SECTION HAC

HEATER & AIR CONDITIONING CONTROL SYSTEM

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PRECAUTION

PRECAUTIONS

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

INFOID:0000000012424756

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

WARNING:

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

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

WARNING:

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

Precaution for Work

INFOID:0000000012424757

- 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.

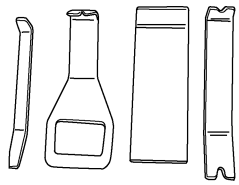
PREPARATION

PREPARATION

Special Service Tool

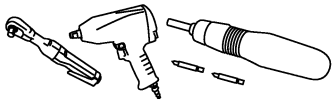
INFOID:0000000012424758

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:0000000012424759

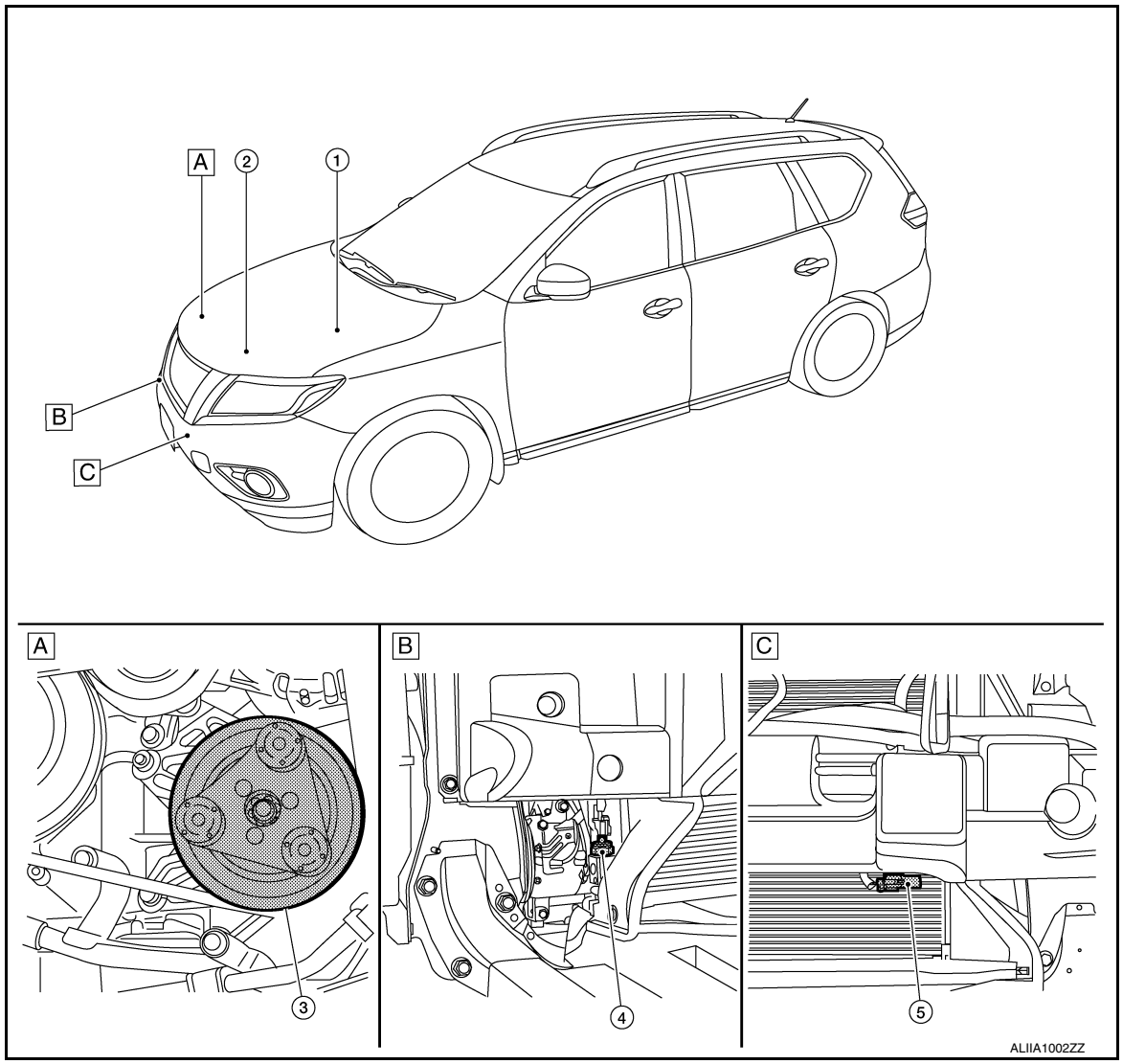
(TechMate No.) Tool name	Description
(—) Power tool  PIIB1407E	Loosening nuts, screws and bolts

SYSTEM DESCRIPTION

COMPONENT PARTS

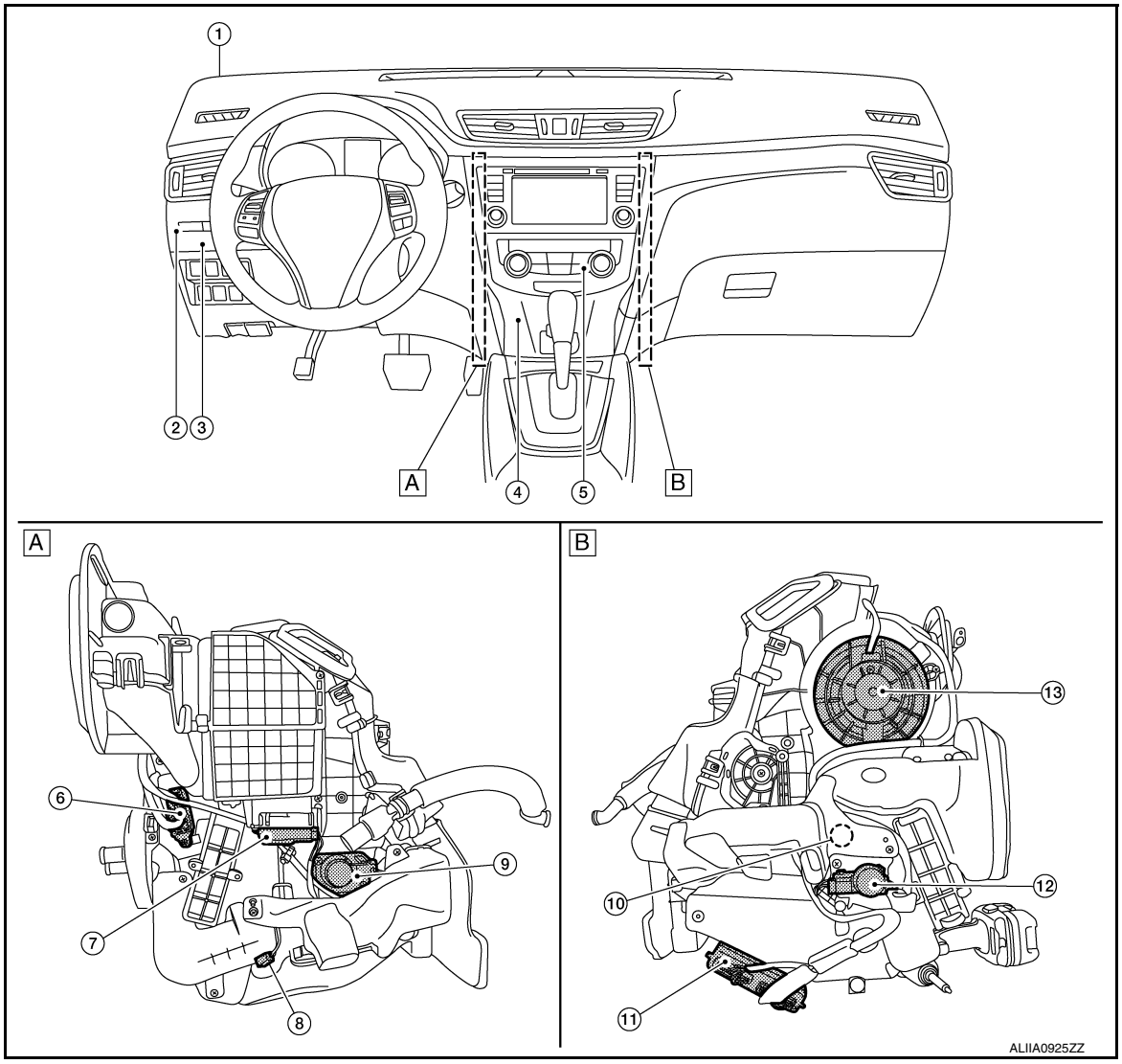
Component Part Location

INFOID:0000000012424760



A. RH side of engine compartment
B. RH front of vehicle (view with front bumper fascia removed)
C. LH front of vehicle (view with front bumper fascia removed)

No.	Component	Description
1.	IPDM E/R	Refer to PCS-7, "RELAY CONTROL SYSTEM : System Description".
2.	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.
3.	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.
4.	Refrigerant pressure sensor	Refer to EC-28, "Refrigerant Pressure Sensor".
5.	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.



A. Left side of A/C unit B. Right side of A/C unit

No.	Component	Description
1.	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.
2.	Front blower relay	The front blower relay controls the flow of current to fuse 17 and 27 in the Fuse Block (J/B). The relay is grounded when the ignition switch is in the ON position.
3.	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.
4.	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.
5.	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.
6.	Variable blower control	The variable blower control controls the speed of the blower motor by controlling the ground circuit of the blower motor. The front air control provides voltage to the gate of the variable blower control based on the position of the blower control dial.

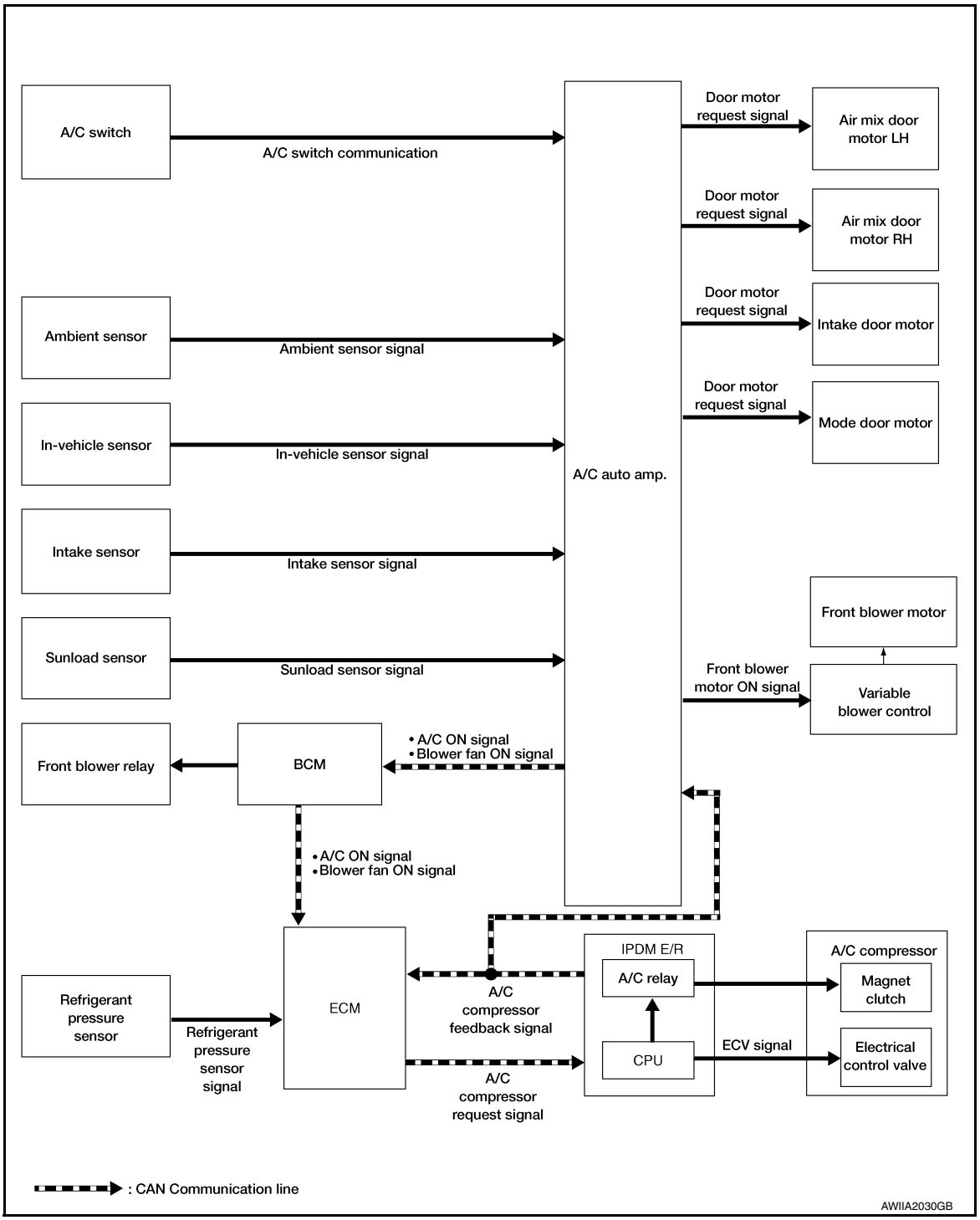
No.	Component	Description
7.	Intake door motor	The intake door motor controls the position of the intake door. Fresh air is allowed to enter the cabin in one position, and recirculated inside air is allowed to enter in the other position. The intake door motor receives position commands from the A/C auto amp.
8.	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.
9.	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.
10.	Mode door motor	The mode door controls the direction the conditioned air passes through the ventilation system. Through a series of levers and gears, the mode door controls the defrost door, the foot door, and the vent door. There are 5 preset positions: VENT, B/L, FOOT, D/F, and DEF. The mode door motor receives position commands from the A/C auto amp.
11.	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.
12.	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.
13.	Front Blower motor	The blower motor varies the speed at which the air flows through the ventilation system.

SYSTEM

System Description

INFOID:0000000012424761

SYSTEM DIAGRAM



SYSTEM DESCRIPTION

- 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-11, "Air Flow Control"
- HAC-12, "Air Inlet Control"
- HAC-13, "Air Outlet Control"

- HAC-13, "Compressor Control"
- HAC-13, "Door Control"
- HAC-18, "Temperature Control"
- Correction for input value of each sensor

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

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

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

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

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

Control by ECM
- Cooling fan control
  Refer to EC-48, "COOLING FAN CONTROL : System Description".
- Air conditioning cut control
  Refer to EC-47, "AIR CONDITIONING CUT CONTROL : System Description".

Control by IPDM E/R
- Relay control
  Refer to PCS-7, "RELAY CONTROL SYSTEM : System Description".
- Cooling fan control
  Refer to EC-48, "COOLING FAN CONTROL : System Description".

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

Air Flow Control

INFOID:0000000012424762

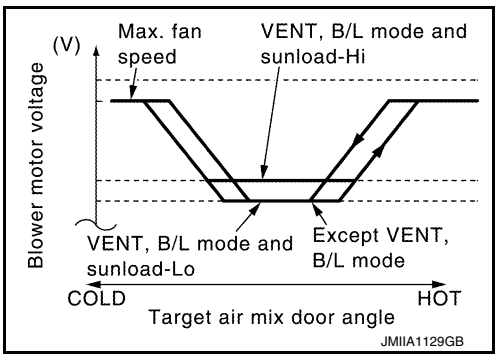
DESCRIPTION

- 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

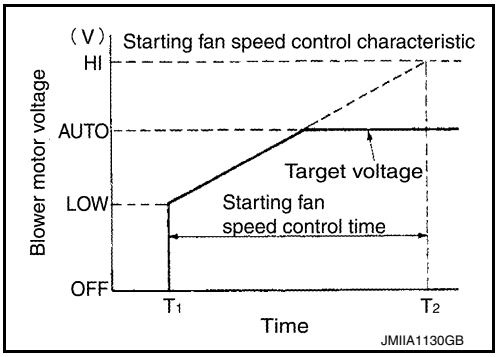
- A/C auto amp. decides target air flow depending on target air mix door opening angle.
- A/C auto amp. changes duty ratio of blower motor control signal and controls the air flow continuously so that air flow matches the target air flow.

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



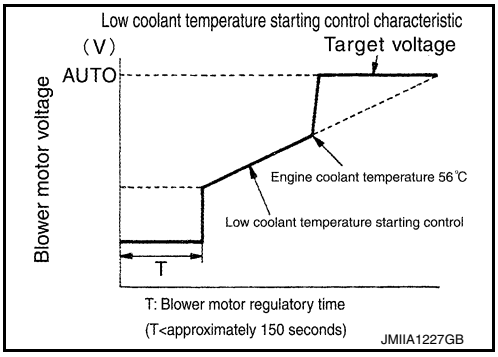
STARTING AIR FLOW CONTROL

- 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.

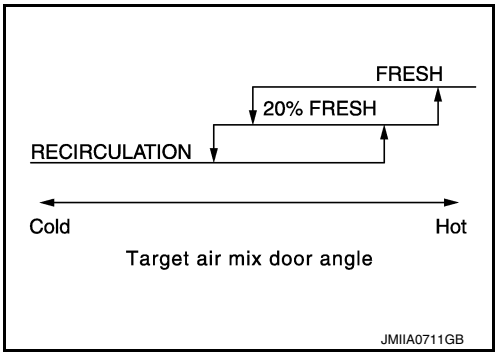
FAN SPEED CONTROL AT DOOR MOTOR OPERATION

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:0000000012424763

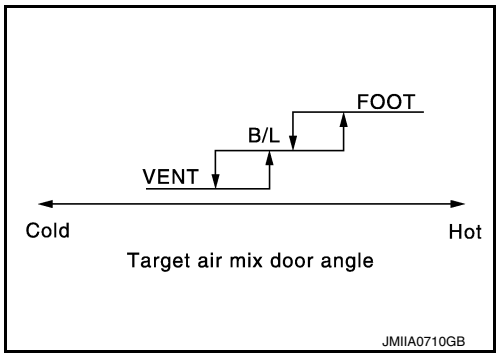
The intake door is automatically controlled by the temperature setting, ambient temperature, in-vehicle temperature, intake temperature, amount of sunload and ON/OFF operation of the compressor.
Intake door automatic control selects FRE, 20% FRE, or REC depending on a target air mix door opening angle,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



Air Outlet Control

INFOID:0000000012424764

- 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:0000000012424765

DESCRIPTION

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

COMPRESSOR PROTECTION CONTROL AT PRESSURE MALFUNCTION

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

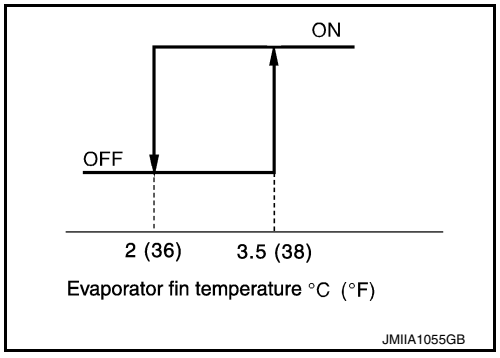
- 3.12 MPa (31.82 kg/cm^2, 452.4 psi) or more (When the engine speed is less than 1,500 rpm)
- 2.74 MPa (27.95 kg/cm^2, 397.3 psi) or more (When the engine speed is 1,500 rpm or more)
- 0.14 MPa (1.43 kg/cm^2, 20.3 psi) or less

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°C (36°F) or less, A/C auto amp. requests ECM to turn compressor OFF, and stops the compressor.
- When the front evaporator fin temperature returns to 3.5°C (38°F) or more, the compressor is activated.



AIR CONDITIONING CUT CONTROL

When set engine is running is excessively high load condition, ECM requests IPDM E/R to turn A/C relay OFF, and stops the compressor. Refer to EC-47, "AIR CONDITIONING CUT CONTROL : System Description".

Door Control

INFOID:0000000012424766

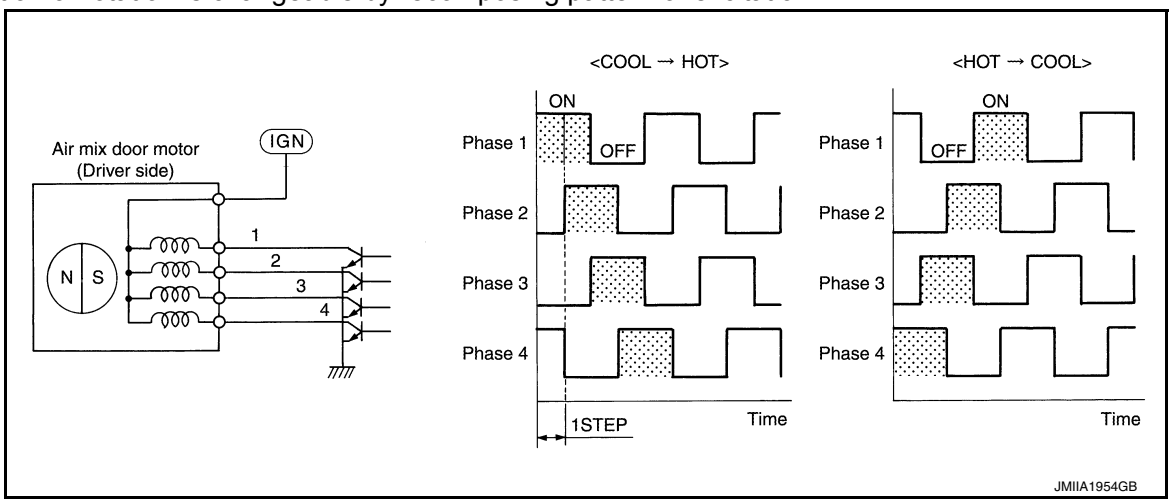
AIR MIX DOOR MOTOR (DRIVER SIDE)

DESCRIPTION

- The step motor system is adopted for air mix door motor (driver side).
- When a drive signal is input from A/C auto amp. to door motor, a step motor built into the door motor rotates according to the drive signal, and then stops at the target door position.

- Rotation of motor is transmitted to air mix door (driver side) [upper air mix door (driver side) and lower air mix door (driver side)] by link, rod and lever, then air flow temperature (driver side) is switched.

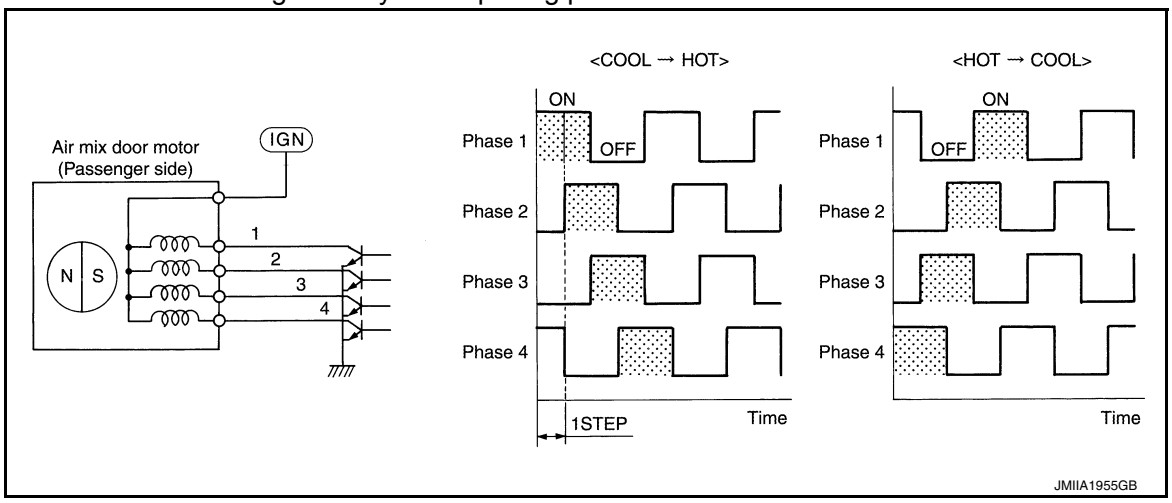
DRIVE METHOD
- The 4 drive coils are excited in sequence in order to drive the motor.
- Direction of rotation is changeable by recomposing pattern of excitation.



AIR MIX DOOR MOTOR (PASSENGER SIDE)

DESCRIPTION
- The step motor system is adopted for air mix door motor (passenger side).
- When a drive signal is input from A/C auto amp. to door motor, a step motor built into the door motor rotates according to the drive signal, and then stops at the target door position.
- Rotation of motor is transmitted to air mix door (passenger side) [upper air mix door (passenger side) and lower air mix door (passenger side)] by link, rod and lever, then air flow temperature (passenger side) is switched.

DRIVE METHOD
- The 4 drive coils are excited in sequence in order to drive the motor.
- Direction of rotation is changeable by recomposing pattern of excitation.

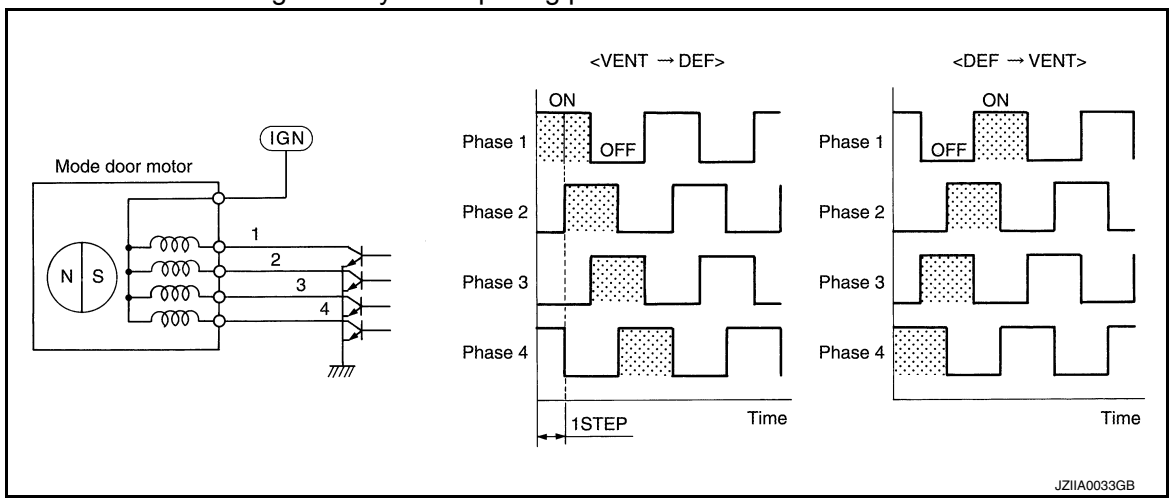


MODE DOOR MOTOR

DESCRIPTION
- The step motor system is adopted for mode door motor.
- When a drive signal is input from A/C auto amp. to door motor, a step motor built into the door motor rotates according to the drive signal, and then stops at the target door position.
- Rotation of motor is transmitted to mode door (center ventilator and defroster door, sub defroster door, side ventilator door, and foot door) by link, rod, and lever, then air outlet is switched.

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

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



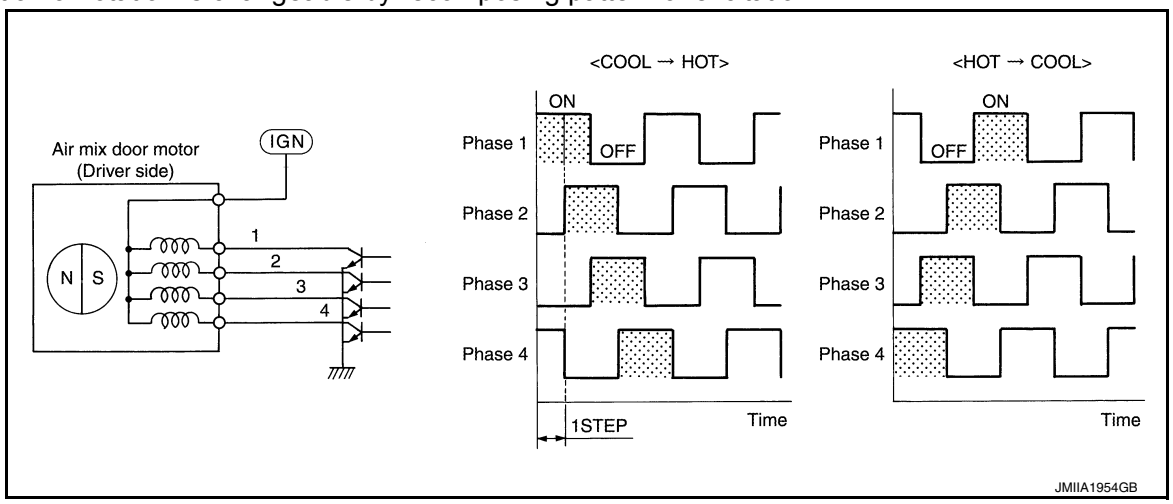
INTAKE DOOR MOTOR

DESCRIPTION

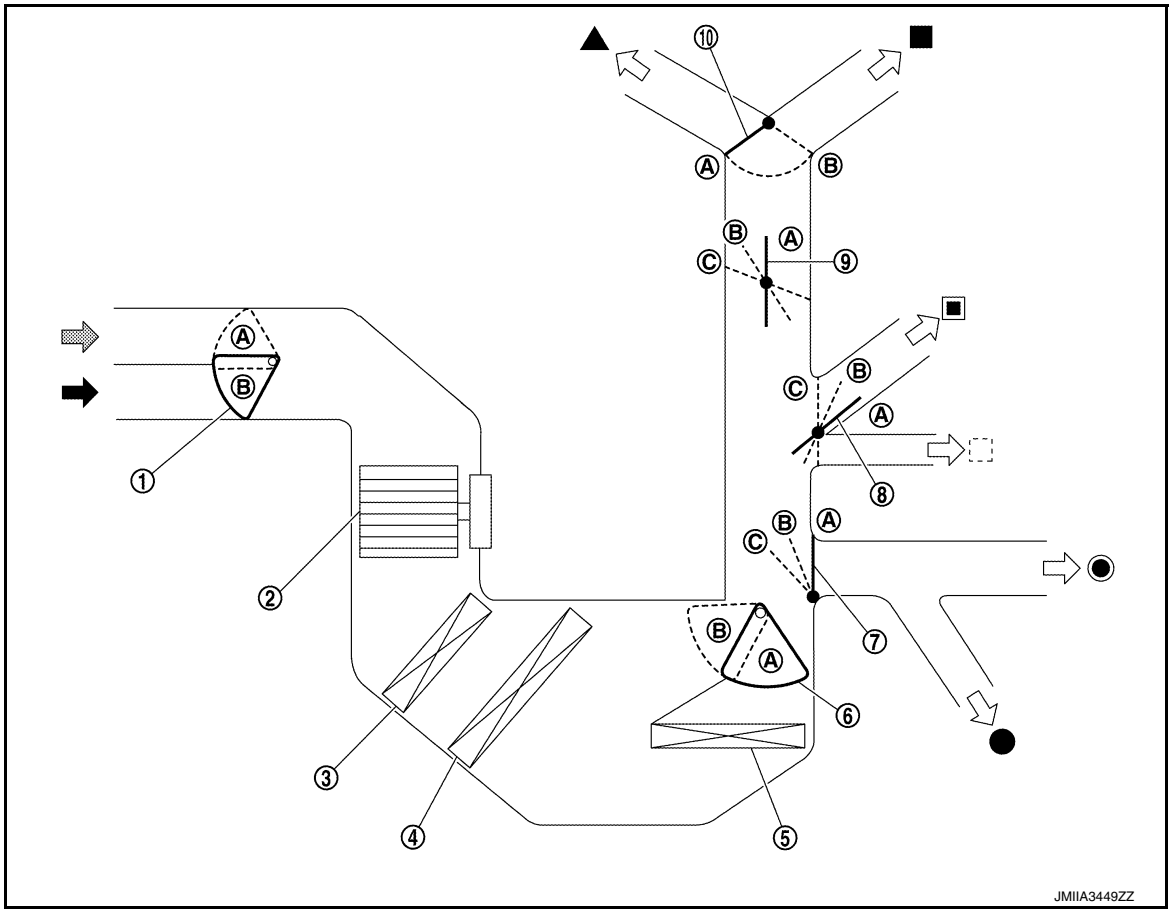
• The step motor system is adopted for intake door motor.
• When a drive signal is input from A/C auto amp. to door motor, a step motor built into the door motor rotates according to the drive signal, and then stops at the target door position.
• Rotation of motor is transmitted to intake door, then air flow is switched.

DRIVE METHOD

• The 4 drive coils are excited in sequence in order to drive the motor.
• Direction of rotation is changeable by recomposing pattern of excitation.



SWITCHES AND THEIR CONTROL FUNCTION



① Intake door	② Blower motor	③ Air conditioner filter
④ Evaporator	⑤ Heater core	⑥ Air mix door (driver side/passenger side)
⑦ Foot door	⑧ Side ventilator door	⑨ Sub defroster door
⑩ Center ventilator and defroster door		
Fresh air intake	Recirculation air	Discharge air
Defroster	Center ventilator	Side ventilator
Rear ventilator	Front foot	Rear foot

NOTE:
The sub defroster door and side ventilator door include a permanent opening and does not fully close.

