SECTION HAC

HEATER & AIR CONDITIONING CONTROL SYSTEM

CONTENTS

PRECAUTION

PRECAUTIONS

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

INFOID:0000000012600763

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, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper repair, 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 or batteries, and wait at least three minutes before performing any service.**

Precaution for Work

INFOID:0000000012600764

- 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:0000000012600765

WARNING:

- **CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. If the refrigerants are mixed compressor failure is likely to occur. Refer to HA-25, "Inspection". To determine the purity of HFC-134a (R-134a) in the vehicle and recovery tank, use Refrigerant Recovery/Recycling Recharging equipment and Refrigerant Identifier.**

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

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

CONTAMINATED REFRIGERANT

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

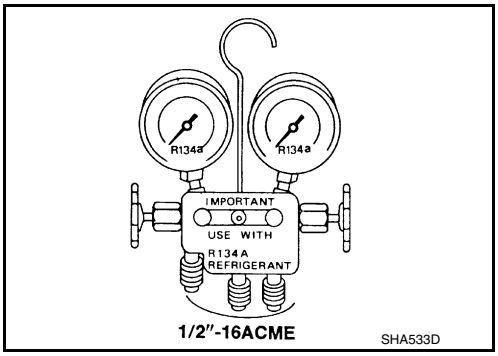
- Explain to the customer that environmental regulations prohibit the release of contaminated refrigerant into the atmosphere.
- Explain that recovery of the contaminated refrigerant could damage your service equipment and refrigerant supply.
- Suggest the customer return the vehicle to the location of previous service where the contamination may have occurred.
- If you choose to perform the repair, recover the refrigerant using only **dedicated equipment and containers. Do not recover contaminated refrigerant into your existing service equipment.** If your facility does not have dedicated recovery equipment, you may contact a local refrigerant product retailer for available 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:0000000012600766

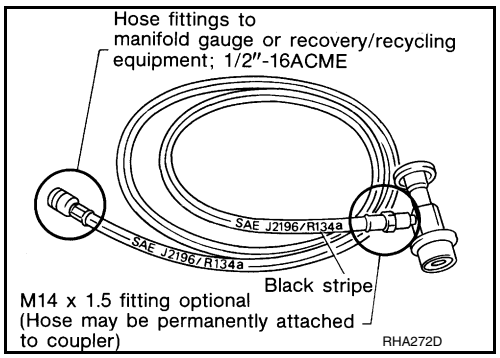
MANIFOLD GAUGE SET

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

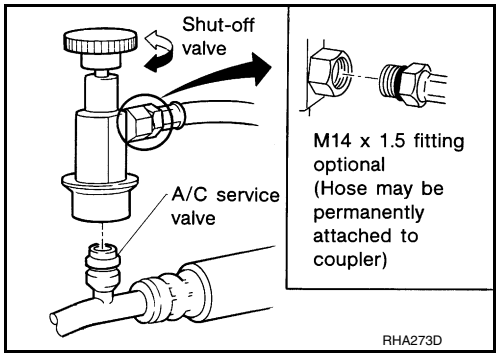
Be certain that the service hoses display the markings described (colored hose with black stripe). All hoses must include positive shut-off devices (either manual or automatic) near the end of the hoses opposite the manifold gauge.



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



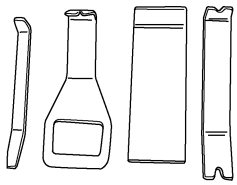
PREPARATION

PREPARATION

Special Service Tool

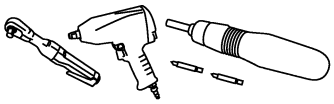
INFOID:0000000012600767

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:0000000012600768

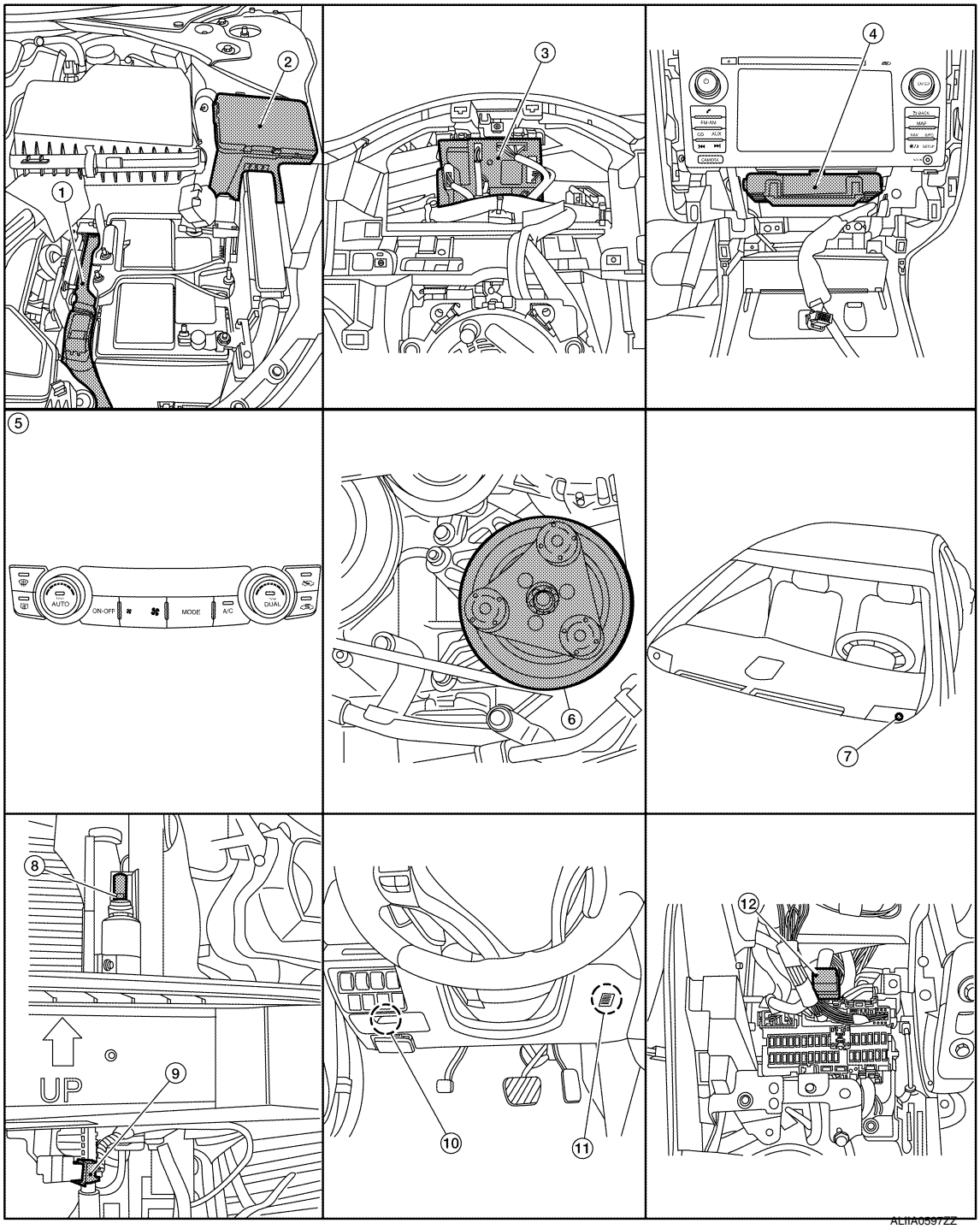
Tool name	Description
Power tool  PIIB1407E	Loosening nuts, screws and bolts

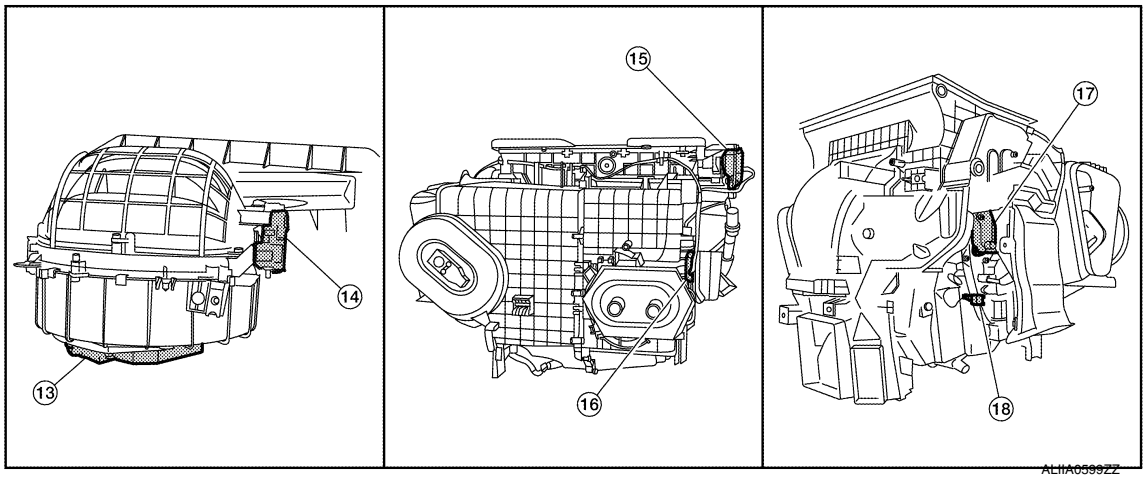
SYSTEM DESCRIPTION

COMPONENT PARTS

Component Part Location

INFOID:0000000012600769





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

Component Description

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Component	Description
A/C auto amp.	A/C auto amp. controls front automatic air conditioning system by inputting and calculating signals from each sensor and each switch.
A/C Compressor	Vaporized refrigerant is drawn into the A/C compressor from the evaporator, where it is compressed to a high pressure, high temperature vapor. The hot, compressed vapor is then discharged to the condenser.
A/C switch assembly	The A/C switch assembly controls the operation of the A/C and heating system based on inputs from the temperature control knob, the mode switches, the blower control dial, the ambient temperature sensor, the intake sensor, and inputs received from the ECM across the CAN. Diagnosis of the A/C switch assembly can be performed using the CONSULT. There is no self-diagnostic feature available.
Air mix door motor LH	The air mix door controls the mix of hot or cold air that enters the ventilation system. It is controlled by the A/C auto amp. based on the position of the temperature dial. The air mix door motor LH receives position commands from the A/C auto amp. and reports actual door position back via an LCU (Local Control Unit) installed inside the motor. Commands and responses are sent across the LIN (Local Interconnect Network) to each motor simultaneously, with each motor having its own unique address, thereby only responding to requests sent to its specific address. The LCU reads the door position from a Position Balanced Resistor (PBR), also part of the motor, and returns that information to the A/C auto amp. The LCU switches the polarity of the circuits connected to the DC motor to drive the motor forward or backward as requested by the A/C auto amp. If the air mix door moves to a position less than 5% or more than 95% of its expected or allowed positions, the A/C auto amp. will set a DTC.

Component	Description
Air mix door motor RH	The air mix door controls the mix of hot or cold air that enters the ventilation system. It is controlled by the A/C auto amp. based on the position of the temperature dial. The air mix door motor RH receives position commands from the A/C auto amp. and reports actual door position back via an LCU (Local Control Unit) installed inside the motor. Commands and responses are sent across the LIN (Local Interconnect Network) to each motor simultaneously, with each motor having its own unique address, thereby only responding to requests sent to its specific address. The LCU reads the door position from a Position Balanced Resistor (PBR), also part of the motor, and returns that information to the A/C auto amp. The LCU switches the polarity of the circuits connected to the DC motor to drive the motor forward or backward as requested by the A/C auto amp. If the air mix door moves to a position less than 5% or more than 95% of its expected or allowed positions, the A/C auto amp. will set a DTC.
Ambient sensor	The ambient sensor measures the temperature of the air surrounding the vehicle. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases.
BCM	The BCM receives the fan ON and A/C ON signals from the A/C auto amp. and sends a compressor ON request to the ECM.
Blower motor	The blower motor varies the speed at which the air flows through the ventilation system.
ECM	The ECM sends a compressor ON request to the IPDM E/R based on the status of engine operation and load as well as refrigerant pressure information. If all the conditions are met for A/C operation, the ECM transmits the compressor ON request to the IPDM E/R. The ECM shares the refrigerant pressure sensor signal, engine RPM, and engine coolant temperature with the A/C auto amp. via CAN communication line.
Front blower motor relay	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 energized when the ignition switch is in the ON or START position.
Fuse Block (J/B)	Located in the passenger compartment, behind the left lower IP, the Fuse Block (J/B) contains the front blower motor relay and several fuses required for the air conditioner control system.
Intake door motor	The intake door motor controls the position of the intake door. Fresh air is allowed to enter the cabin in one position, and recirculated inside air is allowed to enter in the other position. At times the A/C auto amp. may command partial fresh or recirculation based on evaporator or coolant temperatures. The intake door motor receives position commands from the A/C auto amp. and reports actual door position back via an LCU (Local Control Unit) installed inside the motor. Commands and responses are sent across the LIN (Local Interconnect Network) to each motor simultaneously, with each motor having its own unique address, thereby only responding to requests sent to its specific address. The LCU reads the door position from a Position Balanced Resistor (PBR), also part of the motor, and returns that information to the A/C auto amp. The LCU switches the polarity of the circuits connected to the DC motor to drive the motor forward or backward as requested by the A/C auto amp. If the recirculation door moves to a position less than 5% or more than 95% of its expected or allowed positions, the A/C auto amp. will set a DTC.
Intake sensor	The intake sensor measures the temperature of the front evaporator fins. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases.
In-vehicle sensor	In-vehicle sensor measures temperature of intake air that flows through aspirator to passenger room. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases.
IPDM E/R	Refer to PCS-6, "RELAY CONTROL SYSTEM : System Description".
Mode door motor	The mode door controls the direction the conditioned air passes through the ventilation system. Through a series of levers and gears, the mode door controls the defrost door, the foot door, and the vent door. There are 5 preset positions: VENT, B/L, FOOT, D/F, and DEF. The FOOT position can be set to allow some airflow through to the defroster vent, or to completely block the defroster vent using the CONSULT. The mode door motor receives position commands from the A/C auto amp. and reports actual door position back via an LCU (Local Control Unit) installed inside the motor. Commands and responses are sent across the LIN (Local Interconnect Network) to each motor simultaneously, with each motor having its own unique address, thereby only responding to requests sent to its specific address. The LCU reads the door position from a Position Balanced Resistor (PBR), also part of the motor, and returns that information to the A/C auto amp. The LCU switches the polarity of the circuits connected to the DC motor to drive the motor forward or backward as requested by the A/C auto amp. The mode door has 5 expected positions and, therefore, can set up to 5 DTCs if the expected position is not reported back to the A/C auto amp.

Component	Description
Refrigerant pressure sensor	Refer to EC-38, "Refrigerant Pressure Sensor" for QR25DE and EC-599, "Refrigerant Pressure Sensor" for VQ35DE.
Sunload sensor	Sunload sensor measures sunload amount. This sensor is a dual system so that sunload for driver side and passenger side are measured separately. This sensor converts sunload amount to voltage signal by photodiode and transmits to A/C auto amp.

SYSTEM

System Diagram

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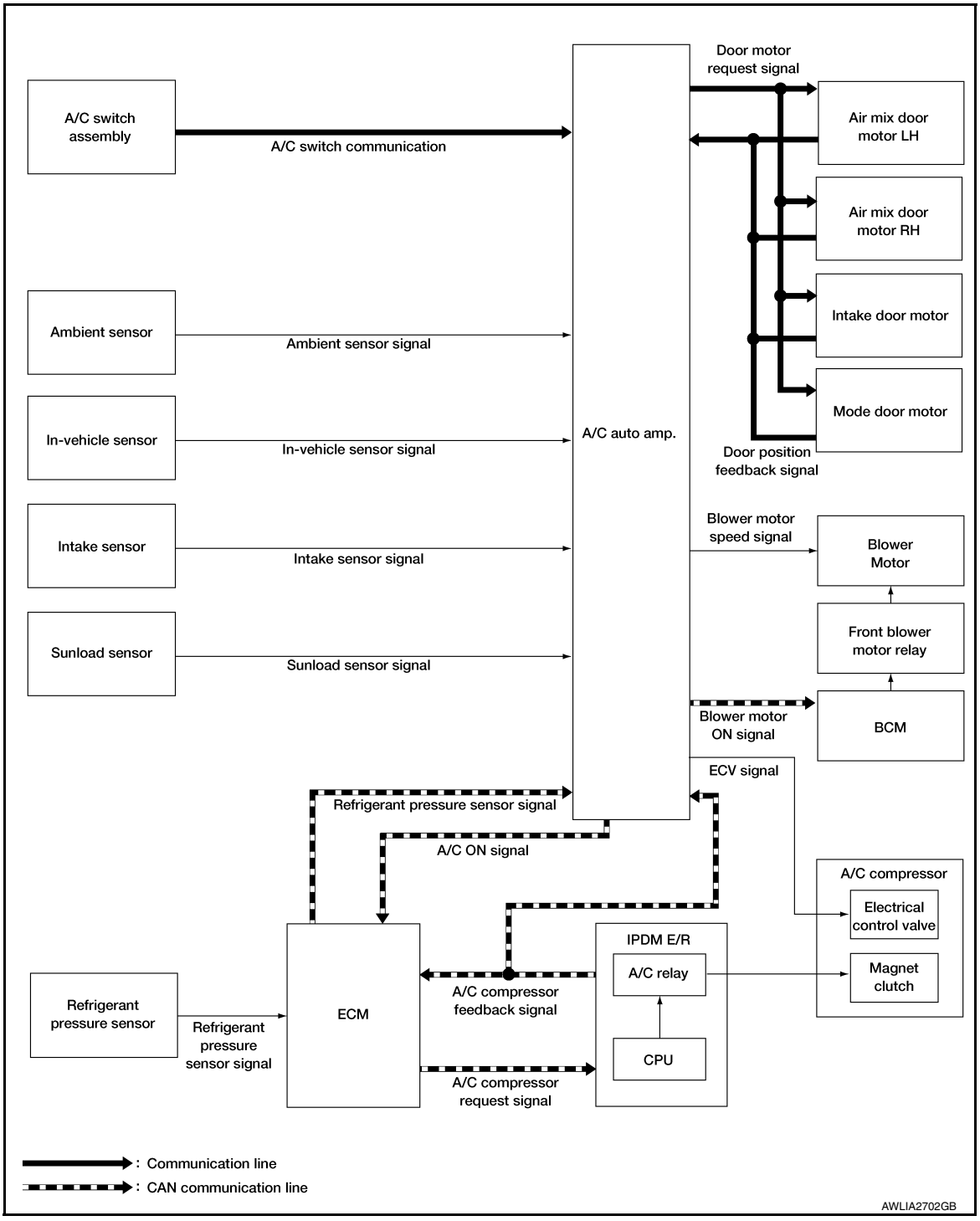


System Description

INFOID:0000000012600772

- 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-14, "Air Flow Control"
- HAC-15, "Air Inlet Control"
- HAC-16, "Air Outlet Control"

- HAC-16, "Compressor Control"
- HAC-17, "Door Control"
- HAC-20, "Temperature Control"
- Correction for input value of each sensor

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

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

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

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

Control by ECM
- Cooling fan control
  Refer to EC-61, "COOLING FAN CONTROL : System Description (with automatic air conditioner)" (QR25DE) or EC-613, "COOLING FAN CONTROL : System Description" (VQ35DE).
- Air conditioning cut control
  Refer to EC-58, "AIR CONDITIONING CUT CONTROL : System Description (with automatic air conditioner)" (QR25DE) or EC-611, "AIR CONDITIONING CUT CONTROL : System Description" (VQ35DE).

Control by IPDM E/R
- Relay control
  Refer to PCS-6, "RELAY CONTROL SYSTEM : System Description".
- Cooling fan control
  Refer to EC-61, "COOLING FAN CONTROL : System Description (with automatic air conditioner)" (QR25DE) or EC-613, "COOLING FAN CONTROL : System Description" (VQ35DE).

Control by BCM
- Relay control
  Refer to BCS-8, "BODY CONTROL SYSTEM : System Description".

Air Flow Control

INFOID:0000000012600773

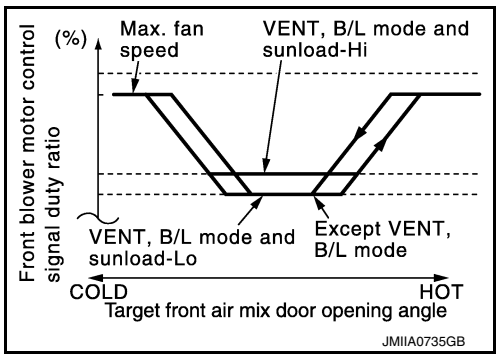
DESCRIPTION

• 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

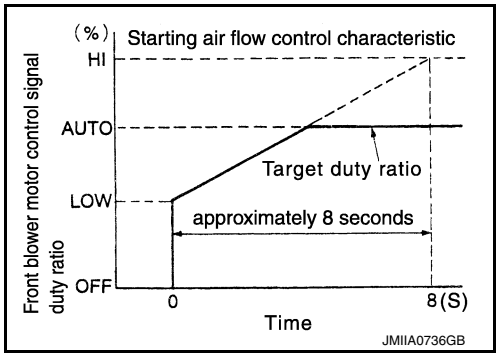
• A/C auto amp. decides target air flow depending on target air mix door opening angle.
• A/C auto amp. changes duty ratio of blower motor control signal and controls the air flow continuously so that air flow matches the target air flow.

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



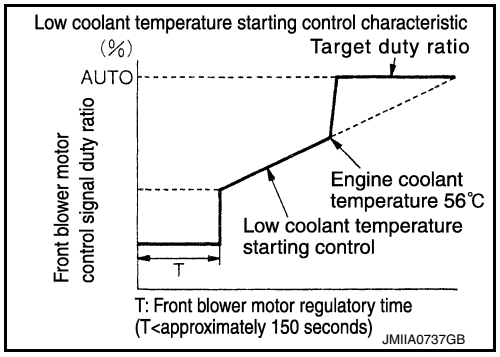
STARTING AIR FLOW CONTROL

- 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.

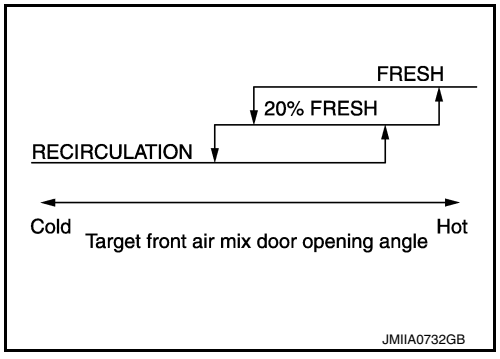
FAN SPEED CONTROL AT DOOR MOTOR OPERATION

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:0000000012600774

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



Air Outlet Control

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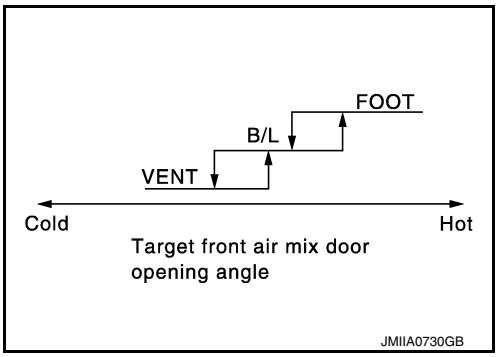
- While air outlet is in automatic control, A/C auto amp. selects the mode door position depending on a target air mix door angle and outlet air temperature calculated from sunload.
- If ambient temperature is excessively low, D/F is selected to prevent windshield fogging when air outlet is set to FOOT.



