SECTION HAC

HEATER & AIR CONDITIONING CONTROL SYSTEM

CONTENTS

AUTOMATIC AIR CONDITIONING

MANUAL AIR CONDITIONING

PRECAUTION

PRECAUTIONS

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

INFOID:0000000009652488

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:

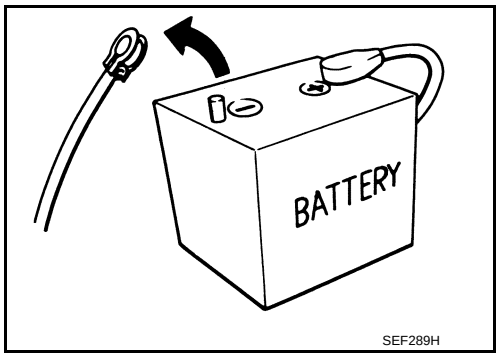
Always observe the following items for preventing accidental activation.

- **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.**

Precautions for Removing Battery Terminal

INFOID:0000000010022912

- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.
  NOTE:
  ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.
- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch.
  NOTE:
  If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.



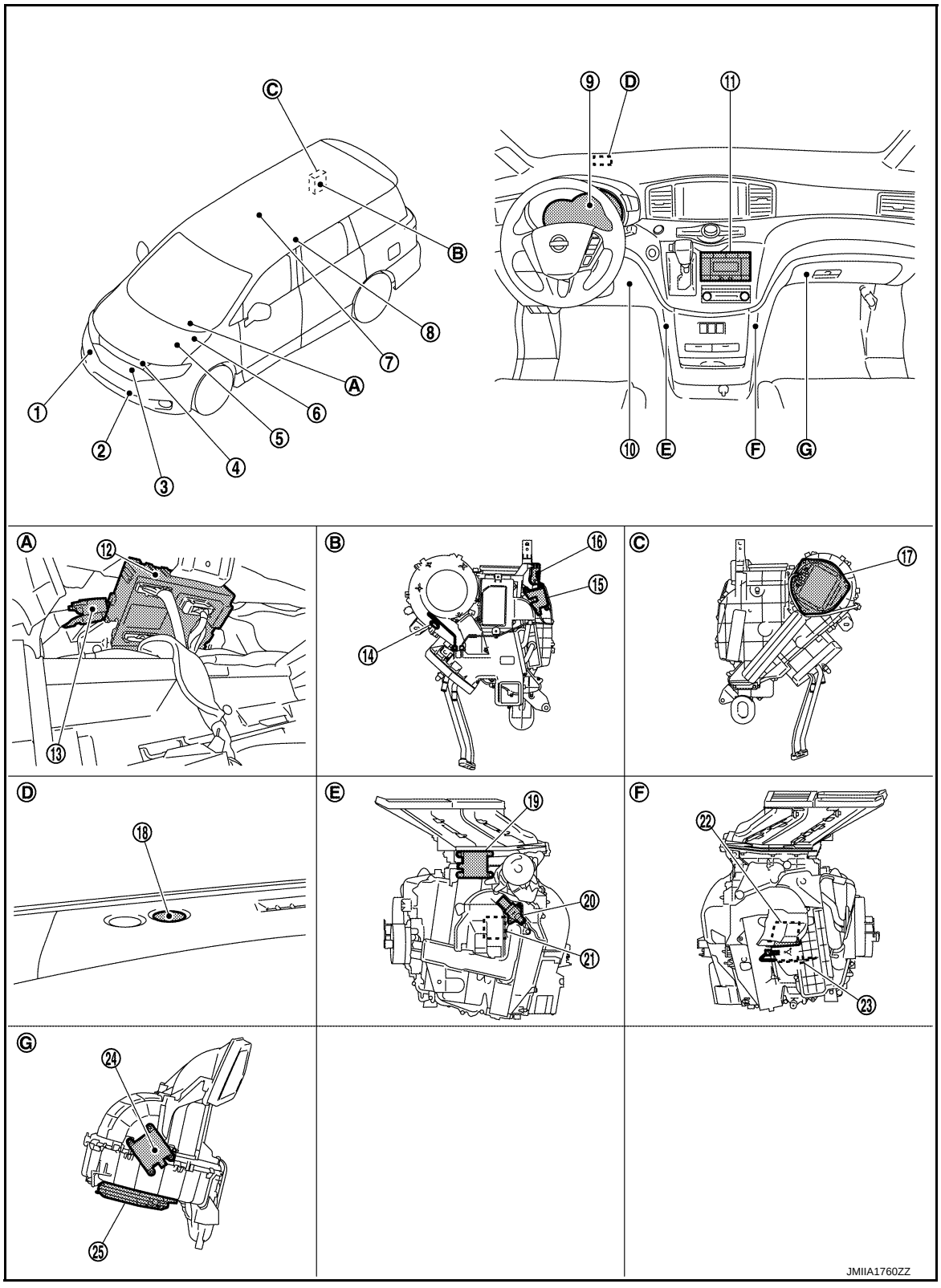
- After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC.
  NOTE:
  The removal of 12V battery may cause a DTC detection error.

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000009652489



A. Combination meter is removed
B. Left side of rear A/C unit assembly
C. Right side of rear A/C unit assembly
D. Left side of instrument upper garnish
E. Left side of heater & cooling unit assembly
F. Right side of heater & cooling unit assembly
G. Right side of blower unit assembly

No.	Component	Function
1.	Magnet clutch	HAC-14, "Magnet Clutch"
2.	Ambient sensor	HAC-13, "Ambient Sensor"
3.	Exhaust gas/outside odor detecting sensor [with ACCS (Advanced Climate Control System)]	HAC-14, "Exhaust Gas/Outside Odor Detecting Sensor"
4.	Refrigerant pressure sensor	HAC-13, "Refrigerant Pressure Sensor"
5.	ECM	ECM, when receiving A/C ON signal and blower fan ON signal from BCM, 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 combination meter via CAN communication line. Refer to EC-15, "ENGINE CONTROL SYSTEM : Component Parts Location" for detailed installation location.
6.	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, "IPDM E/R : Component Parts Location" for detailed installation location.
7.	Rear A/C control (with rear entertainment)	HAC-12, "Rear A/C Control"
8.	Rear A/C control (without rear entertainment)	
9.	Combination meter	Combination meter transmits engine coolant temperature signal and vehicle speed signal to A/C auto amp.
10.	Front in-vehicle sensor	HAC-13, "Front In-vehicle Sensor"
11.	Front A/C control (A/C auto amp.)	HAC-12, "Front A/C Control (A/C Auto Amp.)"
12.	BCM	BCM transmits A/C ON signal and blower fan ON signal, received from A/C auto amp., to ECM via CAN communication line.
13.	Ionizer [with ACCS (Advanced Climate Control System)]	HAC-15, "Ionizer"
14.	Rear in-vehicle sensor	HAC-11, "REAR A/C UNIT ASSEMBLY : Rear In-vehicle Sensor"
15.	Rear air mix door motor	HAC-11, "REAR A/C UNIT ASSEMBLY : Rear Air Mix Door Motor"
16.	Rear mode door motor	HAC-12, "REAR A/C UNIT ASSEMBLY : Rear Mode Door Motor"
17.	Rear blower motor	HAC-12, "REAR A/C UNIT ASSEMBLY : Rear Blower Motor"
18.	Sunload sensor	HAC-13, "Sunload Sensor"
19.	Front mode door motor	HAC-11, "HEATER & COOLING UNIT ASSEMBLY : Front Mode Door Motor"
20.	Aspirator	HAC-10, "HEATER & COOLING UNIT ASSEMBLY : Aspirator"
21.	Front air mix door motor (Driver side)	HAC-11, "HEATER & COOLING UNIT ASSEMBLY : Front Air Mix Door Motor (Driver side)"
22.	Front air mix door motor (Passenger side)	HAC-11, "HEATER & COOLING UNIT ASSEMBLY : Front Air Mix Door Motor (Passenger side)"
23.	Intake sensor	HAC-11, "HEATER & COOLING UNIT ASSEMBLY : Intake Sensor"
24.	Intake door motor	HAC-10, "BLOWER UNIT ASSEMBLY : Intake Door Motor"
25.	Front blower motor	HAC-10, "BLOWER UNIT ASSEMBLY : Front Blower Motor"

BLOWER UNIT ASSEMBLY

BLOWER UNIT ASSEMBLY : Intake Door Motor

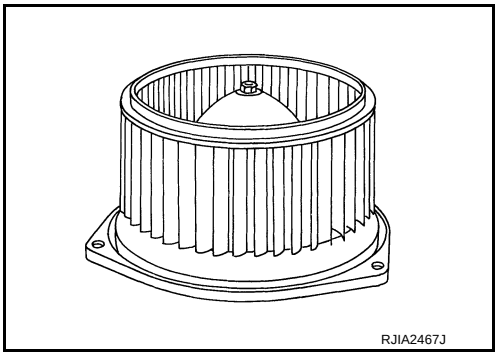
INFOID:0000000009652490

- 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-20, "FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Door Control".
- Rotation of motor is transmitted to intake door, then air inlet is switched.

BLOWER UNIT ASSEMBLY : Front Blower Motor

INFOID:0000000009652491

- The front 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 front blower motor control signal (duty ratio) from A/C auto amp.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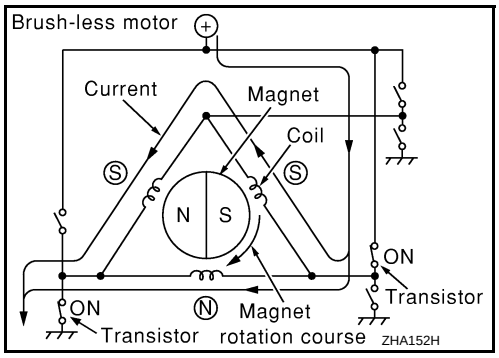
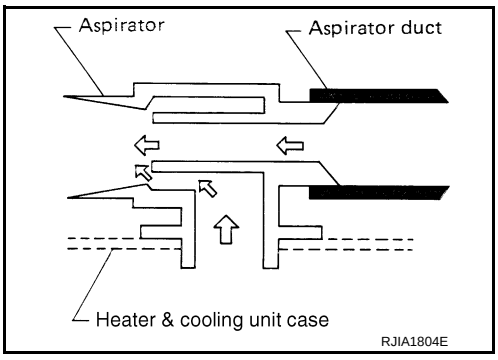


HEATER & COOLING UNIT ASSEMBLY

HEATER & COOLING UNIT ASSEMBLY : Aspirator

INFOID:0000000009652492

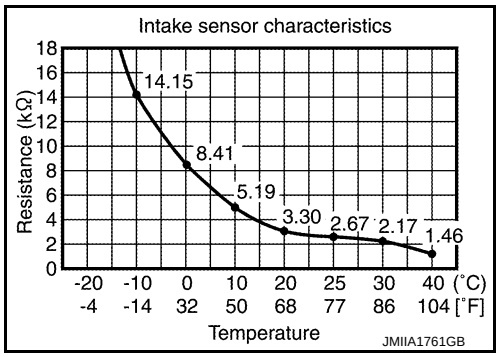
The aspirator generates the vacuum by the air blown from the heater & cooling unit case and draws the air of the passenger room to the front in-vehicle sensor area via the aspirator duct.



HEATER & COOLING UNIT ASSEMBLY : Intake Sensor

INFOID:0000000009652493

Intake sensor measures front 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 : Front Air Mix Door Motor (Driver side)

INFOID:0000000009652494

- Front 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-20, "FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Door Control".
- Rotation of motor is transmitted to front air mix door (driver side), then air flow temperature (driver side) is switched.

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

INFOID:0000000009652495

- Front 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-20, "FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Door Control".
- Rotation of motor is transmitted to front air mix door (passenger side), then air flow temperature (passenger side) is switched.

HEATER & COOLING UNIT ASSEMBLY : Front Mode Door Motor

INFOID:0000000009652496

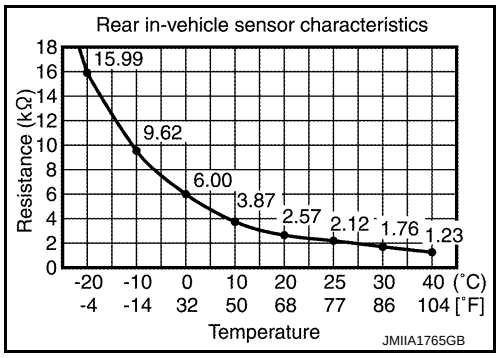
- Front mode door motor consists of motor that drives door, PBR (Potentio Balance Register) that detects door position and LCU (Local Control Unit) that performs multiplex communication control (LAN) with A/C auto amp. Refer to HAC-20, "FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Door Control".
- Rotation of motor is transmitted to front mode door (ventilator door, max. cool door, defroster door and foot door) by lever, link, and rod, then air outlet is switched.

REAR A/C UNIT ASSEMBLY

REAR A/C UNIT ASSEMBLY : Rear In-vehicle Sensor

INFOID:0000000009652497

Rear in-vehicle sensor measures temperature of intake air that flows through rear blower motor 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.



REAR A/C UNIT ASSEMBLY : Rear Air Mix Door Motor

INFOID:0000000009652498

- Rear air mix 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-20, "FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Door Control".
- Rotation of motor is transmitted to rear air mix door by lever, then air flow temperature is switched.

REAR A/C UNIT ASSEMBLY : Rear Mode Door Motor

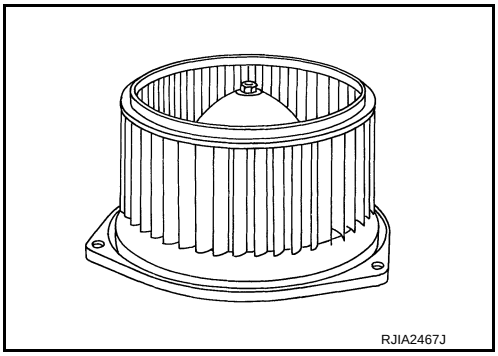
INFOID:0000000009652499

- Rear 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-20, "FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Door Control".
- Rotation of motor is transmitted to rear mode door by lever, then air outlet is switched.

REAR A/C UNIT ASSEMBLY : Rear Blower Motor

INFOID:0000000009652500

- The rear 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 rear blower motor control signal (duty ratio) from A/C auto amp.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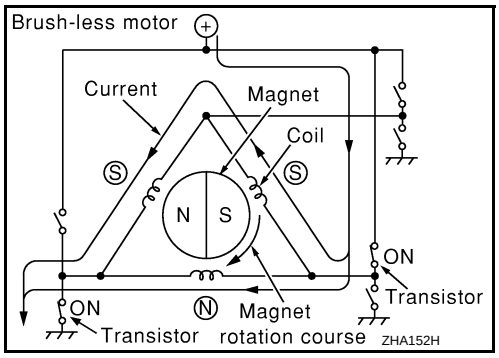
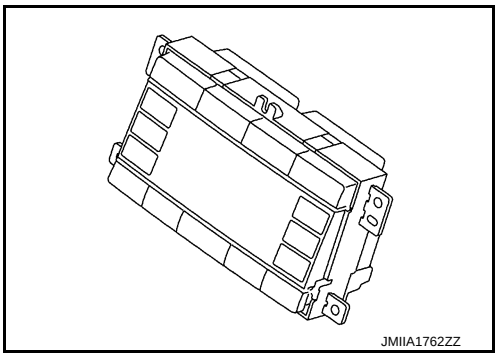


Front A/C Control (A/C Auto Amp.)

INFOID:0000000009652501

- Front A/C control has switches and display that can set and indicate the operation of front automatic air conditioning system, rear automatic air conditioning system, and ACCS (Advanced Climate Control System).
- Front A/C control integrates A/C auto amp. A/C auto amp. controls front automatic air conditioning system, rear automatic air conditioning system, and ACCS (Advanced Climate Control 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.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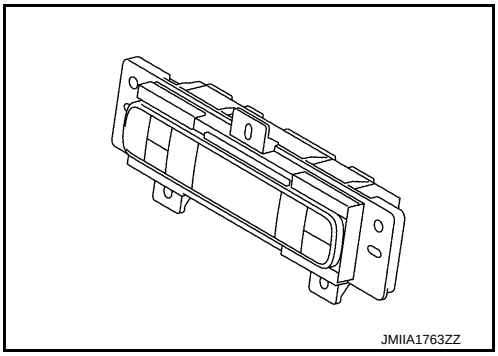
Rear A/C Control

INFOID:0000000009652502

Rear A/C control has switches and display that can set and indicate the operation of rear automatic air conditioning system. Rear A/C control transmits setting status to A/C auto amp. via communication line. A/C auto amp. controls rear automatic air conditioning system.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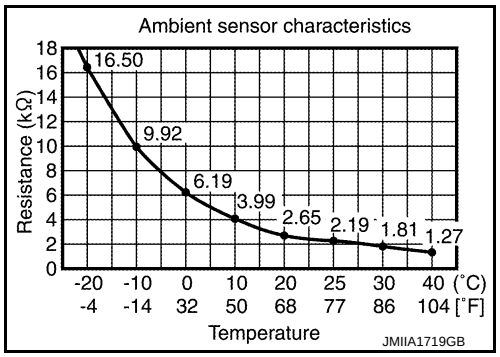
Ambient Sensor

INFOID:0000000009652503

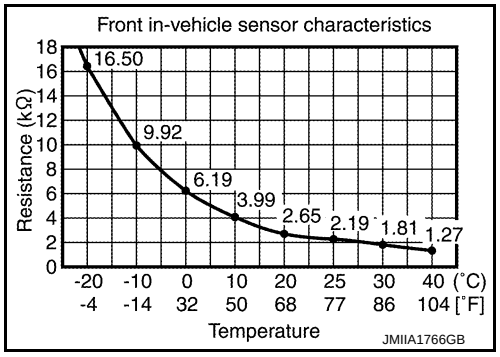
Ambient sensor measures ambient air temperature. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases.



Front In-vehicle Sensor

INFOID:0000000009652504

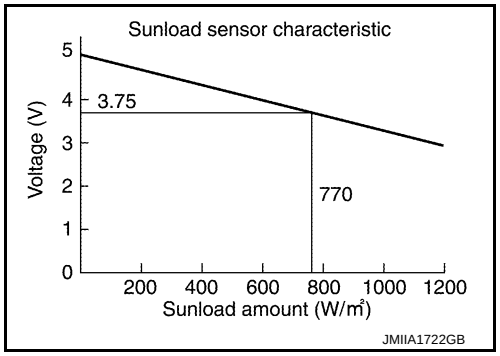
Front in-vehicle sensor measures temperature of intake air that flows through aspirator to passenger room. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases.



Sunload Sensor

INFOID:0000000009652505

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

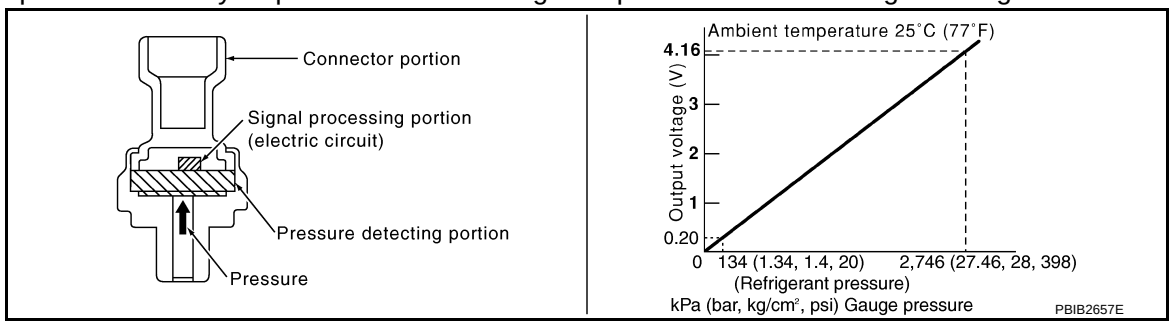


Refrigerant Pressure Sensor

INFOID:0000000009652506

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.



STRUCTURE AND OPERATION

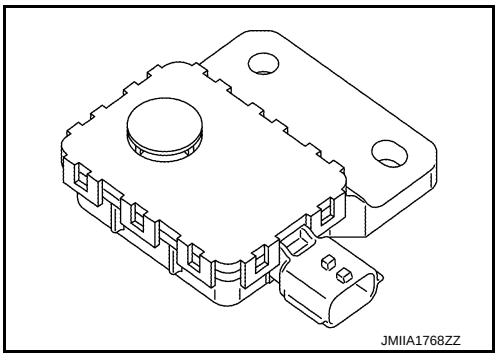
- The refrigerant pressure sensor is a capacitance type sensor. It consists of a pressure detection areas and a signal processing area.
- The pressure detection area, which is a variable capacity condenser, changes internal static capacitance according to pressure force.
- The signal processing area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

Exhaust Gas/Outside Odor Detecting Sensor

INFOID:0000000009652507

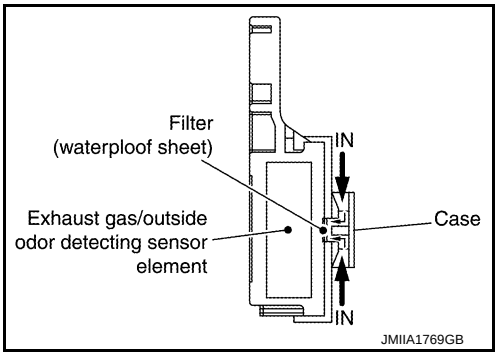
DESCRIPTION

Exhaust gas/outside odor detecting sensor detects ambient atmospheric CO, NO_2 and unpleasant odor, and converts them to values of resistance. The values are converted to signals with the exhaust gas/outside odor detecting sensor internal circuit, then the A/C auto amp. inputs the signals.



STRUCTURE AND OPERATION

Exhaust gas/outside odor detecting sensor has a construction that detects CO, NO_2 and unpleasant odor by exhaust gas/outside odor detecting sensor element from the air intake of the case through a filter (waterproof sheet). It sends output signals to the A/C auto amp. in response to a resistance value conversion by exhaust gas/outside odor detecting sensor elements. A/C auto amp. controls intake door motor to prevent a smell of exhaust gas and unpleasant ambient odor from getting into the vehicle by performing corrections according to various driving conditions.



Magnet Clutch

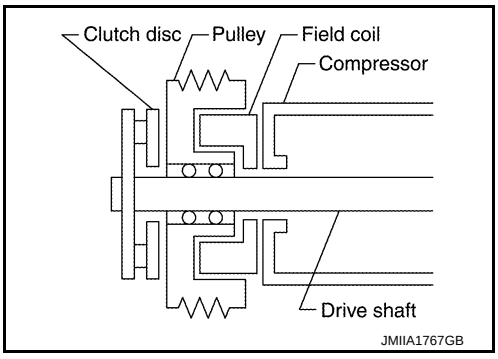
INFOID:0000000009652508

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 pressed 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.



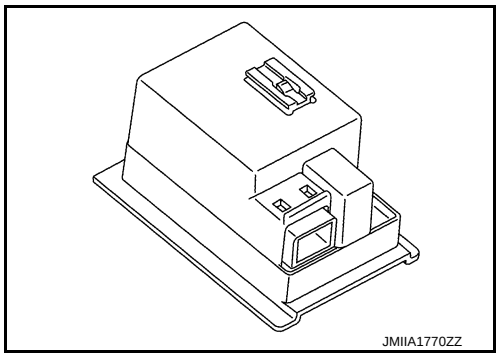
Ionizer

INFOID:0000000009652509

High density plasmacluster™ ion generator is adopted to increase the effect in maintaining skin moisture as well as the effect against mold, viruses, allergens, and odors.

NOTE:

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



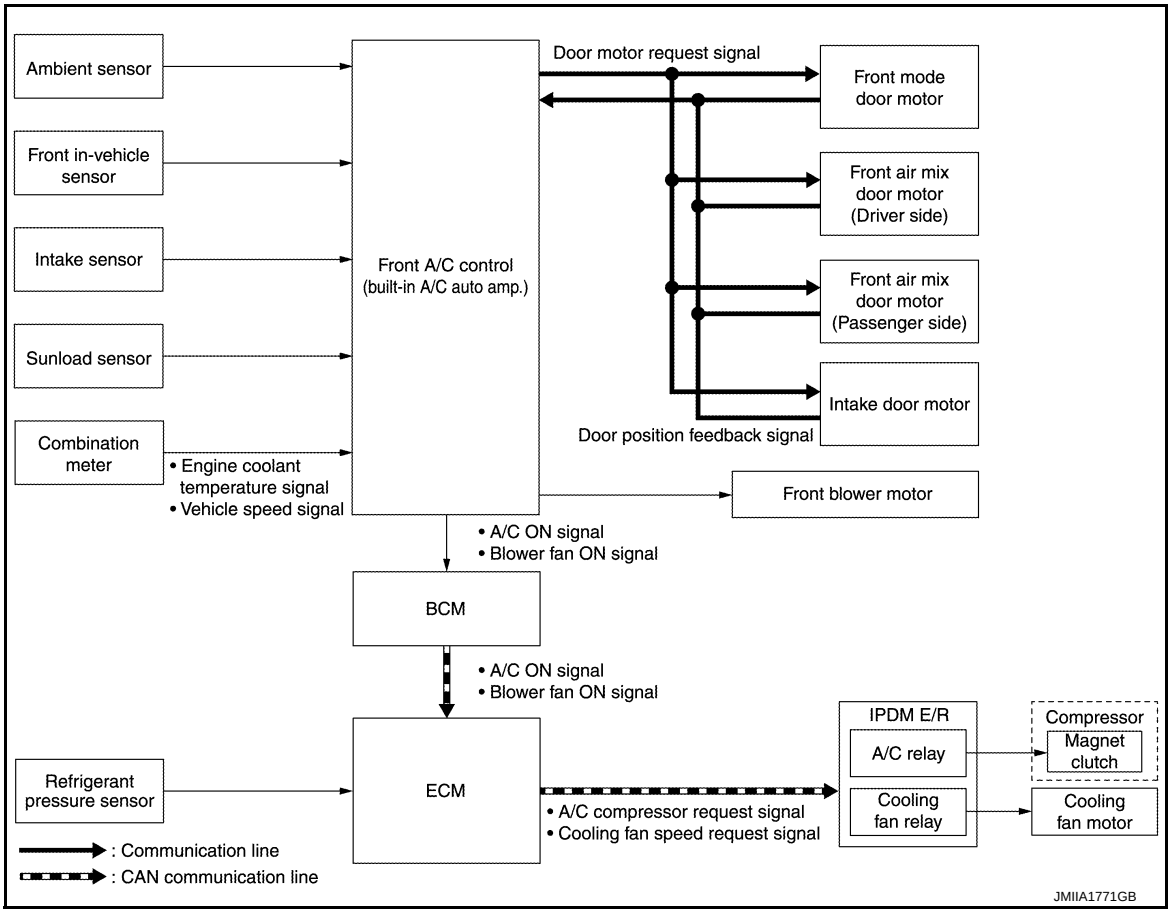
SYSTEM

FRONT AUTOMATIC AIR CONDITIONING SYSTEM

FRONT AUTOMATIC AIR CONDITIONING SYSTEM : System Description

INFOID:0000000009652510

SYSTEM DIAGRAM



DESCRIPTION

- Front automatic air conditioning system is controlled by each function of A/C auto amp., BCM, ECM and IPDM E/R.
- Each operation of front air conditioning system can be controlled by front A/C control (built-in A/C auto amp.).

CONTROL BY A/C AUTO AMP.

- HAC-17, "FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Temperature Control"
- HAC-18, "FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Air Outlet Control"
- HAC-18, "FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Air Flow Control"
- HAC-19, "FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Air Inlet Control"
- HAC-19, "FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Compressor Control"
- HAC-20, "FRONT AUTOMATIC AIR CONDITIONING SYSTEM : 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 front 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).

Front in-vehicle temperature correction
- A/C auto amp. inputs the temperature detected by front in-vehicle sensor as the front in-vehicle temperature.
- A/C auto amp. performs the correction of the temperature detected by front in-vehicle sensor for front air conditioning control.
- A/C auto amp. performs the correction so that the recognition passenger room temperature (front side) changes depending on the difference between the detected passenger room temperature (front side) and the recognition passenger room temperature (front side). 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 (front evaporator temperature).
- A/C auto amp. performs the correction of the temperature detected by intake sensor for front 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 front 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 switch 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 BCM
- HAC-19, "FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Compressor Control"

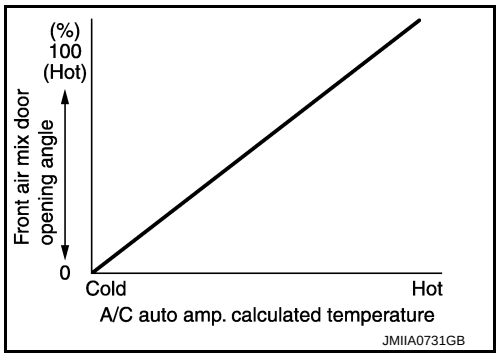
CONTROL BY ECM
- HAC-19, "FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Compressor Control"
- Cooling fan control. Refer to EC-45, "COOLING FAN CONTROL : System Description".

CONTROL BY IPDM E/R
- HAC-19, "FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Compressor Control"
- Cooling fan control. Refer to PCS-5, "RELAY CONTROL SYSTEM : System Description".

FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Temperature Control

INFOID:0000000009652511

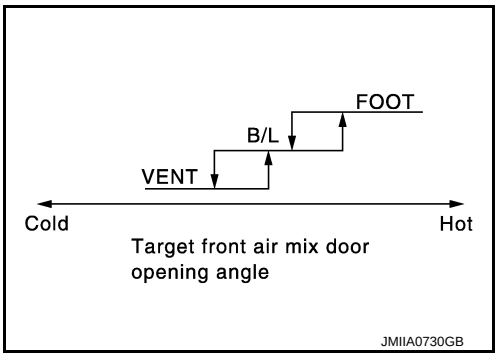
- When ignition switch is in the ON position, A/C auto amp. always automatically controls temperature regardless of air conditioning system operational state.
- A/C auto amp. calculates the target front air mix door opening angle depending on set temperature, in-vehicle temperature, ambient temperature, and sunload.
- Front air mix door is controlled depending on the comparison of current front air mix door opening angle and target front air mix door opening angle.
- Regardless of in-vehicle temperature, ambient temperature, and sunload, front air mix door is fixed at the fully cold position when set temperature is 18°C (60°F), and at the fully hot position when set temperature is 32°C (90°F).



FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Air Outlet Control

INFOID:0000000009652512

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



FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Air Flow Control

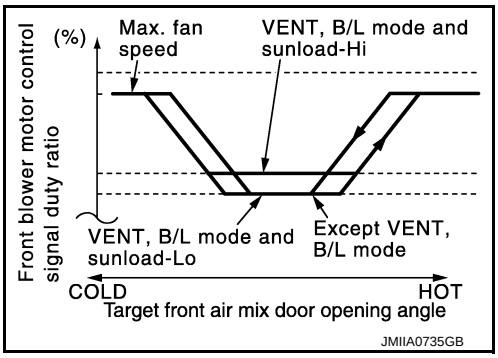
INFOID:0000000009652513

DESCRIPTION

- A/C auto amp. changes duty ratio of front blower motor control signal to control air flow continuously. When air flow is increased, duty ratio of front blower motor control signal gradually increases to prevent a sudden increase in air flow.
- In addition to manual control and automatic control, air flow control is compose 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 front air mix door opening angle.
- A/C auto amp. changes duty ratio of front 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.

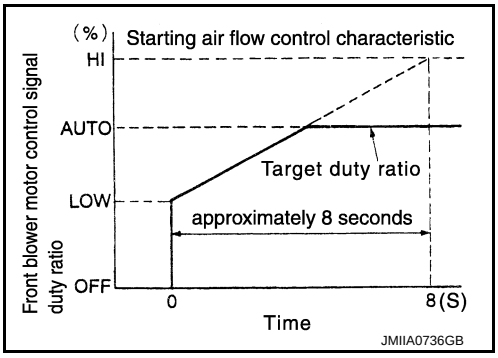


STARTING AIR FLOW CONTROL

When front 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.

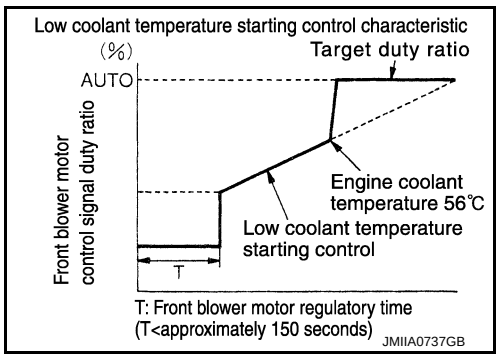
NOTE:

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



LOW COOLANT TEMPERATURE STARTING CONTROL

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



FAN SPEED CONTROL AT DOOR MOTOR OPERATION

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

HIGH IN-VEHICLE TEMPERATURE STARTING CONTROL

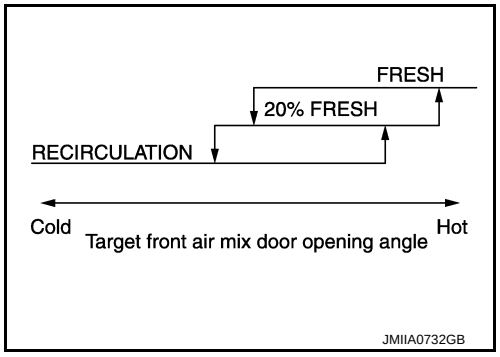
When front evaporator fin temperature is high [intake air temperature sensor value is 35°C (95°F) or more], to prevent a hot discharged air flow, A/C auto amp. suspends front blower motor activation for approximately 3 seconds so that front evaporator is cooled by refrigerant.

FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Air Inlet Control

INFOID:0000000009652514

- 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.
- Air inlet is fixed to 80% FRE, only when the following conditions are satisfied:

- Air inlet is FOOT or D/F
- Ambient temperature is 2°C (36°F) or less
- Maximum fan speed



FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Compressor Control

INFOID:0000000009652515

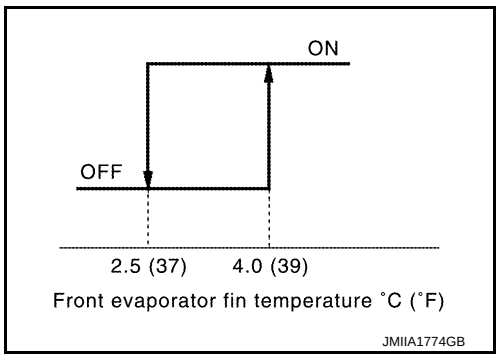
DESCRIPTION

- When the compressor activation condition is satisfied while front blower motor is activated, A/C auto amp. transmits A/C ON signal and blower fan ON signal to BCM.
- BCM transmits the A/C ON signal and blower fan ON signal to ECM via CAN communication line. Refer to BCS-12, "SIGNAL BUFFER SYSTEM : System Description".
- 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

When intake sensor detects that front evaporator fin temperature is 2.5°C (37°F) or less, A/C auto amp. requests ECM to turn the compressor OFF, and stops the compressor.
When the front evaporator fin temperature returns to 4.0°C (39°F) or more, the compressor is activated.



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/cm^2, 452 psi) or more (When the engine speed is less than 1,500 rpm)
- 2.74 MPa (27.9 kg/cm^2, 397 psi) or more (When the engine speed is 1,500 rpm or more)
- 0.14 MPa (1.4 kg/cm^2, 20 psi) or less

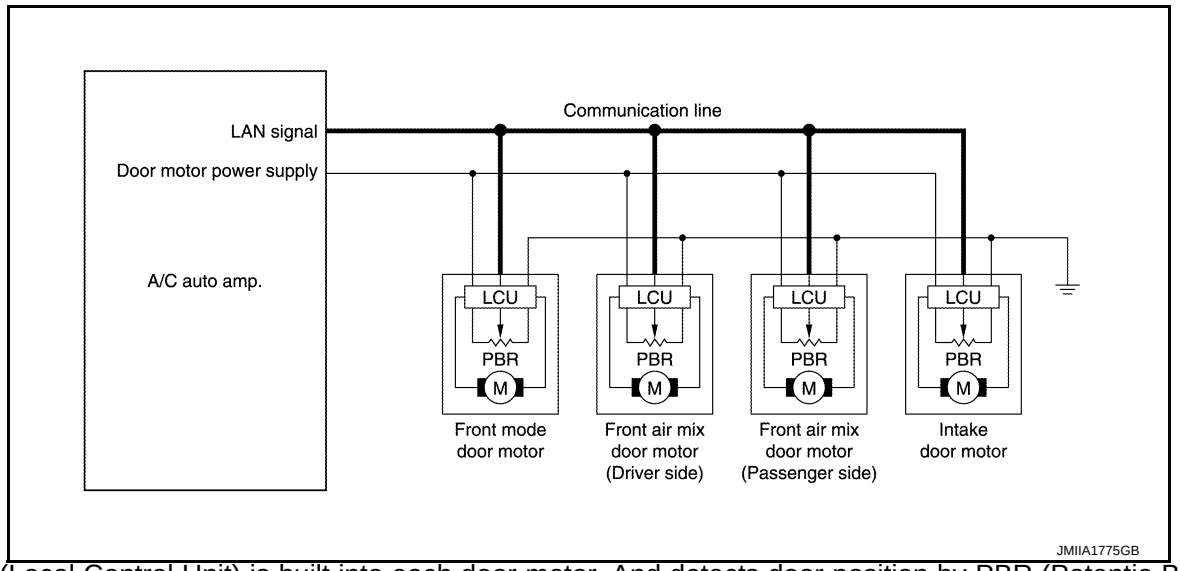
Compressor Oil Circulation Control
When the engine starts while the engine coolant temperature is 56°C (133°F) or less, ECM activates the compressor for approximately 6 seconds and circulates the compressor oil once.

Air Conditioning Cut Control
When the engine condition is high load, ECM transmit A/C relay OFF request to IPDM E/R, and stops the compressor. Refer to EC-43, "AIR CONDITIONING CUT CONTROL : System Description".

FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Door Control

INFOID:0000000009652516

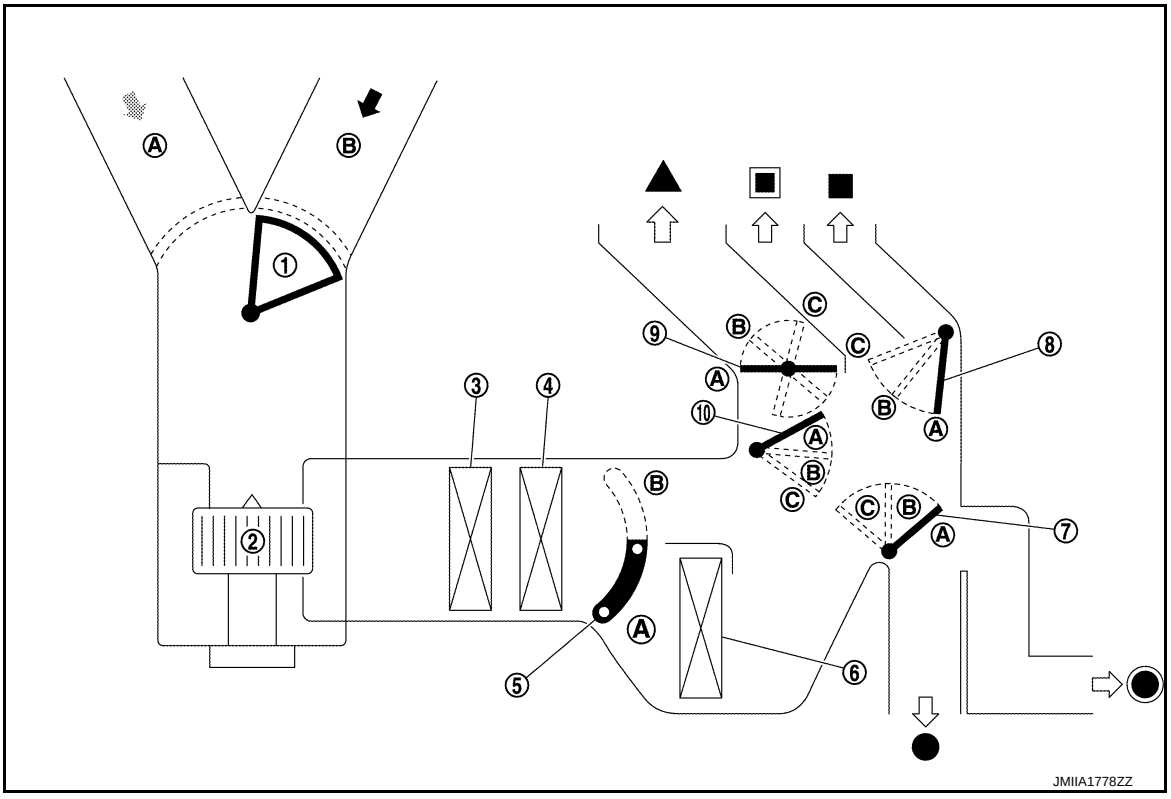
DOOR MOTOR CONTROL



- LCU (Local Control Unit) is built into each door motor. And detects door position by PBR (Potentio 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

With ACCS (Advanced Climate Control System)



1. Intake door
2. Front blower motor
3. In-cabin microfilter
4. Front evaporator
5. Front air mix door
6. Front heater core
7. Foot door
8. Ventilator door
9. Defroster door
10. Max. cool door

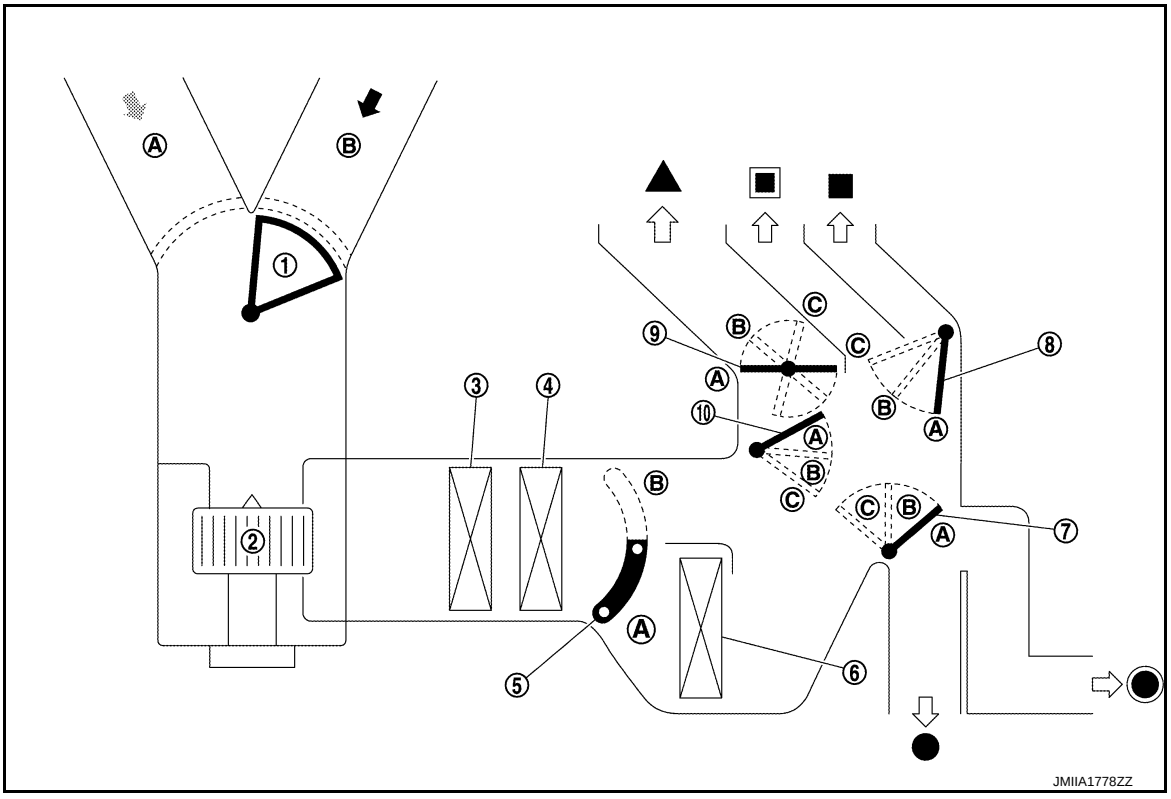
Fresh air
Recirculation air
Discharge air
Defroster
Center ventilator
Side ventilator
Front foot
Rear foot

Switch position		Door position						
		Front mode door					Front air mix door	
		Ventilator door	Max. cool door	Defroster door	Foot door	Intake door	(Driver side)	(Passenger side)
AUTO switch		AUTO						

Switch position			Door position						
			Front mode door					Front air mix door	
			Ventilator door	Max. cool door	Defroster door	Foot door	Intake door	(Driver side)	(Passenger side)
MODE switch			A	A	A	A	—	—	—
			B	B	A	B			
			C	C	B	B			
			C	B	B	B			
DEF switch			C	A	C	C			
Intake switch*							A		
							B		
Temperature control switch (Driver side)	DUAL switch: OFF	Full cold [18°C (60°F)]	—	—	—	—	—	A	—
		18.5°C – 31.5°C (61°F – 89 °F)						AUTO	
		Full hot [32°C (90°F)]						B	
Temperature control switch (Driver side)	DUAL switch: ON	Full cold [18°C (60°F)]						A	
		18.5°C – 31.5°C (61°F – 89 °F)						AUTO	
		Full hot [32°C (90°F)]						B	
Temperature control switch (Passenger side)		Full cold [18°C (60°F)]						—	A
		18.5°C – 31.5°C (61°F – 89 °F)							AUTO
		Full hot [32°C (90°F)]							B
ON·OFF switch	OFF		C	C	B	B	B		—

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

Without ACCS (Advanced Climate Control System)



1. Intake door
2. Front blower motor
3. In-cabin microfilter
4. Front evaporator
5. Front air mix door
6. Front heater core
7. Foot door
8. Ventilator door
9. Defroster door
10. Max. cool door

Fresh air
Recirculation air
Discharge air
Defroster
Center ventilator
Side ventilator
Front foot
Rear foot

Switch position		Door position						
		Front mode door					Front air mix door	
		Ventilator door	Max. cool door	Defroster door	Foot door	Intake door	(Driver side)	(Passenger side)
AUTO switch	-☀-	AUTO						

Switch position			Door position						
			Front mode door					Front air mix door	
			Ventilator door	Max. cool door	Defroster door	Foot door	Intake door	(Driver side)	(Passenger side)
MODE switch			A	A	A	A	—	—	—
			B	B	A	B			
			C	C	B	B			
			C	B	B	B			
DEF switch			C	A	C	C			
REC switch*			—	—	—	—	A		
FRE switch*							B		
Temperature control switch (Driver side)	DUAL switch: OFF	Full cold [18°C (60°F)]					—	A	
		18.5°C – 31.5°C (61°F – 89 °F)						AUTO	
		Full hot [32°C (90°F)]						B	
Temperature control switch (Driver side)	DUAL switch: ON	Full cold [18°C (60°F)]						A	—
		18.5°C – 31.5°C (61°F – 89 °F)						AUTO	
		Full hot [32°C (90°F)]						B	
Temperature control switch (Passenger side)		Full cold [18°C (60°F)]						—	A
		18.5°C – 31.5°C (61°F – 89 °F)							AUTO
		Full hot [32°C (90°F)]							B
ON·OFF switch	OFF		C	C	B	B	B		—

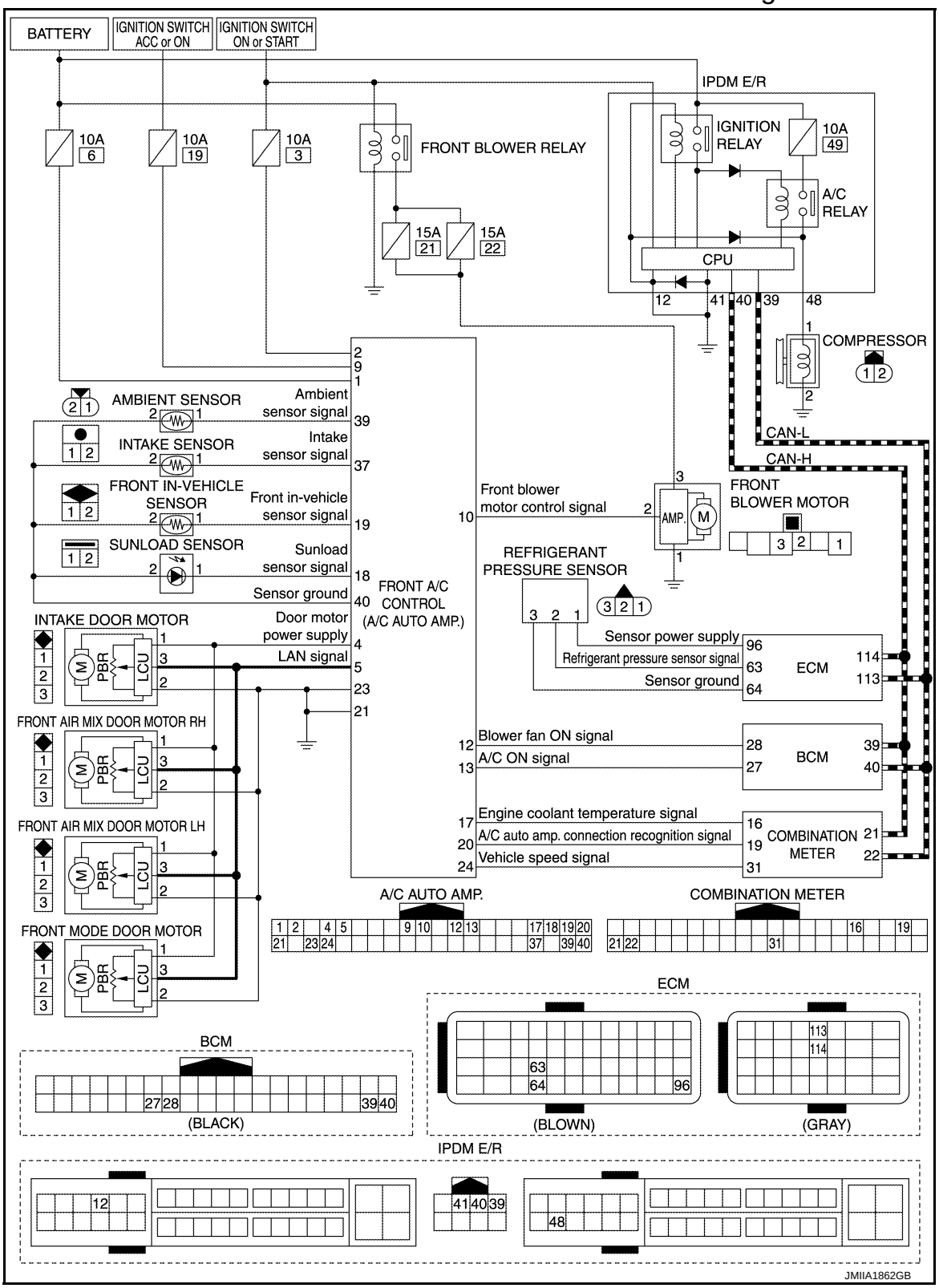
*: Inlet status is displayed by indicator during activating automatic control

AIR DISTRIBUTION

Discharge air flow						
MODE/DEF set position	Condition	Air outlet/distribution				
		Ventilator		Foot		Defroster
		Center	Side	Front	Rear	
	DUAL switch: OFF	50%	50%	—		—
		26%	30%	30%	14%	—
		—	14%	40%	16.5%	29.5%
		—	14%	35%	16%	35%
		—	12%	—		88%

FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Circuit Diagram

INFOID:0000000009652517

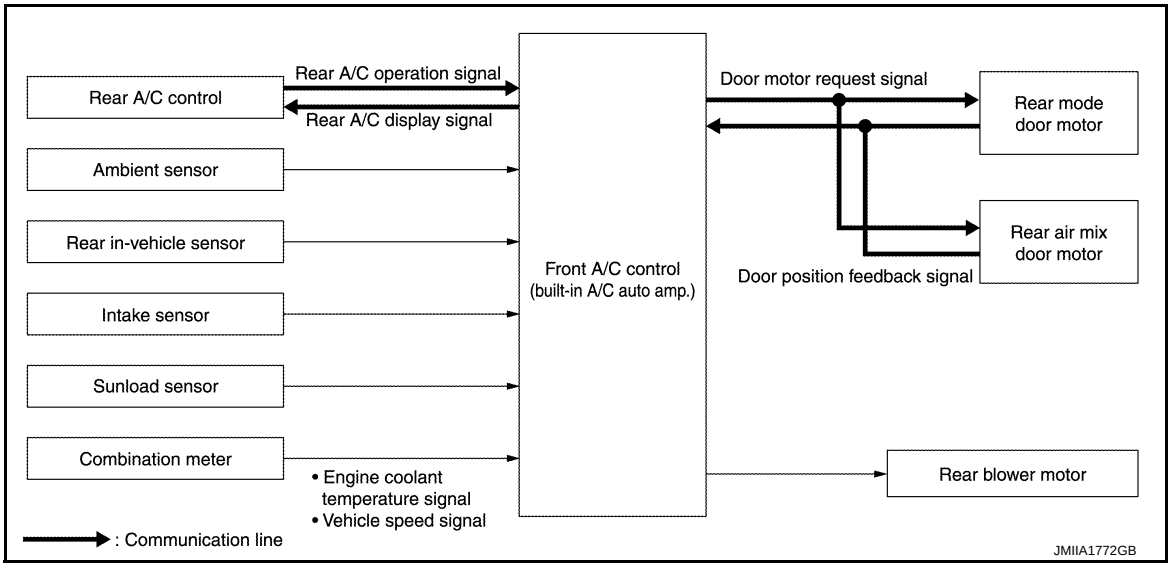


REAR AUTOMATIC AIR CONDITIONING SYSTEM

REAR AUTOMATIC AIR CONDITIONING SYSTEM : System Description

INFOID:0000000009652518

SYSTEM DIAGRAM



DESCRIPTION

- Rear automatic air conditioning system is controlled by each function of A/C auto amp.
- Each operation of rear automatic air conditioning system can be controlled by front A/C control (built-in A/C auto amp.) and rear A/C control.

CONTROL BY A/C AUTO AMP.

- HAC-27, "REAR AUTOMATIC AIR CONDITIONING SYSTEM : Temperature Control"
- HAC-27, "REAR AUTOMATIC AIR CONDITIONING SYSTEM : Air Outlet Control"
- HAC-27, "REAR AUTOMATIC AIR CONDITIONING SYSTEM : Air Flow Control"
- HAC-19, "FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Air Inlet Control"
- HAC-29, "REAR AUTOMATIC AIR CONDITIONING SYSTEM : 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 rear 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).

Rear in-vehicle temperature correction

- A/C auto amp. inputs the temperature detected by rear in-vehicle sensor as the rear in-vehicle temperature.
- A/C auto amp. performs the correction of the temperature detected by rear in-vehicle sensor for rear air conditioning control.
- A/C auto amp. performs the correction so that the recognition passenger room temperature (rear side) changes depending on the difference between the detected passenger room temperature (rear side) and the recognition passenger room temperature (rear side). 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 (front evaporator temperature).
- A/C auto amp. performs the correction of the temperature detected by intake sensor for rear 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.
  NOTE:
  A/C auto amp. calculates rear evaporator temperature according to front evaporator temperature (intake sensor detection temperature).

