

HAC

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:000000007563373

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

WARNING:

Always observe the following items for preventing accidental activation.

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see "SRS AIR BAG".
- Never use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

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

WARNING:

Always observe the following items for preventing accidental activation.

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

Precaution for Battery Service

INFOID:000000007563374

Before disconnecting the battery, lower both the driver and passenger windows. This will prevent any interference between the window edge and the vehicle when the door is opened/closed. During normal operation, the window slightly raises and lowers automatically to prevent any window to vehicle interference. The automatic window function will not work with the battery disconnected.

Service Procedure Precautions for Models with a Pop-up Roll Bar

INFOID:000000007563375

WARNING:

Always observe the following items for preventing accidental activation.

- Risk of passenger injury or death may increase if the pop-up roll bar does not deploy during a roll over collision. In order to reduce the chance of an incident where the pop-up roll bar is inoperative, all maintenance must be performed by a NISSAN or INFINITI dealer.
- Before removing and installing the pop-up roll bar component parts and harness, always turn the ignition switch OFF, disconnect the battery negative terminal, and wait for 3 minutes or more. (The purpose of this operation is to discharge electricity that is accumulated in the auxiliary power supply circuit in the air bag diagnosis sensor unit.)
- When repairing, removing, and installing a pop-up roll bar, always refer to SRS AIR BAG and SRS AIR BAG CONTROL warnings in the Service Manual.

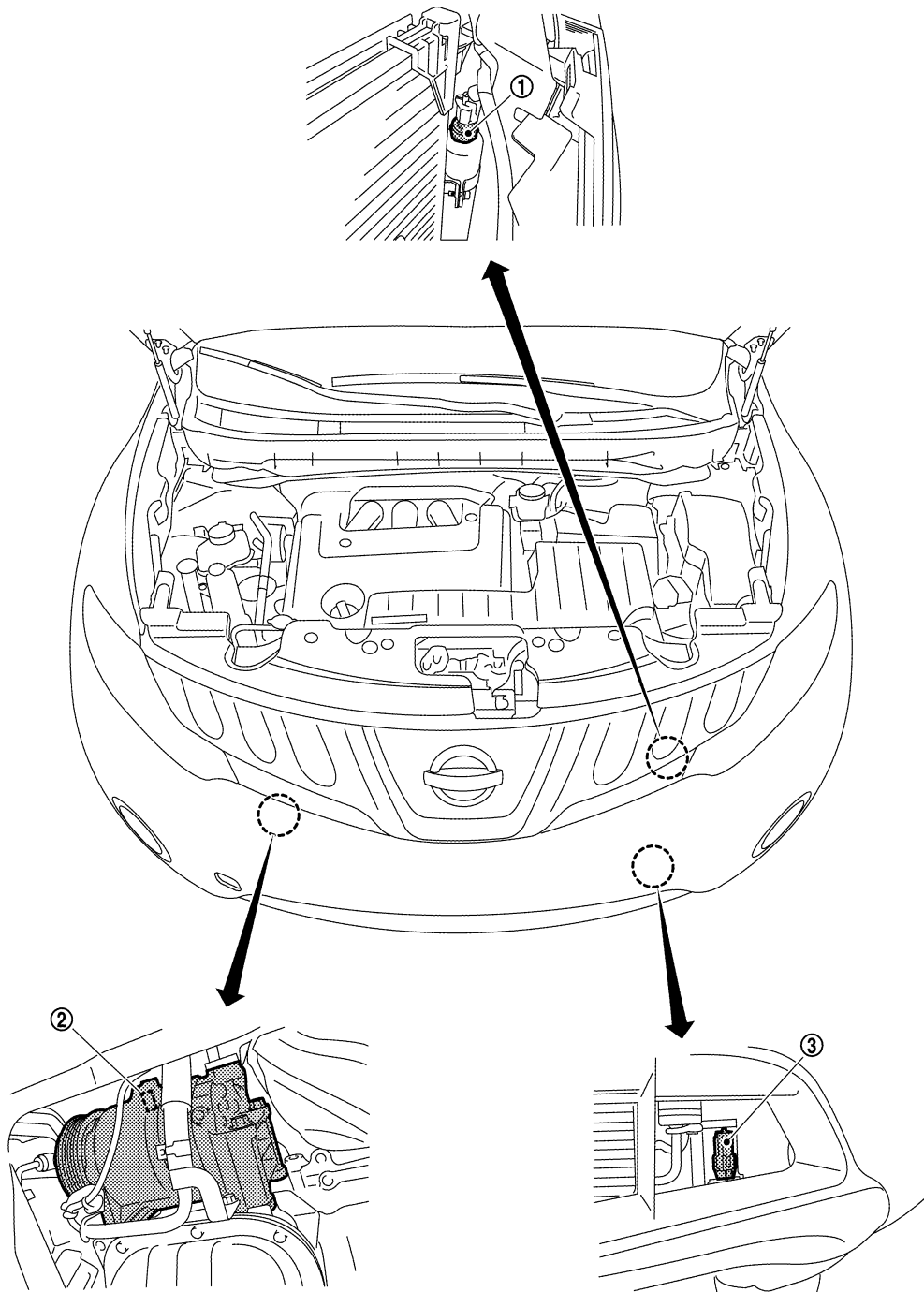
SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

ENGINE COMPARTMENT

INFOID:000000007563376



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COMPONENT PARTS

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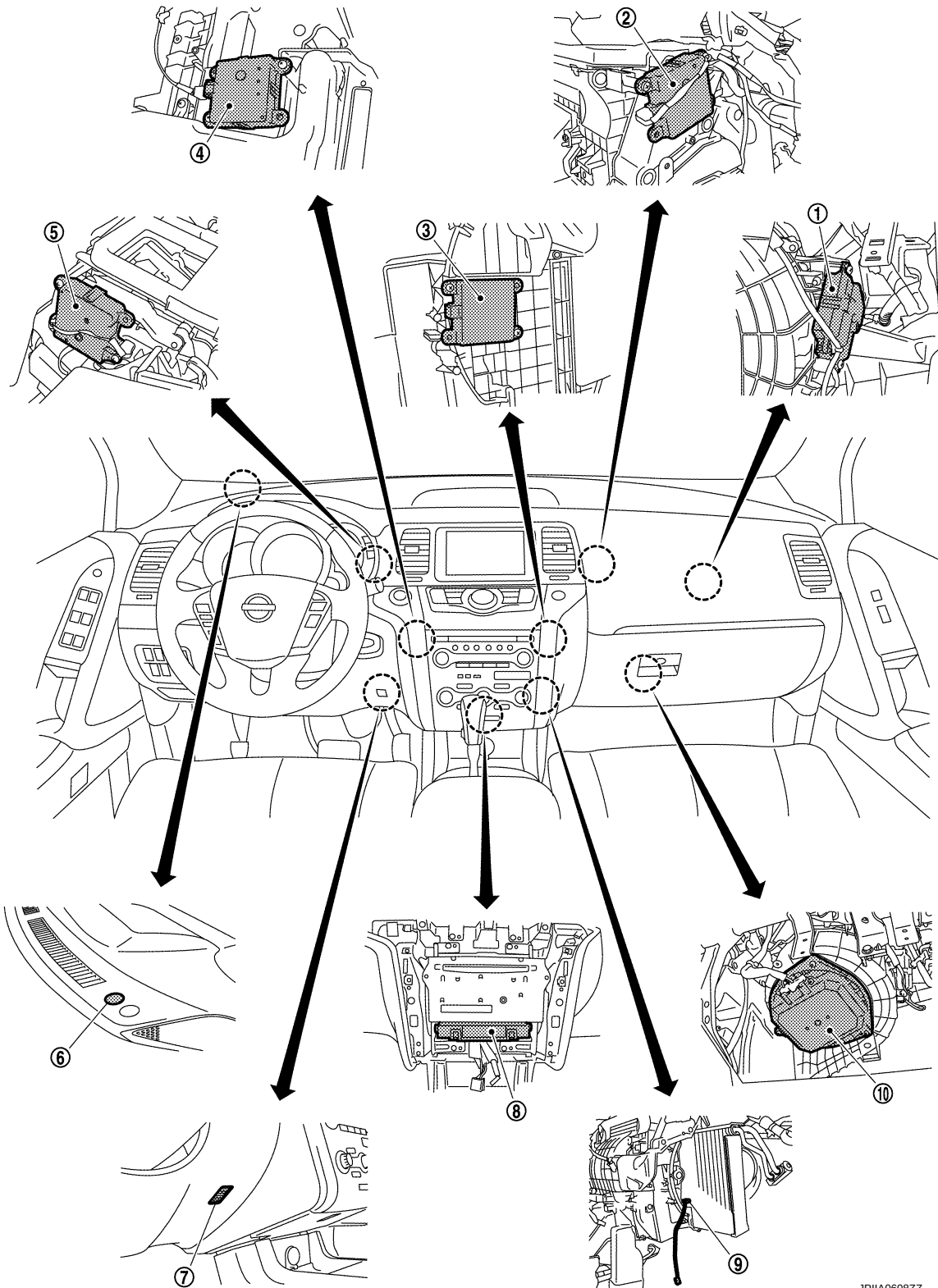
[AUTOMATIC AIR CONDITIONING]

1. Refrigerant pressure sensor

2. Compressor (magnet clutch)

3. Ambient sensor

PASSENGER COMPARTMENT



JP11A0608ZZ

1. Intake door motor

2. Upper ventilator door motor

3. Air mix door motor (passenger side)

4. Air mix door motor (driver side)

5. Mode door motor

6. Sunload sensor

COMPONENT PARTS

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONING]

7. In-vehicle sensor

8. A/C auto amp.

9. Intake sensor

10. Blower motor

Component Description

INFOID:000000007563377

Component		Description
Blower unit assembly	Intake door motor	HAC-7, "BLOWER UNIT ASSEMBLY : Intake Door Motor"
	Blower motor	HAC-8, "BLOWER UNIT ASSEMBLY : Blower Motor"
Heater & cooling unit assembly	Aspirator	HAC-8, "HEATER & COOLING UNIT ASSEMBLY : Aspirator"
	Intake sensor	HAC-8, "HEATER & COOLING UNIT ASSEMBLY : Intake Sensor"
	Air mix door motor (driver side)	HAC-8, "HEATER & COOLING UNIT ASSEMBLY : Air Mix Door Motor (Driver side)"
	Air mix door motor (passenger side)	HAC-9, "HEATER & COOLING UNIT ASSEMBLY : Air Mix Door Motor (Passenger side)"
	Mode door motor	HAC-9, "HEATER & COOLING UNIT ASSEMBLY : Mode Door Motor"
	Upper ventilator door motor	HAC-9, "HEATER & COOLING UNIT ASSEMBLY : Upper Ventilator Door Motor"
Preset switch		Preset switch is integrated with A/C controller and AV operation switch. A/C switch operation signal is transmitted from preset switch to AV control unit via communication line. Refer to AV-10, "Component Parts Location" (BOSE audio without navigation) or AV-126, "Component Parts Location" (BOSE audio with navigation) for detailed installation location.
Display unit		Display unit indicates operation status of air conditioning. Refer to AV-10, "Component Parts Location" (BOSE audio without navigation) or AV-126, "Component Parts Location" (BOSE audio with navigation) for detailed installation location.
AV control unit		AV control unit transmits A/C switch operation signal to A/C auto amp. via CAN communication line. Refer to AV-10, "Component Parts Location" (BOSE audio without navigation) or AV-126, "Component Parts Location" (BOSE audio with navigation) for detailed installation location.
A/C auto amp.		HAC-9, "A/C Auto Amp."
ECM		ECM, when receiving A/C ON signal and blower fan ON signal from A/C auto amp., transmits A/C compressor request signal to IPDM E/R via CAN communication according to status of the engine and refrigerant pressure. ECM transmits engine coolant temperature signal to A/C auto amp. via CAN communication line. Refer to EC-15, "ENGINE CONTROL SYSTEM : Component Parts Location" for detailed installation location.
IPDM E/R		A/C relay is integrated in IPDM E/R. IPDM E/R operates A/C relay when receiving A/C compressor request signal from ECM via CAN communication line. Refer to PCS-4, "Component Parts Location" for detailed installation location.
Ambient sensor		HAC-9, "Ambient Sensor"
In-vehicle sensor		HAC-9, "In-vehicle Sensor"
Sunload sensor		HAC-9, "Sunload Sensor"
Refrigerant pressure sensor		HAC-9, "Refrigerant Pressure Sensor"
Magnet clutch		HAC-10, "Magnet Clutch"

BLOWER UNIT ASSEMBLY

BLOWER UNIT ASSEMBLY : Intake Door Motor

INFOID:000000007563378

- Intake door motor consists of motor that drives door, PBR (Potentio Balance Register) that detects door position and LCU (Local Control Unit) that performs multiplex communication control (LAN) with A/C auto amp. Refer to [HAC-15, "Door Control"](#).

COMPONENT PARTS

< SYSTEM DESCRIPTION >

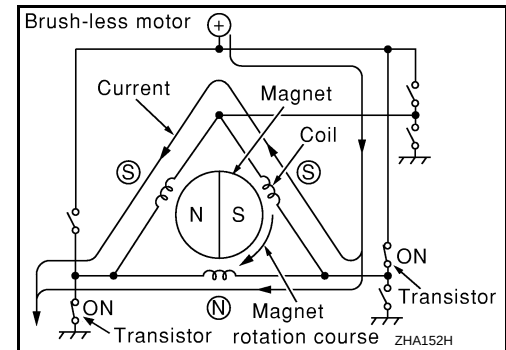
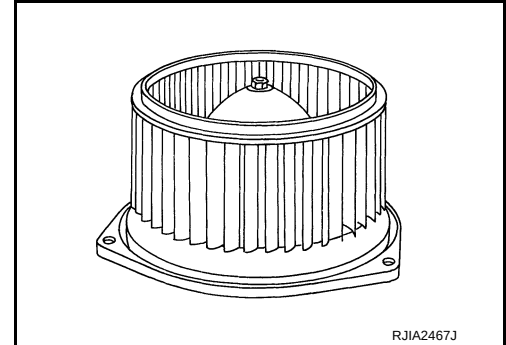
[AUTOMATIC AIR CONDITIONING]

- Rotation of motor is transmitted to intake door, then air inlet is switched.

BLOWER UNIT ASSEMBLY : Blower Motor

INFOID:000000007563379

- The blower motor utilizes a brush-less motor with a rotating magnet. Quietness is improved over previous motors that rotates coil while brush functions as contact points.
- Rotation speed is changed according to blower motor control signal (duty ratio) from A/C auto amp.

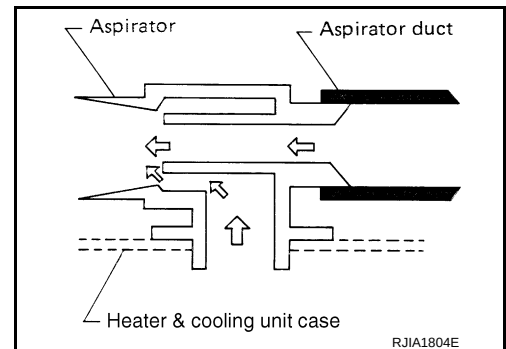


HEATER & COOLING UNIT ASSEMBLY

HEATER & COOLING UNIT ASSEMBLY : Aspirator

INFOID:000000007563380

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



HEATER & COOLING UNIT ASSEMBLY : Intake Sensor

INFOID:000000007563381

Intake sensor measures evaporator fin temperature. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases.

HEATER & COOLING UNIT ASSEMBLY : Air Mix Door Motor (Driver side) INFOID:000000007563382

- Air mix door motor (driver side) consists of motor that drives door, PBR (Potentio Balance Register) that detects door position and LCU (Local Control Unit) that performs multiplex communication control (LAN) with A/C auto amp. Refer to [HAC-15, "Door Control"](#).
- Rotation of motor is transmitted to air mix door (driver side), then air flow temperature (driver side) is switched.

COMPONENT PARTS

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONING]

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

INFOID:000000007563383

- Air mix door motor (passenger side) consists of motor that drives door, PBR (Potentio Balance Register) that detects door position and LCU (Local Control Unit) that performs multiplex communication control (LAN) with A/C auto amp. Refer to [HAC-15, "Door Control"](#).
- Rotation of motor is transmitted to air mix door (passenger side), then air flow temperature (passenger side) is switched.

HEATER & COOLING UNIT ASSEMBLY : Mode Door Motor

INFOID:000000007563384

- Mode door motor consists of motor that drives door, PBR (Potentio Balance Register) that detects door position and LCU (Local Control Unit) that performs multiplex communication control (LAN) with A/C auto amp. Refer to [HAC-15, "Door Control"](#).
- Rotation of motor is transmitted to mode door (ventilator door, max. cool door, defroster door and foot door) by lever, link, and rod, then air outlet is switched.

HEATER & COOLING UNIT ASSEMBLY : Upper Ventilator Door Motor

INFOID:000000007563385

- Upper ventilator door motor consists of motor that drives door, PBR (Potentio Balance Register) that detects door position and LCU (Local Control Unit) that performs multiplex communication control (LAN) with A/C auto amp. Refer to [HAC-15, "Door Control"](#).
- Rotation of motor is transmitted to upper ventilator door by rod and lever, then air outlet (upper ventilator) is switched.

A/C Auto Amp.

INFOID:000000007563386

A/C auto amp. controls automatic air conditioning system, by receiving and calculating signal from each sensor and switch. A/C auto amp. has self-diagnosis function. Diagnosis of air conditioning system can be performed quickly.

Ambient Sensor

INFOID:000000007563387

Ambient sensor measures ambient air temperature. 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

INFOID:000000007563388

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.

Sunload Sensor

INFOID:000000007563389

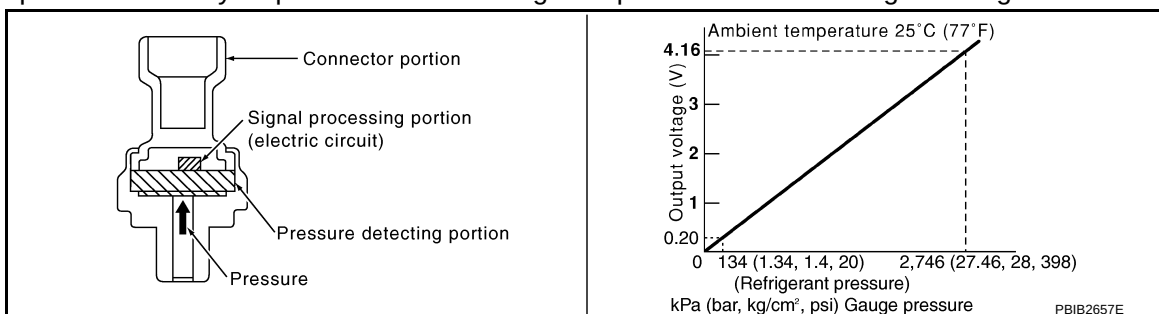
Sunload sensor measures sunload amount. This sensor converts sunload amount to voltage signal by photo-diode and transmits it to A/C auto amp.

Refrigerant Pressure Sensor

INFOID:000000007563390

DESCRIPTION

- The refrigerant pressure sensor converts high-pressure side refrigerant pressure into voltage and transmits it to ECM.
- ECM operates cooler cycle protection and cooling fan speed control according to voltage value that is input.