Compressor Control

INFOID:0000000012600776

DESCRIPTION

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

COMPRESSOR PROTECTION CONTROL AT PRESSURE MALFUNCTION

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

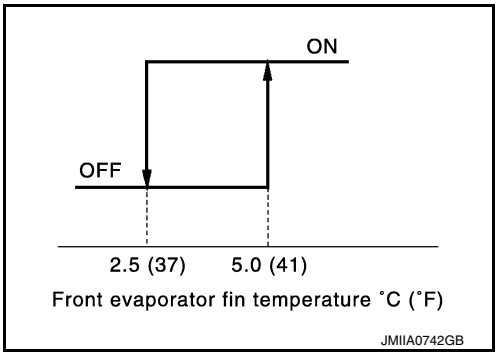
- 3.12 MPa (31.82 kg/cm^2, 452.4 psi) or more (When the engine speed is less than 1,500 rpm)
- 2.74 MPa (27.95 kg/cm^2, 397.3 psi) or more (When the engine speed is 1,500 rpm or more)
- 0.14 MPa (1.43 kg/cm^2, 20.3 psi) or less

COMPRESSOR OIL CIRCULATION CONTROL

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

LOW TEMPERATURE PROTECTION CONTROL

- When intake sensor detects that front evaporator fin temperature is 2.5°C (37°F) or less, A/C auto amp. requests ECM to turn compressor OFF, and stops the compressor.
- When the front evaporator fin temperature returns to 5.0°C (41°F) or more, the 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 compressor activation depending on ambient temperature.

AIR CONDITIONING CUT CONTROL

When set engine is running is excessively high load condition, ECM requests IPDM E/R to turn A/C relay OFF, and stops the compressor. Refer to EC-58, "AIR CONDITIONING CUT CONTROL : System Description (with automatic air conditioner)" (QR25DE) or EC-611, "AIR CONDITIONING CUT CONTROL : System Description" (VQ35DE) for details.

Door Control

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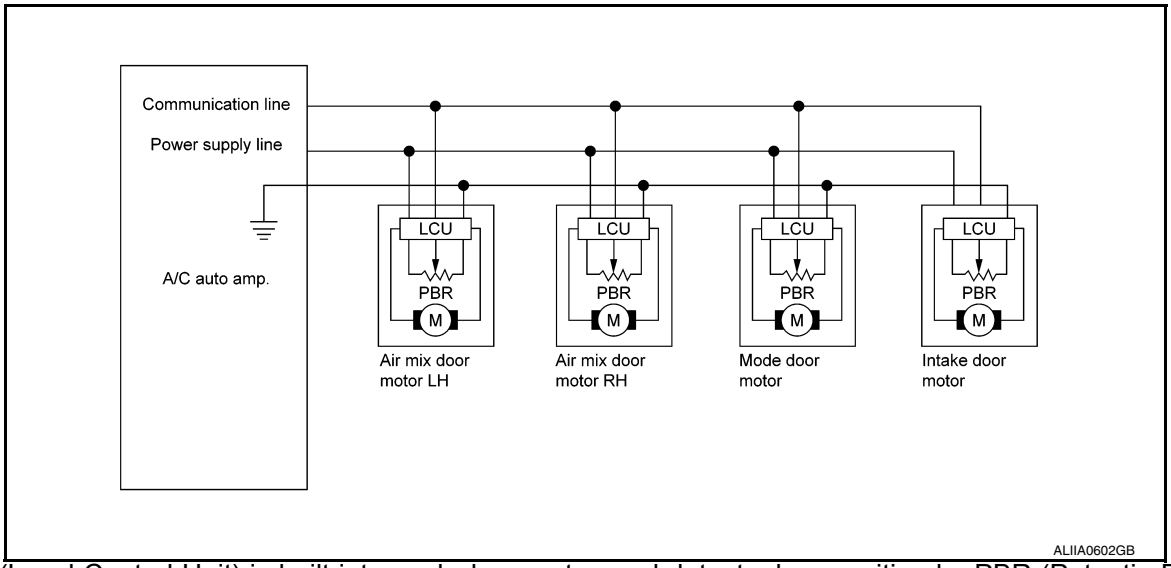
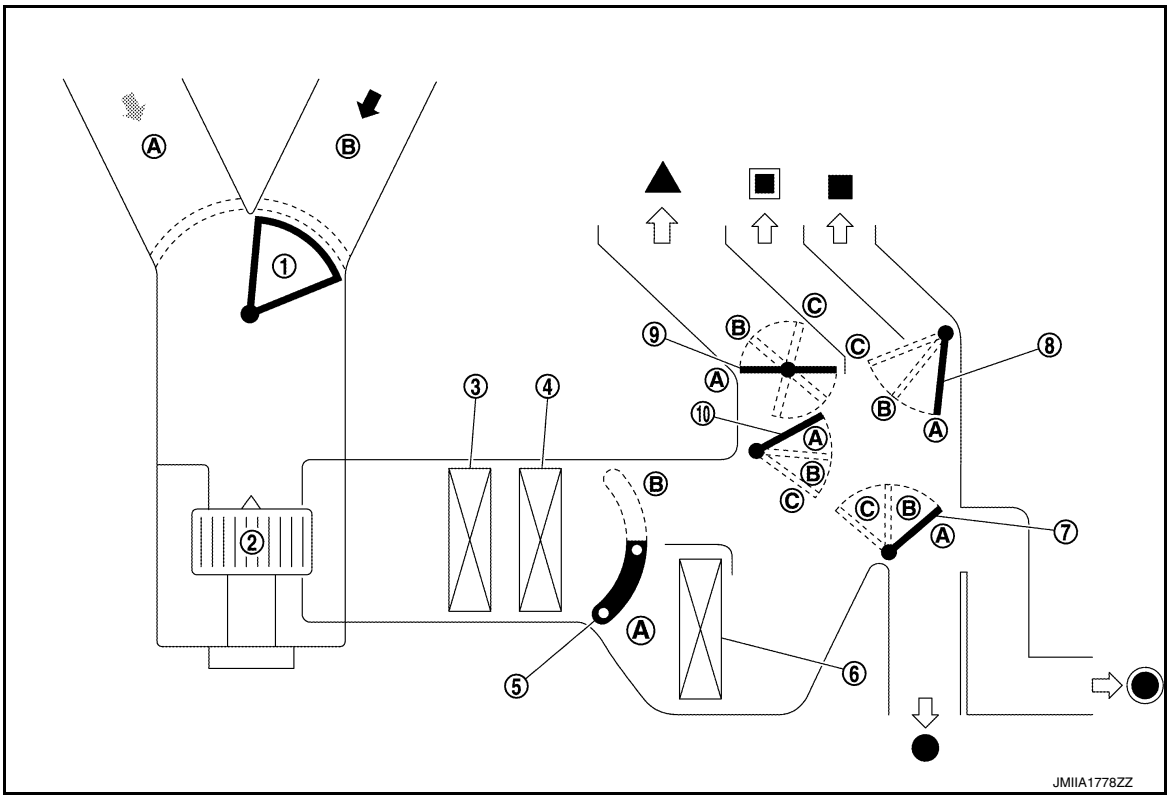
DOOR MOTOR CONTROL



- 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

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						
MODE switch			A	A	A	A	—	—	—
			B	B	A	B			
			C	C	B	B			
			C	B	B	B			
DEF switch			C	A	C	C			
Intake switch*			—	—	—	—	A		
							B		
Temperature control switch (Driver side)	DUAL switch: OFF	Full cold [18°C (60°F)]					—	A	
		18.5°C – 31.5°C (61°F – 89 °F)						AUTO	
		Full hot [32°C (90°F)]						B	
Temperature control switch (Driver side)	DUAL switch: ON	Full cold [18°C (60°F)]						A	—
		18.5°C – 31.5°C (61°F – 89 °F)						AUTO	
		Full hot [32°C (90°F)]						B	
Temperature control switch (Passenger side)		Full cold [18°C (60°F)]						—	A
		18.5°C – 31.5°C (61°F – 89 °F)							AUTO
		Full hot [32°C (90°F)]							B
ON·OFF switch	OFF		C	C	B	B	B		—

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

AIR DISTRIBUTION

VENT MODE ( )					
OUTLET	VENT				
	ASST	CTR		DR	RR
		ASST	DR		
AIR FLOW DISTRIBUTION RATIO (%)	22	22	22	22	12

B/L MODE ( )									
OUTLET	VENT					FOOT			
	ASST	CTR		DR	RR	Fr ASST	Fr DR	Rr ASST	Rr DR
		ASST	DR						
AIR FLOW DISTRIBUTION RATIO (%)	11	11	11	11	17	14.5	14.5	5	5

D/F1 MODE ( )											
OUTLET	VENT					FOOT				DEF	
	ASST	CTR		DR	RR	Fr ASST	Fr DR	Rr ASST	Rr DR	Fr	Side
		ASST	DR								
AIR FLOW DISTRIBUTION RATIO (%)	5	0	0	5	17	18	18	7	7	18	5

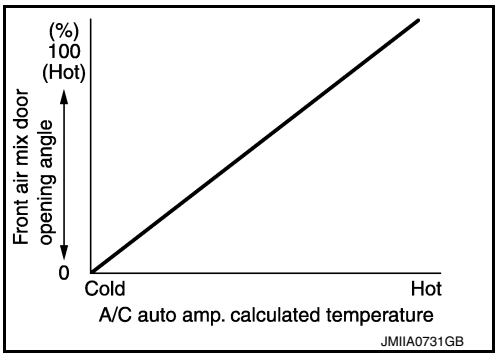
D/F2 MODE ( )											
OUTLET	VENT					FOOT				DEF	
	ASST	CTR		DR	RR	Fr ASST	Fr DR	Rr ASST	Rr DR	Fr	Side
		ASST	DR								
AIR FLOW DISTRIBUTION RATIO (%)	5	0	0	5	17	14	14	6.5	6.5	25	7

DEF MODE ( )											
OUTLET	VENT					FOOT				DEF	
	ASST	CTR		DR	RR	Fr ASST	Fr DR	Rr ASST	Rr DR	Fr	Side
		ASST	DR								
AIR FLOW DISTRIBUTION RATIO (%)	5	0	0	5	14	0	0	0	0	60	16

Temperature Control

INFOID:0000000012600778

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



Fail-safe

INFOID:0000000012600779

FAIL-SAFE FUNCTION

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

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**

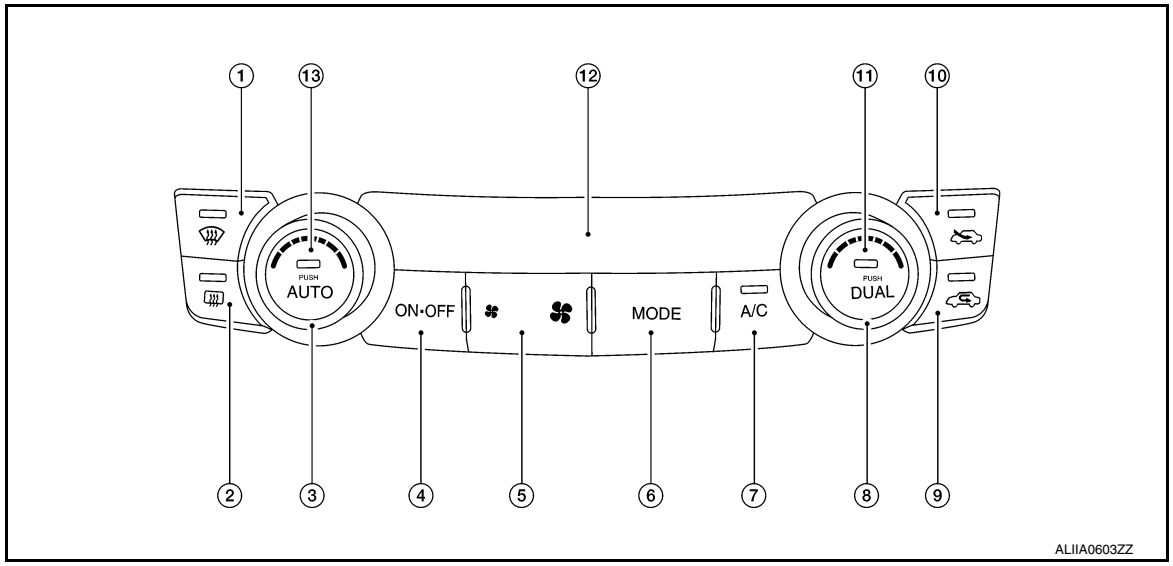
OPERATION

Switch Name and Function

INFOID:0000000012600780

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 • Compressor: ON
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.) - Compressor: ON • 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 - 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 - Compressor: ON • When defroster mode is turned OFF, entire front air conditioning system is set to auto 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 cancelled 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. (Compressor control state returns to the previous state before front air conditioning system 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	Compressor control (switch indicator) changes between ON ⇔ OFF each time this switch is pressed while front blower motor is operated. **NOTE:** • A/C switch cannot be turned ON when front blower motor is OFF. • A/C switch cannot be turned OFF when air outlet is D/F or DEF. • Air inlet changes to fresh air intake when A/C switch is turned OFF while air inlet is set to recirculation.
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 inlet and air outlet become the automatic control.

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 D/F or DEF position, air inlet cannot 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:0000000012600781

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-31, "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 airflow temperature controlled by the temperature setting, the auto amplifier control temperature can be adjusted to compensate for the temperature setting.	HAC-49, "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-50, "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-49, "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-49, "Foot Position Setting Trimmer"
TARGET EVAPORATOR TEMP UPPER LIMIT SETTING	Set the target evaporator upper temperature limit.	HAC-50, "Target Evaporator Temp Upper Limit"

NOTE:

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

ACTIVE TEST

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

HVAC TEST

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

	Test item						
	MODE 1	MODE 2	MODE 3	MODE 4	MODE 5	MODE 6	MODE 7
Blower motor duty ratio	30%	30%	60%	HI	HI	60%	HI
A/C compressor (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.

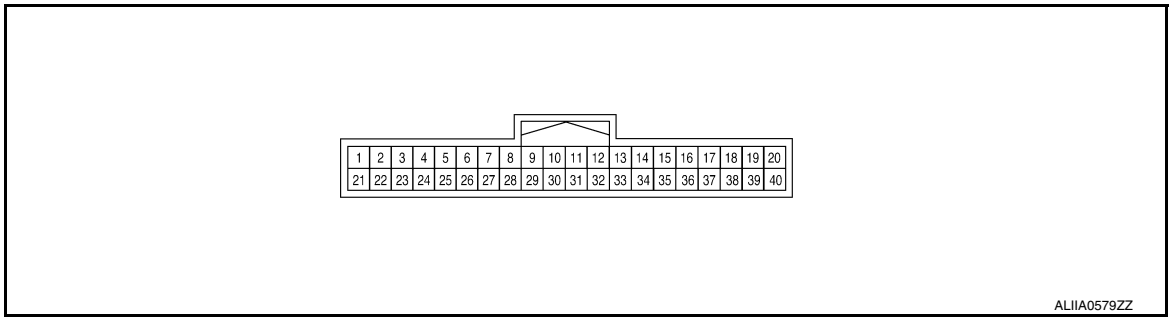
Reference Value

INFOID:0000000012600782

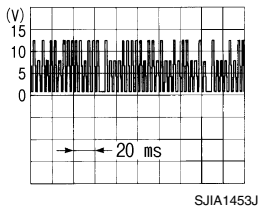
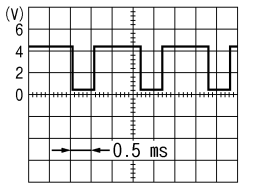
VALUES ON THE DIAGNOSIS TOOL

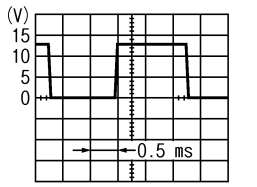
Monitor item	Condition		Value/Status
AMB TEMP SEN	Ignition switch ON	—	22 - 131°F (–30 - 55°C)
IN-VEH TEMP	Ignition switch ON	—	22 - 131°F (–30 - 55°C)
INT TEMP SEN	Ignition switch ON	—	22 - 131°F (–30 - 55°C)
SUNLOAD SEN	Ignition switch ON	—	0 - 1395 w/m^2 (0 - 1200 kcal/m^2·h)
AMB SEN CAL	Ignition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

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	−	Signal name	Input/ Output			
1 (L)	—	CAN-H	Input/ Output	—		—
2 (B)	—	Ground	—	—		—
3 (SB)	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 (BR)	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 (G)	Ground	Sunload sensor signal	Input	Ignition switch ON		0 – 4.8 V Output voltage varies with sunload amount
13 (P)	Ground	IGN 2	Input	Ignition switch ON		Battery voltage
15 (Y)	Ground	RR DEF switch	Output	Defroster switch	OFF	0 V
					ON	5 V
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 (P)	Ground	Front blower motor control signal	Output	• Ignition switch ON • Front fan speed: 1st speed (manual)		 JSIIA0096ZZ
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	—		—

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	−	Signal name	Input/ Output			
22 (B)	—	Ground	—	—		—
23 (G)	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
35 (P)	Ground	RR DEF feedback	Input	Defroster switch	OFF	0 V
					ON	Battery voltage
37 (B)	—	ACTR Ground	—	—		—
40 (G)	Ground	ECV (electrical control valve) control signal	Output	• Ignition switch ON • Active test (HVAC test): MODE 1		 SJIA1607E

*1: With heated steering wheel

DTC Inspection Priority Chart

INFOID:0000000012600783

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: AMB TEMP SEN (SHORT) • B257C: AMB TEMP SEN (OPEN) • B2578: IN CAR SENSOR (OUT OF RANGE[LOW]) • B2579: IN CAR SENSOR (OUT OF RANGE[HI]) • B2581: EVAP TEMP SEN (SHORT) • B2582: EVAP TEMP SEN (OPEN) • B2630: SUNLOAD SEN (SHORT) • B2631: SUNLOAD SEN (OPEN) • B2632: DR AIRMIX ACTR (SHORT) • B2633: DR AIRMIX ACTR (OPEN) • B2634: PASS AIRMIX ACTR (SHORT) • B2635: PASS AIRMIX ACTR (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:0000000012600784

DTC	Items (CONSULT screen terms)	Reference
U1000	CAN COMM CIRCUIT	HAC-54, "DTC Logic"
U1010	CONTROL UNIT (CAN)	HAC-55, "DTC Logic"
B257B	AMB TEMP SEN (SHORT)	HAC-59, "DTC Logic"
B257C	AMB TEMP SEN (OPEN)	HAC-59, "DTC Logic"
B2578	IN CAR SENSOR (OUT OF RANGE [LOW])	HAC-56, "DTC Logic"
B2579	IN CAR SENSOR (OUT OF RANGE [HI])	HAC-56, "DTC Logic"
B2581	EVAP TEMP SEN (SHORT)	HAC-62, "DTC Logic"
B2582	EVAP TEMP SEN (OPEN)	HAC-62, "DTC Logic"
B2630*	SUNLOAD SEN (SHORT)	HAC-65, "DTC Logic"
B2631*	SUNLOAD SEN (OPEN)	HAC-65, "DTC Logic"
B2632	DR AIRMIX ACTR (SHORT)	HAC-68, "DTC Logic"
B2633	DR AIRMIX ACTR (OPEN)	HAC-68, "DTC Logic"
B2634	PASS AIRMIX ACTR (SHORT)	HAC-70, "DTC Logic"
B2635	PASS AIRMIX ACTR (OPEN)	HAC-70, "DTC Logic"
B2636	DR VENT DOOR FAIL	HAC-72, "DTC Logic"
B2637	DR B/L DOOR FAIL	HAC-72, "DTC Logic"
B2638	DR D/F1 DOOR FAIL	HAC-72, "DTC Logic"
B2639	DR DEF DOOR FAIL	HAC-72, "DTC Logic"
B263D	FRE DOOR FAIL	HAC-74, "DTC Logic"
B263E	20P FRE DOOR FAIL	HAC-74, "DTC Logic"
B263F	REC DOOR FAIL	HAC-74, "DTC Logic"
B2654	D/F2 DOOR FAIL	HAC-72, "DTC Logic"

DTC	Items (CONSULT screen terms)	Reference
B2655	B/L2 DOOR FAIL	HAC-72, "DTC Logic"
B27B0	A/C AUTO AMP.	HAC-76, "DTC Logic"

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

ECM, IPDM E/R, BCM

List of ECU Reference

INFOID:0000000012600785

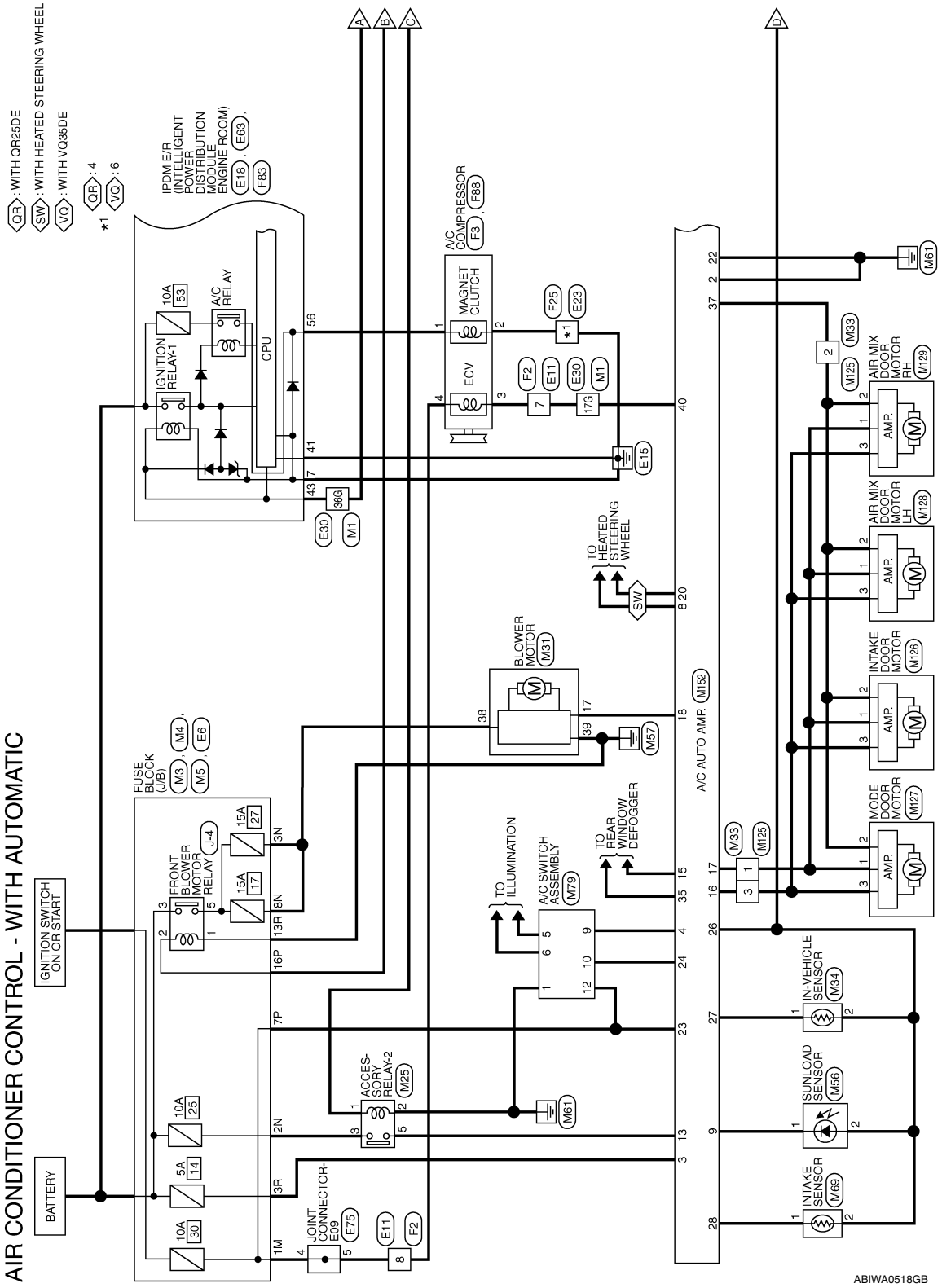
ECU	Reference
ECM	EC-91, "Reference Value" (QR25DE) EC-656, "Reference Value" (VQ35DE)
	EC-106, "Fail Safe" (QR25DE) EC-673, "Fail-safe" (VQ35DE)
	EC-108, "DTC Inspection Priority Chart" (QR25DE) EC-674, "DTC Inspection Priority Chart" (VQ35DE)
	EC-110, "DTC Index" (QR25DE) EC-676, "DTC Index" (VQ35DE)
IPDM E/R	PCS-13, "Reference Value"
	PCS-20, "Fail Safe"
	PCS-21, "DTC Index"
BCM	BCS-31, "Reference Value"
	BCS-50, "Fail Safe"
	BCS-51, "DTC Inspection Priority Chart"
	BCS-52, "DTC Index"