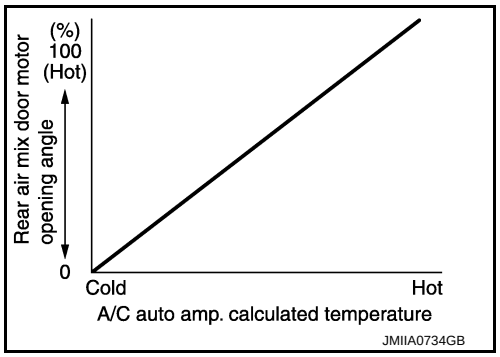
Sunload amount correction
- A/C auto amp. inputs the sunload amount detected by sunload sensor.
- A/C auto amp. performs the correction of the sunload amount detected by sunload sensor for rear air conditioning control.
- When the sunload amount suddenly changes, for example when entering a tunnel, perform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

REAR AUTOMATIC AIR CONDITIONING SYSTEM : Temperature Control

INFOID:0000000009652519

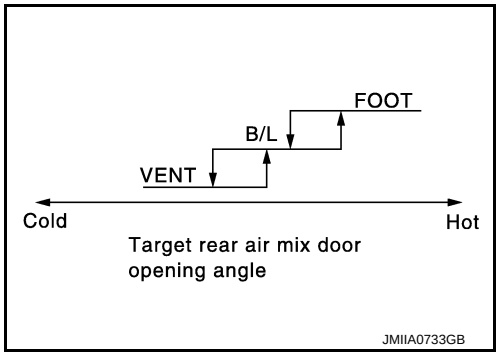
- When ignition switch is in the ON position, A/C auto amp. always automatically controls temperature regardless of rear air conditioning operational state.
- A/C auto amp. calculates the target rear air mix door opening angle depending on set temperature, rear in-vehicle temperature, ambient temperature, and sunload.
- Rear air mix door is controlled depending on the comparison of current rear air mix door opening angle and target rear air mix door opening angle.
- Regardless of rear in-vehicle temperature, ambient temperature, and sunload, rear air mix door is fixed at the fully cold position when set temperature is 18°C (60°F), and at the fully hot position when set temperature is 32°C (90°F).



REAR AUTOMATIC AIR CONDITIONING SYSTEM : Air Outlet Control

INFOID:0000000009652520

While air outlet is in automatic control, A/C auto amp. selects the rear mode door position depending on a target rear air mix door opening angle and outlet air temperature calculated from sunload.



REAR AUTOMATIC AIR CONDITIONING SYSTEM : Air Flow Control

INFOID:0000000009652521

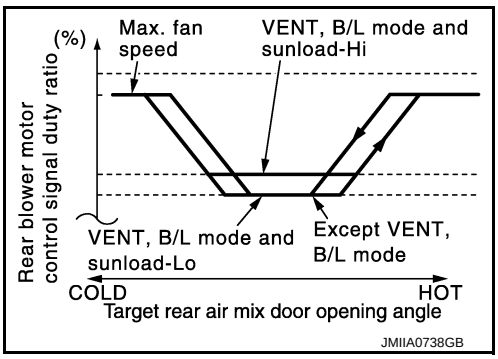
DESCRIPTION

- A/C auto amp. changes duty ratio of rear blower motor control signal to control air flow continuously. When air flow is increased, duty ratio of rear 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 compose 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

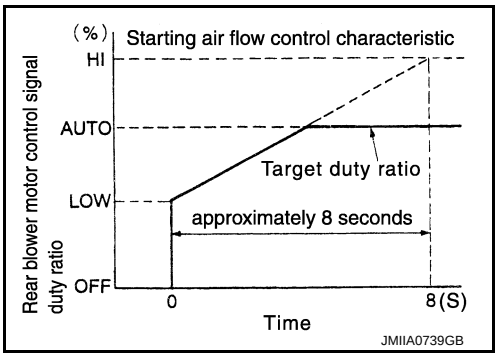
- A/C auto amp. decides target air flow depending on target air mix door opening angle.

- A/C auto amp. changes duty ratio of rear 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.



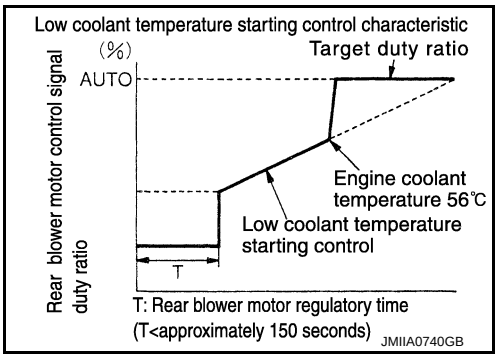
STARTING AIR FLOW CONTROL

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



LOW COOLANT TEMPERATURE STARTING CONTROL

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



HIGH IN-VEHICLE TEMPERATURE STARTING CONTROL

When evaporator 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 rear blower motor activation for approximately 3 seconds so that evaporator is cooled by refrigerant.

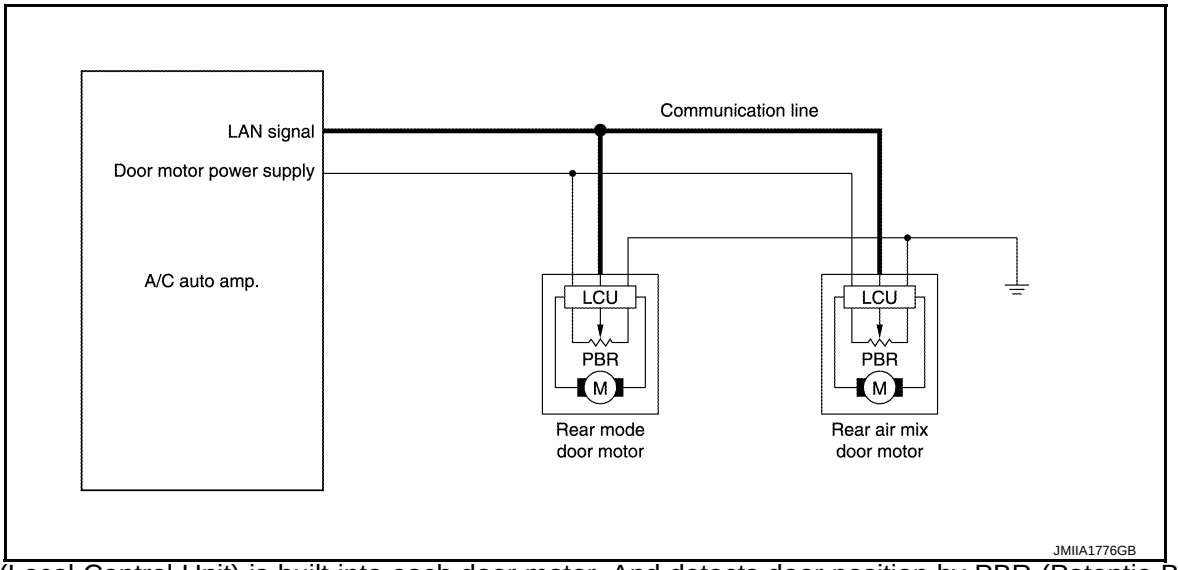
FAN SPEED CONTROL AT DOOR MOTOR OPERATION

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

REAR AUTOMATIC AIR CONDITIONING SYSTEM : Door Control

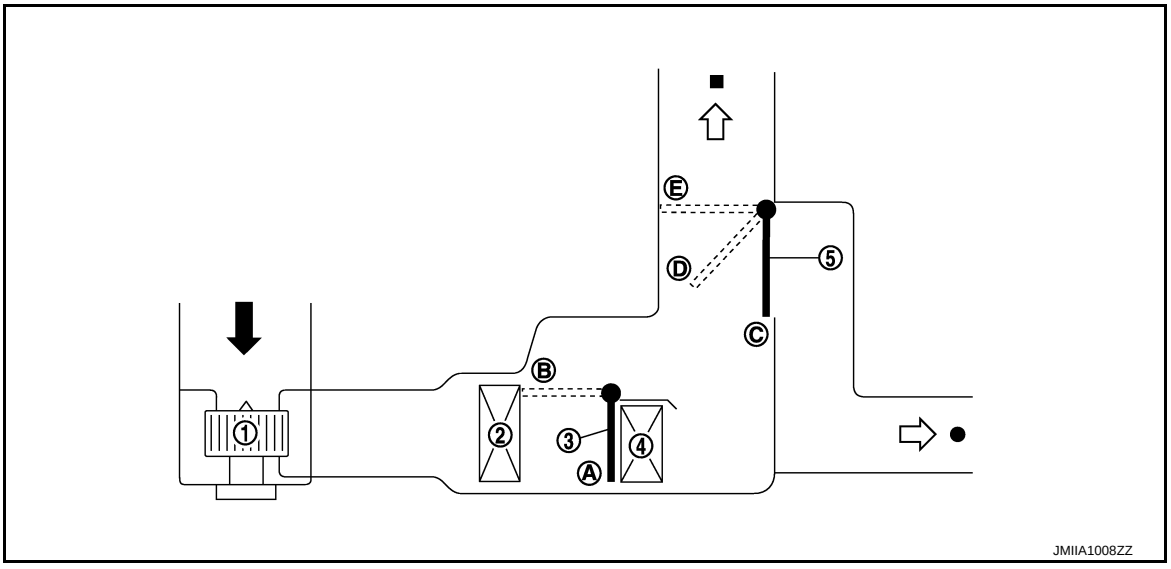
INFOID:0000000009652522

DOOR MOTOR CONTROL



- LCU (Local Control Unit) is built into each door motor. And detects door position by PBR (Potentio 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.

SWITCHES AND THEIR CONTROL FUNCTION



1. Rear blower motor
2. Rear evaporator
3. Rear air mix door
4. Rear heater core
5. Rear mode door

Recirculation air
Discharge air
Rear ventilator
Rear foot

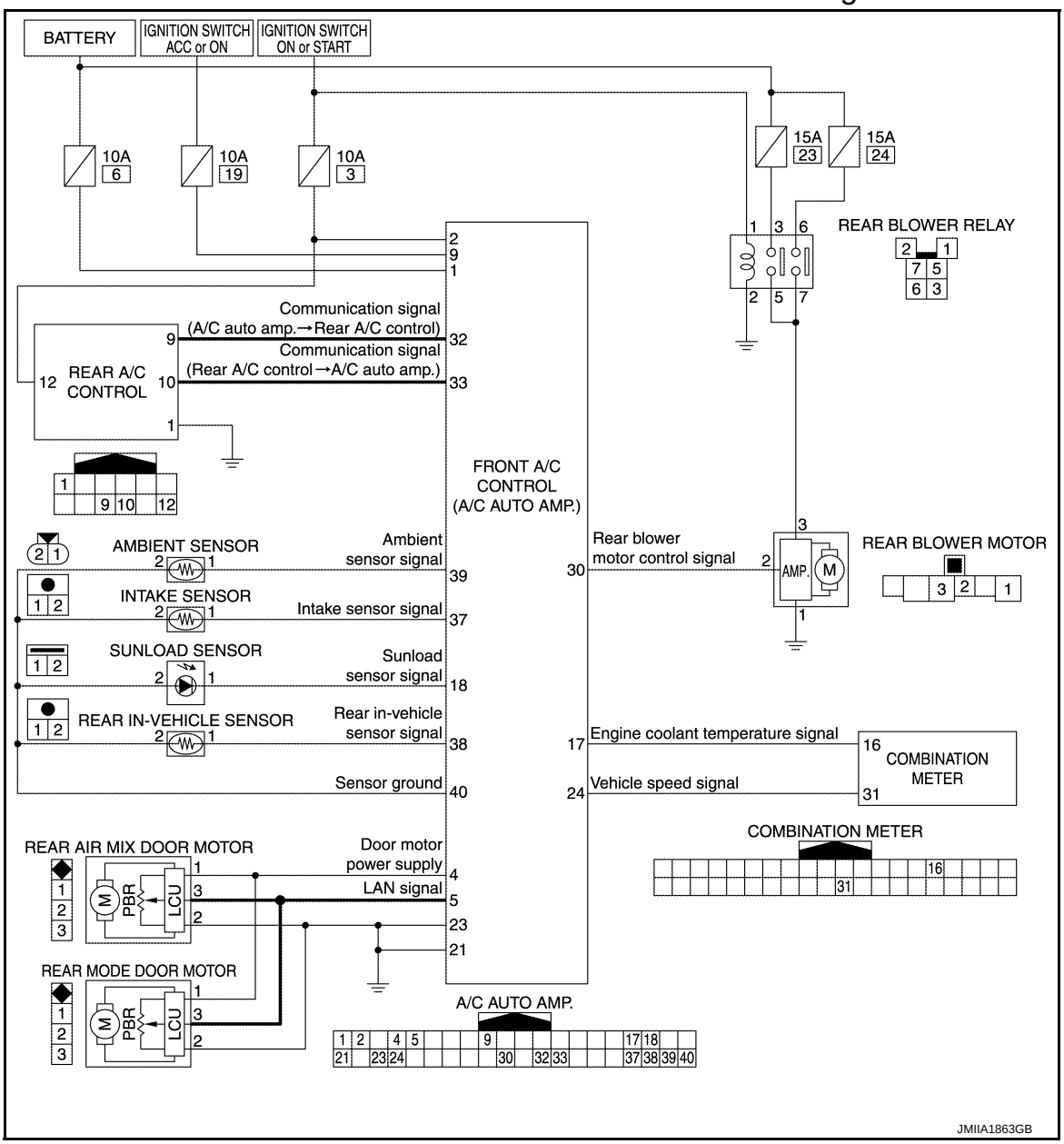
Switch position			Door position	
			Rear mode door	Rear air mix door
AUTO switch	Front A/C control		AUTO	
	Rear A/C control	AUTO		
MODE switch			C	—
			D	
			E	
Temperature control switch (driver side) (front A/C control) or temperature control switch (rear A/C control)		Full cold 18.0°C (60°F)	—	A
		18.5°C – 31.5°C (61°F – 89°F)		AUTO
		Full hot 32.0°C (90°F)		B
ON·OFF switch (front A/C control)		OFF	E	—
OFF switch (rear A/C control)				

AIR DISTRIBUTION

Discharge air flow		
Mode position	Air outlet/distribution	
	Rear ventilator	Rear foot
	100%	—
	62%	38%
	—	100%

REAR AUTOMATIC AIR CONDITIONING SYSTEM : Circuit Diagram

INFOID:0000000009652523

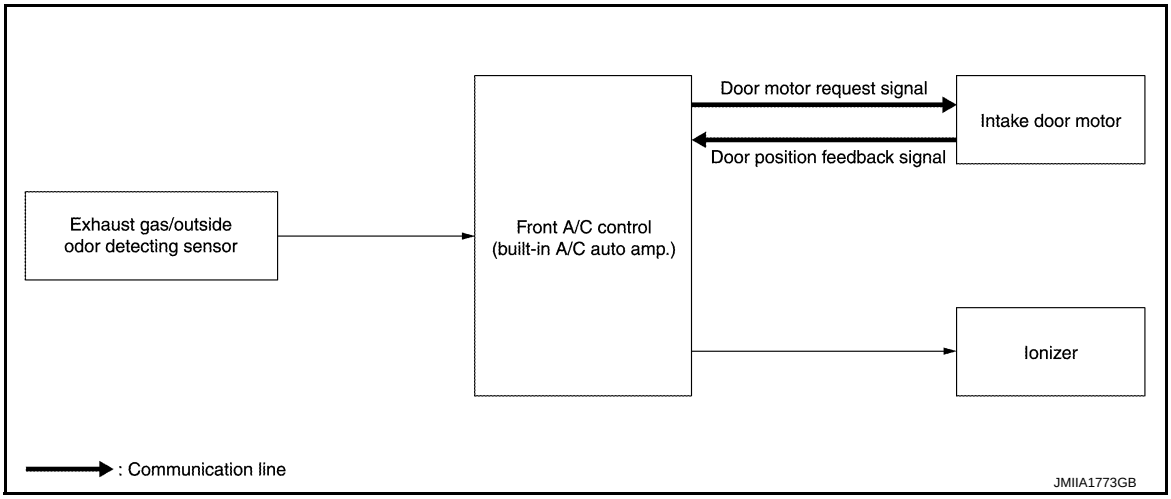


ACCS (ADVANCED CLIMATE CONTROL SYSTEM)

ACCS (ADVANCED CLIMATE CONTROL SYSTEM) : System Description

INFOID:0000000009652524

SYSTEM DIAGRAM



DESCRIPTION

ACCS (advanced climate control system) controls passenger room air. It maintains the cleanliness of the passenger room air using a high performance filter and a combination of each of the following functions.

- Automatic intake control (exhaust gas/outside odor detecting mechanism)
- Plasmacluster™ ion

NOTE:

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

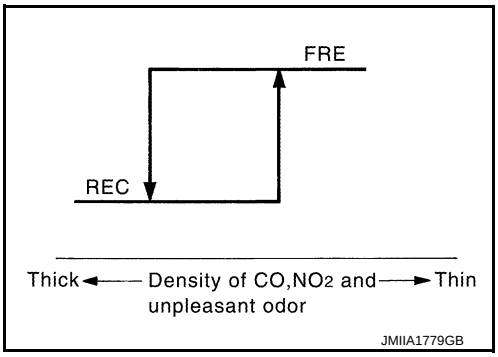
AUTOMATIC INTAKE CONTROL (EXHAUST GAS/OUTSIDE ODOR DETECTING MECHANISM)

Description

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

Operation Description

- When AUTO intake switch is pressed while front blower motor is activated, AUTO intake indicator and REC indicator turn ON. Air inlet is fixed to recirculation for approximately 5 minutes, and then is switched to automatic intake control (exhaust gas/outside odor detecting mechanism).
- Air inlet switches to recirculation when ambient atmospheric CO, NO_2 and unpleasant odor is detected while automatic intake control (exhaust gas/outside odor detecting mechanism) is operated. After that, air inlet switches to fresh air intake when exhaust gas and unpleasant outside odor becomes not detectable.
- When the AUTO intake switch is turned ON, ambient atmosphere status is indicated on the display in the front A/C control according to the signal from the exhaust gas/outside odor detecting sensor. Refer to HAC-44, "ACCS (ADVANCED CLIMATE CONTROL SYSTEM) : Switch Name and Function".



NOTE:

- Sensitivity of exhaust gas/outside odor detecting sensor can be changed. Refer to HAC-85, "Exhaust Gas/Outside Odor Detecting Sensor Sensitivity Adjustment Function".
- Automatic intake control (exhaust gas/outside odor detecting mechanism) does not operate when air outlet is D/F, DEF mode or ambient temperature is 0°C (32°F) or less. In this case, control is only for control of automatic air inlet of automatic air conditioning system.

PLASMACLUSTER™ ION

Description

Plasmacluster™ ion restrains microbes, reduces odor on interior surface, and maintains passenger's skin moisture* by including high density Plasmacluster™ ion in front air conditioning outlet air flow.
*: Effect depends on individual difference and operating conditions. Tasted by Soiken CO., Ltd. Ion density is 25,000 pcs/cm^3. Skin moisture is measured at the temple of person being tested.

NOTE:

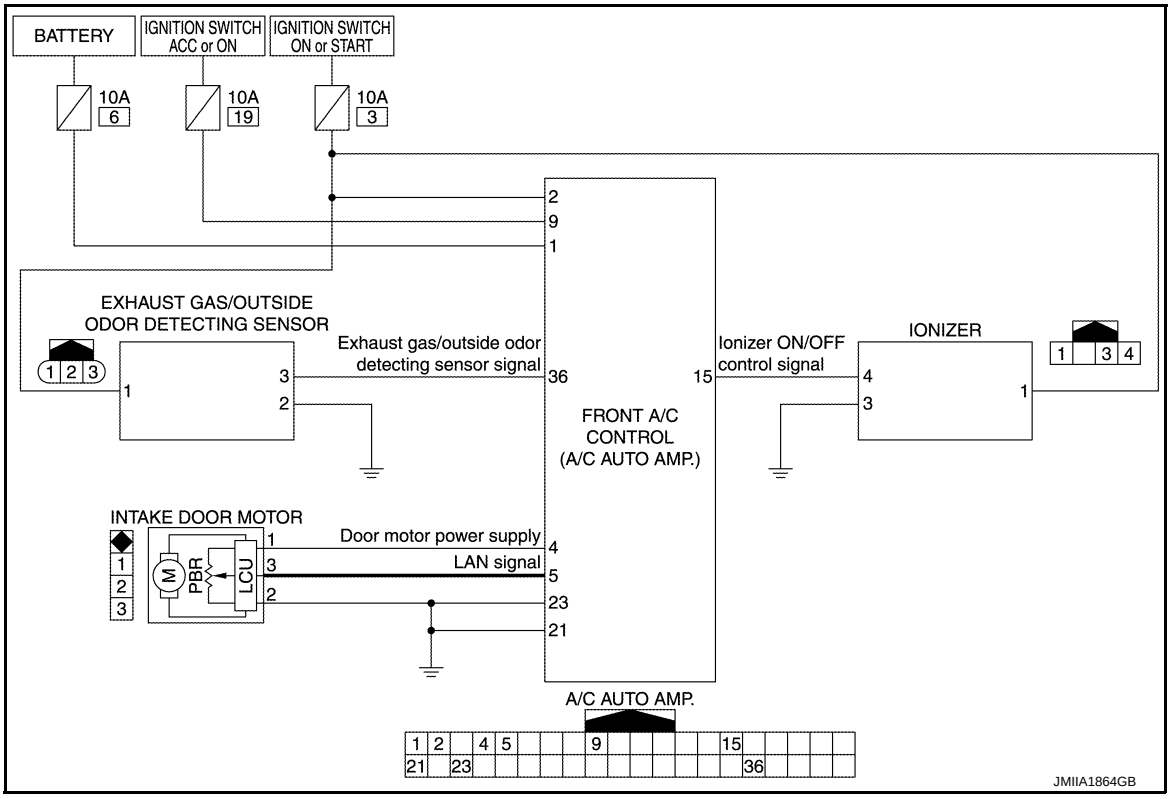
- Plasmacluster™ ion technology developed by Sharp Corporation is installed in this item.
- Plasmacluster™ is a trademark of Sharp Corporation.

Operation Description

- Plasmacluster™ ion operates by interlocking to front blower motor. Plasmacluster™ ion operates when front blower motor operates.
- Control status is displayed on front A/C control display screen. Refer to HAC-39, "REAR AUTOMATIC AIR CONDITIONING SYSTEM : Switch Name and Function".

ACCS (ADVANCED CLIMATE CONTROL SYSTEM) : Circuit Diagram

INFOID:0000000009652525



OPERATION

FRONT AUTOMATIC AIR CONDITIONING SYSTEM

FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Switch Name and Function

INFOID:0000000009652526

OPERATION AND DISPLAY OF FRONT AUTOMATIC AIR CONDITIONING SYSTEM [WITH ACCS (ADVANCED CLIMATE CONTROL SYSTEM)]

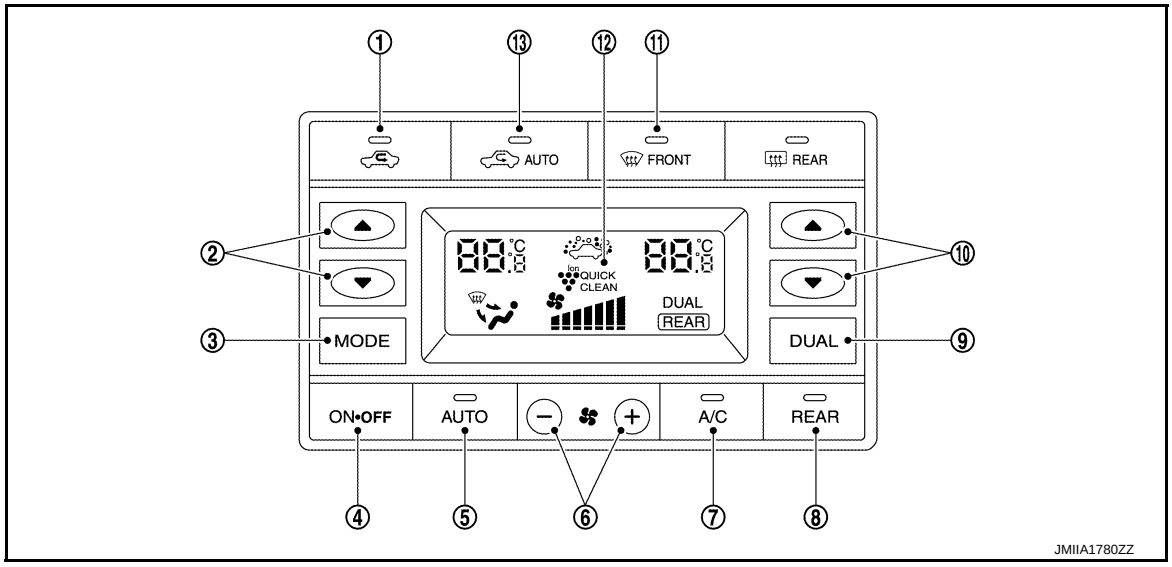
Display: Display in front A/C control

- Front air conditioning operation status is indicated on display in front A/C control.
- Front air conditioning status display screen is indicated when MODE switch is pressed while front air conditioning is OFF.

NOTE:

“REAR” is indicated on display while rear air conditioning operation screen is indicated.

Operation: Front A/C control



1. Intake switch
2. Temperature control switch (driver side)
3. MODE switch
4. ON·OFF switch
5. AUTO switch
6. Fan switch
7. A/C switch
8. REAR switch
9. DUAL switch
10. Temperature control switch (passenger side)
11. DEF switch
12. Display
13. AUTO intake switch

Switch name	Function
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 **NOTE:** • Air inlet can be changed when front air conditioning is in OFF status. • Air inlet cannot be changed when air outlet is D/F or DEF. • A/C switch turns ON when air inlet is changed to recirculation while A/C switch is OFF.
Temperature control switch (driver side)	Setting temperature can be set according to switch operation within a range between 18°C (60°F) – 32°C (90°F) at a rate of 0.5°C (1°F) per adjustment. • Press ▲: Setting temperature increases • Press ▼: Setting temperature decreases **NOTE:** When front air conditioning is OFF, setting temperature can be set only while front air conditioning status screen (only when MODE switch is pressed) is indicated.
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 front 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.
ON·OFF switch	Front air conditioning turns ON ⇔ OFF each time this switch is pressed. • When this switch is pressed while front air conditioning is ON - Front 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 front air conditioning is OFF - Front air conditioning turns ON and operates according to the settings set before front air conditioning is turned OFF, when this switch is pressed.
AUTO switch	• AUTO switch indicator turns ON and front air conditioning becomes the following status, when this switch is pressed while front air conditioning is ON. - Air outlet: Automatic control - Air flow: Automatic control - Air inlet: Automatic control - A/C switch: ON • Front air conditioning turns ON and operates according to the following status, when this switch is pressed while front 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.
Fan switch	• Air flow can be set within a range between 1st – 7th speed according to switch operation. - Press +: Air flow increases - Press –: Air flow decreases • Front air conditioning turns ON and operates according to the following status, when this switch is pressed while front air conditioning is OFF. - Air outlet: Automatic control - Air flow: Automatic control - Air inlet: Settings set before fan switch is pressed - A/C switch: Settings set before front air conditioning is turned OFF **NOTE:** Automatic air flow control is cancelled (AUTO switch indicator turns OFF), when fan switch is pressed while AUTO switch indicator is ON.

Switch name	Function
A/C switch	Compressor control (switch indicator) changes between ON ⇔ OFF each time this switch is pressed while front blower motor is operated. **NOTE:** • A/C switch cannot be turned ON when front 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.
DUAL switch	Left and right ventilation temperature separately control (“DUAL” on front A/C control display) changes between ON ⇔ OFF each time this switch is pressed while front 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 switch (passenger side)	• Left and right ventilation temperature separately control (“DUAL” on front A/C control display) turns ON according to switch operation. Air flow temperature of passenger side can be changed without changing air flow temperature of driver side. • Setting temperature can be set according to switch operation within a range between 18°C (60°F) – 32°C (90°F) at a rate of 0.5°C (1°F) per adjustment. - Press ▲: Setting temperature increases - Press ▼: Setting temperature decreases **NOTE:** • When front air conditioning is OFF, setting temperature can be set only while front air conditioning status screen (only when MODE switch is pressed) is indicated. • Temperature control switch (passenger side) operation is not accepted when DEF mode is ON.
DEF switch	DEF mode (switch indicator) changes between ON ⇔ OFF each time switch is pressed. • When this switch is pressed while front air conditioning is ON - Front 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 - Front 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 front air conditioning is OFF - Front 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 - Front 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.

NOTE:
The following switches are not necessary for front air conditioning system operation.

REAR switch	Refer to HAC-39, "REAR AUTOMATIC AIR CONDITIONING SYSTEM : Switch Name and Function".
AUTO intake switch	Refer to HAC-44, "ACCS (ADVANCED CLIMATE CONTROL SYSTEM) : Switch Name and Function".

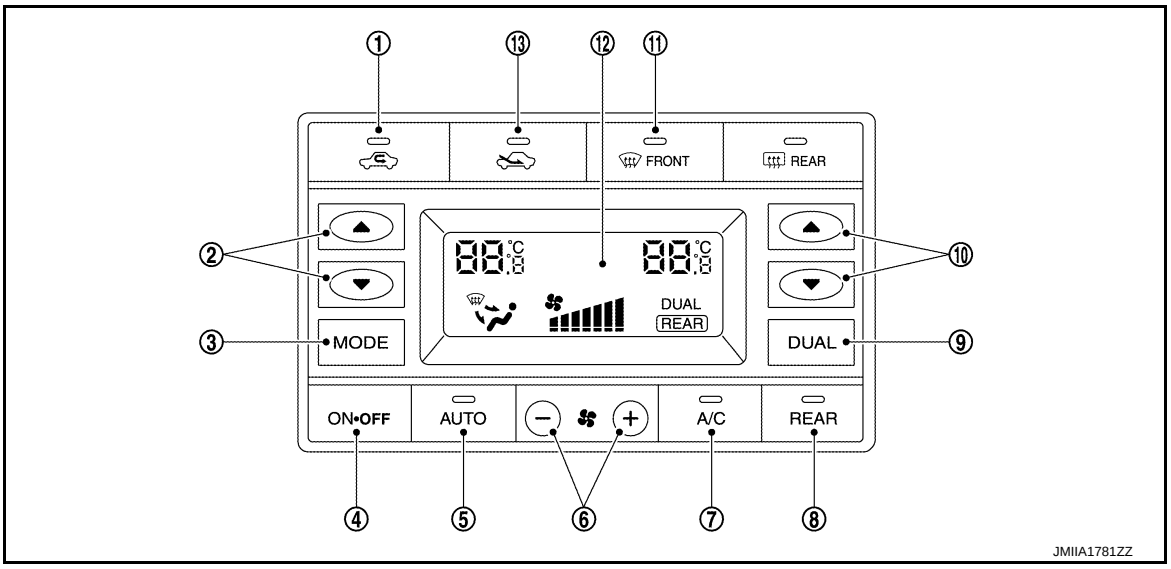
OPERATION AND DISPLAY OF FRONT AUTOMATIC AIR CONDITIONING SYSTEM [WITHOUT ACCS (ADVANCED CLIMATE CONTROL SYSTEM)]

Display: Display in front A/C control

- Front air conditioning operation status is indicated on display in front A/C control.
- Front air conditioning status display screen is indicated when MODE switch is pressed while front air conditioning is OFF.

NOTE:
"REAR" is indicated on display while rear air conditioning operation screen is indicated.

Operation: Front A/C control



1. REC switch
2. Temperature control switch (driver side)
3. MODE switch
4. ON·OFF switch
5. AUTO switch
6. Fan switch
7. A/C switch
8. REAR switch
9. DUAL switch
10. Temperature control switch (passenger side)
11. DEF switch
12. Display
13. FRE switch

Switch name	Function
REC switch	Switch indicator turns ON and air inlet is set to recirculation (REC), when this switch is pressed. **NOTE:** • Air inlet can be changed when front 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.
Temperature control switch (driver side)	Setting temperature can be set according to switch operation within a range between 18°C (60°F) – 32°C (90°F) at a rate of 0.5°C (1°F) per adjustment. • Press ▲: Setting temperature increases • Press ▼: Setting temperature decreases **NOTE:** When front air conditioning is OFF, setting temperature can be set only while front air conditioning status screen (only when MODE switch is pressed) is indicated.
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 front 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.

Switch name	Function
ON·OFF switch	Front air conditioning turns ON ⇔ OFF each time this switch is pressed. • When this switch is pressed while front air conditioning is ON - Front 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 front air conditioning is OFF - Front air conditioning turns ON and operates according to the settings set before front air conditioning is turned OFF, when this switch is pressed.
AUTO switch	• AUTO switch indicator turns ON and front air conditioning becomes the following status, when this switch is pressed while front air conditioning is ON. - Air outlet: Automatic control - Air flow: Automatic control - Air inlet: Automatic control - A/C switch: ON • Front air conditioning turns ON and operates according to the following status, when this switch is pressed while front 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.
Fan switch	• Air flow can be set within a range between 1st – 7th speed according to switch operation. - Press +: Air flow increases - Press –: Air flow decreases • Front air conditioning turns ON and operates according to the following status, when this switch is pressed while front air conditioning is OFF. - Air outlet: Automatic control - Air flow: Automatic control - Air inlet: Settings set before fan switch is pressed - A/C switch: Settings set before front air conditioning is turned OFF **NOTE:** Automatic air flow control is cancelled (AUTO switch indicator turns OFF), when fan switch is pressed while AUTO switch indicator is ON.
A/C switch	Compressor control (switch indicator) changes between ON ⇔ OFF each time this switch is pressed while front blower motor is operated. **NOTE:** • A/C switch cannot be turned ON when front 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.
DUAL switch	Left and right ventilation temperature separately control (“DUAL” on front A/C control display) changes between ON ⇔ OFF each time this switch is pressed while front 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 switch (passenger side)	• Left and right ventilation temperature separately control (“DUAL” on front A/C control display) turns ON according to switch operation. Air flow temperature of passenger side can be changed without changing air flow temperature of driver side. • Setting temperature can be set according to switch operation within a range between 18°C (60°F) – 32°C (90°F) at a rate of 0.5°C (1°F) per adjustment. - Press ▲: Setting temperature increases - Press ▼: Setting temperature decreases **NOTE:** • When front air conditioning is OFF, setting temperature can be set only while front air conditioning status screen (only when MODE switch is pressed) is indicated. • Temperature control switch (passenger side) operation is not accepted when DEF mode is ON.

Switch name	Function
DEF switch	DEF mode (switch indicator) changes between ON ⇔ OFF each time switch is pressed. • When this switch is pressed while front air conditioning is ON - Front 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 - Front 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 front air conditioning is OFF - Front 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 - Front 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.
FRE switch	Switch indicator turns ON and air inlet is set to fresh air intake (FRE), when this switch is pressed. **NOTE:** Air inlet can be changed when front air conditioning is in OFF status.

NOTE:
The following switches are not necessary for front air conditioning system operation.

REAR switch	Refer to HAC-39, "REAR AUTOMATIC AIR CONDITIONING SYSTEM : Switch Name and Function".

REAR AUTOMATIC AIR CONDITIONING SYSTEM

REAR AUTOMATIC AIR CONDITIONING SYSTEM : Switch Name and Function

INFOID:0000000009652527

OPERATION AND DISPLAY OF REAR AUTOMATIC AIR CONDITIONING SYSTEM

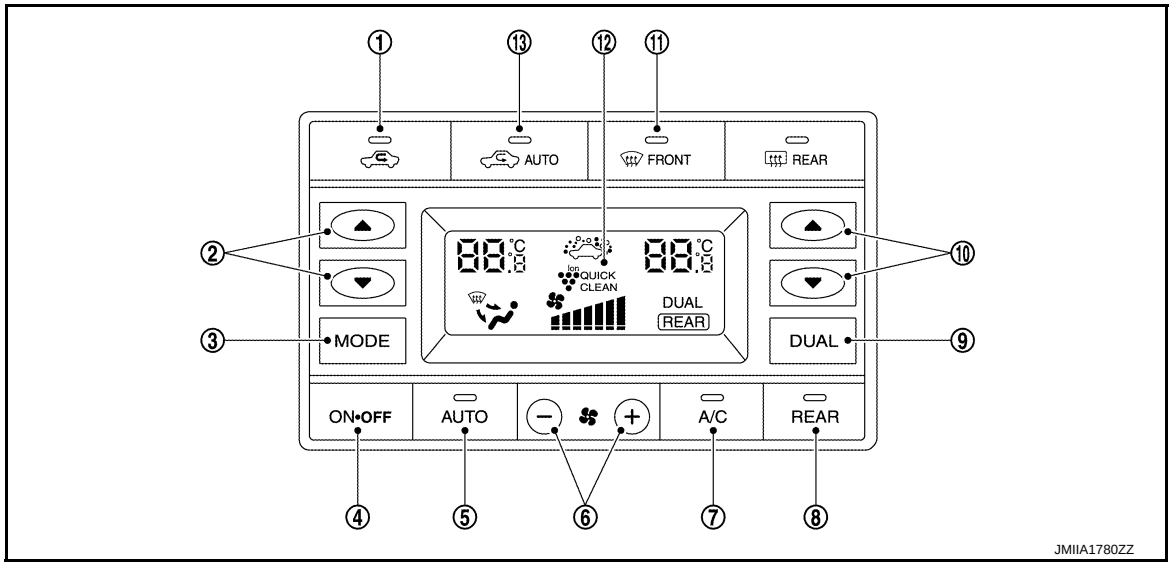
- Rear air conditioning operation status is indicated on display in front A/C control and rear A/C control.
- Rear air conditioning can be operated from front seat (front A/C control) and rear seat (rear A/C control).
  NOTE:
  Rear air conditioning is operative only when front air conditioning is ON.

FRONT A/C CONTROL OPERATION [WITH ACCS (ADVANCED CLIMATE CONTROL SYSTEM)]

Display: Display in front A/C control

- Rear air conditioning operation status is indicated on display in front A/C control.
- Front A/C control changes to rear air conditioning operation screen when REAR switch is pressed while front air conditioning is ON. “REAR” is indicated on display in front A/C control display. The status continues for 10 seconds, and during this period of time, rear air conditioning setting can be set using front A/C control.
- When 10 seconds are passed, front A/C control returns to front air conditioning operation screen and “REAR” on front A/C control display turns OFF. In this case, rear air conditioning setting can be set using rear A/C control.

Operation: Front A/C control



1. Intake switch
2. Temperature control switch (driver side)
3. MODE switch
4. ON·OFF switch
5. AUTO switch
6. Fan switch
7. A/C switch
8. REAR switch
9. DUAL switch
10. Temperature control switch (passenger side)
11. DEF switch
12. Display
13. AUTO intake switch

Switch name	Function
Temperature control switch (driver side)	Setting temperature can be set according to switch operation within a range between 18°C (60°F) – 32°C (90°F) at a rate of 0.5°C (1°F) per adjustment. • Press ▲: Setting temperature increases • Press ▼: Setting temperature decreases
MODE switch	Air outlet changes from VENT⇒ B/L ⇒ FOOT ⇒ VENT each time this switch is pressed. **NOTE:** Automatic air outlet control is cancelled (AUTO switch indicator turns OFF), when MODE switch is pressed while AUTO switch indicator is ON.
ON·OFF switch	• Front air conditioning operation screen (“REAR” is not indicated) - Rear air conditioning turns OFF simultaneously with front air conditioning, and becomes the following status, when this switch is pressed while rear air conditioning is ON. • Air outlet: FOOT • Air flow: OFF - Rear air conditioning turns ON simultaneously with front air conditioning, and operates according to the previous setting before rear air conditioning is turned OFF, when this switch is pressed again. • Rear air conditioning operation screen (“REAR” is indicated) - Rear air conditioning turns OFF and becomes the following status, when this switch is pressed while rear air conditioning is ON. • Air outlet: FOOT • Air flow: OFF - Rear air conditioning operates according to the previous setting before rear air conditioning is turned OFF, when this switch is pressed again.
AUTO switch	Rear air conditioning turns ON simultaneously with compressor control (A/C switch indicator turns ON) and operates according to the following status, when this switch is pressed while rear air conditioning operation screen (REAR is indicated) is displayed. (AUTO switch indicator turns ON/ REAR switch indicator turns ON) • Air outlet: Automatic control • Air flow: Automatic control **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.

Switch name	Function
Fan switch	Air flow can be set within a range between 1st – 7th speed according to switch operation. • Press +: Air flow increases • Press –: Air flow decreases **NOTE:** Automatic air flow control is cancelled (AUTO switch indicator turns OFF), when fan switch is pressed while AUTO switch indicator is ON.
A/C switch	When this switch is pressed, rear air conditioning becomes the following status according to the setting status of air outlet. • Rear air conditioning turns OFF simultaneously with compressor control (A/C switch indicator) and becomes the following status, when this switch is pressed while the setting of air outlet is other than FOOT (automatic control/manual control). - Air outlet: FOOT - Air flow: OFF • Compressor control (A/C switch indicator) turns OFF but rear air conditioning remains ON and becomes the following status, when this switch is pressed while the setting of air outlet is FOOT (automatic control/manual control). - Air outlet: FOOT [Automatic air outlet control is cancelled (AUTO switch indicator turns OFF) when this switch is pressed while automatic control is ON] - Air flow: Previous status before switch is pressed.
REAR switch	• Front A/C control changes between front air conditioning operation screen (“REAR” is not indicated) ⇔ rear air conditioning operation screen (“REAR” is indicated), each time this switch is pressed while rear air conditioning is ON. • Rear air conditioning turns ON simultaneously with compressor control (A/C switch indicator) and operates according to the previous setting before rear air conditioning is turned OFF, when this switch is pressed while rear air conditioning is OFF. **NOTE:** Switch operation is not accepted when front air conditioning is OFF.
DEF switch	• Rear air conditioning turns ON simultaneously with front air conditioning and operates according to the settings set before rear air conditioning is turned OFF, when this switch is pressed after rear air conditioning is turns OFF simultaneously with front air conditioning by ON·OFF switch in previous operation. • Rear air conditioning becomes the following status, when this switch is pressed again. - Air outlet: FOOT - Air flow: OFF

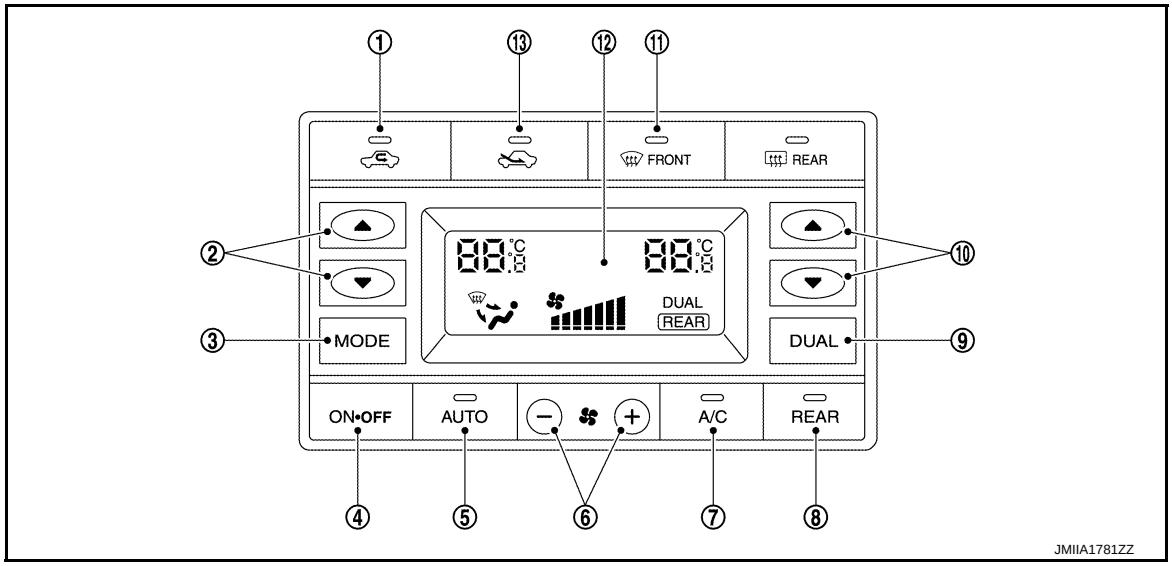
NOTE:
The following switches are not necessary for rear air conditioning system operation.

Intake switch	Refer to HAC-34, "FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Switch Name and Function".
Temperature control switch (passenger side)	
DUAL switch	
AUTO intake switch	Refer to HAC-44, "ACCS (ADVANCED CLIMATE CONTROL SYSTEM) : Switch Name and Function".

FRONT A/C CONTROL OPERATION [WITHOUT ACCS (ADVANCED CLIMATE CONTROL SYSTEM)]

Display: Display in front A/C control
- Rear air conditioning operation status is indicated on display in front A/C control.
- Front A/C control changes to rear air conditioning operation screen when REAR switch is pressed while front air conditioning is ON. “REAR” is indicated on display in front A/C control display. The status continues for 10 seconds, and during this period of time, rear air conditioning setting can be set using front A/C control.
- When 10 seconds are passed, front A/C control returns to front air conditioning operation screen and “REAR” on front A/C control display turns OFF. In this case, rear air conditioning setting can be set using rear A/C control.

Operation: Front A/C control



1. REC switch
2. Temperature control switch (driver side)
3. MODE switch
4. ON·OFF switch
5. AUTO switch
6. Fan switch
7. A/C switch
8. REAR switch
9. DUAL switch
10. Temperature control switch (passenger side)
11. DEF switch
12. Display
13. FRE switch

Switch name	Function
Temperature control switch (driver side)	Setting temperature can be set according to switch operation within a range between 18°C (60°F) – 32°C (90°F) at a rate of 0.5°C (1°F) per adjustment. • Press ▲: Setting temperature increases • Press ▼: Setting temperature decreases
MODE switch	Air outlet changes from VENT⇒ B/L ⇒ FOOT ⇒ VENT each time this switch is pressed. **NOTE:** Automatic air outlet control is cancelled (AUTO switch indicator turns OFF), when MODE switch is pressed while AUTO switch indicator is ON.
ON·OFF switch	• Front air conditioning operation screen (“REAR” is not indicated) - Rear air conditioning turns OFF simultaneously with front air conditioning, and becomes the following status, when this switch is pressed while rear air conditioning is ON. • Air outlet: FOOT • Air flow: OFF - Rear air conditioning turns ON simultaneously with front air conditioning, and operates according to the previous setting before rear air conditioning is turned OFF, when this switch is pressed again. • Rear air conditioning operation screen (“REAR” is indicated) - Rear air conditioning turns OFF and becomes the following status, when this switch is pressed while rear air conditioning is ON. • Air outlet: FOOT • Air flow: OFF - Rear air conditioning operates according to the previous setting before rear air conditioning is turned OFF, when this switch is pressed again.
AUTO switch	Rear air conditioning turns ON simultaneously with compressor control (A/C switch indicator turns ON) and operates according to the following status, when this switch is pressed while rear air conditioning operation screen (REAR is indicated) is displayed. (AUTO switch indicator turns ON/ REAR switch indicator turns ON) • Air outlet: Automatic control • Air flow: Automatic control **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.

Switch name	Function
Fan switch	Air flow can be set within a range between 1st – 7th speed according to switch operation. • Press +: Air flow increases • Press –: Air flow decreases **NOTE:** Automatic air flow control is cancelled (AUTO switch indicator turns OFF), when fan switch is pressed while AUTO switch indicator is ON.
A/C switch	When this switch is pressed, rear air conditioning becomes the following status according to the setting status of air outlet. • Rear air conditioning turns OFF simultaneously with compressor control (A/C switch indicator) and becomes the following status, when this switch is pressed while the setting of air outlet is other than FOOT (automatic control/manual control). - Air outlet: FOOT - Air flow: OFF • Compressor control (A/C switch indicator) turns OFF but rear air conditioning remains ON and becomes the following status, when this switch is pressed while the setting of air outlet is FOOT (automatic control/manual control). - Air outlet: FOOT [Automatic air outlet control is cancelled (AUTO switch indicator turns OFF) when this switch is pressed while automatic control is ON] - Air flow: Previous status before switch is pressed.
REAR switch	Front A/C control changes between front air conditioning operation screen (“REAR” is not indicated) ⇔ rear air conditioning operation screen (“REAR” is indicated), each time this switch is pressed. **NOTE:** Switch operation is not accepted when front air conditioning is OFF.
DEF switch	• Rear air conditioning turns ON simultaneously with front air conditioning and operates according to the settings set before rear air conditioning is turned OFF, when this switch is pressed after rear air conditioning is turns OFF simultaneously with front air conditioning by ON·OFF switch in previous operation. • Rear air conditioning becomes the following status, when this switch is pressed again. - Air outlet: FOOT - Air flow: OFF

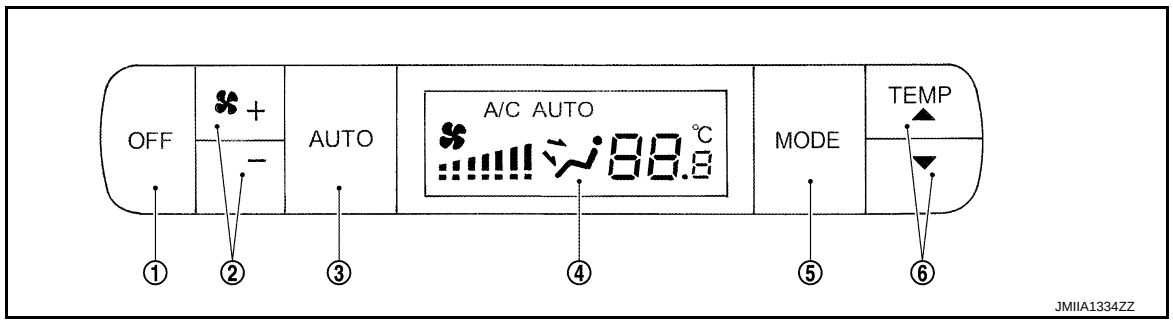
NOTE:
The following switches are not necessary for rear air conditioning system operation.

REC switch	Refer to HAC-34, "FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Switch Name and Function".
Temperature control switch (passenger side)	
DUAL switch	
FRE intake switch	

REAR A/C CONTROL OPERATION

Display: Display in rear A/C control
Rear air conditioning operation status is indicated on display in rear A/C control.

Operation: Rear A/C control
Rear air conditioning becomes the following setting can be operated by rear A/C control in the following status.
- When front air conditioning is ON
- When front A/C control displays front air conditioning operation screen (“REAR” is not indicated)



1. OFF switch
2. Fan switch
3. AUTO switch
4. Display
5. MODE switch
6. Temperature control switch

Switch name	Function
OFF switch	Rear air conditioning turns OFF and becomes the following status, when this switch is pressed while rear air conditioning is ON. • Air outlet: FOOT • Air flow: OFF
Fan switch	Air flow can be set within a range between 1st – 7th speed according to switch operation. • Press +: Air flow increases • Press –: Air flow decreases **NOTE:** Automatic air flow control is cancelled (“AUTO” turns OFF), when fan switch is pressed while “AUTO” is indicated on display.
AUTO switch	Rear air conditioning turns ON simultaneously with compressor control (“A/C” is indicated) and operates according to the following status, when this switch is pressed. (“AUTO” is indicated) • Air outlet: Automatic control • Air flow: Automatic control **NOTE:** When air outlet or air flow is manually operated while “AUTO” is indicated on display, AUTO indication turns OFF. However, automatic control continues for other functions than air outlet or air flow.
MODE switch	Air outlet changes from VENT⇒ B/L ⇒ FOOT ⇒ VENT each time this switch is pressed. **NOTE:** Automatic air outlet control is cancelled (“AUTO” turns OFF), when MODE switch is pressed while “AUTO” is indicated on display.
Temperature control switch	Setting temperature can be set according to switch operation within a range between 18°C (60°F) – 32°C (90°F) at a rate of 0.5°C (1°F) per adjustment. • Press ▲: Setting temperature increases • Press ▼: Setting temperature decreases

ACCS (ADVANCED CLIMATE CONTROL SYSTEM)

ACCS (ADVANCED CLIMATE CONTROL SYSTEM) : Switch Name and Function

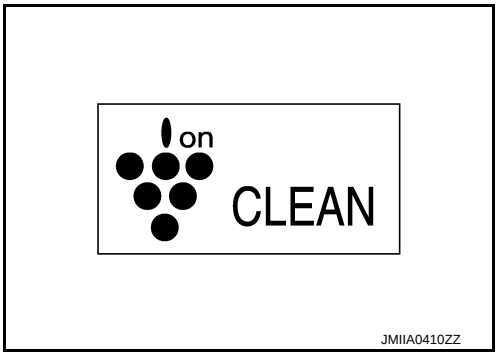
INFOID:0000000009652528

OPERATION AND DISPLAY OF ACCS (ADVANCED CLIMATE CONTROL SYSTEM)

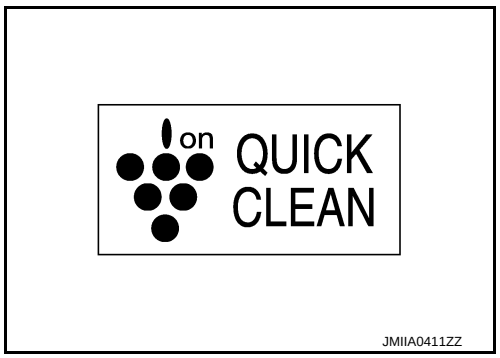
Display: Display in front A/C control

Plasmacluster™ ion
- Plasmacluster™ ion control state is indicated on display in front A/C control.
- Plasmacluster™ ion control state is switched as shown in the figure depending on air flow.

- When air flow is small



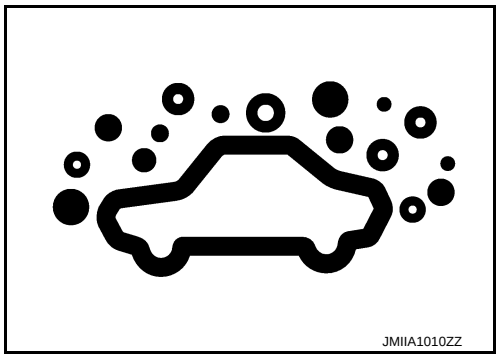
- When air flow is large



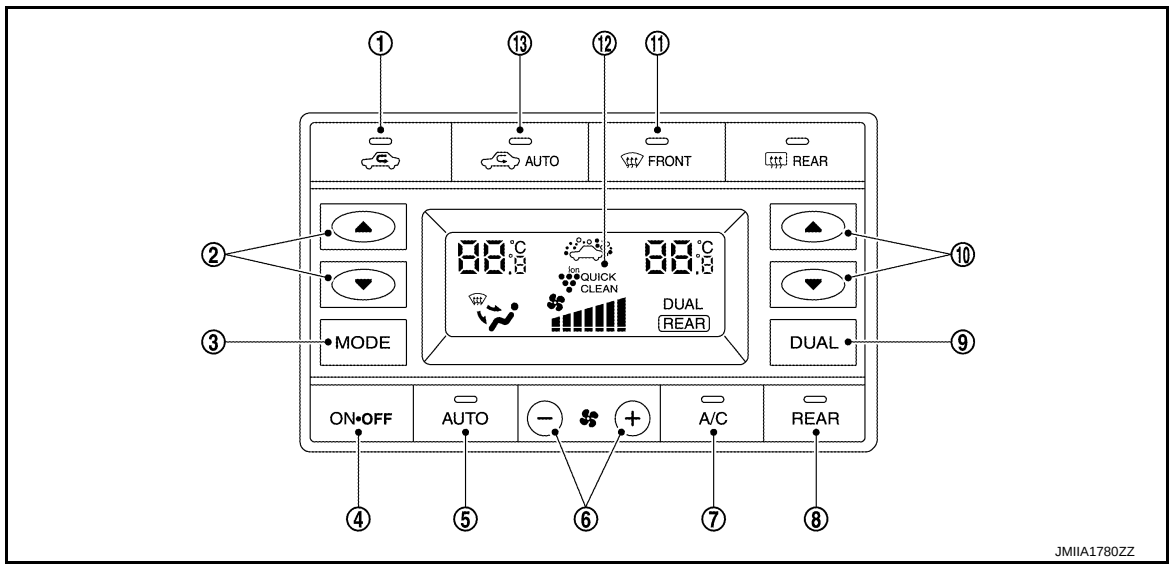
Automatic intake control (exhaust gas/outside odor detecting mechanism)

- When the AUTO intake switch is turned ON, ambient atmosphere status is indicated on the display in the front A/C control, while the exhaust gas/outside odor detecting sensor detects exhaust gas or unpleasant odor.