COMPONENT PARTS

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONING]

STRUCTURE AND OPERATION

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

Magnet Clutch

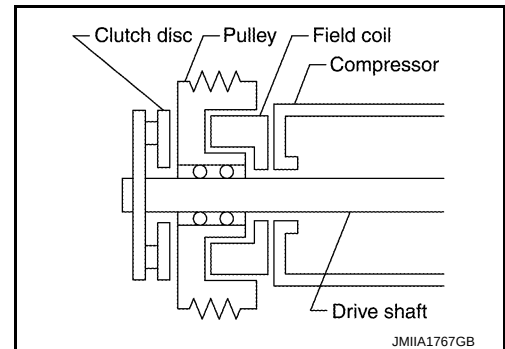
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DESCRIPTION

Compressor is driven by the magnet clutch which is magnetized by electric power supply.

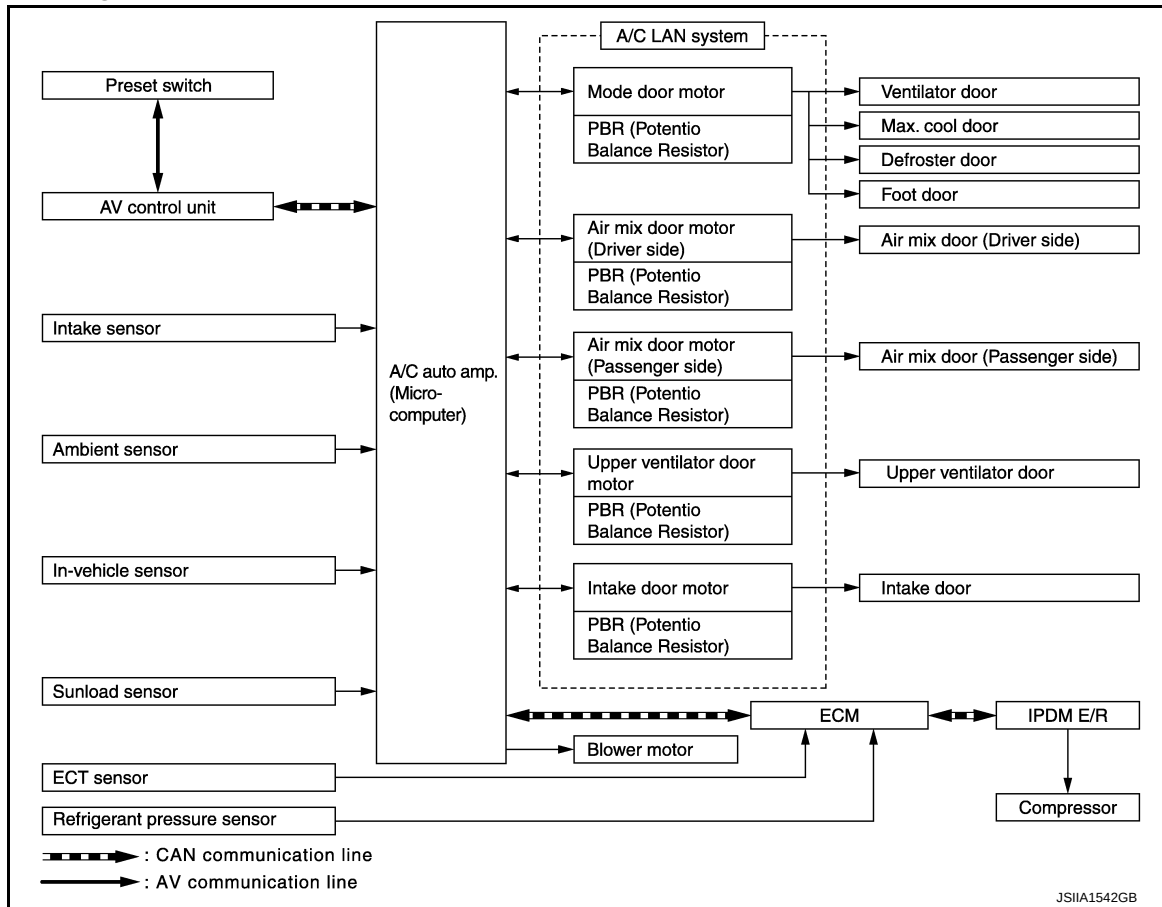
STRUCTURE AND OPERATION

- Magnet clutch consists of pulley, clutch disc, and field coil.
- Pulley is connected with crankshaft pulley of engine via drive belt and is always rotated while engine is running.
- Clutch disc is connected with drive shaft of compressor.
- Field coil, which becomes a strong electric magnet when electricity is supplied, strongly pulls clutch disc and presses it to pulley.
- When A/C relay integrated in IPDM E/R turns ON, electricity is supplied to field coil, clutch disc is pressed to pulley, and engine rotational movement is transmitted from crankshaft pulley ⇒ drive belt ⇒ pulley ⇒ clutch disc ⇒ drive shaft. Compressor is operated. When A/C relay turns OFF, electricity is not supplied to field coil, and clutch disc is released from pulley. Compressor is not operated.



SYSTEM

System Diagram



System Description

INFOID:000000007563393

DESCRIPTION

- Automatic air conditioning system is controlled by each function of A/C auto amp., ECM and IPDM E/R.
- Each operation of air conditioning system can be controlled by preset switch.

CONTROL BY A/C AUTO AMP.

- [HAC-12. "Temperature Control"](#)
- [HAC-13. "Air Outlet Control"](#)
- [HAC-13. "Air Flow Control"](#)
- [HAC-14. "Air Inlet Control"](#)
- [HAC-14. "Compressor Control"](#)
- [HAC-15. "Door Control"](#)
- Correction for input value

Ambient temperature correction

- A/C auto amp. inputs the temperature detected by ambient sensor as the ambient temperature.
- A/C auto amp. performs the correction of the temperature detected by ambient sensor for air conditioning control.
- A/C auto amp. selects and uses the initial value of ambient temperature data depending on the engine coolant temperature when turning the ignition switch from OFF to ON. The detection temperature of the ambient sensor is used when engine coolant temperature is low [less than approximately 56°C (133°F)]. The memory data (before the ignition switch is OFF) when the engine is warmed up [approximately 56°C (133°F) or more].
- The correction of the ambient temperature is not performed when the detection temperature of the ambient temperature is less than approximately -20°C (-4°F).

SYSTEM

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONING]

In-vehicle temperature correction

- A/C auto amp. inputs the temperature detected by in-vehicle sensor as the in-vehicle temperature.
- A/C auto amp. performs the correction of the temperature detected by in-vehicle sensor for air conditioning control.
- A/C auto amp. performs the correction so that the recognition passenger room temperature changes depending on the difference between the detected passenger room temperature and the recognition passenger room temperature. If the difference is large, the changing is early. The changing becomes slow as the difference becomes small.

Intake temperature correction

- A/C auto amp. inputs the temperature detected by intake sensor as the intake temperature (evaporator temperature).
- A/C auto amp. performs the correction of the temperature detected by intake sensor for air conditioning control.
- A/C auto amp. performs the correction so that the recognition intake temperature changes depending on the difference between the detected intake temperature and the recognition intake temperature. If the difference is large, the changing is early. The changing becomes slow as the difference becomes small.

Sunload amount correction

- A/C auto amp. inputs the sunload amount detected by sunload sensor.
- A/C auto amp. performs the correction of the sunload amount detected by sunload sensor for air conditioning control.
- When the sunload amount suddenly changes, for example when entering a tunnel, perform the correction so that the recognition sunload amount of the A/C auto amp. changes slowly.

Set temperature correction

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

CONTROL BY ECM

- [HAC-14, "Compressor Control"](#)
- Cooling fan control. Refer to [EC-40, "COOLING FAN CONTROL : System Description"](#).

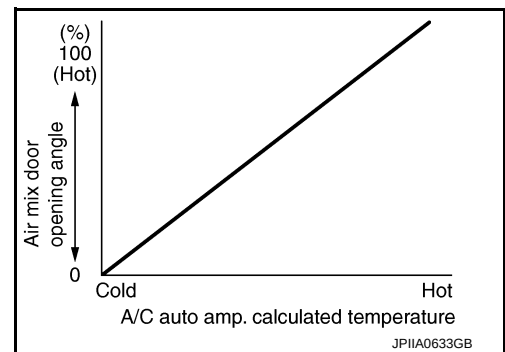
CONTROL BY IPDM E/R

- [HAC-14, "Compressor Control"](#)
- Cooling fan control. Refer to [PCS-5, "RELAY CONTROL SYSTEM : System Description"](#).

Temperature Control

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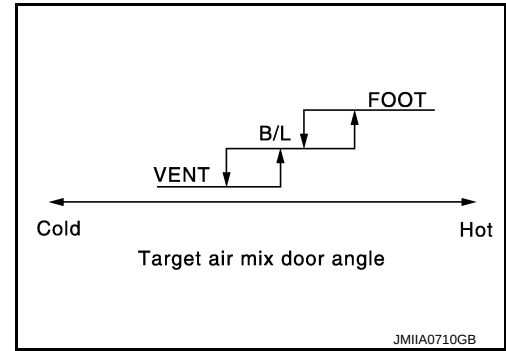
- When ignition switch is in the ON position, A/C auto amp. always automatically controls temperature regardless of air conditioning system operational state.
- A/C auto amp. calculates the target air mix door opening angle depending on set temperature, in-vehicle temperature, ambient temperature, and 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 60°F, and at the fully hot position when set temperature is 90°F.



Air Outlet Control

INFOID:000000007563395

- 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.



Air Flow Control

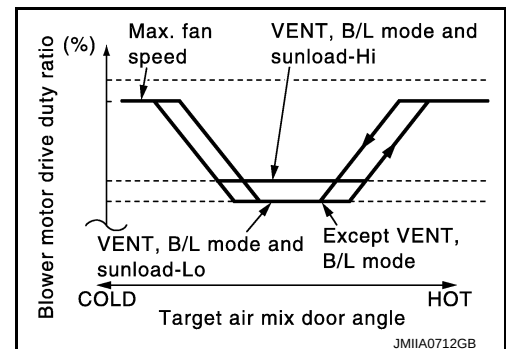
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DESCRIPTION

- A/C auto amp. changes duty ratio of blower motor control signal to control 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 is composed of starting air flow 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 to control air flow continuously so that air flow matches to target air flow.
- When air outlet is VENT or B/L, the minimum air flow is changed depending on sunload.

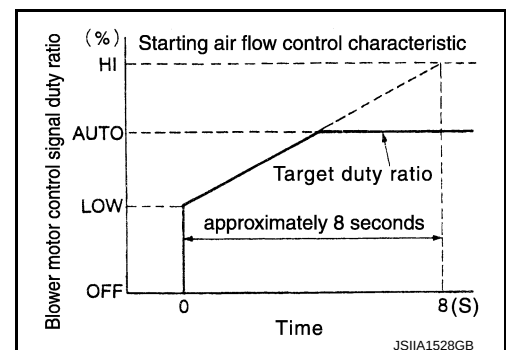


STARTING AIR FLOW CONTROL

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

NOTE:

Do not perform the starting air flow control when the discharge outlet is set to DEF.



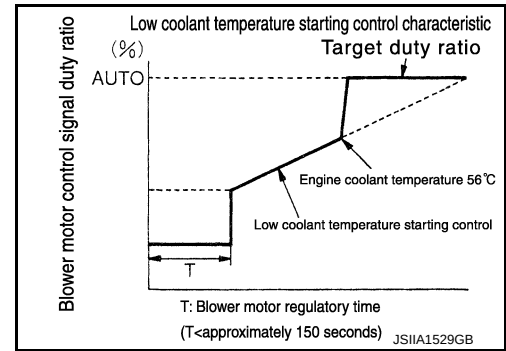
LOW COOLANT TEMPERATURE STARTING CONTROL

SYSTEM

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONING]

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 the maximum 150 seconds depending on target air mix door opening angle. After this, blower motor control signal is increased gradually, and blower motor is activated.



FAN SPEED CONTROL AT DOOR MOTOR OPERATION

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

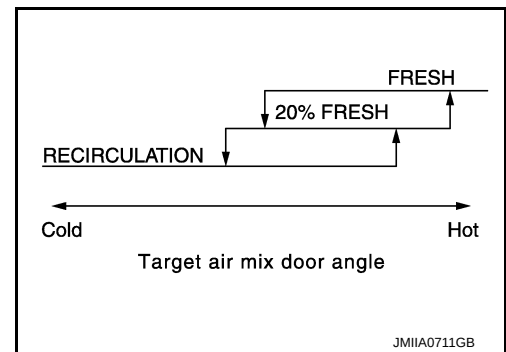
HIGH IN-VEHICLE TEMPERATURE STARTING CONTROL

When evaporator fin temperature is high [intake air temperature 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 evaporator is cooled by refrigerant.

Air Inlet Control

INFOID:000000007563397

While air inlet is in automatic control, A/C auto amp. selects air inlet (fresh air intake, 20% fresh air intake, or recirculation) depending on set temperature, in-vehicle temperature, and ambient temperature.



Compressor Control

INFOID:000000007563398

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 ECM via CAN communication line.
- ECM judges the conditions of each sensor (refrigerant pressure sensor signal, accelerator position signal, etc.), and transmits the A/C compressor request signal to IPDM E/R via CAN communication line.
- By receiving the A/C compressor request signal from ECM, IPDM E/R turns the A/C relay to ON, and activates the compressor. Refer to [PCS-5, "RELAY CONTROL SYSTEM : System Description"](#).

CONTROL BY A/C AUTO AMP.

Low Temperature Protection Control

Turn the A/C relay to OFF and stop the compressor by the signal from the A/C auto amp. according to the evaporator fin temperature detected by the intake sensor and the ambient temperature detected by the ambient sensor.

CONTROL BY ECM

Compressor Protection Control at Pressure Malfunction

When the 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 (31.8 kg/cm², 452 psi) or more (When the engine speed is less than 1,500 rpm)
- 0.12 MPa (1.2 kg/cm², 17 psi) or less

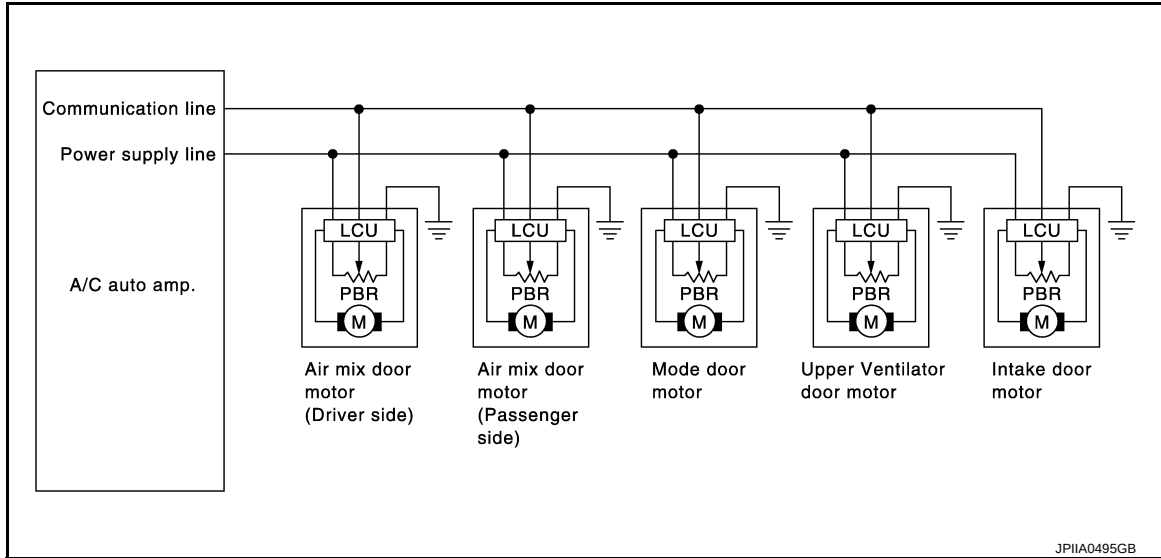
Air Conditioning Cut Control

When the engine condition is high load, ECM transmits A/C relay OFF request to IPDM E/R, and stops the compressor. Refer to [EC-38, "AIR CONDITIONING CUT CONTROL : System Description"](#).

Door Control

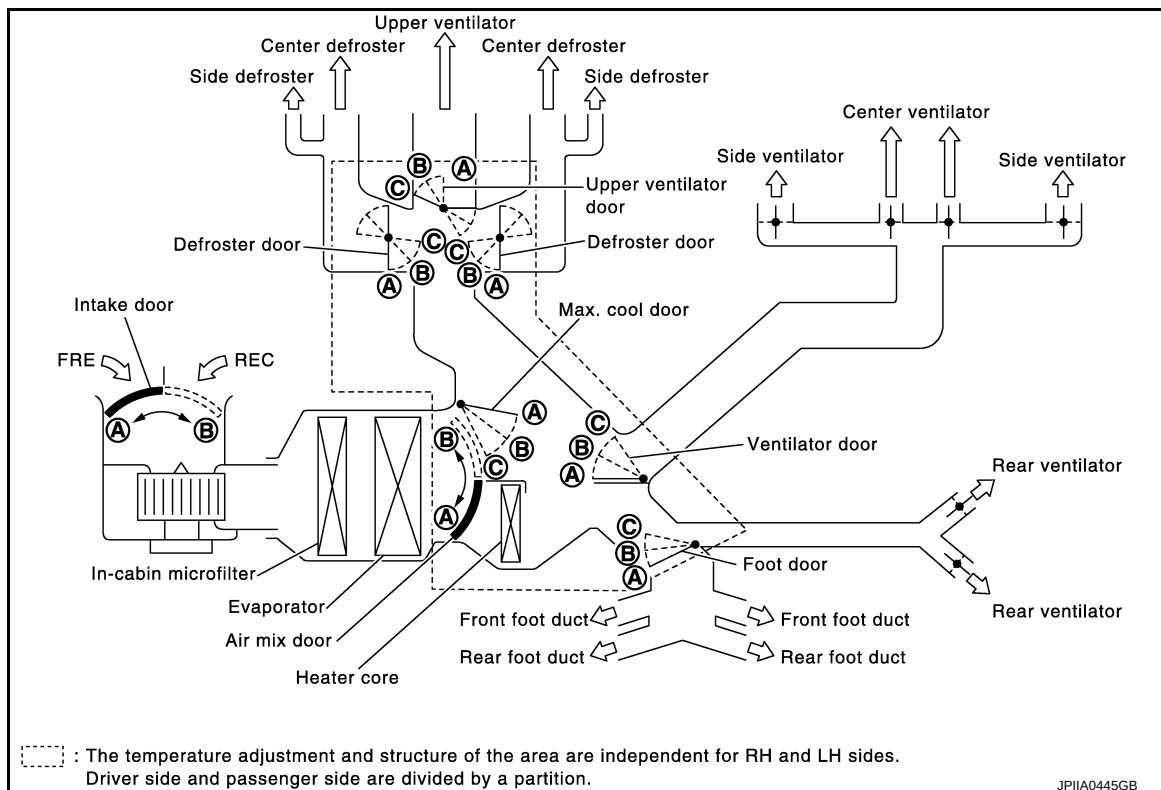
INFOID:000000007563399

DOOR MOTOR CONTROL



- LCU (Local Control Unit) is built into each door motor. And detects door position by PBR (Potentiometer Balance Resistor).
- A/C auto amp. communicates with each LCU via communication line. And receives each door position feedback signal from each LCU.
- Each LCU controls each door to the appropriate position depending on the control signal from A/C auto amp.
- Each LCU transmits the signal of door movement completion to A/C auto amp., when the door movement is completed.