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

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

AIR DISTRIBUTION

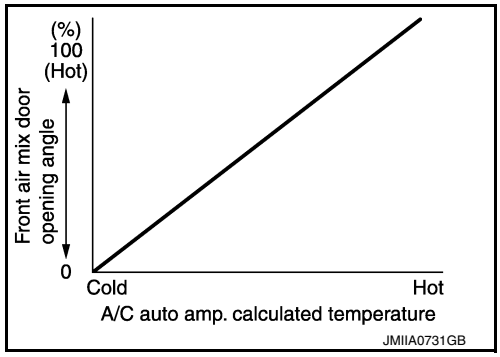
MODE/DEF setting position	Discharge air flow					
	Air outlet/distribution					
	Ventilator			Foot		Defroster
	Front		Rear	Front	Rear	
	Center	Side				
	47%	38%	15%	—	—	—
	25%	34%	13%	18%	10%	—

MODE/DEF setting position	Discharge air flow					
	Air outlet/distribution					
	Ventilator			Foot		Defroster
	Front		Rear	Front	Rear	
	Center	Side				
	—	7%	4%	38%	24%	27%
	—	6%	2%	30%	17%	45%
	—	8%	2%	—	—	90%

Temperature Control

INFOID:0000000012424767

- 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:0000000012424768

FAIL-SAFE FUNCTION

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

A/C switch	**: ON**
Air outlet	**: AUTO**
Air inlet	**: FRE (Fresh air intake)**
Blower fan speed	**: AUTO**
Set temperature	**: Setting before communication error occurs**

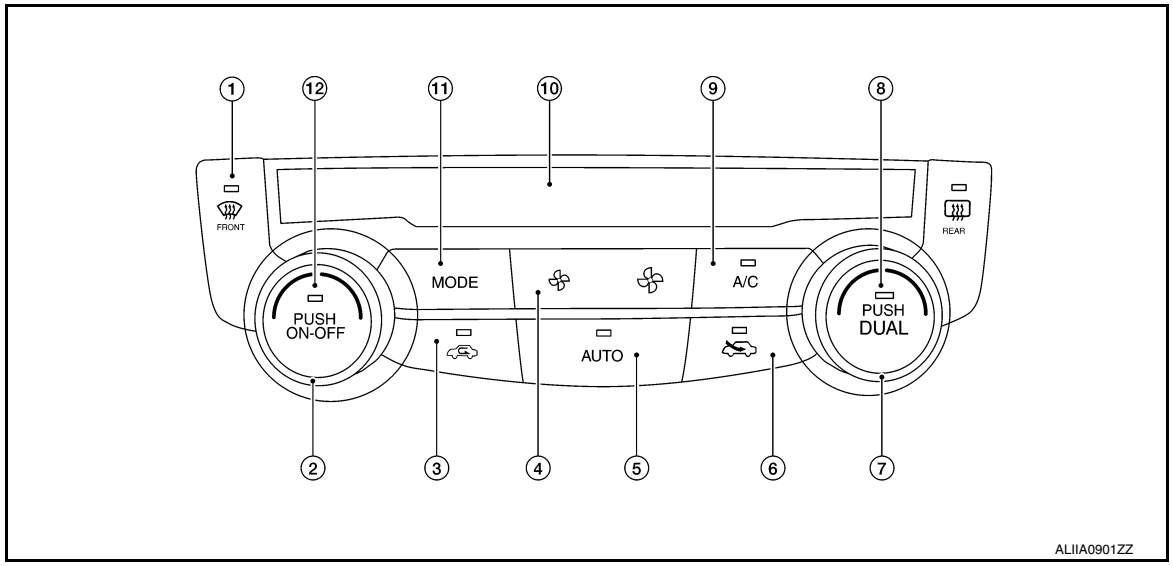
OPERATION

Switch Name and Function

INFOID:0000000012424769

CONTROL OPERATION

A/C Switch Assembly



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

Switch Operation

Switch name	Function
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.
ON·OFF switch	Air conditioning turns ON ⇔ OFF each time this switch is pressed. • When this switch is pressed while air conditioning is ON - Air conditioning turns OFF and becomes the following status, when this switch is pressed. • Air outlet: FOOT • Air flow: OFF • Air inlet: Settings set before this switch is pressed • A/C switch: OFF • When this switch is pressed while air conditioning is OFF - Air conditioning turns ON and operates according to the settings set before air conditioning is turned OFF, when this switch is pressed.

Switch name	Function
AUTO switch	• AUTO switch indicator turns ON and air conditioning becomes the following status, when this switch is pressed while air conditioning is ON. - Air outlet: Automatic control - Air flow: Automatic control - Air inlet: Settings set before this switch is pressed - A/C switch: ON • Air conditioning turns ON and operates according to the following status, when this switch is pressed while air conditioning is OFF. (AUTO switch indicator turns ON) - Air outlet: Automatic control - Air flow: Automatic control - Air inlet: Settings set before this switch is pressed - A/C switch: ON **NOTE:** When air outlet or air flow is manually operated while AUTO switch indicator is ON, AUTO switch indicator turns OFF. However, automatic control continues for other functions than air outlet or air flow.
Fan switch	• Air flow can be set within a range between 1st – 7th speed according to switch operation. - Press +: Air flow increases - Press –: Air flow decreases • Air conditioning turns ON and operates according to the following status, when this switch is pressed while air conditioning is OFF. - Air outlet: Automatic control - Air flow: 1st speed - Air inlet: Settings set before this switch is pressed - A/C switch: Settings set before air conditioning is turned OFF **NOTE:** Automatic air flow control is cancelled (AUTO switch indicator turns OFF), when fan switch is pressed while AUTO switch indicator is ON.
A/C switch	Compressor control (switch indicator) changes between ON ⇔ OFF each time this switch is pressed while blower motor is operated. **NOTE:** A/C switch cannot be turned ON when blower motor is OFF.
DUAL switch	Left and right ventilation temperature separately control (switch indicator) changes between ON ⇔ OFF each time this switch is pressed while blower motor is operated. **NOTE:** • Setting temperature for passenger side is the same as that for driver side when left and right ventilation temperature separately control is OFF. • DUAL switch operation is not accepted when DEF mode is ON.
Temperature control dial (Passenger side)	• 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.
REC switch	Switch indicator turns ON and air inlet is set to recirculation (REC), when this switch is pressed. **NOTE:** Air inlet can be changed when air conditioning is in OFF status.
FRE switch	Switch indicator turns ON and air inlet is set to fresh air intake (FRE), when this switch is pressed. **NOTE:** Air inlet can be changed when air conditioning is in OFF status.

Switch name	Function
MODE switch	Air outlet changes from VENT⇒ B/L ⇒ FOOT ⇒ D/F ⇒ VENT each time this switch is pressed. **NOTE:** • Air outlet can be changed when air conditioning is in OFF status. • Automatic air outlet control is cancelled (AUTO switch indicator turns OFF), when MODE switch is pressed while AUTO switch indicator is ON.
DEF switch	DEF mode (switch indicator) changes between ON ⇔ OFF each time switch is pressed. • When this switch is pressed while air conditioning is ON - Air conditioning becomes the following status when DEF mode is turned ON. • Air outlet: DEF • Air flow: Settings set before DEF mode is turned ON • Air inlet: Fresh air intake • A/C switch: ON - Air conditioning becomes the following status when DEF mode is turned OFF. • Air outlet: Settings set before DEF mode is turned ON • Air flow: Settings set before DEF mode is turned OFF • Air inlet: Settings set before DEF mode is turned OFF • A/C switch: Settings set before DEF mode is turned OFF • When this switch is pressed while air conditioning is OFF - Air conditioning turns ON and operates in the following status, when DEF mode is turned ON. • Air outlet: DEF • Air flow: Automatic control • Air inlet: Fresh air intake • A/C switch: ON - Air conditioning becomes the following status when DEF mode is turned OFF. • Air outlet: Automatic control • Air flow: Settings set before DEF mode is turned OFF • Air inlet: Settings set before DEF mode is turned OFF • A/C switch: Settings set before DEF mode is turned OFF **NOTE:** When DEF mode is turned ON while AUTO switch indicator is turned ON, AUTO switch indicator turns OFF. However, automatic air flow control continues.

DIAGNOSIS SYSTEM (A/C AUTO AMP.)

Description

INFOID:0000000012424770

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

ECU	Diagnostic item (CONSULT)	
A/C auto amp.	HVAC	Self Diagnostic Result
		Data Monitor
		Active Test
		Work support
ECM	ENGINE	Self Diagnostic Result
		Data Monitor
IPDM E/R	IPDM E/R	Self Diagnostic Result
		Data Monitor

CONSULT Function (HVAC)

INFOID:0000000012424771

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

CONSULT application items

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

SELF DIAGNOSTIC RESULT

Refer to HAC-36, "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.
B24A0	A/C AUTO AMP.	A/C auto amp. EEPROM system is malfunctioning.	A/C auto amp.
B24A1	A/C AUTO AMP. POWER SUPPLY	Detected power supply voltage is out of range.	• A/C auto amp. • Harness and connector (Power supply circuit is open, or there is a short in the circuit)
B24A6	IN-CAR SENSOR	Detected temperature at in-vehicle sensor is out of range.	• In-vehicle sensor • A/C auto amp. • Harness and connector (In-vehicle sensor circuit is open, or there is a short in the circuit)

DTC	Items (CONSULT screen terms)	Diagnostic item is detected when...	Possible cause
B24A4	EVAP TEMP SEN	Detected temperature at intake sensor is out of range.	• Intake sensor • A/C auto amp. • Harness and connector (Intake sensor circuit is open, or there is a short in the circuit)
B24A9*	SUNLOAD SEN	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)
B24BB	DR AIRMIX ACTR	Short or open circuit of air mix door motor drive signal.	• Air mix door motor LH • A/C auto amp. • Harness and connector (Air mix door motor is open or shorted)
B24BD	AS AIRMIX ACTR	Short or open circuit of air mix door motor drive signal.	• Air mix door motor RH • A/C auto amp. • Harness and connector (Air mix door motor is open or shorted)
B24B4	A/C CONTROL	Short or open circuit of A/C switch communication.	• A/C switch • A/C auto amp. • Harness and connector (A/C switch is open or shorted)
B24B6			
B24B7	INTAKE ACTR	Short or open circuit of intake door motor drive signal.	• Intake door motor • A/C auto amp. • Harness and connector (Intake door motor is open or shorted)
B24B9	MODE DOOR ACTR	Short or open circuit of mode door motor drive signal.	• Mode door motor • A/C auto amp. • Harness and connector (Mode door motor is open or shorted)
B24C3	BLOWER MOTOR FEEDBACK	Short or open circuit.	• Front blower motor • Front blower motor relay • Variable blower control • A/C auto amp. • Harness and connector
B24C6	BLOWER MOTOR CONTROL		
B24D4	A/C CONTROL COMMUNICATION	Short or open circuit.	• A/C switch • A/C auto amp. • Harness and connector (A/C switch is open or shorted)

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

DATA MONITOR

Display item list

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

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

WORK SUPPORT

Work item	Description	Reference
TEMP SET CORRECT (Setting of difference between temperature setting and control temperature)	If the temperature felt by the customer is different than the airflow temperature controlled by the temperature setting, the auto amplifier control temperature can be adjusted to compensate for the temperature setting.	HAC-54, "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 “With” was set, the REC switch will be ON (recirculation) when turning the ignition switch to the ON position again. • If “Without” was set, the air inlets will be controlled automatically when turning the ignition switch to the ON position again.	HAC-55, "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 “Without” of the FRE switch ON (fresh air intake) condition can be selected. • If “With” was set, the FRE switch will be ON (fresh air intake) when turning the ignition switch to the ON position again. • If “Without” was set, the air inlets will be controlled automatically when turning the ignition switch to the ON position again.	HAC-54, "Inlet Port Memory Function (FRE)"
BLOW SET	Setting change of foot position setting trimmer can be performed.	HAC-54, "Foot Position Setting Trimmer"
Door Motor Starting Position Reset	Starting position reset of air mix door motor and mode door motor can be performed.	HAC-56, "Work Procedure"
TARGET EVAPORATOR TEMP UPPER LIMIT SETTING	Set the target evaporator upper temperature limit.	HAC-55, "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.
ALL SEG	All switch indicator and display indication are turned ON.

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	B/L	D/F1	D/F2	DEF
Intake door position	REC	REC	20%FRE	20%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
Blower motor (Applied voltage)	35%	35%	60%	60%	90%	90%	35%
A/C compressor (Magnet clutch)	ON	ON	ON	ON	OFF	OFF	ON
ECV duty	80%	80%	40%	40%	0%	0%	90%

NOTE:

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

DIAGNOSIS SYSTEM (IPDM E/R)

CONSULT Function (IPDM E/R)

INFOID:0000000012559301

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-26, "DTC Index".

DATA MONITOR

Monitor Item [Unit]	Description
REVERSE SIGNAL [Open/Close]	Indicates condition of transmission range switch R (Reverse) position.
IGN RELAY [Open/Close]	Indicates condition of ignition relay-1.
PUSH SW [Open/Close]	Indicates condition of push-button ignition switch.
INTERLOCK/PNP SW [Open/Close]	Indicates condition of transmission range switch P (Park) and N (Neutral) positions.
OIL PRESSURE SW [Open/Close]	Indicates condition of oil pressure switch.
HOOD SW [Open/Close]	Indicates condition of hood switch.
COMPRESSOR [OFF/ON]	Indicates condition of A/C compressor.
HORN RELAY [OFF/ ON]	Indicates condition of horn relay.
COOLING FAN [OFF/ON]	Indicates condition of cooling fan relay-1.
FRONT WIPER HI/LO RELAY [OFF/ON]	Indicates condition of front wiper high relay.
FRONT WIPER RELAY [OFF/ON]	Indicates condition of front wiper relay.
IGN RELAY OFF STATUS [OFF/ON]	Indicates condition of ignition relay-1 OFF status.
IGN RELAY ON STATUS [OFF/ON]	Indicates condition of ignition relay-1 ON status.
COOLING FAN RELAY 1 [OFF/ON]	Indicates condition of cooling fan relay-1.
STARTER RELAY [OFF/ON]	Indicates condition of starter relay.
COMP ECV DUTY [%]	Indicates condition of A/C compressor.
COOLING FAN RELAY 2 [%]	Indicates condition of cooling fan relay-2.
FR FOG LAMP LH [%]	Indicates condition of front fog lamp LH.
FR FOG LAMP RH [%]	Indicates condition of front fog lamp RH.
PARKING LAMP [%]	Indicates condition of parking lamp.
TAIL LAMP LH [%]	Indicates condition of tail lamp LH.
TAIL LAMP RH [%]	Indicates condition of tail lamp RH.
DAYTIME RUNNING LIGHT LH [%]	Indicates condition of daytime running light LH.
DAYTIME RUNNING LIGHT RH [%]	Indicates condition of daytime running light RH.
HEADLAMP (HI) LH [%]	Indicates condition of headlamp high beam LH.

Monitor Item [Unit]	Description
HEADLAMP (HI) RH [%]	Indicates condition of headlamp high beam RH.
HEADLAMP (LO) LH [%]	Indicates condition of headlamp low beam LH.
HEADLAMP (LO) RH [%]	Indicates condition of headlamp low beam RH.
A/C RELAY STUCK [NG/OK]	Indicates condition of A/C relay.
A/C RELAY [Off/On]	Indicates condition of A/C relay.
COMP ECV STATUS [NG/OK]	Indicates condition of A/C compressor.
VEHICLE SECURITY HORN [Off/On]	Indicates condition of horn relay.
BATTERY CURRENT SENSOR [NG/OK]	Indicates condition of battery current sensor.
FRONT FOG LAMP [Off/On]	Indicates condition of front fog lamps.
COMP ECV CURRENT [A]	Indicates condition of A/C compressor current.
BATTERY VOLTAGE [V]	Indicates condition of battery voltage.
COOLING FAN DUTY [%]	Indicates condition of cooling fans.
HOOD SW (CAN) [OPEN/CLOSE]	Indicates condition of hood switch.
FRONT WIPER [STOP/LOW/HIGH]	Indicates condition of front wiper motor.
FR WIPER STOP POSITION [STOP P/ACTIVE P]	Indicates condition of front wiper motor stop.
HEADLAMP (HI) [Off/On]	Indicates condition of headlamp high beams.
HEADLAMP (LO) [Off/On]	Indicates condition of headlamp low beams.
IGNITION RELAY STATUS [Off/On]	Indicates condition of ignition relay-1.
IGN RELAY MONITOR [Off/On]	Indicates condition of ignition relay-1 feedback.
IGNITION POWER SUPPLY [Off/On]	Indicates condition of ignition relay-1.
INTERLOCK/PNP SW (CAN) [Off/On]	Indicates condition of transmission range switch P (Park) and N (Neutral) positions.
PUSH-BUTTON IGN SW (CAN) [Off/On]	Indicates condition of push-button ignition switch.
TAIL LAMP [Off/On]	Indicates condition of tail lamps.
REVERSE SIGNAL (CAN) [Off/On]	Indicates condition of transmission range switch R (Reverse) position.
ST&ST CONT RELAY STATUS [Off/ST R On]	Indicates condition of starter cut and starter relays.
STARTER MOTOR STATUS [Off/On]	Indicates condition of starter motor.
STARTER RELAY (CAN) [LOW/HIGH]	Indicates condition of starter relay.
IPDM NOT SLEEP [NO RDY/RDY]	Indicates condition of IPDM E/R sleep status.
AFTER COOLING TIME [No request/Request]	Indicates condition of cooling fan request.
AFTER COOLING SPEED [%]	Indicates condition of cooling fans.
COOLING FAN TYPE [NISSAN/RENAULT]	Indicates cooling fan type.
COMPRESSOR REQ1 [Off/On]	Indicates condition of A/C compressor request.
VHCL SECURITY HORN REQ [Off/On]	Indicates condition of horn relay request.
DTRL REQ [Off/On]	Indicates condition of daytime running light request.
SLEEP/WAKE UP [WAKEUP/SLEEP]	Indicates condition of IPDM E/R sleep/wake.
CRANKING ENABLE-TCM [NG/OK]	Indicates condition of crank enable from TCM.
CRANKING ENABLE-ECM [NG/OK]	Indicates condition of crank enable from ECM.
CAN DIAGNOSIS [NG/OK]	Indicates condition of CAN diagnosis.
FRONT FOG LAMP REQ [Off/On]	Indicates condition of front fog lamp request.
HIGH BEAM REQ [Off/On]	Indicates condition of headlamp high beam request.
HORN CHIRP [Off/On]	Indicates condition of horn relay request.
COOLING FAN REQ [%]	Indicates condition of cooling fan request.
ENGINE STATUS [STOP/RUN/IDLING]	Indicates condition of engine status.

Monitor Item [Unit]	Description
TURN SIGNAL REQ [Off/LH/RH]	Indicates condition of turn signal request.
FR WIPER REQ [RETURN/LOW/HIGH]	Indicates condition of front wiper motor request.
SHIFT POSITION [P/R/N/D/L]	Indicates condition of transmission range switch positions.
LOW BEAM REQ [Off/On]	Indicates condition of headlamp low beam request.
POSITION LIGHT REQ [Off/On]	Indicates condition of parking lamp request.
COMPRESSOR REQ2 [Off/On]	Indicates condition of A/C compressor request.
IGNITION SW [Off/On]	Indicates condition of ignition switch.
VEHICLE SPEED (METER) [mph/km/h]	Indicates vehicle speed.
STARTER OPERATION COUNT	Displays the number of times the starter motor is turned ON.
H/P F/PUMP OPERATN COUNT	Displays the number of times the high pressure fuel pump is turned ON.
BAT DISCHARGE COUNT [—]	Monitor the cumulative discharge value of the battery. **NOTE:** When 65,000 or more is counted, replace the battery.
P LAMP CIRC MALFUNCTN [0 – 1]	Monitor the number of times that the smart FET in IPDM E/R reaches the retry upper limit of the parking lamp circuit. **NOTE:** When the number of parking lamp circuit retries count is 20, this item counts 1.
NMB P LAMP CIRC RETRY [0 – 20]	Monitor the number of times that the smart FET in IPDM E/R permits the retry of the parking lamp circuit. **NOTE:** When the number of short circuits in the parking lamp circuit count is 5 and the ignition switch OFF to ON operation is detected, this item counts 1.
NMB P LAMP CIRC SHORT [0 – 5]	Monitor the number of times that the smart FET in IPDM E/R detects the over current of the parking lamp circuit.
DTRL LH CIRC MALFUNCTN [0 – 1]	Monitor the number of times that the smart FET in IPDM E/R reaches the retry upper limit of the daytime running light (left) circuit. **NOTE:** When the number of daytime running light (left) circuit retries count is 20, this item counts 1.
NMB DTRL LH CIRC RETRY [0 – 20]	Monitor the number of times that the smart FET in IPDM E/R permits the retry of the daytime running light (left) circuit. **NOTE:** When the number of short circuits in the daytime running light (left) circuit count is 5 and the ignition switch OFF to ON operation is detected, this item counts 1.
NMB DTRL LH CIRC SHORT [0 – 5]	Monitor the number of times that the smart FET in IPDM E/R detects the over current of the daytime running light (left) circuit.
DTRL RH CIRC MALFUNCTN [0 – 1]	Monitor the number of times that the smart FET in IPDM E/R reaches the retry upper limit of the daytime running light (right) circuit. **NOTE:** When the number of daytime running light (right) circuit retries count is 20, this item counts 1.
NMB DTRL RH CIRC RETRY [0 – 20]	Monitor the number of times that the smart FET in IPDM E/R permits the retry of the daytime running light (right) circuit. **NOTE:** When the number of short circuits in the daytime running light (right) circuit count is 5 and the ignition switch OFF to ON operation is detected, this item counts 1.
NMB DTRL RH CIRC SHORT [0 – 5]	Monitor the number of times that the smart FET in IPDM E/R detects the over current of the daytime running light (right) circuit.

Monitor Item [Unit]	Description
F FOG LH CIRC MALFUNCTN [0 – 1]	Monitor the number of times that the smart FET in IPDM E/R reaches the retry upper limit of the front fog lamp (left) circuit. **NOTE:** When the number of front fog lamp (left) circuit retries count is 20, this item counts 1.
NMB F FOG LH CIRC RETRY [0 – 20]	Monitor the number of times that the smart FET in IPDM E/R permits the retry of the front fog lamp (left) circuit. **NOTE:** When the number of short circuits in the front fog lamp (left) circuit count is 5 and the ignition switch OFF to ON operation is detected, this item counts 1.
NMB F FOG LH CIRC SHORT [0 – 5]	Monitor the number of times that the smart FET in IPDM E/R detects the over current of the front fog lamp (left) circuit.
F FOG RH CIRC MALFUNCTN [0 – 1]	Monitor the number of times that the smart FET in IPDM E/R reaches the retry upper limit of the front fog lamp (right) circuit. **NOTE:** When the number of front fog lamp (right) circuit retries count is 20, this item counts 1.
NMB F FOG RH CIRC RETRY [0 – 20]	Monitor the number of times that the smart FET in IPDM E/R permits the retry of the front fog lamp (right) circuit. **NOTE:** When the number of short circuits in the front fog lamp (right) circuit count is 5 and the ignition switch OFF to ON operation is detected, this item counts 1.
NMB F FOG RH CIRC SHORT [0 – 5]	Monitor the number of times that the smart FET in IPDM E/R detects the over current of the front fog lamp (right) circuit.
HL (HI) LH CIRC MALFUNCTN [0 – 1]	Monitor the number of times that the smart FET in IPDM E/R reaches the retry upper limit of the headlamp (HI) (left) circuit. **NOTE:** When the number of headlamp (HI) (left) circuit retries count is 20, this item counts 1.
NMB HL (HI) LH CIRC RETRY [0 – 20]	Monitor the number of times that the smart FET in IPDM E/R permits the retry of the headlamp (HI) (left) circuit. **NOTE:** When the number of short circuits in the headlamp (HI) (left) circuit count is 5 and the ignition switch OFF to ON operation is detected, this item counts 1.
NMB HL (HI) LH CIRC SHORT [0 – 5]	Monitor the number of times that the smart FET in IPDM E/R detects the over current of the headlamp (HI) (left) circuit.
HL (HI) RH CIRC MALFUNCTN [0 – 1]	Monitor the number of times that the smart FET in IPDM E/R reaches the retry upper limit of the headlamp (HI) (right) circuit. **NOTE:** When the number of headlamp (HI) (right) circuit retries count is 20, this item counts 1.
NMB HL (HI) RH CIRC RETRY [0 – 20]	Monitor the number of times that the smart FET in IPDM E/R permits the retry of the headlamp (HI) (right) circuit. **NOTE:** When the number of short circuits in the headlamp (HI) (right) circuit count is 5 and the ignition switch OFF to ON operation is detected, this item counts 1.
NMB HL (HI) RH CIRC SHORT [0 – 5]	Monitor the number of times that the smart FET in IPDM E/R detects the over current of the headlamp (HI) (right) circuit.
HL (LO) LH CIRC MALFUNCTN [0 – 1]	Monitor the number of times that the smart FET in IPDM E/R reaches the retry upper limit of the headlamp (LO) (left) circuit. **NOTE:** When the number of headlamp (LO) (left) circuit retries count is 20, this item counts 1.

Monitor Item [Unit]	Description
NMB HL (LO) LH CIRC RETRY [0 – 20]	Monitor the number of times that the smart FET in IPDM E/R permits the retry of the headlamp (LO) (left) circuit. **NOTE:** When the number of short circuits in the headlamp (LO) (left) circuit count is 5 and the ignition switch OFF to ON operation is detected, this item counts 1.
NMB HL (LO) LH CIRC SHORT [0 – 5]	Monitor the number of times that the smart FET in IPDM E/R detects the over current of the headlamp (LO) (left) circuit.
HL (LO) RH CIRC MALFUNCTN [0 – 1]	Monitor the number of times that the smart FET in IPDM E/R reaches the retry upper limit of the headlamp (LO) (right) circuit. **NOTE:** When the number of headlamp (LO) (right) circuit retries count is 20, this item counts 1.
NMB HL (LO) RH CIRC RETRY [0 – 20]	Monitor the number of times that the smart FET in IPDM E/R permits the retry of the headlamp (LO) (right) circuit. **NOTE:** When the number of short circuits in the headlamp (LO) (right) circuit count is 5 and the ignition switch OFF to ON operation is detected, this item counts 1.
NMB HL (LO) RH CIRC SHORT [0 – 5]	Monitor the number of times that the smart FET in IPDM E/R detects the over current of the headlamp (LO) (right) circuit.
T LAMP LH CIRC MALFUNCTN [0 – 1]	Monitor the number of times that the smart FET in IPDM E/R reaches the retry upper limit of the tail lamp (left) circuit. **NOTE:** When the number of tail lamp (left) circuit retries count is 20, this item counts 1.
NMB T LAMP LH CIRC RETRY [0 – 20]	Monitor the number of times that the smart FET in IPDM E/R permits the retry of the tail lamp (left) circuit. **NOTE:** When the number of short circuits in the tail lamp (left) circuit count is 5 and the ignition switch OFF to ON operation is detected, this item counts 1.
NMB T LAMP LH CIRC SHORT [0 – 5]	Monitor the number of times that the smart FET in IPDM E/R detects the over current of the tail lamp (left) circuit.
T LAMP RH CIRC MALFUNCTN [0 – 1]	Monitor the number of times that the smart FET in IPDM E/R reaches the retry upper limit of the tail lamp (right) circuit. **NOTE:** When the number of tail lamp (right) circuit retries count is 20, this item counts 1.
NMB T LAMP RH CIRC RETRY [0 – 20]	Monitor the number of times that the smart FET in IPDM E/R permits the retry of the tail lamp (right) circuit. **NOTE:** When the number of short circuits in the tail lamp (right) circuit count is 5 and the ignition switch OFF to ON operation is detected, this item counts 1.
NMB T LAMP RH CIRC SHORT [0 – 5]	Monitor the number of times that the smart FET in IPDM E/R detects the over current of the tail lamp (right) circuit.
BATTERY STATUS [OK/NG]	Monitor the battery status from the battery output.
BAT DISCHARGE COUNT [0-100]	Indicates condition of battery discharge.
BATTERY STATUS [NG/OK]	Indicates battery status.

ACTIVE TEST

Test item	Description
HORN	This test is able to check horn operation [Off/On].
FRONT WIPER	This test is able to check wiper motor operation [Off/Low/High].

Test item	Description
COMPRESSOR	This test is able to check A/C compressor operation [Off/On].
COOLING FAN (DUAL)	This test is able to check cooling fan operation [Off/LO/HI].
HEADLAMP (HI)	This test is able to check headlamp high beam operation [Off/3/5].
HEADLAMP (LO)	This test is able to check headlamp low beam operation [Off/3/5].
FRONT FOG LAMP	This test is able to check front fog lamp operation [Off/3/5].
DAYTIME RUNNING LAMP	This test is able to check daytime running lamp operation [Off/3/5].
PARKING LAMP	This test is able to check parking lamp operation [Off/3/5].
TAIL LAMP	This test is able to check tail lamp operation [Off/3/5].

CAN DIAG SUPPORT MNTR

Refer to LAN-17, "CAN Diagnostic Support Monitor".

WORK SUPPORT

Work item	Description
CML B/DCHRG CRNT CLEAR	In this mode, cumulative battery discharge current is cleared.

ECU DIAGNOSIS INFORMATION

A/C AUTO AMP.

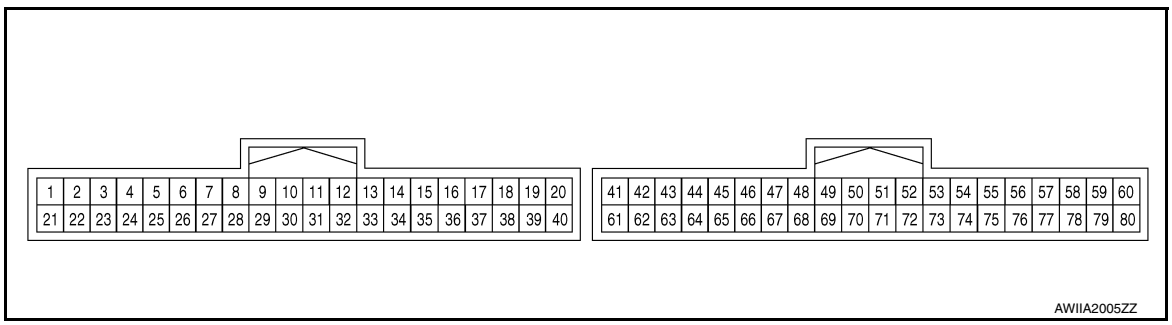
Reference Value

INFOID:0000000012424773

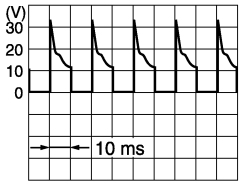
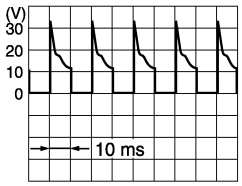
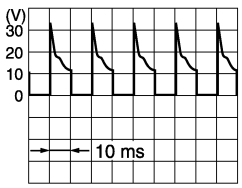
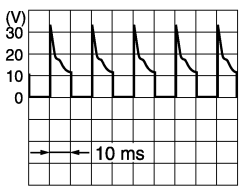
VALUES ON THE DIAGNOSIS TOOL

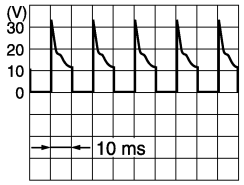
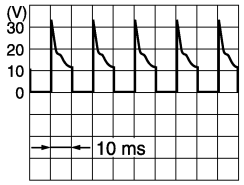
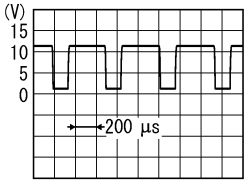
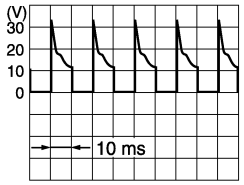
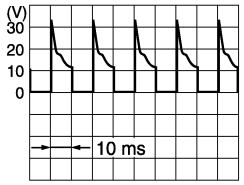
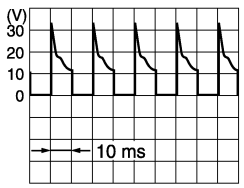
Monitor item	Condition		Value/Status
AMB TEMP SEN	Ignition switch ON	—	22 - 131°F (–30 - 55°C)
IN-VEH TEMP	Ignition switch ON	—	22 - 131°F (–30 - 55°C)
INT TEMP SEN	Ignition switch ON	—	22 - 131°F (–30 - 55°C)
SUNLOAD SEN	Ignition switch ON	—	0 - 1395 w/m^2 (0 - 1200 kcal/m^2·h)
AMB SEN CAL	Ignition 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
COMP ECV DUTY	Engine: Run at idle after warming up	A/C switch: ON (Compressor operation status)	1 - 100%
		A/C switch: OFF	0%
FAN REQ SIG	Engine: Run at idle after warming up	Blower fan: ON	On
		Blower fan: OFF	Off
FAN DUTY	Engine: Run at idle after warming up	Blower fan: ON	25 - 85%
		Blower fan: OFF	0%
XM	Ignition switch ON	—	–100 - 155
ENG COOL TEMP	Ignition switch ON	—	Values according to coolant temperature
VEHICLE SPEED	Driving	—	Equivalent to speedometer reading

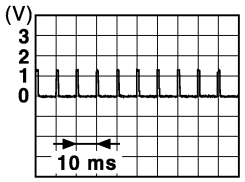
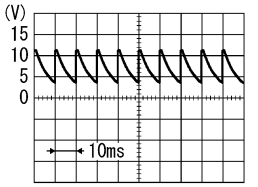
TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description			Condition	Value (Approx.)
+	–	Signal name		Input/ Output		
1 (BG)	3 (R)	Ignition power supply		Input	Ignition switch ON	Battery voltage
3 (R)	Ground	Ground		—	Ignition switch ON	0 – 0.1 V
11 (L)	3 (R)	CAN high		Input/ Output	Ignition switch ON	—
13 (P)	3 (R)	In-vehicle sensor signal		Input	Ignition switch ON	0 – 4.8 V Output voltage varies with in-vehicle temperature
14 (V)	3 (R)	Sunload sensor signal		Input	Ignition switch ON	0 – 4.8 V Output voltage varies with sunload amount
23 (G)	3 (R)	Sensor ground		—	Ignition switch ON	0 – 0.1 V
31 (W)	3 (R)	CAN low		Input/ Output	Ignition switch ON	—
33 (Y)	3 (R)	LIN		Input/ Output	Ignition switch ON	—
41 (BR)	3 (R)	A/MIX drive 2	Air mix door motor (passenger side) drive signal	Output	• Ignition switch ON • Right after the temperature control switch (passenger side) operation	 JPIIA1647GB
42 (LG)	3 (R)	A/MIX drive 1				
49 (BG)	3 (R)	A/MIX drive 2	Air mix door motor (driver side) drive signal	Output	• Ignition switch ON • Right after the temperature control switch (driver side) operation	 JPIIA1647GB
50 (G)	3 (R)	A/MIX drive 1				
51 (Y)	3 (R)	MODE drive 2	Mode door motor drive signal	Output	• Ignition switch ON • Right after the MODE switch operation	 JPIIA1647GB
52 (SB)	3 (R)	MODE drive 1				
54 (LG)	3 (R)	INTAKE drive 3	Intake door motor drive signal	Output	• Ignition switch ON • Right after the intake switch operation	 JPIIA1647GB

