SECTION HAC

HEATER & AIR CONDITIONING CONTROL SYSTEM

CONTENTS

PRECAUTION

PRECAUTIONS

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

INFOID:0000000011933048

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

WARNING:

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

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

WARNING:

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

Precaution for Work

INFOID:0000000011933049

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

- Water soluble dirt:

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

- Oily dirt:

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

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

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

INFOID:0000000012372936

WARNING:

- **CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. If the refrigerants are mixed compressor failure is likely to occur. Refer to HA-23, "Leak Test". To determine the purity of HFC-134a (R-134a) in the vehicle and recovery tank, use Refrigerant Recovery/Recycling Recharging equipment and Refrigerant Identifier.**

- **Use only specified oil for the HFC-134a (R-134a) A/C system and HFC-134a (R-134a) components. If oil other than that specified is used, compressor failure is likely to occur.**
- **The specified HFC-134a (R-134a) oil rapidly absorbs moisture from the atmosphere. The following handling precautions must be observed:**

- When removing refrigerant components from a vehicle, immediately cap (seal) the component to minimize the entry of moisture from the atmosphere.
- When installing refrigerant components to a vehicle, do not remove the caps (unseal) until just before connecting the components. Connect all refrigerant loop components as quickly as possible to minimize the entry of moisture into system.
- Only use the specified oil from a sealed container. Immediately reseal containers of oil. Without proper sealing, oil will become moisture saturated and should not be used.
- Avoid breathing A/C refrigerant and oil vapor or mist. Exposure may irritate eyes, nose and throat. Remove HFC-134a (R-134a) from the A/C system using certified service equipment meeting requirements of SAE J2210 [HFC-134a (R-134a) recycling equipment], or J2209 [HFC-134a (R-134a) recycling equipment], If accidental system discharge occurs, ventilate work area before resuming service. Additional health and safety information may be obtained from refrigerant and oil manufacturers.
- Do not allow A/C oil to come in contact with styrofoam parts. Damage may result.

CONTAMINATED REFRIGERANT

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

- Explain to the customer that environmental regulations prohibit the release of contaminated refrigerant into the atmosphere.
- Explain that recovery of the contaminated refrigerant could damage your service equipment and refrigerant supply.
- Suggest the customer return the vehicle to the location of previous service where the contamination may have occurred.
- If you choose to perform the repair, recover the refrigerant using only **dedicated equipment and containers. Do not recover contaminated refrigerant into your existing service equipment.** If your facility does not have dedicated recovery equipment, you may contact a local refrigerant product retailer for available service. This refrigerant must be disposed of in accordance with all federal and local regulations. In addition, replacement of all refrigerant system components on the vehicle is recommended.
- If the vehicle is within the warranty period, the air conditioner warranty is void. Please contact NISSAN Customer Affairs for further assistance.

Precaution for Service Equipment

INFOID:0000000012379211

RECOVERY/RECYCLING EQUIPMENT

Follow the manufacturer's instructions for machine operation and machine maintenance. Do not introduce any refrigerant other than that specified into the machine.

ELECTRONIC LEAK DETECTOR

Follow the manufacturer's instructions for tester operation and tester maintenance.

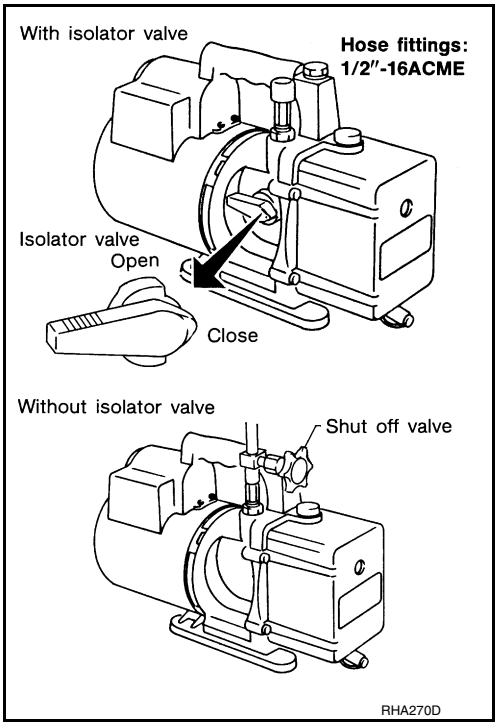
VACUUM PUMP

The oil contained inside the vacuum pump is not compatible with the specified oil for HFC-134a (R-134a) A/C systems. The vent side of the vacuum pump is exposed to atmospheric pressure so the vacuum pump oil may migrate out of the pump into the service hose. This is possible when the pump is switched off after evacuation (vacuuming) and hose is connected to it.

To prevent this migration, use a manual valve situated near the hose-to-pump connection, as follows.

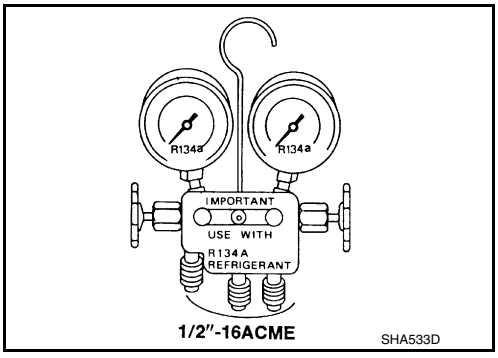
- Usually vacuum pumps have a manual isolator valve as part of the pump. Close this valve to isolate the service hose from the pump.
- For pumps without an isolator, use a hose equipped with a manual shut-off valve near the pump end. Close the valve to isolate the hose from the pump.
- If the hose has an automatic shut off valve, disconnect the hose from the pump: as long as the hose is connected, the valve is open and oil may migrate.

Some one-way valves open when vacuum is applied and close under a no vacuum condition. Such valves may restrict the pump's ability to pull a deep vacuum and are not recommended.



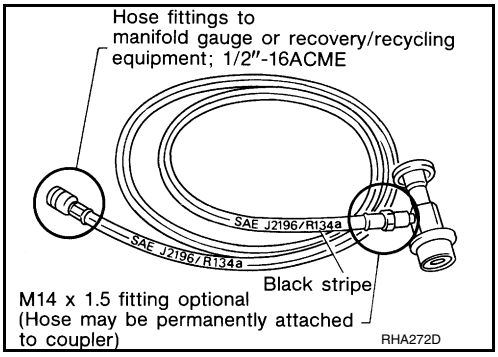
MANIFOLD GAUGE SET

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



SERVICE HOSES

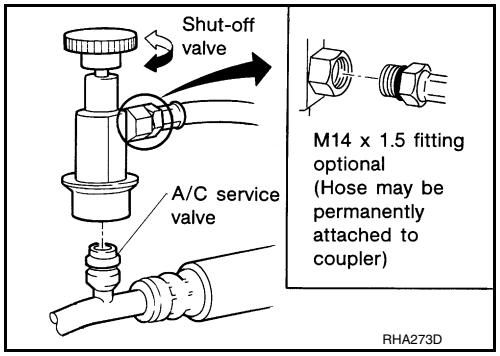
Be certain that the service hoses display the markings described (colored hose with black stripe). All hoses must include positive shut-off devices (either manual or automatic) near the end of the hoses opposite the manifold gauge.



SERVICE COUPLERS

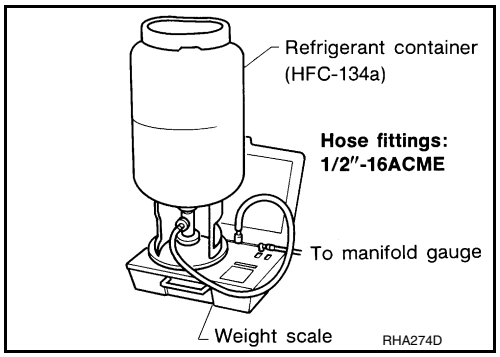
Do not attempt to connect HFC-134a (R-134a) service couplers to a CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers will not properly connect to the CFC-12 (R-12) system. However, if an improper connection is attempted, discharging and contamination may occur.

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



REFRIGERANT WEIGHT SCALE

Verify that no refrigerant other than HFC134a (R-134a) and specified oils have been used with the scale. If the scale controls refrigerant flow electronically, the hose fitting must be 1/2”-16 ACME.



CHARGING CYLINDER

Using a charging cylinder is not recommended. Refrigerant may be vented into air from cylinder's top valve when filling the cylinder with refrigerant. Also, the accuracy of the cylinder is generally less than that of an electronic scale or of quality recycle/recharge equipment.

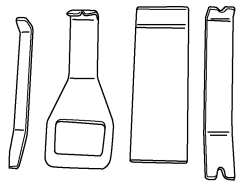
PREPARATION

PREPARATION

Special Service Tool

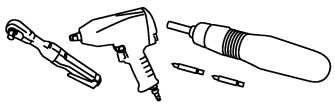
INFOID:0000000011933053

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

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

Commercial Service Tool

INFOID:0000000011933054

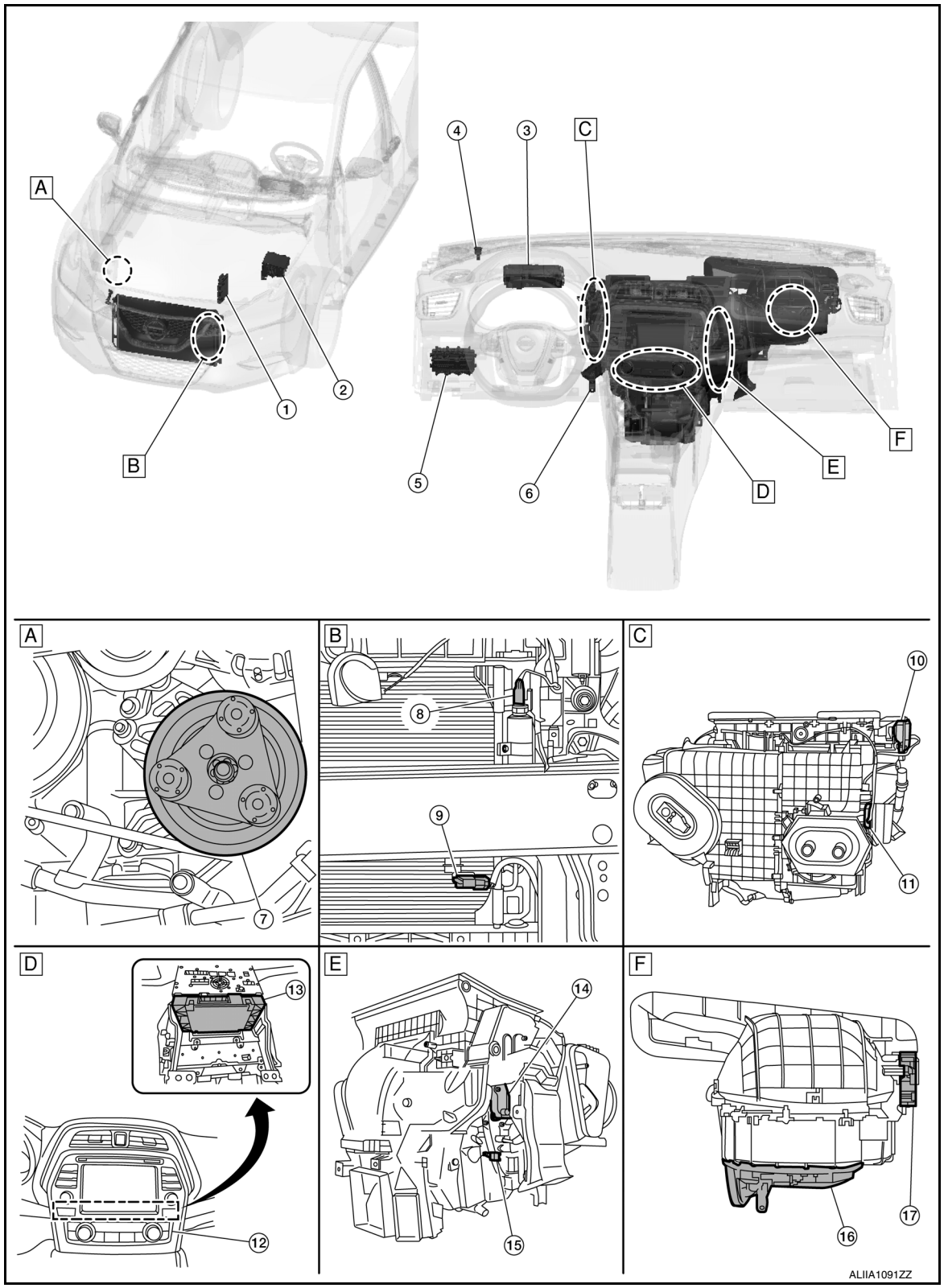
Tool name	Description
Power tool  PIIB1407E	Loosening nuts, screws and bolts

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000012227950



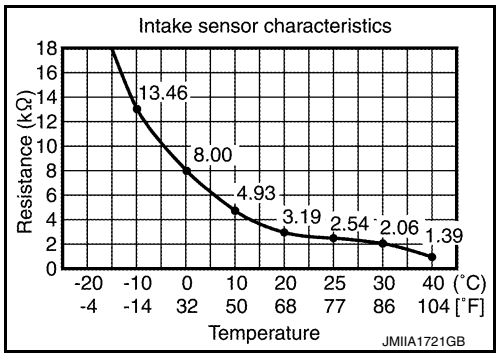
A. RH front of engine compartment
B. View with front bumper fascia removed
C. Behind LH center of instrument panel (view with A/C assembly removed from vehicle)
D. Center of instrument panel
E. Behind RH center of instrument panel (view with A/C assembly removed from vehicle)
F. Behind RH side of instrument panel (view with blower assembly removed from vehicle)

No.	Component	Description
1.	ECM	• The ECM sends an A/C compressor ON request to the IPDM E/R based on the status of engine operation and load as well as refrigerant pressure information. If all the conditions are met for A/C operation, the ECM transmits the A/C compressor ON request to the IPDM E/R. The ECM shares the refrigerant pressure sensor signal, engine RPM, and engine coolant temperature with the A/C auto amp. via CAN communication line. • Refer to EC-15, "ENGINE CONTROL SYSTEM : Component Parts Location" for detailed installation location.
2.	IPDM E/R	• A/C relay is integrated into IPDM E/R. IPDM E/R operates A/C relay when A/C compressor request signal is received from ECM via CAN communication line. • Refer to PCS-5, "Component Parts Location" for detailed installation location.
3.	BCM	• BCM transmits blower motor ON signal to the front and rear blower motor relays. • Refer to BCS-5, "BODY CONTROL SYSTEM : Component Parts Location" for detailed installation location.
4.	Sunload sensor	Refer to HAC-13, "Sunload Sensor".
5.	Fuse block (J/B) (Front blower motor relay)	• Located in the passenger compartment behind the left lower IP, the fuse block (J/B) contains the front blower motor relay and several fuses required for the air conditioner control system. • The front blower motor relay controls the flow of current to fuse 17 and 27 in the fuse block (J/B). The relay is connected directly to ground and is controlled by the BCM.
6.	In-vehicle sensor	Refer to HAC-13, "In-vehicle Sensor".
7.	A/C compressor	Refer to HAC-12, "A/C Compressor".
8.	Refrigerant pressure sensor	Refer to HAC-13, "Refrigerant Pressure Sensor".
9.	Ambient sensor	Refer to HAC-13, "Ambient Sensor".
10.	Mode door motor	Refer to HAC-11, "Mode Door Motor".
11.	Air mix door motor LH	Refer to HAC-11, "Air Mix Door Motor LH".
12.	A/C switch assembly	A/C control operation signal is transmitted from the A/C switch assembly to the A/C auto amp.
13.	A/C auto amp.	Refer to HAC-12, "A/C Auto Amp.".
14.	Air mix door motor RH	Refer to HAC-11, "Air Mix Door Motor RH".
15.	Intake sensor	Refer to HAC-11, "Intake Sensor".
16.	Blower motor	Refer to HAC-11, "Blower Motor".
17.	Intake door motor	Refer to HAC-11, "Intake Door Motor".

Intake Sensor

INFOID:0000000012227951

Intake sensor measures temperature of 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.



Air Mix Door Motor LH

INFOID:0000000012227952

- Air mix door motor (driver side) consists of a motor that drives door, PBR (Potentio Balance Resistor) that detects door position and LCU (Local Control Unit) that performs multiplex communication control (LIN) with A/C auto amp. Refer to HAC-19, "Door Control".
- Rotation of motor is transmitted to air mix door (driver side) by link and lever. Air flow temperature is switched.

Air Mix Door Motor RH

INFOID:0000000012227953

- Air mix door motor (passenger side) consists of a motor that drives door, PBR (Potentio Balance Resistor) that detects door position and LCU (Local Control Unit) that performs multiplex communication control (LIN) with A/C auto amp. Refer to HAC-19, "Door Control".
- Rotation of motor is transmitted to air mix door (passenger side) by link and lever. Air flow temperature is switched.

Mode Door Motor

INFOID:0000000012227954

- Mode door motor consists of a motor that drives door, PBR (Potentio Balance Resistor) that detects door position and LCU (Local Control Unit) that performs multiplex communication control (LIN) with A/C auto amp. Refer to HAC-19, "Door Control".
- Rotation of motor is transmitted to mode door (ventilator door, foot door, and defroster door) by link and lever. Air outlet is switched.

Intake Door Motor

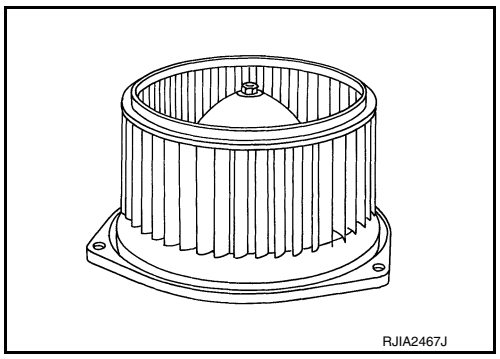
INFOID:0000000012227955

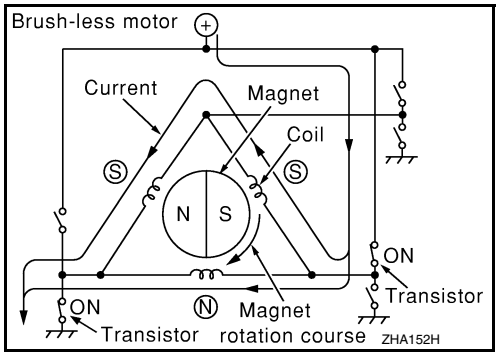
- Intake door motor consists of a motor that drives door, PBR (Potentio Balance Resistor) that detects door position and LCU (Local Control Unit) that performs multiplex communication control (LIN) with A/C auto amp. Refer to HAC-19, "Door Control".
- Rotation of motor is transmitted to intake door by lever. Air inlet is switched.

Blower Motor

INFOID:0000000012227956

- The blower motor utilizes a brush-less motor with a rotating magnet.
- Quietness is improved over previous motors where the brush was the point of contact and the coil rotated.





A/C Compressor

INFOID:0000000012227957

Vaporized refrigerant is drawn into the A/C compressor from the evaporator where it is compressed to a high pressure, high temperature vapor. The hot compressed vapor is then discharged to the condenser.

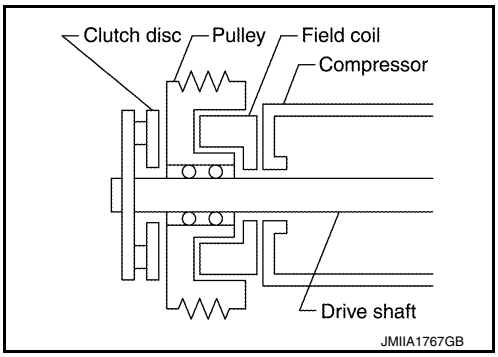
MAGNET CLUTCH

Description

A/C 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 A/C compressor.
- Field coil, which becomes a strong electric magnet when electricity is supplied, strongly pulls clutch disc and presses it to pulley.
- When A/C relay integrated in IPDM E/R turns ON, electricity is supplied to field coil, clutch disc is presses to pulley, and engine rotational movement is transmitted from crankshaft pulley ⇒ drive belt ⇒ pulley ⇒ clutch disc ⇒ drive shaft. A/C compressor is operated. When A/C relay turns OFF, electricity is not supplied to field coil, and clutch disc is released from pulley. A/C compressor is not operated.



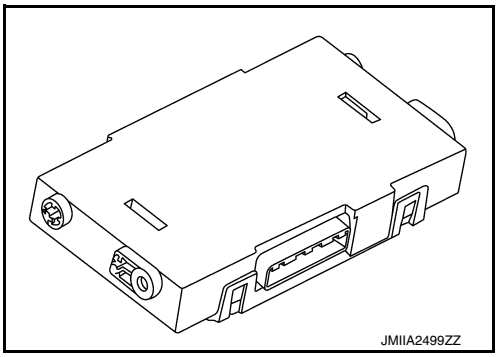
ECV (ELECTRICAL CONTROL VALVE)

ECV (electrical control valve) is installed on the A/C compressor and controls the appropriate amount of refrigerant when necessary.

A/C Auto Amp.

INFOID:0000000012227958

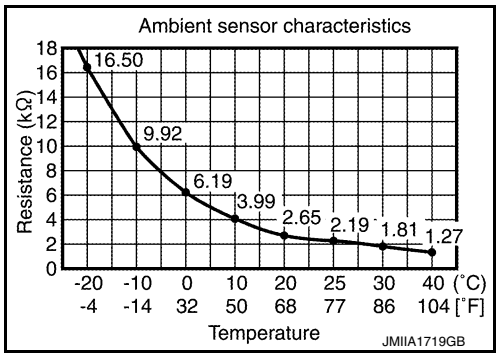
A/C auto amp. controls automatic air conditioning system by inputting and calculating signals from each sensor and each switch.