SWITCH AND THEIR CONTROL FUNCTION



SYSTEM

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONING]

Switch/Dial position			Door position													
			Mode door				Intake door	Upper ventilator door	Air mix door							
			Ventilator door	Max. cool door	Defroster door	Foot door			(Driver side)	(Passenger side)						
AUTO switch				AUTO				—	—	—	—					
MODE switch				A	A	A	A									
				B	B	A	B									
				C	B	B	C									
				C	B	B	B									
DEF switch				C	C	C	A	A	B	A – B	C					
Intake switch*				—	—	—	—					B				
UPPER VENT switch								—	—	—	—	—	A – B			
													C			
Temperature control dial (Driver side)	DUAL switch: OFF	60°F		—	—	—	—						—	—	A	A
		61°F – 89 °F													AUTO	AUTO
		90°F						B	B							
	DUAL switch: ON	60°F						A	—							
		61°F – 89 °F						AUTO								
		90°F						B								
Temperature control dial (Passenger side)		60°F						—	—	—	—	—			—	A
		61°F – 89 °F														AUTO
		90°F														B
ON-OFF switch		OFF		C	B	B	C				—					

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

AIR DISTRIBUTION

Discharge air flow								
MODE/DEF set position	Condition	Air outlet/distribution						
		Ventilator				Foot		Defroster
		Front		Upper	Rear	Front	Rear	
		Center	Side					
	- DUAL switch: OFF - UPPER VENT switch: ON	40%	41%	8%	11%	—	—	—
		18%	24%	10%	17%	23%	8%	—
		—	12%	12%	15.5%	27.5%	12%	21%
		—	11%	11%	14%	24%	11%	29%
		—	11%	10.5%	12.5%	—	—	66%

Fail-safe

INFOID:000000007563400

FAIL-SAFE FUNCTION

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

- Set temperature

: Setting before communication error occurs
- Air outlet

: Automatic control
- Air flow

: Automatic control
- Air inlet

: Fresh air intake (FRE)
- A/C switch

: ON

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OPERATION

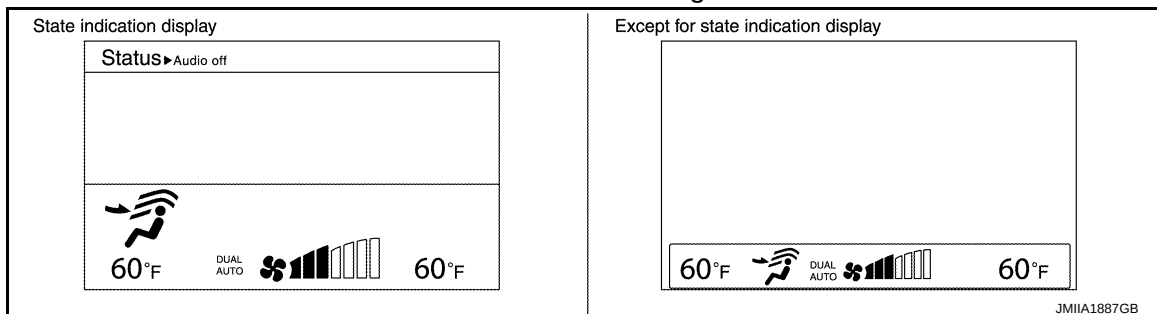
Switch Name and Function

INFOID:000000007563401

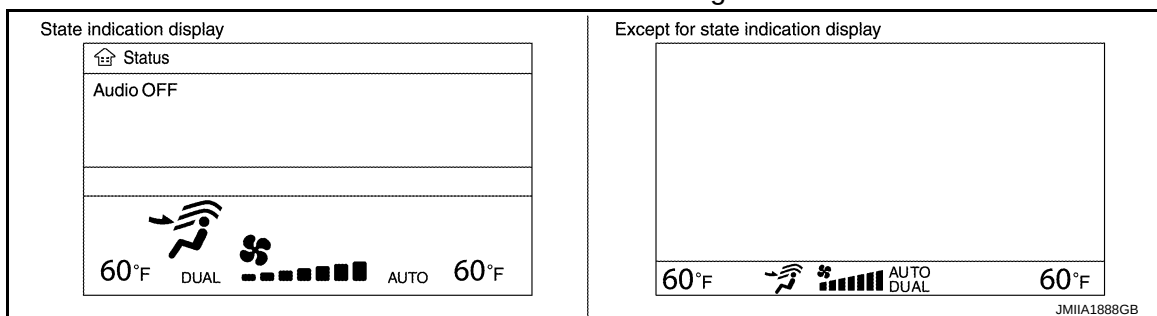
OPERATION AND DISPLAY OF AUTOMATIC AIR CONDITIONING SYSTEM

Display: Display unit

BOSE audio with navigation

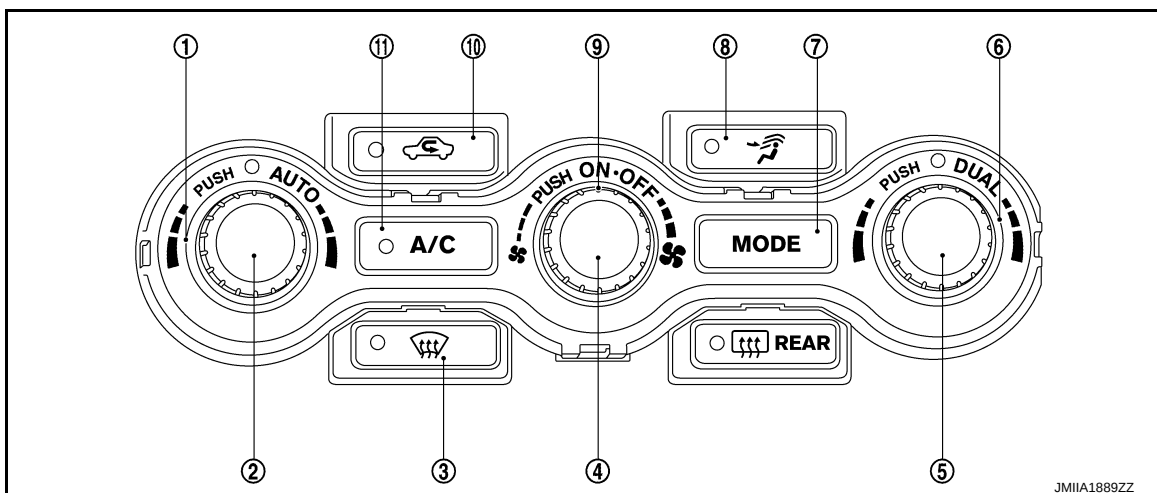


BOSE audio without navigation



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

Operation: Preset switch



- | | | |
|---|----------------|--|
| 1. Temperature control dial (driver side) | 2. AUTO switch | 3. DEF switch |
| 4. ON-OFF switch | 5. DUAL switch | 6. Temperature control dial (passenger side) |

OPERATION

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONING]

- | | | |
|-------------------|----------------------|---------------------|
| 7. MODE switch | 8. UPPER VENT switch | 9. Fan control dial |
| 10. Intake switch | 11. A/C switch | |

Switch name	Function
Temperature control dial (driver side)	Setting temperature can be set according to dial operation within a range between 60°F – 90°F at a rate of 1°F per adjustment. • Clock wise rotation: Setting temperature increases • Counterclockwise rotation: Setting temperature decreases 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.
AUTO switch	• AUTO switch indicator turns ON and air conditioning becomes the following status, when this switch is pressed while air conditioning is ON. - Air outlet: Automatic control - Air flow: Automatic control - Air inlet: Automatic control - 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) - Air outlet: Automatic control - Air flow: Automatic control - Air inlet: Automatic control - A/C switch: ON 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.
DEF switch	DEF mode (switch indicator) changes between ON ⇔ OFF each time switch is pressed. • 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 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.
ON-OFF switch	Air conditioning turns ON ⇔ OFF each time this switch is pressed. • When this switch is pressed while air conditioning is ON - Air conditioning turns OFF and becomes the following status, when this switch is pressed. • Air outlet: FOOT • Air flow: OFF • Air inlet: Fresh air intake • A/C switch: OFF • When this switch is pressed while air conditioning is OFF - 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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P

OPERATION

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONING]

Switch name	Function
DUAL switch	Left and right ventilation temperature separately control (switch indicator) changes between ON ⇔ OFF each time this switch is pressed while blower motor is operated. NOTE: - 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 dial (passenger side)	- Left and right ventilation temperature separately control (DUAL switch indicator) turns ON according to dial 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 dial operation within a range between 60°F – 90°F at a rate of 1°F per adjustment. - Clock wise rotation: Setting temperature increases - Counterclockwise rotation: Setting temperature decreases 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. - Temperature control dial (passenger side) operation is not accepted when DEF mode is ON.
MODE switch	Air outlet changes from VENT ⇒ B/L ⇒ FOOT ⇒ D/F ⇒ VENT each time this switch is pressed. NOTE: - 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.
UPPER VENT switch	Upper ventilator control (switch indicator) changes between ON ⇔ OFF each time this switch is pressed while blower motor is operated. NOTE: - When air conditioning is OFF, upper ventilator control can be changed only while air conditioning status screen (only when MODE switch is pressed) is indicated. - UPPER VENT switch operation is not accepted when DEF mode is ON.
Fan control dial	- Air flow can be set within a range between 1st – 7th speed according to dial operation. - Clock wise rotation: Air flow increases - Counterclockwise rotation: Air flow decreases - Air conditioning turns ON and operates according to the following status, when this switch is pressed while air conditioning is OFF. - Air outlet: Automatic control - Air flow: Automatic control - Air inlet: Settings set before fan control dial is operated - A/C switch: Settings set before air conditioning is turned OFF NOTE: Automatic air flow control is cancelled (AUTO switch indicator turns OFF), when fan control dial is operated while AUTO switch indicator is ON.
Intake switch	- Air inlet changes between recirculation (REC) ⇔ fresh air intake (FRE) each time this switch is pressed. - Switch indicator ON: Recirculation - Switch indicator OFF: Fresh air intake - Switch indicator blinks 2 times and air inlet is set to automatic control when switch is pressed and held for 2 seconds or more. (Switch indicator indicates air inlet status during automatic control) NOTE: - Air inlet can be changed when air conditioning is in OFF status. - REC switch operation is not accepted when air outlet is D/F or DEF. - A/C switch turns ON when REC switch is turned ON while A/C switch is OFF.
A/C switch	Compressor control (switch indicator) changes between ON ⇔ OFF each time this switch is pressed while blower motor is operated. NOTE: - A/C switch cannot be turned ON when blower motor is OFF. - A/C switch cannot be turned OFF when air outlet is D/F or DEF. - Air inlet changes to fresh air intake when A/C switch is turned OFF while air inlet is set to recirculation.

DIAGNOSIS SYSTEM (A/C AUTO AMP.)

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONING]

DIAGNOSIS SYSTEM (A/C AUTO AMP.)

Description

INFOID:000000007563402

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

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

CONSULT Function

INFOID:000000007563403

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

Diagnostic mode	Description
Ecu Identification	Displays the part number of A/C auto amp.
Self Diagnostic Result	Displays the diagnosis results judged by A/C auto amp.
Data Monitor	Displays the input/output signal of A/C auto amp.
Active Test	The signals used to activate each device are forcibly supplied from A/C auto amp.
Work support	Changes the setting for each setting function.

NOTE:

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

ECU IDENTIFICATION

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

SELF-DIAGNOSIS RESULTS

Diagnosis result that is judged by A/C auto amp. can be checked. Refer to [HAC-25. "DTC Index"](#).

DATA MONITOR

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

Display item list

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

DIAGNOSIS SYSTEM (A/C AUTO AMP.)

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONING]

Monitor item [Unit]	Description
IN-VEH CAL [°C (°F)]	In-vehicle temperature value calculated by A/C auto amp.
INT TEMP CAL [°C (°F)]	Evaporator fin temperature value calculated by A/C auto amp.
SUNL SEN CAL [w/m ²]	Sunload value calculated by A/C auto amp.
COMP REQ SIG [On/Off]	Displays A/C ON signal ON/OFF status transmitted to ECM.
FAN REQ SIG [On/Off]	Displays blower fan ON signal ON/OFF status transmitted to ECM.
FAN DUTY	Duty ratio of blower motor judged by A/C auto amp.
XM	Target discharge air temperature judged by A/C auto amp. depending on the temperature setting and the value from each sensor
ENG COOL TEMP [°C (°F)]	Engine coolant temperature signal value received from ECM via CAN communication
VEHICLE SPEED [km/h (mph)]	Vehicle speed signal value received from combination meter via CAN communication

ACTIVE TEST

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

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

Check each output device

	Test item						
	MODE 1	MODE 2	MODE 3	MODE 4	MODE 5	MODE 6	MODE 7
Mode door motor position	VENT	VENT	B/L	B/L	FOOT*	D/F	DEF
Intake door motor position	REC	REC	20% FRE	20% FRE	FRE	FRE	FRE
Air mix door motor (driver side/passenger side) position	FULL COLD	FULL HOT	FULL COLD	FULL HOT	FULL HOT	FULL HOT	FULL HOT
Blower motor (duty ratio)	35%	35%	61%	61%	91%	91%	35%
Magnet clutch	ON	ON	ON	ON	OFF	OFF	ON
Upper ventilator door motor position	OPEN	CLOSE	OPEN	CLOSE	CLOSE	CLOSE	CLOSE

*: Position of mode door motor is set to the status of automatic control that is selected by foot position setting trimmer. Refer to [HAC-35. "Foot Position Setting Trimmer"](#).

NOTE:

Perform the inspection of each output device after starting the engine because the compressor is operated.

WORK SUPPORT

Setting change of each setting functions and automatic adjustment of components can be performed.

Work item	Description	Refer to
TEMP SET CORRECT	Setting change of temperature setting trimmer can be performed.	HAC-34. "Temperature Setting Trimmer"
REC MEMORY SET	Setting change of inlet port memory function (REC) can be performed.	HAC-34. "Inlet Port Memory Function (REC)"
FRE MEMORY SET	Setting change of inlet port memory function (FRE) can be performed.	HAC-35. "Inlet Port Memory Function (FRE)"
BLOWER SET	Setting change of foot position setting trimmer can be performed.	HAC-35. "Foot Position Setting Trimmer"

NOTE:

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

ECU DIAGNOSIS INFORMATION

A/C AUTO AMP.

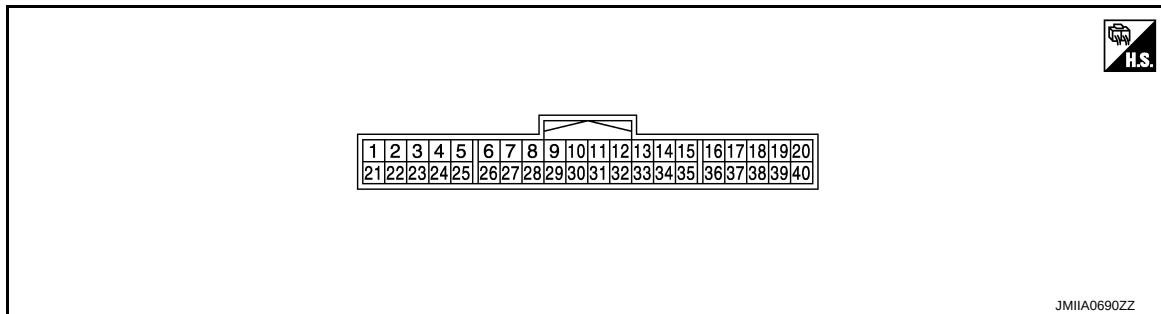
Reference Value

INFOID:000000007563404

CONSULT DATA MONITOR REFERENCE VALUES

Monitor item	Condition		Value/Status
AMB TEMP SEN	Ignition switch ON		Equivalent to ambient temperature
IN-VEH TEMP	Ignition switch ON		Equivalent to in-vehicle temperature
INT TEMP SEN	Ignition switch ON		Equivalent to evaporator fin temperature
SUNLOAD SEN	Ignition switch ON		Equivalent to sunload amount
AMB SEN CAL	Ignition switch ON		Equivalent to ambient temperature
IN-VEH CAL	Ignition switch ON		Equivalent to in-vehicle temperature
INT TEMP CAL	Ignition switch ON		Equivalent to evaporator fin temperature
SUNL SEN CAL	Ignition switch ON		Equivalent to sunload amount
COMP REQ SIG	Engine: Run at idle after warming up	A/C switch: ON (Compressor operation status)	On
		A/C switch: OFF	Off
FAN REQ SIG	Engine: Run at idle after warming up	Blower motor: ON	On
		Blower motor: OFF	Off
FAN DUTY	Engine: Run at idle after warming up	Blower motor: ON	25 – 81
		Blower motor: OFF	0
XM	Ignition switch ON		Value according to target air flow temperature
ENG COOL TEMP	Ignition switch ON		Equivalent to engine coolant temperature
VEHICLE SPEED	Driving		Equivalent to speedometer reading

TERMINAL LAYOUT

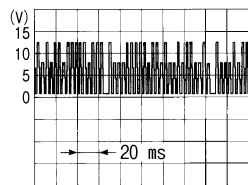
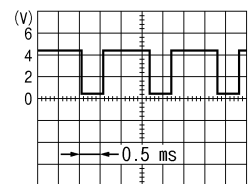


PHYSICAL VALUES

A/C AUTO AMP.

< ECU DIAGNOSIS INFORMATION >

[AUTOMATIC AIR CONDITIONING]

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	—	Signal name	Input/ Output		
1 (L)	—	CAN-H	Input/ Output	—	—
2 (P)	—	CAN-L	Input/ Output	—	—
10 (L)	Ground	LAN signal	Input/ Output	Ignition switch ON	 SJA1453J
11 (R)	Ground	Door motor power supply	Output	Ignition switch ON	12 V
15 (O)	Ground	Sunload sensor signal	Input	Ignition switch ON	0 – 4.8 V Output voltage varies with sun-load amount
16 (G)	Ground	Intake sensor signal	Input	Ignition switch ON	0 – 4.8 V Output voltage varies with evaporator fin temperature
17 (R)	Ground	ACC power supply	—	Ignition switch ON	Battery voltage
19 (B)	Ground	Ground	—	Ignition switch ON	0 V
20 (G)	Ground	Ignition power supply	—	Ignition switch ON	Battery voltage
32 (L)	Ground	Blower motor control signal	Output	- Ignition switch ON - Fan speed: 1st speed (manual)	 JSIA0096ZZ
34 (P)	Ground	A/C auto amp. connection recognition signal	Output	Ignition switch ON	5 V
35 (L)	Ground	Ambient sensor signal	Input	Ignition switch ON	0 – 4.8 V Output voltage varies with ambient temperature
36 (LG)	Ground	In-vehicle sensor signal	Input	Ignition switch ON	0 – 4.8 V Output voltage varies with in-vehicle temperature
37 (Y)	Ground	Sensor ground	—	Ignition switch ON	0 V
39 (B)	Ground	Ground	—	Ignition switch ON	0 V
40 (Y)	Ground	Battery power supply	—	Ignition switch OFF	Battery voltage

Fail-safe

INFOID:000000007563405

FAIL-SAFE FUNCTION

A/C AUTO AMP.

