:0000000010012156

## 1. CHECK ECV (ELECTRICAL CONTROL VALVE)

1. Turn ignition switch OFF.
2. Disconnect compressor connector.
3. Check continuity between compressor connector F27 terminals.

| Terminals | | Condition | Resistance (kΩ) |
|---|---|---|---|
| | | Temperature: °C (°F) | |
| 3 | 4 | 20 (68) | 10.1 – 11.1 |

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace compressor. Refer to HA-30, "Removal and Installation".

# SYMPTOM DIAGNOSIS

## HEATER AND AIR CONDITIONING SYSTEM CONTROL SYMPTOMS

### Symptom Table

INFOID:0000000010012157

SYMPTOM TABLE

| Symptom | Reference Page | |
|---|---|---|
| A/C system does not come on. | Go to Trouble Diagnosis Procedure for A/C System. | HAC-166, "FRONT A/C CONTROL : Diagnosis Procedure" |
| Air outlet does not change.<br>Mode door motor does not operate normally. | Go to Trouble Diagnosis Procedure for Mode Door Motor. | HAC-160, "Diagnosis Procedure" |
| Discharge air temperature does not change.<br>Air mix door motor does not operate normally. | Go to Trouble Diagnosis Procedure for Air Mix Door Motor. | HAC-163, "Diagnosis Procedure" |
| Intake door does not change.<br>Intake door motor does not operate normally. | Go to Trouble Diagnosis Procedure for Intake Door Motor. | HAC-157, "Diagnosis Procedure" |
| Blower motor operation is malfunctioning. | Go to Trouble Diagnosis Procedure for Blower Motor. | HAC-167, "Diagnosis Procedure" |
| Magnet clutch does not engage. | Go to Trouble Diagnosis Procedure for Magnet Clutch. | HAC-171, "Component Function Check" |
| Insufficient cooling | Go to Trouble Diagnosis Procedure for Insufficient Cooling. | HAC-175, "Component Function Check" |
| Insufficient heating | Go to Trouble Diagnosis Procedure for Insufficient Heating. | HAC-177, "Component Function Check" |
| Noise | Go to Trouble Diagnosis Procedure for Noise. | HA-20, "Symptom Table" |

# INSUFFICIENT COOLING

## Component Function Check

INFOID:0000000010012158

SYMPTOM: Insufficient cooling

INSPECTION FLOW

### 1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE DECREASE

1. Press the A/C switch.
2. Turn temperature control dial counterclockwise to maximum cold.
3. Check for cold air at discharge air outlets.

Can a symptom be duplicated?

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

### 2. CHECK FOR ANY SYMPTOMS

Perform a complete operational check and check for any symptoms. Refer to HAC-148, "Work Procedure".

Does another symptom exist?

YES >> Refer to HAC-174, "Symptom Table".
NO >> System OK.

### 3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4.

### 4. CHECK DRIVE BELTS

Check A/C compressor belt tension. Refer to EM-13, "Checking".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Adjust or replace compressor belt. Refer to EM-13, "Tension Adjustment".

### 5. CHECK AIR MIX DOOR MOTOR OPERATION

Check and verify air mix door mechanism for smooth operation.

Does air mix door operate correctly?

YES >> GO TO 6.
NO >> Check air mix door motor circuit. Refer to HAC-163, "Diagnosis Procedure".

### 6. CHECK COOLING FAN MOTOR OPERATION

Check and verify cooling fan motor for smooth operation.

Does cooling fan motor operation correctly?

YES >> GO TO 7.
NO >> Check cooling fan motor. Refer to EC-458, "Component Function Check".

### 7. CHECK RECOVERY/RECYCLING EQUIPMENT BEFORE USAGE

Check recovery/recycling equipment before connecting to vehicle. Verify there is no pressure in the recovery/recycling equipment by checking the gauges. If pressure exists, recover refrigerant from equipment lines.

>> GO TO 8.

### 8. CHECK REFRIGERANT PURITY

1. Connect recovery/recycling equipment to vehicle.
2. Confirm refrigerant purity in supply tank using recovery/recycling and refrigerant identifier.

Is the inspection result normal?

YES >> GO TO 9.
NO >> Check contaminated refrigerant. Refer to HA-21, "Description".

## 9. CHECK REFRIGERANT PRESSURE

Check refrigerant pressure with manifold gauge connected. Refer to HA-28, "Inspection".

Is the inspection result normal?

YES >> Perform diagnostic work flow. Refer to HA-15, "Workflow".
NO >> GO TO 10.

## 10. CHECK FOR EVAPORATOR FREEZE UP

Start engine and run A/C. Check for evaporator freeze up.