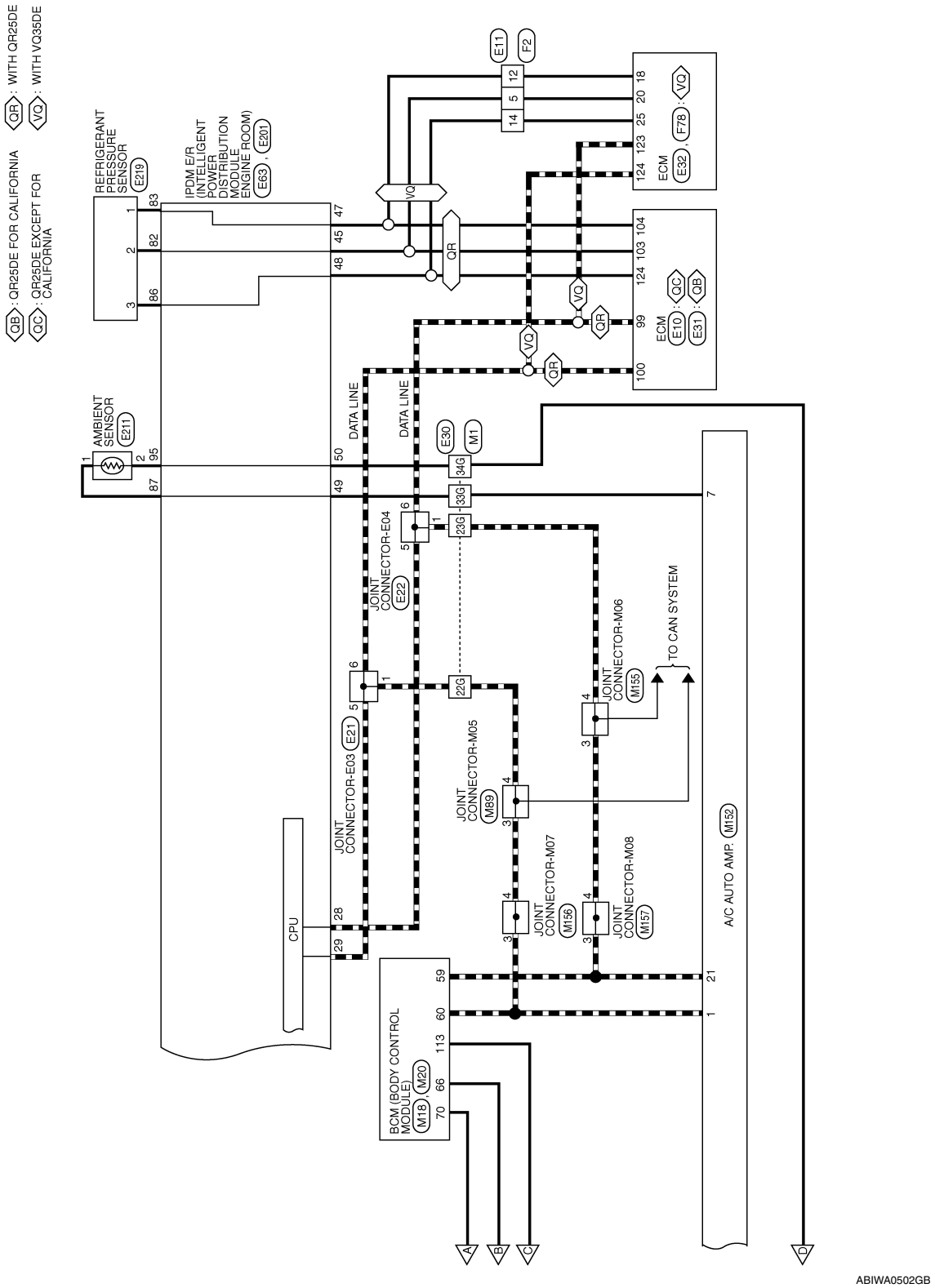
WIRING DIAGRAM

AIR CONDITIONER CONTROL

Wiring Diagram

INFOID:0000000012600786

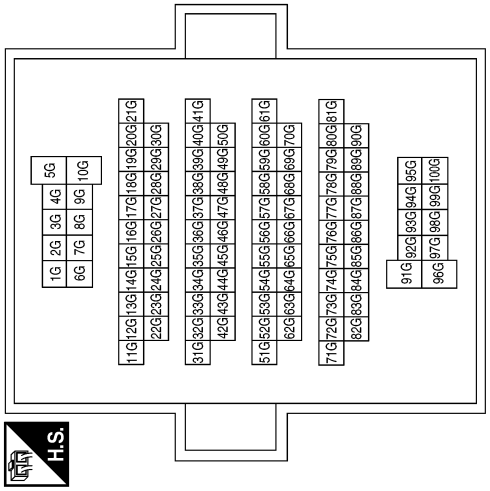



QR : WITH QR25DE
VQ : WITH VQ35DE
QB : QR25DE FOR CALIFORNIA
QC : QR25DE EXCEPT FOR CALIFORNIA
REFRIGERANT PRESSURE SENSOR E219
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) E63, E201
AMBIENT SENSOR E211
ECM E32, F78
ECM E10, E31
DATA LINE
JOINT CONNECTOR-E04 E22
JOINT CONNECTOR-E03 E21
JOINT CONNECTOR-M05 M89
JOINT CONNECTOR-M06 M155
JOINT CONNECTOR-M07 M156
JOINT CONNECTOR-M08 M157
TO CAN SYSTEM
A/C AUTO AMP. M152
CPU
BCM (BODY CONTROL MODULE) M18, M20
E11
F2
E30
M1
ABIWA0502GB

AIR CONDITIONER CONTROL CONNECTORS - WITH AUTOMATIC

Connector No.	M1
Connector Name	WIRE TO WIRE
Connector Color	WHITE

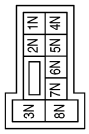
H.S.



Terminal No.	Color of Wire	Signal Name
17G	G	–
22G	L	–
23G	P	–
33G	L	–
34G	W	–
36G	G	–

Connector No.	M3
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
2N	LG	–
3N	W	–
8N	W	–

Connector No.	M4
Connector Name	FUSE BLOCK (J/B)
Connector Color	BROWN

H.S.

Terminal No.	Color of Wire	Signal Name
3R	SB	–
13R	B	–

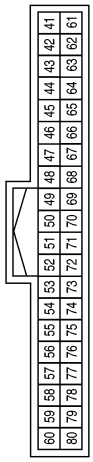
Connector No.	M5
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE

H.S.

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

Connector No.	M18
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	BLACK

H.S.



Terminal No.	Color of Wire	Signal Name
59	P	CAN-L
60	L	CAN-H
66	R	BLOWER FAN RELAY OUT
70	G	IGN USM OUT 1

ABIIA1156GB

Connector No.	M20
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	BLACK

Terminal No.	Color of Wire	Signal Name
113	P	ACC RELAY OUT

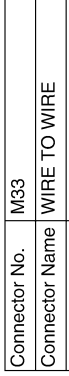
Connector No.	M25
Connector Name	ACCESSORY RELAY-2
Connector Color	BLUE

Terminal No.	Color of Wire	Signal Name
1	W	–
2	B	–
3	LG	–
5	P	–

Connector No.	M31
Connector Name	BLOWER MOTOR
Connector Color	WHITE

Terminal No.	Color of Wire	Signal Name
17	P	–
38	W	–
39	B	–

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



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

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

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

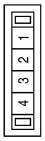
Connector No.	M56
Connector Name	SUNLOAD SENSOR
Connector Color	BLACK

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

ABIIA0898GB

Connector No.	M89
Connector Name	JOINT CONNECTOR-M05
Connector Color	WHITE

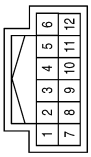
H.S.



Terminal No.	Color of Wire	Signal Name
3	L	–
4	L	–

Connector No.	M79
Connector Name	A/C SWITCH ASSEMBLY
Connector Color	WHITE

H.S.



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

Connector No.	M69
Connector Name	INTAKE SENSOR
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	P	–
2	W	–

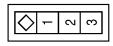
Connector No.	M127
Connector Name	MODE DOOR MOTOR
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	L/R	–
2	B	–
3	L/W	–

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

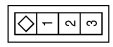
H.S.



Terminal No.	Color of Wire	Signal Name
1	L/R	–
2	B	–
3	L/W	–

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

H.S.



Terminal No.	Color of Wire	Signal Name
1	L/R	–
2	B	–
3	L/W	–

ABIIA0899GB

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

H.S.

Terminal No.	Color of Wire	Signal Name
1	L/R	–
2	B	–
3	L/W	–

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

H.S.

Terminal No.	Color of Wire	Signal Name
1	L/R	–
2	B	–
3	L/W	–

Connector No.	M152
Connector Name	A/C AUTO AMP.
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	L	CAN-H
2	B	GND
3	SB	BATT
4	BR	TX FR
5	–	–
6	–	–
7	L	AMB SENS
8	BR	STRG HTR SW
9	G	SUN SENS
10	–	–
11	–	–
12	–	–
13	P	IGN2
14	–	–
15	Y	RR DEF SW
16	G	ACTR (LIN)
17	W	VACTR
18	P	FR FAN PWM
19	–	–
20	P	STRG HTR RLY
21	P	CAN-L
22	B	P GND
23	G	IGN
24	V	RX FR
25	–	–
26	W	SENS GND
27	G	INC SENS
28	P	INT SENS
29	–	–
30	–	–
31	–	–
32	–	–
33	–	–
34	–	–
35	P	RR DEF F/B
36	–	–
37	B	ACTR GND
38	–	–
39	–	–
40	G	ECV OUT

ABIIA1711GB

Connector No.	M155
Connector Name	JOINT CONNECTOR-M06
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
3	P	–
4	P	–

Connector No.	M156
Connector Name	JOINT CONNECTOR-M07
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
3	L	–
4	L	–

Connector No.	M157
Connector Name	JOINT CONNECTOR-M08
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
3	P	–
4	P	–

Connector No.	E6
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE

H.S.

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

Connector No.	E10
Connector Name	ECM (QR25DE EXCEPT FOR CALIFORNIA)
Connector Color	GRAY

H.S.

Terminal No.	Color of Wire	Signal Name
99	P	CAN-L
100	L	CAN-H
103	V	REFRIGERANT PRESSURE SENSOR
104	O	SENSOR POWER SUPPLY
124	SB	SENSOR GROUND

Connector No.	E11
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
5	P	– (WITH VQ35DE)
7	P	–
8	BG	–
12	BG	– (WITH VQ35DE)
14	SB	–

ABIIA1712GB

Connector No.	E18
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
7	B	GND (POWER)

Connector No.	E21
Connector Name	JOINT CONNECTOR-E03
Connector Color	GRAY

H.S.

Terminal No.	Color of Wire	Signal Name
1	L	–
5	L	–
6	L	–

Connector No.	E22
Connector Name	JOINT CONNECTOR-E04
Connector Color	GRAY

H.S.

Terminal No.	Color of Wire	Signal Name
1	P	–
5	P	–
6	P	–

Connector No.	E23
Connector Name	WIRE TO WIRE
Connector Color	BROWN

H.S.

Terminal No.	Color of Wire	Signal Name
4	B	–
6	B	–

Connector No.	E30
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
17G	P	–
22G	L	–
23G	P	–
33G	P	–
34G	BG	–
36G	LG	–

ABIIA1713GB

Connector No.	E31
Connector Name	ECM (QR25DE FOR CALIFORNIA)
Connector Color	GRAY

H.S.

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

Terminal No.	Color of Wire	Signal Name
99	P	CAN-L
100	L	CAN-H
103	V	REFRIGERANT PRESSURE SENSOR
104	O	SENSOR POWER SUPPLY
124	SB	SENSOR GROUND

Connector No.	E32
Connector Name	ECM (WITH VQ35DE)
Connector Color	BLACK

H.S.

121	125	129	133	137	141	145	149
122	126	130	134	138	142	146	150
123	127	131	135	139	143	147	151
124	128	132	136	140	144	148	152

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

Connector No.	E63
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

H.S.

19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50

Terminal No.	Color of Wire	Signal Name
28	P	CAN-L
29	L	CAN-H
41	B	GND (SIGNAL)

Terminal No.	Color of Wire	Signal Name
43	LG	IGN SIGNAL
45	V	PD SENS SIG-E/R (WITH QR25DE)
45	P	PD SENS SIG-E/R (WITH VQ35DE)
47	O	PD SENS PWR-E/R (WITH QR25DE)
47	BG	PD SENS PWR-E/R (WITH VQ35DE)
48	SB	PD SENS GND-E/R
49	P	AMB SENS SIG-E/R
50	BG	AMB SENS GND-E/R

Connector No.	E75
Connector Name	JOINT CONNECTOR-E09
Connector Color	BLACK

H.S.

5	4	3	2	1
10	9	8	7	6

Terminal No.	Color of Wire	Signal Name
4	BG	–
5	BG	–

ABIIA1714GB

Connector No.	E201
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
82	W	PD SENS SIG-FEM
83	G	PD SENS PWR-FEM
86	R	PD SENS GND-FEM
87	BG	AMB SENS SIG-FEM
95	R	AMB SENS GND-FEM

Connector No.	E211
Connector Name	AMBIENT SENSOR
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	BG	–
2	R	–

Connector No.	E219
Connector Name	REFRIGERANT PRESSURE SENSOR
Connector Color	BLACK

H.S.

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

Connector No.	F2
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
5	SB	– (WITH VQ35DE)
7	SB	–
8	L	– (WITH QR25DE)
8	GR	– (WITH VQ35DE)
12	R	– (WITH VQ35DE)
14	P	–

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

H.S.

Terminal No.	Color of Wire	Signal Name
1	SB	– (WITH QR25DE)
1	P	– (WITH VQ35DE)
2	B	–

Connector No.	F25
Connector Name	WIRE TO WIRE
Connector Color	BROWN

H.S.

Terminal No.	Color of Wire	Signal Name
4	B	–
6	B	–

ABIIA1715GB

Connector No.	F78
Connector Name	ECM (WITH VQ35DE)
Connector Color	BLACK

H.S.

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

Connector No.	F83
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
56	SB	A/C COMP (WITH QR25DE)
56	P	A/C COMP (WITH VQ35DE)

Connector No.	F88
Connector Name	A/C COMPRESSOR
Connector Color	GRAY

H.S.

Terminal No.	Color of Wire	Signal Name
3	SB	–
4	L	– (WITH QR25DE)
4	GR	– (WITH VQ35DE)

ABIIA1716GB

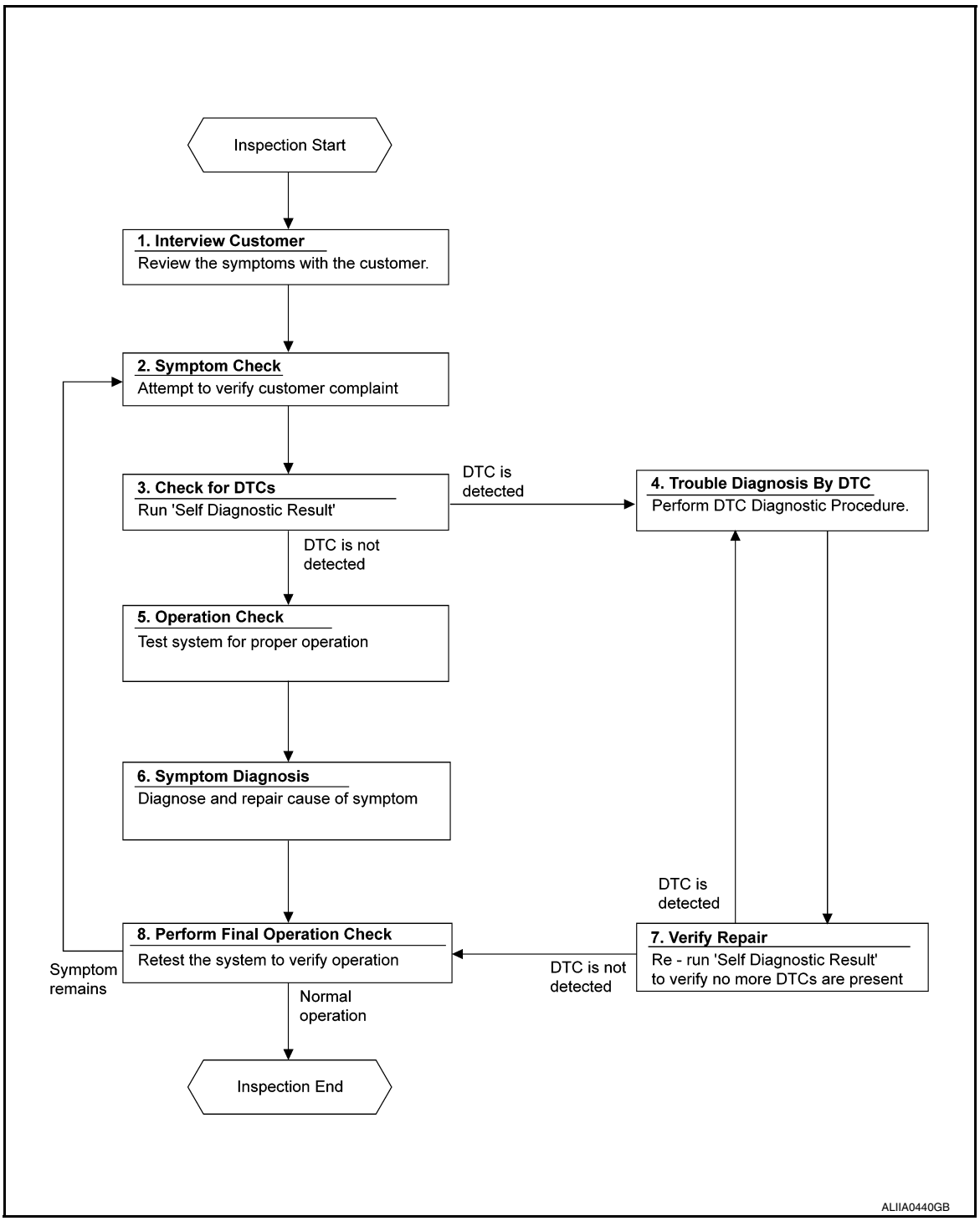
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:0000000012600787

OVERALL SEQUENCE



DETAILED FLOW

1.INTERVIEW CUSTOMER

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

>> GO TO 2.

2.SYMPTOM CHECK

Verify symptoms.

>> GO TO 3.

3.CHECK FOR DTCS

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

Is any DTC detected?

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

4.PERFORM DTC DIAGNOSTIC PROCEDURE

Perform the diagnostic procedure for the detected DTC. Refer to HAC-30, "DTC Inspection Priority Chart".

>> GO TO 7.

5.OPERATION CHECK

Perform the operation check. Refer to HAC-47, "Work Procedure".

>> GO TO 6.

6.SYMPTOM DIAGNOSIS

Check the symptom diagnosis table. Refer to HAC-93, "Diagnosis Chart By Symptom".

>> GO TO 8.

7.VERIFY REPAIR.

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

Is any DTC detected?

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

8.PERFORM FINAL OPERATION CHECK

Perform the operation check. Refer to HAC-47, "Work Procedure".

Does it operate normally?

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

OPERATION INSPECTION

Work Procedure

INFOID:0000000012600788

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-83, "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-13, "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-86, "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.

SYSTEM SETTING

Temperature Setting Trimmer

INFOID:0000000012600789

Description

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

How to set

Using CONSULT, perform “TEMP SET CORRECT” in “Work support” of “HVAC”.

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

NOTE:

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

Foot Position Setting Trimmer

INFOID:0000000012600790

Description

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

How to set

Using CONSULT, perform “BLOW SET” in “Work support” 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:0000000012600791

Description

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

How to set

Using CONSULT, perform “FRE MEMORY SET” in “Work support” of “HVAC”.

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

NOTE:

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

Inlet Port Memory Function (REC)

INFOID:0000000012600792

Description

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

How to set

Using CONSULT, perform “REC MEMORY SET” in “Work support” of “HVAC”.

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

NOTE:

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

Target Evaporator Temp Upper Limit

INFOID:0000000012600793

DESCRIPTION

Set the target evaporator temperature upper limit.

HOW TO SET

With CONSULT

Perform the “TARGET EVAPORATOR TEMP UPPER LIMIT SETTING” in “Work support” of “HVAC”.

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

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

Description

INFOID:0000000012600794

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:0000000012600795

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-101, "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-52, "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-52, "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:0000000012600796

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:0000000012600797

1.WRITING MODE SELECTION

CONSULT
Select “Reprogramming, 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-53, "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:0000000012600798

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

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000012600799

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-35, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart".

DTC Logic

INFOID:0000000012600800

DTC DETECTION LOGIC

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
U1000	CAN COMM CIRCUIT	When A/C auto amp. is not transmitting or receiving CAN communication signal for 2 or more seconds.	CAN communication system

DTC CONFIRMATION PROCEDURE

1.PERFORM SELF-DIAGNOSIS

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

Is DTC detected?

YES >> Refer to HAC-54, "Diagnosis Procedure".
NO >> Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000012600801

1.CHECK CAN COMMUNICATION SYSTEM

Check CAN communication system. Refer to LAN-19, "Trouble Diagnosis Flow Chart".

>> Inspection End.

U1010 CONTROL UNIT (CAN)

Description

INFOID:0000000012600802

Initial diagnosis of A/C auto amp.

DTC Logic

INFOID:0000000012600803

DTC DETECTION LOGIC

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

DTC CONFIRMATION PROCEDURE

1.PERFORM SELF-DIAGNOSIS

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

Is DTC detected?

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

Diagnosis Procedure

INFOID:0000000012600804

1.REPLACE A/C AUTO AMP.

Replace A/C auto amp. Refer to HAC-101, "Removal and Installation".

>> Inspection End.

B2578, B2579 IN-VEHICLE SENSOR

DTC Logic

INFOID:0000000012600805

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

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B2578	IN-VEHICLE SENSOR	The in-vehicle sensor recognition temperature is too high.	• In-vehicle sensor • A/C auto amp. • Harness or connectors (The sensor circuit is open or shorted.)
B2579		The in-vehicle sensor recognition temperature is too low.	

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

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

Is DTC detected?

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

Diagnosis Procedure

INFOID:0000000012600806

Regarding Wiring Diagram information, refer to HAC-34, "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 front 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-57, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-101, "Removal and Installation".
NO >> Replace in-vehicle sensor. Refer to HAC-103, "Removal and Installation".

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

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

In-vehicle sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M34	1	M152	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-101, "Removal and Installation".
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000012600807

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-103, "Removal and Installation".