Ambient Sensor

INFOID:0000000012227959

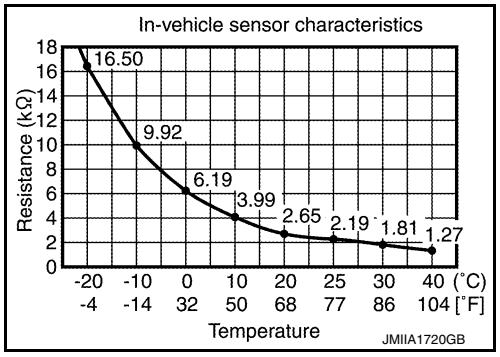
Ambient sensor measures ambient air temperature. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases.



In-vehicle Sensor

INFOID:0000000012227960

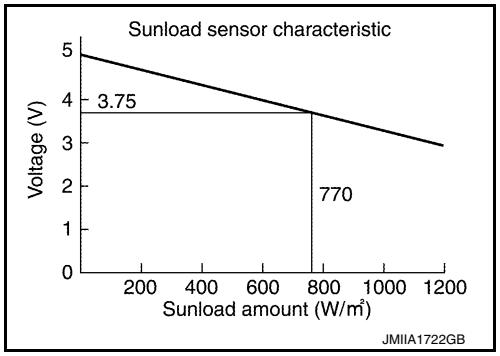
In-vehicle sensor measures temperature of intake air that flows through aspirator to passenger room. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases.



Sunload Sensor

INFOID:0000000012227961

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

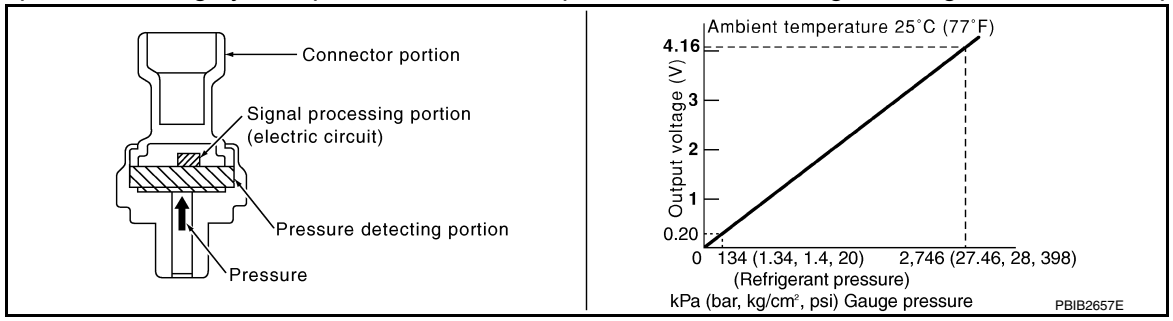


Refrigerant Pressure Sensor

INFOID:0000000012227962

DESCRIPTION

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



STRUCTURE AND OPERATION

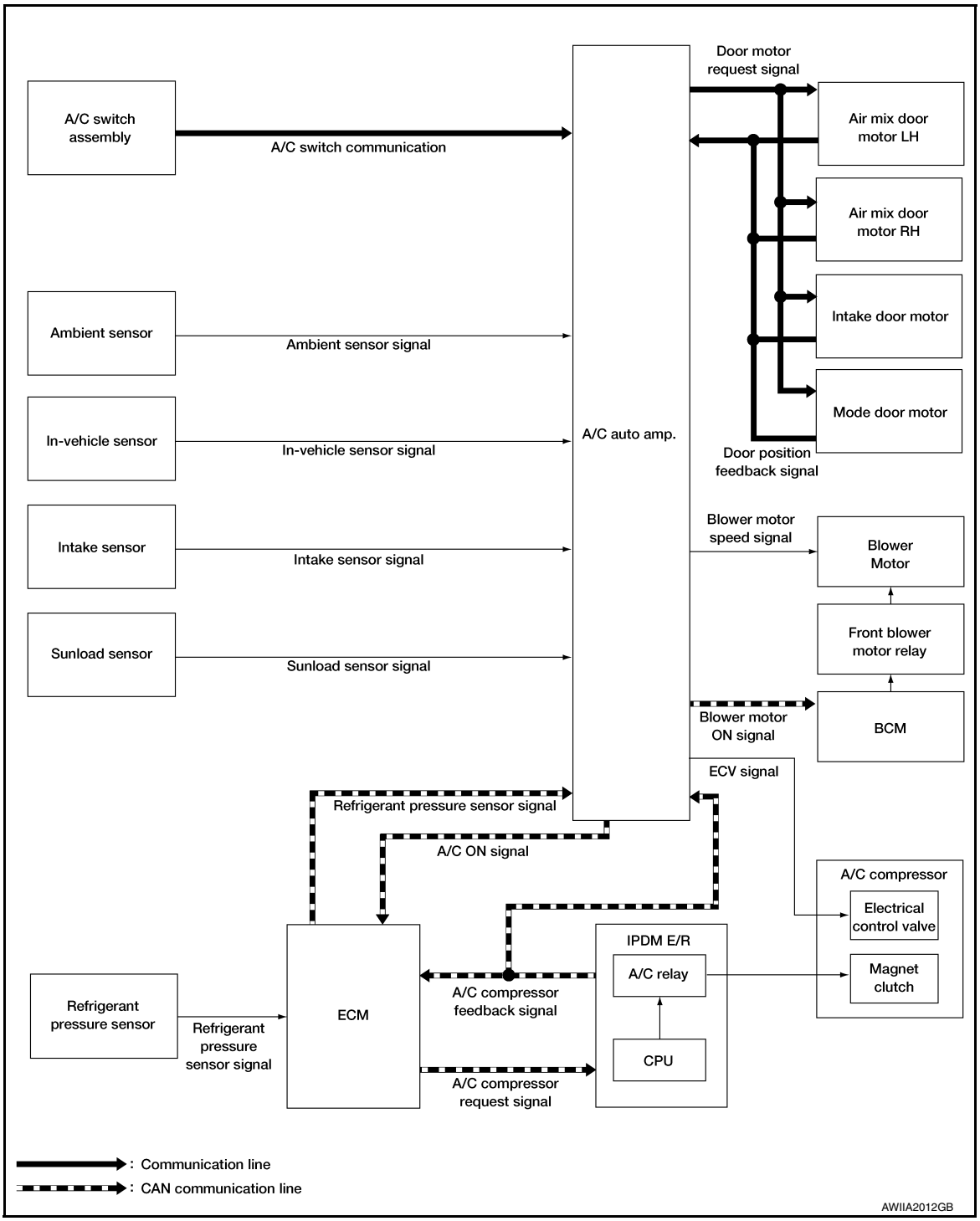
- The refrigerant pressure sensor is a capacitance type sensor. It consists of a pressure detection area and a signal processing area.
- The pressure detection area, which is a variable capacity condenser, changes internal static capacitance according to pressure force.
- The signal processing area detects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

SYSTEM

System Description

INFOID:0000000012174432

SYSTEM DIAGRAM



SYSTEM DESCRIPTION

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

Control by A/C auto amp.

- HAC-17, "Air Flow Control"
- HAC-18, "Air Inlet Control"
- HAC-17, "Air Outlet Control"

- HAC-18, "Compressor Control"
- HAC-19, "Door Control"
- HAC-16, "Temperature Control"
- Correction for input value of each sensor

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

In-vehicle sensor (in-vehicle temperature correction)
• Passenger room temperature detected by in-vehicle sensor is corrected for each front air conditioning control (driver side and passenger side).

Intake sensor (intake temperature correction)
• A/C auto amp. performs correction to change recognized intake temperature of A/C auto amp. quickly when difference is large between recognized intake temperature and intake temperature detected by intake temperature sensor. The correction is performed to change recognition intake temperature slowly when difference is small.

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

Control by ECM
- Cooling fan control
  Refer to EC-42, "COOLING FAN CONTROL : System Description".
- Air conditioning cut control
  Refer to EC-40, "AIR CONDITIONING CUT CONTROL : System Description".

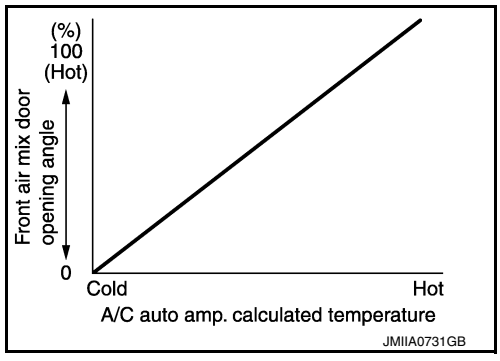
Control by IPDM E/R
- Relay control
  Refer to PCS-7, "RELAY CONTROL SYSTEM : System Description".
- Cooling fan control
  Refer to EC-42, "COOLING FAN CONTROL : System Description".

Control by BCM
- Relay control
  Refer to BCS-13, "POWER CONSUMPTION CONTROL SYSTEM : System Description".

Temperature Control

INFOID:0000000012174438

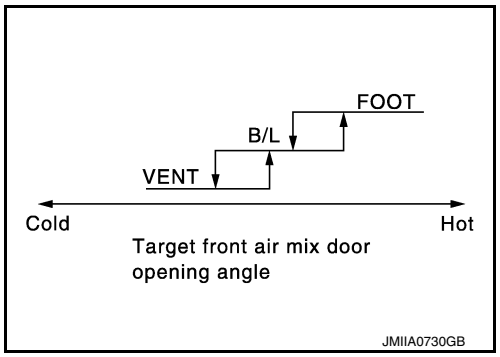
• When ignition switch is in the ON position, A/C auto amp. always automatically controls temperature regardless of front air conditioning operational state.
• A/C auto amp. calculates the target air mix door opening angle depending on set temperature, in-vehicle temperature, ambient temperature, and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



Air Outlet Control

INFOID:0000000012174435

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



Air Flow Control

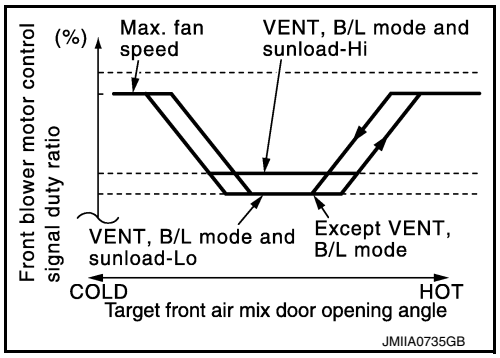
INFOID:0000000012174433

DESCRIPTION

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

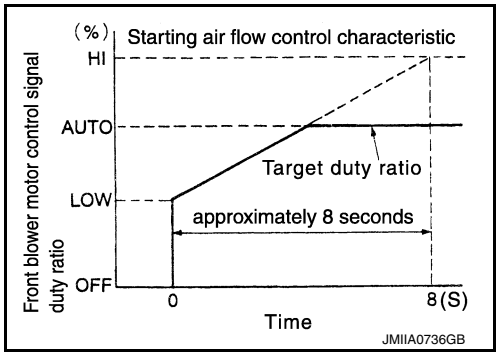
AUTOMATIC AIR FLOW CONTROL

- A/C auto amp. decides target air flow depending on target air mix door opening angle.
- A/C auto amp. changes duty ratio of blower motor control signal and controls the air flow continuously so that air flow matches the target air flow.
- When air outlet is VENT or B/L, the minimum air flow is changed depending on sunload.



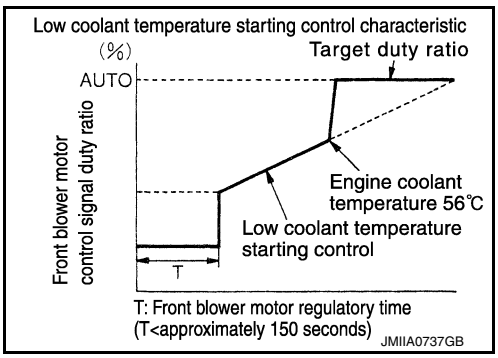
STARTING AIR FLOW CONTROL

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



LOW COOLANT TEMPERATURE STARTING CONTROL

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



HIGH IN-VEHICLE TEMPERATURE STARTING CONTROL

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

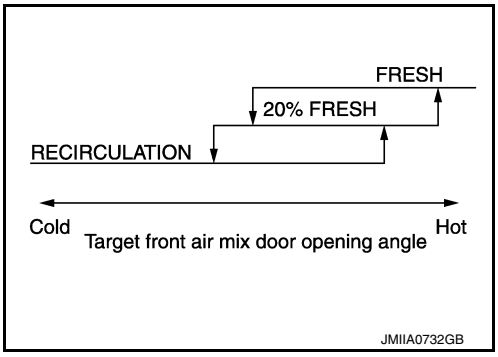
FAN SPEED CONTROL AT DOOR MOTOR OPERATION

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

Air Inlet Control

INFOID:0000000012174434

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



Compressor Control

INFOID:0000000012174436

DESCRIPTION

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

COMPRESSOR PROTECTION CONTROL AT PRESSURE MALFUNCTION

When high-pressure side value that is detected by refrigerant pressure sensor is as per one of the following states, ECM requests IPDM E/R to turn A/C relay OFF and stops the A/C compressor.

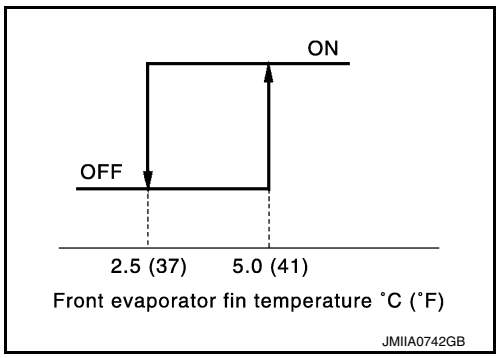
- 3.12 MPa (31.82 kg/cm^2, 452.4 psi) or more (when the engine speed is less than 1,500 rpm)
- 2.74 MPa (27.95 kg/cm^2, 397.3 psi) or more (when the engine speed is 1,500 rpm or more)
- 0.14 MPa (1.43 kg/cm^2, 20.3 psi) or less

COMPRESSOR OIL CIRCULATION CONTROL

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

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 A/C compressor OFF and stops the A/C compressor.
- When the front evaporator fin temperature returns to 5.0°C (41°F) or more, the A/C compressor is activated.



OPERATING RATE CONTROL

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

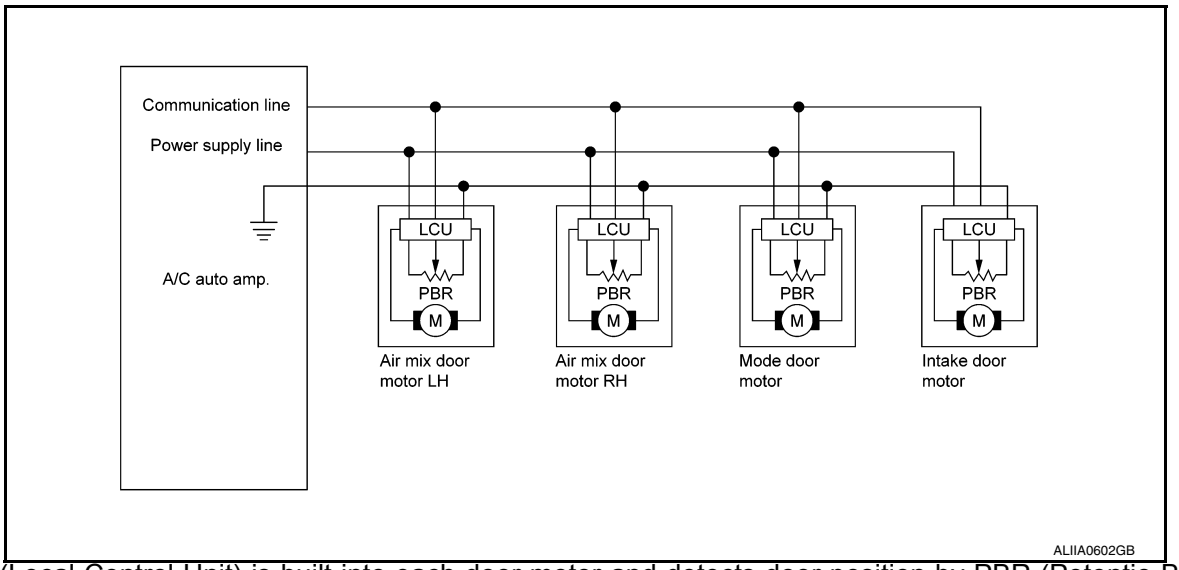
AIR CONDITIONING CUT CONTROL

When engine is running is excessively high load condition, ECM requests IPDM E/R to turn A/C relay OFF, and stops the A/C compressor. Refer to EC-40, "AIR CONDITIONING CUT CONTROL : System Description" for details.

Door Control

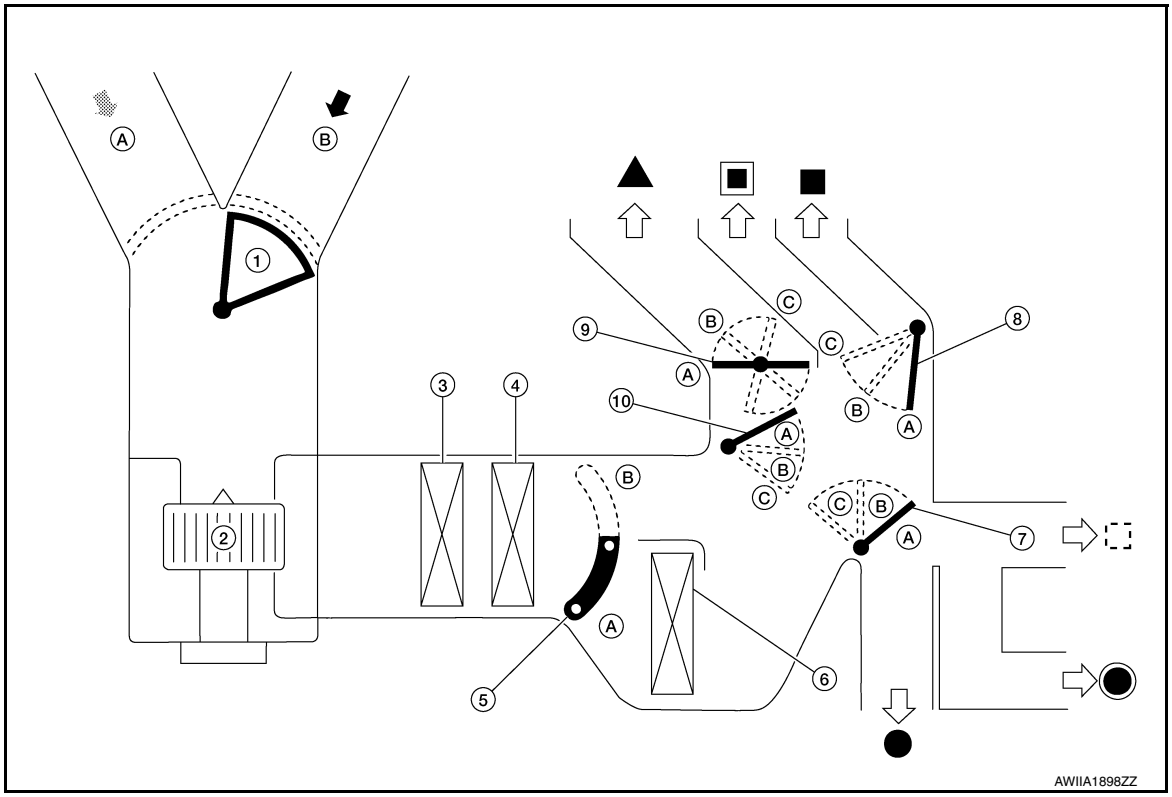
INFOID:0000000012174437

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. Intake door
2. Blower motor
3. In-cabin microfilter
4. Front evaporator
5. 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
Rear ventilator

Switch position		Door position						
		Mode door					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						
			Mode door					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 (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 (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 (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 when activating automatic control.