< ECU DIAGNOSIS INFORMATION >

[AUTOMATIC AIR CONDITIONING]

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

Set temperature	: Setting before communication error occurs
Air outlet	: Automatic control
Air flow	: Automatic control
Air inlet	: Fresh air intake (FRE)
A/C switch	: ON

DTC Index

INFOID:000000007563406

DTC	Items (CONSULT screen terms)	Reference
U1000	CAN COMM CIRCUIT	HAC-36, "DTC Logic"
U1010	CONTROL UNIT (CAN)	HAC-37, "DTC Logic"
B2578	IN-VEHICLE SENSOR	HAC-38, "DTC Logic"
B2579	IN-VEHICLE SENSOR	HAC-38, "DTC Logic"
B257B	AMBIENT SENOR	HAC-40, "DTC Logic"
B257C	AMBIENT SENOR	HAC-40, "DTC Logic"
B2581	INTAKE SENSOR	HAC-42, "DTC Logic"
B2582	INTAKE SENSOR	HAC-42, "DTC Logic"
B2630*	SUNLOAD SENSOR	HAC-44, "DTC Logic"
B2631*	SUNLOAD SENSOR	HAC-44, "DTC Logic"
B2632	DR AIR MIX DOOR MOT	HAC-47, "DTC Logic"
B2633	DR AIR MIX DOOR MOT	HAC-47, "DTC Logic"
B2634	PASS AIR MIX DOOR MOT	HAC-50, "DTC Logic"
B2635	PASS AIR MIX DOOR MOT	HAC-50, "DTC Logic"
B2636	DR VENT DOOR FAIL	HAC-53, "DTC Logic"
B2637	DR B/L DOOR FAIL	HAC-53, "DTC Logic"
B2638	DR D/F1 DOOR FAIL	HAC-53, "DTC Logic"
B2639	DR DEF DOOR FAIL	HAC-53, "DTC Logic"
B263D	FRE DOOR FAIL	HAC-56, "DTC Logic"
B263E	20P FRE DOOR FAIL	HAC-56, "DTC Logic"
B263F	REC DOOR FAIL	HAC-56, "DTC Logic"
B2654	D/F2 DOOR FAIL	HAC-53, "DTC Logic"
B2655	B/L2 DOOR FAIL	HAC-53, "DTC Logic"
B2661	UPPER VENT DOOR MOT	HAC-59, "DTC Logic"
B2662	UPPER VENT DOOR MOT	HAC-59, "DTC Logic"
B2663	UPPER VENT DOOR MOT	HAC-59, "DTC Logic"

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

NOTE:

If all of door motor DTCs (B2632, B2633, B2634, B2635, B2636, B2637, B2638, B2639, B263D, B263E, B263F, B2654, B2655, B2661, B2662, and B2663) are detected, check "DOOR MOTOR" circuit. Refer to [HAC-64, "Diagnosis Procedure"](#).

ECM, IPDM E/R

List of ECU Reference

INFOID:000000007563407

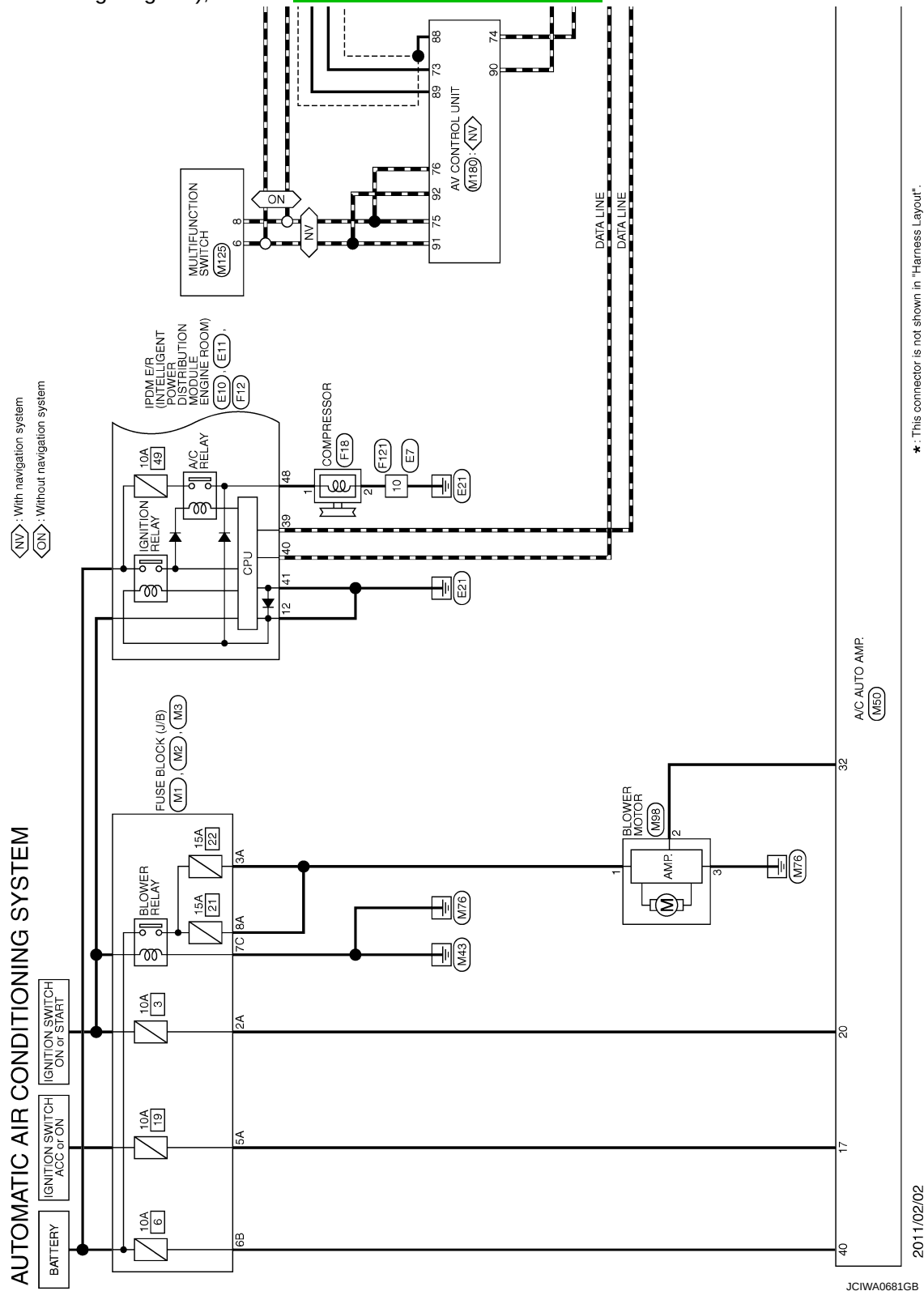
ECU	Reference
ECM	EC-73. "Reference Value"
	EC-87. "Fail-safe"
	EC-89. "DTC Inspection Priority Chart"
	EC-90. "DTC Index"
IPDM E/R	PCS-15. "Reference Value"
	PCS-21. "Fail-safe"
	PCS-23. "DTC Index"

[AUTOMATIC AIR CONDITIONING]

WIRING DIAGRAM

Wiring Diagram

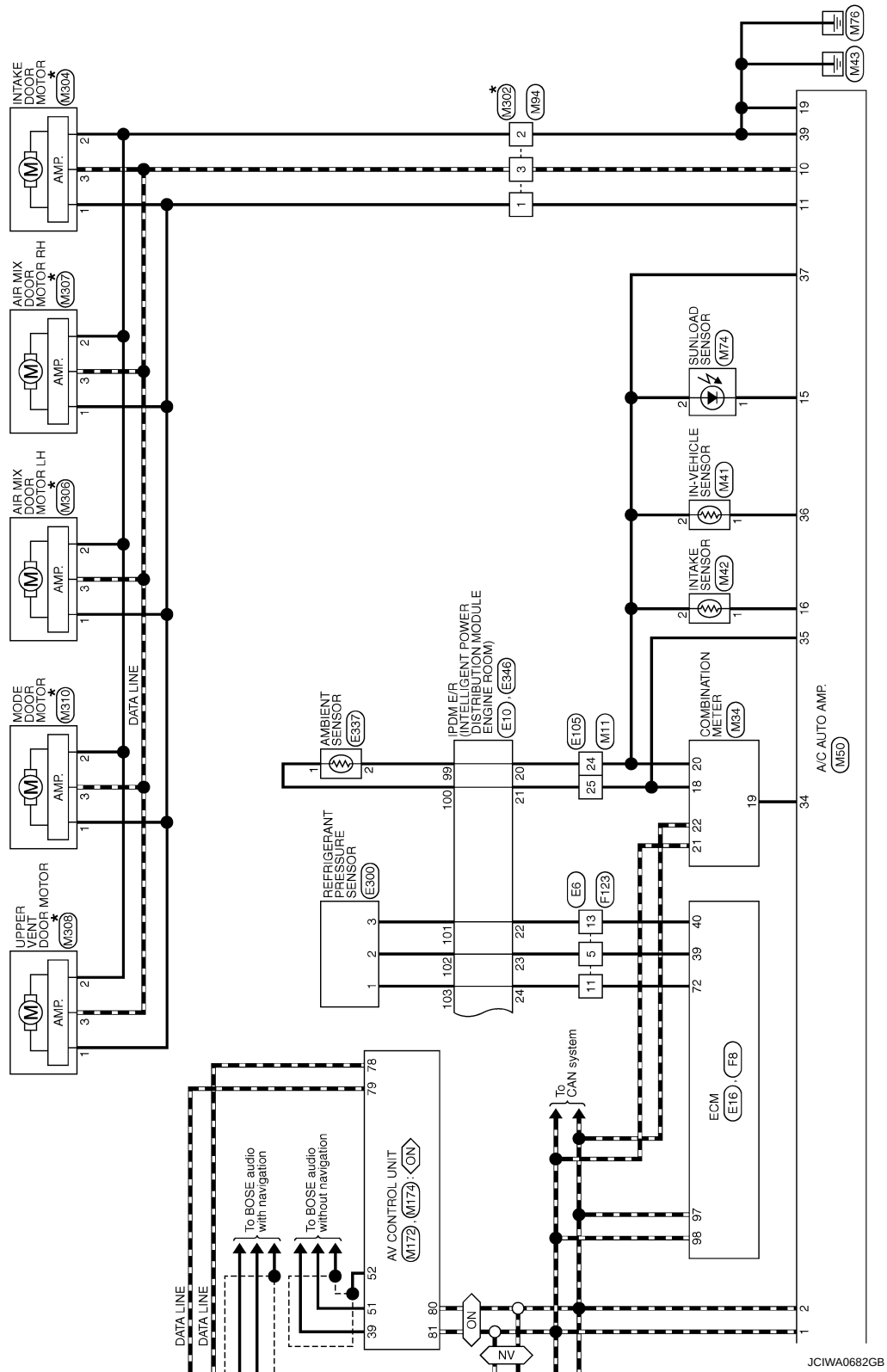
For connector terminal arrangements, harness layouts, and alphabets in a  (option abbreviation; if not described in wiring diagram), refer to [GI-12, "Connector Information"](#).



AUTOMATIC AIR CONDITIONING SYSTEM

< WIRING DIAGRAM >

[AUTOMATIC AIR CONDITIONING]



DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

[AUTOMATIC AIR CONDITIONING]

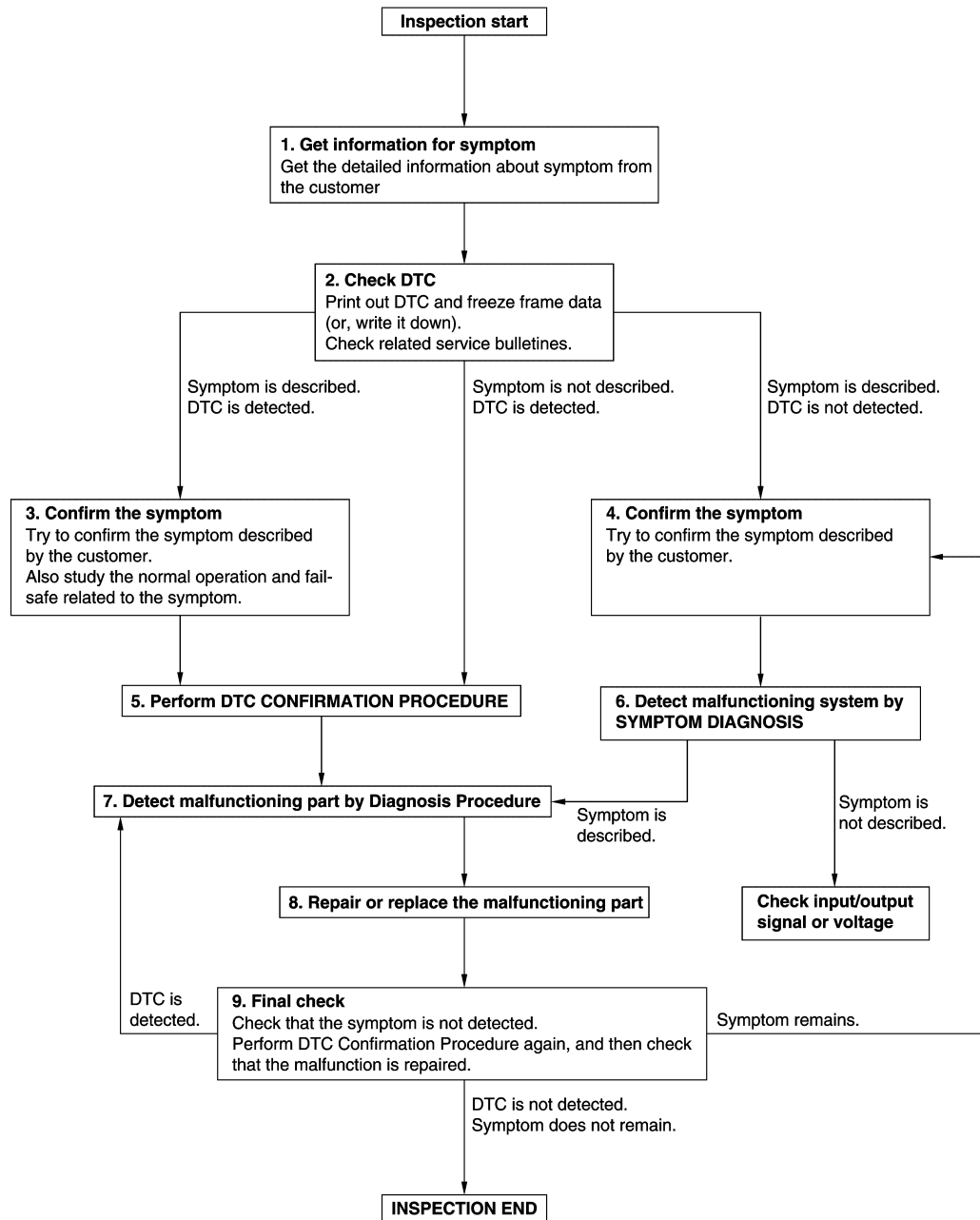
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:000000007563409

OVERALL SEQUENCE



DETAILED FLOW

JMKIA8652GB

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

[AUTOMATIC AIR CONDITIONING]

1.GET INFORMATION FOR SYMPTOM

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

>> GO TO 2.

2.CHECK DTC

1. Check DTC.
2. Perform the following procedure if DTC is detected.
 - Record DTC and freeze frame data (Print them out using CONSULT.)
 - Erase DTC.
 - Study the relationship between the cause detected by DTC and the symptom described by the customer.
3. Check related service bulletins for information.

Are any symptoms described and any DTC detected?

Symptom is described, DTC is detected>>GO TO 3.

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

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

3.CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer.

Also study the normal operation and fail-safe related to the symptom.

Verify relation between the symptom and the condition when the symptom is detected.

>> GO TO 5.

4.CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer.

Verify relation between the symptom and the condition when the symptom is detected.

>> GO TO 6.

5.PERFORM DTC CONFIRMATION PROCEDURE

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

NOTE:

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

Is DTC detected?

YES >> GO TO 7.

NO >> Check according to [GI-40. "Intermittent Incident"](#).

6.DETECT MALFUNCTIONING SYSTEM BY SYMPTOM DIAGNOSIS

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

Is the symptom described?

YES >> GO TO 7.

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

7.DETECT MALFUNCTIONING PART BY DIAGNOSIS PROCEDURE

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

[AUTOMATIC AIR CONDITIONING]

Inspect according to Diagnosis Procedure of the system.

Is malfunctioning part detected?

YES >> GO TO 8.

NO >> Check according to [GI-40. "Intermittent Incident"](#).

8. REPAIR OR REPLACE THE MALFUNCTIONING PART

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

>> GO TO 9.

9. FINAL CHECK

When DTC is detected in step 2, perform DTC CONFIRMATION PROCEDURE again, and then check that the malfunction is repaired securely.

When symptom is described by the customer, refer to confirmed symptom in step 3 or 4, and check that the symptom is not detected.

Is DTC detected and does symptom remain?

YES-1 >> DTC is detected: GO TO 7.

YES-2 >> Symptom remains: GO TO 4.

NO >> Before returning the vehicle to the customer, always erase DTC.

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OPERATION INSPECTION

Work Procedure

INFOID:000000007563410

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

Check condition : Engine running at normal operating temperature.

1. CHECK MEMORY FUNCTION

1. Press AUTO switch to activate air conditioning system.
2. Set temperature to 90°F by operating temperature control dial (driver side).
3. Press ON-OFF switch.
4. Turn ignition switch OFF.
5. Turn ignition switch ON.
6. Press AUTO switch.
7. Check that set temperature (90°F) is maintained.

Is the inspection result normal?

- YES >> GO TO 2.
NO >> GO TO 11.

2. CHECK AIR FLOW (FAN SPEED)

1. Start engine.
2. Operate fan switch.
3. Check that air flow changes. Check operation for all fan speeds.

Is the inspection result normal?

- YES >> GO TO 3.
NO >> GO TO 11.

3. CHECK AIR OUTLET (MODE SWITCH AND DEF SWITCH)

1. Operate fan switch to set the fan speed to maximum speed.
2. Operate MODE switch and DEF switch.
3. Check that air outlets change according to each indicated air outlet by placing a hand in front of the air outlets. Refer to [VTL-5, "System Description"](#).

Is the inspection result normal?

- YES >> GO TO 4.
NO >> GO TO 11.

4. CHECK AIR OUTLET (UPPER VENT SWITCH)

1. Press MODE switch to set the air outlet to other than DEF.
2. Press UPPER VENT switch. The UPPER VENT switch indicator turns ON.
3. Check that air flow blows from upper ventilator.
4. Press UPPER VENT switch again. The UPPER VENT switch indicator turns OFF.
5. Check that air flow from upper ventilator stops.

Is the inspection result normal?

- YES >> GO TO 5.
NO >> GO TO 11.

5. CHECK AIR INLET

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

Is the inspection result normal?

- YES >> GO TO 6.
NO >> GO TO 11.

