

SECTION HAC

HEATER & AIR CONDITIONING CONTROL SYSTEM

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PRECAUTION

PRECAUTIONS

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

INFOID:000000008833644

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 3 minutes before performing any service.

Precaution Necessary for Steering Wheel Rotation After Battery Disconnect

INFOID:000000008833645

NOTE:

- Before removing and installing any control units, first turn the push-button ignition switch to the LOCK position, then disconnect both battery cables.
- After finishing work, confirm that all control unit connectors are connected properly, then re-connect both battery cables.
- Always use CONSULT to perform self-diagnosis as a part of each function inspection after finishing work. If a DTC is detected, perform trouble diagnosis according to self-diagnosis results.

This vehicle is equipped with a push-button ignition switch and a steering lock unit.

If the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

If turning the steering wheel is required with the battery disconnected or discharged, follow the procedure below before starting the repair operation.

OPERATION PROCEDURE

1. Connect both battery cables.
 - NOTE:**
Supply power using jumper cables if battery is discharged.
2. Carry the Intelligent Key or insert it to the key slot and turn the push-button ignition switch to ACC position. (At this time, the steering lock will be released.)
3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
4. Perform the necessary repair operation.
5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the push-button ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the push-button ignition switch is turned to LOCK position.)
6. Perform self-diagnosis check of all control units using CONSULT.

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PRECAUTIONS

< PRECAUTION >

[AUTOMATIC AIR CONDITIONER]

Precaution for Work

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- 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.

Working with HFC-134a (R-134a)

INFOID:000000008833647

WARNING:

- **CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. If the refrigerants are mixed compressor failure is likely to occur. Refer to [HA-25, "Inspection"](#). To determine the purity of HFC-134a (R-134a) in the vehicle and recovery tank, use Refrigerant Recovery/Recycling Recharging equipment and Refrigerant Identifier.**
- **Use only specified oil for the HFC-134a (R-134a) A/C system and HFC-134a (R-134a) components. If oil other than that specified is used, compressor failure is likely to occur.**
- **The specified HFC-134a (R-134a) oil rapidly absorbs moisture from the atmosphere. The following handling precautions must be observed:**
 - **When removing refrigerant components from a vehicle, immediately cap (seal) the component to minimize the entry of moisture from the atmosphere.**
 - **When installing refrigerant components to a vehicle, do not remove the caps (unseal) until just before connecting the components. Connect all refrigerant loop components as quickly as possible to minimize the entry of moisture into system.**
 - **Only use the specified oil from a sealed container. Immediately reseal containers of oil. Without proper sealing, oil will become moisture saturated and should not be used.**
 - **Avoid breathing A/C refrigerant and oil vapor or mist. Exposure may irritate eyes, nose and throat. Remove HFC-134a (R-134a) from the A/C system using certified service equipment meeting requirements of SAE J2210 [HFC-134a (R-134a) recycling equipment], or J2209 [HFC-134a (R-134a) recycling equipment], If accidental system discharge occurs, ventilate work area before resuming service. Additional health and safety information may be obtained from refrigerant and oil manufacturers.**
 - **Do not allow A/C oil to come in contact with styrofoam parts. Damage may result.**

CONTAMINATED REFRIGERANT

If a refrigerant other than pure HFC-134a (R-134a) is identified in a vehicle, your options are:

- Explain to the customer that environmental regulations prohibit the release of contaminated refrigerant into the atmosphere.
- Explain that recovery of the contaminated refrigerant could damage your service equipment and refrigerant supply.
- Suggest the customer return the vehicle to the location of previous service where the contamination may have occurred.
- If you choose to perform the repair, recover the refrigerant using only **dedicated equipment and containers. Do not recover contaminated refrigerant into your existing service equipment.** If your facility does not have dedicated recovery equipment, you may contact a local refrigerant product retailer for available ser-

PRECAUTIONS

[AUTOMATIC AIR CONDITIONER]

< PRECAUTION >

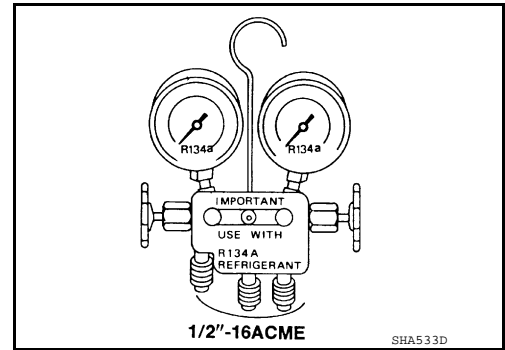
- vice. This refrigerant must be disposed of in accordance with all federal and local regulations. In addition, replacement of all refrigerant system components on the vehicle is recommended.
- If the vehicle is within the warranty period, the air conditioner warranty is void. Please contact NISSAN Customer Affairs for further assistance.

Precaution for Service Equipment

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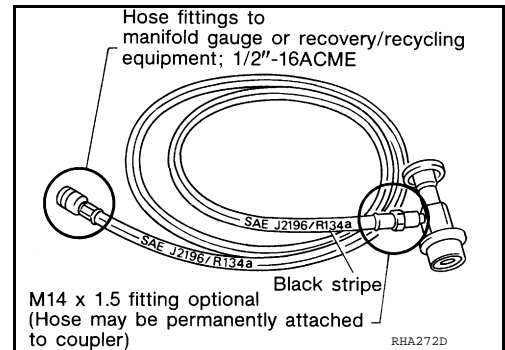
MANIFOLD GAUGE SET

Be certain that the gauge face indicates R-134a or 134a. Make sure the gauge set has 1/2"-16 ACME threaded connections for service hoses. Confirm the set has been used only with refrigerant HFC-134a (R-134a) along with specified oil.



SERVICE HOSES

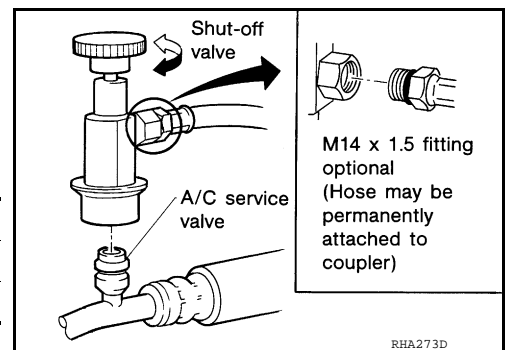
Be certain that the service hoses display the markings described (colored hose with black stripe). All hoses must include positive shut-off devices (either manual or automatic) near the end of the hoses opposite the manifold gauge.



SERVICE COUPLERS

Do not attempt to connect HFC-134a (R-134a) service couplers to a CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers will not properly connect to the CFC-12 (R-12) system. However, if an improper connection is attempted, discharging and contamination may occur.

Shut-off valve rotation	A/C service valve
Clockwise	Open
Counterclockwise	Close



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PREPARATION

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[AUTOMATIC AIR CONDITIONER]

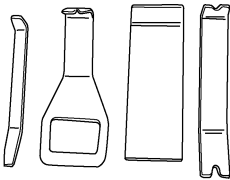
PREPARATION

PREPARATION

Special Service Tool


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The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

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

Commercial Service Tool

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(Kent-Moore No.) Tool name	Description
(—) Power tool  PIIB1407E	Loosening nuts, screws and bolts

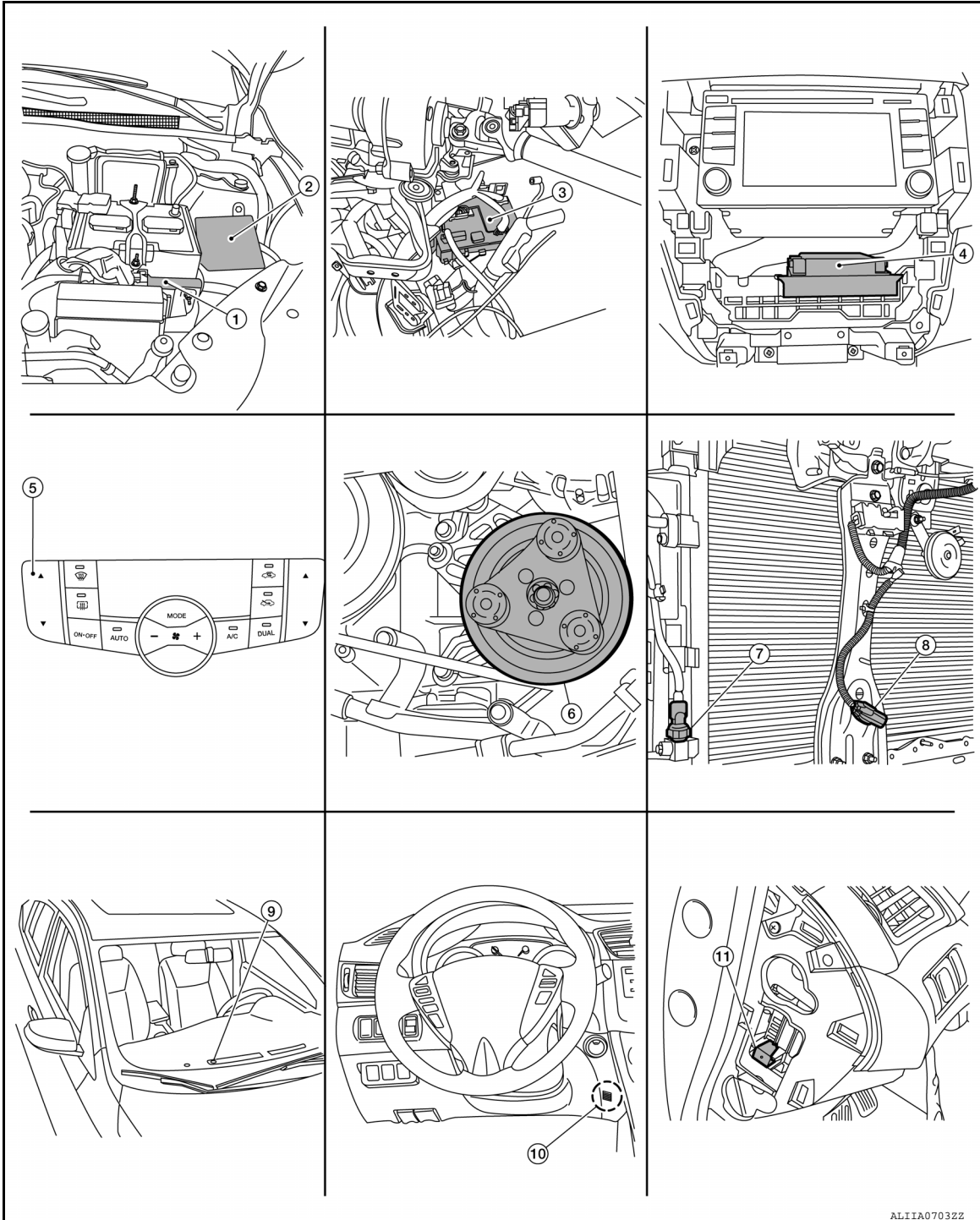
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SYSTEM DESCRIPTION

COMPONENT PARTS

Component Part Location

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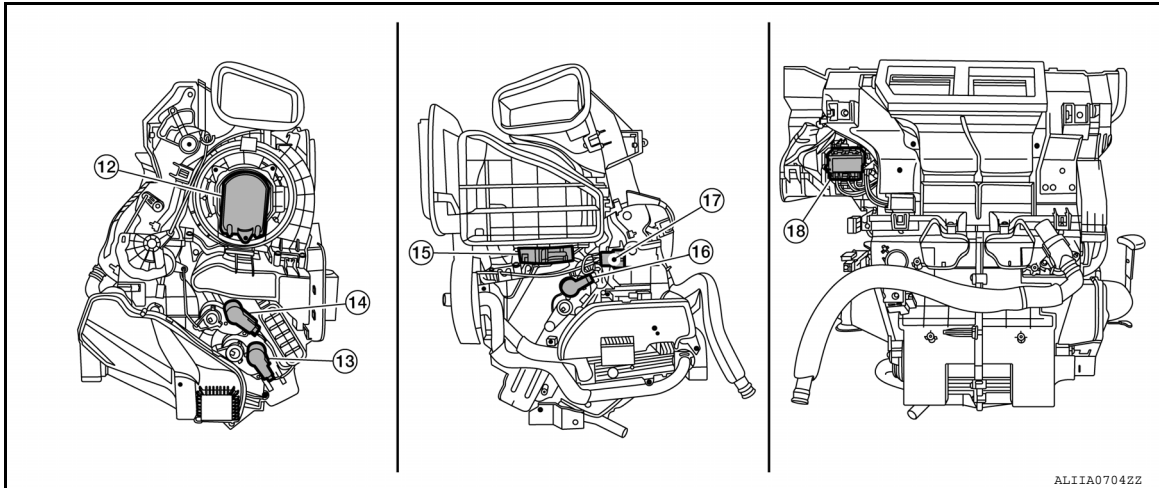


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COMPONENT PARTS

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[AUTOMATIC AIR CONDITIONER]



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|--|------------------------|--|
| 1. ECM | 2. IPDM E/R | 3. BCM (view with instrument panel removed) |
| 4. A/C auto amp. (view with A/C switch assembly removed) | 5. A/C switch assembly | 6. A/C Compressor |
| 7. Refrigerant pressure sensor (view with front bumper fascia removed) | 8. Ambient sensor | 9. Sunload sensor |
| 10. In-vehicle sensor | 11. Blower motor relay | 12. Blower motor (view with front A/C assembly removed from vehicle) |
| 13. Air mix door motor RH | 14. Mode door motor | 15. Intake door motor |
| 16. Air mix door motor LH | 17. Intake sensor | 18. Variable blower control |

Component Description

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Component	Description
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.
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.
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.
Air mix door motor LH	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.
Air mix door motor RH	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 RH receives position commands from the A/C auto amp.
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.
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.
Blower motor	The blower motor varies the speed at which the air flows through the ventilation system.
Blower motor relay	The blower motor relay controls the flow of current to fuse 20, 21 and 22 in the Fuse Block (J/B). The relay is connected directly to ground, and is energized when the ignition switch is in the ON or START position.

COMPONENT PARTS

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONER]

Component	Description
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. The ECM shares the refrigerant pressure sensor signal, engine RPM, and engine coolant temperature with the A/C auto amp. via CAN communication line.
Fuse Block (J/B)	Located in the passenger compartment, behind the left lower IP, the Fuse Block (J/B) contains the blower motor relay and several fuses required for the air conditioner control system.
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. At times the A/C auto amp. may command partial fresh or recirculation based on evaporator or coolant temperatures. The intake door motor receives position commands from the A/C auto amp. and reports actual door position back via an LCU (Local Control Unit) installed inside the motor. The LCU reads the door position from a Position Balanced Resistor (PBR), also part of the motor, and returns that information to the A/C auto amp. The LCU switches the polarity of the circuits connected to the DC motor to drive the motor forward or backward as requested by the A/C auto amp.
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.
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.
IPDM E/R	Refer to PCS-7. "RELAY CONTROL SYSTEM : System Description" (with Intelligent Key system) or PCS-35. "RELAY CONTROL SYSTEM : System Description" (without Intelligent Key system).
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 FOOT position can be set to allow some airflow through to the defroster vent, or to completely block the defroster vent using the CONSULT. The mode door motor receives position commands from the A/C auto amp.
Refrigerant pressure sensor	Refer to EC-29. "Refrigerant Pressure Sensor" .
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.

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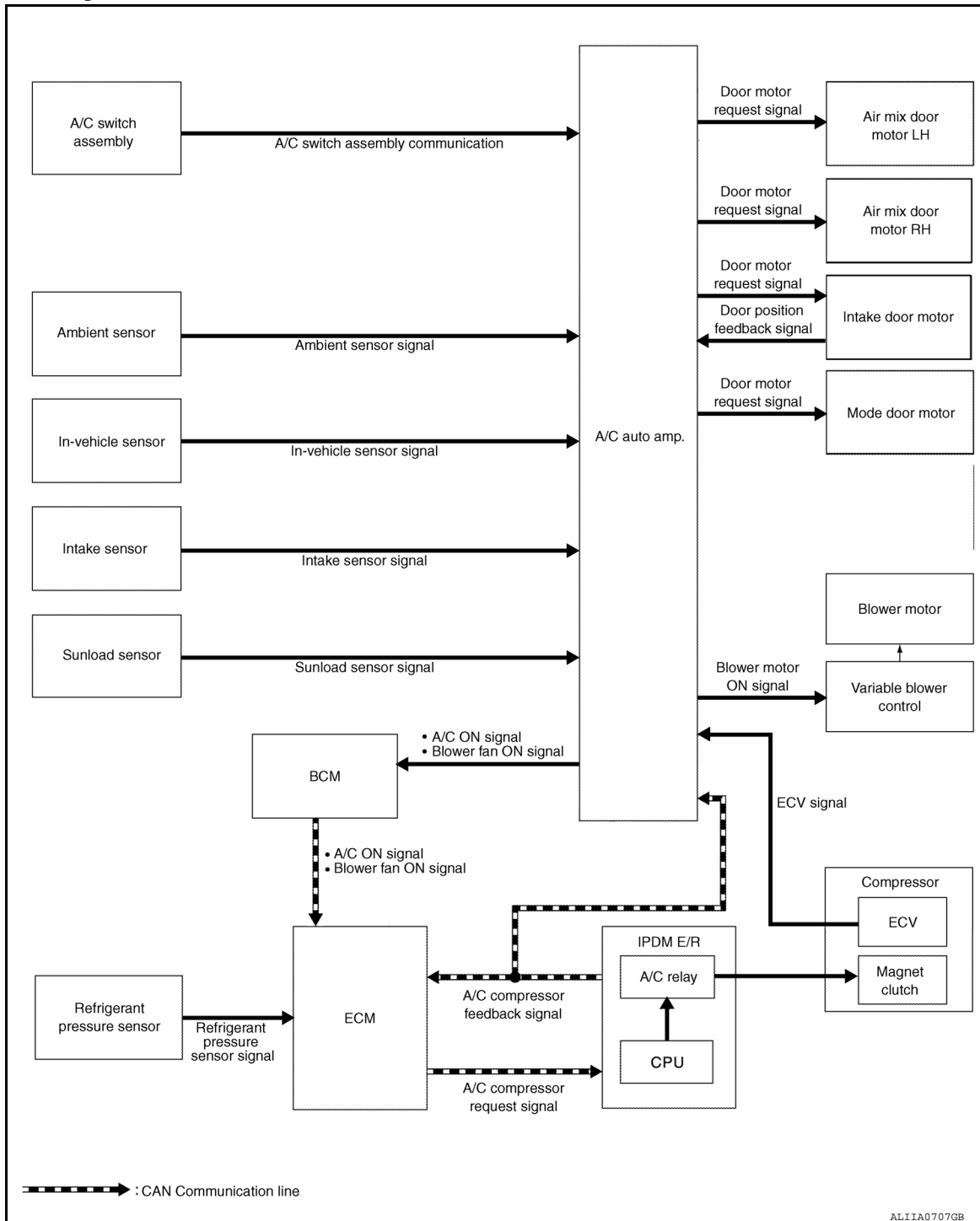
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[AUTOMATIC AIR CONDITIONER]

SYSTEM

System Diagram

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System Description

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- 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-13, "Air Flow Control"](#)
- [HAC-14, "Air Inlet Control"](#)
- [HAC-15, "Air Outlet Control"](#)

SYSTEM

[AUTOMATIC AIR CONDITIONER]

< SYSTEM DESCRIPTION >

- [HAC-15, "Compressor Control"](#)
- [HAC-15, "Door Control"](#)
- [HAC-20, "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 [EC-47, "COOLING FAN CONTROL : System Description"](#).
- Air conditioning cut control
Refer to [EC-46, "AIR CONDITIONING CUT CONTROL : System Description"](#).

Control by IPDM E/R

- Relay control
Refer to [PCS-7, "RELAY CONTROL SYSTEM : System Description"](#) (with Intelligent Key system) or [PCS-35, "RELAY CONTROL SYSTEM : System Description"](#) (without Intelligent Key system).
- Cooling fan control
Refer to [EC-47, "COOLING FAN CONTROL : 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:000000008832712

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.

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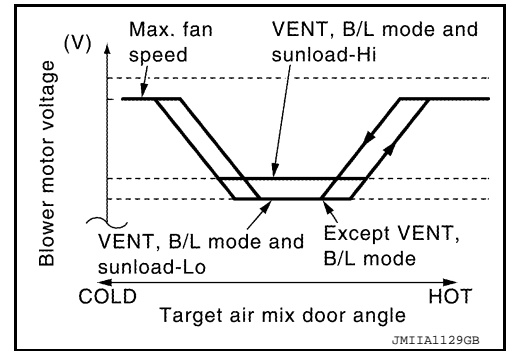
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SYSTEM

< SYSTEM DESCRIPTION >

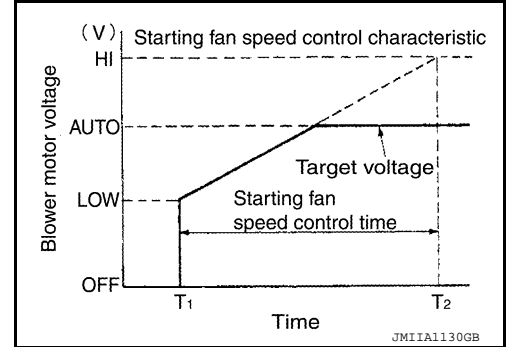
- When air outlet is VENT or B/L, the minimum air flow is changed depending on sunload.

[AUTOMATIC AIR CONDITIONER]



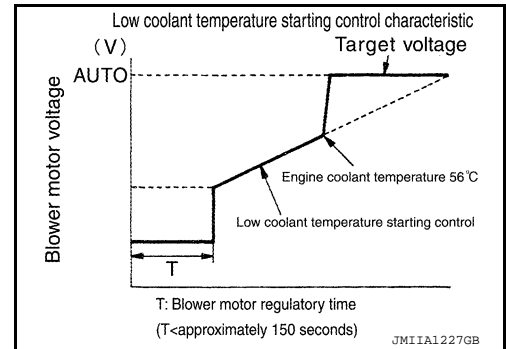
STARTING AIR FLOW CONTROL

- 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.

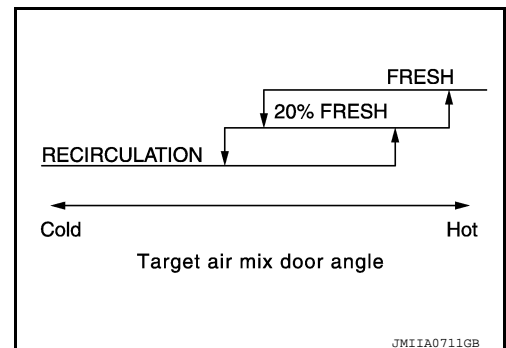
FAN SPEED CONTROL AT DOOR MOTOR OPERATION

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:000000008832713

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.



SYSTEM

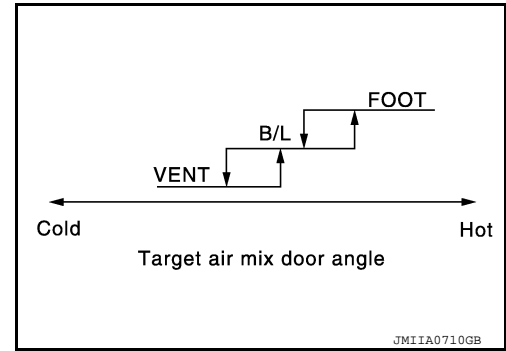
< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONER]

Air Outlet Control

INFOID:000000008832714

- 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:000000008832715

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.

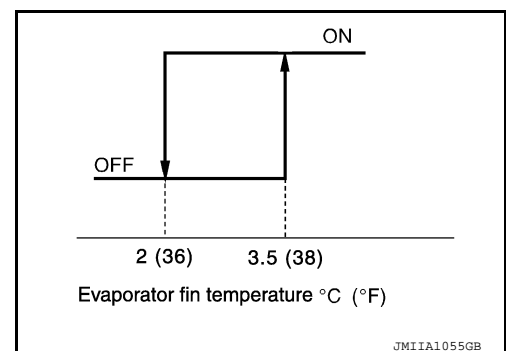
- 3.12 MPa (31.82 kg/cm², 452.4 psi) or more (When the engine speed is less than 1,500 rpm)
- 2.74 MPa (27.95 kg/cm², 397.3 psi) or more (When the engine speed is 1,500 rpm or more)
- 0.14 MPa (1.43 kg/cm², 20.3 psi) or less

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-46. "AIR CONDITIONING CUT CONTROL : System Description"](#).

Door Control

INFOID:000000008832716

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.

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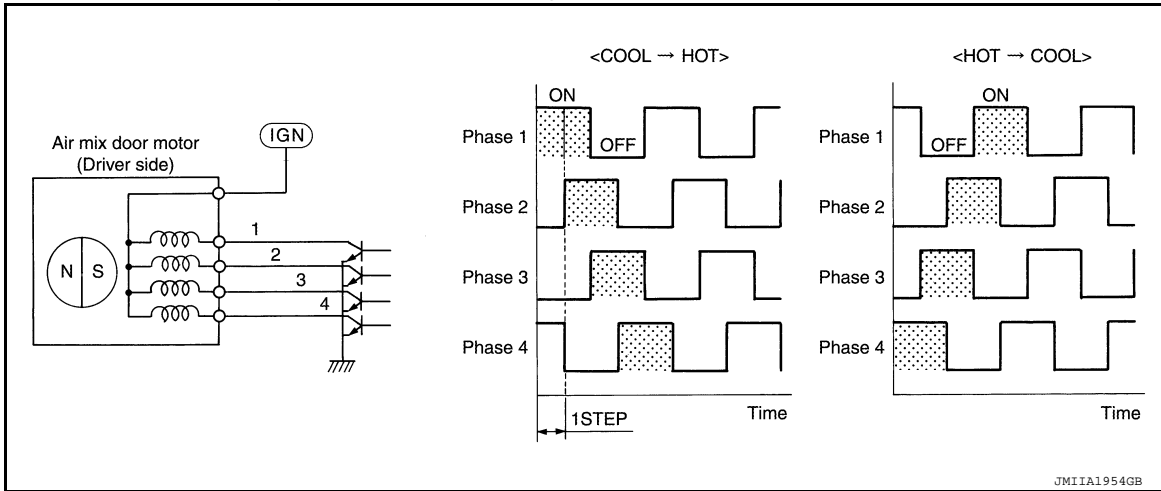
< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONER]

- 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.



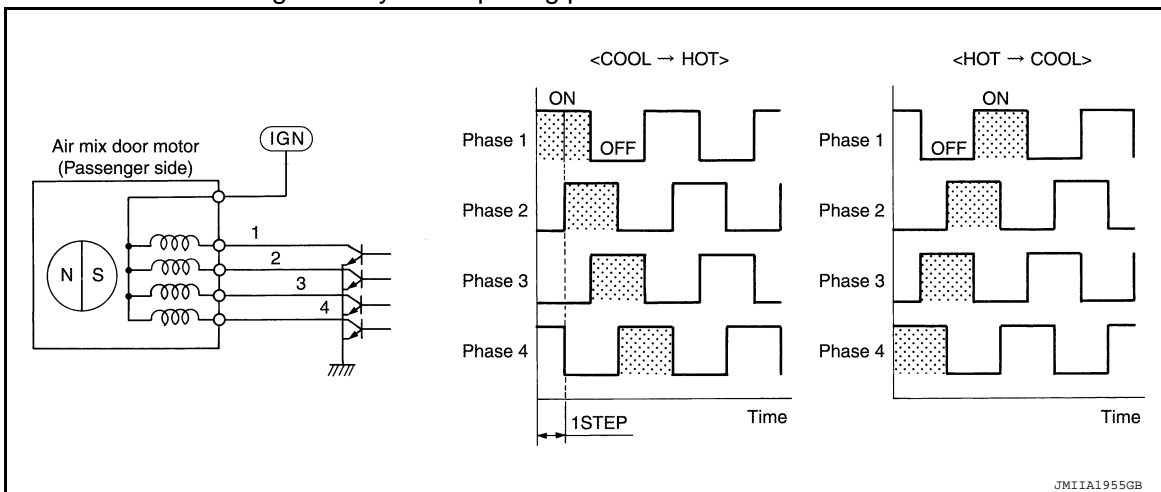
AIR MIX DOOR MOTOR (PASSENGER SIDE)

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

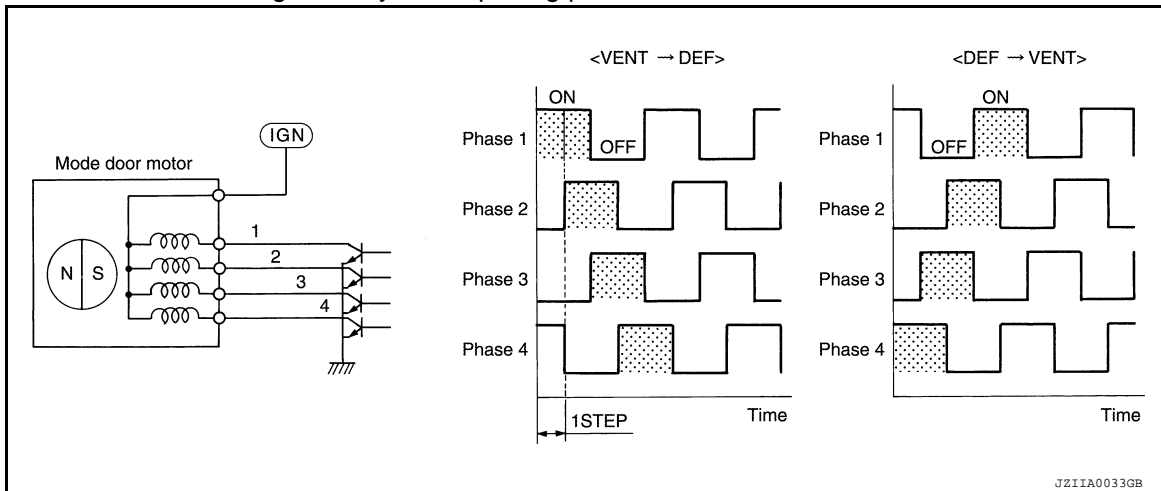
- The 4 drive coils are excited in sequence in order to drive the motor.