AIR DISTRIBUTION

MODE/DEF set position	Condition	Discharge air flow					
		Air outlet/distribution					
		Ventilator			Foot		Defroster
		Center	Side	Rear	Front	Rear	
	DUAL switch: OFF	44%	44%	12%	—		—
		22%	22%	17%	29%	10%	—
		—	10%	17%	36%	14%	23%
		—	10%	17%	28%	13%	32%
		—	10%	14%	—		76%

Fail-safe

INFOID:0000000012174439

FAIL-SAFE FUNCTION

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

When ambient temperature is less than 3°C (37°F) and engine coolant temperature is less than 56°C (133°F)

Compressor	**: ON**
Air outlet	**: DEF**
Air inlet	**: FRE (Fresh air intake)**
Blower fan speed	**: AUTO**
Set temperature	**: Setting before communication error occurs**

When ambient temperature is 3°C (37°F) or more, or engine coolant temperature is 56°C (133°F) or more

Compressor	**: ON**
Air outlet	**: AUTO**
Air inlet	**: 20% FRE (20% fresh air intake)**
Blower fan speed	**: AUTO**
Set temperature	**: Setting before communication error occurs**

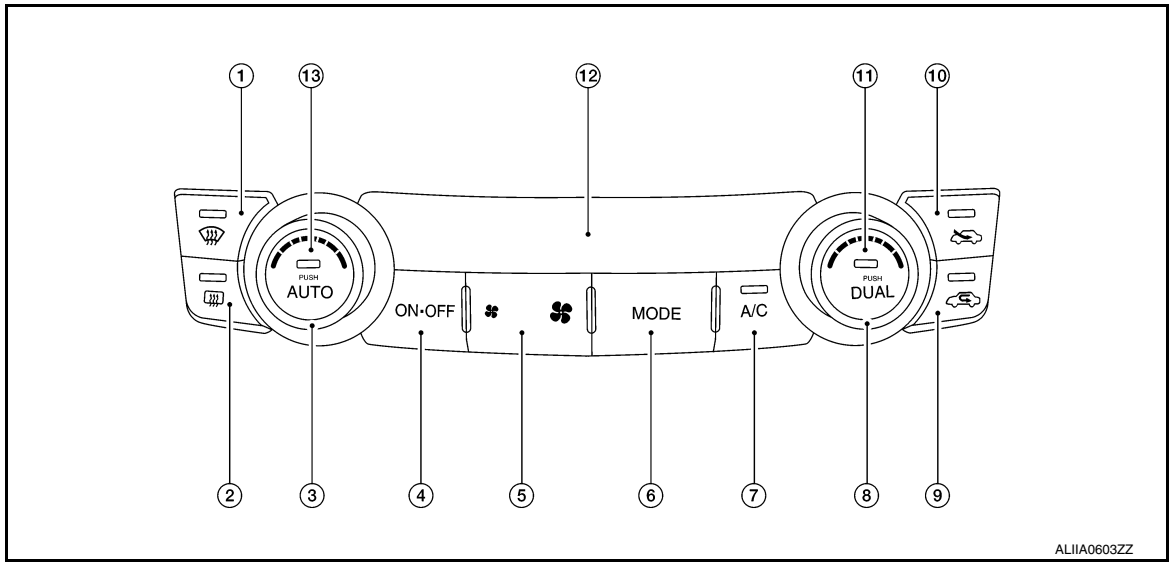
OPERATION

Switch Name and Function

INFOID:0000000012174440

CONTROL OPERATION

A/C Switch Assembly



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

Switch Operation

AUTO switch	Turns the switch indicator lamp and “AUTO” indicator on the display ON, and then front air conditioning system becomes the following state: • Air inlet: Automatic control • Air outlet: Automatic control • Blower fan: Automatic control • A/C compressor: ON • A/C compressor indicator: OFF
Defroster switch	Turns defroster mode (switch indicator) between ON ⇔ OFF each time. When defroster switch is pressed while front air conditioning system is in the ON position. • When defroster mode is turned ON, front air conditioning system becomes the following state: - Air inlet: Fresh air intake - Air outlet: DEF - Blower fan: Automatic control (If fan speed other than AUTO is selected before pressing defroster switch, fan speed is manual control.) - A/C compressor: ON - A/C compressor indicator: OFF • When defroster mode is turned OFF, front air conditioning system state returns to the previous state before defroster mode is selected. But, the following state is continued: - Air inlet: Fresh air intake - A/C compressor: ON When defroster switch is pressed while front air conditioning system is in the OFF position. • When defroster mode is turned ON, front air conditioning system becomes the following state: - Air inlet: Fresh air intake - Air outlet: Defroster - Blower fan: Automatic control - A/C compressor: ON • When defroster mode is turned OFF, entire front air conditioning system is set to automatic mode. **NOTE:** When defroster mode turns ON while front air conditioning system is in automatic control (“AUTO” is indicated), automatic control is released (“AUTO” turns OFF).
DUAL switch	• Turns left and right ventilation temperature control (switch indicator) between ON ⇔ OFF each time. • When DUAL switch indicator is ON, the driver side and passenger side temperatures can each be set independently. • When DUAL switch indicator is OFF, the driver side outlet and setting temperature is applied to both sides. • Left and right ventilation temperature control is canceled by turning the DEF mode ON. **NOTE:** When front air conditioning system is in the OFF position, left and right ventilation temperature control can be selected only while front air conditioning system state (when MODE switch is pressed) is indicated on the display.
Fan switch (UP/DOWN)	Blower fan speed is manually controlled with these switches. Seven speeds are available for manual control (as shown on the display screen). **NOTE:** • When fan switch is pressed while front air conditioning system is in OFF, front air conditioning system is activated. (A/C compressor control state returns to the previous state before front air conditioning system was OFF.) • When fan switch is pressed while front air conditioning system is in automatic control (“AUTO” is indicated), automatic control is released (“AUTO” turns OFF).
A/C switch	A/C 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 indicator can be turned OFF when air outlet is D/F or DEF, but A/C compressor remains ON. • Air inlet changes to fresh air intake when A/C switch is turned OFF while air inlet is set to recirculation.
MODE switch	Selects air outlet sequentially from VENT ⇒ B/L ⇒ FOOT ⇒ D/F ⇒ VENT each time. **NOTE:** • When front air conditioning system is in the OFF position, air outlet can be selected. • When MODE switch is pressed while front air conditioning system is in automatic control (“AUTO” is indicated), automatic control is released (“AUTO” turns OFF).

ON/OFF switch	• Turns front air conditioning system ON·OFF. • When front air conditioning system turns OFF: - air outlet becomes automatic control. - air inlet is set to recirculation.
Fresh air switch	Air inlet changes to fresh air (FRE) when this switch is pressed. • Fresh air switch indicator ON: Fresh air intake • Fresh air switch indicator OFF: Recirculation **NOTE:** When front air conditioning system is in the OFF position, air inlet can be selected.
Recirculation switch	Air inlet changes to recirculation (REC) when this switch is pressed. • Recirculation switch indicator ON: Recirculation • Recirculation switch indicator OFF: Fresh air intake **NOTE:** • When front air conditioning system is in the OFF position, air inlet can be selected. • When MODE switch and DEF switch is in the DEF position, air inlet cannot be selected to recirculation (REC). • When MODE switch and DEF switch is in the D/F position, air inlet can be selected to recirculation (REC).
Temperature control dial (Driver side)	Setting temperature is selected using this dial within a range between 18°C (60°F) and 32°C (90°F) at a rate of 0.5°C (1.0°F) per adjustment. **NOTE:** When air conditioning system is OFF, setting temperature can be selected only while air conditioning system status screen [only when MODE switch (driver side) is pressed] is indicated on display.
Temperature control dial (Passenger side)	• Outlet air flow temperature of passenger side can be changed without changing outlet air flow temperature of driver side. • Setting temperature is selected using this dial within a range between 18°C (60°F) and 32°C (90°F) at a rate of 0.5°C (1.0°F) per adjustment. **NOTE:** • When air conditioning system is OFF, setting temperature can be selected only while air conditioning system status screen [only when MODE switch (passenger side) is pressed] is indicated on display. • When DEF mode is ON, temperature control dial (passenger side) is inoperative.

DIAGNOSIS SYSTEM (A/C AUTO AMP.)

CONSULT Function (HVAC)

INFOID:0000000012174441

CAUTION:
After disconnecting the CONSULT vehicle interface (VI) from the data link connector, the ignition must be cycled OFF → ON (for at least 5 seconds) → OFF. If this step is not performed, the BCM may not go to "sleep mode", potentially causing a discharged battery and no-start condition.

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

CONSULT application items

Diagnosis mode	Description
Self Diagnostic Result	Displays the diagnosis results judged by A/C auto amp.
Data Monitor	Displays A/C auto amp. input/output data in real time.
Work support	Changes the setting for each system function.
Active Test	The signals used to activate each device are forcibly supplied from A/C auto amp.
ECU Identification	Displays the A/C auto amp. number.
Configuration	• The vehicle specification can be read and saved. • The vehicle specification can be written when replacing A/C auto amp.

SELF-DIAGNOSTIC RESULT

Refer to HAC-33, "DTC Index".

Display Item List

DTC	Items (CONSULT screen terms)	Diagnostic item is detected when...	Possible cause
U1000	CAN COMM CIRCUIT	When A/C auto amp. is not transmitting or receiving CAN communication signal for 2 or more seconds.	CAN communication system
U1010	CONTROL UNIT (CAN)	When detecting error during the initial diagnosis of CAN controller of A/C auto amp.	A/C auto amp.
B257B	AMB TEMP SEN (SHORT)	Detected temperature at ambient sensor 55°C (131°F) or more	• Ambient sensor • A/C auto amp. • Harness and connector (Ambient sensor circuit is open, or there is a short in the circuit)
B257C	AMB TEMP SEN (OPEN)	Detected temperature at ambient sensor −30°C (−22°F) or less	
B2578	IN-CAR SENSOR (OUT OF RANGE [LOW])	Detected temperature at in-vehicle sensor 55°C (131°F) or more	• In-vehicle sensor • A/C auto amp. • Harness and connector (In-vehicle sensor circuit is open, or there is a short in the circuit)
B2579	IN-CAR SENSOR (OUT OF RANGE [HI])	Detected temperature at in-vehicle sensor −30°C (−22°F) or less	
B2581	EVAP TEMP SEN (SHORT)	Detected temperature at intake sensor 55°C (131°F) or more	• Intake sensor • A/C auto amp. • Harness and connector (Intake sensor circuit is open, or there is a short in the circuit)
B2582	EVAP TEMP SEN (OPEN)	Detected temperature at intake sensor −30°C (−22°F) or less	
B2630*	SUNLOAD SEN (SHORT)	Detected calorie at sunload sensor 1395 w/m^2 (1200 kcal/m^2·h)	• Sunload sensor • A/C auto amp. • Harness and connector (Sunload sensor circuit is open, or there is a short in the circuit)
B2631*	SUNLOAD SEN (OPEN)	Detected calorie at sunload sensor 0 w/m^2 (0 kcal/m^2·h)	

DTC	Items (CONSULT screen terms)	Diagnostic item is detected when...	Possible cause
B2632	DR AIRMIX ACTR (SHORT)	Air mix door PBR LH position 5% or less	• Air mix door motor LH • A/C auto amp. • Harness and connector (CAN communication line is open or shorted) (Air mix door motor is open or shorted)
B2633	DR AIRMIX ACTR (OPEN)	Air mix door PBR LH position 95% or more	
B2634	PASS AIRMIX ACTR (SHORT)	Air mix door PBR RH position 5% or less	• Air mix door motor RH • A/C auto amp. • Harness and connector (CAN communication line is open or shorted) (Air mix door motor is open or shorted)
B2635	PASS AIRMIX ACTR (OPEN)	Air mix door PBR RH position 95% or more	
B2636	DR VENT DOOR FAIL	When the malfunctioning door position is detected at VENT position	• Mode door motor • A/C auto amp. • Harness and connector (CAN communication line is open or shorted) (Mode door motor is open or shorted)
B2637	DR B/L DOOR FAIL	When the malfunctioning door position is detected at B/L position	
B2638	DR D/F1 DOOR FAIL	When the malfunctioning door position is detected at FOOT position	
B2639	DR DEF DOOR FAIL	When the malfunctioning door position is detected at DEF position	
B263D	FRE DOOR FAIL	When the malfunctioning intake door position is detected at FRE position	• Intake door motor • A/C auto amp. • Harness and connector (CAN communication line is open or shorted) (Intake door motor is open or shorted)
B263E	20P FRE DOOR FAIL	When the malfunctioning intake door position is detected at 20%FRE position	
B263F	REC DOOR FAIL	When the malfunctioning intake door position is detected at REC position	
B2654	D/F2 DOOR FAIL	When the malfunctioning door position is detected at D/F position	• Mode door motor • A/C auto amp. • Harness and connector (CAN communication line is open or shorted) (Mode door motor is open or shorted)
B2655	B/L2 DOOR FAIL	When the malfunctioning door position is detected at B/L2 position	

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

DATA MONITOR

Display item list

Monitor item [Unit]		Description
AMB TEMP SEN	[°C]	Ambient sensor value converted from ambient sensor signal received from ambient sensor
IN-VEH TEMP	[°C]	In-vehicle sensor value converted from in-vehicle sensor signal received from in-vehicle sensor
INT TEMP SEN	[°C]	Intake sensor value converted from intake sensor signal received from intake sensor
SUNLOAD SEN	[w/m^2]	Sunload sensor value converted from sunload sensor signal received from sunload sensor
AMB SEN CAL	[°C]	Ambient sensor value calculated by A/C auto amp.
IN-VEH CAL	[°C]	In-vehicle sensor value calculated by A/C auto amp.
INT TEMP CAL	[°C]	Intake sensor value calculated by A/C auto amp.
SUNL SEN CAL	[w/m^2]	Sunload sensor value calculated by A/C auto amp.
COMP REQ SIG	[On/Off]	Displays A/C switch ON/OFF status transmitted to other units via CAN communication

Monitor item [Unit]		Description
FAN REQ SIG	[On/Off]	Displays blower switch ON/OFF status transmitted to other units via CAN communication
FAN DUTY	[%]	Duty ratio of blower motor judged by A/C auto amp.
XM		Target discharge air temperature judged by A/C auto amp. according to the temperature setting and the value from each sensor
PA TARGET A/TEMP		Target discharge front air temperature (passenger side) judged by A/C auto amp. depending on the temperature setting and the value from each sensor
ENG COOL TEMP	[°C]	Water temperature signal value received from ECM via CAN communication
VEHICLE SPEED	[km/h (mph)]	Vehicle speed signal value received from meter via CAN communication

WORK SUPPORT

Work item	Description	Reference
TEMP SET CORRECT (Setting of difference between temperature setting and control temperature)	If the temperature felt by the customer is different than the air flow temperature controlled by the temperature setting, the auto amplifier control temperature can be adjusted to compensate for the temperature setting.	HAC-51, "Temperature Setting Trimmer"
REC MEMORY SET (REC memory function setting)	• If the ignition switch is turned to the OFF position while the REC switch is set to ON (recirculation), “With” or “Without” of the REC switch ON (recirculation) condition can be selected. • If “” was set, the REC switch will be ON (recirculation) when turning the ignition switch to the ON position again. • If “Without” was set, the air inlets will be controlled automatically when turning the ignition switch to the ON position again.	HAC-52, "Inlet Port Memory Function (REC)"
FRE MEMORY SET (FRE memory function setting)	• If the ignition switch is turned to the OFF position while the FRE switch is set to ON (fresh air intake), “With” or “” of the FRE switch ON (fresh air intake) condition can be selected. • If “With” was set, the FRE switch will be ON (fresh air intake) when turning the ignition switch to the ON position again. • If “Without” was set, the air inlets will be controlled automatically when turning the ignition switch to the ON position again.	HAC-52, "Inlet Port Memory Function (FRE)"
BLOW SET (Blow setting to DEF in FOOT mode)	In the FOOT mode, the air blowing to the DEF can change ON/OFF.	HAC-51, "Foot Position Setting Trimmer"
TARGET EVAPORATOR TEMP UPPER LIMIT SETTING	Set the target evaporator upper temperature limit.	HAC-52, "Target Evaporator Temp Upper Limit"

NOTE:

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

ACTIVE TEST

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

HVAC TEST

	Test item						
	MODE 1	MODE 2	MODE 3	MODE 4	MODE 5	MODE 6	MODE 7
Mode door position	VENT	VENT	B/L	D/F1	D/F2	DEF	DEF
Intake door position	REC	REC	20%FRE	FRE	FRE	FRE	FRE
Air mix door position	FULL COLD	FULL COLD	FULL COLD	FULL HOT	FULL HOT	FULL HOT	FULL HOT
Blower motor duty ratio	30%	30%	60%	HI	HI	60%	HI

	Test item						
	MODE 1	MODE 2	MODE 3	MODE 4	MODE 5	MODE 6	MODE 7
Magnet clutch	ON	ON	ON	OFF	OFF	ON	ON
ECV duty	100%	100%	50%	0%	0%	100%	100%

NOTE:

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

CONFIGURATION

Configuration includes the following functions.

Function		Description
Read/Write Configuration	Before replacing ECU	Allows the reading of vehicle specification (Type ID) written in A/C auto amp. to store the specification in CONSULT.
	After replacing ECU	Allows the writing of vehicle information (Type ID) stored in CONSULT into the A/C auto amp.
Manual Configuration		Allows the writing of vehicle specification (Type ID) into the A/C auto amp. by hand.

CAUTION:

Use “Manual Configuration” only when “TYPE ID””of A/C auto amp. cannot be read.

ECU DIAGNOSIS INFORMATION

A/C AUTO AMP.

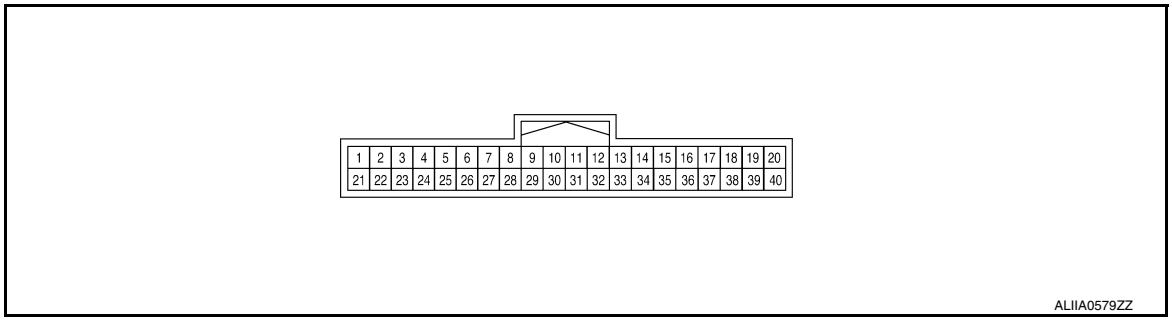
Reference Value

INFOID:0000000012174442

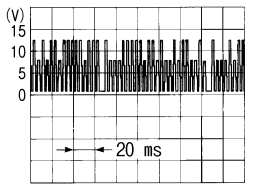
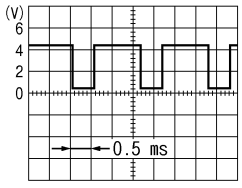
VALUES ON THE DIAGNOSIS TOOL

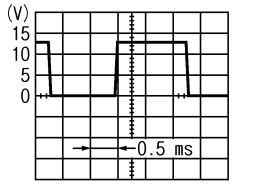
Monitor item	Condition		Value/Status
AMB TEMP SEN	Ignition switch ON	—	−30 - 55°C (22 - 131°F)
IN-VEH TEMP	Ignition switch ON	—	−30 - 55°C (22 - 131°F)
INT TEMP SEN	Ignition switch ON	—	−30 - 55°C (22 - 131°F)
SUNLOAD SEN	Ignition switch ON	—	0 - 1200 kcal/m^2·h (0 - 1395 w/m$^{2)}$
AMB SEN CAL	Ignition switch ON	—	−30 - 55°C (22 - 131°F)
IN-VEH CAL	Ignition switch ON	—	−30 - 55°C (22 - 131°F)
INT TEMP CAL	Ignition switch ON	—	−30 - 55°C (22 - 131°F)
SUNL SEN CAL	Ignition switch ON	—	0 - 1200 kcal/m^2·h (0 - 1395 w/m$^{2)}$
COMP REQ SIG	Engine: Run at idle after warming up	A/C switch: ON (A/C compressor operation status)	On
		A/C switch: OFF	Off
FAN REQ SIG	Engine: Run at idle after warming up	Blower fan: ON	On
		Blower fan: OFF	Off
FAN DUTY	Engine: Run at idle after warming up	Blower fan: ON	25 - 85%
		Blower fan: OFF	0%
XM	Ignition switch ON	—	−100 - 155
PA TARGET A/TEMP	Ignition switch ON	—	Value according to target air flow temperature (passenger side)
ENG COOL TEMP	Ignition switch ON	—	Value according to coolant temperature
VEHICLE SPEED	Driving	—	Equivalent to speedometer reading

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	−	Signal name	Input/ Output			
1 (L)	—	CAN-H	Input/ Output	—		—
2 (B)	—	Ground	—	—		—
3 (G)	Ground	Battery power supply	Input	Ignition switch OFF		Battery voltage
4 (BR)	Ground	TX FR	Output	Ignition switch ON		0 – 5 V
7 (L)	Ground	Ambient sensor signal	Input	Ignition switch ON		0 – 4.8 V Output voltage varies with ambient temperature.
8*1 (SB)	Ground	Heated steering wheel switch signal	Input	Ignition switch ON	Heated steering wheel switch: While pressing	0 V
					Other than the above	Battery voltage
9 (BG)	Ground	Sunload sensor signal	Input	Ignition switch ON		0 – 4.8 V Output voltage varies with sunload amount.
11 (G)	Ground	Drive mode select switch (STANDARD) signal	Input	• Ignition switch ON • Drive mode select switch position: STANDARD		0 V
				Other than the above		12 V
13 (P)	Ground	IGN 2	Input	Ignition switch ON		Battery voltage
15 (LG)	Ground	RR DEF switch	Output	Defroster switch	OFF	0 V
					ON	Battery voltage
16 (G)	Ground	Each door motor LIN signal	Input/ Output	Ignition switch ON		 SJIA1453J
17 (W)	Ground	Each door motor power supply	Output	Ignition switch ON		Battery voltage
18 (BR)	Ground	Front blower motor control signal	Output	• Ignition switch ON • Front fan speed: 1st speed (manual)		 JSIIA0096ZZ