Terminal No. (Wire color)		Description			Condition	Value (Approx.)
+	–	Signal name		Input/ Output		
56 (V)	3 (R)	INTAKE drive 2	Intake door motor drive signal	Output	• Ignition switch ON • Right after the Intake switch operation	 JPIIA1647GB
57 (P)	3 (R)	INTAKE drive 1				
60 (R)	3 (R)	ACTR V		Output	Ignition switch ON	Battery voltage
61 (P)	3 (R)	A/MIX drive 4	Air mix door motor (passenger side) drive signal	Output	• Ignition switch ON • Right after the temperature control switch (passenger side) operation	 JPIIA1647GB
62 (SB)	3 (R)	A/MIX drive 3				
67 (GR)	3 (R)	Power transistor control signal		Output	• Ignition switch ON • Blower motor: 1st speed (manual)	 ZJIA0863J
70 (L)	3 (R)	A/MIX drive 4	Air mix door motor (driver side) drive signal	Output	• Ignition switch ON • Right after the temperature control switch (driver side) operation	 JPIIA1647GB
71 (R)	3 (R)	A/MIX drive 3				
72 (B)	3 (R)	MODE drive 4	Mode door motor drive signal	Output	• Ignition switch ON • Right after the MODE switch operation	 JPIIA1647GB
73 (W)	3 (R)	MODE drive 3				
75 (B)	3 (R)	Sensor ground		—	Ignition switch ON	0 – 0.1 V
76 (DG)	3 (R)	INTAKE drive 4	Intake door motor drive signal	Output	• Ignition switch ON • Right after the intake switch operation	 JPIIA1647GB

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	–	Signal name	Input/ Output		
77 (BR)	3 (R)	Blower fan ON signal	Output	• Ignition switch ON • Blower motor: OFF	 JMIIA0941GB
				• Ignition switch ON • Blower motor: ON	 PKIB4960J
78 (W)	3 (R)	Intake sensor signal	Input	Ignition switch ON	0 – 4.8 V Output voltage varies with evaporator fin temperature
80 (Y)	3 (R)	ACTR V	Output	Ignition switch ON	Battery voltage

Fail-safe

INFOID:0000000012424774

FAIL-SAFE FUNCTION

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

- Set temperature
- Air outlet
- Blower fan speed
- Air inlet
- A/C switch

DTC Inspection Priority Chart

INFOID:0000000012424775

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	• B24A9: SUNLOAD SEN • B24A0: A/C AUTO AMP. • B24A1: A/C AUTO AMP. POWER SUPPLY • B24A4: INTAKE TEMP SEN • B24A6: IN-VEHICLE SEN • B24BB: LEFT AIRMIX ACTR • B24BD: RIGHT AIRMIX ACTR • B24B4: A/C CONTROL • B24B6: A/C CONTROL • B24B7: INTAKE ACTR • B24B9: MODE ACTR • B24C3: BLOWER MOTOR FEEDBACK • B24C6: BLOWER MOTOR CONTROL • B24D4: A/C CONTROL COMMUNICATION

DTC Index

INFOID:0000000012424776

DTC	Items (CONSULT screen terms)	Reference
U1000	CAN COMM CIRCUIT	HAC-57, "DTC Logic"
U1010	CONTROL UNIT (CAN)	HAC-58, "DTC Logic"
B24A0	A/C AUTO AMP.	HAC-59, "DTC Logic"
B24A1	A/C AUTO AMP. POWER SUPPLY	HAC-60, "DTC Logic"
B24A4	INTAKE SENSOR	HAC-62, "DTC Logic"
B24A6	IN-VEHICLE SENSOR	HAC-65, "DTC Logic"
B24A9*	SUNLOAD SENSOR	HAC-68, "DTC Logic"
B24BB	DR AIR MIX DOOR MOT	HAC-71, "DTC Logic"
B24BD	AS AIR MIX DOOR MOT	HAC-74, "DTC Logic"
B24B4	A/C CONTROL	HAC-77, "DTC Logic"
B24B6	A/C CONTROL	HAC-79, "DTC Logic"
B24B7	INTAKE DOOR MOTOR	HAC-81, "DTC Logic"
B24B9	MODE DOOR MOTOR	HAC-84, "DTC Logic"
B24C3	BLOWER MOTOR FEEDBACK	HAC-87, "DTC Logic"
B24C6	BLOWER MOTOR CONTROL	HAC-89, "DTC Logic"
B24D4	A/C CONTROL COMM	HAC-93, "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:0000000012424777

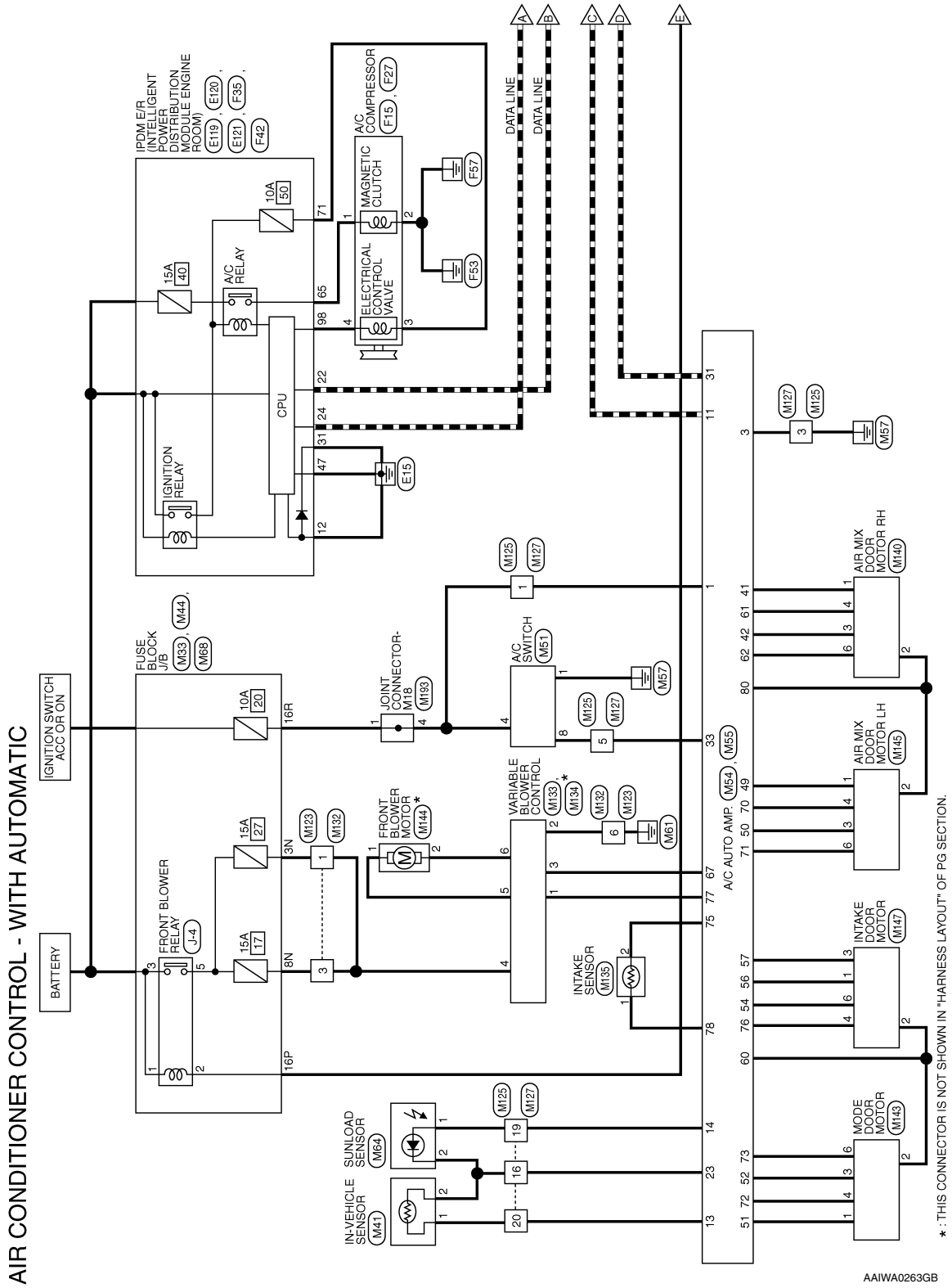
ECU	Reference
ECM	EC-80, "Reference Value"
	EC-92, "Fail Safe"
	EC-95, "DTC Inspection Priority Chart"
	EC-96, "DTC Index"
IPDM E/R	PCS-17, "Reference Value"
	PCS-25, "Fail-safe"
	PCS-26, "DTC Index"
BCM	BCS-29, "Reference Value"
	BCS-47, "Fail Safe"
	BCS-47, "DTC Inspection Priority Chart"
	BCS-48, "DTC Index"

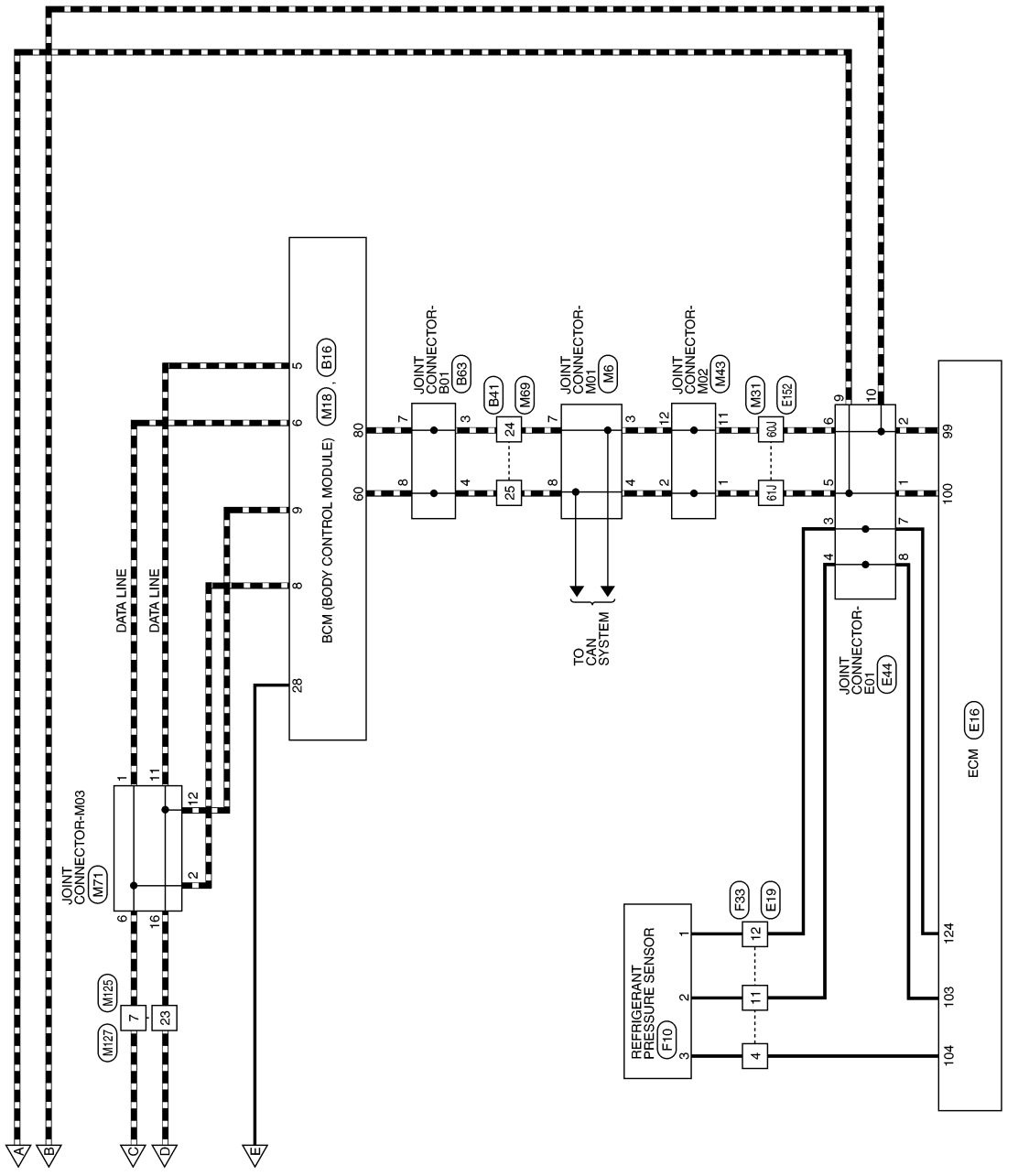
WIRING DIAGRAM

AUTOMATIC AIR CONDITIONING SYSTEM

Wiring Diagram

INFOID:0000000012424778



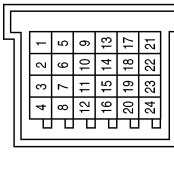


AAIWA0220GB

AIR CONDITIONER CONTROL CONNECTORS - WITH AUTOMATIC

Connector No.	M6
Connector Name	JOINT CONNECTOR-M01
Connector Color	GRAY

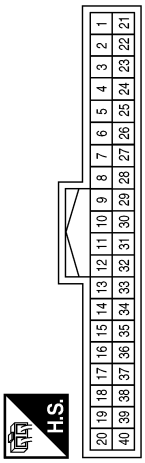
H.S.



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

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

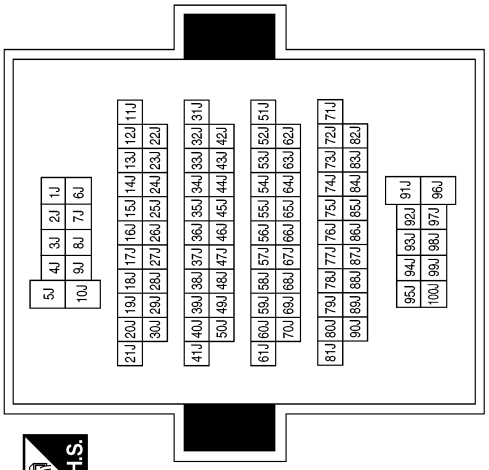
H.S.



Terminal No.	Color of Wire	Signal Name
5	R	CAN-L
6	L	CAN-H
8	L	CAN-H
9	R	CAN-L
28	LA/W	O IGN2 RL

Connector No.	M31
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
60J	P	–
61J	L	–

Connector No.	M33
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE

H.S.

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

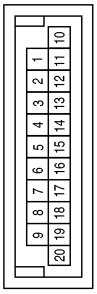
Connector No.	M41
Connector Name	IN-VEHICLE SENSOR
Connector Color	WHITE

H.S.

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

Connector No.	M43
Connector Name	JOINT CONNECTOR-MO2
Connector Color	BLUE

H.S.



Terminal No.	Color of Wire	Signal Name
1	L	–
2	L	–
11	P	–
12	P	–

AAIIA0555GB

Connector No.	M44
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
16P	LA/W	–

Connector No.	M51
Connector Name	A/C SWITCH
Connector Color	BLACK

H.S.

1	2	3	4	5
6	7	8	9	10

Terminal No.	Color of Wire	Signal Name
1	B	–
4	GR	–
8	LG	–

Connector No.	M54
Connector Name	A/C AUTO AMP.
Connector Color	BLACK

H.S.

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

Terminal No.	Color of Wire	Signal Name
1	BG	AUTO ACC
2	–	–
3	R	GND
4	–	–
5	–	–
6	–	–
7	–	–
8	–	–
9	–	–
10	–	–

Terminal No.	Color of Wire	Signal Name
11	L	CAN-H
12	–	–
13	P	INCAR SEN
14	V	SUN SEN
15	–	–
16	–	–
17	–	–
18	–	–
19	–	–
20	–	–
21	–	–
22	–	–
23	G	SEN GND
24	–	–
25	–	–
26	–	–
27	–	–
28	–	–
29	–	–

Terminal No.	Color of Wire	Signal Name
30	–	–
31	W	CAN-L
32	–	–
33	Y	LIN SW AMP
34	–	–
35	–	–
36	–	–
37	–	–
38	–	–
39	–	–
40	–	–

AAIIA0749GB

Connector No.	M55
Connector Name	A/C AUTO AMP.
Connector Color	GRAY

H.S.

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

Terminal No.	Color of Wire	Signal Name
41	BR	MIX AS 2
42	LG	MIX AS 1
43	–	–
44	–	–
45	–	–
46	–	–
47	–	–

Terminal No.	Color of Wire	Signal Name
48	–	–
49	BG	MIX DR 2
50	G	MIX DR 1
51	Y	MODE2
52	SB	MODE1
53	–	–
54	LG	INTAKE3
55	–	–
56	V	INTAKE2
57	P	INTAKE1
58	–	–
59	–	–
60	R	12V PROT MOTOR 12
61	P	MIX AS 4
62	SB	MIX AS 3
63	–	–

Terminal No.	Color of Wire	Signal Name
64	–	–
65	–	–
66	–	–
67	GR	FR FAN OUT
68	–	–
69	–	–
70	L	MIX DR 4
71	R	MIX DR 3
72	B	MODE4
73	W	MODE3
74	–	–
75	B	INTAKE SEN GND
76	DG	INTAKE4
77	BR	FR FAN F/B
78	W	INTAKE SEN
79	–	–
80	Y	12V PROT MOTOR34

Connector No.	M64
Connector Name	SUNLOAD SENSOR
Connector Color	BLACK

H.S.

1	2

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

Connector No.	M68
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
16R	GR	–

Connector No.	M69
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
24	P	–
25	L	–

AAIIA0705GB

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

H.S.

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

Terminal No.	Color of Wire	Signal Name
1	SB	–
3	B	–
5	LG	–
7	L	–
16	BR	–
19	G	–
20	Y	–
23	R	–

Connector No.	M133
Connector Name	VARIABLE BLOWER CONTROL (WITH AUTO A/C)
Connector Color	GRAY

H.S.

1	2
3	4

Terminal No.	Color of Wire	Signal Name
1	BR	–
2	O	–
3	GR	–
4	B	–

Connector No.	M123
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

6	5	4
3	2	1

Terminal No.	Color of Wire	Signal Name
1	Y	–
3	SB	–
6	B	–

Connector No.	M132
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

4	5	6
1	2	3

Terminal No.	Color of Wire	Signal Name
1	B	–
3	B	–
6	O	–

Connector No.	M71
Connector Name	JOINT CONNECTOR-M03
Connector Color	BLUE

H.S.

9	8	7	6	5	4	3	2	1
20	19	18	17	16	15	14	13	12	11	10

Terminal No.	Color of Wire	Signal Name
1	L	–
2	L	–
6	L	–
11	R	–
12	R	–
16	R	–

Connector No.	M127
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
1	BG	–
3	R	–
5	Y	–
7	L	–
16	G	–
19	V	–
20	P	–
23	W	–

AAIIA0750GB

Connector No.	M134
Connector Name	VARIABLE BLOWER CONTROL (WITH AUTO A/C)
Connector Color	GRAY

H.S.

Terminal No.	Color of Wire	Signal Name
5	W	–
6	B	–

Connector No.	M135
Connector Name	INTAKE SENSOR
Connector Color	GRAY

H.S.

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

Connector No.	M140
Connector Name	AIR MIX DOOR MOTOR RH
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	BR	–
2	Y	–
3	LG	–
4	P	–
6	SB	–

Connector No.	M143
Connector Name	MODE DOOR MOTOR
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	Y	–
2	R	–
3	SB	–
4	B	–
6	W	–

Connector No.	M144
Connector Name	FRONT BLOWER MOTOR
Connector Color	WHITE

H.S.

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

Connector No.	M145
Connector Name	AIR MIX DOOR MOTOR LH
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	BG	–
2	Y	–
3	G	–
4	L	–
6	R	–

AAIIA0751GB

Connector No.	E16
Connector Name	ECM
Connector Color	BLACK

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	Y	PDPRES
104	R	SENSOR POWER SUPPLY
124	W	SENSOR GROUND

Connector No.	M193
Connector Name	JOINT CONNECTOR-M18
Connector Color	WHITE

H.S.

8	7	6	5	4	3	2	1

Terminal No.	Color of Wire	Signal Name
1	GR	–
4	GR	–

Connector No.	E44
Connector Name	JOINT CONNECTOR-E01
Connector Color	WHITE

H.S.

4	3	2	1
8	7	6	5
12	11	10	9
16	15	14	13
20	19	18	17
24	23	22	21
28	27	26	25

Terminal No.	Color of Wire	Signal Name
1	L	–
2	P	–
3	W	–
4	Y	–
5	L	–
6	P	–
7	W	–
8	Y	–
9	L	–
10	P	–

Connector No.	M147
Connector Name	INTAKE DOOR MOTOR
Connector Color	BLACK

H.S.

1	4
2	5
3	6

Terminal No.	Color of Wire	Signal Name
1	V	–
2	R	–
3	P	–
4	DG	–
6	LG	–

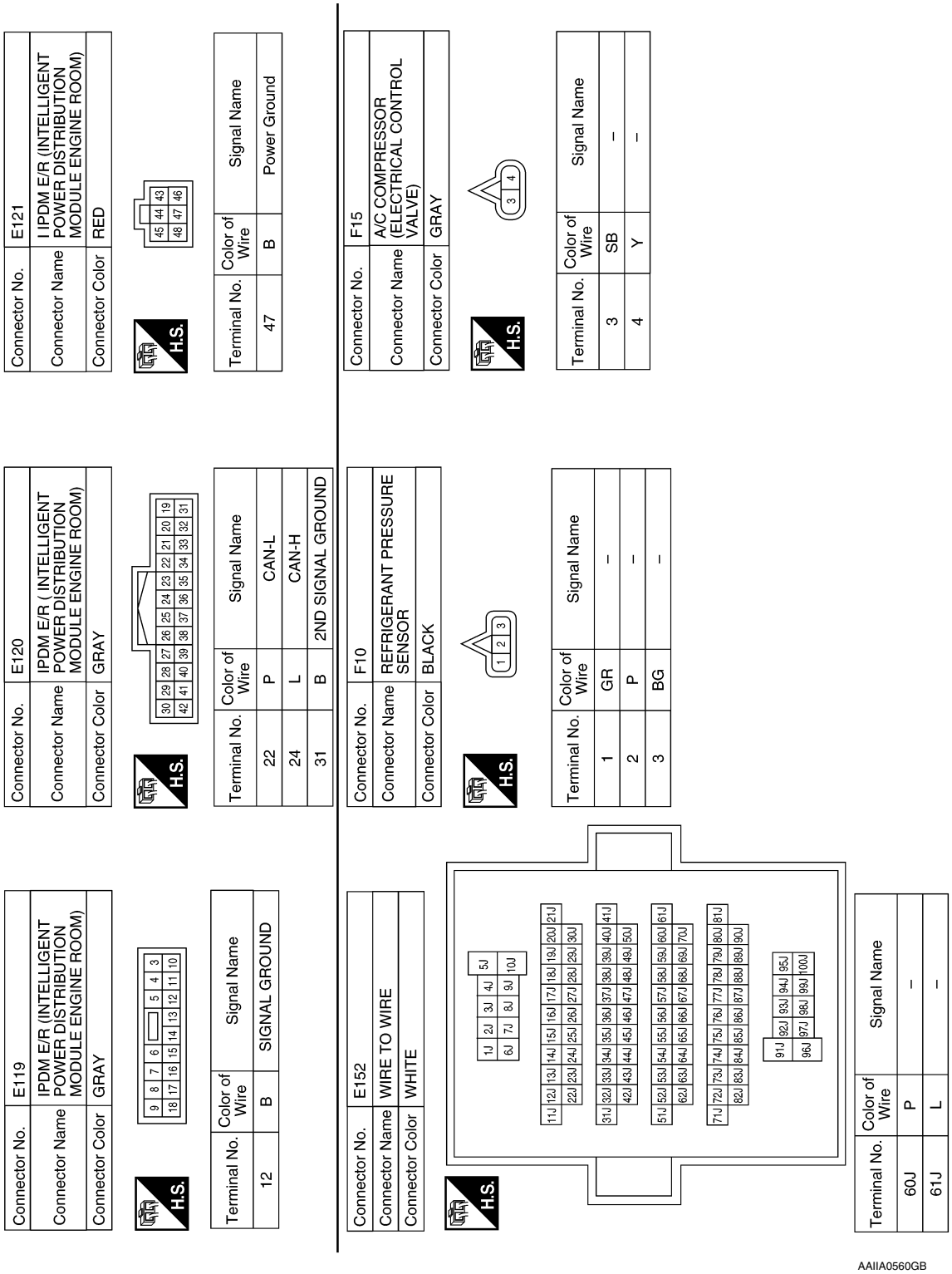
Connector No.	E19
Connector Name	WIRE TO WIRE
Connector Color	BROWN

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
4	R	–
11	Y	–
12	W	–

AAIIA0752GB



AAIIA0560GB

Connector No.	F27
Connector Name	A/C COMPRESSOR (MAGNETIC CLUTCH)
Connector Color	BLACK

H.S.

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

Connector No.	F33
Connector Name	WIRE TO WIRE
Connector Color	BROWN

H.S.

Terminal No.	Color of Wire	Signal Name
4	BG	–
11	P	–
12	GR	–

Connector No.	F35
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
65	P	O AC CLUTCH
71	SB	O IGN REVERSE SW AC VALVE

Connector No.	F42
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
98	Y	O AC VALVE

Connector No.	B16
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	GREEN

H.S.

Terminal No.	Color of Wire	Signal Name
60	L	CAN-H
80	P	CAN-L

Connector No.	B41
Connector Name	WIRE TO WIRE
Connector Color	WHITE

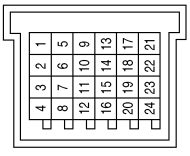
H.S.

Terminal No.	Color of Wire	Signal Name
24	P	–
25	L	–

AAIIA0753GB

Connector No.	B63
Connector Name	JOINT CONNECTOR-B01
Connector Color	GRAY

H.S.



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

AAIIA0754GB

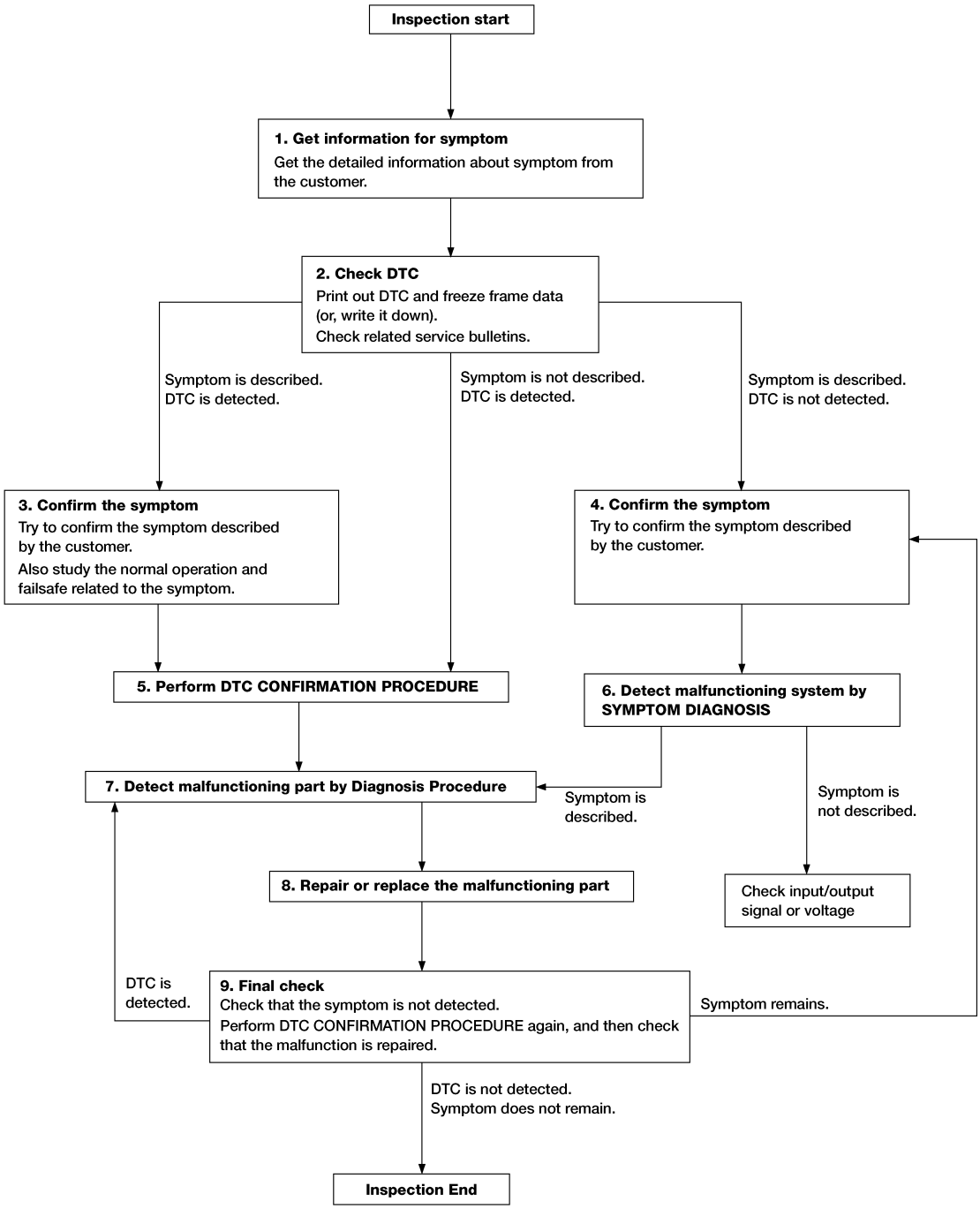
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:0000000012424779

OVERALL SEQUENCE



ALAIA0158GB

DETAILED FLOW

1.GET INFORMATION FOR SYMPTOM

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

>> GO TO 2.

2.CHECK DTC

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

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

3. Check related service bulletins for information.

Are any symptoms described and any DTC detected?

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

3.CONFIRM THE SYMPTOM

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

>> GO TO 5.

4.CONFIRM THE SYMPTOM

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

>> GO TO 6.

5.PERFORM DTC CONFIRMATION PROCEDURE

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

NOTE:

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

Is DTC detected?

YES >> GO TO 7.
NO >> Check according to GI-45, "Intermittent Incident".

6.DETECT MALFUNCTIONING SYSTEM BY SYMPTOM DIAGNOSIS

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

Is the symptom described?

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

7.DETECT MALFUNCTIONING PART BY DIAGNOSIS PROCEDURE

Inspect according to Diagnosis Procedure of the system.

Is malfunctioning part detected?

YES >> GO TO 8.
NO >> Check according to GI-45, "Intermittent Incident".

8. REPAIR OR REPLACE THE MALFUNCTIONING PART

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

>> GO TO 9.

9. FINAL CHECK

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

Is DTC detected and does symptom remain?

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

OPERATION INSPECTION

Work Procedure

INFOID:0000000012424780

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-60, "Diagnosis Procedure".

2. CHECK BLOWER MOTOR SPEED

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

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check blower motor system. Refer to HAC-89, "Diagnosis Procedure".

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

1. Press the MODE switch and the DEF switch.
2. Check that the air outlets change according to each indicated air outlet by placing a hand in front of the outlets. Refer to HAC-10, "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-84, "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-81, "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-95, "Diagnosis Procedure".

6. CHECK TEMPERATURE DECREASE

1. Operate the A/C compressor.
2. Operate the temperature control dial (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-102, "Diagnosis Procedure".

7. CHECK TEMPERATURE INCREASE

1. Operate the temperature control dial (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-103, "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 dial (driver side). Check that the discharge air temperature (driver side) changes.
3. Operate the temperature control dial (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-100, "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 dial (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-100, "Diagnosis Chart By Symptom" and perform the appropriate diagnosis.

SYSTEM SETTING

Temperature Setting Trimmer

INFOID:0000000012424781

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” mode of “HVAC”.

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

NOTE:

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

Foot Position Setting Trimmer

INFOID:0000000012424782

DESCRIPTION

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

HOW TO SET

With CONSULT

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

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

NOTE:

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

Inlet Port Memory Function (FRE)

INFOID:0000000012424783

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" mode of "HVAC".

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

NOTE:

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

Inlet Port Memory Function (REC)

INFOID:0000000012424784

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" mode of "HVAC".

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

NOTE:

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

Target Evaporator Temp Upper Limit

INFOID:0000000012424785

DESCRIPTION

Set the target evaporator temperature upper limit.

HOW TO SET

With CONSULT

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

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

DOOR MOTOR STARTING POSITION RESET

Description

INFOID:0000000012424786

- Reset signal is transmitted from A/C auto amp. to air mix door motor, intake door motor and mode door motor. Starting position reset can be performed.
  NOTE:
  During reset, DEF switch indicator blinks.
- When air mix door motor, intake door motor or mode door motor is removed and installed, always perform door motor starting position reset.

Work Procedure

INFOID:0000000012424787

1.PERFORM DOOR MOTOR STARTING POSITION RESET

With CONSULT
1. Turn ignition switch ON.
2. Select “Door Motor Starting Position Reset” in “Active Test” mode of “HVAC”.
3. Touch “Start” and wait a few seconds.
4. Make sure the “COMPLETED” is displayed on CONSULT screen.

>> Inspection End.

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000012424788

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-36, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart".

DTC Logic

INFOID:0000000012424789

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. Select “Self Diagnostic Result” mode of “HVAC”.
3. Check DTC.

Is DTC detected?

YES >> Refer to HAC-57, "Diagnosis Procedure".
NO >> Refer to GI-45, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000012424790

1. CHECK CAN COMMUNICATION SYSTEM

Check CAN communication system. Refer to LAN-20, "Trouble Diagnosis Flow Chart".

>> Inspection End.

U1010 CONTROL UNIT (CAN)

Description

INFOID:0000000012424791

Initial diagnosis of A/C auto amp.

DTC Logic

INFOID:0000000012424792

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. Select “Self Diagnostic Result” mode of “HVAC”.
3. Check DTC.

Is DTC detected?