SYSTEM

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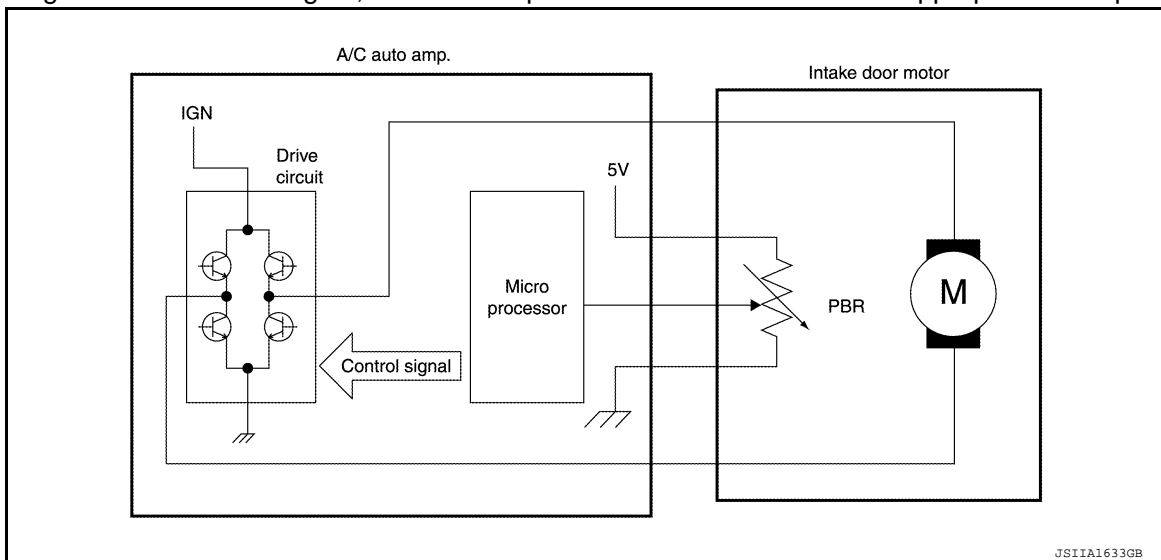
[AUTOMATIC AIR CONDITIONER]

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



INTAKE DOOR MOTOR

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



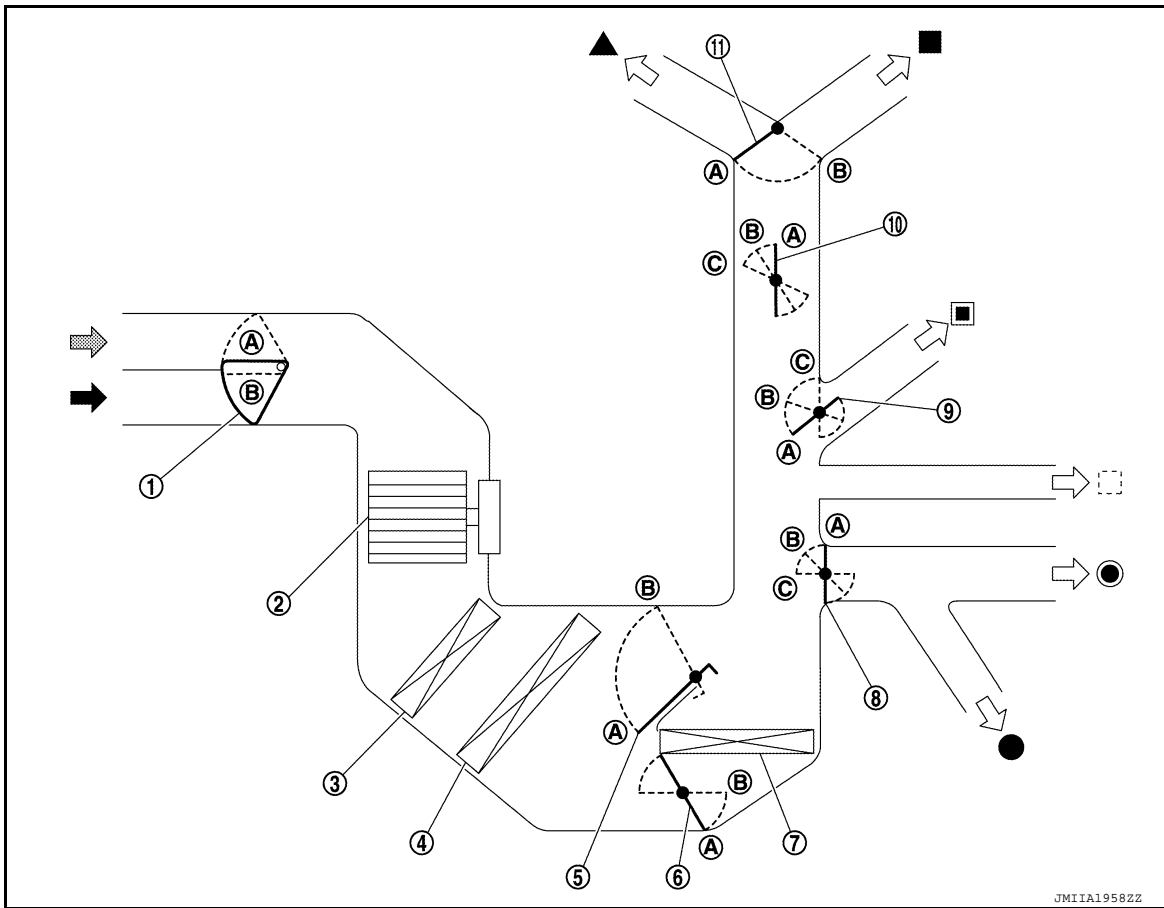
SWITCHES AND THEIR CONTROL FUNCTION

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[AUTOMATIC AIR CONDITIONER]



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|----------------------|--|--|
| ① Intake door | ② Blower motor | ③ Air conditioner filter |
| ④ Evaporator | ⑤ Upper air mix door (driver side/pas-
senger side) | ⑥ Lower air mix door (driver side/pas-
senger 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 |

SYSTEM

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONER]

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

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

AIR DISTRIBUTION

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[AUTOMATIC AIR CONDITIONER]

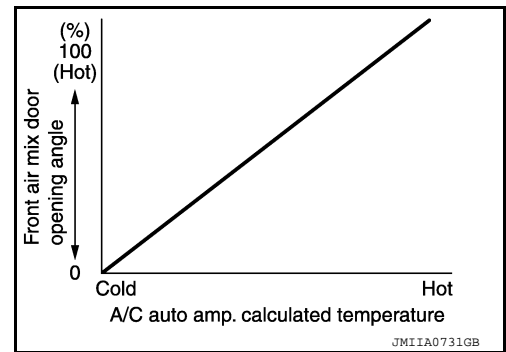
Discharge air flow

MODE/DEF set- ting position	Air outlet/distribution					
	Ventilator			Foot		Defroster
	Front		Rear	Front	Rear	
	Center	Side				
	48.7%	37.4%	13.9%	—	—	—
	26.6%	25.6%	13.2%	23.6%	11.0%	—
	—	15.6%	16.9%	32.9%	16.3%	18.3%
	—	13.4%	15.1%	27.0%	14.3%	30.2%
	—	17.5%	18.8%	—	—	63.7%

Temperature Control

INFOID:000000008832717

- 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:000000008832718

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

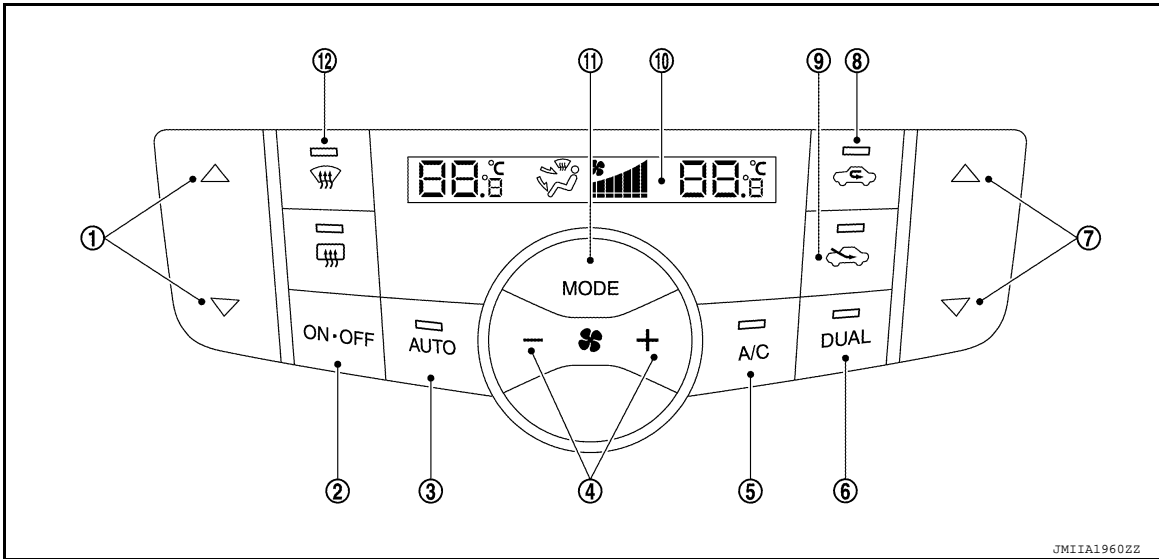
OPERATION

Switch Name and Function

INFOID:000000008832719

CONTROL OPERATION

A/C Switch Assembly



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

Switch Operation

Switch name	Function
Temperature control switch (driver side)	<p>Setting temperature can be set according to switch operation within a range between 18.0°C – 32.0°C at a rate of 0.5°C per adjustment.</p> <ul style="list-style-type: none"> Press ▲: Setting temperature increases Press ▼: Setting temperature decreases <p>NOTE: When air conditioning is OFF, setting temperature can be set only while air conditioning status screen (only when MODE switch is pressed) is indicated.</p>
ON-OFF switch	<p>Air conditioning turns ON ⇔ OFF each time this switch is pressed.</p> <ul style="list-style-type: none"> When this switch is pressed while air conditioning is ON <ul style="list-style-type: none"> Air conditioning turns OFF and becomes the following status, when this switch is pressed. <ul style="list-style-type: none"> Air outlet: FOOT Air flow: OFF Air inlet: Settings set before this switch is pressed A/C switch: OFF When this switch is pressed while air conditioning is OFF <ul style="list-style-type: none"> Air conditioning turns ON and operates according to the settings set before air conditioning is turned OFF, when this switch is pressed.

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OPERATION

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONER]

Switch name	Function
AUTO switch	<ul style="list-style-type: none"> • AUTO switch indicator turns ON and air conditioning becomes the following status, when this switch is pressed while air conditioning is ON. <ul style="list-style-type: none"> - Air outlet: Automatic control - Air flow: Automatic control - Air inlet: Settings set before this switch is pressed - A/C switch: ON • 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) <ul style="list-style-type: none"> - Air outlet: Automatic control - Air flow: Automatic control - Air inlet: Settings set before this switch is pressed - A/C switch: ON <p>NOTE: 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.</p>
Fan switch	<ul style="list-style-type: none"> • Air flow can be set within a range between 1st – 7th speed according to switch operation. <ul style="list-style-type: none"> - Press : Air flow increases - Press : Air flow decreases • Air conditioning turns ON and operates according to the following status, when this switch is pressed while air conditioning is OFF. <ul style="list-style-type: none"> - Air outlet: Automatic control - Air flow: 1st speed - Air inlet: Settings set before this switch is pressed - A/C switch: Settings set before air conditioning is turned OFF <p>NOTE: Automatic air flow control is cancelled (AUTO switch indicator turns OFF), when fan switch is pressed while AUTO switch indicator is ON.</p>
A/C switch	<p>Compressor control (switch indicator) changes between ON ⇔ OFF each time this switch is pressed while blower motor is operated.</p> <p>NOTE: A/C switch cannot be turned ON when blower motor is OFF.</p>
DUAL switch	<p>Left and right ventilation temperature separately control (switch indicator) changes between ON ⇔ OFF each time this switch is pressed while blower motor is operated.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Setting temperature for passenger side is the same as that for driver side when left and right ventilation temperature separately control is OFF. • DUAL switch operation is not accepted when DEF mode is ON.
Temperature control switch (passenger side)	<ul style="list-style-type: none"> • Left and right ventilation temperature separately control (DUAL switch indicator) turns ON according to switch operation. Air flow temperature of passenger side can be changed without changing air flow temperature of driver side. • Setting temperature can be set according to switch operation within a range between 18.0°C – 32.0°C at a rate of 0.5°C per adjustment. <ul style="list-style-type: none"> - Press ▲: Setting temperature increases - Press ▼: Setting temperature decreases <p>NOTE:</p> <ul style="list-style-type: none"> • When air conditioning is OFF, setting temperature can be set only while air conditioning status screen (only when MODE switch is pressed) is indicated. • Temperature control switch (passenger side) operation is not accepted when DEF mode is ON.
REC switch	<p>Switch indicator turns ON and air inlet is set to recirculation (REC), when this switch is pressed.</p> <p>NOTE: Air inlet can be changed when air conditioning is in OFF status.</p>
FRE switch	<p>Switch indicator turns ON and air inlet is set to fresh air intake (FRE), when this switch is pressed.</p> <p>NOTE: Air inlet can be changed when air conditioning is in OFF status.</p>

OPERATION

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONER]

Switch name	Function	
MODE switch	Air outlet changes from VENT⇒ B/L ⇒ FOOT ⇒ D/F ⇒ VENT each time this switch is pressed.	A
	NOTE: <ul style="list-style-type: none"> • Air outlet can be changed when air conditioning is in OFF status. • Automatic air outlet control is cancelled (AUTO switch indicator turns OFF), when MODE switch is pressed while AUTO switch indicator is ON. 	B
DEF switch	DEF mode (switch indicator) changes between ON ⇔ OFF each time switch is pressed.	C
	<ul style="list-style-type: none"> • When this switch is pressed while air conditioning is ON - Air conditioning becomes the following status when DEF mode is turned ON. • Air outlet: DEF • Air flow: Settings set before DEF mode is turned ON • Air inlet: Fresh air intake • A/C switch: ON - Air conditioning becomes the following status when DEF mode is turned OFF. • Air outlet: Settings set before DEF mode is turned ON • Air flow: Settings set before DEF mode is turned OFF • Air inlet: Settings set before DEF mode is turned OFF • A/C switch: Settings set before DEF mode is turned OFF • When this switch is pressed while air conditioning is OFF - Air conditioning turns ON and operates in the following status, when DEF mode is turned ON. • Air outlet: DEF • Air flow: Automatic control • Air inlet: Fresh air intake • A/C switch: ON - Air conditioning becomes the following status when DEF mode is turned OFF. • Air outlet: Automatic control • Air flow: Settings set before DEF mode is turned OFF • Air inlet: Settings set before DEF mode is turned OFF • A/C switch: Settings set before DEF mode is turned OFF 	D E F G
	NOTE: When DEF mode is turned ON while AUTO switch indicator is turned ON, AUTO switch indicator turns OFF. However, automatic air flow control continues.	H
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DIAGNOSIS SYSTEM (A/C AUTO AMP.)

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[AUTOMATIC AIR CONDITIONER]

DIAGNOSIS SYSTEM (A/C AUTO AMP.)

Description

INFOID:000000009018251

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
		Auto active test

CONSULT Function (HVAC)

INFOID:000000008832720

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-38, "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.
B257B	AMB TEMP SEN (SHORT)	Detected temperature at ambient sensor 55°C (131°F) or more	<ul style="list-style-type: none"> Ambient sensor A/C auto amp. Harness and connector (Ambient sensor circuit is open, or there is a short in the circuit)
B257C	AMB TEMP SEN (OPEN)	Detected temperature at ambient sensor -30°C (-22°F) or less	
B2578	IN-CAR SENSOR (OUT OF RANGE [LOW])	Detected temperature at in-vehicle sensor 55°C (131°F) or more	<ul style="list-style-type: none"> In-vehicle sensor A/C auto amp. Harness and connector (In-vehicle sensor circuit is open, or there is a short in the circuit)
B2579	IN-CAR SENSOR (OUT OF RANGE [HI])	Detected temperature at in-vehicle sensor -30°C (-22°F) or less	

DIAGNOSIS SYSTEM (A/C AUTO AMP.)

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONER]

DTC	Items (CONSULT screen terms)	Diagnostic item is detected when...	Possible cause	
B2581	EVAP TEMP SEN (SHORT)	Detected temperature at intake sensor 55°C (131°F) or more	<ul style="list-style-type: none"> Intake sensor A/C auto amp. Harness and connector (Intake sensor circuit is open, or there is a short in the circuit) 	A
B2582	EVAP TEMP SEN (OPEN)	Detected temperature at intake sensor -30°C (-22°F) or less		B
B2630*	SUNLOAD SEN (SHORT)	Detected calorie at sunload sensor 1395 w/m ² (1200 kcal/m ² ·h)	<ul style="list-style-type: none"> Sunload sensor A/C auto amp. Harness and connector (Sunload sensor circuit is open, or there is a short in the circuit) 	C
B2631*	SUNLOAD SEN (OPEN)	Detected calorie at sunload sensor 0 w/m ² (0 kcal/m ² ·h)		D
B27A2	DR AIRMIX ACTR	Short or open circuit of air mix door motor drive signal terminal 1.	<ul style="list-style-type: none"> Air mix door motor LH A/C auto amp. Harness and connector (Air mix door motor is open or shorted) 	E
B27A3		Short or open circuit of air mix door motor drive signal terminal 2.		F
B27A4		Short or open circuit of air mix door motor drive signal terminal 3.		
B27A5		Short or open circuit of air mix door motor drive signal terminal 4.		
B27AA	AS AIRMIX ACTR	Short or open circuit of air mix door motor drive signal terminal 1.	<ul style="list-style-type: none"> Air mix door motor RH A/C auto amp. Harness and connector (Air mix door motor is open or shorted) 	G
B27AB		Short or open circuit of air mix door motor drive signal terminal 2.		H
B27AC		Short or open circuit of air mix door motor drive signal terminal 3.		
B27AD		Short or open circuit of air mix door motor drive signal terminal 4.		
B27A0	INTAKE ACTR	PBR opening angle of intake door motor is 50% or more. (PBR feedback signal voltage of intake door motor is 2.5V or more)	<ul style="list-style-type: none"> Intake door motor A/C auto amp. Harness and connector (Intake door motor is open or shorted) 	J
B27A1		PBR opening angle of intake door motor is 30% or less. (PBR feedback signal voltage of intake door motor is 1.5V or less)		K
B27A6	MODE DOOR ACTR	Short or open circuit of air mix door motor drive signal terminal 1.	<ul style="list-style-type: none"> Mode door motor A/C auto amp. Harness and connector (Mode door motor is open or shorted) 	L
B27A7		Short or open circuit of air mix door motor drive signal terminal 2.		M
B27A8		Short or open circuit of air mix door motor drive signal terminal 3.		
B27A9		Short or open circuit of air mix door motor drive signal terminal 4.		N

*: 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

DIAGNOSIS SYSTEM (A/C AUTO AMP.)

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONER]

Monitor item [Unit]	Description
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.
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.
SUNL SEN CAL [w/m ²]	Sunload 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.
XM	Target discharge air temperature judged by A/C auto amp. according to the temperature setting and the value from each sensor
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-55. "Temperature Setting Trimmer"
REC MEMORY SET (REC memory function setting)	<ul style="list-style-type: none"> 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. If "With" was set, the REC switch will be ON (recirculation) when turning the ignition switch to the ON position again. If "Without" was set, the air inlets will be controlled automatically when turning the ignition switch to the ON position again. 	HAC-56. "Inlet Port Memory Function (REC)"
FRE MEMORY SET (FRE memory function setting)	<ul style="list-style-type: none"> 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. If "With" was set, the FRE switch will be ON (fresh air intake) when turning the ignition switch to the ON position again. If "Without" was set, the air inlets will be controlled automatically when turning the ignition switch to the ON position again. 	HAC-55. "Inlet Port Memory Function (FRE)"
Door Motor Starting Position Reset	Starting position reset of air mix door motor and mode door motor can be performed.	HAC-57. "Work Procedure"
TARGET EVAPORATOR TEMP UPPER LIMIT SETTING	Set the target evaporator upper temperature limit.	HAC-56. "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
ALL SEG	All switch indicator and display indication are turned ON.
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

DIAGNOSIS SYSTEM (A/C AUTO AMP.)

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONER]

	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	REC	20%FRE	FRE	FRE	FRE
Air mix door position (driver & passenger side)	FULL COLD	FULL COLD	FULL COLD	50%	50%	FULL HOT	FULL HOT
Blower motor (Applied voltage)	30%	30%	60%	HI	HI	60%	HI
A/C compressor (Magnet clutch)	ON	ON	ON	ON	OFF	OFF	ON
ECV duty	80%	80%	40%	40%	0%	0%	90%
Blower fan ON signal	ON	ON	ON	ON	OFF	OFF	ON

NOTE:

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

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DIAGNOSIS SYSTEM (BCM) (WITH INTELLIGENT KEY SYSTEM)

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONER]

DIAGNOSIS SYSTEM (BCM) (WITH INTELLIGENT KEY SYSTEM)

COMMON ITEM

COMMON ITEM : CONSULT Function (BCM - COMMON ITEM)

INFOID:000000009018252

APPLICATION ITEM

CONSULT performs the following functions via CAN communication with BCM.

Direct Diagnostic Mode	Description
ECU identification	The BCM part number is displayed.
Self Diagnostic Result	The BCM self diagnostic results are displayed.
Data Monitor	The BCM input/output data is displayed in real time.
Active Test	The BCM activates outputs to test components.
Work support	The settings for BCM functions can be changed.
Configuration	<ul style="list-style-type: none"> • The vehicle specification can be read and saved. • The vehicle specification can be written when replacing BCM.
CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication is displayed.

SYSTEM APPLICATION

BCM can perform the following functions.

System	Sub System	Direct Diagnostic Mode						
		ECU identification	Self Diagnostic Result	Data Monitor	Active Test	Work support	Configuration	CAN DIAG SUPPORT MNTR
Door lock	DOOR LOCK		×	×	×	×		
Rear window defogger	REAR DEFOGGER			×	×			
Warning chime	BUZZER			×	×			
Interior room lamp timer	INT LAMP			×	×	×		
Exterior lamp	HEAD LAMP			×	×	×		
Wiper and washer	WIPER			×	×	×		
Turn signal and hazard warning lamps	FLASHER			×	×	×		
Air conditioner	AIR CONDITIONER			×				
Intelligent Key system	INTELLIGENT KEY		×	×	×	×		
Combination switch	COMB SW			×				
BCM	BCM	×	×			×	×	×
Immobilizer	IMMU		×	×	×	×		
Interior room lamp battery saver	BATTERY SAVER			×	×	×		
Trunk open	TRUNK			×				
Vehicle security system	THEFT ALM			×	×	×		
RAP system	RETAINED PWR			×				
Signal buffer system	SIGNAL BUFFER			×				
TPMS	AIR PRESSURE MONITOR		×	×	×	×		

DIAGNOSIS SYSTEM (BCM) (WITH INTELLIGENT KEY SYSTEM)

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONER]

AIR CONDITIONER

AIR CONDITIONER : CONSULT Function (BCM - AIR CONDITIONER)

INFOID:000000009018253

DATA MONITOR

Monitor Item [Unit]	Description
FAN ON SIG [On/Off]	Indicates condition of fan switch.
AIR COND SW [On/Off]	Indicates condition of A/C switch.

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DIAGNOSIS SYSTEM (IPDM E/R) (WITH INTELLIGENT KEY SYSTEM)

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONER]

DIAGNOSIS SYSTEM (IPDM E/R) (WITH INTELLIGENT KEY SYSTEM)

Diagnosis Description

INFOID:000000009018256

AUTO ACTIVE TEST

Description

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

- Front wiper (LO, HI)
- Parking lamp
- License plate lamp
- Tail lamp
- Front fog lamp
- Headlamp (LO, HI)
- A/C compressor (magnet clutch)
- Cooling fan

Operation Procedure

NOTE:

Never perform auto active test in the following conditions.

- Passenger door is open
- CONSULT is connected

1. Close the hood and lift the wiper arms from the windshield. (Prevent windshield damage due to wiper operation)

NOTE:

When auto active test is performed with hood opened, sprinkle water on windshield beforehand.

2. Turn the ignition switch OFF.
3. Turn the ignition switch ON, and within 20 seconds, press the driver door switch 10 times. Then turn the ignition switch OFF.
4. Turn the ignition switch ON within 10 seconds. After that the horn sounds once and the auto active test starts.
5. After a series of the following operations is repeated 3 times, auto active test is completed.

NOTE:

- When auto active test has to be cancelled halfway through test, turn the ignition switch OFF.
- When auto active test is not activated, door switch may be the cause. Check door switch. Refer to [DLK-97, "Component Inspection"](#).

Inspection in Auto Active Test

When auto active test is actuated, the following operation sequence is repeated 3 times.

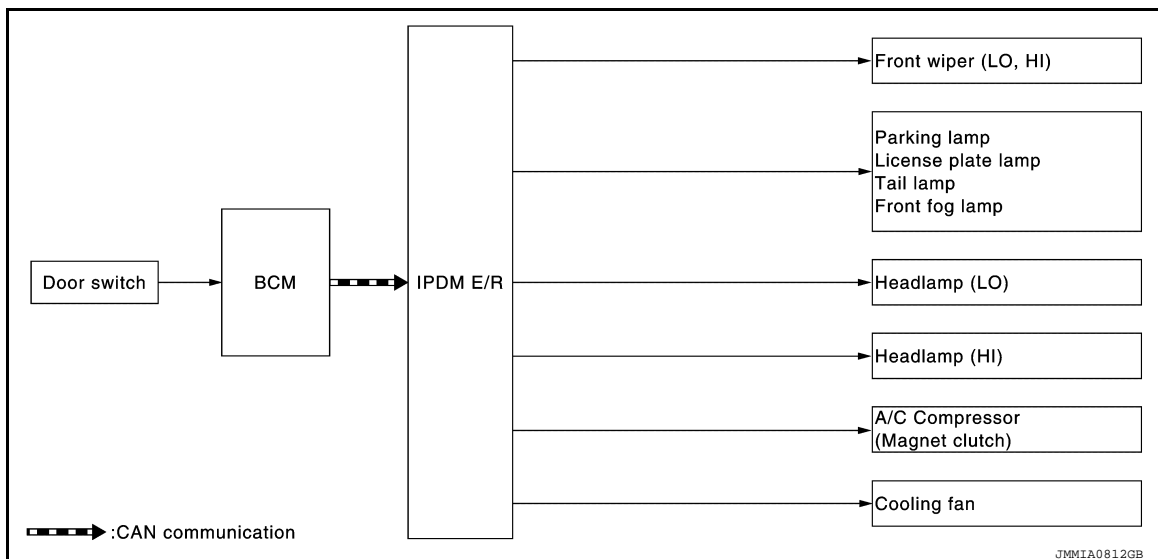
Operation sequence	Inspection location	Operation
1	Front wiper	LO for 5 seconds → HI for 5 seconds
2	<ul style="list-style-type: none">• Parking lamp• License plate lamp• Tail lamp• Front fog lamp	10 seconds
3	Headlamp	LO for 10 seconds → HI ON ⇔ OFF 5 times
4	A/C compressor (magnet clutch)	ON ⇔ OFF 5 times
5	Cooling fan	LO for 5 seconds → MID for 3 seconds → HI for 2 seconds

DIAGNOSIS SYSTEM (IPDM E/R) (WITH INTELLIGENT KEY SYSTEM)

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONER]

Concept of Auto Active Test



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

Diagnosis Chart in Auto Active Test

Symptom	Inspection contents	Possible cause
Any of the following components do not operate <ul style="list-style-type: none"> • Parking lamp • License plate lamp • Tail lamp • Front fog lamp • Headlamp (HI, LO) • Front wiper (HI, LO) 	Perform auto active test. Does the applicable system operate?	YES BCM signal input circuit
		NO <ul style="list-style-type: none"> • Lamp or motor • Lamp or motor ground circuit • Harness or connector between IPDM E/R and applicable system • IPDM E/R
A/C compressor does not operate	Perform auto active test. Does the magnet clutch operate?	YES <ul style="list-style-type: none"> • BCM signal input circuit • CAN communication signal between BCM and ECM • CAN communication signal between ECM and IPDM E/R
		NO <ul style="list-style-type: none"> • Magnet clutch • Harness or connector between IPDM E/R and magnet clutch • IPDM E/R
Cooling fan does not operate	Perform auto active test. Does the cooling fan operate?	YES <ul style="list-style-type: none"> • ECM signal input circuit • CAN communication signal between ECM and IPDM E/R
		NO <ul style="list-style-type: none"> • Cooling fan motor • Harness or connector between IPDM E/R and cooling fan motor • IPDM E/R

CONSULT Function (IPDM E/R)

INFOID:000000009018257

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.

DIAGNOSIS SYSTEM (IPDM E/R) (WITH INTELLIGENT KEY SYSTEM)

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONER]

Direct Diagnostic Mode	Description
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]	Main Signals	Description
MOTOR FAN REQ [%]	×	Indicates cooling fan speed signal received from ECM on CAN communication line
AC COMP REQ [On/Off]	×	Indicates A/C compressor request signal received from ECM on CAN communication line
TAIL&CLR REQ [On/Off]	×	Indicates position light request signal received from BCM on CAN communication line
HL LO REQ [On/Off]	×	Indicates low beam request signal received from BCM on CAN communication line
HL HI REQ [On/Off]	×	Indicates high beam request signal received from BCM on CAN communication line
FR FOG REQ [On/Off]	×	Indicates front fog light request signal received from BCM on CAN communication line
FR WIP REQ [Stop/1LOW/Low/Hi]	×	Indicates front wiper request signal received from BCM on CAN communication line
WIP AUTO STOP [STOP P/ACT P]	×	Indicates condition of front wiper auto stop signal
WIP PROT [Off/BLOCK]	×	Indicates condition of front wiper fail-safe operation
IGN RLY1 -REQ [On/Off]		Indicates ignition switch ON signal received from BCM on CAN communication line
IGN RLY [On/Off]	×	Indicates condition of ignition relay
PUSH SW [On/Off]		Indicates condition of push-button ignition switch
INTER/NP SW [On/Off]		Indicates condition of CVT shift position
ST RLY CONT [On/Off]		Indicates starter relay status signal received from BCM on CAN communication line
IHBT RLY -REQ [On/Off]		Indicates starter control relay signal received from BCM on CAN communication line
ST/INH RLY [Off/ ST /INH]		Indicates condition of starter relay and starter control relay
DETENT SW [On/Off]		Indicates condition of CVT shift selector (park position switch)
DTRL REQ [Off]		Indicates daytime light request signal received from BCM on CAN communication line
THFT HRN REQ [On/Off]		Indicates theft warning horn request signal received from BCM on CAN communication line
HORN CHIRP [On/Off]		Indicates horn reminder signal received from BCM on CAN communication line

ACTIVE TEST

Test item	Description
HORN	This test is able to check horn operation [On].
REAR DEFOGGER	This test is able to check rear window defogger operation [On/Off].
FRONT WIPER	This test is able to check wiper motor operation [Hi/Lo/Off].

DIAGNOSIS SYSTEM (IPDM E/R) (WITH INTELLIGENT KEY SYSTEM)

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONER]

Test item	Description
MOTOR FAN	This test is able to check cooling fan operation [4/3/2/1].
EXTERNAL LAMPS	This test is able to check external lamp operation [Fog/Hi/Lo/TAIL/Off].

CAN DIAG SUPPORT MNTR

Refer to [LAN-13, "CAN Diagnostic Support Monitor"](#).

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A/C AUTO AMP.

< ECU DIAGNOSIS INFORMATION >

[AUTOMATIC AIR CONDITIONER]

ECU DIAGNOSIS INFORMATION

A/C AUTO AMP.

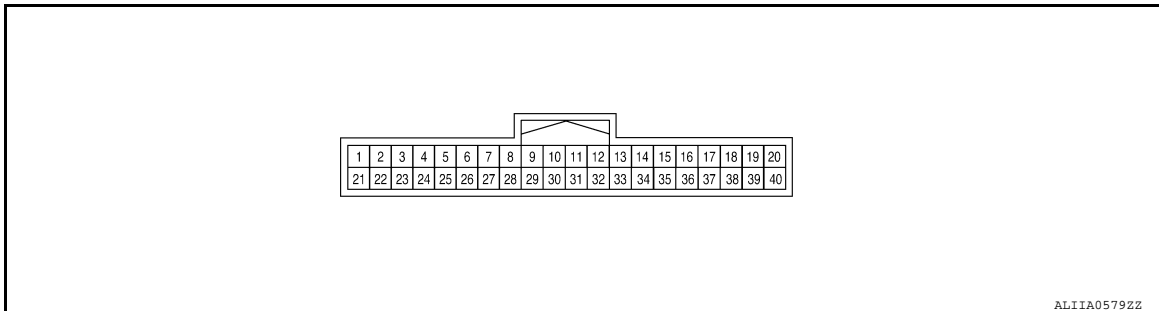
Reference Value

INFOID:000000008832721

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 (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)
SUNL SEN CAL	Ignition switch ON	—	0 - 1395 w/m ² (0 - 1200 kcal/m ² -h)
COMP REQ SIG	Engine: Run at idle after warming up	A/C switch: ON (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
FAN DUTY	Engine: Run at idle after warming up	Blower fan: ON	25 - 85%
		Blower fan: OFF	0%
XM	Ignition switch ON	—	-100 - 155
ENG COOL TEMP	Ignition switch ON	—	Values according to coolant temperature
VEHICLE SPEED	Driving	—	Equivalent to speedometer reading

TERMINAL LAYOUT



PHYSICAL VALUES

A/C AUTO AMP.

< ECU DIAGNOSIS INFORMATION >

[AUTOMATIC AIR CONDITIONER]

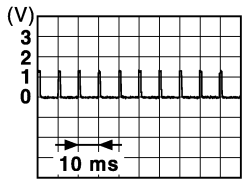
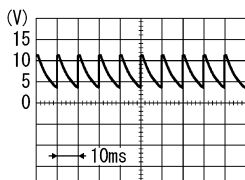
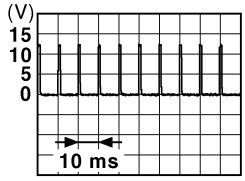
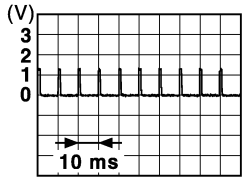
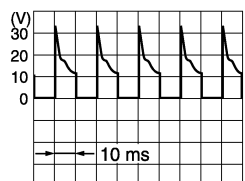
Terminal No. (Wire color)		Description		Condition		Value
+	-	Signal name	Input/ Output			
1 (GR)	30 (B)	ECV control signal	Output	Ignition switch ON	ACTIVE TEST (HVAC TEST: MODE4)	<p style="text-align: right; font-size: small;">SJIA1607E</p>
2 (LG)	30 (B)	In-vehicle sensor signal	Input	Ignition switch ON		0 – 4.8 V Output voltage varies with in-vehicle temperature
3 (L)	30 (B)	Intake sensor signal	Input	Ignition switch ON		0 – 4.8 V Output voltage varies with evaporator fin temperature
4 (GR)	30 (B)	Ambient sensor signal	Input	Ignition switch ON		0 – 4.8 V Output voltage varies with ambient temperature
5 (G)	30 (B)	Sunload sensor signal	Input	Ignition switch ON		0 – 4.8 V Output voltage varies with sunload amount
6 (L)	—	CAN-H	Input/ Output	—		—
7 (P)	—	CAN-L	Input/ Output	—		—
8 (W)	30 (B)	Intake door motor PBR power supply	Output	Ignition switch ON		4.8 – 5.2 V
9 (GR)	30 (B)	A/C auto amp. connection recognition signal	Output	Ignition switch ON		11 – 14 V
10 (L)	30 (B)	Sensor ground	—	Ignition switch ON		0 – 0.1 V
11 (LG)	30 (B)	Ignition power supply	Input	Ignition switch ON		11 – 14 V
12 (SB)	30 (B)	Battery power supply	Input	Ignition switch OFF		11 – 14 V
13 (V)	30 (B)	Power transistor control signal	Output	<ul style="list-style-type: none"> Ignition switch ON Blower motor: 1st speed (manual) 		<p style="text-align: right; font-size: small;">ZJIA0863J</p>

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A/C AUTO AMP.

< ECU DIAGNOSIS INFORMATION >

[AUTOMATIC AIR CONDITIONER]

Terminal No. (Wire color)		Description		Condition	Value						
+	-	Signal name	Input/ Output								
14 (LG)	30 (B)	Blower fan ON signal	Output	<ul style="list-style-type: none"> Ignition switch ON Blower motor: OFF 	 <p style="text-align: right; font-size: small;">JPMIA0941GB</p>						
				<ul style="list-style-type: none"> Ignition switch ON Blower motor: ON 	 <p style="text-align: right; font-size: small;">PK1B4960J</p>						
15 (Y)	30 (B)	A/C ON signal	Output	<ul style="list-style-type: none"> Ignition switch ON A/C switch: OFF (A/C indicator: OFF) 	 <p style="text-align: right; font-size: small;">JPMIA0012GB</p>						
				<ul style="list-style-type: none"> Ignition switch ON A/C switch: ON (A/C indicator: ON) 	 <p style="text-align: right; font-size: small;">JPMIA0941GB</p>						
16 (W)	30 (B)	RR DEF signal	Output	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td rowspan="2" style="width: 50px;">Defroster switch</td> <td>OFF</td> <td>0 V</td> </tr> <tr> <td>ON</td> <td>12 V</td> </tr> </table>	Defroster switch	OFF	0 V	ON	12 V		
Defroster switch	OFF	0 V									
	ON	12 V									
17 (BR)	30 (B)	A/MIX drive 4	Air mix door motor (passenger side) drive signal	Output	<ul style="list-style-type: none"> Ignition switch ON Right after the temperature control switch (passenger side) operation 	 <p style="text-align: right; font-size: small;">JPLIA1647GB</p>					
18 (SB)	30 (B)	A/MIX drive 3									
19 (LG)	30 (B)	A/MIX drive 2									
20 (L)	30 (B)	A/MIX drive 1									
21 (W)	30 (B)	Ignition power supply	Input	Ignition switch ON	11 – 14 V						
22 (SB)	30 (B)	Intake door motor PBR feedback signal	Input	<ul style="list-style-type: none"> Ignition switch ON Intake switch: REC 	0.2 – 0.8 V						
				<ul style="list-style-type: none"> Ignition switch ON Intake switch: FRE 	4.2 – 4.8 V						
25 (R)	30 (B)	RR DEF feedback	Input	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td rowspan="2" style="width: 50px;">Defroster switch</td> <td>OFF</td> <td>0 V</td> </tr> <tr> <td>ON</td> <td>12 V</td> </tr> </table>	Defroster switch	OFF	0 V	ON	12 V		
				Defroster switch		OFF	0 V				
ON	12 V										

A/C AUTO AMP.

< ECU DIAGNOSIS INFORMATION >

[AUTOMATIC AIR CONDITIONER]

Terminal No. (Wire color)		Description		Condition	Value					
+	-	Signal name	Input/ Output							
27 (LG)	30 (B)	Communication signal (A/C control → A/C auto amp.)		Input	Ignition switch ON	<p>SJIA1522J</p>				
28 (BR)	30 (B)	Communication signal (A/C auto amp. → A/C control)		Output	Ignition switch ON	<p>SJIA1521J</p>				
30 (B)	Ground	Ground		—	Ignition switch ON	0 – 0.1 V				
31 (P)	30 (B)	A/MIX drive 4	Air mix door motor (driver side) drive signal	Output	<ul style="list-style-type: none"> Ignition switch ON Right after the temperature control switch (driver side) operation 	<p>JP1IA1647GB</p>				
32 (BR)	30 (B)	A/MIX drive 3								
33 (R)	30 (B)	A/MIX drive 2								
34 (W)	30 (B)	A/MIX drive 1								
35 (G)	30 (B)	FRE	Intake door motor drive signal	Output	<ul style="list-style-type: none"> Ignition switch ON Intake switch: REC → FRE 	9.5 – 13.5 V				
		REC					<ul style="list-style-type: none"> Ignition switch ON Intake switch: FRE → REC 	0 – 1 V		
36 (V)	30 (B)	REC					Intake door motor drive signal	Output	<ul style="list-style-type: none"> Ignition switch ON Intake switch: FRE → REC 	9.5 – 13.5 V
		FRE								
37 (GR)	30 (B)	MODE drive 4	Mode door motor drive signal	Output	<ul style="list-style-type: none"> Ignition switch ON Right after the MODE switch operation 	<p>JP1IA1647GB</p>				
38 (G)	30 (B)	MODE drive 3								
39 (Y)	30 (B)	MODE drive 2								
40 (O)	30 (B)	MODE drive 1								

DTC Inspection Priority Chart

INFOID:000000008832722

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

A/C AUTO AMP.

