SECTION HAC

HEATER & AIR CONDITIONING CONTROL SYSTEM

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BASIC INSPECTION

INSPECTION AND ADJUSTMENT

Operational Check (Front)

INFOID:0000000004199382

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 dial (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-63, "A/C AUTO AMP. : Diagnosis Procedure".

2. CHECK BLOWER MOTOR SPEED

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

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check blower motor system. Refer to HAC-53, "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-12, "System Description".

NOTE:
Confirm that the 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-50, "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 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-52, "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 compressor clutch engages (sound or visual inspection).

Is the inspection result normal?

YES >> GO TO 6.
NO >> Check magnet clutch system. Refer to HAC-61, "Diagnosis Procedure".

6.CHECK TEMPERATURE DECREASE

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

Is the inspection result normal?

YES >> GO TO 7.
NO >> Check for insufficient cooling. Refer to HAC-98, "Component Function Check".

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-104, "Component Function Check".

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 HA-16, "WITH COLOR DISPLAY : Symptom Matrix Chart" 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 HA-16, "WITH COLOR DISPLAY : Symptom Matrix Chart" and perform the appropriate diagnosis.

Operational Check (Rear)

INFOID:0000000004215465

The purpose of the operational check is to confirm that the system operates properly.

Conditions : Engine running and at normal operating temperature

CHECKING REAR SWITCH

1. Turn the ignition switch ON.
2. Press the rear cancel switch to ON position.
3. Press the AUTO switch on the A/C and AV switch assembly.
4. Press the fan switch (🌀) until all speeds are checked.
5. Leave blower on maximum speed.

If NG, go to trouble diagnosis procedure for HAC-57, "Diagnosis Procedure".

If OK, continue with next check.

CHECKING AUTO SWITCH (on rear control)

1. Press the AUTO switch on the rear control switch.
2. The fan speed should change and AUTO should be displayed on both displays.

If NG, go to HAC-57, "Diagnosis Procedure".
If OK, continue with next check.

CHECKING TEMPERATURE DECREASE (on rear control)

1. Press the temperature decrease button several times to 18°C (60°F) on rear control switch.
2. The front passenger temperature display and rear control switch display should read 18°C (60°F).
3. Check for cold air at appropriate discharge air outlets.

If NG, go to trouble diagnosis procedure for rear control switch. Refer to HAC-57, "Diagnosis Procedure".
If OK, continue with next check.

CHECKING TEMPERATURE INCREASE (on rear control)

1. Press the temperature increase button several times to 32°C (90°F) on rear control switch.
2. The front passenger temperature display and rear control switch display should read 32°C (90°F).
3. Check for warm air at appropriate discharge air outlets.

If NG, go to trouble diagnosis procedure for rear control switch. Refer to HAC-57, "Diagnosis Procedure".
If all operational checks are OK (symptom cannot be duplicated), go to HA-3, "WITH COLOR DISPLAY : How to Perform Trouble Diagnosis For Quick And Accurate Repair" and perform tests as outlined. If symptom appears, check for HVAC and MULTI AV DTC by using CONSULT-III and perform "SELF-DIAGNOSIS RESULTS" of HVAC and MULTI AV. If no DTCs are set, refer to HA-16, "WITH COLOR DISPLAY : Symptom Matrix Chart" and perform applicable trouble diagnosis procedures.

Temperature Setting Trimmer

INFOID:0000000004199383

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-III, perform “TEMP SET CORRECT” in “WORK SUPPORT” of HVAC.

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

NOTE:

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

Foot Position Setting Trimmer

INFOID:0000000004199384

Description

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

How to set

Using CONSULT-III, perform “BLOW SET” in “WORK SUPPORT” of HVAC.

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

NOTE:

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

Inlet Port Memory Function (FRE)

INFOID:0000000004199385

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-III, perform “FRE MEMORY SET” in “WORK SUPPORT” of HVAC.

Work support items	Display	Setting
FRE MEMORY SET	WITHOUT (initial status)	Perform the memory of manual FRE
	WITH	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:0000000004199386

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-III, perform “REC MEMORY SET” in “WORK SUPPORT” of HVAC.

Work support items	Display	Setting
REC MEMORY SET	WITHOUT	Perform the memory of manual REC
	WITH (initial status)	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.

FUNCTION DIAGNOSIS

COMPRESSOR CONTROL FUNCTION

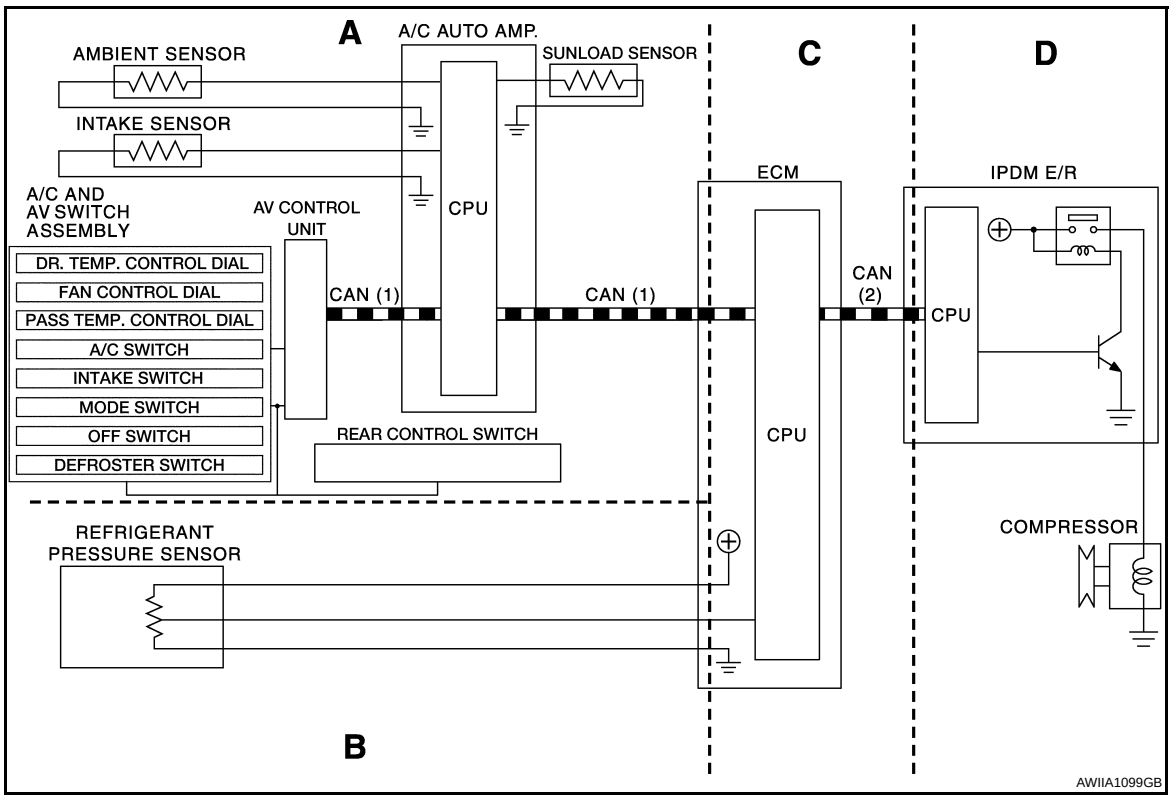
Description

INFOID:0000000004199387

PRINCIPLE OF OPERATION

Compressor is not activated.

Functional circuit diagram



CAN (1) : A/C switch signal
: Blower fan motor switch signal

CAN (2) : A/C compressor request signal

Functional initial inspection chart

Location		A	B	C	D
CONSULT-III	ECM DATA MONITOR		Yes	Yes	
	IPDM E/R DATA MONITOR			Yes	
	HVAC DATA MONITOR	Yes			
	Self-diagnosis function	Yes			
	ACTIVE TEST	Yes			Yes
AUTO ACTIVE TEST					Yes

Fail-Safe

INFOID:0000000004199388

FAIL-SAFE FUNCTION

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

Compressor	**: ON**
Air outlet	**: AUTO**
Air inlet	**: FRE ( )**
Blower fan speed	**: AUTO**
Set temperature	**: Setting before communication error occurs**
Display	**: OFF**

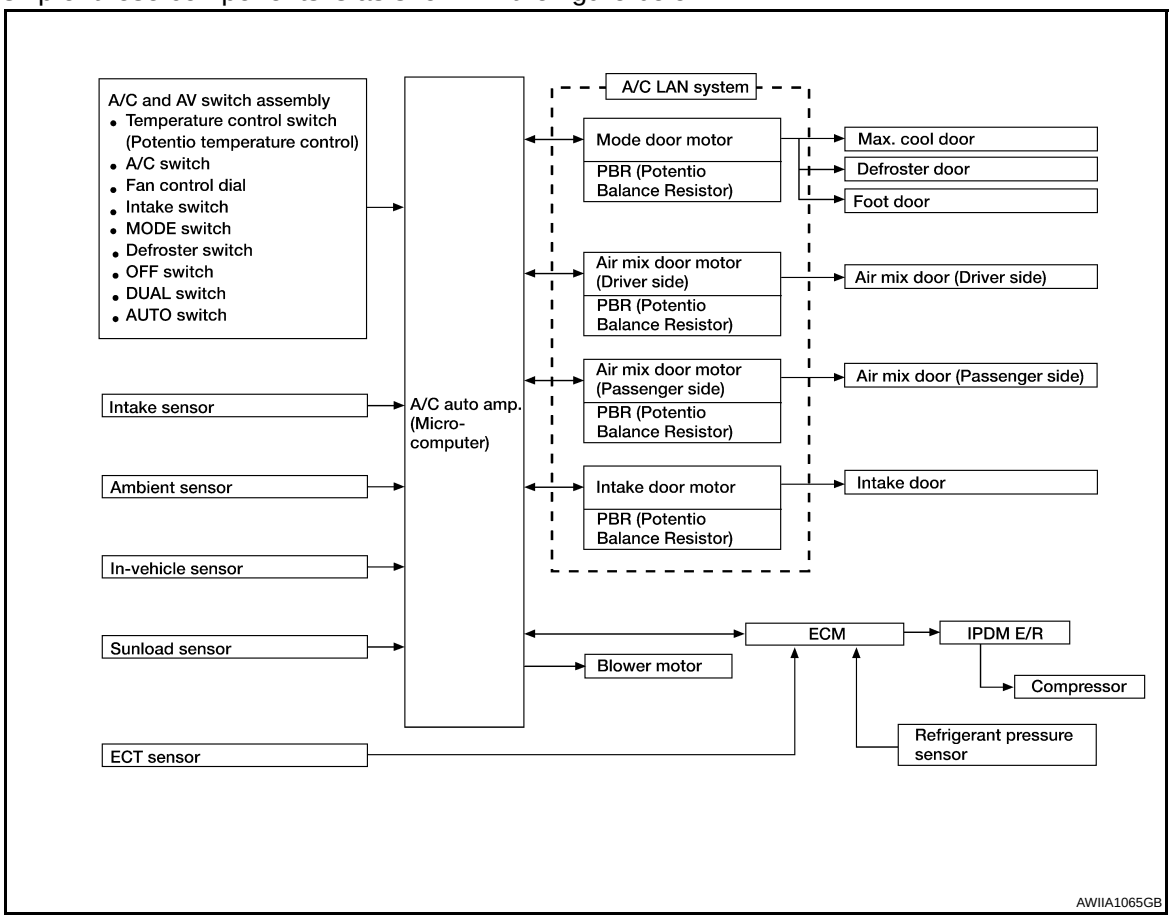
AUTOMATIC AIR CONDITIONER SYSTEM

System Diagram

INFOID:0000000004199389

CONTROL SYSTEM

The control system consists of input sensors, switches, the A/C auto amp. (microcomputer) and outputs. The relationship of these components is as shown in the figure below:



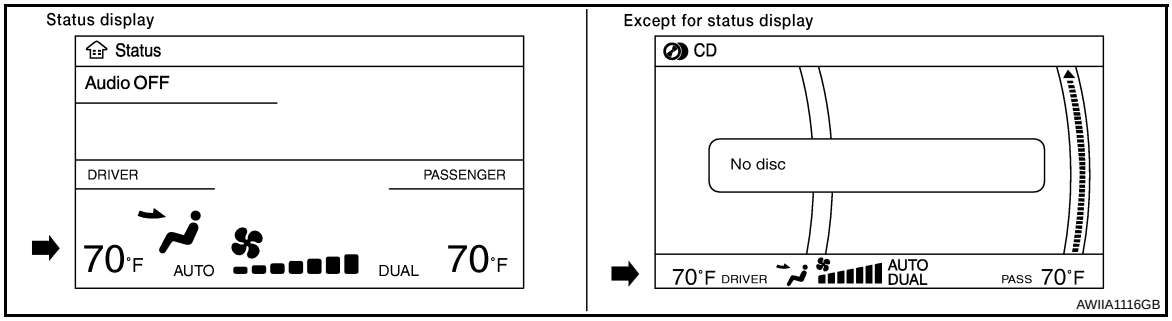
System Description

INFOID:0000000004199390

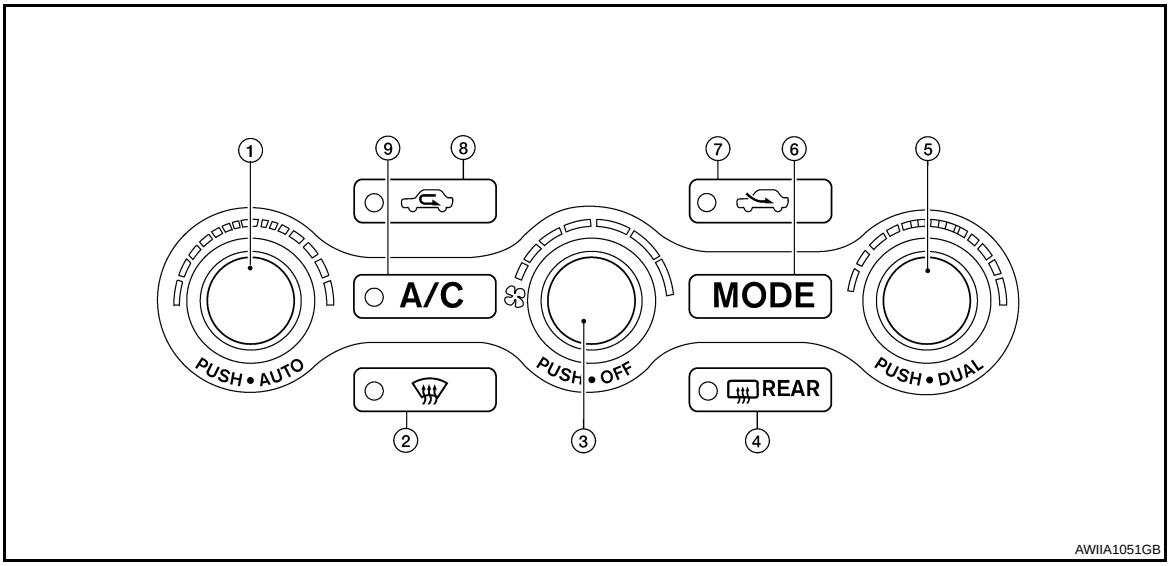
CONTROL OPERATION

Display

The operation status of the HVAC system is displayed on the screen.



A/C and AV Switch Assembly



1. Temperature control dial (driver side)/AUTO switch
2. Defroster switch
3. OFF switch/fan control dial
4. Rear window defogger switch
5. Temperature control dial (passenger)/DUAL mode switch
6. Mode switch
7. Fresh air switch
8. Recirculation switch
9. A/C ON/OFF switch

MODE SWITCH
The air discharge outlets are controlled with this switch.

TEMPERATURE CONTROL DIAL (Driver Side)
The set temperature is increased or decreased with this dial.

TEMPERATURE CONTROL DIAL (Passenger Side)
- The set temperature is increased or decreased with this dial.
- When the temperature control dial is turned, DUAL switch indicator is turned ON.

AUTO SWITCH
- The compressor, intake doors, air mix doors, mode doors and blower speed are automatically controlled so that the in-vehicle temperature will reach, and be maintained at the set temperature selected by the operator.
- When pressing the AUTO switch, air inlet, air outlet, fan speed, and discharge air temperature are automatically controlled.

DEFROSTER ( ) SWITCH
Mode doors are set to the defrost position with this switch. Also, intake doors are set to the outside air position, and compressor turns ON.

A/C SWITCH
Compressor turns ON or OFF with this switch.
(Pressing the A/C switch when the A/C switch is ON turns OFF the A/C switch and compressor.)

FAN CONTROL DIAL
The fan speed is manually controlled with this dial. Seven speeds are available for manual control (as shown on the display screen).

OFF SWITCH
Compressor and blower turn OFF, intake doors and the mode doors are automatically controlled.

REAR WINDOW DEFOGGER SWITCH
When indicator is ON, rear window is defogged.

RECIRCULATION ( ) SWITCH
- When the REC switch is ON, the REC switch indicator is turned ON, and air inlet is set to REC.

FRESH AIR ( ) SWITCH
- When the FRE switch is ON, the FRE switch indicator is turned ON, and air inlet is set to FRE.