YES >> Refer to HAC-58, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000012424793

NOTE:
This DTC can be set if the BCM is placed in transit mode. Confirm if the DTC is CURRENT or PAST. If PAST, perform the following steps before carrying out Diagnosis Procedure.

With CONSULT
1. Clear DTC. Refer to HAC-22, "CONSULT Function (HVAC)".
2. Perform OPERATION INSPECTION. Refer to HAC-52, "Work Procedure".
3. Select “Self Diagnostic Result” mode of “HVAC”. Refer to HAC-22, "CONSULT Function (HVAC)".
4. If DTC resets, proceed with Diagnosis Procedure.

1.REPLACE A/C AUTO AMP.

Replace A/C auto amp. Refer to HAC-107, "Removal and Installation".

>> Inspection End.

B24A0 A/C AUTO AMP.

DTC Logic

INFOID:0000000012424794

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-57, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to HAC-58, "DTC Logic".

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B24A0	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. Select “Self Diagnostic Result” mode of “HVAC”.
3. Check DTC.

Is DTC detected?

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

Diagnosis Procedure

INFOID:0000000012424795

1.PERFORM SELF DIAGNOSTIC

With CONSULT

1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “HVAC”.
3. Touch “ERASE”.
4. Turn ignition switch OFF.
5. Turn ignition switch ON.
6. Perform “DTC CONFIRMATION PROCEDURE”. Refer to HAC-59, "DTC Logic".

Is DTC detected again?

YES >> Replace A/C auto amp. Refer to HAC-107, "Removal and Installation".
NO >> Inspection End.

B24A1 A/C AUTO AMP. POWER SUPPLY

DTC Logic

INFOID:0000000012424796

DTC DETECTION LOGIC

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B24A1	A/C AUTO AMP. POWER SUPPLY	A/C auto amp. power supply is out of range	• A/C auto amp. • Harness and connector (Power supply is open or shorted)

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

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

Is DTC detected?

YES >> Refer to HAC-60, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000012424797

Regarding Wiring Diagram information, refer to HAC-38, "Wiring Diagram".

1.CHECK FUSE

Check 10A fuse [No. 20, 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
M54	1	Ground	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		
M54	3	Ground	Yes

Is the inspection result normal?

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

B24A4 INTAKE SENSOR

DTC Logic

INFOID:0000000012424798

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-57, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to HAC-58, "DTC Logic".

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B24A4	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.)
		The intake sensor recognition temperature is too low.	

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

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

Is DTC detected?

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

Diagnosis Procedure

INFOID:0000000012424799

Regarding Wiring Diagram information, refer to HAC-38, "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		
M135	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		
M135	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-107, "Removal and Installation".
NO >> Replace intake sensor. Refer to HAC-111, "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	
M135	1	M55	78	Yes

Is the inspection result normal?

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

5.CHECK INTAKE SENSOR POWER SUPPLY CIRCUIT FOR SHORT TO GROUND

Check continuity between intake sensor harness connector and ground.

Intake sensor		—	Continuity
Connector	Terminal		
M135	1	Ground	No

Is the inspection result normal?

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

6.CHECK INTAKE SENSOR POWER SUPPLY CIRCUIT FOR SHORT TO VOLTAGE

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

+		−	Voltage (Approx.)
Intake sensor			
Connector	Terminal		
M135	1	Ground	0 V

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-107, "Removal and Installation".
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000012424800

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-111, "Removal and Installation".

B24A6 IN-VEHICLE SENSOR

DTC Logic

INFOID:0000000012424801

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-57, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to HAC-58, "DTC Logic".

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B24A6	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.)
		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. Select “Self Diagnostic Result” mode of “HVAC”.
3. Check DTC.

Is DTC detected?

YES >> Refer to HAC-65, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000012424802

Regarding Wiring Diagram information, refer to HAC-38, "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		
M41	1	Ground	5 V

Is the inspection result normal?

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

2.CHECK CONTINUITY BETWEEN IN-VEHICLE SENSOR AND A/C AUTO AMP.

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

In-vehicle sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M41	2	M54	23	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-66, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-107, "Removal and Installation".
NO >> Replace in-vehicle sensor. Refer to HAC-109, "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	
M41	1	M54	13	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		
M41	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		
M41	1	Ground	0 V

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-107, "Removal and Installation".
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000012424803

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-109, "Removal and Installation".

B24A9 SUNLOAD SENSOR

DTC Logic

INFOID:0000000012424804

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-57, "DTC Logic" (U1000) or HAC-58, "DTC Logic" (U1010).
- Sunload sensor may register a malfunction when indoors, at dusk, or at other times when light is insufficient. When performing the diagnosis indoors, light the sunload sensor with a lamp (60W or more).

DTC	Items (CONSULT screen terms)	Diagnostic item is detected when...	Possible cause
B24A9	SUNLOAD SEN (SHORT)	Detected calorie at sunload sensor 1677 w/m^2 (1442 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)
	SUNLOAD SEN (OPEN)	Detected calorie at sunload sensor 33 w/m^2 (28 kcal/m^2·h)	

DTC CONFIRMATION PROCEDURE

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT

With CONSULT

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

NOTE:

- If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-57, "DTC Logic" (U1000) or HAC-58, "DTC Logic" (U1010).
- Sunload sensor may register a malfunction when indoors, at dusk, or at other times when light is insufficient. When performing the diagnosis indoors, light the sunload sensor with a lamp (60W or more).

Is DTC No.“B24A9” displayed?

YES >> Perform trouble diagnosis for the sunload sensor. Refer to HAC-68, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000012424805

Regarding Wiring Diagram information, refer to HAC-38, "Wiring Diagram".

NOTE:

This DTC can be set if the BCM is placed in transit mode. Confirm if the DTC is CURRENT or PAST. If PAST, perform the following steps before carrying out Diagnosis Procedure.

With CONSULT

1. Clear DTC. Refer to HAC-22, "CONSULT Function (HVAC)".
2. Perform OPERATION INSPECTION. Refer to HAC-52, "Work Procedure".
3. Select “Self Diagnostic Result” mode of “HVAC”. Refer to HAC-22, "CONSULT Function (HVAC)".
4. If DTC resets, proceed with Diagnosis Procedure.

1.CHECK SUNLOAD SENSOR POWER SUPPLY

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

+		–	Voltage (Approx.)
Sunload sensor			
Connector	Terminal		
M64	1	Ground	5 V

Is the inspection result normal?

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

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

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

Sunload sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M64	2	M54	23	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-69, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-107, "Removal and Installation".
NO >> Replace sunload sensor. Refer to HAC-110, "Removal and Installation".

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

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

Sunload sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M64	1	M54	14	Yes

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

Sunload sensor		—	Continuity
Connector	Terminal		
M64	1	Ground	No

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-107, "Removal and Installation".
NO >> Repair harness or connector.

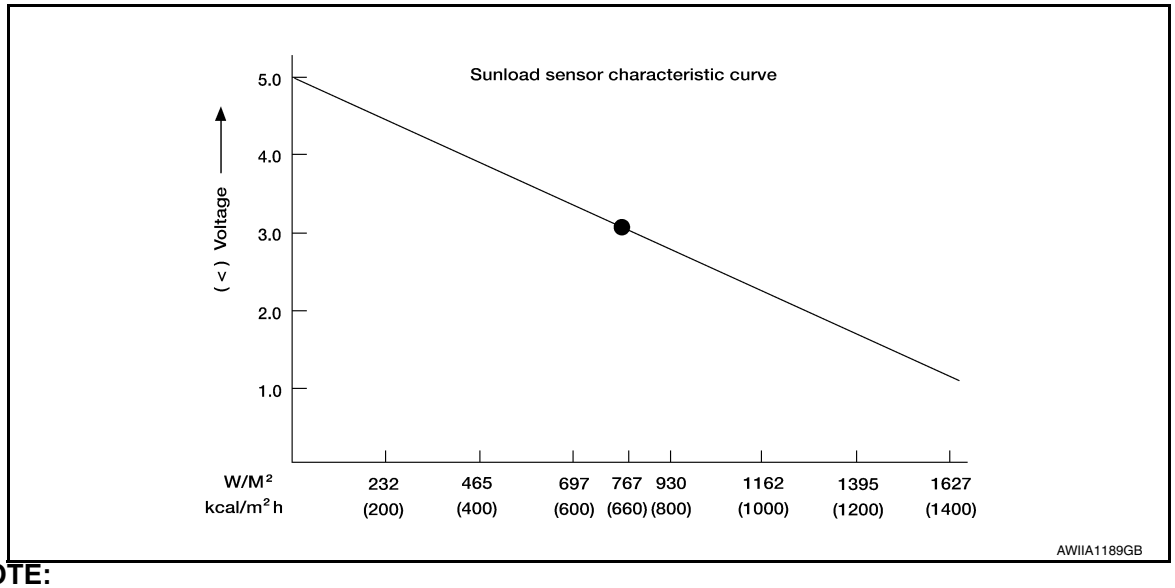
Component Inspection

INFOID:0000000012424806

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	
M54	14	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-110, "Removal and Installation".

B24BB LEFT AIR MIX DOOR MOTOR

DTC Logic

INFOID:0000000012424807

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-57, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-58, "DTC Logic".
- If air mix door motors DTC (B24BB – B24BD) are detected, there is probably a disconnected connector or an open circuit in air mix door motor drive power supply harness.

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B24BB	DR AIR MIX DOOR MOT	Short or open circuit of air mix door motor drive signal.	• Air mix door motor • A/C auto amp. • Harness or connectors (The motor circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

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

Is DTC detected?

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

Diagnosis Procedure

INFOID:0000000012424808

Regarding Wiring Diagram information, refer to HAC-38, "Wiring Diagram".

1.CHECK AIR MIX DOOR MOTOR LH POWER SUPPLY

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

+		–	Voltage (Approx.)
Air mix door motor LH			
Connector	Terminal		
M145	2	Ground	Battery voltage

Is the inspection result normal?

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

2.CHECK AIR MIX DOOR MOTOR LH POWER SUPPLY CIRCUIT FOR OPEN

1. Disconnect A/C auto amp. connector.
2. 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	
M145	2	M55	80	Yes

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-107, "Removal and Installation".
NO >> Repair harness or connector.

3.CHECK AIR MIX DOOR MOTOR LH DRIVE SIGNAL CIRCUIT FOR OPEN

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

Air mix door motor LH		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M145	1	M55	49	Yes
	3		50	
	4		70	
	6		71	

Is the inspection result normal?

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

4.CHECK AIR MIX DOOR MOTOR LH DRIVE SIGNAL CIRCUIT FOR SHORT

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

Air mix door motor LH		—	Continuity
Connector	Terminal		
M145	1	Ground	No
	3		
	4		
	6		

Is the inspection result normal?

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

5.CHECK AIR MIX DOOR MOTOR LH

Check air mix door motor LH. Refer to HAC-75, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-107, "Removal and Installation".
NO >> Replace air mix door motor LH. Refer to HAC-114, "AIR MIX DOOR MOTOR : Removal and Installation".

Component Inspection

INFOID:0000000012424809

1.CHECK AIR MIX DOOR MOTOR LH

1. Remove air mix door motor LH. Refer to HAC-114, "AIR MIX DOOR MOTOR : Removal and Installation".
2. Check resistance between air mix door motor LH terminals. Refer to applicable table for the normal value.

Terminal		Resistance (Ω) (Approx.)
2	1	90
	3	
	4	
	6	

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace air mix door motor LH. Refer to HAC-114, "AIR MIX DOOR MOTOR : Removal and Installation".

B24BD RIGHT AIR MIX DOOR MOTOR

DTC Logic

INFOID:0000000012424810

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-57, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-58, "DTC Logic".
- If air mix door motors DTC (B24BB – B24BD) are detected, there is probably a disconnected connector or an open circuit in air mix door motor drive power supply harness.

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B24BD	AS AIR MIX DOOR MOT	Short or open circuit of air mix door motor drive signal.	• Air mix door motor • A/C auto amp. • Harness or connectors (The motor circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

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

Is DTC detected?

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

Diagnosis Procedure

INFOID:0000000012424811

Regarding Wiring Diagram information, refer to HAC-38, "Wiring Diagram".

1.CHECK AIR MIX DOOR MOTOR RH POWER SUPPLY

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

+		–	Voltage (Approx.)
Air mix door motor RH			
Connector	Terminal		
M140	2	Ground	Battery voltage

Is the inspection result normal?

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

2.CHECK AIR MIX DOOR MOTOR RH POWER SUPPLY CIRCUIT FOR OPEN

1. Disconnect A/C auto amp. connector.
2. 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	
M140	2	M55	80	Yes

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-107, "Removal and Installation".
NO >> Repair harness or connector.

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

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

Air mix door motor RH		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M140	1	M55	41	Yes
	3		42	
	4		61	
	6		62	

Is the inspection result normal?

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

4.CHECK AIR MIX DOOR MOTOR RH DRIVE SIGNAL CIRCUIT FOR SHORT

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

Air mix door motor RH		—	Continuity
Connector	Terminal		
M140	1	Ground	No
	3		
	4		
	6		

Is the inspection result normal?

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

5.CHECK AIR MIX DOOR MOTOR RH

Check air mix door motor RH. Refer to HAC-75, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-107, "Removal and Installation".
NO >> Replace air mix door motor RH. Refer to HAC-114, "AIR MIX DOOR MOTOR : Removal and Installation".

Component Inspection

INFOID:0000000012424812

1.CHECK AIR MIX DOOR MOTOR RH

1. Remove air mix door motor RH. Refer to HAC-114, "AIR MIX DOOR MOTOR : Removal and Installation".
2. Check resistance between air mix door motor RH terminals. Refer to applicable table for the normal value.

Terminal		Resistance (Ω) (Approx.)
2	1	90
	3	
	4	
	6	

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace air mix door motor RH. Refer to HAC-114, "AIR MIX DOOR MOTOR : Removal and Installation".

B24B4 A/C CONTROL

DTC Logic

INFOID:0000000012424813

DTC DETECTION LOGIC

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B24B4	A/C CONTROL COMM	When A/C auto amp. is not transmitting or receiving communication signal for 2 or more seconds.	• A/C switch • A/C auto amp. • Harness and connector (Communication line is open or shorted)

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

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

Is DTC detected?

YES >> Refer to HAC-77, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000012424814

Regarding Wiring Diagram information, refer to HAC-38, "Wiring Diagram".

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT

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

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-57, "DTC Logic" (U1000) or HAC-58, "DTC Logic" (U1010).

Is any DTC No. displayed?

YES >> Perform diagnosis for the applicable DTC. Refer to HAC-36, "DTC Index".
NO >> GO TO 2.

2.CHECK A/C SWITCH COMMUNICATION CIRCUIT CONTINUITY

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

A/C switch		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M51	8	M54	33	Yes

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

A/C switch		—	Continuity
Connector	Terminal		
M51	8	Ground	No

Is the inspection result normal?

YES >> Replace A/C switch. Refer to HAC-106, "Removal and Installation".
NO >> Repair harness or connector.

B24B6 A/C CONTROL

DTC Logic

INFOID:0000000012424815

DTC DETECTION LOGIC

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B24B6	A/C CONTROL COMM	When A/C auto amp. is not transmitting or receiving communication signal for 2 or more seconds.	• A/C switch • A/C auto amp. • Harness and connector (Communication line is open or shorted)

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

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

Is DTC detected?

YES >> Refer to HAC-79, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000012424816

Regarding Wiring Diagram information, refer to HAC-38, "Wiring Diagram".

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT

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

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-57, "DTC Logic" (U1000) or HAC-58, "DTC Logic" (U1010).

Is any DTC No. displayed?

YES >> Perform diagnosis for the applicable DTC. Refer to HAC-36, "DTC Index".
NO >> GO TO 2.

2.CHECK A/C SWITCH COMMUNICATION CIRCUIT CONTINUITY

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

A/C switch		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M51	8	M54	33	Yes

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

A/C switch		—	Continuity
Connector	Terminal		
M51	8	Ground	No

Is the inspection result normal?

YES >> Replace A/C switch. Refer to HAC-106, "Removal and Installation".
NO >> Repair harness or connector.

B24B7 INTAKE DOOR MOTOR

DTC Logic

INFOID:0000000012424817

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-57, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-58, "DTC Logic".
- If mode door motors DTC (B24B7 – B24B9) are detected, there is probably a disconnected connector or an open circuit in mode door motor drive power supply harness.

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B24B7	INTAKE DOOR MOTOR	Short or open circuit of intake door motor drive signal.	• Intake door motor • A/C auto amp. • Harness or connectors (The motor circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

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

Is DTC detected?

YES >> Refer to HAC-81, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000012424818

Regarding Wiring Diagram information, refer to HAC-38, "Wiring Diagram".

1.CHECK INTAKE DOOR MOTOR POWER SUPPLY

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

+		–	Voltage (Approx.)
Intake door motor			
Connector	Terminal		
M147	2	Ground	Battery voltage

Is the inspection result normal?

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

2.CHECK INTAKE DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR OPEN

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

Intake door motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M147	2	M55	60	Yes

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-107, "Removal and Installation".
NO >> Repair harness or connector.

3.CHECK INTAKE DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR OPEN

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

Intake door motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M147	1	M55	56	Yes
	3		57	
	4		76	
	6		54	

Is the inspection result normal?

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

4.CHECK INTAKE DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR SHORT

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

Intake door motor		—	Continuity
Connector	Terminal		
M147	1	Ground	No
	3		
	4		
	6		

Is the inspection result normal?

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

5.CHECK INTAKE DOOR MOTOR

Check intake door motor. Refer to HAC-85, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-107, "Removal and Installation".
NO >> Replace intake door motor. Refer to HAC-114, "INTAKE DOOR MOTOR : Removal and Installation".

Component Inspection (Motor)

INFOID:0000000012424819

1.CHECK INTAKE DOOR MOTOR

1. Remove intake door motor. Refer to HAC-114, "INTAKE DOOR MOTOR : Removal and Installation".
2. Check resistance between intake door motor terminals. Refer to applicable table for the normal value.

Terminal		Resistance (Ω) (Approx.)
2	1	90
	3	
	4	
	6	

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace intake door motor. Refer to HAC-114, "INTAKE DOOR MOTOR : Removal and Installation".

B24B9 MODE DOOR MOTOR

DTC Logic

INFOID:0000000012424820

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-57, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-58, "DTC Logic".
- If mode door motors DTC (B24B7 – B24B9) are detected, there is probably a disconnected connector or an open circuit in mode door motor drive power supply harness.

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B24B9	MODE DOOR MOTOR	Short or open circuit of mode door motor drive signal.	• Mode door motor • A/C auto amp. • Harness or connectors (The motor circuit is open or short-ed.)

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

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

Is DTC detected?

YES >> Refer to HAC-84, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000012424821

Regarding Wiring Diagram information, refer to HAC-38, "Wiring Diagram".

1.CHECK MODE DOOR MOTOR POWER SUPPLY

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

+		–	Voltage (Approx.)
Mode door motor			
Connector	Terminal		
M143	2	Ground	Battery voltage

Is the inspection result normal?

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

2.CHECK MODE DOOR MOTOR POWER SUPPLY CIRCUIT FOR OPEN

1. Disconnect A/C auto amp. connector.
2. 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	
M143	2	M55	60	Yes

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-107, "Removal and Installation".
NO >> Repair harness or connector.

3.CHECK MODE DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR OPEN

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

Mode door motor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M143	1	M55	51	Yes
	3		52	
	4		72	
	6		73	

Is the inspection result normal?

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

4.CHECK MODE DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR SHORT

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

Mode door motor		—	Continuity
Connector	Terminal		
M143	1	Ground	No
	3		
	4		
	6		

Is the inspection result normal?

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

5.CHECK MODE DOOR MOTOR

Check mode door motor. Refer to HAC-85, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-107, "Removal and Installation".
NO >> Replace mode door motor. Refer to HAC-114, "MODE DOOR MOTOR : Removal and Installation".

Component Inspection

INFOID:0000000012424822

1.CHECK MODE DOOR MOTOR

1. Remove mode door motor. Refer to HAC-114, "MODE DOOR MOTOR : Removal and Installation".
2. Check resistance between mode door motor terminals. Refer to applicable table for the normal value.

Terminal		Resistance (Ω) (Approx.)
2	1	90
	3	
	4	
	6	

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace mode door motor. Refer to HAC-114, "MODE DOOR MOTOR : Removal and Installation".

B24C3 BLOWER MOTOR FEEDBACK

DTC Logic

INFOID:0000000012424823

DTC DETECTION LOGIC

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B24C3	BLOWER MOTOR FEEDBACK	Short or open circuit of blower motor feedback circuit.	• Variable blower control • A/C auto amp. • Harness and connector

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

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

Is DTC detected?

YES >> Refer to HAC-87, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000012424824

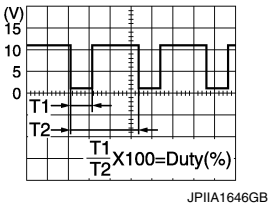
Regarding Wiring Diagram information, refer to HAC-38, "Wiring Diagram".

NOTE:
This DTC can be set if the BCM is placed in transit mode. Confirm if the DTC is CURRENT or PAST. If PAST, perform the following steps before carrying out Diagnosis Procedure.

With CONSULT
1. Clear DTC. Refer to HAC-22, "CONSULT Function (HVAC)".
2. Perform OPERATION INSPECTION. Refer to HAC-52, "Work Procedure".
3. Select “Self Diagnostic Result” mode of “HVAC”. Refer to HAC-22, "CONSULT Function (HVAC)".
4. If DTC resets, proceed with Diagnosis Procedure.

1.CHECK FRONT BLOWER FEEDBACK SIGNAL

1. Turn ignition switch ON.
2. Set air outlet to VENT.
3. Change fan speed from 1st – 7th, and check duty ratios between variable blower control harness connector and ground by using an oscilloscope.
   NOTE:
   Calculate the drive signal duty ratio as shown in the figure.
   T2 = Approx. 1.6 ms

+		–	Condition	Duty ratio (Approx.)	Output waveform
Variable blower control					
Connector	Terminal		Fan speed (manual) Air outlet: VENT		
M133	1	Ground	1st	25%	
			2nd	35%	
			3rd	47%	
			4th	57%	
			5th	69%	
			6th	79%	
			7th	91%	

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Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace variable blower control. Refer to HAC-116, "Removal and Installation".

2.CHECK FRONT BLOWER MOTOR FEEDBACK CIRCUIT FOR OPEN

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

Variable blower control		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M133	1	M55	77	Yes

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to VTL-17, "Removal and Installation".
NO >> Repair harness or connector.

B24C6 BLOWER MOTOR CONTROL

DTC Logic

INFOID:0000000012424825

DTC DETECTION LOGIC

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B24C6	BLOWER MOTOR CONTROL	Short or open circuit of blower motor control circuit.	• Front blower motor • Front blower relay • Variable blower control • A/C auto amp. • Harness and connector

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

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

Is DTC detected?

YES >> Refer to HAC-89, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000012424826

Regarding Wiring Diagram information, refer to HAC-38, "Wiring Diagram".

NOTE:
This DTC can be set if the BCM is placed in transit mode. Confirm if the DTC is CURRENT or PAST. If PAST, perform the following steps before carrying out Diagnosis Procedure.

With CONSULT
1. Clear DTC. Refer to HAC-22, "CONSULT Function (HVAC)".
2. Perform OPERATION INSPECTION. Refer to HAC-52, "Work Procedure".
3. Select “Self Diagnostic Result” mode of “HVAC”. Refer to HAC-22, "CONSULT Function (HVAC)".
4. If DTC resets, proceed with Diagnosis Procedure.

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 VARIABLE BLOWER CONTROL POWER SUPPLY

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

+		−	Voltage (Approx.)
Variable blower control			
Connector	Terminal		
M133	4	Ground	Battery voltage

Is the inspection result normal?

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

3.CHECK FRONT BLOWER RELAY

1. Turn ignition switch OFF.
2. Check front blower relay. Refer to HAC-92, "Component Inspection (Front Blower Relay)".

Is the inspection result normal?

YES >> Repair harness or connector between variable blower control and fuse.
NO >> Replace front blower relay.

4.CHECK FRONT BLOWER MOTOR POWER SUPPLY

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

+		−	Voltage (Approx.)
Front blower motor			
Connector	Terminal		
M144	1	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace variable blower control. Refer to HAC-116, "Removal and Installation".

5.CHECK FRONT BLOWER MOTOR CONTROL CIRCUIT FOR OPEN

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

Variable blower control		Front blower motor		Continuity
Connector	Terminal	Connector	Terminal	
M134	6	M144	2	Yes

Is the inspection result normal?

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

6.CHECK FRONT BLOWER MOTOR OPERATION

Check front blower motor operation. Refer to HAC-92, "Component Inspection (Front Blower Motor)".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace front blower motor. Refer to VTL-17, "Removal and Installation".

7.CHECK VARIABLE BLOWER CONTROL GROUND CIRCUIT FOR OPEN

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

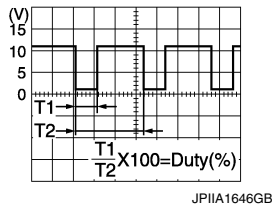
Variable blower control		—	Continuity
Connector	Terminal		
M133	2	Ground	Yes

Is the inspection result normal?

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

8. CHECK VARIABLE BLOWER CONTROL SIGNAL

1. Connect variable blower control connector and A/C auto amp. connector.
2. Turn ignition switch ON.
3. Set air outlet to VENT.
4. Change fan speed from 1st – 7th, and check duty ratios between variable blower control harness connector and ground by using an oscilloscope.
   NOTE:
   Calculate the drive signal duty ratio as shown in the figure.
   T2 = Approx. 1.6 ms

+ Variable blower control		–	Condition	Duty ratio (Approx.)	Output waveform
Connector	Terminal		Fan speed (manual) Air outlet: VENT		
M133	3	Ground	1st	25%	
			2nd	35%	
			3rd	47%	
			4th	57%	
			5th	69%	
			6th	79%	
			7th	91%	

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Is the inspection result normal?

YES >> Replace variable blower control. Refer to HAC-116, "Removal and Installation".
NO >> GO TO 9.

9. CHECK VARIABLE BLOWER CONTROL SIGNAL CIRCUIT FOR OPEN

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

Variable blower control		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M133	3	M55	67	Yes

Is the inspection result normal?

YES >> GO TO 10.
NO >> Repair harness or connector.

10. CHECK VARIABLE BLOWER CONTROL SIGNAL CIRCUIT FOR SHORT

Check continuity between variable blower control harness connector and ground.

Variable blower control		—	Continuity
Connector	Terminal		
M133	3	Ground	No

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-107, "Removal and Installation".
NO >> Repair harness or connector.

Component Inspection (Front Blower Motor)

INFOID:0000000012424827

1.CHECK FRONT BLOWER MOTOR

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

Does the blower fan operate?

YES >> Intermittent incident. Refer to GI-45, "Intermittent Incident".
NO >> Replace front blower motor. Refer to VTL-17, "Removal and Installation".

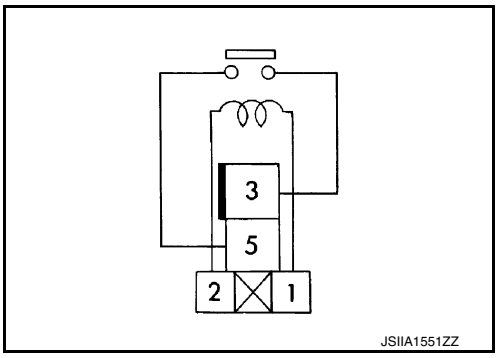
Component Inspection (Front Blower Relay)

INFOID:0000000012424828

1.CHECK FRONT BLOWER RELAY

1. Remove front blower relay. Refer to PG-66, "Terminal Arrangement".
2. Check continuity between front blower relay terminal 3 and 5 when the voltage is supplied between terminal 1 and 2.

Terminal		Voltage	Continuity
3	5	ON	Yes
		OFF	No



Is the inspection result normal?

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

B24D4 A/C CONTROL COMMUNICATION

DTC Logic

INFOID:0000000012424829

DTC DETECTION LOGIC

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B24D4	A/C CONTROL COMM	When A/C auto amp. is not transmitting or receiving communication signal for 2 or more seconds.	• A/C switch • A/C auto amp. • Harness and connector (Communication line is open or shorted)

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

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

Is DTC detected?

YES >> Refer to HAC-93, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000012424830

Regarding Wiring Diagram information, refer to HAC-38, "Wiring Diagram".

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT

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

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-57, "DTC Logic" (U1000) or HAC-58, "DTC Logic" (U1010).

Is any DTC No. displayed?

YES >> Perform diagnosis for the applicable DTC. Refer to HAC-36, "DTC Index".
NO >> GO TO 2.

2.CHECK A/C SWITCH COMMUNICATION CIRCUIT CONTINUITY

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

A/C switch		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M51	8	M54	33	Yes

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

A/C switch		—	Continuity
Connector	Terminal		
M51	8	Ground	No

Is the inspection result normal?

YES >> Replace A/C switch. Refer to HAC-106, "Removal and Installation".
NO >> Repair harness or connector.

MAGNET CLUTCH

Component Function Check

INFOID:0000000012424831

1.CHECK MAGNET CLUTCH OPERATION

Perform “COMPRESSOR” in “Active Test” of “IPDM E/R”. Refer to HAC-26, "CONSULT Function (IPDM E/R)".

Does it operate normally?

YES >> Inspection End.
NO >> Refer to HAC-95, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000012424832

Regarding Wiring Diagram information, refer to HAC-38, "Wiring Diagram".

1.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 10A fuse (No. 50, located in IPDM E/R).
   NOTE:
   Refer to PG-70, "IPDM E/R Terminal Arrangement".

Is the inspection result normal?

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

2.CHECK MAGNET CLUTCH POWER SUPPLY CIRCUIT

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

A/C compressor		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F27	1	F35	65	Yes

Is the inspection result normal?

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

3.CHECK MAGNET CLUTCH GROUND CIRCUIT

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

A/C compressor			Continuity
Connector	Terminal		
F27	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-44, "Removal and Installation".
NO >> Replace magnet clutch. Refer to HA-30, "Removal and Installation".

ECV (ELECTRICAL CONTROL VALVE)

Diagnosis Procedure

INFOID:0000000012424833

Regarding Wiring Diagram information, refer to HAC-38, "Wiring Diagram".

1.CHECK ECV (ELECTRICAL CONTROL VALVE) POWER SUPPLY

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

+		−	Voltage (Approx.)
A/C compressor			
Connector	Terminal		
F15	3	Ground	Battery voltage

Is the inspection result normal?

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

2.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 10A fuse [No. 50, located in IPDM E/R]. Refer to PG-70, "IPDM E/R Terminal Arrangement".

Is the inspection result normal?

YES >> Repair harness or connector.
NO >> Replace the blown fuse after repairing the affected circuit.

3.CHECK ECV CONTROL SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between A/C compressor harness connector and IPDM E/R harness connector.

A/C compressor		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F15	4	F42	98	Yes

Is the inspection result normal?

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

4.CHECK ECV CONTROL SIGNAL CIRCUIT FOR SHORT

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

A/C compressor		—	Continuity
Connector	Terminal		
F15	4	Ground	No

Is the inspection result normal?

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

5.CHECK ECV

Check ECV. Refer to HAC-97, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Replace A/C compressor. Refer to HA-30, "Removal and Installation".

6.CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-44, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:0000000012424834

1.CHECK ECV (ELECTRICAL CONTROL VALVE)

1. Turn ignition switch OFF.
2. Disconnect A/C compressor connector.
3. Check continuity between A/C compressor connector F15 terminals.

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

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace A/C compressor. Refer to HA-30, "Removal and Installation".

POWER SUPPLY AND GROUND CIRCUIT
A/C SWITCH ASSEMBLY

A/C SWITCH ASSEMBLY : Component Function Check

INFOID:0000000012424835

1.CHECK OPERATION

1. Press the AUTO switch, and then check that “AUTO” is shown on the display.
2. Operate the temperature control dial (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. Refer to HAC-98, "A/C SWITCH ASSEMBLY : Diagnosis Procedure".

A/C SWITCH ASSEMBLY : Diagnosis Procedure

INFOID:0000000012424836

Regarding Wiring Diagram information, refer to HAC-38, "Wiring Diagram".

1.CHECK A/C SWITCH POWER SUPPLY

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

(+)		(−)	Voltage (Approx.)
A/C switch			
Connector	Terminal		
M51	4	Ground	Battery voltage

Is the inspection result normal?

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

2.CHECK FUSE

Check 10A fuse [No. 20, located in the fuse block (J/B)].

NOTE:
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 A/C SWITCH POWER SUPPLY CIRCUIT FOR OPEN

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

A/C switch		Fuse block (J/B)		Continuity
Connector	Terminal	Connector	Terminal	
M51	4	M34	16R	Yes

Is the inspection result normal?

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

4.CHECK A/C SWITCH GROUND CIRCUIT

1. Turn ignition switch OFF.

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

A/C switch		—	Continuity
Connector	Terminal		
M51	1	Ground	Yes

Is the inspection result normal?

YES >> Replace the A/C switch. Refer to HAC-106, "Removal and Installation".
NO >> Repair the harness or connectors.

SYMPTOM DIAGNOSIS

HEATER AND AIR CONDITIONING SYSTEM CONTROL SYMPTOMS

Diagnosis Chart By Symptom

INFOID:0000000012424837

NOTE:
Perform the self-diagnosis 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-60, "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-84, "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-71, "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-74, "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-81, "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-89, "Diagnosis Procedure"
A/C 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-95, "Diagnosis Procedure"
• 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-102, "Diagnosis Procedure"

Symptom		Corresponding malfunction part	Reference
• Insufficient heating. • No warm air comes out. (Air flow volume is normal.)		• Engine cooling system • Heater hose • Heater core • Air leakage from each duct • Temperature setting trimmer (front)	HAC-103, "Diagnosis Procedure"
Noise is heard when front air conditioning system operates.	During A/C compressor operation	Refrigerant cycle	HA-20, "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-92, "Component Inspection (Front 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-60, "Diagnosis Procedure"

INSUFFICIENT COOLING

Description

INFOID:0000000012424838

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

Diagnosis Procedure

INFOID:0000000012424839

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

1.CHECK MAGNET CLUTCH OPERATION

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

Is the inspection result normal?