< ECU DIAGNOSIS INFORMATION >

[AUTOMATIC AIR CONDITIONER]

Priority	Detected items (DTC)
1	<ul style="list-style-type: none"> • U1000: CAN COMM CIRCUIT • U1010: CONTROL UNIT (CAN)
2	<ul style="list-style-type: none"> • B257B: AMB TEMP SEN (SHORT) • B257C: AMB TEMP SEN (OPEN) • B2578: IN CAR SENSOR (OUT OF RANGE[LOW]) • B2579: IN CAR SENSOR (OUT OF RANGE[HI]) • B2581: EVAP TEMP SEN (SHORT) • B2582: EVAP TEMP SEN (OPEN) • B2630: SUNLOAD SEN (SHORT) • B2631: SUNLOAD SEN (OPEN) • B27A2: DR AIRMIX ACTR (TERMINAL 1) • B27A3: DR AIRMIX ACTR (TERMINAL 2) • B27A4: DR AIRMIX ACTR (TERMINAL 3) • B27A5: DR AIRMIX ACTR (TERMINAL 4) • B27AA: PASS AIRMIX ACTR (TERMINAL 1) • B27AB: PASS AIRMIX ACTR (TERMINAL 2) • B27AC: PASS AIRMIX ACTR (TERMINAL 3) • B27AD: PASS AIRMIX ACTR (TERMINAL 4) • B27A0: INTAKE ACTR (OUT OF RANGE[HI]) • B27A1: INTAKE ACTR (OUT OF RANGE[LOW]) • B27A6: MODE ACTR (TERMINAL 1) • B27A7: MODE ACTR (TERMINAL 2) • B27A8: MODE ACTR (TERMINAL 3) • B27A9: MODE ACTR (TERMINAL 4)

DTC Index

INFOID:000000008832723

DTC	Items (CONSULT screen terms)	Reference
U1000	CAN COMM CIRCUIT	HAC-58, "DTC Logic"
U1010	CONTROL UNIT (CAN)	HAC-59, "DTC Logic"
B2578	IN-VEHICLE SENSOR	HAC-60, "DTC Logic"
B2579	IN-VEHICLE SENSOR	HAC-60, "DTC Logic"
B257B	AMBIENT SENOR	HAC-63, "DTC Logic"
B257C	AMBIENT SENOR	HAC-63, "DTC Logic"
B2581	INTAKE SENSOR	HAC-66, "DTC Logic"
B2582	INTAKE SENSOR	HAC-66, "DTC Logic"
B2630*	SUNLOAD SENSOR	HAC-69, "DTC Logic"
B2631*	SUNLOAD SENSOR	HAC-69, "DTC Logic"
B27A0	INTAKE DOOR MOTOR	HAC-78, "DTC Logic"
B27A1	INTAKE DOOR MOTOR	HAC-78, "DTC Logic"
B27A2	DR AIR MIX DOOR MOT	HAC-72, "DTC Logic"
B27A3	DR AIR MIX DOOR MOT	HAC-72, "DTC Logic"
B27A4	DR AIR MIX DOOR MOT	HAC-72, "DTC Logic"
B27A5	DR AIR MIX DOOR MOT	HAC-72, "DTC Logic"
B27AA	AS AIR MIX DOOR MOT	HAC-74, "DTC Logic"
B27AB	AS AIR MIX DOOR MOT	HAC-74, "DTC Logic"
B27AC	AS AIR MIX DOOR MOT	HAC-74, "DTC Logic"
B27AD	AS AIR MIX DOOR MOT	HAC-74, "DTC Logic"
B27A6	MODE DOOR MOTOR	HAC-76, "DTC Logic"
B27A7	MODE DOOR MOTOR	HAC-76, "DTC Logic"

A/C AUTO AMP.

< ECU DIAGNOSIS INFORMATION >

[AUTOMATIC AIR CONDITIONER]

DTC	Items (CONSULT screen terms)	Reference
B27A8	MODE DOOR MOTOR	HAC-76. "DTC Logic"
B27A9	MODE DOOR MOTOR	HAC-76. "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.

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HAC

ECM, IPDM E/R, BCM

< ECU DIAGNOSIS INFORMATION >

[AUTOMATIC AIR CONDITIONER]

ECM, IPDM E/R, BCM

List of ECU Reference

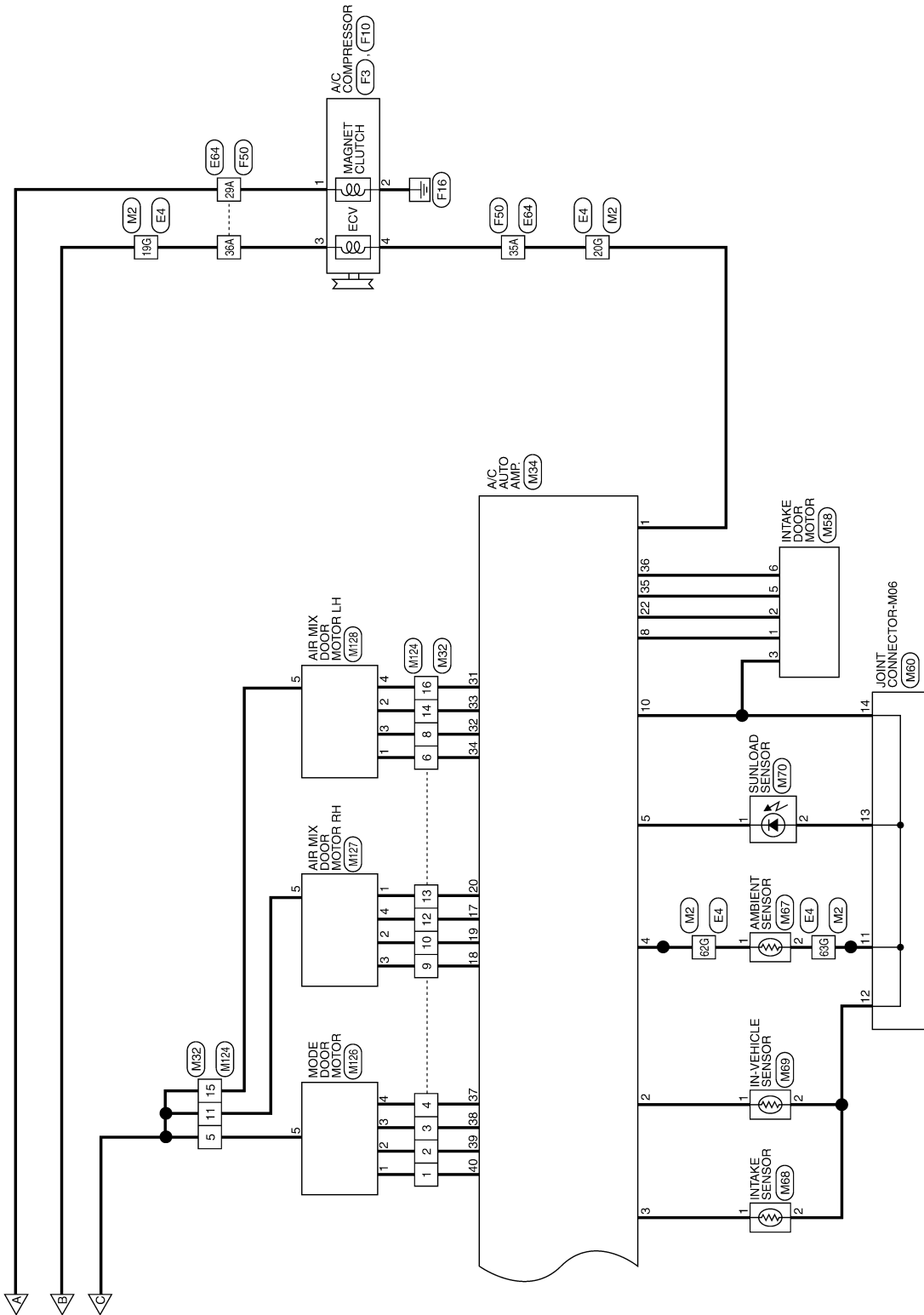
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ECU	Reference
ECM	EC-76. "Reference Value"
	EC-89. "Fail Safe"
	EC-92. "DTC Inspection Priority Chart"
	EC-93. "DTC Index"
IPDM E/R (with Intelligent Key system)	PCS-13. "Reference Value"
	PCS-19. "Fail-safe"
	PCS-20. "DTC Index"
BCM (with Intelligent Key system)	BCS-29. "Reference Value"
	BCS-47. "Fail-safe"
	BCS-49. "DTC Inspection Priority Chart"
	BCS-50. "DTC Index"

AUTOMATIC AIR CONDITIONING SYSTEM

[AUTOMATIC AIR CONDITIONER]

< WIRING DIAGRAM >

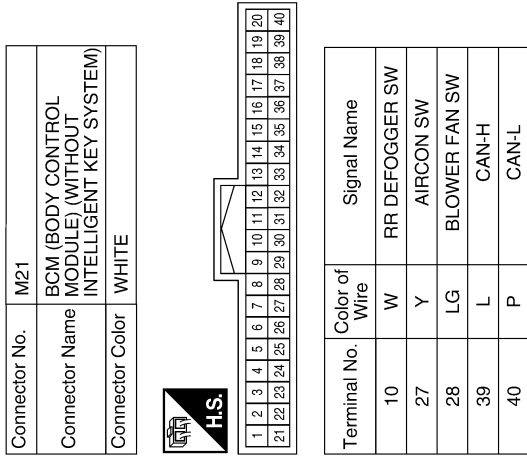


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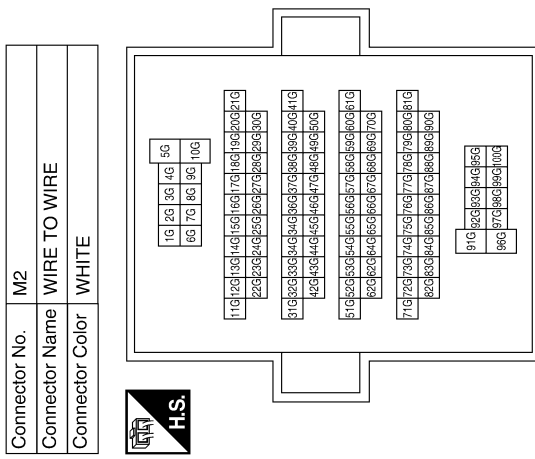
AUTOMATIC AIR CONDITIONING SYSTEM

[AUTOMATIC AIR CONDITIONER]

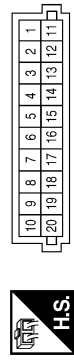
< WIRING DIAGRAM >



Terminal No.	Color of Wire	Signal Name
19G	SB	-
20G	GR	-
62G	V	-
63G	R	-
95G	P	-
100G	L	-

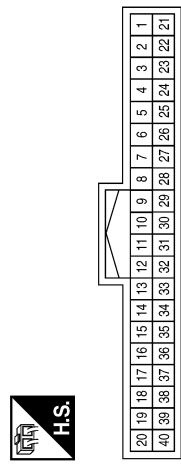


Connector No.	M31
Connector Name	JOINT CONNECTOR-M01
Connector Color	GRAY



Terminal No.	Color of Wire	Signal Name
9	P	-
10	P	-
19	L	-
20	L	-

Connector No.	M24
Connector Name	COMBINATION METER
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
31	GR	OUTSIDE TEMP SENS PWR

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AUTOMATIC AIR CONDITIONING SYSTEM

< WIRING DIAGRAM >

[AUTOMATIC AIR CONDITIONER]

Terminal No.	Color of Wire	Signal Name
14	LG	FAN ON O/P
15	Y	A/C ON O/P
16	W	RR DEF SW O/P
17	BR	R MIX4
18	SB	R MIX3
19	LG	R MIX2
20	L	R MIX1
21	W	IGN 2
22	SB	INT F/B
25	R	RR DEF IND
27	LG	UART RX
28	BR	UART TX
30	B	GND
31	P	L MIX4
32	BR	L MIX3
33	R	L MIX2
34	W	L MIX1
35	G	FRESH
36	V	REC
37	GR	MODE 4
38	G	MODE 3
39	Y	MODE 2
40	O	MODE 1

Connector No.	M34
Connector Name	A/C AUTO AMP (WITH AUTO A/C)
Connector Color	WHITE



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	GR	ECV
2	LG	INCAR SENS
3	L	INTAKE SENS
4	GR	AMB SENS
5	G	SUN SENS
6	L	CAN-H
7	P	CAN-L
8	W	5V OUT
9	GR	OUTSIDE TEMP POWER
10	L	SENS GND
11	LG	IGN 1
12	SB	BAT
13	V	BLOWER PWM

Connector No.	M32
Connector Name	WIRE TO WIRE
Connector Color	WHITE



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

Terminal No.	Color of Wire	Signal Name
1	O	-
2	Y	-
3	G	-
4	GR	-
5	V	-
6	W	-
8	BR	-
9	SB	-
10	LG	-
11	V	-
12	BR	-
13	L	-
14	R	-
15	V	-
16	P	-

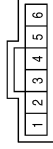
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AUTOMATIC AIR CONDITIONING SYSTEM

[AUTOMATIC AIR CONDITIONER]

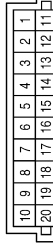
< WIRING DIAGRAM >

Connector No.	M58
Connector Name	INTAKE DOOR MOTOR
Connector Color	BLACK



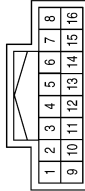
Terminal No.	Color of Wire	Signal Name
1	W	-
2	SB	-
3	L	-
5	G	-
6	V	-

Connector No.	M53
Connector Name	JOINT CONNECTOR-M03
Connector Color	PINK



Terminal No.	Color of Wire	Signal Name
13	P	-
14	P	-
15	P	-
18	L	-
19	L	-
20	L	-

Connector No.	M52
Connector Name	VARIABLE BLOWER CONTROL
Connector Color	WHITE



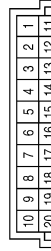
Terminal No.	Color of Wire	Signal Name
1	L	-
2	V	-
3	B	-
4	P	-

Connector No.	M62
Connector Name	BLOWER MOTOR
Connector Color	WHITE



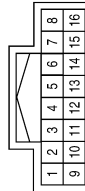
Terminal No.	Color of Wire	Signal Name
1	P	-
2	L	-

Connector No.	M60
Connector Name	JOINT CONNECTOR-M06
Connector Color	BLUE



Terminal No.	Color of Wire	Signal Name
8	SB	-
9	W	-
11	R	-
12	P	-
13	Y	-
14	L	-

Connector No.	M59
Connector Name	A/C SWITCH ASSEMBLY
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	B	-
4	W	-
8	LG	-
9	BR	-

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AUTOMATIC AIR CONDITIONING SYSTEM

< WIRING DIAGRAM >

[AUTOMATIC AIR CONDITIONER]

Connector No.	M69
Connector Name	IN-VEHICLE SENSOR
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	LG	-
2	R	-

Connector No.	M68
Connector Name	INTAKE SENSOR
Connector Color	BROWN



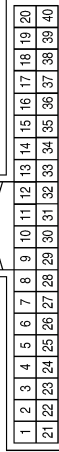
Terminal No.	Color of Wire	Signal Name
1	L	-
2	P	-

Connector No.	M67
Connector Name	AMBIENT SENSOR
Connector Color	BLACK



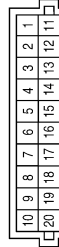
Terminal No.	Color of Wire	Signal Name
1	V	-
2	LG	-

Connector No.	M84
Connector Name	BCM (BODY CONTROL MODULE) (WITH INTELLIGENT KEY SYSTEM)
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
15	W	RR DEFOGGER SW
27	Y	AIRCON SW
28	LG	BLOWER FAN SW
39	L	CAN-H
40	P	CAN-L

Connector No.	M78
Connector Name	JOINT CONNECTOR-M02
Connector Color	PINK



Terminal No.	Color of Wire	Signal Name
1	V	-
2	SB	-
5	LG	-
7	G	-
9	W	-

Connector No.	M70
Connector Name	SUNLOAD SENSOR
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	G	-
2	Y	-

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AUTOMATIC AIR CONDITIONING SYSTEM

[AUTOMATIC AIR CONDITIONER]

< WIRING DIAGRAM >

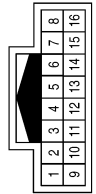
Connector No.	M126
Connector Name	MODE DOOR MOTOR
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	O	-
2	Y	-
3	G	-
4	GR	-
5	V	-
6	-	-

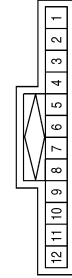
Terminal No.	Color of Wire	Signal Name
6	W	-
8	BR	-
9	SB	-
10	LG	-
11	V	-
12	BR	-
13	L	-
14	R	-
15	V	-
16	P	-

Connector No.	M124
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	O	-
2	Y	-
3	G	-
4	GR	-
5	V	-

Connector No.	E2
Connector Name	JOINT CONNECTOR-E02
Connector Color	BLUE



Terminal No.	Color of Wire	Signal Name
1	L	-
2	L	-
5	L	-
8	P	-
9	P	-
12	P	-

Connector No.	M128
Connector Name	AIR MIX DOOR MOTOR RH
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	W	-
2	R	-
3	BR	-
4	P	-
5	V	-
6	-	-

Connector No.	M127
Connector Name	AIR MIX DOOR MOTOR RH
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	L	-
2	LG	-
3	SB	-
4	BR	-
5	V	-
6	-	-

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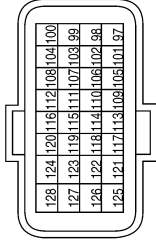
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AUTOMATIC AIR CONDITIONING SYSTEM

< WIRING DIAGRAM >

[AUTOMATIC AIR CONDITIONER]

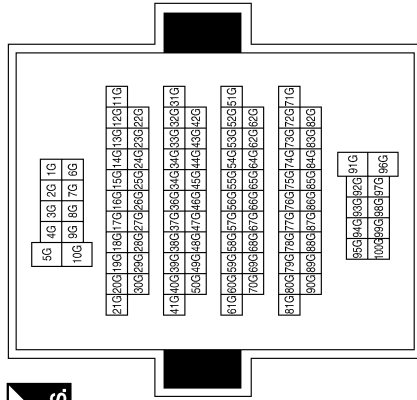
Connector No.	E16
Connector Name	ECM
Connector Color	GRAY



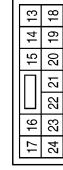
Terminal No.	Color of Wire	Signal Name
99	P	CAN-L
100	L	CAN-H
103	P	PDPRES
104	L	AVCC PDPRES
124	V	GND-A (PDPRES)

Terminal No.	Color of Wire	Signal Name
19G	W	-
20G	GR	-
62G	V	-
63G	LG	-
95G	P	-
100G	L	-

Connector No.	E4
Connector Name	WIRE TO WIRE
Connector Color	WHITE

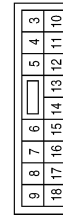


Connector No.	E46
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
40	P	CAN-L
41	L	CAN-H

Connector No.	E43
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
12	SB	A/C COMPRESSOR

Connector No.	E35
Connector Name	REFRIGERANT PRESSURE SENSOR
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	V	-
2	P	-
3	L	-

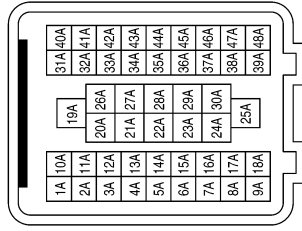
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AUTOMATIC AIR CONDITIONING SYSTEM

[AUTOMATIC AIR CONDITIONER]

< WIRING DIAGRAM >

Connector No.	E64
Connector Name	WIRE TO WIRE
Connector Color	BLACK



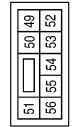
Terminal No.	Color of Wire	Signal Name
29A	SB	-
35A	GR	-
36A	W	-

Connector No.	E48
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
57	B/Y	POWER GND

Connector No.	E47
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	BROWN



Terminal No.	Color of Wire	Signal Name
52	B/Y	SIGNAL GND

Connector No.	F10
Connector Name	ELECTRICAL CONTROL VALVE
Connector Color	GRAY



Terminal No.	Color of Wire	Signal Name
3	W	-
4	R	-

Connector No.	F3
Connector Name	A/C COMPRESSOR
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	W	-
2	B	-

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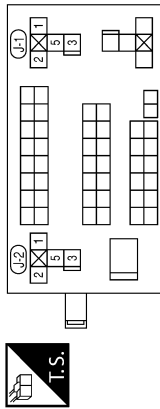
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AUTOMATIC AIR CONDITIONING SYSTEM

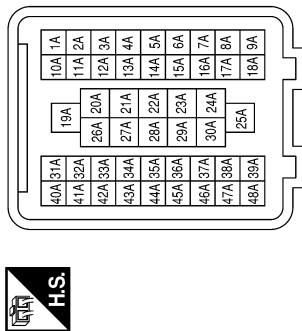
< WIRING DIAGRAM >

[AUTOMATIC AIR CONDITIONER]

Connector No.	J-1
Connector Name	FUSE BLOCK (J/B) BLOWER MOTOR RELAY
Connector Color	-



Connector No.	F50
Connector Name	WIRE TO WIRE
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
29A	W	-
35A	R	-
36A	W	-

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DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[AUTOMATIC AIR CONDITIONER]

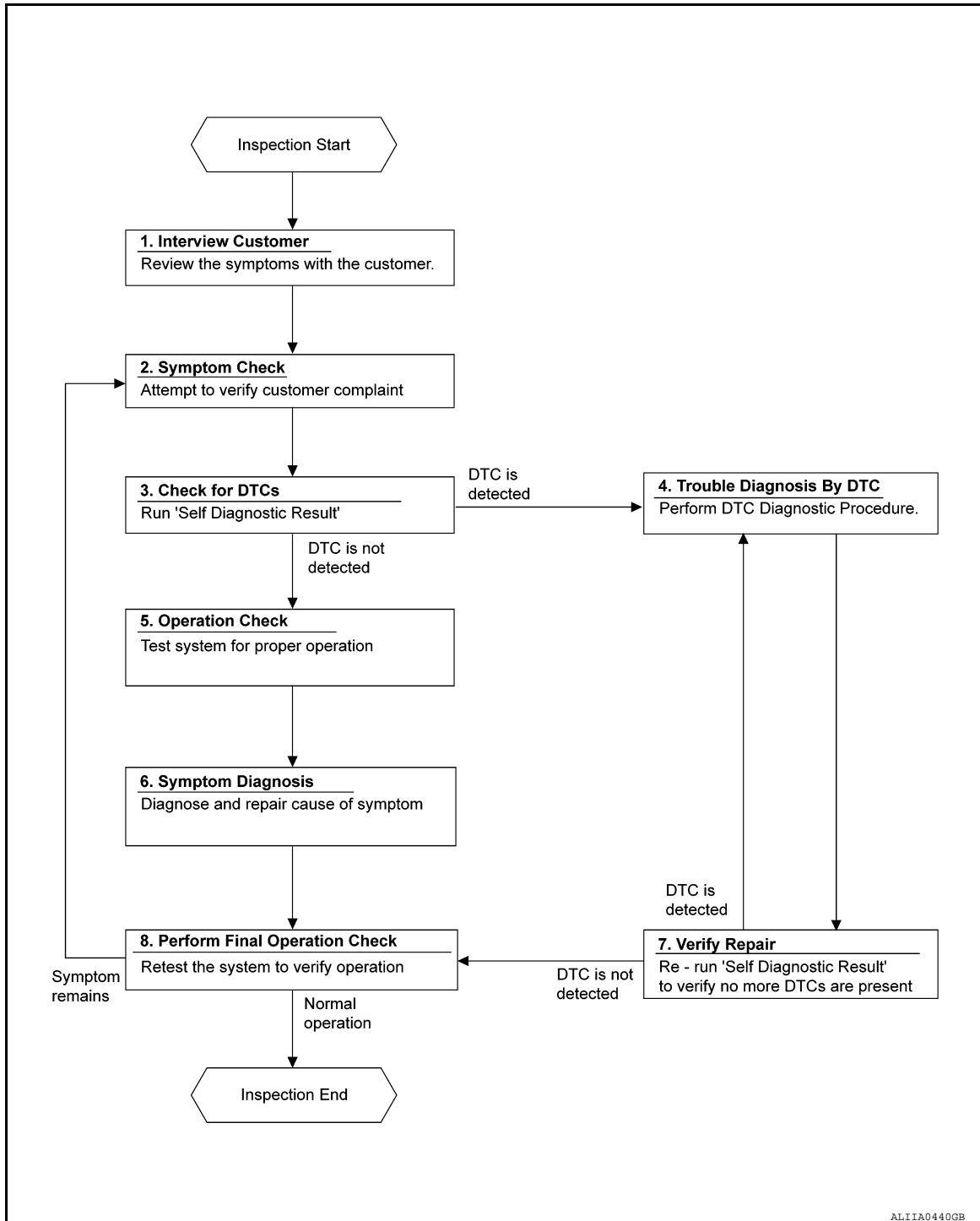
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000008832726

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.

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DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[AUTOMATIC AIR CONDITIONER]

>> 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-37. "DTC Inspection Priority Chart"](#).

>> GO TO 7.

5. OPERATION CHECK

Perform the operation check. Refer to [HAC-53. "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-53. "Work Procedure"](#).

Does it operate normally?

YES >> Inspection End.

NO >> GO TO 2.

OPERATION INSPECTION

< BASIC INSPECTION >

[AUTOMATIC AIR CONDITIONER]

OPERATION INSPECTION

Work Procedure

INFOID:000000008832727

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-82, "A/C AUTO AMP. : 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-89, "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-12, "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-76, "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-78, "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?

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OPERATION INSPECTION

[AUTOMATIC AIR CONDITIONER]

< BASIC INSPECTION >

YES >> GO TO 6.

NO >> Check magnet clutch system. Refer to [HAC-93, "Diagnosis Procedure"](#).

6. CHECK TEMPERATURE DECREASE

1. Operate the A/C compressor.
2. Operate the temperature control switch (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 switch (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-100, "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 switch (driver side). Check that the discharge air temperature (driver side) changes.
3. Operate the temperature control switch (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 switch (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

< BASIC INSPECTION >

[AUTOMATIC AIR CONDITIONER]

SYSTEM SETTING

Temperature Setting Trimmer

INFOID:000000008832728

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.

Inlet Port Memory Function (FRE)

INFOID:000000008832730

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.

SYSTEM SETTING




< BASIC INSPECTION >

[AUTOMATIC AIR CONDITIONER]

Inlet Port Memory Function (REC)

INFOID:000000008832731

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:000000008832732

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

< BASIC INSPECTION >

[AUTOMATIC AIR CONDITIONER]

DOOR MOTOR STARTING POSITION RESET

Description

INFOID:000000009018320

- Reset signal is transmitted from A/C auto amp. to air mix door motor and mode door motor. Starting position reset can be performed.

NOTE:

- During reset, DEF switch indicator blinks.
- When air mix door motor or mode door motor is removed and installed, always perform door motor starting position reset.

Work Procedure

INFOID:000000009018321

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.

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HAC

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:000000008832738

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-30, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart"](#).

DTC Logic

INFOID:000000008832739

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

④ With CONSULT

1. Turn ignition switch ON and wait for 2 seconds or more.
2. Using CONSULT, perform "SELF-DIAGNOSIS RESULTS" 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 >> Refer to [GI-43, "Intermittent Incident"](#).

Diagnosis Procedure

INFOID:000000008832740

1. CHECK CAN COMMUNICATION SYSTEM

Check CAN communication system. Refer to [LAN-16, "Trouble Diagnosis Flow Chart"](#).

>> Inspection End.

U1010 CONTROL UNIT (CAN)

[AUTOMATIC AIR CONDITIONER]

< DTC/CIRCUIT DIAGNOSIS >

U1010 CONTROL UNIT (CAN)

Description

INFOID:000000008832741

Initial diagnosis of A/C auto amp.

DTC Logic

INFOID:000000008832742

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-DIAGNOSIS RESULTS" of HVAC.
3. Check if any DTC No. is displayed in the self-diagnosis results.

Is DTC detected?

- YES >> Refer to [HAC-59. "Diagnosis Procedure"](#).
NO >> Inspection End.

Diagnosis Procedure

INFOID:000000008832743

1. REPLACE A/C AUTO AMP.

Replace A/C auto amp. Refer to [HAC-104. "Removal and Installation"](#).

>> Inspection End.

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B2578, B2579 IN-VEHICLE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

B2578, B2579 IN-VEHICLE SENSOR

DTC Logic

INFOID:000000008832744

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to [HAC-58, "DTC Logic"](#).
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to [HAC-59, "DTC Logic"](#).

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B2578	IN-VEHICLE SENSOR	The in-vehicle sensor recognition temperature is too high.	<ul style="list-style-type: none">• In-vehicle sensor• A/C auto amp.• Harness or connectors (The sensor circuit is open or shorted.)
B2579		The in-vehicle sensor recognition temperature is too low.	

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

Ⓟ With CONSULT

1. Turn ignition switch ON.
2. Using CONSULT, perform "SELF-DIAGNOSIS RESULTS" of HVAC.
3. Check if any DTC No. is displayed in the self-diagnosis results.

Is DTC detected?

- YES >> Refer to [HAC-60, "Diagnosis Procedure"](#).
NO >> Inspection End.

Diagnosis Procedure

INFOID:000000008832745

Regarding Wiring Diagram information, refer to [HAC-41, "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		
M69	1	Ground	5 V

Is the inspection result normal?

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

2. CHECK IN-VEHICLE SENSOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between front in-vehicle sensor harness connector and ground.

B2578, B2579 IN-VEHICLE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

In-vehicle sensor		—	Continuity
Connector	Terminal		
M69	2	Ground	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-61, "Component Inspection"](#).

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-104, "Removal and Installation"](#).

NO >> Replace in-vehicle sensor. Refer to [HAC-106, "Removal and Installation"](#).

4.CHECK IN-VEHICLE SENSOR POWER SUPPLY CIRCUIT FOR OPEN

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

In-vehicle sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M69	1	M34	2	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		
M69	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		
M69	1	Ground	0 V

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-104, "Removal and Installation"](#).

NO >> Repair harness or connector.

Component Inspection

INFOID:000000008832746

1.CHECK IN-VEHICLE SENSOR

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

B2578, B2579 IN-VEHICLE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

3. Check resistance between in-vehicle sensor terminals.

Terminal		Condition	Resistance: k Ω
		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-106. "Removal and Installation"](#).

B257B, B257C AMBIENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

B257B, B257C AMBIENT SENSOR

DTC Logic

INFOID:000000008832747

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to [HAC-58, "DTC Logic"](#).
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to [HAC-59, "DTC Logic"](#).

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B257B	AMBIENT SENSOR	The ambient sensor recognition temperature is too high.	<ul style="list-style-type: none"> • Ambient sensor • A/C auto amp. • Harness or connectors (The sensor circuit is open or shorted.)
B257C		The ambient sensor recognition temperature is too low.	

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

Ⓜ With CONSULT

1. Turn ignition switch ON.
2. Using CONSULT, perform "SELF-DIAGNOSIS RESULTS" of HVAC.
3. Check if any DTC No. is displayed in the self-diagnosis results.

Is DTC detected?

- YES >> Refer to [HAC-63, "Diagnosis Procedure"](#).
 NO >> Inspection End.

HAC

Diagnosis Procedure

INFOID:000000008832748

Regarding Wiring Diagram information, refer to [HAC-41, "Wiring Diagram"](#).

1. CHECK AMBIENT SENSOR POWER SUPPLY

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

+		-	Voltage (Approx.)
Ambient sensor			
Connector	Terminal		
E67	1	Ground	5 V

Is the inspection result normal?

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

2. CHECK AMBIENT SENSOR GROUND CIRCUIT

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

B257B, B257C AMBIENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

Ambient sensor		—	Continuity
Connector	Terminal		
E67	2	Ground	Yes

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair harness or connector.

3.CHECK AMBIENT SENSOR

Check ambient sensor. Refer to [HAC-64, "Component Inspection"](#).

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-104, "Removal and Installation"](#).

NO >> Replace ambient sensor. Refer to [HAC-105, "Removal and Installation"](#).

4.CHECK AMBIENT SENSOR POWER SUPPLY CIRCUIT FOR OPEN

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

Ambient sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
E67	1	M34	4	Yes

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair harness or connector.

5.CHECK AMBIENT SENSOR POWER SUPPLY CIRCUIT FOR GROUND SHORT

Check continuity between ambient sensor harness connector and ground.

Ambient sensor		—	Continuity
Connector	Terminal		
E67	1	Ground	No

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair harness or connector.

6.CHECK AMBIENT SENSOR POWER SUPPLY CIRCUIT FOR POWER SHORT

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

+		-	Voltage (Approx.)
Ambient sensor			
Connector	Terminal		
E67	1	Ground	0 V

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-104, "Removal and Installation"](#).

NO >> Repair harness or connector.

Component Inspection

INFOID:000000008832749

1.CHECK AMBIENT SENSOR

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

B257B, B257C AMBIENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

3. Check resistance between ambient sensor terminals.

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

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace ambient sensor. Refer to [HAC-105. "Removal and Installation"](#).

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B2581, B2582 INTAKE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

B2581, B2582 INTAKE SENSOR

DTC Logic

INFOID:000000008832750

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to [HAC-58, "DTC Logic"](#).
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to [HAC-59, "DTC Logic"](#).

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B2581	INTAKE SENSOR	The intake sensor recognition temperature is too high.	<ul style="list-style-type: none">• Intake sensor• A/C auto amp.• Harness or connectors (The sensor circuit is open or shorted.)
B2582		The intake sensor recognition temperature is too low.	

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

Ⓟ With CONSULT

1. Turn ignition switch ON.
2. Using CONSULT, perform "SELF-DIAGNOSIS RESULTS" of HVAC.
3. Check if any DTC No. is displayed in the self-diagnosis results.

Is DTC detected?

- YES >> Refer to [HAC-66, "Diagnosis Procedure"](#).
NO >> Inspection End.

Diagnosis Procedure

INFOID:000000008832751

Regarding Wiring Diagram information, refer to [HAC-41, "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		
M68	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.

B2581, B2582 INTAKE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

Intake sensor		—	Continuity
Connector	Terminal		
M68	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-67, "Component Inspection"](#).

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-104, "Removal and Installation"](#).

NO >> Replace intake sensor. Refer to [HAC-108, "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	
M68	1	M34	3	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		
M68	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		
M68	1	Ground	0 V

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-104, "Removal and Installation"](#).

NO >> Repair harness or connector.

Component Inspection

INFOID:000000008832752

1.CHECK INTAKE SENSOR

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

B2581, B2582 INTAKE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

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-108. "Removal and Installation"](#).