B257B, B257C AMBIENT SENSOR

DTC Logic

INFOID:0000000012600808

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

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B257B	AMBIENT SENSOR	The ambient sensor recognition temperature is too high.	• Ambient sensor • A/C auto amp. • Harness or connectors (The sensor circuit is open or shorted.)
B257C		The ambient sensor recognition temperature is too low.	

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

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

Is DTC detected?

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

Diagnosis Procedure

INFOID:0000000012600809

Regarding Wiring Diagram information, refer to HAC-34, "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-60, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-101, "Removal and Installation".
NO >> Replace ambient sensor. Refer to HAC-102, "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	M152	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-101, "Removal and Installation".
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000012600810

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-102, "Removal and Installation".

B2581, B2582 INTAKE SENSOR

DTC Logic

INFOID:0000000012600811

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

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B2581	INTAKE SENSOR	The intake sensor recognition temperature is too high.	• Intake sensor • A/C auto amp. • Harness or connectors (The sensor circuit is open or shorted.)
B2582		The intake sensor recognition temperature is too low.	

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

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

Is DTC detected?

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

Diagnosis Procedure

INFOID:0000000012600812

Regarding Wiring Diagram information, refer to HAC-34, "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-63, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-101, "Removal and Installation".
NO >> Replace intake sensor. Refer to HAC-105, "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	M152	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-101, "Removal and Installation".
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000012600813

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-105, "Removal and Installation".

B2630, B2631 SUNLOAD SENSOR

DTC Logic

INFOID:0000000012600814

DTC DETECTION LOGIC

NOTE:

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

DTC	Items (CONSULT screen terms)	Diagnostic item is detected when...	Possible cause
B2630	SUNLOAD SEN (SHORT)	Detected calorie at sunload sensor 1395 w/m^2 (1200 kcal/m^2·h) or more	• 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 CONFIRMATION PROCEDURE

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT

With CONSULT

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

NOTE:

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

Is DTC No.“B2630” or “B2631” displayed?

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

Diagnosis Procedure

INFOID:0000000012600815

Regarding Wiring Diagram information, refer to HAC-34, "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 M56 terminal 1 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 M56 terminal 2 and A/C auto amp. harness connector M152 terminal 26.

Sunload sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M56	2	M152	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-101, "Removal and Installation".
NO >> Replace sunload sensor. Refer to HAC-104, "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 M56 terminal 1 and A/C auto amp. harness connector M152 terminal 9.

Sunload sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M56	1	M152	9	Yes

4. Check continuity between sunload sensor harness connector M56 terminal 1 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-101, "Removal and Installation".
NO >> Repair harness or connector.

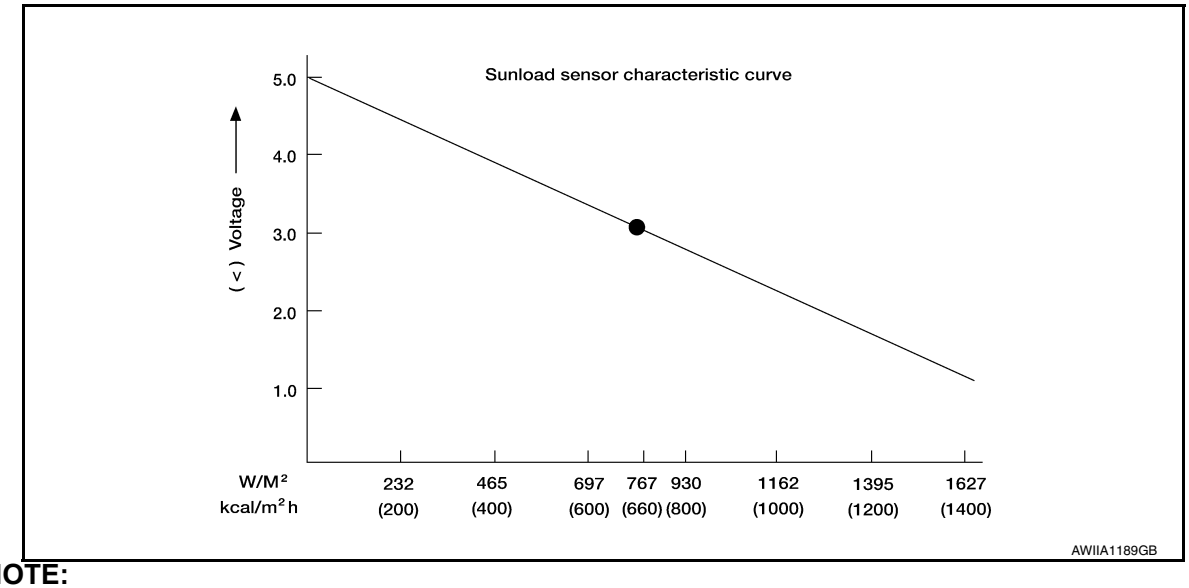
Component Inspection

INFOID:0000000012600816

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	
M152	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-104, "Removal and Installation".

B2632, B2633 AIR MIX DOOR MOTOR (DRIVER SIDE)

DTC Logic

INFOID:0000000012600817

DTC DETECTION LOGIC

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B2632	DR AIR MIX DOOR MOT	Air mix door motor LH PBR position 95% or more	• Air mix door motor LH (PBR internal circuit is open or shorted) • Air mix door motor LH installation condition • A/C auto amp. • Harness and connector (LIN communication line is open or shorted)
B2633		Air mix door motor LH PBR position 5% or less	

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

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

Is DTC detected?

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

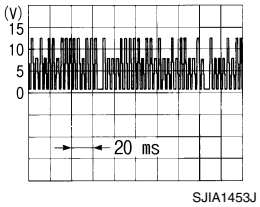
Diagnosis Procedure

INFOID:0000000012600818

Regarding Wiring Diagram information, refer to HAC-34, "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 the 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-107, "Exploded View".

Is the inspection result normal?

YES >> Replace air mix door motor LH. Refer to HAC-108, "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 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	M152	16	Yes

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-101, "Removal and Installation".

NO >> Repair harness or connector.

B2634, B2635 AIR MIX DOOR MOTOR (PASSENGER SIDE)

DTC Logic

INFOID:0000000012600819

DTC DETECTION LOGIC

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B2634	PASS AIR MIX DOOR MOT	Air mix door motor RH PBR position 95% or more	• Air mix door motor RH (PBR internal circuit is open or shorted) • Air mix door motor RH installation condition • A/C auto amp. • Harness and connector (LIN communication line is open or shorted)
B2635		Air mix door motor RH PBR position 5% or less	

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

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

Is DTC detected?

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

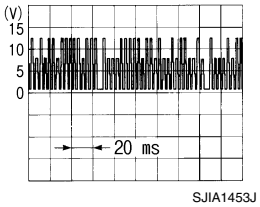
Diagnosis Procedure

INFOID:0000000012600820

Regarding Wiring Diagram information, refer to HAC-34, "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 the 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-107, "Exploded View".

Is the inspection result normal?

YES >> Replace air mix door motor RH. Refer to HAC-108, "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 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	M152	16	Yes

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-101, "Removal and Installation".

NO >> Repair harness or connector.

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

DTC Logic

INFOID:0000000012600821

DTC DETECTION LOGIC

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B2636	DR VENT DOOR FAIL	When the malfunctioning door position is detected at VENT position	• Mode door motor (PBR internal circuit is open or shorted) • Mode door motor control linkage installation condition • A/C auto amp. • Harness and connector (LIN communication line 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	
B2654	D/F2 VENT DOOR FAIL	When the malfunctioning door position is detected at D/F position	
B2655	B/L2 DOOR FAIL	When the malfunctioning door position is detected at B/L position	

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

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

Is DTC detected?

YES >> Refer to HAC-72, "Diagnosis Procedure".
NO >> Inspection End.

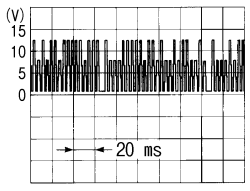
Diagnosis Procedure

INFOID:0000000012600822

Regarding Wiring Diagram information, refer to HAC-34, "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 the 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-107, "Exploded View".

Is the inspection result normal?

YES >> Replace mode door motor. Refer to HAC-108, "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 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	M152	16	Yes

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-101, "Removal and Installation".

NO >> Repair harness or connector.

B263D, B263E, B263F INTAKE DOOR MOTOR

DTC Logic

INFOID:0000000012600823

DTC DETECTION LOGIC

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B263D	FRE DOOR FAIL	When the malfunctioning intake door position is detected at FRE position	• Intake door motor (PBR internal circuit is open or shorted) • A/C auto amp. • Harness and connector (LIN communication line 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	

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

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

Is DTC detected?

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

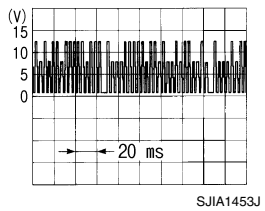
Diagnosis Procedure

INFOID:0000000012600824

Regarding Wiring Diagram information, refer to HAC-34, "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 the 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-107, "Exploded View".

Is the inspection result normal?

YES >> Replace intake door motor. Refer to HAC-108, "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 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	M152	16	Yes

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-101, "Removal and Installation".
NO >> Repair harness or connector.

B27B0 A/C AUTO AMP.

DTC Logic

INFOID:0000000012600825

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

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B27B0	A/C AUTO AMP.	A/C auto amp. EEPROM system is malfunctioning.	A/C auto amp.

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

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

Is DTC detected?

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

Diagnosis Procedure

INFOID:0000000012600826

1.PERFORM SELF DIAGNOSTIC

With CONSULT

1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” 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 Logic".

Is DTC detected again?

YES >> Replace A/C auto amp. Refer to HAC-101, "Removal and Installation".
NO >> Inspection End.

POWER SUPPLY AND GROUND CIRCUIT

A/C AUTO AMP.

A/C AUTO AMP. : Diagnosis Procedure

INFOID:0000000012600827

Regarding Wiring Diagram information, refer to HAC-34, "Wiring Diagram".

1.CHECK FUSE

Check fuses [Nos. 14, 25 and 30, located in the fuse block (J/B)].
NOTE:
Refer to PG-66, "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
M152	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
	40		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		
M152	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:0000000012600828

Regarding Wiring Diagram information, refer to HAC-34, "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-107, "Exploded View".

Is the inspection result normal?

YES >> Replace air mix door motor LH. Refer to HAC-108, "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	M152	17	Yes

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-101, "Removal and Installation".
NO >> Repair harness or connector.

AIR MIX DOOR MOTOR (PASSENGER SIDE)

AIR MIX DOOR MOTOR (PASSENGER SIDE) : Diagnosis Procedure

INFOID:0000000012600829

Regarding Wiring Diagram information, refer to HAC-34, "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-107, "Exploded View".

Is the inspection result normal?

YES >> Replace air mix door motor RH. Refer to HAC-108, "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	M152	17	Yes

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-101, "Removal and Installation".
NO >> Repair harness or connector.

MODE DOOR MOTOR

MODE DOOR MOTOR : Diagnosis Procedure

INFOID:0000000012600830

Regarding Wiring Diagram information, refer to HAC-34, "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-107, "Exploded View".

Is the inspection result normal?

YES >> Replace mode door motor. Refer to HAC-108, "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	M152	17	Yes

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-101, "Removal and Installation".
NO >> Repair harness or connector.

INTAKE DOOR MOTOR

INTAKE DOOR MOTOR : Diagnosis Procedure

INFOID:0000000012600831

Regarding Wiring Diagram information, refer to HAC-34, "Wiring Diagram".

1.CHECK INTAKE MODE DOOR MOTOR POWER SUPPLY

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

+		–	Voltage (Approx.)
Intake mode 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 MODE DOOR MOTOR GROUND CIRCUIT

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

Intake mode 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 MODE DOOR MOTOR

Check intake mode door motor is properly installed. Refer to HAC-107, "Exploded View".

Is the inspection result normal?

YES >> Replace intake mode door motor. Refer to HAC-108, "INTAKE DOOR MOTOR : Removal and Installation".
NO >> Repair or replace malfunctioning part.

4.CHECK INTAKE MODE DOOR MOTOR POWER SUPPLY CIRCUIT

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

Intake mode door motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M126	1	M152	17	Yes

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-101, "Removal and Installation".
NO >> Repair harness or connector.

A/C SWITCH ASSEMBLY

A/C SWITCH ASSEMBLY : Component Function Check

INFOID:0000000012600832

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:0000000012600833

Regarding Wiring Diagram information, refer to HAC-34, "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 M79 terminal 12 and ground.

(+)		(–)	Voltage		
A/C switch assembly		—	Ignition switch position		
Connector	Terminal		OFF	ACC	ON
M79	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-66, "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 M79 terminal 1 and ground.

A/C switch assembly		—	Continuity
Connector	Terminal		
M79	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.

BLOWER MOTOR

Diagnosis Procedure

INFOID:0000000012600834

Regarding Wiring Diagram information, refer to HAC-34, "Wiring Diagram".

1.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 15A fuses [Nos. 17 and 27, located in fuse block (J/B)].
   NOTE:
   Refer to PG-66, "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	38	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	39	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.

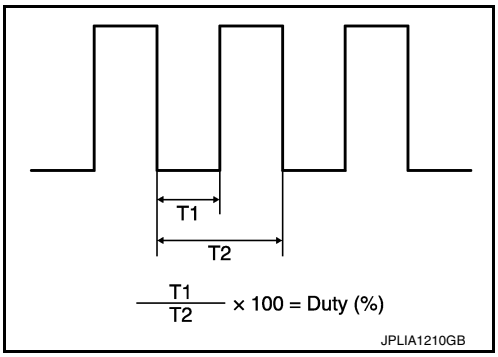
Blower motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M31	17	M152	18	Yes

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 by 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	17	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-12, "BLOWER MOTOR : Removal and Installation".
NO >> Replace A/C auto amp. Refer to HAC-101, "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-84, "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:0000000012600835

1.CHECK BLOWER MOTOR

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

Does the blower fan operate?

YES >> Intermittent incident. Refer to GI-44, "Intermittent Incident".
NO >> Replace blower motor. Refer to VTL-12, "BLOWER MOTOR : Removal and Installation".

Component Inspection (Front Blower Motor Relay)

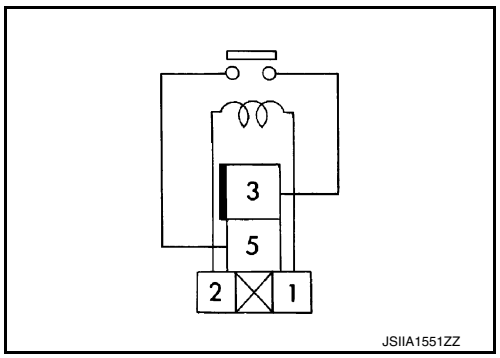
INFOID:0000000012600836

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:0000000012600837

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-86, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000012600838

Regarding Wiring Diagram information, refer to HAC-34, "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-68, "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 compressor connector and IPDM E/R connector.
2. Check continuity between compressor harness connector and IPDM E/R harness connector.

Compressor		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F3	1	F83	56	Yes

Is the inspection result normal?

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

3.CHECK MAGNET CLUTCH GROUND CIRCUIT

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

Compressor		—	Continuity
Connector	Terminal		
F3	2	Ground	Yes

Is the inspection result normal?

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

4.CHECK MAGNET CLUTCH

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

Does it operate normally?

YES >> Replace IPDM E/R. Refer to PCS-47, "Removal and Installation".
NO >> Replace magnet clutch. Refer to HA-31, "MAGNET CLUTCH : Removal and Installation".

A/C SWITCH ASSEMBLY SIGNAL CIRCUIT

Diagnosis Procedure

INFOID:0000000012600839

Regarding Wiring Diagram information, refer to HAC-34, "Wiring Diagram".

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT

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

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

Is any DTC No. displayed?

YES >> Perform diagnosis for the applicable DTC. Refer to HAC-31, "DTC Index".
NO >> GO TO 2.

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

1. Turn ignition switch OFF.
2. Disconnect the A/C switch assembly and the A/C auto amp. connectors.
3. Check continuity between A/C switch assembly harness connector M79 terminal 10 and A/C auto amp. harness connector M152 terminal 24.

A/C switch assembly		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M79	10	M152	24	Yes

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

A/C switch assembly		—	Continuity
Connector	Terminal		
M79	10	Ground	No

Is the inspection result normal?

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

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

1. Check continuity between A/C switch assembly harness connector M79 terminal 9 and A/C auto amp. harness connector M152 terminal 4.

A/C switch assembly		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M79	9	M152	4	Yes

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

A/C switch assembly		—	Continuity
Connector	Terminal		
M79	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.

DOOR MOTOR

Diagnosis Procedure

INFOID:0000000012600840

Regarding Wiring Diagram information, refer to HAC-34, "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	M152	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-101, "Removal and Installation".
NO >> Repair harness or connector.

DOOR MOTOR COMMUNICATION CIRCUIT

Diagnosis Procedure

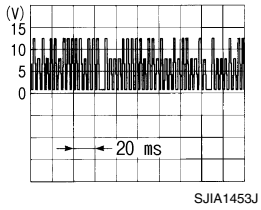
INFOID:0000000012600841

Regarding Wiring Diagram information, refer to HAC-34, "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 the oscilloscope.

+		–	Output waveform
A/C auto amp.			
Connector	Terminal		
M152	16	Ground	

SJIA1453J

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	
M152	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		
M152	16	Ground	No

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-101, "Removal and Installation".
NO >> Repair harness or connector.

ECV (ELECTRICAL CONTROL VALVE)

Diagnosis Procedure

INFOID:0000000012600842

Regarding Wiring Diagram information, refer to HAC-34, "Wiring Diagram".

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

1.CHECK ECV (ELECTRICAL CONTROL VALVE) POWER SUPPLY

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

+		–	Voltage
Compressor			
Connector	Terminal		
F88	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-66, "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 compressor harness connector and fuse block (J/B) harness connector.

Compressor		Fuse block (J/B)		Continuity
Connector	Terminal	Connector	Terminal	
F88	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 compressor harness connector and ground.

Compressor		—	Continuity
Connector	Terminal		
F88	4	Ground	No

Is the inspection result normal?

YES >> Check ignition power supply circuit. Refer to PG-26, "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 compressor harness connector and A/C auto amp. harness connector.

Compressor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
F88	3	M152	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 compressor harness connector and ground.

Compressor		—	Continuity
Connector	Terminal		
F88	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 compressor. Refer to HA-30, "COMPRESSOR : Removal and Installation".

8.CHECK INTERMITTENT INCIDENT

Refer to GI-44, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-101, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:0000000012600843

1.CHECK ECV (ELECTRICAL CONTROL VALVE)

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

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

Is the inspection result normal?

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

SYMPTOM DIAGNOSIS

HEATER AND AIR CONDITIONING SYSTEM CONTROL SYMPTOMS

Diagnosis Chart By Symptom

INFOID:0000000012600844

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-90, "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-83, "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-18, "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-84, "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:0000000012600845

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

Diagnosis Procedure

INFOID:0000000012600846

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

1.CHECK MAGNET CLUTCH OPERATION

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

Is the inspection result normal?

YES >> GO TO 2.
NO >> Perform diagnosis of “COMPRESSOR DOES NOT OPERATE” in “SYMPTOM DIAGNOSIS”. Refer to HAC-98, "Diagnosis Procedure".

2.CHECK DRIVE BELT

Check tension of drive belt. Refer to EM-19, "Checking Drive Belts" (QR25DE) or EM-136, "Checking Drive Belt" (VQ35DE).

Is the inspection result normal?

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

3.CHECK REFRIGERANT CYCLE

Connect recovery/recycling recharging equipment to the vehicle and perform pressure inspection with gauge. Refer to HA-18, "Symptom Table".

Is the inspection result normal?

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

4.CHECK AIR LEAKAGE FROM EACH DUCT

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

Is the inspection result normal?

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

5.CHECK AMBIENT TEMPERATURE DISPLAY

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

Is the inspection result normal?

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

6.CHECK SETTING OF TEMPERATURE SETTING TRIMMER (FRONT)

1. Check setting value of temperature setting trimmer (front). Refer to HAC-49, "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-101, "Removal and Installation".

INSUFFICIENT HEATING

Description

INFOID:0000000012600847

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

Diagnosis Procedure

INFOID:0000000012600848

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-9, "System Inspection" (QR25DE) or CO-33, "System Inspection" (VQ35DE).
2. Check reservoir tank cap. Refer to CO-9, "System Inspection" (QR25DE) or CO-33, "System Inspection" (VQ35DE).
3. Check water flow sounds of the engine coolant. Refer to CO-9, "System Inspection" (QR25DE) or CO-33, "System Inspection" (VQ35DE).

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-41, "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-49, "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-101, "Removal and Installation".

COMPRESSOR DOES NOT OPERATE

Description

INFOID:0000000012600849

Symptom: Compressor does not operate.

Diagnosis Procedure

INFOID:0000000012600850

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-86, "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-560, "Component Function Check" (QR25DE) or EC-1070, "Component Function Check" (VQ35DE).

Is the inspection result normal?

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

3.CHECK A/C AUTO AMP. OUTPUT SIGNAL

With CONSULT
Check “COMP REQ SIG” and “FAN REQ SIG” in “Data Monitor” of “HVAC”.

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-101, "Removal and Installation".

4.CHECK ECM INPUT SIGNAL

With CONSULT
Check “AIR COND SIG” and “HEATER FAN SW” in “Data Monitor” of “ECM”.

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-19, "Trouble Diagnosis Flow Chart".

5.CHECK IPDM E/R INPUT SIGNAL

With CONSULT

1. Start engine.
2. Check “AC COMP REQ” in “Data Monitor” of “IPDM E/R”.

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-19, "Trouble Diagnosis Flow Chart".