6. CHECK COMPRESSOR

1. Press A/C switch. The A/C switch indicator turns ON.

OPERATION INSPECTION

< BASIC INSPECTION >

[AUTOMATIC AIR CONDITIONING]

2. Check visually and by sound that the compressor operates.
3. Press A/C switch again. The A/C switch indicator turns OFF.
4. Check that compressor stops.

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 11.

7.CHECK DISCHARGE AIR TEMPERATURE

1. Operate temperature control dial (driver side).
2. Check that discharge air temperature (driver side/passenger side) changes.
3. Operate temperature control dial (passenger side). The DUAL switch indicator turns ON.
4. Check that discharge air temperature (passenger side only) changes.
5. Press DUAL switch. The DUAL switch indicator turns OFF.
6. Check that air temperature setting (LH/RH) is unified to the driver side temperature setting.

Is the inspection result normal?

YES >> GO TO 8.

NO >> GO TO 11.

8.CHECK TEMPERATURE DECREASE

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

Is the inspection result normal?

YES >> GO TO 9.

NO >> GO TO 11.

9.CHECK TEMPERATURE INCREASE

1. Operate temperature control dial (driver side) and raise the set temperature to 90°F.
2. Check that warm air blows from the air outlets.

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 11.

10.CHECK AUTO MODE

1. Press AUTO switch. The AUTO switch indicator turns ON.
2. Operate temperature control dial (driver side) to check that air flow (fan speed) or air outlet changes (the air outlet or air flow varies depending on the ambient temperature, in-vehicle temperature, set temperature, and etc.).

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 11.

11.CHECK SELF-DIAGNOSIS WITH CONSULT

1. Perform self-diagnosis with CONSULT.
2. Check that any DTC is detected.

Is any DTC detected?

YES >> Refer to [HAC-25, "DTC Index"](#) and perform the appropriate diagnosis.

NO >> GO TO 12.

12.CHECK FAIL-SAFE ACTIVATION

Check that symptom is applied to the fail-safe activation. Refer to [HAC-24, "Fail-safe"](#).

>> Refer to [HAC-71, "Symptom Table"](#) and perform the appropriate diagnosis.

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SYSTEM SETTING

Temperature Setting Trimmer

INFOID:000000007563411

DESCRIPTION

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

HOW TO SET

 With CONSULT

Perform "TEMP SET CORRECT" of HVAC work support item.

Work support items	Display	Correction (°F)
TEMP SET CORRECT	6	+6
	5	+5
	4	+4
	3	+3
	2	+2
	1	+1
	0	0 (Initial setting)
	-1	-1
	-2	-2
	-3	-3
	-4	-4
	-5	-5
	-6	-6

NOTE:

- When -6°F is corrected on the temperature setting set as 75°F the temperature controlled by A/C auto amp. is 75°F - -6°F = 69°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 10 V or less, the setting of the difference between the set temperature and control temperature may be cancelled.

Inlet Port Memory Function (REC)

INFOID:000000007563412

DESCRIPTION

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

 With CONSULT

Perform the "REC MEMORY SET" of HVAC work support item.

Work support items	Display	Setting
REC MEMORY SET	WITHOUT	Perform the memory of manual REC (Initial setting)
	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 10 V or less, the setting of the REC memory function may be cancelled.

SYSTEM SETTING

< BASIC INSPECTION >

[AUTOMATIC AIR CONDITIONING]

Inlet Port Memory Function (FRE)

INFOID:000000007563413

DESCRIPTION

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

HOW TO SET

 With CONSULT

Perform the "FRE MEMORY SET" of HVAC work support item.

Work support items	Display	Setting
FRE MEMORY SET	WITHOUT	Perform the memory of manual FRE
	WITH	Do not perform the memory of manual FRE (auto control) (Initial setting)

NOTE:

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

Foot Position Setting Trimmer

INFOID:000000007563414

DESCRIPTION

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

HOW TO SET

 With CONSULT

Perform the "BLOW SET" of HVAC work support item.

HAC

Work support items	Display	Defroster door position	
		Auto control	Manual control
BLOW SET	Mode1	OPEN	CLOSE
	Mode2 (Initial setting)	OPEN	OPEN
	Mode3	CLOSE	OPEN
	Mode4	CLOSE	CLOSE

NOTE:

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

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:000000007563415

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

Refer to [LAN-28, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart"](#) for details of the communication signal.

DTC Logic

INFOID:000000007563416

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 seconds or more.	CAN communication system

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

 With CONSULT

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

Is DTC detected?

YES >> Refer to [HAC-36, "Diagnosis Procedure"](#).

NO >> Check intermittent incident. Refer to [GI-40, "Intermittent Incident"](#).

Diagnosis Procedure

INFOID:000000007563417

1.CHECK CAN COMMUNICATION SYSTEM

Check CAN communication system. Refer to [LAN-15, "Trouble Diagnosis Flow Chart"](#).

>> INSPECTION END

U1010 CONTROL UNIT (CAN)

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

U1010 CONTROL UNIT (CAN)

Description

INFOID:0000000007563418

Initial diagnosis of A/C auto amp.

DTC Logic

INFOID:0000000007563419

DTC DETECTION LOGIC

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

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

①With 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-37, "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000007563420

1.REPLACE A/C AUTO AMP.

Replace A/C auto amp. Refer to [HAC-78, "Removal and Installation"](#).

>> INSPECTION END

B2578, B2579 IN-VEHICLE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

B2578, B2579 IN-VEHICLE SENSOR

DTC Logic

INFOID:000000007563421

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to [HAC-36, "DTC Logic"](#).
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. [HAC-37, "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 [more than 100°C (212°F)].	• Harness or connectors (In-vehicle sensor circuit is open or shorted) • In-vehicle sensor • A/C auto amp.
B2579		The in-vehicle sensor recognition temperature is too low [less than -44°C (-47°F)].	

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-38, "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007563422

1.CHECK IN-VEHICLE SENSOR POWER SUPPLY

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

+		-	Voltage (Approx.)
In-vehicle sensor			
Connector	Terminal		
M41	1	Ground	5 V

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 4.

2.CHECK IN-VEHICLE SENSOR GROUND CIRCUIT FOR OPEN

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

In-vehicle sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M41	2	M50	37	Existed

Is the inspection result normal?

B2578, B2579 IN-VEHICLE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

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

3.CHECK IN-VEHICLE SENSOR

Check in-vehicle sensor. Refer to [HAC-39, "Component Inspection"](#).

Is the inspection result normal?

- YES >> Replace A/C auto amp. Refer to [HAC-78, "Removal and Installation"](#).
NO >> Replace in-vehicle sensor. Refer to [HAC-80, "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	
M41	1	M50	36	Existed

Is the inspection result normal?

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

5.CHECK IN-VEHICLE SENSOR POWER SUPPLY CIRCUIT FOR SHORT

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

In-vehicle sensor		—	Continuity
Connector	Terminal		
M41	1	Ground	Not existed

Is the inspection result normal?

- YES >> Replace A/C auto amp. Refer to [HAC-78, "Removal and Installation"](#).
NO >> Repair harness or connector.

Component Inspection

INFOID:000000007563423

1.CHECK IN-VEHICLE SENSOR

1. Remove in-vehicle sensor. Refer to [HAC-80, "Removal and Installation"](#).
2. Check resistance between in-vehicle sensor terminals. Refer to applicable table for the normal value.

Terminal		Condition	Resistance: kΩ
		Temperature: °C (°F)	
1	2	-20 (-4)	16.50
		-10 (14)	9.92
		0 (32)	6.19
		10 (50)	3.99
		20 (68)	2.65
		25 (77)	2.19
		30 (86)	1.81
		40 (104)	1.27

Is the inspection result normal?

- YES >> INSPECTION END
NO >> Replace in-vehicle sensor. Refer to [HAC-80, "Removal and Installation"](#).

B257B, B257C AMBIENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

B257B, B257C AMBIENT SENSOR

DTC Logic

INFOID:000000007563424

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to [HAC-36, "DTC Logic"](#).
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. [HAC-37, "DTC Logic"](#).

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B257B	AMBIENT SENSOR	The ambient sensor recognition temperature is too high [more than 100°C (212°F)].	• Harness or connectors (Ambient sensor circuit is open or shorted) • Ambient sensor • A/C auto amp.
B257C		The ambient sensor recognition temperature is too low [less than -44°C (-47°F)].	

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-40, "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007563425

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		
E337	1	Ground	5 V

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 4.

2.CHECK AMBIENT SENSOR GROUND 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	
E337	2	M50	37	Existed

Is the inspection result normal?

B257B, B257C AMBIENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

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

3.CHECK AMBIENT SENSOR

Check ambient sensor. Refer to [HAC-41, "Component Inspection"](#).

Is the inspection result normal?

- YES >> Replace A/C auto amp. Refer to [HAC-78, "Removal and Installation"](#).
NO >> Replace ambient sensor. Refer to [HAC-79, "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	
E337	1	M50	35	Existed

Is the inspection result normal?

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

5.CHECK AMBIENT SENSOR POWER SUPPLY CIRCUIT FOR SHORT

Check continuity between ambient sensor harness connector and ground.

Ambient sensor		—	Continuity
Connector	Terminal		
E337	1	Ground	Not existed

Is the inspection result normal?

- YES >> Replace A/C auto amp. Refer to [HAC-78, "Removal and Installation"](#).
NO >> Repair harness or connector.

Component Inspection

INFOID:000000007563426

1.CHECK AMBIENT SENSOR

1. Remove ambient sensor. Refer to [HAC-79, "Removal and Installation"](#).
2. Check resistance between ambient sensor terminals. Refer to applicable table for the normal value.

Terminal		Condition	Resistance: kΩ
		Temperature: °C (°F)	
1	2	-20 (-4)	16.50
		-10 (14)	9.92
		0 (32)	6.19
		10 (50)	3.99
		20 (68)	2.65
		25 (77)	2.19
		30 (86)	1.81
		40 (104)	1.27

Is the inspection result normal?

- YES >> INSPECTION END
NO >> Replace ambient sensor. Refer to [HAC-79, "Removal and Installation"](#).

B2581, B2582 INTAKE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

B2581, B2582 INTAKE SENSOR

DTC Logic

INFOID:000000007563427

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to [HAC-36, "DTC Logic"](#).
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. [HAC-37, "DTC Logic"](#).

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B2581	INTAKE SENSOR	The intake sensor recognition temperature is too high [more than 69°C (156°F)].	• Harness or connectors (Intake sensor circuit is open or shorted) • Intake sensor • A/C auto amp.
B2582		The intake sensor recognition temperature is too low [less than -33°C (-27°F)].	

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-42, "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007563428

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		
M42	1	Ground	5 V

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 4.

2.CHECK INTAKE SENSOR GROUND 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	
M42	2	M50	37	Existed

Is the inspection result normal?

B2581, B2582 INTAKE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

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

3.CHECK INTAKE SENSOR

Check intake sensor. Refer to [HAC-43. "Component Inspection"](#).

Is the inspection result normal?

- YES >> Replace A/C auto amp. Refer to [HAC-78. "Removal and Installation"](#).
NO >> Replace intake sensor. Refer to [HAC-82. "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	
M42	1	M50	16	Existed

Is the inspection result normal?

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

5.CHECK INTAKE SENSOR POWER SUPPLY CIRCUIT FOR SHORT

Check continuity between intake sensor harness connector and ground.

Intake sensor		—	Continuity
Connector	Terminal		
M42	1	Ground	Not existed

Is the inspection result normal?

- YES >> Replace A/C auto amp. Refer to [HAC-78. "Removal and Installation"](#).
NO >> Repair harness or connector.

Component Inspection

INFOID:000000007563429

1.CHECK INTAKE SENSOR

1. Remove intake sensor. Refer to [HAC-82. "Removal and Installation"](#).
2. Check resistance between intake sensor terminals. Refer to applicable table for the normal value.

Terminal		Condition	Resistance: kΩ
		Temperature: °C (°F)	
1	2	-20 (-4)	24.81
		-10 (14)	14.15
		0 (32)	8.41
		10 (50)	5.19
		20 (68)	3.30
		25 (77)	2.67
		30 (86)	2.17
		40 (104)	1.46

Is the inspection result normal?

- YES >> INSPECTION END
NO >> Replace intake sensor. Refer to [HAC-82. "Removal and Installation"](#).

B2630, B2631 SUNLOAD SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

B2630, B2631 SUNLOAD SENSOR

DTC Logic

INFOID:000000007563430

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to [HAC-36, "DTC Logic"](#).
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. [HAC-37, "DTC Logic"](#).
- Sunload sensor may register a malfunction when indoors, at dusk, or at other times when light is insufficient. When performing the diagnosis indoors, use a lamp (60 W or more) that is pointed at the sunload sensor.

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B2630	SUNLOAD SENSOR	Detected calorie at sunload sensor 2832 W/m ² (2436 kcal/m ² ·h) or more.	• Harness or connectors (Sunload sensor circuit is open or shorted) • Sunload sensor • A/C auto amp.
B2631		Detected calorie at sunload sensor 64.7 W/m ² (56 kcal/m ² ·h) or less.	

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

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

Is DTC detected?

YES >> Refer to [HAC-44, "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007563431

1.CHECK SUNLOAD SENSOR POWER SUPPLY

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

+		–	Voltage (Approx.)
Sunload sensor			
Connector	Terminal		
M74	1	Ground	5 V

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 4.

2.CHECK SUNLOAD SENSOR GROUND CIRCUIT FOR OPEN

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

Sunload sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M74	2	M50	37	Existed

B2630, B2631 SUNLOAD SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

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-45, "Component Inspection"](#).

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-78, "Removal and Installation"](#).

NO >> Replace sunload sensor. Refer to [HAC-81, "Removal and Installation"](#).

4.CHECK SUNLOAD SENSOR POWER SUPPLY CIRCUIT FOR OPEN

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

Sunload sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M74	1	M50	15	Existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair harness or connector.

5.CHECK SUNLOAD SENSOR POWER SUPPLY CIRCUIT FOR SHORT

Check continuity between sunload sensor harness connector and ground.

Sunload sensor		—	Continuity
Connector	Terminal		
M74	1	Ground	Not existed

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-78, "Removal and Installation"](#).

NO >> Repair harness or connector.

Component Inspection

INFOID:0000000007563432

1.CHECK SUNLOAD SENSOR

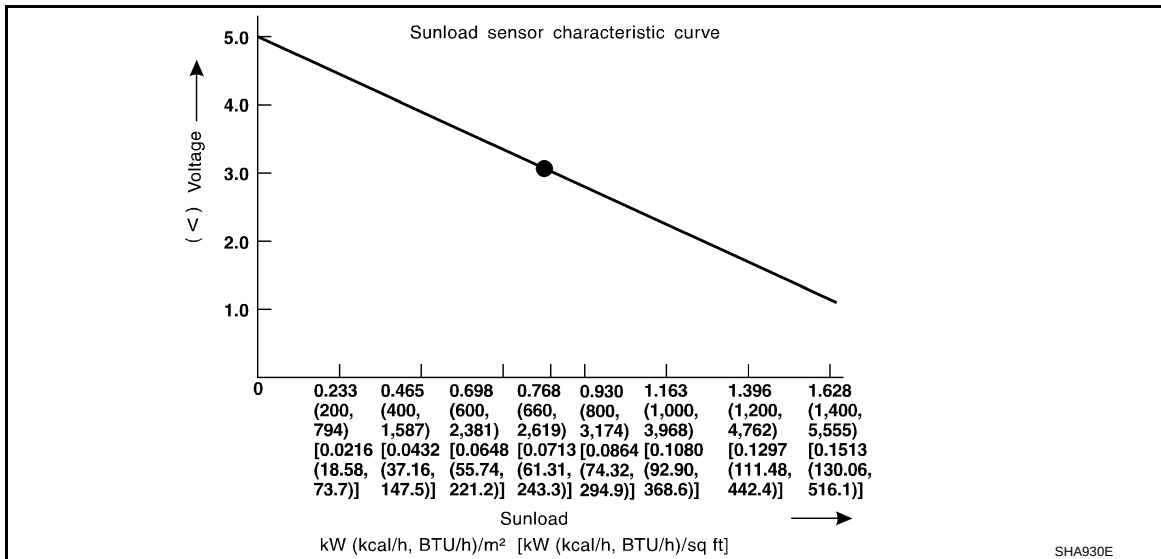
1. Turn ignition switch ON.
2. Check voltage between A/C auto amp. harness connector and ground. Refer to applicable table for the normal value.

+		—
A/C auto amp.		
Connector	Terminal	
M50	15	Ground

B2630, B2631 SUNLOAD SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]



NOTE:

- When checking indoors, use a lamp of approximately 60 W. Move the lamp towards and away from the sensor to check.
- The sunload amount produced by direct sunshine in fair weather is equivalent to approximately 0.77 kW/m² (662 kcal/m²·h).

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace sunload sensor. Refer to [HAC-81. "Removal and Installation"](#).

B2632, B2633 AIR MIX DOOR MOTOR (DRIVER SIDE)

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

B2632, B2633 AIR MIX DOOR MOTOR (DRIVER SIDE)

DTC Logic

INFOID:000000007563433

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to [HAC-36, "DTC Logic"](#).
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. [HAC-37, "DTC Logic"](#).
- If all of door motors DTC (B2632, B2633, B2634, B2635, B2636, B2637, B2638, B2639, B263D, B263E, B263F, B2654, B2655, B2661, B2662, and B2663) are detected, check "DOOR MOTOR" circuit. Refer to [HAC-64, "Diagnosis Procedure"](#).

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B2632	DR AIR MIX DOOR MOT	Air mix door motor (driver side) PBR position 95% or more	• Harness or connectors [Air mix door motor (driver side) circuit is open or shorted] • Air mix door motor (driver side) system installation condition • Air mix door motor (driver side) • A/C auto amp.
B2633		Air mix door motor (driver side) PBR position 5% or less	

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

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

Is DTC detected?

- YES >> Refer to [HAC-47, "Diagnosis Procedure"](#).
- NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007563434

1.CHECK AIR MIX DOOR MOTOR (DRIVER SIDE) POWER SUPPLY

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

+		-	Voltage (Approx.)
Air mix door motor LH			
Connector	Terminal		
M306	1	Ground	12 V

Is the inspection result normal?

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

2.CHECK AIR MIX DOOR MOTOR (DRIVER SIDE) GROUND CIRCUIT FOR OPEN

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

B2632, B2633 AIR MIX DOOR MOTOR (DRIVER SIDE)

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

Air mix door motor LH		—	Continuity
Connector	Terminal		
M306	2	Ground	Existed

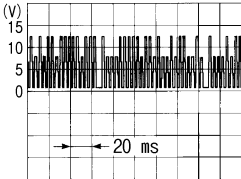
Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair harness or connector.

3.CHECK AIR MIX DOOR MOTOR (DRIVER SIDE) LAN SIGNAL

1. Connect air mix door motor LH and A/C auto amp. connector.
2. Turn ignition switch ON.
3. Confirm output waveform between air mix door motor LH harness connector and ground using oscilloscope.

+		-	Output waveform
Air mix door motor LH			
Connector	Terminal		
M306	3	Ground	

SJIA1453J

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 6.

4.CHECK INSTALLATION OF AIR MIX DOOR MOTOR (DRIVER SIDE) SYSTEM

Check air mix door motor (driver side) system is properly installed. Refer to [HAC-85, "Exploded View"](#).