  NOTE:
  - After the ignition switch is turned ON, warm up the exhaust gas/outside odor detecting sensor for approximately 40 seconds.
  - When the AUTO intake switch is turned ON, the ambient atmosphere status is displayed continuously until sensor warm up is completed.



Operation: Front A/C control



1. Intake switch
2. Temperature control switch (driver side)
3. MODE switch
4. ON·OFF switch
5. AUTO switch
6. Fan switch
7. A/C switch
8. REAR switch
9. DUAL switch
10. Temperature control switch (passenger side)
11. DEF switch
12. Display
13. AUTO intake switch

Switch name	Function
AUTO intake switch	• Automatic intake control (exhaust gas/outside odor detecting mechanism) (switch indicator) changes between ON ⇔ OFF each time when AUTO intake switch is pressed while front blower motor is activated. • Front air conditioning becomes the following status when AUTO intake switch is turned ON. - Air inlet: Recirculation [After approximately 5 minutes, air inlet is switched to automatic intake control (exhaust gas/outside odor detecting mechanism).] - A/C switch: ON • Front air conditioning becomes the following status when AUTO intake switch is turned OFF. - Air inlet: Fresh air intake - A/C switch: Stays ON **NOTE:** • Interlocking condition of A/C switch can be changed. Refer to HAC-85, "AUTO Intake Switch Interlocking Movement Change Function". • AUTO intake switch operation is not accepted when the following status. - Air outlet: D/F or DEF - Ambient temperature: 0°C (32°F) or less

NOTE:
The following switches are not necessary for ACCS (Advanced Climate Control System) operation.

Intake switch	Refer to HAC-34, "FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Switch Name and Function".
Temperature control switch (driver side)	
MODE switch	
ON·OFF switch	
AUTO switch	
Fan switch	
A/C switch	
DUAL switch	
Temperature control switch (passenger side)	
DEF switch	
REAR switch	Refer to HAC-39, "REAR AUTOMATIC AIR CONDITIONING SYSTEM : Switch Name and Function".

DIAGNOSIS SYSTEM (A/C AUTO AMP.)

Description

INFOID:0000000009652529

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.	On board diagnosis function	
BCM	BCM-AIR CONDITIONER	Self Diagnostic Result
		Data Monitor
ECM	ENGINE	Self Diagnostic Result
		Data Monitor
IPDM E/R	IPDM E/R	Self Diagnostic Result
		Data Monitor
	Auto active test	

On Board Diagnosis Function

INFOID:0000000009652530

ON BOARD DIAGNOSIS ITEM

On board diagnosis function of A/C auto amp. consists of steps 1 to 8. Diagnosis for sensors, motors, and etc. can be performed by each step. System settings can be also changed by each step.

Diagnosis item	Diagnosis content	Diagnosis part
STEP 1: Indicator check	Switch indicator and display indication are checked.	• Front A/C control (A/C auto amp.) • Rear A/C control
STEP 2: Sensor / door motor diagnosis	The circuit diagnoses of each sensor and air mix door motor are performed. A/C auto amp. indicates the result on the display.	• Ambient sensor • Front in-vehicle sensor • Rear in-vehicle sensor • Intake sensor • Sunload sensor • Front air mix door motor (driver side) • Front air mix door motor (passenger side) • Rear air mix door motor • Exhaust gas/outside odor detecting sensor • Exhaust gas/outside odor detecting sensor harness
STEP 3: Door motor diagnosis	The circuit diagnoses of front mode door motor, rear mode door motor and intake door motor are performed. A/C auto amp. indicates the result on the display.	• Front mode door motor • Rear mode door motor • Intake door motor
STEP 4: Operation check	Operational check of each part is performed.	• Front mode door motor • Intake door motor • Front air mix door motor (driver side) • Front air mix door motor (passenger side) • Front blower motor • Compressor • Rear mode door motor • Rear air mix door motor • Rear blower motor • Ionizer • Plasmacluster™ ion operation status)
STEP 5-1: Each sensor recognition temperature check	Each sensor recognition temperature is indicated on the display.	• Ambient sensor • Front In-vehicle sensor • Intake sensor • Rear in-vehicle sensor

Diagnosis item	Diagnosis content	Diagnosis part
STEP 5-2: EEPROM system diagnosis	A/C auto amp. EEPROM memory function error detected.	A/C auto amp.
STEP 6-1: Temperature setting trimmer (front/rear)	Setting change of temperature setting trimmer (front/rear) can be performed.	—
STEP 6-2: Foot position setting trimmer	Setting change of foot position setting trimmer can be performed.	—
STEP 6-3: Inlet port memory function	Setting change of inlet port memory function can be performed.	—
STEP 7: Exhaust gas/outside odor detecting sensor sensitivity adjustment function*	Setting change of exhaust gas/outside odor detecting sensor sensitivity adjustment function can be performed.	—
STEP 8: AUTO intake switch interlocking movement change function*	Setting change of AUTO intake switch interlocking movement change function can be performed.	—

*: With ACCS (Advanced Climate Control System)

METHOD OF STARTING

Self-diagnosis Mode Entry

The self-diagnosis is started by pressing the ON·OFF switch for 5 seconds or more within 10 seconds after starting engine.

NOTE:

If battery voltage drops below 12 V during diagnosis STEP-3, door motor speed becomes slower and as a result, the system may generate an error even when operation is normal. Start engine before performing this diagnosis to avoid this.

Changes of Step up and Step down

- The changes of STEP 1 – 5 can be performed by pressing the temperature control switch (driver side) of front A/C control.
- The change of STEP 5 – 8 can be performed by pressing the fan switch of front A/C control during the condition of STEP 5.

Self-diagnosis Cancellation

By pressing AUTO switch of front A/C control or turning ignition switch OFF, the self-diagnosis is canceled.

STEP 1: INDICATOR CHECK

Description

Front A/C control (switch indicator and display) and rear A/C control (display) indication are checked.
Normal: All switch indicator and display indication are turned ON.
Malfunction: Malfunctioning part indicator is not turned ON.

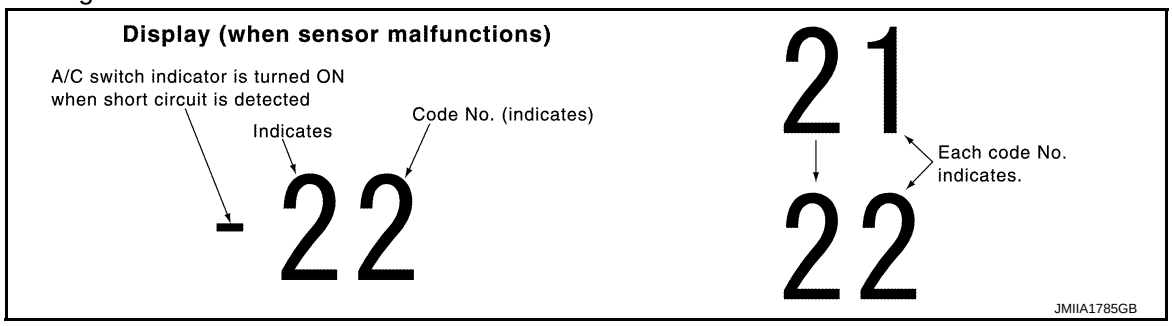
STEP 2: SENSOR / DOOR MOTOR DIAGNOSIS

Description

When STEP 2 is selected, “2” is indicated on the display, and then self-diagnosis result is indicated.
Normal: “20” is displayed.
Malfunction: Corresponding code number displayed. (When short-circuit error, A/C switch indicator turns ON)

NOTE:

Corresponding code Nos. indicates 1 second each if two or more sensors and door motors malfunction.



Self-diagnosis Result

Code No.	Corresponding sensor or door motor	Malfunctioning judgment condition		Reference
		Open	Short	
21 / 21	Ambient sensor	–44°C (–47°F) or less	100°C (212°F) or more	HAC-94, "Diagnosis Procedure"
22 / 22	Front in-vehicle sensor	–44°C (–47°F) or less	100°C (212°F) or more	HAC-96, "Diagnosis Procedure"
23 / 23	Rear in-vehicle sensor	–44°C (–47°F) or less	100°C (212°F) or more	HAC-102, "Diagnosis Procedure"
24 / 24	Intake sensor	–44°C (–47°F) or less	100°C (212°F) or more	HAC-98, "Diagnosis Procedure"
25 / 25	Sunload sensor*1	65 W/m^2 or less	2832 W/m^2 or more	HAC-100, "Diagnosis Procedure"
26 / 26	Front air mix door motor (driver side)*2	PBR angle 5% or less	PBR angle 95% or more	HAC-106, "Diagnosis Procedure"
27 / 27	Front air mix door motor (passenger side)*2	PBR angle 5% or less	PBR angle 95% or more	HAC-108, "Diagnosis Procedure"
28 / 28	Rear air mix door motor*2	PBR angle 5% or less	PBR angle 95% or more	HAC-114, "Diagnosis Procedure"
29 / 29	Exhaust gas/outside odor detecting sensor*3	Duty ratio 90% or more	Duty ratio 10% or less	HAC-114, "Diagnosis Procedure"

: A/C switch indicator

*1: Perform the self-diagnosis under sunshine. When performing indoors, aim a light (more than 60 W) at sunload sensor, otherwise code No. “25” indicates despite that sunload sensor is functioning normally.

*2: The following display pattern will appear if front air mix door motor (driver side) harness connector is disconnected:

“26” → “26” → Return to “26”.

*3: With ACCS (Advanced Climate Control System)

NOTE:

- When ambient sensor has the malfunction of open circuit, the sensor judges that ambient temperature is extremely cold, and controls the in vehicle temperature to warmly.
- Inspect door motor circuit, when all door motor system malfunction are detected. Refer to HAC-118, "Diagnosis Procedure".

STEP 3: DOOR MOTOR DIAGNOSIS

Description

“3” is indicated on the display, and then self-diagnosis result is indicated.

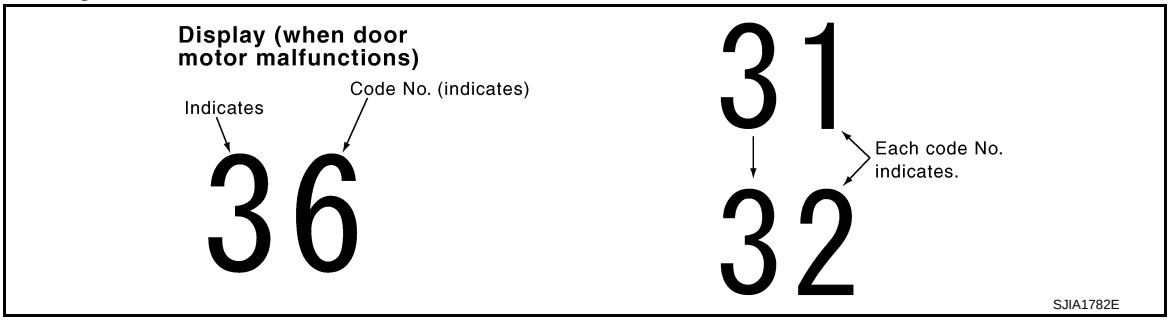
The check of door motor is performed by A/C auto amp. transmitting output signal to each door motor.

Normal: “30” is displayed.

Malfunction: Corresponding code number displayed.

NOTE:

Corresponding code Nos. indicates 1 seconds each if two or more mode or intake door motors malfunction.



Self-diagnosis Result

Code No.	Corresponding door motor	Malfunctioning judgment condition	Reference
31	Front mode door motor*1	When the malfunctioning door position is detected at VENT position	HAC-110, "Diagnosis Procedure"
32		When the malfunctioning door position is detected at B/L position	
33		When the malfunctioning door position is detected at FOOT position	
34		When the malfunctioning door position is detected at DEF position	
35	Rear mode door motor*2	When the malfunctioning door position is detected at VENT position	HAC-112, "Diagnosis Procedure"
36		When the malfunctioning door position is detected at FOOT position	
37	Intake door motor*3	When the malfunctioning door position is detected at FRE position	HAC-112, "Diagnosis Procedure"
38		When the malfunctioning door position is detected at 20% FRE position	
39		When the malfunctioning door position is detected at REC position	

*1: The following display pattern will appear if front mode door motor harness connector is disconnected:
"31" → "32" → "33" → "34" → Return to "31"
*2: The following display pattern will appear if rear mode door motor harness connector is disconnected:
"35" → "36" → Return to "35"
*3: The following display pattern will appear if intake door motor harness connector is disconnected:
"37" → "38" → "39" → Return to "37"

NOTE:
Inspect door motor circuit, when all door motor system malfunction are detected. Refer to HAC-118, "Diagnosis Procedure".

STEP 4: OPERATION CHECK

Description
When STEP 4 is selected, each part operation is started with indicating "41" on the display.
Each time DEF switch is pressed, the display will change to "41" → "42" → "43" → "44" → "45" → "46" → "41".

Operation Contents
Checks must be visually, by listening the sound or by touching air outlets with hand, etc. for improper operation.

Front air conditioning

Code No.	Front mode door position	Intake door position	Front air mix door (driver side/passenger side) position	Front blower motor control signal (duty ratio)	Magnet clutch	Ionizer*	Display (Plasmacluster™ ion operating state)*
41	VENT	REC	Full cold	35%	ON	ON	CLEAN
42	VENT	REC	Full cold	35%	ON	ON	CLEAN
43	B/L	20% FRE	Full cold	59%	ON	ON	QUICK CLEAN
44	FOOT	FRE	Full hot	89%	OFF	ON	QUICK CLEAN
45	D/F	FRE	Full hot	89%	OFF	ON	QUICK CLEAN
46	DEF	FRE	Full hot	35%	ON	OFF	OFF

*: With ACCS (Advanced Climate Control System)

Rear air conditioning

Code No.	Rear mode door position	Rear air mix door position	Rear blower motor control signal (duty ratio)
41	VENT	Full cold	35%
42	VENT	Full cold	35%
43	B/L	Full cold	59%
44	FOOT	Full hot	89%
45	FOOT	Full hot	89%
46	FOOT	Full hot	35%

STEP 5-1: EACH SENSOR RECOGNITION CHECK

Description

When STEP 5 is selected, “51” is indicated on the display.
Each time DEF switch is pressed, each sensor recognition temperature is changed in order of the following:
“51” → Ambient sensor recognition temperature → Front in-vehicle sensor recognition temperature → Intake sensor recognition temperature → Rear in-vehicle sensor recognition temperature → “51”.

NOTE:

- When each sensor recognition temperature is negative temperature, A/C switch indicator turns ON.
- Each sensor recognition temperature is not displayed in less than –30°C (–22°F) or more than 55°C (131°F).

STEP 5-2: EEPROM SYSTEM DIAGNOSIS

Description

When STEP 5 is selected, “51” is indicated on the display.
When REC switch is pressed, “52” is indicated on the display.
Each time DEF switch is pressed, display is changed in order of the following:
“52” → Self-diagnosis result → “51”.

Self-diagnosis Result

- Normal: “0” is displayed.
- A malfunction is detected now: “40” is displayed.
- A malfunction was detected in the past: “1” – “39” is displayed. The number increases like “1” → “2” → “3” ··· “39” after returning to the normal condition whenever IGN OFF → ON. It returns to “1” when a malfunction is detected again in the process.
- The number is fixed to “39” until the self-diagnosis result is erased if it is over “39”.

How to Erase Self-diagnosis

1. Display the self-diagnosis result.
2. Press A/C switch.

STEP 6-1: TEMPERATURE SETTING TRIMMER (FRONT/REAR)

Description

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

Setting Procedure

- Front air conditioning: Refer to HAC-82, "Temperature Setting Trimmer (Front)".
- Rear air conditioning: Refer to HAC-83, "Temperature Setting Trimmer (Rear)".

STEP 6-2: FOOT POSITION SETTING TRIMMER

Description

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

Setting Procedure

Refer to HAC-84, "Foot Position Setting Trimmer".

STEP 6-3: INLET PORT MEMORY FUNCTION

Description

- Inlet port setting can be memorized when ignition switch is turned OFF.

- Inlet port setting can be selected from FRE (fresh air intake), REC (recirculation), or “Do not perform the memory” when ignition switch is turned ON.

Setting Procedure
Refer to HAC-84, "Inlet Port Memory Function".

STEP 7: EXHAUST GAS/OUTSIDE ODOR DETECTING SENSOR SENSITIVITY ADJUSTMENT FUNCTION

Description

According to customer's sense of smell, exhaust gas/outside odor detecting sensor sensitivity can be changed.

Setting Procedure
Refer to HAC-85, "Exhaust Gas/Outside Odor Detecting Sensor Sensitivity Adjustment Function".

STEP 8: AUTO INTAKE SWITCH INTERLOCKING MOVEMENT FUNCTION

Description
Condition for interlocking movement of AUTO intake switch and A/C switch can be changed. In addition operation of the AUTO intake switch, which activates the automatic intake control (exhaust gas/outside odor detecting mechanism), can be set to become available when the A/C switch is ON.

Setting Procedure
Refer to HAC-85, "AUTO Intake Switch Interlocking Movement Change Function".

DIAGNOSIS SYSTEM (BCM)

COMMON ITEM

COMMON ITEM : CONSULT Function (BCM - COMMON ITEM)

INFOID:0000000009652531

APPLICATION ITEM

CONSULT performs the following functions via CAN communication with BCM.

Diagnosis mode	Function Description
Work Support	Changes the setting for each system function.
Self Diagnostic Result	Displays the diagnosis results judged by BCM.
CAN Diag Support Monitor	Monitors the reception status of CAN communication viewed from BCM.
Data Monitor	The BCM input/output signals are displayed.
Active Test	The signals used to activate each device are forcibly supplied from BCM.
Ecu Identification	The BCM part number is displayed.
Configuration	• Read and save the vehicle specification. • Write the vehicle specification when replacing BCM.

SYSTEM APPLICATION

BCM can perform the following functions for each system.

NOTE:

It can perform the diagnosis modes except the following for all sub system selection items.

×: Applicable item

System	Sub system selection item	Diagnosis mode		
		Work Support	Data Monitor	Active Test
Door lock	DOOR LOCK	×	×	×
Rear window defogger	REAR DEFOGGER		×	×
Warning chime	BUZZER		×	×
Interior room lamp control system	INT LAMP	×	×	×
Exterior lamp	HEAD LAMP	×	×	×
Wiper and washer	WIPER	×	×	×
Turn signal and hazard warning lamps	FLASHER	×	×	×
Air conditioning control system	AIR CONDITONER		×	×*
• Intelligent Key system • Engine start system	INTELLIGENT KEY	×	×	×
Combination switch	COMB SW		×	
Body control system	BCM	×		
NVIS	IMMU	×	×	×
Interior room lamp battery saver	BATTERY SAVER	×	×	×
Back door open	TRUNK		×	
Vehicle security system	THEFT ALM	×	×	×
RAP system	RETAINED PWR		×	
Signal buffer system	SIGNAL BUFFER		×	×
TPMS	AIR PRESSURE MONITOR	×	×	×

NOTE:

*: For models with automatic air conditioning control system, this diagnosis mode is not used.

FREEZE FRAME DATA (FFD)

The BCM records the following vehicle condition at the time a particular DTC is detected, and displays on CONSULT.

CONSULT screen item	Indication/Unit	Description	
Vehicle Speed	km/h	Vehicle speed of the moment a particular DTC is detected	
Odo/Trip Meter	km	Total mileage (Odometer value) of the moment a particular DTC is detected	
Vehicle Condition	SLEEP>LOCK	Power position status of the moment a particular DTC is detected*	While turning BCM status from low power consumption mode to normal mode [Power supply position is OFF (LOCK)]
	SLEEP>OFF		While turning BCM status from low power consumption mode to normal mode [Power supply position is OFF (OFF)]
	LOCK>ACC		While turning power supply position from OFF (LOCK) to ACC
	ACC>ON		While turning power supply position from ACC to ON
	RUN>ACC		While turning power supply position from RUN to ACC (Except emergency stop operation)
	CRANK>RUN		While turning power supply position from CRANK to RUN
	RUN>URGENT		While turning power supply position from RUN to ACC (Emergency stop operation)
	ACC>OFF		While turning power supply position from ACC to OFF (OFF)
	OFF>LOCK		While turning power supply position from OFF (OFF) to OFF (LOCK)
	OFF>ACC		While turning power supply position from OFF (OFF) to ACC
	ON>CRANK		While turning power supply position from ON to CRANK
	OFF>SLEEP		While turning BCM status from normal mode [Power supply position is OFF (OFF)] to low power consumption mode
	LOCK>SLEEP		While turning BCM status from normal mode [Power supply position is OFF (LOCK)] to low power consumption mode
	LOCK		Power supply position is OFF (LOCK)
	OFF		Power supply position is OFF (OFF)
	ACC		Power supply position is ACC
	ON		Power supply position is ON
	ENGINE RUN		Power supply position is RUN
	CRANKING		Power supply position is CRANK
IGN Counter	0 - 39	The number of times that ignition switch is turned ON after DTC is detected • The number is 0 when a malfunction is detected now. • The number increases like 1 → 2 → 3...38 → 39 after returning to the normal condition whenever ignition switch OFF → ON. • The number is fixed to 39 until the self-diagnosis results are erased if it is over 39.	

NOTE:

*: Refer to the following for details of the power supply position.

- OFF (OFF, LOCK): Ignition switch OFF
- ACC: Ignition switch ACC
- IGN: Ignition switch ON with engine stopped
- RUN: Ignition switch ON with engine running
- CRANK: At engine cranking

Power supply position shifts to “OFF (LOCK)” from “OFF (OFF)”, when ignition switch is in the OFF position, shift position is in the P position, and any of the following conditions are met.

- Closing door
- Opening door
- Door is locked using door request switch
- Door is locked using Intelligent Key

The power supply position shifts to “ACC” when the push-button ignition switch (push switch) is pushed at “OFF (LOCK)”.

AIR CONDITIONER

AIR CONDITIONER : CONSULT Function (BCM - AIR CONDITIONER) (Auto A/C)

INFOID:0000000009652532

DATA MONITOR

NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

Display Item List

Monitor Item [Unit]		Contents
FAN ON SIG	[On/Off]	Displays the status of blower fan ON signal received from A/C auto amp.
AIR COND SW	[On/Off]	Displays the status of A/C ON signal received from A/C auto amp.

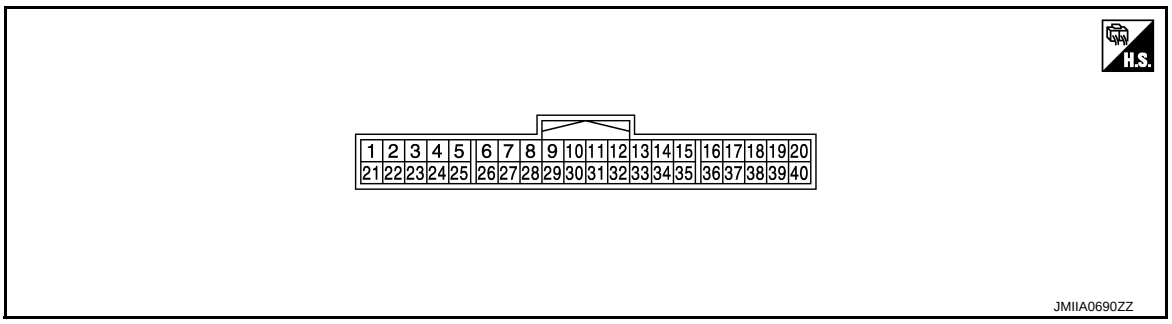
ECU DIAGNOSIS INFORMATION

A/C AUTO AMP.

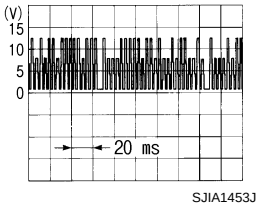
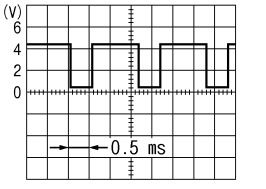
Reference Value

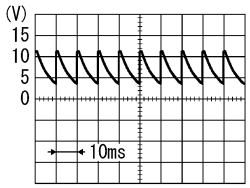
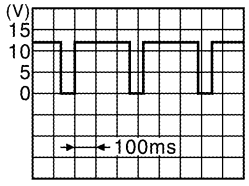
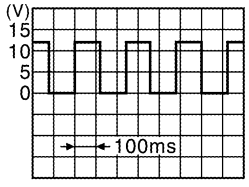
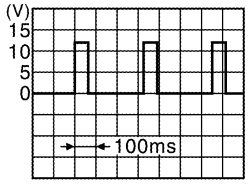
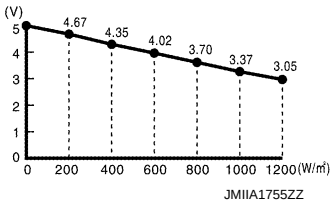
INFOID:0000000009652533

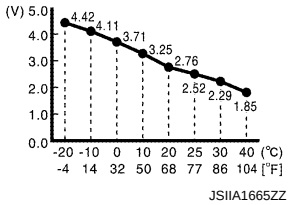
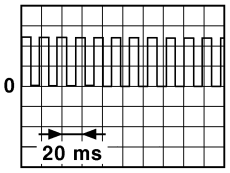
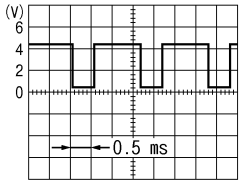
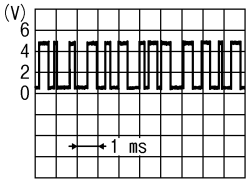
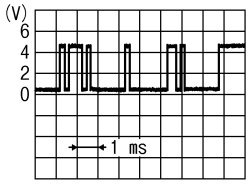
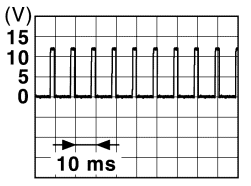
TERMINAL LAYOUT

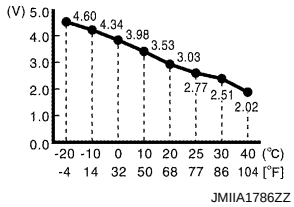
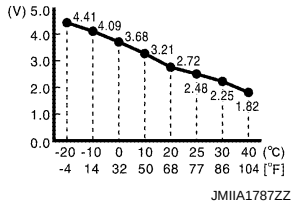
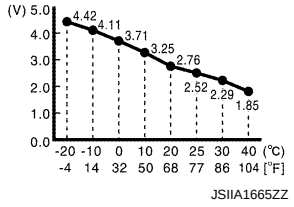


PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition	Value
+	–	Signal name	Input/ Output		
1 (O)	Ground	Battery power supply	—	Ignition switch OFF	11 – 14 V
2 (G)	Ground	Ignition power supply	—	Ignition switch ON	11 – 14 V
4 (SB)	Ground	Door motor power supply	Output	Ignition switch ON	9.5 – 13.5 V
5 (BR)	Ground	LAN signal	Input/ Output	Ignition switch ON	 SJIA1453J
9 (V)	Ground	ACC power supply	—	Ignition switch ON	11 – 14 V
10 (W)	Ground	Front blower motor control signal	Output	• Ignition switch ON • Front fan speed: 1st speed (manual)	 JSIIA0096ZZ
12 (BR)	Ground	Blower fan ON signal	Output	• Ignition switch ON • Front blower motor: OFF	11 – 14 V
				• Ignition switch ON • Front blower motor: ON	0 – 0.5 V

Terminal No. (Wire color)		Description		Condition	Value
+	–	Signal name	Input/ Output		
13 (O)	Ground	A/C ON signal	Output	• Ignition switch ON • A/C switch: OFF (A/C indicator: OFF)	 PKIB4960J
				• Ignition switch ON • A/C switch: ON (A/C indicator: ON)	0 – 0.5 V
15 (GR)	Ground	Ionizer ON/OFF control signal	Output	• Ignition switch ON • Front blower motor: OFF	9.5 – 13.5 V
				• Ignition switch ON • Front blower motor: ON	0 – 0.5 V
17 (L)	Ground	Engine coolant temperature signal	Input	• Ignition switch ON • Engine idling • Engine coolant temperature: Below 56°C (133°F)	 JMIIA1756JP
				• Ignition switch ON • Engine idling • Engine coolant temperature: Between 56 – 105°C (133 – 221°F)	 JMIIA1757JP
				• Ignition switch ON • Engine idling • Engine coolant temperature: Above 105°C (221°F)	 JMIIA1758JP
18 (L)	Ground	Sunload sensor signal	Input	Ignition switch ON	 JMIIA1755ZZ

Terminal No. (Wire color)		Description		Condition	Value
+	–	Signal name	Input/ Output		
19 (O)	Ground	Front in-vehicle sensor signal	Input	Ignition switch ON	 JSIIA1665ZZ
20 (R)	Ground	A/C auto amp. connection recognition signal	Output	Ignition switch ON	4.8 – 5.2 V
21 (B/W)	Ground	Ground	—	Ignition switch ON	0 – 0.1 V
23 (B/W)	Ground	Ground	—	Ignition switch ON	0 – 0.1 V
24 (SB)	Ground	Vehicle speed signal	Input	Vehicle speed: 40 km/h (25 MPH) **NOTE:** Waveform varies according to vehicle speed	 JSNIA0012GB
30 (R)	Ground	Rear blower motor control signal	Output	• Ignition switch ON • Rear fan speed: 1st speed (manual)	 JSIIA0096ZZ
32 (BR)	Ground	Communication signal (A/C auto amp. → Rear A/C control)	Output	Ignition switch ON	 SJIA1521J
33 (SB)	Ground	Communication signal (Rear A/C control → A/C auto amp.)	Input	Ignition switch ON	 SJIA1522J
36 (G)	Ground	Exhaust gas/outside odor detecting sensor signal	Input	Ignition switch ON **NOTE:** Waveform varies according to the measurement environment of the vehicle	 JMIIA2115GB

Terminal No. (Wire color)		Description		Condition	Value
+	–	Signal name	Input/ Output		
37 (GR)	Ground	Intake sensor signal	Input	Ignition switch ON	 JMIIA1786ZZ
38 (P)	Ground	Rear in-vehicle sensor signal	Input	Ignition switch ON	 JMIIA1787ZZ
39 (LG)	Ground	Ambient sensor signal	Input	Ignition switch ON	 JSIIA1665ZZ
40 (Y)	Ground	Sensor ground	—	Ignition switch ON	0 – 0.1 V

BCM, ECM, IPDM E/R

List of ECU Reference

INFOID:0000000009652534

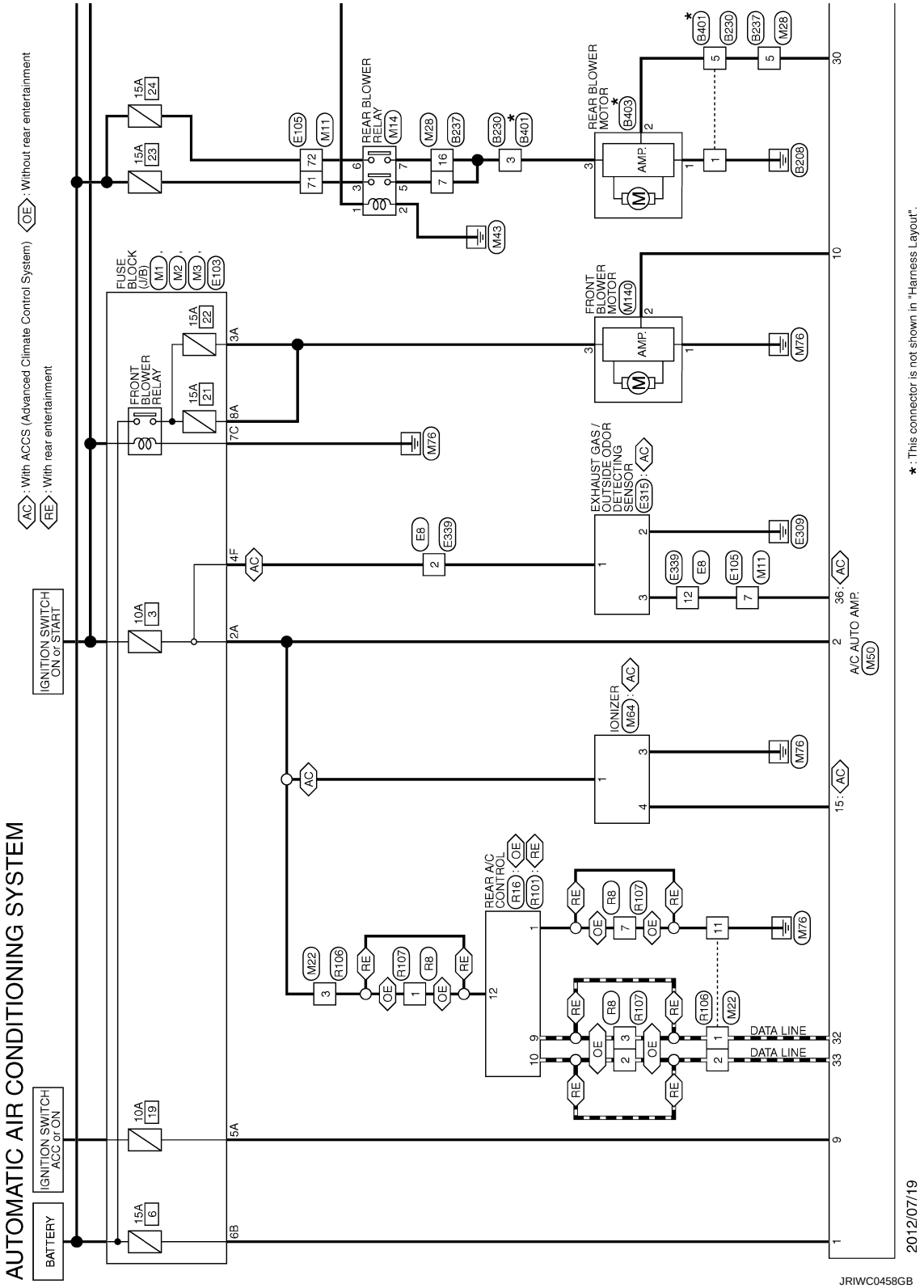
ECU	Reference
BCM	BCS-40, "Reference Value"
	BCS-62, "Fail-safe"
	BCS-62, "DTC Inspection Priority Chart"
	BCS-63, "DTC Index"
ECM	EC-79, "Reference Value"
	EC-92, "Fail-safe"
	EC-94, "DTC Inspection Priority Chart"
	EC-96, "DTC Index"
IPDM E/R	PCS-16, "Reference Value"
	PCS-23, "Fail-safe"
	PCS-24, "DTC Index"

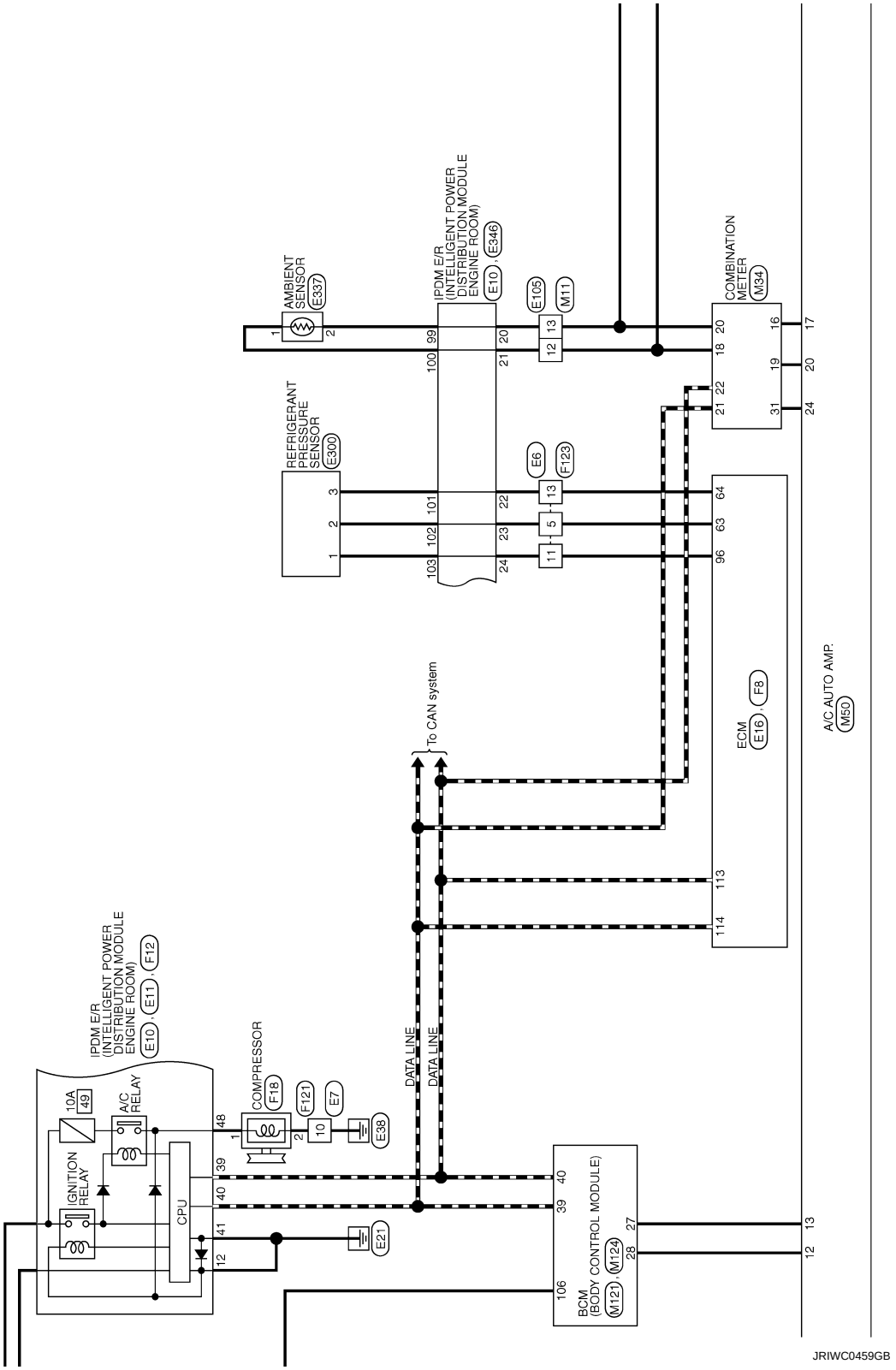
WIRING DIAGRAM

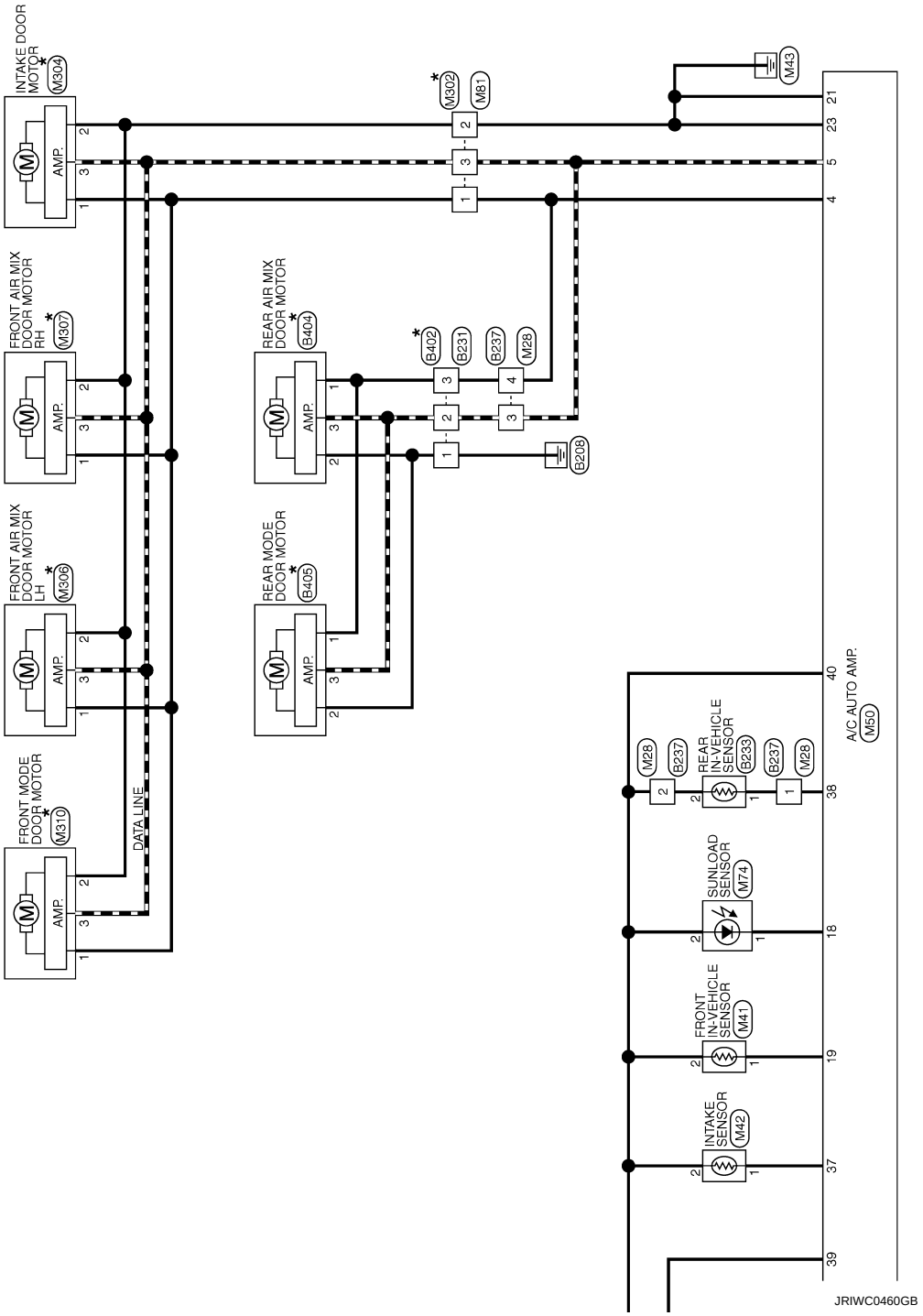
AUTOMATIC AIR CONDITIONING SYSTEM

Wiring Diagram

INFOID:0000000009652535




AMBIENT SENSOR E337
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) E10, E346
E105
M11
COMBINATION METER M34
REFRIGERANT PRESSURE SENSOR E300
E6
F123
ECM E16, F8
To CAN system
A/C AUTO AMP. M50
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) E10, E11, F12
10A 49
A/C RELAY
IGNITION RELAY
CPU
COMPRESSOR F18
F121
E7
E38
E21
DATA LINE
DATA LINE
BCM (BODY CONTROL MODULE) M121, M124
JRIWC0459GB


INTAKE DOOR MOTOR
M304
AMP.
FRONT AIR MIX DOOR MOTOR RH
M307
FRONT AIR MIX DOOR MOTOR LH
M306
FRONT MODE DOOR MOTOR
M310
DATA LINE
REAR AIR MIX DOOR MOTOR
B404
REAR MODE DOOR MOTOR
B405
M302
M81
B402
B231
B237
M28
B208
M43
A/C AUTO AMP.
M50
REAR IN-VEHICLE SENSOR
B233
SUNLOAD SENSOR
M74
FRONT IN-VEHICLE SENSOR
M41
INTAKE SENSOR
M42
JRIWC0460GB

AUTOMATIC AIR CONDITIONING SYSTEM

Connector No.	B230
Connector Name	WIRE TO WIRE
Connector Type	M06FW-LC

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	B	–
3	G	–
5	LG	–

Connector No.	B231
Connector Name	WIRE TO WIRE
Connector Type	TK03FW

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	B/W	–
2	SB	–
3	BR	–

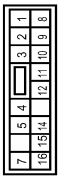
Connector No.	B233
Connector Name	REAR IN-VEHICLE SENSOR
Connector Type	C02FW

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	R	–
2	Y	–

Connector No.	B237
Connector Name	WIRE TO WIRE
Connector Type	NS16MGY-CS

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	R	–
2	Y	–
3	SB	–
4	BR	–
5	LG	–
7	G	–
8	GR	–
9	SB	–
10	O	–
11	V	–
12	P	–
14	R	–
15	L	–
16	G	–

Connector No.	B401
Connector Name	WIRE TO WIRE
Connector Type	M06MW-LC

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	–	–
3	–	–
5	–	–

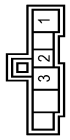
Connector No.	B402
Connector Name	WIRE TO WIRE
Connector Type	TK03MW

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	–	–
2	–	–
3	–	–

Connector No.	B403
Connector Name	REAR BLOWER MOTOR
Connector Type	NS03FW-M3

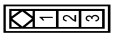
H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	–	–
2	–	–
3	–	–

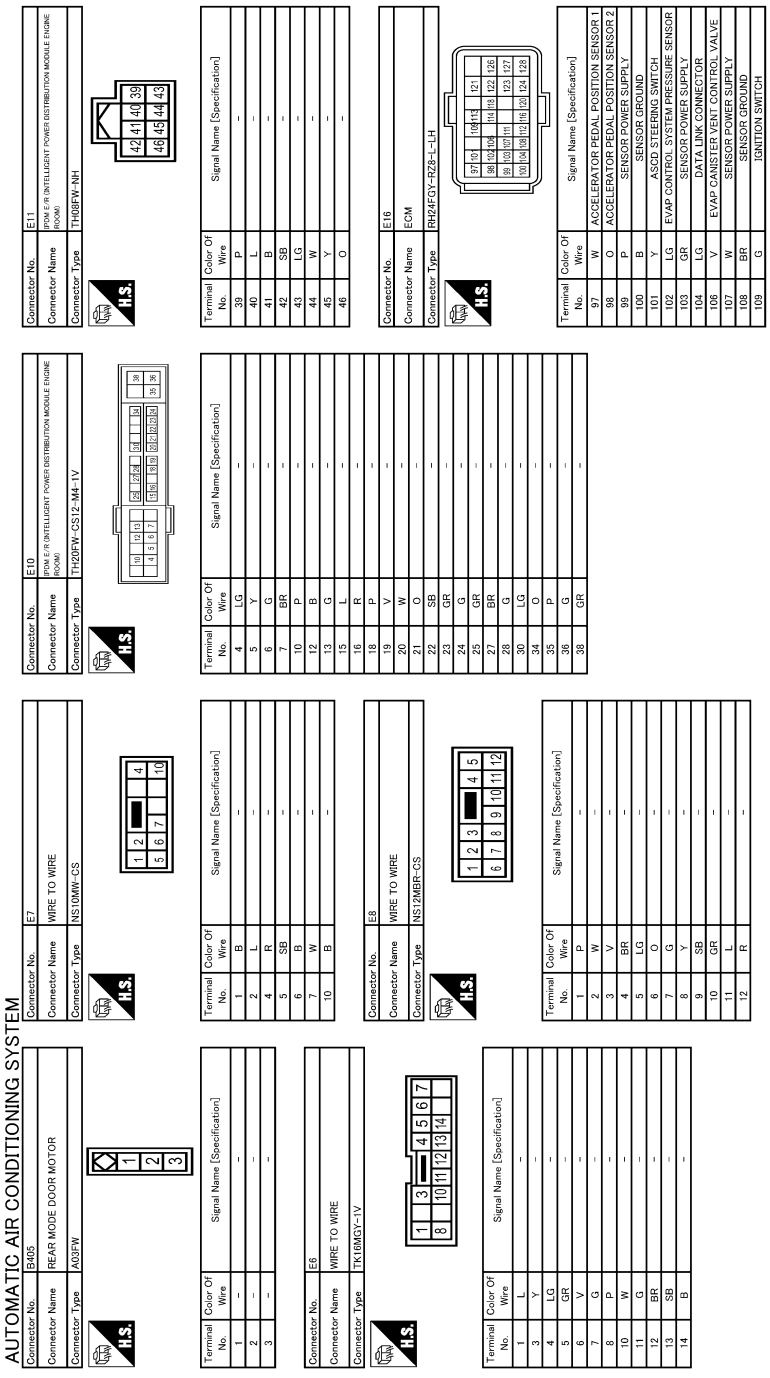
Connector No.	B404
Connector Name	REAR AIR MIX DOOR MOTOR
Connector Type	A03FW

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	–	–
2	–	–
3	–	–

JRIWC1225GB

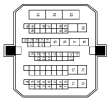


JRIWC1226GB

AUTOMATIC AIR CONDITIONING SYSTEM

111	Y	FUEL TANK TEMPERATURE SENSOR
112	V	SENSOR GROUND
113	P	CAN COMMUNICATION LINE
114	L	CAN COMMUNICATION LINE
116	G	SENSOR GROUND
118	R	PNP signal
120	SB	SENSOR GROUND
121	L	POWER SUPPLY FOR ECM
122	SB	STOP LAMP SWITCH
123	B	ECM GROUND
124	B	ECM GROUND
126	BR	ASCD BRAKE SWITCH
127	B	ECM GROUND
128	B	ECM GROUND

Connector No.	E105
Connector Name	WIRE TO WIRE
Connector Type	TH70MW-CS10-M3



Terminal No.	Color Of Wire	Signal Name [Specification]
1	SHIELD	-
2	W	-
3	B	-
4	R	-
6	LG	-
7	R	-
8	GR	-
9	SB	-
10	BR	-
11	Y	-
12	O	-
13	W	-
14	L	-
15	P	-
31	GR	-
32	R	-
33	W	-
37	BR	-
38	G	-
39	V	-
40	P	-
41	L	-
42	LG	-
43	O	-
45	GR	-
46	SB	-
47	V	-
49	L	-
51	BR	-
52	G	-
53	B	-
54	O	-
55	Y	-
56	SHIELD	-
61	P	-
62	G	-

63	W/L
64	W/R
66	W
67	Y
69	SB
70	LG
71	R
72	L
73	GR
74	Y
75	SB
76	Y
77	G
78	O
80	R
81	L
82	LG
83	R

Connector No.	E315
Connector Name	EXHAUST GAS/OUTSIDE ODOR DETECTING SENSOR
Connector Type	RH03FB

Terminal No.	Color Of Wire	Signal Name [Specification]
1	O	-
2	B/W	-
3	G	-

Connector No.	E337
Connector Name	AMBIENT SENSOR
Connector Type	RS02FB

Terminal No.	Color Of Wire	Signal Name [Specification]
1	V	-
2	Y	-

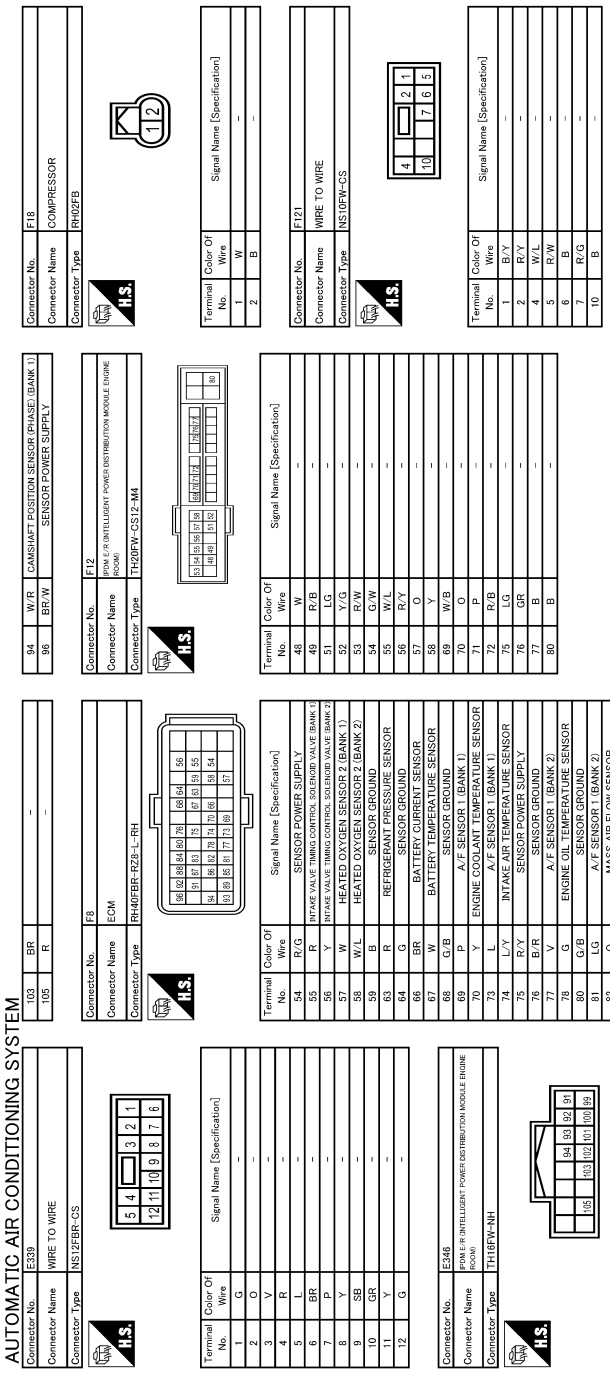
Connector No.	E300
Connector Name	REFRIGERANT PRESSURE SENSOR
Connector Type	RK03FB