REMOVAL AND INSTALLATION

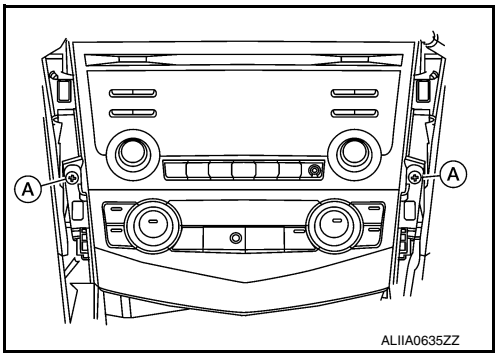
A/C SWITCH ASSEMBLY

Removal and Installation

INFOID:0000000012600851

REMOVAL

1. Remove cluster lid C lower. Refer to IP-20, "Cluster Lid C Lower".
2. Remove the A/C switch assembly screws (A).



3. Disconnect the harness connector from the A/C switch assembly and remove.

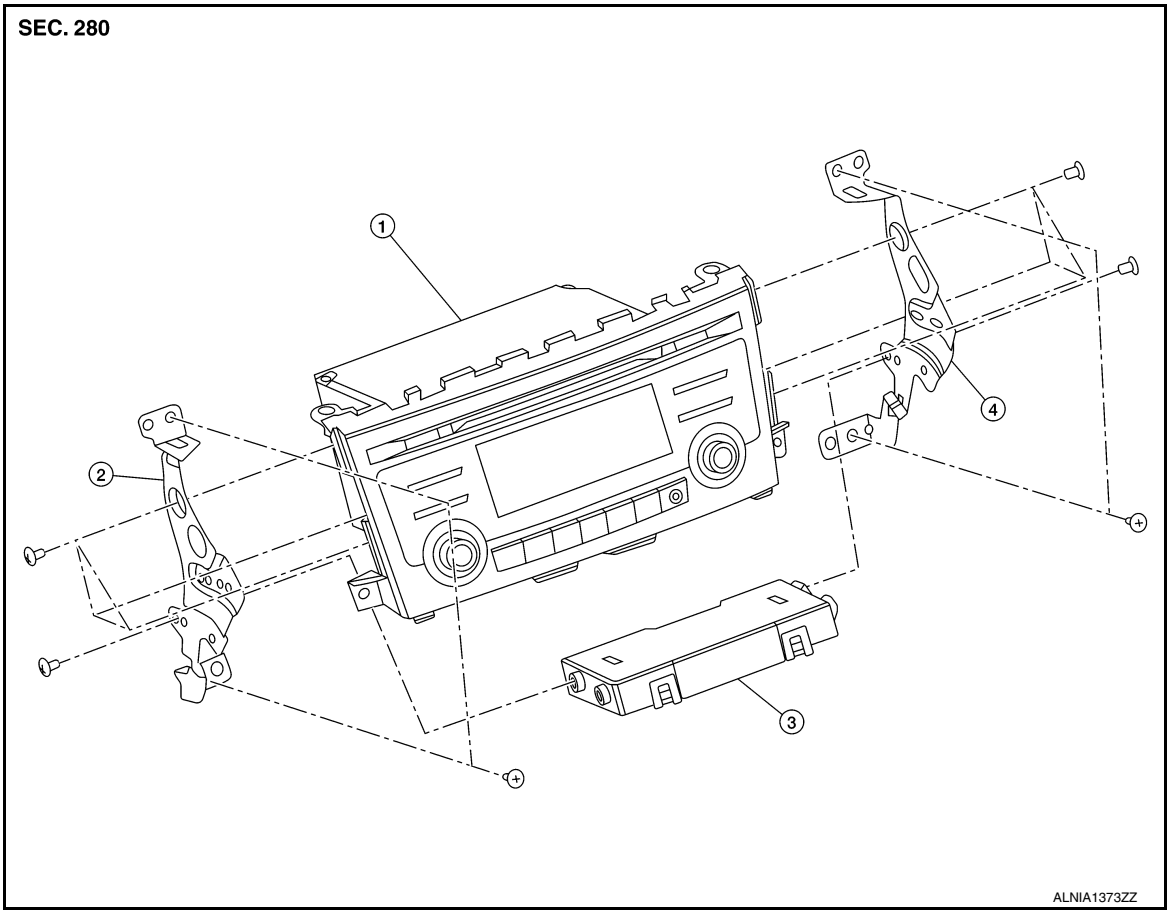
INSTALLATION

Installation is in the reverse order of removal.

A/C AUTO AMP.

Exploded View

INFOID:0000000012600852



1. Audio or AV control unit
2. Audio or AV control unit bracket (LH)
3. A/C auto amp.
4. Audio or AV control unit bracket (RH)

Removal and Installation

INFOID:0000000012600853

REMOVAL

1. Remove the Audio or AV control unit. Refer to AV-46, "Removal and Installation" (BASE AUDIO) or AV-106, "Removal and Installation" (DISPLAY AUDIO WITHOUT BOSE) or AV-192, "Removal and Installation" (DISPLAY AUDIO WITH BOSE) or AV-290, "Removal and Installation" (NAVIGATION WITHOUT BOSE) or AV-407, "Removal and Installation" (NAVIGATION WITH BOSE).
2. Remove the Audio or AV control unit bracket screws and Audio or AV control unit brackets (LH/RH).
3. Remove the A/C auto amp.

INSTALLATION

Installation is in the reverse order of removal.

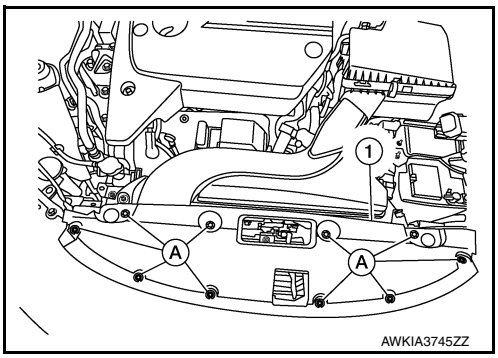
AMBIENT SENSOR

Removal and Installation

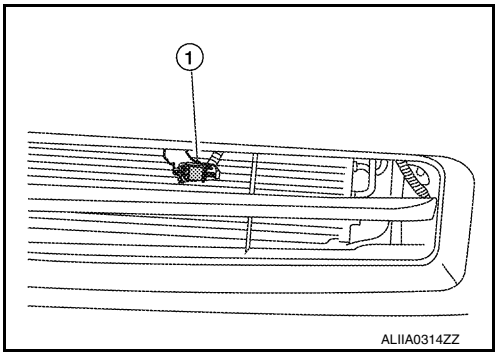
INFOID:0000000012600854

REMOVAL

1. Remove the core support cover clips (A), then remove the core support cover (1).



2. Disconnect the harness connector from the ambient sensor.
3. Release the ambient sensor clip, then remove the ambient sensor (1).



INSTALLATION

Installation is in the reverse order of removal.

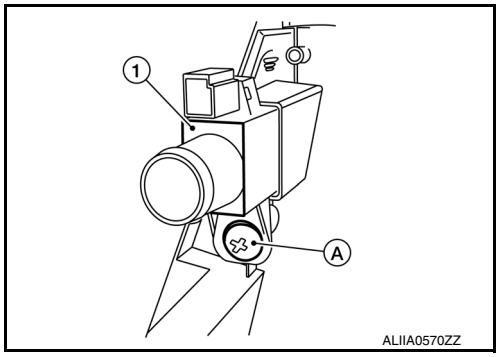
IN-VEHICLE SENSOR

Removal and Installation

INFOID:0000000012600855

REMOVAL

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



INSTALLATION

Installation is in the reverse order of removal.

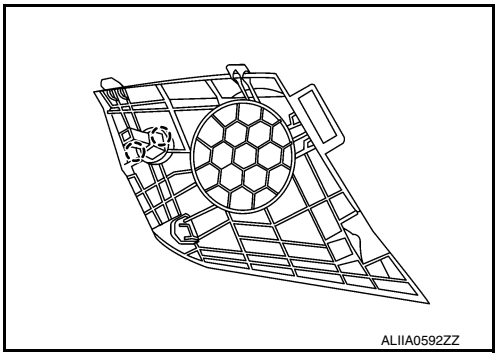
SUNLOAD SENSOR

Removal and Installation

INFOID:0000000012600856

REMOVAL

1. Release the front speaker grille (LH). Refer to IP-14, "Exploded View".
2. Release the sunload sensor pawls and remove.
   ( ): Pawl



INSTALLATION

Installation is in the reverse order of removal.

INTAKE SENSOR

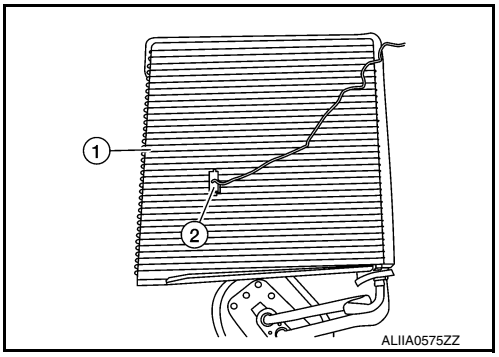
Removal and Installation

INFOID:0000000012600857

REMOVAL

1. Remove the front evaporator. Refer to HA-41, "EVAPORATOR : Removal and Installation".
2. Remove the intake sensor (2) by pulling it out of the front evaporator (1).

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



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

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

REFRIGERANT PRESSURE SENSOR

Removal and Installation

INFOID:0000000012600858

REMOVAL

1. Discharge the refrigerant. Refer to HA-23, "Recycle Refrigerant".
2. Remove the front bumper fascia. Refer to EXT-25, "Removal and Installation".
3. Disconnect the harness connector from the refrigerant pressure sensor.
4. Remove the 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.

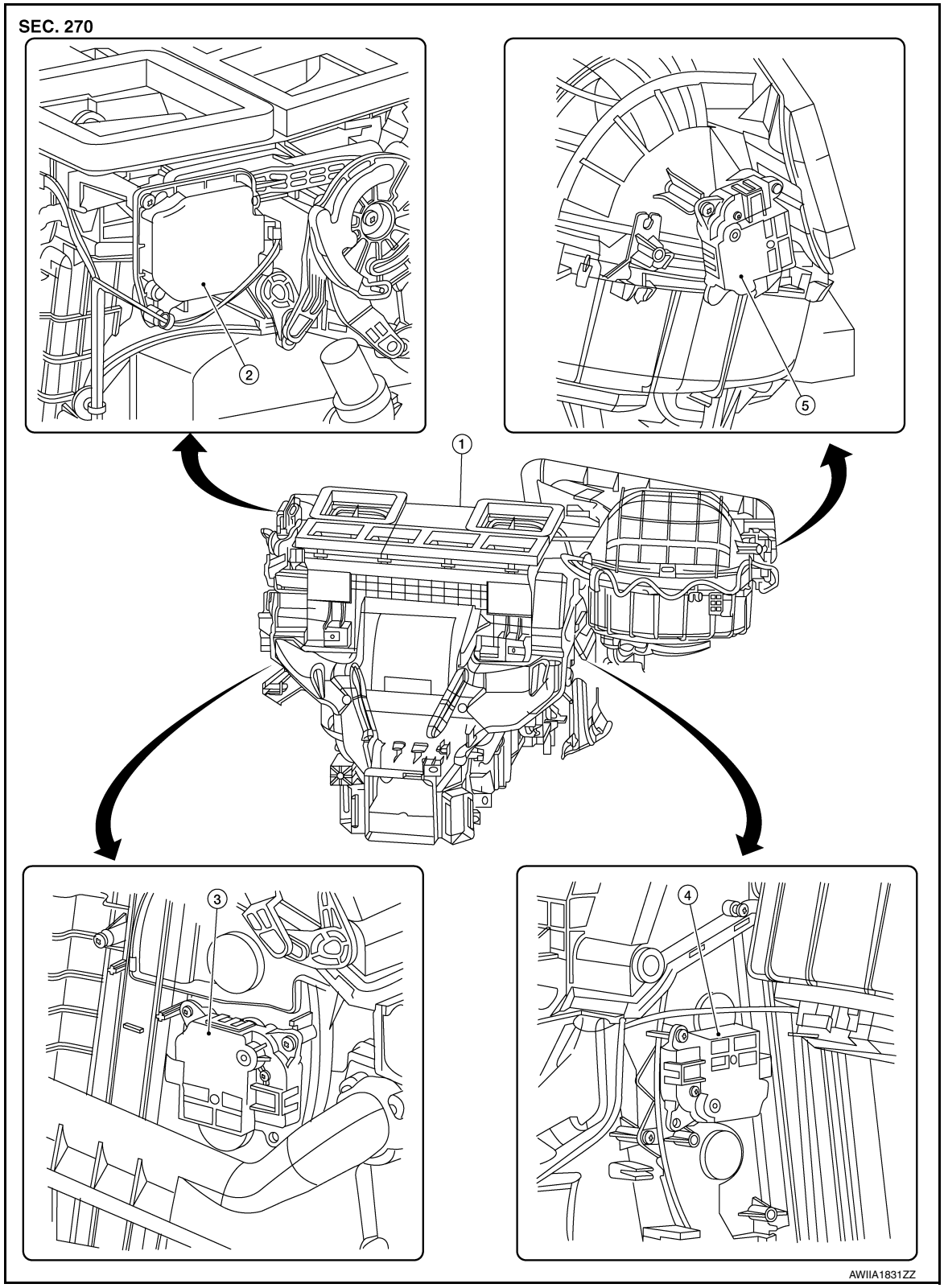
CAUTION:

- **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-21, "Leak Test".**

DOOR MOTOR

Exploded View

INFOID:0000000012600859



1. Front 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:0000000012600860

REMOVAL

1. Remove the glove box assembly. Refer to IP-22, "Removal and Installation".
2. Disconnect the harness connector from the intake door motor.
3. Remove the intake door motor screws and the intake door motor.

INSTALLATION

Installation is in the reverse order of removal.

MODE DOOR MOTOR

MODE DOOR MOTOR : Removal and Installation

INFOID:0000000012600861

REMOVAL

1. Remove the instrument lower panel LH. Refer to IP-21, "Removal and Installation".
2. Disconnect the harness connector from the mode door motor.
3. Remove the mode door motor screws and the mode door motor.

INSTALLATION

Installation is in the reverse order of removal.

AIR MIX DOOR MOTOR

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

INFOID:0000000012600862

REMOVAL

1. Remove the glove box assembly. Refer to IP-22, "Removal and Installation".
2. Remove the upper floor connecting duct (RH). Refer to HA-39, "Exploded View".
3. Disconnect the harness connector from the air mix door motor (RH).
4. Remove the air mix door motor (RH) screws and the air mix door motor (RH).

INSTALLATION

Installation is in the reverse order of removal.

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

INFOID:0000000012600863

REMOVAL

1. Remove the upper floor connecting duct (LH). Refer to HA-39, "Exploded View".
2. Disconnect the harness connector from the air mix door motor (LH).
3. Remove the air mix door motor (LH) screws and the air mix door motor (LH).

INSTALLATION

Installation is in the reverse order of removal.

PRECAUTION

PRECAUTIONS

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

INFOID:0000000012600864

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, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper repair, 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 or batteries, and wait at least three minutes before performing any service.**

Precaution for Work

INFOID:0000000012600865

- 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:0000000012600866

WARNING:

- **CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. If the refrigerants are mixed compressor failure is likely to occur. Refer to HA-25, "Inspection". To determine the purity of HFC-134a (R-134a) in the vehicle and recovery tank, use Refrigerant Recovery/Recycling Recharging equipment and Refrigerant Identifier.**

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

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

CONTAMINATED REFRIGERANT

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

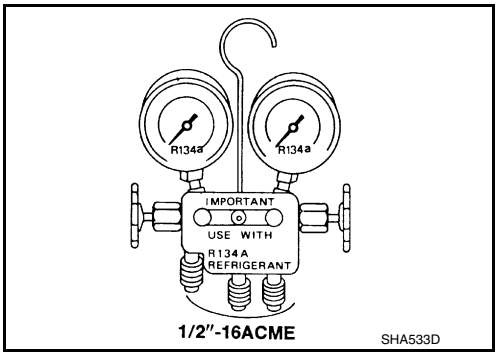
- Explain to the customer that environmental regulations prohibit the release of contaminated refrigerant into the atmosphere.
- Explain that recovery of the contaminated refrigerant could damage your service equipment and refrigerant supply.
- Suggest the customer return the vehicle to the location of previous service where the contamination may have occurred.
- If you choose to perform the repair, recover the refrigerant using only **dedicated equipment and containers. Do not recover contaminated refrigerant into your existing service equipment.** If your facility does not have dedicated recovery equipment, you may contact a local refrigerant product retailer for available 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:0000000012600867

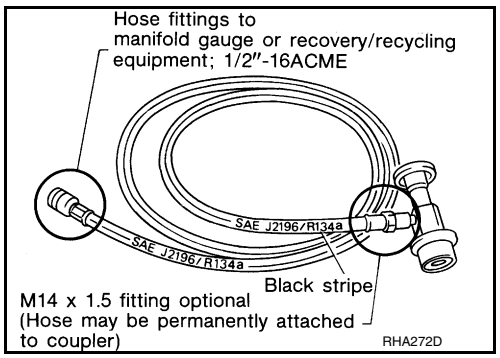
MANIFOLD GAUGE SET

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

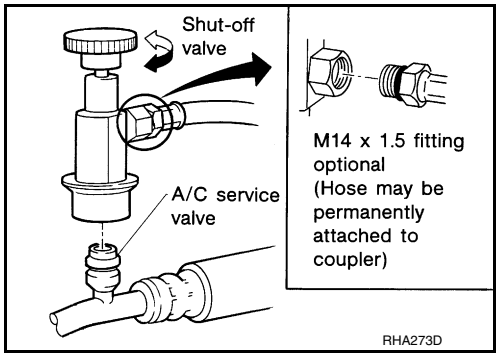
Be certain that the service hoses display the markings described (colored hose with black stripe). All hoses must include positive shut-off devices (either manual or automatic) near the end of the hoses opposite the manifold gauge.



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



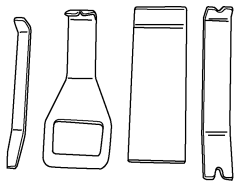
PREPARATION

PREPARATION

Special Service Tool

INFOID:0000000012600868

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:0000000012600869

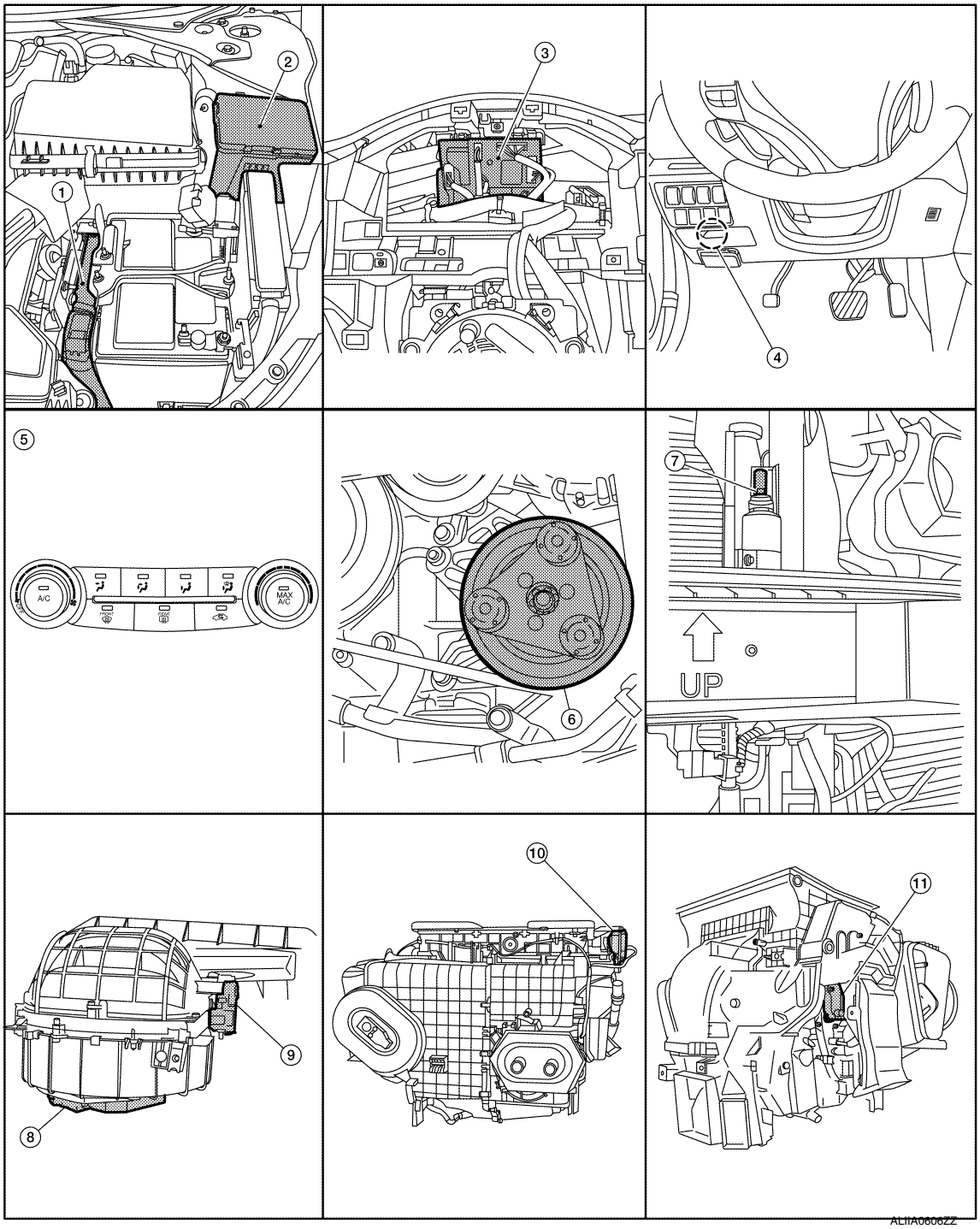
Tool name	Description
Power tool  PIIB1407E	Loosening nuts, screws and bolts

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Part Location

INFOID:0000000012600870



1. ECM
2. IPDM E/R
3. BCM (view with combination meter removed)
4. Front blower motor relay
5. Front air control
6. A/C Compressor

7. Refrigerant pressure sensor (view with front bumper fascia removed)
8. Blower motor (view with front air conditioning assembly removed from vehicle)
9. Intake door motor
10. Mode door motor
11. Air mix door motor

Component Description

INFOID:0000000012600871

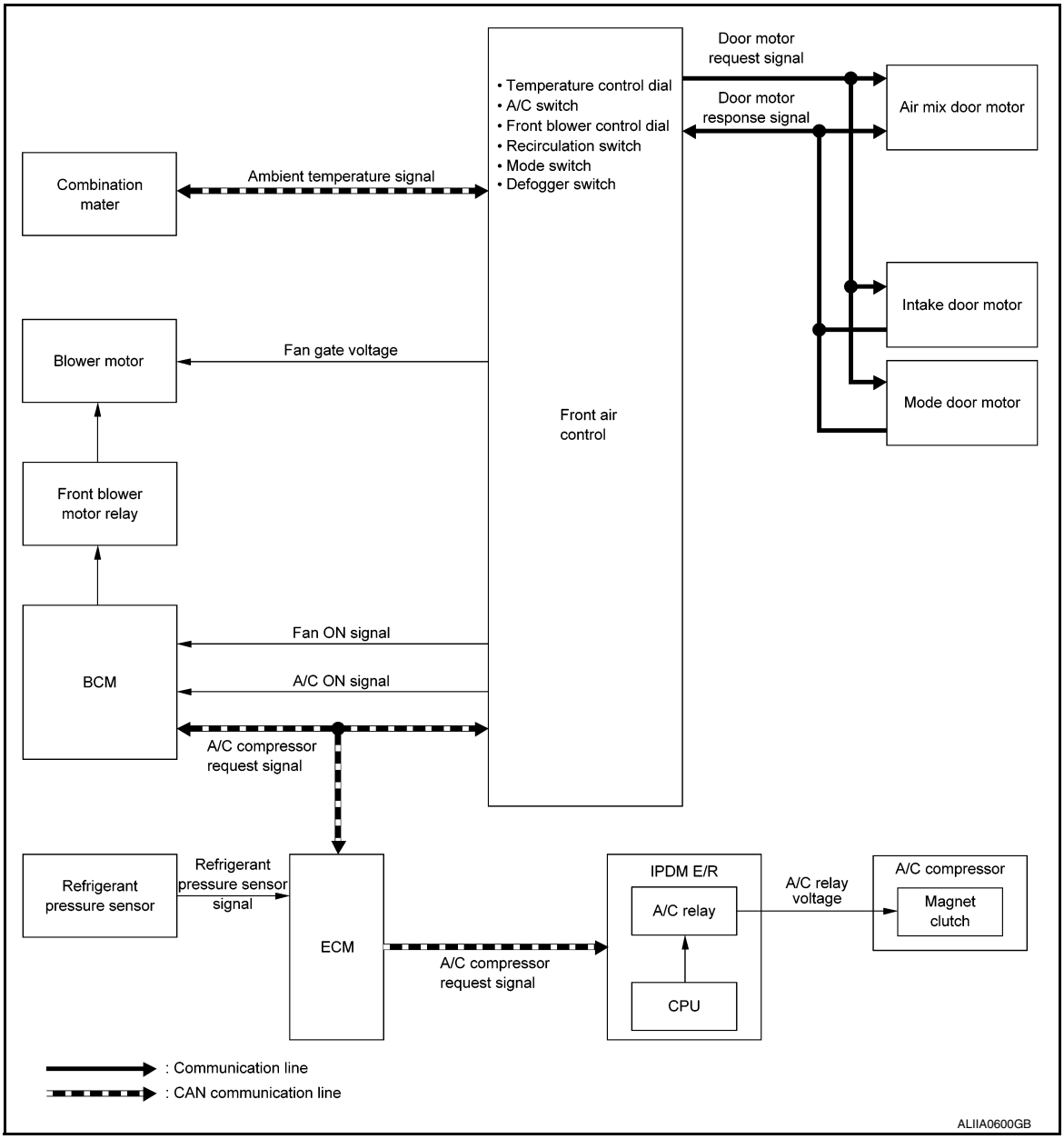
Component	Description
A/C Compressor	Vaporized refrigerant is drawn into the A/C compressor from the evaporator, where it is compressed to a high pressure, high temperature vapor. The hot, compressed vapor is then discharged to the condenser.
Air mix door motor	The air mix door controls the mix of hot or cold air that enters the ventilation system. It is controlled by the front air control based on the position of the temperature dial. The air mix door motor receives position commands from the front air control and reports actual door position back via an LCU (Local Control Unit) installed inside the motor. Commands and responses are sent across the LIN (Local Interconnect Network) to each motor simultaneously, with each motor having its own unique address, thereby only responding to requests sent to its specific address. The LCU reads the door position from a Position Balanced Resistor (PBR), also part of the motor, and returns that information to the front air control. The LCU switches the polarity of the circuits connected to the DC motor to drive the motor forward or backward as requested by the front air control.
BCM	The BCM receives the fan ON and A/C ON signals from the front air control and sends a compressor ON request to the ECM.
Blower motor	The blower motor varies the speed at which the air flows through the ventilation system.
ECM	The ECM sends a compressor ON request to the IPDM E/R based on the status of engine operation and load as well as refrigerant pressure information. If all the conditions are met for A/C operation, the ECM transmits the compressor ON request to the IPDM E/R. The ECM shares the refrigerant pressure sensor signal, engine RPM, and engine coolant temperature with the front air control via CAN communication line.
Front air control	The front air control controls the operation of the A/C and heating system based on inputs from the temperature control knob, the mode switches, the blower control dial, and inputs received from the ECM and combination meter across the CAN.
Front blower motor relay	The front blower motor relay controls the flow of current to fuses 17 and 27 in the Fuse Block (J/B). The relay is connected directly to ground, and is energized when the ignition switch is in the ON or START position.
Fuse Block (J/B)	Located in the passenger compartment, behind the left lower IP, the Fuse Block (J/B) contains the front blower motor relay and several fuses required for the air conditioner control system.
Intake door motor	The intake door motor controls the position of the intake door. Fresh air is allowed to enter the cabin in one position, and recirculated inside air is allowed to enter in the other position. At times the front air control may command partial fresh or recirculation based on evaporator or coolant temperatures. The intake door motor receives position commands from the front air control and reports actual door position back via an LCU (Local Control Unit) installed inside the motor. Commands and responses are sent across the LIN (Local Interconnect Network) to each motor simultaneously, with each motor having its own unique address, thereby only responding to requests sent to its specific address. The LCU reads the door position from a Position Balanced Resistor (PBR), also part of the motor, and returns that information to the front air control. The LCU switches the polarity of the circuits connected to the DC motor to drive the motor forward or backward as requested by the front air control.
IPDM E/R	Refer to PCS-6, "RELAY CONTROL SYSTEM : System Description".