YES >> GO TO 2.
NO >> Perform diagnosis of “COMPRESSOR DOES NOT OPERATE” in “SYMPTOM DIAGNOSIS”. Refer to HAC-104, "Diagnosis Procedure".

2.CHECK DRIVE BELT

Check tension of drive belt. Refer to EM-15, "Checking".

Is the inspection result normal?

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

3.CHECK REFRIGERANT CYCLE

Connect recovery/recycling recharging equipment to the vehicle and perform pressure inspection with gauge. Refer to HA-17, "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 SETTING OF TEMPERATURE SETTING TRIMMER (FRONT)

1. Check setting value of temperature setting trimmer (front). Refer to HAC-54, "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-107, "Removal and Installation".

INSUFFICIENT HEATING

Description

INFOID:0000000012424840

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

Diagnosis Procedure

INFOID:0000000012424841

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-8, "Inspection".
2. Check reservoir tank cap. Refer to CO-8, "Inspection".
3. Check water flow sounds of the engine coolant. Refer to CO-8, "Inspection".

Is the inspection result normal?

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

2.CHECK HEATER HOSE

Check installation of heater hose visually or by touching.

Is the inspection result normal?

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

3.CHECK HEATER CORE

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

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace heater core. Refer to HA-45, "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-54, "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-107, "Removal and Installation".

COMPRESSOR DOES NOT OPERATE

Description

INFOID:0000000012424842

Symptom: Compressor does not operate.

Diagnosis Procedure

INFOID:0000000012424843

NOTE:
- Perform self-diagnosis 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-95, "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-486, "Component Function Check".

Is the inspection result normal?

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

3.CHECK A/C AUTO AMP. OUTPUT SIGNAL

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

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-107, "Removal and Installation".

4.CHECK ECM INPUT SIGNAL

With CONSULT
Check “AIR COND SIG” and “HEATER FAN SW” in “Data Monitor” mode 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-20, "Trouble Diagnosis Flow Chart".

5.CHECK IPDM E/R INPUT SIGNAL

With CONSULT
1. Start engine.

2. Check “AC COMP REQ” in “Data Monitor” mode 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-20, "Trouble Diagnosis Flow Chart".

REMOVAL AND INSTALLATION

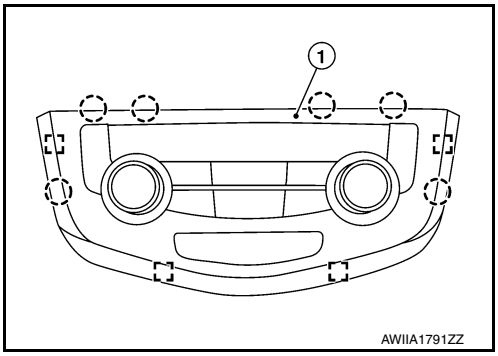
A/C SWITCH ASSEMBLY

Removal and Installation

INFOID:0000000012424844

REMOVAL

1. Release the A/C switch assembly clips and pawls using a suitable tool.
   : Metal clip
   : Pawl
2. Disconnect the harness connectors from the A/C switch assembly (1) and remove.
3. Remove A/C switch assembly from finisher.



INSTALLATION

Installation is in the reverse order of removal.

A/C AUTO AMP.

Removal and Installation

INFOID:0000000012424845

REMOVAL

1. Remove instrument side finisher (RH). Refer to IP-14, "Exploded View".
2. Disconnect the harness connectors from the A/C auto amp.
3. Release pawls and remove A/C auto amp.

INSTALLATION

Installation is in the reverse order of removal.

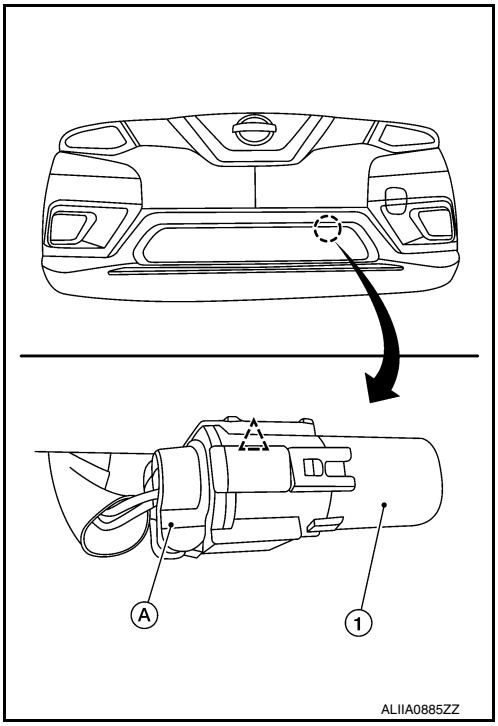
AMBIENT SENSOR

Removal and Installation

INFOID:0000000012424846

REMOVAL

1. Disconnect the harness connector (A) from the ambient sensor (1).
2. Release the clip and remove ambient sensor.
   : Clip



INSTALLATION

Installation is in the reverse order of removal.

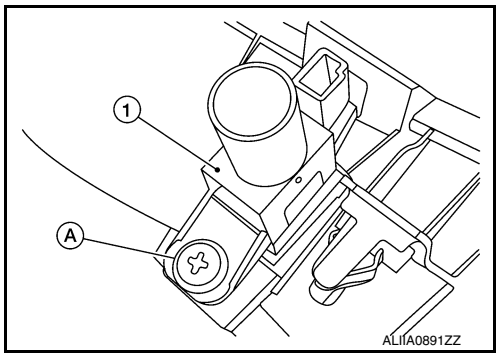
IN-VEHICLE SENSOR

Removal and Installation

INFOID:0000000012424847

REMOVAL

1. Remove cluster lid C. Refer to IP-22, "Removal and Installation".
2. Disconnect harness connector from in-vehicle sensor.
3. Remove screw (A) and in-vehicle sensor (1).



INSTALLATION

Installation is in the reverse order of removal.

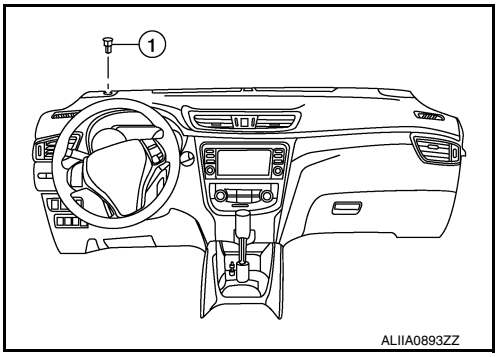
SUNLOAD SENSOR

Removal and Installation

INFOID:0000000012424848

REMOVAL

1. Release the sunload sensor pawls using a suitable tool.
2. Disconnect the harness connector from the sunload sensor (1) and remove.



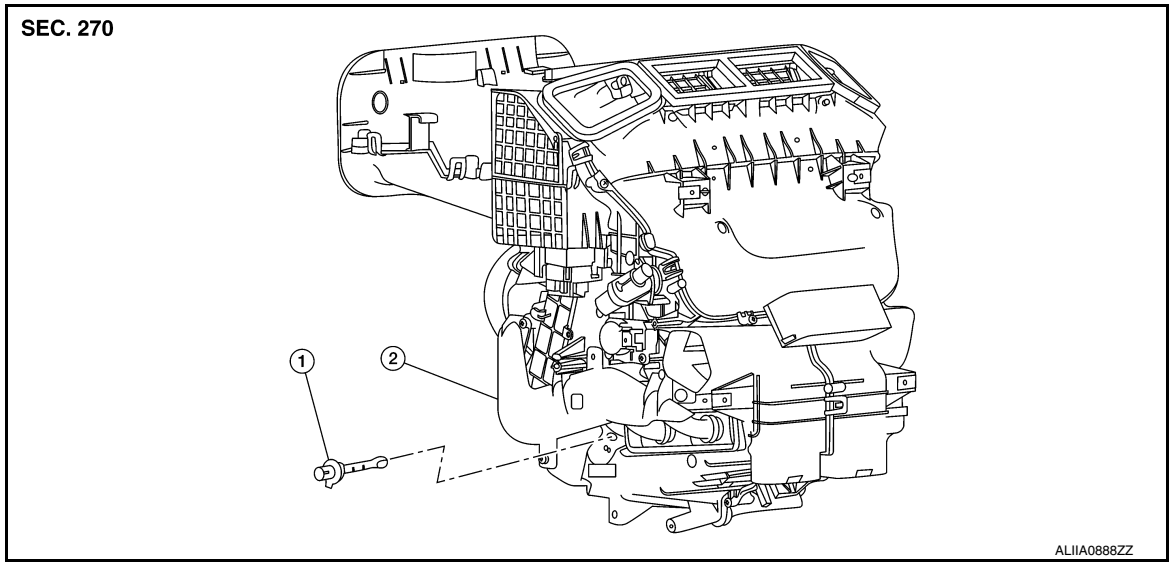
INSTALLATION

Installation is in the reverse order of removal.

INTAKE SENSOR

Exploded View

INFOID:0000000012424849



1. Intake sensor
2. Heating and cooling unit assembly

Removal and Installation

INFOID:0000000012424850

REMOVAL

1. Remove front foot duct (LH). Refer to VTL-10, "FRONT FOOT DUCT : Removal and Installation".
2. Disconnect the harness connector and remove intake sensor.

INSTALLATION

Installation is in the reverse order of removal.

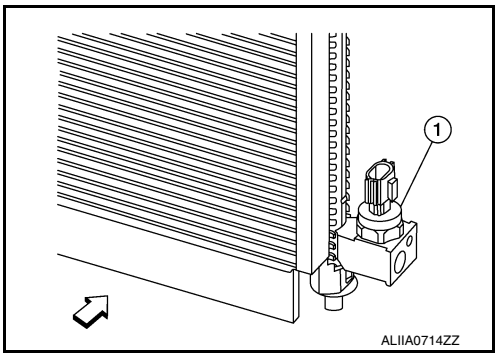
REFRIGERANT PRESSURE SENSOR

Removal and Installation

INFOID:0000000012424851

REMOVAL

1. Discharge the refrigerant. Refer to HA-23, "Recycle Refrigerant".
2. Remove front air duct. Refer to EM-26, "Removal and Installation".
3. Remove front bumper fascia. Refer to EXT-17, "Removal and Installation".
4. Remove air guide (RH). Refer to HA-39, "Exploded View".
5. Disconnect the harness connector from the refrigerant pressure sensor.
6. Remove the refrigerant pressure sensor (1) from the condenser.
   ⇦: Front
   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.

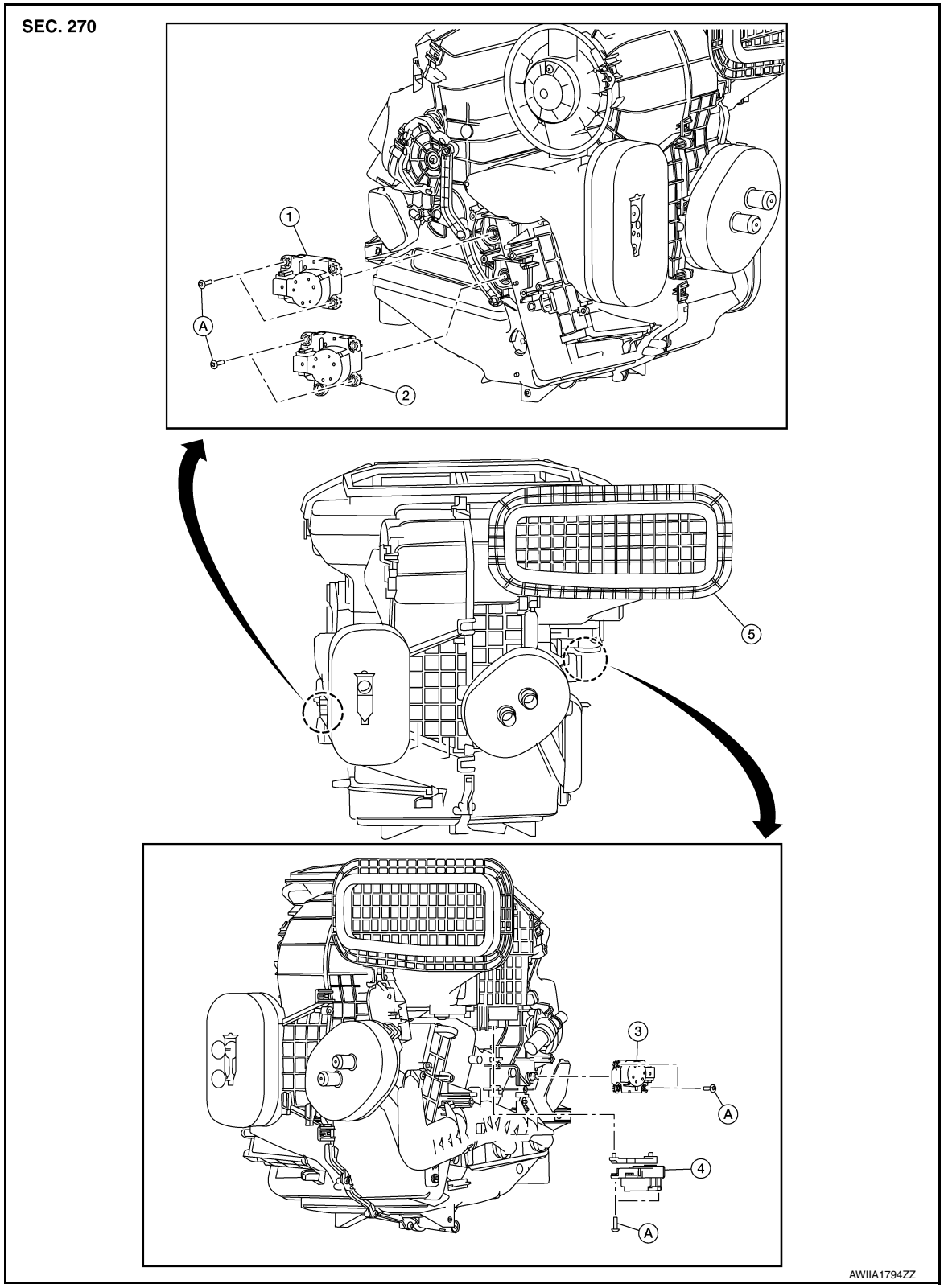
CAUTION:

- **Do not reuse O-ring.**
- **Apply A/C oil to new O-ring for installation.**
- **Charge refrigerant. Refer to HA-23, "Charge Refrigerant".**
- **After charging refrigerant, check for leaks. Refer to HA-21, "Leak Test".**

DOOR MOTOR

Exploded View

INFOID:0000000012424852



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

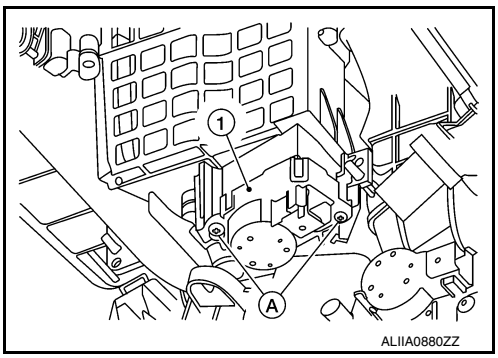
INTAKE DOOR MOTOR

INTAKE DOOR MOTOR : Removal and Installation

INFOID:0000000012424853

REMOVAL

1. Remove air mix door motor (LH). Refer to HAC-114, "AIR MIX DOOR MOTOR : Removal and Installation".
2. Disconnect the harness connector from the intake door motor.
3. Remove screws (A) and intake door motor (1).



INSTALLATION

Installation is in the reverse order of removal.

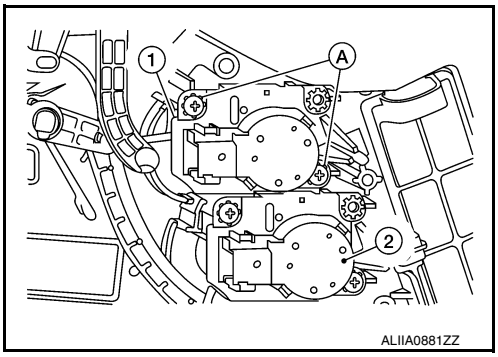
MODE DOOR MOTOR

MODE DOOR MOTOR : Removal and Installation

INFOID:0000000012424854

REMOVAL

1. Remove air mix door motor (RH). Refer to HAC-114, "AIR MIX DOOR MOTOR : Removal and Installation".
2. Disconnect the harness connector from the mode door motor.
3. Remove screws (A) and mode door motor (1).
   (2): Air mix door motor (RH)



INSTALLATION

Installation is in the reverse order of removal.

AIR MIX DOOR MOTOR

AIR MIX DOOR MOTOR : Removal and Installation

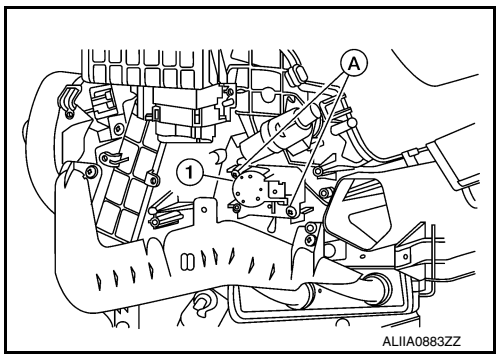
INFOID:0000000012424855

REMOVAL

Air Mix Door Motor (LH)

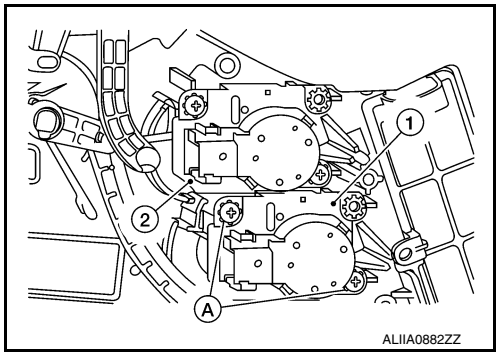
1. Remove front foot duct (LH). Refer to VTL-10, "FRONT FOOT DUCT : Removal and Installation".
2. Disconnect the harness connector from the air mix door motor (LH).

3. Remove screws (A) and air mix door motor (LH) (1).



Air Mix Door Motor (RH)

1. Remove front foot duct (RH). Refer to VTL-10, "FRONT FOOT DUCT : Removal and Installation".
2. Disconnect the harness connector from the air mix door motor (RH).
3. Remove screws (A) and air mix door motor (RH) (1).
   (2): Mode door motor



INSTALLATION

Installation is in the reverse order of removal.

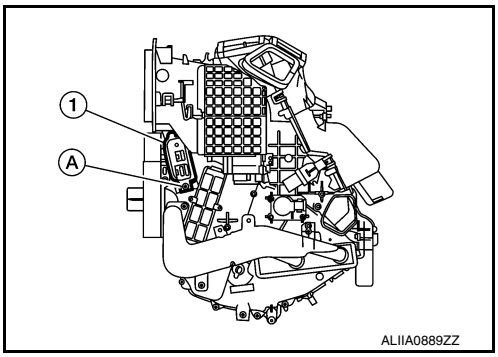
VARIABLE BLOWER CONTROL

Removal and Installation

INFOID:0000000012424856

REMOVAL

1. Remove center console side finisher (LH). Refer to IP-19, "Exploded View".
2. Disconnect the harness connector from the variable blower control.
3. Remove screw (A) and variable blower control (1).



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:0000000012424857

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

WARNING:

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

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

WARNING:

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

Precaution for Work

INFOID:0000000012424858

- 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.

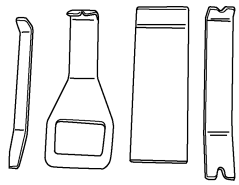
PREPARATION

PREPARATION

Special Service Tool

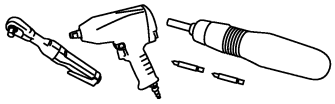
INFOID:0000000012424859

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:0000000012424860

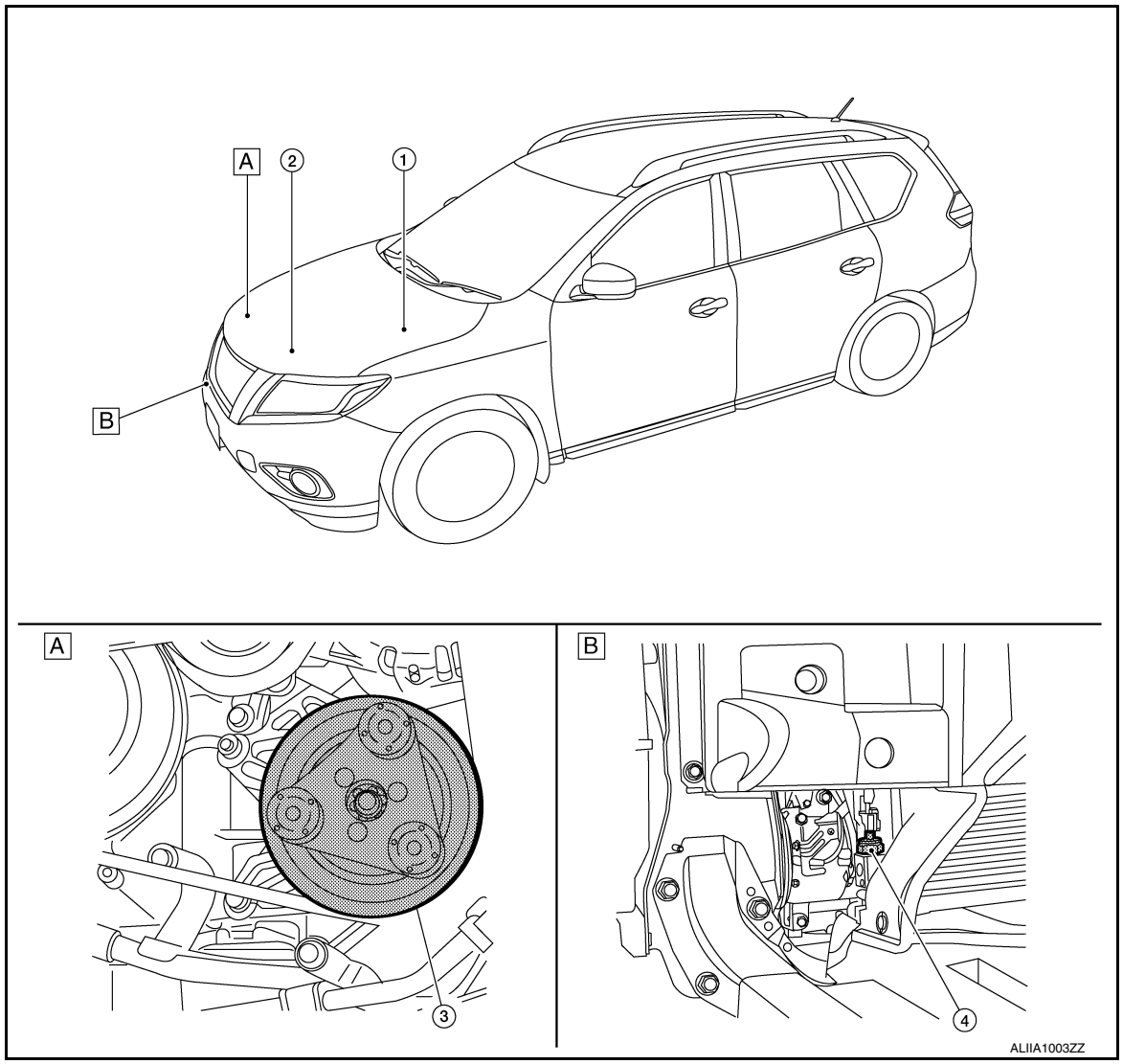
(TechMate No.) Tool name	Description
(—) Power tool  PIIB1407E	Loosening nuts, screws and bolts

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Part Location

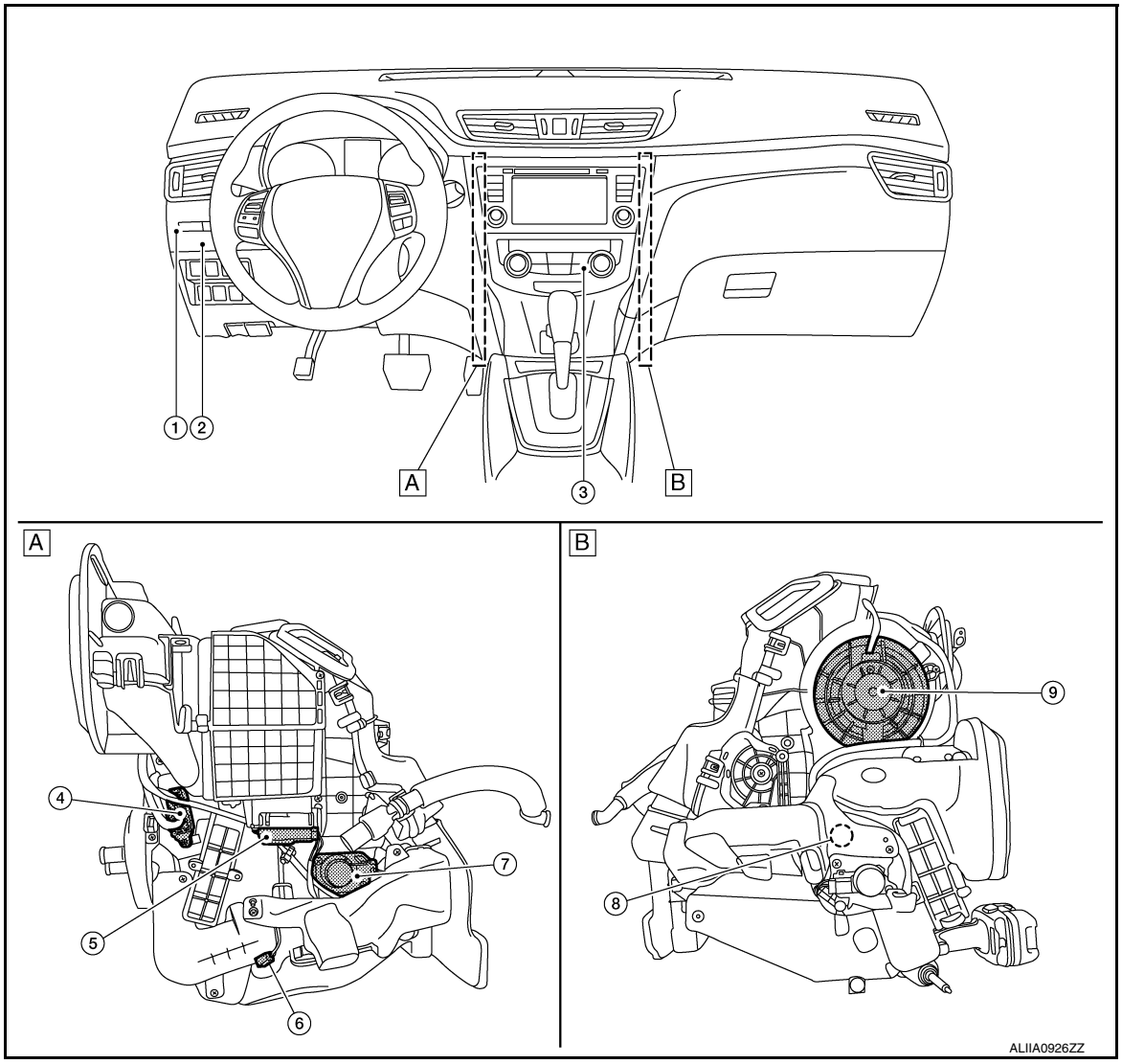
INFOID:0000000012424861



A. RH side of engine compartment

B. RH front of vehicle (view with front bumper fascia removed)

No.	Component	Description
1.	IPDM E/R	Refer to PCS-7, "RELAY CONTROL SYSTEM : System Description".
2.	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.
3.	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.
4.	Refrigerant pressure sensor	Refer to EC-28, "Refrigerant Pressure Sensor".



A. Left side of A/C unit B. Right side of A/C unit

No.	Component	Description
1.	Front blower relay	The front blower relay controls the flow of current to fuse 17 and 27 in the Fuse Block (J/B). The relay is grounded when the ignition switch is in the ON position.
2.	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.
3.	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, the intake sensor, and inputs received from the ECM across the CAN. Diagnosis of the front air control can be performed using the CONSULT. There is no self-diagnostic feature available.
4.	Variable blower control	The variable blower control controls the speed of the blower motor by controlling the ground circuit of the blower motor. The front air control provides voltage to the gate of the variable blower control based on the position of the blower control dial.
5.	Intake door motor	The intake door motor controls the position of the intake door. Fresh air is allowed to enter the cabin in one position, and recirculated inside air is allowed to enter in the other position. The intake door motor receives position commands from the front air control.
6.	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.

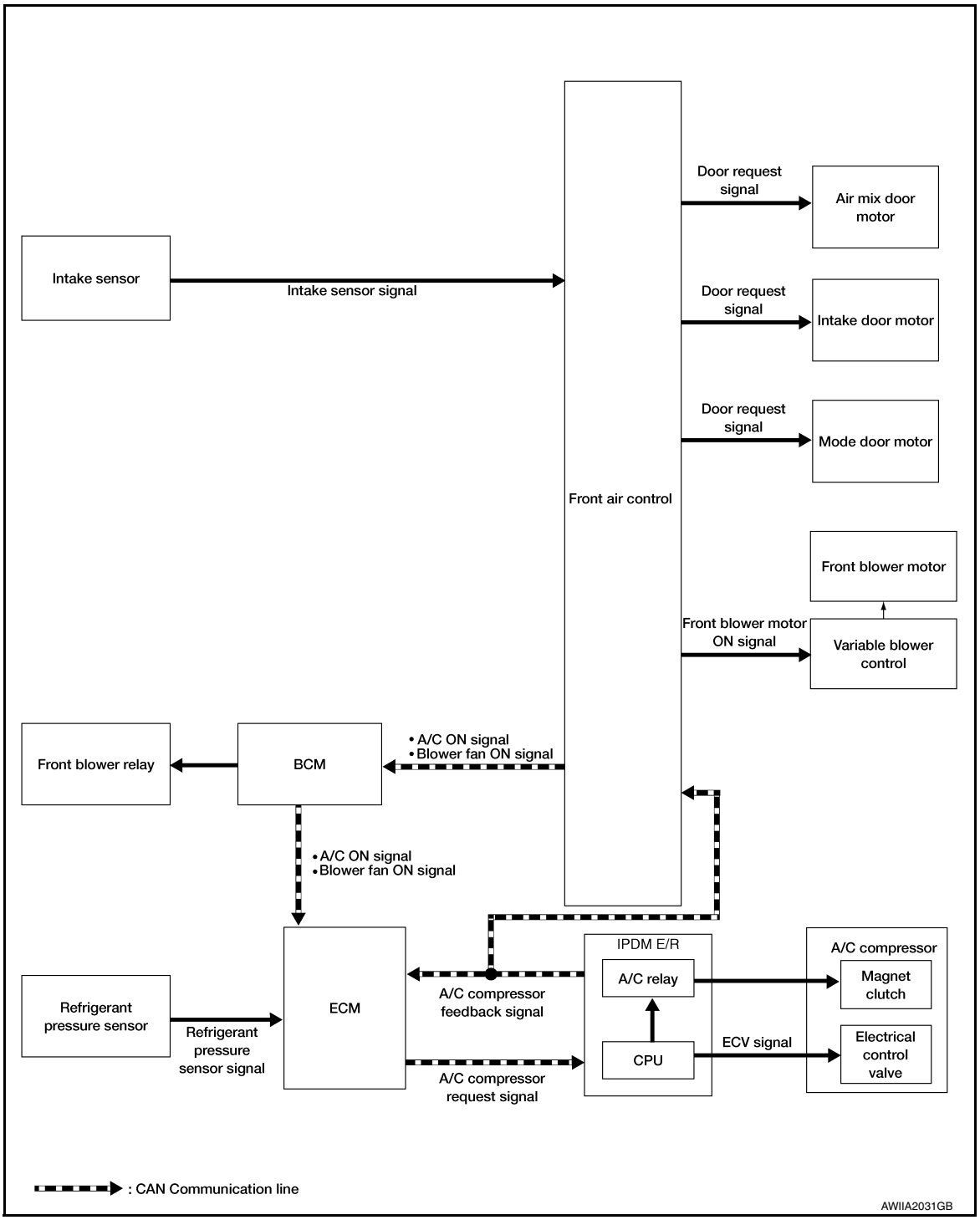
No.	Component	Description
7.	Air mix door motor	The air mix door controls the mix of hot or cold air that enters the ventilation system. It is controlled by the front air control based on the position of the temperature dial. The air mix door motor LH receives position commands from the front air control.
8.	Mode door motor	The mode door controls the direction the conditioned air passes through the ventilation system. Through a series of levers and gears, the mode door controls the defrost door, the foot door, and the vent door. There are 5 preset positions: VENT, B/L, FOOT, D/F, and DEF. The mode door motor receives position commands from the front air control.
9.	Front blower motor	The blower motor varies the speed at which the air flows through the ventilation system.

SYSTEM

System Description

INFOID:0000000012424862

SYSTEM DIAGRAM



SYSTEM DESCRIPTION

- 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-123, "Air Flow Control"
- HAC-123, "Air Inlet Control"
- HAC-123, "Air Outlet Control"

- HAC-123, "Compressor Control"
- HAC-124, "Door Control"
- HAC-127, "Temperature Control"

Controlled by BCM:
- Air conditioning request signal.
  Refer to BCS-8, "BODY CONTROL SYSTEM : System Description" (with Intelligent Key system) or BCS-81, "BODY CONTROL SYSTEM : System Description" (without Intelligent Key system).

Control by ECM
- Cooling fan control
  Refer to EC-48, "COOLING FAN CONTROL : System Description".
- Air conditioning cut control
  Refer to EC-47, "AIR CONDITIONING CUT CONTROL : System Description".

Control by IPDM E/R
- Relay control
  Refer to PCS-7, "RELAY CONTROL SYSTEM : System Description".
- Cooling fan control
  Refer to EC-48, "COOLING FAN CONTROL : System Description".

Air Flow Control

INFOID:0000000012424863

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:0000000012424864

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:0000000012424865

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:0000000012424866

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.