Terminal No.	Color Of Wire	Signal Name [Specification]
1	BR	-
2	G	-
3	O	-

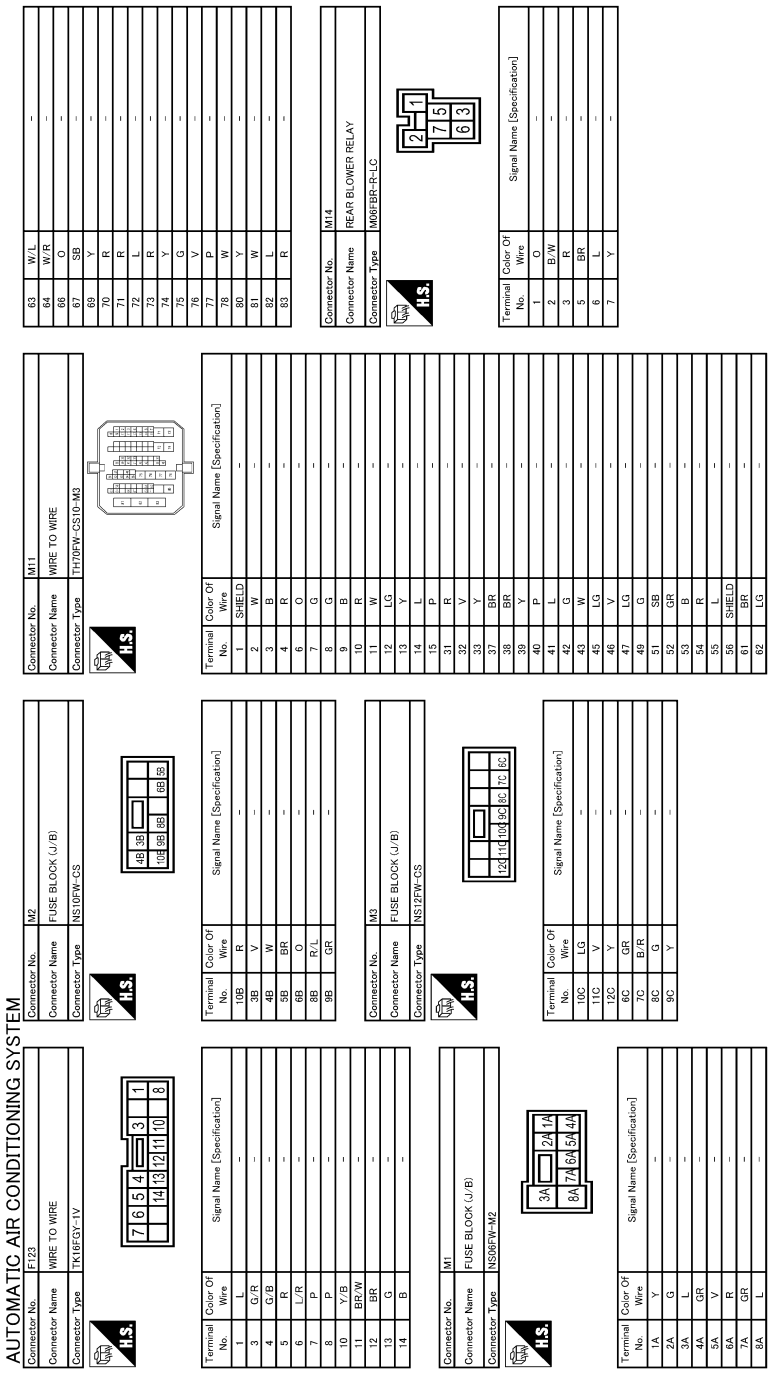
Connector No.	E103
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS16FW-CS

Terminal No.	Color Of Wire	Signal Name [Specification]
11F	G	-
12F	V	-
1F	SB	-
2F	R	-
4F	L	-
6F	LG	-
8F	P	-
9F	BR	-

JRIWC1227GB



JRIWC1228GB



JRIWC1229GB

AUTOMATIC AIR CONDITIONING SYSTEM

Connector No.	M22
Connector Name	WIRE TO WIRE
Connector Type	TH16FW-NH

Terminal No.	Color Of Wire	Signal Name [Specification]
1	BR	–
2	SB	–
3	G/W	–
4	O	–
6	R	–
7	SB	–
8	GR	–
9	P	–
10	R	–
11	B/W	–
12	B	–
13	R	–
14	W/L	– [Without NAVI]
14	Y	– [With NAVI]
15	SHIELD	– [With NAVI]
16	BR	– [Without NAVI]
16	W/R	–

Connector No.	M28
Connector Name	WIRE TO WIRE
Connector Type	NS16FGY-CS

Terminal No.	Color Of Wire	Signal Name [Specification]
1	P	–
2	Y	–
3	BR	–
4	SB	–
5	R	–
7	BR	–
8	L	–
9	R	–
10	W	–
11	G	–
12	V	–
14	V	–
15	LG	–
16	Y	–

Connector No.	M34
Connector Name	COMBINATION METER
Connector Type	TH40FW-NH

Terminal No.	Color Of Wire	Signal Name [Specification]
1	O	BATTERY POWER SUPPLY
2	Y	IGNITION SIGNAL
3	B	GROUND
4	B	GROUND
5	B/P	ILLUMINATION CONTROL SIGNAL
8	SB	TRIP RESET SWITCH SIGNAL
10	P	METER CONTROL SWITCH GROUND
11	G	ENTER SWITCH SIGNAL
12	BR	SELECT SWITCH SIGNAL
13	Y	ILLUMINATION CONTROL SWITCH SIGNAL (+)
14	V	ILLUMINATION CONTROL SWITCH SIGNAL (–)
15	BR	AIR BAG SIGNAL
16	L	ENGINE COOLANT TEMPERATURE SIGNAL
18	LG	AMBIENT SENSOR SIGNAL
19	R	A/C AUTO AMP. CONNECTION RECOGNITION SIGNAL
20	Y	AMBIENT SENSOR GROUND
21	L	CAN-H
22	P	CAN-L
23	B	GROUND
24	B	FUEL LEVEL SENSOR GROUND
25	BR	ALTERNATOR SIGNAL
26	BR	PARKING BRAKE SWITCH SIGNAL
27	Y	BRAKE FLUID LEVEL SWITCH SIGNAL
28	V	SECURITY SIGNAL
29	G	WASHER LEVEL SWITCH SIGNAL
31	SB	VEHICLE SPEED SIGNAL (8-PULSE)
32	P	OVERDRIVE CONTROL SWITCH SIGNAL
34	O	FUEL LEVEL SENSOR SIGNAL
35	P	SEAT BELT BUCKLE SWITCH SIGNAL (DRIVER SIDE)
36	BR	PASSENGER SEAT BELT WARNING SIGNAL

Connector No.	M41
Connector Name	FRONT IN-VEHICLE SENSOR
Connector Type	A02FW

Terminal No.	Color Of Wire	Signal Name [Specification]
1	O	–
2	Y	–

Connector No.	M42
Connector Name	INTAKE SENSOR
Connector Type	C02FW

Terminal No.	Color Of Wire	Signal Name [Specification]
1	GR	–
2	Y	–

Connector No.	M50
Connector Name	A/C AUTO AMP.
Connector Type	TH40FW-NH

Terminal No.	Color Of Wire	Signal Name [Specification]
1	O	BATTERY POWER SUPPLY
2	G	IGNITION POWER SUPPLY
4	SB	DOOR MOTOR POWER SUPPLY
5	BR	LAN SIGNAL
7	Y	REAR WINDOW DEFOGGER F/B SIGNAL
8	R/L	ILLUMINATION POWER SUPPLY
9	V	ACC POWER SUPPLY
10	W	FRONT BLOWER MOTOR CONTROL SIGNAL
12	BR	BLOWER FAN ON SIGNAL
13	O	A/C ON SIGNAL
15	GR	IONIZER ON/OFF CONTROL SIGNAL
17	L	ENGINE COOLANT TEMPERATURE SIGNAL
18	L	SUNLOAD SENSOR SIGNAL
19	O	FRONT IN-VEHICLE SENSOR SIGNAL
20	R	A/C AUTO AMP. CONNECTION RECOGNITION SIGNAL
21	B/W	GROUND
23	B/W	GROUND
24	SB	VEHICLE SPEED SIGNAL
27	W	REAR WINDOW DEFOGGER ON SIGNAL
28	B/R	ILLUMINATION GROUND
30	R	REAR BLOWER MOTOR CONTROL SIGNAL
32	BR	COMM (A/C AUTO AMP.–RR A/C CONT)
33	SB	COMM (RR A/C CONT.–A/C AUTO AMP.)
36	G	EXH GAS/OUTSIDE DOOR DETECTING SENSOR SIGNAL
37	GR	INTAKE SENSOR SIGNAL
38	P	REAR IN-VEHICLE SENSOR SIGNAL
39	LG	AMBIENT SENSOR SIGNAL
40	Y	SENSOR GROUND

JRIWC1230GB

AUTOMATIC AIR CONDITIONING SYSTEM

Connector No.	M64
Connector Name	IONIZER
Connector Type	TH04FW-NH

Terminal No.	Color Of Wire	Signal Name [Specification]
1	G	IGN
3	B/W	GROUND
4	GR	ION-ON/OFF

Connector No.	M74
Connector Name	SUNLOAD SENSOR
Connector Type	K02FB

Terminal No.	Color Of Wire	Signal Name [Specification]
1	L	–
2	Y	–

Connector No.	M81
Connector Name	WIRE TO WIRE
Connector Type	A03MW

Terminal No.	Color Of Wire	Signal Name [Specification]
1	SB	–
2	B/W	–
3	BR	–

Connector No.	M121
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FB-NH

Terminal No.	Color Of Wire	Signal Name [Specification]
1	W	REAR WINDOW DEF RELAY CONT
2	LG	COMBI SW INPUT 5
3	Y	COMBI SW INPUT 4
4	O	COMBI SW INPUT 3
5	G	COMBI SW INPUT 2
6	L	COMBI SW INPUT 1
7	W	KEY CYL UNLOCK SW
8	GR	PW SW COMM [With automatic sliding door]
8	Y	KEY CYL LOCK SW [Without automatic sliding door]
9	V	STOP LAMP SW 1
12	GR	DOOR LK & UNLK SW LOCK
13	BR	DOOR LK & UNLK SW UNLOCK
14	L	OPTICAL SENS
15	W	REAR WINDOW DEF SW
16	Y	DIMMER
17	O	SENS PWR SPLY
18	R	RECEIV SENS GND
21	R	NATS ANT AMP.
23	V	SECURITY IND CONT
24	B	DONGLE LINK
25	W	NATS ANT AMP.
27	O	A/C ON
28	BR	BLOWER FAN ON
29	P	HAZARD SW
30	L	BK DOOR OPNR SW
31	O	DR DOOR UNLK SENS
32	Y	COMBI SW OUTPUT 5
33	W	COMBI SW OUTPUT 4
34	GR	COMBI SW OUTPUT 3
35	SB	COMBI SW OUTPUT 2
36	R	COMBI SW OUTPUT 1
37	G	DETENT SW
38	SB	RECEIVER COMM
39	L	CAN-H
40	P	CAN-L

Connector No.	M124
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FW-NH

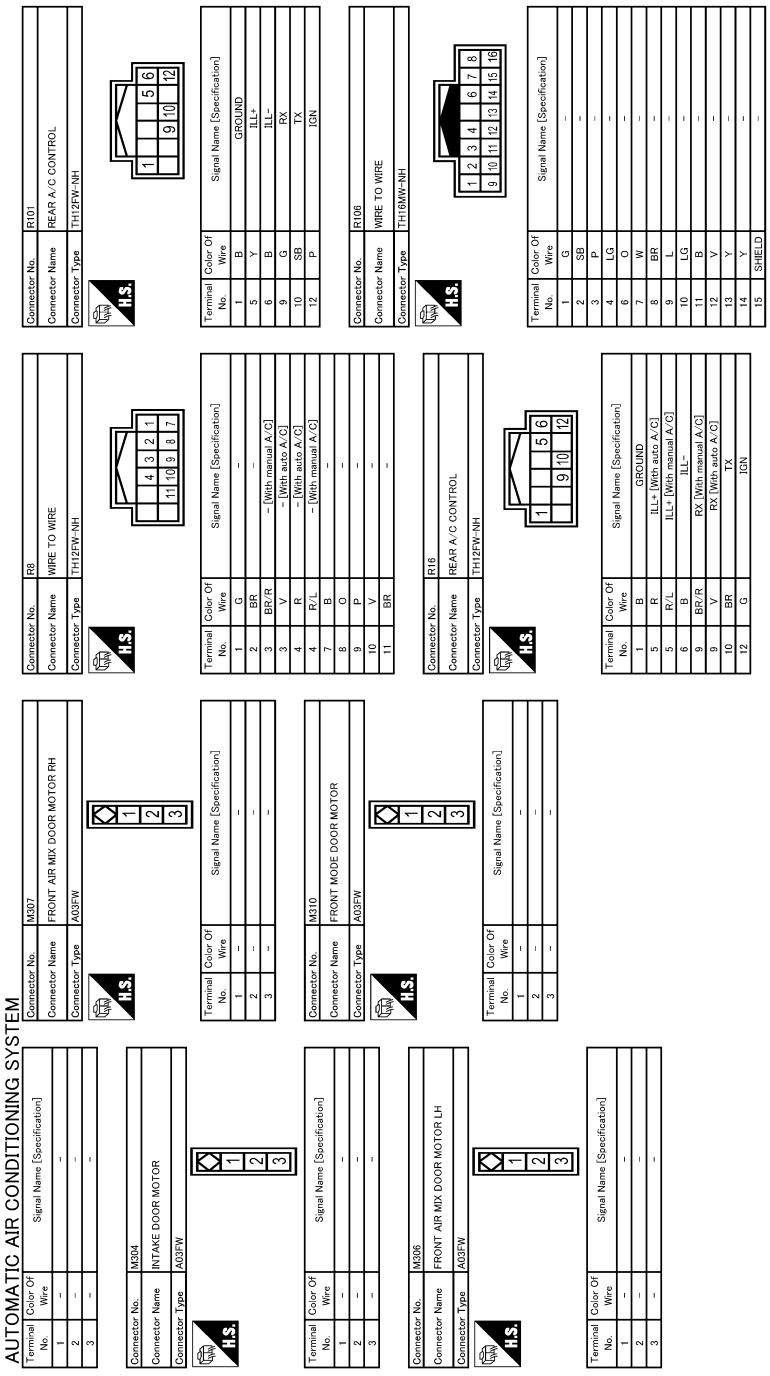
Terminal No.	Color Of Wire	Signal Name [Specification]
73	Y	ON IND
75	SB	DR DOOR REQ SW
76	V	PUSH SW
78	P	DR DOOR ANT+
79	V	DR DOOR ANT–
80	R	PASS DOOR ANT+
81	L	PASS DOOR ANT–
82	G	REAR BMPR ANT+
83	R	REAR BMPR ANT–
84	Y	ROOM ANT1+
85	BR	ROOM ANT1–
86	LG	ROOM ANT2+
87	V	ROOM ANT2–
88	W	LAGGAGE ROOM ANT+
89	B	LAGGAGE ROOM ANT–
90	P	PUSH-BTN IGN SW ILL PWR SPLY
91	SB	LOCK IND
92	G	PUSH-BTN IGN SW ILL GND
93	R	I-KEY WARN BUZZER
96	BR	ACC RELAY CONT OUTPUT
97	W	STARTER RELAY CONT
98	LG	IGN RELAY (IPDM E/R) CONT
99	GR	IGN RELAY (F/B) CONT OUTPUT
100	GR	PASS DOOR REQ SW
101	BR	IGN PWR SPLY 2
102	Y	P/N POSITION
104	L	CVT SHIFT SELECT PWR SPLY
105	GR	STOP LAMP SW 2
106	O	BLWR RELAY CONT OUTPUT
109	GR	ACC IND

Connector No.	M140
Connector Name	FRONT BLOWER MOTOR
Connector Type	NS03FW-M3

Terminal No.	Color Of Wire	Signal Name [Specification]
1	B	–
2	W	–
3	L	–

Connector No.	M302
Connector Name	WIRE TO WIRE
Connector Type	AD0FW

JRIWC1231GB



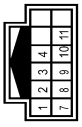
JRIWC1232GB

AUTOMATIC AIR CONDITIONING SYSTEM

16	BR	-

Connector No.	R107
Connector Name	WIRE TO WIRE
Connector Type	TH12MW-NH

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	P	-
2	SB	-
3	G	-
4	Y	-
7	B	-
8	R	-
9	L	-
10	P	-
11	LG	-

JRIWC1233GB

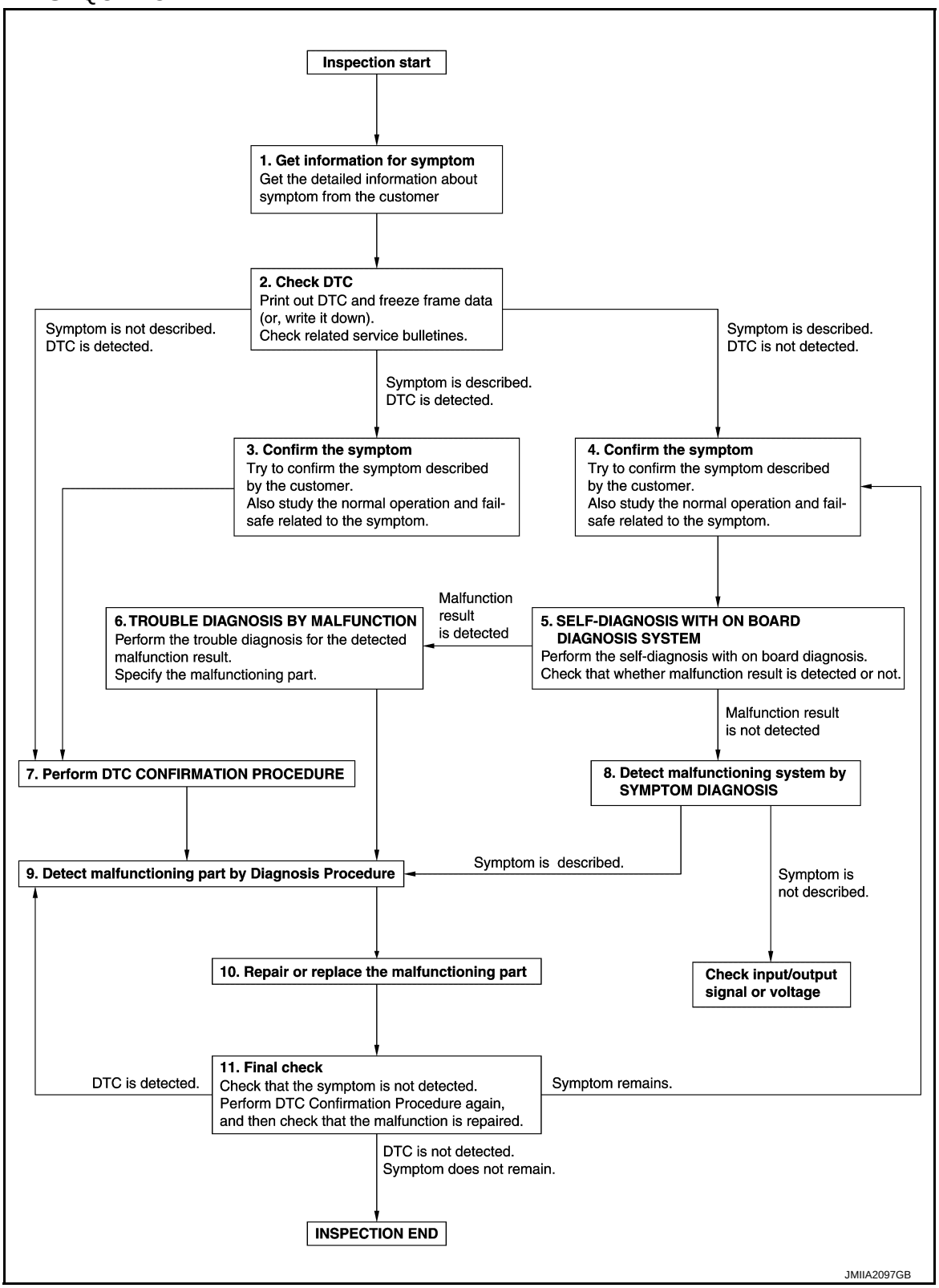
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:0000000009652536

OVERALL SEQUENCE



DETAILED FLOW

1.GET INFORMATION FOR SYMPTOM

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

>> GO TO 2.

2.CHECK DTC

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

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

3. Check related service bulletins for information.

Are any symptoms described and any DTC detected?

Symptom is described, DTC is detected>>GO TO 3.
Symptom is described, DTC is not detected>>GO TO 4.
Symptom is not described, DTC is detected>>GO TO 7.

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 7.

4.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.

5.SELF-DIAGNOSIS WITH ON BOARD DIAGNOSIS SYSTEM

Perform the self-diagnosis with on board diagnosis. Check that whether malfunction result is detected or not.

Is malfunction result detected?

YES >> GO TO 6.
NO >> GO TO 8.

6.TROUBLE DIAGNOSIS BY MALFUNCTION

Perform the trouble diagnosis for the detected malfunction result. Specify the malfunctioning part.

>> GO TO 9.

7.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 9.
NO >> Check according to GI-42, "Intermittent Incident".

8. 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 9.
NO >> Monitor input data from related sensors or check voltage of related module terminals using CONSULT.

9. DETECT MALFUNCTIONING PART BY DIAGNOSIS PROCEDURE

Inspect according to Diagnosis Procedure of the system.

Is malfunctioning part detected?

YES >> GO TO 10.
NO >> Check according to GI-42, "Intermittent Incident".

10. 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 11.

11. 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 9.
YES-2 >> Symptom remains: GO TO 4.
NO >> Before returning the vehicle to the customer, always erase DTC.

OPERATION INSPECTION
FRONT AUTOMATIC AIR CONDITIONING SYSTEM
FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Work Procedure

INFOID:0000000009652537

DESCRIPTION
The purpose of the operation inspection is to check that the individual system operates normally.

Check condition : Engine running at normal operating temperature.

OPERATION INSPECTION
1.CHECK MEMORY FUNCTION

1. Press AUTO switch to activate front A/C system.
2. Set temperature to 32.0°C by operating temperature control switch (driver side).
3. Press ON·OFF switch.
4. Turn ignition switch OFF.
5. Turn ignition switch ON.
6. Press AUTO switch.
7. Check that the set temperature (32.0°C) is maintained.

Is the inspection result normal?

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

2.CHECK FRONT BLOWER MOTOR

1. Start engine.
2. Operate fan switch and check that fan speed changes.
3. Check operation for all fan speeds.

Is the inspection result normal?

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

3.CHECK DISCHARGE AIR (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 outlets. Refer to VTL-6, "VENTILATION SYSTEM (FRONT AIR CONDITIONING) : System Description".

Is the inspection result normal?

YES-1 >> With ACCS (Advanced Climate Control System): GO TO 4.
YES-2 >> Without ACCS (Advanced Climate Control System): GO TO 5.
NO >> GO TO 11.

4.CHECK INTAKE AIR [WITH ACCS (ADVANCED CLIMATE CONTROL SYSTEM)]

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.

5.CHECK INTAKE AIR [WITHOUT ACCS (ADVANCED CLIMATE CONTROL SYSTEM)]

1. Press REC switch to set the air inlet to recirculation. The REC switch indicator turns ON.
2. Listen to intake sound and confirm air inlets change.
3. Press FRE switch again to set the air inlet to fresh air intake. The FRE switch indicator turns 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 is turns ON.
2. Check visually and by sound that the compressor operates.
3. Press A/C switch again. The A/C switch indicator is 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 switch (driver side).
2. Check that discharge air temperature (driver side) changes.
3. Operate temperature control switch (passenger side). “DUAL” indicator on front A/C control display turns ON.
4. Check that the discharge air temperature (passenger side) changes.
5. Press DUAL switch. “DUAL” 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 WITH TEMPERATURE SETTING LOWERED

1. Operate compressor.
2. Operate temperature control switch (driver side) to lower the set temperature to 18°C.
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. Warm up engine to the normal operating temperature.
2. Operate temperature control switch (driver side) to raise the set temperature to 32°C.
3. 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 and check that “AUTO” indicator on front A/C control display turns ON.
2. Operate temperature control switch (driver side) to check that fan speed or air outlet changes (the air outlet or fan speed varies depending on the ambient temperature, in-vehicle temperature (front side), set temperature, and etc.).

Is the inspection result normal?

YES >> INSPECTION END
NO >> GO TO 11.

11.CHECK SELF-DIAGNOSIS USING ON BOARD DIAGNOSIS SYSTEM

1. Perform self-diagnosis using on board diagnosis.
2. Check whether any malfunction is detected.

Is any malfunction detected?

YES >> Perform the appropriate diagnosis for the detected malfunction.
NO >> GO TO 12.

12.CHECK SELF-DIAGNOSTIC RESULT USING CONSULT

1. Perform self-diagnosis using CONSULT.

2. Check whether any DTC is detected.

Is any DTC detected?

YES >> Perform the appropriate diagnosis for the detected DTC.
NO >> Refer to HAC-134, "Symptom Table", and perform the appropriate diagnosis.

REAR AUTOMATIC AIR CONDITIONING SYSTEM

REAR AUTOMATIC AIR CONDITIONING SYSTEM : Work Procedure

INFOID:0000000009652538

DESCRIPTION

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

NOTE:

Check that front automatic air conditioning system operates normally. Refer to HAC-76, "FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Work Procedure".

Check condition : Engine running at normal operating temperature.
: Front air conditioning system is in operation.

OPERATION INSPECTION

Front A/C control operation

1. CHECK REAR CONTROL MODE FUNCTION

1. Press REAR switch. The REAR switch indicator turns ON.
2. Check that front A/C control changes to the rear A/C control mode (“REAR” indicator on front A/C display turns ON) and that rear automatic air conditioning system starts.
   NOTE:
   “REAR” indicator on front A/C control display turns OFF when any switch is not operated for approximately 10 seconds.
3. Press REAR switch again. The REAR switch indicator turns OFF.
4. Check that “REAR” indicator on front A/C display turns OFF and rear control mode released.
   (Rear automatic air conditioning system operates continuously)

Is the inspection result normal?

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

2. CHECK REAR BLOWER MOTOR

1. Press REAR switch and check that “REAR” indicator on front A/C display turns ON.
   NOTE:
   “REAR” indicator on front A/C control display turns OFF when any switch is not operated for approximately 10 seconds.
2. Operate fan switch to check that fan speed changes.
3. Check the operation for all fan speeds.

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 8.

3. CHECK DISCHARGE AIR

1. Press REAR switch and check that “REAR” indicator on front A/C display turns ON.
   NOTE:
   “REAR” indicator on front A/C control display turns OFF when any switch is not operated for approximately 10 seconds.
2. Operate fan switch to set the fan speed to maximum speed.
3. Operate MODE switch.
4. Check that air outlets change according to each indicated air outlet by placing a hand in front of the outlets. Refer to VTL-7, "VENTILATION SYSTEM (REAR AIR CONDITIONING) : System Description".

Is the inspection result normal?

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

4. CHECK DISCHARGE AIR TEMPERATURE

1. Press REAR switch and check that “REAR” indicator on front A/C display turns ON.
   NOTE:
   “REAR” indicator on front A/C control display turns OFF when any switch is not operated for approximately 10 seconds.
2. Operate temperature control switch (driver side).
3. Check that discharge air temperature changes.

Is the inspection result normal?

YES >> GO TO 5.
NO >> GO TO 8.

5. CHECK WITH TEMPERATURE SETTING LOWERED

1. Press REAR switch and check that “REAR” indicator on front A/C display turns ON.
   NOTE:
   “REAR” indicator on front A/C control display turns OFF when any switch is not operated for approximately 10 seconds.
2. Operate temperature control switch (driver side) to lower the set temperature to 18°C.
3. Check that cool air blows from the air outlets.

Is the inspection result normal?

YES >> GO TO 6.
NO >> GO TO 8.

6. CHECK TEMPERATURE INCREASE

1. Press REAR switch and check that “REAR” indicator on front A/C display turns ON.
   NOTE:
   “REAR” indicator on front A/C control display turns OFF when any switch is not operated for approximately 10 seconds.
2. Operate temperature control switch (driver side) to raise the set temperature to 32°C.
3. Check that warm air blows from the air outlets.

Is the inspection result normal?

YES >> GO TO 7.
NO >> GO TO 8.

7. CHECK AUTO MODE

1. Press REAR switch and check that “REAR” indicator on front A/C display turns ON.
   NOTE:
   “REAR” indicator on front A/C control display turns OFF when any switch is not operated for approximately 10 seconds.
2. Press AUTO switch and check that “AUTO” indicator on front A/C control display turns ON.
3. Operate temperature control switch (driver side) to check that fan speed or air outlet changes (the air outlet or fan speed varies depending on the ambient temperature, in-vehicle temperature (rear side), set temperature, and etc.).

Is the inspection result normal?

YES >> INSPECTION END
NO >> GO TO 8.

8. CHECK SELF-DIAGNOSIS USING ON BOARD DIAGNOSIS SYSTEM

1. Perform self-diagnosis using on board diagnosis.
2. Check whether any malfunction is detected.

Is any malfunction detected?

YES >> Perform the appropriate diagnosis for the detected malfunction.
NO >> Refer to HAC-136, "Symptom Table", and perform the appropriate diagnosis.

Rear A/C control operation

1. CHECK REAR BLOWER MOTOR

1. Press AUTO switch and check that “AUTO” indicator on rear A/C control display turns ON.
2. Operate fan switch to check that fan speed changes.

3. Check operation for all fan speeds.

Is the inspection result normal?

YES >> GO TO 2.
NO >> GO TO 7.

2.CHECK DISCHARGE AIR

1. Operate fan switch to set the fan speed to maximum speed.
2. Operate MODE switch.
3. Check that air outlets change according to each indicated air outlet by placing a hand in front of the outlets. Refer to VTL-7, "VENTILATION SYSTEM (REAR AIR CONDITIONING) : System Description".

Is the inspection result normal?

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

3.CHECK DISCHARGE AIR TEMPERATURE

1. Operate temperature control switch.
2. Check that discharge air temperature changes.

Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 7.

4.CHECK WITH TEMPERATURE SETTING LOWERED

1. Operate temperature control switch to lower the set temperature to 18°C.
2. Check that cool air blows from the air outlets.

Is the inspection result normal?

YES >> GO TO 5.
NO >> GO TO 7.

5.CHECK TEMPERATURE INCREASE

1. Operate temperature control switch to raise the set temperature to 32°C.
2. Check that warm air blows from the air outlets.

Is the inspection result normal?

YES >> GO TO 6.
NO >> GO TO 7.

6.CHECK AUTO MODE

1. Press AUTO switch and check that “AUTO” indicator on rear A/C control display turns ON.
2. Operate temperature control switch to check that fan speed or air outlet changes (the air outlet or fan speed varies depending on the ambient temperature, in-vehicle temperature (rear side), set temperature, and etc.).

Is the inspection result normal?

YES >> INSPECTION END
NO >> GO TO 7.

7.CHECK SELF-DIAGNOSIS USING ON BOARD DIAGNOSIS SYSTEM

1. Perform self-diagnosis using on board diagnosis.
2. Check whether any malfunction is detected.

Is any malfunction detected?

YES >> Perform the appropriate diagnosis for the detected malfunction.
NO >> Refer to HAC-136, "Symptom Table", and perform the appropriate diagnosis.

ACCS (ADVANCED CLIMATE CONTROL SYSTEM)

ACCS (ADVANCED CLIMATE CONTROL SYSTEM) : Work Procedure

INFOID:0000000009652539

DESCRIPTION

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

NOTE:

Check that front automatic air conditioning system operates normally. Refer to HAC-76, "FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Work Procedure".

Check condition : Engine running

OPERATION INSPECTION

1. CHECK PLASMACLUSTER™ ION

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

Is the inspection result normal?

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

2. CHECK PLASMACLUSTER™ ION OPERATION STATUS

Operate fan switch and visually check that status indicator on front A/C control display changes in accordance with the following table.

Fan speed	Front A/C control display (ion indicator)
2nd	CLEAN
5th	QUICK CLEAN

Is the inspection result normal?

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

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

1. Press AUTO intake switch and check that AUTO intake switch indicator turns ON.
2. Listen to intake sound to check that the air inlet changes to recirculation.
3. Wait approximately for 5 minutes until air inlet switches to fresh air intake.
4. Apply cigarette smoke or similar substance to exhaust gas/outside odor detecting sensor portion.
5. Check that the status indicator on front A/C control display turns ON and listen to intake sound to check that air inlets change to recirculation.

Is the inspection result normal?

YES >> INSPECTION END
NO >> GO TO 4.

4. CHECK SELF-DIAGNOSIS USING ON BOARD DIAGNOSIS SYSTEM

1. Perform self-diagnosis using on board diagnosis.
2. Check whether any malfunction is detected.

Is any malfunction detected?

YES >> Perform the appropriate diagnosis for the detected malfunction.
NO >> Refer to HAC-137, "Symptom Table" and perform the appropriate diagnosis.

SYSTEM SETTING

Temperature Setting Trimmer (Front)

INFOID:0000000009652540

DESCRIPTION

If the temperature felt by the customer is different from the front 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

1. Starts on board self-diagnosis STEP 5 mode (Each sensor recognition temperature check; “51” or “52” is indicated on front A/C control display).
2. Press fan switch (up: +) and check that “61” is indicated on front A/C control display.
3. After approximately 3 seconds, the temperature setting trimmer (front) can be available.
4. The indication will be changed by “5” (“1”) in range of –3.0°C (–6°F) to +3.0°C (6°F) by pressing the temperature control switch (driver side) each time. Press temperature control switch (driver side) (▲) to increase the set temperature, and press temperature control switch (driver side) (▼) to decrease the set temperature. When balance setting is minus, A/C switch indicator is turned ON.

Models for Canada

Display	Correction (°C)
30	+3.0
25	+2.5
20	+2.0
15	+1.5
10	+1.0
5	+0.5
0	0 (Initial setting)
-5	–0.5
-10	–1.0
-15	–1.5
-20	–2.0
-25	–2.5
-30	–3.0

Models for USA

Display	Correction (°F)
6	+6
5	+5
4	+4
3	+3
2	+2
1	+1
0	0 (Initial setting)
-1	–1
-2	–2
-3	–3
-4	–4

Display	Correction (°F)
-☀- 5	–5
-☀- 6	–6

-☀- : A/C switch indicator

NOTE:

- When –3°C (–6°F) is selected on the temperature setting set as 25°C (75°F), the temperature controlled by A/C auto amp. is 25°C (75°F) – 3°C (6°F) = 22.0°C (69°F), and then 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.

Temperature Setting Trimmer (Rear)

INFOID:0000000009652541

DESCRIPTION

If the temperature felt by the customer is different from the rear 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

1. Starts on board self-diagnosis STEP 5 mode (Each sensor recognition temperature check; “51” or “52” is indicated on front A/C control display).
2. Press fan switch (up: ✿+) and check that “61” is indicated on front A/C control display.
3. After approximately 3 seconds, the temperature setting trimmer (rear) can be available.
4. The indication will be changed by “5” (“1”) in range of –3.0°C (–6°F) to +3.0°C (6°F) by pressing the temperature control switch (passenger side) each time. Press temperature control switch (passenger side) (▲) to increase the set temperature, and press temperature control switch (passenger side) (▼) to decrease the set temperature. When balance setting is minus, REAR switch indicator is turned ON.

Models for Canada

Display	Correction (°C)
30	+3.0
25	+2.5
20	+2.0
15	+1.5
10	+1.0
5	+0.5
0	0 (Initial setting)
-☀- 5	–0.5
-☀- 10	–1.0
-☀- 15	–1.5
-☀- 20	–2.0
-☀- 25	–2.5
-☀- 30	–3.0

Models for USA

Display	Correction (°F)
6	+6
5	+5
4	+4
3	+3
2	+2

Display	Correction (°F)
1	+1
0	0 (Initial setting)
1	–1
2	–2
3	–3
4	–4
5	–5
6	–6

: REAR switch indicator

NOTE:
- When –3°C (–6°F) is selected on the temperature setting set as 25°C (75°F), the temperature controlled by A/C auto amp. is 25°C (75°F) – 3°C (6°F) = 22.0°C (69°F), and then 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.

Foot Position Setting Trimmer

INFOID:0000000009652542

DESCRIPTION

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

HOW TO SET

1. Starts on board self-diagnosis STEP 5 mode (Each sensor recognition temperature check; “51” or “52” is indicated on front A/C control display).
2. Press fan switch (up: +) and check that “61” is indicated on front A/C control display.
3. After approximately 3 seconds, the foot position setting trimmer can be available.
4. Press MODE switch to select FOOT mode type as shown below.

Type	Display	Defroster door position	
		Auto control	Manual control
Type-A		OPEN	CLOSE
Type-B (Initial setting)		OPEN	OPEN
Type-C		CLOSE	OPEN
Type-D		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 foot position setting trimmer may be cancelled.

Inlet Port Memory Function

INFOID:0000000009652543

DESCRIPTION

- Air inlet is memorized when ignition switch is turned OFF, and the air inlet can be set either REC (recirculation), FRE (fresh air intake), or “Do not perform the memory” when ignition switch is turned ON again.
- When “Do not perform the memory” is set, the air inlet is controlled automatically when ignition switch is turned ON again.

HOW TO SET

1. Starts on board self-diagnosis STEP 5 mode (Each sensor recognition temperature check; “51” or “52” is indicated on front A/C control display).
2. Press fan switch (up: +) and check that “61” is indicated on front A/C control display.

3. After approximately 3 seconds, the inlet port memory function can be available.
4. Press AUTO intake switch or intake switch to set the inlet port memory function as per the following. [with ACCS (Advanced Climate Control System)]
   Press FRE switch or REC switch to set the inlet port memory function as per the following. [without ACCS (Advanced Climate Control System)]

With ACCS (Advanced Climate Control System)

Switch	Switch indicator	Setting
AUTO intake switch	OFF	Do not perform the memory of manual FRE (Initial setting)
	ON	Perform the memory of manual FRE
Intake switch	OFF	Do not perform the memory of manual REC
	ON	Perform the memory of manual REC (Initial setting)

Without ACCS (Advanced Climate Control System)

Switch	Switch indicator	Setting
FRE switch	OFF	Do not perform the memory of manual FRE (Initial setting)
	ON	Perform the memory of manual FRE
REC switch	OFF	Do not perform the memory of manual REC
	ON	Perform the memory of manual REC (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 inlet port memory function may be cancelled.

Exhaust Gas/Outside Odor Detecting Sensor Sensitivity Adjustment Function

INFOID:0000000009652544

DESCRIPTION

Sensitivity of exhaust gas/outside odor detecting sensor is adjustable for 2 steps of high and low. This function is used when sensitivity of sensor is different from customer′s sense of smell.

HOW TO SET

1. Starts on board self-diagnosis STEP 5 mode (Each sensor recognition temperature check; “51” or “52” is indicated on front A/C control display).
2. Press fan switch (up: ✣+) twice and check that “7” is indicated on front A/C control display.
3. After approximately 3 seconds, the exhaust gas/outside odor detecting sensor sensitivity adjustment function can be available.
4. Press temperature control switch (driver side) to select the setting as per the following.

Display	Setting
75	More sensitive setting than display 74 setting (the change to REC is earlier than display 74 operation)
74	More sensitive setting than normal setting (the change to REC is earlier than normal operation)
73	Normal (Initial setting)
72	Less sensitive setting than normal setting (the change to REC is later than normal operation)
71	Less sensitive setting than display 72 setting (the change to REC is later than display 72 operation)

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 exhaust gas/outside odor detecting sensor sensitivity adjustment function may be cancelled.

AUTO Intake Switch Interlocking Movement Change Function

INFOID:0000000009652545

DESCRIPTION

Condition for interlocking movement of AUTO intake switch and A/C switch can be changed. It is possible to set the system not to receive switch operation of AUTO intake switch when A/C switch is OFF so that the

advanced climate control system is not activated. It is also possible to set the system not to turn A/C switch ON when AUTO intake switch is pressed.

HOW TO SET

1. Starts on board self-diagnosis STEP 5 mode (Each sensor recognition temperature check; “51” or “52” is indicated on front A/C control display).
2. Press fan switch (up: ✣+) three times and check that “8” is indicated on front A/C control display.
3. After approximately 3 seconds, the AUTO intake switch interlocking movement change function can be available.
4. Press A/C switch or AUTO intake switch to select the setting as per the following.

Switch	Switch indicator	Setting
A/C switch	ON	When AUTO intake switch is turned ON, A/C switch is also turned ON in synchronization with AUTO intake switch. (Initial setting) Control of the AUTO intake switch is functional even when the A/C switch is turned OFF.
	OFF	When AUTO intake switch is turned ON, A/C switch is not turned ON in synchronization with AUTO intake switch. Control of the AUTO intake switch is functional even when A/C switch is turned OFF.
AUTO intake switch	ON	AUTO intake switch can be turned ON when A/C switch is OFF. When A/C switch is turned OFF while AUTO intake switch is ON, AUTO intake switch is not turned OFF in synchronization with A/C switch. (Initial setting)
	OFF	AUTO intake switch can not be turned ON when A/C switch is OFF. When A/C switch is turned OFF while AUTO intake switch is ON, AUTO intake switch is turned OFF in synchronization with A/C switch.

NOTE:
When the battery cable is disconnected from the negative terminal or when the battery voltage becomes 10 V or less, the AUTO intake switch interlocking movement change function setting may be cancelled.

DTC/CIRCUIT DIAGNOSIS

POWER SUPPLY AND GROUND CIRCUIT
A/C AUTO AMP.

A/C AUTO AMP. : Diagnosis Procedure

INFOID:0000000009652546

1.CHECK SYMPTOM

Check symptom (A or B).

	Symptom
A	• Front air conditioning does not activate. • Front air conditioning cannot be controlled. • Operation status of front 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

1. Turn ignition switch OFF.
2. Check 10A fuse (No. 3 and 19, located in fuse block (J/B)].
   NOTE:
   Refer to PG-80, "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

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

+		–	Voltage
A/C auto amp.			
Connector	Terminal		
M50	2	Ground	11 – 14 V
	9		

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

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

A/C auto amp.		—	Continuity
Connector	Terminal		
M50	21	Ground	Existed
	23		

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".

NO >> Repair harness or connector.

5.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 15A fuse (No. 6, located in fuse block (J/B)].

NOTE:
Refer to PG-80, "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	1	Ground	11 – 14 V

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Repair harness or connector between A/C auto amp. and fuse.

REAR A/C CONTROL

REAR A/C CONTROL : Diagnosis Procedure

INFOID:0000000009652547

1.CHECK REAR A/C CONTROL POWER SUPPLY

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

+		–	Voltage
Rear A/C control			
Connector	Terminal		
R16 (without rear entertainment)	12	Ground	11 – 14 V
R101 (with rear entertainment)			

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector between rear A/C control and fuse block (J/B).

2.CHECK REAR A/C CONTROL GROUND CIRCUIT

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

Rear A/C control		—	Continuity
Connector	Terminal		
R16 (without rear entertainment)	1	Ground	Existed
R101 (with rear entertainment)			

Is the inspection result normal?

YES >> Replace rear A/C control. Refer to HAC-144, "Removal and Installation".
NO >> Repair harness or connector.

A/C AUTO AMP.

Component Function Check

INFOID:0000000009652548

1.PERFORM SELF-DIAGNOSIS FUNCTION STEP 5-2

1. Turn ignition switch ON.
2. Perform self-diagnosis function step 5-2. Erase self diagnosis result. Refer to HAC-47, "On Board Diagnosis Function".
3. Turn ignition switch OFF.
4. Turn ignition switch ON.
5. Perform self-diagnosis function step 5-2 again. Refer to HAC-47, "On Board Diagnosis Function".
6. Check self-diagnosis result.

Is “40” displayed?

YES >> Refer to HAC-90, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000009652549

1.REPLACE FRONT A/C CONTROL (A/C AUTO AMP.)

Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".

>> INSPECTION END

REAR A/C CONTROL COMMUNICATION SIGNAL

Diagnosis Procedure

INFOID:0000000009652550

1.CHECK SYMPTOM

Check symptom (A or B).

Symptom		
A	Rear air conditioning cannot be controlled by rear A/C control.	Operation status of rear air conditioning is indicated on rear A/C control display.
B		Operation status of rear air conditioning is not indicated on rear A/C control display.

Which symptom is detected?

A >> GO TO 2.
B >> GO TO 5.

2.CHECK COMMUNICATION SIGNAL (REAR A/C CONTROL → A/C AUTO AMP.) CIRCUIT FOR OUTPUT SIGNAL

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

+		–	Voltage (Approx.)
Rear A/C control			
Connector	Terminal		
R16 (without rear entertainment)	10	Ground	5 V
R101 (with rear entertainment)			

Is the inspection result normal?

YES >> Replace rear A/C control. Refer to HAC-144, "Removal and Installation".
NO >> GO TO 3.

3.CHECK COMMUNICATION SIGNAL (REAR A/C CONTROL → A/C AUTO AMP.) CIRCUIT FOR OPEN

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

Rear A/C control		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
R16 (without rear entertainment)	10	M50	33	Existed
R101 (with rear entertainment)				

Is the inspection result normal?

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

4.CHECK COMMUNICATION SIGNAL (REAR A/C CONTROL → A/C AUTO AMP.) CIRCUIT FOR SHORT

Check continuity between rear A/C control harness connector and ground.

Rear A/C control		—	Continuity
Connector	Terminal		
R16 (without rear entertainment)	10	Ground	Not existed
R101 (with rear entertainment)			

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Repair harness or connector.

5. CHECK COMMUNICATION SIGNAL (A/C AUTO AMP. → REAR A/C CONTROL) CIRCUIT FOR OUTPUT SIGNAL

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

+		–	Voltage (Approx.)
A/C auto amp.			
Connector	Terminal		
M50	32	Ground	5 V

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> GO TO 6.

6. CHECK COMMUNICATION SIGNAL (A/C AUTO AMP. → REAR A/C CONTROL) CIRCUIT FOR OPEN

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

Rear A/C control		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
R16 (without rear entertainment)	9	M50	32	Existed
R101 (with rear entertainment)				

Is the inspection result normal?

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

7. CHECK COMMUNICATION SIGNAL (A/C AUTO AMP. → REAR A/C CONTROL) CIRCUIT FOR SHORT

Check continuity between rear A/C control harness connector and ground.

Rear A/C control		—	Continuity
Connector	Terminal		
R16 (without rear entertainment)	9	Ground	Not existed
R101 (with rear entertainment)			

Is the inspection result normal?

YES >> Check rear A/C control power supply circuit. Refer to HAC-88, "REAR A/C CONTROL : Diagnosis Procedure".

NO >> Repair harness or connector.

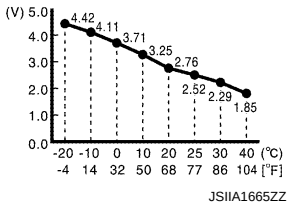
AMBIENT SENSOR

Diagnosis Procedure

INFOID:0000000009652551

1.CHECK AMBIENT SENSOR SIGNAL

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

+		–	Voltage
A/C auto amp.			
Connector	Terminal		
M50	39	Ground	

Is the inspection result normal?

YES >> GO TO 7.
NO >> GO TO 2.

2.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 3.
NO >> GO TO 5.

3.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	40	Existed

Is the inspection result normal?

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

4.CHECK AMBIENT SENSOR

Check ambient sensor. Refer to HAC-95, "Component Inspection".

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Replace ambient sensor. Refer to HAC-145, "Removal and Installation".

5.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	39	Existed

Is the inspection result normal?

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

6.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 front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Repair harness or connector.

7.CHECK INTERMITTENT INCIDENT

Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:0000000009652552

1.CHECK AMBIENT SENSOR

1. Remove ambient sensor. Refer to HAC-145, "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-145, "Removal and Installation".

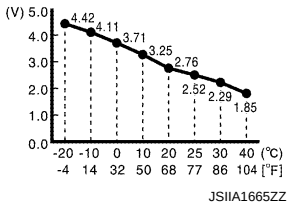
FRONT IN-VEHICLE SENSOR

Diagnosis Procedure

INFOID:0000000009652553

1.CHECK FRONT IN-VEHICLE SENSOR SIGNAL

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

+		–	Voltage
A/C auto amp.			
Connector	Terminal		
M50	19	Ground	

Is the inspection result normal?

YES >> GO TO 7.
NO >> GO TO 2.

2.CHECK FRONT IN-VEHICLE SENSOR POWER SUPPLY

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

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

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 5.

3.CHECK FRONT IN-VEHICLE SENSOR GROUND CIRCUIT FOR OPEN

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

Front in-vehicle sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M41	2	M50	40	Existed

Is the inspection result normal?

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

4.CHECK FRONT IN-VEHICLE SENSOR

Check front in-vehicle sensor. Refer to HAC-97, "Component Inspection".

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".

NO >> Replace front in-vehicle sensor. Refer to HAC-146, "Removal and Installation".

5. CHECK FRONT IN-VEHICLE SENSOR POWER SUPPLY CIRCUIT FOR OPEN

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

Front in-vehicle sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M41	1	M50	19	Existed

Is the inspection result normal?

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

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

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

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

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Repair harness or connector.

7. CHECK INTERMITTENT INCIDENT

Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:0000000009652554

1. CHECK FRONT IN-VEHICLE SENSOR

1. Remove front in-vehicle sensor. Refer to HAC-146, "Removal and Installation".
2. Check resistance between front 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 front in-vehicle sensor. Refer to HAC-146, "Removal and Installation".

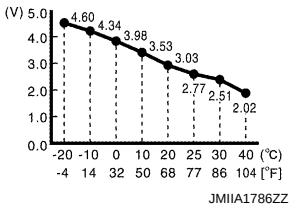
INTAKE SENSOR

Diagnosis Procedure

INFOID:0000000009652555

1.CHECK INTAKE SENSOR SIGNAL

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

+		–	Voltage
A/C auto amp.			
Connector	Terminal		
M50	37	Ground	

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Is the inspection result normal?

YES >> GO TO 7.
NO >> GO TO 2.

2.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 3.
NO >> GO TO 5.

3.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	40	Existed

Is the inspection result normal?

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

4.CHECK INTAKE SENSOR

Check intake sensor. Refer to HAC-99, "Component Inspection".

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Replace intake sensor. Refer to HAC-148, "Removal and Installation".

5.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	37	Existed

Is the inspection result normal?

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

6.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 front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Repair harness or connector.

7.CHECK INTERMITTENT INCIDENT

Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:0000000009652556

1.CHECK INTAKE SENSOR

1. Remove intake sensor. Refer to HAC-148, "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-148, "Removal and Installation".

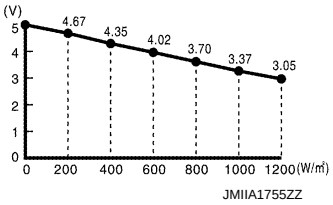
SUNLOAD SENSOR

Diagnosis Procedure

INFOID:0000000009652557

1.CHECK SUNLOAD SENSOR SIGNAL

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

+		–	Voltage
A/C auto amp.			
Connector	Terminal		
M50	18	Ground	

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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 W/m^2.

Is the inspection result normal?

YES >> GO TO 7.
NO >> GO TO 2.

2.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 3.
NO >> GO TO 5.

3.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	40	Existed

Is the inspection result normal?

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

4. REPLACE SUNLOAD SENSOR

1. Replace sunload sensor. Refer to HAC-147, "Removal and Installation".
2. Perform self-diagnosis function step 2. Refer to HAC-47, "On Board Diagnosis Function".
3. Check self-diagnosis result.

Is "25" or " ☀ 25" displayed?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> INSPECTION END

5. 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	18	Existed

Is the inspection result normal?

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

6. 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 front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Repair harness or connector.

7. CHECK INTERMITTENT INCIDENT

Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

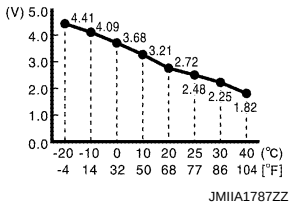
REAR IN-VEHICLE SENSOR

Diagnosis Procedure

INFOID:0000000009652558

1.CHECK REAR IN-VEHICLE SENSOR SIGNAL

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

+		–	Voltage
A/C auto amp.			
Connector	Terminal		
M50	38	Ground	

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Is the inspection result normal?

YES >> GO TO 7.
NO >> GO TO 2.

2.CHECK REAR IN-VEHICLE SENSOR POWER SUPPLY

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

+		–	Voltage (Approx.)
Rear in-vehicle sensor			
Connector	Terminal		
B233	1	Ground	5 V

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 5.

3.CHECK REAR IN-VEHICLE SENSOR GROUND CIRCUIT FOR OPEN

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

Rear in-vehicle sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
B233	2	M50	40	Existed

Is the inspection result normal?

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

4.CHECK REAR IN-VEHICLE SENSOR

Check rear in-vehicle sensor. Refer to HAC-103, "Component Inspection".

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Replace rear in-vehicle sensor. Refer to HAC-146, "Removal and Installation".

5. CHECK REAR IN-VEHICLE SENSOR POWER SUPPLY CIRCUIT FOR OPEN

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

Rear in-vehicle sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
B233	1	M50	38	Existed

Is the inspection result normal?

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

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

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

Rear in-vehicle sensor		—	Continuity
Connector	Terminal		
B233	1	Ground	Not existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Repair harness or connector.

7. CHECK INTERMITTENT INCIDENT

Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:0000000009652559

1. CHECK REAR IN-VEHICLE SENSOR

1. Remove rear in-vehicle sensor. Refer to HAC-146, "Removal and Installation".
2. Check resistance between rear in-vehicle sensor terminals. Refer to applicable table for the normal value.

Terminal		Condition	Resistance: kΩ
		Temperature: °C (°F)	
1	2	–20 (–4)	15.99
		–10 (14)	9.62
		0 (32)	6.00
		10 (50)	3.87
		20 (68)	2.57
		25 (77)	2.12
		30 (86)	1.76
		40 (104)	1.23

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace rear in-vehicle sensor. Refer to HAC-146, "Removal and Installation".

EXHAUST GAS/OUTSIDE ODOR DETECTING SENSOR

Diagnosis Procedure

INFOID:0000000009652560

1. CHECK EXHAUST GAS/OUTSIDE ODOR DETECTING SENSOR POWER SUPPLY

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

+		–	Voltage
Exhaust gas/outside odor detecting sensor			
Connector	Terminal		
E315	1	Ground	11 – 14 V

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector between exhaust gas/outside odor detecting sensor and fuse.

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

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

Exhaust gas/outside odor detecting sensor		—	Continuity
Connector	Terminal		
E315	2	Ground	Existed

Is the inspection result normal?

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

3. CHECK EXHAUST GAS/OUTSIDE ODOR DETECTING SENSOR SIGNAL CIRCUIT

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

+		–	Voltage (Approx.)
Exhaust gas/outside odor detecting sensor			
Connector	Terminal		
E315	3	Ground	12 V

Is the inspection result normal?

YES >> Replace exhaust gas/outside odor detecting sensor. Refer to HAC-149, "Removal and Installation".
NO >> GO TO 4.

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

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

Exhaust gas/outside odor detecting sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
E315	3	M50	36	Existed

Is the inspection result normal?

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

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

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

Exhaust gas/outside odor detecting sensor		—	Continuity
Connector	Terminal		
E315	3	Ground	Not existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Repair harness or connector.

FRONT AIR MIX DOOR MOTOR (DRIVER SIDE)

Diagnosis Procedure

INFOID:0000000009652561

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

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

+		–	Voltage
Front air mix door motor LH			
Connector	Terminal		
M306	1	Ground	9.5 – 13.5 V

Is the inspection result normal?

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

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

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

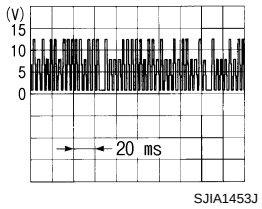
Front air mix door motor LH		—	Continuity
Connector	Terminal		
M306	2	Ground	Existed

Is the inspection result normal?

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

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

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

+		–	Output waveform
Front air mix door motor LH			
Connector	Terminal		
M306	3	Ground	

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Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 6.

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

Check front air mix door motor (driver side) is properly installed. Refer to HAC-151, "Exploded View".

Is the inspection result normal?

YES >> Replace front air mix door motor (driver side). Refer to HAC-152, "FRONT AIR MIX DOOR MOTOR : Removal and Installation".

NO >> Repair or replace malfunctioning part.

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

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

Front air mix door motor LH		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M306	1	M50	4	Existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Repair harness or connector.

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

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

Front air mix door motor LH		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M306	3	M50	5	Existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Repair harness or connector.