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
20*1 (P)	Ground	Heated steering wheel relay control signal	Output	Ignition switch ON	Within 30 seconds after turning ON the heated steering switch	0 V
					Other than the above	Battery voltage
21 (P)	—	CAN-L	Input/ Output	—		—
22 (B)	—	Ground	—	—		—
23 (BG)	Ground	Ignition power supply	Input	Ignition switch ON		Battery voltage
24 (V)	Ground	RX FR	Input	Ignition switch ON		0 – 5 V
26 (W)	—	Sensor ground	—	—		—
27 (G)	Ground	In-vehicle sensor signal	Input	Ignition switch ON		0 – 4.8 V Output voltage varies with in-vehicle temperature.
28 (P)	Ground	Intake sensor signal	Input	Ignition switch ON		0 – 4.8 V Output voltage varies with front evaporator fin temperature.
31 (R)	Ground	Drive mode select switch (SPORT) signal	Input	• Ignition switch ON • Drive mode select switch position: SPORT		0 V
				Other than the above		12 V
33 (W)	Ground	Drive mode indicator (SPORT) signal	Input	• Ignition switch ON • Drive mode select switch position: SPORT		0 V
				Other than the above		12 V
35 (P)	Ground	RR DEF feedback	Input	Defroster switch	OFF	0 V
					ON	Battery voltage
36 (BG)	Ground	Drive mode indicator (STANDARD) signal	Input	• Ignition switch ON • Drive mode select switch position: STANDARD		0 V
				Other than the above		12 V
37 (B)	—	ACTR Ground	—	—		—
40 (SB)	Ground	ECV (electrical control valve) control signal	Output	• Ignition switch ON • Active test (HVAC test): MODE 1		 SJIA1607E

*1: With heated steering wheel

Fail-safe

INFOID:0000000012308587

FAIL-SAFE FUNCTION

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

When ambient temperature is less than 3°C (37°F) and engine coolant temperature is less than 56°C (133°F)

Compressor	**: ON**
Air outlet	**: DEF**
Air inlet	**: FRE (Fresh air intake)**
Blower fan speed	**: AUTO**
Set temperature	**: Setting before communication error occurs**

When ambient temperature is 3°C (37°F) or more, or engine coolant temperature is 56°C (133°F) or more

Compressor	**: ON**
Air outlet	**: AUTO**
Air inlet	**: 20% FRE (20% fresh air intake)**
Blower fan speed	**: AUTO**
Set temperature	**: Setting before communication error occurs**

DTC Inspection Priority Chart

INFOID:0000000012174443

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

Priority	Detected items (DTC)
1	• U1000: CAN COMM CIRCUIT • U1010: CONTROL UNIT (CAN)
2	• B257B: AMBIENT SENSOR (SHORT) • B257C: AMBIENT SENSOR (OPEN) • B2578: IN-VRHICLE SENSOR (OUT OF RANGE[LOW]) • B2579: IN-VEHICLE SENSOR (OUT OF RANGE[HI]) • B2581: INTAKE SENSOR (SHORT) • B2582: INTAKE SENSOR (OPEN) • B2630: SUNLOAD SENSOR (SHORT) • B2631: SUNLOAD SENSOR (OPEN) • B2632: DR AIR MIX DOOR MOT (SHORT) • B2633: DR AIR MIX DOOR MOT (OPEN) • B2634: PASS AIR MIX DOOR MOT (SHORT) • B2635: PASS AIR MIX DOOR MOT (OPEN) • B2636: DR VENT DOOR FAIL • B2637: DR B/L DOOR FAIL • B2638: DR D/F1 DOOR FAIL • B2639: DR DEF DOOR FAIL • B263D: FRE DOOR FAIL • B263E: 20P FRE DOOR FAIL • B263F: REC DOOR FAIL • B2654: D/F2 DOOR FAIL • B2655: B/L2 DOOR FAIL • B27B0: A/C AUTO AMP.

DTC Index

INFOID:0000000012174444

DTC	Items (CONSULT screen terms)	Reference
U1000	CAN COMM CIRCUIT	HAC-54, "DTC Description"
U1010	CONTROL UNIT (CAN)	HAC-55, "DTC Description"
B257B	AMBIENT SENSOR (SHORT)	HAC-59, "DTC Description"

DTC	Items (CONSULT screen terms)	Reference
B257C	AMBIENT SENSOR (OPEN)	HAC-59, "DTC Description"
B2578	IN-VEHICLE SENSOR (OUT OF RANGE [LOW])	HAC-56, "DTC Description"
B2579	IN-VEHICLE SENSOR (OUT OF RANGE [HI])	HAC-56, "DTC Description"
B2581	INTAKE SENSOR (SHORT)	HAC-62, "DTC Description"
B2582	INTAKE SENSOR (OPEN)	HAC-62, "DTC Description"
B2630*	SUNLOAD SENSOR (SHORT)	HAC-65, "DTC Description"
B2631*	SUNLOAD SENSOR (OPEN)	HAC-65, "DTC Description"
B2632	DR AIR MIX DOOR MOT (SHORT)	HAC-68, "DTC Description"
B2633	DR AIR MIX DOOR MOT (OPEN)	HAC-68, "DTC Description"
B2634	PASS AIR MIX MOT (SHORT)	HAC-70, "DTC Description"
B2635	PASS AIR MIX MOT (OPEN)	HAC-70, "DTC Description"
B2636	DR VENT DOOR FAIL	HAC-72, "DTC Description"
B2637	DR B/L DOOR FAIL	HAC-72, "DTC Description"
B2638	DR D/F1 DOOR FAIL	HAC-72, "DTC Description"
B2639	DR DEF DOOR FAIL	HAC-72, "DTC Description"
B263D	FRE DOOR FAIL	HAC-74, "DTC Description"
B263E	20P FRE DOOR FAIL	HAC-74, "DTC Description"
B263F	REC DOOR FAIL	HAC-74, "DTC Description"
B2654	D/F2 DOOR FAIL	HAC-72, "DTC Description"
B2655	B/L2 DOOR FAIL	HAC-72, "DTC Description"
B27B0	A/C AUTO AMP.	HAC-76, "DTC Description"

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

ECM, IPDM E/R, BCM

List of ECU Reference

INFOID:0000000012174445

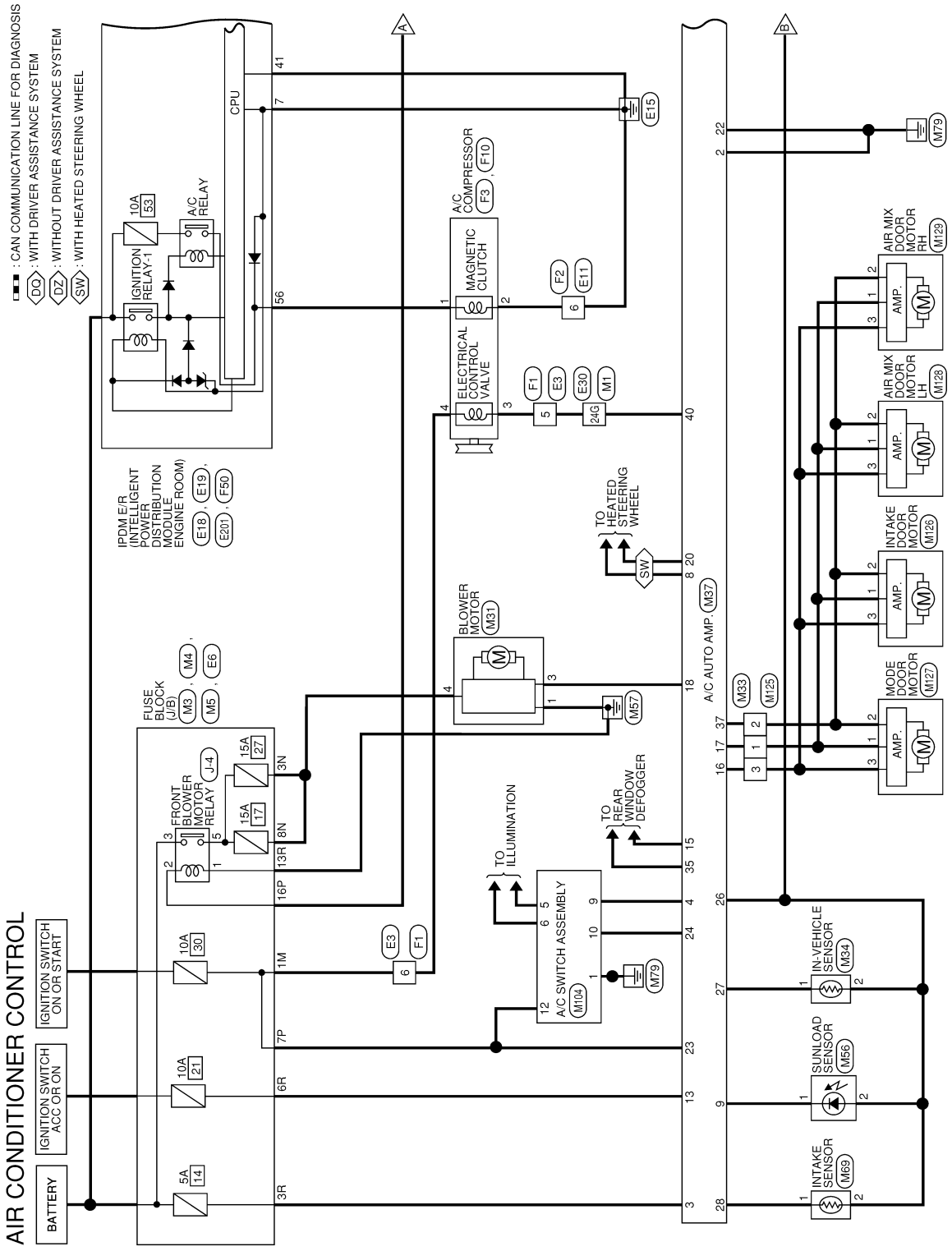
ECU	Reference
ECM	EC-86, "Reference Value"
	EC-103, "Fail-safe"
	EC-105, "DTC Inspection Priority Chart"
	EC-107, "DTC Index"
IPDM E/R	PCS-13, "Reference Value"
	PCS-20, "Fail Safe"
	PCS-21, "DTC Index"
BCM	BCS-31, "Reference Value"
	BCS-51, "Fail Safe"
	BCS-52, "DTC Inspection Priority Chart"
	BCS-53, "DTC Index"

WIRING DIAGRAM

AUTOMATIC AIR CONDITIONING SYSTEM

Wiring Diagram

INFOID:0000000012174446



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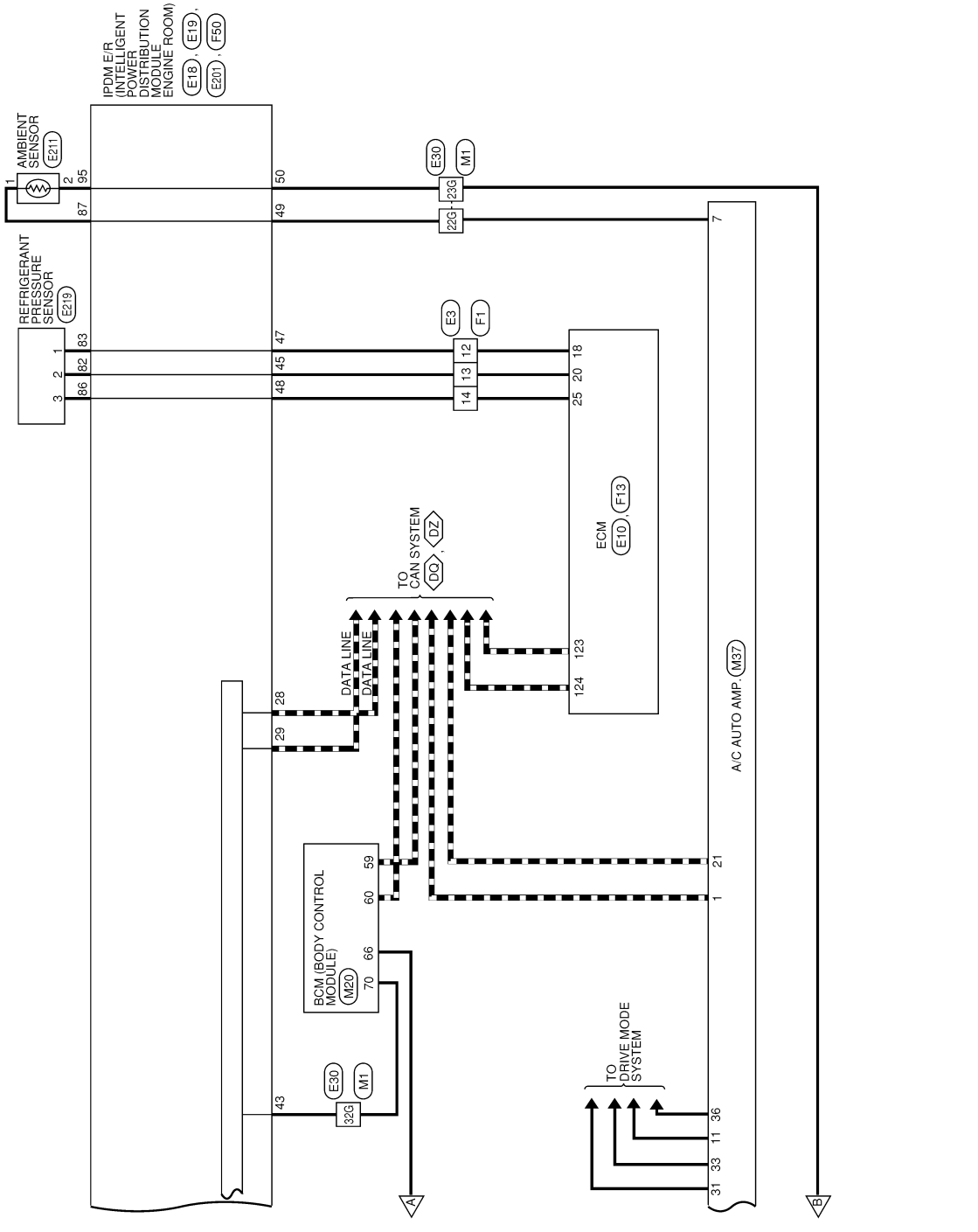
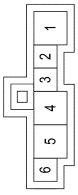

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E18, E19, E201, F50
AMBIENT SENSOR
E211
REFRIGERANT PRESSURE SENSOR
E219
E30
M1
23G
22G
E3
F1
12
13
14
ECM
E10
F13
TO CAN SYSTEM
DZ
DQ
DATA LINE
DATA LINE
BCM (BODY CONTROL MODULE)
M20
32G
TO DRIVE MODE SYSTEM
A/C AUTO AMP.
M37
A
B
AAIWA0265GB

AIR CONDITIONER CONTROL CONNECTORS

60	L	CAN-H
66	R	BLOWER FAN RELAY OUT
70	G	IGN USM OUT 1

Connector No.	M31
Connector Name	BLOWER MOTOR
Connector Type	NS03FW-M3
Connector Color	WHITE

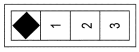
H.S.



Terminal No.	Color of Wire	Signal Name
1	B	–
3	BR	–
4	W	–

Connector No.	M33
Connector Name	WIRE TO WIRE
Connector Type	A03MW
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
1	W	–
2	B	–
3	G	–

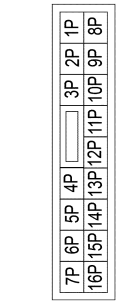
Connector No.	M4
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS16FBR-CS
Connector Color	BROWN

H.S.

Terminal No.	Color of Wire	Signal Name
3R	G	–
6R	P	–
13R	B	–

Connector No.	M5
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS16FW-CS
Connector Color	WHITE

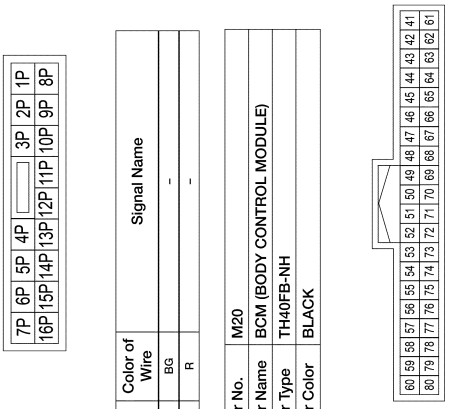
H.S.



Terminal No.	Color of Wire	Signal Name
7P	BG	–
16P	R	–

Connector No.	M20
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FB-NH
Connector Color	BLACK

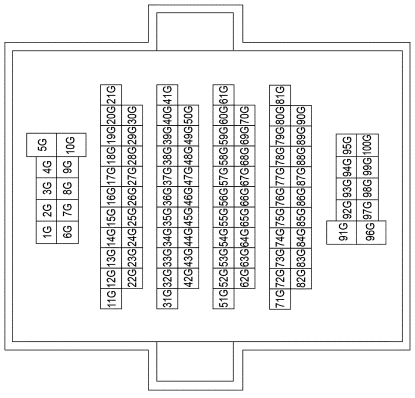
H.S.



Terminal No.	Color of Wire	Signal Name
59	P	CAN-L

Connector No.	M1
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
22G	L	–
23G	W	–
24G	SB	–
32G	G	–

Connector No.	M3
Connector Name	FUSE BLOCK (J/B)
Connector Type	CS06FW-M2
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
3N	W	–
8N	W	–

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2	W	-

Connector No.	M104
Connector Name	A/C SWITCH ASSEMBLY
Connector Type	TH12FW-NH
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	B	-
5	R	-
6	GR	-
9	BR	-
10	V	-
12	BG	-

Connector No.	M125
Connector Name	WIRE TO WIRE
Connector Type	A03FW
Connector Color	WHITE

H.S.

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

22	B	P-GND
23	BG	IGN
24	V	UART Rx FR
25	-	-
26	W	SENS GND
27	G	INC SENS
28	P	INT SENS
29	-	-
30	-	-
31	R	SPORT MODE SW
32	-	-
33	W	SPORT MODE INDI
34	-	-
35	P	RR DEF F/B
36	BG	STD MODE INDI
37	B	ACTR GND
38	-	-
39	-	-
40	SB	ECV OUT

Connector No.	M56
Connector Name	SUNLOAD SENSOR
Connector Type	K02FB
Connector Color	BLACK

H.S.

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

Connector No.	M69
Connector Name	INTAKE SENSOR
Connector Type	C02FW
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	P	-

Connector No.	M34
Connector Name	IN-VEHICLE SENSOR
Connector Type	A02FW
Connector Color	WHITE

H.S.

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

Connector No.	M37
Connector Name	A/C AUTO AMP.
Connector Type	TH40FW-NH
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	L	CAN-H
2	B	GND
3	G	BATT
4	BR	UART Tx FR
5	-	-
6	-	-
7	L	AMB SENS
8	SB	STRG HTR SW
9	BG	SUN SENS
10	-	-
11	G	STD MODE SW
12	-	-
13	P	IGN2 (ACC)
14	-	-
15	LG	RR DEF SW
16	G	ACTR(LIN)
17	W	VACTR
18	BR	FR FAN PWM
19	-	-
20	P	STRG HTR RLY
21	P	CAN-L

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Connector No.	M126
Connector Name	INTAKE DOOR MOTOR
Connector Type	A03FW
Connector Color	WHITE

H.S.

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

Connector No.	M127
Connector Name	MODE DOOR MOTOR
Connector Type	A03FW
Connector Color	WHITE

H.S.

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

Connector No.	M128
Connector Name	AIR MIX DOOR MOTOR LH
Connector Type	A03FW
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	W	-

2	W	-
3	W	-

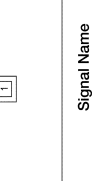
Connector No.	M129
Connector Name	AIR MIX DOOR MOTOR RH
Connector Type	A03FW
Connector Color	WHITE

H.S.

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

Connector No.	E3
Connector Name	WIRE TO WIRE
Connector Type	TH16MW-NH
Connector Color	WHITE

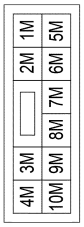
H.S.



Terminal No.	Color of Wire	Signal Name
5	SB	-
6	BG	-
12	BG	-
13	P	-
14	SB	-

Connector No.	E6
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS10FW-CS
Connector Color	WHITE

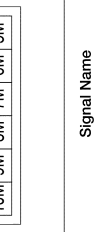
H.S.



Terminal No.	Color of Wire	Signal Name
1M	BG	-

Connector No.	E10
Connector Name	ECM
Connector Type	RH24FB-RZ8-L-LH
Connector Color	BLACK

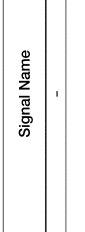
H.S.



Terminal No.	Color of Wire	Signal Name
123	P	CAN-L
124	L	CAN-H

Connector No.	E11
Connector Name	WIRE TO WIRE
Connector Type	NS08MBR-CS
Connector Color	BROWN

H.S.