Does evaporator freeze up?

YES >> Perform diagnostic work flow. Refer HA-15, "Workflow".
NO >> GO TO 11.

## 11. CHECK AIR DUCTS

Check ducts for air leaks.

Is the inspection result normal?

YES >> System OK.
NO >> Repair air leaks.

# INSUFFICIENT HEATING

## Component Function Check

INFOID:0000000010012159

SYMPTOM: Insufficient heating

INSPECTION FLOW

### 1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE INCREASE

1. Turn temperature control dial clockwise to maximum heat.
2. Check for hot air at discharge air outlets.

Can a symptom be duplicated?

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

### 2. CHECK FOR ANY SYMPTOMS

Perform a complete operational check and check for any symptoms. Refer to HAC-148, "Work Procedure".

Does another symptom exist?

YES >> Refer to HAC-174, "Symptom Table".
NO >> System OK.

### 3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4.

### 4. CHECK ENGINE COOLING SYSTEM

1. Check for proper engine coolant level. Refer to CO-8, "Inspection".
2. Check hoses for leaks or kinks.
3. Check radiator cap. Refer to CO-12, "RADIATOR CAP : Inspection".
4. Check for air in cooling system.

>> GO TO 5.

### 5. CHECK AIR MIX DOOR MOTOR OPERATION

Check and verify air mix door mechanism for smooth operation.

Does air mix door operate correctly?

YES >> GO TO 6.
NO >> Check the air mix door motor circuit. Refer to HAC-163, "Diagnosis Procedure".

### 6. CHECK AIR DUCTS

Check for disconnected or leaking air ducts.

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair all disconnected or leaking air ducts.

### 7. CHECK HEATER HOSE TEMPERATURES

1. Start engine and warm it up to normal operating temperature.
2. Touch both the inlet and outlet heater hoses. The inlet hose should be hot and the outlet hose should be warm.

Is the inspection result normal?

YES >> GO TO 8.
NO >> Both hoses warm: GO TO 9.

### 8. CHECK ENGINE COOLANT SYSTEM

Check thermostat operation. Refer to CO-22, "Inspection".

Is the inspection result normal?

YES >> System OK.
NO >> Repair or replace as necessary.

## 9. CHECK HEATER HOSES

Check heater hoses for proper installation.

Is the inspection result normal?

YES >> System OK.
NO >> 1. Back flush heater core.
2. Drain the water from the system.
3. Refill system with new engine coolant. Refer to CO-9, "Refilling".
4. To retest GO TO 10.

## 10. CHECK HEATER HOSE TEMPERATURES

1. Start engine and warm up to normal operating temperature.
2. Touch both the inlet and outlet heater hoses. The inlet hose should be hot and the outlet hose should be warm

Is the inspection result normal?

YES >> System OK.
NO >> Replace heater core. Refer to HA-43, "HEATER CORE : Removal and Installation".

# COMPRESSOR DOES NOT OPERATE

## Description

INFOID:0000000010012160

Symptom: Compressor does not operate.

## Diagnosis Procedure

INFOID:0000000010012161

**NOTE:**
- Perform self-diagnoses with CONSULT before performing symptom diagnosis. If DTC is detected, perform the corresponding diagnosis.
- Check that refrigerant system is properly charged. If refrigerant amount is below the proper amount, perform inspection of refrigerant leakage.

### 1.CHECK MAGNET CLUTCH OPERATION

Check magnet clutch. Refer to HAC-171, "Component Function Check".

Does it operate normally?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts.

### 2.CHECK REFRIGERANT PRESSURE SENSOR

Check refrigerant pressure sensor. Refer to EC-482, "Component Function Check".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace malfunctioning parts.

### 3.CHECK FRONT AIR CONTROL OUTPUT SIGNAL

With CONSULT
Check “FAN ON” and “” in “DATA MONITOR” mode of “” using CONSULT.

| Monitor item | Condition | | Status |
|---|---|---|---|
| AIR COND SW | A/C switch | ON | On |
| | | OFF | Off |
| FAN ON | Blower motor | ON | On |
| | | OFF | Off |

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace front air control. Refer to HAC-181, "Removal and Installation".

### 4.CHECK ECM INPUT SIGNAL

With CONSULT
Check “AIR COND SIG” and “HEATER FAN SW” in “DATA MONITOR” mode of “ECM” using CONSULT.

| Monitor item | Condition | | Status |
|---|---|---|---|
| AIR COND SIG | A/C switch | ON | On |
| | | OFF | Off |
| HEATER FAN SW | Blower motor | ON | On |
| | | OFF | Off |

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check CAN communication system. Refer to LAN-17, "Trouble Diagnosis Flow Chart".