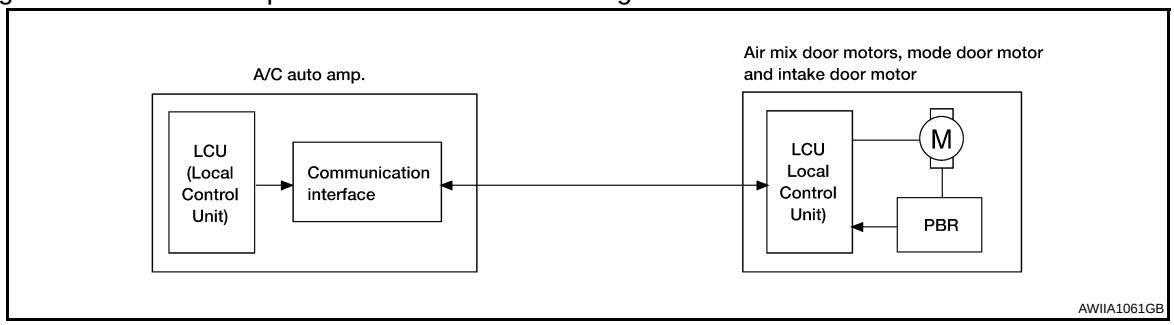
DUAL MODE SWITCH

- When the DUAL switch indicator is ON, the driver side and passenger side, temperature can each be set independently.
- When the DUAL switch indicator is OFF, the driver side outlet and setting temperature are applied to both sides.

Air Conditioner LAN Control System

INFOID:0000000004221461

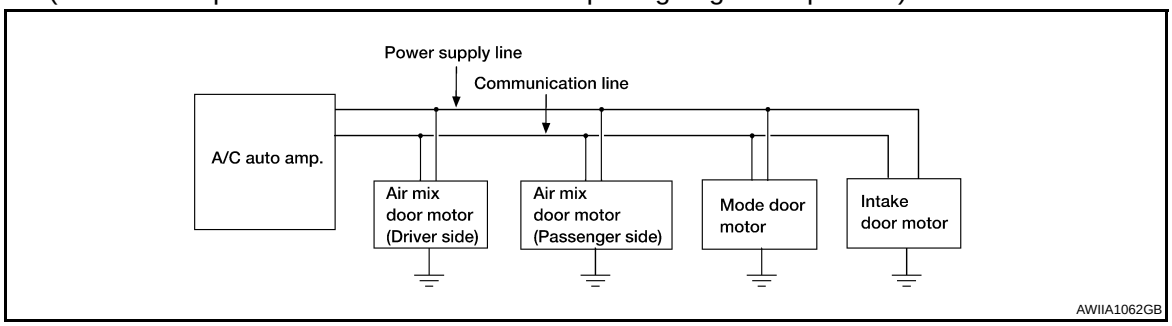
The LAN (Local Area Network) system consists of the A/C auto amp., the mode door motor, the air mix door motors and the intake door motor.
A configuration of these components is as shown in the figure below.



SYSTEM CONSTRUCTION

A small network exists between the A/C auto amp., the mode door motor, the air mix door motors and the intake door motor. The A/C auto amp. and motors are connected by data transmission lines and motor power supply lines. The LAN network is built through the ground circuits of each door motor.
Addresses, motor opening angle signals, motor stop signals and error checking messages are all transmitted through the data transmission lines connecting the A/C auto amp. and each door motor.
The following functions are contained in LCUs built into the mode door motor, the air mix door motors and the intake door motor.

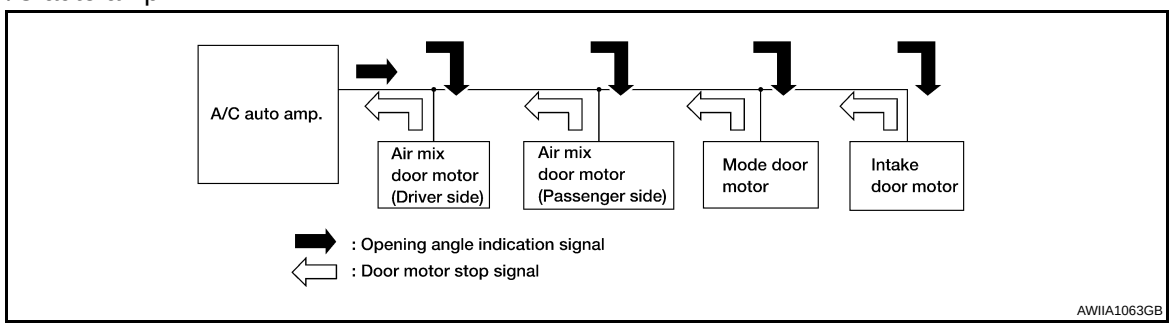
- Address
- Motor opening angle signals
- Data transmission
- Motor stop and drive decision
- Opening angle sensor (PBR function)
- Comparison
- Decision (A/C auto amp. indicated value and motor opening angle comparison)



Operation

The A/C auto amp. receives data from each of the sensors. The A/C auto amp. sends mode door, the air mix door and the intake door opening angle data to the mode door motor LCU, the air mix door motor LCUs and the intake door motor LCU.
The mode door motor, the air mix door motors and the intake door motor read their respective signals according to the address signal. Opening angle indication signals received from the A/C auto amp. and each of the motor position sensors is compared by the LCUs in each door motor with the existing decision and opening

angles. Next, HOT/COLD, DEF/VENT or FRE/REC operation is selected. The new selection data is returned to the A/C auto amp.



Transmission Data and Transmission Order

A/C auto amp. data is transmitted consecutively to each of the door motors following the form as shown in the figure below.

START:
- Initial compulsory signal is sent to each of the door motors.

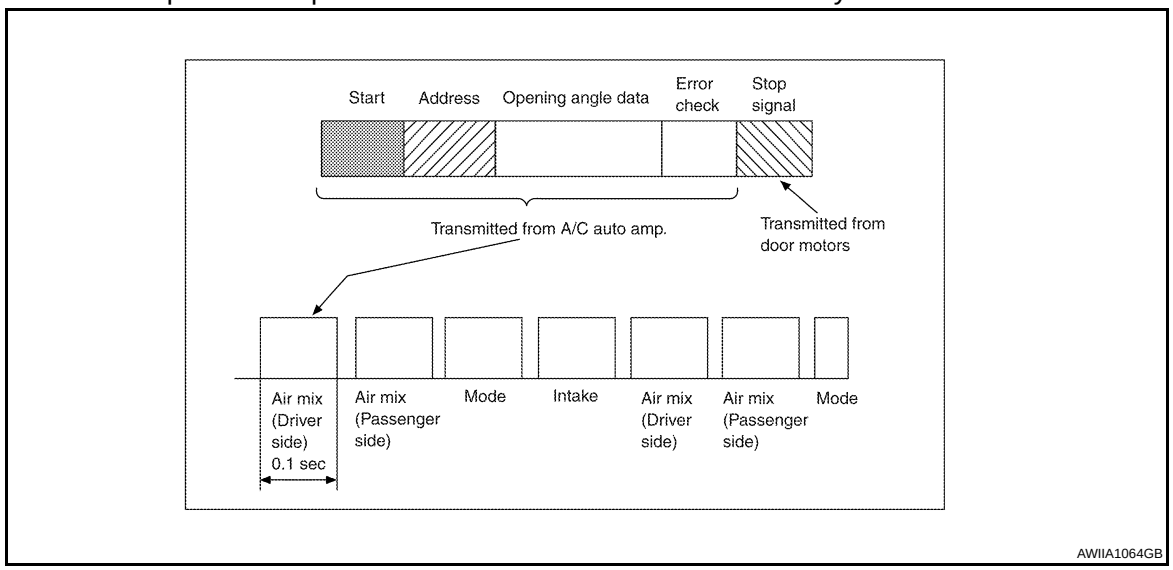
ADDRESS:
- Data sent from the A/C auto amp. is selected according to data-based decisions made by the mode door motor, the air mix door motors and the intake door motor.
- If the addresses are identical, the opening angle data and error check signals are received by the door motor LCUs. The LCUs then make the appropriate error decision. If the opening angle data has no error, door control begins.
- If an error exists, the received data is rejected and the corrected data received. Finally, door control is based upon the corrected opening angle data.

OPENING ANGLE:
- Data that shows the indicated door opening angle of each door motor.

ERROR CHECK:
- In this procedure, transmitted and received data is checked for errors. Error data is then compiled. The error check prevents corrupted data from being used by the mode door motor, the air mix door motors and the intake door motor. Error data can be related to the following symptoms:

- Malfunction of electrical frequency
- Poor electrical connections
- Signal leakage from transmission lines
- Signal level fluctuation

STOP SIGNAL:
- At the end of each transmission, a stop operation, in-operation, or internal malfunction message is delivered to the A/C auto amp. This completes one data transmission and control cycle.



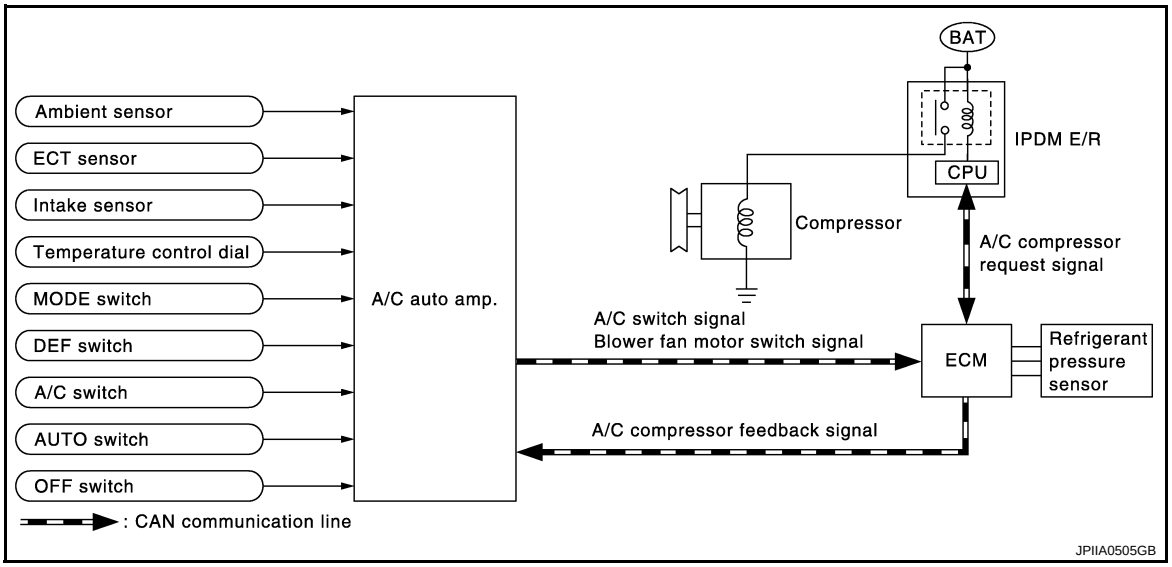
AIR MIX DOOR CONTROL (AUTOMATIC TEMPERATURE CONTROL)
- The air mix doors are automatically controlled so that in-vehicle temperature is maintained at a predetermined value by the temperature setting, ambient temperature, in-vehicle temperature and amount of sunload.

FAN SPEED CONTROL
- Fan speed is automatically controlled by the temperature setting, ambient temperature, in-vehicle temperature, intake temperature, amount of sunload and air mix door position.
  With pressing AUTO switch, the blower motor starts to gradually increase airflow volume.
  When engine coolant temperature is low, the blower motor operation is delayed to prevent cool air from flowing.

INTAKE DOOR CONTROL
- The intake doors are automatically controlled by the temperature setting, ambient temperature, in-vehicle temperature, intake temperature, amount of sunload and ON/OFF operation of the compressor.

MODE DOOR CONTROL
- The mode door is automatically controlled by the temperature setting, ambient temperature, in-vehicle temperature, intake temperature and amount of sunload.

MAGNET CLUTCH CONTROL

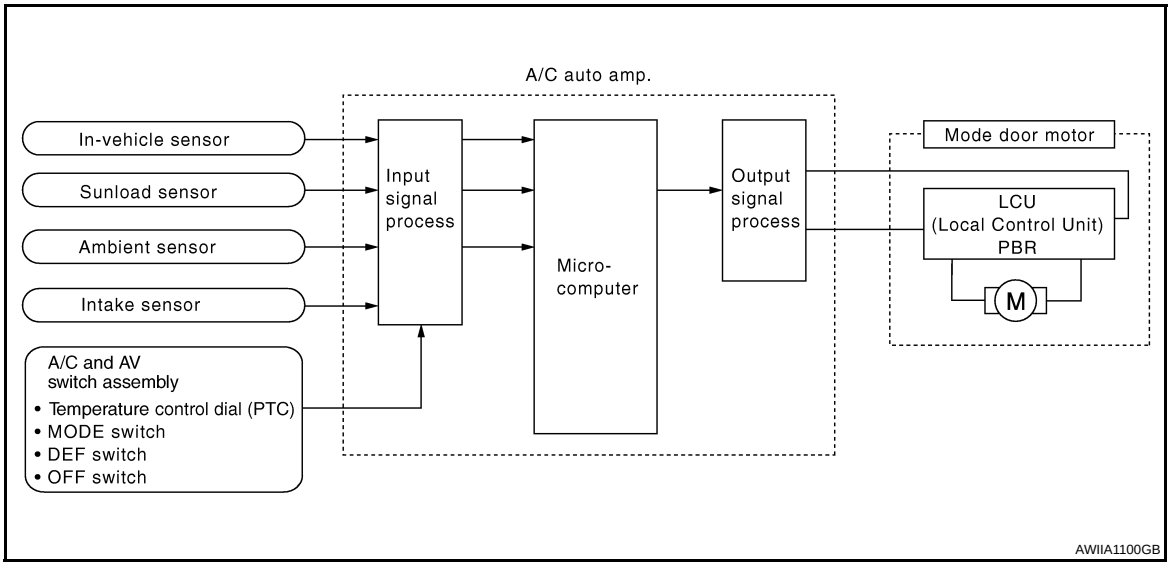


When A/C switch, AUTO switch or DEF ( ) switch is pressed, A/C auto amp. transmits compressor ON signal to ECM, via CAN communication.
ECM judges whether compressor can be turned ON, based on each sensor status (refrigerant pressure sensor signal, throttle angle, etc.). If it judges compressor can be turned ON, it sends compressor ON signal to IPDM E/R, via CAN communication.
Upon receipt of compressor ON signal from ECM, IPDM E/R turns air conditioner relay ON to operate compressor.
When sending compressor ON signal to IPDM E/R via CAN communication line, ECM simultaneously sends compressor feedback signal to A/C auto amp. via CAN communication line.

MODE DOOR CONTROL SYSTEM

System Diagram

INFOID:0000000004199393



System Description

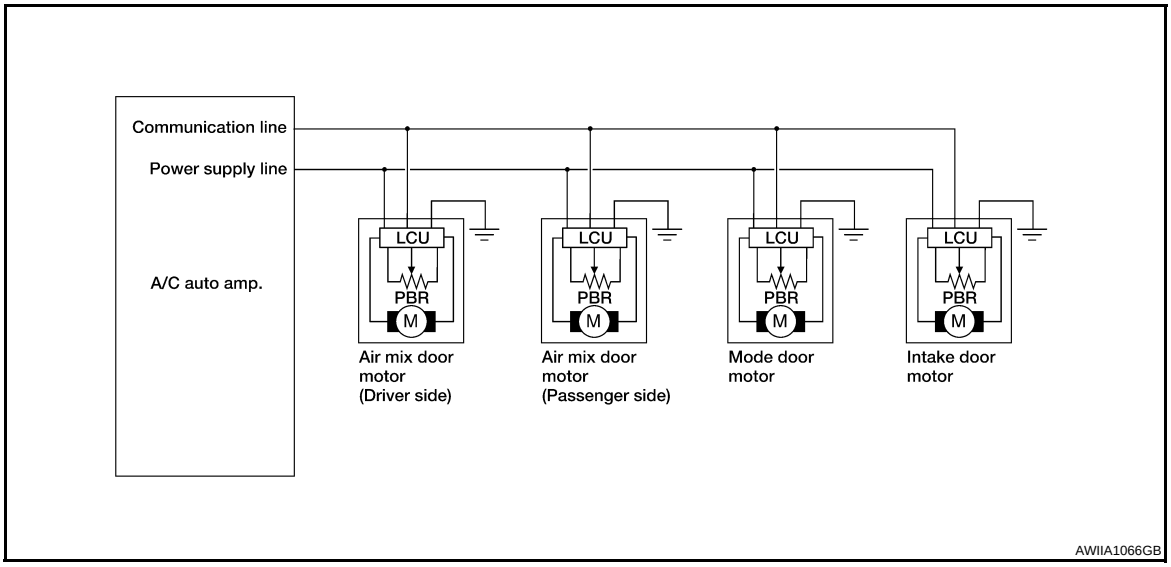
INFOID:0000000004199394

The mode door is automatically controlled by the temperature setting, ambient temperature, in-vehicle temperature, intake temperature and amount of sunload.

SYSTEM OPERATION

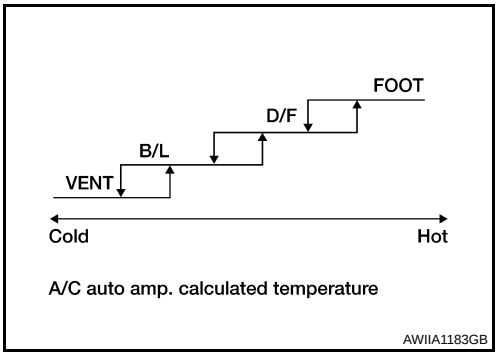
- The A/C auto amp. receives data from each of the sensors.
- The A/C auto amp. sends the air mix door, the mode door and the intake door opening angle data to the air mix door motor LCU(s), the mode door motor LCU and the intake door motor LCU.
- The air mix door motor(s), the mode door motor and the intake door motor read their respective signals according to the address signal. Opening angle indication signals received from the A/C auto amp. and each of the motor position sensors, are compared by the LCUs in each door motor with the existing decision and opening angles.
- Next, HOT/COLD, DEF/VENT or FRE/REC operation is selected. The newly selected data is returned to the A/C auto amp.