Terminal No.	Color of Wire	Signal Name
6	B	-

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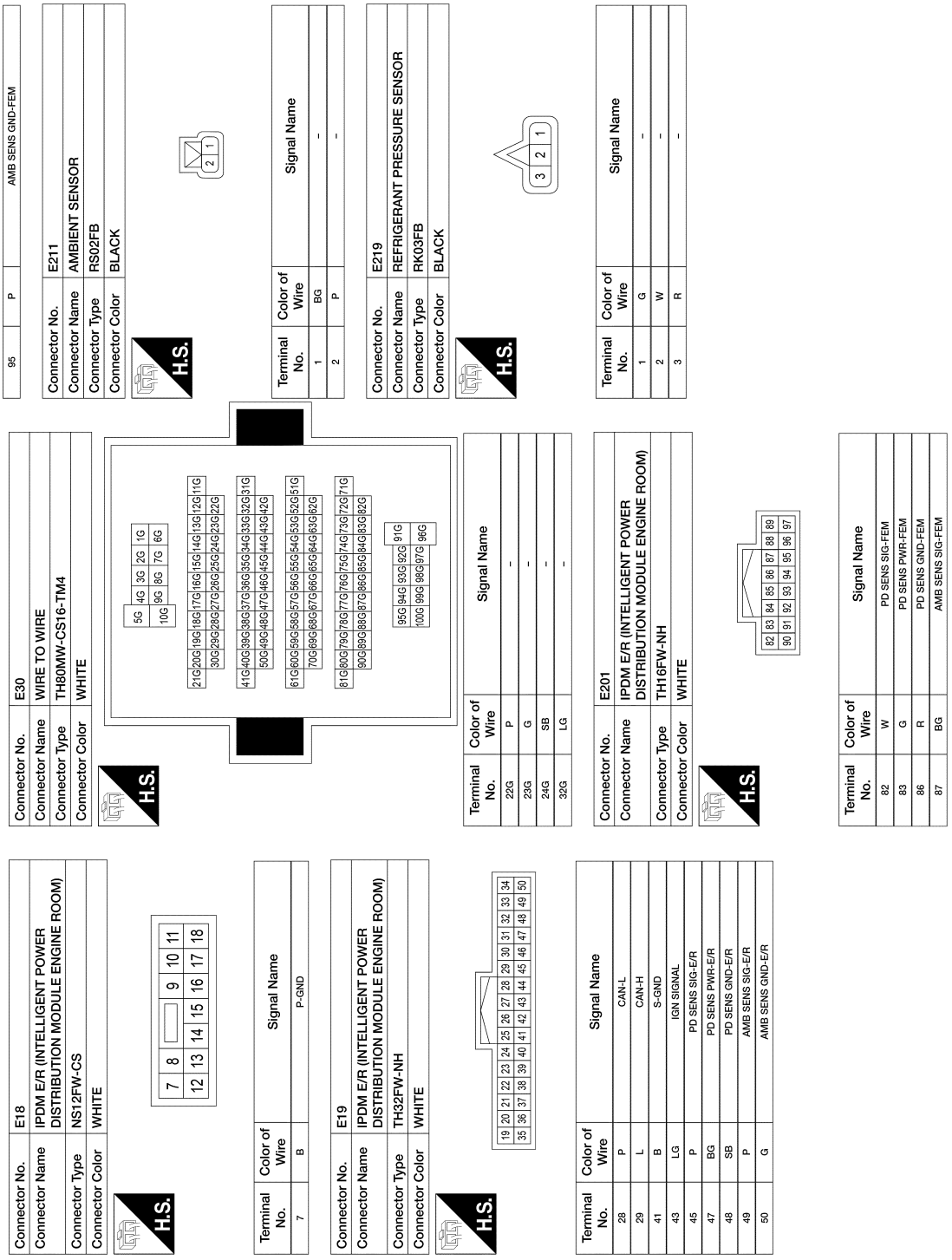

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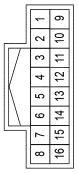
Connector No.	F1
Connector Name	WIRE TO WIRE
Connector Type	TH16FW-NH
Connector Color	WHITE

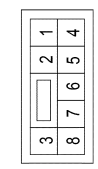
H.S.



Terminal No.	Color of Wire	Signal Name
5	SB	-
6	LG	-
12	R	-
13	SB	-
14	V	-

Connector No.	F2
Connector Name	WIRE TO WIRE
Connector Type	NS08FBR-CS
Connector Color	BROWN

H.S.



Terminal No.	Color of Wire	Signal Name
6	B	-

Connector No.	F3
Connector Name	A/C COMPRESSOR
Connector Type	RH02FB
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	BG	-

2	B	-

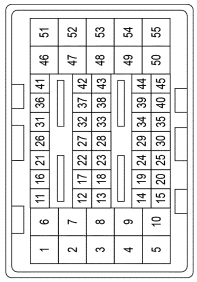
Connector No.	F10
Connector Name	A/C COMPRESSOR (ELECTRICAL CONTROL VALVE)
Connector Type	RK02FGY
Connector Color	GRAY

H.S.

Terminal No.	Color of Wire	Signal Name
3	SB	-
4	LG	-

Connector No.	F13
Connector Name	ECM
Connector Type	MAB35FB-MEB20-LH
Connector Color	BLACK

H.S.



Terminal No.	Color of Wire	Signal Name
18	R	SENSOR POWER SUPPLY
20	SB	REFRIGERANT PRESSURE SENSOR
25	V	SENSOR GROUND

Connector No.	F50
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS10FW-CS
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
56	BG	A/C COMP

AAIIA0712GB

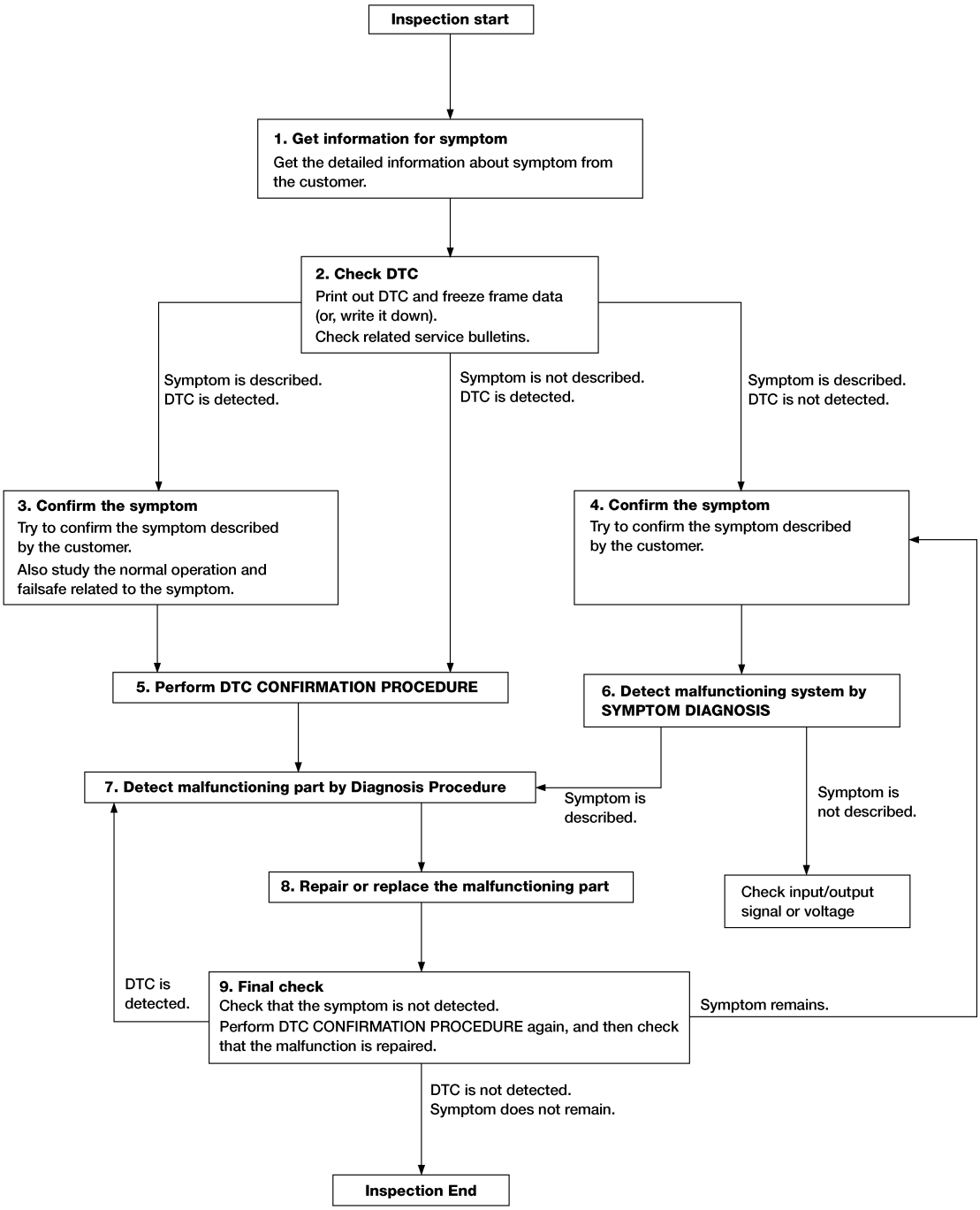
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:0000000012174447

OVERALL SEQUENCE



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DETAILED FLOW

1.GET INFORMATION FOR SYMPTOM

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

>> GO TO 2.

2.CHECK DTC

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

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

3. Check related service bulletins for information.

Are any symptoms described and any DTC detected?

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

3.CONFIRM THE SYMPTOM

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

>> GO TO 5.

4.CONFIRM THE SYMPTOM

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

>> GO TO 6.

5.PERFORM DTC CONFIRMATION PROCEDURE

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

NOTE:

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

Is DTC detected?

YES >> GO TO 7.
NO >> Check according to GI-41, "Intermittent Incident".

6.DETECT MALFUNCTIONING SYSTEM BY SYMPTOM DIAGNOSIS

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

Is the symptom described?

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

7.DETECT MALFUNCTIONING PART BY DIAGNOSIS PROCEDURE

Inspect according to Diagnosis Procedure of the system.

Is malfunctioning part detected?

YES >> GO TO 8.
NO >> Check according to GI-41, "Intermittent Incident".

8. REPAIR OR REPLACE THE MALFUNCTIONING PART

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

>> GO TO 9.

9. FINAL CHECK

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

Is DTC detected and does symptom remain?

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

OPERATION INSPECTION

Work Procedure

INFOID:0000000012174448

DESCRIPTION

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

Conditions : Engine running at normal operating temperature

INSPECTION PROCEDURE

1.CHECK MEMORY FUNCTION

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

Is the inspection result normal?

YES >> GO TO 2.
NO >> Check power and ground circuits for A/C auto amp. Refer to HAC-77, "A/C AUTO AMP. : Diagnosis Procedure".

2.CHECK BLOWER MOTOR SPEED

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

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check blower motor system. Refer to HAC-87, "Diagnosis Procedure".

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

1. Press the MODE switch and the DEF switch.
2. Check that the air outlets change according to each indicated air outlet by placing a hand in front of the outlets. Refer to HAC-15, "System Description".

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

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check mode door system. Refer to HAC-79, "MODE DOOR MOTOR : Diagnosis Procedure".

4.CHECK INTAKE AIR

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

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

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check intake door system. Refer to HAC-80, "INTAKE DOOR MOTOR : Diagnosis Procedure".

5.CHECK A/C SWITCH

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

Is the inspection result normal?

YES >> GO TO 6.
NO >> Check magnet clutch system. Refer to HAC-90, "Diagnosis Procedure".

6. CHECK TEMPERATURE DECREASE

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

Is the inspection result normal?

YES >> GO TO 7.
NO >> Check for insufficient cooling. Refer to HAC-95, "Diagnosis Procedure".

7. CHECK TEMPERATURE INCREASE

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

Is the inspection result normal?

YES >> GO TO 8.
NO >> Check for insufficient heating. Refer to HAC-97, "Diagnosis Procedure".

8. CHECK DUAL MODE FUNCTION

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

Is the inspection result normal?

YES >> GO TO 9.
NO >> Refer to HAC-93, "Diagnosis Chart By Symptom" and perform the appropriate diagnosis.

9. CHECK AUTO MODE

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

Is the inspection result normal?

YES >> Inspection End.
NO >> Refer to HAC-93, "Diagnosis Chart By Symptom" and perform the appropriate diagnosis.

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

Description

INFOID:0000000012174454

BEFORE REPLACEMENT

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

NOTE:

If “Before Replace ECU” cannot be used, use the “After Replace ECU” or “Manual Configuration” after replacing A/C auto amp.

AFTER REPLACEMENT

CAUTION:

- **When replacing A/C auto amp., you must perform “After Replace ECU” with CONSULT.**
- **Complete the procedure of “After Replace ECU” in order.**
- **If you set incorrect “After Replace ECU”, incidents might occur.**
- **Configuration is different for each vehicle model. Confirm configuration of each vehicle model.**

Work Procedure

INFOID:0000000012174455

1. SAVING VEHICLE SPECIFICATION

CONSULT

Enter "Re/Programming, Configuration" and perform “Before Replace ECU” to save or print current vehicle specification.

NOTE:

If “Before Replace ECU” cannot be used, use the "After Replace ECU" or "Manual Configuration" after replacing A/C auto amp.

>> GO TO 2.

2. REPLACE A/C AUTO AMP.

Replace A/C auto amp. Refer to HAC-102, "Removal and Installation".

>> GO TO 3.

3. WRITING VEHICLE SPECIFICATION

CONSULT

1. Enter "Re/Programming, Configuration".
2. If “Before Replace ECU” operation was performed, automatically an "Operation Log Selection" screen will be displayed. Select the applicable file from the "Saved Data List" and press “Confirm” to write vehicle specification. Refer to HAC-49, "Work Procedure".
3. If “Before Replace ECU” operation was not performed, select "After Replace ECU" or "Manual Configuration" to write vehicle specification. Refer to HAC-49, "Work Procedure".

>> GO TO 4.

4. OPERATION CHECK

Check that the operation of the A/C auto amp. is normal.

>> Work End.

CONFIGURATION (HVAC)

Description

INFOID:0000000012174456

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

Function	Description
"Before Replace ECU"	• Reads the vehicle configuration of current A/C auto amp. • Saves the read vehicle configuration.
"After Replace ECU"	Writes the vehicle configuration with manual selection.
"Select Saved Data List"	Writes the vehicle configuration with saved data.

CAUTION:

- **When replacing A/C auto amp., you must perform “Select Saved Data List” or "After Replace ECU" with CONSULT.**
- **Complete the procedure of “Select Saved Data List” or "After Replace ECU" in order.**
- **If you set incorrect “Select Saved Data List” or "After Replace ECU", incidents might occur.**
- **Configuration is different for each vehicle model. Confirm configuration of each vehicle model.**
- **Never perform “Select Saved Data List” or "After Replace ECU" except for new A/C auto amp.**

Work Procedure

INFOID:0000000012174457

1.WRITING MODE SELECTION

CONSULT
Select “Re/Programming, Configuration” of A/C auto amp.

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

2.PERFORM “SAVED DATA LIST”

CONSULT
Automatically “Operation Log Selection” window will display if “Before Replace ECU” was performed. Select applicable file from the “Saved Data List” and press “Confirm”.

>> Work End.

3.PERFORM “AFTER REPLACE ECU” OR “MANUAL CONFIGURATION”

CONSULT
1. Select “After Replace ECU” or “Manual Configuration”.
2. Identify the correct model and configuration list. Refer to HAC-50, "Configuration List".
3. Confirm and/or change setting value for each item.
   CAUTION:
   Thoroughly read and understand the vehicle specification. ECU control may not operate normally if the setting is not correct.
4. Select “Next”.
   CAUTION:
   Make sure to select “Next”, confirm each setting value and press “OK” even if the indicated configuration of brand new A/C auto amp. is same as the desirable configuration. If not, configuration which is set automatically by selecting vehicle model cannot be memorized.
5. When "Completed", select "End".

>> GO TO 4.

4.OPERATION CHECK

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

>> Work End.

Configuration List

INFOID:0000000012174458

CAUTION:
Thoroughly read and understand the vehicle specification. Incorrect settings may result in abnormal control of ECU.

MANUAL SETTING ITEM	
Items	Setting value
HANDLE	LHD ⇔ RHD

⇔: Items which confirm vehicle specifications

SYSTEM SETTING

Temperature Setting Trimmer

INFOID:0000000012174449

Description

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

How to set

CONSULT

Perform the “TEMP SET CORRECT” in “Work support” mode of “HVAC”.

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

NOTE:

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

Foot Position Setting Trimmer

INFOID:0000000012174450

Description

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

How to set

CONSULT

Perform the “BLOW SET” in “Work support” mode of “HVAC”.

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

NOTE:

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

Inlet Port Memory Function (FRE)

INFOID:0000000012174451

Description

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

How to set

CONSULT

Perform the "FRE MEMORY SET" in "Work support" mode of "HVAC".

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

NOTE:

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

Inlet Port Memory Function (REC)

INFOID:0000000012174452

Description

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

How to set

CONSULT

Perform the "REC MEMORY SET" in "Work support" mode of "HVAC".

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

NOTE:

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

Target Evaporator Temp Upper Limit

INFOID:0000000012174453

DESCRIPTION

Set the target evaporator temperature upper limit.

HOW TO SET

CONSULT

Perform the "TARGET EVAPORATOR TEMP UPPER LIMIT SETTING" in "Work support" mode of "HVAC".

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

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

DTC Description

INFOID:0000000012174459

CAN (Controller Area Network) is a serial communication system for real time application. It is an on-vehicle multiplex communication system with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto vehicles, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with two communication lines (CAN-H line, CAN-L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only. Refer to LAN-32, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart".

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
U1000	CAN COMM CIRCUIT (CAN COMM CIRCUIT)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	–
		Diagnosis delay time	2 seconds or more

POSSIBLE CAUSE

CAN communication system

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1.PERFORM SELF-DIAGNOSIS

CONSULT

1. Turn ignition switch ON and wait for 2 seconds or more.
2. Perform “Self Diagnostic Result” mode of “HVAC”.
3. Check DTC.

Is DTC detected?

YES >> Refer to HAC-54, "Diagnosis Procedure".
NO >> Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000012174461

1.CHECK CAN COMMUNICATION SYSTEM

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

>> Inspection End.

U1010 CONTROL UNIT (CAN)

DTC Description

INFOID:0000000012174462

Initial diagnosis of A/C auto amp.

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
U1010	CONTROL UNIT (CAN) [CONTROL UNIT (CAN)]	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	–
		Diagnosis delay time	–

POSSIBLE CAUSE

A/C auto amp.

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1.PERFORM SELF-DIAGNOSIS

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

Is DTC detected?

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

Diagnosis Procedure

INFOID:0000000012174464

1.REPLACE A/C AUTO AMP.

Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".

>> Inspection End.

B2578, B2579 IN-VEHICLE SENSOR

DTC Description

INFOID:0000000012174465

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-54, "DTC Description".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to HAC-55, "DTC Description".

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
B2578	IN-VEHICLE SENSOR (SHORT) (In-vehicle sensor)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	More than 100°C (212°F)
		Diagnosis delay time	–
B2579	IN-VEHICLE SENSOR (OPEN) (In-vehicle sensor)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	Less than -42°C (-44°F)
		Diagnosis delay time	–

POSSIBLE CAUSE

- In-vehicle sensor
- A/C auto amp.
- Harness or connectors (The sensor circuit is open or shorted.)

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT

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

Is DTC detected?

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

Diagnosis Procedure

INFOID:0000000012174466

Regarding Wiring Diagram information, refer to HAC-36, "Wiring Diagram".

1.CHECK IN-VEHICLE SENSOR POWER SUPPLY

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

+		—	Voltage (Approx.)
In-vehicle sensor			
Connector	Terminal		
M34	1	Ground	5 V

Is the inspection result normal?

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

2.CHECK IN-VEHICLE SENSOR GROUND CIRCUIT

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

In-vehicle sensor		—	Continuity
Connector	Terminal		
M34	2	Ground	Yes

Is the inspection result normal?

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

3.CHECK IN-VEHICLE SENSOR

Check in-vehicle sensor. Refer to HAC-58, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".
NO >> Replace in-vehicle sensor. Refer to HAC-104, "Removal and Installation".

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

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

In-vehicle sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M34	1	M37	27	Yes

Is the inspection result normal?

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

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

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

In-vehicle sensor		—	Continuity
Connector	Terminal		
M34	1	Ground	No

Is the inspection result normal?

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

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

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

+		—	Voltage (Approx.)
In-vehicle sensor			
Connector	Terminal		
M34	1	Ground	0 V

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000012174467

1.CHECK IN-VEHICLE SENSOR

1. Turn ignition switch OFF.
2. Disconnect in-vehicle sensor connector.
3. Check resistance between in-vehicle sensor terminals.

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

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace in-vehicle sensor. Refer to HAC-104, "Removal and Installation".

B257B, B257C AMBIENT SENSOR

DTC Description

INFOID:0000000012174468

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-54, "DTC Description".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to HAC-55, "DTC Description".

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
B257B	AMBIENT SENSOR (SHORT) (Ambient sensor)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	More than 100°C (212°F)
		Diagnosis delay time	–
B257C	AMBIENT SENSOR (OPEN) (Ambient sensor)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	Less than (-44°F) -42°C
		Diagnosis delay time	–

POSSIBLE CAUSE

- Ambient sensor
- A/C auto amp.
- Harness or connectors (The sensor circuit is open or shorted.)

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT

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

Is DTC detected?

YES >> Refer to HAC-59, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000012174469

Regarding Wiring Diagram information, refer to HAC-36, "Wiring Diagram".

1.CHECK AMBIENT SENSOR POWER SUPPLY

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

+		—	Voltage (Approx.)
Ambient sensor			
Connector	Terminal		
E211	1	Ground	5 V

Is the inspection result normal?

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

2.CHECK AMBIENT SENSOR GROUND CIRCUIT

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

Ambient sensor		—	Continuity
Connector	Terminal		
E211	2	Ground	Yes

Is the inspection result normal?

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

3.CHECK AMBIENT SENSOR

Check ambient sensor. Refer to HAC-61, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".
NO >> Replace ambient sensor. Refer to HAC-103, "Removal and Installation".

4.CHECK AMBIENT SENSOR POWER SUPPLY CIRCUIT FOR OPEN

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

Ambient sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
E211	1	M37	7	Yes

Is the inspection result normal?

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

5.CHECK AMBIENT SENSOR POWER SUPPLY CIRCUIT FOR GROUND SHORT

Check continuity between ambient sensor harness connector and ground.