Is the inspection result normal?

YES >> Replace air mix door motor (driver side). Refer to [HAC-85, "AIR MIX DOOR MOTOR : Removal and Installation"](#).

NO >> Repair or replace malfunctioning part.

5.CHECK AIR MIX DOOR MOTOR (DRIVER SIDE) POWER SUPPLY CIRCUIT FOR OPEN

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

Air mix door motor LH		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M306	1	M50	11	Existed

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-78, "Removal and Installation"](#).

NO >> Repair harness or connector.

6.CHECK AIR MIX DOOR MOTOR (DRIVER SIDE) LAN SIGNAL CIRCUIT FOR OPEN

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

B2632, B2633 AIR MIX DOOR MOTOR (DRIVER SIDE)

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

Air mix door motor LH		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M306	3	M50	10	Existed

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-78. "Removal and Installation"](#).

NO >> Repair harness or connector.

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B2634, B2635 AIR MIX DOOR MOTOR (PASSENGER SIDE)

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

B2634, B2635 AIR MIX DOOR MOTOR (PASSENGER SIDE)

DTC Logic

INFOID:000000007563435

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to [HAC-36, "DTC Logic"](#).
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. [HAC-37, "DTC Logic"](#).
- If all of door motors DTC (B2632, B2633, B2634, B2635, B2636, B2637, B2638, B2639, B263D, B263E, B263F, B2654, B2655, B2661, B2662, and B2663) are detected, check "DOOR MOTOR" circuit. Refer to [HAC-64, "Diagnosis Procedure"](#).

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B2634	PASS AIR MIX DOOR MOT	Air mix door motor (passenger side) PBR position 95% or more	• Harness or connectors [Air mix door motor (passenger side) circuit is open or shorted] • Air mix door motor (passenger side) system installation condition • Air mix door motor (passenger side) • A/C auto amp.
B2635		Air mix door motor (passenger side) PBR position 5% or less	

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

 With CONSULT

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

Is DTC detected?

YES >> Refer to [HAC-50, "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007563436

1.CHECK AIR MIX DOOR MOTOR (PASSENGER SIDE) POWER SUPPLY

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

+		-	Voltage (Approx.)
Air mix door motor RH			
Connector	Terminal		
M307	1	Ground	12 V

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 5.

2.CHECK AIR MIX DOOR MOTOR (PASSENGER SIDE) GROUND CIRCUIT FOR OPEN

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

B2634, B2635 AIR MIX DOOR MOTOR (PASSENGER SIDE)

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

Air mix door motor RH		—	Continuity
Connector	Terminal		
M307	2	Ground	Existed

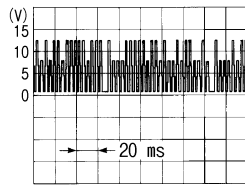
Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair harness or connector.

3. CHECK AIR MIX DOOR MOTOR (PASSENGER SIDE) LAN SIGNAL

1. Connect air mix door motor RH and A/C auto amp. connector.
2. Turn ignition switch ON.
3. Confirm output waveform between air mix door motor RH harness connector and ground using oscilloscope.

+		—	Output waveform
Air mix door motor RH			
Connector	Terminal		
M307	3	Ground	

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 6.

4. CHECK INSTALLATION OF AIR MIX DOOR MOTOR (PASSENGER SIDE) SYSTEM

Check air mix door motor (passenger side) system is properly installed. Refer to [HAC-85, "Exploded View"](#).

Is the inspection result normal?

YES >> Replace air mix door motor (passenger side). Refer to [HAC-85, "AIR MIX DOOR MOTOR : Removal and Installation"](#).

NO >> Repair or replace malfunctioning part.

5. CHECK AIR MIX DOOR MOTOR (PASSENGER SIDE) POWER SUPPLY CIRCUIT FOR OPEN

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

Air mix door motor RH		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M307	1	M50	11	Existed

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-78, "Removal and Installation"](#).

NO >> Repair harness or connector.

6. CHECK AIR MIX DOOR MOTOR (PASSENGER SIDE) LAN SIGNAL CIRCUIT FOR OPEN

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

B2634, B2635 AIR MIX DOOR MOTOR (PASSENGER SIDE)

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

Air mix door motor RH		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M307	3	M50	10	Existed

Is the inspection result normal?

- YES >> Replace A/C auto amp. Refer to [HAC-78. "Removal and Installation"](#).
NO >> Repair harness or connector.

B2636, B2637, B2638, B2639, B2654, B2655 MODE DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

B2636, B2637, B2638, B2639, B2654, B2655 MODE DOOR MOTOR

DTC Logic

INFOID:000000007563437

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to [HAC-36, "DTC Logic"](#).
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. [HAC-37, "DTC Logic"](#).
- If all of door motors DTC (B2632, B2633, B2634, B2635, B2636, B2637, B2638, B2639, B263D, B263E, B263F, B2654, B2655, B2661, B2662, and B2663) are detected, check "DOOR MOTOR" circuit. Refer to [HAC-64, "Diagnosis Procedure"](#).

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B2636	DR VENT DOOR FAIL	When the malfunctioning door position is detected at VENT position	• Harness or connectors (Mode door motor circuit is open or shorted) • Mode door motor system installation condition • Mode door motor • A/C auto amp.
B2637	DR B/L DOOR FAIL	When the malfunctioning door position is detected at B/L position	
B2638	DR D/F1 DOOR FAIL	When the malfunctioning door position is detected at FOOT position	
B2639	DR DEF DOOR FAIL	When the malfunctioning door position is detected at DEF position	
B2654	D/F2 DOOR FAIL	When the malfunctioning door position is detected at D/F position	
B2655	B/L DOOR FAIL	When the malfunctioning door position is detected at B/L position	

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-53, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007563438

1.CHECK MODE DOOR MOTOR POWER SUPPLY

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

+		-	Voltage (Approx.)
Mode door motor			
Connector	Terminal		
M310	1	Ground	12 V

Is the inspection result normal?

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

2.CHECK MODE DOOR MOTOR GROUND CIRCUIT FOR OPEN

1. Turn ignition switch OFF.

B2636, B2637, B2638, B2639, B2654, B2655 MODE DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

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

Mode door motor		—	Continuity
Connector	Terminal		
M310	2	Ground	Existed

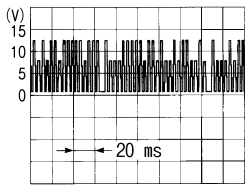
Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair harness or connector.

3.CHECK MODE DOOR MOTOR LAN SIGNAL

1. Connect mode door motor and A/C auto amp. connector.
2. Turn ignition switch ON.
3. Confirm output waveform between mode door motor harness connector and ground using oscilloscope.

+		—	Output waveform
Mode door motor			
Connector	Terminal		
M310	3	Ground	 SJIA1453J

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 6.

4.CHECK INSTALLATION OF MODE DOOR MOTOR SYSTEM

Check mode door motor system is properly installed. Refer to [HAC-85, "Exploded View"](#).

Is the inspection result normal?

YES >> Replace mode door motor. Refer to [HAC-86, "MODE DOOR MOTOR : Removal and Installation"](#).

NO >> Repair or replace malfunctioning part.

5.CHECK MODE DOOR MOTOR POWER SUPPLY CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect mode door motor and 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	
M310	1	M50	11	Existed

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-78, "Removal and Installation"](#).

NO >> Repair harness or connector.

6.CHECK MODE DOOR MOTOR LAN SIGNAL CIRCUIT FOR OPEN

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

B2636, B2637, B2638, B2639, B2654, B2655

MODE DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

Mode door motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M310	3	M50	10	Existed

Is the inspection result normal?

- YES >> Replace A/C auto amp. Refer to [HAC-78. "Removal and Installation"](#).
- NO >> Repair harness or connector.

- A
- B
- C
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- F
- G
- H
- HAC
- J
- K
- L
- M
- N
- O
- P

B263D, B263E, B263F INTAKE DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

B263D, B263E, B263F INTAKE DOOR MOTOR

DTC Logic

INFOID:000000007563439

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to [HAC-36, "DTC Logic"](#).
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. [HAC-37, "DTC Logic"](#).
- If all of door motors DTC (B2632, B2633, B2634, B2635, B2636, B2637, B2638, B2639, B263D, B263E, B263F, B2654, B2655, B2661, B2662, and B2663) are detected, check "DOOR MOTOR" circuit. Refer to [HAC-64, "Diagnosis Procedure"](#).

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B263D	FRE DOOR FAIL	When the malfunctioning intake door position is detected at FRE position	• Harness or connectors (Intake door motor circuit is open or shorted) • Intake door motor system installation condition • Intake door motor • A/C auto amp.
B263E	20P FRE DOOR FAIL	When the malfunctioning intake door position is detected at 20% FRE position	
B263F	REC DOOR FAIL	When the malfunctioning intake door position is detected at REC position	

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-56, "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007563440

1.CHECK INTAKE DOOR MOTOR POWER SUPPLY

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

+		-	Voltage (Approx.)
Intake door motor			
Connector	Terminal		
M304	1	Ground	12 V

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 5.

2.CHECK INTAKE DOOR MOTOR GROUND CIRCUIT FOR OPEN

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

B263D, B263E, B263F INTAKE DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

Intake door motor		—	Continuity
Connector	Terminal		
M304	2	Ground	Existed

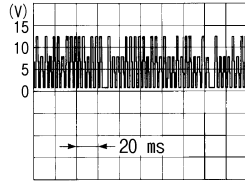
Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair harness or connector.

3.CHECK INTAKE DOOR MOTOR LAN SIGNAL

1. Connect intake door motor and A/C auto amp. connector.
2. Turn ignition switch ON.
3. Confirm output waveform between intake door motor harness connector and ground using oscilloscope.

+		—	Output waveform
Intake door motor			
Connector	Terminal		
M304	3	Ground	

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 6.

4.CHECK INSTALLATION OF INTAKE DOOR MOTOR SYSTEM

Check intake door motor system is properly installed. Refer to [HAC-85, "Exploded View"](#).

Is the inspection result normal?

YES >> Replace intake door motor. Refer to [HAC-87, "INTAKE DOOR MOTOR : Removal and Installation"](#).

NO >> Repair or replace malfunctioning part.

5.CHECK INTAKE DOOR MOTOR POWER SUPPLY CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect intake door motor 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	
M304	1	M50	11	Existed

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-78, "Removal and Installation"](#).

NO >> Repair harness or connector.

6.CHECK INTAKE DOOR MOTOR LAN SIGNAL CIRCUIT FOR OPEN

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

B263D, B263E, B263F INTAKE DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

Intake door motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M304	3	M50	10	Existed

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-78. "Removal and Installation"](#).
NO >> Repair harness or connector.

B2661, B2662, B2663 UPPER VENTILATOR DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

B2661, B2662, B2663 UPPER VENTILATOR DOOR MOTOR

DTC Logic

INFOID:000000007563441

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to [HAC-36, "DTC Logic"](#).
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. [HAC-37, "DTC Logic"](#).
- If all of door motors DTC (B2632, B2633, B2634, B2635, B2636, B2637, B2638, B2639, B263D, B263E, B263F, B2654, B2655, B2661, B2662, and B2663) are detected, check "DOOR MOTOR" circuit. Refer to [HAC-64, "Diagnosis Procedure"](#).

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B2661	UPPER VENT DOOR MOT	When the malfunctioning upper ventilator door position is detected at OPEN position	• Harness or connectors (Upper ventilator door motor circuit is open or shorted) • Upper ventilator door motor system installation condition • Upper ventilator door motor • A/C auto amp.
B2662		When the malfunctioning upper ventilator door position is detected at middle position	
B2663		When the malfunctioning upper ventilator door position is detected at shut position	

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-59, "Diagnosis Procedure"](#).
- NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007563442

1.CHECK UPPER VENTILATOR DOOR MOTOR POWER SUPPLY

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

+		–	Voltage (Approx.)
Upper vent door motor			
Connector	Terminal		
M308	1	Ground	12 V

Is the inspection result normal?

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

2.CHECK UPPER VENTILATOR DOOR MOTOR GROUND CIRCUIT FOR OPEN

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

B2661, B2662, B2663 UPPER VENTILATOR DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

Upper vent door motor		—	Continuity
Connector	Terminal		
M308	2	Ground	Existed

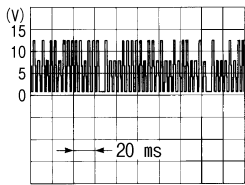
Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair harness or connector.

3.CHECK UPPER VENTILATOR DOOR MOTOR LAN SIGNAL

1. Connect upper vent door motor and A/C auto amp. connector.
2. Turn ignition switch ON.
3. Confirm output waveform between upper vent door motor harness connector and ground using oscilloscope.

+		—	Output waveform
Upper vent door motor			
Connector	Terminal		
M308	3	Ground	 SJIA1453J

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 6.

4.CHECK INSTALLATION OF UPPER VENTILATOR DOOR MOTOR

Check upper ventilator door motor is properly installed. Refer to [HAC-85, "Exploded View"](#).

Is the inspection result normal?

YES >> Replace upper ventilator door motor. Refer to [HAC-87, "UPPER VENTILATOR DOOR MOTOR : Removal and Installation"](#).

NO >> Repair or replace malfunctioning part.

5.CHECK UPPER VENTILATOR DOOR MOTOR POWER SUPPLY CIRCUIT FOR OPEN

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

Upper vent door motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M308	1	M50	11	Existed

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-78, "Removal and Installation"](#).

NO >> Repair harness or connector.

6.CHECK UPPER VENTILATOR DOOR MOTOR LAN SIGNAL CIRCUIT FOR OPEN

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

B2661, B2662, B2663 UPPER VENTILATOR DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

Upper vent door motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M308	3	M50	10	Existed

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-78. "Removal and Installation"](#).

NO >> Repair harness or connector.

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POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

POWER SUPPLY AND GROUND CIRCUIT

A/C AUTO AMP.

A/C AUTO AMP. : Diagnosis Procedure

INFOID:000000007563443

1.CHECK SYMPTOM

Check symptom (A or B).

Symptom	
A	- Air conditioning does not activate. - Air conditioning cannot be controlled. - Operation status of air conditioning is not indicated on display.
B	- Memory function does not operate normally. - The setting is not maintained. (It returns to the initial condition)

Which symptom is detected?

A >> GO TO 2.

B >> GO TO 5.

2.CHECK FUSE

- Turn ignition switch OFF.
- Check 10A fuse (No. 3 and 19, located in fuse block (J/B)).

NOTE:

Refer to [PG-34, "Fuse, Connector and Terminal Arrangement"](#).

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.

3.CHECK A/C AUTO AMP. IGNITION POWER SUPPLY AND ACC POWER SUPPLY

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

+		-	Voltage
A/C auto amp.			
Connector	Terminal		
M50	17	Ground	Battery voltage
	20		

Is the inspection result normal?

YES >> GO TO 4.

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

4.CHECK A/C AUTO AMP. GROUND CIRCUIT FOR OPEN

- Turn ignition switch OFF.
- Check continuity between A/C auto amp. harness connector and ground.

A/C auto amp.		—	Continuity
Connector	Terminal		
M50	19	Ground	Existed
	39		

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-78, "Removal and Installation"](#).

NO >> Repair harness or connector.

POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

5.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 10A fuse (No. 6, located in fuse block (J/B)).

NOTE:

Refer to [PG-34, "Fuse, Connector and Terminal Arrangement"](#).

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.

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

1. Disconnect A/C auto amp. connector.
2. Check voltage between A/C auto amp. harness connector and ground.

+		-	Voltage
A/C auto amp.			
Connector	Terminal		
M50	40	Ground	Battery voltage

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-78, "Removal and Installation"](#).

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

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HAC

DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

DOOR MOTOR

Diagnosis Procedure

INFOID:000000007563444

NOTE:

Check this circuit when all of door motors DTC (B2632, B2633, B2634, B2635, B2636, B2637, B2638, B2639, B263D, B263E, B263F, B2654, B2655, B2661, B2662, and B2663) are detected.

1.CHECK DOOR MOTOR POWER SUPPLY

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

+		-	Voltage (Approx.)
Intake door motor			
Connector	Terminal		
M304	1	Ground	12 V

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 7.

2.CHECK DOOR MOTOR GROUND CIRCUIT FOR OPEN

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

Intake door motor		—	Continuity
Connector	Terminal		
M304	2	Ground	Existed

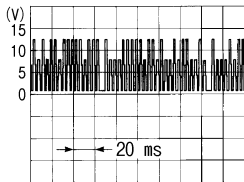
Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair harness or connector.

3.CHECK DOOR MOTOR LAN SIGNAL

1. Connect A/C auto amp. and intake door motor connector.
2. Turn ignition switch ON.
3. Confirm output waveform between A/C auto amp. harness connector and ground using oscilloscope.

+		-	Output waveform
A/C auto amp.			
Connector	Terminal		
M50	5	Ground	

SJIA1453J

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 6.

4.CHECK DOOR MOTOR LAN SIGNAL CIRCUIT FOR OPEN

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

DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

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

A/C auto amp.		Intake door motor		Continuity
Connector	Terminal	Connector	Terminal	
M50	10	M304	3	Existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair harness or connector.

5.CHECK INTERMITTENT INCIDENT

Check intermittent incident. Refer to [GI-40, "Intermittent Incident"](#).

>> INSPECTION END

6.CHECK DOOR MOTOR LAN SIGNAL CIRCUIT FOR SHORT

1. Turn ignition switch OFF.
2. Disconnect following connectors.
 - A/C auto amp.
 - Air mix door motor LH
 - Air mix door motor RH
 - Mode door motor
 - Intake door motor
3. Check continuity between A/C auto amp. harness connector and ground.

A/C auto amp.		—	Continuity
Connector	Terminal		
M50	10	Ground	Not existed

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to [HAC-78, "Removal and Installation"](#).

NO >> Repair harness or connector.

7.CHECK DOOR MOTOR POWER SUPPLY CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect intake door motor 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	
M304	1	M50	11	Existed

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair harness or connector.

8.CHECK DOOR MOTOR POWER SUPPLY CIRCUIT FOR SHORT

1. Disconnect following connectors.
 - A/C auto amp.
 - Air mix door motor LH
 - Air mix door motor RH
 - Mode door motor
2. Check continuity between A/C auto amp. harness connector and ground.

A/C auto amp.		—	Continuity
Connector	Terminal		
M50	11	Ground	Not existed

DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

Is the inspection result normal?

- YES >> Replace A/C auto amp. Refer to [HAC-78, "Removal and Installation"](#).
- NO >> Repair harness or connector.

BLOWER MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

BLOWER MOTOR

Diagnosis Procedure

INFOID:000000007563445

1.CHECK FUSE

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

NOTE:

Refer to [PG-34, "Fuse, Connector and Terminal Arrangement"](#).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.

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		
M98	1	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 6.

3.CHECK BLOWER MOTOR GROUND CIRCUIT FOR OPEN

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

Blower motor		—	Continuity
Connector	Terminal		
M98	3		
M98	3	Ground	Existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair harness or connector.

4.CHECK BLOWER MOTOR CONTROL SIGNAL CIRCUIT FOR OPEN

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

Blower motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M98	2	M50	32	
M98	2	M50	32	Existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair harness or connector.