B2630, B2631 SUNLOAD SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

B2630, B2631 SUNLOAD SENSOR

DTC Logic

INFOID:000000008832753

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to [HAC-58. "DTC Logic"](#) (U1000) or [HAC-59. "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
B2630	SUNLOAD SEN (SHORT)	Detected calorie at sunload sensor 1677 w/m ² (1442 kcal/m ² ·h) or more	<ul style="list-style-type: none">• Sunload sensor• A/C auto amp.• Harness and connector
B2631	SUNLOAD SEN (OPEN)	Detected calorie at sunload sensor 33 w/m ² (28 kcal/m ² ·h)	(Sunload sensor circuit is open, or there is a short in the circuit)

DTC CONFIRMATION PROCEDURE

1. CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT

1. Using CONSULT, perform "SELF-DIAGNOSIS RESULTS" 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-58. "DTC Logic"](#) (U1000) or [HAC-59. "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. "B2630" or "B2631" displayed?

- YES >> Perform trouble diagnosis for the sunload sensor. Refer to [HAC-69. "Diagnosis Procedure"](#).
NO >> Inspection End.

Diagnosis Procedure

INFOID:000000008832754

Regarding Wiring Diagram information, refer to [HAC-41. "Wiring Diagram"](#).

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		
M70	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.

B2630, B2631 SUNLOAD SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

Sunload sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M70	2	M34	10	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-70, "Component Inspection"](#).

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-104, "Removal and Installation"](#).

NO >> Replace sunload sensor. Refer to [HAC-107, "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	
M70	1	M34	5	Yes

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

Sunload sensor		—	Continuity
Connector	Terminal		
M70	1	Ground	No

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-104, "Removal and Installation"](#).

NO >> Repair harness or connector.

Component Inspection

INFOID:000000008832755

1.CHECK SUNLOAD SENSOR

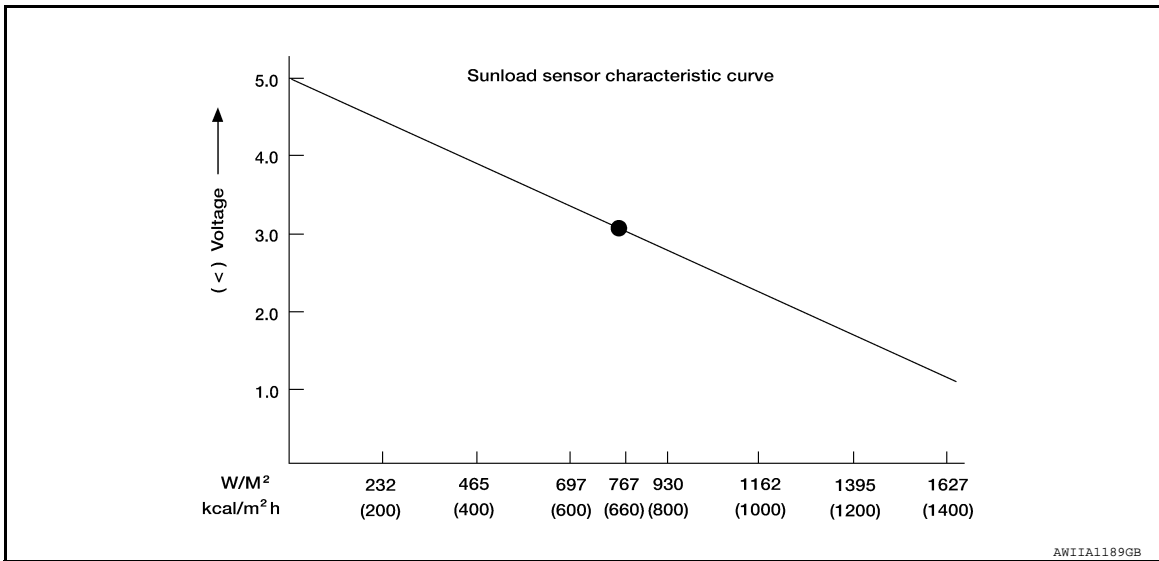
1. Turn ignition switch ON.
2. Check voltage between A/C auto amp. harness connector and ground.

(+)		(-)	
A/C auto amp.		—	
Connector	Terminal		
M34	5	Ground	

B2630, B2631 SUNLOAD SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]



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-107, "Removal and Installation"](#).

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B27A2, B27A3, B27A4, B27A5 AIR MIX DOOR MOTOR (DRIVER SIDE)

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

B27A2, B27A3, B27A4, B27A5 AIR MIX DOOR MOTOR (DRIVER SIDE)

DTC Logic

INFOID:000000009012572

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to [HAC-58, "DTC Logic"](#).
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. [HAC-59, "DTC Logic"](#).
- If air mix door motors DTC (B27A2 – B27A5) 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
B27A2	DR AIR MIX DOOR MOT	Short or open circuit of air mix door motor drive signal terminal 1.	<ul style="list-style-type: none">• Air mix door motor• A/C auto amp.• Harness or connectors (The motor circuit is open or shorted.)
B27A3		Short or open circuit of air mix door motor drive signal terminal 2.	
B27A4		Short or open circuit of air mix door motor drive signal terminal 3.	
B27A5		Short or open circuit of air mix door motor drive signal terminal 4.	

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

Ⓟ With CONSULT

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

Is DTC detected?

- YES >> Refer to [HAC-74, "Diagnosis Procedure"](#).
NO >> Inspection End.

Diagnosis Procedure

INFOID:000000009012573

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		
M128	5	Ground	Battery voltage

Is the inspection result normal?

- YES >> GO TO 2.
NO >> Repair harness or connector between air mix door motor and fuse.

2. 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.

B27A2, B27A3, B27A4, B27A5 AIR MIX DOOR MOTOR (DRIVER SIDE)

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

Air mix door motor LH		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M128	1	M34	34	Yes
	2		33	
	3		32	
	4		31	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair harness or connector.

3. 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		
M128	1	Ground	No
	2		
	3		
	4		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair harness or connector.

4. CHECK AIR MIX DOOR MOTOR LH

Check air mix door motor LH. Refer to [HAC-75, "Component Inspection"](#).

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-104, "Removal and Installation"](#).

NO >> Replace air mix door motor LH. Refer to [HAC-111, "AIR MIX DOOR MOTOR : Removal and Installation - Air Mix Door Motor LH"](#).

Component Inspection

INFOID:000000009012574

1. CHECK AIR MIX DOOR MOTOR LH

1. Remove air mix door motor LH. Refer to [HAC-111, "AIR MIX DOOR MOTOR : Removal and Installation - Air Mix Door Motor LH"](#).

2. Check resistance between air mix door motor LH terminals. Refer to applicable table for the normal value.

Terminal		Resistance (Ω) (Approx.)
5	1	90
	2	
	3	
	4	

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace air mix door motor LH. Refer to [HAC-111, "AIR MIX DOOR MOTOR : Removal and Installation - Air Mix Door Motor LH"](#).

B27AA, B27AB, B27AC, B27AD AIR MIX DOOR MOTOR (PASSENGER SIDE)

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

B27AA, B27AB, B27AC, B27AD AIR MIX DOOR MOTOR (PASSENGER SIDE)

DTC Logic

INFOID:000000009012578

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to [HAC-58, "DTC Logic"](#).
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. [HAC-59, "DTC Logic"](#).
- If air mix door motors DTC (B27A2 – B27A5) 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
B27AA	AS AIR MIX DOOR MOT	Short or open circuit of air mix door motor drive signal terminal 1.	<ul style="list-style-type: none">• Air mix door motor• A/C auto amp.• Harness or connectors (The motor circuit is open or shorted.)
B27AB		Short or open circuit of air mix door motor drive signal terminal 2.	
B27AC		Short or open circuit of air mix door motor drive signal terminal 3.	
B27AD		Short or open circuit of air mix door motor drive signal terminal 4.	

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

Ⓟ With CONSULT

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

Is DTC detected?

- YES >> Refer to [HAC-74, "Diagnosis Procedure"](#).
NO >> Inspection End.

Diagnosis Procedure

INFOID:000000009012579

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		
M127	5	Ground	Battery voltage

Is the inspection result normal?

- YES >> GO TO 2.
NO >> Repair harness or connector.

2. CHECK AIR MIX DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.

B27AA, B27AB, B27AC, B27AD AIR MIX DOOR MOTOR (PASSENGER SIDE)

[AUTOMATIC AIR CONDITIONER]

< DTC/CIRCUIT DIAGNOSIS >

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	
M127	1	M34	20	Yes
	2		19	
	3		18	
	4		17	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair harness or connector.

3.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		
M127	1	Ground	No
	2		
	3		
	4		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair harness or connector.

4.CHECK AIR MIX DOOR MOTOR RH

Check air mix door motor RH. Refer to [HAC-75, "Component Inspection"](#).

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-104, "Removal and Installation"](#).

NO >> Replace air mix door motor RH. Refer to [HAC-111, "AIR MIX DOOR MOTOR : Removal and Installation - Air Mix Door Motor RH"](#).

Component Inspection

INFOID:000000009012580

1.CHECK AIR MIX DOOR MOTOR RH

1. Remove air mix door motor RH. Refer to [HAC-111, "AIR MIX DOOR MOTOR : Removal and Installation - Air Mix Door Motor RH"](#).
2. Check resistance between air mix door motor RH terminals. Refer to applicable table for the normal value.

Terminal	Resistance (Ω) (Approx.)	
5	1	90
	2	
	3	
	4	

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace air mix door motor RH. Refer to [HAC-111, "AIR MIX DOOR MOTOR : Removal and Installation - Air Mix Door Motor RH"](#).

B27A6, B27A7, B27A8, B27A9 MODE DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

B27A6, B27A7, B27A8, B27A9 MODE DOOR MOTOR

DTC Logic

INFOID:000000009012575

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to [HAC-58, "DTC Logic"](#).
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. [HAC-59, "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
B27A6	MODE DOOR MOTOR	Short or open circuit of mode door motor drive signal terminal 1.	<ul style="list-style-type: none">• Mode door motor• A/C auto amp.• Harness or connectors (The motor circuit is open or shorted.)
B27A7		Short or open circuit of mode door motor drive signal terminal 2.	
B27A8		Short or open circuit of mode door motor drive signal terminal 3.	
B27A9		Short or open circuit of mode door motor drive signal terminal 4.	

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-76, "Diagnosis Procedure"](#).
NO >> Inspection End.

Diagnosis Procedure

INFOID:000000009012576

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		
M126	5	Ground	Battery voltage

Is the inspection result normal?

- YES >> GO TO 2.
NO >> Repair harness or connector between mode door motor and fuse.

2. 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.

B27A6, B27A7, B27A8, B27A9 MODE DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

Mode door motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M126	4	M34	37	Yes
	3		38	
	2		39	
	1		40	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair harness or connector.

3. 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		
M126	4	Ground	No
	3		
	2		
	1		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair harness or connector.

4. CHECK MODE DOOR MOTOR

Check mode door motor. Refer to [HAC-77, "Component Inspection"](#).

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-104, "Removal and Installation"](#).

NO >> Replace mode door motor. Refer to [HAC-111, "MODE DOOR MOTOR : Removal and Installation"](#).

Component Inspection

INFOID:000000009012577

1. CHECK MODE DOOR MOTOR

1. Remove mode door motor. Refer to [HAC-111, "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.)
5	1	90
	2	
	3	
	4	

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace mode door motor. Refer to [HAC-111, "MODE DOOR MOTOR : Removal and Installation"](#).

B27A0, B27A1 INTAKE DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

B27A0, B27A1 INTAKE DOOR MOTOR

DTC Logic

INFOID:000000009012568

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to [HAC-58, "DTC Logic"](#).
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. [HAC-59, "DTC Logic"](#).

DTC	Items (CONSULT screen terms)	DTC detection condition*	Possible cause
B27A0	INTAKE DOOR MOTOR	PBR opening angle of intake door motor is 50% or more. (PBR feedback signal voltage of intake door motor is 2.5 V or more)	<ul style="list-style-type: none">• Intake door motor• Intake door motor system installation condition• A/C auto amp.• Harness or connectors (The motor circuit is open or shorted.)
B27A1		PBR opening angle of intake door motor is 30% or less. (PBR feedback signal voltage of intake door motor is 1.5 V or less)	

*: A/C auto amp. operates intake door motor according to target value of PBR opening angle at 40% when performing self-diagnosis.

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-78, "Diagnosis Procedure"](#).
NO >> Inspection End.

Diagnosis Procedure

INFOID:000000009012569

1. CHECK INTAKE DOOR MOTOR OPERATION

1. Turn ignition switch ON.
2. Operate intake switch and check by operation sound that intake door motor operates.

Does the intake door motor operate?

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

2. CHECK INTAKE DOOR MOTOR PBR POWER SUPPLY

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

+		-	Voltage (Approx.)
Intake door motor			
Connector	Terminal		
M58	1	Ground	5 V

Is the inspection result normal?

- YES >> GO TO 3.
NO >> GO TO 7.

3. CHECK INTAKE DOOR MOTOR PBR GROUND CIRCUIT FOR OPEN

B27A0, B27A1 INTAKE DOOR MOTOR

[AUTOMATIC AIR CONDITIONER]

< DTC/CIRCUIT DIAGNOSIS >

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	
M58	3	M34	10	Yes

Is the inspection result normal?

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

4.CHECK INTAKE DOOR MOTOR PBR FEEDBACK SIGNAL CIRCUIT FOR OPEN

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	
M58	2	M34	22	Yes

Is the inspection result normal?

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

5.CHECK INTAKE DOOR MOTOR PBR FEEDBACK SIGNAL CIRCUIT FOR SHORT

Check continuity between intake door motor harness connector and ground.

Intake door motor		—	Continuity
Connector	Terminal		
M58	2	Ground	No

Is the inspection result normal?

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

6.CHECK INTAKE DOOR MOTOR PBR

Check intake door motor PBR. Refer to [HAC-80, "Component Inspection \(PBR\)".](#)

Is the inspection result normal?

- YES >> Replace A/C auto amp. Refer to [HAC-104, "Removal and Installation".](#)
NO >> Replace intake door motor. Refer to [HAC-111, "INTAKE DOOR MOTOR : Removal and Installation".](#)

7.CHECK INTAKE DOOR MOTOR PBR POWER SUPPLY CIRCUIT FOR OPEN

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

Intake door motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M58	1	M34	8	Yes

Is the inspection result normal?

- YES >> Replace A/C auto amp. Refer to [HAC-104, "Removal and Installation".](#)
NO >> Repair harness or connector.

8.CHECK INTAKE DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect intake door motor connector, and A/C auto amp. connector.

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B27A0, B27A1 INTAKE DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

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	
M58	5	M34	35	Yes
	6		36	

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair harness or connector.

9.CHECK INTAKE DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR SHORT

Check continuity between intake door motor harness connector and ground.

Intake door motor		—	Continuity
Connector	Terminal		
M58	5	Ground	No
	6		

Is the inspection result normal?

YES >> GO TO 10.

NO >> Repair harness or connector.

10.CHECK INTAKE DOOR MOTOR

1. Turn ignition switch OFF.

2. Check intake door motor. Refer to [HAC-80. "Component Inspection \(Motor\)".](#)

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace intake door motor. Refer to [HAC-111. "INTAKE DOOR MOTOR : Removal and Installation".](#)

11.CHECK INSTALLATION OF INTAKE DOOR MOTOR SYSTEM

Check intake door motor system is properly installed. Refer to [HAC-110. "Exploded View".](#)

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-104. "Removal and Installation".](#)

NO >> Repair or replace malfunctioning parts.

Component Inspection (PBR)

INFOID:000000009012570

1.CHECK INTAKE DOOR MOTOR PBR

Check resistance between intake door motor terminals.

Terminal		Resistance (Ω)
1	2	Except 0 or ∞
	3	

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace intake door motor. Refer to [HAC-111. "INTAKE DOOR MOTOR : Removal and Installation".](#)

Component Inspection (Motor)

INFOID:000000009012571

1.CHECK INTAKE DOOR MOTOR

Supply intake door motor terminals with battery voltage and check by visually and operation sound that intake door motor operates.

B27A0, B27A1 INTAKE DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

Terminal		Operation direction
+	-	
5	6	REC
6	5	FRE

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace intake door motor. Refer to [HAC-111, "INTAKE DOOR MOTOR : Removal and Installation"](#).

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POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

POWER SUPPLY AND GROUND CIRCUIT

A/C AUTO AMP.

A/C AUTO AMP. : Diagnosis Procedure

INFOID:000000008832766

Regarding Wiring Diagram information, refer to [HAC-41. "Wiring Diagram"](#).

1. CHECK FUSE

Check fuses [No. 5, 8 and 21, located in the fuse block (J/B)].

NOTE:

Refer to [PG-47. "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
M34	11	Ground	Approx. 0 V	Approx. 0 V	Battery voltage
	12		Battery voltage	Battery voltage	Battery voltage
	21		Approx. 0 V	Battery voltage	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		
M34	30	Ground	Yes

Is the inspection result normal?

YES >> Inspection End.

NO >> Repair harness or connector.

A/C SWITCH ASSEMBLY

A/C SWITCH ASSEMBLY : Component Function Check

INFOID:000000008832771

1. CHECK OPERATION

1. Press the AUTO switch, and then check that "AUTO" is shown on the display.
2. Operate the temperature control switch (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.

POWER SUPPLY AND GROUND CIRCUIT

[AUTOMATIC AIR CONDITIONER]

< DTC/CIRCUIT DIAGNOSIS >

NO >> Perform trouble diagnosis for the A/C switch assembly. Refer to [HAC-83. "A/C SWITCH ASSEMBLY : Diagnosis Procedure"](#).

A/C SWITCH ASSEMBLY : Diagnosis Procedure

INFOID:000000008832772

Regarding Wiring Diagram information, refer to [HAC-41. "Wiring Diagram"](#).

1. CHECK A/C SWITCH ASSEMBLY POWER SUPPLY

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

(+)		(-)	Voltage (Approx.)
A/C switch assembly			
Connector	Terminal		
M59	4	Ground	Battery voltage

Is the inspection result normal?

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

2. CHECK FUSE

Check 10A fuse [No.5, located in the fuse block (J/B)].

NOTE:

Refer to [PG-47. "Terminal Arrangement"](#).

Is the inspection result normal?

- YES >> Check harness for open circuit. Repair or replace if necessary.
NO >> Check harness for short circuit. Repair or replace if necessary.

3. CHECK A/C SWITCH ASSEMBLY GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between A/C switch assembly harness connector and ground.

A/C switch assembly		—	Continuity
Connector	Terminal		
M59	1	Ground	Yes

Is the inspection result normal?

- YES >> Replace the A/C switch assembly. Refer to [HAC-103. "Removal and Installation"](#).
NO >> Repair the harnesses or connectors.

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A/C SWITCH ASSEMBLY SIGNAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

A/C SWITCH ASSEMBLY SIGNAL CIRCUIT

Diagnosis Procedure

INFOID:000000008832778

Regarding Wiring Diagram information, refer to [HAC-41. "Wiring Diagram"](#).

1. CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT

1. Using CONSULT, perform "SELF-DIAGNOSIS RESULTS" 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-58. "DTC Logic"](#) (U1000) or [HAC-59. "DTC Logic"](#) (U1010).

Is any DTC No. displayed?

- YES >> Perform diagnosis for the applicable DTC. Refer to [HAC-38. "DTC Index"](#).
NO >> GO TO 2.

2. CHECK TX (A/C SWITCH ASSEMBLY → A/C AUTO AMP.) CIRCUIT CONTINUITY

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

A/C switch assembly		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M59	8	M34	27	Yes

4. Check continuity between A/C switch assembly harness connector M79 terminal 10 and ground.

A/C switch assembly		—	Continuity
Connector	Terminal		
M59	8	Ground	No

Is the inspection result normal?

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

3. CHECK RX (A/C AUTO AMP. → A/C SWITCH ASSEMBLY) CIRCUIT CONTINUITY

1. Check continuity between A/C switch assembly harness connector and A/C auto amp. harness connector.

A/C switch assembly		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M59	9	M34	28	Yes

2. Check continuity between A/C switch assembly harness connector M79 terminal 9 and ground.

A/C switch assembly		—	Continuity
Connector	Terminal		
M59	9	Ground	No

Is the inspection result normal?

- YES >> Perform trouble diagnosis for the A/C switch assembly. Refer to [HAC-83. "A/C SWITCH ASSEMBLY : Diagnosis Procedure"](#).
NO >> Repair harness or connector.

A/C ON SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

A/C ON SIGNAL

Component Function Check

INFOID:000000009020387

1.CHECK A/C ON SIGNAL

④ With CONSULT

1. Turn ignition switch ON.
2. Operate blower motor.
3. Select "AIR CONDITIONER" of "BCM" using CONSULT.
4. Select "AIR COND SW" in "DATA MONITOR" mode.
5. Check A/C ON signal when the A/C switch is operated.

Monitor item	Condition		Status
AIR COND SW	A/C switch	ON (A/C indicator: ON)	On
		OFF (A/C indicator: OFF)	Off

Is the inspection result normal?

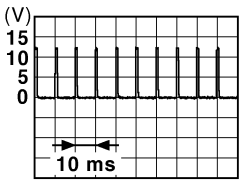
- YES >> Inspection End.
 NO >> Refer to [HAC-85, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000009020388

1.CHECK A/C ON SIGNAL

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Turn ignition switch ON.
4. Check output waveform between A/C auto amp. harness connector and ground with using oscilloscope.

+		-	Output waveform
A/C auto amp.			
Connector	Terminal		
M34	15	Ground	 <p style="text-align: right; font-size: small;">JPM1A0012GB</p>

Is the inspection result normal?

- YES >> Replace A/C auto amp. Refer to [HAC-104, "Removal and Installation"](#).
 NO >> GO TO 2.

2.CHECK A/C ON SIGNAL CIRCUIT FOR OPEN

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

A/C auto amp.		BCM		Continuity
Connector	Terminal	Connector	Terminal	
M34	15	M84	27	Yes

Is the inspection result normal?

- YES >> GO TO 3.

A/C ON SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

NO >> Repair harness or connector.

3. CHECK A/C ON SIGNAL CIRCUIT FOR SHORT

Check continuity between A/C auto amp. harness connector and ground.

A/C auto amp.		—	Continuity
Connector	Terminal		
M34	15	Ground	No

Is the inspection result normal?

YES >> Replace BCM. Refer to [BCS-74. "Removal and Installation"](#).

NO >> Repair harness or connector.

BLOWER FAN ON SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

BLOWER FAN ON SIGNAL

Component Function Check

INFOID:000000009020389

1.CHECK BLOWER FAN ON SIGNAL

④ With CONSULT

1. Turn ignition switch ON.
2. Select "AIR CONDITIONER" of "BCM" using CONSULT.
3. Select "FAN ON SIG" in "DATA MONITOR" mode.
4. Check blower fan ON signal when the fan control dial is operated.

Monitor item	Condition	Status
FAN ON SIG	Blower motor ON	On
	Blower motor OFF	OFF

Is the inspection result normal?

- YES >> Inspection End.
 NO >> Refer to [HAC-87, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000009020390

1.CHECK BLOWER FAN ON SIGNAL

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. harness connector.
3. Turn ignition switch ON.
4. Check output waveform between A/C auto amp. and ground with using oscilloscope.

+		-	Output waveform
A/C auto amp.			
Connector	Terminal		
M34	14	Ground	

Is the inspection result normal?

- YES >> Replace A/C auto amp. Refer to [HAC-104, "Removal and Installation"](#).
 NO >> GO TO 2.

2.CHECK BLOWER FAN ON SIGNAL CIRCUIT FOR OPEN

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

A/C auto amp.		BCM		Continuity
Connector	Terminal	Connector	Terminal	
M34	14	M84	28	Yes

Is the inspection result normal?

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

3.CHECK BLOWER FAN ON SIGNAL CIRCUIT FOR SHORT

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BLOWER FAN ON SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

Check continuity between A/C auto amp. harness connector and ground.

A/C auto amp.		—	Continuity
Connector	Terminal		
M34	14	Ground	No

Is the inspection result normal?

- YES >> Replace BCM. Refer to [BCS-74, "Removal and Installation"](#).
NO >> Repair harness or connector.

BLOWER MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

BLOWER MOTOR

Diagnosis Procedure

INFOID:000000009020391

1. CHECK FUSE

1. Turn ignition switch OFF.
2. Check following fuses.
 - 10A fuse [No. 21, located in fuse block (J/B)]
 - 15A fuses [Nos. 20 and 22, located in fuse block (J/B)]

NOTE:

Refer to [PG-47, "Terminal Arrangement"](#).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace the blown fuse after repairing the affected circuit.

2. CHECK BLOWER MOTOR POWER SUPPLY

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

+		-	Voltage
Blower motor			
Connector	Terminal	Ground	Battery voltage
M62	1		

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

3. CHECK BLOWER RELAY

1. Turn ignition switch OFF.
2. Check blower relay. Refer to [HAC-91, "Component Inspection \(Blower Motor Relay\)"](#).

Is the inspection result normal?

YES >> Repair harness or connector between blower motor and fuse.

NO >> Replace blower relay.

4. CHECK BLOWER MOTOR CONTROL CIRCUIT

1. Turn ignition switch OFF.
2. Connect 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	Ground	Battery voltage
M52	1		

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

5. CHECK BLOWER MOTOR CONTROL CIRCUIT FOR OPEN

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

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BLOWER MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

Variable blower control		Blower motor		Continuity
Connector	Terminal	Connector	Terminal	
M52	1	M62	2	Existed

Is the inspection result normal?

YES >> Replace blower motor. Refer to [VTL-11, "Removal and Installation"](#).

NO >> Repair harness or connector.

6. CHECK A/C AUTO AMP. IGNITION POWER SUPPLY

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

+		-	Voltage
A/C auto amp.			
Connector	Terminal		
M34	21	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair harness or connector between A/C auto amp. and fuse.

7. CHECK VARIABLE BLOWER CONTROL IGNITION POWER SUPPLY

Check voltage between variable blower control harness connector and ground.

+		-	Voltage
Variable blower control			
Connector	Terminal		
M52	4	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair harness or connector between variable blower control and fuse.

8. 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		
M52	3	Ground	Yes

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair harness or connector.

9. CHECK VARIABLE BLOWER CONTROL 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

BLOWER MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

+		-	Condition	Duty ratio (Approx.)	Output waveform
Variable blower control					
Connector	Terminal		Fan speed (manual) Air outlet: VENT		
M52	2	Ground	1st	26%	
			2nd	34%	
			3rd	41%	
			4th	51%	
			5th	62%	
			6th	73%	
			7th	82%	

Is the inspection result normal?

- YES >> Replace variable blower control. Refer to [HAC-112. "Removal and Installation"](#).
- NO >> GO TO 10.

10. CHECK VARIABLE BLOWER CONTROL 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	
M52	2	M34	13	Yes

Is the inspection result normal?

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

11. CHECK VARIABLE BLOWER CONTROL CONTROL SIGNAL CIRCUIT FOR SHORT

Check continuity between variable blower control harness connector and ground.

Variable blower control		—	Continuity
Connector	Terminal		
M52	2	Ground	No

Is the inspection result normal?

- YES >> Replace A/C auto amp. Refer to [HAC-104. "Removal and Installation"](#).
- NO >> Repair harness or connector.

Component Inspection (Blower Motor)

INFOID:0000000008832774

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-43. "Intermittent Incident"](#).
- NO >> Replace blower motor. Refer to [VTL-11. "Removal and Installation"](#).

Component Inspection (Blower Motor Relay)

INFOID:0000000008832775

1. CHECK BLOWER RELAY

1. Turn ignition switch OFF.

BLOWER MOTOR

[AUTOMATIC AIR CONDITIONER]

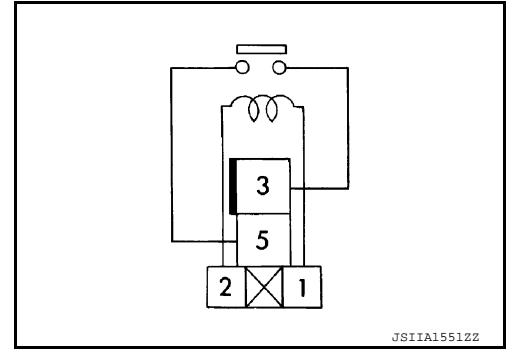
< DTC/CIRCUIT DIAGNOSIS >

2. Remove blower motor relay.
3. Check continuity between blower motor 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 blower motor relay.



MAGNET CLUTCH

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

MAGNET CLUTCH

Component Function Check

INFOID:000000008832776

1.CHECK MAGNET CLUTCH OPERATION

Perform auto active test of IPDM E/R. Refer to [PCS-9, "Diagnosis Description"](#) (with Intelligent Key system) or [PCS-37, "Diagnosis Description"](#) (without Intelligent Key system).

Does it operate normally?

- YES >> Inspection End.
- NO >> Refer to [HAC-93, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000008832777

Regarding Wiring Diagram information, refer to [HAC-41, "Wiring Diagram"](#).

1.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 10A fuse (No. 39, located in IPDM E/R).

NOTE:

Refer to [PG-49, "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	
F3	1	E43	12	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		
F3	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-30, "Removal and Installation"](#).
- NO >> Replace magnet clutch. Refer to [HA-31, "MAGNET CLUTCH : Removal and Installation"](#).

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ECV (ELECTRICAL CONTROL VALVE)

[AUTOMATIC AIR CONDITIONER]

< DTC/CIRCUIT DIAGNOSIS >

ECV (ELECTRICAL CONTROL VALVE)

Diagnosis Procedure

INFOID:000000008832781

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	Ground	Battery voltage
F10	3		

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. 5, located in fuse block (J/B)]. Refer to [PG-47. "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 A/C auto amp. connector.
3. Check continuity between compressor harness connector and A/C auto amp. harness connector.

Compressor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
F10	4	M34	1	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		
F10	4	Ground	No

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair harness or connector.

5. CHECK ECV

Check ECV. Refer to [HAC-95. "Component Inspection"](#).

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace compressor. Refer to [HA-31. "COMPRESSOR : Removal and Installation"](#).

ECV (ELECTRICAL CONTROL VALVE)

[AUTOMATIC AIR CONDITIONER]

< DTC/CIRCUIT DIAGNOSIS >

6. CHECK INTERMITTENT INCIDENT

Refer to [GI-43, "Intermittent Incident"](#).

Is the inspection result normal?

- YES >> Replace A/C auto amp. Refer to [HAC-104, "Removal and Installation"](#).
- NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:000000008832782

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-31, "COMPRESSOR : Removal and Installation"](#).

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HEATER AND AIR CONDITIONING SYSTEM CONTROL SYMPTOMS

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

SYMPTOM DIAGNOSIS

HEATER AND AIR CONDITIONING SYSTEM CONTROL SYMPTOMS

Diagnosis Chart By Symptom

INFOID:000000008832783

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
<ul style="list-style-type: none"> Air conditioning does not activate. Air conditioning cannot be controlled. Operation status of air conditioning is not indicated on display. 	<ul style="list-style-type: none"> A/C auto amp. ignition power supply circuit Front A/C control (A/C auto amp.) 	HAC-82, "A/C AUTO AMP. : Diagnosis Procedure"
<ul style="list-style-type: none"> Air outlet does not change. Mode door motor does not operate normally. 	<ul style="list-style-type: none"> Circuit between mode door motor and A/C auto amp. Mode door motor control linkage Mode door motor A/C auto amp. 	HAC-76, "Diagnosis Procedure"
<ul style="list-style-type: none"> Discharge air temperature of driver side does not change. Air mix door motor LH does not operate normally. 	<ul style="list-style-type: none"> Circuit between air mix door motor LH and A/C auto amp. Air mix door motor LH installation condition Air mix door motor LH A/C auto amp. 	HAC-72, "Diagnosis Procedure"
<ul style="list-style-type: none"> Discharge air temperature of passenger side does not change. Air mix door motor RH does not operate normally. 	<ul style="list-style-type: none"> Circuit between air mix door motor RH and A/C auto amp. Air mix door motor RH installation condition Air mix door motor RH A/C auto amp. 	HAC-74, "Diagnosis Procedure"
<ul style="list-style-type: none"> Intake door does not change. Intake door motor does not operate normally. 	<ul style="list-style-type: none"> Circuit between intake door motor and A/C auto amp. Intake door motor control linkage Intake door motor A/C auto amp. 	HAC-78, "Diagnosis Procedure"
Blower motor operation is malfunctioning.	<ul style="list-style-type: none"> Power supply system of front blower motor Circuit between front blower motor and A/C auto amp. Front blower motor A/C auto amp. 	HAC-89, "Diagnosis Procedure"
Compressor does not operate.	<ul style="list-style-type: none"> Circuit between magnet clutch and IPDM E/R Magnet clutch IPDM E/R (A/C relay) Circuit between ECM and refrigerant pressure sensor Refrigerant pressure sensor CAN communication circuit A/C auto amp. 	HAC-93, "Diagnosis Procedure"
<ul style="list-style-type: none"> Insufficient cooling. No cool air comes out. (Air flow volume is normal.) 	<ul style="list-style-type: none"> Magnet clutch control system Drive belt slipping Refrigerant cycle ECV (electrical control valve) Air leakage from each duct A/C auto amp. connection recognition signal circuit Temperature setting trimmer (front) 	HAC-98, "Diagnosis Procedure"

HEATER AND AIR CONDITIONING SYSTEM CONTROL SYMPTOMS

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

Symptom		Corresponding malfunction part	Reference
<ul style="list-style-type: none"> Insufficient heating. No warm air comes out. (Air flow volume is normal.) 		<ul style="list-style-type: none"> Engine cooling system Heater hose Heater core Air leakage from each duct Temperature setting trimmer (front) 	HAC-100. "Diagnosis Procedure"
Noise is heard when front air conditioning system operates.	During compressor operation	Refrigerant cycle	HA-17. "Symptom Table"
	During front blower motor operation	<ul style="list-style-type: none"> Mixing any foreign object in front blower motor Front blower motor fan breakage Front blower motor rotation inferiority 	HAC-91. "Component Inspection (Blower Motor)"
<ul style="list-style-type: none"> Memory function does not operate. Setting temperature is not memorized. 		<ul style="list-style-type: none"> Battery power supply system of A/C auto amp. A/C auto amp. 	HAC-82. "A/C AUTO AMP. : Diagnosis Procedure"

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INSUFFICIENT COOLING

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

INSUFFICIENT COOLING

Description

INFOID:000000008832784

Symptom

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

Diagnosis Procedure

INFOID:000000008832785

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-101, "Diagnosis Procedure"](#).

2.CHECK DRIVE BELT

Check tension of drive belt. Refer to [EM-16, "Inspection"](#).

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-18, "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 AMBIENT TEMPERATURE DISPLAY

Check that there is not much difference between actual ambient temperature and indicated temperature on information display in combination meter.

Is the inspection result normal?

- YES >> GO TO 6.
NO >> Perform diagnosis for the A/C auto amp. connection recognition signal circuit. Refer to [HAC-63, "Diagnosis Procedure"](#).

6.CHECK SETTING OF TEMPERATURE SETTING TRIMMER (FRONT)

1. Check setting value of temperature setting trimmer (front). Refer to [HAC-55, "Temperature Setting Trimmer"](#).
2. Check that temperature setting trimmer (front) is set to "+ direction".

NOTE:

INSUFFICIENT COOLING

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

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-104, "Removal and Installation"](#).

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INSUFFICIENT HEATING

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

INSUFFICIENT HEATING

Description

INFOID:000000008832786

Symptom

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

Diagnosis Procedure

INFOID:000000008832787

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-11, "System Inspection"](#).
2. Check reservoir tank cap. Refer to [CO-11, "System Inspection"](#).
3. Check water flow sounds of the engine coolant. Refer to [CO-11, "System 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-44, "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-55, "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-104, "Removal and Installation"](#).