LOW TEMPERATURE PROTECTION CONTROL

- When the intake sensor detects that the front evaporator fin temperature is 1.5°C (35°F) or less, the front air control requests the BCM to turn the compressor OFF, and stops the compressor.
- When the front evaporator fin temperature returns to 5.0°C (41°F) or more, the compressor is activated.

OPERATING RATE CONTROL

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

Door Control

INFOID:0000000012424867

AIR MIX DOOR MOTOR

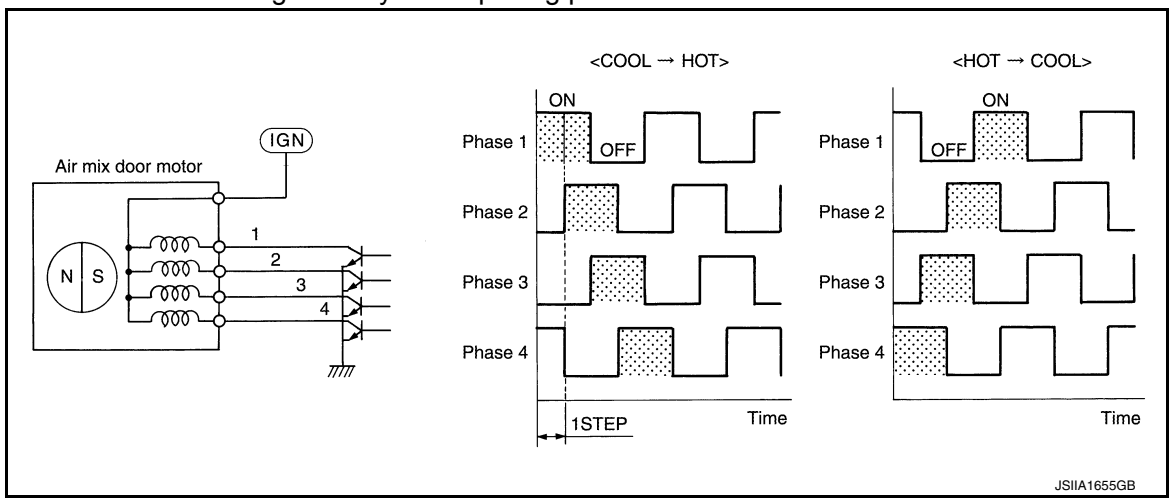
DESCRIPTION

- The step motor system is adopted for air mix door motor.
- When a drive signal is input from front air control to door motor, a step motor built into the door motor rotates according to the drive signal, and then stops at the target door position.
- Rotation of motor is transmitted to air mix door (upper air mix door and lower air mix door) by link, rod and lever, then air flow temperature is switched.

DRIVE METHOD

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

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



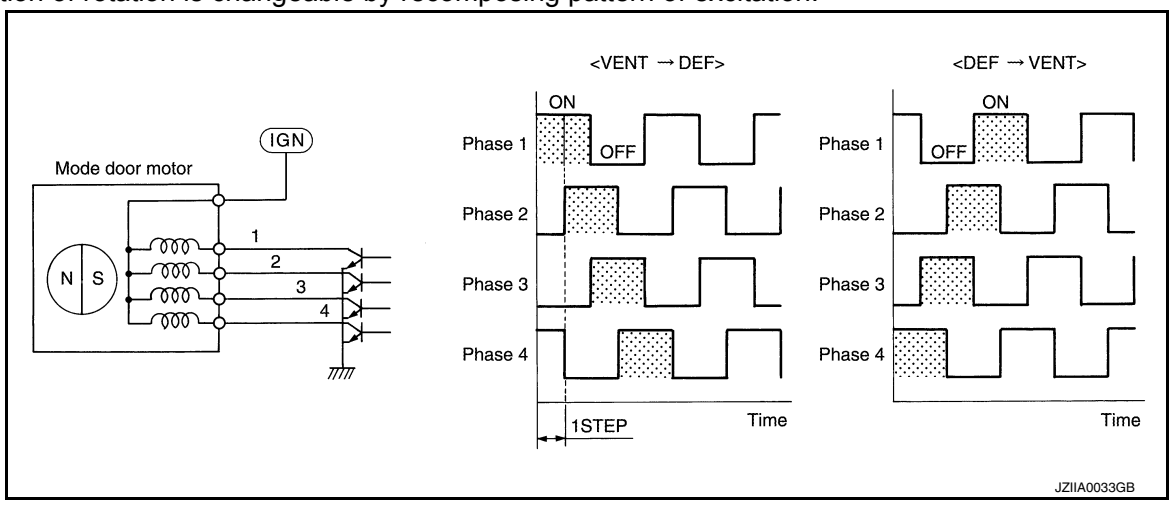
MODE DOOR MOTOR

DESCRIPTION

• The step motor system is adopted for mode door motor.
• When a drive signal is input from front air control to door motor, a step motor built into the door motor rotates according to the drive signal, and then stops at the target door position.
• Rotation of motor is transmitted to mode door (center ventilator and defroster door, sub defroster door, side ventilator door, and foot door) by link, rod, and lever, then air outlet is switched.

DRIVE METHOD

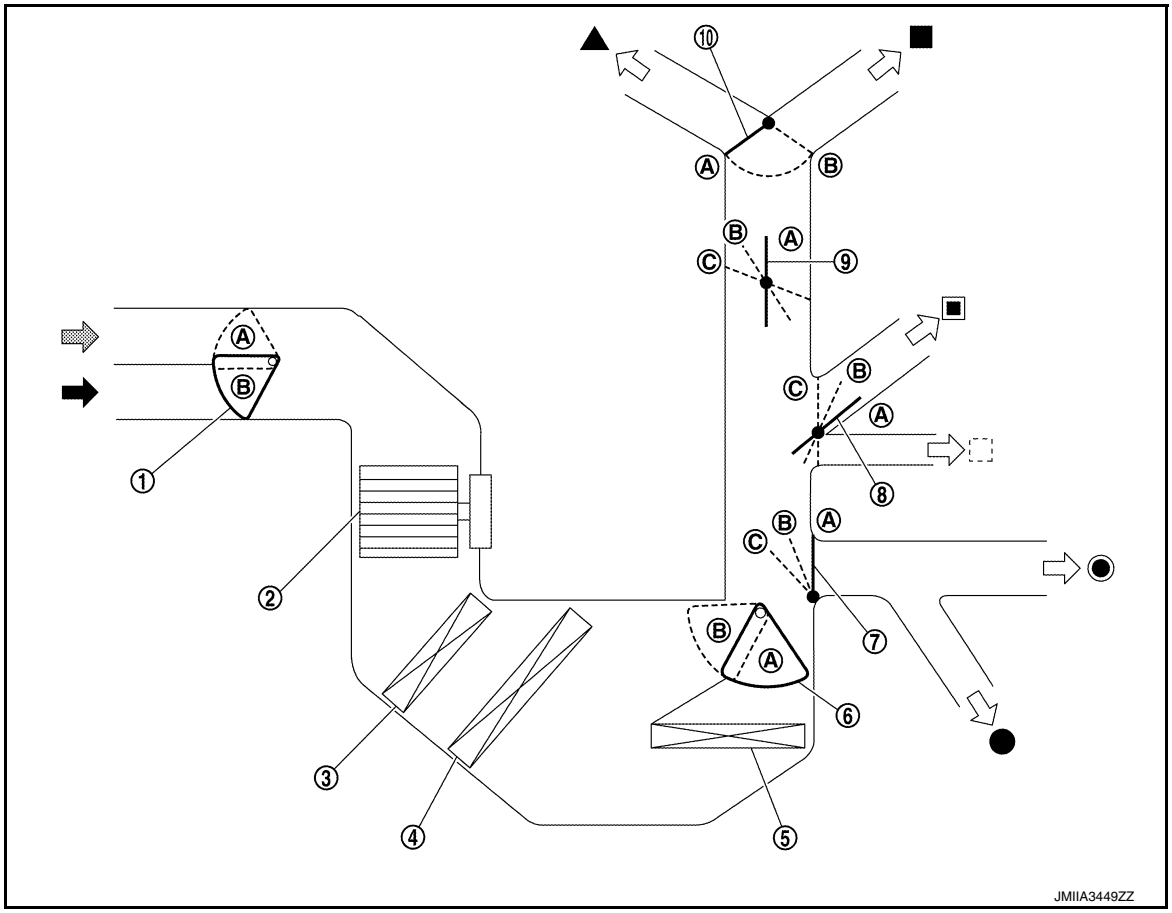
• The 4 drive coils are excited in sequence in order to drive the motor.
• Direction of rotation is changeable by recomposing pattern of excitation.



INTAKE DOOR MOTOR

• Motor operates intake door according to control signal from front air control.
• Rotation of motor is transmitted to intake door by lever, then air inlet is switched.

SWITCHES AND THEIR CONTROL FUNCTION



① Intake door	② Blower motor	③ Air conditioner filter
④ Evaporator	⑤ Heater core	⑥ Air mix door
⑦ Foot door	⑧ Side ventilator door	⑨ Sub defroster door
⑩ Center ventilator and defroster door		
Fresh air intake	Recirculation air	Discharge air
Defroster	Center ventilator	Side ventilator
Rear ventilator	Front foot	Rear foot

NOTE:
The sub defroster door and side ventilator door include a permanent opening and does not fully close.

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

AIR DISTRIBUTION

MODE/DEF setting position	Discharge air flow					
	Air outlet/distribution					
	Ventilator			Foot		Defroster
	Front		Rear	Front	Rear	
	Center	Side				
	47%	38%	15%	—	—	—
	25%	34%	13%	18%	10%	—
	—	7%	4%	38%	24%	27%
	—	6%	2%	30%	17%	45%
	—	8%	2%	—	—	90%

Temperature Control

INFOID:0000000012424868

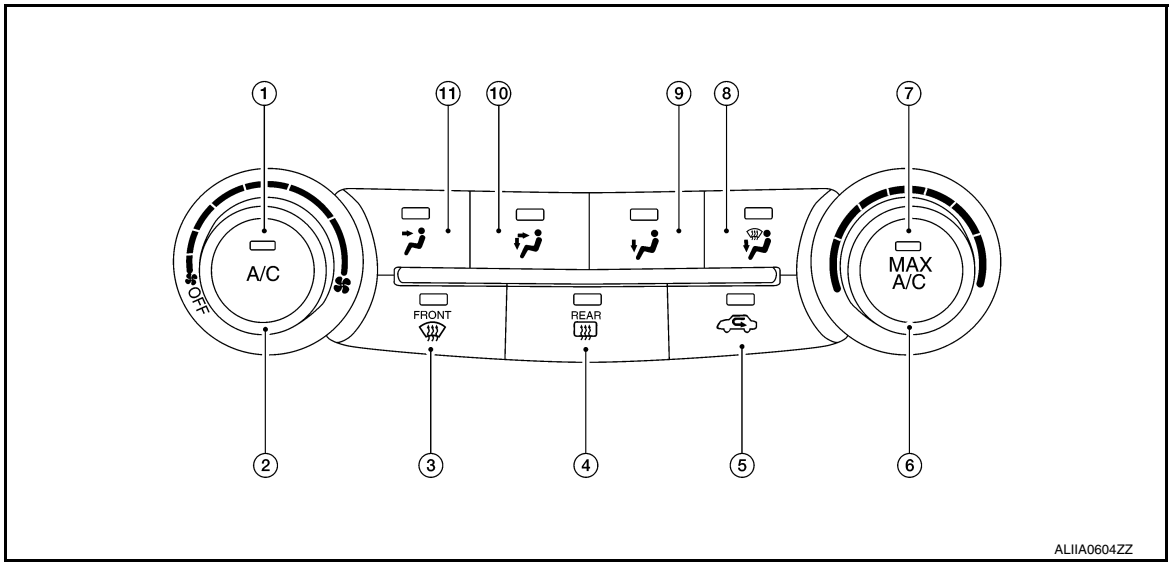
- When the ignition switch is in the ON position, the customer uses the front air control temperature control dial to set the desired temperature.
- The front air control calculates the target front air mix door opening angle depending on the selected temperature, intake temperature sensor, engine coolant 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:0000000012424869

A/C Switch Assembly



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

Switch Operation

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 (HVAC)

Description

INFOID:0000000012424870

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

ECU	Diagnostic item (CONSULT)	
Front air control	HVAC	Self Diagnostic Result
		Data Monitor
		Active Test
		Work support
ECM	ENGINE	Self Diagnostic Result
		Data Monitor
IPDM E/R	IPDM E/R	Self Diagnostic Result
		Data Monitor

CONSULT Function (HVAC)

INFOID:0000000012424871

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 front air control.
ECU Identification	Displays the A/C auto amp. number.

SELF DIAGNOSTIC RESULT

Refer to HAC-142, "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 front air control.	Front air control
B24A4	INTAKE TEMP SEN	Short or open circuit of the intake temperature sensor signal.	• Intake sensor • Front air control • Harness and connector (Intake sensor circuit is open, or there is a short in the circuit)
B24BB	AIRMIX ACTR	Short or open circuit of air mix door motor drive signal.	• Air mix door motor LH • Front air control • Harness and connector (Air mix door motor is open or shorted)

DTC	Items (CONSULT screen terms)	Diagnostic item is detected when...	Possible cause
B24B7	INTAKE ACTR	Short or open circuit of intake door motor drive signal.	• Intake door motor • Front air control • Harness and connector (Intake door motor is open or shorted)
B27B9	MODE DOOR ACTR	Short or open circuit of mode door motor drive signal.	• Mode door motor • Front air control • Harness and connector (Mode door motor is open or shorted)

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
INT TEMP SEN	[°C]	Intake sensor value converted from intake sensor signal received from intake sensor
AMB SEN CAL	[°]	Ambient sensor value calculated by A/C auto amp.
INT TEMP CAL	[°C]	Intake 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
COMP ECV DUTY	[%]	Duty ratio of ECV (electrical control valve) judged by A/C amp.
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.
VEHICLE SPEED	[km/h (mph)]	Vehicle speed signal value received from meter via CAN communication

WORK SUPPORT

Work item	Description	Reference
Door Motor Starting Position Reset	Starting position reset of air mix door motor and mode door motor can be performed.	HAC-160, "Work Procedure"
TARGET EVAPORATOR TEMP UPPER LIMIT SETTING	Set the target evaporator upper temperature limit.	HAC-159, "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	B/L	D/F1	D/F2	DEF
Intake door position	REC	REC	20%FRE	20%FRE	FRE	FRE	FRE
Air mix door position	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 (Applied voltage)	35%	35%	60%	60%	90%	90%	35%
A/C compressor (Magnet clutch)	ON	ON	ON	ON	OFF	OFF	ON
ECV duty	80%	80%	40%	40%	0%	0%	90%

NOTE:

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

DIAGNOSIS SYSTEM (IPDM E/R)

CONSULT Function (IPDM E/R)

INFOID:0000000012916352

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-26, "DTC Index".

DATA MONITOR

Monitor Item [Unit]	Description
REVERSE SIGNAL [Open/Close]	Indicates condition of transmission range switch R (Reverse) position.
IGN RELAY [Open/Close]	Indicates condition of ignition relay-1.
PUSH SW [Open/Close]	Indicates condition of push-button ignition switch.
INTERLOCK/PNP SW [Open/Close]	Indicates condition of transmission range switch P (Park) and N (Neutral) positions.
OIL PRESSURE SW [Open/Close]	Indicates condition of oil pressure switch.
HOOD SW [Open/Close]	Indicates condition of hood switch.
COMPRESSOR [OFF/ON]	Indicates condition of A/C compressor.
HORN RELAY [OFF/ ON]	Indicates condition of horn relay.
COOLING FAN [OFF/ON]	Indicates condition of cooling fan relay-1.
FRONT WIPER HI/LO RELAY [OFF/ON]	Indicates condition of front wiper high relay.
FRONT WIPER RELAY [OFF/ON]	Indicates condition of front wiper relay.
IGN RELAY OFF STATUS [OFF/ON]	Indicates condition of ignition relay-1 OFF status.
IGN RELAY ON STATUS [OFF/ON]	Indicates condition of ignition relay-1 ON status.
COOLING FAN RELAY 1 [OFF/ON]	Indicates condition of cooling fan relay-1.
STARTER RELAY [OFF/ON]	Indicates condition of starter relay.
COMP ECV DUTY [%]	Indicates condition of A/C compressor.
COOLING FAN RELAY 2 [%]	Indicates condition of cooling fan relay-2.
FR FOG LAMP LH [%]	Indicates condition of front fog lamp LH.
FR FOG LAMP RH [%]	Indicates condition of front fog lamp RH.
PARKING LAMP [%]	Indicates condition of parking lamp.
TAIL LAMP LH [%]	Indicates condition of tail lamp LH.
TAIL LAMP RH [%]	Indicates condition of tail lamp RH.
DAYTIME RUNNING LIGHT LH [%]	Indicates condition of daytime running light LH.
DAYTIME RUNNING LIGHT RH [%]	Indicates condition of daytime running light RH.
HEADLAMP (HI) LH [%]	Indicates condition of headlamp high beam LH.

Monitor Item [Unit]	Description
HEADLAMP (HI) RH [%]	Indicates condition of headlamp high beam RH.
HEADLAMP (LO) LH [%]	Indicates condition of headlamp low beam LH.
HEADLAMP (LO) RH [%]	Indicates condition of headlamp low beam RH.
A/C RELAY STUCK [NG/OK]	Indicates condition of A/C relay.
A/C RELAY [Off/On]	Indicates condition of A/C relay.
COMP ECV STATUS [NG/OK]	Indicates condition of A/C compressor.
VEHICLE SECURITY HORN [Off/On]	Indicates condition of horn relay.
BATTERY CURRENT SENSOR [NG/OK]	Indicates condition of battery current sensor.
FRONT FOG LAMP [Off/On]	Indicates condition of front fog lamps.
COMP ECV CURRENT [A]	Indicates condition of A/C compressor current.
BATTERY VOLTAGE [V]	Indicates condition of battery voltage.
COOLING FAN DUTY [%]	Indicates condition of cooling fans.
HOOD SW (CAN) [OPEN/CLOSE]	Indicates condition of hood switch.
FRONT WIPER [STOP/LOW/HIGH]	Indicates condition of front wiper motor.
FR WIPER STOP POSITION [STOP P/ACTIVE P]	Indicates condition of front wiper motor stop.
HEADLAMP (HI) [Off/On]	Indicates condition of headlamp high beams.
HEADLAMP (LO) [Off/On]	Indicates condition of headlamp low beams.
IGNITION RELAY STATUS [Off/On]	Indicates condition of ignition relay-1.
IGN RELAY MONITOR [Off/On]	Indicates condition of ignition relay-1 feedback.
IGNITION POWER SUPPLY [Off/On]	Indicates condition of ignition relay-1.
INTERLOCK/PNP SW (CAN) [Off/On]	Indicates condition of transmission range switch P (Park) and N (Neutral) positions.
PUSH-BUTTON IGN SW (CAN) [Off/On]	Indicates condition of push-button ignition switch.
TAIL LAMP [Off/On]	Indicates condition of tail lamps.
REVERSE SIGNAL (CAN) [Off/On]	Indicates condition of transmission range switch R (Reverse) position.
ST&ST CONT RELAY STATUS [Off/ST R On]	Indicates condition of starter cut and starter relays.
STARTER MOTOR STATUS [Off/On]	Indicates condition of starter motor.
STARTER RELAY (CAN) [LOW/HIGH]	Indicates condition of starter relay.
IPDM NOT SLEEP [NO RDY/RDY]	Indicates condition of IPDM E/R sleep status.
AFTER COOLING TIME [No request/Request]	Indicates condition of cooling fan request.
AFTER COOLING SPEED [%]	Indicates condition of cooling fans.
COOLING FAN TYPE [NISSAN/RENAULT]	Indicates cooling fan type.
COMPRESSOR REQ1 [Off/On]	Indicates condition of A/C compressor request.
VHCL SECURITY HORN REQ [Off/On]	Indicates condition of horn relay request.
DTRL REQ [Off/On]	Indicates condition of daytime running light request.
SLEEP/WAKE UP [WAKEUP/SLEEP]	Indicates condition of IPDM E/R sleep/wake.
CRANKING ENABLE-TCM [NG/OK]	Indicates condition of crank enable from TCM.
CRANKING ENABLE-ECM [NG/OK]	Indicates condition of crank enable from ECM.
CAN DIAGNOSIS [NG/OK]	Indicates condition of CAN diagnosis.
FRONT FOG LAMP REQ [Off/On]	Indicates condition of front fog lamp request.
HIGH BEAM REQ [Off/On]	Indicates condition of headlamp high beam request.
HORN CHIRP [Off/On]	Indicates condition of horn relay request.
COOLING FAN REQ [%]	Indicates condition of cooling fan request.
ENGINE STATUS [STOP/RUN/IDLING]	Indicates condition of engine status.

Monitor Item [Unit]	Description
TURN SIGNAL REQ [Off/LH/RH]	Indicates condition of turn signal request.
FR WIPER REQ [RETURN/LOW/HIGH]	Indicates condition of front wiper motor request.
SHIFT POSITION [P/R/N/D/L]	Indicates condition of transmission range switch positions.
LOW BEAM REQ [Off/On]	Indicates condition of headlamp low beam request.
POSITION LIGHT REQ [Off/On]	Indicates condition of parking lamp request.
COMPRESSOR REQ2 [Off/On]	Indicates condition of A/C compressor request.
IGNITION SW [Off/On]	Indicates condition of ignition switch.
VEHICLE SPEED (METER) [mph/km/h]	Indicates vehicle speed.
STARTER OPERATION COUNT	Displays the number of times the starter motor is turned ON.
H/P F/PUMP OPERATN COUNT	Displays the number of times the high pressure fuel pump is turned ON.
BAT DISCHARGE COUNT [—]	Monitor the cumulative discharge value of the battery. **NOTE:** When 65,000 or more is counted, replace the battery.
P LAMP CIRC MALFUNCTN [0 – 1]	Monitor the number of times that the smart FET in IPDM E/R reaches the retry upper limit of the parking lamp circuit. **NOTE:** When the number of parking lamp circuit retries count is 20, this item counts 1.
NMB P LAMP CIRC RETRY [0 – 20]	Monitor the number of times that the smart FET in IPDM E/R permits the retry of the parking lamp circuit. **NOTE:** When the number of short circuits in the parking lamp circuit count is 5 and the ignition switch OFF to ON operation is detected, this item counts 1.
NMB P LAMP CIRC SHORT [0 – 5]	Monitor the number of times that the smart FET in IPDM E/R detects the over current of the parking lamp circuit.
DTRL LH CIRC MALFUNCTN [0 – 1]	Monitor the number of times that the smart FET in IPDM E/R reaches the retry upper limit of the daytime running light (left) circuit. **NOTE:** When the number of daytime running light (left) circuit retries count is 20, this item counts 1.
NMB DTRL LH CIRC RETRY [0 – 20]	Monitor the number of times that the smart FET in IPDM E/R permits the retry of the daytime running light (left) circuit. **NOTE:** When the number of short circuits in the daytime running light (left) circuit count is 5 and the ignition switch OFF to ON operation is detected, this item counts 1.
NMB DTRL LH CIRC SHORT [0 – 5]	Monitor the number of times that the smart FET in IPDM E/R detects the over current of the daytime running light (left) circuit.
DTRL RH CIRC MALFUNCTN [0 – 1]	Monitor the number of times that the smart FET in IPDM E/R reaches the retry upper limit of the daytime running light (right) circuit. **NOTE:** When the number of daytime running light (right) circuit retries count is 20, this item counts 1.
NMB DTRL RH CIRC RETRY [0 – 20]	Monitor the number of times that the smart FET in IPDM E/R permits the retry of the daytime running light (right) circuit. **NOTE:** When the number of short circuits in the daytime running light (right) circuit count is 5 and the ignition switch OFF to ON operation is detected, this item counts 1.
NMB DTRL RH CIRC SHORT [0 – 5]	Monitor the number of times that the smart FET in IPDM E/R detects the over current of the daytime running light (right) circuit.

Monitor Item [Unit]	Description
F FOG LH CIRC MALFUNCTN [0 – 1]	Monitor the number of times that the smart FET in IPDM E/R reaches the retry upper limit of the front fog lamp (left) circuit. **NOTE:** When the number of front fog lamp (left) circuit retries count is 20, this item counts 1.
NMB F FOG LH CIRC RETRY [0 – 20]	Monitor the number of times that the smart FET in IPDM E/R permits the retry of the front fog lamp (left) circuit. **NOTE:** When the number of short circuits in the front fog lamp (left) circuit count is 5 and the ignition switch OFF to ON operation is detected, this item counts 1.
NMB F FOG LH CIRC SHORT [0 – 5]	Monitor the number of times that the smart FET in IPDM E/R detects the over current of the front fog lamp (left) circuit.
F FOG RH CIRC MALFUNCTN [0 – 1]	Monitor the number of times that the smart FET in IPDM E/R reaches the retry upper limit of the front fog lamp (right) circuit. **NOTE:** When the number of front fog lamp (right) circuit retries count is 20, this item counts 1.
NMB F FOG RH CIRC RETRY [0 – 20]	Monitor the number of times that the smart FET in IPDM E/R permits the retry of the front fog lamp (right) circuit. **NOTE:** When the number of short circuits in the front fog lamp (right) circuit count is 5 and the ignition switch OFF to ON operation is detected, this item counts 1.
NMB F FOG RH CIRC SHORT [0 – 5]	Monitor the number of times that the smart FET in IPDM E/R detects the over current of the front fog lamp (right) circuit.
HL (HI) LH CIRC MALFUNCTN [0 – 1]	Monitor the number of times that the smart FET in IPDM E/R reaches the retry upper limit of the headlamp (HI) (left) circuit. **NOTE:** When the number of headlamp (HI) (left) circuit retries count is 20, this item counts 1.
NMB HL (HI) LH CIRC RETRY [0 – 20]	Monitor the number of times that the smart FET in IPDM E/R permits the retry of the headlamp (HI) (left) circuit. **NOTE:** When the number of short circuits in the headlamp (HI) (left) circuit count is 5 and the ignition switch OFF to ON operation is detected, this item counts 1.
NMB HL (HI) LH CIRC SHORT [0 – 5]	Monitor the number of times that the smart FET in IPDM E/R detects the over current of the headlamp (HI) (left) circuit.
HL (HI) RH CIRC MALFUNCTN [0 – 1]	Monitor the number of times that the smart FET in IPDM E/R reaches the retry upper limit of the headlamp (HI) (right) circuit. **NOTE:** When the number of headlamp (HI) (right) circuit retries count is 20, this item counts 1.
NMB HL (HI) RH CIRC RETRY [0 – 20]	Monitor the number of times that the smart FET in IPDM E/R permits the retry of the headlamp (HI) (right) circuit. **NOTE:** When the number of short circuits in the headlamp (HI) (right) circuit count is 5 and the ignition switch OFF to ON operation is detected, this item counts 1.
NMB HL (HI) RH CIRC SHORT [0 – 5]	Monitor the number of times that the smart FET in IPDM E/R detects the over current of the headlamp (HI) (right) circuit.
HL (LO) LH CIRC MALFUNCTN [0 – 1]	Monitor the number of times that the smart FET in IPDM E/R reaches the retry upper limit of the headlamp (LO) (left) circuit. **NOTE:** When the number of headlamp (LO) (left) circuit retries count is 20, this item counts 1.

Monitor Item [Unit]	Description
NMB HL (LO) LH CIRC RETRY [0 – 20]	Monitor the number of times that the smart FET in IPDM E/R permits the retry of the headlamp (LO) (left) circuit. **NOTE:** When the number of short circuits in the headlamp (LO) (left) circuit count is 5 and the ignition switch OFF to ON operation is detected, this item counts 1.
NMB HL (LO) LH CIRC SHORT [0 – 5]	Monitor the number of times that the smart FET in IPDM E/R detects the over current of the headlamp (LO) (left) circuit.
HL (LO) RH CIRC MALFUNCTN [0 – 1]	Monitor the number of times that the smart FET in IPDM E/R reaches the retry upper limit of the headlamp (LO) (right) circuit. **NOTE:** When the number of headlamp (LO) (right) circuit retries count is 20, this item counts 1.
NMB HL (LO) RH CIRC RETRY [0 – 20]	Monitor the number of times that the smart FET in IPDM E/R permits the retry of the headlamp (LO) (right) circuit. **NOTE:** When the number of short circuits in the headlamp (LO) (right) circuit count is 5 and the ignition switch OFF to ON operation is detected, this item counts 1.
NMB HL (LO) RH CIRC SHORT [0 – 5]	Monitor the number of times that the smart FET in IPDM E/R detects the over current of the headlamp (LO) (right) circuit.
T LAMP LH CIRC MALFUNCTN [0 – 1]	Monitor the number of times that the smart FET in IPDM E/R reaches the retry upper limit of the tail lamp (left) circuit. **NOTE:** When the number of tail lamp (left) circuit retries count is 20, this item counts 1.
NMB T LAMP LH CIRC RETRY [0 – 20]	Monitor the number of times that the smart FET in IPDM E/R permits the retry of the tail lamp (left) circuit. **NOTE:** When the number of short circuits in the tail lamp (left) circuit count is 5 and the ignition switch OFF to ON operation is detected, this item counts 1.
NMB T LAMP LH CIRC SHORT [0 – 5]	Monitor the number of times that the smart FET in IPDM E/R detects the over current of the tail lamp (left) circuit.
T LAMP RH CIRC MALFUNCTN [0 – 1]	Monitor the number of times that the smart FET in IPDM E/R reaches the retry upper limit of the tail lamp (right) circuit. **NOTE:** When the number of tail lamp (right) circuit retries count is 20, this item counts 1.
NMB T LAMP RH CIRC RETRY [0 – 20]	Monitor the number of times that the smart FET in IPDM E/R permits the retry of the tail lamp (right) circuit. **NOTE:** When the number of short circuits in the tail lamp (right) circuit count is 5 and the ignition switch OFF to ON operation is detected, this item counts 1.
NMB T LAMP RH CIRC SHORT [0 – 5]	Monitor the number of times that the smart FET in IPDM E/R detects the over current of the tail lamp (right) circuit.
BATTERY STATUS [OK/NG]	Monitor the battery status from the battery output.
BAT DISCHARGE COUNT [0-100]	Indicates condition of battery discharge.
BATTERY STATUS [NG/OK]	Indicates battery status.

ACTIVE TEST

Test item	Description
HORN	This test is able to check horn operation [Off/On].
FRONT WIPER	This test is able to check wiper motor operation [Off/Low/High].

Test item	Description
COMPRESSOR	This test is able to check A/C compressor operation [Off/On].
COOLING FAN (DUAL)	This test is able to check cooling fan operation [Off/LO/HI].
HEADLAMP (HI)	This test is able to check headlamp high beam operation [Off/3/5].
HEADLAMP (LO)	This test is able to check headlamp low beam operation [Off/3/5].
FRONT FOG LAMP	This test is able to check front fog lamp operation [Off/3/5].
DAYTIME RUNNING LAMP	This test is able to check daytime running lamp operation [Off/3/5].
PARKING LAMP	This test is able to check parking lamp operation [Off/3/5].
TAIL LAMP	This test is able to check tail lamp operation [Off/3/5].

CAN DIAG SUPPORT MNTR

Refer to LAN-17, "CAN Diagnostic Support Monitor".

WORK SUPPORT

Work item	Description
CML B/DCHRG CRNT CLEAR	In this mode, cumulative battery discharge current is cleared.