Door Motor Circuit



Mode Door Control Specification

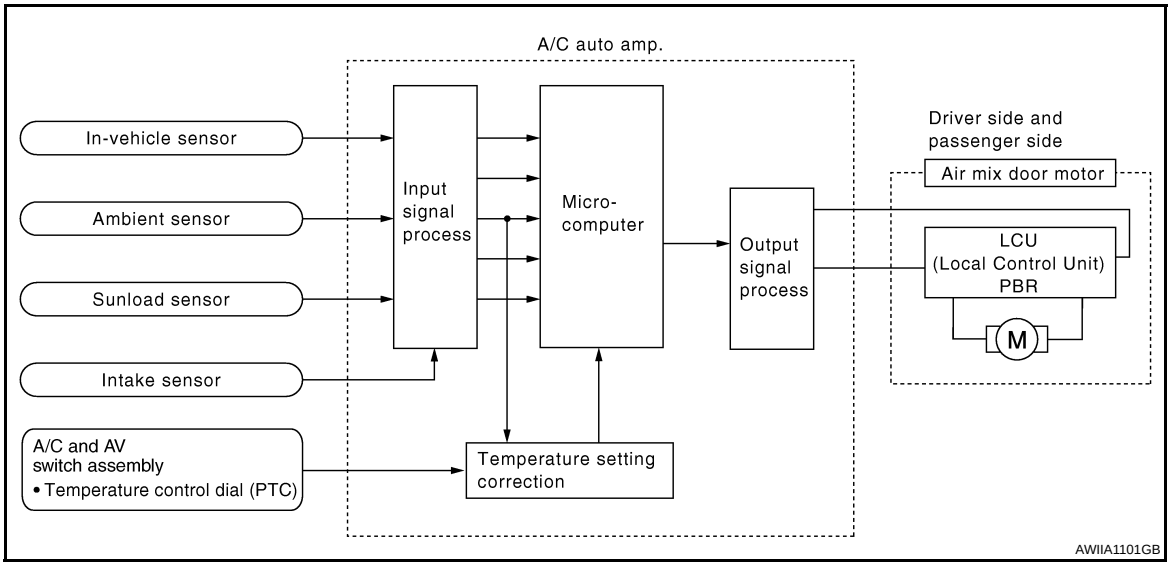
Mode position can be selected manually by pressing the MODE switch or the DEF switch on the A/C and AV switch assembly. Pressing the AUTO switch allows automatic control by the A/C auto amp. During the automatic control of a mode position, a mode door position (VENT, B/L, FOOT, or D/F) is selected based on a target air mix door opening angle and sunload sensor, calculated by the A/C auto amp. In addition, the D/F is selected to prevent windshield fogging only when ambient temperature is extremely low.



AIR MIX DOOR CONTROL SYSTEM

System Diagram

INFOID:0000000004199395



System Description

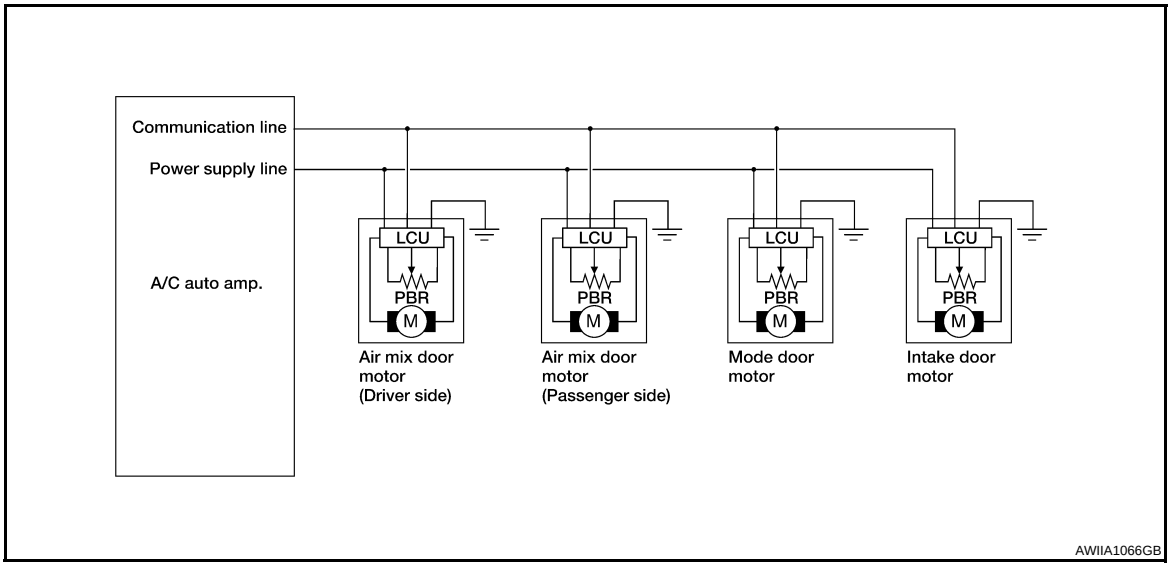
INFOID:0000000004199396

The air mix doors are automatically controlled so that in-vehicle temperature is maintained at a predetermined value by the temperature setting, ambient temperature, intake temperature and amount of sunload.

SYSTEM OPERATION

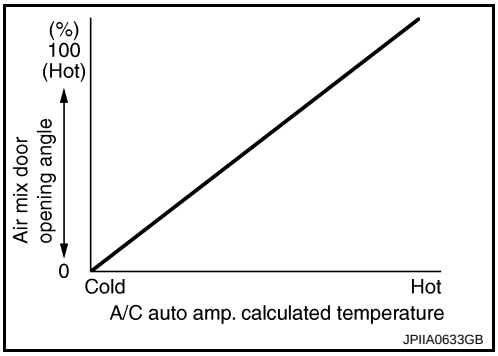
- The A/C auto amp. receives data from each of the sensors.
- The A/C auto amp. sends air mix door, the mode door and the intake door opening angle data to the air mix door motor LCU(s), the mode door motor LCU and the intake door motor LCU.
- The air mix door motor(s), the mode door motor and the intake door motor read their respective signals according to the address signal. Opening angle indication signals received from the A/C auto amp. and each of the motor position sensors are compared by the LCUs in each door motor with the existing decision and opening angles.
- Next, HOT/COLD, DEF/VENT or FRE/REC operation is selected. The newly selected data is returned to the A/C auto amp.

Door Motor Circuit



Air Mix Door Control Specification

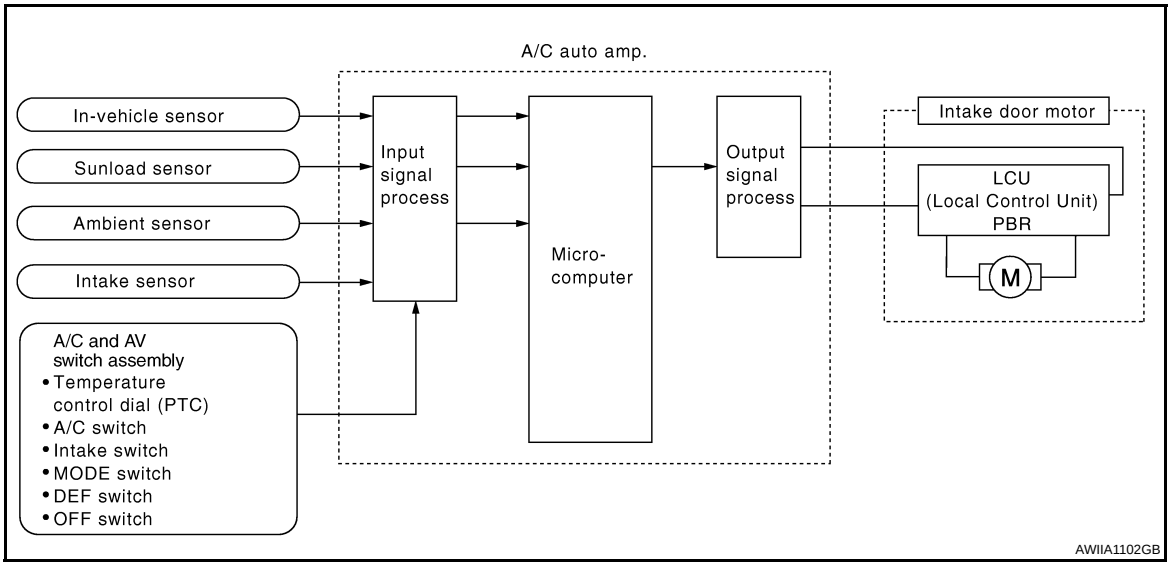
When ignition switch is ON, the A/C auto amp. continuously and automatically controls temperatures, regardless of air conditioner operational condition. When setting a target temperature with the temperature control switch, the A/C auto amp. corrects the set temperature and decides a target air mix door opening angle. The A/C auto amp. controls the air mix door according, to the target air mix door opening angle and the current air mix door opening angle, keeping an optimum air mix door opening angle. When the temperature is set at 18°C (60°F), air mix door is set on full-cold, and when the temperature is set at 32°C (90°F), it is set to full-hot.



INTAKE DOOR CONTROL SYSTEM

System Diagram

INFOID:0000000004199397



System Description

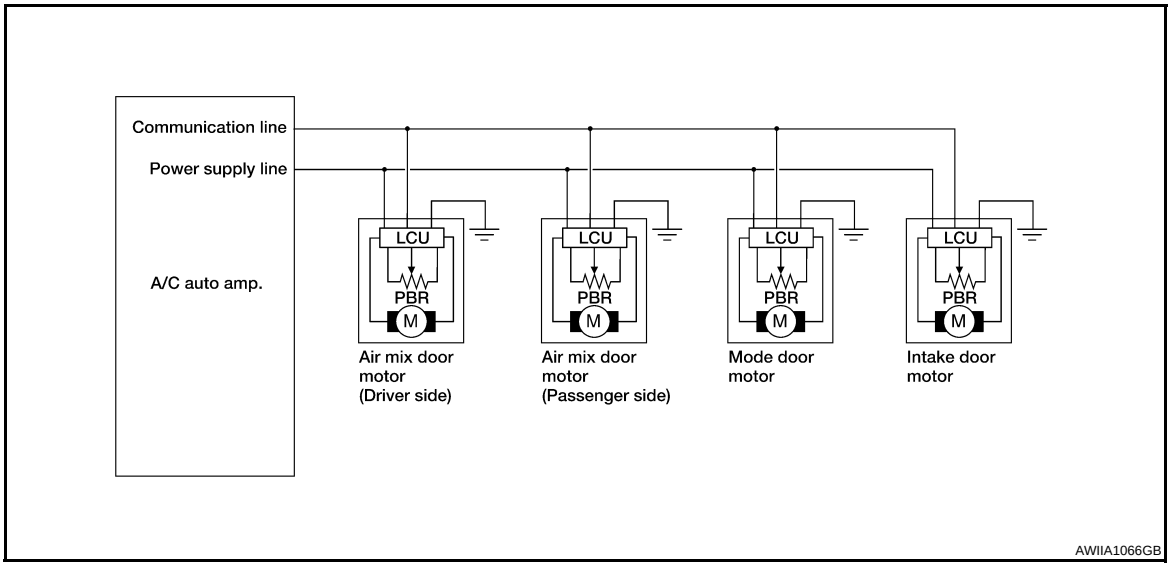
INFOID:0000000004199398

The intake doors are automatically controlled by the temperature setting, ambient temperature, in-vehicle temperature, intake temperature, amount of sunload and ON/OFF operation of the compressor.

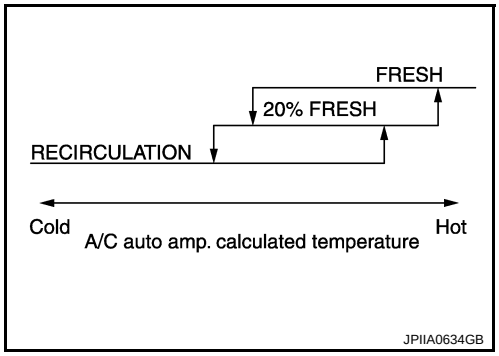
SYSTEM OPERATION

The intake door control judges intake door position based on the ambient temperature, the intake air temperature and the in-vehicle temperature. When in shifting mode position D/F, if the DEF or OFF switches are pressed, or when the A/C switch is OFF, the A/C auto amp. sets the intake door to the FRE position.

Door Motor Circuit



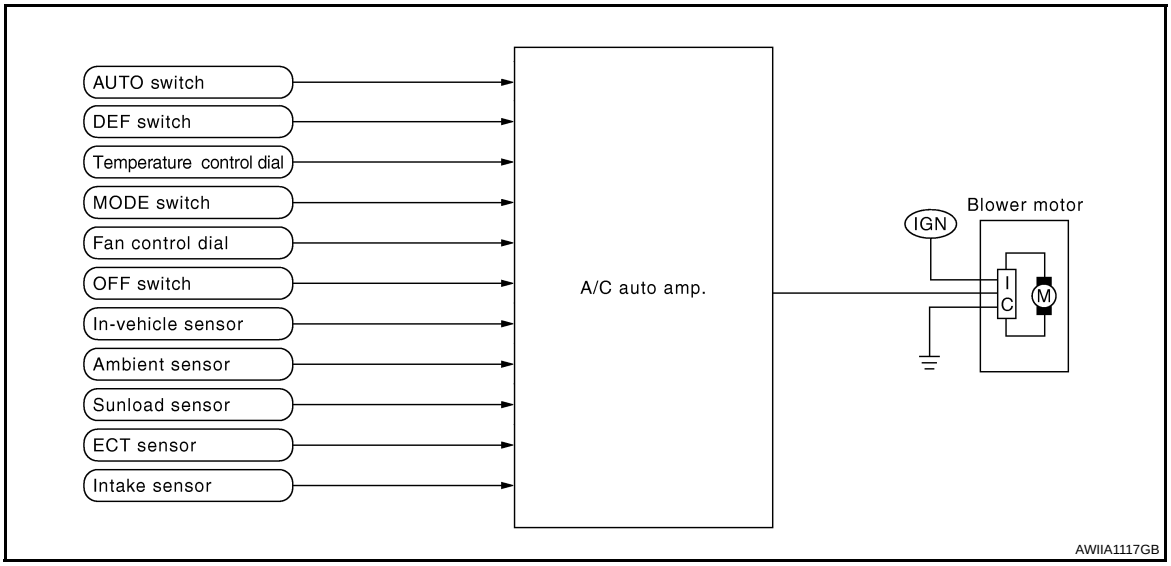
Intake Door Control Specification



BLOWER MOTOR CONTROL SYSTEM

System Diagram

INFOID:0000000004199399



System Description

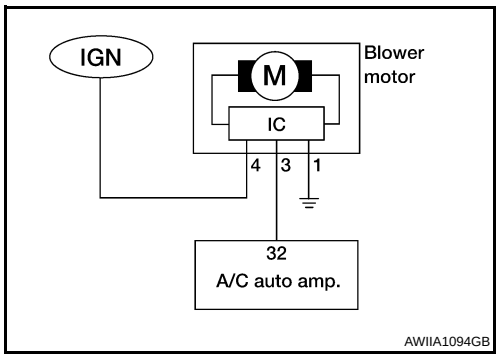
INFOID:0000000004199400

Fan speed is automatically controlled by the temperature setting, ambient temperature, in-vehicle temperature, intake temperature, amount of sunload and air mix door position.
By pressing the AUTO switch, the blower motor starts to gradually increase airflow volume.
When engine coolant temperature is low, the blower motor operation is delayed to prevent cool air from flowing.

SYSTEM OPERATION

System Operation

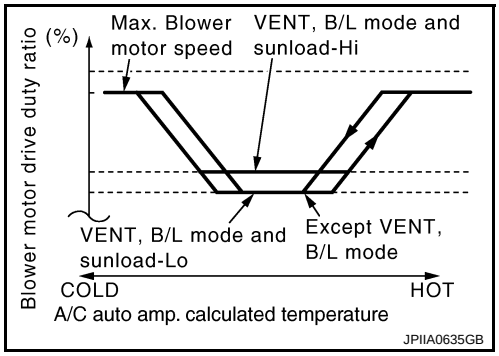
- For airflow, the manual selection (1-7) with the fan control dial has priority.
- If the AUTO switch is pressed or if the DEF switch is pressed while in the OFF condition, it changes to the automatic control by A/C auto amp.
- When increasing the airflow, it changes the duty ratio of the blower motor drive signal to prevent the airflow from suddenly increasing.
- There are the following types of airflow control: starting airflow control, starting airflow control at low coolant temperature, starting airflow control at high in-vehicle temperature, and airflow control at actuator operation in addition to manual control, normal automatic airflow control.



Normal Automatic Airflow Control

- When the target temperature is set by the temperature control dial of A/C and AV switch assembly, the A/C auto amp. performs the calculation and decides the target according to the signal from each sensor.
- The A/C auto amp. changes the duty ratio of blower motor drive signal and controls the airflow, continuously, so that the airflow becomes the target airflow.
- The minimum airflow will change according to the sunload when the air discharge outlet is VENT or B/L.

Fan Speed Control Specification



Starting Airflow Control

- When starting the automatic control of airflow, the system gradually increases the duty ratio of the blower motor drive signal to prevent too much air from blowing.
- The time period from when the airflow changes from LO to HI is approximately 8 seconds.
- It becomes the starting airflow control at low coolant temperature according to the calculation result of the A/C auto amp. and engine coolant temperature [approximately 56°C (133°F) or less] during the automatic airflow control.
- Do not perform the starting airflow control when the air discharge outlet is set to DEF.