COMPRESSOR DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

COMPRESSOR DOES NOT OPERATE

Description

INFOID:000000008832788

Symptom: Compressor does not operate.

Diagnosis Procedure

INFOID:000000008832789

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-93, "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-464, "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-104, "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-16, "Trouble Diagnosis Flow Chart"](#).

5. CHECK IPDM E/R INPUT SIGNAL

 With CONSULT

1. Start engine.

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HAC

COMPRESSOR DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

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
		OFF

Is the inspection result normal?

YES >> Inspection End.

NO >> Check CAN communication system. Refer to [LAN-16. "Trouble Diagnosis Flow Chart"](#).

A/C SWITCH ASSEMBLY

< REMOVAL AND INSTALLATION >

[AUTOMATIC AIR CONDITIONER]

REMOVAL AND INSTALLATION

A/C SWITCH ASSEMBLY

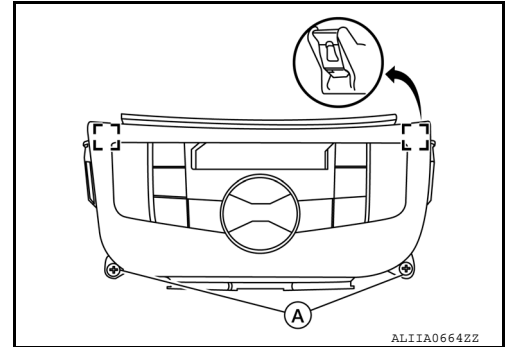
Removal and Installation

INFOID:000000008832790

REMOVAL

1. Remove the CVT shift selector finisher (CVT: RE0F11A). Refer to [TM-247. "Removal and Installation"](#).
2. Remove the MT shift selector finisher (6MT: RS6F94R). Refer to [TM-22. "Removal and Installation"](#).
3. Remove the A/C switch assembly screws (A).
4. Release the A/C switch assembly metal clips using a suitable tool.

 Metal clip



5. Disconnect the harness connectors from the A/C switch assembly and remove.

INSTALLATION

Installation is in the reverse order of removal.

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A/C AUTO AMP.

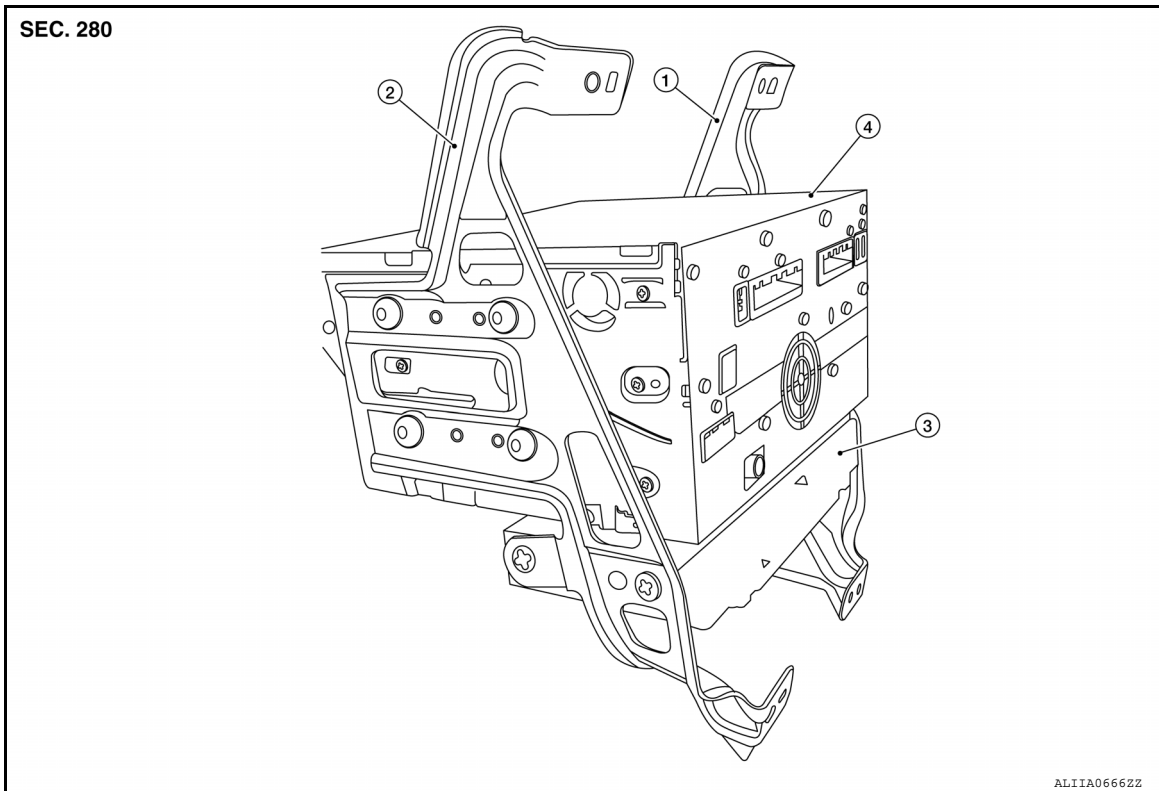
< REMOVAL AND INSTALLATION >

[AUTOMATIC AIR CONDITIONER]

A/C AUTO AMP.

Exploded View

INFOID:000000008832791



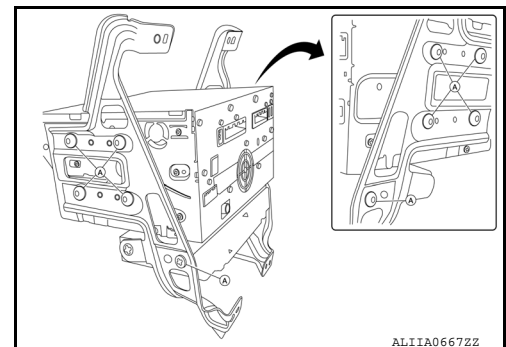
- 1. AV control unit bracket LH
- 2. AV control unit bracket RH
- 3. A/C auto amp.
- 4. AV control unit

Removal and Installation

INFOID:000000008832792

REMOVAL

1. Remove the AV control unit. Refer to [AV-401. "Removal and Installation"](#).
2. Remove the AV control unit bracket screws (A).



3. Remove the A/C auto amp.

INSTALLATION

Installation is in the reverse order of removal.

AMBIENT SENSOR

< REMOVAL AND INSTALLATION >

[AUTOMATIC AIR CONDITIONER]

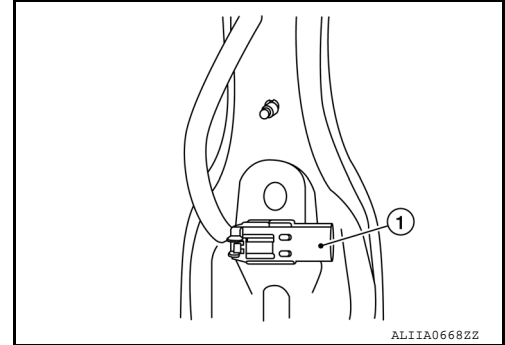
AMBIENT SENSOR

Removal and Installation

INFOID:000000008832793

REMOVAL

1. Remove the front under cover. Refer to [EXT-30. "FRONT UNDER COVER : Removal and Installation"](#).
2. Disconnect the harness connector from the ambient sensor.
3. Release the ambient sensor clip, then remove the ambient sensor (1).



INSTALLATION

Installation is in the reverse order of removal.

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IN-VEHICLE SENSOR

< REMOVAL AND INSTALLATION >

[AUTOMATIC AIR CONDITIONER]

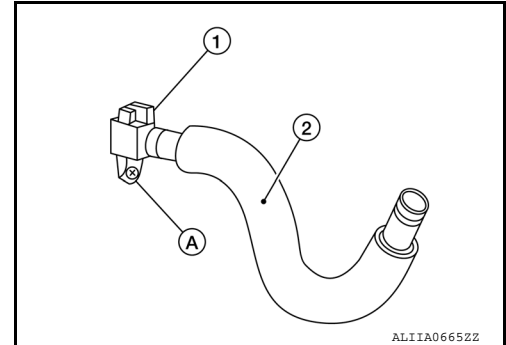
IN-VEHICLE SENSOR

Removal and Installation

INFOID:000000008832794

REMOVAL

1. Remove the instrument lower panel LH. Refer to [IP-21. "Removal and Installation"](#).
2. Disconnect the harness connector from the in-vehicle sensor.
3. Disconnect the aspirator hose (2) from the in-vehicle sensor.
4. Remove the in-vehicle sensor screw (A) and the in-vehicle sensor (1).



INSTALLATION

Installation is in the reverse order of removal.

SUNLOAD SENSOR

< REMOVAL AND INSTALLATION >

[AUTOMATIC AIR CONDITIONER]

SUNLOAD SENSOR

Removal and Installation

INFOID:000000008832795

REMOVAL

1. Release the defroster grille LH. Refer to [VTL-10, "SIDE DEFROSTER GRILLE : Removal and Installation"](#).
2. Disconnect the harness connector from the sunload sensor.
3. Release the sunload sensor pawls using a suitable tool, then remove the sunload sensor.

INSTALLATION

Installation is in the reverse order of removal.

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INTAKE SENSOR

< REMOVAL AND INSTALLATION >

[AUTOMATIC AIR CONDITIONER]

INTAKE SENSOR

Removal and Installation

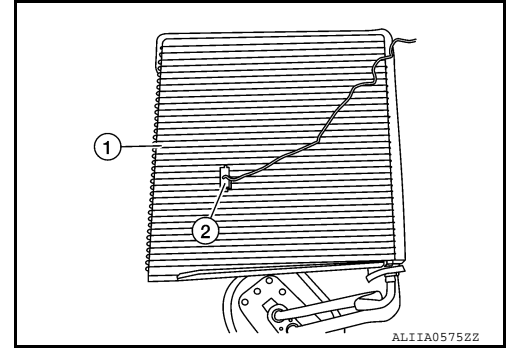
INFOID:000000008832796

REMOVAL

1. Remove the evaporator. Refer to [HA-45. "EVAPORATOR : Removal and Installation"](#).
2. Remove the intake sensor (2) by pulling it out of the evaporator (1).

CAUTION:

- Mark the mounting position of the intake sensor.
- Do not damage the evaporator core.



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

Mount the intake sensor in the same position as the original intake sensor on the evaporator core.

REFRIGERANT PRESSURE SENSOR

< REMOVAL AND INSTALLATION >

[AUTOMATIC AIR CONDITIONER]

REFRIGERANT PRESSURE SENSOR

Removal and Installation

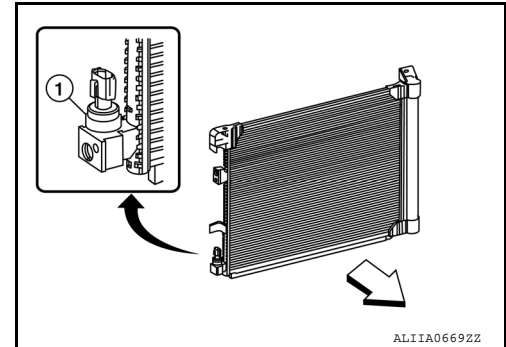
INFOID:000000008832797

REMOVAL

1. Discharge the refrigerant. Refer to [HA-23, "Recycle Refrigerant"](#).
2. Remove the core support upper. Refer to [HA-39, "Exploded View"](#).
3. Disconnect the harness connector from the refrigerant pressure sensor.
4. Remove the refrigerant pressure sensor (1).

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 the O-ring of the refrigerant pressure sensor for installation.
- After charging refrigerant, check for leaks. Refer to [HA-21, "Leak Test"](#).

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DOOR MOTOR

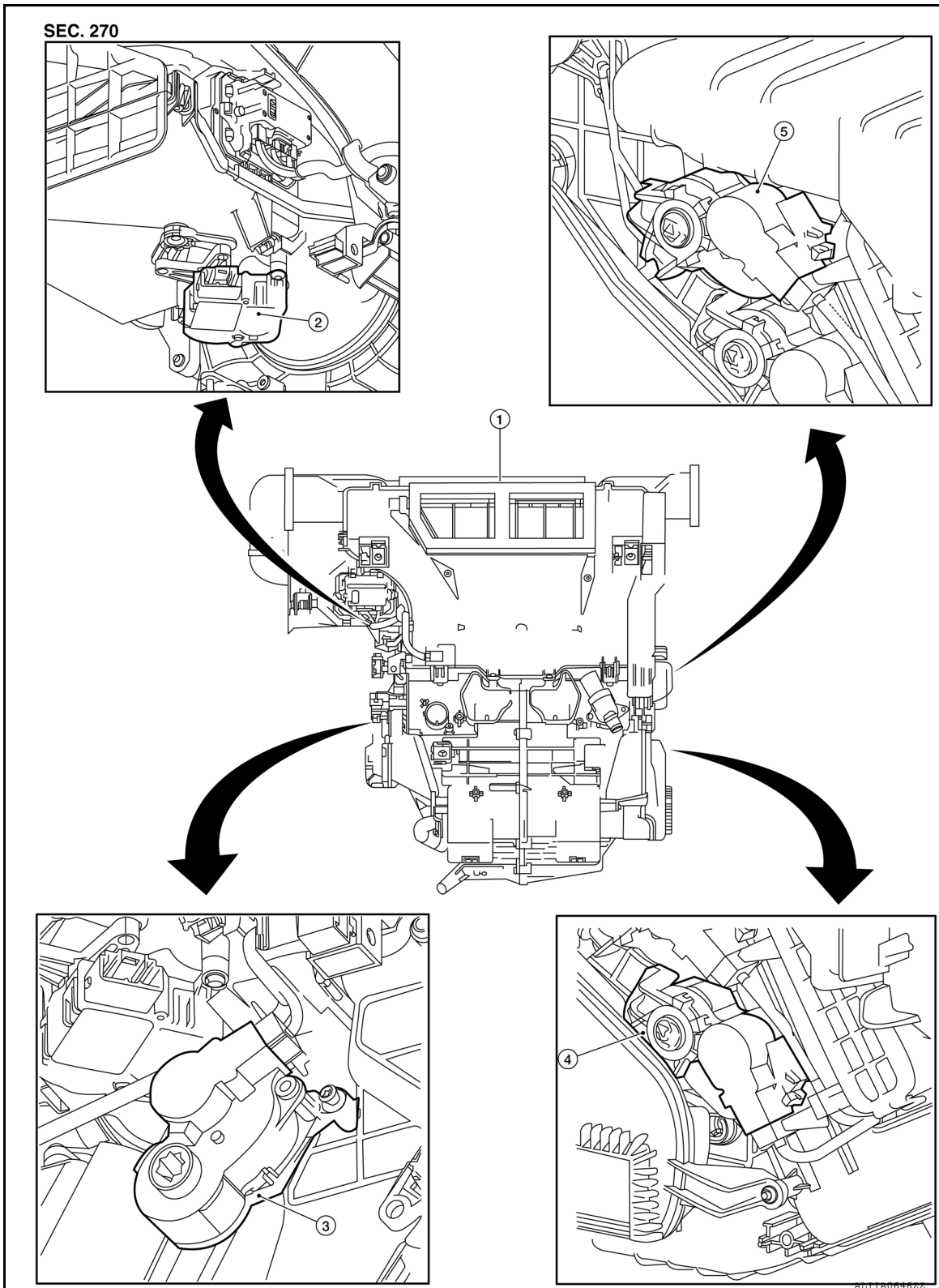
< REMOVAL AND INSTALLATION >

[AUTOMATIC AIR CONDITIONER]

DOOR MOTOR

Exploded View

INFOID:00000008832798



- 1. Heating and cooling unit assembly
- 2. Intake door motor

- 3. Mode door motor
- 4. Air mix door motor LH
- 5. Air mix door motor RH

DOOR MOTOR

< REMOVAL AND INSTALLATION >

[AUTOMATIC AIR CONDITIONER]

INTAKE DOOR MOTOR

INTAKE DOOR MOTOR : Removal and Installation

INFOID:000000008832799

REMOVAL

1. Remove the heating and cooling unit assembly. Refer to [HA-43, "HEATING AND COOLING UNIT ASSEMBLY : Removal and Installation"](#).
2. Disconnect the harness connector from the intake door motor.
3. Remove the intake door motor screws and the intake door motor.

INSTALLATION

Installation is in the reverse order of removal.

MODE DOOR MOTOR

MODE DOOR MOTOR : Removal and Installation

INFOID:000000008832800

REMOVAL

1. Remove the front floor duct LH. Refer to [VTL-7, "Exploded View"](#).
2. Disconnect the harness connector from the mode door motor.
3. Remove the mode door motor screws and the mode door motor.

INSTALLATION

Installation is in the reverse order of removal.

AIR MIX DOOR MOTOR

AIR MIX DOOR MOTOR : Removal and Installation - Air Mix Door Motor RH

INFOID:000000008832801

HAC

REMOVAL

1. Remove the glove box. Refer to [IP-22, "Removal and Installation"](#).
2. Disconnect the harness connector from the air mix door motor RH.
3. Remove the air mix door motor RH screws and the air mix door motor RH.

INSTALLATION

Installation is in the reverse order of removal.

AIR MIX DOOR MOTOR : Removal and Installation - Air Mix Door Motor LH

INFOID:000000008832802

REMOVAL

1. Remove the front floor duct RH. Refer to [VTL-7, "Exploded View"](#).
2. Disconnect the harness connector from the air mix door motor LH.
3. Remove the air mix door motor LH screws and the air mix door motor LH.

INSTALLATION

Installation is in the reverse order of removal.

POWER TRANSISTOR

< REMOVAL AND INSTALLATION >

[AUTOMATIC AIR CONDITIONER]

POWER TRANSISTOR

Removal and Installation

INFOID:000000009021939

REMOVAL

1. Remove the instrument lower panel LH. Refer to [IP-21. "Removal and Installation"](#).
2. Disconnect the harness connector from the power transistor.
3. Release the pawls using a suitable tool and remove the power transistor.

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:000000008833649

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 3 minutes before performing any service.

Precaution Necessary for Steering Wheel Rotation After Battery Disconnect

INFOID:000000008833650

NOTE:

- Before removing and installing any control units, first turn the push-button ignition switch to the LOCK position, then disconnect both battery cables.
- After finishing work, confirm that all control unit connectors are connected properly, then re-connect both battery cables.
- Always use CONSULT to perform self-diagnosis as a part of each function inspection after finishing work. If a DTC is detected, perform trouble diagnosis according to self-diagnosis results.

This vehicle is equipped with a push-button ignition switch and a steering lock unit.

If the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

If turning the steering wheel is required with the battery disconnected or discharged, follow the procedure below before starting the repair operation.

OPERATION PROCEDURE

1. Connect both battery cables.
 - NOTE:**
Supply power using jumper cables if battery is discharged.
2. Carry the Intelligent Key or insert it to the key slot and turn the push-button ignition switch to ACC position. (At this time, the steering lock will be released.)
3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
4. Perform the necessary repair operation.
5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the push-button ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the push-button ignition switch is turned to LOCK position.)
6. Perform self-diagnosis check of all control units using CONSULT.

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PRECAUTIONS

[MANUAL AIR CONDITIONER]

< PRECAUTION >

Precaution for Work

INFOID:000000008833651

- 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.

Working with HFC-134a (R-134a)

INFOID:000000008833652

WARNING:

- **CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. If the refrigerants are mixed compressor failure is likely to occur. Refer to [HA-25, "Inspection"](#). To determine the purity of HFC-134a (R-134a) in the vehicle and recovery tank, use Refrigerant Recovery/Recycling Recharging equipment and Refrigerant Identifier.**
- **Use only specified oil for the HFC-134a (R-134a) A/C system and HFC-134a (R-134a) components. If oil other than that specified is used, compressor failure is likely to occur.**
- **The specified HFC-134a (R-134a) oil rapidly absorbs moisture from the atmosphere. The following handling precautions must be observed:**
 - **When removing refrigerant components from a vehicle, immediately cap (seal) the component to minimize the entry of moisture from the atmosphere.**
 - **When installing refrigerant components to a vehicle, do not remove the caps (unseal) until just before connecting the components. Connect all refrigerant loop components as quickly as possible to minimize the entry of moisture into system.**
 - **Only use the specified oil from a sealed container. Immediately reseal containers of oil. Without proper sealing, oil will become moisture saturated and should not be used.**
 - **Avoid breathing A/C refrigerant and oil vapor or mist. Exposure may irritate eyes, nose and throat. Remove HFC-134a (R-134a) from the A/C system using certified service equipment meeting requirements of SAE J2210 [HFC-134a (R-134a) recycling equipment], or J2209 [HFC-134a (R-134a) recycling equipment], If accidental system discharge occurs, ventilate work area before resuming service. Additional health and safety information may be obtained from refrigerant and oil manufacturers.**
 - **Do not allow A/C oil to come in contact with styrofoam parts. Damage may result.**

CONTAMINATED REFRIGERANT

If a refrigerant other than pure HFC-134a (R-134a) is identified in a vehicle, your options are:

- Explain to the customer that environmental regulations prohibit the release of contaminated refrigerant into the atmosphere.
- Explain that recovery of the contaminated refrigerant could damage your service equipment and refrigerant supply.
- Suggest the customer return the vehicle to the location of previous service where the contamination may have occurred.
- If you choose to perform the repair, recover the refrigerant using only **dedicated equipment and containers. Do not recover contaminated refrigerant into your existing service equipment.** If your facility does not have dedicated recovery equipment, you may contact a local refrigerant product retailer for available ser-

PRECAUTIONS

[MANUAL AIR CONDITIONER]

< PRECAUTION >

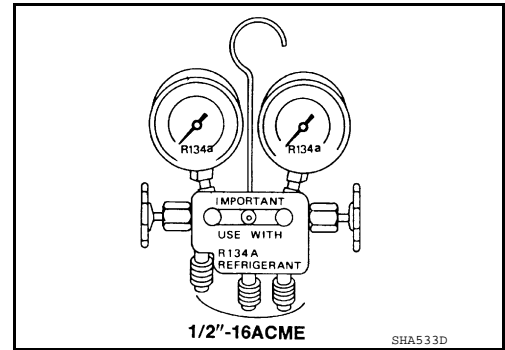
- vice. This refrigerant must be disposed of in accordance with all federal and local regulations. In addition, replacement of all refrigerant system components on the vehicle is recommended.
- If the vehicle is within the warranty period, the air conditioner warranty is void. Please contact NISSAN Customer Affairs for further assistance.

Precaution for Service Equipment

INFOID:000000008833653

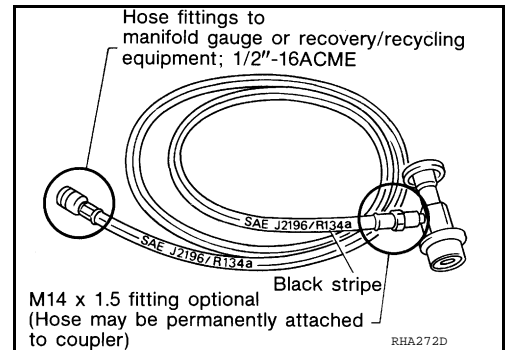
MANIFOLD GAUGE SET

Be certain that the gauge face indicates R-134a or 134a. Make sure the gauge set has 1/2"-16 ACME threaded connections for service hoses. Confirm the set has been used only with refrigerant HFC-134a (R-134a) along with specified oil.



SERVICE HOSES

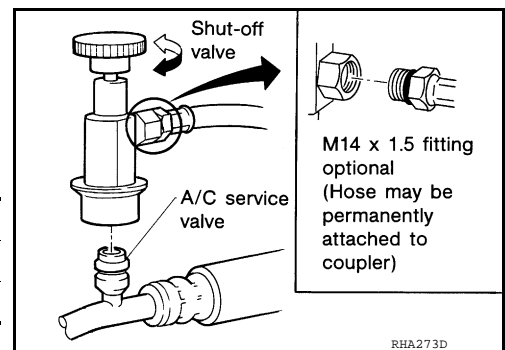
Be certain that the service hoses display the markings described (colored hose with black stripe). All hoses must include positive shut-off devices (either manual or automatic) near the end of the hoses opposite the manifold gauge.



SERVICE COUPLERS

Do not attempt to connect HFC-134a (R-134a) service couplers to a CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers will not properly connect to the CFC-12 (R-12) system. However, if an improper connection is attempted, discharging and contamination may occur.

Shut-off valve rotation	A/C service valve
Clockwise	Open
Counterclockwise	Close



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PREPARATION

< PREPARATION >

[MANUAL AIR CONDITIONER]

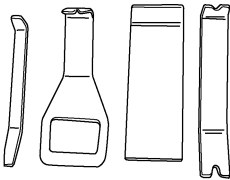
PREPARATION

PREPARATION

Special Service Tool


INFOID:000000008832807

The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

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

Commercial Service Tool

INFOID:000000008832808

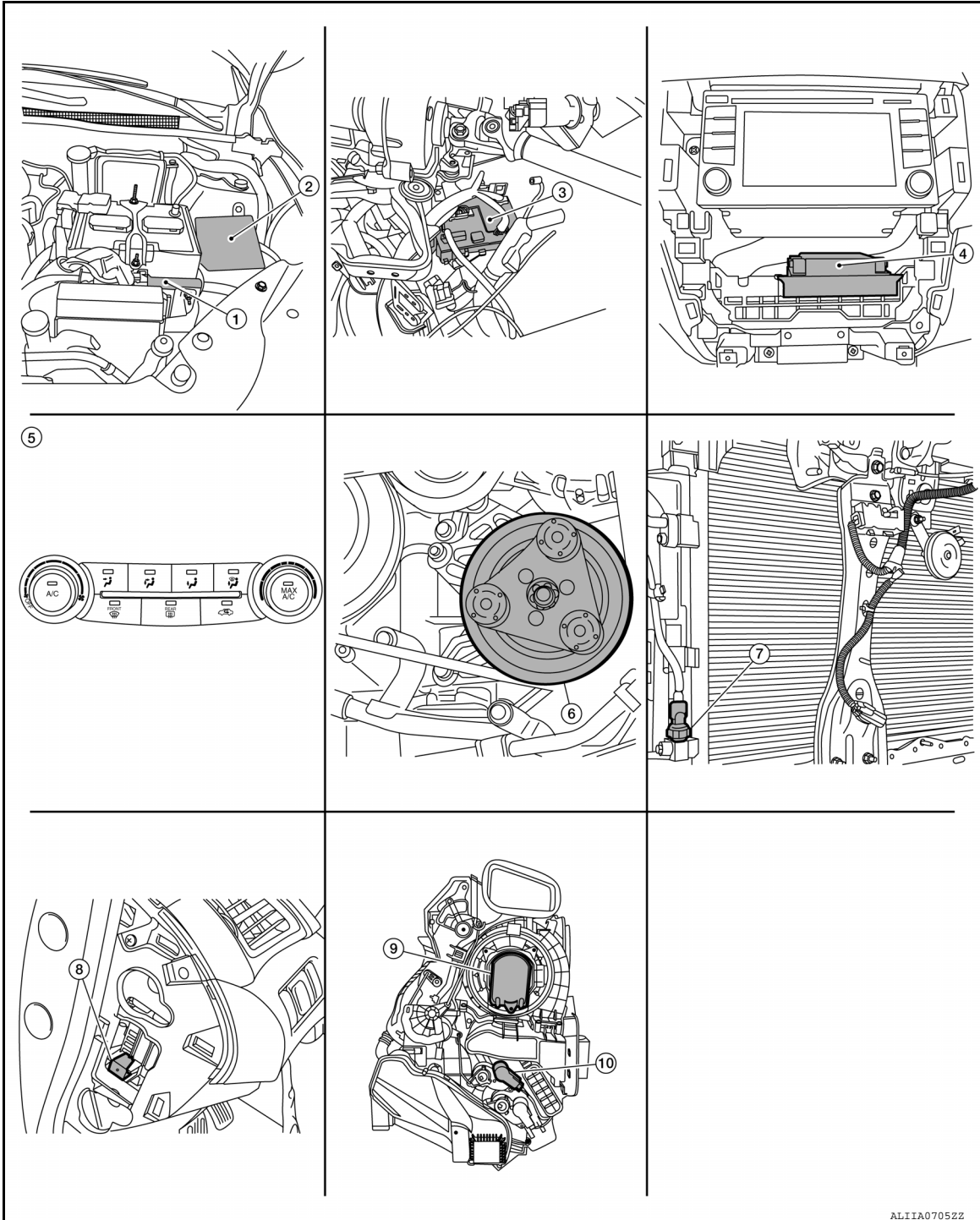
(Kent-Moore No.) Tool name	Description
(—) Power tool  PIIB1407E	Loosening nuts, screws and bolts

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Part Location

INFOID:000000009016191

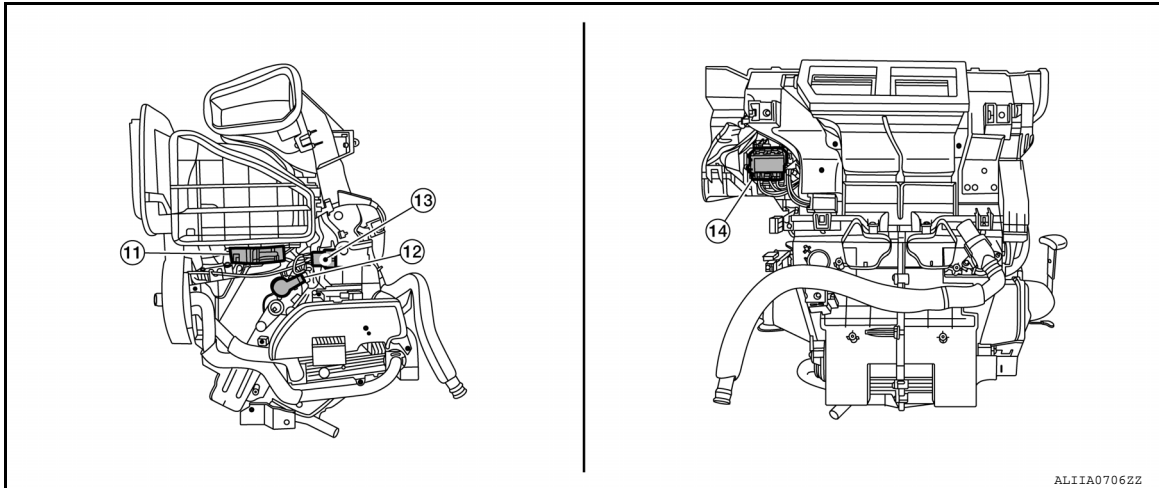


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COMPONENT PARTS

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]



- | | | |
|--|---|---|
| 1. ECM | 2. IPDM E/R | 3. BCM (view with combination meter removed) |
| 4. A/C auto amp. (view with A/C switch assembly removed) | 5. A/C switch assembly | 6. A/C Compressor |
| 7. Refrigerant pressure sensor (view with front bumper fascia removed) | 8. Fuse Block (J/B), Front blower motor relay | 9. Blower motor (view with front A/C assembly removed from vehicle) |
| 10. Mode door motor | 11. Intake door motor | 12. Air mix door motor |
| 13. Intake sensor | 14. Variable blower control | |

Component Description

INFOID:000000009016192

Component	Description
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.
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.
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.
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 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.
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.
Blower motor	The blower motor varies the speed at which the air flows through the ventilation system.
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.
Blower motor relay	The blower motor relay controls the flow of current to fuse 20, 21 and 22 in the Fuse Block (J/B). The relay is connected directly to ground, and is energized when the ignition switch is in the ON or START position.
Fuse Block (J/B)	Located in the passenger compartment, behind the left lower IP, the Fuse Block (J/B) contains the front blower motor relay and several fuses required for the air conditioner control system.
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.

COMPONENT PARTS

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]

Component	Description
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.
IPDM E/R	Refer to PCS-7, "RELAY CONTROL SYSTEM : System Description" (with Intelligent Key system) or PCS-35, "RELAY CONTROL SYSTEM : System Description" (without Intelligent Key system).
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.
Refrigerant pressure sensor	Refer to EC-29, "Refrigerant Pressure Sensor" .

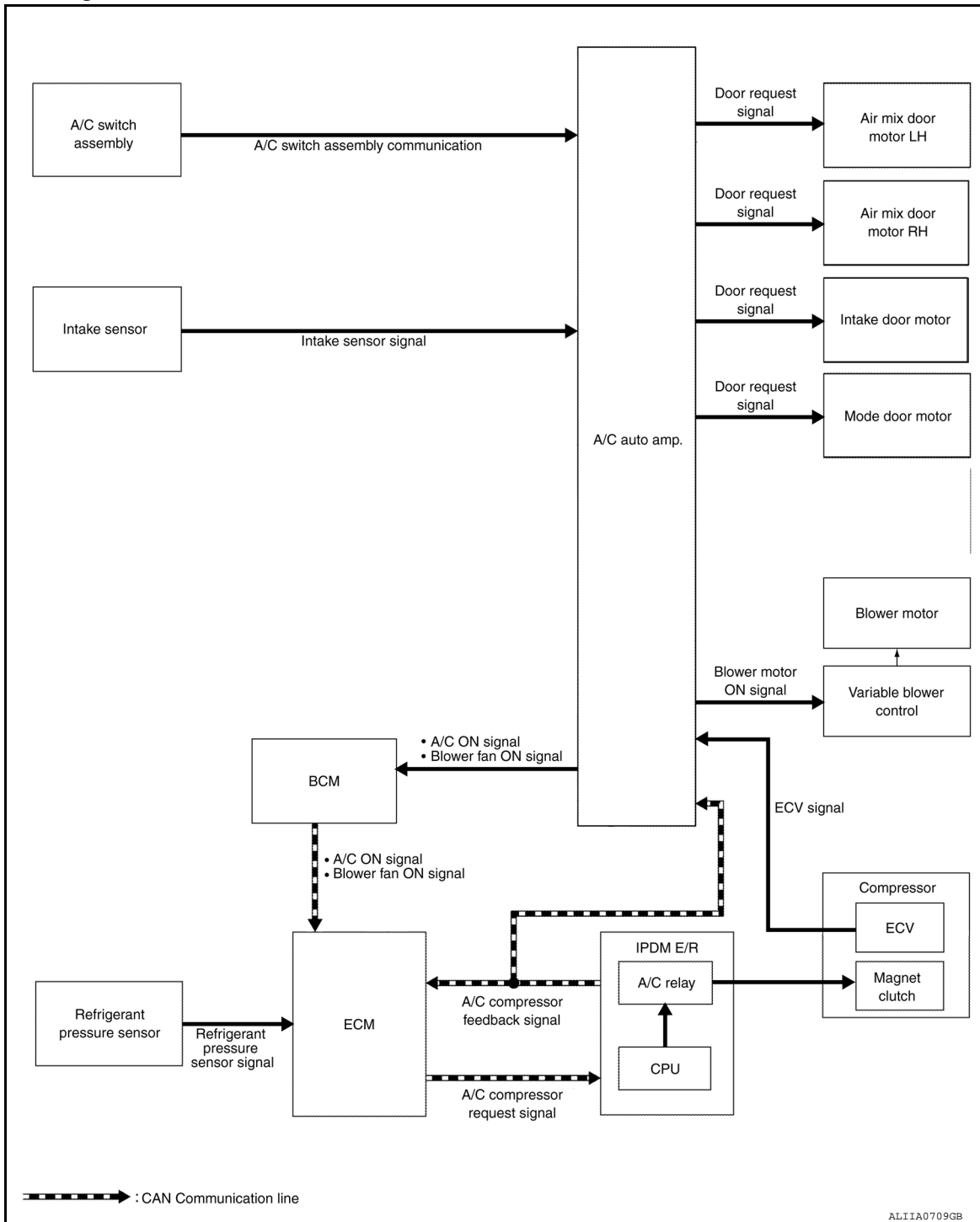
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SYSTEM

System Diagram

INFOID:000000008832811



System Description

INFOID:000000008832812

- 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-121, "Air Flow Control"](#)
- [HAC-121, "Air Inlet Control"](#)
- [HAC-121, "Air Outlet Control"](#)

SYSTEM

[MANUAL AIR CONDITIONER]

< SYSTEM DESCRIPTION >

- [HAC-121, "Compressor Control"](#)
- [HAC-122, "Door Control"](#)
- [HAC-125, "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-47, "COOLING FAN CONTROL : System Description"](#).
- Air conditioning cut control
Refer to [EC-46, "AIR CONDITIONING CUT CONTROL : System Description"](#).