Component	Description
Mode door motor	The mode door controls the direction the conditioned air passes through the ventilation system. Through a series of levers and gears, the mode door controls the defrost door, the foot door, and the vent door. There are 5 preset positions: VENT, B/L, FOOT, D/F, and DEF. The FOOT position can be set to allow some airflow through to the defroster vent, or to completely block the defroster vent using the CONSULT. The mode door motor receives position commands from the front air control and reports actual door position back via an LCU (Local Control Unit) installed inside the motor. Commands and responses are sent across the LIN (Local Interconnect Network) to each motor simultaneously, with each motor having its own unique address, thereby only responding to requests sent to its specific address. The LCU reads the door position from a Position Balanced Resistor (PBR), also part of the motor, and returns that information to the front air control. The LCU switches the polarity of the circuits connected to the DC motor to drive the motor forward or backward as requested by the front air control.
Refrigerant pressure sensor	Refer to EC-38, "Refrigerant Pressure Sensor" for QR25DE and EC-599, "Refrigerant Pressure Sensor" for VQ35DE.

SYSTEM

System Diagram

INFOID:0000000012600872



System Description

INFOID:0000000012600873

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

Controlled by front air control:
- HAC-117, "Air Flow Control"
- HAC-117, "Air Inlet Control"
- HAC-117, "Air Outlet Control"
- HAC-117, "Compressor Control"
- HAC-118, "Door Control"
- HAC-120, "Temperature Control"

Controlled by BCM:
- Air conditioning request signal.
  Refer to BCS-8, "BODY CONTROL SYSTEM : System Description".

Control by ECM
- Cooling fan control
  Refer to EC-62, "COOLING FAN CONTROL : System Description (with manual air conditioner)" (QR25DE) or EC-613, "COOLING FAN CONTROL : System Description" (VQ35DE).
- Air conditioning cut control
  Refer to EC-59, "AIR CONDITIONING CUT CONTROL : System Description (with manual air conditioner)" (QR25DE) or EC-611, "AIR CONDITIONING CUT CONTROL : System Description" (VQ35DE).

Control by IPDM E/R
- Relay control
  Refer to PCS-6, "RELAY CONTROL SYSTEM : System Description".
- Cooling fan control
  Refer to EC-62, "COOLING FAN CONTROL : System Description (with manual air conditioner)" (QR25DE) or EC-613, "COOLING FAN CONTROL : System Description" (VQ35DE).

Air Flow Control

INFOID:0000000012600874

DESCRIPTION

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

FAN SPEED CONTROL AT DOOR MOTOR OPERATION

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

Air Inlet Control

INFOID:0000000012600875

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

Air Outlet Control

INFOID:0000000012600876

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

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

Compressor Control

INFOID:0000000012600877

DESCRIPTION

In order for the IPDM E/R to complete a compressor ON request, the following conditions must be met:
1. The BCM detects a Fan ON signal from the front air control. The front air control grounds the fan ON signal monitored by the BCM when the blower speed dial is in any of the fan speed positions.
2. The BCM detects an A/C ON signal from the front air control. The front air control grounds the A/C ON signal monitored by the BCM when:

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

NOTE:
If the compressor was engaged by pressing the D/F or DEF mode buttons, and the time spent in either mode exceeds 1 minute, then the compressor stays requested, even when modes other than D/F or DEF are selected, until either:
1. The ignition switch is turned OFF.

2. The blower speed dial is turned completely counterclockwise to the OFF position.
3. The A/C switch is manually turned OFF.

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

REFRIGERANT PRESSURE PROTECTION

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

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

PRESSURE RELIEF VALVE

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

COMPRESSOR OIL CIRCULATION CONTROL

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

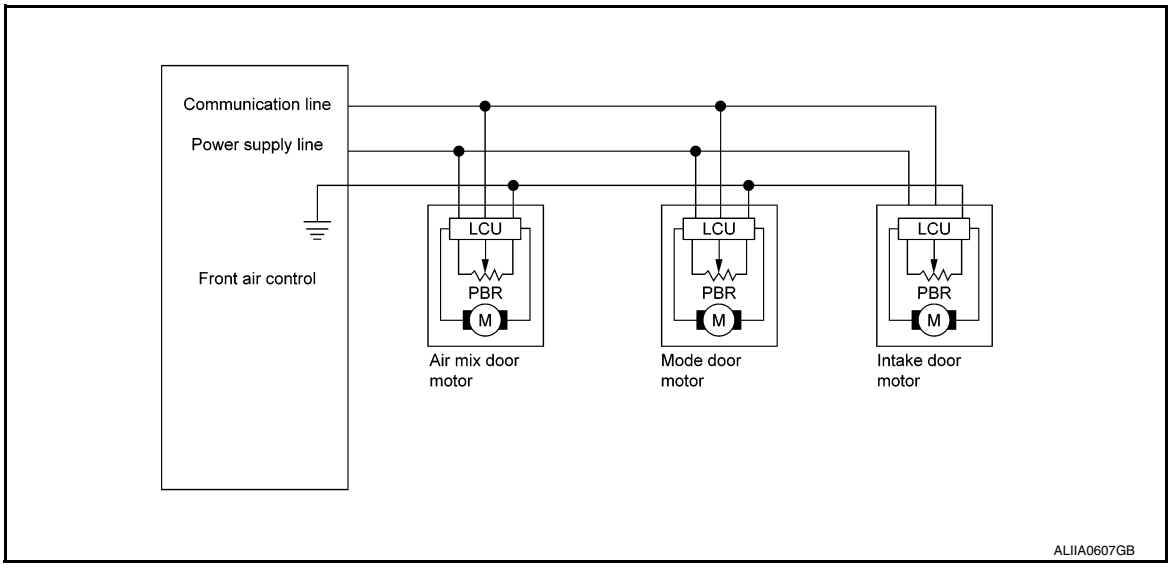
OPERATING RATE CONTROL

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

Door Control

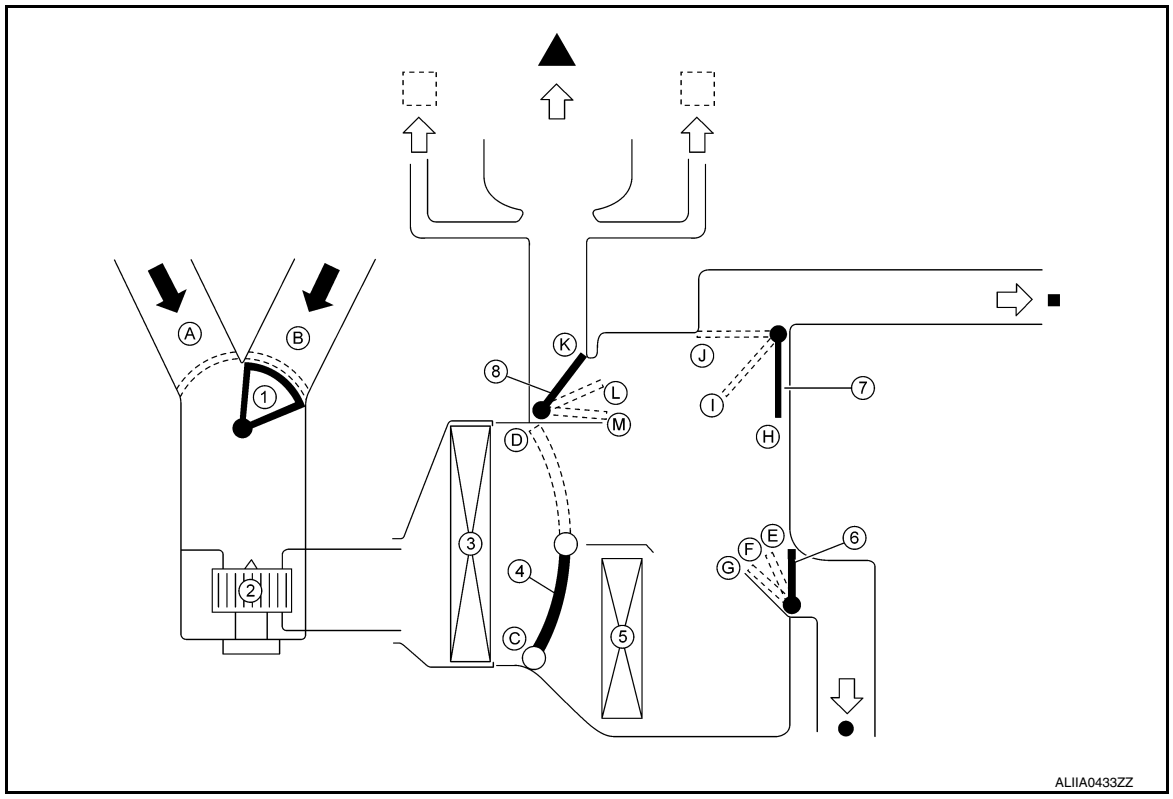
INFOID:0000000012600878

DOOR MOTOR CONTROL



- A Local Control Unit (LCU) is built into each door motor and detects the door position by using a Position Balanced Resistor (PBR).
- Each door motor LCU has a unique address. The front air control communicates with the door motor LCUs by using each door’s unique communication address. The front air control sends requested door position commands to each door motor LCU via a Local Interconnect Network (LIN) communication line. Each door motor’s LCU receives the command and sends back a door position feedback signal.
- Each LCU controls each door to the appropriate position depending on the control signal from the front air control. When the door movement is complete, the LCU transmits a signal to the front air control indicating that the door movement is complete.

SWITCHES AND THEIR CONTROL FUNCTION



1. Intake door
2. Blower motor
3. Evaporator
4. Air mix door
5. Heater core
6. Foot door
7. Ventilator door
8. Defroster door

Fresh air intake
Recirculation air
Ventilator
Side defroster
Defroster
Foot

Switch/Dial position				Door position				
				Ventilator door	Foot door	Defroster door	Intake door	Air mix door
MODE switch		VENT		H	E	K	—	
		B/L		I	F	K	—	
		FOOT		J	G	L	—	
		D/F		J	G	L	B	—
DEF switch				J	E	M	B	—
REC switch*1		ON		—			B	—
		OFF	—	—			A	—
Temperature control dial			Full Cold	—				C
			Full Cold ⇔ Full Hot	—				AUTO
			Full Hot	—				D

*1: Inlet status is displayed by indicator when activating Max A/C or D/F modes.

AIR DISTRIBUTION

VENT MODE ( )					
OUTLET	VENT				
	ASST	CTR		DR	RR
		ASST	DR		
AIR FLOW DISTRIBUTION RATIO (%)	22	22	22	22	12

B/L MODE ( )									
OUTLET	VENT					FOOT			
	ASST	CTR		DR	RR	Fr ASST	Fr DR	Rr ASST	Rr DR
		ASST	DR						
AIR FLOW DISTRIBUTION RATIO (%)	11	11	11	11	17	14.5	14.5	5	5

D/F1 MODE ( )											
OUTLET	VENT					FOOT				DEF	
	ASST	CTR		DR	RR	Fr ASST	Fr DR	Rr ASST	Rr DR	Fr	Side
		ASST	DR								
AIR FLOW DISTRIBUTION RATIO (%)	5	0	0	5	17	18	18	7	7	18	5

D/F2 MODE ( )											
OUTLET	VENT					FOOT				DEF	
	ASST	CTR		DR	RR	Fr ASST	Fr DR	Rr ASST	Rr DR	Fr	Side
		ASST	DR								
AIR FLOW DISTRIBUTION RATIO (%)	5	0	0	5	17	14	14	6.5	6.5	25	7

DEF MODE ( )											
OUTLET	VENT					FOOT				DEF	
	ASST	CTR		DR	RR	Fr ASST	Fr DR	Rr ASST	Rr DR	Fr	Side
		ASST	DR								
AIR FLOW DISTRIBUTION RATIO (%)	5	0	0	5	14	0	0	0	0	60	16

Temperature Control

INFOID:0000000012600879

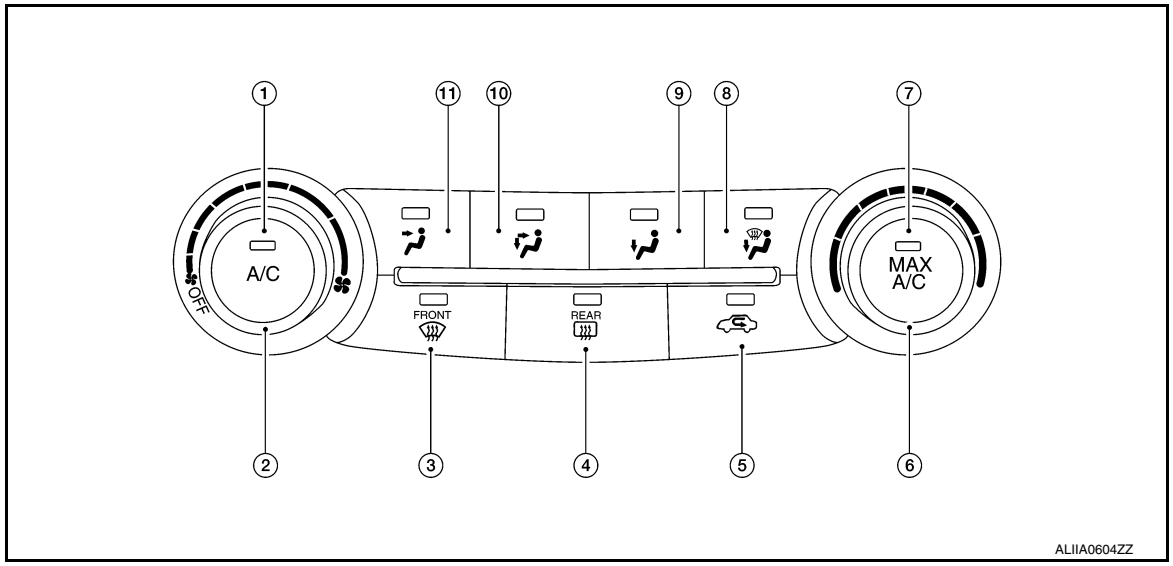
- When the ignition switch is in the ON position, the customer uses the front air control temperature control dial to set the desired temperature.
- The front air control calculates the target front air mix door opening angle depending on the selected temperature, intake temperature sensor, engine coolant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

OPERATION

Switch Name and Function

INFOID:0000000012600880

Front Air Control



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

Switch Operation

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

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

DIAGNOSIS SYSTEM (BCM)

CONSULT Function (BCM - COMMON ITEM)

INFOID:0000000012822747

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 a no-start condition.

APPLICATION ITEM

CONSULT performs the following functions via CAN communication with BCM.

Direct Diagnostic Mode	Description
ECU Identification	The BCM part number is displayed.
Self Diagnostic Result	The BCM self diagnostic results are displayed.
Data Monitor	The BCM input/output data is displayed in real time.
Active Test	The BCM activates outputs to test components.
Work support	The settings for BCM functions can be changed.
Configuration	• The vehicle specification can be read and saved. • The vehicle specification can be written when replacing BCM.
CAN Diag Support Mntr	The result of transmit/receive diagnosis of CAN communication is displayed.

SYSTEM APPLICATION

BCM can perform the following functions.

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

System	Sub System	Direct Diagnostic Mode						
		ECU Identification	Self Diagnostic Result	Data Monitor	Active Test	Work support	Configuration	CAN Diag Support Mntr
Signal buffer system	SIGNAL BUFFER			×	×			
TPMS	AIR PRESSURE MONITOR		×	×	×			

CONSULT Function (BCM - AIR CONDITIONER)

INFOID:0000000012822748

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 a no-start condition.

DATA MONITOR

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

DIAGNOSIS SYSTEM (IPDM E/R)

CONSULT Function (IPDM E/R)

INFOID:0000000012822749

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 a no-start condition.

APPLICATION ITEM

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

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

ECU IDENTIFICATION

The IPDM E/R part number is displayed.

SELF DIAGNOSTIC RESULT

Refer to PCS-21, "DTC Index".

DATA MONITOR

Monitor Item [Unit]	Main Signals	Description
MOTOR FAN REQ [1/2/3/4]	×	Indicates cooling fan speed signal received from ECM on CAN communication line
AC COMP REQ [On/Off]	×	Indicates A/C compressor request signal received from ECM on CAN communication line
TAIL&CLR REQ [On/Off]	×	Indicates position light request signal received from BCM on CAN communication line
HL LO REQ [On/Off]	×	Indicates low beam request signal received from BCM on CAN communication line
HL HI REQ [On/Off]	×	Indicates high beam request signal received from BCM on CAN communication line
FR FOG REQ [On/Off]	×	Indicates front fog light request signal received from BCM on CAN communication line
FR WIP REQ [Stop/1LOW/Low/Hi]	×	Indicates front wiper request signal received from BCM on CAN communication line
WIP AUTO STOP [STOP P/ACT P]	×	Indicates condition of front wiper auto stop signal
WIP PROT [Off/BLOCK]	×	Indicates condition of front wiper fail-safe operation
IGN RLY1 -REQ [On/Off]		Indicates ignition switch ON signal received from BCM on CAN communication line
IGN RLY [On/Off]	×	Indicates condition of ignition relay
PUSH SW [On/Off]		Indicates condition of push-button ignition switch
INTER/NP SW [On/Off]		Indicates condition of CVT shift position
ST RLY CONT [On/Off]		Indicates starter relay status signal received from BCM on CAN communication line
IHBT RLY -REQ [On/Off]		Indicates starter control relay signal received from BCM on CAN communication line

Monitor Item [Unit]	Main Signals	Description
ST/INHI RLY [Off/ ST /INHI]		Indicates condition of starter relay and starter control relay
DETENT SW [On/Off]		Indicates condition of CVT shift selector (park position switch)
DTRL REQ [Off]		Indicates daytime running light request signal received from BCM on CAN communication line
HOOD SW [On/Off]		Indicates condition of hood switch
THFT HRN REQ [On/Off]		Indicates theft warning horn request signal received from BCM on CAN communication line
HORN CHIRP [On/Off]		Indicates horn reminder signal received from BCM on CAN communication line
HOOD SW 2 [On/Off]		Indicates condition of hood switch 2

ACTIVE TEST

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

CAN DIAG SUPPORT MNTR

Refer to LAN-16, "CAN Diagnostic Support Monitor".

ECU DIAGNOSIS INFORMATION

FRONT AIR CONTROL

Reference Value

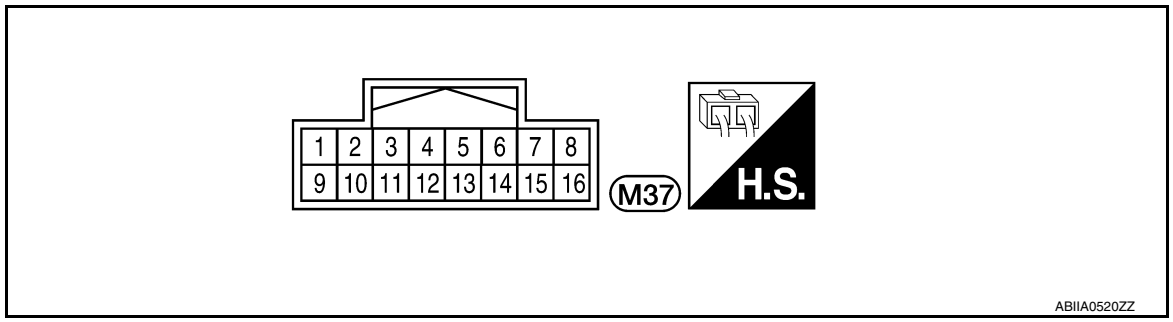
INFOID:0000000012600884

VALUES ON THE DIAGNOSIS TOOL

Display Item List

Monitor item name "operation or unit"		Contents
HEATER FAN SW	"ON/OFF"	Displays "ON/OFF" status as judged from blower fan motor switch signal.
AIR COND SW	"ON/OFF"	Displays "ON/OFF" status as judged from air conditioner switch signal.