FRONT AIR MIX DOOR MOTOR (PASSENGER SIDE)

Diagnosis Procedure

INFOID:0000000009652562

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

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

+		–	Voltage
Front air mix door motor RH			
Connector	Terminal		
M307	1	Ground	9.5 – 13.5 V

Is the inspection result normal?

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

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

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

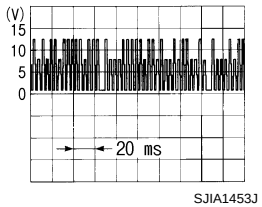
Front air mix door motor RH		—	Continuity
Connector	Terminal		
M307	2	Ground	Existed

Is the inspection result normal?

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

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

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

+		–	Output waveform
Front air mix door motor RH			
Connector	Terminal		
M307	3	Ground	

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Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 6.

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

Check front air mix door motor (passenger side) is properly installed. Refer to HAC-151, "Exploded View".

Is the inspection result normal?

YES >> Replace front air mix door motor (passenger side). Refer to HAC-152, "FRONT AIR MIX DOOR MOTOR : Removal and Installation".

NO >> Repair or replace malfunctioning part.

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

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

Front air mix door motor RH		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M307	1	M50	4	Existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Repair harness or connector.

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

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

Front air mix door motor RH		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M307	3	M50	5	Existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Repair harness or connector.

FRONT MODE DOOR MOTOR

Diagnosis Procedure

INFOID:0000000009652563

1.CHECK FRONT MODE DOOR MOTOR POWER SUPPLY

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

+		–	Voltage
Front mode door motor			
Connector	Terminal		
M310	1	Ground	9.5 – 13.5 V

Is the inspection result normal?

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

2.CHECK FRONT MODE DOOR MOTOR GROUND CIRCUIT FOR OPEN

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

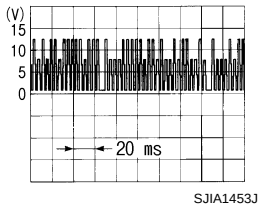
Front mode door motor		—	Continuity
Connector	Terminal		
M310	2	Ground	Existed

Is the inspection result normal?

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

3.CHECK FRONT MODE DOOR MOTOR LAN SIGNAL

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

+		–	Output waveform
Front mode door motor			
Connector	Terminal		
M310	3	Ground	

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Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 6.

4.CHECK INSTALLATION OF FRONT MODE DOOR MOTOR

Check front mode door motor is properly installed. Refer to HAC-151, "Exploded View".

Is the inspection result normal?

YES >> Replace front mode door motor. Refer to HAC-151, "FRONT MODE DOOR MOTOR : Removal and Installation".

NO >> Repair or replace malfunctioning part.

5. CHECK FRONT MODE DOOR MOTOR POWER SUPPLY CIRCUIT FOR OPEN

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

Front mode door motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M310	1	M50	4	Existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Repair harness or connector.

6. CHECK FRONT MODE DOOR MOTOR LAN SIGNAL CIRCUIT FOR OPEN

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

Front mode door motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M310	3	M50	5	Existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Repair harness or connector.

INTAKE DOOR MOTOR

Diagnosis Procedure

INFOID:0000000009652564

1.CHECK INTAKE DOOR MOTOR POWER SUPPLY

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

+		–	Voltage
Intake door motor			
Connector	Terminal		
M304	1	Ground	9.5 – 13.5 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.

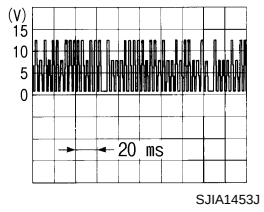
Intake door motor		—	Continuity
Connector	Terminal		
M304	2	Ground	Existed

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	

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Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 6.

4.CHECK INSTALLATION OF INTAKE DOOR MOTOR

Check intake door motor is properly installed. Refer to HAC-151, "Exploded View".

Is the inspection result normal?

YES >> Replace intake door motor. Refer to HAC-153, "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	4	Existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "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.

Intake door motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M304	3	M50	5	Existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Repair harness or connector.

REAR AIR MIX DOOR MOTOR

Diagnosis Procedure

INFOID:0000000009652565

1.CHECK REAR AIR MIX DOOR MOTOR POWER SUPPLY

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

+		–	Voltage
Rear air mix door motor			
Connector	Terminal		
B404	1	Ground	9.5 – 13.5 V

Is the inspection result normal?

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

2.CHECK REAR AIR MIX DOOR MOTOR GROUND CIRCUIT FOR OPEN

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

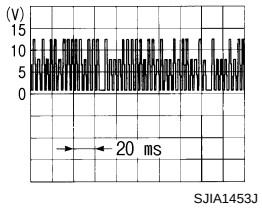
Rear air mix door motor		—	Continuity
Connector	Terminal		
B404	2	Ground	Existed

Is the inspection result normal?

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

3.CHECK REAR AIR MIX DOOR MOTOR LAN SIGNAL

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

+		–	Output waveform
Rear air mix door motor			
Connector	Terminal		
B404	3	Ground	

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Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 6.

4.CHECK INSTALLATION OF REAR AIR MIX DOOR MOTOR

Check rear air mix door motor is properly installed. Refer to HAC-151, "Exploded View".

Is the inspection result normal?

YES >> Replace rear air mix door motor. Refer to HAC-153, "REAR AIR MIX DOOR MOTOR : Removal and Installation".

NO >> Repair or replace malfunctioning part.

5. CHECK REAR AIR MIX DOOR MOTOR POWER SUPPLY CIRCUIT FOR OPEN

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

Rear air mix door motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
B404	1	M50	4	Existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Repair harness or connector.

6. CHECK REAR AIR MIX DOOR MOTOR LAN SIGNAL CIRCUIT FOR OPEN

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

Rear air mix door motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
B404	3	M50	5	Existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Repair harness or connector.

REAR MODE DOOR MOTOR

Diagnosis Procedure

INFOID:0000000009652566

1.CHECK REAR MODE DOOR MOTOR POWER SUPPLY

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

+		–	Voltage
Rear mode door motor			
Connector	Terminal		
B405	1	Ground	9.5 – 13.5 V

Is the inspection result normal?

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

2.CHECK REAR MODE DOOR MOTOR GROUND CIRCUIT FOR OPEN

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

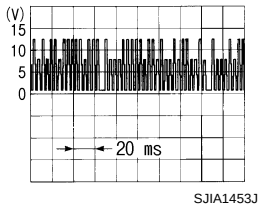
Rear mode door motor		—	Continuity
Connector	Terminal		
B405	2	Ground	Existed

Is the inspection result normal?

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

3.CHECK REAR MODE DOOR MOTOR LAN SIGNAL

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

+		–	Output waveform
Rear mode door motor			
Connector	Terminal		
B405	3	Ground	

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Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 6.

4.CHECK INSTALLATION OF REAR MODE DOOR MOTOR

Check rear mode door motor is properly installed. Refer to HAC-151, "Exploded View".

Is the inspection result normal?

YES >> Replace rear mode door motor. Refer to HAC-153, "REAR MODE DOOR MOTOR : Removal and Installation".

NO >> Repair or replace malfunctioning part.

5. CHECK REAR MODE DOOR MOTOR POWER SUPPLY CIRCUIT FOR OPEN

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

Rear mode door motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
B405	1	M50	4	Existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Repair harness or connector.

6. CHECK REAR MODE DOOR MOTOR LAN SIGNAL CIRCUIT FOR OPEN

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

Rear mode door motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
B405	3	M50	5	Existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Repair harness or connector.

DOOR MOTOR

Diagnosis Procedure

INFOID:0000000009652567

NOTE:
Check this circuit when all door motor system malfunction 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
Intake door motor			
Connector	Terminal		
M304	1	Ground	9.5 – 13.5 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.

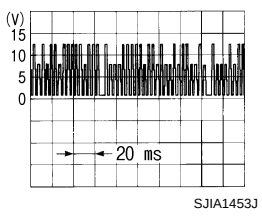
Intake door motor		—	Continuity
Connector	Terminal		
M304	2	Ground	Existed

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	

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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.
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	5	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-42, "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.
- Front air mix door motor LH
- Front air mix door motor RH
- Front mode door motor
- Intake door motor
- Rear air mix door motor
- Rear mode door motor
3. Check continuity between A/C auto amp. harness connector and ground.

A/C auto amp.		—	Continuity
Connector	Terminal		
M50	5	Ground	Not existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "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	4	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.
- Front air mix door motor LH
- Front air mix door motor RH
- Front mode door motor
- Rear air mix door motor
- Rear mode door motor
2. Check continuity between A/C auto amp. harness connector and ground.

A/C auto amp.		—	Continuity
Connector	Terminal		
M50	4	Ground	Not existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> Repair harness or connector.

A/C ON SIGNAL

Component Function Check

INFOID:0000000009652568

1.CHECK A/C ON SIGNAL

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

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

Is the inspection result normal?

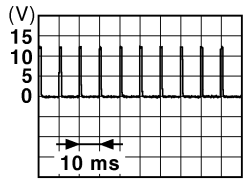
YES >> INSPECTION END
NO >> Refer to HAC-121, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000009652569

1.CHECK A/C ON SIGNAL

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

+		–	Output waveform
A/C auto amp.			
Connector	Terminal		
M50	13	Ground	

JPMIA0012GB

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> GO TO 2.

2.CHECK A/C ON SIGNAL CIRCUIT FOR OPEN

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

A/C auto amp.		BCM		Continuity
Connector	Terminal	Connector	Terminal	
M50	13	M121	27	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair harness or connector.

3. CHECK A/C ON SIGNAL CIRCUIT FOR SHORT

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

A/C auto amp.		—	Continuity
Connector	Terminal		
M50	13	Ground	Not existed

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-98, "Removal and Installation".
NO >> Repair harness or connector.

BLOWER FAN ON SIGNAL

Component Function Check

INFOID:0000000009652570

1.CHECK BLOWER FAN ON SIGNAL

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

Monitor item	Condition		Status
FAN ON SIG	Fan switch	OFF position	Off
		Except OFF position	On

Is the inspection result normal?

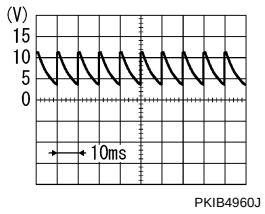
YES >> INSPECTION END
NO >> Refer to HAC-123, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000009652571

1.CHECK BLOWER FAN ON SIGNAL

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

+		–	Output waveform
A/C auto amp.			
Connector	Terminal		
M50	12	Ground	

PKIB4960J

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> GO TO 2.

2.CHECK BLOWER FAN ON SIGNAL CIRCUIT FOR OPEN

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

A/C auto amp.		BCM		Continuity
Connector	Terminal	Connector	Terminal	
M50	12	M121	28	Existed

Is the inspection result normal?

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

3.CHECK BLOWER FAN ON SIGNAL CIRCUIT FOR SHORT

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

A/C auto amp.		—	Continuity
Connector	Terminal		
M50	12	Ground	Not existed

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-98, "Removal and Installation".
NO >> Repair harness or connector.

FRONT BLOWER MOTOR

Diagnosis Procedure

INFOID:0000000009652572

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-80, "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 FRONT BLOWER MOTOR POWER SUPPLY

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

+		–	Voltage
Front blower motor			
Connector	Terminal		
M140	3	Ground	11 – 14 V

Is the inspection result normal?

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

3.CHECK FRONT BLOWER MOTOR GROUND CIRCUIT FOR OPEN

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

Front blower motor		—	Continuity
Connector	Terminal		
M140	1	Ground	Existed

Is the inspection result normal?

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

4.CHECK FRONT BLOWER MOTOR CONTROL SIGNAL CIRCUIT FOR OPEN

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

Front blower motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M140	2	M50	10	Existed

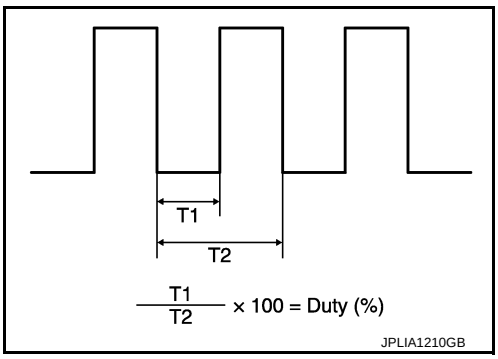
Is the inspection result normal?

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

5.CHECK FRONT BLOWER MOTOR CONTROL SIGNAL

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

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



Front blower motor		Condition	Duty ratio (Approx.)
Connector	Terminal	Fan speed (manual) VENT mode	
M140	2	1st	25 %
		2nd	33 %
		3rd	41 %
		4th	51 %
		5th	61 %
		6th	69 %
		7th	81 %

Is the inspection result normal?

YES >> Replace front blower motor. Refer to VTL-18, "FRONT BLOWER MOTOR : Removal and Installation".
NO >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".

6. CHECK FRONT 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 front blower motor harness connector.

Fuse block (J/B)		Front blower motor		Continuity
Connector	Terminal	Connector	Terminal	
M1	3A	M140	3	Existed
	8A			

Is the inspection result normal?

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

7. CHECK FRONT 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 FRONT BLOWER RELAY

Check front blower relay. Refer to HAC-127, "Component Inspection (Front Blower Relay)".

Is the inspection result normal?

YES >> Check front blower relay power supply circuit. Refer to PG-11, "Wiring Diagram - BATTERY POWER SUPPLY -" and PG-54, "Wiring Diagram - IGNITION POWER SUPPLY -".
NO >> Replace front blower relay.

Component Inspection (Front Blower Motor)

INFOID:0000000009652573

1. CHECK FRONT BLOWER MOTOR-I

1. Remove front blower motor. Refer to VTL-18, "FRONT BLOWER MOTOR : Removal and Installation".
2. Check that there is not any mixing foreign object in the front blower motor.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace front blower motor. Refer to VTL-18, "FRONT BLOWER MOTOR : Removal and Installation".

2.CHECK FRONT BLOWER MOTOR-II

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

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace front blower motor. Refer to VTL-18, "FRONT BLOWER MOTOR : Removal and Installation".

3.CHECK FRONT BLOWER MOTOR-III

Check that front blower motor turns smoothly.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace front blower motor. Refer to VTL-18, "FRONT BLOWER MOTOR : Removal and Installation".

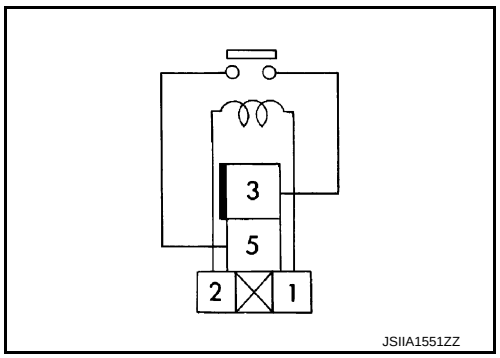
Component Inspection (Front Blower Relay)

INFOID:0000000009652574

1.CHECK FRONT BLOWER RELAY

1. Remove front blower relay. Refer to PG-80, "Fuse, Connector and Terminal Arrangement".
2. Check continuity between front 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 front blower relay.

REAR BLOWER MOTOR

Diagnosis Procedure

INFOID:0000000009652575

1.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 15A fuse (No. 23 and 24).
   NOTE:
   Refer to PG-81, "Fuse and Fusible Link 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 REAR BLOWER MOTOR POWER SUPPLY

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

+		–	Voltage
Rear blower motor			
Connector	Terminal		
B403	3	Ground	11 – 14 V

Is the inspection result normal?

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

3.CHECK REAR BLOWER MOTOR GROUND CIRCUIT FOR OPEN

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

Rear blower motor		—	Continuity
Connector	Terminal		
B403	1	Ground	Existed

Is the inspection result normal?

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

4.CHECK REAR BLOWER MOTOR CONTROL SIGNAL CIRCUIT FOR OPEN

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

Rear blower motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
B403	2	M50	30	Existed

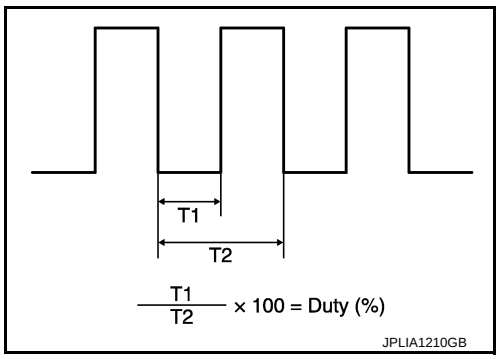
Is the inspection result normal?

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

5.CHECK REAR BLOWER MOTOR CONTROL SIGNAL

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

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



Rear blower motor		Condition	Duty ratio (Approx.)
Connector	Terminal	Fan speed (manual) VENT mode	
B403	2	1st	25 %
		2nd	33 %
		3rd	41 %
		4th	51 %
		5th	61 %
		6th	69 %
		7th	81 %

Is the inspection result normal?

YES >> Replace rear blower motor. Refer to VTL-18, "REAR BLOWER MOTOR : Removal and Installation".
NO >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".

6. CHECK REAR BLOWER MOTOR POWER SUPPLY CIRCUIT FOR OPEN

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

Rear blower relay		Rear blower motor		Continuity
Connector	Terminal	Connector	Terminal	
M14	5	B403	3	Existed
	7			

Is the inspection result normal?

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

7. CHECK REAR BLOWER RELAY GROUND CIRCUIT FOR OPEN

Check continuity between rear blower relay harness connector and ground.

Rear blower relay		—	Continuity
Connector	Terminal		
M14	2	Ground	Existed

Is the inspection result normal?

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

8. CHECK REAR BLOWER RELAY

Check rear blower relay. Refer to HAC-130, "Component Inspection (Rear Blower Relay)".

Is the inspection result normal?

YES >> Check rear blower relay power supply circuit. Refer to PG-11, "Wiring Diagram - BATTERY POWER SUPPLY -" and PG-54, "Wiring Diagram - IGNITION POWER SUPPLY -".
NO >> Replace rear blower relay.

Component Inspection (Rear Blower Motor)

INFOID:0000000009652576

1. CHECK REAR BLOWER MOTOR-I

1. Remove rear blower motor. Refer to VTL-18, "REAR BLOWER MOTOR : Removal and Installation".
2. Check that there is not any mixing foreign object in the rear blower motor.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace rear blower motor. Refer to VTL-18, "REAR BLOWER MOTOR : Removal and Installation".

2.CHECK REAR BLOWER MOTOR-II

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

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace rear blower motor. Refer to VTL-18, "REAR BLOWER MOTOR : Removal and Installation".

3.CHECK REAR BLOWER MOTOR-III

Check that rear blower motor turns smoothly.

Is the inspection result normal?

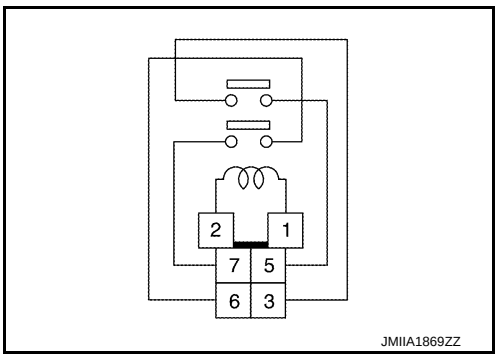
YES >> INSPECTION END
NO >> Replace rear blower motor. Refer to VTL-18, "REAR BLOWER MOTOR : Removal and Installation".

Component Inspection (Rear Blower Relay)

INFOID:0000000009652577

1.CHECK REAR BLOWER RELAY

1. Remove rear blower relay. Refer to PG-81, "Fuse and Fusible Link Arrangement".
2. Check continuity between rear blower relay terminal 3 and 5, then 6 and 7 when voltage is supplied between terminal 1 and 2.



Terminal		Voltage	Continuity
3	5	ON	Existed
		OFF	Not existed
6	7	ON	Existed
		OFF	Not existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace rear blower relay.

MAGNET CLUTCH

Component Function Check

INFOID:0000000009652578

1.CHECK MAGNET CLUTCH OPERATION

Perform auto active test of IPDM E/R. Refer to PCS-11, "Diagnosis Description".

Does it operate normally?

YES >> INSPECTION END
NO >> Refer to HAC-131, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000009652579

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-82, "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-36, "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-32, "MAGNET CLUTCH : Removal and Installation of Compressor Clutch".
NO >> Repair harness or connector.

IONIZER

Diagnosis Procedure

INFOID:0000000009652580

1.CHECK IONIZER POWER SUPPLY

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

+		–	Voltage
Ionizer			
Connector	Terminal		
M64	1	Ground	11 – 14 V

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector between ionizer and fuse block (J/B).

2.CHECK IONIZER GROUND CIRCUIT FOR OPEN

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

Ionizer		—	Continuity
Connector	Terminal		
M64	3	Ground	Existed

Is the inspection result normal?

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

3.CHECK IONIZER (ON/OFF) CONTROL SIGNAL

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

+		–	Voltage
A/C auto amp.			
Connector	Terminal		
M50	15	Ground	9.5 – 13.5 V

Is the inspection result normal?

YES >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
NO >> GO TO 4.

4.CHECK IONIZER (ON/OFF) CONTROL SIGNAL CIRCUIT FOR OPEN

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

Ionizer		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M64	4	M50	15	Existed

Is the inspection result normal?

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

5. CHECK IONIZER (ON/OFF) CONTROL SIGNAL CIRCUIT FOR SHORT

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

Ionizer		—	Continuity
Connector	Terminal		
M64	4	Ground	Not existed

Is the inspection result normal?

YES >> Replace ionizer. Refer to HAC-155, "Removal and Installation".
NO >> Repair harness or connector.

SYMPTOM DIAGNOSIS

FRONT AUTOMATIC AIR CONDITIONING SYSTEM

Symptom Table

INFOID:0000000009652581

NOTE:
Perform self-diagnoses with on board diagnosis and CONSULT before performing the symptom diagnosis. If any malfunction result or DTC is detected, perform the corresponding diagnosis.

Symptom	Corresponding malfunction part	Check item/Reference
• Front air conditioning does not activate. • Front air conditioning cannot be controlled. • Operation status of air conditioning is not indicated on display.	• A/C auto amp. ignition power supply circuit • Front A/C control (A/C auto amp.)	HAC-87, "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 • Front A/C control (A/C auto amp.)	HAC-87, "A/C AUTO AMP. : Diagnosis Procedure"
Discharge air temperature (driver side) does not change.	Front air mix door motor (driver side) system installation condition	Check front air mix door motor (driver side) system is properly installed. Refer to HAC-151, "Exploded View".
Discharge air temperature (passenger side) does not change.	Front air mix door motor (passenger side) system installation condition	Check front air mix door motor (passenger side) system is properly installed. Refer to HAC-151, "Exploded View".
Air outlet does not change.	Front mode door motor system installation condition	Check front mode door motor system is properly installed. Refer to HAC-151, "Exploded View".
Air inlet does not change.	Intake door motor system installation condition	Check intake door motor system is properly installed. Refer to HAC-151, "Exploded View".
Front blower motor does not operate.	• Front blower motor power supply circuit. • Front blower motor control signal circuit • Front blower motor • Front A/C control (A/C auto amp.)	HAC-125, "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 • CAN communication line • A/C ON signal circuit • Blower fan ON signal circuit • Front A/C control (A/C auto amp.)	HAC-142, "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 (front)	HAC-138, "FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Diagnosis Procedure"

Symptom		Corresponding malfunction part	Check item/Reference
• Insufficient heating • No warm air comes out. (Air flow volume is normal.)		• Engine cooling system • Front heater hose • Front heater core • Air leakage from each duct • Temperature setting trimmer (front)	HAC-140, "FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Diagnosis Procedure"
Noise is heard when the front air conditioning operates.	During compressor operation	Cooler cycle	HA-29, "Symptom Table"
	During front blower motor operation	• Mixing any foreign object in front blower motor • Front blower motor fan breakage • Front blower motor rotation inferiority	HAC-126, "Component Inspection (Front Blower Motor)"

REAR AUTOMATIC AIR CONDITIONING SYSTEM

Symptom Table

INFOID:0000000009652582

NOTE:

- Perform self-diagnoses with on board diagnosis and CONSULT, before performing the symptom diagnosis. If any malfunction result or DTC is detected, perform the corresponding diagnosis.
- The following table is based on the condition that front automatic air conditioning system operates normally.

Symptom		Corresponding malfunction part	Check item/Reference
• Rear air conditioning cannot be controlled by front A/C control. • Operation status of rear air conditioning is not indicated on front A/C control display.		Front A/C control (A/C auto amp.)	Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
Rear air conditioning cannot be controlled by rear A/C control.	Operation status of rear air conditioning is indicated on rear A/C control display.	Communication signal (rear A/C control → A/C auto amp.)	Refer to HAC-91, "Diagnosis Procedure".
	Operation status of rear air conditioning is not indicated on rear A/C control display.	Communication signal (A/C auto amp. → rear A/C control)	Refer to HAC-91, "Diagnosis Procedure".
		Rear A/C control power supply circuit	Refer to HAC-88, "REAR A/C CONTROL : Diagnosis Procedure".
Discharge air temperature does not change.		Rear air mix door motor system installation condition	Check rear air mix door motor system is properly installed. Refer to HAC-151, "Exploded View".
Air outlet does not change.		Rear mode door motor system installation condition	Check rear mode door motor system is properly installed. Refer to HAC-151, "Exploded View".
Rear blower motor does not operate.		• Rear blower motor power supply circuit. • Rear blower motor control signal circuit • Rear blower motor • Front A/C control (A/C auto amp.)	HAC-128, "Diagnosis Procedure"
• Insufficient cooling • No cool air comes out. (Air flow volume is normal.)		• Cooler cycle • Air leakage from each duct • Temperature setting trimmer (rear)	HAC-139, "REAR AUTOMATIC AIR CONDITIONING SYSTEM : Diagnosis Procedure"
• Insufficient heating • No warm air comes out. (Air flow volume is normal.)		• Rear heater hose • Rear heater core • Air leakage from each duct • Temperature setting trimmer (rear)	HAC-141, "REAR AUTOMATIC AIR CONDITIONING SYSTEM : Diagnosis Procedure"
Noise is heard when the rear blower motor operates.		• Mixing any foreign object in rear blower motor • Rear blower motor fan breakage • Rear blower motor rotation inferiority	HAC-129, "Component Inspection (Rear Blower Motor)"

ACCS (ADVANCED CLIMATE CONTROL SYSTEM)

Symptom Table

INFOID:0000000009652583

NOTE:
- Perform self-diagnoses with on board diagnosis and CONSULT, before performing the symptom diagnosis. If any malfunction result or DTC is detected, perform the corresponding diagnosis.
- The following table is based on the condition that front automatic air conditioning system operates normally.

Symptom	Corresponding malfunction part	Check item/Reference
• AUTO intake switch cannot be operated • Automatic intake control (exhaust gas/outside odor detecting mechanism) does not operate normally • Ambient air status indication on front A/C control display does not change	Front A/C control (A/C auto amp.)	Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".
Plasmacluster™ ion does not operate.	• Ionizer power supply circuit • Ionizer ON/OFF control signal circuit • Ionizer • Front A/C control (A/C auto amp.)	Refer to HAC-132, "Diagnosis Procedure".
Operation status of Plasmacluster™ ion does not switch according to air flow.	Front A/C control (A/C auto amp.)	Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".

INSUFFICIENT COOLING

FRONT AUTOMATIC AIR CONDITIONING SYSTEM

FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Description

INFOID:0000000009652584

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

FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Diagnosis Procedure

INFOID:0000000009652585

NOTE:
Perform self-diagnoses with on board diagnosis and CONSULT before performing symptom diagnosis. If any malfunction result or DTC is detected, perform the corresponding diagnosis.

1.CHECK MAGNET CLUTCH OPERATION

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

Is the inspection result normal?

YES >> GO TO 2.
NO >> Perform diagnosis of “COMPRESSOR DOES NOT OPERATE” in “SYMPTOM DIAGNOSIS”. Refer to HAC-142, "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-27, "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.

NOTE:
Actual ambient temperature is sensor recognition temperature of on board self-diagnosis STEP 5-1.

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-82, "Diagnosis Procedure".

6.CHECK SETTING OF TEMPERATURE SETTING TRIMMER (FRONT)

1. Check setting value of temperature setting trimmer (front). Refer to HAC-82, "Temperature Setting Trimmer (Front)".
2. Check that temperature setting trimmer is set to “+ direction”.
   NOTE:
   The control temperature can be set by setting of the temperature setting trimmer (front).
3. Set difference between the set temperature and control temperature to “0”.

Is inspection result normal?

YES >> INSPECTION END
NO >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".

REAR AUTOMATIC AIR CONDITIONING SYSTEM

REAR AUTOMATIC AIR CONDITIONING SYSTEM : Description

INFOID:0000000009652586

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

REAR AUTOMATIC AIR CONDITIONING SYSTEM : Diagnosis Procedure

INFOID:0000000009652587

NOTE:
Perform self-diagnoses with on board diagnosis and CONSULT before performing symptom diagnosis. If any malfunction result or DTC is detected, perform the corresponding diagnosis.

1.CHECK REFRIGERANT CYCLE PRESSURE

Connect recovery/recycling recharging equipment to the vehicle and perform pressure inspection with gauge. Refer to HA-27, "Symptom Table".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace parts depending on the inspection results.

2.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 3.
NO >> Repair or replace parts depending on the inspection results.

3.CHECK SETTING OF TEMPERATURE SETTING TRIMMER (REAR)

1. Check setting value of temperature setting trimmer (REAR). Refer to HAC-83, "Temperature Setting Trimmer (Rear)".
2. Check that temperature setting trimmer is set to “+ direction”.
   NOTE:
   The control temperature can be set by setting of the temperature setting trimmer (rear).
3. Set difference between the set temperature and control temperature to “0”.

Is inspection result normal?

YES >> INSPECTION END
NO >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".

INSUFFICIENT HEATING

FRONT AUTOMATIC AIR CONDITIONING SYSTEM

FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Description

INFOID:0000000009652588

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

FRONT AUTOMATIC AIR CONDITIONING SYSTEM : Diagnosis Procedure

INFOID:0000000009652589

NOTE:
Perform self-diagnoses with on board diagnosis and CONSULT before performing symptom diagnosis. If any malfunction result or 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 FRONT HEATER HOSE

Check installation of front 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 FRONT HEATER CORE

1. Check temperature of inlet hose and outlet hose of front heater core.
2. Check that inlet side of front 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 front heater core. Refer to HA-54, "HEATER CORE : Removal and Installation".

4.CHECK AIR LEAKAGE FROM EACH DUCT

Check duct and nozzle, etc. of the front 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 (FRONT)

1. Check setting value of temperature setting trimmer (front). Refer to HAC-82, "Temperature Setting Trimmer (Front)".
2. Check that temperature setting trimmer is set to “– direction”.
   NOTE:
   The control temperature can be set by the temperature setting trimmer (front).
3. Set difference between the set temperature and control temperature to “0”.

Are the symptoms solved?

YES >> INSPECTION END
NO >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".

REAR AUTOMATIC AIR CONDITIONING SYSTEM

REAR AUTOMATIC AIR CONDITIONING SYSTEM : Description

INFOID:0000000009652590

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

REAR AUTOMATIC AIR CONDITIONING SYSTEM : Diagnosis Procedure

INFOID:0000000009652591

NOTE:
Perform self-diagnoses with on board diagnosis and CONSULT before performing symptom diagnosis. If any malfunction result or DTC is detected, perform the corresponding diagnosis.

1.CHECK REAR HEATER HOSE

Check installation of rear heater hose by visually or touching.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace parts depending on the inspection results.

2.CHECK REAR HEATER CORE

1. Check temperature of inlet hose and outlet hose of rear heater core.
2. Check that inlet side of rear 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 3.
NO >> Replace rear heater core. Refer to HA-59, "HEATER CORE : Removal and Installation".

3.CHECK AIR LEAKAGE FROM EACH DUCT

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

Is the inspection result normal?

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

4.CHECK SETTING OF TEMPERATURE SETTING TRIMMER (REAR)

1. Check setting value of temperature setting trimmer (rear). Refer to HAC-83, "Temperature Setting Trimmer (Rear)".
2. Check that temperature setting trimmer is set to “– direction”.
   NOTE:
   The control temperature can be set by the temperature setting trimmer (rear).
3. Set difference between the set temperature and control temperature to “0”.

Are the symptoms solved?

YES >> INSPECTION END
NO >> Replace front A/C control (A/C auto amp.). Refer to HAC-143, "Removal and Installation".

COMPRESSOR DOES NOT OPERATE

Description

INFOID:0000000009652592

SYMPTOM
Compressor does not operate.

Diagnosis Procedure

INFOID:0000000009652593

NOTE:
- Perform self-diagnoses with on board diagnosis and CONSULT before performing symptom diagnosis. If any malfunction result or 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-131, "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-442, "Component Function Check".

Is the inspection result normal?

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

3.CHECK A/C ON SIGNAL

Check A/C ON signal. Refer to HAC-121, "Component Function Check".

Is inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace malfunctioning parts.

4.CHECK BLOWER FAN ON SIGNAL

Check blower fan ON signal. Refer to HAC-123, "Component Function Check".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace malfunctioning parts

5.CHECK BCM 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-36, "Removal and Installation".
NO >> Replace BCM. Refer to BCS-98, "Removal and Installation".

REMOVAL AND INSTALLATION

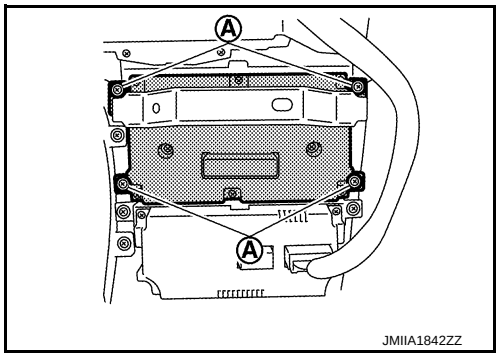
FRONT A/C CONTROL

Removal and Installation

INFOID:0000000009652594

REMOVAL

1. Remove cluster lid C. Refer to IP-28, "Removal and Installation".
2. Remove fixing screws (A), and then remove front A/C control.



INSTALLATION

Install in the reverse order of removal.

REAR A/C CONTROL

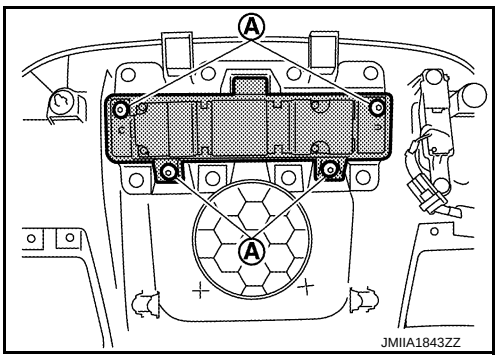
Removal and Installation

INFOID:0000000009652595

REMOVAL

With Rear Display

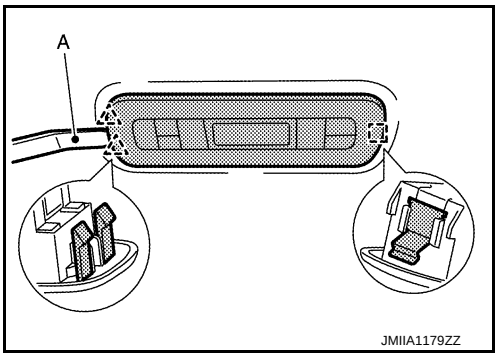
1. Remove roof console. Refer to INT-35, "Removal and Installation".
2. Remove fixing screws (A), and then remove rear A/C control.



Without Rear Display

1. Disengage fixing pawls and metal clip using a remover tool (A).

: Pawl
: Metal clip



2. Disconnect harness connector, and then remove rear A/C control.

INSTALLATION

Install in the reverse order of removal.

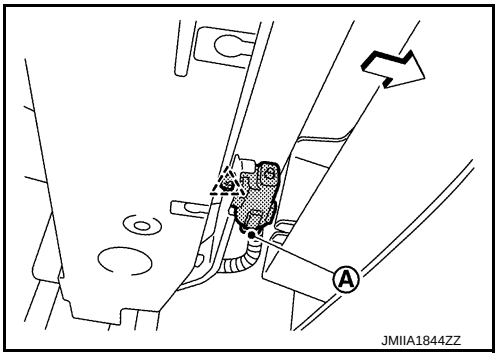
AMBIENT SENSOR

Removal and Installation

INFOID:0000000009652596

REMOVAL

1. Remove engine under cover. Refer to EXT-23, "Removal and Installation".
2. Disconnect harness connector (A).
3. Disengage fixing pawl, and then remove ambient sensor.



: Pawl

: Vehicle front

INSTALLATION

Install in the reverse order of removal.

IN-VEHICLE SENSOR

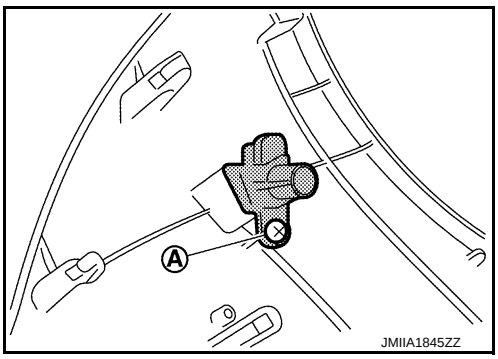
Removal and Installation

INFOID:0000000009652597

REMOVAL

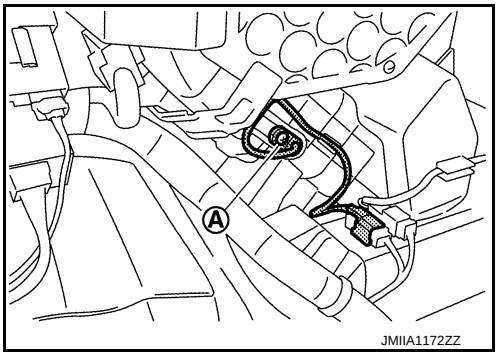
Front Side

1. Remove instrument lower panel LH. Refer to IP-14, "Removal and Installation".
2. Remove fixing screw (A), and then remove in-vehicle sensor.



Rear Side

1. Remove luggage side lower finisher RH. Refer to INT-43, "LUGGAGE SIDE LOWER FINISHER : Removal and Installation".
2. Remove fixing screw (A), and then disconnect harness connector.
3. Remove intake sensor from rear A/C unit assembly.



INSTALLATION

Install in the reverse order of removal.

SUNLOAD SENSOR

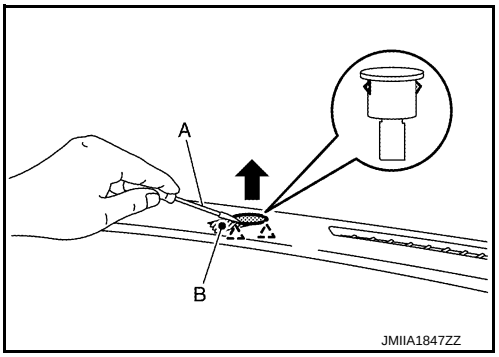
Removal and Installation

INFOID:0000000009652598

REMOVAL

1. Disengage fixing pawls using a remover tool (A) as shown in the figure.
   CAUTION:
   Apply protective tape (B) on the part to protect it from damage.

   : Pawl



2. Disconnect sunload sensor harness connector, and then remove sunload sensor.

INSTALLATION

Install in the reverse order of removal.

INTAKE SENSOR

Removal and Installation

INFOID:0000000009652599

REMOVAL

1. Remove evaporator assembly. Refer to HA-52, "EVAPORATOR : Removal and Installation".
2. Remove intake sensor from evaporator assembly.

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.**
- **Check for leakages when recharging refrigerant. Refer to HA-18, "Leak Test".**

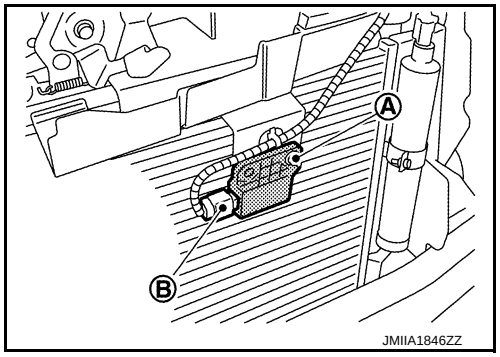
EXHAUST GAS/OUTSIDE ODOR SENSOR

Removal and Installation

INFOID:0000000009652600

REMOVAL

1. Remove front grille. Refer to EXT-18, "Removal and Installation".
2. Remove mounting nut (A), and then remove exhaust gas/outside odor sensor.
3. Disconnect exhaust gas/outside odor sensor connector (B).



INSTALLATION

Install in the reverse order of removal.

REFRIGERANT PRESSURE SENSOR

Exploded View

INFOID:0000000009652601

Refer to HA-43, "Exploded View".

Removal and Installation

INFOID:0000000009652602

REMOVAL

Refer to HA-45, "REFRIGERANT PRESSURE SENSOR : Removal and Installation".

INSTALLATION

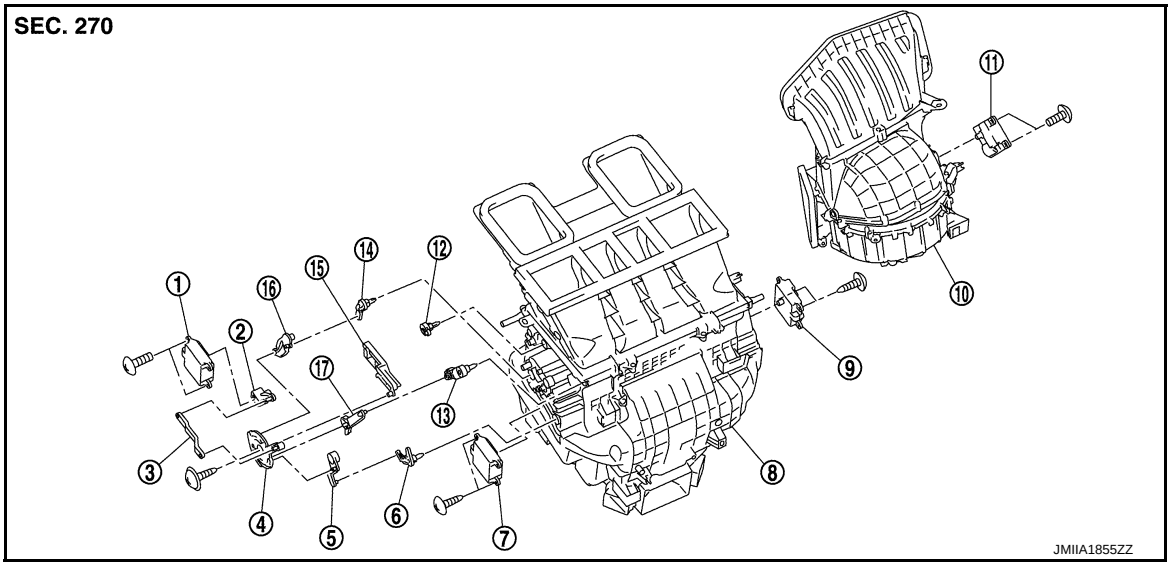
Install in the reverse order of removal.

DOOR MOTOR

Exploded View

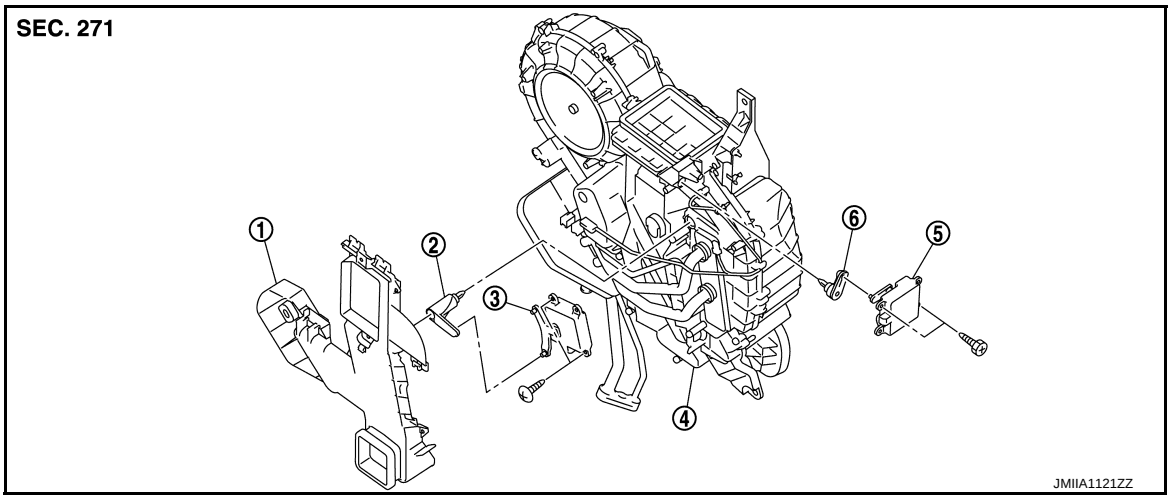
INFOID:0000000009652603

Front A/C unit



1. Front mode door motor
2. Front mode door lever
3. Link rod
4. Main link
5. Foot link
6. Foot lever
7. Front air mix door motor (Driver side)
8. Heater & cooling unit assembly
9. Front air mix door motor (Passenger side)
10. Blower unit assembly
11. Intake door motor
12. Defroster lever
13. Ventilator lever
14. Max. cool lever
15. Defroster link
16. Max. cool link
17. Ventilator link

Rear A/C unit



1. Rear foot duct 2
2. Rear air mix door lever
3. Rear air mix door motor
4. Rear A/C unit assembly
5. Rear mode door motor
6. Rear mode door lever

FRONT MODE DOOR MOTOR

FRONT MODE DOOR MOTOR : Removal and Installation

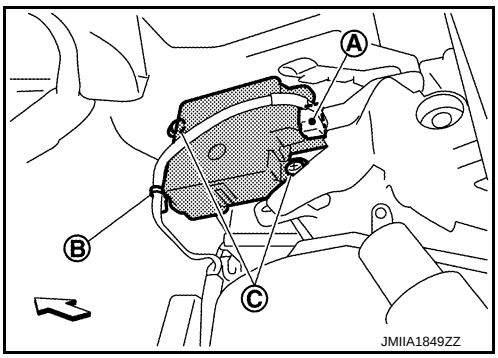
INFOID:0000000009652604

REMOVAL

1. Remove instrument lower panel LH. Refer to IP-14, "Removal and Installation".

2. Disconnect harness connector (A), and then remove harness fixing clip (B).
3. Remove fixing screws (C), and then remove front mode door motor from heater & cooling unit assembly.

⇦ : Vehicle front



INSTALLATION

Install in the reverse order of removal.

FRONT AIR MIX DOOR MOTOR

FRONT AIR MIX DOOR MOTOR : Removal and Installation

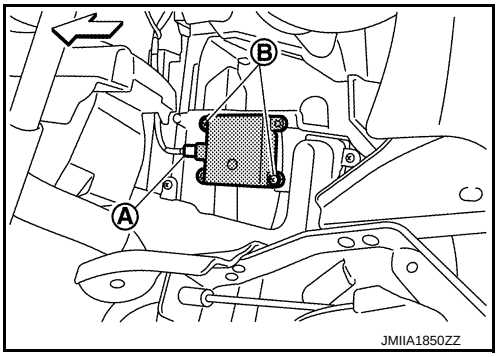
INFOID:0000000009652605

REMOVAL

Driver Side

1. Set the temperature at 18°C (64°F).
   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 instrument lower cover LH. Refer to IP-14, "Removal and Installation".
4. Disconnect harness connector (A), and then remove fixing screws (B).
5. Remove front air mix door motor from heater & cooling unit assembly.

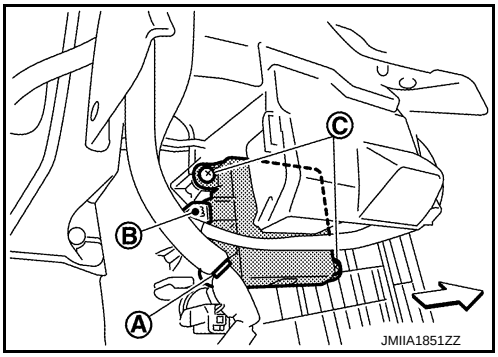
⇦ : Vehicle front



Passenger Side

1. Set the temperature at 18°C (64°F).
   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 instrument lower cover RH. Refer to IP-14, "Removal and Installation".
4. Remove harness fixing clip (A), and then disconnect harness connector (B).
5. Remove fixing screws (C), and then remove front air mix door motor from heater & cooling unit assembly.

⇦ : Vehicle front



INSTALLATION
Install in the reverse order of removal.

INTAKE DOOR MOTOR

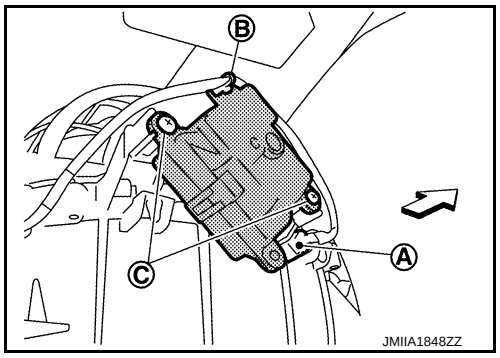
INTAKE DOOR MOTOR : Removal and Installation

INFOID:0000000009652606

REMOVAL

1. Remove instrument lower panel RH. Refer to IP-14, "Removal and Installation".
2. Disconnect harness connector (A), and then remove harness fixing clip (B).
3. Remove fixing screws (C), and then remove intake door motor from blower unit assembly.

⇦ : Vehicle front



INSTALLATION
Install in the reverse order of removal.

REAR MODE DOOR MOTOR

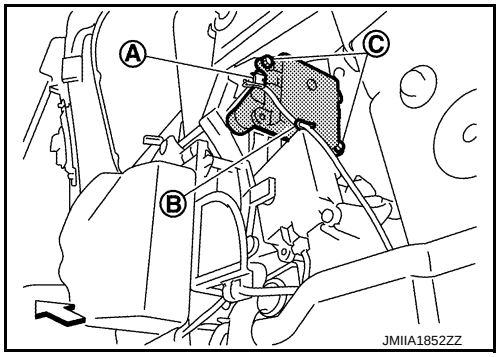
REAR MODE DOOR MOTOR : Removal and Installation

INFOID:0000000009652607

REMOVAL

1. Remove luggage side lower finisher RH. Refer to INT-43, "LUGGAGE SIDE LOWER FINISHER : Removal and Installation".
2. Disconnect harness connector (A), and then remove harness fixing clip (B).
3. Remove fixing screws (C), and then remove rear mode door motor from rear A/C unit assembly.

⇦ : Vehicle front



INSTALLATION
Install in the reverse order of removal.

REAR AIR MIX DOOR MOTOR

REAR AIR MIX DOOR MOTOR : Removal and Installation

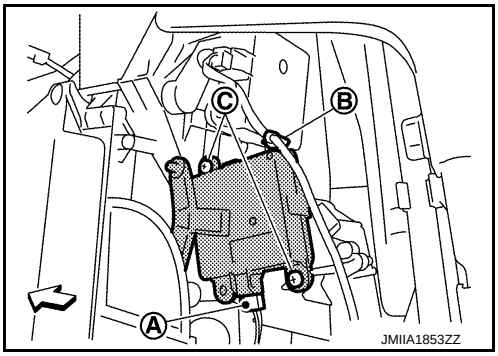
INFOID:0000000009652608

REMOVAL

1. Set the temperature at 18°C (64°F).
   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 luggage side lower finisher RH. Refer to INT-43, "LUGGAGE SIDE LOWER FINISHER : Removal and Installation".

4. Disconnect harness connector (A), and then remove harness fixing clip (B).
5. Remove fixing screws (C), and then remove rear air mix door motor from rear A/C unit assembly.

⇦ : Vehicle front



INSTALLATION

Install in the reverse order of removal.

IONIZER

Exploded View

INFOID:0000000009652609

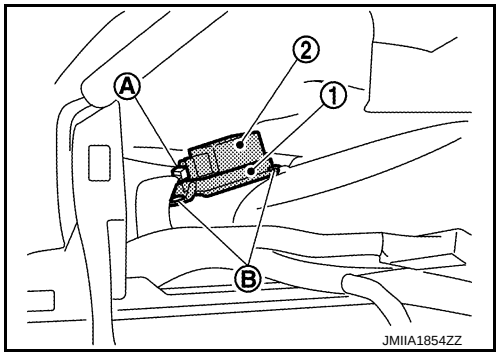
Refer to VTL-8, "Exploded View".

Removal and Installation

INFOID:0000000009652610

Removal

1. Remove BCM. Refer to BCS-98, "Removal and Installation".
2. Disconnect harness connector (A).
3. Remove fixing clips (B), and then remove ionizer bracket (1) and ionizer (2) as a set.
   CAUTION:
   Never tough the surface (ceramic part) of the ionizer. It is the discharge electrode.



INSTALLATION

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

CAUTION:
If there is dirt, use a clean cloth and clean the discharge electrode (ceramic part) of the ionizer.

PRECAUTION

PRECAUTIONS

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

INFOID:0000000009652611

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

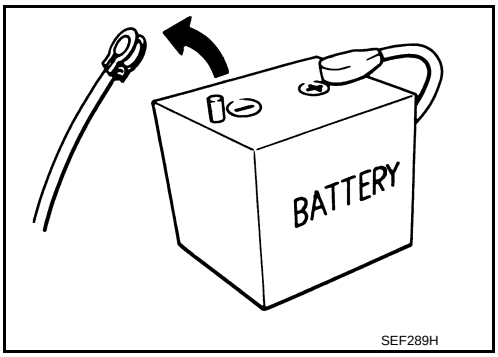
WARNING:

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.**

Precautions for Removing Battery Terminal

INFOID:0000000010022913



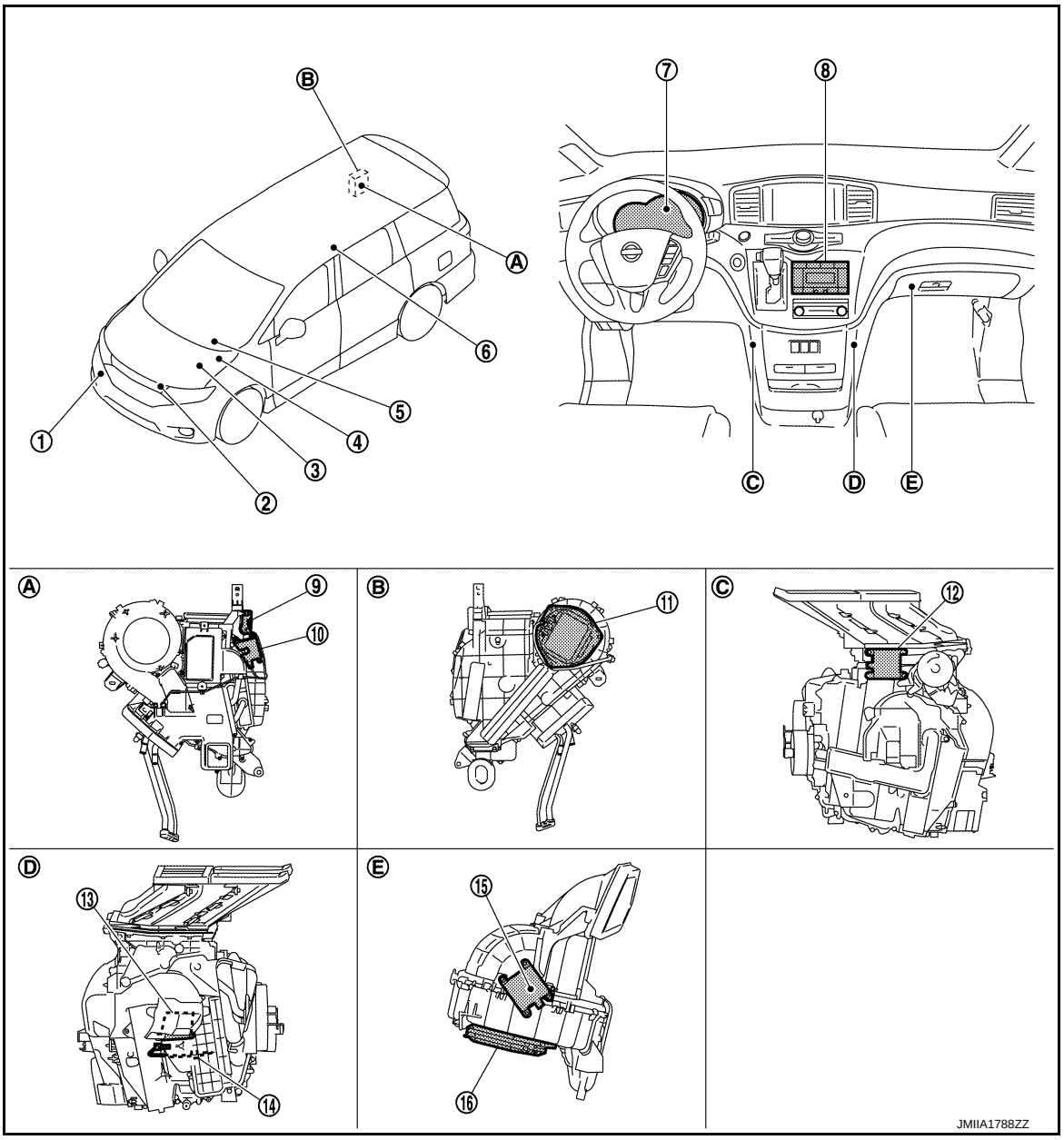
- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.
  NOTE:
  ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.
- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch.
  NOTE:
  If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.
- After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC.
  NOTE:
  The removal of 12V battery may cause a DTC detection error.