### 5.CHECK IPDM E/R INPUT SIGNAL

With CONSULT
1. Start engine.

2. Check “AC COMP REQ” in “DATA MONITOR” mode of “IPDM E/R” using CONSULT.

| Monitor item | Condition | | Status |
|---|---|---|---|
| AC COMP REQ | A/C switch | ON | On |
| | | OFF | Off |

Is the inspection result normal?

YES >> Inspection End.
NO >> Check CAN communication system. Refer to LAN-17, "Trouble Diagnosis Flow Chart".

# REMOVAL AND INSTALLATION

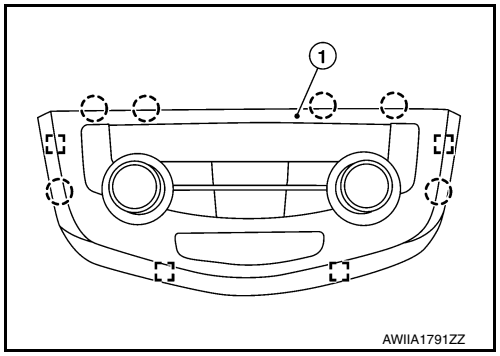
## FRONT AIR CONTROL

### Removal and Installation

INFOID:0000000009797944

REMOVAL

1. Release the front air control clips and pawls using a suitable tool.
   : Metal clip
   : Pawl
2. Disconnect the harness connector from the front air control (1) and remove.



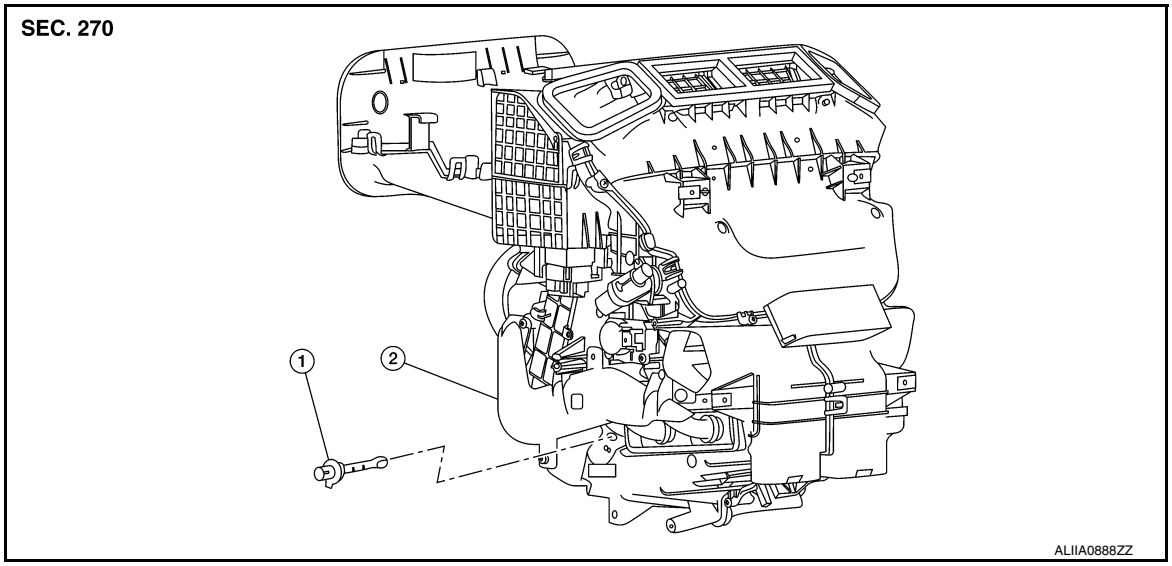

INSTALLATION

Installation is in the reverse order of removal.

# INTAKE SENSOR

## Exploded View

INFOID:0000000010193939




1. Intake sensor
2. Heating and cooling unit assembly

## Removal and Installation

INFOID:0000000010193940

### REMOVAL

1. Remove front foot duct (LH). Refer to VTL-10, "FRONT FOOT DUCT : Removal and Installation".
2. Disconnect the harness connector and remove intake sensor.

### INSTALLATION

Installation is in the reverse order of removal.