Ambient sensor		—	Continuity
Connector	Terminal		
E211	1	Ground	No

Is the inspection result normal?

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

6.CHECK AMBIENT SENSOR POWER SUPPLY CIRCUIT FOR POWER SHORT

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

+		—	Voltage (Approx.)
Ambient sensor			
Connector	Terminal		
E211	1	Ground	0 V

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000012174470

1.CHECK AMBIENT SENSOR

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

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

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace ambient sensor. Refer to HAC-103, "Removal and Installation".

B2581, B2582 INTAKE SENSOR

DTC Description

INFOID:0000000012174471

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-54, "DTC Description".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to HAC-55, "DTC Description".

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
B2581	INTAKE SENSOR (SHORT) (Intake sensor)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	More than 100°C (212°F)
		Diagnosis delay time	–
B2582	INTAKE SENSOR (OPEN) (Intake sensor)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	Less than -42°C (-44°F)
		Diagnosis delay time	–

POSSIBLE CAUSE

- Intake sensor
- A/C auto amp.
- Harness or connectors (The sensor circuit is open or shorted.)

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT

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

Is DTC detected?

YES >> Refer to HAC-62, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000012174472

Regarding Wiring Diagram information, refer to HAC-36, "Wiring Diagram".

1.CHECK INTAKE SENSOR POWER SUPPLY

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

+		—	Voltage (Approx.)
Intake sensor			
Connector	Terminal		
M69	1	Ground	5 V

Is the inspection result normal?

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

2.CHECK INTAKE SENSOR GROUND CIRCUIT

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

Intake sensor		—	Continuity
Connector	Terminal		
M69	2	Ground	Yes

Is the inspection result normal?

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

3.CHECK INTAKE SENSOR

Check intake sensor. Refer to HAC-64, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".
NO >> Replace intake sensor. Refer to HAC-106, "Removal and Installation".

4.CHECK INTAKE SENSOR POWER SUPPLY CIRCUIT FOR OPEN

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

Intake sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M69	1	M37	28	Yes

Is the inspection result normal?

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

5.CHECK INTAKE SENSOR POWER SUPPLY CIRCUIT FOR GROUND SHORT

Check continuity between intake sensor harness connector and ground.

Intake sensor		—	Continuity
Connector	Terminal		
M69	1	Ground	No

Is the inspection result normal?

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

6.CHECK INTAKE SENSOR POWER SUPPLY CIRCUIT FOR POWER SHORT

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

+		—	Voltage (Approx.)
Intake sensor			
Connector	Terminal		
M69	1	Ground	0 V

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000012174473

1.CHECK INTAKE SENSOR

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

Terminal		Condition	Resistance: kΩ
		Temperature: °C (°F)	
1	2	−15 (5)	17.73
		−10 (14)	13.46
		−5 (23)	10.33
		0 (32)	8.00
		5 (41)	6.25
		10 (50)	4.93
		15 (59)	3.92
		20 (68)	3.14
		25 (77)	2.54
		30 (86)	2.06
		35 (95)	1.69
		40 (104)	1.39
		45 (113)	1.15

Is the inspection result normal?

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

B2630, B2631 SUNLOAD SENSOR

DTC Description

INFOID:0000000012174474

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
B2630	SUNLOAD SENSOR (SHORT) (Sunload sensor)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	Detected calorie at sunload sensor is 1200 kcal/m^2·h (1395 w/m^2) or more
		Diagnosis delay time	–
B2631	SUNLOAD SENSOR (OPEN) (Sunload sensor)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	Detected calorie at sunload sensor is 0 kcal/m^2·h (0 w/m^2)
		Diagnosis delay time	–

POSSIBLE CAUSE

- Sunload sensor
- A/C auto amp.
- Harness and connector (The sensor circuit is open or shorted.)

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT

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

NOTE:

- If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-54, "DTC Description" or HAC-55, "DTC Description".
- Sunload sensor may register a malfunction when indoors, at dusk, or at other times when light is insufficient. When performing the diagnosis indoors, light the sunload sensor with a lamp (60W or more).

Is DTC “B2630” or “B2631” displayed?

YES >> Perform trouble diagnosis for the sunload sensor. Refer to HAC-65, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000012174475

Regarding Wiring Diagram information, refer to HAC-36, "Wiring Diagram".

1.CHECK SUNLOAD SENSOR POWER SUPPLY

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

+		—	Voltage (Approx.)
Sunload sensor			
Connector	Terminal		
M56	1	Ground	5 V

Is the inspection result normal?

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

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

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

Sunload sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M56	2	M37	26	Yes

Is the inspection result normal?

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

3.CHECK SUNLOAD SENSOR

1. Reconnect sunload sensor connector and A/C auto amp. connector.
2. Check sunload sensor. Refer to HAC-66, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".
NO >> Replace sunload sensor. Refer to HAC-105, "Removal and Installation".

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

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

Sunload sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M56	1	M37	9	Yes

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

Sunload sensor		—	Continuity
Connector	Terminal		
M56	1	Ground	No

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".
NO >> Repair harness or connector.

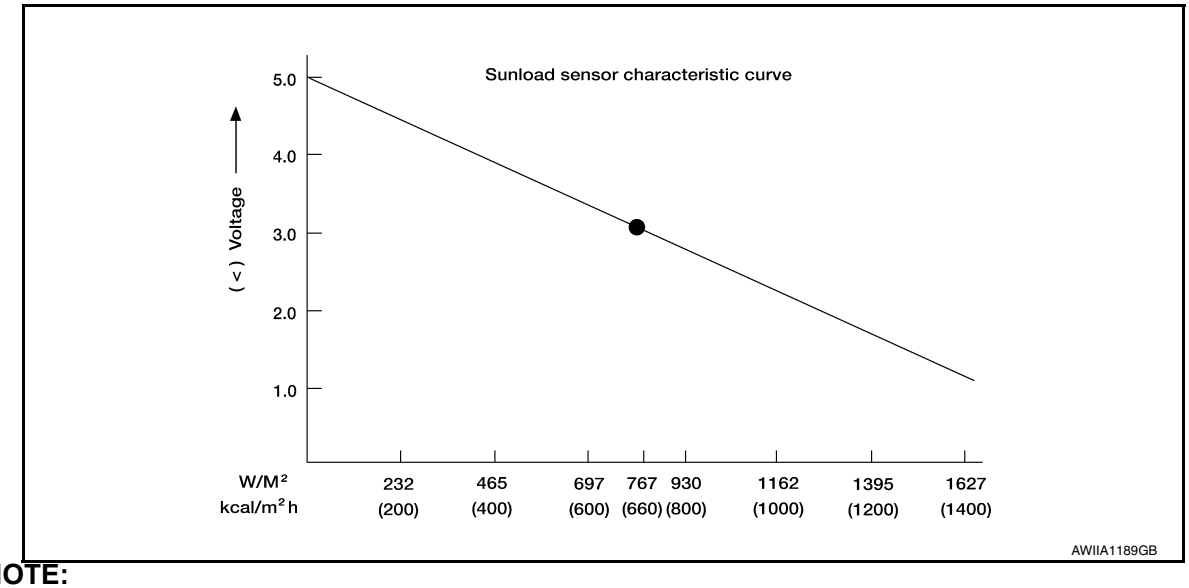
Component Inspection

INFOID:0000000012174476

1.CHECK SUNLOAD SENSOR

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

(+)		(–)
A/C auto amp.		—
Connector	Terminal	
M56	9	Ground



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

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace sunload sensor. Refer to HAC-105, "Removal and Installation".

B2632, B2633 AIR MIX DOOR MOTOR (DRIVER SIDE)

DTC Description

INFOID:0000000012174477

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
B2632	DR AIR MIX DOOR MOT (SHORT) (Driver side air mix door motor)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	PBR position is 95% or more
		Diagnosis delay time	–
B2633	DR AIR MIX DOOR MOT (OPEN) (Driver side air mix door motor)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	PBR position is 5% or less
		Diagnosis delay time	–

POSSIBLE CAUSE

- Air mix door motor LH
- Air mix door motor LH installation condition
- A/C auto amp.
- Harness and connector (Air mix door motor LH circuit is open or shorted).

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT

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

Is DTC detected?

YES >> Refer to HAC-68, "Diagnosis Procedure".
NO >> Inspection End.

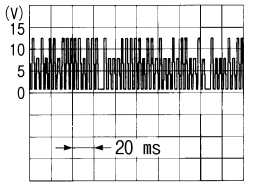
Diagnosis Procedure

INFOID:0000000012174478

Regarding Wiring Diagram information, refer to HAC-36, "Wiring Diagram".

1.CHECK AIR MIX DOOR MOTOR LH COMMUNICATION SIGNAL

1. Turn ignition switch ON.
2. Check output waveform between air mix door motor LH harness connector and ground with oscilloscope.

+		—	Output waveform
Air mix door motor LH			
Connector	Terminal		
M128	3	Ground	 SJIA1453J

Is the inspection result normal?

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

2. CHECK INSTALLATION OF AIR MIX DOOR MOTOR LH

Check air mix door motor LH is properly installed. Refer to HAC-108, "Exploded View".

Is the inspection result normal?

YES >> Replace air mix door motor LH. Refer to HAC-109, "AIR MIX DOOR MOTOR : Removal and Installation - Air Mix Door Motor (LH)".
NO >> Repair or replace malfunctioning part.

3. CHECK AIR MIX DOOR MOTOR LH COMMUNICATION SIGNAL CIRCUIT

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

Air mix door motor LH		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M128	3	M37	16	Yes

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".
NO >> Repair harness or connector.

B2634, B2635 AIR MIX DOOR MOTOR (PASSENGER SIDE)

DTC Description

INFOID:0000000012174479

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
B2634	PASS AIR MIX DOOR MOT (SHORT) (Passenger side air mix door motor)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	PBR position is 95% or more
		Diagnosis delay time	–
B2635	PASS AIR MIX DOOR MOT (OPEN) (Passenger side air mix door motor)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	PBR position is 5% or less
		Diagnosis delay time	–

POSSIBLE CAUSE

- Air mix door motor RH
- Air mix door motor RH installation condition
- A/C auto amp.
- Harness and connector (Air mix door motor RH circuit is open or shorted).

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT

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

Is DTC detected?

YES >> Refer to HAC-70, "Diagnosis Procedure".
NO >> Inspection End.

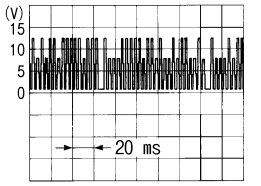
Diagnosis Procedure

INFOID:0000000012174480

Regarding Wiring Diagram information, refer to HAC-36, "Wiring Diagram".

1.CHECK AIR MIX DOOR MOTOR RH COMMUNICATION SIGNAL

1. Turn ignition switch ON.
2. Check output waveform between front air mix door motor RH harness connector and ground with oscilloscope.

+		—	Output waveform
Air mix door motor RH			
Connector	Terminal		
M129	3	Ground	 SJIA1453J

Is the inspection result normal?

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

2. CHECK INSTALLATION OF AIR MIX DOOR MOTOR RH

Check air mix door motor RH is properly installed. Refer to HAC-108, "Exploded View".

Is the inspection result normal?

YES >> Replace air mix door motor RH. Refer to HAC-110, "AIR MIX DOOR MOTOR : Removal and Installation - Air Mix Door Motor (RH)".
NO >> Repair or replace malfunctioning part.

3. CHECK AIR MIX DOOR MOTOR RH COMMUNICATION SIGNAL CIRCUIT

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

Air mix door motor RH		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M129	3	M37	16	Yes

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".
NO >> Repair harness or connector.

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

DTC Description

INFOID:0000000012174481

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
B2636	DR VENT DOOR FAIL (DR VENT DOOR FAIL)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	–
		Diagnosis delay time	–
B2637	DR B/L DOOR FAIL (DR B/L DOOR FAIL)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	–
		Diagnosis delay time	–
B2638	DR D/F1 DOOR FAIL (DR D/F1 DOOR FAIL)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	–
		Diagnosis delay time	–
B2639	DR DEF DOOR FAIL (DR DEF DOOR FAIL)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	–
		Diagnosis delay time	–
B2654	D/F2 DOOR FAIL (D/F2 DOOR FAIL)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	–
		Diagnosis delay time	–
B2655	B/L2 DOOR FAIL (B/L2 DOOR FAIL)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	–
		Diagnosis delay time	–

POSSIBLE CAUSE

- Mode door motor
- Mode door motor control linkage installation condition
- A/C auto amp.
- Harness and connector (Mode door motor circuit is open or shorted).

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT

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

Is DTC detected?

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

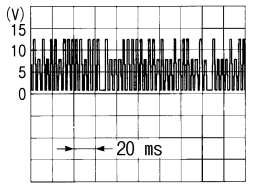
Diagnosis Procedure

INFOID:0000000012174482

Regarding Wiring Diagram information, refer to HAC-36, "Wiring Diagram".

1.CHECK MODE DOOR MOTOR COMMUNICATION SIGNAL

1. Turn ignition switch ON.
2. Check output waveform between mode door motor harness connector and ground with oscilloscope.

+		—	Output waveform
Mode door motor			
Connector	Terminal		
M127	3	Ground	 SJIA1453J

Is the inspection result normal?

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

2.CHECK INSTALLATION OF MODE DOOR MOTOR

Check mode door motor is properly installed. Refer to HAC-108, "Exploded View".

Is the inspection result normal?

YES >> Replace mode door motor. Refer to HAC-109, "MODE DOOR MOTOR : Removal and Installation".
NO >> Repair or replace malfunctioning part.

3.CHECK MODE DOOR MOTOR COMMUNICATION SIGNAL CIRCUIT

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

Mode door motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M127	3	M37	16	Yes

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".
NO >> Repair harness or connector.

B263D, B263E, B263F INTAKE DOOR MOTOR

DTC Description

INFOID:0000000012174483

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
B263D	FRE DOOR FAIL (FRE DOOR FAIL)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	Detected at FRE position
		Diagnosis delay time	–
B263E	20P FRE DOOR FAIL (20P FRE DOOR FAIL)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	Detected at 20% FRE position
		Diagnosis delay time	–
B263F	REC DOOR FAIL (REC DOOR FAIL)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	Detected at REC position
		Diagnosis delay time	–

POSSIBLE CAUSE

- Intake door motor
- A/C auto amp.
- Harness and connector (Intake door motor circuit is open or shorted).

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT

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

Is DTC detected?

YES >> Refer to HAC-74, "Diagnosis Procedure".
NO >> Inspection End.

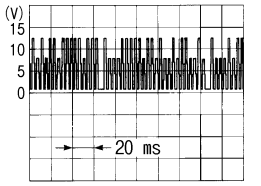
Diagnosis Procedure

INFOID:0000000012174484

Regarding Wiring Diagram information, refer to HAC-36, "Wiring Diagram".

1.CHECK INTAKE DOOR MOTOR COMMUNICATION SIGNAL

1. Turn ignition switch ON.
2. Check output waveform between intake door motor harness connector and ground with oscilloscope.

+		—	Output waveform
Intake door motor			
Connector	Terminal		
M126	3	Ground	 SJIA1453J

Is the inspection result normal?

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

2. CHECK INSTALLATION OF INTAKE DOOR MOTOR

Check intake door motor is properly installed. Refer to HAC-108, "Exploded View".

Is the inspection result normal?

YES >> Replace intake door motor. Refer to HAC-109, "INTAKE DOOR MOTOR : Removal and Installation".
NO >> Repair or replace malfunctioning part.

3. CHECK INTAKE DOOR MOTOR COMMUNICATION SIGNAL CIRCUIT

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

Intake door motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M126	3	M37	16	Yes

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".
NO >> Repair harness or connector.

B27B0 A/C AUTO AMP.

DTC Description

INFOID:0000000012174485

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-54, "DTC Description".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to HAC-55, "DTC Description".

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
B27B0	A/C AUTO AMP. (A/C auto amp.)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	–
		Diagnosis delay time	–

POSSIBLE CAUSE

A/C auto amp.

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT

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

Is DTC detected?

YES >> Refer to HAC-76, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000012174486

1.PERFORM SELF DIAGNOSTIC RESULT

CONSULT

1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “HVAC”.
3. Touch “ERASE”.
4. Turn ignition switch OFF.
5. Turn ignition switch ON.
6. Perform “DTC CONFIRMATION PROCEDURE”. Refer to HAC-76, "DTC Description".

Is DTC detected again?

YES >> Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".
NO >> Inspection End.

POWER SUPPLY AND GROUND CIRCUIT

A/C AUTO AMP.

A/C AUTO AMP. : Diagnosis Procedure

INFOID:0000000012174487

Regarding Wiring Diagram information, refer to HAC-36, "Wiring Diagram".

1.CHECK FUSE

Check fuses [No. 14, 21 and 30, located in the fuse block (J/B)].
NOTE:
Refer to PG-89, "Terminal Arrangement".

Is the inspection result normal?

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

2.CHECK A/C AUTO AMP. POWER SUPPLY

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

+		—	Voltage		
A/C auto amp.			Ignition switch position		
Connector	Terminal		OFF	ACC	ON
M37	3	Ground	Battery voltage	Battery voltage	Battery voltage
	13		Approx. 0 V	Battery voltage	Battery voltage
	23		Approx. 0 V	Approx. 0 V	Battery voltage

Is the inspection result normal?

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

3.CHECK A/C AUTO AMP. GROUND CIRCUIT

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

A/C auto amp.		—	Continuity
Connector	Terminal		
M37	2	Ground	Yes
	22		

Is the inspection result normal?

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

AIR MIX DOOR MOTOR (DRIVER SIDE)

AIR MIX DOOR MOTOR (DRIVER SIDE) : Diagnosis Procedure

INFOID:0000000012174488

Regarding Wiring Diagram information, refer to HAC-36, "Wiring Diagram".

1.CHECK AIR MIX DOOR MOTOR LH POWER SUPPLY

1. Turn ignition switch ON.

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

+		—	Voltage (Approx.)
Air mix door motor LH			
Connector	Terminal		
M128	1	Ground	Battery voltage

Is the inspection result normal?

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

2.CHECK AIR MIX DOOR MOTOR LH GROUND CIRCUIT

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

Air mix door motor LH		—	Continuity
Connector	Terminal		
M128	2	Ground	Yes

Is the inspection result normal?

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

3.CHECK INSTALLATION OF AIR MIX DOOR MOTOR LH

Check air mix door motor LH is properly installed. Refer to HAC-108, "Exploded View".

Is the inspection result normal?

YES >> Replace air mix door motor LH. Refer to HAC-109, "AIR MIX DOOR MOTOR : Removal and Installation - Air Mix Door Motor (LH)".
NO >> Repair or replace malfunctioning part.

4.CHECK AIR MIX DOOR MOTOR LH POWER SUPPLY CIRCUIT

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

Air mix door motor LH		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M128	1	M37	17	Yes

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".
NO >> Repair harness or connector.

AIR MIX DOOR MOTOR (PASSENGER SIDE)

AIR MIX DOOR MOTOR (PASSENGER SIDE) : Diagnosis Procedure

INFOID:0000000012174489

Regarding Wiring Diagram information, refer to HAC-36, "Wiring Diagram".

1.CHECK AIR MIX DOOR MOTOR RH POWER SUPPLY

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

+		—	Voltage (Approx.)
Air mix door motor RH			
Connector	Terminal		
M129	1	Ground	Battery voltage

Is the inspection result normal?

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

2.CHECK AIR MIX DOOR MOTOR RH GROUND CIRCUIT

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

Air mix door motor RH		—	Continuity
Connector	Terminal		
M129	2	Ground	Yes

Is the inspection result normal?

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

3.CHECK INSTALLATION OF AIR MIX DOOR MOTOR RH

Check air mix door motor RH is properly installed. Refer to HAC-108, "Exploded View".

Is the inspection result normal?

YES >> Replace air mix door motor RH. Refer to HAC-110, "AIR MIX DOOR MOTOR : Removal and Installation - Air Mix Door Motor (RH)".
NO >> Repair or replace malfunctioning part.

4.CHECK AIR MIX DOOR MOTOR RH POWER SUPPLY CIRCUIT

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

Air mix door motor RH		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M129	1	M37	17	Yes

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".
NO >> Repair harness or connector.

MODE DOOR MOTOR

MODE DOOR MOTOR : Diagnosis Procedure

INFOID:0000000012174490

Regarding Wiring Diagram information, refer to HAC-36, "Wiring Diagram".

1.CHECK MODE DOOR MOTOR POWER SUPPLY

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

+		—	Voltage (Approx.)
Mode door motor			
Connector	Terminal		
M127	1	Ground	Battery voltage

Is the inspection result normal?

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

2.CHECK MODE DOOR MOTOR GROUND CIRCUIT

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

Mode door motor		—	Continuity
Connector	Terminal		
M127	2	Ground	Yes

Is the inspection result normal?

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

3.CHECK INSTALLATION OF MODE DOOR MOTOR CONTROL LINKAGE

Check mode door motor control linkage is properly installed. Refer to HAC-108, "Exploded View".

Is the inspection result normal?

YES >> Replace mode door motor. Refer to HAC-109, "MODE DOOR MOTOR : Removal and Installation".
NO >> Repair or replace malfunctioning part.

4.CHECK MODE DOOR MOTOR POWER SUPPLY CIRCUIT

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

Mode door motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M127	1	M37	17	Yes

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".
NO >> Repair harness or connector.

INTAKE DOOR MOTOR

INTAKE DOOR MOTOR : Diagnosis Procedure

INFOID:0000000012174491

Regarding Wiring Diagram information, refer to HAC-36, "Wiring Diagram".