Starting Fan Speed Control

Start-up from COLD SOAK Condition (Automatic mode)

In cold start-up condition where the engine coolant temperature is below 56°C (133°F), the blower does not operate for a short period of time (up to 150 seconds). The exact start delay time varies depending on the ambient temperature and engine coolant temperature.

In the most extreme case (very low ambient temperature) the blower start delay is 150 seconds, as described above. After this delay, the blower will operate at low speed until the engine coolant temperature rises above 56°C (133°F), and then the fan speed increases to the objective speed.

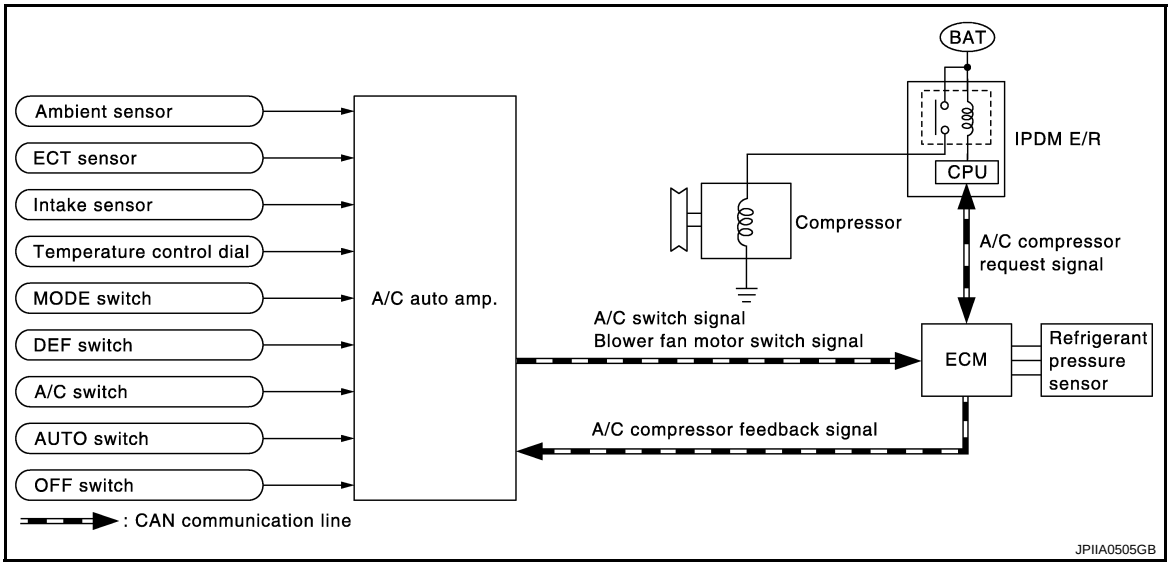
Start-up from usual or HOT SOAK Condition (Automatic mode)

The blower will begin operation momentarily after the AUTO switch is pressed. The fan speed rises gradually to the objective speed over a time period of 3 seconds or less (actual time depends on the objective fan speed).

MAGNET CLUTCH CONTROL SYSTEM

System Diagram

INFOID:0000000004199401



System Description

INFOID:0000000004199402

The A/C auto amp. controls compressor operation by ambient temperature, intake air temperature and signal from ECM.

SYSTEM OPERATION

When the A/C switch, the AUTO switch, or the DEF switch is pressed, or when shifting mode position to D/F, the A/C auto amp. transmits the A/C switch signal and blower fan motor switch signal to the ECM, via CAN communication.

ECM judges whether compressor can be turned ON, based on each sensor status (refrigerant-pressure sensor signal, throttle angle, etc.). If the ECM judges that the compressor can be turned ON, it sends A/C compressor request signal to the IPDM E/R, via CAN communication.

Upon receipt of A/C compressor request signal from the ECM, the IPDM E/R turns the A/C relay ON to operate the compressor.

When sending A/C compressor request signal to the IPDM E/R via CAN communication line, the ECM simultaneously sends A/C compressor feedback signal to A/C auto amp. via CAN communication line.

The ECM sends A/C compressor feedback signal to A/C auto amp., then, uses input A/C compressor feedback signal to control air inlet.

Compressor Protection Control

The ECM makes the A/C relay turn OFF and stops the compressor when pressure on the high-pressure side, detected by the refrigerant pressure sensor, is over approximately 3,119 kPa (31.8 kg/cm^2, 452 psi), or below approximately 118 kPa (1.2 kg/cm^2, 17 psi).

Low Temperature Protection Control

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

CAN COMMUNICATION SYSTEM

System Description

INFOID:0000000004199403

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto each vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 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. For details, refer to LAN-24, "CAN System Specification Chart".

DIAGNOSIS SYSTEM (HVAC)

CONSULT-III Function

INFOID:0000000004199404

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

CONSULT-III application items

Diagnosis mode	Description
ECU Identification	Displays the A/C auto amp. number.
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.
Active Test	The signals used to activate each device are forcibly supplied from A/C auto amp.
Work Support	Changes the setting for each system function. • Difference between temperature setting and control temperature • FRE memory function setting • REC memory function setting • Blow setting to DEF in FOOT mode

SELF DIAGNOSTIC RESULT

Refer to HAC-96, "DTC Index".

Display Item List

DTC	Items (CONSULT-III screen terms)	Diagnostic item is detected when...	Possible cause
U1000	CAN COMM CIRCUIT	When A/C auto amp. is not transmitting or receiving CAN communication signal for 2 or more seconds.	CAN communication system
U1010	CONTROL UNIT (CAN)	When detecting error during the initial diagnosis of CAN controller of A/C auto amp.	A/C auto amp.
B257B	AMB TEMP SEN (SHORT)	Detected temperature at ambient sensor –55°C (131°F) or more	• Ambient sensor • A/C auto amp. • Harness and connector (Ambient sensor circuit is open, or there is a short in the circuit)
B257C	AMB TEMP SEN (OPEN)	Detected temperature at ambient sensor -30°C (-22°F) or less	
B2578	IN-CAR SENSOR (OUT OF RANGE [LOW])	Detected temperature at in-vehicle sensor 55°C (131°F) or more	• In-vehicle sensor • A/C auto amp. • Harness and connector (In-vehicle sensor circuit is open, or there is a short in the circuit)
B2579	IN-CAR SENSOR (OUT OF RANGE [HI])	Detected temperature at in-vehicle sensor -30°C (-22°F) or less	
B2581	EVAP TEMP SEN (SHORT)	Detected temperature at intake sensor 55°C (131°F) or more	• Intake sensor • A/C auto amp. • Harness and connector (Intake sensor circuit is open, or there is a short in the circuit)
B2582	EVAP TEMP SEN (OPEN)	Detected temperature at intake sensor -30°C (-22°F) or less	
B2630*	SUNLOAD SEN (SHORT)	Detected calorie at sunload sensor 1395 w/m^2 (1200 kcal/m^2·h) or more	• Sunload sensor • A/C auto amp. • Harness and connector (Sunload sensor circuit is open, or there is a short in the circuit)
B2631*	SUNLOAD SEN (OPEN)	Detected calorie at sunload sensor 0 w/m^2 (0 kcal/m^2·h)	
B2632	DR AIRMIX ACTR (SHORT)	Air mix door PBR (driver side) position 5% or less	• Air mix door motor (driver side) • A/C auto amp. • Harness and connector (CAN communication line is open or shorted) (Air mix door motor is open or shorted)
B2633	DR AIRMIX ACTR (OPEN)	Air mix door PBR (driver side) position 95% or more	

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

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

DATA MONITOR

Display item list

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

Monitor item [Unit]		Description
ENG COOL TEMP	[°C]	Water temperature signal value received from ECM via CAN communication
VEHICLE SPEED	[Mph (km/h)]	Vehicle speed signal value received from meter via CAN communication

ACTIVE TEST

Test item	Description
ALL SEG	**NOTE:** • Item can be displayed but cannot be tested. • When choosing to turn “ALL SEG” on, error message is displayed but it is not malfunction.
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 door position	VENT1	B/L1	B/L2	FOOT	D/F	DEF
Intake door position	REC	REC	20%FRE	FRE	FRE	FRE
Air mix door position (driver & passenger side)	FULL COLD	FULL COLD	FULL HOT	FULL HOT	FULL HOT	FULL HOT
Blower motor duty ratio	37%	91%	65%	65%	65%	91%
Compressor (Magnet clutch)	ON	ON	ON	OFF	ON	ON

NOTE:

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

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-7, "Temperature Setting Trimmer"
BLOW SET (Blow setting to DEF in FOOT mode)	In the FOOT mode, the air blowing to the DEF can change ON/OFF.	HAC-8, "Foot Position Setting Trimmer"

Work item	Description	Reference
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), “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.	HAC-8, "Inlet Port Memory Function (FRE)"
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), “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.	HAC-8, "Inlet Port Memory Function (REC)"

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.

COMPONENT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000004199405

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, 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.
CAN Communication Signal Chart. Refer to LAN-14, "How to Use CAN Communication Signal Chart".

DTC Logic

INFOID:0000000004199406

DTC DETECTION LOGIC

DTC	Items (CONSULT-III 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

Diagnosis Procedure

INFOID:0000000004199407

1. CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Turn ignition switch ON and wait for 2 or more seconds.
2. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.

Is “CAN COMM CIRCUIT” displayed?

YES >> Perform trouble diagnosis for the CAN communication system. Refer to LAN-15, "Trouble Diagnosis Flow Chart".
NO >> Perform the intermittent malfunction diagnosis. Refer to GI-39, "Intermittent Incident".

U1010 CONTROL UNIT (CAN)

Description

INFOID:0000000004199408

Initial diagnosis of A/C auto amp.

DTC Logic

INFOID:0000000004199409

DTC DETECTION LOGIC

DTC	Items (CONSULT-III screen terms)	Diagnostic item is detected when...	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.

Diagnosis Procedure

INFOID:0000000004199410

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.

Is DTC No.“U1010” displayed?

YES >> Replace A/C auto amp. Refer to HAC-123, "Removal and Installation".
NO >> Inspection End.

B257B, B257C AMBIENT SENSOR

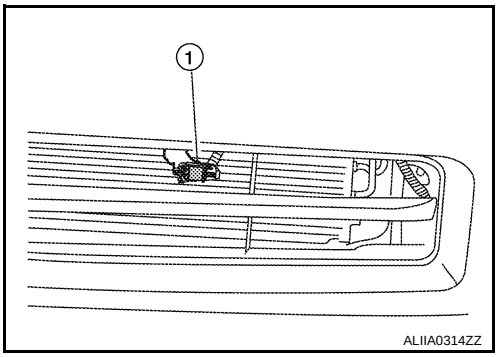
Description

INFOID:0000000004199411

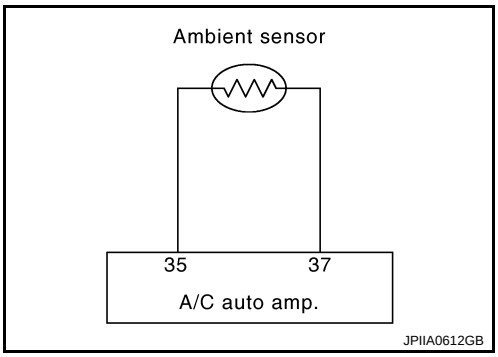
COMPONENT DESCRIPTION

Ambient Sensor

- The ambient sensor (1) is installed to the front bumper reinforcement.
- It detects ambient temperature and converts it into a resistance value which is then input into the A/C auto amp.



Ambient Sensor Circuit



AMBIENT TEMPERATURE INPUT PROCESS

The A/C auto amp. equips a processing circuit for the ambient sensor input. However, when the temperature detected by the ambient sensor increases quickly, the processing circuit retards the A/C auto amp. function. It only allows the A/C auto amp. to recognize an ambient temperature increase of 0.33°C (0.6°F) per 100 seconds.

As an example, consider stopping for a few minutes after high-speed driving. Although the actual ambient temperature has not changed, the temperature detected by the ambient sensor increases. This is because the heat from the engine compartment can radiate to the front bumper area, the location of the ambient sensor.

DTC Logic

INFOID:0000000004199412

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-31, "DTC Logic" or HAC-32, "DTC Logic".
- If there is an open circuit in the ambient sensor, A/C auto amp. registers extreme cold [-30°C (-22°F)] and adjusts the temperature control warmer.

DTC	Items (CONSULT-III screen terms)	Diagnostic item is detected when...	Possible cause
B257B	AMB TEMP SEN (SHORT)	Detected temperature at ambient sensor 55°C (131°F) or more	• Ambient sensor • A/C auto amp. • Harness and connector (Ambient sensor circuit is open, or there is a short in the circuit)
B257C	AMB TEMP SEN (OPEN)	Detected temperature at ambient sensor -30°C (-22°F) or less	

DTC CONFIRMATION PROCEDURE

1. CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.
2. Check if any DTC No. is displayed in the self-diagnosis results.

NOTE:

- If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-31, "DTC Logic" or HAC-32, "DTC Logic".
- If there is an open circuit in the ambient sensor, A/C auto amp. registers extreme cold [-30°C (-22°F)] and adjusts the temperature control warmer.

Is DTC No.“B257B” or “B257C” displayed?

YES >> Perform trouble diagnosis for the ambient sensor. Refer to HAC-34, "Diagnosis Procedure".
NO >> Inspection End.

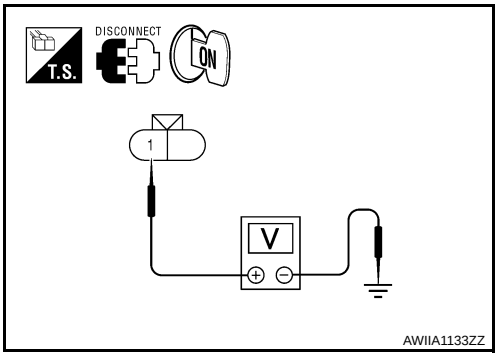
Diagnosis Procedure

INFOID:0000000004199413

1. CHECK VOLTAGE BETWEEN AMBIENT SENSOR AND GROUND

1. Disconnect ambient sensor connector.
2. Turn ignition switch ON.
3. Check voltage between ambient sensor harness connector E211 terminal 1 and ground.

1 - Ground : Approx. 5V



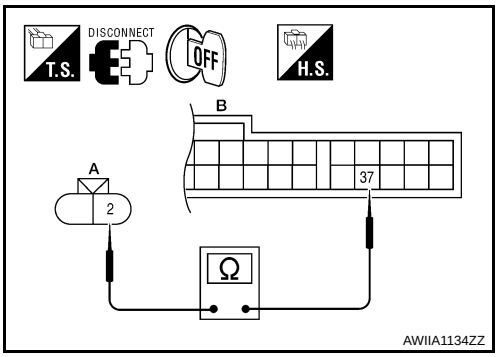
Is the inspection result normal?

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

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

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between ambient sensor harness connector E211 (A) terminal 2 and A/C auto amp. harness connector M37(B) terminal 37.

2 - 37 : Continuity should exist.



Is the inspection result normal?

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

3. CHECK AMBIENT SENSOR

Check ambient sensor. Refer to HAC-35, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-123, "Removal and Installation".
NO >> Replace ambient sensor. Refer to HAC-124, "Removal and Installation".

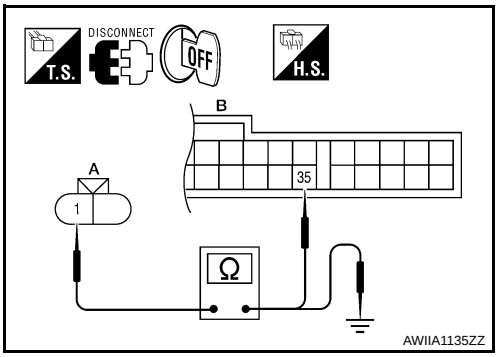
4. CHECK CONTINUITY BETWEEN AMBIENT SENSOR AND A/C AUTO AMP.

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between ambient sensor harness connector E211 (A) terminal 1 and A/C auto amp. harness connector M37 (B) terminal 35.

1 - 35 : Continuity should exist.

4. Check continuity between ambient sensor harness connector E211 (A) terminal 1 and ground.

1 - Ground : Continuity should not exist.



Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-123, "Removal and Installation".
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000004199414

1. CHECK AMBIENT SENSOR

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

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

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace ambient sensor. Refer to HAC-124, "Removal and Installation".

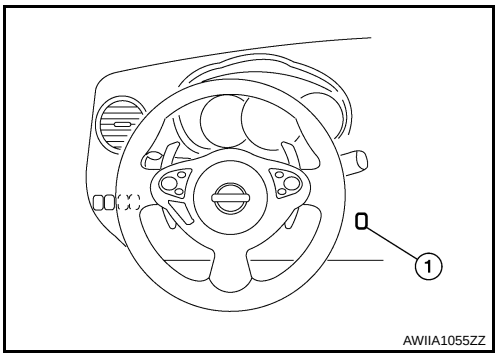
B2578, B2579 IN-VEHICLE SENSOR

Description

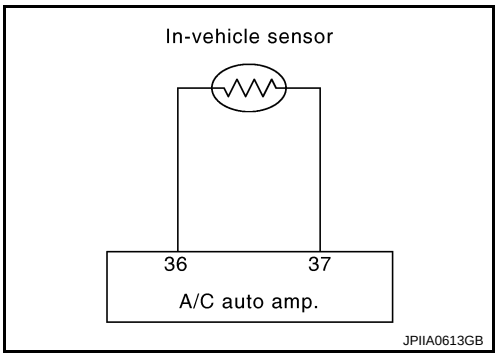
INFOID:0000000004199415

In-vehicle Sensor

- The in-vehicle sensor (1) is located on instrument lower cover (LH).
- It converts variations in compartment air temperature drawn from the aspirator into a resistance value. It is then input into the A/C auto amp.