ECU DIAGNOSIS INFORMATION

FRONT AIR CONTROL

Reference Value

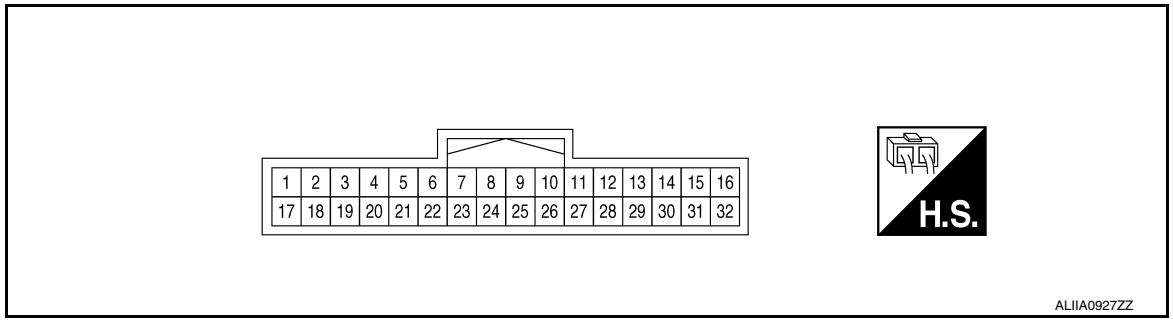
INFOID:0000000012424873

CONSULT DATA MONITOR REFERENCE VALUES

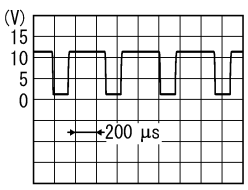
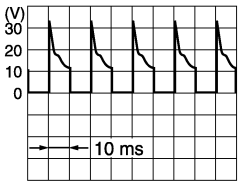
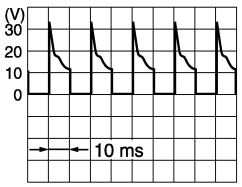
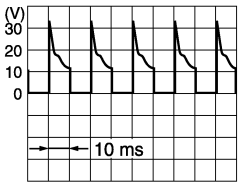
NOTE:
The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

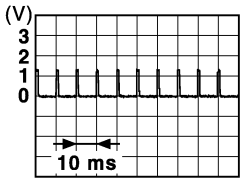
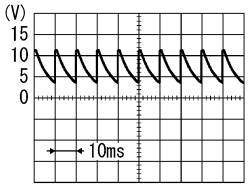
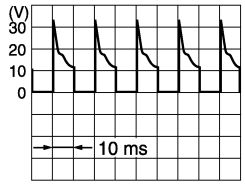
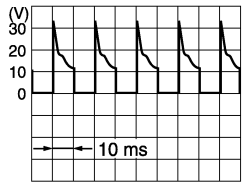
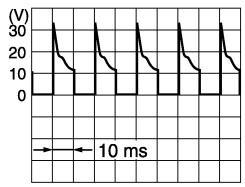
Monitor item	Condition		Value/Status
AMB TEMP SEN	Ignition switch ON		Equivalent to ambient temperature
INT TEMP SEN	Ignition switch ON		Values depending on evaporator fin temperature
AMB SEN CAL	Ignition switch ON		Equivalent to ambient temperature
INT TEMP CAL	Ignition switch ON		Values depending on evaporator fin temperature
COMP REQ SIG	Engine: Run at idle after warming up	A/C switch: ON (Compressor operation status)	On
		A/C switch: OFF	Off
COMP ECV DUTY	Engine: Run at idle after warming up	A/C switch: ON (Compressor operation status)	1 - 100%
		A/C switch: OFF	0%
FAN REQ SIG	Engine: Run at idle after warming up	Blower motor: ON	On
		Blower motor: OFF	Off
FAN DUTY	Engine: Run at idle after warming up	Blower motor: ON	1 – 100
		Blower motor: OFF	0
VEHICLE SPEED	Turn drive wheels and compare CONSULT value with the speedometer indication.		Equivalent to speedometer reading

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description			Condition	Value
+	–	Signal name		Input/ Output		
1 (G)	19 (B)	Power transistor control signal		Output	• Ignition switch ON • Blower motor: 1st speed (manual)	 ZJIA0863J
3 (SB)	19 (B)	Ignition power supply		Input	Ignition switch ON	Battery voltage
4 (V)	19 (B)	Ignition power supply		Output	Ignition switch ON	Battery voltage
7 (L)	19 (B)	CAN-H		Input/ Output	Ignition switch ON	—
8 (W)	19 (B)	ACTR V		Output	Ignition switch ON	Battery voltage
9 (BG)	19 (B)	A/MIX drive 1	Air mix door motor (passenger side) drive signal	Output	• Ignition switch ON • Right after the temperature control switch (passenger side) operation	 JPIIA1647GB
10 (Y)	19 (B)	A/MIX drive 2				
11 (V)	19 (B)	INTAKE drive 1	Intake door motor drive signal	Output	• Ignition switch ON • Right after the Intake switch operation	 JPIIA1647GB
12 (GR)	19 (B)	INTAKE drive 2				
13 (LG)	19 (B)	MODE drive 1	Mode door motor drive signal	Output	• Ignition switch ON • Right after the MODE switch operation	 JPIIA1647GB
14 (SB)	19 (B)	MODE drive 2				

Terminal No. (Wire color)		Description			Condition	Value
+	–	Signal name		Input/ Output		
17 (W)	19 (B)	Blower fan ON signal		Output	• Ignition switch ON • Blower motor: OFF	 JMIIA0941GB
					• Ignition switch ON • Blower motor: ON	 PKIB4960J
18 (BR)	19 (B)	Sensor ground		—	Ignition switch ON	0 – 0.1 V
19 (B)	Ground	Ground		—	Ignition switch ON	0 – 0.1 V
21 (BG)	19 (B)	Intake sensor signal		Input	Ignition switch ON	0 – 4.8 V Output voltage varies with evaporator fin temperature
23 (R)	19 (B)	CAN-L		Input/ Output	Ignition switch ON	—
24 (SB)	19 (B)	ACTR V		Output	Ignition switch ON	Battery voltage
25 (GR)	19 (B)	A/MIX drive 3	Air mix door motor (passenger side) drive signal	Output	• Ignition switch ON • Right after the temperature control switch (passenger side) operation	 JPIIA1647GB
26 (BR)	19 (B)	A/MIX drive 4				
27 (LG)	19 (B)	INTAKE drive 3	Intake door motor drive signal	Output	• Ignition switch ON • Right after the intake switch operation	 JPIIA1647GB
28 (W)	19 (B)	INTAKE drive 4				
29 (BG)	19 (B)	MODE drive 3	Mode door motor drive signal	Output	• Ignition switch ON • Right after the MODE switch operation	 JPIIA1647GB
30 (G)	19 (B)	MODE drive 4				

DTC Inspection Priority Chart

INFOID:0000000012424874

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	• B24A4: INTAKE TEMP SEN • B24BB: AIRMIX ACTR • B24B7: INTAKE ACTR • B24B9: MODE ACTR

DTC Index

INFOID:0000000012424875

DTC	Items (CONSULT screen terms)	Reference
U1000	CAN COMM CIRCUIT	HAC-57, "DTC Logic"
U1010	CONTROL UNIT (CAN)	HAC-58, "DTC Logic"
B24A4	INTAKE SENSOR	HAC-62, "DTC Logic"
B24B7	INTAKE DOOR MOTOR	HAC-81, "DTC Logic"
B24B9	MODE DOOR MOTOR	HAC-84, "DTC Logic"
B24BB	LEFT AIR MIX DOOR MOTOR	HAC-71, "DTC Logic"

ECM, IPDM E/R, BCM

List of ECU Reference

INFOID:0000000012424876

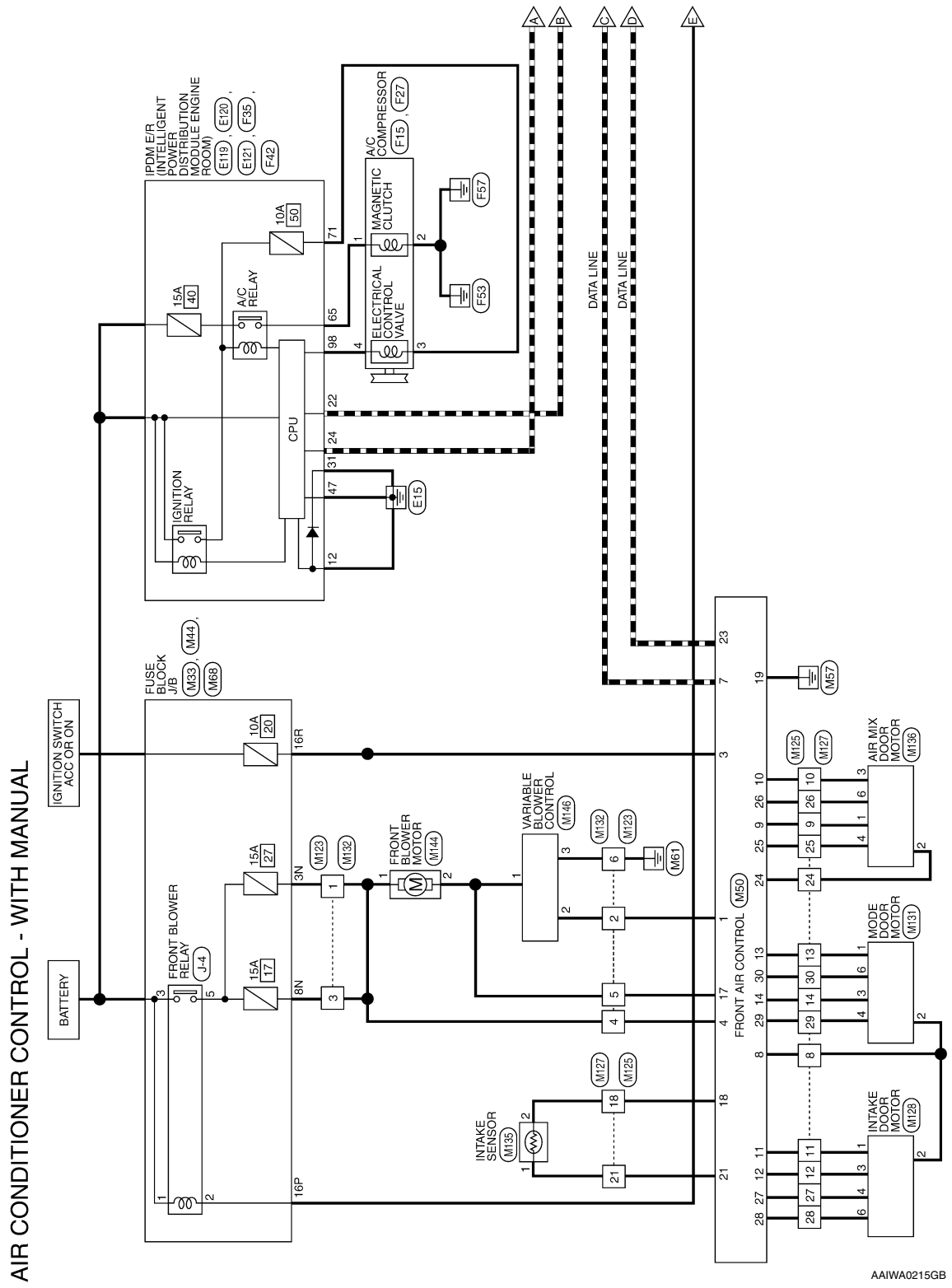
ECU	Reference
ECM	EC-80, "Reference Value"
	EC-92, "Fail Safe"
	EC-95, "DTC Inspection Priority Chart"
	EC-96, "DTC Index"
IPDM E/R	PCS-17, "Reference Value"
	PCS-25, "Fail-safe"
	PCS-26, "DTC Index"
BCM (with Intelligent Key system)	BCS-29, "Reference Value"
	BCS-47, "Fail Safe"
	BCS-47, "DTC Inspection Priority Chart"
	BCS-48, "DTC Index"
BCM (without Intelligent Key system)	BCS-97, "Reference Value"
	BCS-108, "Fail Safe"
	BCS-109, "DTC Inspection Priority Chart"
	BCS-109, "DTC Index"

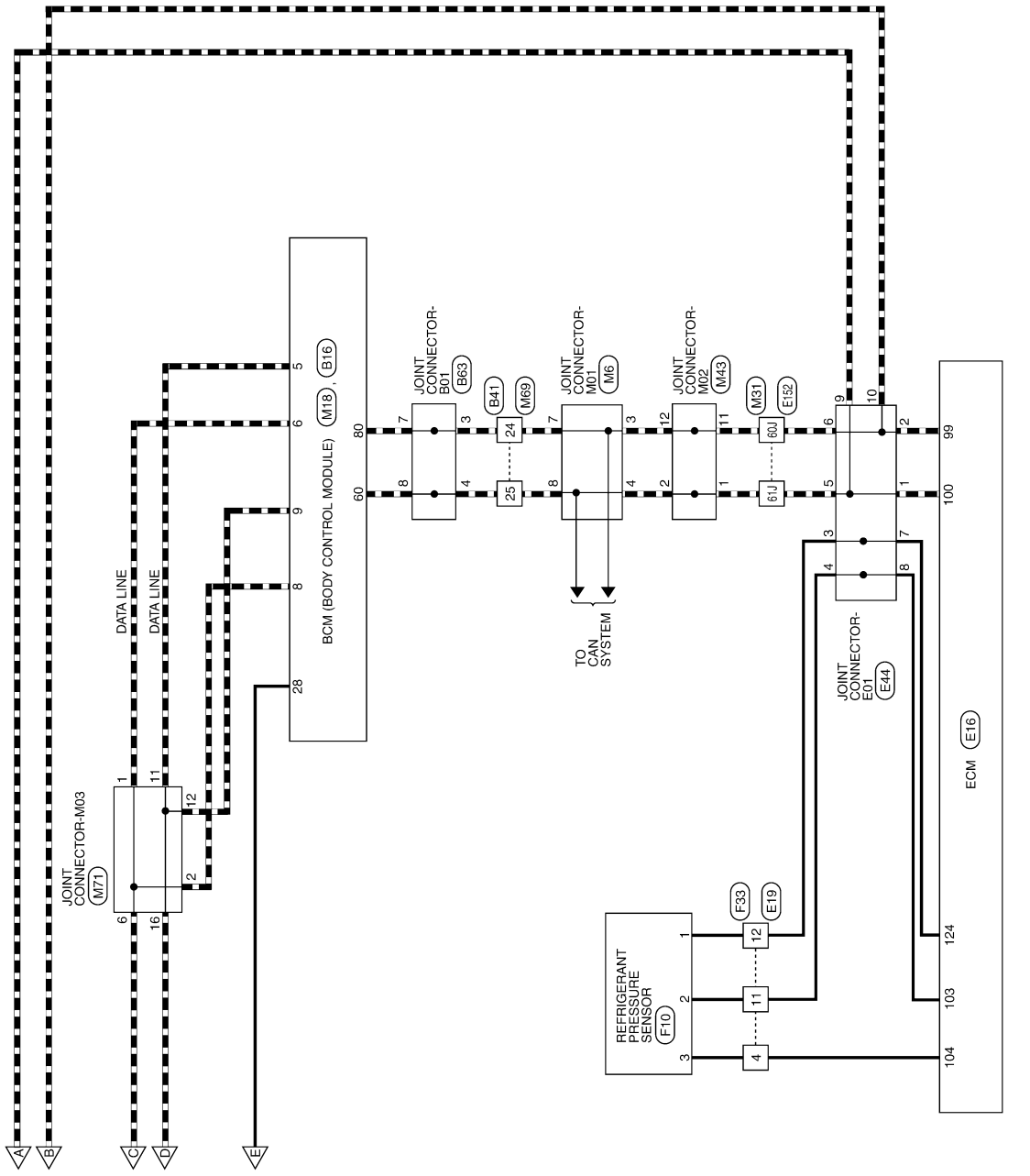
WIRING DIAGRAM

MANUAL AIR CONDITIONING SYSTEM

Wiring Diagram

INFOID:0000000012424877



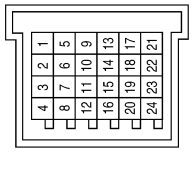


AAIWA0216GB

AIR CONDITIONER CONTROL CONNECTORS - WITH MANUAL

Connector No.	M6
Connector Name	JOINT CONNECTOR-M01
Connector Color	GRAY

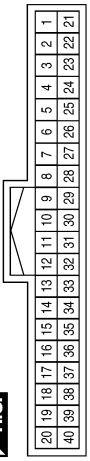
H.S.



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

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

H.S.

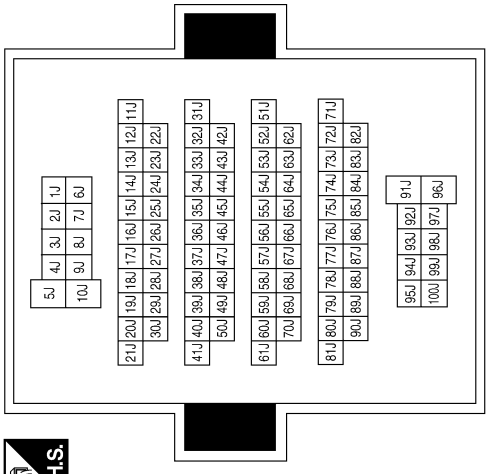


Terminal No.	Color of Wire	Signal Name
5	R	CAN-L
6	L	CAN-H
8	L	CAN-H

Terminal No.	Color of Wire	Signal Name
9	R	CAN-L
28	LA/W	O IGN2 RL

Connector No.	M31
Connector Name	WIRE TO WIRE
Connector Color	WHITE

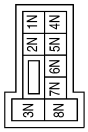
H.S.



Terminal No.	Color of Wire	Signal Name
60J	P	–
61J	L	–

Connector No.	M33
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE

H.S.



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

AAIIA0543GB

Connector No.	M43
Connector Name	JOINT CONNECTOR-M02
Connector Color	BLUE

H.S.

9	8	7	6	5	4	3	2	1	
20	19	18	17	16	15	14	13	12	11	10

Terminal No.	Color of Wire	Signal Name
1	L	–
2	L	–
11	P	–
12	P	–

Connector No.	M44
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
16P	LA/W	–

Connector No.	M50
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
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32

Terminal No.	Color of Wire	Signal Name
1	G	FR FAN OUT
2	–	–
3	SB	IGN TEMPO
4	V	IGN2
5	–	–
6	–	–
7	L	CAN-H
8	W	12V PROT MOTOR
9	BG	MIX DR1
10	Y	MIX DR2
11	V	INTAKE1
12	GR	INTAKE2

Terminal No.	Color of Wire	Signal Name
13	LG	MODE1
14	SB	MODE2
15	–	–
16	–	–
17	W	FR FAN F/B
18	BR	INTAKE SEN GND
19	B	GND
20	–	–
21	BG	INTAKE SEN
22	–	–
23	R	CAN-L
24	SB	12V PROT MOTOR
25	GR	MIX DR3
26	BR	MIX DR4
27	LG	INTAKE3
28	W	INTAKE4
29	BG	MODE3
30	G	MODE4
31	–	–
32	–	–

Connector No.	M68
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
16R	GR	–

AAIIA0544GB

Connector No.	M69
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
24	P	–
25	L	–

Connector No.	M71
Connector Name	JOINT CONNECTOR-M03
Connector Color	BLUE

H.S.

9	8	7	6	5	4	3	2	1
20	19	18	17	16	15	14	13	12	11	10
---	---	---	---	---	---	---	---	---	---	---

Terminal No.	Color of Wire	Signal Name
1	L	–
2	L	–
6	L	–
11	R	–
12	R	–
16	R	–

Connector No.	M123
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

6	5	4
3	2	1

Terminal No.	Color of Wire	Signal Name
1	Y	–
2	G	–
3	SB	–
4	V	–
5	W	–
6	B	–

Terminal No.	Color of Wire	Signal Name
18	BR	–
21	BG	–
24	SB	–
25	GR	–
26	BR	–
27	LG	–
28	W	–
29	BG	–
30	G	–

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

H.S.

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

Terminal No.	Color of Wire	Signal Name
8	W	–
9	BG	–
10	Y	–
11	V	–
12	GR	–
13	LG	–
14	SB	–

AAIIA0410GB

Connector No.	M128
Connector Name	INTAKE DOOR MOTOR
Connector Color	BLACK

H.S.

1	4
2	5
3	6

Terminal No.	Color of Wire	Signal Name
1	L	–
2	W	–
3	R	–
4	BR	–
6	W	–

Connector No.	M135
Connector Name	INTAKE SENSOR
Connector Color	GRAY

H.S.

1	2

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

Connector No.	M127
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
8	W	–
9	L	–
10	W	–
11	L	–
12	R	–
13	L	–
14	BR	–
18	BR	–
21	BG	–

Terminal No.	Color of Wire	Signal Name
24	G	–
25	R	–
26	BR	–
27	BR	–
28	W	–
29	R	–
30	G	–

Connector No.	M132
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

4	5	6
1	2	3

Terminal No.	Color of Wire	Signal Name
1	Y	–
2	G	–
3	SB	–
4	V	–
5	W	–
6	B	–

Connector No.	M131
Connector Name	MODE DOOR MOTOR
Connector Color	BLACK

H.S.

1	4
2	5
3	6

Terminal No.	Color of Wire	Signal Name
1	L	–
2	W	–
3	BR	–
4	R	–
6	G	–

AAIIA0411GB

Connector No.	M136
Connector Name	AIR MIX DOOR MOTOR
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	L	–
2	G	–
3	W	–
4	R	–
6	BR	–

Connector No.	M144
Connector Name	FRONT BLOWER MOTOR
Connector Color	WHITE

H.S.

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

Connector No.	M146
Connector Name	VARIABLE BLOWER CONTROL (WITH MANUAL A/C)
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	R	–
2	G	–
3	B	–
4	–	–

Connector No.	E16
Connector Name	ECM
Connector Color	BLACK

H.S.

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

Connector No.	E19
Connector Name	WIRE TO WIRE
Connector Color	BROWN

H.S.

Terminal No.	Color of Wire	Signal Name
4	R	–
11	Y	–
12	W	–

AAIIA0747GB

Connector No.	E44
Connector Name	JOINT CONNECTOR-E01
Connector Color	WHITE

H.S.

4	3	2	1
8	7	6	5
12	11	10	9
16	15	14	13
20	19	18	17
24	23	22	21
28	27	26	25

Connector No.	E120
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	GRAY

H.S.

30	29	28	27	26	25	24	23	22	21	20	19
42	41	40	39	38	37	36	35	34	33	32	31

Terminal No.	Color of Wire	Signal Name
22	P	CAN-L
24	L	CAN-H
31	B	2ND SIGNAL GROUND

Terminal No.	Color of Wire	Signal Name
1	L	–
2	P	–
3	W	–
4	Y	–
5	L	–
6	P	–
7	W	–
8	Y	–
9	L	–
10	P	–

Connector No.	E121
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	RED

H.S.

45	44	43
48	47	46

Terminal No.	Color of Wire	Signal Name
47	B	POWER GROUND

Connector No.	E119
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	GRAY

H.S.

9	8	7	6		5	4	3
18	17	16	15	14	13	12	11	10

Terminal No.	Color of Wire	Signal Name
12	B	SIGNAL GROUND

Connector No.	E152
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

					1J	2J	3J	4J	5J		
					6J	7J	8J	9J	10J		
				11J	12J	13J	14J	15J	16J	17J	18J	19J	20J	21J
					22J	23J	24J	25J	26J	27J	28J	29J	30J	
			31J	32J	33J	34J	35J	36J	37J	38J	39J	40J	41J	
				42J	43J	44J	45J	46J	47J	48J	49J	50J		
			51J	52J	53J	54J	55J	56J	57J	58J	59J	60J	61J	
				62J	63J	64J	65J	66J	67J	68J	69J	70J		
			71J	72J	73J	74J	75J	76J	77J	78J	79J	80J	81J	
				82J	83J	84J	85J	86J	87J	88J	89J	90J		
					91J	92J	93J	94J	95J					
						96J	97J	98J	99J	100J				

Terminal No.	Color of Wire	Signal Name
60J	P	–
61J	L	–

AAIIA0547GB

Connector No.	F10
Connector Name	REFRIGERANT PRESSURE SENSOR
Connector Color	BLACK

H.S.

1 2 3

Terminal No.	Color of Wire	Signal Name
1	GR	–
2	P	–
3	BG	–

Connector No.	F15
Connector Name	A/C COMPRESSOR (ELECTRICAL CONTROL VALVE)
Connector Color	GRAY

H.S.

3 4

Terminal No.	Color of Wire	Signal Name
3	SB	–
4	Y	–

Connector No.	F27
Connector Name	A/C COMPRESSOR (MAGNETIC CLUTCH)
Connector Color	BLACK

H.S.

1 2

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

Connector No.	F33
Connector Name	WIRE TO WIRE
Connector Color	BROWN

H.S.

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

Terminal No.	Color of Wire	Signal Name
4	BG	–
11	P	–
12	GR	–

Connector No.	F35
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

H.S.

71	70	69	68		67	66	65
80	79	78	77	76	75	74	73	72

Terminal No.	Color of Wire	Signal Name
65	P	O AC CLUTCH
71	SB	O IGN REVERSE SW AC VALVE

Connector No.	F42
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	BLACK

H.S.

98	97	96	95	94	93	92	91	90	89	88	87
110	109	108	107	106	105	104	103	102	101	100	99

Terminal No.	Color of Wire	Signal Name
98	Y	O AC VALVE

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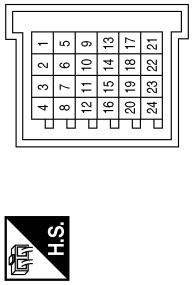
Connector No.	B63
Connector Name	JOINT CONNECTOR-B01
Connector Color	GRAY

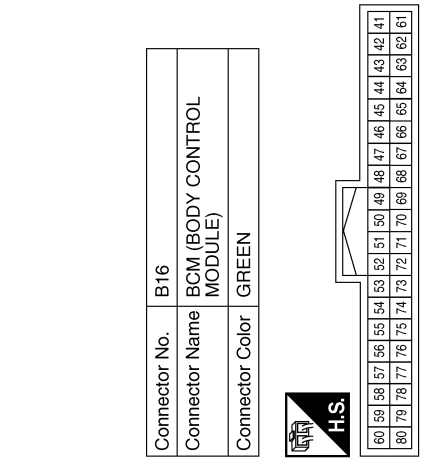


Terminal No.	Color of Wire	Signal Name
3	P	–
4	L	–
7	P	–
8	L	–

Connector No.	B41
Connector Name	WIRE TO WIRE
Connector Color	WHITE

Terminal No.	Color of Wire	Signal Name
24	P	–
25	L	–

Connector No.	B16
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	GREEN



Terminal No.	Color of Wire	Signal Name
60	L	CAN-H
80	P	CAN-L

AAIIA0748GB

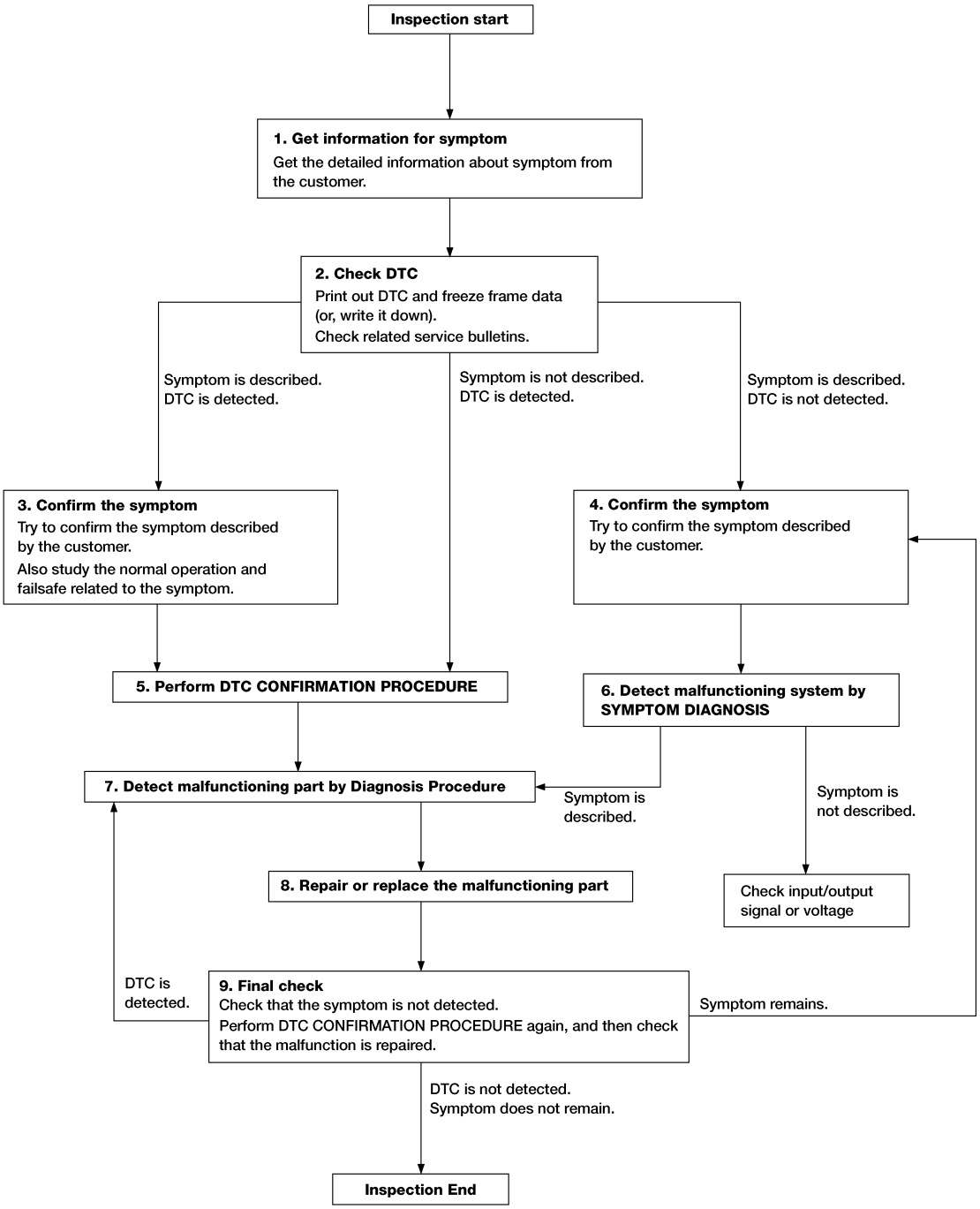
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:0000000012424878

OVERALL SEQUENCE



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DETAILED FLOW

1.GET INFORMATION FOR SYMPTOM

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

>> GO TO 2.

2.CHECK DTC

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

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

3. Check related service bulletins for information.

Are any symptoms described and any DTC detected?

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

3.CONFIRM THE SYMPTOM

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

>> GO TO 5.

4.CONFIRM THE SYMPTOM

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

>> GO TO 6.

5.PERFORM DTC CONFIRMATION PROCEDURE

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

NOTE:

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

Is DTC detected?

YES >> GO TO 7.
NO >> Check according to GI-45, "Intermittent Incident".

6.DETECT MALFUNCTIONING SYSTEM BY SYMPTOM DIAGNOSIS

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

Is the symptom described?

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

7.DETECT MALFUNCTIONING PART BY DIAGNOSIS PROCEDURE

Inspect according to Diagnosis Procedure of the system.

Is malfunctioning part detected?

YES >> GO TO 8.
NO >> Check according to GI-45, "Intermittent Incident".

8. REPAIR OR REPLACE THE MALFUNCTIONING PART

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

>> GO TO 9.

9. FINAL CHECK

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

Is DTC detected and does symptom remain?

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

OPERATION INSPECTION

Work Procedure

INFOID:0000000012424879

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-176, "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-175, "FRONT A/C CONTROL : 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-180, "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-175, "FRONT A/C CONTROL : 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-124, "Door Control".

Is the test result normal?

YES >> GO TO 6.
NO >> Refer to HAC-183, "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-175, "FRONT A/C CONTROL : 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-166, "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-184, "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-186, "Component Function Check".

SYSTEM SETTING

Target Evaporator Temp Upper Limit

INFOID:0000000012424880

DESCRIPTION

Set the target evaporator temperature upper limit.

HOW TO SET

With CONSULT

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

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

DOOR MOTOR STARTING POSITION RESET

Description

INFOID:0000000012424881

- Reset signal is transmitted from A/C auto amp. to air mix door motor, intake door motor and mode door motor. Starting position reset can be performed.
  NOTE:
  During reset, DEF switch indicator blinks.
- When air mix door motor, intake door motor or mode door motor is removed and installed, always perform door motor starting position reset.

Work Procedure

INFOID:0000000012424882

1.PERFORM DOOR MOTOR STARTING POSITION RESET

With CONSULT
1. Turn ignition switch ON.
2. Select “Door Motor Starting Position Reset” in “Active Test” of “HVAC”.
3. Touch “Start” and wait a few seconds.
4. Make sure the “COMPLETED” is displayed on CONSULT screen.

>> Inspection End.

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000012424883

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-36, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart".

DTC Logic

INFOID:0000000012424884

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. Select “Self Diagnostic Result” mode of “HVAC”.
3. Check DTC.

Is DTC detected?

YES >> Refer to HAC-161, "Diagnosis Procedure".
NO >> Refer to GI-45, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000012424885

1. CHECK CAN COMMUNICATION SYSTEM

Check CAN communication system. Refer to LAN-20, "Trouble Diagnosis Flow Chart".

>> Inspection End.

U1010 CONTROL UNIT (CAN)

Description

INFOID:0000000012424886

Initial diagnosis of A/C auto amp.

DTC Logic

INFOID:0000000012424887

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 front air control.	Front air control

DTC CONFIRMATION PROCEDURE

1.PERFORM SELF-DIAGNOSIS

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

Is DTC detected?

YES >> Refer to HAC-162, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000012424888

1.REPLACE FRONT AIR CONTROL

Replace front air control. Refer to HAC-190, "Removal and Installation".

>> Inspection End.

B24A4 INTAKE SENSOR

DTC Logic

INFOID:0000000012424889

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-161, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to HAC-162, "DTC Logic".

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B24A4	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.)

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

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

Is DTC detected?

YES >> Refer to HAC-163, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000012424890

Regarding Wiring Diagram information, refer to HAC-144, "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		
M135	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		
M135	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-164, "Component Inspection".

Is the inspection result normal?

YES >> Replace front air control. Refer to HAC-190, "Removal and Installation".
NO >> Replace intake sensor. Refer to HAC-191, "Removal and Installation".

4.CHECK INTAKE SENSOR POWER SUPPLY CIRCUIT FOR OPEN

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

Intake sensor		Front air control		Continuity
Connector	Terminal	Connector	Terminal	
M135	1	M50	21	Yes

Is the inspection result normal?

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

5.CHECK INTAKE SENSOR POWER SUPPLY CIRCUIT FOR SHORT TO GROUND

Check continuity between intake sensor harness connector and ground.

Intake sensor		—	Continuity
Connector	Terminal		
M135	1	Ground	No

Is the inspection result normal?

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

6.CHECK INTAKE SENSOR POWER SUPPLY CIRCUIT FOR SHORT TO VOLTAGE

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

+		−	Voltage (Approx.)
Intake sensor			
Connector	Terminal		
M135	1	Ground	0 V

Is the inspection result normal?

YES >> Replace front air control. Refer to HAC-190, "Removal and Installation".
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000012424891

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 (Approx.)
		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-191, "Removal and Installation".

B24B7 INTAKE DOOR MOTOR

DTC Logic

INFOID:0000000012424892

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-161, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-162, "DTC Logic".

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B24B7	INTAKE DOOR MOTOR	Short or open circuit of intake door motor drive signal.	• Intake door motor • Intake door motor system installation condition • Front air control • Harness or connectors (The motor circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

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

Is DTC detected?

YES >> Refer to HAC-166, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000012424893

Regarding Wiring Diagram information, refer to HAC-144, "Wiring Diagram".

NOTE:

This DTC can be set if the BCM is placed in transit mode. Confirm if the DTC is CURRENT or PAST. If PAST, perform the following steps before carrying out Diagnosis Procedure.

With CONSULT

1. Clear DTC. Refer to HAC-22, "CONSULT Function (HVAC)".
2. Perform OPERATION INSPECTION. Refer to HAC-52, "Work Procedure".
3. Select “Self Diagnostic Result” mode of “HVAC”. Refer to HAC-22, "CONSULT Function (HVAC)".
4. If DTC resets, proceed with Diagnosis Procedure.

1.CHECK INTAKE DOOR MOTOR POWER SUPPLY

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

+		−	Voltage (Approx.)
Intake door motor			
Connector	Terminal		
M128	2	Ground	Battery voltage

Is the inspection result normal?