1.CHECK INTAKE DOOR MOTOR POWER SUPPLY

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

+		—	Voltage (Approx.)
Intake door motor			
Connector	Terminal		
M126	1	Ground	Battery voltage

Is the inspection result normal?

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

2.CHECK INTAKE DOOR MOTOR GROUND CIRCUIT

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

Intake door motor		—	Continuity
Connector	Terminal		
M126	2	Ground	Yes

Is the inspection result normal?

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

3.CHECK INSTALLATION OF INTAKE DOOR MOTOR

Check intake door motor is properly installed. Refer to HAC-108, "Exploded View".

Is the inspection result normal?

YES >> Replace intake door motor. Refer to HAC-109, "INTAKE DOOR MOTOR : Removal and Installation".
NO >> Repair or replace malfunctioning part.

4.CHECK INTAKE DOOR MOTOR POWER SUPPLY CIRCUIT

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

Intake door motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M126	1	M37	17	Yes

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".
NO >> Repair harness or connector.

A/C SWITCH ASSEMBLY

A/C SWITCH ASSEMBLY : Component Function Check

INFOID:0000000012174492

1.CHECK OPERATION

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

Does it operate normally?

YES >> Inspection End.
NO >> Perform trouble diagnosis for the A/C switch assembly. Refer to HAC-82, "A/C SWITCH ASSEMBLY : Diagnosis Procedure".

A/C SWITCH ASSEMBLY : Diagnosis Procedure

INFOID:0000000012174493

Regarding Wiring Diagram information, refer to HAC-36, "Wiring Diagram".

1. CHECK A/C SWITCH ASSEMBLY POWER SUPPLY

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

(+)		(–)	Voltage		
A/C switch assembly		—	Ignition switch position		
Connector	Terminal		OFF	ACC	ON
M104	12	Ground	Approx. 0V	Approx. 0V	Battery voltage

Is the inspection result normal?

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

2. CHECK FUSE

Check 10A fuse [No. 30, located in the fuse block (J/B)].

NOTE:
Refer to PG-89, "Terminal Arrangement".

Is the inspection result normal?

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

3. CHECK A/C SWITCH ASSEMBLY GROUND CIRCUIT

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

A/C switch assembly		—	Continuity
Connector	Terminal		
M104	1	Ground	Yes

Is the inspection result normal?

YES >> Replace the A/C switch assembly. Refer to HAC-100, "Removal and Installation".
NO >> Repair the harnesses or connectors.

DOOR MOTOR

Diagnosis Procedure

INFOID:0000000012174500

Regarding Wiring Diagram information, refer to HAC-36, "Wiring Diagram".

1.CHECK EACH DOOR MOTOR POWER SUPPLY

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

+		—	Voltage (Approx.)
Intake door motor			
Connector	Terminal		
M126	1	Ground	Battery voltage

Is the inspection result normal?

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

2.CHECK EACH DOOR MOTOR GROUND CIRCUIT

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

Intake door motor		—	Continuity
Connector	Terminal		
M126	2	Ground	Yes

Is the inspection result normal?

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

3.CHECK EACH DOOR MOTOR POWER SUPPLY CIRCUIT FOR OPEN

1. Disconnect A/C auto amp. connector.
2. 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	
M126	1	M37	17	Yes

Is the inspection result normal?

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

4.CHECK EACH DOOR MOTOR POWER SUPPLY CIRCUIT FOR SHORT

1. Disconnect following connectors:
- Air mix door motor LH
- Air mix door motor RH
- Mode door motor
2. Check continuity between intake door motor harness connector and ground.

Intake door motor		—	Continuity
Connector	Terminal		
M126	1	Ground	No

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".
NO >> Repair harness or connector.

DOOR MOTOR COMMUNICATION CIRCUIT

Diagnosis Procedure

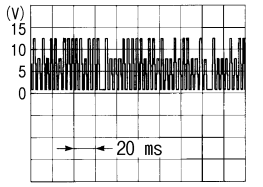
INFOID:0000000012174501

Regarding Wiring Diagram information, refer to HAC-36, "Wiring Diagram".

NOTE:
If all door motor DTCs are detected, check this circuit.

1.CHECK EACH DOOR MOTOR COMMUNICATION SIGNAL

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

+		—	Output waveform
A/C auto amp.			
Connector	Terminal		
M37	16	Ground	

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Is the inspection result normal?

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

2.CHECK EACH DOOR MOTOR COMMUNICATION SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector 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	
M37	16	M126	3	Yes

Is the inspection result normal?

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

3.CHECK EACH DOOR MOTOR COMMUNICATION SIGNAL CIRCUIT FOR SHORT

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

A/C auto amp.		—	Continuity
Connector	Terminal		
M37	16	Ground	No

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".
NO >> Repair harness or connector.

A/C SWITCH ASSEMBLY SIGNAL CIRCUIT

Diagnosis Procedure

INFOID:0000000012174499

Regarding Wiring Diagram information, refer to HAC-36, "Wiring Diagram".

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT

1. Using CONSULT, perform “Self Diagnostic Result” mode of “HVAC”.
2. Check if any DTC is displayed in the self-diagnosis results.

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-54, "DTC Description" or HAC-55, "DTC Description".

Is any DTC displayed?

YES >> Perform diagnosis for the applicable DTC. Refer to HAC-33, "DTC Index".
NO >> GO TO 2.

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

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

A/C switch assembly		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M104	10	M37	24	Yes

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

A/C switch assembly		—	Continuity
Connector	Terminal		
M104	10	Ground	No

Is the inspection result normal?

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

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

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

A/C switch assembly		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M104	9	M37	4	Yes

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

A/C switch assembly		—	Continuity
Connector	Terminal		
M104	9	Ground	No

Is the inspection result normal?

YES >> Perform trouble diagnosis for the A/C switch assembly. Refer to HAC-82, "A/C SWITCH ASSEMBLY : Diagnosis Procedure".
NO >> Repair harness or connector.

BLOWER MOTOR

Diagnosis Procedure

INFOID:0000000012174494

Regarding Wiring Diagram information, refer to HAC-36, "Wiring Diagram".

1.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 15A fuses [No. 17 and 27, located in fuse block (J/B)].
   NOTE:
   Refer to PG-89, "Terminal Arrangement".

Is the inspection result normal?

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

2.CHECK BLOWER MOTOR POWER SUPPLY

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

+		—	Voltage (Approx.)
Blower motor			
Connector	Terminal		
M31	4	Ground	Battery voltage

Is the inspection result normal?

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

3.CHECK BLOWER MOTOR GROUND CIRCUIT

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

Blower motor		—	Continuity
Connector	Terminal		
M31	1	Ground	Yes

Is the inspection result normal?

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

4.CHECK BLOWER MOTOR CONTROL SIGNAL CIRCUIT

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

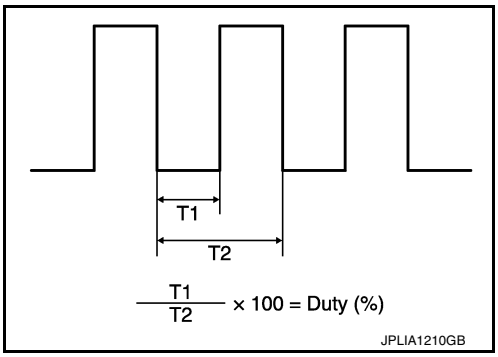
Blower motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M31	3	M37	18	Yes

Is the inspection result normal?

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

5.CHECK BLOWER MOTOR CONTROL SIGNAL

1. Reconnect blower motor connector and A/C auto amp. connector.
2. Turn ignition switch ON.
3. Operate MODE switch to set air outlet to VENT.
4. Change fan speed from Lo to Hi, and check duty ratios between blower motor harness connector and ground using an oscilloscope.
   NOTE:
   Calculate drive signal duty ratio as shown in the figure.
   T2 = Approx. 1.6 ms



Blower motor		Condition	Duty ratio (Approx.)
Connector	Terminal	Fan speed (manual) VENT mode	
M31	3	1st	25 %
		2nd	33 %
		3rd	41 %
		4th	51 %
		5th	61 %
		6th	69 %
		7th	81 %

Is the inspection result normal?

YES >> Replace blower motor. Refer to VTL-15, "BLOWER MOTOR : Removal and Installation".
NO >> Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".

6.CHECK BLOWER MOTOR RELAY GROUND CIRCUIT

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

Fuse block (J/B)		—	Continuity
Connector	Terminal		
M4	13R	Ground	Yes

Is the inspection result normal?

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

7.CHECK FRONT BLOWER MOTOR RELAY

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

Is the inspection result normal?

YES >> Repair harness or connector between blower motor and fuse block (J/B).
NO >> Replace front blower motor relay.

Component Inspection (Blower Motor)

INFOID:0000000012174495

1.CHECK BLOWER MOTOR

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

Does the blower fan operate?

YES >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".
NO >> Replace blower motor. Refer to VTL-15, "BLOWER MOTOR : Removal and Installation".

Component Inspection (Front Blower Motor Relay)

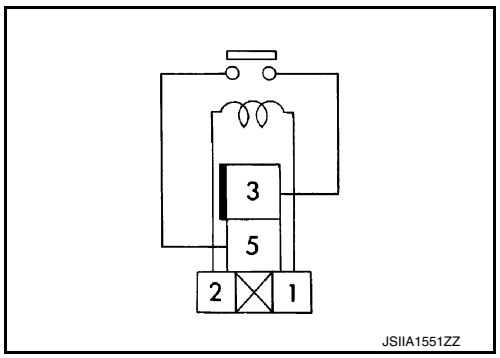
INFOID:0000000012174496

1.CHECK BLOWER RELAY

1. Turn ignition switch OFF.
2. Remove front blower motor relay.

3. Check continuity between front blower motor relay terminals 3 and 5 when voltage is supplied between terminals 1 and 2.

Terminals		Voltage	Continuity
3	5	ON	Yes
		OFF	No



Is the inspection result normal?

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

MAGNET CLUTCH

Component Function Check

INFOID:0000000012174497

1.CHECK MAGNET CLUTCH OPERATION

Perform auto active test of IPDM E/R. Refer to PCS-9, "Diagnosis Description".

Does it operate normally?

YES >> Inspection End.
NO >> Refer to HAC-90, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000012174498

Regarding Wiring Diagram information, refer to HAC-36, "Wiring Diagram".

1.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 10A fuse (No. 53, located in IPDM E/R).
   NOTE:
   Refer to PG-91, "Fuse, Connector and Terminal Arrangement".

Is the inspection result normal?

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

2.CHECK MAGNET CLUTCH POWER SUPPLY CIRCUIT

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

A/C compressor		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F3	1	F50	56	Yes

Is the inspection result normal?

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

3.CHECK MAGNET CLUTCH GROUND CIRCUIT

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

A/C compressor		—	Continuity
Connector	Terminal		
F3	2	Ground	Yes

Is the inspection result normal?

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

4.CHECK MAGNET CLUTCH

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

Does it operate normally?

YES >> Replace IPDM E/R. Refer to PCS-36, "Removal and Installation".
NO >> Replace magnet clutch. Refer to HA-34, "Removal and Installation".

ECV (ELECTRICAL CONTROL VALVE)

Diagnosis Procedure

INFOID:0000000012174502

1.CHECK ECV (ELECTRICAL CONTROL VALVE) POWER SUPPLY

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

+		—	Voltage (Approx.)
A/C compressor			
Connector	Terminal		
F10	4	Ground	Battery voltage

Is the inspection result normal?

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

2.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 10 A fuse [No. 30, located in fuse block (J/B)]. Refer to PG-89, "Terminal Arrangement".

Is the inspection result normal?

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

3.CHECK ECV POWER SUPPLY CIRCUIT FOR OPEN

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

A/C compressor		Fuse block (J/B)		Continuity
Connector	Terminal	Connector	Terminal	
F10	4	E6	1M	Yes

Is the inspection result normal?

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

4.CHECK ECV POWER SUPPLY CIRCUIT FOR SHORT

1. Disconnect A/C auto amp. connector and A/C switch assembly connector.
2. Check continuity between A/C compressor harness connector and ground.

A/C compressor		—	Continuity
Connector	Terminal		
F10	4	Ground	No

Is the inspection result normal?

YES >> Check ignition power supply circuit. Refer to PG-40, "Wiring Diagram - IGNITION POWER SUPPLY -".
NO >> Repair harness or connector.

5.CHECK ECV CONTROL SIGNAL CIRCUIT FOR OPEN

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

A/C compressor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
F10	3	M37	40	Yes

Is the inspection result normal?

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

6.CHECK ECV CONTROL SIGNAL CIRCUIT FOR SHORT

Check continuity between A/C compressor harness connector and ground.

A/C compressor		—	Continuity
Connector	Terminal		
F10	3	Ground	No

Is the inspection result normal?

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

7.CHECK ECV

Check ECV. Refer to HAC-92, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 8.
NO >> Replace A/C compressor. Refer to HA-34, "Removal and Installation".

8.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:0000000012174503

1.CHECK ECV (ELECTRICAL CONTROL VALVE)

1. Turn ignition switch OFF.
2. Disconnect A/C compressor connector.
3. Check continuity between A/C compressor connector F10 terminals.

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

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace A/C compressor. Refer to HA-34, "Removal and Installation".

SYMPTOM DIAGNOSIS

HEATER AND AIR CONDITIONING SYSTEM CONTROL SYMPTOMS

Diagnosis Chart By Symptom

INFOID:0000000012174504

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

Symptom	Corresponding malfunction part	Reference
• Air conditioning does not activate. • 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-77, "A/C AUTO AMP. : Diagnosis Procedure"
• Air outlet does not change. • Mode door motor does not operate normally.	• Circuit between mode door motor and A/C auto amp. • Mode door motor control linkage • Mode door motor • A/C auto amp.	HAC-79, "MODE DOOR MOTOR : Diagnosis Procedure"
• Discharge air temperature of driver side does not change. • Air mix door motor LH does not operate normally.	• Circuit between air mix door motor LH and A/C auto amp. • Air mix door motor LH installation condition • Air mix door motor LH • A/C auto amp.	HAC-77, "AIR MIX DOOR MOTOR (DRIVER SIDE) : Diagnosis Procedure"
• Discharge air temperature of passenger side does not change. • Air mix door motor RH does not operate normally.	• Circuit between air mix door motor RH and A/C auto amp. • Air mix door motor RH installation condition • Air mix door motor RH • A/C auto amp.	HAC-78, "AIR MIX DOOR MOTOR (PASSENGER SIDE) : Diagnosis Procedure"
• Intake door does not change. • Intake door motor does not operate normally.	• Circuit between intake door motor and A/C auto amp. • Intake door motor control linkage • Intake door motor • A/C auto amp.	HAC-80, "INTAKE DOOR MOTOR : Diagnosis Procedure"
All door motors do not operate normally.	• Each door motor power supply and ground circuit • A/C auto amp.	HAC-85, "Diagnosis Procedure"
Blower motor operation is malfunctioning.	• Power supply system of front blower motor • Circuit between front blower motor and A/C auto amp. • Front blower motor • A/C auto amp.	HAC-87, "Diagnosis Procedure"
Compressor does not operate.	• Circuit between magnet clutch and IPDM E/R • Magnet clutch • IPDM E/R (A/C relay) • Circuit between ECM and refrigerant pressure sensor • Refrigerant pressure sensor • CAN communication circuit • A/C auto amp.	HAC-98, "Diagnosis Procedure"

Symptom		Corresponding malfunction part	Reference
• Insufficient cooling. • No cool air comes out. (Air flow volume is normal.)		• Magnet clutch control system • Drive belt slipping • Refrigerant cycle • ECV (electrical control valve) • Air leakage from each duct • A/C auto amp. connection recognition signal circuit • Temperature setting trimmer (front)	HAC-95, "Diagnosis Procedure"
• Insufficient heating. • No warm air comes out. (Air flow volume is normal.)		• Engine cooling system • Heater hose • Heater core • Air leakage from each duct • Temperature setting trimmer (front)	HAC-97, "Diagnosis Procedure"
Noise is heard when front air conditioning system operates.	During compressor operation	Refrigerant cycle	HA-22, "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-88, "Component Inspection (Blower Motor)"
• Memory function does not operate. • Setting temperature is not memorized.		• Battery power supply system of A/C auto amp. • A/C auto amp.	HAC-77, "A/C AUTO AMP. : Diagnosis Procedure"

INSUFFICIENT COOLING

Description

INFOID:0000000012174505

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

Diagnosis Procedure

INFOID:0000000012174506

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

1.CHECK MAGNET CLUTCH OPERATION

1. Turn ignition switch ON.
2. Operate fan switch.
3. Press A/C switch.
4. Check that A/C indicator turns ON. Check visually and by sound that A/C compressor operates.
5. Press A/C switch again.
6. Check that A/C indicator turns OFF. Check that A/C 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-98, "Diagnosis Procedure".

2.CHECK DRIVE BELT

Check tension of drive belt. Refer to EM-16, "Checking Drive Belt".

Is the inspection result normal?

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

3.CHECK REFRIGERANT CYCLE

Connect recovery/recycling recharging equipment to the vehicle and perform pressure inspection with gauge. Refer to HA-18, "Trouble Diagnoses for Abnormal Pressure".

Is the inspection result normal?

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

4.CHECK AIR LEAKAGE FROM EACH DUCT

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

Is the inspection result normal?

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

5.CHECK AMBIENT TEMPERATURE DISPLAY

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

Is the inspection result normal?

YES >> GO TO 6.
NO >> Perform diagnosis for the A/C auto amp. connection recognition signal circuit. Refer to HAC-59, "Diagnosis Procedure".

6.CHECK SETTING OF TEMPERATURE SETTING TRIMMER (FRONT)

1. Check setting value of temperature setting trimmer (front). Refer to HAC-51, "Temperature Setting Trimmer".
2. Check that temperature setting trimmer (front) is set to “+ direction”.

NOTE:

The control temperature can be set with the setting of the temperature setting trimmer (front).

3. Set difference between set temperature and control temperature to “0”.

Is inspection result normal?

YES >> Inspection End.
NO >> Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".

INSUFFICIENT HEATING

Description

INFOID:0000000012174507

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

Diagnosis Procedure

INFOID:0000000012174508

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

1.CHECK COOLING SYSTEM

1. Check engine coolant level and check leakage. Refer to CO-10, "System Inspection".
2. Check reservoir tank cap. Refer to CO-10, "System Inspection".
3. Check water flow sounds of the engine coolant. Refer to CO-10, "System Inspection".

Is the inspection result normal?

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

2.CHECK HEATER HOSE

Check installation of heater hose visually or by touching.

Is the inspection result normal?

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

3.CHECK HEATER CORE

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

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace heater core. Refer to HA-46, "HEATER CORE : Removal and Installation".

4.CHECK AIR LEAKAGE FROM EACH DUCT

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

Is the inspection result normal?

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

5.CHECK SETTING OF TEMPERATURE SETTING TRIMMER (FRONT)

1. Check setting value of temperature setting trimmer (front). Refer to HAC-51, "Temperature Setting Trimmer".
2. Check that temperature setting trimmer (front) is set to “– direction”.
   NOTE:
   The control temperature can be set by the temperature setting trimmer (front).
3. Set difference between the set temperature and control temperature to “0”.

Are the symptoms solved?

YES >> Inspection End.
NO >> Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".

COMPRESSOR DOES NOT OPERATE

Description

INFOID:0000000012174509

Symptom: Compressor does not operate.

Diagnosis Procedure

INFOID:0000000012174510

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

1.CHECK MAGNET CLUTCH OPERATION

Check magnet clutch. Refer to HAC-90, "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-567, "Component Function Check".

Is the inspection result normal?

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

3.CHECK A/C AUTO AMP. OUTPUT SIGNAL

CONSULT
1. Select “Data Monitor” mode of “HVAC”.
2. Select “COMP REQ SIG” and “FAN REQ SIG”.
3. Check that the function operates normally according to the following conditions:

Monitor item	Condition		Status
COMP REQ SIG	A/C switch	ON	On
		OFF	Off
FAN REQ SIG	Blower motor	ON	On
		OFF	Off

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace A/C auto amp. Refer to HAC-102, "Removal and Installation".

4.CHECK ECM INPUT SIGNAL

CONSULT
1. Select “Data Monitor” mode of “ECM”.
2. Select “AIR COND SIG” and “HEATER FAN SW”.
3. Check that the function operates normally according to the following conditions:

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

Is the inspection result normal?

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

5.CHECK IPDM E/R INPUT SIGNAL

CONSULT
1. Start engine.
2. Select “Data Monitor” mode of “IPDM E/R”.
3. Select “AC COMP REQ”.
4. Check that the function operates normally according to the following conditions:

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

Is the inspection result normal?