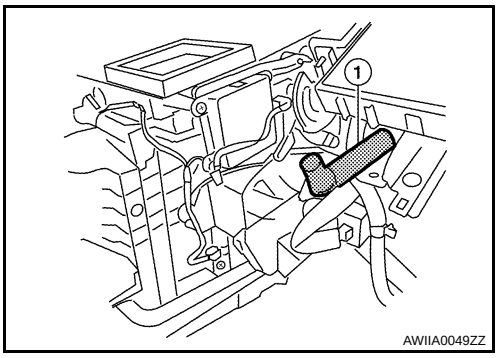


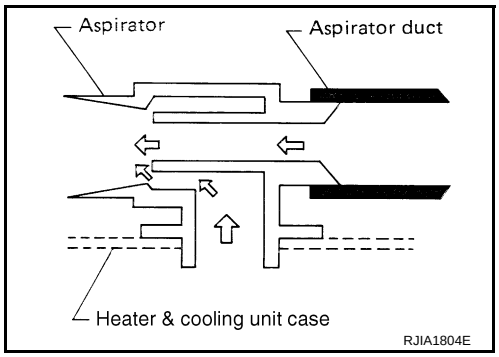
In-vehicle Sensor Circuit



Aspirator

The aspirator (1) is located on driver side of heater & cooling unit assembly. It produces vacuum pressure due to air discharged from the heater & cooling unit assembly, continuously taking compartment air in the aspirator.





DTC Logic

INFOID:0000000004199416

DTC DETECTION LOGIC

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-31, "DTC Logic" or HAC-32, "DTC Logic".

DTC	Items (CONSULT-III screen terms)	Diagnostic item is detected when...	Possible cause
B2578	IN-CAR SENSOR (OUT OF RANGE [LOW])	Detected temperature at in-vehicle sensor 55°C (131°F) or more	• In-vehicle sensor • A/C auto amp. • Harness and connector (In-vehicle sensor circuit is open, or there is a short in the circuit)
B2579	IN-CAR SENSOR (OUT OF RANGE [HI])	Detected temperature at in-vehicle sensor -30°C (-22°F) or less	

DTC CONFIRMATION PROCEDURE

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.
2. Check if any DTC No. is displayed in the self-diagnosis results.

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-31, "DTC Logic" or HAC-32, "DTC Logic".

Is DTC No.“B2578” or “B2579” displayed?

YES >> Perform trouble diagnosis for the in-vehicle sensor. Refer to HAC-37, "Diagnosis Procedure".
NO >> Inspection End.

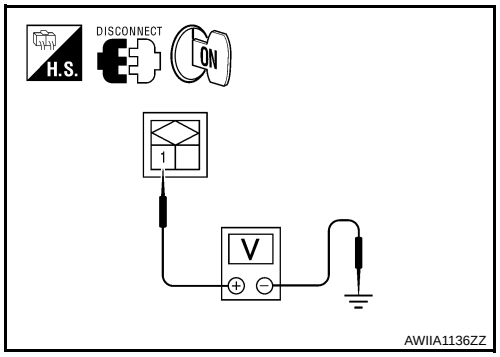
Diagnosis Procedure

INFOID:0000000004199417

1.CHECK IN-VEHICLE SENSOR POWER SUPPLY

1. Disconnect in-vehicle sensor connector.
2. Turn ignition switch ON.
3. Check voltage between in-vehicle sensor harness connector M34 terminal 1 and ground.

1 - Ground : Approx. 5V



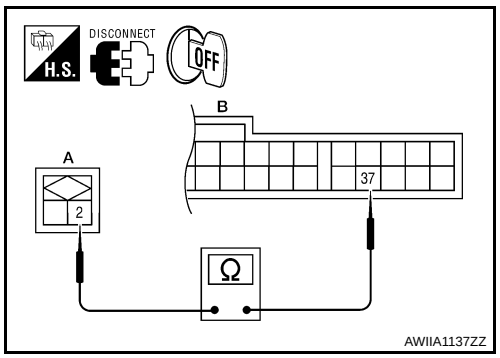
Is the inspection result normal?

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 M34 (A) terminal 2 and A/C auto amp. harness connector M37 (B) terminal 37.

2 - 37 : Continuity should exist.



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-38, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-123, "Removal and Installation".
NO >> Replace in-vehicle sensor. Refer to HAC-125, "Removal and Installation".

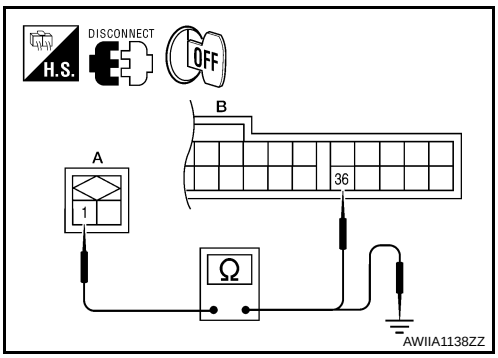
4. CHECK CONTINUITY BETWEEN IN-VEHICLE SENSOR AND A/C AUTO AMP.

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between in-vehicle sensor harness connector M34 (A) terminal 1 and A/C auto amp. harness connector M37 (B) terminal 36.

1 - 36 : Continuity should exist.

4. Check continuity between in-vehicle sensor harness connector M34 (A) terminal 1 and ground.

1 - Ground : Continuity should not exist.



Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-123, "Removal and Installation".
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000004199418

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?

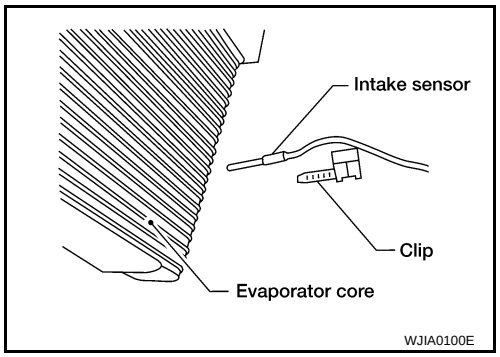
YES >> Inspection End.
NO >> Replace in-vehicle sensor. Refer to HAC-125, "Removal and Installation".

B2581, B2582 INTAKE SENSOR

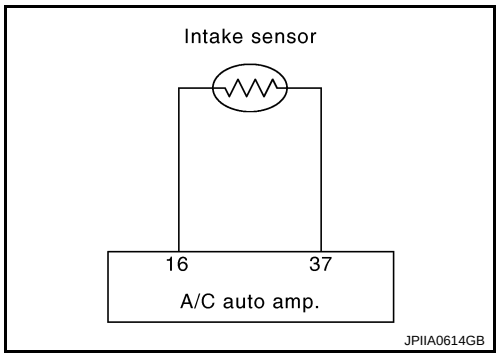
Description

INFOID:0000000004199419

Intake Sensor
- The intake sensor is located on the evaporator.
- It converts air temperature after it passes through the evaporator into a resistance value which is then input to the A/C auto amp.



Intake Sensor Circuit



DTC Logic

INFOID:0000000004199420

DTC DETECTION LOGIC

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-31, "DTC Logic" or HAC-32, "DTC Logic".

DTC	Items (CONSULT-III screen terms)	Diagnostic item is detected when...	Possible cause
B2581	EVAP TEMP SEN (SHORT)	Detected temperature at intake sensor 55°C (131°F) or more	• Intake sensor • A/C auto amp. • Harness and connector (Intake sensor circuit is open, or there is a short in the circuit)
B2582	EVAP TEMP SEN (OPEN)	Detected temperature at intake sensor -30°C (-22°F) or less	

DTC CONFIRMATION PROCEDURE

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.
2. Check if any DTC No. is displayed in the self-diagnosis results.

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-31, "DTC Logic" or HAC-32, "DTC Logic".

Is DTC No.“B2581” or “B2582” displayed?

YES >> Perform trouble diagnosis for the intake sensor. Refer to HAC-39, "Diagnosis Procedure".
NO >> Inspection End.

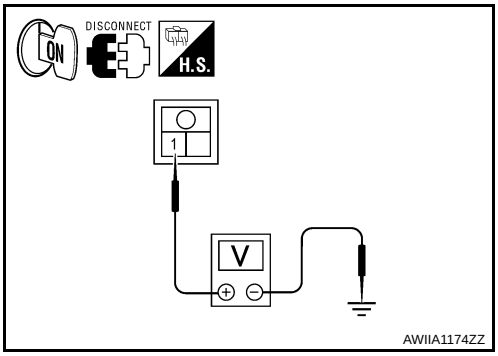
Diagnosis Procedure

INFOID:0000000004199421

1.CHECK INTAKE SENSOR POWER SUPPLY

1. Disconnect intake sensor connector.
2. Turn ignition switch ON.
3. Check voltage between intake sensor harness connector M69 terminal 1 and ground.

1 - Ground : Approx. 5V



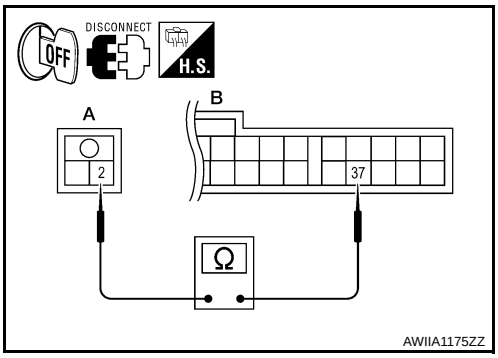
Is the inspection result normal?

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

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

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between intake sensor harness connector M69 (A) terminal 2 and A/C auto amp. harness connector M37 (B) terminal 37.

2 - 37 : Continuity should exist.



Is the inspection result normal?

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

3.CHECK INTAKE SENSOR

Check intake sensor. Refer to HAC-40, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-123, "Removal and Installation".
NO >> Replace intake sensor. Refer to HAC-127, "Removal and Installation".

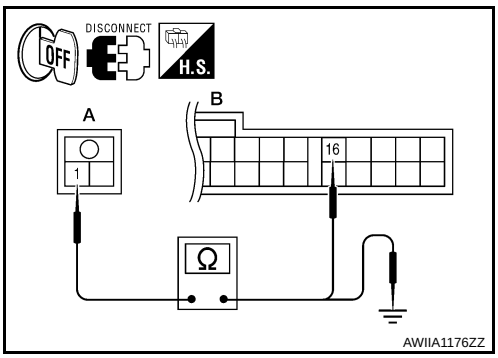
4.CHECK CONTINUITY BETWEEN INTAKE SENSOR AND A/C AUTO AMP.

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between intake sensor harness connector M69 (A) terminal 1 and A/C auto amp. harness connector M37 (B) terminal 16.

1 - 16 : Continuity should exist.

4. Check continuity between intake sensor harness connector M69 (A) terminal 1 and ground.

1 - Ground : Continuity should not exist.



Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-123, "Removal and Installation".
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000004199422

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)	18.63
		–10 (14)	14.15
		–5 (23)	10.86
		0 (32)	8.41
		5 (41)	6.58
		10 (50)	5.19
		15 (59)	4.12
		20 (68)	3.30
		25 (77)	2.67
		30 (86)	2.17
		35 (95)	1.78
		40 (104)	1.46
		45 (113)	1.21

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace intake sensor. Refer to HAC-127, "Removal and Installation".

B2630, B2631 SUNLOAD SENSOR

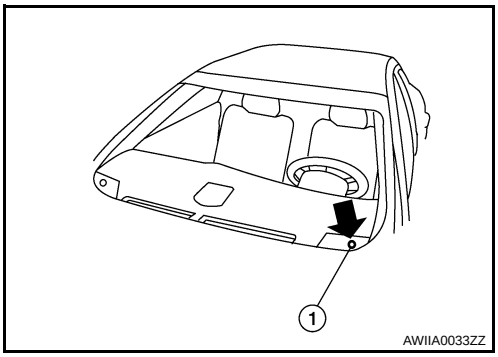
Description

INFOID:0000000004199423

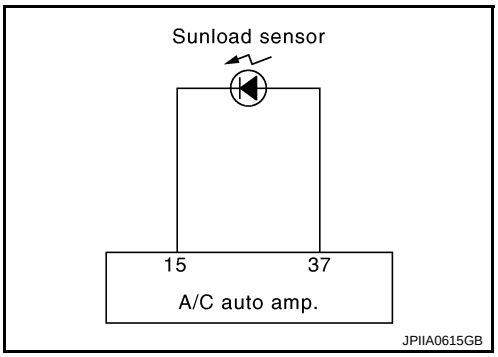
COMPONENT DESCRIPTION

Sunload Sensor

- The sunload sensor (1) is located on the driver'side defroster grille.
- It detects sunload entering through windshield by means of a photo diode. The sensor converts the sunload into a current value, which is then input into the A/C auto amp.



Sunload Sensor Circuit



SUNLOAD INPUT PROCESS

The A/C auto amp. also equips a processing circuit which averages the variations in detected sunload over a period of time. This prevents drastic swings in the air temperature control system operation due to small or quick variations in detected sunload.

For example, consider driving along a road bordered by an occasional group of large trees. The sunload detected by the sunload sensor varies whenever the trees obstruct the sunlight. The processing circuit averages the detected sunload over a period of time, so that the (insignificant) effect of the trees momentarily obstructing the sunlight does not cause any change in the air temperature control system operation. On the other hand, shortly after entering a long tunnel, the system recognizes the change in sunload, and the system reacts accordingly.

DTC Logic

INFOID:0000000004199424

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-31, "DTC Logic" or HAC-32, "DTC Logic".
- Sunload sensor may register a malfunction when indoors, at dusk, or at other times when light is insufficient. When performing the diagnosis indoors, light the sunload sensor with a lamp (60W or more).

DTC	Items (CONSULT-III screen terms)	Diagnostic item is detected when...	Possible cause
B2630	SUNLOAD SEN (SHORT)	Detected calorie at sunload sensor 1395 w/m^2 (1200 kcal/m^2·h) or more	• Sunload sensor • A/C auto amp. • Harness and connector (Sunload sensor circuit is open, or there is a short in the circuit)
B2631	SUNLOAD SEN (OPEN)	Detected calorie at sunload sensor 0 w/m^2 (0 kcal/m^2·h)	

DTC CONFIRMATION PROCEDURE

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.
2. Check if any DTC No. is displayed in the self-diagnosis results.

NOTE:

- If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-31, "DTC Logic" or HAC-32, "DTC Logic".
- Sunload sensor may register a malfunction when indoors, at dusk, or at other times when light is insufficient. When performing the diagnosis indoors, light the sunload sensor with a lamp (60W or more).

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

YES >> Perform trouble diagnosis for the sunload sensor. Refer to HAC-43, "Diagnosis Procedure".
NO >> Inspection End.

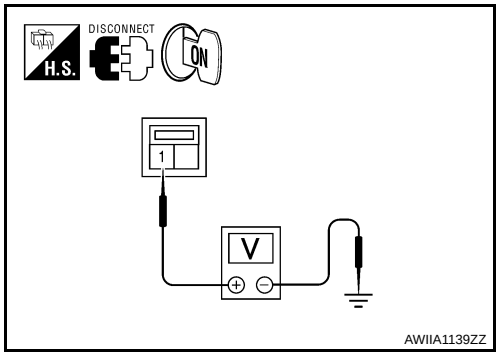
Diagnosis Procedure

INFOID:0000000004199425

1.CHECK SUNLOAD SENSOR POWER SUPPLY

1. Disconnect sunload sensor connector.
2. Turn ignition switch ON.
3. Check voltage between sunload sensor harness connector M56 terminal 1 and ground.

1 - Ground : Approx. 5V



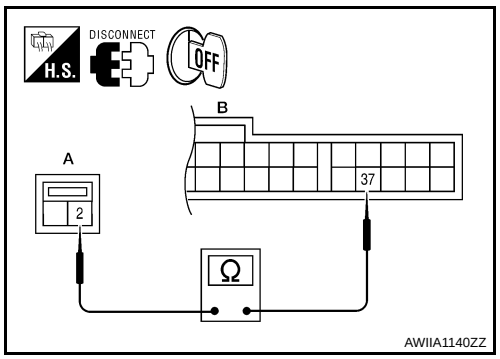
Is the inspection result normal?

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

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

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between sunload sensor harness connector M56 (A) terminal 2 and A/C auto amp. harness connector M37 (B) terminal 37.

2 - 37 : Continuity should exist.



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-44, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-123, "Removal and Installation".
NO >> Replace sunload sensor. Refer to HAC-126, "Removal and Installation".

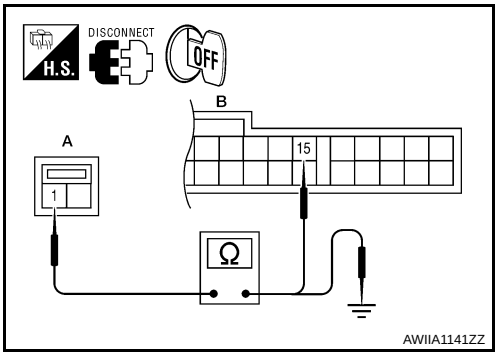
4.CHECK CONTINUITY BETWEEN SUNLOAD SENSOR AND A/C AUTO AMP.

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between sunload sensor harness connector M56 (A) terminal 1 and A/C auto amp. harness connector M37 (B) terminal 15.

1 - 15 : Continuity should exist.

4. Check continuity between sunload sensor harness connector M56 (A) terminal 1 and ground.

1 - Ground : Continuity should not exist.



Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-123, "Removal and Installation".
NO >> Repair harness or connector.