5.CHECK BLOWER MOTOR CONTROL SIGNAL

1. Reconnect blower motor connector and A/C auto amp. connector.
2. Turn ignition switch ON.
3. Operate MODE switch to set air outlet to VENT position.
4. Change fan speed from Lo to Hi, and check duty ratios between blower motor harness connector and ground by using an oscilloscope.

BLOWER MOTOR

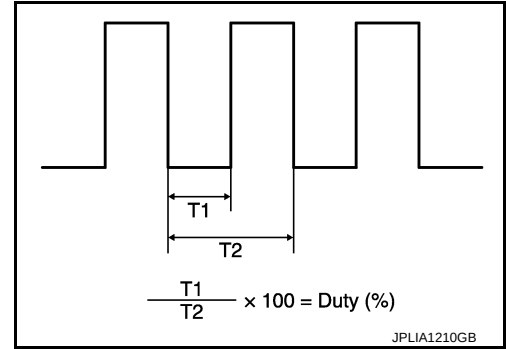
< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

NOTE:

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

Blower motor		Condition	Duty ratio (Approx.)
Connector	Terminal	Fan speed (manual) VENT mode	
M98	2	1st	25 %
		2nd	33 %
		3rd	41 %
		4th	51 %
		5th	61 %
		6th	69 %
		7th	81 %



Is the inspection result normal?

- YES >> Replace blower motor. Refer to [VTL-21. "Removal and Installation"](#).
NO >> Replace A/C auto amp. Refer to [HAC-78. "Removal and Installation"](#).

6.CHECK BLOWER MOTOR POWER SUPPLY CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect fuse block (J/B) connector.
3. Check continuity between fuse block (J/B) harness connector and blower motor harness connector.

Fuse block (J/B)		Blower motor		Continuity
Connector	Terminal	Connector	Terminal	
M1	3A	M98	3	Existed
	8A			

Is the inspection result normal?

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

7.CHECK BLOWER RELAY GROUND CIRCUIT FOR OPEN

Check continuity between fuse block (J/B) harness connector and ground.

Fuse block (J/B)		—	Continuity
Connector	Terminal		
M3	7C	Ground	Existed

Is the inspection result normal?

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

8.CHECK BLOWER RELAY

Check blower relay. Refer to [HAC-69. "Component Inspection \(Blower Relay\)"](#).

Is the inspection result normal?

- YES >> Check blower relay power supply circuit. Refer to [PG-11. "Wiring Diagram - BATTERY POWER SUPPLY -"](#) and [PG-28. "Wiring Diagram - IGNITION POWER SUPPLY -"](#).
NO >> Replace blower relay.

Component Inspection (Blower Motor)

INFOID:000000007563446

1.CHECK BLOWER MOTOR-I

1. Remove blower motor. Refer to [VTL-21. "Removal and Installation"](#).

BLOWER MOTOR

[AUTOMATIC AIR CONDITIONING]

< DTC/CIRCUIT DIAGNOSIS >

2. Check that there is not any mixing foreign object in the blower motor.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace blower motor. Refer to [VTL-21, "Removal and Installation"](#).

2.CHECK BLOWER MOTOR-II

Check that there is not breakage or damage in the blower motor.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace blower motor. Refer to [VTL-21, "Removal and Installation"](#).

3.CHECK BLOWER MOTOR-III

Check that blower motor turns smoothly.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace blower motor. Refer to [VTL-21, "Removal and Installation"](#).

Component Inspection (Blower Relay)

INFOID:000000007563447

1.CHECK BLOWER RELAY

1. Remove blower relay. Refer to [PG-34, "Fuse, Connector and Terminal Arrangement"](#).

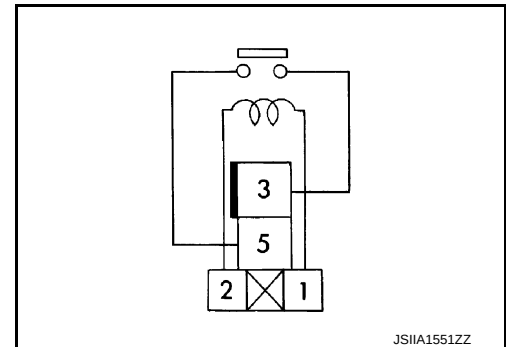
2. Check continuity between blower relay terminal 3 and 5 when voltage is supplied between terminal 1 and 2.

Terminal		Voltage	Continuity
3	5	ON	Existed
		OFF	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace blower relay.



MAGNET CLUTCH

Component Function Check

INFOID:000000007563448

1.CHECK MAGNET CLUTCH OPERATION

Perform auto active test of IPDM E/R. Refer to [PCS-10, "Diagnosis Description"](#).

Does it operate normally?

- YES >> INSPECTION END
NO >> Refer to [HAC-70, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000007563449

1.CHECK MAGNET CLUTCH

1. Turn ignition switch OFF.
2. Disconnect compressor connector.
3. Directly apply battery voltage to the magnet clutch. Check for operation visually and by sound.

Does it operate normally?

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

2.CHECK FUSE

Check 10A fuse (No. 49, located in IPDM E/R).

NOTE:

Refer to [PG-36, "Fuse, Connector and Terminal Arrangement"](#).

Is the inspection result normal?

- YES >> GO TO 3.
NO >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.

3.CHECK MAGNET CLUTCH POWER SUPPLY CIRCUIT FOR OPEN

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

IPDM E/R		Compressor		Continuity
Connector	Terminal	Connector	Terminal	
F12	48	F18	1	Existed

Is the inspection result normal?

- YES >> Replace IPDM E/R. Refer to [PCS-31, "Removal and Installation"](#).
NO >> Repair harness or connector.

4.CHECK MAGNET CLUTCH GROUND CIRCUIT FOR OPEN

Check continuity between compressor harness connector and ground.

Compressor		—	Continuity
Connector	Terminal		
F18	2	Ground	Existed

Is the inspection result normal?

- YES >> Replace magnet clutch. Refer to [HA-31, "MAGNET CLUTCH : Removal and Installation of Compressor Clutch"](#).
NO >> Repair harness or connector.

SYMPTOM DIAGNOSIS

AUTOMATIC AIR CONDITIONING SYSTEM

Symptom Table

INFOID:000000007563450

NOTE:

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

Symptom		Corresponding malfunction part	Check item/Reference
- Air conditioning does not activate. - Air conditioning cannot be controlled. - Operation status of air conditioning is not indicated on display.	Fail-safe activates	Multi AV system	- BOSE audio without navigation: AV-95, "Symptom Table" - BOSE audio with navigation: AV-224, "Symptom Table"
	Fail-safe does not activate	- A/C auto amp. ignition power supply circuit and ACC power supply circuit - A/C auto amp.	HAC-62, "A/C AUTO AMP : Diagnosis Procedure"
- Memory function does not operate normally. - The setting is not maintained. (It returns to initial condition)		- A/C auto amp. battery power supply circuit - A/C auto amp.	HAC-62, "A/C AUTO AMP : Diagnosis Procedure"
Discharge air temperature (driver side) does not change.		Air mix door motor (driver side) system installation condition	Check air mix door motor (driver side) system is properly installed. Refer to HAC-85, "Exploded View" .
Discharge air temperature (passenger side) does not change.		Air mix door motor (passenger side) system installation condition	Check air mix door motor (passenger side) system is properly installed. Refer to HAC-85, "Exploded View" .
Air outlet does not change.		Mode door motor system installation condition	Check mode door motor system is properly installed. Refer to HAC-85, "Exploded View" .
Air inlet does not change.		Intake door motor system installation condition	Check intake door motor system is properly installed. Refer to HAC-85, "Exploded View" .
Blower motor does not operate.		- Blower motor power supply circuit. - Blower motor control signal circuit - Blower motor - A/C auto amp.	HAC-67, "Diagnosis Procedure"
Compressor does not operate.		- Magnet clutch - The circuit between magnet clutch and IPDM E/R - IPDM E/R (A/C relay) - The circuit between ECM and refrigerant pressure sensor - Refrigerant pressure sensor - A/C auto amp. output signal (A/C ON signal and blower fan ON signal) - A/C auto amp.	HAC-76, "Diagnosis Procedure"
- Insufficient cooling - No cool air comes out. (Air flow volume is normal.)		- Magnet clutch control system - Drive belt slipping - Cooler cycle - Air leakage from each duct - A/C auto amp. connection recognition signal circuit - Temperature setting trimmer	HAC-73, "Diagnosis Procedure"

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AUTOMATIC AIR CONDITIONING SYSTEM

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

Symptom		Corresponding malfunction part	Check item/Reference
- Insufficient heating - No warm air comes out. (Air flow volume is normal.)		- Engine cooling system - Heater hose - Heater core - Air leakage from each duct - Temperature setting trimmer	HAC-75, "Diagnosis Procedure"
Noise is heard when the air conditioning operates.	During compressor operation	Cooler cycle	HA-28, "Symptom Table"
	During blower motor operation	- Mixing any foreign object in blower motor - Blower motor fan breakage - Blower motor rotation inferiority	HAC-68, "Component Inspection (Blower Motor)"

INSUFFICIENT COOLING

Description

INFOID:000000007563451

Symptom

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

Diagnosis Procedure

INFOID:000000007563452

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 control dial.
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-76, "Diagnosis Procedure"](#).

2.CHECK DRIVE BELT

Check tension of drive belt. Refer to [EM-14, "Checking"](#).

Is the inspection result normal?

YES >> GO TO 3.

NO >> Adjust or replace drive belt depending on the inspection results.

3.CHECK REFRIGERANT CYCLE PRESSURE

Connect recovery/recycling recharging equipment to the vehicle and perform pressure inspection with gauge. Refer to [HA-26, "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 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 [MWI-59, "Diagnosis Procedure"](#).

6.CHECK SETTING OF TEMPERATURE SETTING TRIMMER

1. Check setting value of temperature setting trimmer. Refer to [HAC-34, "Temperature Setting Trimmer"](#).
2. Check that temperature setting trimmer is set to "+ direction".

NOTE:

The control temperature can be set by setting of the temperature setting trimmer.

INSUFFICIENT COOLING

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

3. Set difference between the set temperature and control temperature to "0".

Is inspection result normal?

YES >> INSPECTION END

NO >> Replace A/C auto amp. Refer to [HAC-78. "Removal and Installation"](#).

INSUFFICIENT HEATING

Description

INFOID:000000007563453

Symptom

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

Diagnosis Procedure

INFOID:000000007563454

NOTE:

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

1.CHECK COOLING SYSTEM

1. Check engine coolant level and check for leakage. Refer to [CO-8, "Inspection"](#).
2. Check radiator cap. Refer to the [CO-12, "RADIATOR CAP : Inspection"](#).
3. Check water flow sounds of the engine coolant. Refer to [CO-9, "Refilling"](#).

Is the inspection result normal?

YES >> GO TO 2.

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

2.CHECK HEATER HOSE

Check installation of heater hose by visually or 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 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-49, "HEATER CORE : Removal and Installation"](#).**4.CHECK AIR LEAKAGE FROM EACH DUCT**

Check duct and nozzle, etc. of the air conditioning 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

1. Check setting value of temperature setting trimmer. Refer to [HAC-34, "Temperature Setting Trimmer"](#).
2. Check that temperature setting trimmer is set to "– direction".

NOTE:

The control temperature can be set by the temperature setting trimmer.

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-78, "Removal and Installation"](#).

COMPRESSOR DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

COMPRESSOR DOES NOT OPERATE

Description

INFOID:000000007563455

SYMPTOM

Compressor does not operate.

Diagnosis Procedure

INFOID:000000007563456

NOTE:

- Perform self-diagnoses with CONSULT before performing symptom diagnosis. If any DTC is detected, perform the corresponding diagnosis.
- Check that refrigerant is enclosed in cooler cycle normally. If refrigerant amount is shortage from proper amount, perform the inspection of refrigerant leakage.

1.CHECK MAGNET CLUTCH OPERATION

Check magnet clutch. Refer to [HAC-70, "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-429, "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

1. Select "DATA MONITOR" mode of "ECM" using CONSULT.
2. Select "AIR COND SIG" and "HEATER FAN SW", and check status under the following conditions.

Monitor item	Condition		Status
AIR COND SIG	A/C switch	OFF (A/C indicator: OFF)	Off
		ON (A/C indicator: ON)	On
HEATER FAN SW	Blower motor	OFF	Off
		ON	On

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to [PCS-31, "Removal and Installation"](#).

NO >> Replace A/C auto amp. Refer to [HAC-78, "Removal and Installation"](#).

PRESET SWITCH

< REMOVAL AND INSTALLATION >

[AUTOMATIC AIR CONDITIONING]

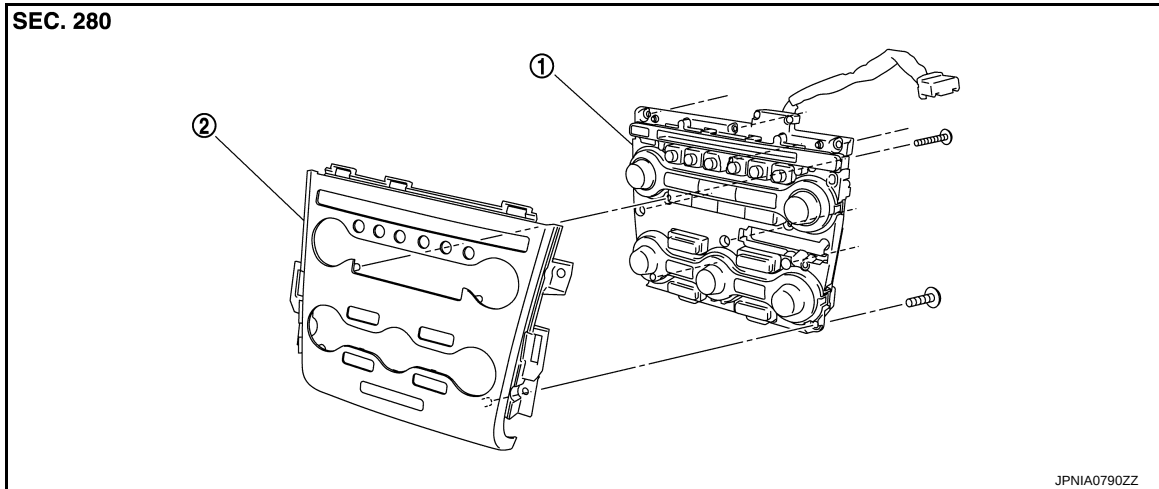
REMOVAL AND INSTALLATION

PRESET SWITCH

Exploded View

INFOID:000000007563457

DISASSEMBLY



1. Preset switch

2. Cluster lid C

Removal and Installation

INFOID:000000007563458

REMOVAL

Remove preset switch. Refer to the following.

- Refer to [AV-112. "Removal and Installation"](#). (BOSE AUDIO WITHOUT NAVIGATION)
- Refer to [AV-246. "Removal and Installation"](#). (BOSE AUDIO WITH NAVIGATION)

INSTALLATION

Install in the reverse order of removal.

A
B
C
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HAC

A/C AUTO AMP.

< REMOVAL AND INSTALLATION >

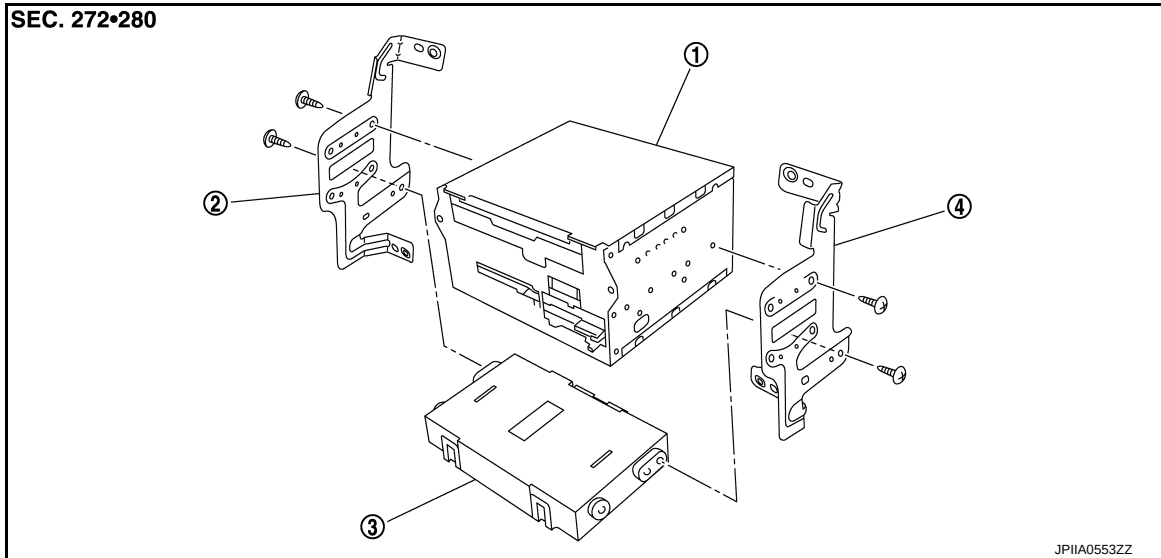
[AUTOMATIC AIR CONDITIONING]

A/C AUTO AMP.

Exploded View

INFOID:000000007563459

DISASSEMBLY



1. AV control unit

2. Bracket LH

3. A/C auto amp.

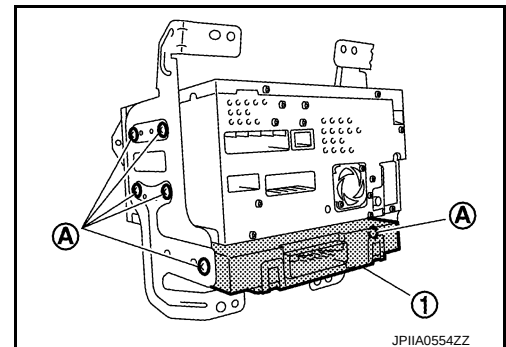
4. Bracket RH

Removal and Installation

INFOID:000000007563460

REMOVAL

1. Remove AV control unit. Refer to the following.
 - Refer to [AV-102, "Removal and Installation"](#). (BOSE AUDIO WITHOUT NAVIGATION)
 - Refer to [AV-236, "Removal and Installation"](#). (BOSE AUDIO WITH NAVIGATION)
2. Remove fixing screws (A), and then remove A/C auto amp. (1).



INSTALLATION

Install in the reverse order of removal.

AMBIENT SENSOR

< REMOVAL AND INSTALLATION >

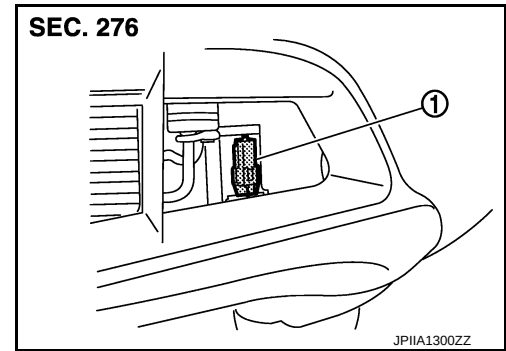
[AUTOMATIC AIR CONDITIONING]

AMBIENT SENSOR

Exploded View

INFOID:000000007563461

1. Ambient sensor

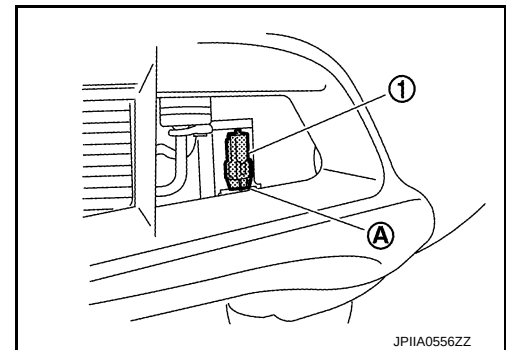


Removal and Installation

INFOID:000000007563462

REMOVAL

Disconnect ambient sensor harness connector (A), and then remove ambient sensor (1).