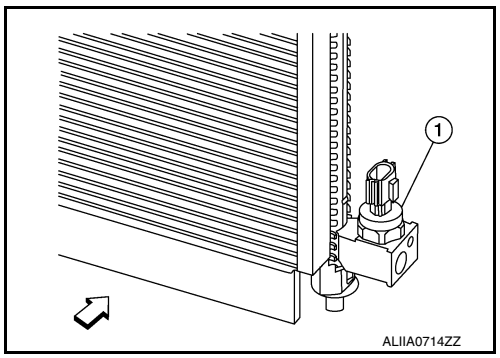
# REFRIGERANT PRESSURE SENSOR

## Removal and Installation

INFOID:0000000010193997

### REMOVAL

1. Discharge the refrigerant. Refer to HA-23, "Recycle Refrigerant".
2. Remove front bumper fascia. Refer to EXT-17, "Removal and Installation".
3. Disconnect the harness connector from the refrigerant pressure sensor.
4. Remove the refrigerant pressure sensor (1) from the condenser.
   ⇦: Front
   **CAUTION:**
   **Cap or wrap the opening of the refrigerant pressure sensor with suitable material such as vinyl tape to avoid the entry of air.**




### INSTALLATION

Installation is in the reverse order of removal.

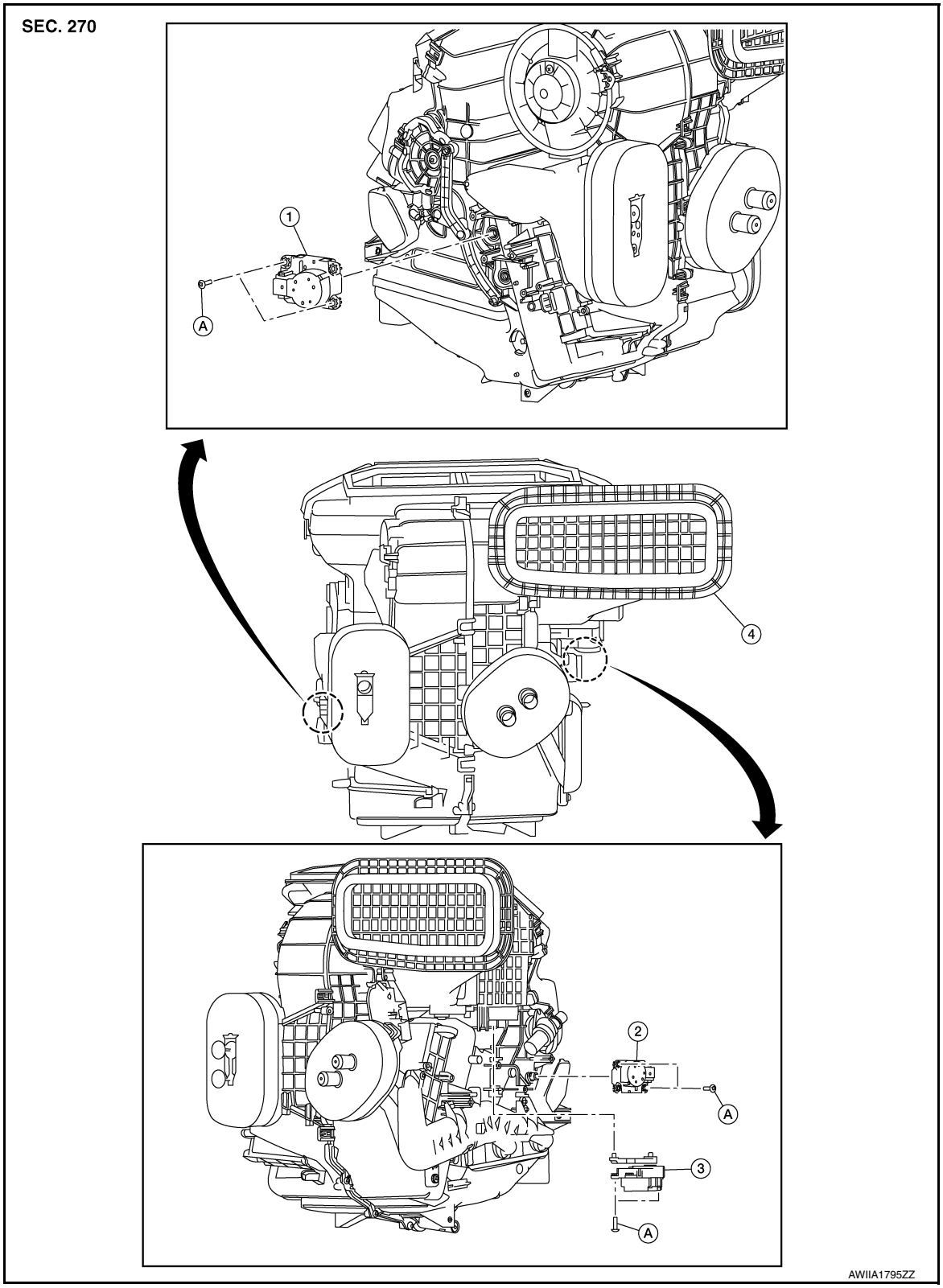
**CAUTION:**

- **Do not reuse O-ring.**
- **Apply A/C oil to new O-ring for installation.**
- **After charging refrigerant, check for leaks. Refer to HA-21, "Leak Test".**