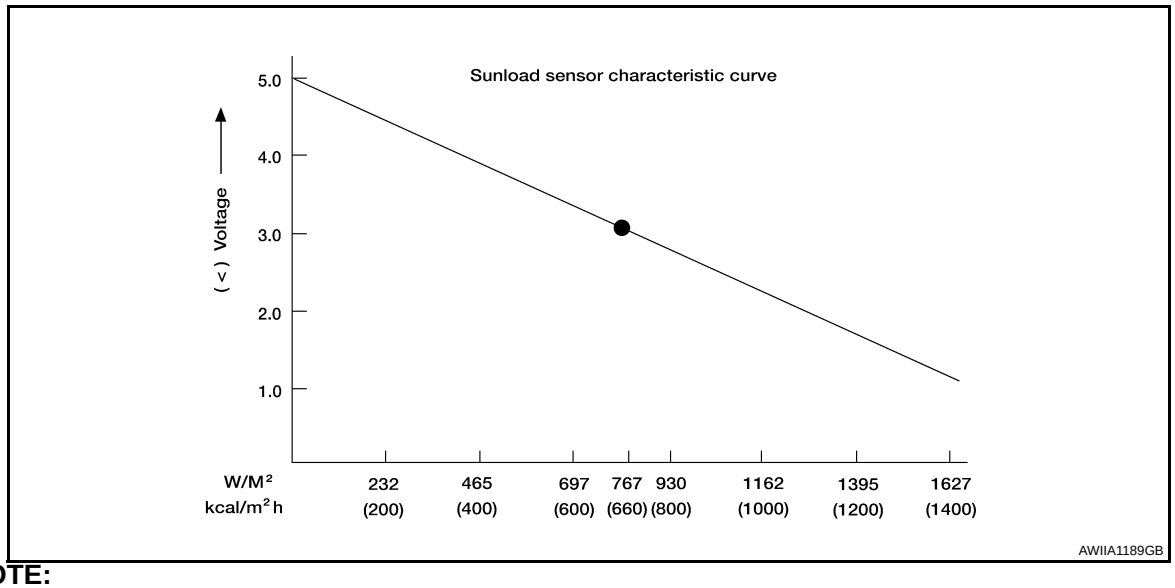
Component Inspection

INFOID:0000000004199426

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	
M37	15	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-126, "Removal and Installation".

B2632, B2633 AIR MIX DOOR MOTOR (DRIVER SIDE)

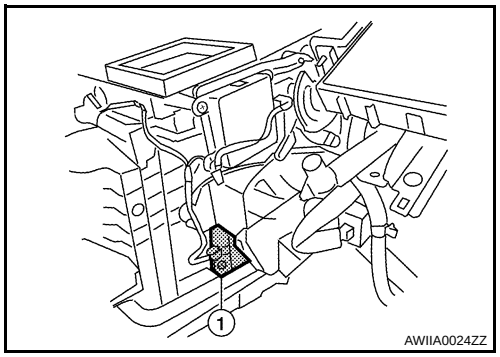
Description

INFOID:0000000004199427

COMPONENT DESCRIPTION

Air Mix Door Motor (Driver side)

- The air mix door motor (driver side) (1) is attached to the heater & cooling unit assembly.
- It rotates so that the air mix door is opened or closed to a position set by the A/C auto amp.
- Motor rotation is then conveyed through a shaft and the air mix door position feedback is then sent to the A/C auto amp. by PBR built-in air mix door motor.



DTC Logic

INFOID:0000000004199428

DTC DETECTION LOGIC

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-31, "DTC Logic" or HAC-32, "DTC Logic".

DTC	Items (CONSULT-III screen terms)	Diagnostic item is detected when...	Possible cause
B2632	DR AIRMIX ACTR (SHORT)	Air mix door PBR (driver side) position 5% or less	• Air mix door motor (driver side) • A/C auto amp. • Harness and connector (CAN communication line is open or shorted) (Air mix door motor is open or shorted)
B2633	DR AIRMIX ACTR (OPEN)	Air mix door PBR (driver side) position 95% or more	

DTC CONFIRMATION PROCEDURE

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.
2. Check if any DTC No. is displayed in the self-diagnosis results.

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-31, "DTC Logic" or HAC-32, "DTC Logic".

Is DTC No.“B2632” or “B2633” displayed?

YES >> Perform trouble diagnosis for the air mix door motor (driver side). Refer to HAC-46, "Diagnosis Procedure".
NO >> GO TO 2.

2.FUNCTION INSPECTION

1. Turn the temperature control dial (driver side) until 32°C (90°F) is displayed.
2. Check for warm air at discharge air outlets.
3. Operate the compressor.
4. Turn the temperature control dial (driver side) until 18°C (60°F) is displayed.
5. Check for cool air at air discharge outlets.

Does it operate normally?

YES >> Inspection End.
NO >> Check air mix door motor (driver side) installation, and repair or replace the malfunctioning parts.

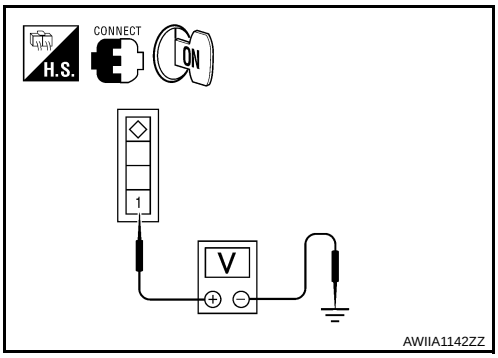
Diagnosis Procedure

INFOID:0000000004199429

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

1. Turn ignition switch ON.
2. Check voltage between air mix door motor (driver side) harness connector M128 terminal 1 and ground.

1 - Ground : Battery Voltage

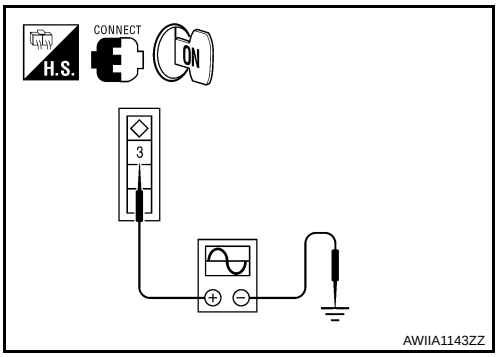


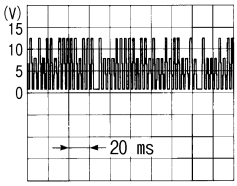
Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the harnesses or connectors.

2. CHECK SIGNAL FOR AIR MIX DOOR MOTOR (DRIVER SIDE)

Check the output waveform (LAN signal) between air mix door motor (driver side) harness connector M128 terminal 3 and ground using an oscilloscope.



(+)		(–)	Voltage
Air mix door motor (driver side)		—	
Connector	Terminal		
M128	3	Ground	

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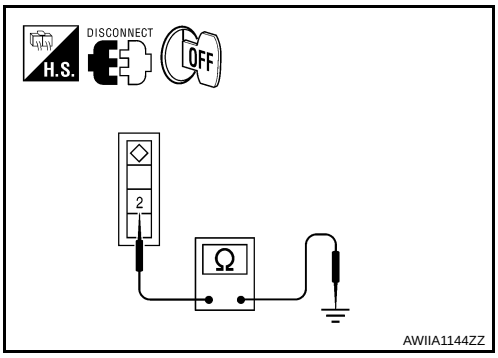
Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the harnesses or connectors.

3. CHECK AIR MIX DOOR MOTOR (DRIVER SIDE) GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect air mix door motor (driver side) connector.
3. Check continuity between air mix door motor (driver side) harness connector M128 terminal 2 and ground.

2 - Ground : Continuity should exist.



Is the inspection result normal?

YES >> Replace air mix door motor (driver side). Refer to HAC-129, "AIR MIX DOOR MOTOR : Removal and Installation".
NO >> Repair harness or connector.

B2634, B2635 AIR MIX DOOR MOTOR (PASSENGER SIDE)

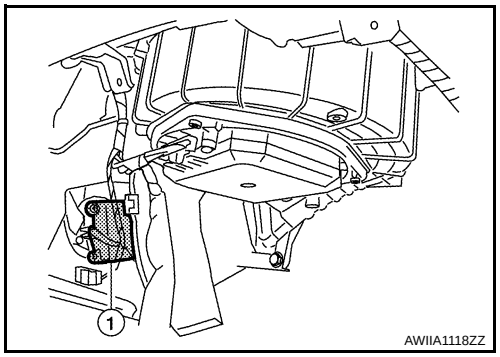
Description

INFOID:0000000004199430

COMPONENT DESCRIPTION

Air Mix Door Motor (Passenger Side)

- The air mix door motor (passenger side) (1) is attached to the heater & cooling unit assembly.
- It rotates so that the air mix door is opened or closed to a position set by the A/C auto amp.
- Motor rotation is then conveyed through a shaft and the air mix door position feedback is then sent to the A/C auto amp. by PBR built-in air mix door motor.



DTC Logic

INFOID:0000000004199431

DTC DETECTION LOGIC

NOTE:

If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-31, "DTC Logic" or HAC-32, "DTC Logic".

DTC	Items (CONSULT-III screen terms)	Diagnostic item is detected when...	Possible cause
B2634	PASS AIRMIX ACTR (SHORT)	Air mix door PBR (passenger side) position 5% or less	• Air mix door motor (passenger side) • A/C auto amp. • Harness and connector (CAN communication line is open or shorted) (Air mix door motor is open or shorted)
B2635	PASS AIRMIX ACTR (OPEN)	Air mix door PBR (passenger side) position 95% or more	

DTC CONFIRMATION PROCEDURE

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.
2. Check if any DTC No. is displayed in the self-diagnosis results.

NOTE:

If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-31, "DTC Logic" or HAC-32, "DTC Logic".

Is DTC No.“B2634” or “B2635” displayed?

YES >> Perform trouble diagnosis for the air mix door motor (passenger side). Refer to HAC-48, "Diagnosis Procedure".

NO >> GO TO 2.

2.FUNCTION INSPECTION

1. Turn the temperature control dial (passenger side) until 32°C (90°F) is displayed.
2. Check for warm air at discharge air outlets.
3. Operate the compressor.
4. Turn the temperature control dial (passenger side) until 18°C (60°F) is displayed.
5. Check for cool air at air discharge outlets.

Does it operate normally?

YES >> Inspection End.

NO >> Check air mix door motor (passenger side) installation, and repair or replace the malfunctioning parts.

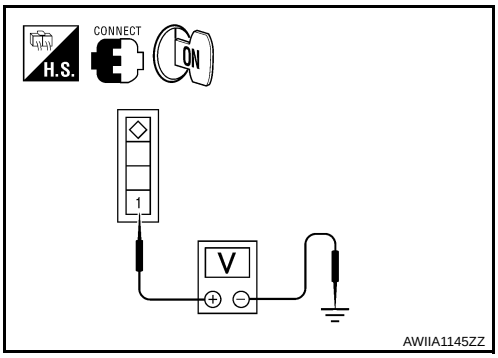
Diagnosis Procedure

INFOID:0000000004199432

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

1. Turn ignition switch ON.
2. Check voltage between air mix door motor (passenger side) harness connector M129 terminal 1 and ground.

1 - Ground :Battery Voltage

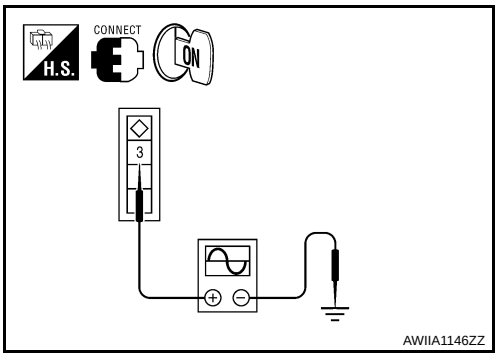


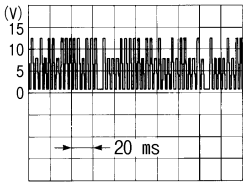
Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the harnesses or connectors.

2. CHECK SIGNAL FOR AIR MIX DOOR MOTOR (PASSENGER SIDE)

Check the output waveform (LAN signal) between air mix door motor (passenger side) harness connector and ground using an oscilloscope.



(+)		(–)	Voltage
Air mix door motor (passenger side)		—	
Connector	Terminal		
M129	3	Ground	

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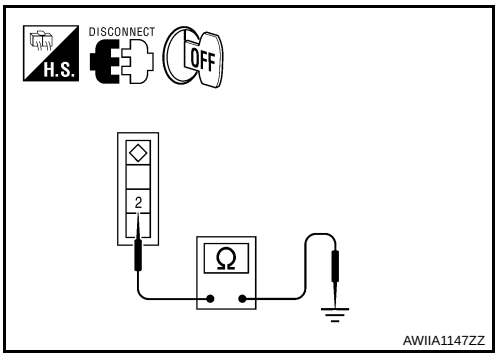
Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the harnesses or connectors.

3. CHECK AIR MIX DOOR MOTOR (PASSENGER SIDE) GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect air mix door motor (passenger side) connector.
3. Check continuity between air mix door motor (passenger side) harness connector M129 terminal 2 and ground.

2 - Ground : Continuity should exist.



Is the inspection result normal?

YES >> Replace air mix door motor (passenger side). Refer to HAC-129, "AIR MIX DOOR MOTOR : Removal and Installation".
NO >> Repair harness or connector.

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

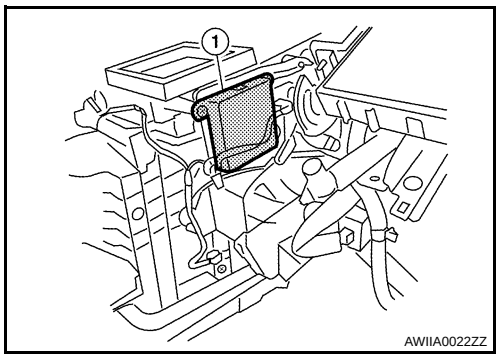
Description

INFOID:0000000004199433

COMPONENT DESCRIPTION

Mode Door Motor

- The mode door motor (1) is attached to the heater & cooling unit assembly.
- It rotates so that air is discharged from the outlet set by the A/C auto amp. Motor rotation is conveyed to a link which activates the mode door.



DTC Logic

INFOID:0000000004199434

DTC DETECTION LOGIC

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-31, "DTC Logic" or HAC-32, "DTC Logic".

DTC	Items (CONSULT-III screen terms)	Diagnostic item is detected when...	Possible cause
B2636	DR VENT DOOR FAIL	When the malfunctioning door position is detected at VENT position	• Mode door motor • A/C auto amp. • Harness and connector (CAN communication line is open or shorted) (Mode door motor is open or shorted)
B2637	DR B/L DOOR FAIL	When the malfunctioning door position is detected at B/L position	
B2638	DR D/F1 DOOR FAIL	When the malfunctioning door position is detected at FOOT position	
B2639	DR DEF DOOR FAIL	When the malfunctioning door position is detected at DEF position	
B2654	D/F2 DOOR FAIL	When the malfunctioning door position is detected at D/F position	
B2655	B/L2 DOOR FAIL	When the malfunctioning door position is detected at B/L2 position	

DTC CONFIRMATION PROCEDURE

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.
2. Check if any DTC No. is displayed in the self-diagnosis results.

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-31, "DTC Logic" or HAC-32, "DTC Logic".

Is DTC No.“B2636”, “B2637”, “B2638”, “B2639”, “B2654” or “B2655” displayed?

YES >> Perform trouble diagnosis for the mode door motor. Refer to HAC-50, "Diagnosis Procedure".
NO >> GO TO 2.

2.FUNCTION INSPECTION

1. Press MODE switch and DEF switch.
2. Each position indicator should change shape.
3. Confirm that air discharge comes out according to the air distribution table. Refer to HAC-10, "Description".

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

Does it operate normally?

YES >> Inspection End.
NO >> Check mode door motor installation, and repair or replace the malfunctioning parts. Refer to HAC-129, "MODE DOOR MOTOR : Removal and Installation".

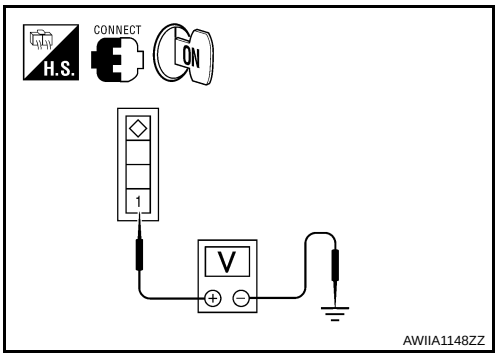
Diagnosis Procedure

INFOID:0000000004199435

1. CHECK MODE DOOR MOTOR POWER SUPPLY

1. Turn ignition switch ON.
2. Check voltage between mode door motor harness connector M127 terminal 1 and ground.

1 - Ground : Battery Voltage

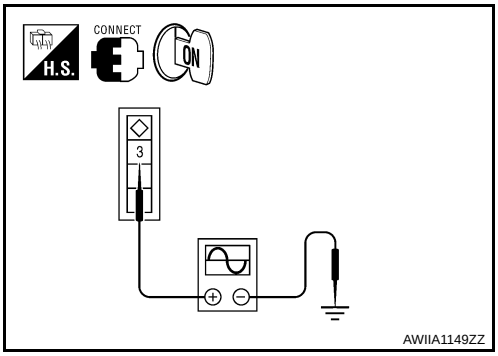


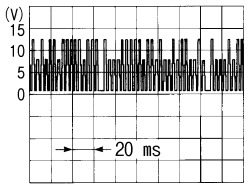
Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2. CHECK SIGNAL FOR MODE DOOR MOTOR

Confirm A/C LAN signal between mode door motor harness connector M127 terminal 3 and ground using an oscilloscope.