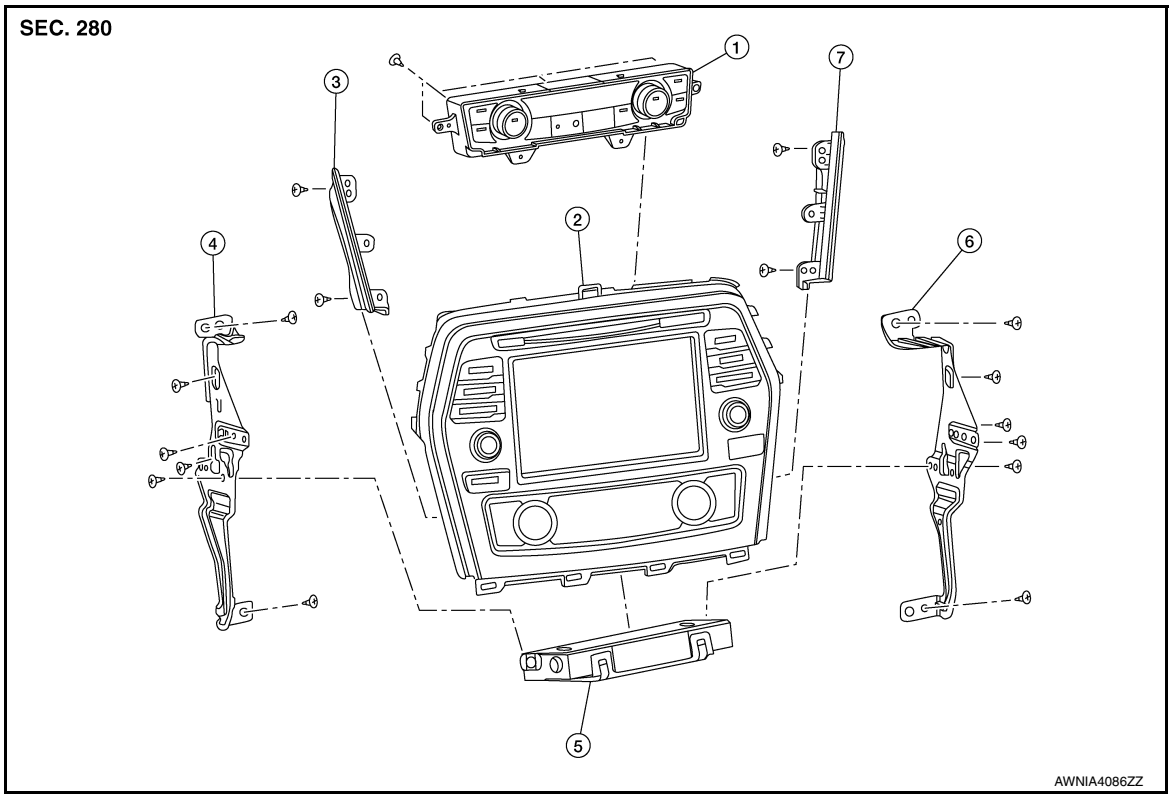
YES >> Inspection End.
NO >> Check CAN communication system. Refer to LAN-17, "Trouble Diagnosis Flow Chart".

REMOVAL AND INSTALLATION

A/C SWITCH ASSEMBLY

Exploded View

INFOID:0000000012339605



1. A/C switch assembly
2. AV control unit
3. Audio unit finisher (LH)
4. Audio unit bracket (LH)
5. A/C auto amp.
6. Audio unit bracket (RH)
7. Audio unit finisher (RH)

Removal and Installation

INFOID:0000000011933056

REMOVAL

CAUTION:

Before disconnecting the AV control unit and battery terminals, turn the ignition switch OFF and wait at least 30 seconds.

NOTE:

- Before replacing AV control unit, perform “Before Replace ECU” of “Read / Write Configuration” to save or print current vehicle specification. Refer to HAC-48, "Description".
- After the ignition switch is turned OFF, the AV control unit continues operating for approximately 30 seconds. Therefore, data corruption may occur if battery voltage is cut off within 30 seconds.

1. Disconnect the negative battery terminal. Refer to PG-101, "Removal and Installation (Battery)".
2. Remove center console finisher. Refer to IP-20, "Exploded View".
3. Remove AV control unit screws then pull out AV control unit.
4. Disconnect the harness connectors from AV control unit and remove.
5. Remove A/C switch assembly screws from AV control unit and then remove A/C switch assembly.

INSTALLATION

CAUTION:

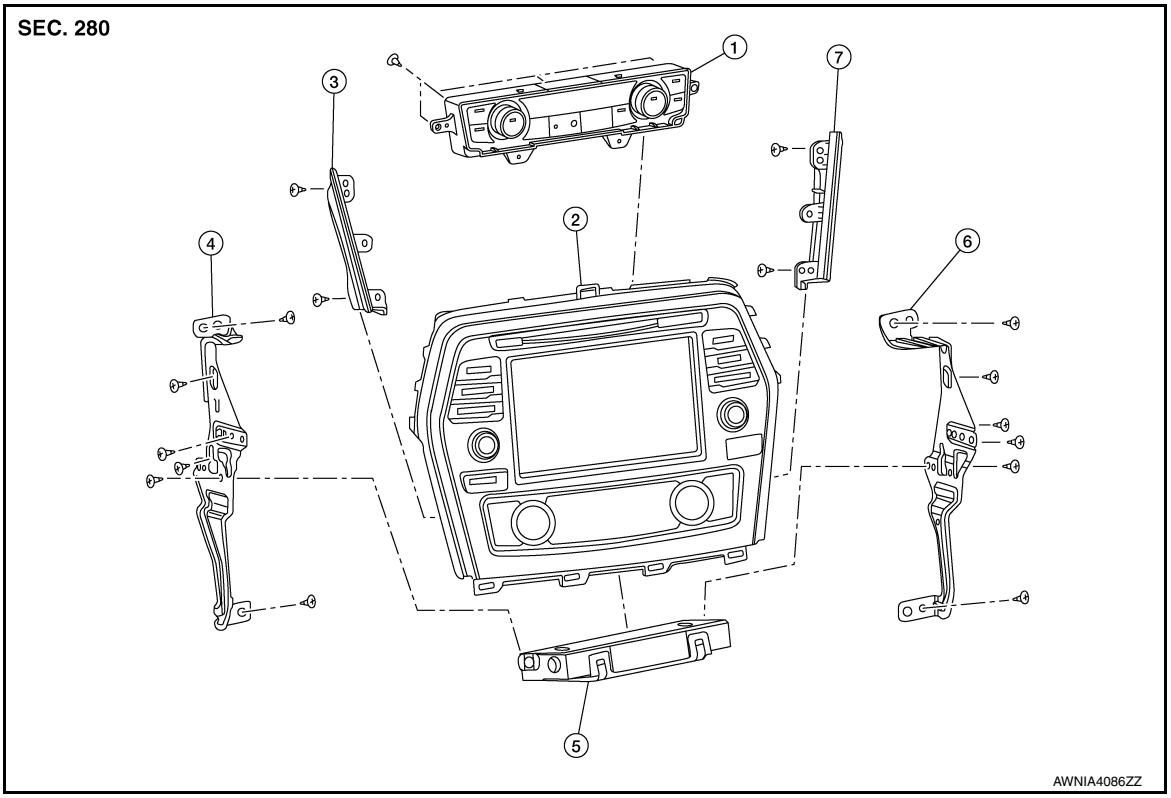
Be sure to perform “After Replace ECU” of “Read / Write Configuration” or “Manual Configuration” when replacing AV control unit. Refer to HAC-48, "Description".

Installation is in the reverse order of removal.

A/C AUTO AMP.

Exploded View

INFOID:0000000012339606



1. A/C switch assembly
2. AV control unit
3. Audio unit finisher (LH)
4. Audio unit bracket (LH)
5. A/C auto amp.
6. Audio unit bracket (RH)
7. Audio unit finisher (RH)

Removal and Installation

INFOID:0000000012310061

REMOVAL

CAUTION:

Before disconnecting the AV control unit and battery terminals, turn the ignition switch OFF and wait at least 30 seconds.

NOTE:

- Before replacing A/C auto amp., perform “Before Replace ECU” of “Read / Write Configuration” to save or print current vehicle specification. Refer to HAC-48, "Description".
- After the ignition switch is turned OFF, the AV control unit continues operating for approximately 30 seconds. Therefore, data corruption may occur if battery voltage is cut off within 30 seconds.

1. Disconnect negative battery terminal. Refer to PG-101, "Removal and Installation (Battery)".
2. Remove center console finisher. Refer to IP-20, "Exploded View".
3. Remove AV control unit screws then pull out AV control unit.
4. Disconnect harness connectors from AV control unit and remove.
5. Remove screws and A/C auto amp.

INSTALLATION

CAUTION:

Be sure to perform “After Replace ECU” of “Read / Write Configuration” or “Manual Configuration” when replacing A/C auto amp. Refer to HAC-48, "Description".

Installation is in the reverse order of removal.

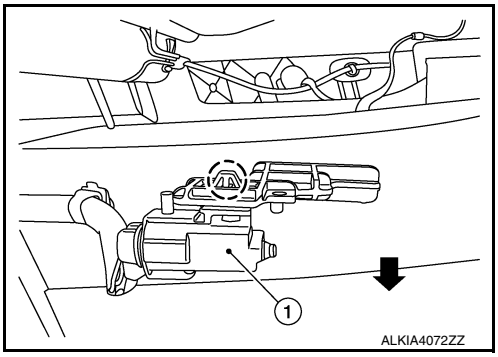
AMBIENT SENSOR

Removal and Installation

INFOID:0000000011933057

REMOVAL

1. Remove front under cover. Refer to EXT-26, "Removal and Installation".
2. Disconnect harness connector from ambient sensor (1).
3. Release clip and remove ambient sensor.



⇦ : Front

◌ : Clip

INSTALLATION

Installation is in the reverse order of removal.

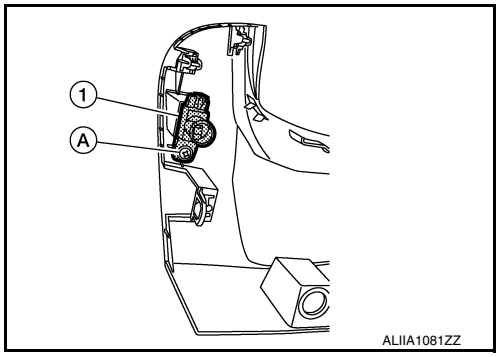
IN-VEHICLE SENSOR

Removal and Installation

INFOID:0000000011933058

REMOVAL

1. Remove instrument lower panel LH. Refer to IP-23, "Removal and Installation".
2. Remove screw (A) and then remove the in-vehicle sensor (1).



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

Make sure that aspirator hose is securely attached to in-vehicle sensor when installing the instrument lower panel LH.

SUNLOAD SENSOR

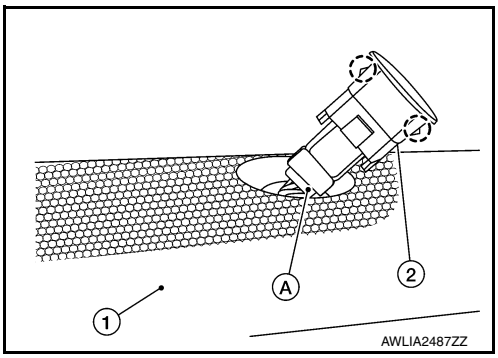
Removal and Installation

INFOID:0000000011933059

REMOVAL

1. Remove defroster grille (1). Refer to VTL-8, "Exploded View".
2. Disconnect harness connector (A) from sunload sensor (2).
3. Release pawls and remove sunload sensor.

:Pawl



INSTALLATION

Installation is in the reverse order of removal.

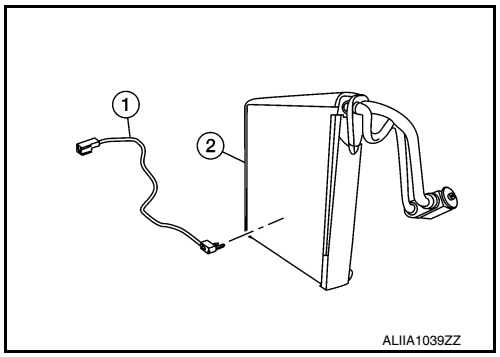
INTAKE SENSOR

Removal and Installation

INFOID:0000000011933060

REMOVAL

1. Remove the evaporator from the heating and cooling unit. Refer to HA-46, "EVAPORATOR : Removal and Installation".
2. Remove the intake sensor (1) from the evaporator (2).
   CAUTION:
   - **Mark the mounting position of the intake sensor.**
   - **Do not damage the evaporator core.**



INSTALLATION

Installation is in the reverse order of removal.

REFRIGERANT PRESSURE SENSOR

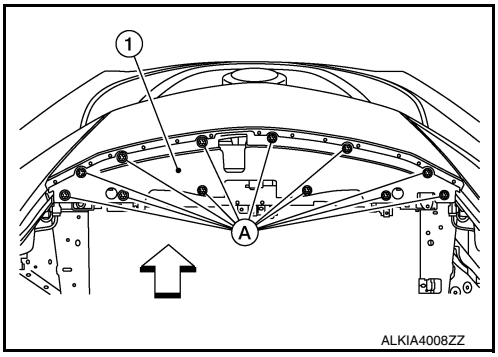
Removal and Installation

INFOID:0000000011933061

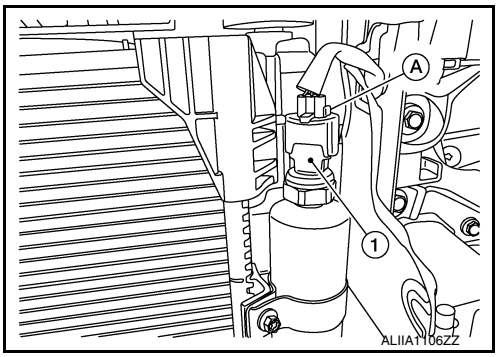
REMOVAL

1. Discharge refrigerant. Refer to HA-25, "Recycle Refrigerant".
2. Remove clips (A), then remove core support cover (1).

⇦ : Front



3. Disconnect harness connector (A) from refrigerant pressure sensor (1).



4. Remove refrigerant pressure sensor.
   CAUTION:
   Cap or wrap the opening of the refrigerant pressure sensor with suitable material such as vinyl tape to avoid the entry of air.

INSTALLATION

Installation is in the reverse order of removal.

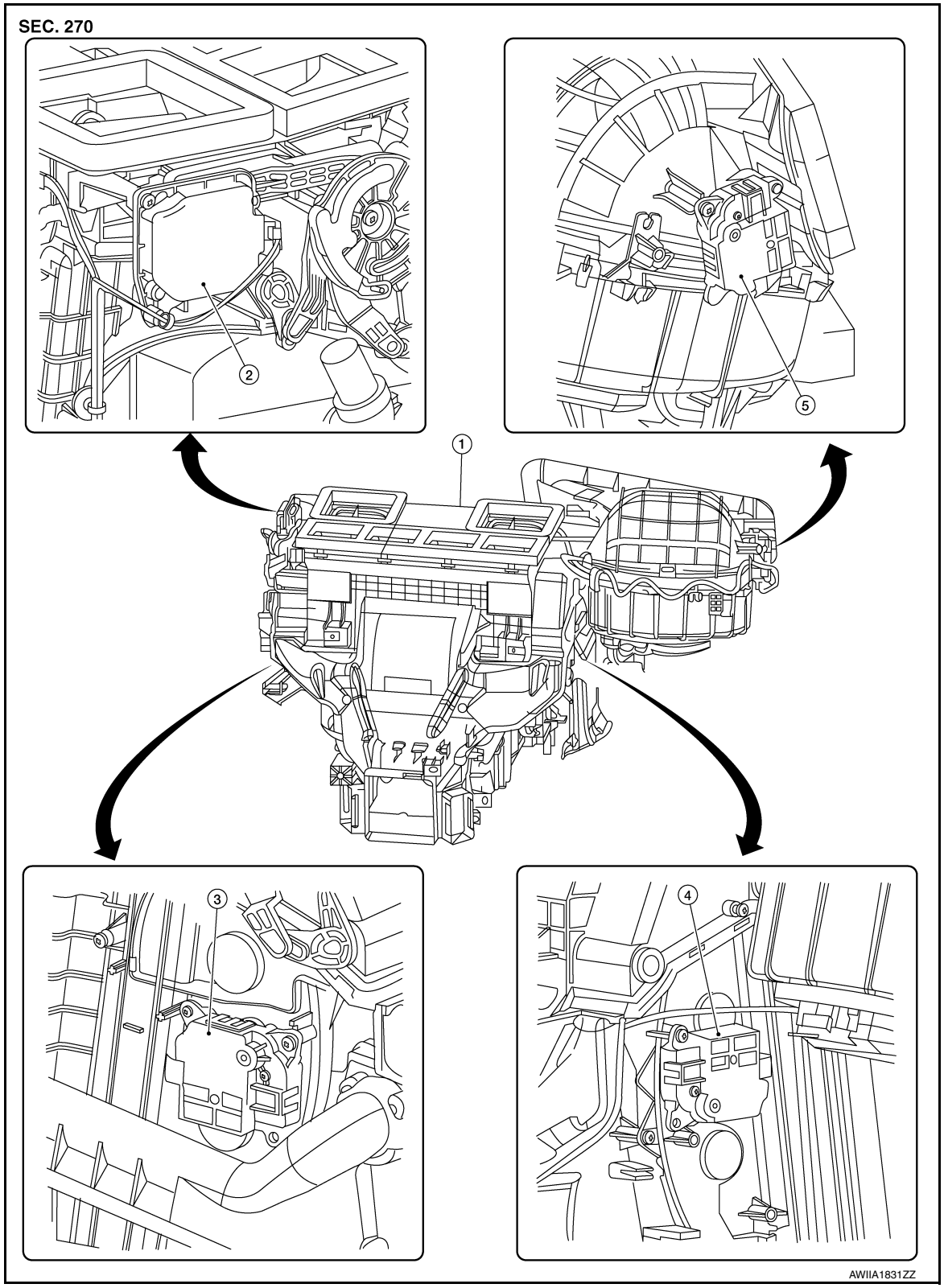
CAUTION:

- **Do not reuse O-ring.**
- **Apply A/C oil to the O-ring of the refrigerant pressure sensor for installation.**
- **After charging refrigerant, check for leaks. Refer to HA-23, "Leak Test".**

DOOR MOTOR

Exploded View

INFOID:0000000011933062



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

INTAKE DOOR MOTOR

INTAKE DOOR MOTOR : Removal and Installation

INFOID:0000000011933063

REMOVAL

1. Remove the glove box assembly. Refer to IP-24, "Removal and Installation".
2. Remove the remote keyless entry receiver and bracket and position them aside.
3. Disconnect the harness connector from the intake door motor.
4. Remove the intake door motor screws and intake door motor from the blower unit.

INSTALLATION

Installation is in the reverse order of removal.

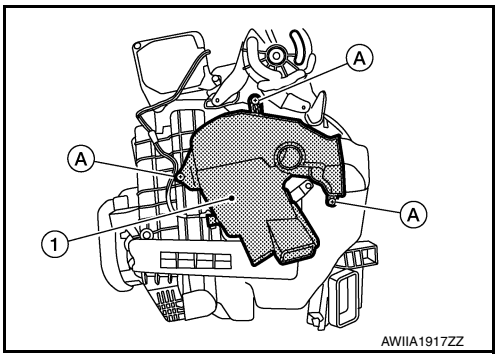
MODE DOOR MOTOR

MODE DOOR MOTOR : Removal and Installation

INFOID:0000000011933064

REMOVAL

1. Remove the combination meter. Refer to MWI-68, "Removal and Installation".
2. Remove the BCM. Refer to BCS-82, "Removal and Installation".
3. Remove the screws (A) and the front foot duct (LH) (1).
4. Remove the mode door motor screws.
5. Disconnect the harness connector from the mode door motor and remove.



INSTALLATION

Installation is in the reverse order of removal.

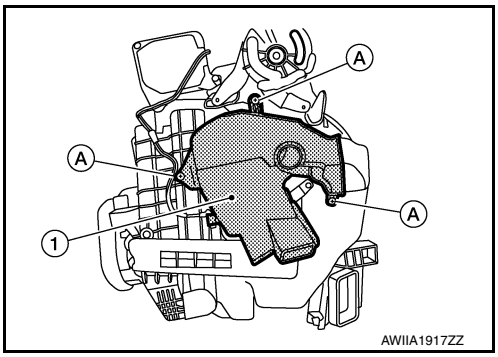
AIR MIX DOOR MOTOR

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

INFOID:0000000011933065

REMOVAL

1. Remove the instrument lower panel LH. Refer to IP-23, "Removal and Installation".
2. Remove the front floor connecting duct (LH). Refer to VTL-8, "Exploded View".
3. Remove the screws (A) and the front foot duct (LH) (1).
4. Remove the air mix door motor (LH) screws.
5. Disconnect the harness connector from the air mix door motor (LH) and remove.



INSTALLATION

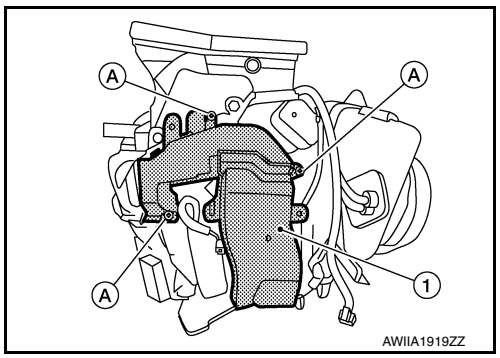
Installation is in the reverse order of removal.

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

INFOID:0000000011933066

REMOVAL

1. Remove the glove box assembly. Refer to IP-24, "Removal and Installation".
2. Remove the front floor connecting duct (RH). Refer to VTL-8, "Exploded View".
3. Remove the screws (A) and front foot duct (RH) (1).
4. Remove the air mix door motor (RH) screws.
5. Disconnect the harness connector from the air mix door motor (RH) and remove.



INSTALLATION

Installation is in the reverse order of removal.

BLOWER MOTOR

Removal and Installation

INFOID:0000000012462449

For removal and installation of the blower motor, refer to VTL-15, "BLOWER MOTOR : Removal and Installation".

COMPRESSOR

Removal and Installation

INFOID:0000000012462450

For removal and installation of the compressor, refer to HA-34, "Removal and Installation".