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000009652612



A. Left side of rear A/C unit assembly
B. Right side of rear A/C unit assembly
C. Left side of heater & cooling unit assembly
D. Right side of heater & cooling unit assembly
E. Right side of blower unit assembly

No.	Component	Function
1.	Magnet clutch	HAC-161, "Magnet Clutch"
2.	Refrigerant pressure sensor	HAC-160, "Refrigerant Pressure Sensor"

No.	Component	Function
3.	ECM	ECM, when receiving A/C ON signal and blower fan ON signal from BCM, 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 combination meter via CAN communication line. Refer to EC-15, "ENGINE CONTROL SYSTEM : Component Parts Location" for detailed installation location.
4.	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, "IPDM E/R : Component Parts Location" for detailed installation location.
5.	BCM	BCM transmits A/C ON signal and blower fan ON signal, received from A/C amp., to ECM via CAN communication line. Refer to BCS-4, "BODY CONTROL SYSTEM : Component Parts Location" for detailed installation location.
6.	Rear A/C control	HAC-160, "Rear A/C Control"
7.	Combination meter	Combination meter transmits engine coolant temperature signal to A/C amp.
8.	Front A/C control (A/C amp.)	HAC-160, "Front A/C Control (A/C Amp.)"
9.	Rear mode door motor	HAC-159, "REAR A/C UNIT ASSEMBLY : Rear Mode Door Motor"
10.	Rear air mix door motor	HAC-159, "REAR A/C UNIT ASSEMBLY : Rear Air Mix Door Motor"
11.	Rear blower motor	HAC-160, "REAR A/C UNIT ASSEMBLY : Rear Blower Motor"
12.	Front mode door motor	HAC-159, "HEATER & COOLING UNIT ASSEMBLY : Front Mode Door Motor"
13.	Front air mix door motor	HAC-159, "HEATER & COOLING UNIT ASSEMBLY : Front Air Mix Door Motor"
14.	Intake sensor	HAC-159, "HEATER & COOLING UNIT ASSEMBLY : Intake Sensor"
15.	Intake door motor	HAC-158, "BLOWER UNIT ASSEMBLY : Intake Door Motor"
16.	Front blower motor	HAC-158, "BLOWER UNIT ASSEMBLY : Front Blower Motor"

BLOWER UNIT ASSEMBLY

BLOWER UNIT ASSEMBLY : Intake Door Motor

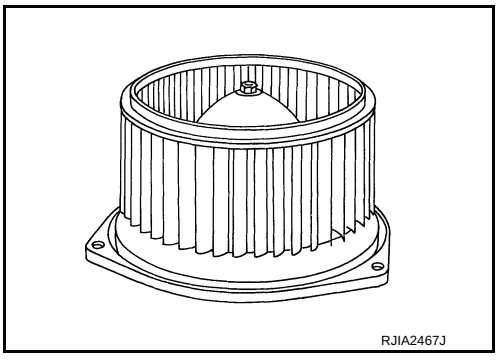
INFOID:0000000009652613

- 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 amp. Refer to HAC-164, "FRONT MANUAL AIR CONDITIONING SYSTEM : Door Control".
- Rotation of motor is transmitted to intake door, then air inlet is switched.

BLOWER UNIT ASSEMBLY : Front Blower Motor

INFOID:0000000009652614

- The front 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 front blower motor control signal (duty ratio) from A/C amp.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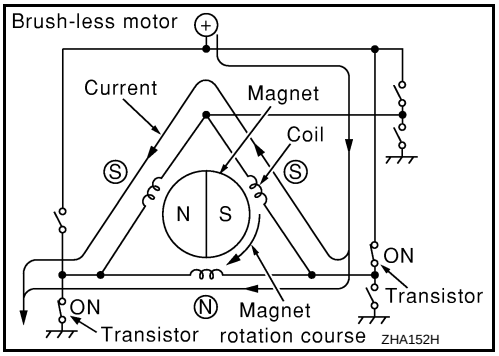
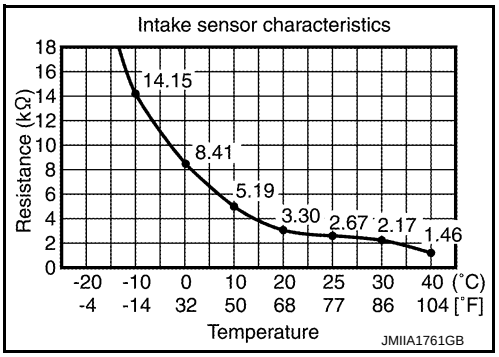


HEATER & COOLING UNIT ASSEMBLY

HEATER & COOLING UNIT ASSEMBLY : Intake Sensor

INFOID:0000000009652615

Intake sensor measures front 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 : Front Air Mix Door Motor

INFOID:0000000009652616

- Front air mix 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 amp. Refer to HAC-164, "FRONT MANUAL AIR CONDITIONING SYSTEM : Door Control".
- Rotation of motor is transmitted to front air mix door, then air flow temperature is switched.

HEATER & COOLING UNIT ASSEMBLY : Front Mode Door Motor

INFOID:0000000009652617

- Front 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 amp. Refer to HAC-164, "FRONT MANUAL AIR CONDITIONING SYSTEM : Door Control".
- Rotation of motor is transmitted to front mode door (ventilator door, max. cool door, defroster door and foot door) by lever, link, and rod, then air outlet is switched.

REAR A/C UNIT ASSEMBLY

REAR A/C UNIT ASSEMBLY : Rear Air Mix Door Motor

INFOID:0000000009652618

- Rear air mix 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 amp. Refer to HAC-164, "FRONT MANUAL AIR CONDITIONING SYSTEM : Door Control".
- Rotation of motor is transmitted to rear air mix door by lever, then air flow temperature is switched.

REAR A/C UNIT ASSEMBLY : Rear Mode Door Motor

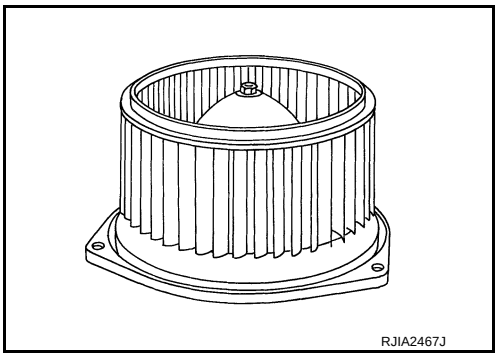
INFOID:0000000009652619

- Rear 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 amp. Refer to HAC-164, "FRONT MANUAL AIR CONDITIONING SYSTEM : Door Control".
- Rotation of motor is transmitted to rear mode door by lever, then air outlet is switched.

REAR A/C UNIT ASSEMBLY : Rear Blower Motor

INFOID:0000000009652620

- The rear 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 rear blower motor control signal (duty ratio) from A/C amp.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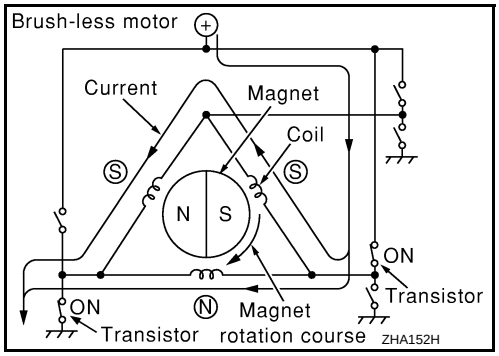
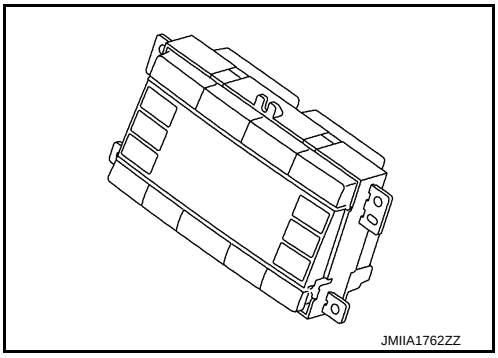


Front A/C Control (A/C Amp.)

INFOID:0000000009652621

- Front A/C control has switches and display that can set and indicate the operation of front manual air conditioning system.
- Front A/C control integrates A/C amp. A/C amp. controls front manual air conditioning system, by receiving and calculating signal from each sensor and switch. A/C amp. has self-diagnosis function. Diagnosis of air conditioning system can be performed quickly.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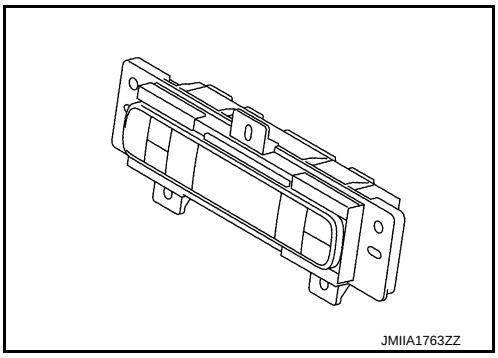
Rear A/C Control

INFOID:0000000009652622

Rear A/C control has switches and display that can set and indicate the operation of rear manual air conditioning system. Rear A/C control transmits setting status to A/C amp. via communication line. A/C amp. controls rear manual air conditioning system.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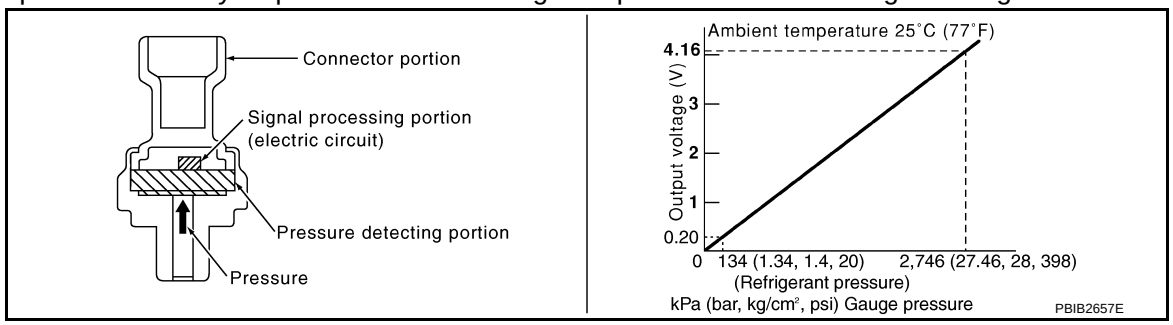
Refrigerant Pressure Sensor

INFOID:0000000009652623

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.



STRUCTURE AND OPERATION

- The refrigerant pressure sensor is a capacitance type sensor. It consists of a pressure detection areas 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

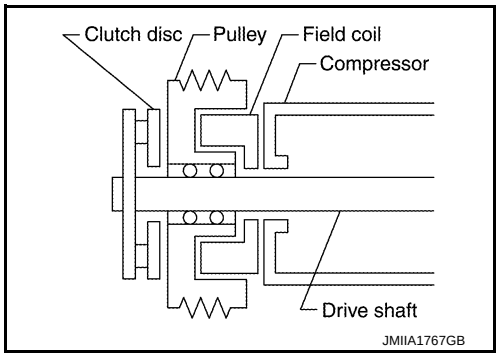
INFOID:0000000009652624

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 pressed 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.



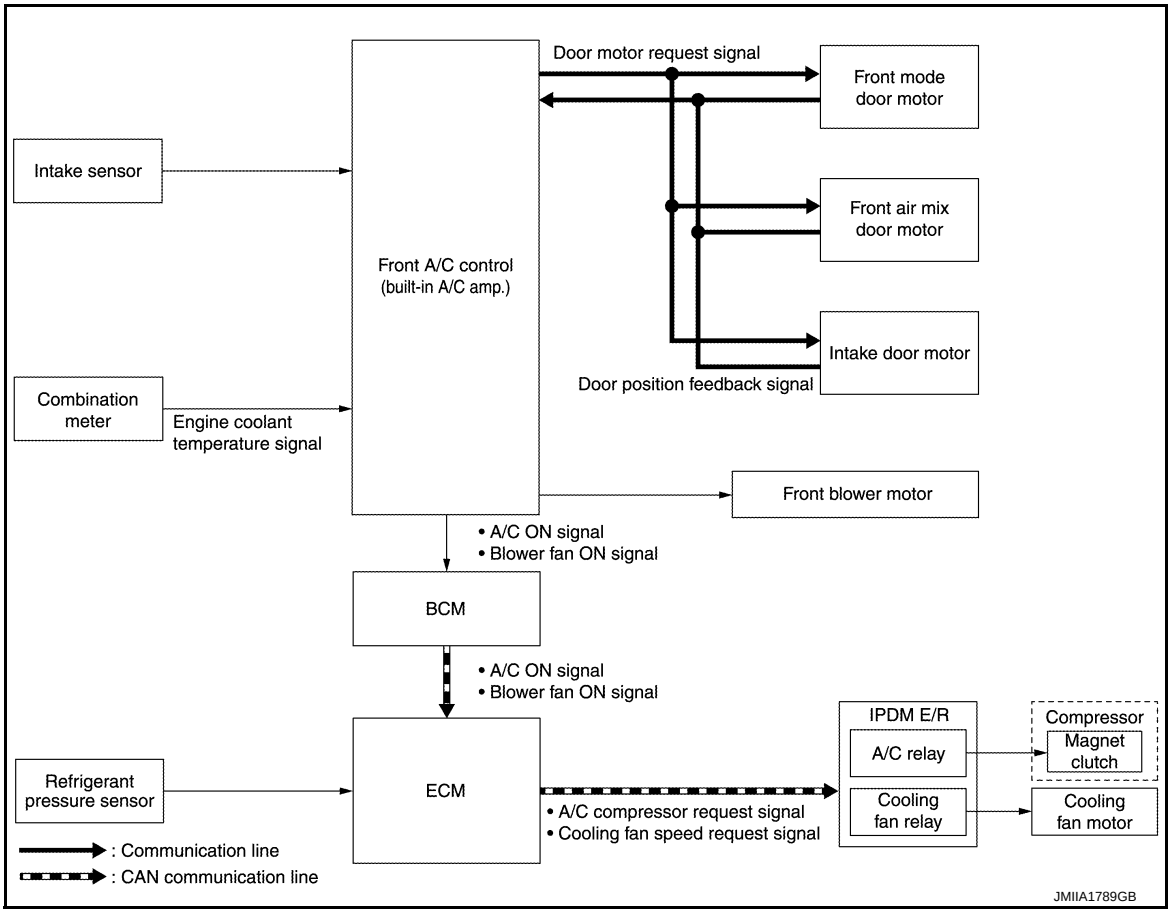
SYSTEM

FRONT MANUAL AIR CONDITIONING SYSTEM

FRONT MANUAL AIR CONDITIONING SYSTEM : System Description

INFOID:0000000009652625

SYSTEM DIAGRAM



DESCRIPTION

- Front manual air conditioning system is controlled by each function of A/C amp., BCM, ECM and IPDM E/R.
- Each operation of front air conditioning can be controlled by front A/C control (built-in A/C amp.).

CONTROL BY A/C AMP.

- HAC-163, "FRONT MANUAL AIR CONDITIONING SYSTEM : Air Flow Control"
- HAC-163, "FRONT MANUAL AIR CONDITIONING SYSTEM : Air Inlet Control"
- HAC-163, "FRONT MANUAL AIR CONDITIONING SYSTEM : Compressor Control"
- HAC-164, "FRONT MANUAL AIR CONDITIONING SYSTEM : Door Control"
- Correction for input value

Intake temperature correction

- A/C amp. inputs the temperature detected by intake sensor as the intake temperature (front evaporator temperature).
- A/C amp. performs the correction of the temperature detected by intake sensor for front air conditioning control.
- A/C 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.

CONTROL BY BCM

- HAC-163, "FRONT MANUAL AIR CONDITIONING SYSTEM : Compressor Control"

CONTROL BY ECM

- HAC-163, "FRONT MANUAL AIR CONDITIONING SYSTEM : Compressor Control"

- Cooling fan control. Refer to EC-45, "COOLING FAN CONTROL : System Description".

CONTROL BY IPDM E/R

- HAC-163, "FRONT MANUAL AIR CONDITIONING SYSTEM : Compressor Control"
- Cooling fan control. Refer to PCS-5, "RELAY CONTROL SYSTEM : System Description".

FRONT MANUAL AIR CONDITIONING SYSTEM : Air Flow Control

INFOID:0000000009652626

DESCRIPTION

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

FAN SPEED CONTROL AT DOOR MOTOR OPERATION

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

FRONT MANUAL AIR CONDITIONING SYSTEM : Air Inlet Control

INFOID:0000000009652627

A/C amp. controls air inlet to fresh air intake (FRE), when engine coolant temperature is 105°C (221°F) or more.

FRONT MANUAL AIR CONDITIONING SYSTEM : Compressor Control

INFOID:0000000009652628

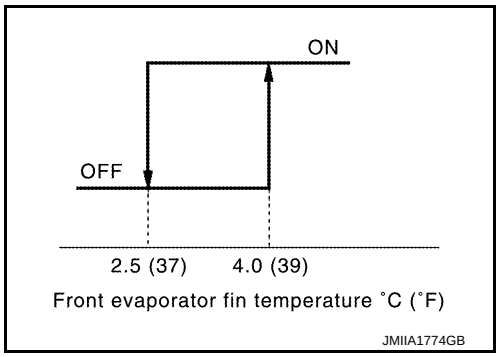
DESCRIPTION

- When the compressor activation condition is satisfied while front blower motor is activated, A/C amp. transmits A/C ON signal and blower fan ON signal to BCM.
- BCM transmits the A/C ON signal and blower fan ON signal to ECM via CAN communication line. Refer to BCS-12, "SIGNAL BUFFER SYSTEM : System Description".
- 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 AMP.

Low Temperature Protection Control

When intake sensor detects that front evaporator fin temperature is 2.5°C (37°F) or less, A/C amp. requests ECM to turn the compressor OFF, and stops the compressor.
When the front evaporator fin temperature returns to 4.0°C (39°F) or more, the compressor is activated.



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/cm^2, 452 psi) or more (When the engine speed is less than 1,500 rpm)
- 2.74 MPa (27.9 kg/cm^2, 397 psi) or more (When the engine speed is 1,500 rpm or more)
- 0.14 MPa (1.4 kg/cm^2, 20 psi) or less

Compressor Oil Circulation Control

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

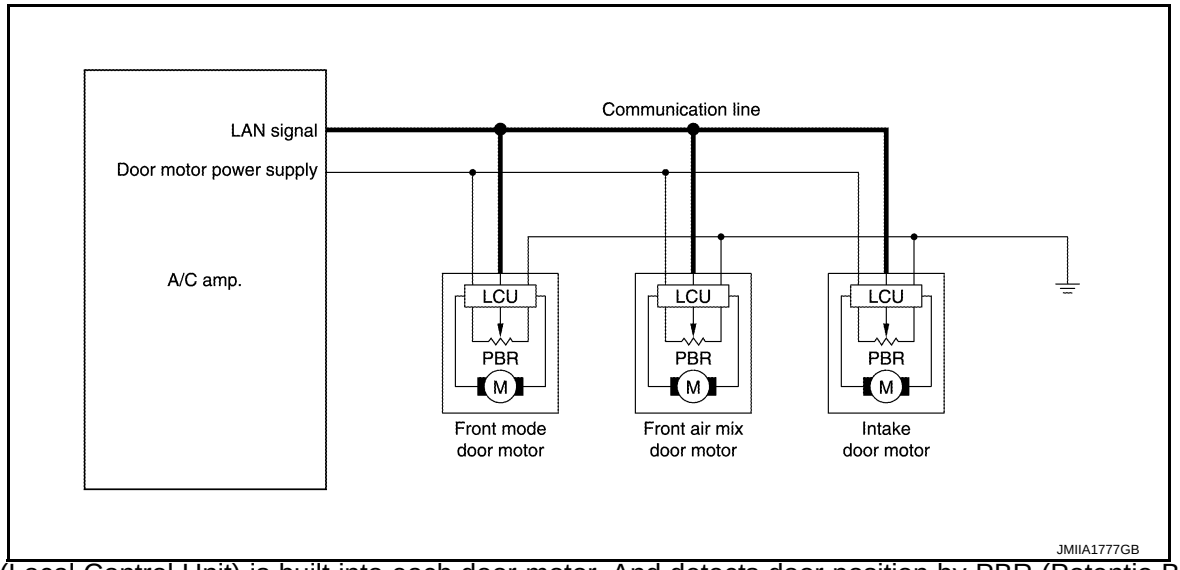
Air Conditioning Cut Control

When the engine condition is high load, ECM transmit A/C relay OFF request to IPDM E/R, and stops the compressor. Refer to EC-43, "AIR CONDITIONING CUT CONTROL : System Description".

FRONT MANUAL AIR CONDITIONING SYSTEM : Door Control

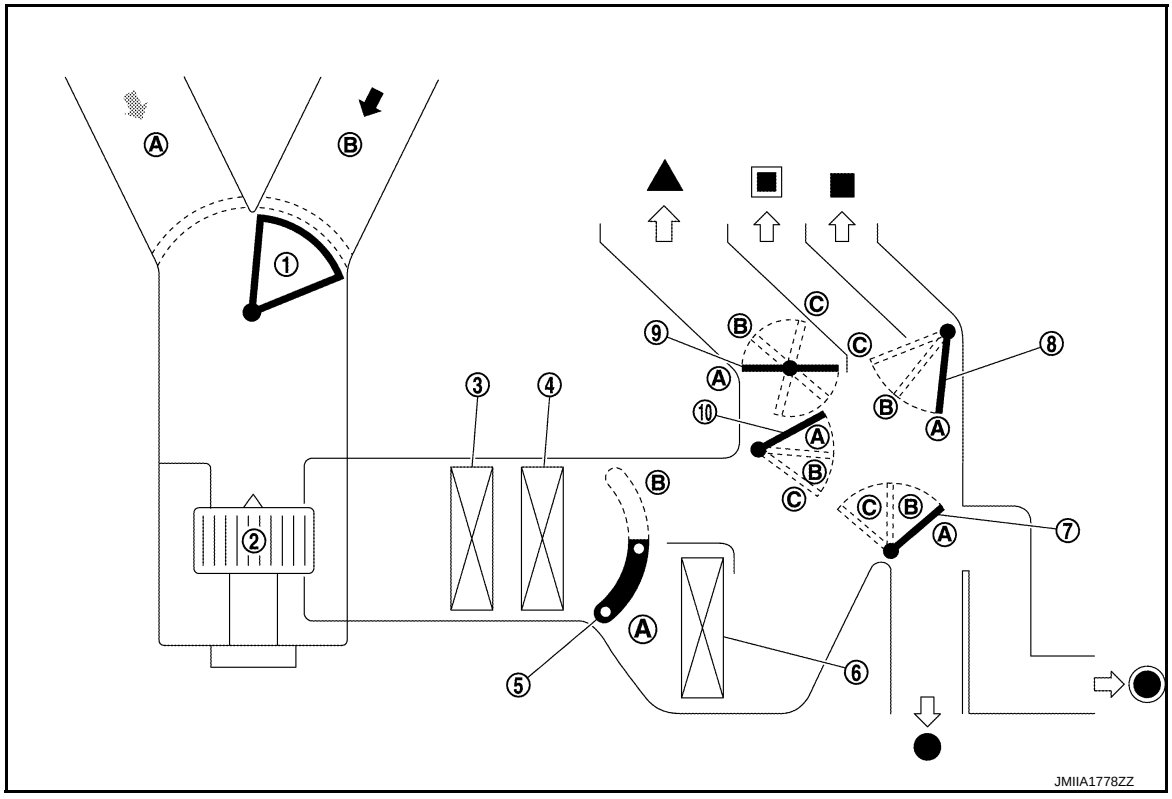
INFOID:0000000009652629

DOOR MOTOR CONTROL



- LCU (Local Control Unit) is built into each door motor. And detects door position by PBR (Potentio Balance Resistor).
- A/C 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 amp.
- Each LCU transmits the signal of door movement completion to A/C amp., when the door movement is completed.

SWITCH AND THEIR CONTROL FUNCTION



1. Intake door
2. Front blower motor
3. In-cabin microfilter
4. Front evaporator
5. Front air mix door
6. Front heater core
7. Foot door
8. Ventilator door
9. Defroster door
10. Max. cool door

Fresh air | Recirculation air | Discharge air
Defroster | Center ventilator | Side ventilator
Front foot | Rear foot

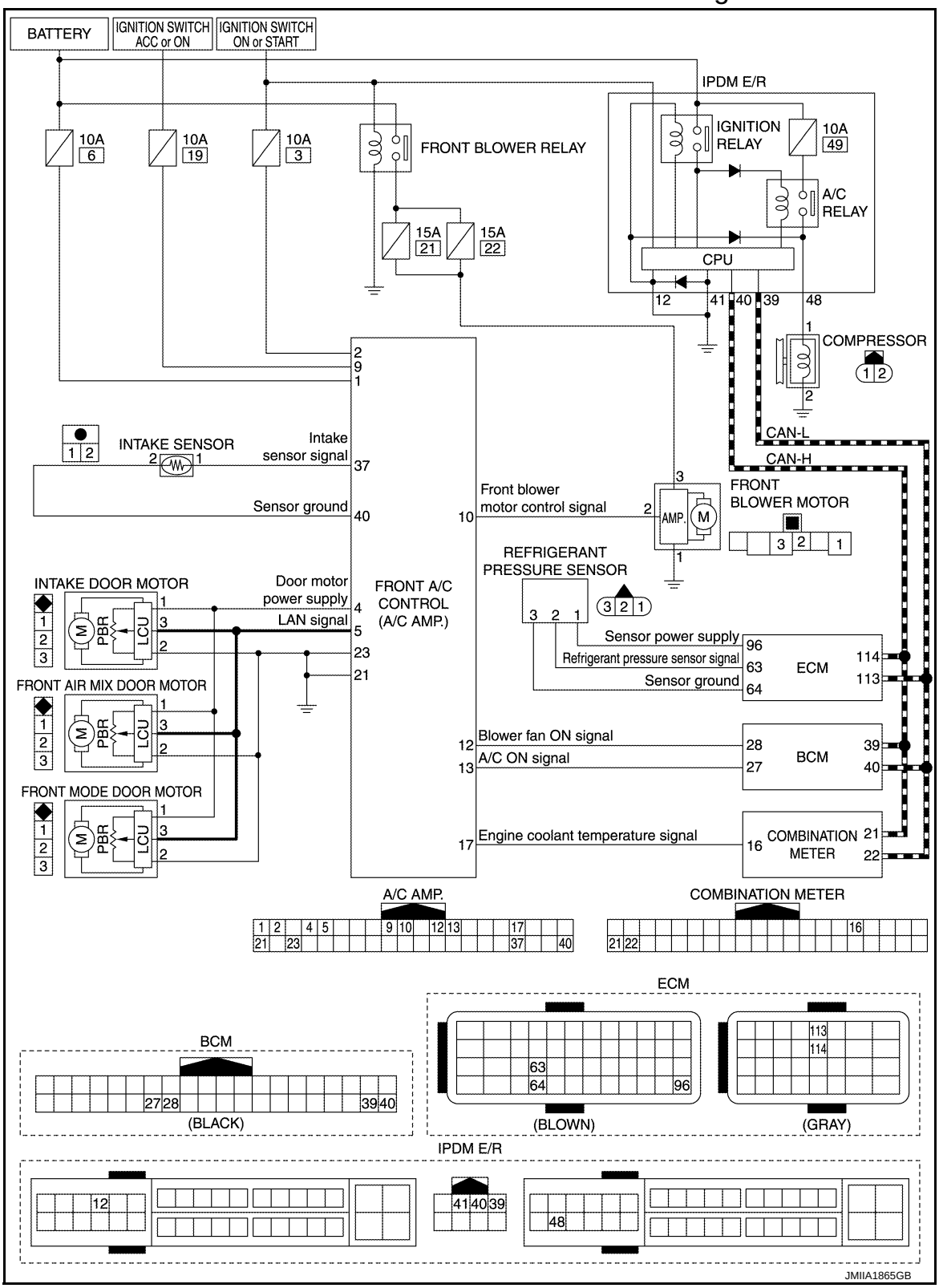
Switch position			Door position					
			Front mode door				Intake door	Front air mix door
			Ventilator door	Max. cool door	Defroster door	Foot door		
MODE switch			A	A	A	A	—	—
			B	B	A	B		
			C	C	B	B		
			C	B	B	B		
DEF switch			C	A	C	C		
REC switch			—	—	—	—	A	
FRE switch							B	
Temperature control switch	Full cold						—	A
	Full hot							B
ON·OFF switch	OFF		C	C	B	B		—

AIR DISTRIBUTION

MODE/DEF set position	Discharge air flow				
	Air outlet/distribution				
	Ventilator		Foot		Defroster
	Center	Side	Front	Rear	
	50%	50%	—		—
	26%	30%	30%	14%	—
	—	14%	40%	16.5%	29.5%
	—	14%	35%	16%	35%
	—	12%	—		88%

FRONT MANUAL AIR CONDITIONING SYSTEM : Circuit Diagram

INFOID:0000000009652630

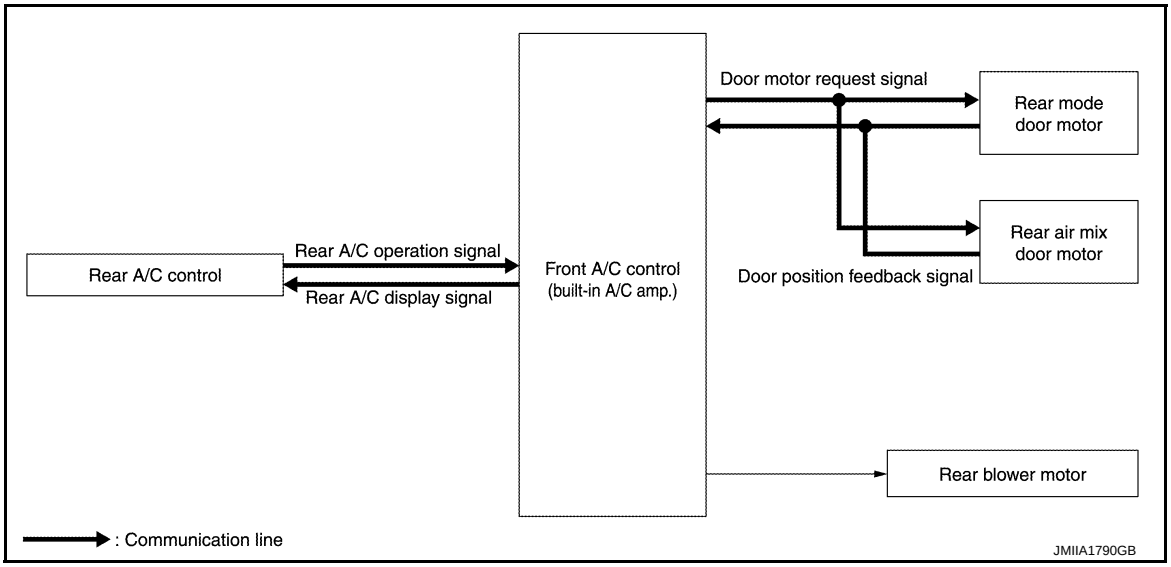


REAR MANUAL AIR CONDITIONING SYSTEM

REAR MANUAL AIR CONDITIONING SYSTEM : System Description

INFOID:0000000009652631

SYSTEM DIAGRAM



DESCRIPTION

- Rear manual air conditioning system is controlled by each function of A/C amp.
- Each operation of rear manual air conditioning can be controlled by front A/C control (built-in A/C amp.) and rear A/C control.

CONTROL BY A/C AMP.

- HAC-167, "REAR MANUAL AIR CONDITIONING SYSTEM : Air Flow Control"
- HAC-168, "REAR MANUAL AIR CONDITIONING SYSTEM : Door Control"

REAR MANUAL AIR CONDITIONING SYSTEM : Air Flow Control

INFOID:0000000009652632

DESCRIPTION

- A/C amp. changes duty ratio of rear blower motor control signal to control air flow continuously. When air flow is increased, duty ratio of rear blower motor control signal gradually increases to prevent a sudden increase in air flow.
- In addition to manual control, air flow control is compose of fan speed control at door motor operation.

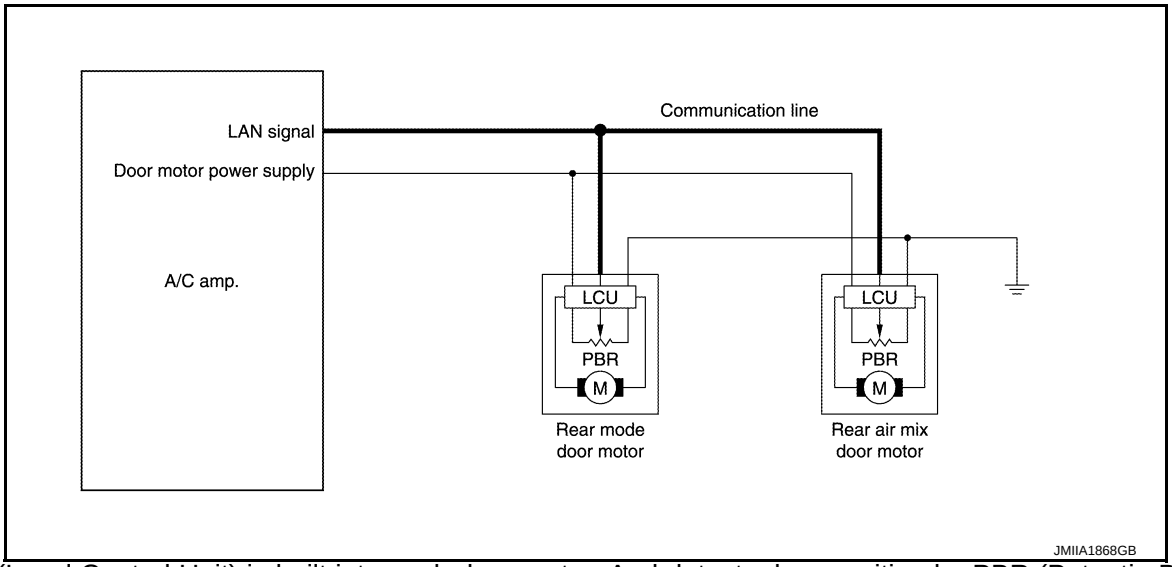
FAN SPEED CONTROL AT DOOR MOTOR OPERATION

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

REAR MANUAL AIR CONDITIONING SYSTEM : Door Control

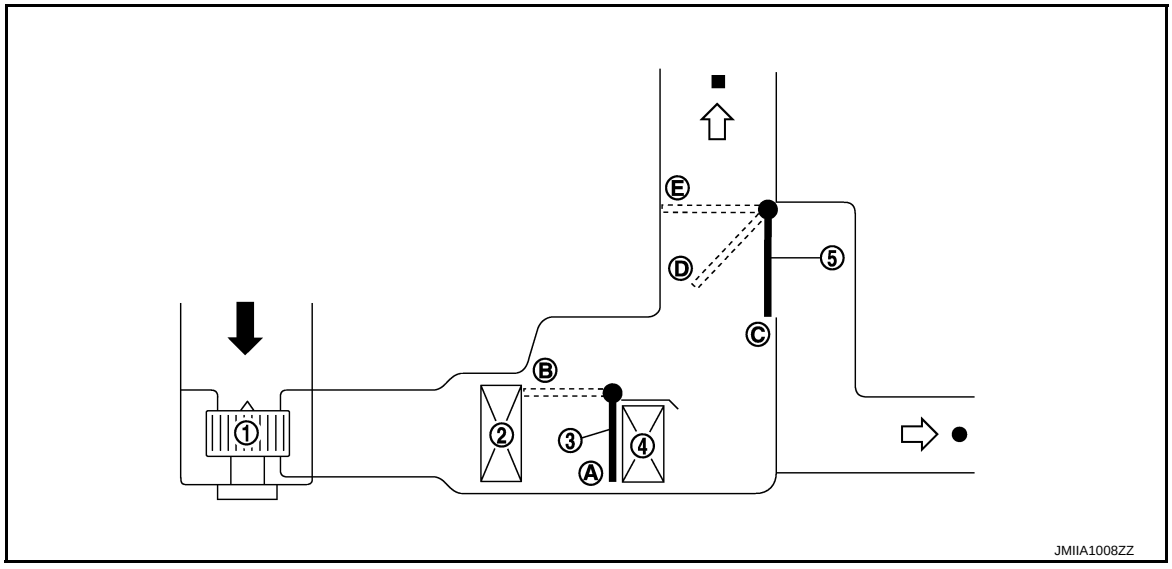
INFOID:0000000009652633

DOOR MOTOR CONTROL



- LCU (Local Control Unit) is built into each door motor. And detects door position by PBR (Potentio Balance Resistor).
- A/C 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 amp.
- Each LCU transmits the signal of door movement completion to A/C amp., when the door movement is completed.

SWITCHES AND THEIR CONTROL FUNCTION



1. Rear blower motor
2. Rear evaporator
3. Rear air mix door
4. Rear heater core
5. Rear mode door

Recirculation air

Discharge air

Rear ventilator

Rear foot

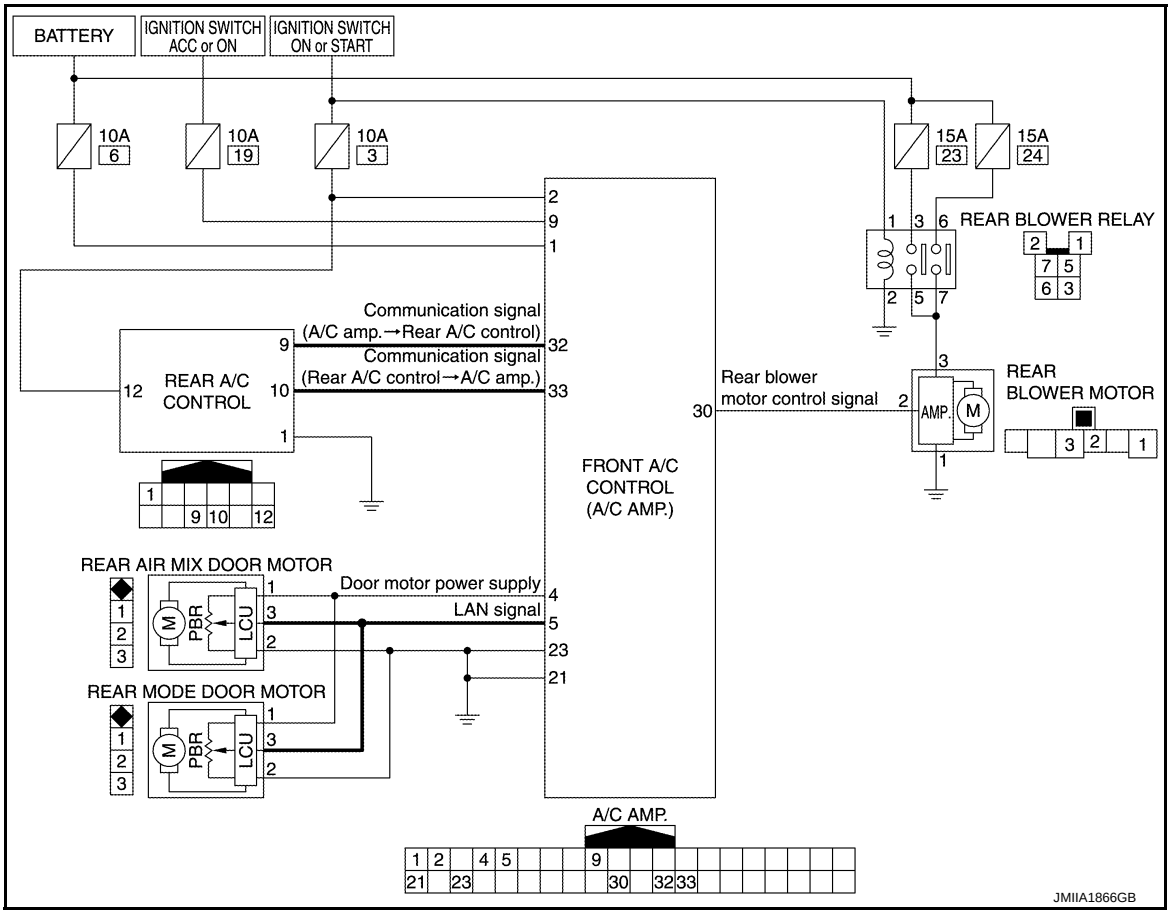
Switch position			Door position	
			Rear mode door	Rear air mix door
MODE switch			C	—
			D	
			E	
Temperature control switch (front A/C control) or temperature control switch (rear A/C control)		Full cold	—	A
		Full hot		B
ON·OFF switch (front A/C control)		OFF	E	—
OFF switch (rear A/C control)				

AIR DISTRIBUTION

Discharge air flow		
Mode position	Air outlet/distribution	
	Rear ventilator	Rear foot
	100%	—
	62%	38%
	—	100%

REAR MANUAL AIR CONDITIONING SYSTEM : Circuit Diagram

INFOID:0000000009652634



OPERATION

FRONT MANUAL AIR CONDITIONING SYSTEM

FRONT MANUAL AIR CONDITIONING SYSTEM : Switch Name and Function

INFOID:0000000009652635

OPERATION AND DISPLAY OF FRONT MANUAL AIR CONDITIONING SYSTEM

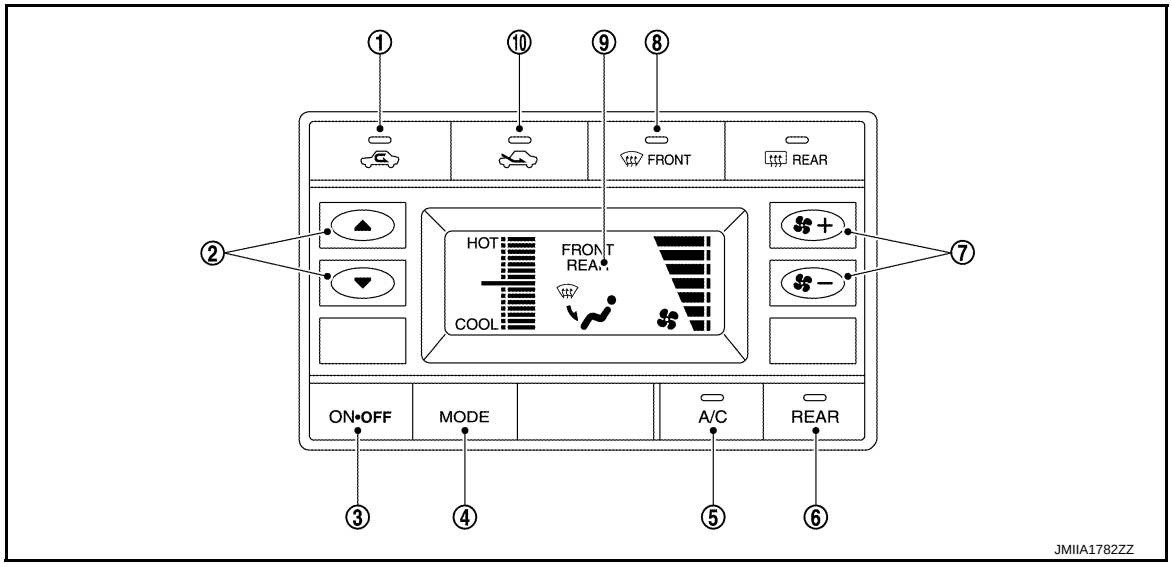
Display: Display in front A/C control

- Front air conditioning operation status is indicated on display in front A/C control.
- Front air conditioning status display screen is indicated when MODE switch is pressed while front air conditioning is OFF.

NOTE:

"REAR" is indicated on display while rear air conditioning operation screen is indicated.

Operation: Front A/C control



1. REC switch
2. Temperature control switch
3. ON·OFF switch
4. MODE switch
5. A/C switch
6. REAR switch
7. Fan switch
8. DEF switch
9. Display
10. FRE switch

Switch name	Function
REC switch	Switch indicator turns ON and air inlet is set to recirculation (REC), when this switch is pressed. **NOTE:** • Air inlet can be changed when front air conditioning is in OFF status. • REC switch operation is not accepted when air outlet is D/F or DEF. • REC switch operation is not accepted when engine coolant temperature is 105°C (221°F) or more. • A/C switch turns ON when REC switch is turned ON while A/C switch is OFF.
Temperature control switch	Air flow temperature can be adjusted according to switch operation. • Press ▲: Air flow temperature increases • Press ▼: Air flow temperature decreases **NOTE:** When front air conditioning is OFF, air flow temperature can be adjusted only while front air conditioning status screen (only when MODE switch is pressed) is indicated.
ON·OFF switch	Front air conditioning turns ON ⇔ OFF each time this switch is pressed. • Front air conditioning turns OFF, when this switch is pressed while front air conditioning is ON. • Front air conditioning turns ON and operates according to the settings set before front air conditioning is turned OFF, when this switch is pressed while front air conditioning is OFF.

Switch name	Function
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 front air conditioning is in OFF status.
A/C switch	Compressor control (switch indicator) changes between ON ⇔ OFF each time this switch is pressed while front blower motor is operated. **NOTE:** • A/C switch cannot be turned ON when front 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.
Fan switch	• Air flow can be set within a range between 1st – 7th speed according to switch operation. - Press +: Air flow increases - Press –: Air flow decreases • Front air conditioning turns ON and operates according to the following status, when this switch is pressed while front air conditioning is OFF. - Air outlet: Settings set before fan switch is pressed - Air flow: 1st - Air inlet: Settings set before fan switch is pressed - A/C switch: Settings set before front air conditioning is turned OFF
DEF switch	DEF mode (switch indicator) changes between ON ⇔ OFF each time switch is pressed. • When this switch is pressed while front air conditioning is ON - Front 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 - Only air outlet returns to the settings set before DEF mode is turned ON, when DEF mode is turned OFF. • When this switch is pressed while front air conditioning is OFF - Front air conditioning turns ON and operates in the following status, when DEF mode is turned ON. • Air outlet: DEF • Air flow: 7th • Air inlet: Fresh air intake • A/C switch: ON - Only air outlet returns to the settings set before DEF mode is turned ON, when DEF mode is turned OFF.
FRE switch	Switch indicator turns ON and air inlet is set to fresh air intake (FRE), when this switch is pressed. **NOTE:** • Air inlet can be changed when front air conditioning is in OFF status. • FRE switch operation is not accepted when engine coolant temperature is 105°C (221°F) or more.

NOTE:
The following switches are not necessary for front air conditioning system operation.

REAR switch	Refer to HAC-171, "REAR MANUAL AIR CONDITIONING SYSTEM : Switch Name and Function".

REAR MANUAL AIR CONDITIONING SYSTEM

REAR MANUAL AIR CONDITIONING SYSTEM : Switch Name and Function

INFOID:0000000009652636

OPERATION AND DISPLAY OF REAR MANUAL AIR CONDITIONING SYSTEM

- Rear air conditioning operation status is indicated on display in front A/C control and rear A/C control.
- Rear air conditioning can be operated from front seat (front A/C control) and rear seat (rear A/C control).
  NOTE:
  Rear air conditioning is operative only when front air conditioning is ON.

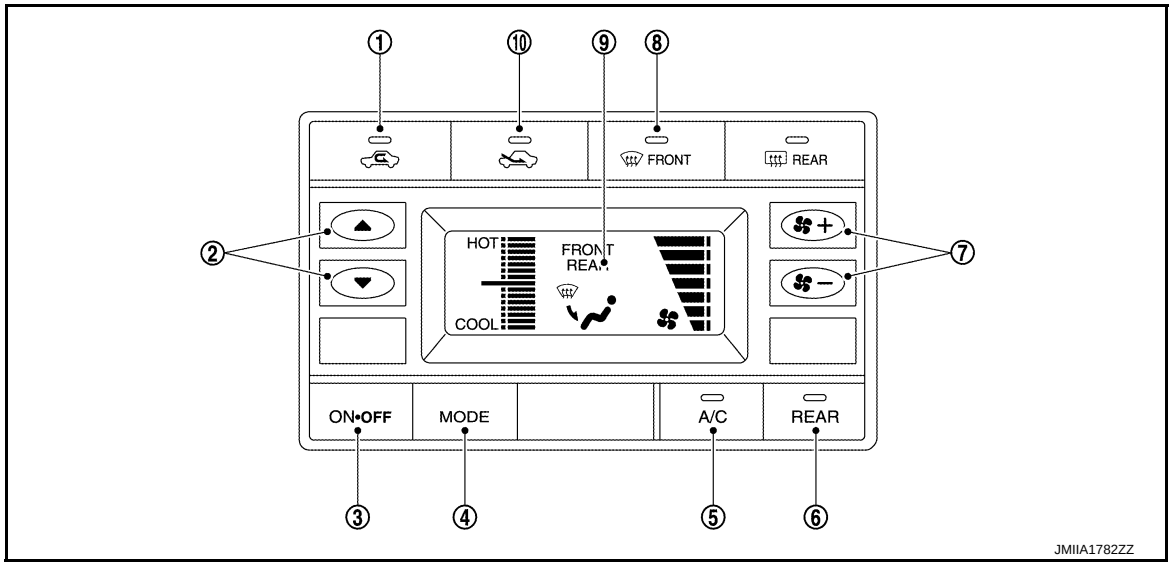
FRONT A/C CONTROL OPERATION

Display: Display in front A/C control

- Rear air conditioning operation status is indicated on display in front A/C control.

- Front A/C control changes to rear air conditioning operation screen when REAR switch is pressed while front air conditioning is ON. “REAR” is indicated on display in front A/C control display. The status continues for 10 seconds, and during this period of time, rear air conditioning setting can be set using front A/C control.
- When 10 seconds are passed, front A/C control returns to front air conditioning operation screen and “REAR” on front A/C control display turns OFF and “FRONT” is indicated. In this case, rear air conditioning setting can be set using rear A/C control.

Operation: Front A/C control



1. REC switch
2. Temperature control switch
3. ON·OFF switch
4. MODE switch
5. A/C switch
6. REAR switch
7. Fan switch
8. DEF switch
9. Display
10. FRE switch

Switch name	Function
Temperature control switch	Air flow temperature can be adjusted according to switch operation. • Press ▲: Air flow temperature increases • Press ▼: Air flow temperature decreases
ON·OFF switch	• Front air conditioning operation screen (“FRONT” is indicated) - Rear air conditioning turns OFF simultaneously with front air conditioning, when this switch is pressed while rear air conditioning is ON. - Rear air conditioning turns ON simultaneously with front air conditioning, and operates according to the previous setting before rear air conditioning is turned OFF, when this switch is pressed again. • Rear air conditioning operation screen (“REAR” is indicated) - Rear air conditioning turns OFF and front A/C control returns to front air conditioning operation screen (“FRONT” is indicated) after 0.5 seconds, when this switch is pressed while rear air conditioning is ON. - Rear air conditioning operates according to the previous setting before rear air conditioning is turned OFF, when this switch is pressed again. A/C switch simultaneously turns ON when A/C switch is OFF.
MODE switch	Air outlet changes from VENT⇒ B/L ⇒ FOOT ⇒ VENT each time this switch is pressed.
A/C switch	When this switch is pressed, rear air conditioning becomes the following status according to the setting status of air outlet. • Rear air conditioning turns OFF simultaneously with compressor control (A/C switch indicator), when this switch is pressed while the setting of air outlet is VENT or B/L. • Compressor control (A/C switch indicator) turns OFF but rear air conditioning remains ON, when this switch is pressed while the setting of air outlet is FOOT.

Switch name	Function
REAR switch	• Front A/C control changes between front air conditioning operation screen (“FRONT” is indicated) ⇔ rear air conditioning operation screen (“REAR” is indicated), each time this switch is pressed while rear air conditioning is ON. • Rear air conditioning turns ON simultaneously with compressor control (A/C switch indicator) and operates according to the previous setting before rear air conditioning is turned OFF, when this switch is pressed while rear air conditioning is OFF. **NOTE:** Switch operation is not accepted when front air conditioning is OFF.
Fan switch	Air flow can be set within a range between 1st – 7th speed according to switch operation. • Press +: Air flow increases • Press –: Air flow decreases
DEF switch	Rear air conditioning turns ON simultaneously with front air conditioning and operates according to the settings set before rear air conditioning is turned OFF, when this switch is pressed after rear air conditioning is turns OFF simultaneously with front air conditioning by ON·OFF switch in previous operation.

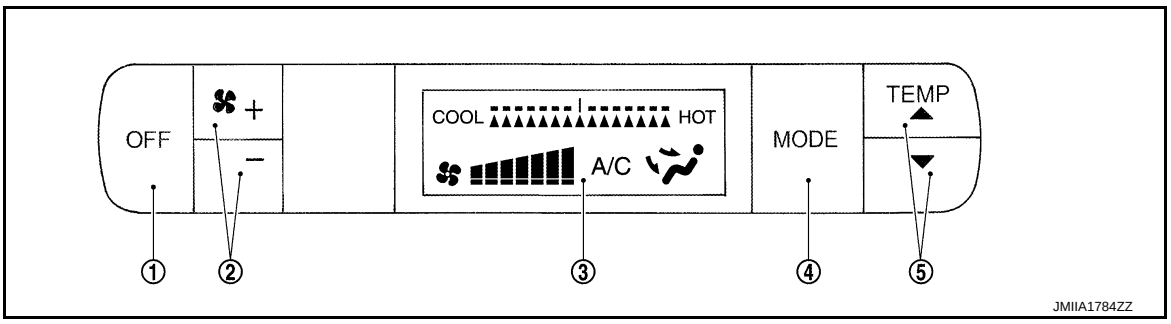
NOTE:
The following switches are not necessary for rear air conditioning system operation.