(+)		(–)	Voltage
Mode door motor		—	
Connector	Terminal		
M127	3	Ground	

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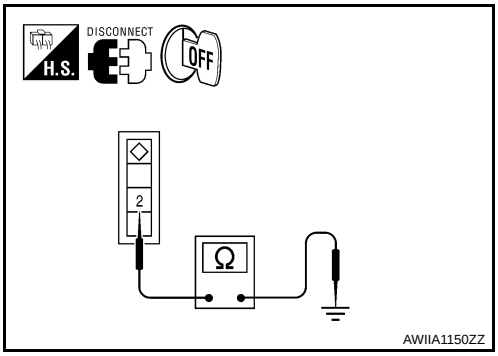
Is the inspection result normal?

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

3. CHECK MODE DOOR MOTOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect mode door motor connector.
3. Check continuity between mode door motor harness connector M127 terminal 2 and ground.

2 - Ground : Continuity should exist.



Is the inspection result normal?

YES >> Replace mode door motor. Refer to HAC-129, "MODE DOOR MOTOR : Removal and Installation".
NO >> Repair harness or connector.

B263D, B263E, B263F INTAKE DOOR MOTOR

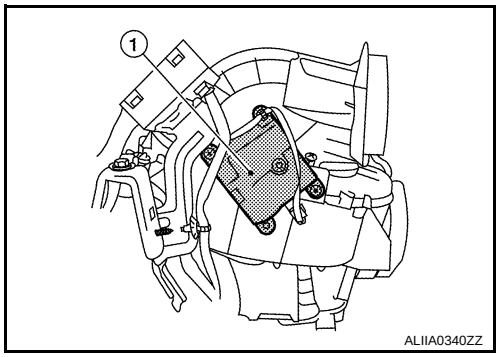
Description

INFOID:0000000004199436

COMPONENT DESCRIPTION

Intake Door Motor

- The intake door motor (1) is attached to the blower unit.
- It rotates so that air is drawn from inlets set by the A/C auto amp. Motor rotation is conveyed to a lever which activates the intake door.



DTC Logic

INFOID:0000000004199437

DTC DETECTION LOGIC

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-31, "DTC Logic" or HAC-32, "DTC Logic".

DTC	Items (CONSULT-III screen terms)	Diagnostic item is detected when...	Possible cause
B263D	FRE DOOR FAIL	When the malfunctioning intake door position is detected at FRE position	• Intake door motor • A/C auto amp. • Harness and connector (CAN communication line is open or shorted) (Intake door motor is open or shorted)
B263E	20P FRE DOOR FAIL	When the malfunctioning intake door position is detected at 20% FRE position	
B263F	REC DOOR FAIL	When the malfunctioning intake door position is detected at REC position	

DTC CONFIRMATION PROCEDURE

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.
2. Check if any DTC No. is displayed in the self-diagnosis results.

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-31, "DTC Logic" or HAC-32, "DTC Logic".

Is DTC No.“B263D”, “B263E”, or “B263F” displayed?

YES >> Perform trouble diagnosis for the intake door motor. Refer to HAC-52, "Diagnosis Procedure".
NO >> GO TO 2.

2.FUNCTION INSPECTION

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

Does it operate normally?

YES >> Inspection End.
NO >> Check intake door motor installation, and repair or replace the malfunctioning parts.

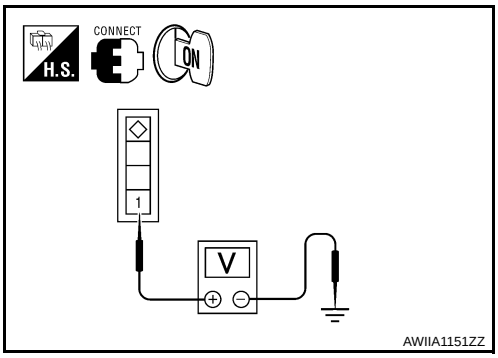
Diagnosis Procedure

INFOID:0000000004199438

1. CHECK INTAKE DOOR MOTOR POWER SUPPLY

1. Turn ignition switch ON.
2. Check voltage between intake door motor harness connector M126 terminal 1 and ground.

1 - Ground : Battery Voltage

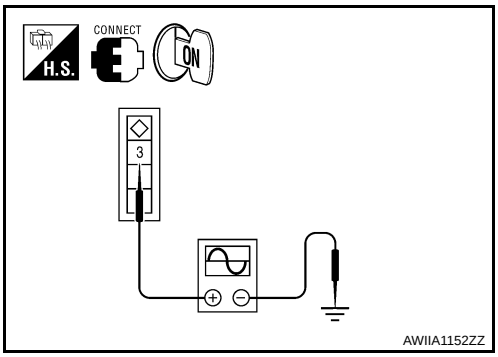


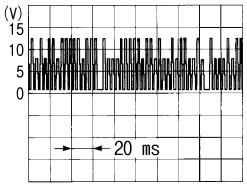
Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2. CHECK SIGNAL FOR INTAKE DOOR MOTOR

Confirm A/C LAN signal between intake door motor harness connector M126 terminal 3 and ground using an oscilloscope.



(+)		(–)	Voltage
Intake door motor		—	
Connector	Terminal		
M126	3	Ground	

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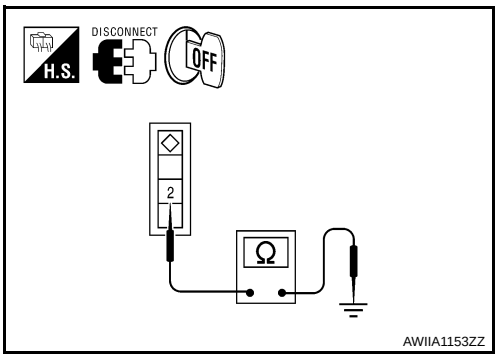
Is the inspection result normal?

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

3. CHECK INTAKE DOOR MOTOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect intake door motor connector.
3. Check continuity between intake door motor harness connector M126 terminal 2 and ground.

2 - Ground : Continuity should exist.



Is the inspection result normal?

YES >> Replace intake door motor. Refer to HAC-129, "INTAKE DOOR MOTOR : Removal and Installation".
NO >> Repair harness or connector.

BLOWER MOTOR

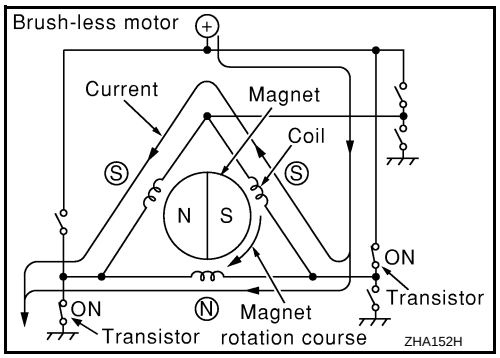
Description

INFOID:0000000004199442

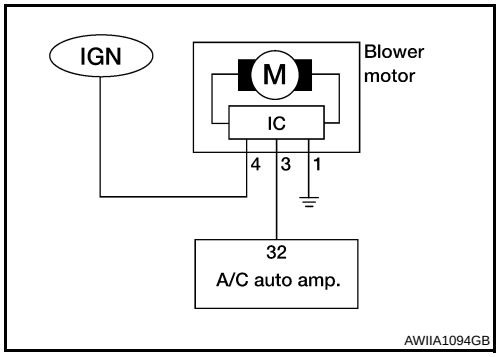
COMPONENT DESCRIPTION

Brush-less Motor

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



Blower Motor Circuit



Component Function Check

INFOID:0000000004199443

1. CHECK OPERATION

1. Warm up the engine.
2. Operate the fan control dial. Check that the fan speed and indicator are switched for all fan speeds.

Does it operate normally?

YES >> Inspection End.
NO >> Perform trouble diagnosis for the blower motor. Refer to HAC-53, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000004199444

1. CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.
2. Check if any DTC No. is displayed in the self-diagnosis results.

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-31, "DTC Logic" or HAC-32, "DTC Logic".

Is any DTC No. displayed?

YES >> Perform diagnosis for the applicable DTC. Refer to HAC-96, "DTC Index".
NO >> GO TO 2.

2. CHECK WITH ACTIVE TEST OF CONSULT-III

1. Using CONSULT-III, perform “HVAC TEST”“ACTIVE TEST” of HVAC to check each output device. Refer to HAC-27, "CONSULT-III Function".
   NOTE:
   Perform the ACTIVE TEST after starting the engine because the compressor is operating.
2. Check that the blower motor control signal changes according to each indicator signal.

	Test item					
	MODE 1	MODE 2	MODE 3	MODE 4	MODE 5	MODE 6
Mode door position	VENT1	B/L1	B/L2	FOOT	D/F	DEF
Intake door position	REC	REC	20% FRE	FRE	FRE	FRE
Air mix door position (driver & passenger side)	FULL COLD	FULL COLD	FULL HOT	FULL HOT	FULL HOT	FULL HOT
Blower motor duty ratio	37%	91%	65%	65%	65%	91%
Compressor (Magnet clutch)	ON	ON	ON	OFF	ON	ON

NOTE:

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

Does it operate normally?

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

3.CHECK FUSE

Check 15A fuses (Nos. 21 and 22).

NOTE:

Refer to PG-61, "Terminal Arrangement" for fuse location.

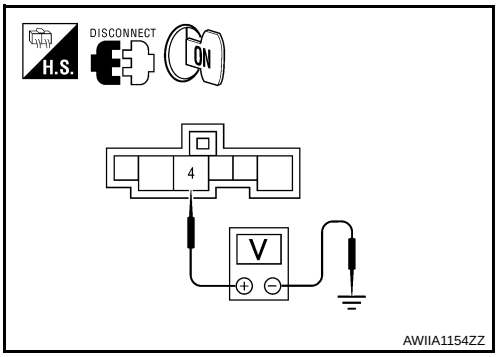
Is the inspection result normal?

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

4.CHECK POWER SUPPLY FOR BLOWER MOTOR

1. Turn ignition switch OFF.
2. Disconnect blower motor connector.
3. Turn ignition switch ON.
4. Check voltage between blower motor harness connector M31 terminal 4 and ground.

4 - Ground : Battery voltage



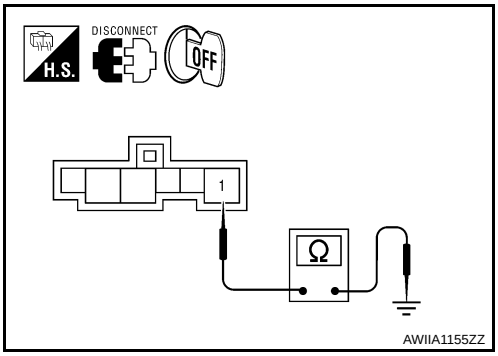
Is the inspection result normal?

YES >> GO TO 5.
NO >> GO TO 10.

5.CHECK BLOWER MOTOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between blower motor harness connector M31 terminal 1 and ground.

1 - Ground : Continuity should exist.



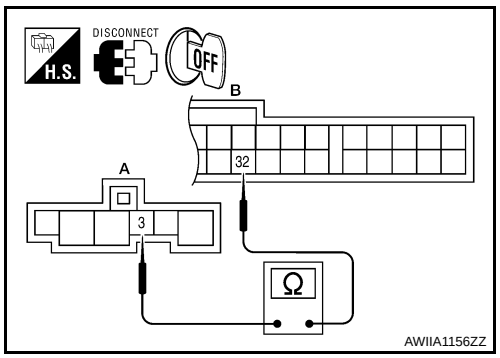
Is the inspection result normal?

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

6.CHECK BLOWER MOTOR CIRCUIT CONTINUITY

1. Disconnect A/C auto amp. connector.
2. Check continuity between blower motor harness connector M31 (A) terminal 3 and A/C auto amp. harness connector M37 (B) terminal 32.

3 - 32 : Continuity should exist.

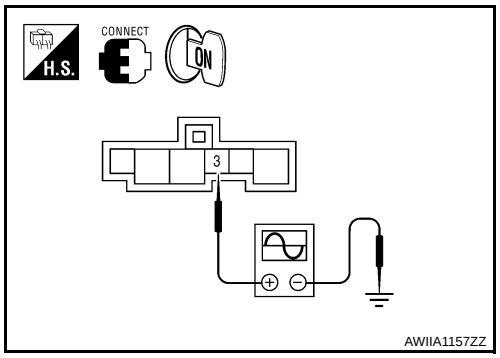


Is the inspection result normal?

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

7. CHECK A/C AUTO AMP. OUTPUT SIGNAL

1. Reconnect blower motor connector and A/C auto amp. connector.
2. Turn ignition switch ON.
3. Set MODE switch to the VENT position.
4. Check the output waveform between blower motor harness connector M31 terminal 3 and ground using an oscilloscope, while varying the fan speed from 1 to 7.



Blower fan speed (Manual) VENT mode	1st	2nd	3rd	4th	5th	6th	7th
Blower motor connector terminal fan PWM (Oscilloscope)	T1 Approx. 1.6 ms.	T2 Approx. 1.6 ms.	T3 Approx. 1.6 ms.	T4 Approx. 1.6 ms.	T5 Approx. 1.6 ms.	T6 Approx. 1.6 ms.	T7 Approx. 1.6 ms.
Duty ratio	Approx. 25%	Approx. 33%	Approx. 41%	Approx. 51%	Approx. 61%	Approx. 71%	Approx. 85%

AWIIA1098GB

Is the inspection result normal?

YES >> Replace the blower motor. Refer to VTL-17, "BLOWER MOTOR : Removal and Installation".
NO >> Replace the A/C auto amp. Refer to HAC-123, "Removal and Installation".

8. REPLACE FUSES

1. Replace fuses.
2. Activate the blower motor.

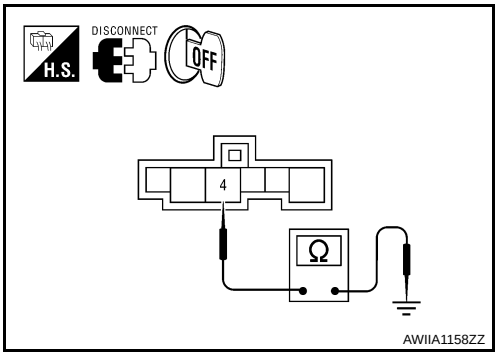
Does the fuse blow?

YES >> GO TO 9.
NO >> Inspection End.

9. CHECK BLOWER MOTOR POWER SUPPLY CIRCUIT FOR SHORT

1. Turn ignition switch OFF.
2. Disconnect blower motor harness connector.
3. Check continuity between blower motor harness connector M31 terminal 4 and ground.

4 - Ground : Continuity should not exist.



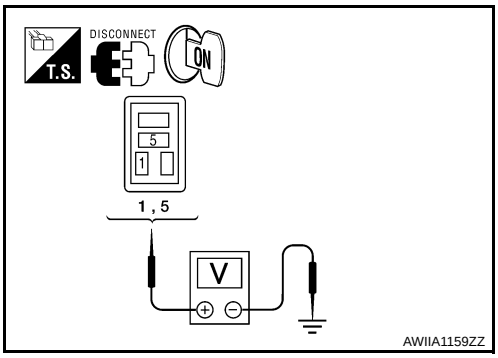
Is the inspection result normal?

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

10. CHECK POWER SUPPLY OF THE BLOWER MOTOR RELAY

1. Turn the ignition switch OFF.
2. Remove the blower motor relay.
3. Turn the ignition switch ON.
4. Check the voltage between blower motor relay harness connector J-4 terminals 1, 5 and ground.

1, 5 - Ground : Battery voltage



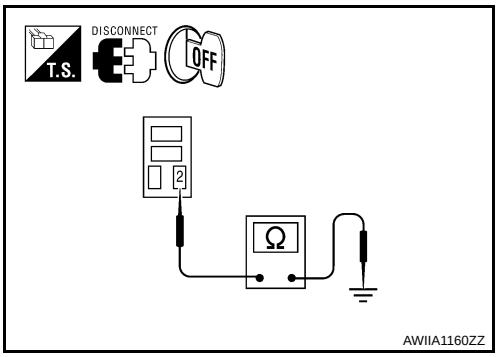
Is the inspection result normal?

YES >> GO TO 11.
NO >> Repair harness or connector.

11. CHECK BLOWER MOTOR RELAY GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between blower motor relay harness connector J-4 terminal 2 and ground.

2 - Ground : Continuity should exist.



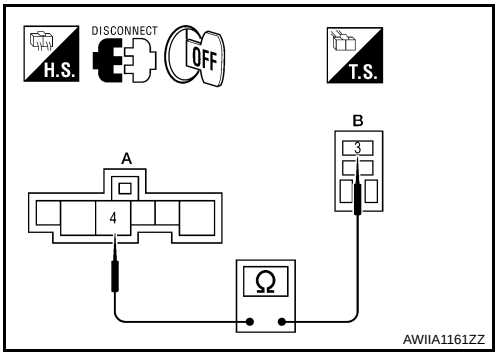
Is the inspection result normal?

YES >> GO TO 12.
NO >> Repair harness or connector.

12. CHECK BLOWER MOTOR SUPPLY CIRCUIT FOR OPEN

1. Disconnect A/C auto amp. connector.
2. Check continuity between blower motor harness connector M31 (A) terminal 4 and blower motor relay harness connector J-4 (B) terminal 3.

3 - 4 : Continuity should exist.