Control by IPDM E/R

- Relay control
Refer to [PCS-7, "RELAY CONTROL SYSTEM : System Description"](#) (with Intelligent Key system) or [PCS-35, "RELAY CONTROL SYSTEM : System Description"](#) (without Intelligent Key system).
- Cooling fan control
Refer to [EC-47, "COOLING FAN CONTROL : System Description"](#).

Air Flow Control

INFOID:000000008832813

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:000000008832814

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:000000008832815

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:000000008832816

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.

SYSTEM

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]

- 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/cm², 452.4 psi) or more (When the engine speed is less than 1,500 rpm)
- 2.74 MPa (27.95 kg/cm², 397.3 psi) or more (When the engine speed is 1,500 rpm or more)
- 0.14 MPa (1.43 kg/cm², 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/cm², 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:000000008832817

AIR MIX DOOR MOTOR

DESCRIPTION

- The step motor system is adopted for air mix 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 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

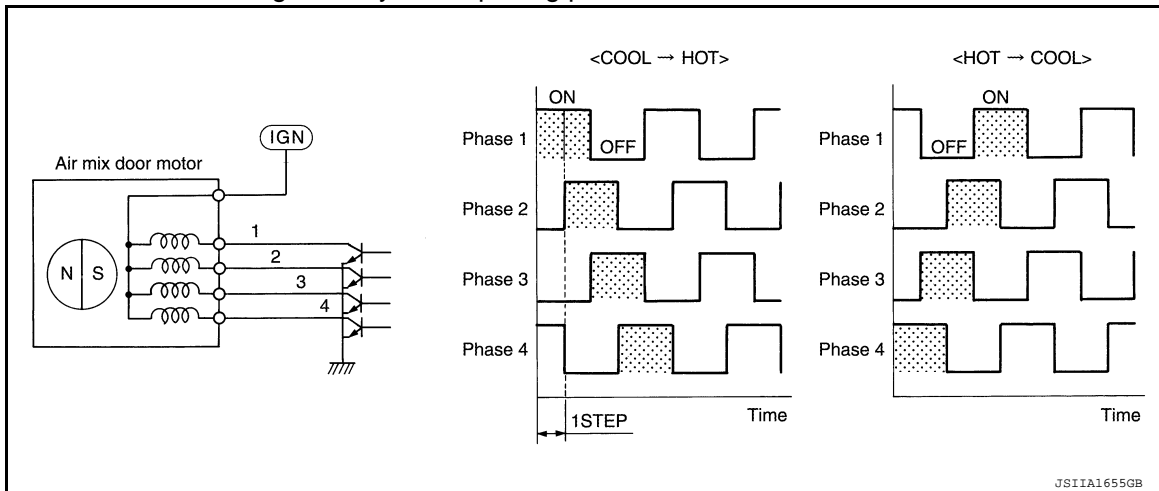
- The 4 drive coils are excited in sequence in order to drive the motor.

SYSTEM

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]

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



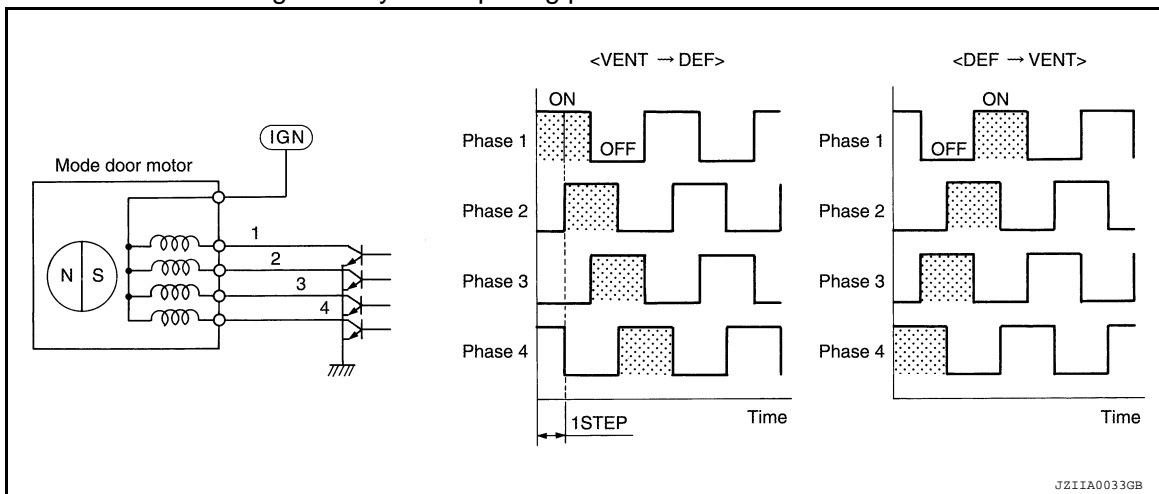
MODE DOOR MOTOR

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

- Motor operates intake door according to control signal from A/C auto amp.
- Rotation of motor is transmitted to intake door by lever, then air inlet is switched.

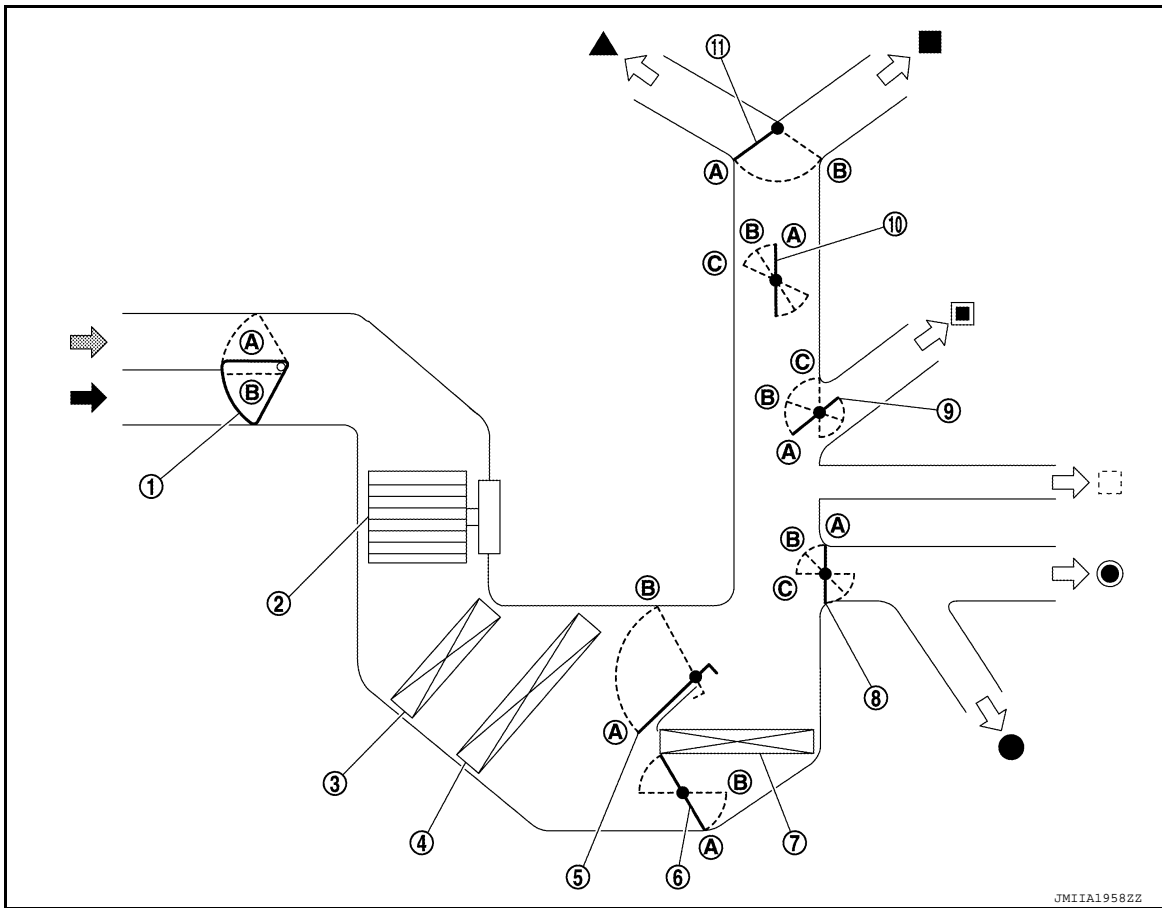
SWITCHES AND THEIR CONTROL FUNCTION

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SYSTEM

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]



- | | | |
|----------------------|--|--|
| ① Intake door | ② Blower motor | ③ Air conditioner filter |
| ④ Evaporator | ⑤ Upper air mix door (driver side/pas-
senger side) | ⑥ Lower air mix door (driver side/pas-
senger 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 |

SYSTEM

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]

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

AIR DISTRIBUTION

Discharge air flow						
MODE/DEF setting position	Air outlet/distribution					
	Ventilator			Foot		Defroster
	Front		Rear	Front	Rear	
	Center	Side				
	48.7%	37.4%	13.9%	—	—	—
	26.6%	25.6%	13.2%	23.6%	11.0%	—
	—	15.6%	16.9%	32.9%	16.3%	18.3%
	—	13.4%	15.1%	27.0%	14.3%	30.2%
	—	17.5%	18.8%	—	—	63.7%

Temperature Control

INFOID:0000000008832818

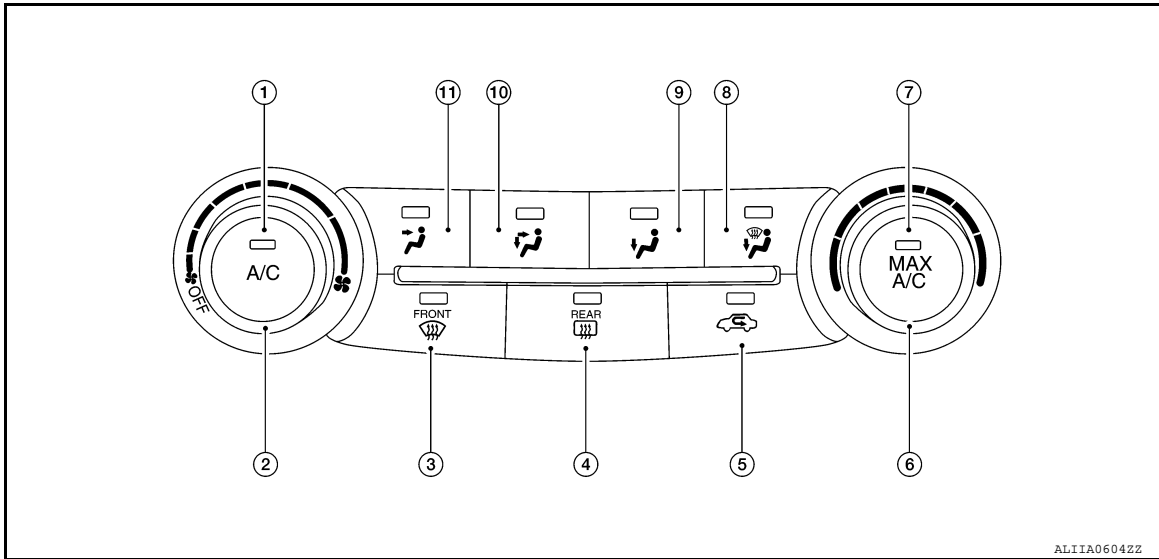
- When the ignition switch is in the ON position, the customer uses the front air control temperature control dial to set the desired temperature.
- The front air control calculates the target front air mix door opening angle depending on the selected temperature, intake temperature sensor, engine coolant 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:000000008832819

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

<p>A/C switch</p>	<p>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.</p> <p>NOTE: When front blower fan is OFF, the compressor control cannot be activated.</p>
<p>Blower control dial (with OFF switch)</p>	<ul style="list-style-type: none"> 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. Turns air conditioning system OFF. <p>NOTE: 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.)</p>
<p>DEF switch</p>	<p>Switches DEF mode (switch indicator) between ON ⇔ OFF with each press.</p> <ul style="list-style-type: none"> When DEF mode is turned ON, the air conditioning system changes to the following state. <ul style="list-style-type: none"> Air inlet: Fresh air intake Air outlet: DEF Blower fan: Manual setting. Compressor: ON 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: <ul style="list-style-type: none"> Air inlet: Fresh air intake Compressor: ON <p>NOTE: When front blower fan is OFF, DEF cannot be activated.</p>

OPERATION

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]

MAX A/C switch	<p>Switches the MAX A/C and compressor control switch indicators between ON ⇔ OFF with each press while front blower fan is activated.</p> <ul style="list-style-type: none"> • When MAX A/C mode is turned ON, the air conditioning system changes to the following state. <ul style="list-style-type: none"> - Air inlet: Recirculation air intake - Air outlet: Manual setting - Blower fan: Manual setting. - Compressor: ON • 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: <ul style="list-style-type: none"> - Air inlet: Fresh air intake - Compressor: ON <p>NOTE: When front blower fan is OFF, the compressor control cannot be activated.</p>	A B C D
MODE switches	<p>Selects air outlet from VENT, B/L, FOOT, and D/F.</p> <p>NOTE: When the air conditioning system is OFF, the air outlet can still be selected.</p>	E
REC switch	<ul style="list-style-type: none"> • Air inlet is selected to fresh air intake (REC) by pressing this switch. - REC indicator: ON <p>NOTE:</p> <ul style="list-style-type: none"> • When the air conditioning system is OFF, the air inlet can still be selected. • When D/F mode or DEF is selected, the REC button is disabled. 	F
Temperature control dial	<ul style="list-style-type: none"> • Selects desired temperature between full cold and full hot. - Clockwise rotation: Temperature increases. - Counterclockwise rotation: Temperature decreases. 	G

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DIAGNOSIS SYSTEM (BCM) (WITH INTELLIGENT KEY SYSTEM)

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]

DIAGNOSIS SYSTEM (BCM) (WITH INTELLIGENT KEY SYSTEM)

COMMON ITEM

COMMON ITEM : CONSULT Function (BCM - COMMON ITEM)

INFOID:000000009018115

APPLICATION ITEM

CONSULT performs the following functions via CAN communication with BCM.

Direct Diagnostic Mode	Description
ECU identification	The BCM part number is displayed.
Self Diagnostic Result	The BCM self diagnostic results are displayed.
Data Monitor	The BCM input/output data is displayed in real time.
Active Test	The BCM activates outputs to test components.
Work support	The settings for BCM functions can be changed.
Configuration	<ul style="list-style-type: none"> • The vehicle specification can be read and saved. • The vehicle specification can be written when replacing BCM.
CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication is displayed.

SYSTEM APPLICATION

BCM can perform the following functions.

System	Sub System	Direct Diagnostic Mode						
		ECU identification	Self Diagnostic Result	Data Monitor	Active Test	Work support	Configuration	CAN DIAG SUPPORT MNTR
Door lock	DOOR LOCK		×	×	×	×		
Rear window defogger	REAR DEFOGGER			×	×			
Warning chime	BUZZER			×	×			
Interior room lamp timer	INT LAMP			×	×	×		
Exterior lamp	HEAD LAMP			×	×	×		
Wiper and washer	WIPER			×	×	×		
Turn signal and hazard warning lamps	FLASHER			×	×	×		
Air conditioner	AIR CONDITIONER			×				
Intelligent Key system	INTELLIGENT KEY		×	×	×	×		
Combination switch	COMB SW			×				
BCM	BCM	×	×			×	×	×
Immobilizer	IMMU		×	×	×	×		
Interior room lamp battery saver	BATTERY SAVER			×	×	×		
Trunk open	TRUNK			×				
Vehicle security system	THEFT ALM			×	×	×		
RAP system	RETAINED PWR			×				
Signal buffer system	SIGNAL BUFFER			×				
TPMS	AIR PRESSURE MONITOR		×	×	×	×		

DIAGNOSIS SYSTEM (BCM) (WITH INTELLIGENT KEY SYSTEM)

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]

AIR CONDITIONER

AIR CONDITIONER : CONSULT Function (BCM - AIR CONDITIONER)

INFOID:000000009018116

DATA MONITOR

Monitor Item [Unit]	Description
FAN ON SIG [On/Off]	Indicates condition of fan switch.
AIR COND SW [On/Off]	Indicates condition of A/C switch.

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DIAGNOSIS SYSTEM (BCM) (WITHOUT INTELLIGENT KEY SYSTEM)

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]

DIAGNOSIS SYSTEM (BCM) (WITHOUT INTELLIGENT KEY SYSTEM) COMMON ITEM

COMMON ITEM : CONSULT Function (BCM - COMMON ITEM)

INFOID:000000009018117

APPLICATION ITEM

CONSULT performs the following functions via CAN communication with BCM.

Direct Diagnostic Mode	Description
ECU identification	The BCM part number is displayed.
Self Diagnostic Result	The BCM self diagnostic results are displayed.
Data Monitor	The BCM input/output data is displayed in real time.
Active Test	The BCM activates outputs to test components.
Work support	The settings for BCM functions can be changed.
Configuration	<ul style="list-style-type: none"> The vehicle specification can be read and saved. The vehicle specification can be written when replacing BCM.
CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication is displayed.

SYSTEM APPLICATION

BCM can perform the following functions.

System	Sub System	Direct Diagnostic Mode						
		ECU identification	Self Diagnostic Result	Data Monitor	Active Test	Work support	Configuration	CAN DIAG SUPPORT MNTR
Door lock	DOOR LOCK		×	×	×	×		
Rear window defogger	REAR DEFOGGER			×	×			
Warning chime	BUZZER			×	×			
Interior room lamp timer	INT LAMP			×	×	×		
Remote keyless entry system	MULTI REMOTE ENT			×	×	×		
Exterior lamp	HEAD LAMP			×	×	×		
Wiper and washer	WIPER			×	×	×		
Turn signal and hazard warning lamps	FLASHER			×	×			
Air conditioner	AIR CONDITIONER			×				
Combination switch	COMB SW			×				
BCM	BCM	×	×			×	×	×
Immobilizer	IMMU		×		×	×		
Interior room lamp battery saver	BATTERY SAVER			×	×	×		
Trunk open	TRUNK			×				
RAP system	RETAINED PWR			×		×		
Signal buffer system	SIGNAL BUFFER			×				
TPMS	AIR PRESSURE MONITOR		×	×	×	×		
Panic alarm system	PANIC ALARM				×			

DIAGNOSIS SYSTEM (BCM) (WITHOUT INTELLIGENT KEY SYSTEM)

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]

AIR CONDITIONER

AIR CONDITIONER : CONSULT Function (BCM - AIR CONDITIONER)

INFOID:000000009018118

DATA MONITOR

Monitor Item [Unit]	Description
IGN ON SW [On/Off]	Indicates condition of ignition switch ON position.
FAN ON SIG [On/Off]	Indicates condition of fan switch.
AIR COND SW [On/Off]	Indicates condition of A/C switch.
THERMO AMP [On/Off]	Indicates condition of thermo amp.
FR DEF SW [On/Off]	Indicates condition of front defrost switch.

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DIAGNOSIS SYSTEM (IPDM E/R) (WITH INTELLIGENT KEY SYSTEM)

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]

DIAGNOSIS SYSTEM (IPDM E/R) (WITH INTELLIGENT KEY SYSTEM)

Diagnosis Description

INFOID:000000009018119

AUTO ACTIVE TEST

Description

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

- Front wiper (LO, HI)
- Parking lamp
- License plate lamp
- Tail lamp
- Front fog lamp
- Headlamp (LO, HI)
- A/C compressor (magnet clutch)
- Cooling fan

Operation Procedure

NOTE:

Never perform auto active test in the following conditions.

- Passenger door is open
- CONSULT is connected

1. Close the hood and lift the wiper arms from the windshield. (Prevent windshield damage due to wiper operation)

NOTE:

When auto active test is performed with hood opened, sprinkle water on windshield beforehand.

2. Turn the ignition switch OFF.
3. Turn the ignition switch ON, and within 20 seconds, press the driver door switch 10 times. Then turn the ignition switch OFF.
4. Turn the ignition switch ON within 10 seconds. After that the horn sounds once and the auto active test starts.
5. After a series of the following operations is repeated 3 times, auto active test is completed.

NOTE:

- When auto active test has to be cancelled halfway through test, turn the ignition switch OFF.
- When auto active test is not activated, door switch may be the cause. Check door switch. Refer to [DLK-97, "Component Inspection"](#).

Inspection in Auto Active Test

When auto active test is actuated, the following operation sequence is repeated 3 times.

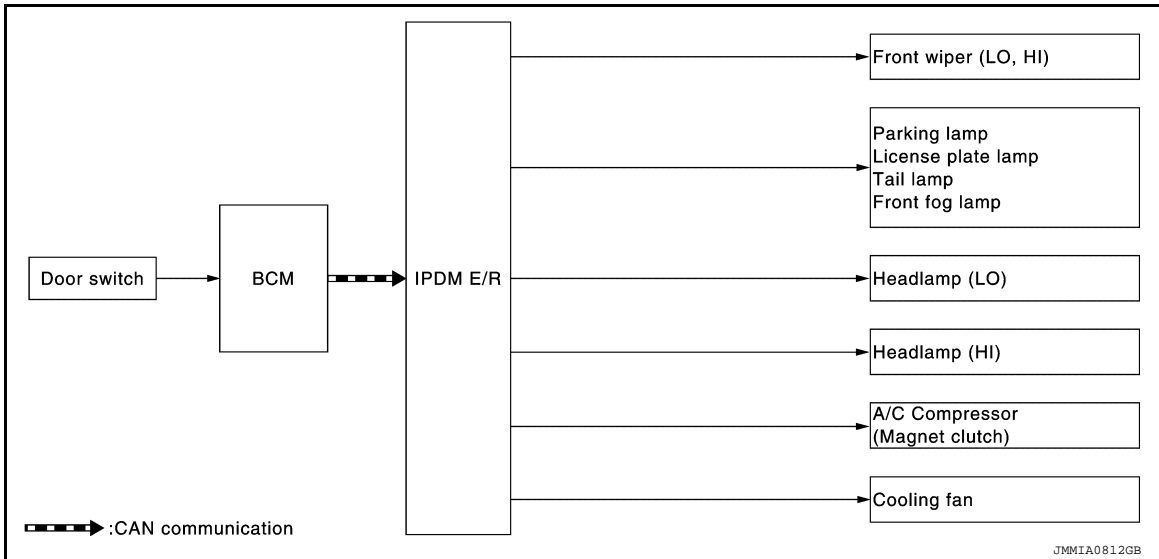
Operation sequence	Inspection location	Operation
1	Front wiper	LO for 5 seconds → HI for 5 seconds
2	<ul style="list-style-type: none">• Parking lamp• License plate lamp• Tail lamp• Front fog lamp	10 seconds
3	Headlamp	LO for 10 seconds → HI ON ⇔ OFF 5 times
4	A/C compressor (magnet clutch)	ON ⇔ OFF 5 times
5	Cooling fan	LO for 5 seconds → MID for 3 seconds → HI for 2 seconds

DIAGNOSIS SYSTEM (IPDM E/R) (WITH INTELLIGENT KEY SYSTEM)

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]

Concept of Auto Active Test



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

Diagnosis Chart in Auto Active Test

Symptom	Inspection contents	Possible cause
Any of the following components do not operate <ul style="list-style-type: none"> • Parking lamp • License plate lamp • Tail lamp • Front fog lamp • Headlamp (HI, LO) • Front wiper (HI, LO) 	Perform auto active test. Does the applicable system operate?	YES BCM signal input circuit
		NO <ul style="list-style-type: none"> • Lamp or motor • Lamp or motor ground circuit • Harness or connector between IPDM E/R and applicable system • IPDM E/R
A/C compressor does not operate	Perform auto active test. Does the magnet clutch operate?	YES <ul style="list-style-type: none"> • BCM signal input circuit • CAN communication signal between BCM and ECM • CAN communication signal between ECM and IPDM E/R
		NO <ul style="list-style-type: none"> • Magnet clutch • Harness or connector between IPDM E/R and magnet clutch • IPDM E/R
Cooling fan does not operate	Perform auto active test. Does the cooling fan operate?	YES <ul style="list-style-type: none"> • ECM signal input circuit • CAN communication signal between ECM and IPDM E/R
		NO <ul style="list-style-type: none"> • Cooling fan motor • Harness or connector between IPDM E/R and cooling fan motor • IPDM E/R

CONSULT Function (IPDM E/R)

INFOID:000000009018120

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.

DIAGNOSIS SYSTEM (IPDM E/R) (WITH INTELLIGENT KEY SYSTEM)

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]

Direct Diagnostic Mode	Description
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]	Main Signals	Description
MOTOR FAN REQ [%]	×	Indicates cooling fan speed signal received from ECM on CAN communication line
AC COMP REQ [On/Off]	×	Indicates A/C compressor request signal received from ECM on CAN communication line
TAIL&CLR REQ [On/Off]	×	Indicates position light request signal received from BCM on CAN communication line
HL LO REQ [On/Off]	×	Indicates low beam request signal received from BCM on CAN communication line
HL HI REQ [On/Off]	×	Indicates high beam request signal received from BCM on CAN communication line
FR FOG REQ [On/Off]	×	Indicates front fog light request signal received from BCM on CAN communication line
FR WIP REQ [Stop/1LOW/Low/Hi]	×	Indicates front wiper request signal received from BCM on CAN communication line
WIP AUTO STOP [STOP P/ACT P]	×	Indicates condition of front wiper auto stop signal
WIP PROT [Off/BLOCK]	×	Indicates condition of front wiper fail-safe operation
IGN RLY1 -REQ [On/Off]		Indicates ignition switch ON signal received from BCM on CAN communication line
IGN RLY [On/Off]	×	Indicates condition of ignition relay
PUSH SW [On/Off]		Indicates condition of push-button ignition switch
INTER/NP SW [On/Off]		Indicates condition of CVT shift position
ST RLY CONT [On/Off]		Indicates starter relay status signal received from BCM on CAN communication line
IHBT RLY -REQ [On/Off]		Indicates starter control relay signal received from BCM on CAN communication line
ST/INH RLY [Off/ ST /INH]		Indicates condition of starter relay and starter control relay
DETENT SW [On/Off]		Indicates condition of CVT shift selector (park position switch)
DTRL REQ [Off]		Indicates daytime light request signal received from BCM on CAN communication line
THFT HRN REQ [On/Off]		Indicates theft warning horn request signal received from BCM on CAN communication line
HORN CHIRP [On/Off]		Indicates horn reminder signal received from BCM on CAN communication line

ACTIVE TEST

Test item	Description
HORN	This test is able to check horn operation [On].
REAR DEFOGGER	This test is able to check rear window defogger operation [On/Off].
FRONT WIPER	This test is able to check wiper motor operation [Hi/Lo/Off].

DIAGNOSIS SYSTEM (IPDM E/R) (WITH INTELLIGENT KEY SYSTEM)

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]

Test item	Description
MOTOR FAN	This test is able to check cooling fan operation [4/3/2/1].
EXTERNAL LAMPS	This test is able to check external lamp operation [Fog/Hi/Lo/TAIL/Off].

CAN DIAG SUPPORT MNTR

Refer to [LAN-13, "CAN Diagnostic Support Monitor"](#).

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DIAGNOSIS SYSTEM (IPDM E/R) (WITHOUT INTELLIGENT KEY SYSTEM)

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]

DIAGNOSIS SYSTEM (IPDM E/R) (WITHOUT INTELLIGENT KEY SYSTEM)

Diagnosis Description

INFOID:000000009018121

AUTO ACTIVE TEST

Description

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

- Front wiper (LO, HI)
- Parking lamp
- License plate lamp
- Tail lamp
- Front fog lamp
- Headlamp (LO, HI)
- A/C compressor (magnet clutch)
- Cooling fan

Operation Procedure

NOTE:

Never perform auto active test in the following conditions.

- Passenger door is open
- CONSULT is connected

1. Close the hood and lift the wiper arms from the windshield. (Prevent windshield damage due to wiper operation)

NOTE:

When auto active test is performed with hood opened, sprinkle water on windshield beforehand.

2. Turn the ignition switch OFF.
3. Turn the ignition switch ON, and within 20 seconds, press the driver door switch 10 times. Then turn the ignition switch OFF.
4. Turn the ignition switch ON within 10 seconds. After that the horn sounds once and the auto active test starts.
5. After a series of the following operations is repeated 3 times, auto active test is completed.

NOTE:

- When auto active test has to be cancelled halfway through test, turn the ignition switch OFF.
- When auto active test is not activated, door switch may be the cause. Check door switch. Refer to [DLK-254, "Component Inspection"](#).

Inspection in Auto Active Test

When auto active test is actuated, the following operation sequence is repeated 3 times.

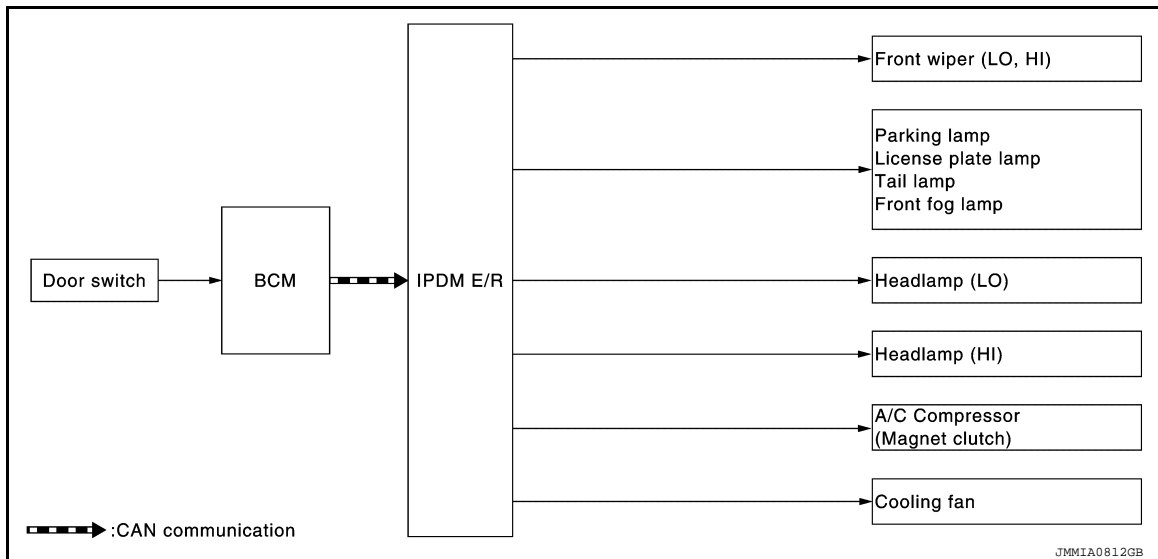
Operation sequence	Inspection location	Operation
1	Front wiper	LO for 5 seconds → HI for 5 seconds
2	<ul style="list-style-type: none">• Parking lamp• License plate lamp• Tail lamp• Front fog lamp	10 seconds
3	Headlamp	LO for 10 seconds → HI ON ⇔ OFF 5 times
4	A/C compressor (magnet clutch)	ON ⇔ OFF 5 times
5	Cooling fan	LO for 5 seconds → MID for 3 seconds → HI for 2 seconds

DIAGNOSIS SYSTEM (IPDM E/R) (WITHOUT INTELLIGENT KEY SYSTEM)

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]

Concept of Auto Active Test



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

Diagnosis Chart in Auto Active Test

Symptom	Inspection contents	Possible cause
Any of the following components do not operate <ul style="list-style-type: none"> • Parking lamp • License plate lamp • Tail lamp • Front fog lamp • Headlamp (HI, LO) • Front wiper (HI, LO) 	Perform auto active test. Does the applicable system operate?	YES BCM signal input circuit
		NO <ul style="list-style-type: none"> • Lamp or motor • Lamp or motor ground circuit • Harness or connector between IPDM E/R and applicable system • IPDM E/R
A/C compressor does not operate	Perform auto active test. Does the magnet clutch operate?	YES <ul style="list-style-type: none"> • BCM signal input circuit • CAN communication signal between BCM and ECM • CAN communication signal between ECM and IPDM E/R
		NO <ul style="list-style-type: none"> • Magnet clutch • Harness or connector between IPDM E/R and magnet clutch • IPDM E/R
Cooling fan does not operate	Perform auto active test. Does the cooling fan operate?	YES <ul style="list-style-type: none"> • ECM signal input circuit • CAN communication signal between ECM and IPDM E/R
		NO <ul style="list-style-type: none"> • Cooling fan motor • Harness or connector between IPDM E/R and cooling fan motor • IPDM E/R

CONSULT Function (IPDM E/R)

INFOID:000000009018122

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.

DIAGNOSIS SYSTEM (IPDM E/R) (WITHOUT INTELLIGENT KEY SYSTEM)

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]

Direct Diagnostic Mode	Description
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-48, "DTC Index"](#).

DATA MONITOR

Monitor Item [Unit]	Main Signals	Description
MOTOR FAN REQ [%]	×	Indicates cooling fan speed signal received from ECM on CAN communication line
AC COMP REQ [On/Off]	×	Indicates A/C compressor request signal received from ECM on CAN communication line
TAIL&CLR REQ [On/Off]	×	Indicates position light request signal received from BCM on CAN communication line
HL LO REQ [On/Off]	×	Indicates low beam request signal received from BCM on CAN communication line
HL HI REQ [On/Off]	×	Indicates high beam request signal received from BCM on CAN communication line
FR FOG REQ [On/Off]	×	Indicates front fog light request signal received from BCM on CAN communication line
FR WIP REQ [Stop/1LOW/Low/Hi]	×	Indicates front wiper request signal received from BCM on CAN communication line
WIP AUTO STOP [STOP P/ACT P]	×	Indicates condition of front wiper auto stop signal
WIP PROT [Off/BLOCK]	×	Indicates condition of front wiper fail-safe operation
IGN RLY1 -REQ [On/Off]		Indicates ignition switch ON signal received from BCM on CAN communication line
IGN RLY [On/Off]	×	Indicates condition of ignition relay
PUSH SW [On/Off]		Indicates condition of push-button ignition switch
INTER/NP SW [On/Off]		Indicates condition of CVT shift position
ST RLY CONT [On/Off]		Indicates starter relay status signal received from BCM on CAN communication line
IHBT RLY -REQ [On/Off]		Indicates starter control relay signal received from BCM on CAN communication line
ST/INH RLY [Off/ ST /INH]		Indicates condition of starter relay and starter control relay
DETENT SW [On/Off]		Indicates condition of CVT shift selector (park position switch)
DTRL REQ [Off]		Indicates daytime light request signal received from BCM on CAN communication line
THFT HRN REQ [On/Off]		Indicates theft warning horn request signal received from BCM on CAN communication line
HORN CHIRP [On/Off]		Indicates horn reminder signal received from BCM on CAN communication line

ACTIVE TEST

Test item	Description
HORN	This test is able to check horn operation [On].
REAR DEFOGGER	This test is able to check rear window defogger operation [On/Off].
FRONT WIPER	This test is able to check wiper motor operation [Hi/Lo/Off].