REC switch	Refer to HAC-170, "FRONT MANUAL AIR CONDITIONING SYSTEM : Switch Name and Function".
FRE switch	

REAR A/C CONTROL OPERATION

Display: Display in rear A/C control
Rear air conditioning operation status is indicated on display in rear A/C control.

Operation: Rear A/C control
Rear air conditioning becomes the following setting can be operated by rear A/C control in the following status.
- When front air conditioning is ON
- When front A/C control displays front air conditioning operation screen (“FRONT” is indicated)



1. OFF switch
2. Fan switch
3. Display
4. MODE switch
5. Temperature control switch

Switch name	Function
OFF switch	Rear air conditioning turns OFF, when this switch is pressed.
Fan switch	Air flow can be set within a range between 1st – 7th speed according to switch operation. • Press +: Air flow increases • Press –: Air flow decreases
MODE switch	Air outlet changes from VENT⇒ B/L ⇒ FOOT ⇒ VENT each time this switch is pressed.
Temperature control switch	Air flow temperature can be adjusted according to switch operation. • Press ▲: Air flow temperature increases • Press ▼: Air flow temperature decreases

DIAGNOSIS SYSTEM (A/C AMP.)

Description

INFOID:0000000009652637

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

ECU	Diagnostic item (CONSULT)	
A/C amp.	On board diagnosis function	
BCM	BCM-AIR CONDITIONER	Self Diagnostic Result
		Data Monitor
ECM	ENGINE	Self Diagnostic Result
		Data Monitor
IPDM E/R	IPDM E/R	Self Diagnostic Result
		Data Monitor
	Auto active test	

On Board Diagnosis Function

INFOID:0000000009652638

ON BOARD DIAGNOSIS ITEM

On board diagnosis function of A/C amp. consists of steps 1. Indicator check can be performed by step 1.

Diagnosis item	Diagnosis content	Diagnosis part
STEP 1: Indicator check	Switch indicator and display indication are checked.	• Front A/C control (A/C amp.) • Rear A/C control

METHOD OF STARTING

Self-diagnosis Mode Entry

The self-diagnosis is started by pressing the ON·OFF switch for 5 seconds or more within 10 seconds after starting engine.

Self-diagnosis Cancellation

By pressing DEF switch or turning ignition switch OFF, the self-diagnosis is canceled.

STEP 1: INDICATOR CHECK

Description

Front A/C control (switch indicator and display) and rear A/C control (display) indication are checked.
Normal: All switch indicator and display indication are turned ON.
Malfunction: Malfunctioning part indicator is not turned ON.

DIAGNOSIS SYSTEM (BCM)

COMMON ITEM

COMMON ITEM : CONSULT Function (BCM - COMMON ITEM)

INFOID:0000000009652639

APPLICATION ITEM

CONSULT performs the following functions via CAN communication with BCM.

Diagnosis mode	Function Description
Work Support	Changes the setting for each system function.
Self Diagnostic Result	Displays the diagnosis results judged by BCM.
CAN Diag Support Monitor	Monitors the reception status of CAN communication viewed from BCM.
Data Monitor	The BCM input/output signals are displayed.
Active Test	The signals used to activate each device are forcibly supplied from BCM.
Ecu Identification	The BCM part number is displayed.
Configuration	• Read and save the vehicle specification. • Write the vehicle specification when replacing BCM.

SYSTEM APPLICATION

BCM can perform the following functions for each system.

NOTE:

It can perform the diagnosis modes except the following for all sub system selection items.

×: Applicable item

System	Sub system selection item	Diagnosis mode		
		Work Support	Data Monitor	Active Test
Door lock	DOOR LOCK	×	×	×
Rear window defogger	REAR DEFOGGER		×	×
Warning chime	BUZZER		×	×
Interior room lamp control system	INT LAMP	×	×	×
Exterior lamp	HEAD LAMP	×	×	×
Wiper and washer	WIPER	×	×	×
Turn signal and hazard warning lamps	FLASHER	×	×	×
Air conditioning control system	AIR CONDITONER		×	×*
• Intelligent Key system • Engine start system	INTELLIGENT KEY	×	×	×
Combination switch	COMB SW		×	
Body control system	BCM	×		
NVIS	IMMU	×	×	×
Interior room lamp battery saver	BATTERY SAVER	×	×	×
Back door open	TRUNK		×	
Vehicle security system	THEFT ALM	×	×	×
RAP system	RETAINED PWR		×	
Signal buffer system	SIGNAL BUFFER		×	×
TPMS	AIR PRESSURE MONITOR	×	×	×

NOTE:

*: For models with automatic air conditioning control system, this diagnosis mode is not used.

FREEZE FRAME DATA (FFD)

The BCM records the following vehicle condition at the time a particular DTC is detected, and displays on CONSULT.

CONSULT screen item	Indication/Unit	Description	
Vehicle Speed	km/h	Vehicle speed of the moment a particular DTC is detected	
Odo/Trip Meter	km	Total mileage (Odometer value) of the moment a particular DTC is detected	
Vehicle Condition	SLEEP>LOCK	Power position status of the moment a particular DTC is detected*	While turning BCM status from low power consumption mode to normal mode [Power supply position is OFF (LOCK)]
	SLEEP>OFF		While turning BCM status from low power consumption mode to normal mode [Power supply position is OFF (OFF)]
	LOCK>ACC		While turning power supply position from OFF (LOCK) to ACC
	ACC>ON		While turning power supply position from ACC to ON
	RUN>ACC		While turning power supply position from RUN to ACC (Except emergency stop operation)
	CRANK>RUN		While turning power supply position from CRANK to RUN
	RUN>URGENT		While turning power supply position from RUN to ACC (Emergency stop operation)
	ACC>OFF		While turning power supply position from ACC to OFF (OFF)
	OFF>LOCK		While turning power supply position from OFF (OFF) to OFF (LOCK)
	OFF>ACC		While turning power supply position from OFF (OFF) to ACC
	ON>CRANK		While turning power supply position from ON to CRANK
	OFF>SLEEP		While turning BCM status from normal mode [Power supply position is OFF (OFF)] to low power consumption mode
	LOCK>SLEEP		While turning BCM status from normal mode [Power supply position is OFF (LOCK)] to low power consumption mode
	LOCK		Power supply position is OFF (LOCK)
	OFF		Power supply position is OFF (OFF)
	ACC		Power supply position is ACC
	ON		Power supply position is ON
	ENGINE RUN		Power supply position is RUN
	CRANKING		Power supply position is CRANK
IGN Counter	0 - 39	The number of times that ignition switch is turned ON after DTC is detected • The number is 0 when a malfunction is detected now. • The number increases like 1 → 2 → 3...38 → 39 after returning to the normal condition whenever ignition switch OFF → ON. • The number is fixed to 39 until the self-diagnosis results are erased if it is over 39.	

NOTE:

*: Refer to the following for details of the power supply position.

- OFF (OFF, LOCK): Ignition switch OFF
- ACC: Ignition switch ACC
- IGN: Ignition switch ON with engine stopped
- RUN: Ignition switch ON with engine running
- CRANK: At engine cranking

Power supply position shifts to “OFF (LOCK)” from “OFF (OFF)”, when ignition switch is in the OFF position, shift position is in the P position, and any of the following conditions are met.

- Closing door
- Opening door
- Door is locked using door request switch
- Door is locked using Intelligent Key

The power supply position shifts to “ACC” when the push-button ignition switch (push switch) is pushed at “OFF (LOCK)”.

AIR CONDITIONER

AIR CONDITIONER : CONSULT Function (BCM - AIR CONDITIONER) (Manual A/C)

INFOID:0000000009652640

DATA MONITOR

NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

Display Item List

Monitor Item [Unit]		Contents
FAN ON SIG	[On/Off]	Displays the status of blower fan ON signal received from A/C amp.
AIR COND SW	[On/Off]	Displays the status of A/C ON signal received from A/C amp.

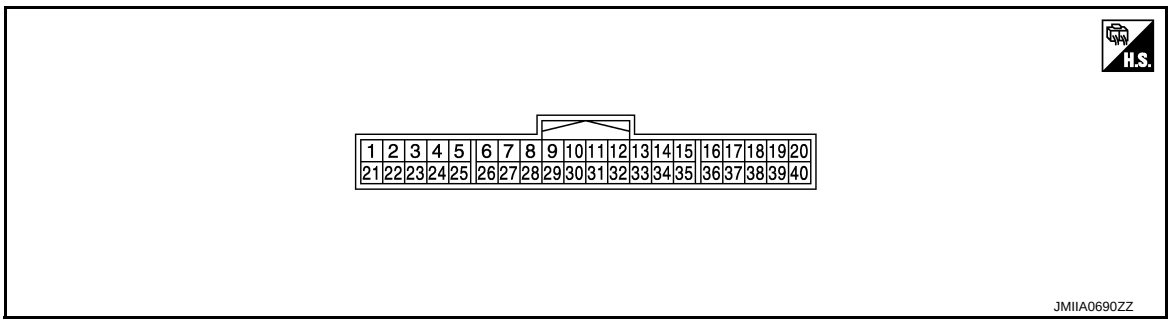
ECU DIAGNOSIS INFORMATION

A/C AMP.

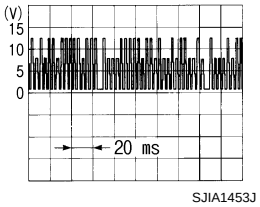
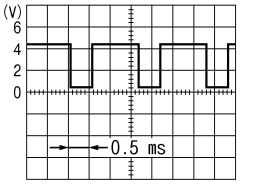
Reference Value

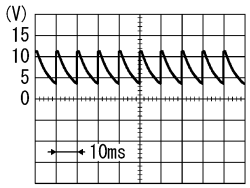
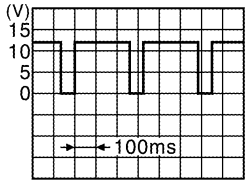
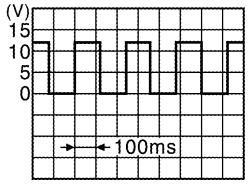
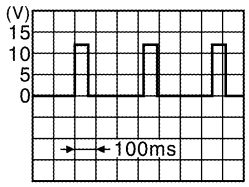
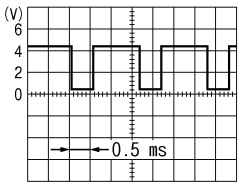
INFOID:0000000009652641

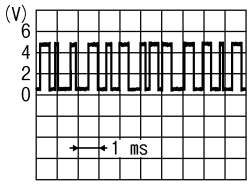
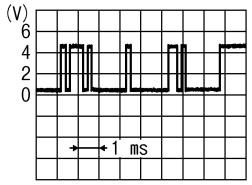
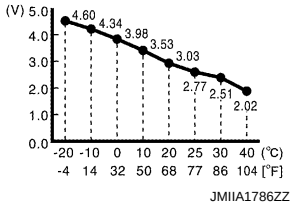
TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition	Value
+	–	Signal name	Input/ Output		
1 (O)	Ground	Battery power supply	—	Ignition switch OFF	11 – 14 V
2 (G)	Ground	Ignition power supply	—	Ignition switch ON	11 – 14 V
4 (SB)	Ground	Door motor power supply	Output	Ignition switch ON	9.5 – 13.5 V
5 (BR)	Ground	LAN signal	Input/ Output	Ignition switch ON	 SJIA1453J
9 (Y)	Ground	ACC power supply	—	Ignition switch ON	11 – 14 V
10 (W)	Ground	Front blower motor control signal	Output	• Ignition switch ON • Front fan speed: 1st speed (manual)	 JSIIA0096ZZ
12 (BR)	Ground	Blower fan ON signal	Output	• Ignition switch ON • Front blower motor: OFF	11 – 14 V
				• Ignition switch ON • Front blower motor: ON	0 – 0.5 V

Terminal No. (Wire color)		Description		Condition	Value
+	–	Signal name	Input/ Output		
13 (O)	Ground	A/C ON signal	Output	• Ignition switch ON • A/C switch: OFF (A/C indicator: OFF)	 PKIB4960J
				• Ignition switch ON • A/C switch: ON (A/C indicator: ON)	0 – 0.5 V
17 (L)	Ground	Engine coolant temperature signal	Input	• Ignition switch ON • Engine idling • Engine coolant temperature: Below 56°C (133°F)	 JMIIA1756JP
				• Ignition switch ON • Engine idling • Engine coolant temperature: Between 56 – 105°C (133 – 221°F)	 JMIIA1757JP
				• Ignition switch ON • Engine idling • Engine coolant temperature: Above 105°C (221°F)	 JMIIA1758JP
21 (B/W)	Ground	Ground	—	Ignition switch ON	0 – 0.1 V
23 (B/W)	Ground	Ground	—	Ignition switch ON	0 – 0.1 V
30 (R)	Ground	Rear blower motor control signal	Output	• Ignition switch ON • Rear fan speed: 1st speed (manual)	 JSIIA0096ZZ

Terminal No. (Wire color)		Description		Condition	Value
+	–	Signal name	Input/ Output		
32 (BR)	Ground	Communication signal (A/C amp. → Rear A/C control)	Output	Ignition switch ON	 SJIA1521J
33 (SB)	Ground	Communication signal (Rear A/C control → A/C amp.)	Input	Ignition switch ON	 SJIA1522J
37 (GR)	Ground	Intake sensor signal	Input	Ignition switch ON	 JMIIA1786ZZ
40 (Y)	Ground	Sensor ground	—	Ignition switch ON	0 – 0.1 V

BCM, ECM, IPDM E/R

List of ECU Reference

INFOID:0000000009652642

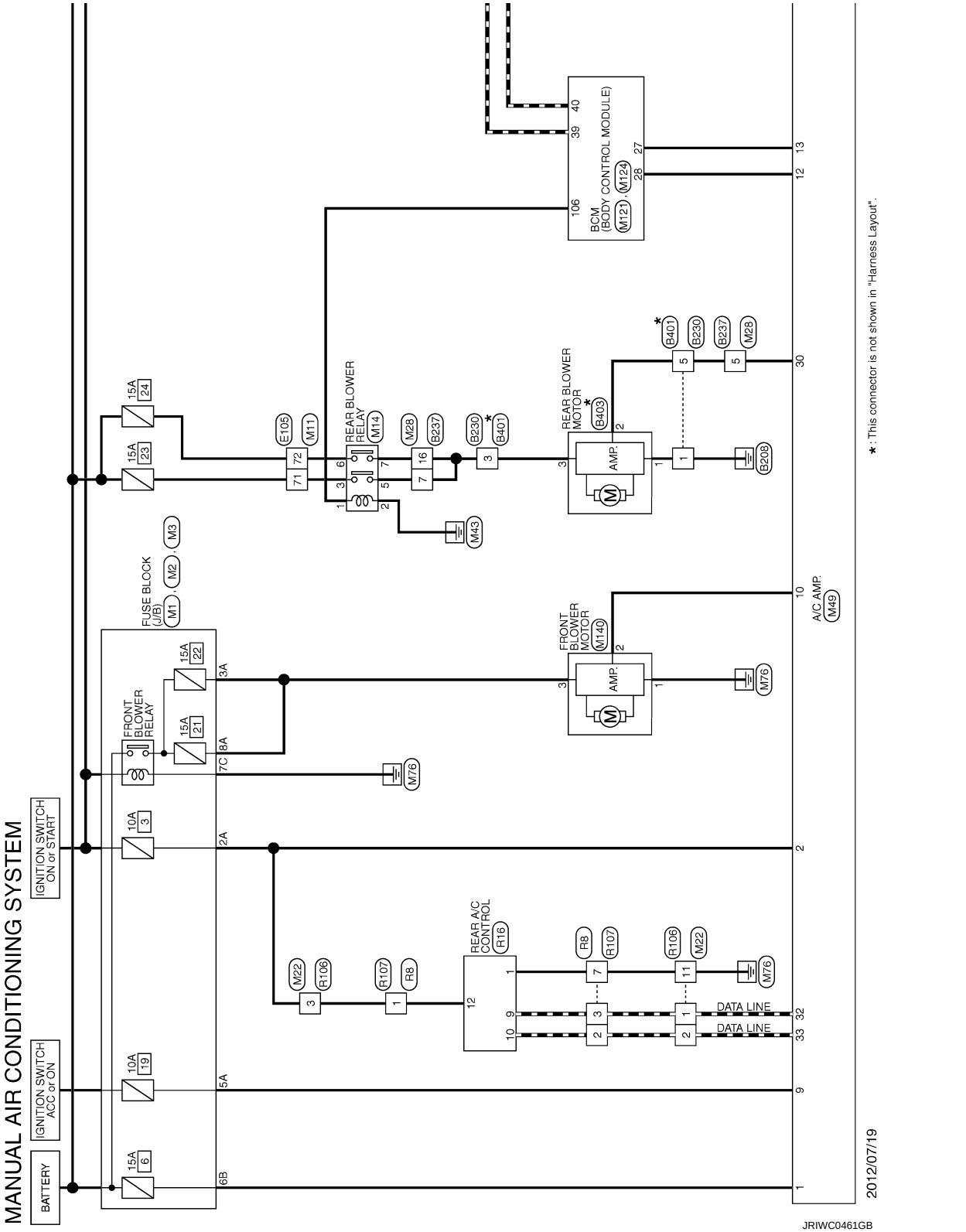
ECU	Reference
BCM	BCS-40, "Reference Value"
	BCS-62, "Fail-safe"
	BCS-62, "DTC Inspection Priority Chart"
	BCS-63, "DTC Index"
ECM	EC-79, "Reference Value"
	EC-92, "Fail-safe"
	EC-94, "DTC Inspection Priority Chart"
	EC-96, "DTC Index"
IPDM E/R	PCS-16, "Reference Value"
	PCS-23, "Fail-safe"
	PCS-24, "DTC Index"

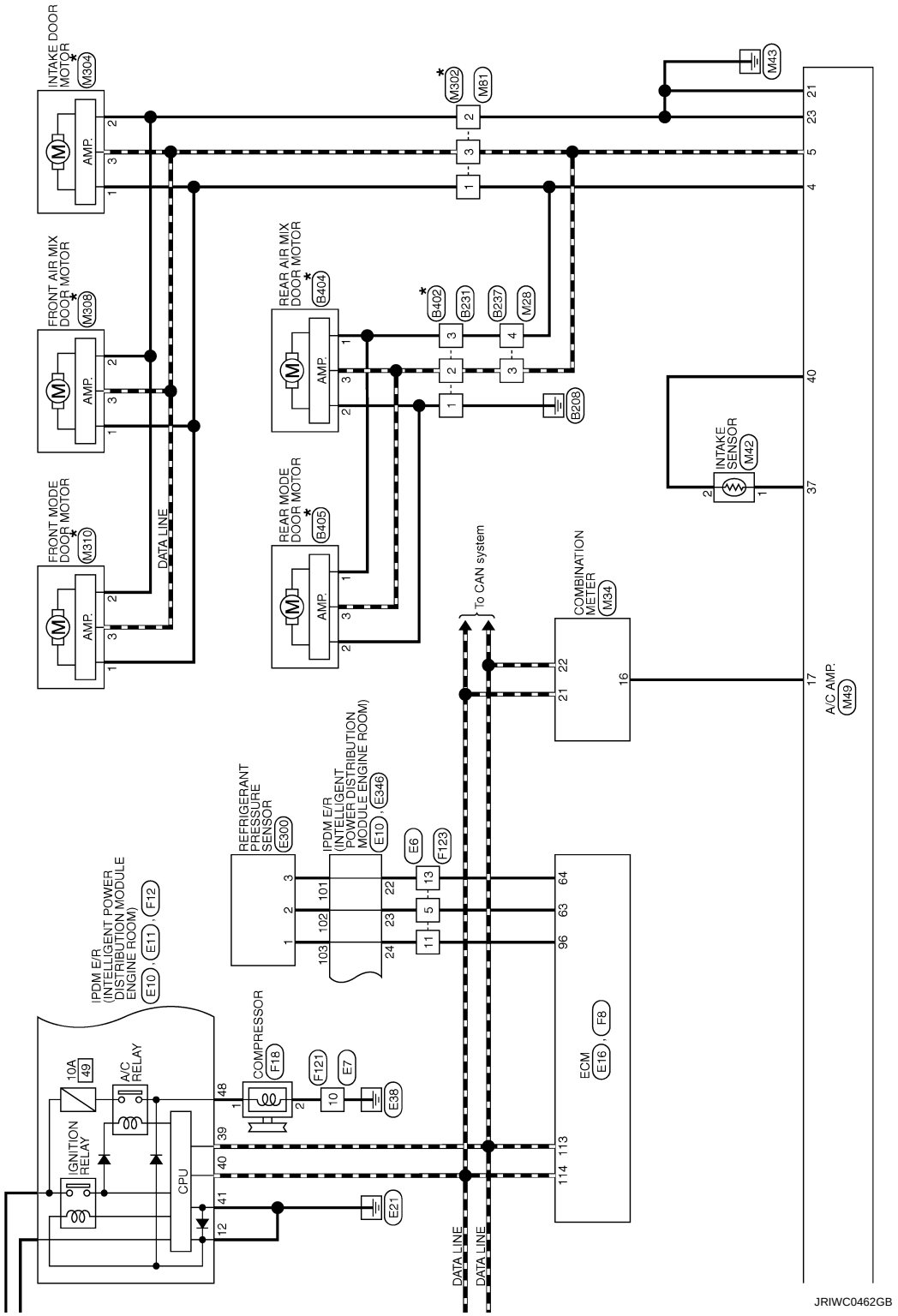
WIRING DIAGRAM

MANUAL AIR CONDITIONING SYSTEM

Wiring Diagram

INFOID:0000000009652643




INTAKE DOOR MOTOR
M304
AMP.
FRONT AIR MIX DOOR MOTOR
M308
FRONT MODE DOOR MOTOR
M310
DATA LINE
REAR AIR MIX DOOR MOTOR
B404
REAR MODE DOOR MOTOR
B405
M302
M81
B402
B231
B237
M28
B208
M43
INTAKE SENSOR
M42
To CAN system
COMBINATION METER
M34
A/C AMP.
M49
REFRIGERANT PRESSURE SENSOR
E300
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E10, E346
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E10, E11, F12
E6
F123
10A
49
A/C RELAY
IGNITION RELAY
CPU
COMPRESSOR
F18
F121
E7
E38
E21
ECM
E16, F8
DATA LINE
DATA LINE
JRIWC0462GB

MANUAL AIR CONDITIONING SYSTEM

Connector No.	B230
Connector Name	WIRE TO WIRE
Connector Type	M06FW-LC

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	B	–
3	G	–
5	LG	–

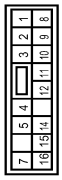
Connector No.	B231
Connector Name	WIRE TO WIRE
Connector Type	TK03FW

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	B/W	–
2	SB	–
3	BR	–

Connector No.	B237
Connector Name	WIRE TO WIRE
Connector Type	NS16MGY-CS

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	R	–
2	Y	–
3	SB	–
4	BR	–
5	LG	–
7	G	–
8	GR	–
9	SB	–
10	O	–
11	V	–
12	P	–
14	R	–
15	L	–
16	G	–

Connector No.	B401
Connector Name	WIRE TO WIRE
Connector Type	M06MW-LC

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	–	–
3	–	–
5	–	–

Connector No.	B402
Connector Name	WIRE TO WIRE
Connector Type	TK03MW

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	–	–
2	–	–
3	–	–

Connector No.	B403
Connector Name	REAR BLOWER MOTOR
Connector Type	NS03FW-M3

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	–	–
2	–	–
3	–	–

Connector No.	B404
Connector Name	REAR AIR MIX DOOR MOTOR
Connector Type	A03FW

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	–	–
2	–	–
3	–	–

Connector No.	B405
Connector Name	REAR MODE DOOR MOTOR
Connector Type	A03FW

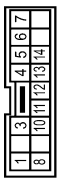
H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	–	–
2	–	–
3	–	–

JRIWC1234GB

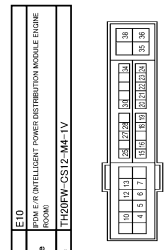
MANUAL AIR CONDITIONING SYSTEM

Connector No.	E6
Connector Name	WIRE TO WIRE
Connector Type	TK16MGY-1V



Terminal No.	Color Of Wire	Signal Name [Specification]
1	L	–
3	Y	–
4	LG	–
5	GR	–
6	V	–
7	G	–
8	P	–
10	W	–
11	G	–
12	BR	–
13	SB	–
14	B	–

Connector No.	E10
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH20FW-CS12-M4-1V



Terminal No.	Color Of Wire	Signal Name [Specification]
4	LG	–
5	Y	–
6	G	–
7	BR	–
10	P	–
12	B	–
13	G	–
15	L	–
16	R	–
18	P	–
19	V	–
20	W	–
21	O	–
22	SB	–
23	GR	–
24	G	–
25	GR	–
27	BR	–
28	G	–
30	LG	–
34	O	–
35	P	–
36	G	–
38	GR	–

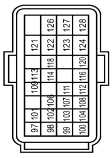
Connector No.	E7
Connector Name	WIRE TO WIRE
Connector Type	NS10MW-CS

Terminal No.	Color Of Wire	Signal Name [Specification]
1	B	–
2	L	–
4	R	–
5	SB	–
6	B	–
7	W	–
10	B	–

Connector No.	E11
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH08FW-NH

Terminal No.	Color Of Wire	Signal Name [Specification]
39	P	–
40	L	–
41	B	–
42	SB	–
43	LG	–
44	W	–
45	Y	–
46	O	–

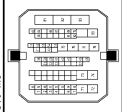
Connector No.	E16
Connector Name	ECM
Connector Type	RH24FGY-RZ8-L-LH



Terminal No.	Color Of Wire	Signal Name [Specification]
97	W	ACCELERATOR PEDAL POSITION SENSOR 1
98	O	ACCELERATOR PEDAL POSITION SENSOR 2
99	P	SENSOR POWER SUPPLY
100	B	SENSOR GROUND
101	Y	ASCD STEERING SWITCH
102	LG	EVAP CONTROL SYSTEM PRESSURE SENSOR
103	GR	SENSOR POWER SUPPLY
104	LG	DATA LINK CONNECTOR
106	V	EVAP CANISTER VENT CONTROL VALVE
107	W	SENSOR POWER SUPPLY
108	BR	SENSOR GROUND
109	G	IGNITION SWITCH

111	Y	FUEL TANK TEMPERATURE SENSOR
112	V	SENSOR GROUND
113	P	CAN COMMUNICATION LINE
114	L	CAN COMMUNICATION LINE
116	G	SENSOR GROUND
118	R	PNP signal
120	SB	SENSOR GROUND
121	L	POWER SUPPLY FOR ECM
122	SB	STOP LAMP SWITCH
123	B	ECM GROUND
124	B	ECM GROUND
126	BR	ASCD BRAKE SWITCH
127	B	ECM GROUND
128	B	ECM GROUND

Connector No.	E105
Connector Name	WIRE TO WIRE
Connector Type	TH70MW-CS10-M3



Terminal No.	Color Of Wire	Signal Name [Specification]
1	SHIELD	–
2	W	–
3	B	–
4	R	–
6	LG	–
7	R	–
8	GR	–
9	SB	–
10	BR	–
11	Y	–
12	O	–
13	W	–
14	L	–
15	P	–
31	GR	–
32	R	–
33	W	–
37	BR	–
38	G	–
39	V	–

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MANUAL AIR CONDITIONING SYSTEM

40	P	-
41	L	-
42	LG	-
43	O	-
45	GR	-
46	SB	-
47	V	-
49	L	-
51	BR	-
52	G	-
53	B	-
54	O	-
55	Y	-
56	SHIELD	-
61	P	-
62	G	-
63	W/L	-
64	W/R	-
66	W	-
67	Y	-
69	SB	-
70	LG	-
71	R	-
72	L	-
73	GR	-
74	Y	-
75	SB	-
76	Y	-
77	G	-
78	O	-
80	R	-
81	L	-
82	LG	-
83	R	-

Connector No.	E300
Connector Name	REFRIGERANT PRESSURE SENSOR
Connector Type	RK03FB

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	BR	-
2	G	-
3	O	-

Connector No.	E346
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH16FW-NH

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
91	LG	-
92	P	-
93	W	-
94	O	-
99	Y	-
100	V	-
101	O	-
102	G	-
103	BR	-
105	R	-

Connector No.	F8
Connector Name	ECM
Connector Type	RH40FBR-RZ8-L-RH

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
54	R / G	SENSOR POWER SUPPLY
55	R	INTAKE VALVE TIMING CONTROL SOLENOID VALVE (BANK 1)
56	Y	INTAKE VALVE TIMING CONTROL SOLENOID VALVE (BANK 2)
57	W	HEATED OXYGEN SENSOR 2 (BANK 1)
58	W / L	HEATED OXYGEN SENSOR 2 (BANK 2)
59	B	SENSOR GROUND
63	R	REFRIGERANT PRESSURE SENSOR
64	G	SENSOR GROUND
66	BR	BATTERY CURRENT SENSOR
67	W	BATTERY TEMPERATURE SENSOR
68	G / B	SENSOR GROUND
69	P	A/F SENSOR 1 (BANK 1)
70	Y	ENGINE COOLANT TEMPERATURE SENSOR
73	L	A/F SENSOR 1 (BANK 1)
74	L / Y	INTAKE AIR TEMPERATURE SENSOR
75	R / Y	SENSOR POWER SUPPLY
76	B / R	SENSOR GROUND
77	V	A/F SENSOR 1 (BANK 2)
78	G	ENGINE OIL TEMPERATURE SENSOR
80	G / B	SENSOR GROUND
81	LG	A/F SENSOR 1 (BANK 2)
82	O	MASS AIR FLOW SENSOR
83	G / W	SENSOR POWER SUPPLY
84	Y / B	SENSOR GROUND
85	B	KNOCK SENSOR (BANK 1)
86	W	KNOCK SENSOR (BANK 2)
87	R / W	SENSOR POWER SUPPLY
88	B / R	SENSOR GROUND
89	W / B	CRANKSHAFT POSITION SENSOR (POS)
91	SHIELD	SENSOR GROUND
92	Y / G	SENSOR GROUND
93	BR / W	CAMSHAFT POSITION SENSOR (PHASE) (BANK 2)
94	W / R	CAMSHAFT POSITION SENSOR (PHASE) (BANK 1)
96	BR / W	SENSOR POWER SUPPLY

Connector No.	F12
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH20FW-CS12-M4

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
48	W	-
49	R / B	-
51	LG	-
52	Y / G	-
53	R / W	-
54	G / W	-
55	W / L	-
56	R / Y	-
57	O	-
58	Y	-
69	W / B	-
70	O	-
71	P	-
72	R / B	-
75	LG	-
76	GR	-
77	B	-
80	B	-

Connector No.	F18
Connector Name	COMPRESSOR
Connector Type	RH02FB

H.S.

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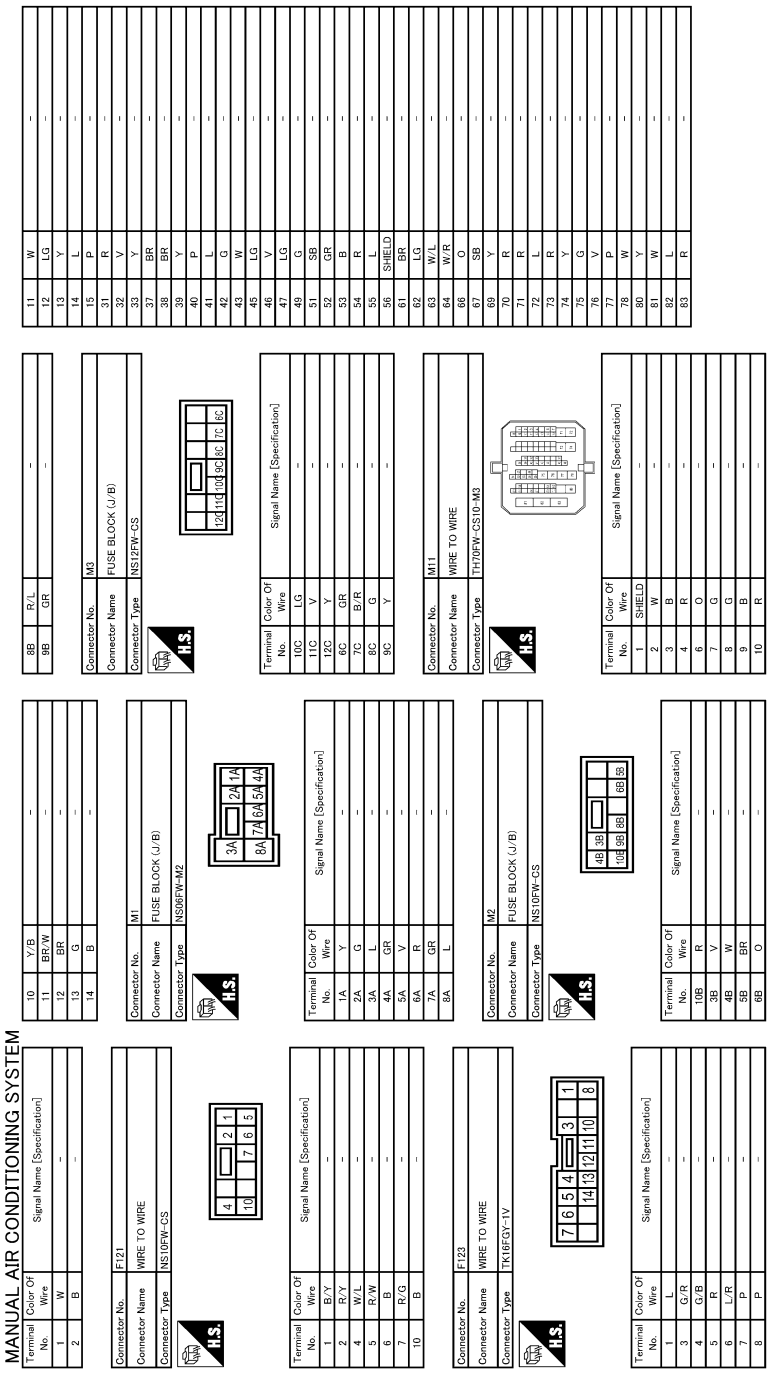


JRIWC1237GB

MANUAL AIR CONDITIONING SYSTEM

Connector No.	M14
Connector Name	REAR BLOWER RELAY
Connector Type	M06FBR-R-LC

Terminal No.	Color Of Wire	Signal Name [Specification]
1	O	–
2	B/W	–
3	R	–
5	BR	–
6	L	–
7	Y	–

Connector No.	M22
Connector Name	WIRE TO WIRE
Connector Type	TH16FW-NH

Terminal No.	Color Of Wire	Signal Name [Specification]
1	BR	–
2	SB	–
3	G/W	–
4	O	–
6	R	–
7	SB	–
8	GR	–
9	P	–
10	R	–
11	B/W	–
12	B	–
13	R	–
14	W/L	– [Without NAVI]
14	Y	– [With NAVI]

15	SHIELD	–
16	BR	– [With NAVI]
16	W/R	– [Without NAVI]

Connector No.	M28
Connector Name	WIRE TO WIRE
Connector Type	NS16FGY-CS

Terminal No.	Color Of Wire	Signal Name [Specification]
1	P	–
2	Y	–
3	BR	–
4	SB	–
5	R	–
7	BR	–
8	L	–
9	R	–
10	W	–
11	G	–
12	V	–
14	V	–
15	LG	–
16	Y	–

Connector No.	M34
Connector Name	COMBINATION METER
Connector Type	TH40FW-NH

Terminal No.	Color Of Wire	Signal Name [Specification]
1	O	BATTERY POWER SUPPLY
2	Y	IGNITION SIGNAL
3	B	GROUND
4	B	GROUND
5	B/P	ILLUMINATION CONTROL SIGNAL
8	SB	TRIP RESET SWITCH SIGNAL
10	P	METER CONTROL SWITCH GROUND
11	G	ENTER SWITCH SIGNAL
12	BR	SELECT SWITCH SIGNAL
13	Y	ILLUMINATION CONTROL SWITCH SIGNAL (+)
14	V	ILLUMINATION CONTROL SWITCH SIGNAL (-)
15	BR	AIR BAG SIGNAL
16	L	ENGINE COOLANT TEMPERATURE SIGNAL
18	LG	AMBIENT SENSOR SIGNAL
19	R	A/C AUTO AMP. CONNECTION RECOGNITION SIGNAL
20	Y	AMBIENT SENSOR GROUND
21	L	CAN-H
22	P	CAN-L
23	B	GROUND
24	B	FUEL LEVEL SENSOR GROUND
25	BR	ALTERNATOR SIGNAL
26	BR	PARKING BRAKE SWITCH SIGNAL
27	Y	BRAKE FLUID LEVEL SWITCH SIGNAL
28	V	SECURITY SIGNAL
29	G	WASHER LEVEL SWITCH SIGNAL
31	SB	VEHICLE SPEED SIGNAL (8-PULSE)
32	P	OVERDRIVE CONTROL SWITCH SIGNAL
34	O	FUEL LEVEL SENSOR SIGNAL
35	P	SEAT BELT BUCKLE SWITCH SIGNAL (DRIVER SIDE)
36	BR	PASSENGER SEAT BELT WARNING SIGNAL

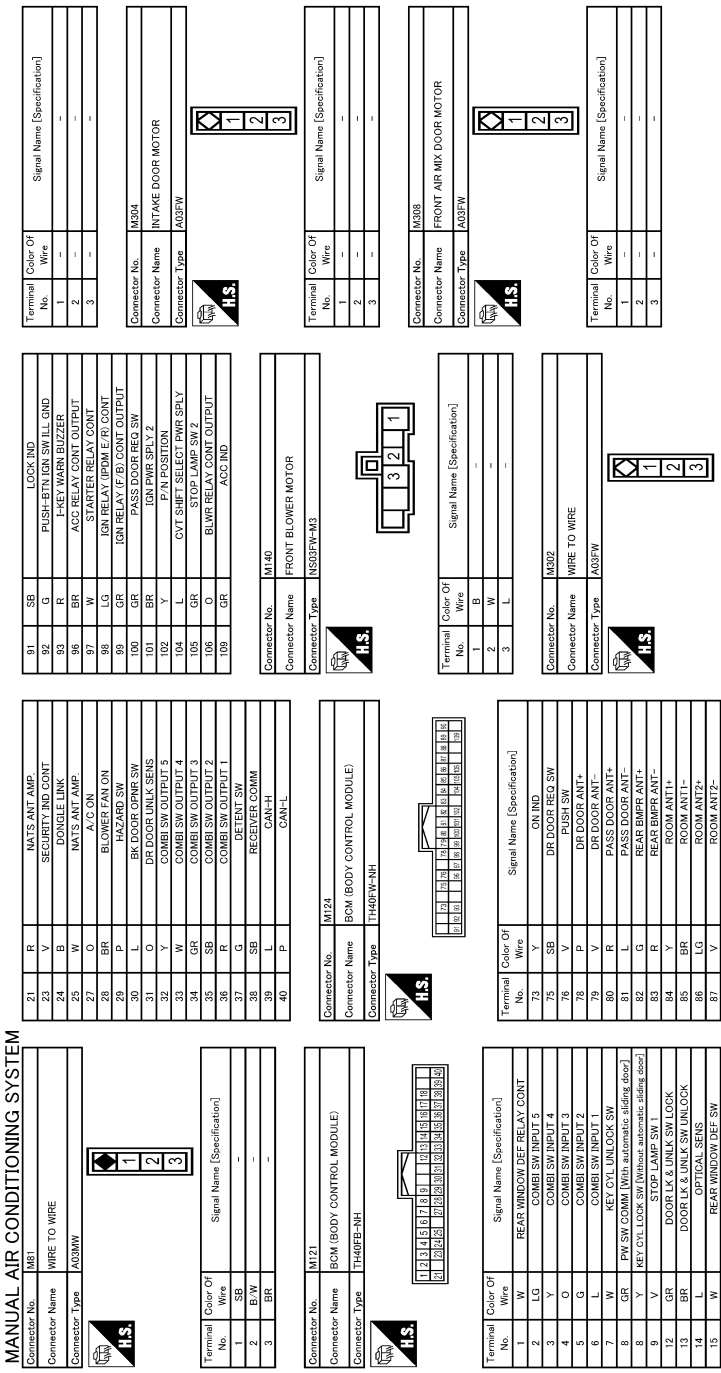
Connector No.	M42
Connector Name	INTAKE SENSOR
Connector Type	C02FW

Terminal No.	Color Of Wire	Signal Name [Specification]
1	GR	–
2	Y	–

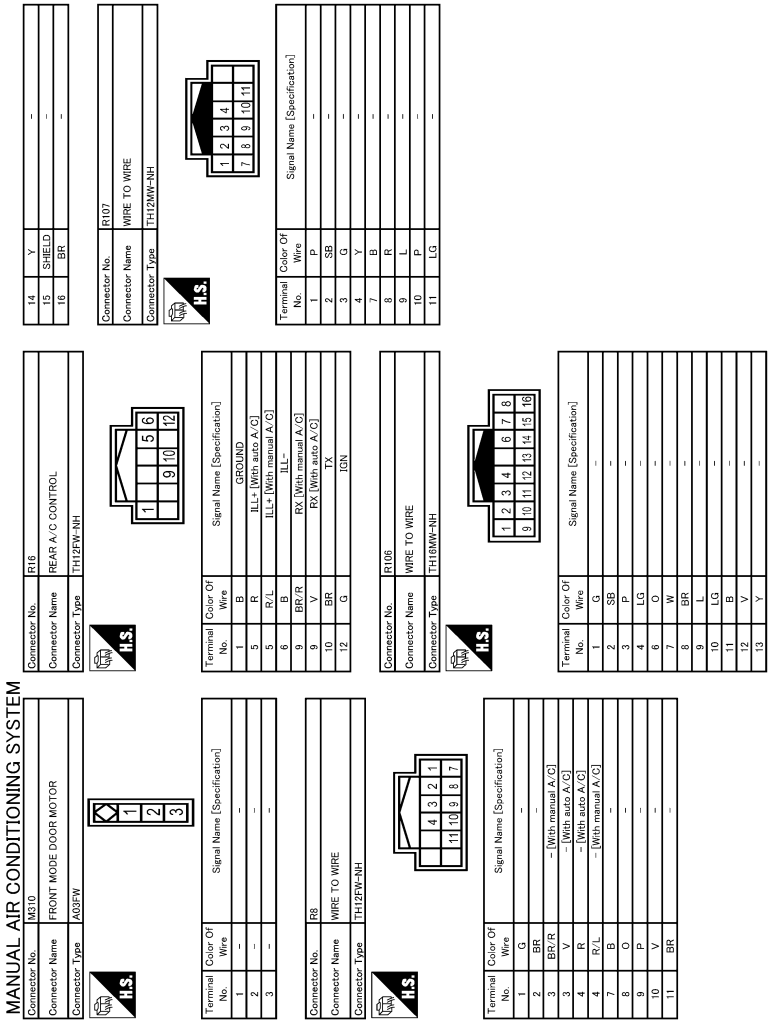
Connector No.	M49
Connector Name	A/C AMP.
Connector Type	TH40FW-NH

Terminal No.	Color Of Wire	Signal Name [Specification]
1	O	BATTERY POWER SUPPLY
2	G	IGNITION POWER SUPPLY
4	SB	DOOR MOTOR POWER SUPPLY
5	BR	LAN SIGNAL
7	Y	REAR WINDOW DEFOGGER F/B SIGNAL
8	R/L	ILLUMINATION POWER SUPPLY
9	V	ACC POWER SUPPLY
10	W	FRONT BLOWER MOTOR CONTROL SIGNAL
12	BR	BLOWER FAN ON SIGNAL
13	O	A/C ON SIGNAL
17	L	ENGINE COOLANT TEMPERATURE SIGNAL
21	B/W	GROUND
23	B/W	GROUND
27	W	REAR WINDOW DEFOGGER ON SIGNAL
28	B/R	ILLUMINATION GROUND
30	R	REAR BLOWER MOTOR CONTROL SIGNAL
32	BR	COMM (A/C AUTO AMP.-RR A/C CONT)
33	SB	COMM (RR A/C CONT.-A/C AUTO AMP.)
37	GR	INTAKE SENSOR SIGNAL
40	Y	SENSOR GROUND

JRIWC1238GB



JRIWC1239GB



JRIWC1240GB

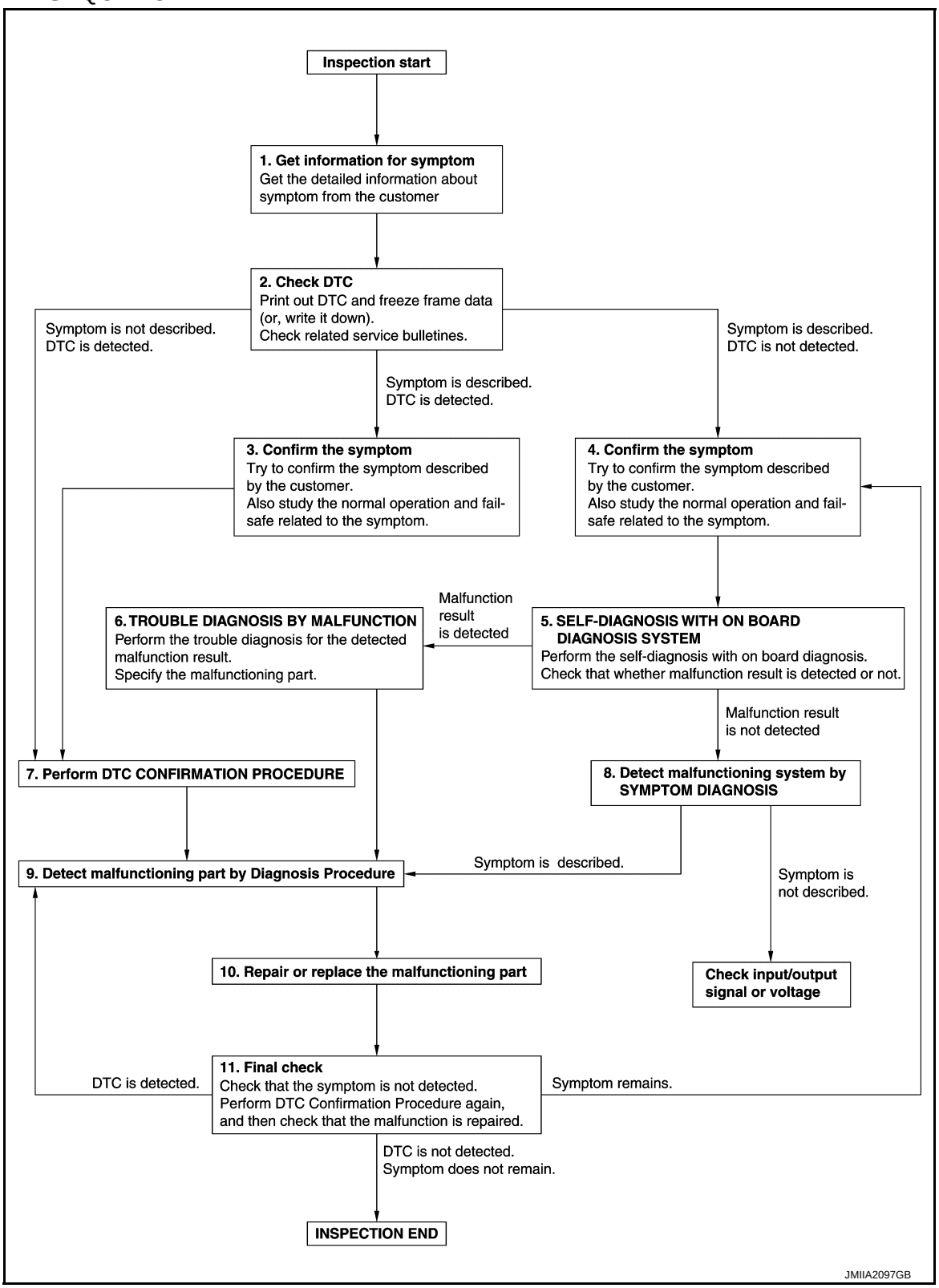
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:0000000009652644

OVERALL SEQUENCE



DETAILED FLOW

1.GET INFORMATION FOR SYMPTOM

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

>> GO TO 2.

2.CHECK DTC

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

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

3. Check related service bulletins for information.

Are any symptoms described and any DTC detected?

Symptom is described, DTC is detected>>GO TO 3.
Symptom is described, DTC is not detected>>GO TO 4.
Symptom is not described, DTC is detected>>GO TO 7.

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 7.

4.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.

5.SELF-DIAGNOSIS WITH ON BOARD DIAGNOSIS SYSTEM

Perform the self-diagnosis with on board diagnosis. Check that whether malfunction result is detected or not.

Is malfunction result detected?

YES >> GO TO 6.
NO >> GO TO 8.

6.TROUBLE DIAGNOSIS BY MALFUNCTION

Perform the trouble diagnosis for the detected malfunction result. Specify the malfunctioning part.

>> GO TO 9.

7.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 9.
NO >> Check according to GI-42, "Intermittent Incident".

8. 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 9.
NO >> Monitor input data from related sensors or check voltage of related module terminals using CONSULT.

9. DETECT MALFUNCTIONING PART BY DIAGNOSIS PROCEDURE

Inspect according to Diagnosis Procedure of the system.

Is malfunctioning part detected?

YES >> GO TO 10.
NO >> Check according to GI-42, "Intermittent Incident".

10. 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 11.

11. 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 9.
YES-2 >> Symptom remains: GO TO 4.
NO >> Before returning the vehicle to the customer, always erase DTC.

OPERATION INSPECTION
FRONT MANUAL AIR CONDITIONING SYSTEM
FRONT MANUAL AIR CONDITIONING SYSTEM : Work Procedure

INFOID:0000000009652645

DESCRIPTION
The purpose of the operation inspection is to check that the individual system operates normally.

Check condition : Engine running at normal operating temperature.

OPERATION INSPECTION
1.CHECK MEMORY FUNCTION

1. Press fan switch to activate front A/C system.
2. Operating temperature control switch to full hot position.
3. Press ON·OFF switch.
4. Turn ignition switch OFF.
5. Turn ignition switch ON.
6. Press fan switch.
7. Check that the air flow temperature position (full hot) is maintained.

Is the inspection result normal?

YES >> GO TO 2.
NO >> GO TO 9.

2.CHECK FRONT BLOWER MOTOR

1. Start engine.
2. Operate fan switch and check that fan speed changes.
3. Check operation for all fan speeds.

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 9.

3.CHECK DISCHARGE AIR (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 outlets. Refer to VTL-6, "VENTILATION SYSTEM (FRONT AIR CONDITIONING) : System Description".

Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 9.

4.CHECK INTAKE AIR

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

Is the inspection result normal?

YES >> GO TO 5.
NO >> GO TO 9.

5.CHECK COMPRESSOR

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

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 9.

6. CHECK DISCHARGE AIR TEMPERATURE

1. Operate temperature control switch.
2. Check that discharge air temperature changes.

Is the inspection result normal?

YES >> GO TO 7.
NO >> GO TO 9.

7. CHECK TEMPERATURE SETTING DECREASE

1. Operate compressor.
2. Operate temperature control switch to full cold position.
3. Check that cool air blows from the air outlets.

Is the inspection result normal?

YES >> GO TO 8.
NO >> GO TO 9.

8. CHECK TEMPERATURE INCREASE

1. Warm up engine to the normal operating temperature.
2. Operate temperature control switch to full hot position.
3. Check that warm air blows from the air outlets.

Is the inspection result normal?

YES >> INSPECTION END
NO >> GO TO 9.

9. CHECK SELF-DIAGNOSIS USING ON BOARD DIAGNOSIS SYSTEM

1. Perform self-diagnosis using on board diagnosis.
2. Check whether any malfunction is detected.

Is any malfunction detected?

YES >> Perform the appropriate diagnosis for the detected malfunction.
NO >> GO TO 10.

10. CHECK SELF-DIAGNOSIS USING WITH CONSULT

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

Is any DTC detected?

YES >> Perform trouble diagnosis for the detected DTC.
NO >> Refer to HAC-229, "Symptom Table", and perform the appropriate diagnosis.

REAR MANUAL AIR CONDITIONING SYSTEM

REAR MANUAL AIR CONDITIONING SYSTEM : Work Procedure

INFOID:0000000009652646

DESCRIPTION

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

NOTE:

Check that front manual air conditioning system operates normally. Refer to HAC-194, "FRONT MANUAL AIR CONDITIONING SYSTEM : Work Procedure".

Check condition **: Engine running at normal operating temperature.**
: Front air conditioning system is in operation.

OPERATION INSPECTION

Front A/C control operation

1. CHECK REAR CONTROL MODE FUNCTION

1. Press REAR switch. The REAR switch indicator turns ON.

2. Check that front A/C control changes to the rear A/C control mode (“REAR” indicator on front A/C display turns ON) and that rear manual air conditioning system starts.
   NOTE:
   “REAR” indicator on front A/C control display turns OFF when any switch is not operated for approximately 10 seconds.
3. Press REAR switch again. The REAR switch indicator turns OFF.
4. Check that “REAR” indicator on front A/C display turns OFF and rear control mode released.
   (Rear manual air conditioning system operates continuously)

Is the inspection result normal?

YES >> GO TO 2.
NO >> GO TO 7.

2. CHECK REAR BLOWER MOTOR

1. Press REAR switch and check that “REAR” indicator on front A/C display turns ON.
   NOTE:
   “REAR” indicator on front A/C control display turns OFF when any switch is not operated for approximately 10 seconds.
2. Operate fan switch to check that fan speed changes.
3. Check the operation for all fan speeds.

Is the inspection result normal?

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

3. CHECK DISCHARGE AIR

1. Press REAR switch and check that “REAR” indicator on front A/C display turns ON.
   NOTE:
   “REAR” indicator on front A/C control display turns OFF when any switch is not operated for approximately 10 seconds.
2. Operate fan switch to set the fan speed to maximum speed.
3. Operate MODE switch.
4. Check that air outlets change according to each indicated air outlet by placing a hand in front of the outlets. Refer to VTL-7, "VENTILATION SYSTEM (REAR AIR CONDITIONING) : System Description".

Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 7.

4. CHECK DISCHARGE AIR TEMPERATURE

1. Press REAR switch and check that “REAR” indicator on front A/C display turns ON.
   NOTE:
   “REAR” indicator on front A/C control display turns OFF when any switch is not operated for approximately 10 seconds.
2. Operate temperature control switch.
3. Check that discharge air temperature changes.

Is the inspection result normal?

YES >> GO TO 5.
NO >> GO TO 7.

5. CHECK TEMPERATURE DECREASE

1. Press REAR switch and check that “REAR” indicator on front A/C display turns ON.
   NOTE:
   “REAR” indicator on front A/C control display turns OFF when any switch is not operated for approximately 10 seconds.
2. Operate temperature control switch to full cold position.
3. Check that cool air blows from the air outlets.

Is the inspection result normal?

YES >> GO TO 6.
NO >> GO TO 7.

6. CHECK TEMPERATURE INCREASE

1. Press REAR switch and check that “REAR” indicator on front A/C display turns ON.
NOTE:
“REAR” indicator on front A/C control display turns OFF when any switch is not operated for approximately 10 seconds.
2. Operate temperature control switch to full hot position.
3. Check that warm air blows from the air outlets.