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No.	Wire color	Item	Ignition switch	Condition		Voltage (V) (Approx.)
1	SB	Power supply for battery	—	—		Battery voltage
2	G	Power supply for IGN	ON	—		Battery voltage
3	P	CAN-L	—	—		—
4	L	CAN-H	—	—		—
5	R	Illumination (+)	ON	Lighting switch	OFF	0
					1st position	Battery voltage
6	GR	Illumination (-)	—	—		0
7	L	Compressor ON signal	ON	Compressor	ON	0
					OFF	9 - 12
8	Y	Blower ON signal	ON	Fan	ON	Battery voltage
					OFF	0
9	B	Ground	—	—		0
10	Y	Rear defrost ON signal	ON	Defroster switch	ON	0
					OFF	5
11	P	Blower motor feedback	ON	Fan speed	Low	7.0- 10.0
12	G	LIN signal	ON	—		5.5
13	W	VACTR	ON	—		Battery voltage
14	B	ACTR Ground	—	—		0
15	P	Rear defrost feedback	ON	Defroster switch	ON	Battery voltage
					OFF	0
16	BR	PD cut	ON	Compressor	ON	4.4

ECM, IPDM E/R, BCM

List of ECU Reference

INFOID:0000000012600885

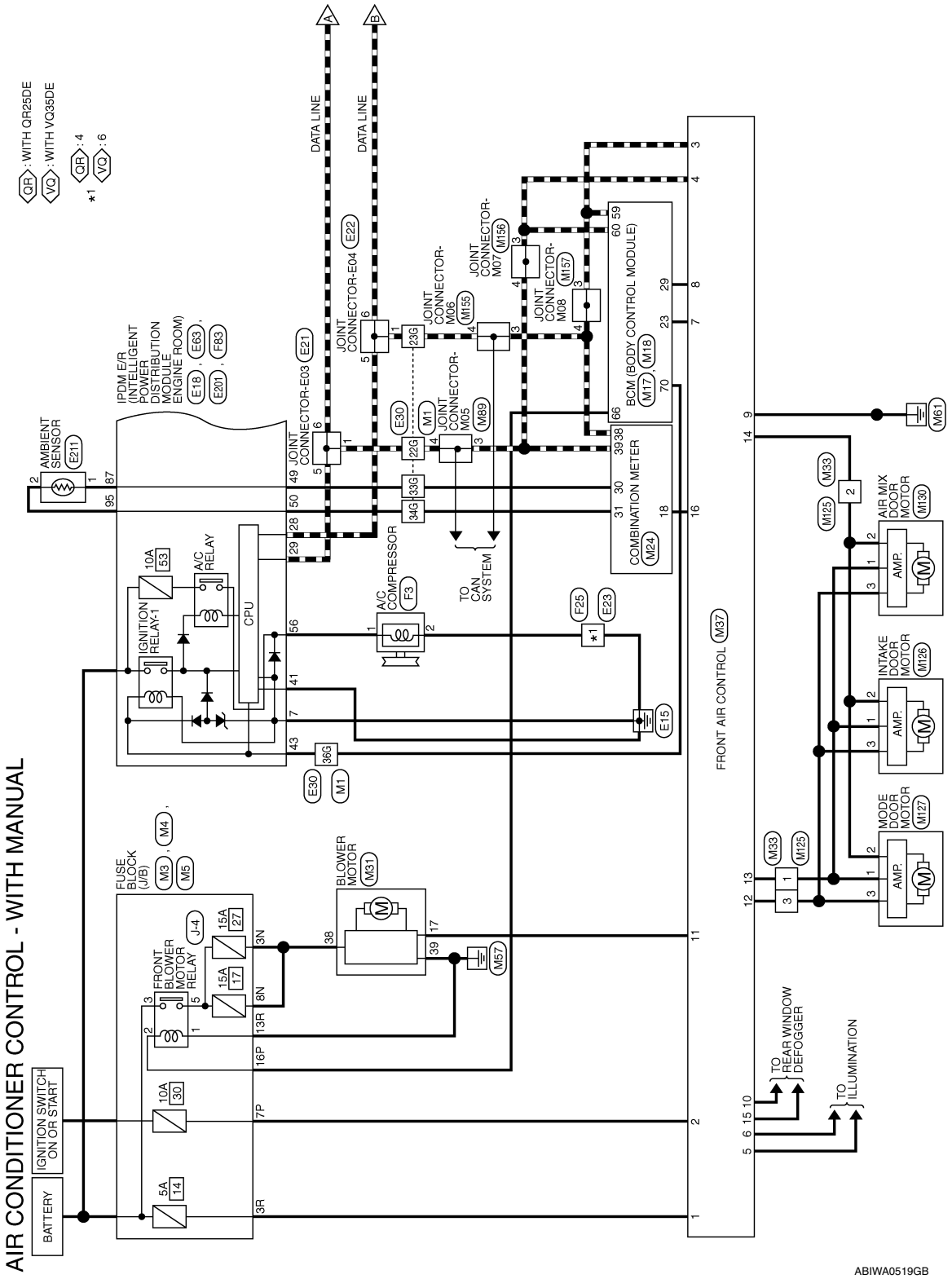
ECU	Reference
ECM	EC-91, "Reference Value" (QR25DE) EC-656, "Reference Value" (VQ35DE)
	EC-106, "Fail Safe" (QR25DE) EC-673, "Fail-safe" (VQ35DE)
	EC-108, "DTC Inspection Priority Chart" (QR25DE) EC-674, "DTC Inspection Priority Chart" (VQ35DE)
	EC-110, "DTC Index" (QR25DE) EC-676, "DTC Index" (VQ35DE)
IPDM E/R	PCS-13, "Reference Value"
	PCS-20, "Fail Safe"
	PCS-21, "DTC Index"
BCM	BCS-31, "Reference Value"
	BCS-50, "Fail Safe"
	BCS-51, "DTC Inspection Priority Chart"
	BCS-52, "DTC Index"

WIRING DIAGRAM

AIR CONDITIONER CONTROL

Wiring Diagram

INFOID:0000000012600886



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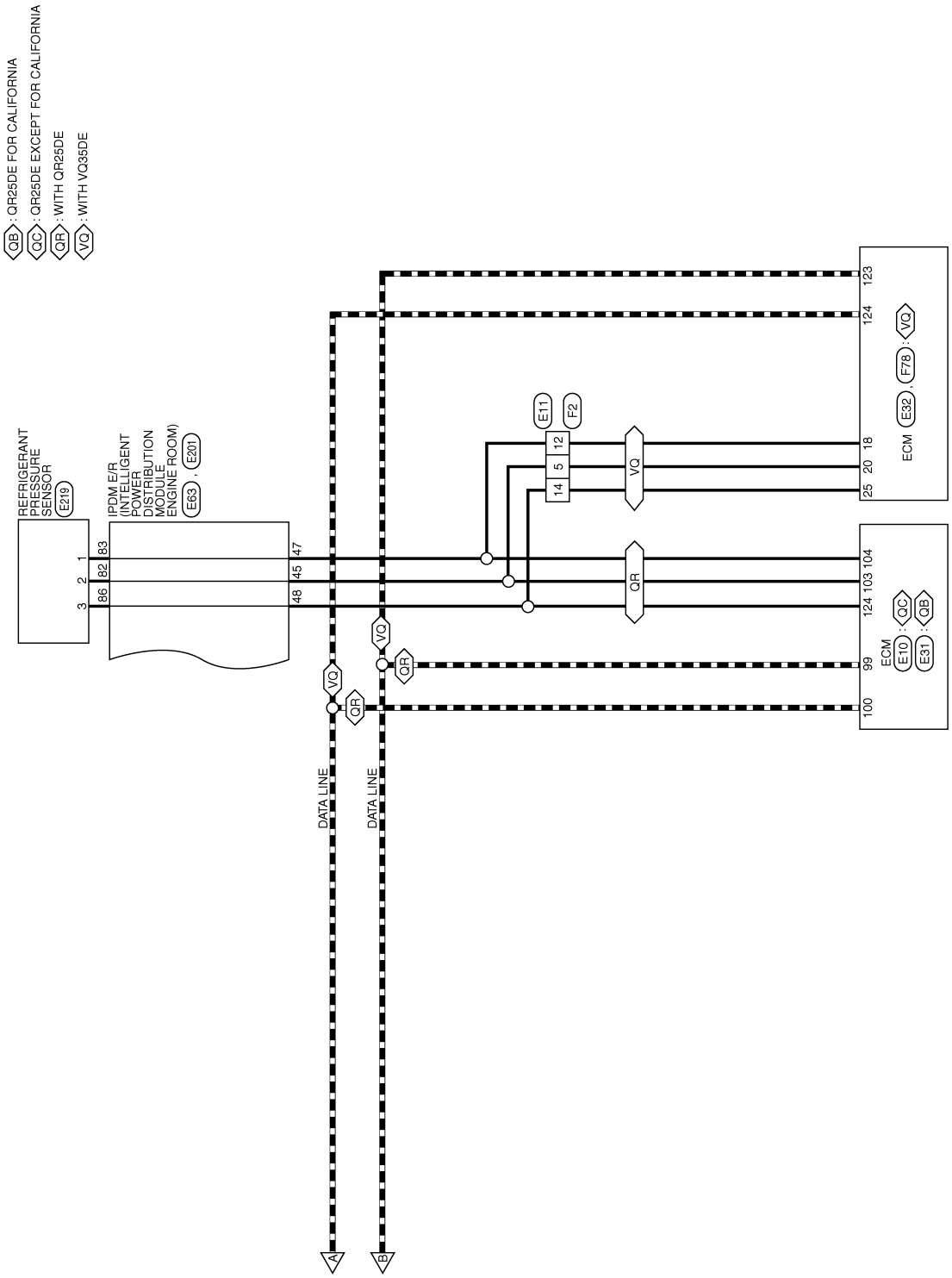

QB : QR25DE FOR CALIFORNIA
QC : QR25DE EXCEPT FOR CALIFORNIA
QR : WITH QR25DE
VQ : WITH VQ35DE
REFRIGERANT PRESSURE SENSOR
E219
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E63 , E201
E11
F2
ECM
E32 , F78
E10 , E31
DATA LINE
A
B
ABIWA0503GB

AIR CONDITIONER CONTROL CONNECTORS - WITH MANUAL

Connector No.	M1
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

1G	2G	3G	4G	5G
6G	7G	8G	9G	10G

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

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

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

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

91G	92G	93G	94G	95G
96G	97G	98G	99G	100G

Terminal No.	Color of Wire	Signal Name
22G	L	–
23G	P	–
33G	L	–
34G	W	–
36G	G	–

Connector No.	M3
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE

H.S.

3N	2N	1N
8N	7N	6N	5N	4N

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

Connector No.	M4
Connector Name	FUSE BLOCK (J/B)
Connector Color	BROWN

H.S.

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

Terminal No.	Color of Wire	Signal Name
3R	SB	–
13R	B	–

Connector No.	M5
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE

H.S.

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

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

Connector No.	M17
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	GREEN

H.S.

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

Terminal No.	Color of Wire	Signal Name
23	L	AIRCON SW
29	Y	BLOWER FAN SW

ABIIA1163GB

Connector No.	M18
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	BLACK

H.S.

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

Terminal No.	Color of Wire	Signal Name
59	P	CAN-L
60	L	CAN-H
66	R	BLOWER FAN RELAY OUT
70	G	IGN USM OUT 1

Connector No.	M24
Connector Name	COMBINATION METER
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
18	BR	A/C PD CUT OUT
30	L	OAT (VAMB)
31	W	OUT GND
38	P	CAN-L
39	L	CAN-H

Connector No.	M31
Connector Name	BLOWER MOTOR
Connector Color	WHITE

H.S.

38	17	39

Terminal No.	Color of Wire	Signal Name
17	P	–
38	W	–
39	B	–

Connector No.	M37
Connector Name	FRONT AIR CONTROL
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
1	SB	BAT
2	G	IGN
3	P	CAN-L
4	L	CAN-H
5	R	ILL+
6	GR	ILL-
7	L	COMP ON
8	Y	FAN ON
9	B	GND

Terminal No.	Color of Wire	Signal Name
10	Y	RR DEF ON
11	P	FAN PWM
12	G	LIN SIG
13	W	VACTR
14	B	ACTR GND
15	P	RR DEF F/B
16	BR	PD CUT

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

H.S.

3
2
1

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

AAIIA0524GB

Connector No.	M89
Connector Name	JOINT CONNECTOR-M05
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
3	L	–
4	L	–

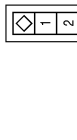
Connector No.	M125
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	L/R	–
2	B	–
3	L/W	–

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

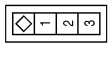
H.S.



Terminal No.	Color of Wire	Signal Name
1	L/R	–
2	B	–
3	L/W	–

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

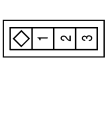
H.S.



Terminal No.	Color of Wire	Signal Name
1	L/R	–
2	B	–
3	L/W	–

Connector No.	M130
Connector Name	AIR MIX DOOR MOTOR
Connector Color	WHITE

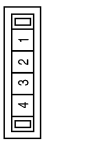
H.S.



Terminal No.	Color of Wire	Signal Name
1	L/R	–
2	B	–
3	L/W	–

Connector No.	M155
Connector Name	JOINT CONNECTOR-M06
Connector Color	WHITE

H.S.

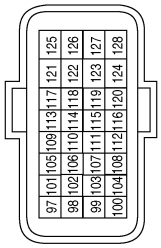


Terminal No.	Color of Wire	Signal Name
3	P	–
4	P	–

ABIIA1090GB

Connector No.	E10
Connector Name	ECM (QR25DE EXCEPT FOR CALIFORNIA)
Connector Color	GRAY

H.S.



Terminal No.	Color of Wire	Signal Name
99	P	CAN-L
100	L	CAN-H
103	V	REFRIGERANT PRESSURE SENSOR
104	O	SENSOR POWER SUPPLY
124	SB	SENSOR GROUND

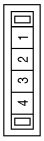
Connector No.	M157
Connector Name	JOINT CONNECTOR-M08
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
3	P	–
4	P	–

Connector No.	M156
Connector Name	JOINT CONNECTOR-M07
Connector Color	WHITE

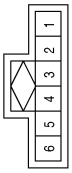
H.S.



Terminal No.	Color of Wire	Signal Name
3	L	–
4	L	–

Connector No.	E21
Connector Name	JOINT CONNECTOR-E03
Connector Color	GRAY

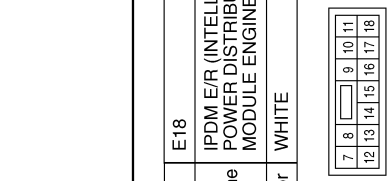
H.S.



Terminal No.	Color of Wire	Signal Name
1	L	–
5	L	–
6	L	–

Connector No.	E18
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

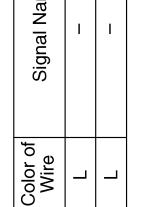
H.S.



Terminal No.	Color of Wire	Signal Name
7	B	GND (POWER)

Connector No.	E11
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
5	P	– (WITH VQ35DE)
12	BG	– (WITH VQ35DE)
14	SB	–

ABIIA1717GB

Connector No.	E22
Connector Name	JOINT CONNECTOR-E04
Connector Color	GRAY

H.S.

Terminal No.	Color of Wire	Signal Name
1	P	–
5	P	–
6	P	–

Connector No.	E23
Connector Name	WIRE TO WIRE
Connector Color	BROWN

H.S.

Terminal No.	Color of Wire	Signal Name
4	B	–
6	B	–

Connector No.	E30
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
22G	L	–
23G	P	–
33G	P	–
34G	BG	–
36G	LG	–

Connector No.	E31
Connector Name	ECM (QR25DE FOR CALIFORNIA)
Connector Color	GRAY

H.S.

Terminal No.	Color of Wire	Signal Name
99	P	CAN-L
100	L	CAN-H
103	V	REFRIGERANT PRESSURE SENSOR
104	O	SENSOR POWER SUPPLY
124	SB	SENSOR GROUND

ABIIA1718GB

Terminal No.	Color of Wire	Signal Name
45	V	PD SENS SIG-E/R (WITH QR25DE)
45	P	PD SENS SIG-E/R (WITH VQ35DE)
47	O	PD SENS PWR-E/R (WITH QR25DE)
47	BG	PD SENS PWR-E/R (WITH VQ35DE)
48	SB	PD SENS GND-E/R
49	P	AMB SENS SIG-E/R
50	BG	AMB SENS GND-E/R

Connector No.	E63
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

H.S.

19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50

Terminal No.	Color of Wire	Signal Name
28	P	CAN-L
29	L	CAN-H
41	B	GND (SIGNAL)
43	LG	IGN SIGNAL

Connector No.	E219
Connector Name	REFRIGERANT PRESSURE SENSOR
Connector Color	BLACK

H.S.

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

Connector No.	E32
Connector Name	ECM (WITH VQ35DE)
Connector Color	BLACK

H.S.

121	125	129	133	137	141	145	149
122	126	130	134	138	142	146	150
123	127	131	135	139	143	147	151
124	128	132	136	140	144	148	152

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

Connector No.	E211
Connector Name	AMBIENT SENSOR
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	BG	–
2	R	–

Connector No.	E201
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

H.S.

82	83	84	85	86	87	88	89
90	91	92	93	94	95	96	97

Terminal No.	Color of Wire	Signal Name
82	W	PD SENS SIG-FEM
83	G	PD SENS PWR-FEM
86	R	PD SENS GND-FEM
87	BG	AMB SENS SIG-FEM
95	R	AMB SENS GND-FEM

ABIIA1720GB

Connector No.	F2
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
5	SB	– (WITH VQ35DE)
12	R	– (WITH VQ35DE)
14	P	–

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

H.S.

Terminal No.	Color of Wire	Signal Name
1	SB	– (WITH QR25DE)
1	P	– (WITH VQ35DE)
2	B	–

Connector No.	F25
Connector Name	WIRE TO WIRE
Connector Color	BROWN

H.S.

Terminal No.	Color of Wire	Signal Name
4	B	–
6	B	–

Connector No.	F78
Connector Name	ECM (WITH VQ35DE)
Connector Color	BLACK

H.S.

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

Connector No.	F83
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
56	SB	A/C COMP (WITH QR25DE)
56	P	A/C COMP (WITH VQ35DE)

ABIIA1719GB

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:0000000012600887

DETAILED FLOW

1. LISTEN TO CUSTOMER COMPLAINT

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

>> GO TO 2.

2. VERIFY THE SYMPTOM WITH OPERATIONAL CHECK

Verify the symptom with operational check. Refer to HAC-139, "Work Procedure".

>> GO TO 3.

3. GO TO APPROPRIATE TROUBLE DIAGNOSIS

Go to appropriate trouble diagnosis. Refer to HAC-153, "Symptom Table".

>> GO TO 4.

4. REPAIR OR REPLACE

Repair or replace the specific parts.

>> GO TO 5.

5. FINAL CHECK

Final check.

Is the inspection result normal?

YES >> Inspection End.
NO >> GO TO 3.

OPERATION INSPECTION

Work Procedure

INFOID:0000000012600888

DESCRIPTION

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

Check condition : Engine running at normal operating temperature.
Check condition : Blower control dial in OFF position.
Check condition : REC off (LED extinguished).
Check condition : VENT selected (LED illuminated).
Check condition : DEF off (LED extinguished).

OPERATION INSPECTION

1. CHECK BLOWER

1. Rotate the blower control dial clockwise one detent. Blower should operate on low speed.
2. Rotate the blower control dial one detent at a time, and continue checking blower speed until all speeds are checked.
3. Leave blower on maximum speed.

Is the test result normal?

YES >> GO TO 2.
NO >> Refer to HAC-147, "Diagnosis Procedure".

2. CHECK A/C SWITCH LED

1. Press A/C switch.
2. A/C switch indicator should turn ON.

Is the test result normal?

YES >> GO TO 3.
NO >> Refer to HAC-151, "Diagnosis Procedure".

3. CHECK A/C SWITCH

Confirm that the compressor clutch engages (sound or visual inspection).

Is the test result normal?

YES >> GO TO 4.
NO >> Refer to HAC-150, "Diagnosis Procedure".

4. CHECK FRONT AIR CONTROL MODE LEDS

1. Press D/F ( ), FOOT ( ), B/L , and VENT , MAX A/C, and DEF ( ).
2. Each button indicator should illuminate.

Is the test result normal?

YES >> GO TO 5.
NO >> Refer to HAC-151, "Diagnosis Procedure".

5. CHECK DISCHARGE AIR

1. Press D/F ( ), FOOT ( ), B/L , and VENT and DEF ( ).
2. Confirm that discharge air comes out according to the air distribution table. Refer to HAC-118, "Door Control".

Is the test result normal?

YES >> GO TO 6.
NO >> Refer to HAC-153, "Symptom Table".

6. CHECK REC LED

1. Press DEF ( ) and make sure LED is off.
2. Make sure VENT ( ) or B/L ( ) is selected.
3. Press REC ( ) switch one time. REC indicator should illuminate.

4. Press REC ( ) switch one more time. REC indicator should go off.

Is the test result normal?

YES >> GO TO 7.
NO >> Refer to HAC-151, "Diagnosis Procedure".

7. CHECK INTAKE DOOR OPERATION

1. Press REC ( ) switch one time. REC indicator should illuminate.
2. Listen to the sound of the air coming out of the vent.
3. Press REC ( ) switch one more time. REC indicator should go off.
4. There should be an audible change to the sound of the air flowing out of the vent.

Is the test result normal?

YES >> GO TO 8.
NO >> Refer to HAC-145, "Diagnosis Procedure".

8. CHECK TEMPERATURE DECREASE

1. Press A/C switch.
2. Rotate temperature control dial counterclockwise until maximum cold.
3. Check for cold air at selected discharge air outlets.

Is the test result normal?

YES >> GO TO 9.
NO >> Refer to HAC-154, "Component Function Check".

9. CHECK TEMPERATURE INCREASE

1. Rotate temperature control dial clockwise until maximum hot.
2. Check for hot air at appropriate discharge air outlets.

Is the test result normal?

YES >> Inspection End.
NO >> Refer to HAC-156, "Component Function Check".

DTC/CIRCUIT DIAGNOSIS

MODE DOOR MOTOR

Diagnosis Procedure

INFOID:0000000012600889

Regarding Wiring Diagram information, refer to HAC-129, "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 5.

2.CHECK MODE DOOR MOTOR GROUND CIRCUIT FOR OPEN

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

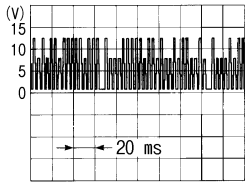
Mode door motor		—	Continuity
Connector	Terminal		
M127	2	Ground	Yes

Is the inspection result normal?

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

3.CHECK MODE DOOR MOTOR LIN SIGNAL

1. Connect mode door motor and front air control connector.
2. Turn ignition switch ON.
3. Confirm output waveform between mode door motor harness connector and ground using oscilloscope.

+		−	Output waveform
Mode door motor			
Connector	Terminal		
M127	3	Ground	

SJIA1453J

Is the inspection result normal?

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

4. CHECK INSTALLATION OF MODE DOOR MOTOR

Check mode door motor is properly installed. Refer to HAC-162, "Exploded View".

Is the inspection result normal?

YES >> Replace mode door motor. Refer to HAC-163, "MODE DOOR MOTOR : Removal and Installation".
NO >> Repair or replace malfunctioning part.

5. CHECK MODE DOOR MOTOR POWER SUPPLY CIRCUIT FOR OPEN

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

Mode door motor		Front air control		Continuity
Connector	Terminal	Connector	Terminal	
M127	1	M37	13	Yes

Is the inspection result normal?

YES >> Replace front air control. Refer to HAC-160, "Removal and Installation".
NO >> Repair harness or connector.

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

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

Mode door motor		Front air control		Continuity
Connector	Terminal	Connector	Terminal	
M127	3	M37	12	Yes

Is the inspection result normal?

YES >> Replace front air control. Refer to HAC-160, "Removal and Installation".
NO >> Repair harness or connector.

AIR MIX DOOR MOTOR

Diagnosis Procedure

INFOID:0000000012600890

Regarding Wiring Diagram information, refer to HAC-129, "Wiring Diagram".