DIAGNOSIS SYSTEM (IPDM E/R) (WITHOUT INTELLIGENT KEY SYSTEM)

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]

Test item	Description
MOTOR FAN	This test is able to check cooling fan operation [4/3/2/1].
EXTERNAL LAMPS	This test is able to check external lamp operation [Fog/Hi/Lo/TAIL/Off].

CAN DIAG SUPPORT MNTR

Refer to [LAN-13, "CAN Diagnostic Support Monitor"](#).

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A/C AUTO AMP.

< ECU DIAGNOSIS INFORMATION >

[MANUAL AIR CONDITIONER]

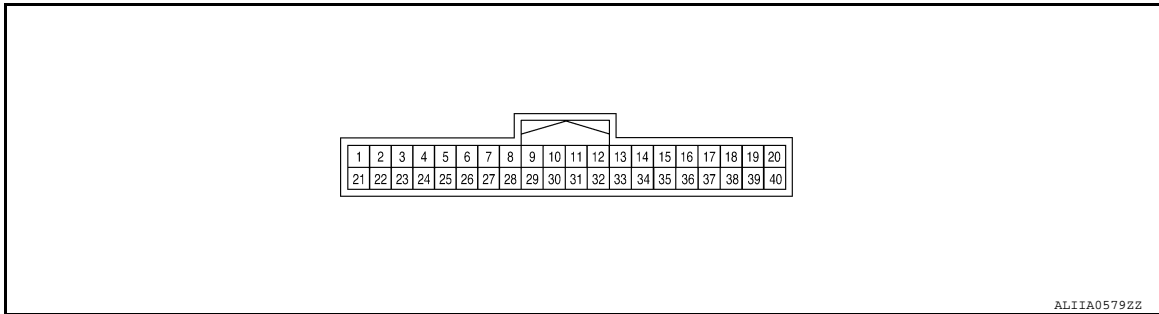
ECU DIAGNOSIS INFORMATION

A/C AUTO AMP.

Reference Value

INFOID:0000000008832823

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition		Value
+	-	Signal name	Input/ Output			
1* (GR)	30 (B)	ECV control signal	Output	Ignition switch ON	ACTIVE TEST (HVAC TEST: MODE4)	<p style="text-align: right; font-size: small;">SJIA1607E</p>
3* (L)	30 (B)	Intake sensor signal	Input	Ignition switch ON		0 – 4.8 V Output voltage varies with evapo- rator fin temperature
10* (P)	30 (B)	Sensor ground	—	Ignition switch ON		0 – 0.1 V
11 (LG)	30 (B)	Ignition power supply	Input	Ignition switch ON		11 – 14 V
12 (SB)	30 (B)	Battery power supply	Input	Ignition switch OFF		11 – 14 V
13 (V)	30 (B)	Power transistor control signal	Output	<ul style="list-style-type: none"> Ignition switch ON Blower motor: 1st speed (manual) 		<p style="text-align: right; font-size: small;">ZJIA0863J</p>

A/C AUTO AMP.

< ECU DIAGNOSIS INFORMATION >

[MANUAL AIR CONDITIONER]

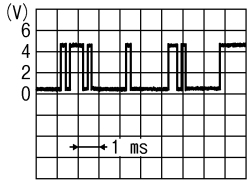
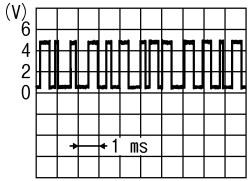

Terminal No. (Wire color)		Description		Condition	Value				
+	-	Signal name	Input/ Output						
14 (LG)	30 (B)	Blower fan ON signal	Output	<ul style="list-style-type: none"> Ignition switch ON Blower motor: OFF 	<p style="text-align: right; font-size: small;">JMIIA0941GB</p>				
				<ul style="list-style-type: none"> Ignition switch ON Blower motor: ON 	<p style="text-align: right; font-size: small;">PKIB4960J</p>				
15* (Y)	30 (B)	A/C ON signal	Output	<ul style="list-style-type: none"> Ignition switch ON A/C switch: OFF (A/C indicator: OFF) 	<p style="text-align: right; font-size: small;">JPMIA0012GB</p>				
				<ul style="list-style-type: none"> Ignition switch ON A/C switch: ON (A/C indicator: ON) 	<p style="text-align: right; font-size: small;">JMIIA0941GB</p>				
16 (W)	30 (B)	RR DEF signal	Output	Defroster switch	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>OFF</td> <td>0 V</td> </tr> <tr> <td>ON</td> <td>12 V</td> </tr> </table>	OFF	0 V	ON	12 V
OFF	0 V								
ON	12 V								
17 (BR)	30 (B)	A/MIX drive 4	Air mix door motor (passenger side) drive signal	Output	<ul style="list-style-type: none"> Ignition switch ON Right after the temperature control switch (passenger side) operation 				
18 (SB)	30 (B)	A/MIX drive 3							
19 (LG)	30 (B)	A/MIX drive 2							
20 (L)	30 (B)	A/MIX drive 1							
21 (W)	30 (B)	Ignition power supply	Input	Ignition switch ON	11 – 14 V				
23* (P)	30 (B)	A/C auto amp. connection recognition signal	Output	Ignition switch ON	11 – 14 V				
25 (R)	30 (B)	RR DEF feedback	Input	Defroster switch	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>OFF</td> <td>0 V</td> </tr> <tr> <td>ON</td> <td>12 V</td> </tr> </table>	OFF	0 V	ON	12 V
				OFF	0 V				
ON	12 V								

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A/C AUTO AMP.

< ECU DIAGNOSIS INFORMATION >

[MANUAL AIR CONDITIONER]

Terminal No. (Wire color)		Description		Condition	Value	
+	-	Signal name	Input/ Output			
27 (LG)	30 (B)	Communication signal (A/C control → A/C auto amp.)		Input	Ignition switch ON  <small>SJIA1522J</small>	
28 (BR)	30 (B)	Communication signal (A/C auto amp. → A/C control)		Output	Ignition switch ON  <small>SJIA1521J</small>	
30 (B)	Ground	Ground		—	Ignition switch ON 0 – 0.1 V	
35 (G)	30 (B)	FRE	Intake door motor drive signal	Output	• Ignition switch ON • Intake switch: REC → FRE	9.5 – 13.5 V
					• Ignition switch ON • Intake switch: FRE → REC	0 – 1 V
36 (V)	30 (B)	REC			• Ignition switch ON • Intake switch: FRE → REC	9.5 – 13.5 V
					• Ignition switch ON • Intake switch: REC → FRE	0 – 1 V
37 (GR)	30 (B)	MODE drive 4	Mode door motor drive signal	Output	• Ignition switch ON • Right after the MODE switch operation	 <small>JPIIA1647GB</small>
38 (G)	30 (B)	MODE drive 3				
39 (Y)	30 (B)	MODE drive 2				
40 (O)	30 (B)	MODE drive 1				

*:With manual A/C

ECM, IPDM E/R, BCM

List of ECU Reference

INFOID:000000008832824

ECU	Reference
ECM	EC-76. "Reference Value"
	EC-89. "Fail Safe"
	EC-92. "DTC Inspection Priority Chart"
	EC-93. "DTC Index"
IPDM E/R (with Intelligent Key system)	PCS-13. "Reference Value"
	PCS-19. "Fail-safe"
	PCS-20. "DTC Index"
IPDM E/R (without Intelligent Key system)	PCS-41. "Reference Value"
	PCS-47. "Fail-Safe"
	PCS-48. "DTC Index"
BCM (with Intelligent Key system)	BCS-29. "Reference Value"
	BCS-47. "Fail-safe"
	BCS-49. "DTC Inspection Priority Chart"
	BCS-50. "DTC Index"
BCM (without Intelligent Key system)	BCS-98. "Reference Value"
	BCS-109. "Fail-safe"
	BCS-109. "DTC Inspection Priority Chart"
	BCS-110. "DTC Index"

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MANUAL AIR CONDITIONING SYSTEM

[MANUAL AIR CONDITIONER]

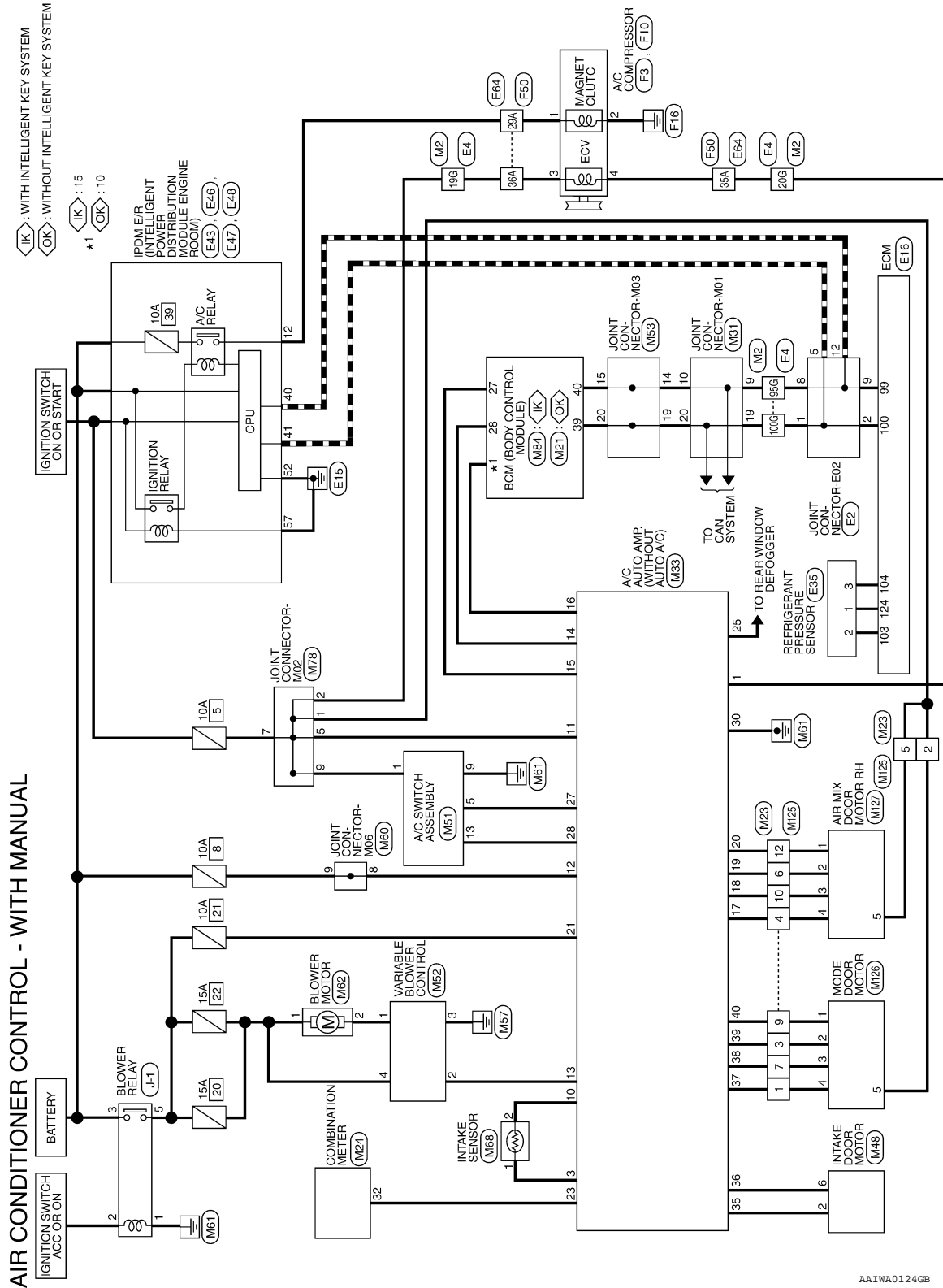
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WIRING DIAGRAM

MANUAL AIR CONDITIONING SYSTEM

Wiring Diagram

INFOID:000000008832825



AAIWA0124GB

MANUAL AIR CONDITIONING SYSTEM

< WIRING DIAGRAM >

[MANUAL AIR CONDITIONER]

Connector No.	M21
Connector Name	BCM (BODY CONTROL MODULE) (WITHOUT INTELLIGENT KEY SYSTEM)
Connector Color	WHITE

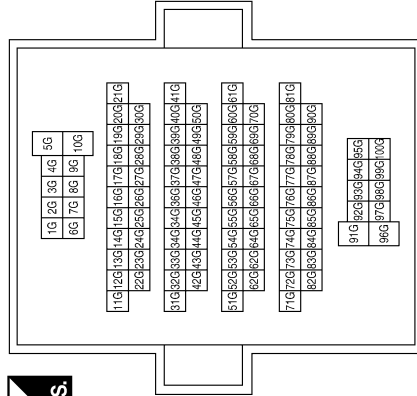


1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

Terminal No.	Color of Wire	Signal Name
10	W	RR DEFOGGER SW
27	Y	AIRCON SW
28	LG	BLOWER FAN SW
39	L	CAN-H
40	P	CAN-L

Terminal No.	Color of Wire	Signal Name
19G	SB	-
20G	GR	-
95G	P	-
100G	L	-

Connector No.	M2
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Connector No.	M24
Connector Name	COMBINATION METER
Connector Color	WHITE

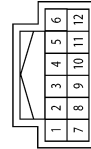


20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21

Terminal No.	Color of Wire	Signal Name
32	P	A/C PD CUT

Terminal No.	Color of Wire	Signal Name
5	V	-
6	LG	-
7	G	-
9	O	-
10	SB	-
12	L	-

Connector No.	M23
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	GR	-
2	P	-
3	Y	-
4	BR	-

AA1IA0214GB

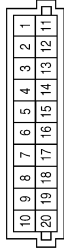
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MANUAL AIR CONDITIONING SYSTEM

< WIRING DIAGRAM >

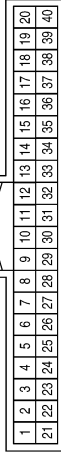
[MANUAL AIR CONDITIONER]

Connector No.	M31
Connector Name	JOINT CONNECTOR-M01
Connector Color	GRAY



Terminal No.	Color of Wire	Signal Name
9	P	-
10	P	-
19	L	-
20	L	-

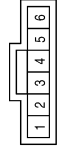
Connector No.	M33
Connector Name	A/C AUTO AMP. (WITHOUT AUTO A/C)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	GR	ECV
3	L	INTAKE SENS
10	P	SENS GND
11	LG	IGN 1
12	SB	BAT
13	V	BLOWER PWM
14	LG	FAN ON O/P
15	Y	A/C ON O/P

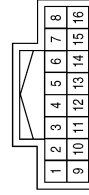
Terminal No.	Color of Wire	Signal Name
16	W	RR DEF SW O/P
17	BR	R MIX4
18	SB	R MIX3
19	LG	R MIX2
20	L	R MIX1
21	W	IGN 2
23	P	PD CUT
25	R	RR DEF IND
27	LG	UART RX
28	BR	UART TX
30	B	GND
35	G	FRESH
36	V	REC
37	GR	MODE 4
38	G	MODE 3
39	Y	MODE 1
40	O	MODE 1

Connector No.	M48
Connector Name	INTAKE DOOR MOTOR
Connector Color	BLACK



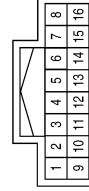
Terminal No.	Color of Wire	Signal Name
2	G	-
6	V	-

Connector No.	M51
Connector Name	A/C SWITCH ASSEMBLY
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	W	-
5	LG	-
9	B	-
13	BR	-

Connector No.	M52
Connector Name	VARIABLE BLOWER CONTROL
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	L	-
2	V	-
3	B	-
4	P	-

MANUAL AIR CONDITIONING SYSTEM

< WIRING DIAGRAM >

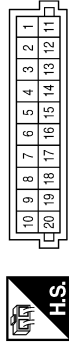
[MANUAL AIR CONDITIONER]

Connector No.	M62
Connector Name	BLOWER MOTOR
Connector Color	WHITE



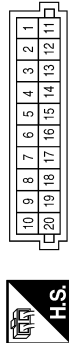
Terminal No.	Color of Wire	Signal Name
1	P	-
2	L	-

Connector No.	M60
Connector Name	JOINT CONNECTOR-M06
Connector Color	BLUE



Terminal No.	Color of Wire	Signal Name
8	SB	-
9	W	-

Connector No.	M53
Connector Name	JOINT CONNECTOR-M03
Connector Color	PINK



Terminal No.	Color of Wire	Signal Name
14	P	-
15	P	-
19	L	-
20	L	-

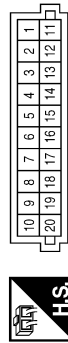
Connector No.	M84
Connector Name	BCM (BODY CONTROL MODULE) (WITH INTELLIGENT KEY SYSTEM)
Connector Color	BLACK



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
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Terminal No.	Color of Wire	Signal Name
15	W	RR DEFOGGER SW
27	Y	AIRCON SW
28	LG	BLOWER FAN SW
39	L	CAN-H
40	P	CAN-L

Connector No.	M78
Connector Name	JOINT CONNECTOR-M02
Connector Color	PINK



Terminal No.	Color of Wire	Signal Name
1	V	-
2	SB	-
5	LG	-
7	G	-
9	W	-

Connector No.	M68
Connector Name	INTAKE SENSOR
Connector Color	BROWN



Terminal No.	Color of Wire	Signal Name
1	L	-
2	P	-

AA1IA0216GB

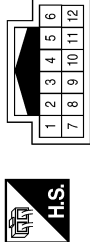
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MANUAL AIR CONDITIONING SYSTEM

< WIRING DIAGRAM >

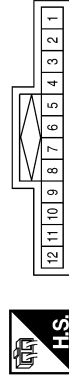
[MANUAL AIR CONDITIONER]

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



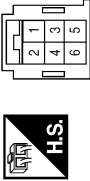
Terminal No.	Color of Wire	Signal Name
1	GR	-
2	P	-
3	Y	-
4	BR	-
5	V	-
6	LG	-
7	G	-
9	O	-
10	SB	-
12	L	-

Connector No.	E2
Connector Name	JOINT CONNECTOR-E02
Connector Color	BLUE



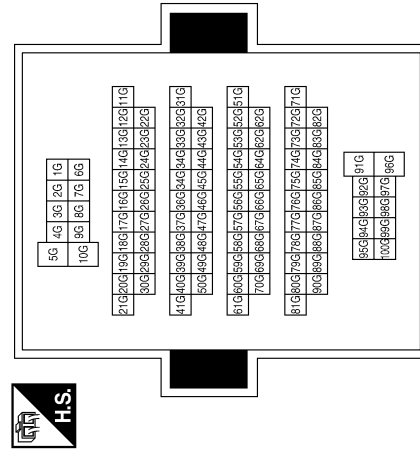
Terminal No.	Color of Wire	Signal Name
1	L	-
2	L	-
5	L	-
8	P	-
9	P	-
12	P	-

Connector No.	M126
Connector Name	MODE DOOR MOTOR
Connector Color	BLACK

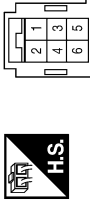


Terminal No.	Color of Wire	Signal Name
1	O	-
2	Y	-
3	G	-
4	GR	-
5	V	-
6	-	-

Connector No.	E4
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Connector No.	M127
Connector Name	AIR MIX DOOR MOTOR RH
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	L	-
2	LG	-
3	SB	-
4	BR	-
5	V	-
6	-	-

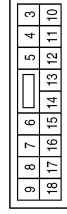
Terminal No.	Color of Wire	Signal Name
19G	W	-
20G	GR	-
95G	P	-
100G	L	-

MANUAL AIR CONDITIONING SYSTEM

< WIRING DIAGRAM >

[MANUAL AIR CONDITIONER]

Connector No.	E43
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE



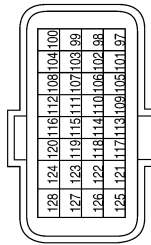
Terminal No.	Color of Wire	Signal Name
12	SB	A/C CLUTCH

Connector No.	E35
Connector Name	REFRIGERANT PRESSURE SENSOR
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	V	-
2	P	-
3	L	-

Connector No.	E16
Connector Name	ECM
Connector Color	GRAY



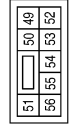
Terminal No.	Color of Wire	Signal Name
99	P	CAN-L
100	L	CAN-H
103	P	PDPRE
104	L	AVCC PDPRES
124	V	GND-A (PDPRES)

Connector No.	E48
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	BLACK



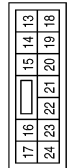
Terminal No.	Color of Wire	Signal Name
57	B	POWER GND

Connector No.	E47
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	BROWN



Terminal No.	Color of Wire	Signal Name
52	B/Y	SIGNAL GND

Connector No.	E46
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
40	P	CAN-L
41	L	CAN-H

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MANUAL AIR CONDITIONING SYSTEM

< WIRING DIAGRAM >

[MANUAL AIR CONDITIONER]

Connector No.	F10
Connector Name	A/C COMPRESSOR
Connector Color	GRAY



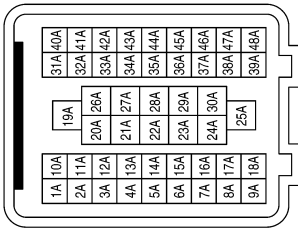
Terminal No.	Color of Wire	Signal Name
3	W	-
4	R	-

Connector No.	F3
Connector Name	A/C COMPRESSOR
Connector Color	BLACK



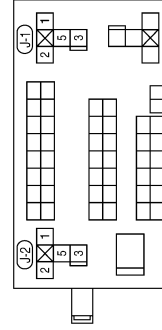
Terminal No.	Color of Wire	Signal Name
1	W	-
2	B	-

Connector No.	E64
Connector Name	WIRE TO WIRE
Connector Color	BLACK



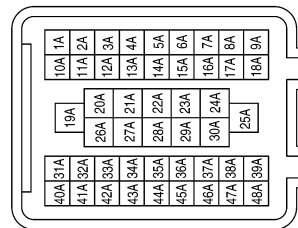
Terminal No.	Color of Wire	Signal Name
29A	SB	-
35A	GR	-
36A	W	-

Connector No.	J-1
Connector Name	FUSE BLOCK (J/B) BLOWER MOTOR RELAY
Connector Color	-



Terminal No.	Color of Wire	Signal Name
29A	W	-
35A	R	-
36A	W	-

Connector No.	F50
Connector Name	WIRE TO WIRE
Connector Color	BLACK

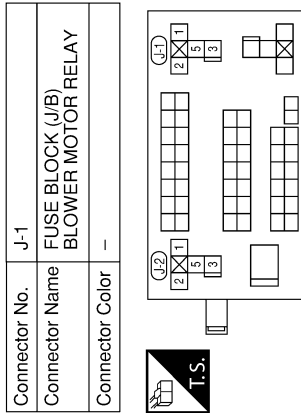


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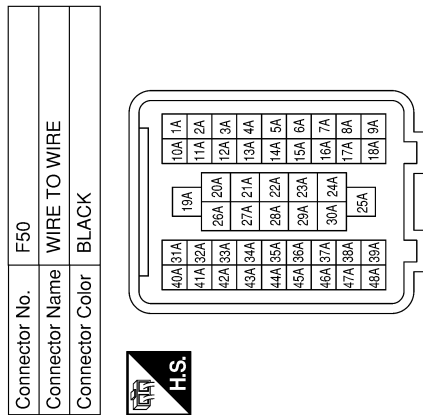
MANUAL AIR CONDITIONING SYSTEM

< WIRING DIAGRAM >

[MANUAL AIR CONDITIONER]



Terminal No.	Color of Wire	Signal Name
29A	W	-
35A	R	-
36A	W	-



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MANUAL HEATER SYSTEM

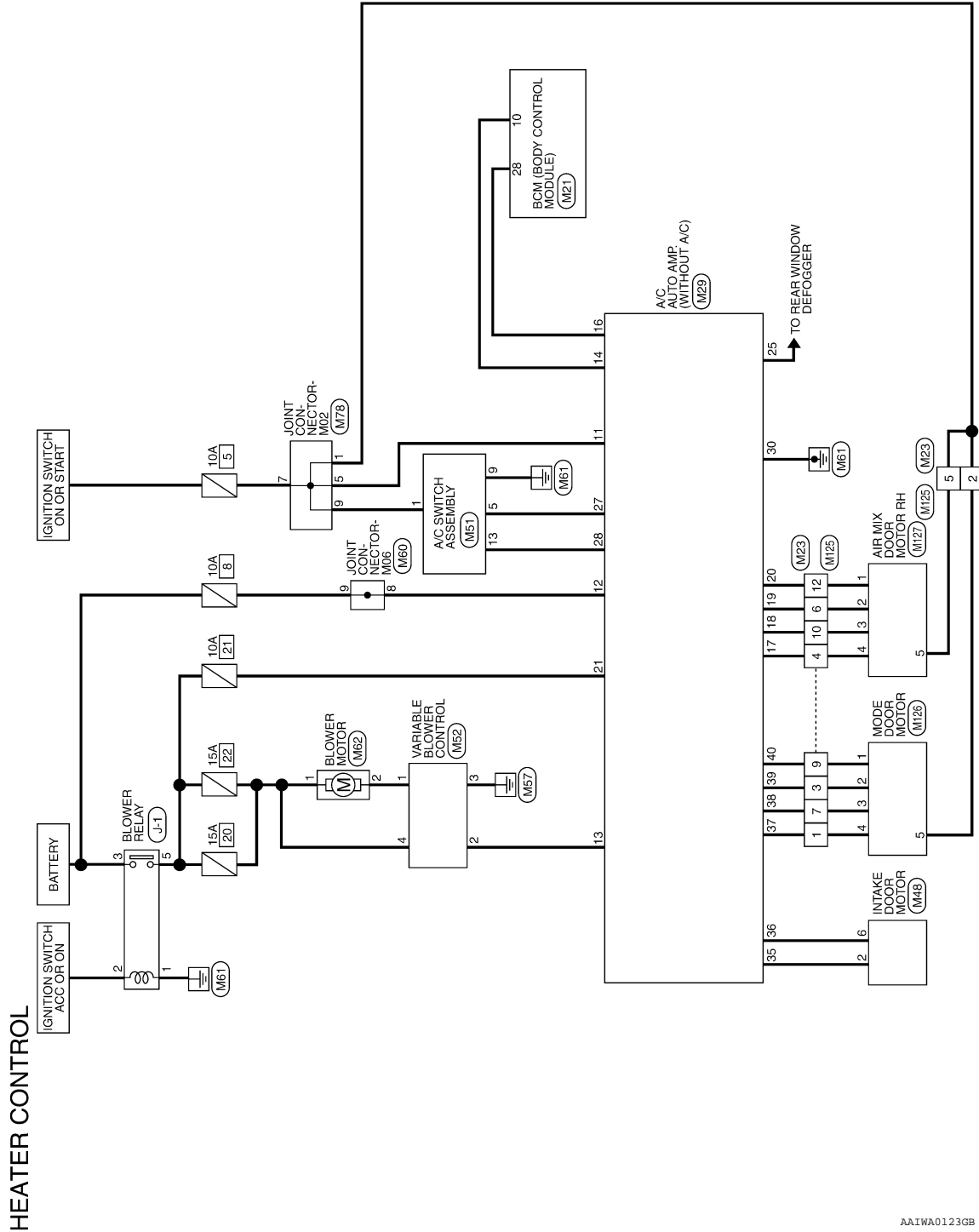
< WIRING DIAGRAM >

[MANUAL AIR CONDITIONER]

MANUAL HEATER SYSTEM

Wiring Diagram

INFOID:000000009017001



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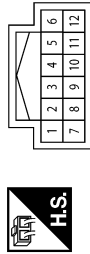
MANUAL HEATER SYSTEM

< WIRING DIAGRAM >

[MANUAL AIR CONDITIONER]

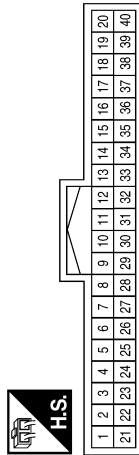
Terminal No.	Color of Wire	Signal Name
5	V	-
6	LG	-
7	G	-
9	O	-
10	SB	-
12	L	-

Connector No.	M23
Connector Name	WIRE TO WIRE
Connector Color	WHITE



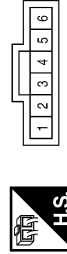
Terminal No.	Color of Wire	Signal Name
1	GR	-
2	P	-
3	Y	-
4	BR	-

Connector No.	M21
Connector Name	BCM (BODY CONTROL MODULE) (WITHOUT INTELLIGENT KEY SYSTEM)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
10	W	RR DEFOGGER SW
28	LG	BLOWER FAN SW

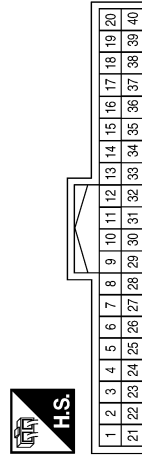
Connector No.	M48
Connector Name	INTAKE DOOR MOTOR
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
2	G	-
6	V	-

Terminal No.	Color of Wire	Signal Name
19	LG	R MIX2
20	L	R MIX1
21	W	IGN 2
25	R	RR DEF IND
27	LG	UART FX
28	BR	UART TX
30	B	GND
35	G	FRESH
36	V	REC
37	GR	MODE 4
38	G	MODE 3
39	Y	MODE 1
40	O	MODE 1

Connector No.	M29
Connector Name	A/C AUTO AMP. (WITHOUT A/C)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
11	LG	IGN 1
12	SB	BAT
13	V	BLOWER PWM
14	LG	FAN ON O/P
16	W	RR DEF SW O/P
17	BR	R MIX4
18	SB	R MIX3

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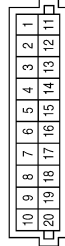
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MANUAL HEATER SYSTEM

< WIRING DIAGRAM >

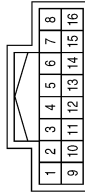
[MANUAL AIR CONDITIONER]

Connector No.	M60
Connector Name	JOINT CONNECTOR-M06
Connector Color	BLUE



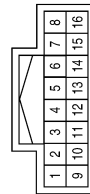
Terminal No.	Color of Wire	Signal Name
8	W	-
9	W	-

Connector No.	M52
Connector Name	VARIABLE BLOWER CONTROL
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	L	-
2	V	-
3	B	-
4	P	-

Connector No.	M51
Connector Name	A/C SWITCH ASSEM
Connector Color	WHITE



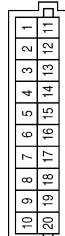
Terminal No.	Color of Wire	Signal Name
1	W	-
5	LG	-
9	B	-
13	BR	-

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



Terminal No.	Color of Wire	Signal Name
1	GR	-
2	P	-
3	Y	-
4	BR	-
5	V	-
6	LG	-
7	G	-
9	O	-
10	SB	-
12	L	-

Connector No.	M78
Connector Name	JOINT CONNECTOR-M02
Connector Color	PINK



Terminal No.	Color of Wire	Signal Name
1	V	-
5	LG	-
7	G	-
9	W	-

Connector No.	M62
Connector Name	BLOWER MOTOR
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	P	-
2	L	-

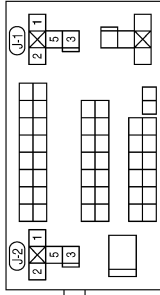
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MANUAL HEATER SYSTEM

< WIRING DIAGRAM >

[MANUAL AIR CONDITIONER]

Connector No.	J-1
Connector Name	FUSE BLOCK (J/B) BLOWER MOTOR RELAY
Connector Color	-



Connector No.	M127
Connector Name	AIR MIX DOOR MOTOR RH
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	L	-
2	LG	-
3	SB	-
4	BR	-
5	V	-
6	-	-

Connector No.	M126
Connector Name	MODE DOOR MOTOR
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	O	-
2	Y	-
3	G	-
4	GR	-
5	V	-
6	-	-

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BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000008832826

DETAILED FLOW

1. LISTEN TO CUSTOMER COMPLAINT

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

>> GO TO 2.

2. VERIFY THE SYMPTOM WITH OPERATIONAL CHECK

Verify the symptom with operational check. Refer to [HAC-157, "Work Procedure"](#).

>> GO TO 3.

3. GO TO APPROPRIATE TROUBLE DIAGNOSIS

Go to appropriate trouble diagnosis. Refer to [HAC-181, "Symptom Table"](#).

>> GO TO 4.

4. REPAIR OR REPLACE

Repair or replace the specific parts.

>> GO TO 5.

5. FINAL CHECK

Final check.

Is the inspection result normal?

YES >> Inspection End.

NO >> GO TO 3.

OPERATION INSPECTION

Work Procedure

INFOID:000000008832827

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-174, "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-168, "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-178, "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-160, "A/C SWITCH ASSEMBLY : 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-122, "Door Control"](#).

Is the test result normal?

YES >> GO TO 6.

NO >> Refer to [HAC-181, "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.

OPERATION INSPECTION

[MANUAL AIR CONDITIONER]

< BASIC INSPECTION >

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-160. "A/C SWITCH ASSEMBLY : 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-165. "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-182. "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-184. "Component Function Check"](#).

DTC/CIRCUIT DIAGNOSIS

POWER SUPPLY AND GROUND CIRCUIT

A/C AUTO AMP.

A/C AUTO AMP. : Diagnosis Procedure

INFOID:000000009020393

Regarding Wiring Diagram information, refer to [HAC-41, "Wiring Diagram"](#).

1.CHECK FUSE

Check fuses [No. 5, 8 and 21, located in the fuse block (J/B)].

NOTE:

Refer to [PG-47, "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
M33 (with manual A/C) M29 (without A/C)	11	Ground	Approx. 0 V	Approx. 0 V	Battery voltage
	12		Battery voltage	Battery voltage	Battery voltage
	21		Approx. 0 V	Battery voltage	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		
M33 (with manual A/C) M29 (without A/C)	30	Ground	Yes

Is the inspection result normal?

YES >> Inspection End.

NO >> Repair harness or connector.

A/C SWITCH ASSEMBLY

A/C SWITCH ASSEMBLY : Component Function Check

INFOID:000000009020394

1.CHECK OPERATION

1. Press the ON switch.
2. Operate the temperature control switch. Check that the fan speed or outlet changes.

Does it operate normally?

POWER SUPPLY AND GROUND CIRCUIT

[MANUAL AIR CONDITIONER]

< DTC/CIRCUIT DIAGNOSIS >

- YES >> Inspection End.
NO >> Perform trouble diagnosis for the A/C switch assembly. Refer to [HAC-160, "A/C SWITCH ASSEMBLY : Diagnosis Procedure"](#).

A/C SWITCH ASSEMBLY : Diagnosis Procedure

INFOID:000000009020395

Regarding Wiring Diagram information, refer to [HAC-41, "Wiring Diagram"](#).