Is the inspection result normal?

YES >> INSPECTION END
NO >> GO TO 7.

7. CHECK SELF-DIAGNOSIS USING ON BOARD DIAGNOSIS SYSTEM

1. Perform self-diagnosis using on board diagnosis.
2. Check whether any malfunction is detected.

Is any malfunction detected?

YES >> Perform the appropriate diagnosis for the detected malfunction.
NO >> Refer to HAC-231, "Symptom Table", and perform the appropriate diagnosis.

Rear A/C control operation

1. CHECK REAR BLOWER MOTOR

1. Operate fan switch to check that fan speed changes.
2. Check operation for all fan speeds.

Is the inspection result normal?

YES >> GO TO 2.
NO >> GO TO 6.

2. CHECK DISCHARGE AIR

1. Operate fan switch to set the fan speed to maximum speed.
2. Operate MODE switch.
3. Check that air outlets change according to each indicated air outlet by placing a hand in front of the outlets. Refer to VTL-7, "VENTILATION SYSTEM (REAR AIR CONDITIONING) : System Description".

Is the inspection result normal?

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

3. CHECK DISCHARGE AIR TEMPERATURE

1. Operate temperature control switch.
2. Check that discharge air temperature changes.

Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 6.

4. CHECK TEMPERATURE DECREASE

1. Operate temperature control switch to full cold position.
2. Check that cool air blows from the air outlets.

Is the inspection result normal?

YES >> GO TO 5.
NO >> GO TO 6.

5. CHECK TEMPERATURE INCREASE

1. Operate temperature control switch to full hot position.
2. Check that warm air blows from the air outlets.

Is the inspection result normal?

YES >> INSPECTION END
NO >> GO TO 6.

6. CHECK SELF-DIAGNOSIS USING ON BOARD DIAGNOSIS SYSTEM

1. Perform self-diagnosis using on board diagnosis.

2. Check whether any malfunction is detected.

Is any malfunction detected?

YES >> Perform the appropriate diagnosis for the detected malfunction.
NO >> Refer to HAC-231, "Symptom Table", and perform the appropriate diagnosis.

DTC/CIRCUIT DIAGNOSIS

POWER SUPPLY AND GROUND CIRCUIT
A/C AMP.

A/C AMP. : Diagnosis Procedure

INFOID:0000000009652647

1.CHECK SYMPTOM

Check symptom (A or B).

	Symptom
A	• Front air conditioning does not activate. • Front air conditioning cannot be controlled. • Operation status of front air conditioning is not indicated on display.
B	Memory function does not operate normally.

Which symptom is detected?

A >> GO TO 2.
B >> GO TO 5.

2.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 10A fuse (No. 3 and 19, located in fuse block (J/B)].
   NOTE:
   Refer to PG-80, "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 AMP. IGNITION POWER SUPPLY AND ACC POWER SUPPLY

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

+		–	Voltage
A/C amp.			
Connector	Terminal		
M49	2	Ground	11 – 14 V
	9		

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair harness or connector between A/C amp. and fuse.

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

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

A/C amp.		—	Continuity
Connector	Terminal		
M49	21	Ground	Existed
	23		

Is the inspection result normal?

YES >> Replace front A/C control (A/C amp.). Refer to HAC-238, "Removal and Installation".
NO >> Repair harness or connector.

5.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 15A fuse (No. 6, located in fuse block (J/B)].

NOTE:
Refer to PG-80, "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 AMP. BATTERY POWER SUPPLY

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

+		–	Voltage
A/C amp.			
Connector	Terminal		
M49	1	Ground	11 – 14 V

Is the inspection result normal?

YES >> Replace front A/C control (A/C amp.). Refer to HAC-238, "Removal and Installation".
NO >> Repair harness or connector between A/C amp. and fuse.

REAR A/C CONTROL

REAR A/C CONTROL : Diagnosis Procedure

INFOID:0000000009652648

1.CHECK REAR A/C CONTROL POWER SUPPLY

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

+		–	Voltage
Rear A/C control			
Connector	Terminal		
R16	12	Ground	11 – 14 V

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector between rear A/C control and fuse block (J/B).

2.CHECK REAR A/C CONTROL GROUND CIRCUIT

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

Rear A/C control		—	Continuity
Connector	Terminal		
R16	1	Ground	Existed

Is the inspection result normal?

YES >> Replace rear A/C control. Refer to HAC-239, "Removal and Installation".
NO >> Repair harness or connector.

REAR A/C CONTROL COMMUNICATION SIGNAL

Diagnosis Procedure

INFOID:0000000009652649

1.CHECK SYMPTOM

Check symptom (A or B).

Symptom		
A	Rear air conditioning cannot be controlled by rear A/C control.	Operation status of rear air conditioning is indicated on rear A/C control display.
B		Operation status of rear air conditioning is not indicated on rear A/C control display.

Which symptom is detected?

A >> GO TO 2.
B >> GO TO 5.

2.CHECK COMMUNICATION SIGNAL (REAR A/C CONTROL → A/C AMP.) CIRCUIT FOR OUTPUT SIGNAL

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

+		–	Voltage (Approx.)
Rear A/C control			
Connector	Terminal		
R16	10	Ground	5 V

Is the inspection result normal?

YES >> Replace rear A/C control. Refer to HAC-239, "Removal and Installation".
NO >> GO TO 3.

3.CHECK COMMUNICATION SIGNAL (REAR A/C CONTROL → A/C AMP.) CIRCUIT FOR OPEN

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

Rear A/C control		A/C amp.		Continuity
Connector	Terminal	Connector	Terminal	
R16	10	M49	33	Existed

Is the inspection result normal?

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

4.CHECK COMMUNICATION SIGNAL (REAR A/C CONTROL → A/C AMP.) CIRCUIT FOR SHORT

Check continuity between rear A/C control harness connector and ground.

Rear A/C control		—	Continuity
Connector	Terminal		
R16	10	Ground	Not existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C amp.). Refer to HAC-238, "Removal and Installation".
NO >> Repair harness or connector.

5.CHECK COMMUNICATION SIGNAL (A/C AMP. → REAR A/C CONTROL) CIRCUIT FOR OUTPUT SIG-

NAL

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

+		–	Voltage (Approx.)
A/C amp.			
Connector	Terminal		
M49	32	Ground	5 V

Is the inspection result normal?

YES >> Replace front A/C control (A/C amp.). Refer to HAC-238, "Removal and Installation".
NO >> GO TO 6.

6. CHECK COMMUNICATION SIGNAL (A/C AMP. → REAR A/C CONTROL) CIRCUIT FOR OPEN

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

Rear A/C control		A/C amp.		Continuity
Connector	Terminal	Connector	Terminal	
R16	9	M49	32	Existed

Is the inspection result normal?

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

7. CHECK COMMUNICATION SIGNAL (A/C AMP. → REAR A/C CONTROL) CIRCUIT FOR SHORT

Check continuity between rear A/C control harness connector and ground.

Rear A/C control		—	Continuity
Connector	Terminal		
R16	9	Ground	Not existed

Is the inspection result normal?

YES >> Check rear A/C control power supply circuit. Refer to HAC-200, "REAR A/C CONTROL : Diagnosis Procedure".
NO >> Repair harness or connector.

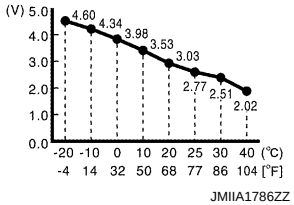
INTAKE SENSOR

Diagnosis Procedure

INFOID:0000000009652650

1.CHECK INTAKE SENSOR SIGNAL

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

+		–	Voltage
A/C amp.			
Connector	Terminal		
M49	37	Ground	

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Is the inspection result normal?

YES >> GO TO 7.
NO >> GO TO 2.

2.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 3.
NO >> GO TO 5.

3.CHECK INTAKE SENSOR GROUND CIRCUIT FOR OPEN

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

Intake sensor		A/C amp.		Continuity
Connector	Terminal	Connector	Terminal	
M42	2	M49	40	Existed

Is the inspection result normal?

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

4.CHECK INTAKE SENSOR

Check intake sensor. Refer to HAC-204, "Component Inspection".

Is the inspection result normal?

YES >> Replace front A/C control (A/C amp.). Refer to HAC-238, "Removal and Installation".
NO >> Replace intake sensor. Refer to HAC-240, "Removal and Installation".

5.CHECK INTAKE SENSOR POWER SUPPLY CIRCUIT FOR OPEN

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

Intake sensor		A/C amp.		Continuity
Connector	Terminal	Connector	Terminal	
M42	1	M49	37	Existed

Is the inspection result normal?

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

6.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 front A/C control (A/C amp.). Refer to HAC-238, "Removal and Installation".
NO >> Repair harness or connector.

7.CHECK INTERMITTENT INCIDENT

Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace front A/C control (A/C amp.). Refer to HAC-238, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:0000000009652651

1.CHECK INTAKE SENSOR

1. Remove intake sensor. Refer to HAC-240, "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-240, "Removal and Installation".

FRONT AIR MIX DOOR MOTOR

Diagnosis Procedure

INFOID:0000000009652652

1.CHECK FRONT AIR MIX DOOR MOTOR POWER SUPPLY

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

+		–	Voltage
Front air mix door motor			
Connector	Terminal		
M308	1	Ground	9.5 – 13.5 V

Is the inspection result normal?

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

2.CHECK FRONT AIR MIX DOOR MOTOR GROUND CIRCUIT FOR OPEN

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

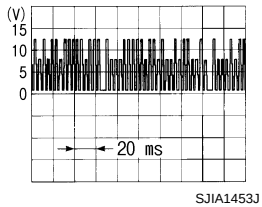
Front air mix door motor		—	Continuity
Connector	Terminal		
M308	2	Ground	Existed

Is the inspection result normal?

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

3.CHECK FRONT AIR MIX DOOR MOTOR LAN SIGNAL

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

+		–	Output waveform
Front air mix door motor			
Connector	Terminal		
M308	3	Ground	

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Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 6.

4.CHECK INSTALLATION OF FRONT AIR MIX DOOR MOTOR

Check front air mix door motor is properly installed. Refer to HAC-242, "Exploded View".

Is the inspection result normal?

YES >> Replace front air mix door motor. Refer to HAC-243, "FRONT AIR MIX DOOR MOTOR : Removal and Installation".

NO >> Repair or replace malfunctioning part.

5. CHECK FRONT AIR MIX DOOR MOTOR POWER SUPPLY CIRCUIT FOR OPEN

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

Front air mix door motor		A/C amp.		Continuity
Connector	Terminal	Connector	Terminal	
M308	1	M49	4	Existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C amp.). Refer to HAC-238, "Removal and Installation".
NO >> Repair harness or connector.

6. CHECK FRONT AIR MIX DOOR MOTOR LAN SIGNAL CIRCUIT FOR OPEN

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

Front air mix door motor		A/C amp.		Continuity
Connector	Terminal	Connector	Terminal	
M308	3	M49	5	Existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C amp.). Refer to HAC-238, "Removal and Installation".
NO >> Repair harness or connector.

FRONT MODE DOOR MOTOR

Diagnosis Procedure

INFOID:0000000009652653

1.CHECK FRONT MODE DOOR MOTOR POWER SUPPLY

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

+		–	Voltage
Front mode door motor			
Connector	Terminal		
M310	1	Ground	9.5 – 13.5 V

Is the inspection result normal?

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

2.CHECK FRONT MODE DOOR MOTOR GROUND CIRCUIT FOR OPEN

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

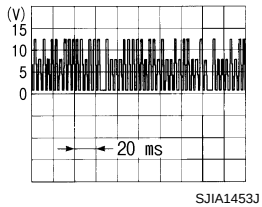
Front mode door motor		—	Continuity
Connector	Terminal		
M310	2	Ground	Existed

Is the inspection result normal?

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

3.CHECK FRONT MODE DOOR MOTOR LAN SIGNAL

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

+		–	Output waveform
Front mode door motor			
Connector	Terminal		
M310	3	Ground	

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Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 6.

4.CHECK INSTALLATION OF FRONT MODE DOOR MOTOR

Check front mode door motor is properly installed. Refer to HAC-242, "Exploded View".

Is the inspection result normal?

YES >> Replace front mode door motor. Refer to HAC-242, "FRONT MODE DOOR MOTOR : Removal and Installation".

NO >> Repair or replace malfunctioning part.

5. CHECK FRONT MODE DOOR MOTOR POWER SUPPLY CIRCUIT FOR OPEN

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

Front mode door motor		A/C amp.		Continuity
Connector	Terminal	Connector	Terminal	
M310	1	M49	4	Existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C amp.). Refer to HAC-238, "Removal and Installation".
NO >> Repair harness or connector.

6. CHECK FRONT MODE DOOR MOTOR LAN SIGNAL CIRCUIT FOR OPEN

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

Front mode door motor		A/C amp.		Continuity
Connector	Terminal	Connector	Terminal	
M310	3	M49	5	Existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C amp.). Refer to HAC-238, "Removal and Installation".
NO >> Repair harness or connector.

INTAKE DOOR MOTOR

Diagnosis Procedure

INFOID:0000000009652654

1.CHECK INTAKE DOOR MOTOR POWER SUPPLY

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

+		–	Voltage
Intake door motor			
Connector	Terminal		
M304	1	Ground	9.5 – 13.5 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 amp. connector.
3. Check continuity between intake door motor harness connector and ground.

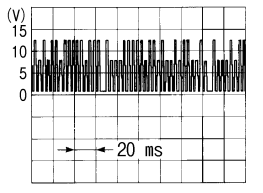
Intake door motor		—	Continuity
Connector	Terminal		
M304	2	Ground	Existed

Is the inspection result normal?

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

3.CHECK INTAKE DOOR MOTOR LAN SIGNAL

1. Connect intake door motor and A/C 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	 SJIA1453J

Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 6.

4.CHECK INSTALLATION OF INTAKE DOOR MOTOR

Check intake door motor is properly installed. Refer to HAC-242, "Exploded View".

Is the inspection result normal?

YES >> Replace intake door motor. Refer to HAC-243, "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 amp. connector.
3. Check continuity between intake door motor harness connector and A/C amp. harness connector.

Intake door motor		A/C amp.		Continuity
Connector	Terminal	Connector	Terminal	
M304	1	M49	4	Existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C amp.). Refer to HAC-238, "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 amp. connector.
3. Check continuity between intake door motor harness connector and A/C amp. harness connector.

Intake door motor		A/C amp.		Continuity
Connector	Terminal	Connector	Terminal	
M304	3	M49	5	Existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C amp.). Refer to HAC-238, "Removal and Installation".
NO >> Repair harness or connector.

REAR AIR MIX DOOR MOTOR

Diagnosis Procedure

INFOID:0000000009652655

1.CHECK REAR AIR MIX DOOR MOTOR POWER SUPPLY

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

+		–	Voltage
Rear air mix door motor			
Connector	Terminal		
B404	1	Ground	9.5 – 13.5 V

Is the inspection result normal?

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

2.CHECK REAR AIR MIX DOOR MOTOR GROUND CIRCUIT FOR OPEN

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

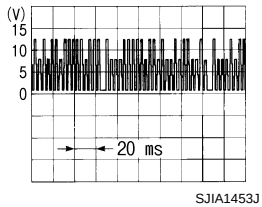
Rear air mix door motor		—	Continuity
Connector	Terminal		
B404	2	Ground	Existed

Is the inspection result normal?

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

3.CHECK REAR AIR MIX DOOR MOTOR LAN SIGNAL

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

+		–	Output waveform
Rear air mix door motor			
Connector	Terminal		
B404	3	Ground	

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Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 6.

4.CHECK INSTALLATION OF REAR AIR MIX DOOR MOTOR

Check rear air mix door motor is properly installed. Refer to HAC-242, "Exploded View".

Is the inspection result normal?

YES >> Replace rear air mix door motor. Refer to HAC-244, "REAR AIR MIX DOOR MOTOR : Removal and Installation".

NO >> Repair or replace malfunctioning part.

5. CHECK REAR AIR MIX DOOR MOTOR POWER SUPPLY CIRCUIT FOR OPEN

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

Rear air mix door motor		A/C amp.		Continuity
Connector	Terminal	Connector	Terminal	
B404	1	M49	4	Existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C amp.). Refer to HAC-238, "Removal and Installation".
NO >> Repair harness or connector.

6. CHECK REAR AIR MIX DOOR MOTOR LAN SIGNAL CIRCUIT FOR OPEN

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

Rear air mix door motor		A/C amp.		Continuity
Connector	Terminal	Connector	Terminal	
B404	3	M49	5	Existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C amp.). Refer to HAC-238, "Removal and Installation".
NO >> Repair harness or connector.

REAR MODE DOOR MOTOR

Diagnosis Procedure

INFOID:0000000009652656

1.CHECK REAR MODE DOOR MOTOR POWER SUPPLY

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

+		–	Voltage
Rear mode door motor			
Connector	Terminal		
B405	1	Ground	9.5 – 13.5 V

Is the inspection result normal?

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

2.CHECK REAR MODE DOOR MOTOR GROUND CIRCUIT FOR OPEN

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

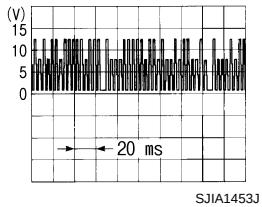
Rear mode door motor		—	Continuity
Connector	Terminal		
B405	2	Ground	Existed

Is the inspection result normal?

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

3.CHECK REAR MODE DOOR MOTOR LAN SIGNAL

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

+		–	Output waveform
Rear mode door motor			
Connector	Terminal		
B405	3	Ground	

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Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 6.

4.CHECK INSTALLATION OF REAR MODE DOOR MOTOR

Check rear mode door motor is properly installed. Refer to HAC-242, "Exploded View".

Is the inspection result normal?

YES >> Replace rear mode door motor. Refer to HAC-244, "REAR MODE DOOR MOTOR : Removal and Installation".

NO >> Repair or replace malfunctioning part.

5. CHECK REAR MODE DOOR MOTOR POWER SUPPLY CIRCUIT FOR OPEN

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

Rear mode door motor		A/C amp.		Continuity
Connector	Terminal	Connector	Terminal	
B405	1	M49	4	Existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C amp.). Refer to HAC-238, "Removal and Installation".
NO >> Repair harness or connector.

6. CHECK REAR MODE DOOR MOTOR LAN SIGNAL CIRCUIT FOR OPEN

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

Rear mode door motor		A/C amp.		Continuity
Connector	Terminal	Connector	Terminal	
B405	3	M49	5	Existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C amp.). Refer to HAC-238, "Removal and Installation".
NO >> Repair harness or connector.

DOOR MOTOR

Diagnosis Procedure

INFOID:0000000009652657

NOTE:
Check this circuit when all door motor system malfunction 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
Intake door motor			
Connector	Terminal		
M304	1	Ground	9.5 – 13.5 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 amp. connector.
3. Check continuity between intake door motor harness connector and ground.

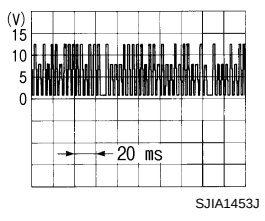
Intake door motor		—	Continuity
Connector	Terminal		
M304	2	Ground	Existed

Is the inspection result normal?

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

3.CHECK DOOR MOTOR LAN SIGNAL

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

+		–	Output waveform
A/C amp.			
Connector	Terminal		
M49	5	Ground	

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

A/C amp.		Intake door motor		Continuity
Connector	Terminal	Connector	Terminal	
M49	5	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-42, "Intermittent Incident".

>> INSPECTION END

6. CHECK DOOR MOTOR LAN SIGNAL CIRCUIT FOR SHORT

1. Turn ignition switch OFF.
2. Disconnect following connectors.
- A/C amp.
- Front air mix door motor
- Front mode door motor
- Intake door motor
- Rear air mix door motor
- Rear mode door motor
3. Check continuity between A/C amp. harness connector and ground.

A/C amp.		—	Continuity
Connector	Terminal		
M49	5	Ground	Not existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C amp.). Refer to HAC-238, "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 amp. connector.
3. Check continuity between intake door motor harness connector and A/C amp. harness connector.

Intake door motor		A/C amp.		Continuity
Connector	Terminal	Connector	Terminal	
M304	1	M49	4	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 amp.
- Front air mix door motor
- Front mode door motor
- Rear air mix door motor
- Rear mode door motor
2. Check continuity between A/C amp. harness connector and ground.

A/C amp.		—	Continuity
Connector	Terminal		
M49	4	Ground	Not existed

Is the inspection result normal?

YES >> Replace front A/C control (A/C amp.). Refer to HAC-238, "Removal and Installation".
NO >> Repair harness or connector.

A/C ON SIGNAL

Component Function Check

INFOID:0000000009652658

1.CHECK A/C ON SIGNAL

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

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

Is the inspection result normal?

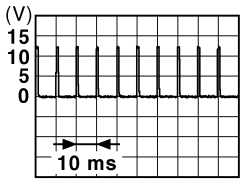
YES >> INSPECTION END
NO >> Refer to HAC-218, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000009652659

1.CHECK A/C ON SIGNAL

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

+		–	Output waveform
A/C amp.			
Connector	Terminal		
M49	13	Ground	

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Is the inspection result normal?

YES >> Replace front A/C control (A/C amp.). Refer to HAC-238, "Removal and Installation".
NO >> GO TO 2.

2.CHECK A/C ON SIGNAL CIRCUIT FOR OPEN

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

A/C amp.		BCM		Continuity
Connector	Terminal	Connector	Terminal	
M49	13	M121	27	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair harness or connector.

3. CHECK A/C ON SIGNAL CIRCUIT FOR SHORT

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

A/C amp.		—	Continuity
Connector	Terminal		
M49	13	Ground	Not existed

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-98, "Removal and Installation".
NO >> Repair harness or connector.

BLOWER FAN ON SIGNAL

Component Function Check

INFOID:0000000009652660

1.CHECK BLOWER FAN ON SIGNAL

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

Monitor item	Condition		Status
FAN ON SIG	Fan switch	OFF position	Off
		Except OFF position	On

Is the inspection result normal?

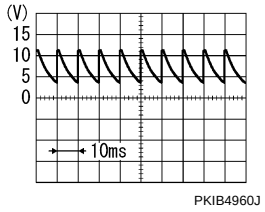
YES >> INSPECTION END
NO >> Refer to HAC-220, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000009652661

1.CHECK BLOWER FAN ON SIGNAL

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

+		–	Output waveform
A/C amp.			
Connector	Terminal		
M49	12	Ground	

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Is the inspection result normal?

YES >> Replace front A/C control (A/C amp.). Refer to HAC-238, "Removal and Installation".
NO >> GO TO 2.

2.CHECK BLOWER FAN ON SIGNAL CIRCUIT FOR OPEN

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

A/C amp.		BCM		Continuity
Connector	Terminal	Connector	Terminal	
M49	12	M121	28	Existed

Is the inspection result normal?

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

3.CHECK BLOWER FAN ON SIGNAL CIRCUIT FOR SHORT

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

A/C amp.		—	Continuity
Connector	Terminal		
M49	12	Ground	Not existed

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-98, "Removal and Installation".
NO >> Repair harness or connector.

FRONT BLOWER MOTOR

Diagnosis Procedure

INFOID:0000000009652662

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-80, "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 FRONT BLOWER MOTOR POWER SUPPLY

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

+		–	Voltage
Front blower motor			
Connector	Terminal		
M140	3	Ground	11 – 14 V

Is the inspection result normal?

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

3.CHECK FRONT BLOWER MOTOR GROUND CIRCUIT FOR OPEN

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

Front blower motor		—	Continuity
Connector	Terminal		
M140	1	Ground	Existed

Is the inspection result normal?

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

4.CHECK FRONT BLOWER MOTOR CONTROL SIGNAL CIRCUIT FOR OPEN

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

Front blower motor		A/C amp.		Continuity
Connector	Terminal	Connector	Terminal	
M140	2	M49	10	Existed

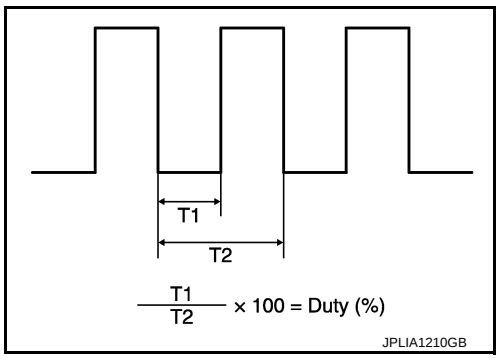
Is the inspection result normal?

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

5.CHECK FRONT BLOWER MOTOR CONTROL SIGNAL

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

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



Front blower motor		Condition	Duty ratio (Approx.)
Connector	Terminal	Fan speed VENT mode	
M140	2	1st	25 %
		2nd	33 %
		3rd	41 %
		4th	51 %
		5th	61 %
		6th	69 %
		7th	81 %

Is the inspection result normal?

YES >> Replace front blower motor. Refer to VTL-18, "FRONT BLOWER MOTOR : Removal and Installation".
NO >> Replace front A/C control (A/C amp.). Refer to HAC-238, "Removal and Installation".

6. CHECK FRONT 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 front blower motor harness connector.

Fuse block (J/B)		Front blower motor		Continuity
Connector	Terminal	Connector	Terminal	
M1	3A	M140	3	Existed
	8A			

Is the inspection result normal?

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

7. CHECK FRONT 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 FRONT BLOWER RELAY

Check front blower relay. Refer to HAC-224, "Component Inspection (Front Blower Relay)".

Is the inspection result normal?

YES >> Check front blower relay power supply circuit. Refer to PG-11, "Wiring Diagram - BATTERY POWER SUPPLY -" and PG-54, "Wiring Diagram - IGNITION POWER SUPPLY -".
NO >> Replace front blower relay.

Component Inspection (Front Blower Motor)

INFOID:0000000009652663

1. CHECK FRONT BLOWER MOTOR-I

1. Remove front blower motor. Refer to VTL-18, "FRONT BLOWER MOTOR : Removal and Installation".
2. Check that there is not any mixing foreign object in the front blower motor.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace front blower motor. Refer to VTL-18, "FRONT BLOWER MOTOR : Removal and Installation".

2.CHECK FRONT BLOWER MOTOR-II

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

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace front blower motor. Refer to VTL-18, "FRONT BLOWER MOTOR : Removal and Installation".

3.CHECK FRONT BLOWER MOTOR-III

Check that front blower motor turns smoothly.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace front blower motor. Refer to VTL-18, "FRONT BLOWER MOTOR : Removal and Installation".

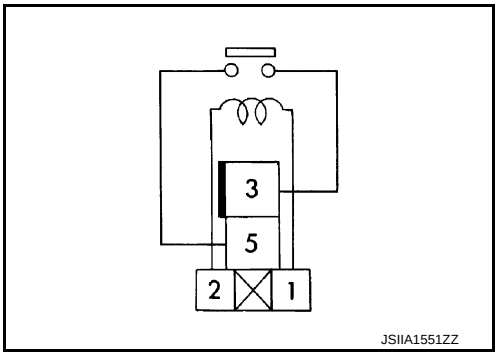
Component Inspection (Front Blower Relay)

INFOID:0000000009652664

1.CHECK FRONT BLOWER RELAY

1. Remove front blower relay. Refer to PG-80, "Fuse, Connector and Terminal Arrangement".
2. Check continuity between front 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 front blower relay.

REAR BLOWER MOTOR

Diagnosis Procedure

INFOID:0000000009652665

1.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 15A fuse (No. 23 and 24).

NOTE:
Refer to PG-81, "Fuse and Fusible Link 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 REAR BLOWER MOTOR POWER SUPPLY

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

+		–	Voltage
Rear blower motor			
Connector	Terminal		
B403	3	Ground	11 – 14 V

Is the inspection result normal?

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

3.CHECK REAR BLOWER MOTOR GROUND CIRCUIT FOR OPEN

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

Rear blower motor		—	Continuity
Connector	Terminal		
B403	1	Ground	Existed

Is the inspection result normal?

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

4.CHECK REAR BLOWER MOTOR CONTROL SIGNAL CIRCUIT FOR OPEN

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

Rear blower motor		A/C amp.		Continuity
Connector	Terminal	Connector	Terminal	
B403	2	M49	30	Existed

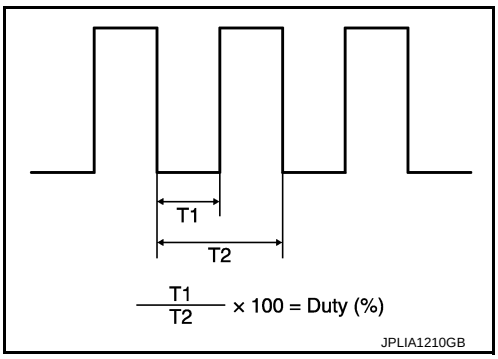
Is the inspection result normal?

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

5.CHECK REAR BLOWER MOTOR CONTROL SIGNAL

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

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



Rear blower motor		Condition	Duty ratio (Approx.)
Connector	Terminal	Fan speed VENT mode	
B403	2	1st	25 %
		2nd	33 %
		3rd	41 %
		4th	51 %
		5th	61 %
		6th	69 %
		7th	81 %

Is the inspection result normal?

YES >> Replace rear blower motor. Refer to VTL-18, "REAR BLOWER MOTOR : Removal and Installation".
NO >> Replace front A/C control (A/C amp.). Refer to HAC-238, "Removal and Installation".

6.CHECK REAR BLOWER MOTOR POWER SUPPLY CIRCUIT FOR OPEN

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

Rear blower relay		Rear blower motor		Continuity
Connector	Terminal	Connector	Terminal	
M14	5	B403	3	Existed
	7			

Is the inspection result normal?

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

7.CHECK REAR BLOWER RELAY GROUND CIRCUIT FOR OPEN

Check continuity between rear blower relay harness connector and ground.

Rear blower relay		—	Continuity
Connector	Terminal		
M14	2	Ground	Existed

Is the inspection result normal?

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

8.CHECK REAR BLOWER RELAY

Check rear blower relay. Refer to HAC-227, "Component Inspection (Rear Blower Relay)".

Is the inspection result normal?

YES >> Check rear blower relay power supply circuit. Refer to PG-11, "Wiring Diagram - BATTERY POWER SUPPLY -" and PG-54, "Wiring Diagram - IGNITION POWER SUPPLY -".
NO >> Replace rear blower relay.

Component Inspection (Rear Blower Motor)

INFOID:0000000009652666

1.CHECK REAR BLOWER MOTOR-I

1. Remove rear blower motor. Refer to VTL-18, "REAR BLOWER MOTOR : Removal and Installation".
2. Check that there is not any mixing foreign object in the rear blower motor.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace rear blower motor. Refer to VTL-18, "REAR BLOWER MOTOR : Removal and Installation".

2.CHECK REAR BLOWER MOTOR-II

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

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace rear blower motor. Refer to VTL-18, "REAR BLOWER MOTOR : Removal and Installation".

3.CHECK REAR BLOWER MOTOR-III

Check that rear blower motor turns smoothly.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace rear blower motor. Refer to VTL-18, "REAR BLOWER MOTOR : Removal and Installation".

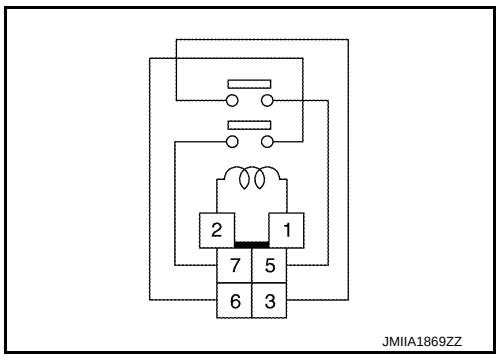
Component Inspection (Rear Blower Relay)

INFOID:0000000009652667

1.CHECK REAR BLOWER RELAY

1. Remove rear blower relay. Refer to PG-81, "Fuse and Fusible Link Arrangement".
2. Check continuity between rear blower relay terminal 3 and 5, then 6 and 7 when voltage is supplied between terminal 1 and 2.

Terminal		Voltage	Continuity
3	5	ON	Existed
		OFF	Not existed
6	7	ON	Existed
		OFF	Not existed



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Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace rear blower relay.

MAGNET CLUTCH

Component Function Check

INFOID:0000000009652668

1.CHECK MAGNET CLUTCH OPERATION

Perform auto active test of IPDM E/R. Refer to PCS-11, "Diagnosis Description".

Does it operate normally?

YES >> INSPECTION END
NO >> Refer to HAC-228, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000009652669

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-82, "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-36, "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-32, "MAGNET CLUTCH : Removal and Installation of Compressor Clutch".
NO >> Repair harness or connector.

SYMPTOM DIAGNOSIS

FRONT MANUAL AIR CONDITIONING SYSTEM

Symptom Table

INFOID:0000000009652670

NOTE:
Perform self-diagnoses with on board diagnosis and CONSULT before performing the symptom diagnosis. If any malfunction result or DTC is detected, perform the corresponding diagnosis.

Symptom	Corresponding malfunction part	Check item/Reference
• Front air conditioning does not activate. • Front air conditioning cannot be controlled. • Operation status of air conditioning is not indicated on display.	• A/C amp. ignition power supply circuit • Front A/C control (A/C amp.)	HAC-199, "A/C AMP. : Diagnosis Procedure"
Memory function does not operate normally.	• A/C amp. battery power supply circuit • Front A/C control (A/C amp.)	HAC-199, "A/C AMP. : Diagnosis Procedure"
Discharge air temperature does not change.	• Front air mix door motor power supply circuit. • Front air mix door motor LAN signal circuit. • Front air mix door motor system installation condition • Front air mix door motor • Front A/C control (A/C amp.)	HAC-205, "Diagnosis Procedure"
Air outlet does not change.	• Front mode door motor power supply circuit. • Front mode door motor LAN signal circuit. • Front mode door motor system installation condition • Front mode door motor • Front A/C control (A/C amp.)	HAC-207, "Diagnosis Procedure"
Air inlet does not change.	• Intake door motor power supply circuit. • Intake door motor LAN signal circuit. • Intake door motor system installation condition • Intake door motor • Front A/C control (A/C amp.)	HAC-209, "Diagnosis Procedure"
All door motor does not operate.	• Each door motor power supply circuit. • Each door motor LAN signal circuit. • Front A/C control (A/C amp.)	HAC-215, "Diagnosis Procedure"
Front blower motor does not operate.	• Front blower motor power supply circuit. • Front blower motor control signal circuit • Front blower motor • Front A/C control (A/C amp.)	HAC-222, "Diagnosis Procedure"

Symptom		Corresponding malfunction part	Check item/Reference
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 • CAN communication line • A/C ON signal circuit • Blower fan ON signal circuit • Intake sensor circuit • Intake sensor • Front A/C control (A/C amp.)	HAC-236, "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	HAC-232, "FRONT MANUAL AIR CONDITIONING SYSTEM : Diagnosis Procedure"
• Insufficient heating • No warm air comes out. (Air flow volume is normal.)		• Engine cooling system • Front heater hose • Front heater core • Air leakage from each duct	HAC-234, "FRONT MANUAL AIR CONDITIONING SYSTEM : Diagnosis Procedure"
Noise is heard when the front air conditioning operates.	During compressor operation	Cooler cycle	HA-29, "Symptom Table"
	During front blower motor operation	• Mixing any foreign object in front blower motor • Front blower motor fan breakage • Front blower motor rotation inferiority	HAC-223, "Component Inspection (Front Blower Motor)"

REAR MANUAL AIR CONDITIONING SYSTEM

Symptom Table

INFOID:0000000009652671

NOTE:

- Perform self-diagnoses with on board diagnosis and CONSULT, before performing the symptom diagnosis. If any malfunction result or DTC is detected, perform the corresponding diagnosis.
- The following table is based on the condition that front manual air conditioning system operates normally.

Symptom		Corresponding malfunction part	Check item/Reference
• Rear air conditioning cannot be controlled by front A/C control. • Operation status of rear air conditioning is not indicated on front A/C control display.		Front A/C control (A/C amp.)	Replace front A/C control (A/C amp.). Refer to HAC-238, "Removal and Installation".
Rear air conditioning cannot be controlled by rear A/C control.	Operation status of rear air conditioning is indicated on rear A/C control display.	Communication signal (rear A/C control → A/C amp.)	Refer to HAC-201, "Diagnosis Procedure".
	Operation status of rear air conditioning is not indicated on rear A/C control display.	Communication signal (A/C amp. → rear A/C control)	Refer to HAC-201, "Diagnosis Procedure".
		Rear A/C control power supply circuit	Refer to HAC-200, "REAR A/C CONTROL : Diagnosis Procedure".
Discharge air temperature does not change.		• Rear air mix door motor power supply circuit. • Rear air mix door motor LAN signal circuit. • Rear air mix door motor system installation condition • Rear air mix door motor • Front A/C control (A/C amp.)	HAC-205, "Diagnosis Procedure"
Air outlet does not change.		• Rear mode door motor power supply circuit. • Rear mode door motor LAN signal circuit. • Rear mode door motor system installation condition • Rear mode door motor • Front A/C control (A/C amp.)	HAC-213, "Diagnosis Procedure"
Rear blower motor does not operate.		• Rear blower motor power supply circuit. • Rear blower motor control signal circuit • Rear blower motor • Front A/C control (A/C amp.)	HAC-225, "Diagnosis Procedure"
• Insufficient cooling • No cool air comes out. (Air flow volume is normal.)		• Cooler cycle • Air leakage from each duct	HAC-232, "REAR MANUAL AIR CONDITIONING SYSTEM : Diagnosis Procedure"
• Insufficient heating • No warm air comes out. (Air flow volume is normal.)		• Rear heater hose • Rear heater core • Air leakage from each duct	HAC-234, "REAR MANUAL AIR CONDITIONING SYSTEM : Diagnosis Procedure"
Noise is heard when the rear blower motor operates.		• Mixing any foreign object in rear blower motor • Rear blower motor fan breakage • Rear blower motor rotation inferiority	HAC-226, "Component Inspection (Rear Blower Motor)"

INSUFFICIENT COOLING

FRONT MANUAL AIR CONDITIONING SYSTEM

FRONT MANUAL AIR CONDITIONING SYSTEM : Description

INFOID:0000000009652672

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

FRONT MANUAL AIR CONDITIONING SYSTEM : Diagnosis Procedure

INFOID:0000000009652673

NOTE:
Perform self-diagnoses with on board diagnosis and CONSULT before performing symptom diagnosis. If any malfunction result or DTC is detected, perform the corresponding diagnosis.

1.CHECK MAGNET CLUTCH OPERATION

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

Is the inspection result normal?

YES >> GO TO 2.
NO >> Perform diagnosis of “COMPRESSOR DOES NOT OPERATE” in “SYMPTOM DIAGNOSIS”. Refer to HAC-236, "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-27, "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 >> INSPECTION END
NO >> Repair or replace parts depending on the inspection results.

REAR MANUAL AIR CONDITIONING SYSTEM

REAR MANUAL AIR CONDITIONING SYSTEM : Description

INFOID:0000000009652674

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

REAR MANUAL AIR CONDITIONING SYSTEM : Diagnosis Procedure

INFOID:0000000009652675

NOTE:
Perform self-diagnoses with on board diagnosis and CONSULT before performing symptom diagnosis. If any malfunction result or DTC is detected, perform the corresponding diagnosis.

1.CHECK REFRIGERANT CYCLE PRESSURE

Connect recovery/recycling recharging equipment to the vehicle and perform pressure inspection with gauge. Refer to HA-27, "Symptom Table".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace parts depending on the inspection results.

2.CHECK AIR LEAKAGE FROM EACH DUCT

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

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair or replace parts depending on the inspection results.

INSUFFICIENT HEATING

FRONT MANUAL AIR CONDITIONING SYSTEM

FRONT MANUAL AIR CONDITIONING SYSTEM : Description

INFOID:0000000009652676

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

FRONT MANUAL AIR CONDITIONING SYSTEM : Diagnosis Procedure

INFOID:0000000009652677

NOTE:
Perform self-diagnoses with on board diagnosis and CONSULT before performing symptom diagnosis. If any malfunction result or 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 FRONT HEATER HOSE

Check installation of front 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 FRONT HEATER CORE

1. Check temperature of inlet hose and outlet hose of front heater core.
2. Check that inlet side of front 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 front heater core. Refer to HA-54, "HEATER CORE : Removal and Installation".

4.CHECK AIR LEAKAGE FROM EACH DUCT

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

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair or replace parts depending on the inspection results.

REAR MANUAL AIR CONDITIONING SYSTEM

REAR MANUAL AIR CONDITIONING SYSTEM : Description

INFOID:0000000009652678

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

REAR MANUAL AIR CONDITIONING SYSTEM : Diagnosis Procedure

INFOID:0000000009652679

NOTE:
Perform self-diagnoses with on board diagnosis and CONSULT before performing symptom diagnosis. If any malfunction result or DTC is detected, perform the corresponding diagnosis.

1.CHECK REAR HEATER HOSE

Check installation of rear heater hose by visually or touching.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace parts depending on the inspection results.

2.CHECK REAR HEATER CORE

1. Check temperature of inlet hose and outlet hose of rear heater core.
2. Check that inlet side of rear 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 3.
NO >> Replace rear heater core. Refer to HA-59, "HEATER CORE : Removal and Installation".

3.CHECK AIR LEAKAGE FROM EACH DUCT

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

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair or replace parts depending on the inspection results.

COMPRESSOR DOES NOT OPERATE

Description

INFOID:0000000009652680

SYMPTOM
Compressor does not operate.

Diagnosis Procedure

INFOID:0000000009652681

NOTE:
- Perform self-diagnoses with on board diagnosis and CONSULT before performing symptom diagnosis. If any malfunction result or 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-228, "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-442, "Component Function Check".

Is the inspection result normal?

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

3. CHECK A/C ON SIGNAL

Check A/C ON signal. Refer to HAC-218, "Component Function Check".

Is inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace malfunctioning parts.

4. CHECK BLOWER FAN ON SIGNAL

Check blower fan ON signal. Refer to HAC-220, "Component Function Check".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace malfunctioning parts

5. CHECK INTAKE SENSOR CIRCUIT

Check intake sensor circuit. Refer to HAC-203, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair or replace malfunctioning parts

6. CHECK BCM 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-36, "Removal and Installation".
NO >> Replace BCM. Refer to BCS-98, "Removal and Installation".

REMOVAL AND INSTALLATION

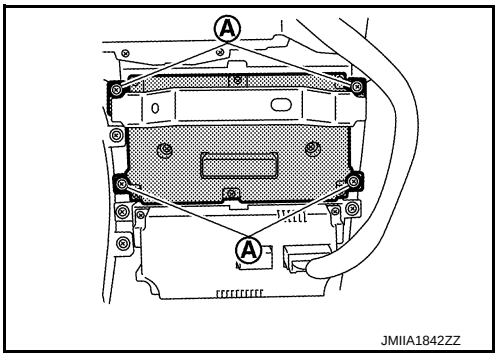
FRONT A/C CONTROL

Removal and Installation

INFOID:0000000009652682

REMOVAL

1. Remove cluster lid C. Refer to IP-28, "Removal and Installation".
2. Remove fixing screws (A), and then remove front A/C control.



INSTALLATION

Install in the reverse order of removal.

REAR A/C CONTROL

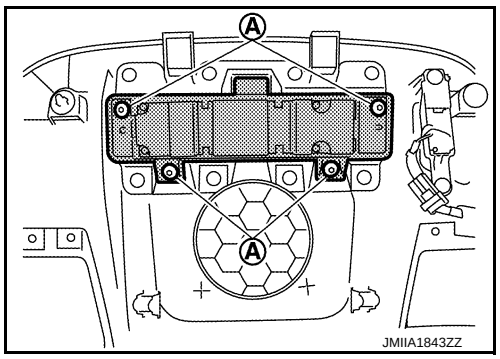
Removal and Installation

INFOID:0000000009652683

REMOVAL

With Rear Display

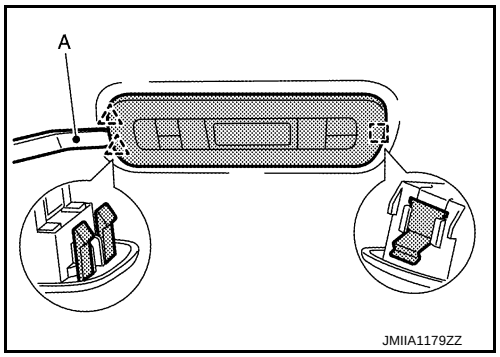
1. Remove roof console. Refer to INT-35, "Removal and Installation".
2. Remove fixing screws (A), and then remove rear A/C control.



Without Rear Display

1. Disengage fixing pawls and metal clip using a remover tool (A).

: Pawl
: Metal clip



2. Disconnect harness connector, and then remove rear A/C control.

INSTALLATION

Install in the reverse order of removal.

INTAKE SENSOR

Removal and Installation

INFOID:0000000009652684

REMOVAL

1. Remove evaporator assembly. Refer to HA-52, "EVAPORATOR : Removal and Installation".
2. Remove intake sensor from evaporator assembly.

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.**
- **Check for leakages when recharging refrigerant. Refer to HA-18, "Leak Test".**

REFRIGERANT PRESSURE SENSOR

Exploded View

INFOID:0000000009652685

Refer to HA-43, "Exploded View".

Removal and Installation

INFOID:0000000009652686

REMOVAL

Refer to HA-45, "REFRIGERANT PRESSURE SENSOR : Removal and Installation".

INSTALLATION

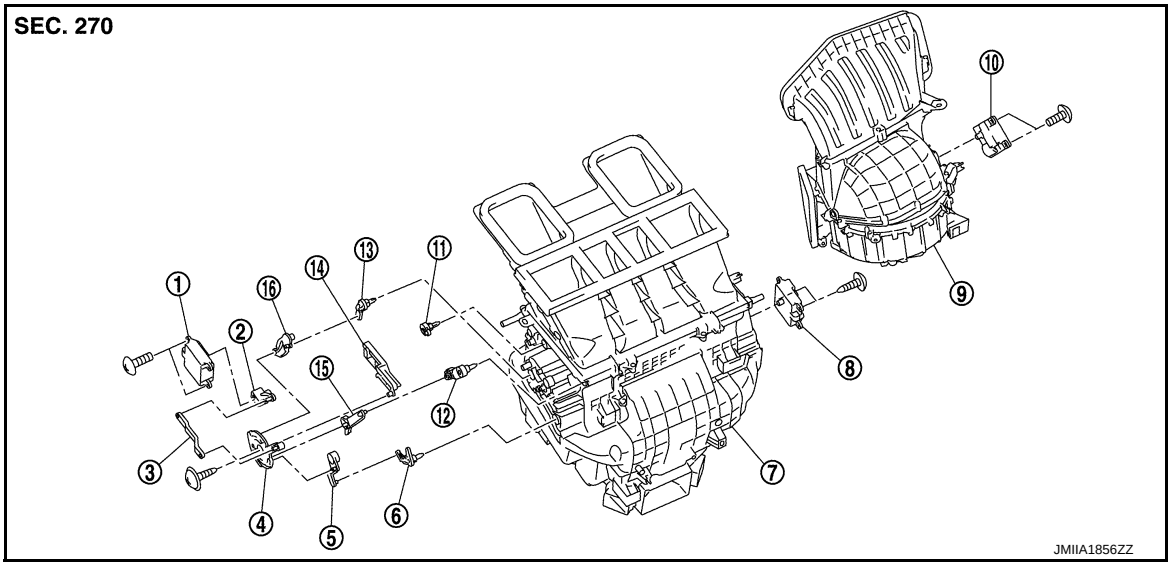
Install in the reverse order of removal.

DOOR MOTOR

Exploded View

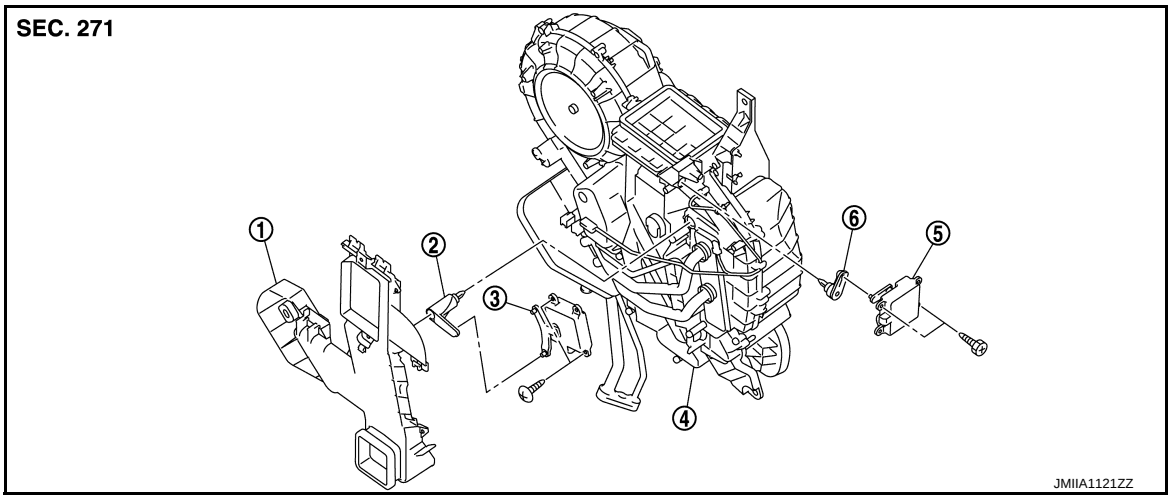
INFOID:0000000009652687

Front A/C unit



1. Front mode door motor
2. Front mode door lever
3. Link rod
4. Main link
5. Foot link
6. Foot lever
7. Heater & cooling unit assembly
8. Air mix door motor
9. Blower unit assembly
10. Intake door motor
11. Defroster lever
12. Ventilator lever
13. Max. cool lever
14. Defroster link
15. Ventilator link
16. Max. cool link

Rear A/C unit



1. Rear foot duct
2. Rear air mix door lever
3. Rear air mix door motor
4. Rear A/C unit assembly
5. Rear mode door motor
6. Rear mode door lever

FRONT MODE DOOR MOTOR

FRONT MODE DOOR MOTOR : Removal and Installation

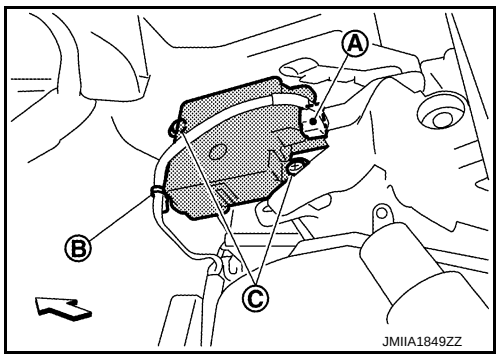
INFOID:0000000009652688

REMOVAL

1. Remove instrument lower panel LH. Refer to IP-14, "Removal and Installation".

2. Disconnect harness connector (A), and then remove harness fixing clip (B).
3. Remove fixing screws (C), and then remove front mode door motor from heater & cooling unit assembly.

⇦ : Vehicle front



INSTALLATION

Install in the reverse order of removal.

FRONT AIR MIX DOOR MOTOR

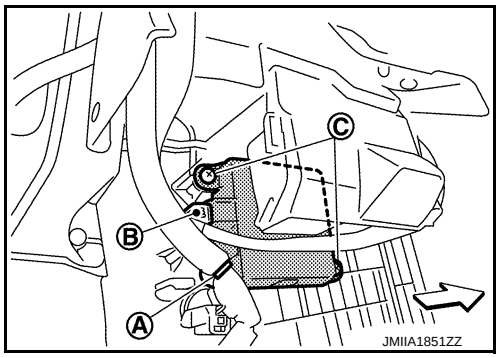
FRONT AIR MIX DOOR MOTOR : Removal and Installation

INFOID:0000000009652689

REMOVAL

1. Set the temperature at 18°C (64°F).
   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 instrument lower cover RH. Refer to IP-14, "Removal and Installation".
4. Remove harness fixing clip (A), and then disconnect harness connector (B).
5. Remove fixing screws (C), and then remove front air mix door motor from heater & cooling unit assembly.

⇦ : Vehicle front



INSTALLATION

Install in the reverse order of removal.

INTAKE DOOR MOTOR

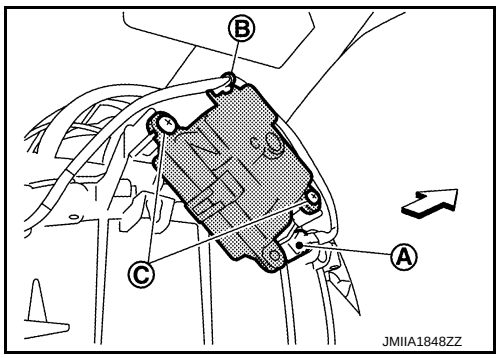
INTAKE DOOR MOTOR : Removal and Installation

INFOID:0000000009652690

REMOVAL

1. Remove instrument lower panel RH. Refer to IP-14, "Removal and Installation".
2. Disconnect harness connector (A), and then remove harness fixing clip (B).
3. Remove fixing screws (C), and then remove intake door motor from blower unit assembly.

⇦ : Vehicle front



INSTALLATION

Install in the reverse order of removal.

REAR MODE DOOR MOTOR

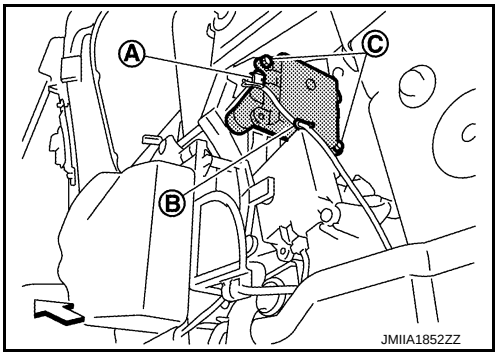
REAR MODE DOOR MOTOR : Removal and Installation

INFOID:0000000009652691

REMOVAL

1. Remove luggage side lower finisher RH. Refer to INT-43, "LUGGAGE SIDE LOWER FINISHER : Removal and Installation".
2. Disconnect harness connector (A), and then remove harness fixing clip (B).
3. Remove fixing screws (C), and then remove rear mode door motor from rear A/C unit assembly.

⇦ : Vehicle front



INSTALLATION

Install in the reverse order of removal.

REAR AIR MIX DOOR MOTOR

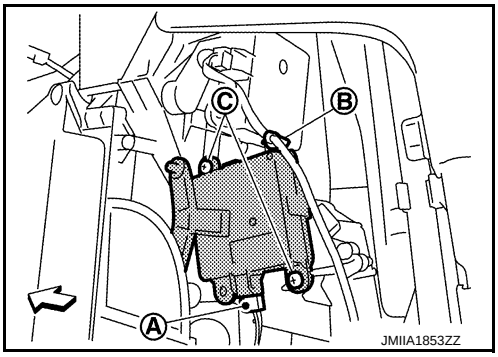
REAR AIR MIX DOOR MOTOR : Removal and Installation

INFOID:0000000009652692

REMOVAL

1. Set the temperature at 18°C (64°F).
   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 luggage side lower finisher RH. Refer to INT-43, "LUGGAGE SIDE LOWER FINISHER : Removal and Installation".
4. Disconnect harness connector (A), and then remove harness fixing clip (B).
5. Remove fixing screws (C), and then remove rear air mix door motor from rear A/C unit assembly.

⇦ : Vehicle front



INSTALLATION

Install in the reverse order of removal.