INSTALLATION

Install in the reverse order of removal.

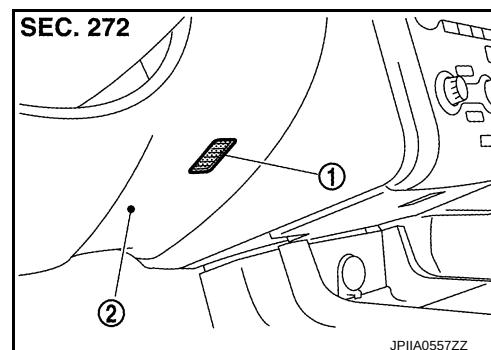
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IN-VEHICLE SENSOR

Exploded View

INFOID:000000007563463

1. In-vehicle sensor
2. Instrument lower panel LH

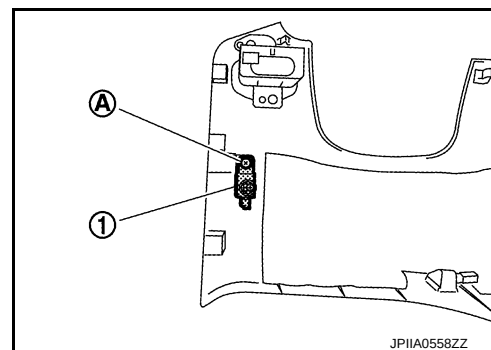


Removal and Installation

INFOID:000000007563464

REMOVAL

1. Remove instrument lower panel LH. Refer to [IP-13, "Removal and Installation"](#).
2. Remove fixing screw (A), and then remove in-vehicle sensor (1).



INSTALLATION

Install in the reverse order of removal.

SUNLOAD SENSOR

< REMOVAL AND INSTALLATION >

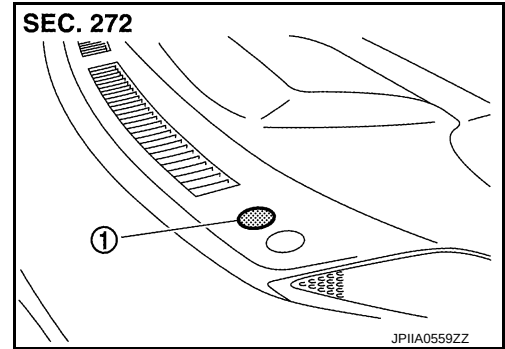
[AUTOMATIC AIR CONDITIONING]

SUNLOAD SENSOR

Exploded View

INFOID:000000007563465

1. Sunload sensor

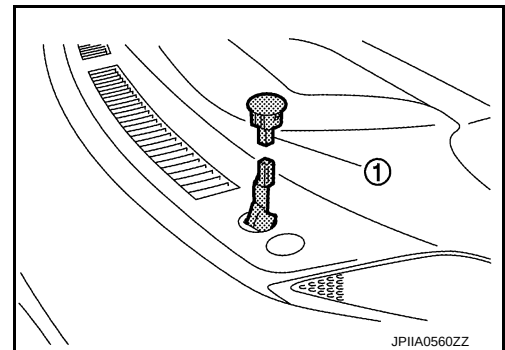


Removal and Installation

INFOID:000000007563466

REMOVAL

Disconnect sunload sensor harness connector, and then remove sunload sensor (1).



INSTALLATION

Install in the reverse order of removal.

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INTAKE SENSOR

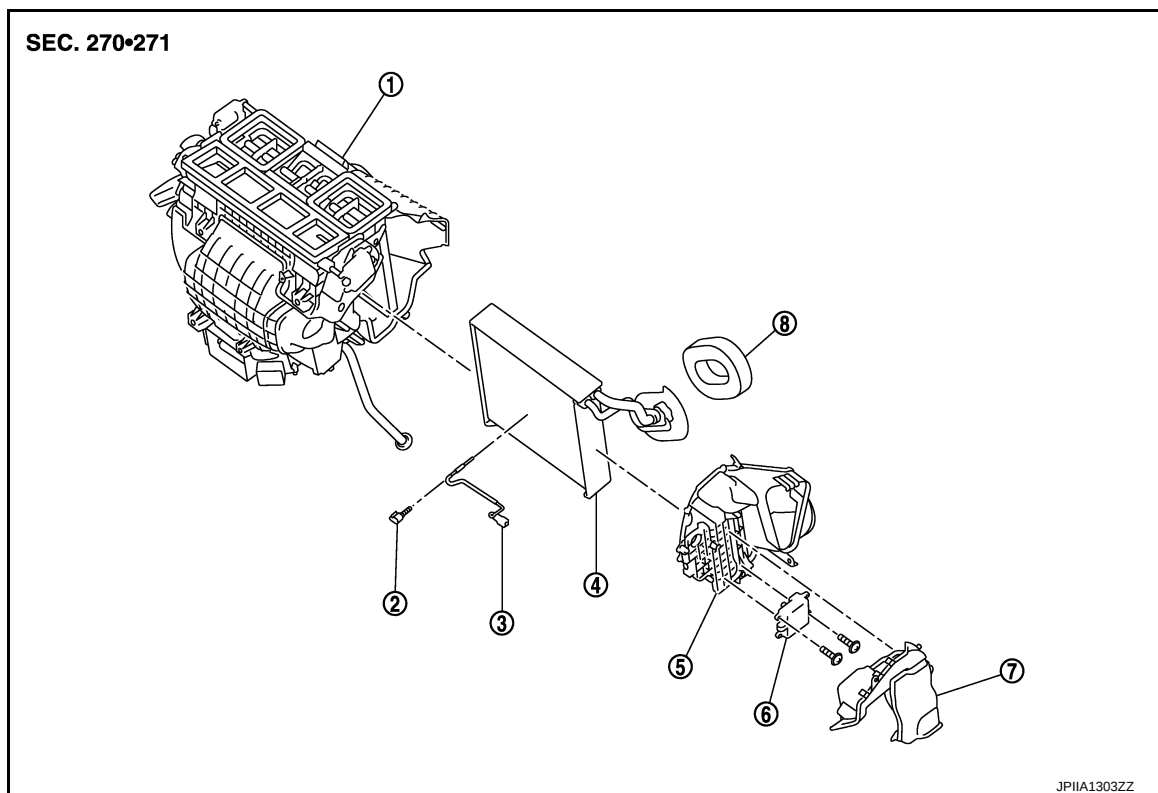
< REMOVAL AND INSTALLATION >

[AUTOMATIC AIR CONDITIONING]

INTAKE SENSOR

Exploded View

INFOID:000000007563467



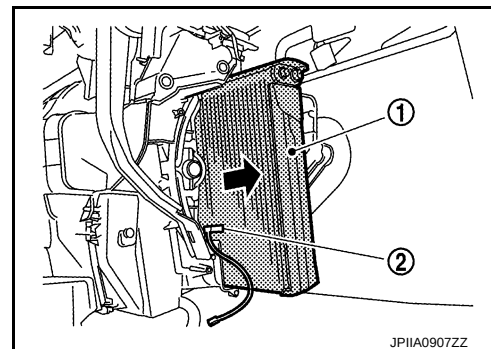
- | | | |
|-----------------------------------|--------------------------|--|
| 1. Heater & cooling unit assembly | 2. Intake sensor bracket | 3. Intake sensor |
| 4. Evaporator assembly | 5. Evaporator cover | 6. Air mix door motor (Passenger side) |
| 7. Foot duct RH | 8. Cooler pipe grommet | |

Removal and Installation

INFOID:000000007563468

REMOVAL

1. Remove evaporator pipe assembly. Refer to [HA-48. "EVAPORATOR PIPE ASSEMBLY : Removal and Installation"](#).
2. Pull out evaporator (1) toward the right side of vehicle, and then remove intake sensor (2).



INSTALLATION

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

CAUTION:

- Replace O-rings with new ones. Then apply the compressor oil to them when installing.
- Mark the mounting position of intake sensor bracket prior to removal so that the reinstalled sensor can be located in the same position.
- Never rotate the bracket insertion part when removing and installing the intake sensor.

INTAKE SENSOR

< REMOVAL AND INSTALLATION >

[AUTOMATIC AIR CONDITIONING]

- Check for leakages when recharging refrigerant. Refer to [HA-18. "Leak Test"](#).

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REFRIGERANT PRESSURE SENSOR

< REMOVAL AND INSTALLATION >

[AUTOMATIC AIR CONDITIONING]

REFRIGERANT PRESSURE SENSOR

Exploded View

INFOID:000000007563469

Refer to [HA-38. "Exploded View"](#).

Removal and Installation

INFOID:000000007563470

REMOVAL

Refer to [HA-41. "REFRIGERANT PRESSURE SENSOR : Removal and Installation"](#).

INSTALLATION

Install in the reverse order of removal.

DOOR MOTOR

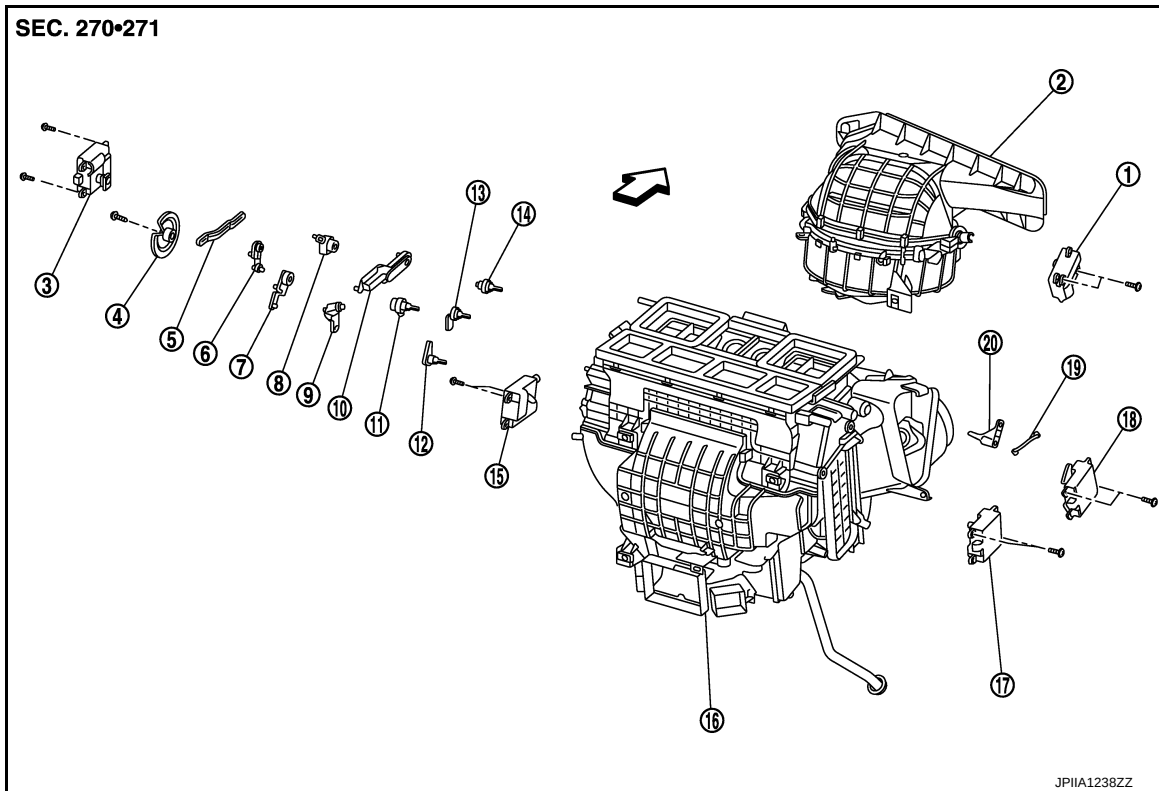
< REMOVAL AND INSTALLATION >

[AUTOMATIC AIR CONDITIONING]

DOOR MOTOR

Exploded View

INFOID:000000007563471



- | | | |
|------------------------------------|---|--------------------------------------|
| 1. Intake door motor | 2. Blower unit assembly | 3. Mode door motor |
| 4. Main link | 5. Link rod | 6. Foot door link |
| 7. Max. cool door link | 8. Mode door lever | 9. Ventilator door link |
| 10. Defroster door link | 11. Ventilator door lever | 12. Foot door lever |
| 13. Max. cool door lever | 14. Defroster door lever | 15. Air mix door motor (Driver side) |
| 16. Heater & cooling unit assembly | 17. Air mix door motor (Passenger side) | 18. Upper ventilator door motor |
| 19. Upper ventilator door rod | 20. Upper ventilator door lever | |

↶ : Vehicle front

AIR MIX DOOR MOTOR

AIR MIX DOOR MOTOR : Removal and Installation

INFOID:000000007563472

REMOVAL

Driver Side

1. Set the temperature at full cold.

CAUTION:

The angle may be out, when installing the air mix door motor to the air mix door, unless the above procedure is performed.

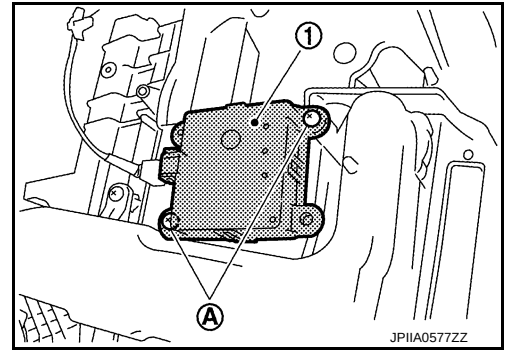
2. Disconnect the battery cable from the negative terminal.
3. Remove front foot duct LH. Refer to [VTL-12, "FRONT FOOT DUCT : Removal and Installation"](#).
4. Disconnect air mix door motor harness connector.

DOOR MOTOR

< REMOVAL AND INSTALLATION >

[AUTOMATIC AIR CONDITIONING]

5. Remove fixing screws (A), and then air mix door motor (1).



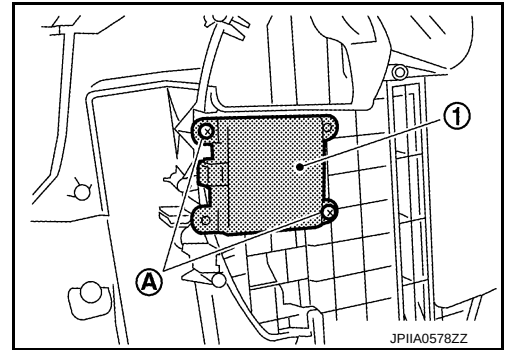
Passenger Side

1. Set the temperature at full cold.

CAUTION:

The angle may be out, when installing the air mix door motor to the air mix door, unless the above procedure is performed.

2. Disconnect the battery cable from the negative terminal.
3. Remove front foot duct RH. Refer to [VTL-12. "FRONT FOOT DUCT : Removal and Installation"](#).
4. Disconnect air mix door motor harness connector.
5. Remove fixing screws (A), and then air mix door motor (1).



INSTALLATION

Install in the reverse order of removal.

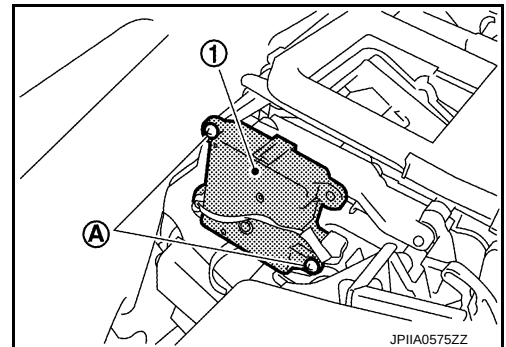
MODE DOOR MOTOR

MODE DOOR MOTOR : Removal and Installation

INFOID:000000007563473

REMOVAL

1. Remove instrument panel assembly. Refer to [IP-13. "Removal and Installation"](#).
2. Disconnect mode door motor harness connector.
3. Remove fixing screws (A), and then remove mode door motor (1).



INSTALLATION

Install in the reverse order of removal.

INTAKE DOOR MOTOR

DOOR MOTOR

< REMOVAL AND INSTALLATION >

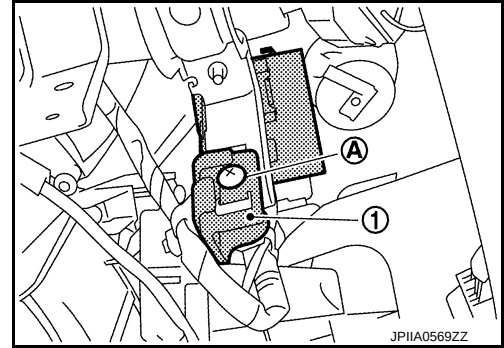
[AUTOMATIC AIR CONDITIONING]

INTAKE DOOR MOTOR : Removal and Installation

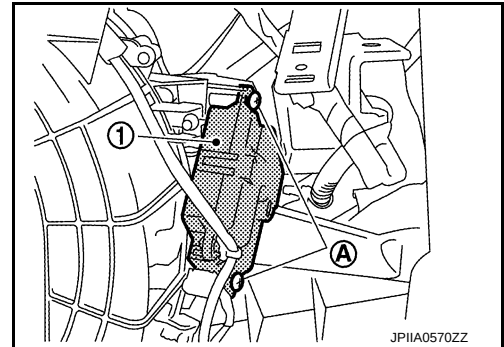
INFOID:000000007563474

REMOVAL

1. Remove instrument lower panel RH. Refer to [IP-13. "Removal and Installation"](#).
2. Remove fixing screw (A), and then move key less controller assembly bracket (1) to secure work space.



3. Disconnect intake door motor harness connector.
4. Remove fixing screws (A), and then remove intake door motor (1).



INSTALLATION

Install in the reverse order of removal.

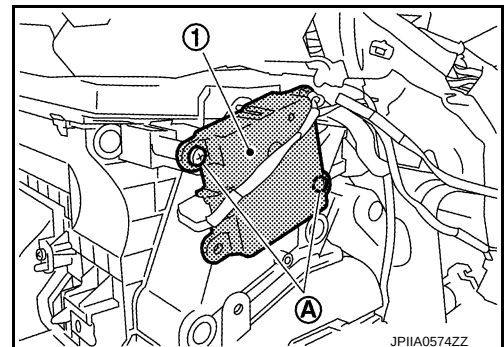
UPPER VENTILATOR DOOR MOTOR

UPPER VENTILATOR DOOR MOTOR : Removal and Installation

INFOID:000000007563475

REMOVAL

1. Remove blower unit assmbly. Refer to [VTL-19. "Removal and Installation"](#).
2. Disconnect upper ventilator door motor harness connector.
3. Remove fixing screws (A), and then remove upper ventilator door motor (1).



INSTALLATION

Install in the reverse order of removal.