1.CHECK AIR MIX DOOR MOTOR POWER SUPPLY

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

+		−	Voltage (Approx.)
Air mix door motor			
Connector	Terminal		
M130	1	Ground	Battery voltage

Is the inspection result normal?

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

2.CHECK AIR MIX DOOR MOTOR GROUND CIRCUIT FOR OPEN

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

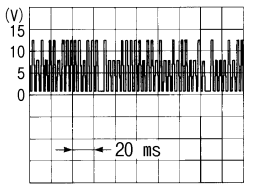
Air mix door motor		—	Continuity
Connector	Terminal		
M130	2	Ground	Yes

Is the inspection result normal?

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

3.CHECK AIR MIX DOOR MOTOR LIN SIGNAL

1. Connect air mix door motor and front air control connector.
2. Turn ignition switch ON.
3. Confirm output waveform between air mix door motor harness connector and ground using oscilloscope.

+		−	Output waveform
Air mix door motor			
Connector	Terminal		
M130	3	Ground	

SJIA1453J

Is the inspection result normal?

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

4.CHECK INSTALLATION OF AIR MIX DOOR MOTOR

Check air mix door motor is properly installed. Refer to HAC-162, "Exploded View".

Is the inspection result normal?

YES >> Replace air mix door motor. Refer to HAC-163, "AIR MIX DOOR MOTOR : Removal and Installation".

NO >> Repair or replace malfunctioning part.

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

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

Air mix door motor		Front air control		Continuity
Connector	Terminal	Connector	Terminal	
M130	1	M37	13	Yes

Is the inspection result normal?

YES >> Replace front air control. Refer to HAC-160, "Removal and Installation".

NO >> Repair harness or connector.

6. CHECK AIR MIX DOOR MOTOR LIN SIGNAL CIRCUIT FOR OPEN

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

Air mix door motor		Front air control		Continuity
Connector	Terminal	Connector	Terminal	
M130	3	M37	12	Yes

Is the inspection result normal?

YES >> Replace front air control. Refer to HAC-160, "Removal and Installation".

NO >> Repair harness or connector.

INTAKE DOOR MOTOR

Diagnosis Procedure

INFOID:0000000012600891

Regarding Wiring Diagram information, refer to HAC-129, "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 5.

2.CHECK INTAKE DOOR MOTOR GROUND CIRCUIT FOR OPEN

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

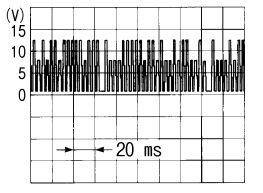
Intake door motor		—	Continuity
Connector	Terminal		
M126	2	Ground	Yes

Is the inspection result normal?

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

3.CHECK INTAKE DOOR MOTOR LIN SIGNAL

1. Connect intake door motor and front air control connector.
2. Turn ignition switch ON.
3. Confirm output waveform between intake door motor harness connector and ground using oscilloscope.

+		−	Output waveform
Intake door motor			
Connector	Terminal		
M126	3	Ground	

SJIA1453J

Is the inspection result normal?

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

4.CHECK INSTALLATION OF INTAKE DOOR MOTOR

Check intake door motor is properly installed. Refer to HAC-162, "Exploded View".

Is the inspection result normal?

YES >> Replace intake door motor. Refer to HAC-163, "INTAKE DOOR MOTOR : Removal and Installation".
NO >> Repair or replace malfunctioning part.

5. CHECK INTAKE DOOR MOTOR POWER SUPPLY CIRCUIT FOR OPEN

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

Intake door motor		Front air control		Continuity
Connector	Terminal	Connector	Terminal	
M126	1	M37	13	Yes

Is the inspection result normal?

YES >> Replace front air control. Refer to HAC-160, "Removal and Installation".
NO >> Repair harness or connector.

6. CHECK INTAKE DOOR MOTOR LIN SIGNAL CIRCUIT FOR OPEN

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

Intake door motor		Front air control		Continuity
Connector	Terminal	Connector	Terminal	
M126	3	M37	12	Yes

Is the inspection result normal?

YES >> Replace front air control. Refer to HAC-160, "Removal and Installation".
NO >> Repair harness or connector.

BLOWER MOTOR

Diagnosis Procedure

INFOID:0000000012600892

Regarding Wiring Diagram information, refer to HAC-129, "Wiring Diagram".

1.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 15A fuses [Nos. 17 and 27, located in fuse block (J/B)].
   NOTE:
   Refer to PG-66, "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	38	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	39	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 front air control connector.
2. Check continuity between blower motor harness connector and front air control harness connector.

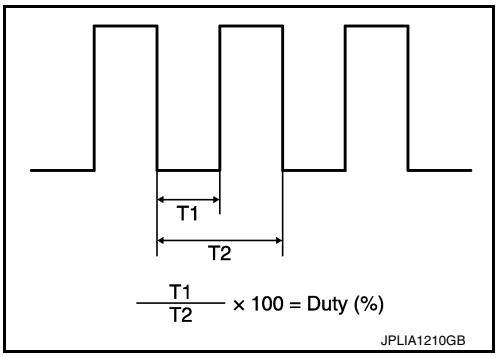
Blower motor		Front air control		Continuity
Connector	Terminal	Connector	Terminal	
M31	17	M37	11	Yes

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 front air control 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 by 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	17	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-12, "BLOWER MOTOR : Removal and Installation".
NO >> Replace front air control. Refer to HAC-160, "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-148, "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:0000000012600893

1. CHECK BLOWER MOTOR

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

Does the blower fan operate?

YES >> Intermittent incident. Refer to GI-44, "Intermittent Incident".
NO >> Replace blower motor. Refer to VTL-12, "BLOWER MOTOR : Removal and Installation".

Component Inspection (Front Blower Motor Relay)

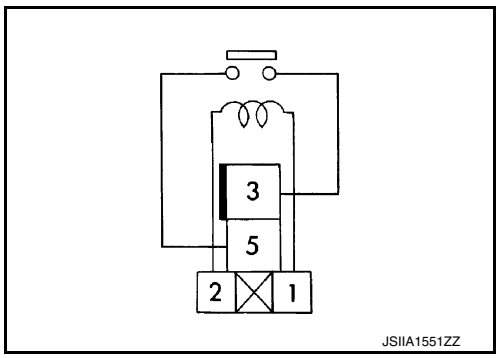
INFOID:0000000012600894

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:0000000012600895

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-150, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000012600896

Regarding Wiring Diagram information, refer to HAC-129, "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-68, "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 compressor connector and IPDM E/R connector.
2. Check continuity between compressor harness connector and IPDM E/R harness connector.

Compressor		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F3	1	F83	56	Yes

Is the inspection result normal?

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

3.CHECK MAGNET CLUTCH GROUND CIRCUIT

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

Compressor		—	Continuity
Connector	Terminal		
F3	2	Ground	Yes

Is the inspection result normal?

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

4.CHECK MAGNET CLUTCH

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

Does it operate normally?

YES >> Replace IPDM E/R. Refer to PCS-47, "Removal and Installation".
NO >> Replace magnet clutch. Refer to HA-31, "MAGNET CLUTCH : Removal and Installation".

POWER SUPPLY AND GROUND CIRCUIT FOR FRONT AIR CONTROL

Description

INFOID:0000000012600897

COMPONENT DESCRIPTION

Front air control.
The front air control has a built-in microcomputer that processes information sent from various sensors needed for air conditioner operation. The air mix door motor, the mode door motor, the intake door motor, the blower motor and the A/C compressor are then controlled.

Component Function Check

INFOID:0000000012600898

1.CHECK OPERATION

1. Turn the blower motor dial clockwise and verify the blower speed increases and that one of the LEDs illuminates on the mode switch.
2. Press the mode switches and verify that the modes change, the LEDs illuminate, and that air flows from the various vents.
3. Turn the temperature control dial and verify the temperature changes at the selected vents.
4. Press the DEF and REC buttons and verify air flow changes.

Does it operate normally?

YES >> Inspection End.
NO >> Perform trouble diagnosis for the front air control system. Refer to HAC-151, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000012600899

Regarding Wiring Diagram information, refer to HAC-129, "Wiring Diagram".

1.CHECK FRONT AIR CONTROL POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect the front air control connector.
3. Turn ignition switch ON.
4. Check voltage between front air control harness connector M37 terminals 1, 2 and ground.

(+)		(–)	Voltage		
Front air control		—	Ignition switch position		
Connector	Terminal		OFF	ACC	ON
M37	1	Ground	Battery voltage	Battery voltage	Battery voltage
	2		Approx. 0V	Approx. 0V	Battery voltage

Is the inspection result normal?

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

2.CHECK FUSE

Check fuses [Nos. 14 and 30, located in the fuse block (J/B)].
NOTE:
Refer to PG-66, "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 FRONT AIR CONTROL GROUND CIRCUIT

1. Turn ignition switch OFF.

2. Check continuity between front air control harness connector M37 terminals 9 and ground.

Front air control		—	Continuity
Connector	Terminal		
M37	9	Ground	Yes

Is the inspection result normal?

YES >> Replace the front air control. Refer to HAC-160, "Removal and Installation".
NO >> Repair the harnesses or connectors.

SYMPTOM DIAGNOSIS

HEATER AND AIR CONDITIONING SYSTEM CONTROL SYMPTOMS

Symptom Table

INFOID:0000000012600900

SYMPTOM TABLE

Symptom	Reference Page	
A/C system does not come on.	Go to Trouble Diagnosis Procedure for A/C System.	HAC-151, "Diagnosis Procedure"
Air outlet does not change.	Go to Trouble Diagnosis Procedure for Mode Door Motor. (LIN)	HAC-141, "Diagnosis Procedure"
Mode door motor does not operate normally.		
Discharge air temperature does not change.	Go to Trouble Diagnosis Procedure for Air Mix Door Motor. (LIN)	HAC-143, "Diagnosis Procedure"
Air mix door motor does not operate normally.		
Intake door does not change.	Go to Trouble Diagnosis Procedure for Intake Door Motor. (LIN)	HAC-145, "Diagnosis Procedure"
Intake door motor does not operate normally.		
Blower motor operation is malfunctioning.	Go to Trouble Diagnosis Procedure for Blower Motor.	HAC-147, "Diagnosis Procedure"
Magnet clutch does not engage.	Go to Trouble Diagnosis Procedure for Magnet Clutch.	HAC-150, "Diagnosis Procedure"
Insufficient cooling	Go to Trouble Diagnosis Procedure for Insufficient Cooling.	HAC-154, "Component Function Check"
Insufficient heating	Go to Trouble Diagnosis Procedure for Insufficient Heating.	HAC-156, "Component Function Check"
Noise	Go to Trouble Diagnosis Procedure for Noise.	HA-20, "Symptom Table"

INSUFFICIENT COOLING

Component Function Check

INFOID:0000000012600901

SYMPTOM: Insufficient cooling

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE DECREASE

1. Press the A/C switch.
2. Turn temperature control dial counterclockwise to maximum cold.
3. Check for cold air at discharge air outlets.

Can a symptom be duplicated?

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

2. CHECK FOR ANY SYMPTOMS

Perform a complete operational check and check for any symptoms. Refer to HAC-139, "Work Procedure".

Does another symptom exist?

YES >> Refer to HAC-153, "Symptom Table".
NO >> System OK.

3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4.

4. CHECK DRIVE BELTS

Check A/C compressor belt tension. Refer to EM-19, "Checking Drive Belts" (QR25DE) or EM-136, "Checking Drive Belt" (VQ35DE).

Is the inspection result normal?

YES >> GO TO 5.
NO >> Adjust or replace compressor belt. Refer to EM-19, "Tension Adjustment" (QR25DE) or EM-136, "Tension Adjustment" (VQ35DE).

5. CHECK AIR MIX DOOR MOTOR OPERATION

Check and verify air mix door mechanism for smooth operation.

Does air mix door operate correctly?

YES >> GO TO 6.
NO >> Check air mix door motor circuit. Refer to HAC-143, "Diagnosis Procedure".

6. CHECK COOLING FAN MOTOR OPERATION

Check and verify cooling fan motor for smooth operation.

Does cooling fan motor operation correctly?

YES >> GO TO 7.
NO >> Check cooling fan motor. Refer to EC-536, "Component Function Check" (QR25DE) or EC-1044, "Component Function Check" (VQ35DE).

7. CHECK RECOVERY/RECYCLING EQUIPMENT BEFORE USAGE

Check recovery/recycling equipment before connecting to vehicle. Verify there is no pressure in the recovery/recycling equipment by checking the gauges. If pressure exists, recover refrigerant from equipment lines.

>> GO TO 8.

8. CHECK REFRIGERANT PURITY

1. Connect recovery/recycling equipment to vehicle.
2. Confirm refrigerant purity in supply tank using recovery/recycling and refrigerant identifier.

Is the inspection result normal?

YES >> GO TO 9.
NO >> Check contaminated refrigerant. Refer to HA-4, "Contaminated Refrigerant".

9. CHECK REFRIGERANT PRESSURE

Check refrigerant pressure with manifold gauge connected. Refer to HA-28, "Inspection".

Is the inspection result normal?

YES >> Perform diagnostic work flow. Refer to HA-15, "Workflow".
NO >> GO TO 10.

10. CHECK FOR EVAPORATOR FREEZE UP

Start engine and run A/C. Check for evaporator freeze up.

Does evaporator freeze up?

YES >> Perform diagnostic work flow. Refer HA-15, "Workflow".
NO >> GO TO 11.

11. CHECK AIR DUCTS

Check ducts for air leaks.

Is the inspection result normal?

YES >> System OK.
NO >> Repair air leaks.

INSUFFICIENT HEATING

Component Function Check

INFOID:0000000012600902

SYMPTOM: Insufficient heating

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE INCREASE

1. Turn temperature control dial clockwise to maximum heat.
2. Check for hot air at discharge air outlets.

Can a symptom be duplicated?

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

2. CHECK FOR ANY SYMPTOMS

Perform a complete operational check and check for any symptoms. Refer to HAC-139, "Work Procedure".

Does another symptom exist?

YES >> Refer to HAC-153, "Symptom Table".
NO >> System OK.

3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4.

4. CHECK ENGINE COOLING SYSTEM

1. Check for proper engine coolant level. Refer to CO-9, "System Inspection" (QR25DE) or CO-33, "System Inspection" (VQ35DE).
2. Check hoses for leaks or kinks.
3. Check radiator cap. Refer to CO-9, "System Inspection" (QR25DE) or CO-33, "System Inspection" (VQ35DE).
4. Check for air in cooling system.

>> GO TO 5.

5. CHECK AIR MIX DOOR MOTOR OPERATION

Check and verify air mix door mechanism for smooth operation.

Does air mix door operate correctly?

YES >> GO TO 6.
NO >> Check the air mix door motor circuit. Refer to HAC-143, "Diagnosis Procedure".

6. CHECK AIR DUCTS

Check for disconnected or leaking air ducts.

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair all disconnected or leaking air ducts.

7. CHECK HEATER HOSE TEMPERATURES

1. Start engine and warm it up to normal operating temperature.
2. Touch both the inlet and outlet heater hoses. The inlet hose should be hot and the outlet hose should be warm.

Is the inspection result normal?

YES >> GO TO 8.
NO >> Both hoses warm: GO TO 9.

8. CHECK ENGINE COOLANT SYSTEM

Check thermostat operation. Refer to CO-22, "Removal and Installation" (QR25DE) or CO-46, "Removal and Installation" (VQ35DE).

Is the inspection result normal?

YES >> System OK.
NO >> Repair or replace as necessary.

9. CHECK HEATER HOSES

Check heater hoses for proper installation.

Is the inspection result normal?

YES >> System OK.
NO >> 1. Back flush heater core.
2. Drain the water from the system.
3. Refill system with new engine coolant. Refer to CO-11, "Changing Engine Coolant" (QR25DE) or CO-35, "Changing Engine Coolant" (VQ35DE).
4. To retest GO TO 10.

10. CHECK HEATER HOSE TEMPERATURES

1. Start engine and warm up to normal operating temperature.
2. Touch both the inlet and outlet heater hoses. The inlet hose should be hot and the outlet hose should be warm

Is the inspection result normal?

YES >> System OK.
NO >> Replace heater core. Refer to HA-41, "HEATER CORE : Removal and Installation".

COMPRESSOR DOES NOT OPERATE

Description

INFOID:0000000012600903

Symptom: Compressor does not operate.

Diagnosis Procedure

INFOID:0000000012600904

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-86, "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-560, "Component Function Check" (QR25DE) or EC-1070, "Component Function Check" (VQ35DE).

Is the inspection result normal?

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

3.CHECK FRONT AIR CONTROL OUTPUT SIGNAL

With CONSULT
Check “FAN ON” and “” in “Data Monitor” of “BCM”.

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

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace front air control. Refer to HAC-160, "Removal and Installation".

4.CHECK ECM INPUT SIGNAL

With CONSULT
Check “AIR COND SIG” and “HEATER FAN SW” in “Data Monitor” of “ECM”.

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-19, "Trouble Diagnosis Flow Chart".

5.CHECK IPDM E/R INPUT SIGNAL

With CONSULT

1. Start engine.
2. Check “AC COMP REQ” in “Data Monitor” of “IPDM E/R”.

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-19, "Trouble Diagnosis Flow Chart".

REMOVAL AND INSTALLATION

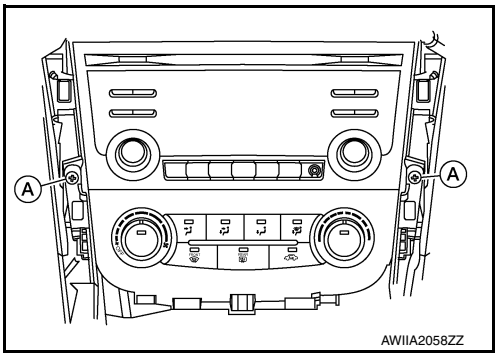
FRONT AIR CONTROL

Removal and Installation

INFOID:0000000012600905

REMOVAL

1. Remove the cluster lid C lower. Refer to IP-20, "Cluster Lid C Lower".
2. Remove the front air control screws (A).



3. Disconnect the harness connector from the front air control and remove.

INSTALLATION

Installation is in the reverse order of removal.

REFRIGERANT PRESSURE SENSOR

Removal and Installation

INFOID:0000000012600906

REMOVAL

1. Discharge the refrigerant. Refer to HA-23, "Recycle Refrigerant".
2. Remove the front bumper fascia. Refer to EXT-25, "Removal and Installation".
3. Disconnect the harness connector from the refrigerant pressure sensor.
4. Remove the 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

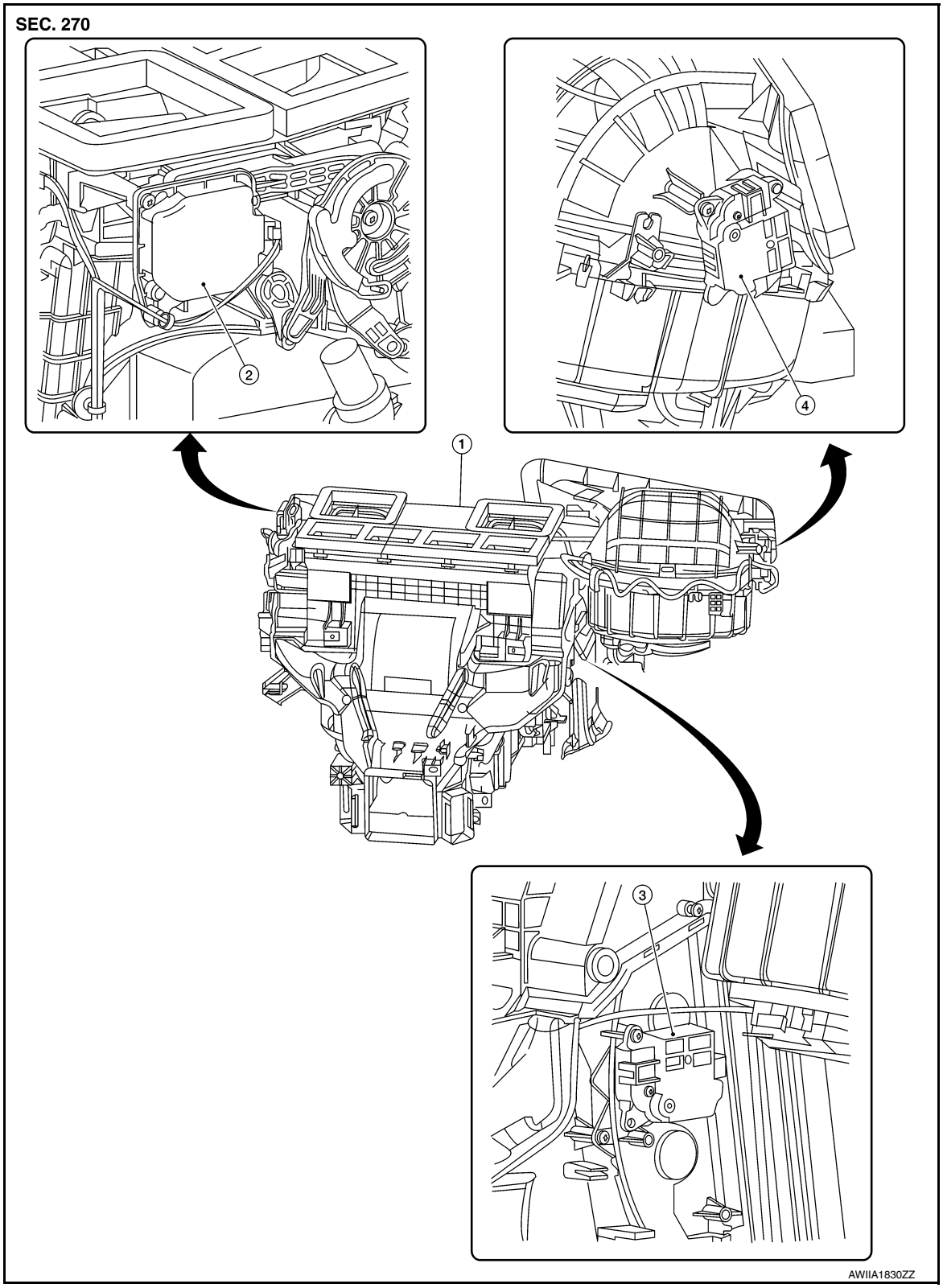
Installation is in the reverse order of removal.

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-21, "Leak Test".**

DOOR MOTOR

Exploded View

INFOID:0000000012600907



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

INTAKE DOOR MOTOR

INTAKE DOOR MOTOR : Removal and Installation

INFOID:0000000012600908

REMOVAL

1. Remove the glove box assembly. Refer to IP-22, "Removal and Installation".
2. Disconnect the harness connector from the intake door motor.
3. Remove the intake door motor screws and the intake door motor.

INSTALLATION

Installation is in the reverse order of removal.

MODE DOOR MOTOR

MODE DOOR MOTOR : Removal and Installation

INFOID:0000000012600909

REMOVAL

1. Remove the instrument lower panel LH. Refer to IP-21, "Removal and Installation".
2. Disconnect the harness connector from the mode door motor.
3. Remove the mode door motor screws and the mode door motor.

INSTALLATION

Installation is in the reverse order of removal.

AIR MIX DOOR MOTOR

AIR MIX DOOR MOTOR : Removal and Installation

INFOID:0000000012600910

REMOVAL

1. Remove the glove box assembly. Refer to IP-22, "Removal and Installation".
2. Remove the upper floor connecting duct (RH). Refer to HA-39, "Exploded View".
3. Disconnect the harness connector from the air mix door motor.
4. Remove the air mix door motor screws and the air mix door motor.

INSTALLATION

Installation is in the reverse order of removal.