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

2.CHECK INTAKE DOOR MOTOR POWER SUPPLY CIRCUIT FOR OPEN

1. Disconnect front air control connector.
2. 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	
M128	2	M50	8	Yes

Is the inspection result normal?

YES >> Replace front air control. Refer to HAC-190, "Removal and Installation".
NO >> Repair harness or connector.

3.CHECK INTAKE DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect front air control connector.
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	
M128	1	M50	11	Yes
	3		12	
	4		27	
	6		28	

Is the inspection result normal?

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

4.CHECK INTAKE DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR SHORT

Check continuity between intake door motor harness connector and front air control harness connector.

Intake door motor		—	Continuity
Connector	Terminal		
M128	1	Ground	No
	3		
	4		
	6		

Is the inspection result normal?

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

5.CHECK INTAKE DOOR MOTOR

Check intake door motor. Refer to HAC-194, "INTAKE DOOR MOTOR : Removal and Installation".

Is the inspection result normal?

YES >> Replace front air control. Refer to HAC-190, "Removal and Installation".
NO >> Replace intake door motor. Refer to HAC-194, "INTAKE DOOR MOTOR : Removal and Installation".

Component Inspection (Motor)

INFOID:0000000012424894

1.CHECK INTAKE DOOR MOTOR

1. Remove intake door motor. Refer to HAC-194, "INTAKE DOOR MOTOR : Removal and Installation".
2. Check resistance between intake door motor terminals. Refer to applicable table for the normal value.

Terminal		Resistance (Ω) (Approx.)
2	1	90
	3	
	4	
	6	

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace intake door motor. Refer to HAC-194, "INTAKE DOOR MOTOR : Removal and Installation".

B24B9 MODE DOOR MOTOR

DTC Logic

INFOID:0000000012424895

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-161, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-162, "DTC Logic".
- If mode door motors DTC (B27A6 – B27A9) are detected, there is probably a disconnected connector or an open circuit in mode door motor drive power supply harness.

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B24B9	MODE DOOR MOTOR	Short or open circuit of mode door motor drive signal.	• Mode door motor • Front air control • Harness or connectors (The motor circuit is open or short-ed.)

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

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

Is DTC detected?

YES >> Refer to HAC-169, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000012424896

Regarding Wiring Diagram information, refer to HAC-144, "Wiring Diagram".

NOTE:
This DTC can be set if the BCM is placed in transit mode. Confirm if the DTC is CURRENT or PAST. If PAST, perform the following steps before carrying out Diagnosis Procedure.

With CONSULT

1. Clear DTC. Refer to HAC-22, "CONSULT Function (HVAC)".
2. Perform OPERATION INSPECTION. Refer to HAC-52, "Work Procedure".
3. Select “Self Diagnostic Result” mode of “HVAC”. Refer to HAC-22, "CONSULT Function (HVAC)".
4. If DTC resets, proceed with Diagnosis Procedure.

1.CHECK MODE DOOR MOTOR POWER SUPPLY

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

+		–	Voltage (Approx.)
Mode door motor			
Connector	Terminal		
M131	2	Ground	Battery voltage

Is the inspection result normal?

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

2.CHECK MODE DOOR MOTOR POWER SUPPLY CIRCUIT FOR OPEN

1. Disconnect front air control connector.
2. 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	
M131	2	M50	8	Yes

Is the inspection result normal?

YES >> Replace front air control. Refer to HAC-190, "Removal and Installation".
NO >> Repair harness or connector.

3.CHECK MODE DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect 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	
M131	4	M50	29	Yes
	3		14	
	6		30	
	1		13	

Is the inspection result normal?

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

4.CHECK MODE DOOR MOTOR DRIVE SIGNAL CIRCUIT FOR SHORT

Check continuity between mode door motor harness connector and ground.

Mode door motor		—	Continuity
Connector	Terminal		
M131	4	Ground	No
	3		
	6		
	1		

Is the inspection result normal?

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

5.CHECK MODE DOOR MOTOR

Check mode door motor. Refer to HAC-170, "Component Inspection".

Is the inspection result normal?

YES >> Replace front air control. Refer to HAC-190, "Removal and Installation".
NO >> Replace mode door motor. Refer to HAC-194, "MODE DOOR MOTOR : Removal and Installation".

Component Inspection

INFOID:0000000012424897

1.CHECK MODE DOOR MOTOR

1. Remove mode door motor. Refer to HAC-194, "MODE DOOR MOTOR : Removal and Installation".
2. Check resistance between mode door motor terminals. Refer to applicable table for the normal value.

Terminal		Resistance (Ω) (Approx.)
2	1	90
	6	
	3	
	4	

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace mode door motor. Refer to HAC-194, "MODE DOOR MOTOR : Removal and Installation".

B24BB LEFT AIR MIX DOOR MOTOR

DTC Logic

INFOID:0000000012424898

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to HAC-161, "DTC Logic".
- If DTC is displayed along with DTC U1010, first perform the trouble diagnosis for DTC U1010. HAC-162, "DTC Logic".

DTC	Items (CONSULT screen terms)	DTC detection condition	Possible cause
B24BB	AIR MIX DOOR MOT	Short or open circuit of air mix door motor drive signal.	• Air mix door motor • Front air control • Harness or connectors (The motor circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

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

Is DTC detected?

YES >> Refer to HAC-172, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000012424899

Regarding Wiring Diagram information, refer to HAC-144, "Wiring Diagram".

NOTE:

This DTC can be set if the BCM is placed in transit mode. Confirm if the DTC is CURRENT or PAST. If PAST, perform the following steps before carrying out Diagnosis Procedure.

With CONSULT

1. Clear DTC. Refer to HAC-22, "CONSULT Function (HVAC)".
2. Perform OPERATION INSPECTION. Refer to HAC-52, "Work Procedure".
3. Select “Self Diagnostic Result” mode of “HVAC”. Refer to HAC-22, "CONSULT Function (HVAC)".
4. If DTC resets, proceed with Diagnosis Procedure.

1.CHECK AIR MIX DOOR MOTOR POWER SUPPLY

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

+		−	Voltage (Approx.)
Air mix door motor			
Connector	Terminal		
M136	2	Ground	Battery voltage

Is the inspection result normal?

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

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

1. Disconnect front air control connector.
2. 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	
M136	2	M50	24	Yes

Is the inspection result normal?

YES >> Replace front air control. Refer to HAC-190, "Removal and Installation".
NO >> Repair harness or connector.

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

1. Turn ignition switch OFF.
2. Disconnect 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	
M136	3	M50	10	Yes
	6		26	
	1		9	
	4		25	

Is the inspection result normal?

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

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

Check continuity between air mix door motor harness connector and front air control harness connector.

Air mix door motor		—	Continuity
Connector	Terminal		
M131	3	Ground	No
	6		
	1		
	4		

Is the inspection result normal?

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

5.CHECK AIR MIX DOOR MOTOR

Check air mix door motor. Refer to HAC-173, "Component Inspection".

Is the inspection result normal?

YES >> Replace front air control. Refer to HAC-190, "Removal and Installation".
NO >> Replace air mix door motor. Refer to HAC-194, "AIR MIX DOOR MOTOR : Removal and Installation".

Component Inspection

INFOID:0000000012424900

1.CHECK AIR MIX DOOR MOTOR

1. Remove air mix door motor. Refer to HAC-194, "AIR MIX DOOR MOTOR : Removal and Installation".

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

Terminal		Resistance (Ω) (Approx.)
2	3	90
	6	
	1	
	4	

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace air mix door motor. Refer to HAC-194, "AIR MIX DOOR MOTOR : Removal and Installation".

POWER SUPPLY AND GROUND CIRCUIT
FRONT A/C CONTROL
FRONT A/C CONTROL : Diagnosis Procedure

INFOID:0000000012424901

Regarding Wiring Diagram information, refer to HAC-144, "Wiring Diagram".

1.CHECK FUSE

Check 10A fuse [No. 20, 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 FRONT AIR CONTROL POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect front air control connector.
3. Check voltage between front air control harness connector and ground.

+		–	Voltage		
Front air control			Ignition switch position		
Connector	Terminal		OFF	ACC	ON
M50	3	Ground	Approx. 0 V	Approx. 0 V	Battery voltage

Is the inspection result normal?

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

3.CHECK FRONT AIR CONTROL GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between front air control harness connector and ground.

Front air control		—	Continuity
Connector	Terminal		
M50	19	Ground	Yes

Is the inspection result normal?

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

FRONT BLOWER MOTOR

Diagnosis Procedure

INFOID:0000000012424902

Regarding Wiring Diagram information, refer to HAC-144, "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 FRONT BLOWER MOTOR POWER SUPPLY

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

+		−	Voltage (Approx.)
Front blower motor			
Connector	Terminal		
M144	1	Ground	Battery voltage

Is the inspection result normal?

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

3.CHECK FRONT BLOWER RELAY

1. Turn ignition switch OFF.
2. Check front blower relay. Refer to HAC-179, "Component Inspection (Front Blower Relay)".

Is the inspection result normal?

YES >> Repair harness or connector between front blower motor and fuse.
NO >> Replace front blower relay.

4.CHECK BLOWER MOTOR CONTROL CIRCUIT

1. Turn ignition switch OFF.
2. Connect front blower motor connector.
3. Disconnect variable blower control connector.
4. Turn ignition switch ON.
5. Check voltage between variable blower control harness connector and ground.

+		−	Voltage (Approx.)
Variable blower control			
Connector	Terminal		
M146	1	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 6.
NO >> GO TO 5.

5.CHECK FRONT BLOWER MOTOR CONTROL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.

2. Disconnect front blower motor connector.
3. Check continuity between variable blower control harness connector and front blower motor harness connector.

Variable blower control		Front blower motor		Continuity
Connector	Terminal	Connector	Terminal	
M146	1	M144	2	Yes

Is the inspection result normal?

YES >> Replace front blower motor. Refer to VTL-17, "Removal and Installation".
NO >> Repair harness or connector.

6. CHECK VARIABLE BLOWER CONTROL GROUND CIRCUIT FOR OPEN

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

Variable blower control		—	Continuity
Connector	Terminal		
M146	3	Ground	Yes

Is the inspection result normal?

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

7. CHECK VARIABLE BLOWER CONTROL SIGNAL CIRCUIT

1. Turn blower control dial fully counterclockwise to the OFF position
2. While turning the blower control dial clockwise, through each detent, check voltage between variable blower control and ground.

Power transistor			Condition					
Connector	Terminal		Blower control dial detents	VENT	B/L	D/F1	D/F2	DEF
				Voltage				
M146	2	Ground	OFF	0.00 volts	0.00 volts	0.00 volts	0.00 volts	0.00 volts
			1	4.00 volts	4.00 volts	4.00 volts	4.00 volts	4.00 volts
			2	4.75 volts	4.75 volts	4.75 volts	4.75 volts	4.75 volts
			3	5.00 volts	5.00 volts	5.25 volts	5.25 volts	5.25 volts
			4	5.50 volts	5.50 volts	5.50 volts	5.50 volts	5.50 volts
			5	5.75 volts	5.75 volts	6.00 volts	6.00 volts	6.00 volts
			6	6.25 volts	6.25 volts	6.25 volts	6.25 volts	6.25 volts
			7	6.50 volts	6.50 volts	6.75 volts	6.75 volts	6.75 volts
			8	6.75 volts	6.75 volts	7.00 volts	7.00 volts	7.00 volts
			9	7.25 volts	7.25 volts	7.50 volts	7.50 volts	7.50 volts
			10	7.50 volts	7.50 volts	7.75 volts	7.75 volts	7.75 volts
			11	8.00 volts	8.00 volts	8.25 volts	8.25 volts	8.25 volts
			12	8.25 volts	8.25 volts	8.50 volts	8.50 volts	8.50 volts
			13	8.50 volts	8.50 volts	9.00 volts	9.00 volts	9.00 volts
			14	9.00 volts	9.00 volts	9.25 volts	9.25 volts	9.25 volts
			15	9.25 volts	9.25 volts	9.75 volts	9.75 volts	9.75 volts
			16	9.75 volts	9.75 volts	10.00 volts	10.00 volts	10.00 volts
			17	10.00 volts	10.00 volts	10.50 volts	10.50 volts	10.50 volts
			18	10.50 volts	10.50 volts	10.75 volts	10.75 volts	10.75 volts
			19	10.75 volts	10.75 volts	11.25 volts	11.25 volts	11.25 volts
			20	11.00 volts	11.00 volts	11.50 volts	11.50 volts	11.50 volts
			21	11.50 volts	11.50 volts	12.00 volts	12.00 volts	12.00 volts
			22	11.75 volts	11.75 volts	12.25 volts	12.25 volts	12.25 volts
			23	12.25 volts	12.25 volts	12.75 volts	12.75 volts	12.75 volts
			24	12.50 volts	12.50 volts	13.00 volts	13.00 volts	13.00 volts
			12 = Max blower voltage					

Is the inspection result normal?

YES >> Replace variable blower control. Refer to HAC-196, "Removal and Installation".
NO >> GO TO 8.

8. CHECK VARIABLE BLOWER CONTROL SIGNAL CIRCUIT FOR OPEN

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

Variable blower control		Front air control		Continuity
Connector	Terminal	Connector	Terminal	
M146	2	M50	1	Yes

Is the inspection result normal?

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

9. CHECK VARIABLE BLOWER CONTROL SIGNAL CIRCUIT FOR SHORT

Check continuity between variable blower control harness connector and ground.

Variable blower control		—	Continuity
Connector	Terminal		
M146	2	Ground	No

Is the inspection result normal?

YES >> Replace front air control. Refer to HAC-190, "Removal and Installation".
NO >> Repair harness or connector.

Component Inspection (Front Blower Motor)

INFOID:0000000012424903

1.CHECK FRONT BLOWER MOTOR

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

Does the blower fan operate?

YES >> Intermittent incident. Refer to GI-45, "Intermittent Incident".
NO >> Replace front blower motor. Refer to VTL-17, "Removal and Installation".

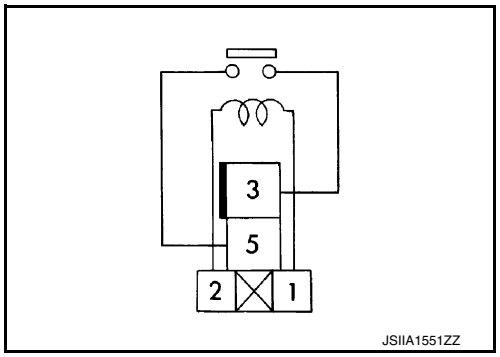
Component Inspection (Front Blower Relay)

INFOID:0000000012424904

1.CHECK FRONT BLOWER RELAY

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

MAGNET CLUTCH

Component Function Check

INFOID:0000000012424905

1.CHECK MAGNET CLUTCH OPERATION

Perform “COMPRESSOR” in “Active Test” of “IPDM E/R”. Refer to HAC-133, "CONSULT Function (IPDM E/R)".

Does it operate normally?

YES >> Inspection End.
NO >> Refer to HAC-180, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000012424906

Regarding Wiring Diagram information, refer to HAC-144, "Wiring Diagram".

1.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 15A fuse (No. 40, located in IPDM E/R).
   NOTE:
   Refer to PG-70, "IPDM E/R Terminal Arrangement".

Is the inspection result normal?

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

2.CHECK MAGNET CLUTCH POWER SUPPLY CIRCUIT

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

A/C compressor		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F27	1	F35	65	Yes

Is the inspection result normal?

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

3.CHECK MAGNET CLUTCH GROUND CIRCUIT

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

A/C compressor			Continuity
Connector	Terminal		
F27	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-44, "Removal and Installation".
NO >> Replace magnet clutch. Refer to HA-30, "Removal and Installation".

ECV (ELECTRICAL CONTROL VALVE)

Diagnosis Procedure

INFOID:0000000012424907

Regarding Wiring Diagram information, refer to HAC-144, "Wiring Diagram".

1.CHECK ECV (ELECTRICAL CONTROL VALVE) POWER SUPPLY

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

+		–	Voltage (Approx.)
A/C compressor			
Connector	Terminal		
F15	3	Ground	Battery voltage

Is the inspection result normal?

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

2.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 10A fuse [No. 50, located in IPDM E/R]. Refer to PG-70, "IPDM E/R Terminal Arrangement".

Is the inspection result normal?

YES >> Repair harness or connector.
NO >> Replace the blown fuse after repairing the affected circuit.

3.CHECK ECV CONTROL SIGNAL CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between A/C compressor harness connector and IPDM E/R harness connector.

A/C compressor		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F15	4	F42	98	Yes

Is the inspection result normal?

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

4.CHECK ECV CONTROL SIGNAL CIRCUIT FOR SHORT

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

A/C compressor		—	Continuity
Connector	Terminal		
F15	4	Ground	No

Is the inspection result normal?

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

5.CHECK ECV

Check ECV. Refer to HAC-182, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Replace A/C compressor. Refer to HA-30, "Removal and Installation".

6. CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace front air control. Refer to HAC-190, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:0000000012424908

1. CHECK ECV (ELECTRICAL CONTROL VALVE)

1. Turn ignition switch OFF.
2. Disconnect A/C compressor connector.
3. Check continuity between A/C compressor connector F15 terminals.

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

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace A/C compressor. Refer to HA-30, "Removal and Installation".

SYMPTOM DIAGNOSIS

HEATER AND AIR CONDITIONING SYSTEM CONTROL SYMPTOMS

Symptom Table

INFOID:0000000012424909

SYMPTOM TABLE

Symptom	Reference Page	
A/C system does not come on.	Go to Trouble Diagnosis Procedure for A/C System.	HAC-175, "FRONT A/C CONTROL : Diagnosis Procedure"
Air outlet does not change.	Go to Trouble Diagnosis Procedure for Mode Door Motor.	HAC-169, "Diagnosis Procedure"
Mode door motor does not operate normally.		
Discharge air temperature does not change.	Go to Trouble Diagnosis Procedure for Air Mix Door Motor.	HAC-172, "Diagnosis Procedure"
Air mix door motor does not operate normally.		
Intake door does not change.	Go to Trouble Diagnosis Procedure for Intake Door Motor.	HAC-166, "Diagnosis Procedure"
Intake door motor does not operate normally.		
Blower motor operation is malfunctioning.	Go to Trouble Diagnosis Procedure for Blower Motor.	HAC-176, "Diagnosis Procedure"
Magnet clutch does not engage.	Go to Trouble Diagnosis Procedure for Magnet Clutch.	HAC-180, "Component Function Check"
Insufficient cooling	Go to Trouble Diagnosis Procedure for Insufficient Cooling.	HAC-184, "Component Function Check"
Insufficient heating	Go to Trouble Diagnosis Procedure for Insufficient Heating.	HAC-186, "Component Function Check"
Noise	Go to Trouble Diagnosis Procedure for Noise.	HA-20, "Symptom Table"

INSUFFICIENT COOLING

Component Function Check

INFOID:0000000012424910

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-157, "Work Procedure".

Does another symptom exist?

YES >> Refer to HAC-183, "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-15, "Checking".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Adjust or replace compressor belt. Refer to EM-15, "Tension Adjustment".

5. CHECK AIR MIX DOOR MOTOR OPERATION

Check and verify air mix door mechanism for smooth operation.

Does air mix door operate correctly?

YES >> GO TO 6.
NO >> Check air mix door motor circuit. Refer to HAC-172, "Diagnosis Procedure".

6. CHECK COOLING FAN MOTOR OPERATION

Check and verify cooling fan motor for smooth operation.

Does cooling fan motor operation correctly?

YES >> GO TO 7.
NO >> Check cooling fan motor. Refer to EC-462, "Component Function Check".

7. CHECK RECOVERY/RECYCLING EQUIPMENT BEFORE USAGE

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

>> GO TO 8.

8. CHECK REFRIGERANT PURITY

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

Is the inspection result normal?

YES >> GO TO 9.
NO >> Check contaminated refrigerant. Refer to HA-21, "Description".

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:0000000012424911

SYMPTOM: Insufficient heating

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE INCREASE

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

Can a symptom be duplicated?

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

2. CHECK FOR ANY SYMPTOMS

Perform a complete operational check and check for any symptoms. Refer to HAC-157, "Work Procedure".

Does another symptom exist?

YES >> Refer to HAC-183, "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-8, "Inspection".
2. Check hoses for leaks or kinks.
3. Check radiator cap. Refer to CO-8, "Inspection".
4. Check for air in cooling system.

>> GO TO 5.

5. CHECK AIR MIX DOOR MOTOR OPERATION

Check and verify air mix door mechanism for smooth operation.

Does air mix door operate correctly?

YES >> GO TO 6.
NO >> Check the air mix door motor circuit. Refer to HAC-172, "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-8, "Inspection".

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-9, "Refilling".
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-45, "HEATER CORE : Removal and Installation".

COMPRESSOR DOES NOT OPERATE

Description

INFOID:0000000012424912

Symptom: Compressor does not operate.

Diagnosis Procedure

INFOID:0000000012424913

NOTE:
- Perform self-diagnosis 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-180, "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-486, "Component Function Check".

Is the inspection result normal?

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

3.CHECK FRONT AIR CONTROL OUTPUT SIGNAL

With CONSULT
Check “COMP REQ SIG” and “” in “Data Monitor” mode 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 front air control. Refer to HAC-190, "Removal and Installation".

4.CHECK ECM INPUT SIGNAL

With CONSULT
Check “AIR COND SIG” and “HEATER FAN SW” in “Data Monitor” mode 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-20, "Trouble Diagnosis Flow Chart".

5.CHECK IPDM E/R INPUT SIGNAL

With CONSULT
1. Start engine.

2. Check “AC COMP REQ” in “Data Monitor” mode 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-20, "Trouble Diagnosis Flow Chart".

REMOVAL AND INSTALLATION

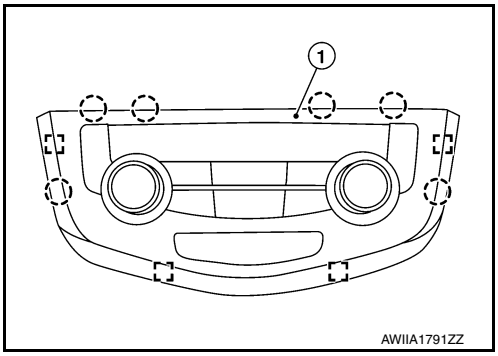
FRONT AIR CONTROL

Removal and Installation

INFOID:0000000012424914

REMOVAL

1. Release the front air control clips and pawls using a suitable tool.
   : Metal clip
   : Pawl
2. Disconnect the harness connectors from the front air control (1) and remove.
3. Remove A/C switch assembly from finisher.



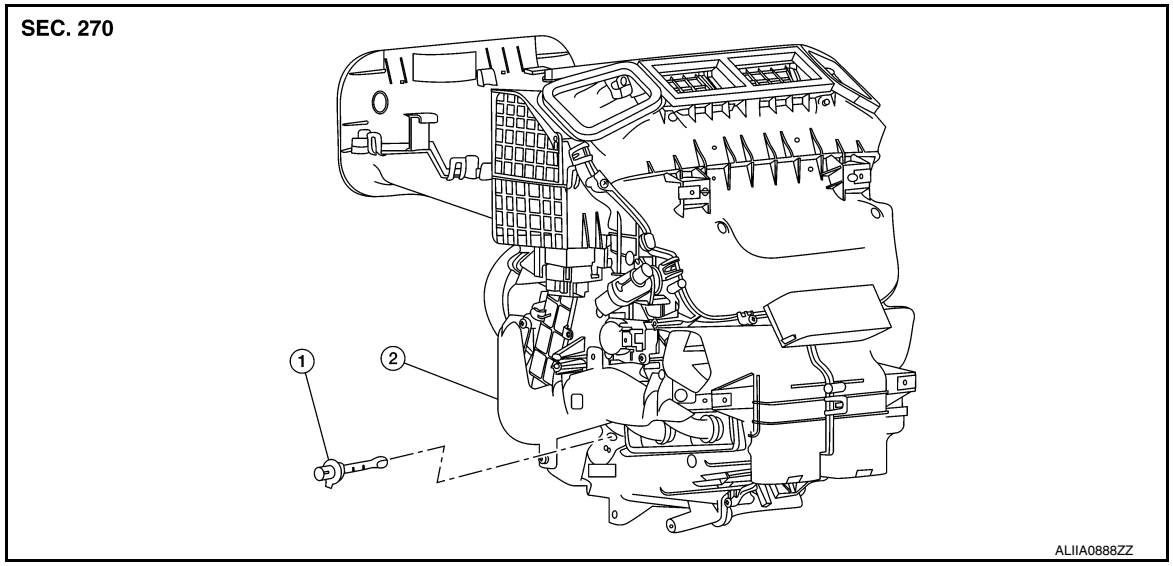
INSTALLATION

Installation is in the reverse order of removal.

INTAKE SENSOR

Exploded View

INFOID:0000000012424915



1. Intake sensor
2. Heating and cooling unit assembly

Removal and Installation

INFOID:0000000012424916

REMOVAL

1. Remove front foot duct (LH). Refer to VTL-10, "FRONT FOOT DUCT : Removal and Installation".
2. Disconnect the harness connector and remove intake sensor.

INSTALLATION

Installation is in the reverse order of removal.

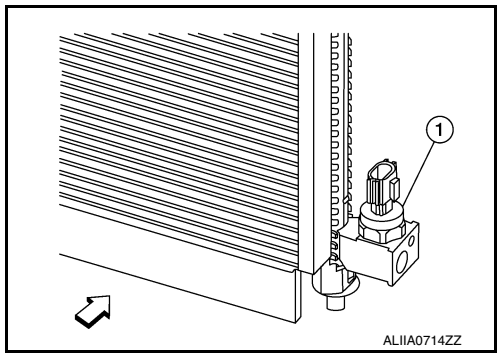
REFRIGERANT PRESSURE SENSOR

Removal and Installation

INFOID:0000000012424917

REMOVAL

1. Discharge the refrigerant. Refer to HA-23, "Recycle Refrigerant".
2. Remove front air duct. Refer to EM-26, "Removal and Installation".
3. Remove front bumper fascia. Refer to EXT-17, "Removal and Installation".
4. Remove air guide (RH). Refer to HA-39, "Exploded View".
5. Disconnect the harness connector from the refrigerant pressure sensor.
6. Remove the refrigerant pressure sensor (1) from the condenser.
   ⇦: Front
   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.

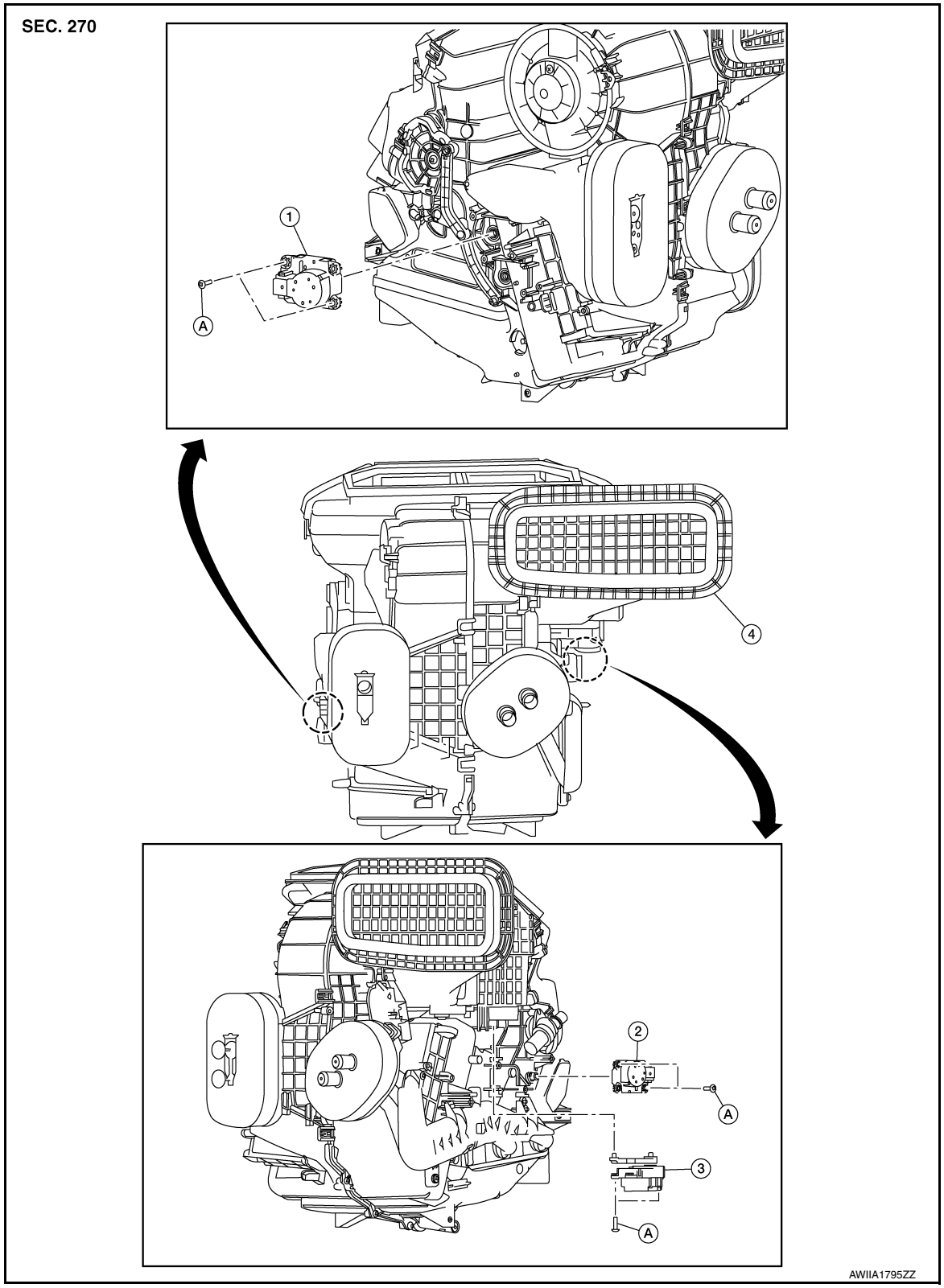
CAUTION:

- **Do not reuse O-ring.**
- **Apply A/C oil to new O-ring for installation.**
- **Charge refrigerant. Refer to HA-23, "Charge Refrigerant".**
- **After charging refrigerant, check for leaks. Refer to HA-21, "Leak Test".**

DOOR MOTOR

Exploded View

INFOID:0000000012424918



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

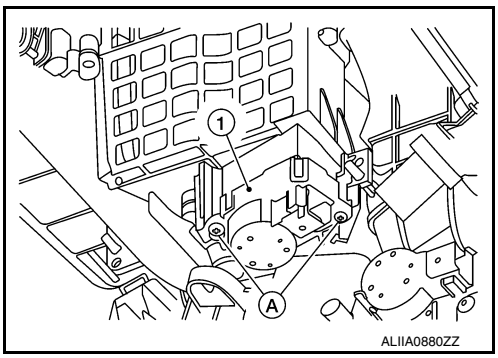
INTAKE DOOR MOTOR

INTAKE DOOR MOTOR : Removal and Installation

INFOID:0000000012424919

REMOVAL

1. Remove air mix door motor (LH). Refer to HAC-194, "AIR MIX DOOR MOTOR : Removal and Installation".
2. Disconnect the harness connector from the intake door motor.
3. Remove screws (A) and intake door motor (1).



INSTALLATION

Installation is in the reverse order of removal.

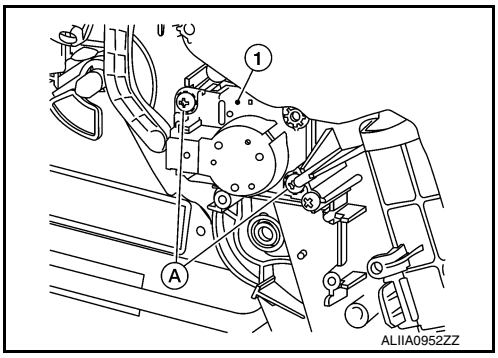
MODE DOOR MOTOR

MODE DOOR MOTOR : Removal and Installation

INFOID:0000000012424920

REMOVAL

1. Remove front foot duct (RH). Refer to VTL-10, "FRONT FOOT DUCT : Removal and Installation".
2. Disconnect the harness connector from the mode door motor.
3. Remove screws (A) and mode door motor (1).



INSTALLATION

Installation is in the reverse order of removal.

AIR MIX DOOR MOTOR

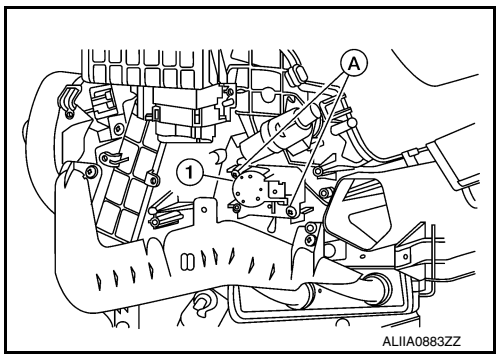
AIR MIX DOOR MOTOR : Removal and Installation

INFOID:0000000012424921

REMOVAL

1. Remove front foot duct (LH). Refer to VTL-10, "FRONT FOOT DUCT : Removal and Installation".
2. Disconnect the harness connector from the air mix door motor.

3. Remove screws (A) and air mix door motor (1).



INSTALLATION

Installation is in the reverse order of removal.

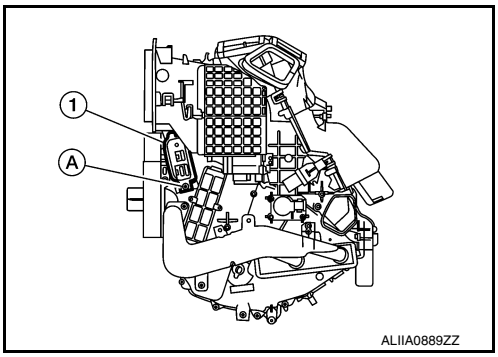
VARIABLE BLOWER CONTROL

Removal and Installation

INFOID:0000000012424922

REMOVAL

1. Remove center console side finisher (LH). Refer to IP-19, "Exploded View".
2. Disconnect the harness connector from the variable blower control.
3. Remove screw (A) and variable blower control (1).



INSTALLATION

Installation is in the reverse order of removal.