1. CHECK A/C SWITCH ASSEMBLY POWER SUPPLY

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

(+)		(-)	Voltage (Approx.)
A/C switch assembly			
Connector	Terminal		
M51	1	Ground	Battery voltage

Is the inspection result normal?

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

2. CHECK FUSE

Check 10A fuse [No.5, located in the fuse block (J/B)].

NOTE:

Refer to [PG-47, "Terminal Arrangement"](#).

Is the inspection result normal?

- YES >> Check harness for open circuit. Repair or replace if necessary.
NO >> Check harness for short circuit. Repair or replace if necessary.

3. CHECK A/C SWITCH ASSEMBLY GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between A/C switch assembly harness connector and ground.

A/C switch assembly		—	Continuity
Connector	Terminal		
M51	9	Ground	Yes

Is the inspection result normal?

- YES >> Replace the A/C switch assembly. Refer to [HAC-103, "Removal and Installation"](#).
NO >> Repair the harnesses or connectors.

MODE DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

MODE DOOR MOTOR

Diagnosis Procedure

INFOID:000000009020398

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
Connector	Terminal		
M126	5	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair harness or connector between mode door motor and fuse.

2. 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	
M126	4	M33 (with manual A/C) M29 (without A/C)	37	Yes
	3		38	
	2		39	
	1		40	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair harness or connector.

3. 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		
M126	4	Ground	No
	3		
	2		
	1		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair harness or connector.

4. CHECK MODE DOOR MOTOR

Check mode door motor. Refer to [HAC-162. "Component Inspection"](#).

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-189. "Removal and Installation"](#).

NO >> Replace mode door motor. Refer to [HAC-193. "MODE DOOR MOTOR : Removal and Installation"](#).

MODE DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

Component Inspection

INFOID:000000009020399

1. CHECK MODE DOOR MOTOR

1. Remove mode door motor. Refer to [HAC-193, "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.)
5	1	90
	2	
	3	
	4	

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace mode door motor. Refer to [HAC-193, "MODE DOOR MOTOR : Removal and Installation"](#).

AIR MIX DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

AIR MIX DOOR MOTOR

Diagnosis Procedure

INFOID:000000009020396

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		
M127	5	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair harness or connector between air mix door motor and fuse.

2. 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 harness connector and A/C auto amp. harness connector.

Air mix door motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M127	1	M33 (with manual A/C) M29 (without A/C)	34	Yes
	2		33	
	3		32	
	4		31	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair harness or connector.

3. CHECK AIR MIX DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR SHORT

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

Air mix door motor		—	Continuity
Connector	Terminal		
M127	1	Ground	No
	2		
	3		
	4		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair harness or connector.

4. CHECK AIR MIX DOOR MOTOR

Check air mix door motor. Refer to [HAC-75. "Component Inspection"](#).

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-189. "Removal and Installation"](#).

NO >> Replace air mix door motor. Refer to [HAC-193. "AIR MIX DOOR MOTOR : Removal and Installation"](#).

AIR MIX DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

Component Inspection

INFOID:000000009020397

1. CHECK AIR MIX DOOR MOTOR

1. Remove air mix door motor. Refer to [HAC-193, "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.)
5	1	90
	2	
	3	
	4	

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace air mix door motor. Refer to [HAC-193, "AIR MIX DOOR MOTOR : Removal and Installation"](#).

INTAKE DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

INTAKE DOOR MOTOR

Diagnosis Procedure

INFOID:000000009020400

1. CHECK INTAKE DOOR MOTOR OPERATION

1. Turn ignition switch ON.
2. Operate intake switch and check by operation sound that intake door motor operates.

Does the intake door motor operate?

- YES >> Refer to [GI-43, "Intermittent Incident"](#).
NO >> GO TO 2.

2. CHECK INTAKE DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect intake door motor connector, and 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	
M48	2	M33 (with manual A/C) M29 (without A/C)	35	Yes
	6		36	

Is the inspection result normal?

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

3. CHECK INTAKE DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR SHORT

Check continuity between intake door motor harness connector and ground.

Intake door motor		—	Continuity
Connector	Terminal		
M48	2	Ground	No
	6		

Is the inspection result normal?

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

4. CHECK INTAKE DOOR MOTOR

1. Turn ignition switch OFF.
2. Check intake door motor. Refer to [HAC-193, "INTAKE DOOR MOTOR : Removal and Installation"](#).

Is the inspection result normal?

- YES >> GO TO 5.
NO >> Replace intake door motor. Refer to [HAC-193, "INTAKE DOOR MOTOR : Removal and Installation"](#).

5. CHECK INSTALLATION OF INTAKE DOOR MOTOR SYSTEM

Check intake door motor system is properly installed. Refer to [HAC-192, "Exploded View"](#).

Is the inspection result normal?

- YES >> Replace A/C auto amp. Refer to [HAC-189, "Removal and Installation"](#).
NO >> Repair or replace malfunctioning parts.

Component Inspection (Motor)

INFOID:000000009020401

1. CHECK INTAKE DOOR MOTOR

Supply intake door motor terminals with battery voltage and check by visually and operation sound that intake door motor operates.

INTAKE DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

Terminal		Operation direction
+	-	
5	6	REC
6	5	FRE

Is the inspection result normal?

YES >> Inspection ENd.

NO >> Replace intake door motor. Refer to [HAC-193. "INTAKE DOOR MOTOR : Removal and Installation"](#).

A/C SWITCH ASSEMBLY SIGNAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

A/C SWITCH ASSEMBLY SIGNAL CIRCUIT

Diagnosis Procedure

INFOID:000000009020413

Regarding Wiring Diagram information, refer to [HAC-41. "Wiring Diagram"](#).

1. CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT

1. Using CONSULT, perform "SELF-DIAGNOSIS RESULTS" 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-58. "DTC Logic"](#) or [HAC-59. "DTC Logic"](#).

Is any DTC No. displayed?

- YES >> Perform diagnosis for the applicable DTC. Refer to [HAC-38. "DTC Index"](#).
NO >> GO TO 2.

2. CHECK TX (A/C SWITCH ASSEMBLY → A/C AUTO AMP.) CIRCUIT CONTINUITY

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

A/C switch assembly		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M51	5	M33 (with manual A/C)	27	Yes
		M29 (without A/C)		

4. Check continuity between A/C switch assembly harness connector M79 terminal 10 and ground.

A/C switch assembly		—	Continuity
Connector	Terminal		
M51	5	Ground	No

Is the inspection result normal?

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

3. CHECK RX (A/C AUTO AMP. → A/C SWITCH ASSEMBLY) CIRCUIT CONTINUITY

1. Check continuity between A/C switch assembly harness connector and A/C auto amp. harness connector.

A/C switch assembly		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M51	13	M33 (with manual A/C)	28	Yes
		M29 (without A/C)		

2. Check continuity between A/C switch assembly harness connector M79 terminal 9 and ground.

A/C switch assembly		—	Continuity
Connector	Terminal		
M51	13	Ground	No

Is the inspection result normal?

- YES >> Perform trouble diagnosis for the A/C switch assembly. Refer to [HAC-160. "A/C SWITCH ASSEMBLY : Diagnosis Procedure"](#).
NO >> Repair harness or connector.

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A/C ON SIGNAL

Component Function Check

INFOID:000000009020411

1.CHECK A/C ON SIGNAL

④ With CONSULT

1. Turn ignition switch ON.
2. Operate blower motor.
3. Select "AIR CONDITIONER" of "BCM" using CONSULT.
4. Select "AIR COND SW" in "DATA MONITOR" mode.
5. Check A/C ON signal when the A/C switch is operated.

Monitor item	Condition	Status
AIR COND SW	A/C switch ON (A/C indicator: ON)	On
	A/C switch OFF (A/C indicator: OFF)	Off

Is the inspection result normal?

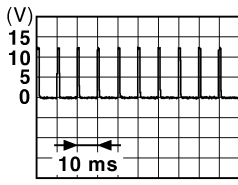
- YES >> Inspection End.
 NO >> Refer to [HAC-168. "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000009020412

1.CHECK A/C ON SIGNAL

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Turn ignition switch ON.
4. Check output waveform between A/C auto amp. harness connector and ground with using oscilloscope.

+		-	Output waveform
A/C auto amp.			
Connector	Terminal		
M33	15	Ground	 <p style="text-align: right; font-size: small;">JPMIA0012GB</p>

Is the inspection result normal?

- YES >> Replace A/C auto amp. Refer to [HAC-189. "Removal and Installation"](#).
 NO >> GO TO 2.

2.CHECK A/C ON SIGNAL CIRCUIT FOR OPEN

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

A/C auto amp.		BCM		Continuity
Connector	Terminal	Connector	Terminal	
M33	15	M21 (without Intelligent Key system)	27	Yes
		M84 (with Intelligent Key system)		

Is the inspection result normal?

A/C ON SIGNAL

[MANUAL AIR CONDITIONER]

< DTC/CIRCUIT DIAGNOSIS >

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

3. CHECK A/C ON SIGNAL CIRCUIT FOR SHORT

Check continuity between A/C auto amp. harness connector and ground.

A/C auto amp.		—	Continuity
Connector	Terminal		
M33	15	Ground	No

Is the inspection result normal?

- YES >> Replace BCM. Refer to [BCS-74, "Removal and Installation"](#) (with Intelligent Key system) or [BCS-127, "Removal and Installation"](#) (without Intelligent Key system).
- NO >> Repair harness or connector.

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HAC

INTAKE SENSOR

Diagnosis Procedure

INFOID:000000009020424

Regarding Wiring Diagram information, refer to [HAC-41. "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		
M68	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		
M68	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-171. "Component Inspection"](#).

Is the inspection result normal?

- YES >> Replace A/C auto amp. Refer to [HAC-104. "Removal and Installation"](#).
 NO >> Replace intake sensor. Refer to [HAC-108. "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	
M68	1	M33	3	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

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

Intake sensor		—	Continuity
Connector	Terminal		
M68	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	Ground	0 V
M68	1		

Is the inspection result normal?

- YES >> Replace A/C auto amp. Refer to [HAC-104, "Removal and Installation"](#).
- NO >> Repair harness or connector.

Component Inspection

INFOID:000000009020425

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-108, "Removal and Installation"](#).

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BLOWER FAN ON SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

BLOWER FAN ON SIGNAL

Component Function Check

INFOID:000000009020409

1. CHECK BLOWER FAN ON SIGNAL

Ⓟ With CONSULT

1. Turn ignition switch ON.
2. Select "AIR CONDITIONER" of "BCM" using CONSULT.
3. Select "FAN ON SIG" in "DATA MONITOR" mode.
4. Check blower fan ON signal when the fan control dial is operated.

Monitor item	Condition	Status
FAN ON SIG	Blower motor ON	On
	Blower motor OFF	OFF

Is the inspection result normal?

- YES >> Inspection End.
 NO >> Refer to [HAC-172, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000009020410

1. CHECK BLOWER FAN ON SIGNAL

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. harness connector.
3. Turn ignition switch ON.
4. Check output waveform between A/C auto amp. and ground with using oscilloscope.

+		-	Output waveform
A/C auto amp.			
Connector	Terminal		
M33 (with manual A/C)	14	Ground	

Is the inspection result normal?

- YES >> Replace A/C auto amp. Refer to [HAC-189, "Removal and Installation"](#).
 NO >> GO TO 2.

2. CHECK BLOWER FAN ON SIGNAL CIRCUIT FOR OPEN

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

A/C auto amp.		BCM		Continuity
Connector	Terminal	Connector	Terminal	
M33 (with manual A/C)	14	M21 (without Intelligent Key system)	28	Yes
M29 (without A/C)		M84 (with Intelligent Key system)		

Is the inspection result normal?

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

BLOWER FAN ON SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

3. CHECK BLOWER FAN ON SIGNAL CIRCUIT FOR SHORT

Check continuity between A/C auto amp. harness connector and ground.

A/C auto amp.		—	Continuity
Connector	Terminal		
M33 (with manual A/C)	14	Ground	No
M29 (without A/C)			

Is the inspection result normal?

- YES >> Replace BCM. Refer to [BCS-74, "Removal and Installation"](#) (with Intelligent Key system) or [BCS-127, "Removal and Installation"](#) (without Intelligent Key system).
- NO >> Repair harness or connector.

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BLOWER MOTOR

Diagnosis Procedure

INFOID:00000009020402

1. CHECK FUSE

1. Turn ignition switch OFF.
2. Check following fuses.
 - 10A fuse [No. 21, located in fuse block (J/B)]
 - 15A fuses [Nos. 20 and 22, located in fuse block (J/B)]

NOTE:

Refer to [PG-47. "Terminal Arrangement"](#).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace the blown fuse after repairing the affected circuit.

2. CHECK BLOWER MOTOR POWER SUPPLY

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

+		-	Voltage
Blower motor			
Connector	Terminal	Ground	Battery voltage
M62	1		

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

3. CHECK BLOWER RELAY

1. Turn ignition switch OFF.
2. Check blower relay. Refer to [HAC-177. "Component Inspection \(Blower Motor Relay\)"](#).

Is the inspection result normal?

YES >> Repair harness or connector between blower motor and fuse.

NO >> Replace blower relay.

4. CHECK BLOWER MOTOR CONTROL CIRCUIT

1. Turn ignition switch OFF.
2. Connect 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	Ground	Battery voltage
M52	1		

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

5. CHECK BLOWER MOTOR CONTROL CIRCUIT FOR OPEN

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

BLOWER MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

Variable blower control		Blower motor		Continuity
Connector	Terminal	Connector	Terminal	
M52	1	M62	2	Existed

Is the inspection result normal?

- YES >> Replace blower motor. Refer to [VTL-11, "Removal and Installation"](#).
NO >> Repair harness or connector.

6. CHECK A/C AUTO AMP. IGNITION POWER SUPPLY

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

+		-	Voltage
A/C auto amp.			
Connector	Terminal	Ground	Battery voltage
M33 (with manual A/C)	21		
M29 (without A/C)			

Is the inspection result normal?

- YES >> GO TO 7.
NO >> Repair harness or connector between A/C auto amp. and fuse.

7. CHECK VARIABLE BLOWER CONTROL IGNITION POWER SUPPLY

Check voltage between variable blower control harness connector and ground.

+		-	Voltage
Variable blower control			
Connector	Terminal	Ground	Battery voltage
M52	4		

Is the inspection result normal?

- YES >> GO TO 8.
NO >> Repair harness or connector between variable blower control and fuse.

8. 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		
M52	3	Ground	Yes

Is the inspection result normal?

- YES >> GO TO 9.
NO >> Repair harness or connector.

9. CHECK VARIABLE BLOWER CONTROL 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.

BLOWER MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

T2 = Approx. 1.6 ms

+		-	Condition	Duty ratio (Approx.)	Output waveform
Variable blower control					
Connector	Terminal		Fan speed (manual) Air outlet: VENT		
M52	2	Ground	1st	26%	
			2nd	34%	
			3rd	41%	
			4th	51%	
			5th	62%	
			6th	73%	
			7th	82%	

Is the inspection result normal?

- YES >> Replace variable blower control. Refer to [HAC-194. "Removal and Installation"](#).
 NO >> GO TO 10.

10. CHECK VARIABLE BLOWER CONTROL CONTROL SIGNAL CIRCUIT FOR OPEN

- Turn ignition switch OFF.
- Disconnect variable blower control connector and A/C auto amp. connector.
- 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	
M52	2	M33 (with manual A/C)	13	Yes
		M29 (without A/C)		

Is the inspection result normal?

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

11. CHECK VARIABLE BLOWER CONTROL CONTROL SIGNAL CIRCUIT FOR SHORT

Check continuity between variable blower control harness connector and ground.

Variable blower control		—	Continuity
Connector	Terminal		
M52	2	Ground	No

Is the inspection result normal?

- YES >> Replace A/C auto amp. Refer to [HAC-189. "Removal and Installation"](#).
 NO >> Repair harness or connector.

Component Inspection (Blower Motor)

INFOID:000000009020403

1. CHECK BLOWER MOTOR

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

Does the blower fan operate?

- YES >> Intermittent incident. Refer to [GI-43. "Intermittent Incident"](#).
 NO >> Replace blower motor. Refer to [VTL-11. "Removal and Installation"](#).

BLOWER MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

Component Inspection (Blower Motor Relay)

INFOID:000000009020404

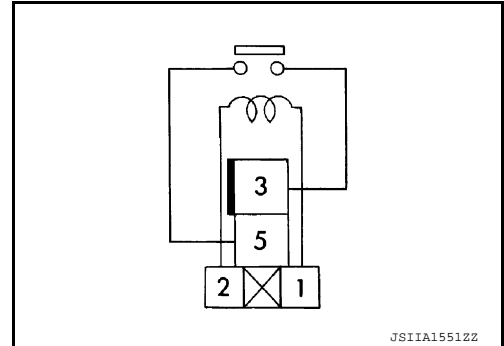
1. CHECK BLOWER RELAY

1. Turn ignition switch OFF.
2. Remove blower motor relay.
3. Check continuity between blower motor 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 blower motor relay.



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MAGNET CLUTCH

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

MAGNET CLUTCH

Component Function Check

INFOID:000000009020405

1.CHECK MAGNET CLUTCH OPERATION

Perform auto active test of IPDM E/R. Refer to [PCS-9, "Diagnosis Description"](#) (with Intelligent Key system) or [PCS-37, "Diagnosis Description"](#) (without Intelligent Key system).

Does it operate normally?

YES >> Inspection End.

NO >> Refer to [HAC-178, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000009020406

Regarding Wiring Diagram information, refer to [HAC-41, "Wiring Diagram"](#).

1.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 10A fuse (No. 39, located in IPDM E/R).

NOTE:

Refer to [PG-49, "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	
F3	1	E43	12	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		
F3	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-30, "Removal and Installation"](#) (with Intelligent Key system) or [PCS-58, "Removal and Installation"](#) (without Intelligent Key system).

NO >> Replace magnet clutch. Refer to [HA-31, "MAGNET CLUTCH : Removal and Installation"](#).

ECV (ELECTRICAL CONTROL VALVE)

[MANUAL AIR CONDITIONER]

< DTC/CIRCUIT DIAGNOSIS >

ECV (ELECTRICAL CONTROL VALVE)

Diagnosis Procedure

INFOID:000000009020407

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		
F10	3	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. 5, located in fuse block (J/B)]. Refer to [PG-47, "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 A/C auto amp. connector.
3. Check continuity between compressor harness connector and A/C auto amp. harness connector.

Compressor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
F10	4	M33	1	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		
F10	4	Ground	No

Is the inspection result normal?

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

5. CHECK ECV

Check ECV. Refer to [HAC-180, "Component Inspection"](#).

Is the inspection result normal?

- YES >> GO TO 6.
 NO >> Replace compressor. Refer to [HA-31, "COMPRESSOR : Removal and Installation"](#).

ECV (ELECTRICAL CONTROL VALVE)

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

6. CHECK INTERMITTENT INCIDENT

Refer to [GI-43, "Intermittent Incident"](#).

Is the inspection result normal?

- YES >> Replace A/C auto amp. Refer to [HAC-104, "Removal and Installation"](#).
- NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:000000009020408

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-31, "COMPRESSOR : Removal and Installation"](#).

HEATER AND AIR CONDITIONING SYSTEM CONTROL SYMPTOMS

< SYMPTOM DIAGNOSIS >

[MANUAL AIR CONDITIONER]

SYMPTOM DIAGNOSIS

HEATER AND AIR CONDITIONING SYSTEM CONTROL SYMPTOMS

Symptom Table

INFOID:0000000008832839

SYMPTOM TABLE

Symptom	Reference Page	
A/C system does not come on.	Go to Trouble Diagnosis Procedure for A/C System.	HAC-160, "A/C SWITCH ASSEMBLY : Diagnosis Procedure"
Air outlet does not change.	Go to Trouble Diagnosis Procedure for Mode Door Motor	HAC-161, "Diagnosis Procedure"
Mode door motor does not operate normally.		
Discharge air temperature does not change.	Go to Trouble Diagnosis Procedure for Air Mix Door Motor	HAC-163, "Diagnosis Procedure"
Air mix door motor does not operate normally.		
Intake door does not change.	Go to Trouble Diagnosis Procedure for Intake Door Motor	HAC-165, "Diagnosis Procedure"
Intake door motor does not operate normally.		
Blower motor operation is malfunctioning.	Go to Trouble Diagnosis Procedure for Blower Motor.	HAC-174, "Diagnosis Procedure"
Magnet clutch does not engage.	Go to Trouble Diagnosis Procedure for Magnet Clutch.	HAC-178, "Component Function Check"
Insufficient cooling	Go to Trouble Diagnosis Procedure for Insufficient Cooling.	HAC-182, "Component Function Check"
Insufficient heating	Go to Trouble Diagnosis Procedure for Insufficient Heating.	HAC-184, "Component Function Check"
Noise	Go to Trouble Diagnosis Procedure for Noise.	HA-20, "Symptom Table"

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INSUFFICIENT COOLING**Component Function Check**

INFOID:000000008832840

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 SYMPTOMSPerform a complete operational check and check for any symptoms. Refer to [HAC-157. "Work Procedure"](#).Does another symptom exist?YES >> Refer to [HAC-181. "Symptom Table"](#).

NO >> System OK.

3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4

4. CHECK DRIVE BELTSCheck A/C compressor belt tension. Refer to [EM-16. "Inspection"](#).Is the inspection result normal?

YES >> GO TO 5

NO >> Adjust or replace compressor belt. Refer to [EM-16. "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-462. "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"](#).

INSUFFICIENT COOLING

< SYMPTOM DIAGNOSIS >

[MANUAL AIR CONDITIONER]

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.

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INSUFFICIENT HEATING**Component Function Check**

INFOID:000000008832841

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-157, "Work Procedure"](#).

Does another symptom exist?

- YES >> Refer to [HAC-181, "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-11, "System Inspection"](#).
2. Check hoses for leaks or kinks.
3. Check radiator cap. Refer to [CO-11, "System 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?

INSUFFICIENT HEATING

[MANUAL AIR CONDITIONER]

< SYMPTOM DIAGNOSIS >

- 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-12. "Changing Engine Coolant"](#).
 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-44. "HEATER CORE : Removal and Installation"](#).

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COMPRESSOR DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

[MANUAL AIR CONDITIONER]

COMPRESSOR DOES NOT OPERATE

Description

INFOID:000000008832842

Symptom: Compressor does not operate.

Diagnosis Procedure

INFOID:000000008832843

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-93, "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-464, "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 A/C switch assembly. Refer to [HAC-188, "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-16, "Trouble Diagnosis Flow Chart"](#).

5.CHECK IPDM E/R INPUT SIGNAL

 With CONSULT

1. Start engine.

COMPRESSOR DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

[MANUAL AIR CONDITIONER]

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-16. "Trouble Diagnosis Flow Chart"](#).

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REMOVAL AND INSTALLATION

FRONT AIR CONTROL

Removal and Installation

INFOID:000000008836196

REMOVAL

1. Remove the CVT shift selector finisher (CVT: RE0F11A). Refer to [TM-247. "Removal and Installation"](#).
2. Remove the MT shift selector finisher (6MT: RS6F94R). Refer to [TM-22. "Exploded View"](#).
3. Remove the front air control screws.
4. Release the front air control metal clips using a suitable tool.
5. Disconnect the harness connectors from the front air control and remove.

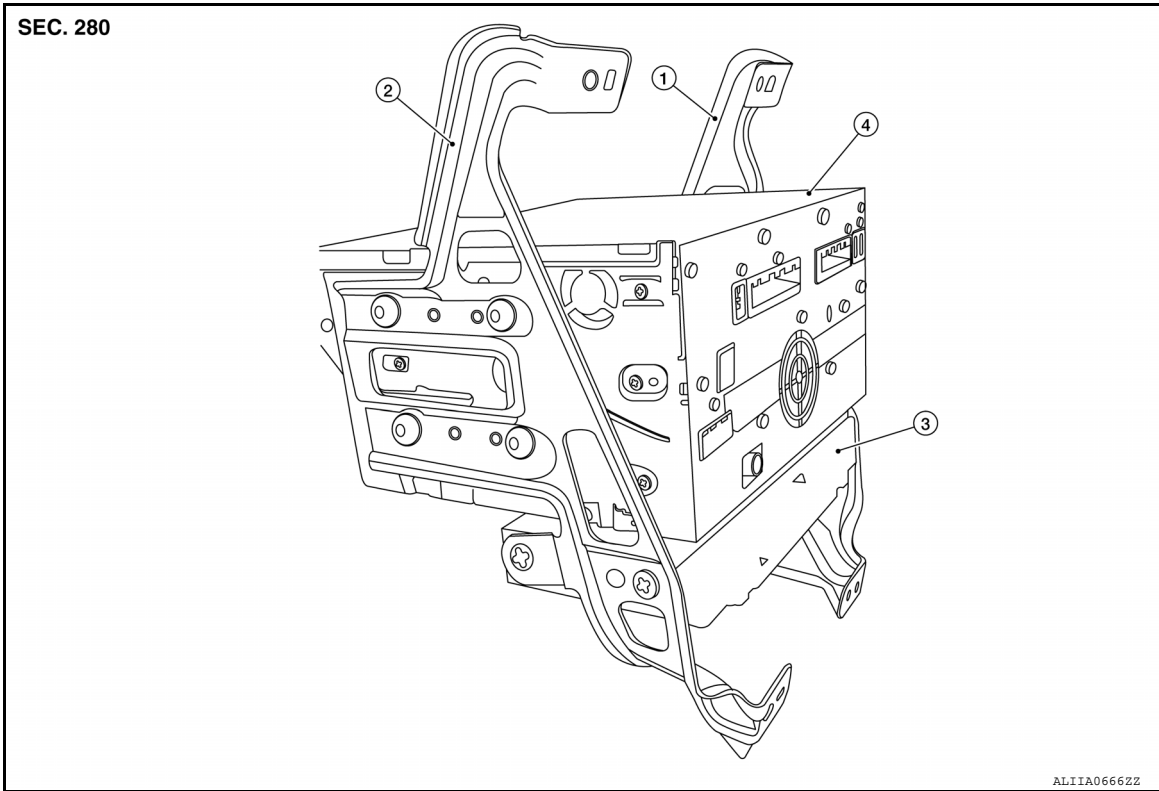
INSTALLATION

Installation is in the reverse order of removal.

A/C AUTO AMP.

Exploded View

INFOID:000000009021940



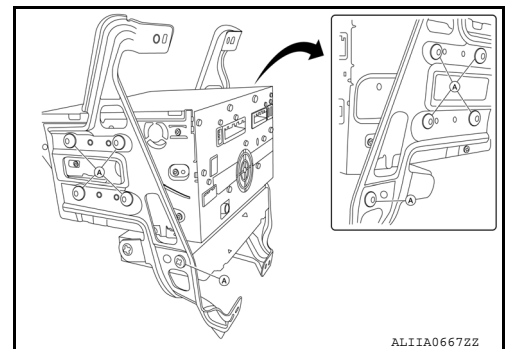
- 1. AV control unit bracket LH
- 2. AV control unit bracket RH
- 3. A/C auto amp.
- 4. AV control unit

Removal and Installation

INFOID:000000009021941

REMOVAL

1. Remove the AV control unit. Refer to [AV-401, "Removal and Installation"](#).
2. Remove the AV control unit bracket screws (A).



3. Remove the A/C auto amp.

INSTALLATION

Installation is in the reverse order of removal.

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INTAKE SENSOR

< REMOVAL AND INSTALLATION >

[MANUAL AIR CONDITIONER]

INTAKE SENSOR

Removal and Installation

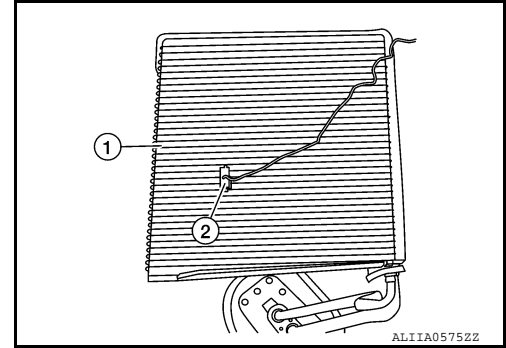
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REMOVAL

1. Remove the evaporator. Refer to [HA-45. "EVAPORATOR : Removal and Installation"](#).
2. Remove the intake sensor (2) by pulling it out of the evaporator (1).

CAUTION:

- Mark the mounting position of the intake sensor.
- Do not damage the evaporator core.



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

Mount the intake sensor in the same position as the original intake sensor on the evaporator core.

REFRIGERANT PRESSURE SENSOR

< REMOVAL AND INSTALLATION >

[MANUAL AIR CONDITIONER]

REFRIGERANT PRESSURE SENSOR

Removal and Installation

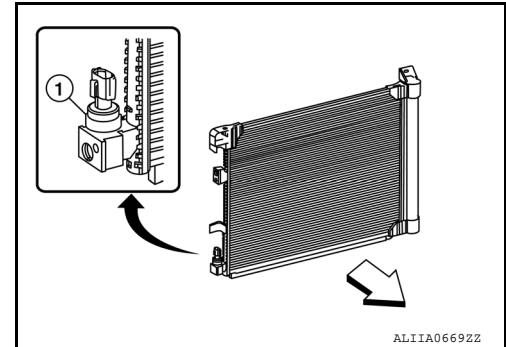
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REMOVAL

1. Discharge the refrigerant. Refer to [HA-23, "Recycle Refrigerant"](#).
2. Remove the core support upper. Refer to [HA-39, "Exploded View"](#).
3. Disconnect the harness connector from the refrigerant pressure sensor.
4. Remove the refrigerant pressure sensor (1).

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 the O-ring of the refrigerant pressure sensor for installation.
- After charging refrigerant, check for leaks. Refer to [HA-21, "Leak Test"](#).

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DOOR MOTOR

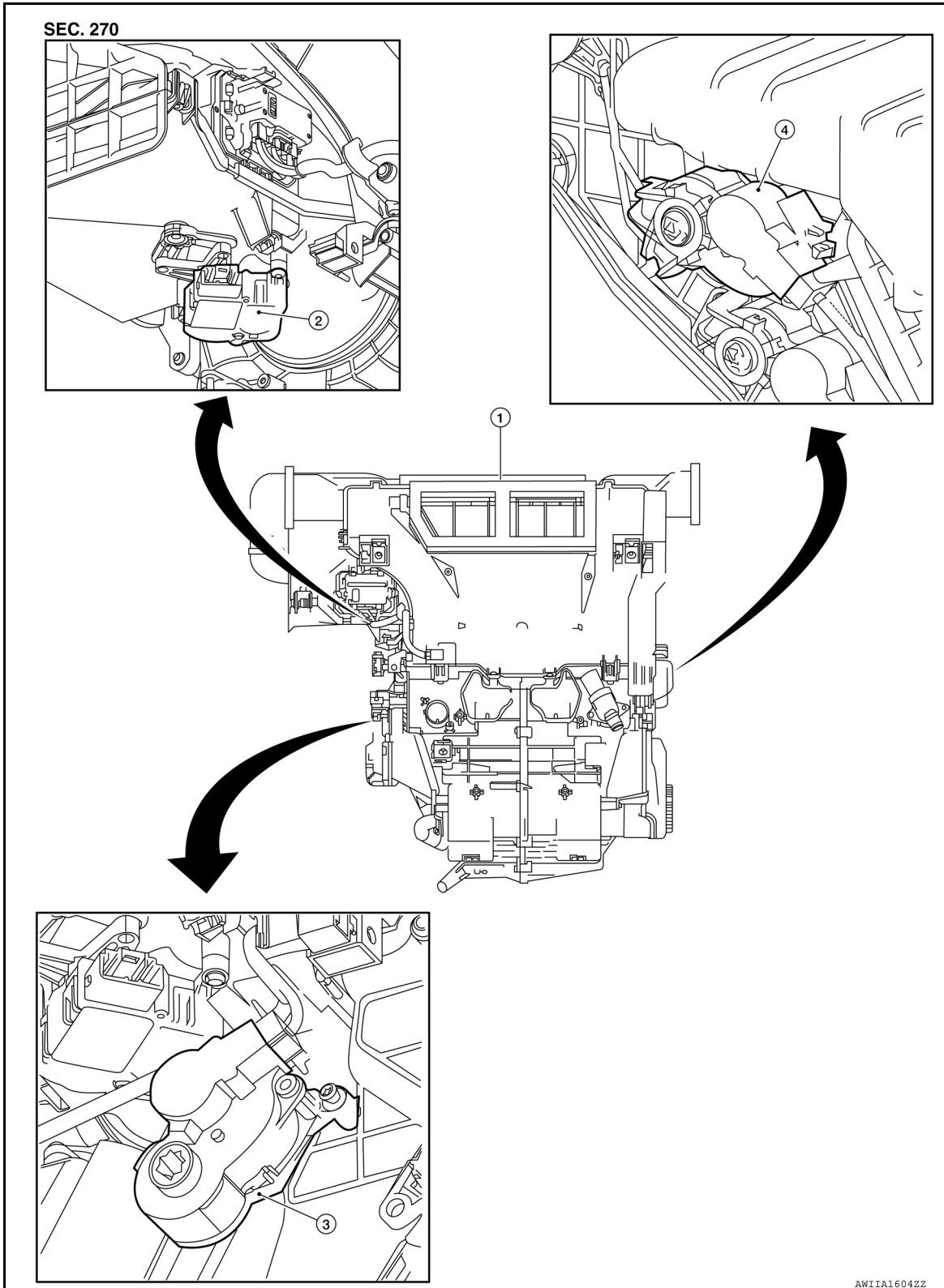
< REMOVAL AND INSTALLATION >

[MANUAL AIR CONDITIONER]

DOOR MOTOR

Exploded View

INFOID:000000008832848



1. Heating and cooling unit assembly 2. Intake door motor 3. Mode door motor
4. Air mix door motor

INTAKE DOOR MOTOR

INTAKE DOOR MOTOR : Removal and Installation

INFOID:000000008832849

REMOVAL

1. Remove the heating and cooling unit assembly. Refer to [HA-43. "HEATING AND COOLING UNIT ASSEMBLY : Removal and Installation"](#).
2. Disconnect the harness connector from the intake door motor.
3. Remove the intake door motor screws and the intake door motor.

INSTALLATION

Installation is in the reverse order of removal.

MODE DOOR MOTOR

MODE DOOR MOTOR : Removal and Installation

INFOID:000000008832850

REMOVAL

1. Remove the front floor duct LH. Refer to [HA-42. "Exploded View"](#).
2. Disconnect the harness connector from the mode door motor.
3. Remove the mode door motor screws and the mode door motor.

INSTALLATION

Installation is in the reverse order of removal.

AIR MIX DOOR MOTOR

AIR MIX DOOR MOTOR : Removal and Installation

INFOID:000000008832851

REMOVAL

1. Remove the glove box assembly. Refer to [IP-22. "Removal and Installation"](#).
2. Disconnect the harness connector from the air mix door motor.
3. Remove the air mix door motor screws and the air mix door motor.

INSTALLATION

Installation is in the reverse order of removal.

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BLOWER MOTOR RESISTOR

< REMOVAL AND INSTALLATION >

[MANUAL AIR CONDITIONER]

BLOWER MOTOR RESISTOR

Removal and Installation

INFOID:000000009021938

REMOVAL

1. Remove the instrument lower panel LH. Refer to [IP-21. "Removal and Installation"](#).
2. Disconnect the harness connector from the blower motor resistor.
3. Release the pawls using a suitable tool and remove the blower motor resistor.

INSTALLATION

Installation is in the reverse order of removal.