# DOOR MOTOR

## Component Parts Location

INFOID:0000000010193913




1. Mode door motor
2. Air mix door motor
3. Intake door motor
4. Heating and cooling unit assembly
A. Screw

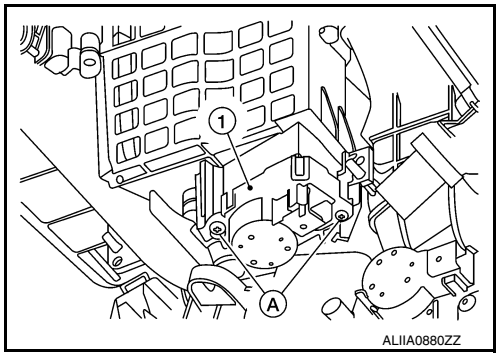
## INTAKE DOOR MOTOR

### INTAKE DOOR MOTOR : Removal and Installation

INFOID:0000000010193914

REMOVAL

1. Remove front foot duct (LH). Refer to VTL-10, "FRONT FOOT DUCT : Removal and Installation".
2. Disconnect the harness connector from the intake door motor.
3. Remove screws (A) and intake door motor (1).




INSTALLATION

Installation is in the reverse order of removal.

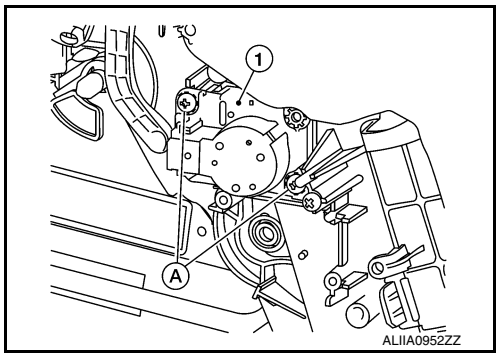
## MODE DOOR MOTOR

### MODE DOOR MOTOR : Removal and Installation

INFOID:0000000010193915

REMOVAL

1. Remove front foot duct (RH). Refer to VTL-10, "FRONT FOOT DUCT : Removal and Installation".
2. Disconnect the harness connector from the mode door motor.
3. Remove screws (A) and mode door motor (1).




INSTALLATION

Installation is in the reverse order of removal.

## AIR MIX DOOR MOTOR

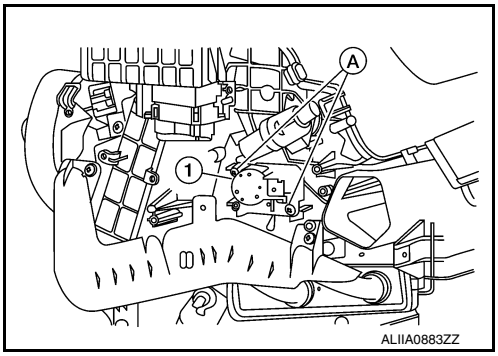
### AIR MIX DOOR MOTOR : Removal and Installation

INFOID:0000000010193916

REMOVAL

1. Remove front foot duct (LH). Refer to VTL-10, "FRONT FOOT DUCT : Removal and Installation".
2. Disconnect the harness connector from the air mix door motor.

3. Remove screws (A) and air mix door motor (1).




## INSTALLATION

Installation is in the reverse order of removal.

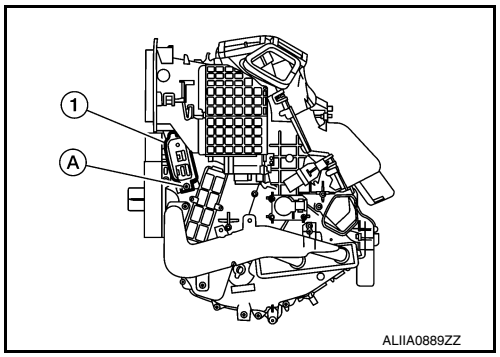
# VARIABLE BLOWER CONTROL

## Removal and Installation

INFOID:0000000010193944

### REMOVAL

1. Remove center console side finisher (LH). Refer to IP-18, "Exploded View".
2. Disconnect the harness connector from the variable blower control.
3. Remove screw (A) and variable blower control (1).




### INSTALLATION

Installation is in the reverse order of removal.