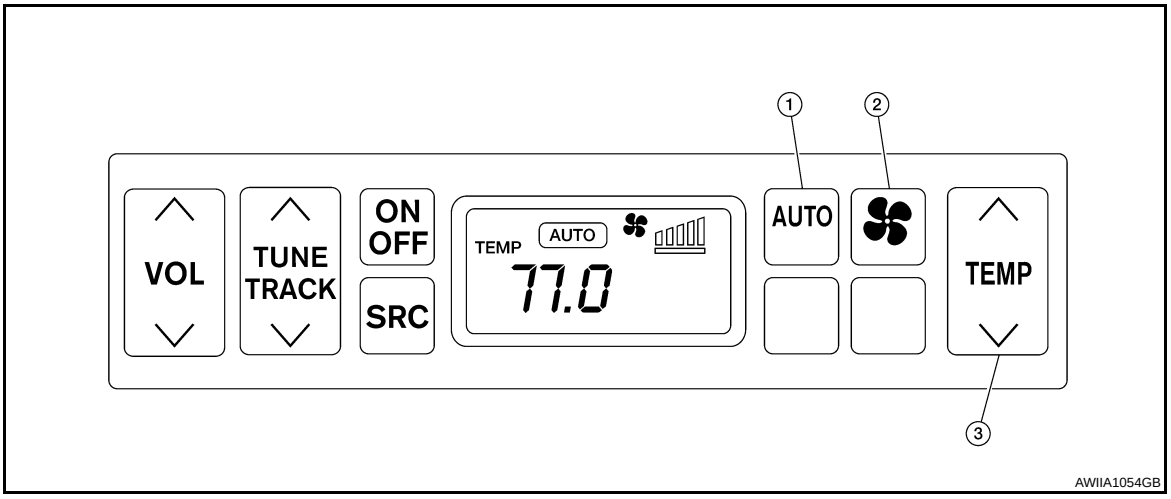
Is the inspection result normal?

YES >> Replace blower motor relay.
NO >> Repair harness or connector.

REAR AIR CONTROL CIRCUIT

Description

INFOID:0000000004199445



1. AUTO switch
2. Fan switch
3. Rear temperature control switch

AUTO SWITCH

- When pressing AUTO switch, air inlet, air outlet, fan speed, and discharge air temperature are automatically controlled.

FAN SWITCH

The fan speed is manually controlled with this switch. Seven speeds are available (5 speeds on display) for manual control (as shown on the display screen).

REAR TEMPERATURE CONTROL SWITCH

- Increases or decreases the passenger side set temperature and the air coming out of the center console.
- A temperature for the rear seat, with respect to a set temperature for the front seat, can be adjusted by operating the rear seat temperature switch.
- Rear temperature control switch allows for selection of temperature every 0.5°C (1°F) in the 18°C (60°F) to 32°C (90°F) range.

  NOTE:

  A set temperature for the rear seat is tied to a set temperature for the passenger's seat. Therefore, a set temperature for the rear seat changes in conjunction with a set temperature for the passenger's seat. The air temperature coming out of the center console is a mixture of the driver and passenger temperatures.

Diagnosis Procedure

INFOID:0000000004199447

DIAGNOSIS PROCEDURE FOR REAR CONTROL SWITCH

SYMPTOM: Rear control switch does not operate.

1. CHECK FOR AUDIO DTCS WITH CONSULT-III

Using CONSULT-III, perform "SELF-DIAGNOSIS RESULTS" of MULTI AV.

Are there any audio DTCs present?

YES >> Go to audio DTC index. Refer to HAC-96, "DTC Index".
NO >> GO TO 2.

2. CHECK A/C SYSTEM

Confirm A/C system operates from the A/C and AV switch assembly.

Is inspection result normal?

YES >> GO TO 3.
NO >> Go to trouble diagnosis procedure for A/C system. Refer to HAC-63, "A/C AUTO AMP. : Component Function Check".

3. CHECK A/C SYSTEM FROM REAR CONTROL SWITCH

1. Press the rear control cancel switch to the ON position.
2. Check A/C system operation from the rear control switch.

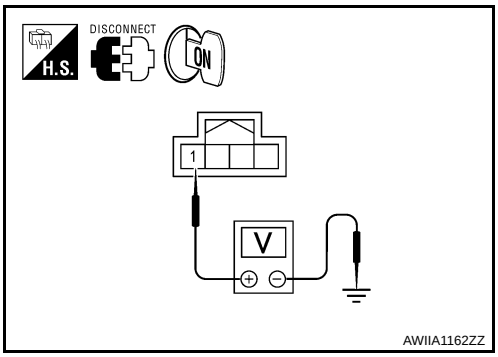
Is inspection result normal?

YES >> Inspection End.
NO >> GO TO 4.

4. CHECK REAR CONTROL SWITCH POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect rear control switch connector.
3. Turn ignition switch ON.
4. Check voltage between rear control switch harness connector B402 terminal 1 and ground.

1 – Ground : Battery voltage



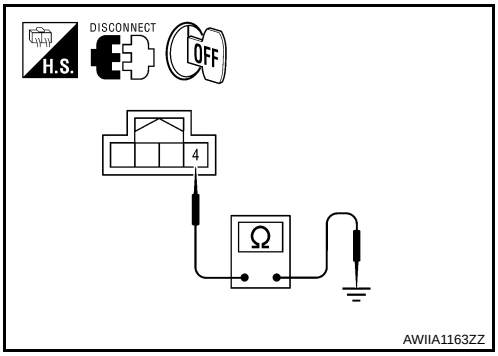
Is inspection result normal?

YES >> GO TO 5.
NO >> Check 10A fuse [No. 17 located in the fuse block (J/B)]. Refer to PG-61, "Terminal Arrangement".
- If fuse is OK, check harness for open circuit. Repair or replace if necessary.
- If fuse is NG, check harness for short circuit and replace fuse.

5. CHECK REAR CONTROL SWITCH GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between rear control switch harness connector B402 terminal 4 and ground.

4 – Ground : Continuity should exist.



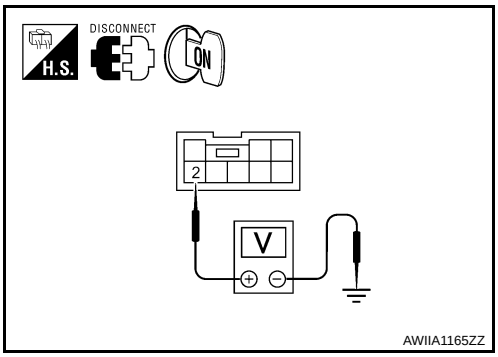
Is inspection result normal?

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

6. CHECK REAR CONTROL CANCEL SWITCH CIRCUIT

1. Disconnect rear control cancel switch.
2. Turn ignition switch ON.
3. Check voltage between rear control cancel switch harness connector M89 terminal 2 and ground.

2 – Ground : Approx. 8.0V



Is inspection result normal?

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

7. CHECK REAR CONTROL CANCEL SWITCH GROUND CIRCUIT

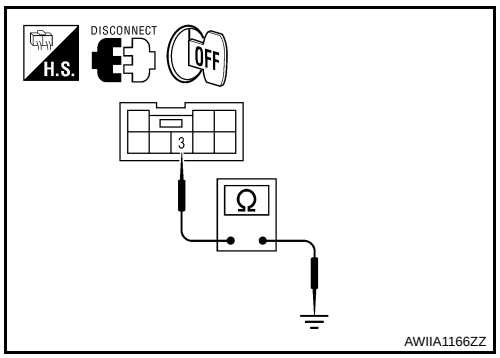
1. Turn ignition switch OFF.
2. Check continuity between rear control cancel switch harness connector M89 terminal 3 and ground.

3 – Ground : Continuity should exist.

Is inspection result normal?

YES >> Replace rear control cancel switch. Refer to HAC-123, "Removal and Installation"

NO >> Repair harness or connector.



8. CHECK CONTINUITY BETWEEN REAR CONTROL SWITCH AND REAR CONTROL CANCEL SWITCH

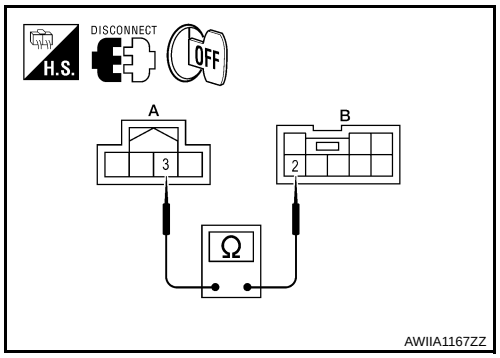
Check continuity between rear control switch harness connector B402 (A) terminal 3 and rear control cancel switch harness connector M89 (B) terminal 2.

2 – 3 : Continuity should exist.

Is the inspection result normal?

YES >> Replace rear control switch. Refer to HAC-123, "Removal and Installation".

NO >> Repair harness or connector.



MAGNET CLUTCH

Description

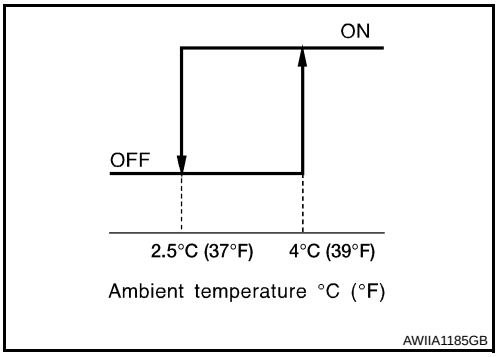
INFOID:0000000004199448

SYSTEM DESCRIPTION

A/C auto amp. controls A/C compressor operation by ambient temperature and signal from ECM.

Low Temperature Protection Control

A/C auto amp. will turn the A/C compressor ON or OFF as determined by a signal detected by ambient sensor.
When ambient temperature is greater than 4°C (39°F), the A/C compressor turns ON. The A/C compressor turns OFF when ambient temperature is less than 2.5°C (37°F).



Component Function Check

INFOID:0000000004199449

1. FUNCTION INSPECTIONS

1. Press AUTO switch. AUTO is indicated on the display.
2. Press the A/C switch.
3. Check that the indicator of the A/C switch turns on. Check visually and by sound that the compressor is operating. (The discharge air temperature or fan speed varies depending on the ambient temperature, in-vehicle temperature, and temperature setting.)
4. Press the A/C switch again.
5. Check that the indicator of the A/C switch turns OFF. Check visually and by sound that the compressor stops.

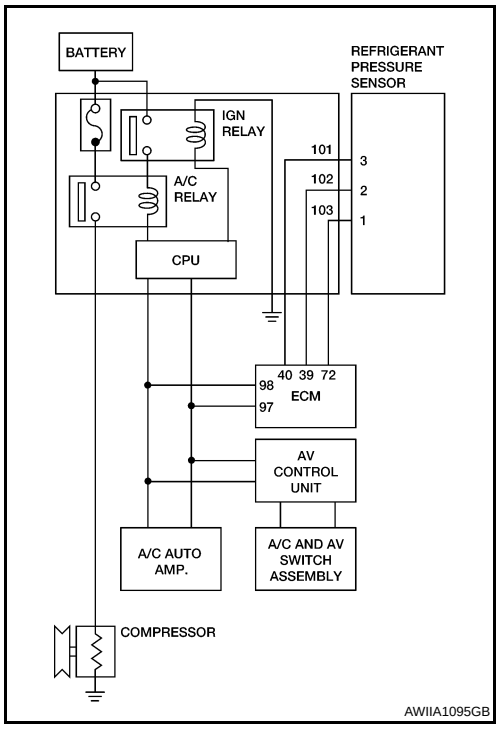
Does it operate normally?

YES >> Inspection End.
NO >> Perform trouble diagnosis for the compressor. Refer to HAC-61, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000004199450

SYMPTOM: Magnet clutch does not engage when A/C switch is ON.



1. INSPECTION IN AUTO ACTIVE TEST MODE

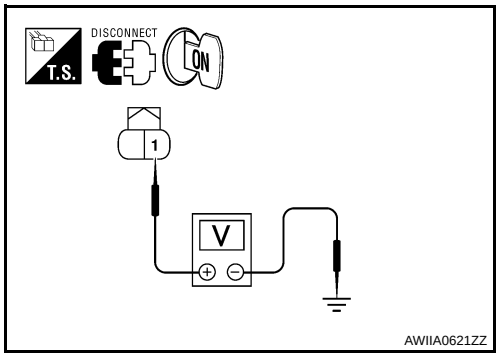
Perform “AUTO ACTIVE TEST”. Refer to PCS-13, "Diagnosis Description".

Does it operate normally?

YES >> GO TO 6.
NO >> GO TO 2.

2. CHECK POWER SUPPLY FOR A/C COMPRESSOR

1. Disconnect A/C compressor connector.
2. Start engine and press A/C switch.
3. Check voltage between A/C compressor harness connector F3 terminal 1 and ground.



Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal	Body ground	12V
F3-1		

Is the inspection result normal?

YES >> Check magnet clutch coil.
1. If NG, replace magnet clutch. Refer to HA-44, "Removal and Installation for Compressor".
2. If OK, check A/C compressor mounting points for looseness or corrosion and repair as necessary.

NO >> GO TO 3

3. CHECK FUSE

Check 10A fuse (No. 41).

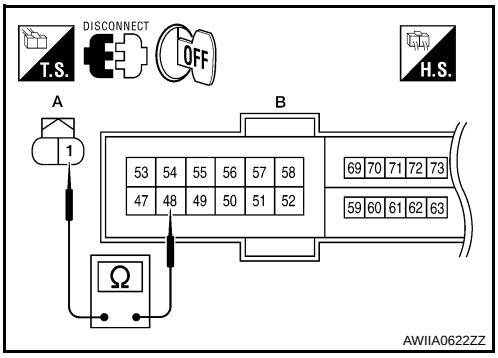
NOTE:
Refer to PG-63, "Fuse, Connector and Terminal Arrangement" for fuse location.

Is the inspection result normal?

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

4. CHECK CIRCUIT CONTINUITY BETWEEN A/C RELAY IN IPDM E/R AND A/C COMPRESSOR

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector F10 and A/C compressor connector F3.
3. Check continuity between A/C compressor harness connector F3 (A) terminal 1 and IPDM E/R harness connector F10 (B) terminal 48.



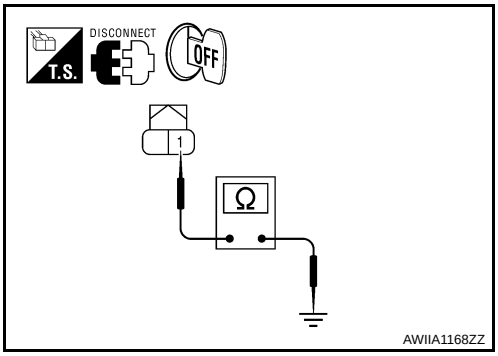
1 - 48 : Continuity should exist.

Is the inspection result normal?

YES >> Replace A/C Relay.
NO >> Repair harness or connector.

5. CHECK A/C COMPRESSOR CIRCUIT FOR SHORT

Check continuity between A/C compressor harness connector F3 terminal 1 and ground.



1 - Ground : Continuity should not exist.

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-40, "Removal and Installation".
NO >> Repair harness or connector.

6. CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.
2. Check if any DTC No. is displayed in the self-diagnosis results.

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-31, "DTC Logic" or HAC-32, "DTC Logic".

Is any DTC No. displayed?

YES >> Perform diagnosis for the applicable DTC. Refer to HAC-96, "DTC Index".
NO >> GO TO 7.

7. CHECK A/C AUTO AMP. INPUT SIGNAL

Using CONSULT-III, check “On/Off” of “AIR COND SIG” and “HEATER FAN SW” in “DATA MONITOR” of HVAC. Refer to HAC-27, "CONSULT-III Function".

A/C SWITCH ON : AIR COND SIG On
A/C SWITCH OFF : AIR COND SIG Off
FAN CONTROL DIAL ON : HEATER FAN SW On
FAN CONTROL DIAL OFF : HEATER FAN SW Off

Is the inspection result normal?

YES >> GO TO 8.
NO >> Replace A/C auto amp. Refer to HAC-123, "Removal and Installation".

8. CHECK REFRIGERANT PRESSURE SENSOR

Check refrigerant pressure sensor. Refer to EC-481, "Component Function Check".

Is the inspection result normal?

YES >> Inspection End.
NO >> Repair or replace malfunctioning parts.

POWER SUPPLY AND GROUND CIRCUIT
A/C AUTO AMP.

A/C AUTO AMP. : Description

INFOID:0000000004199451

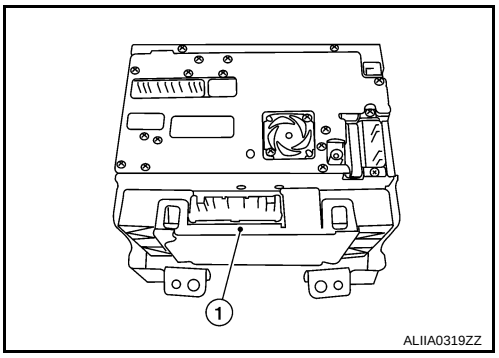
COMPONENT DESCRIPTION

A/C Auto Amp. (Air Conditioner Automatic Amplifier)

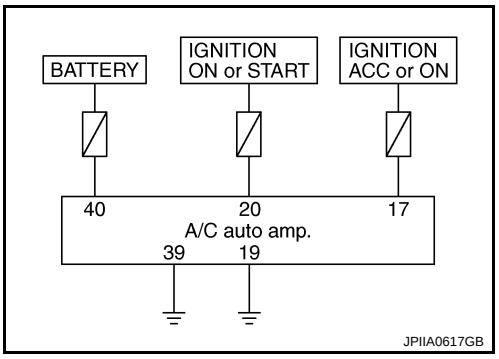
The A/C auto amp. (1) has a built-in microcomputer that processes information sent from various sensors needed for air conditioner operation. The air mix door motor(s), the mode door motor, the intake door motor, the blower motor and the compressor are then controlled.

When the various switches and temperature control dial are operated, data is input to the A/C auto amp. from the AV control unit using CAN communication.

The A/C auto amp. is operated with control mechanisms. Signals from various switches and Potentio Temperature Control (PTC) are directly entered into the A/C auto amp.



Power Supply and Ground Circuit for A/C Auto Amp.



A/C AUTO AMP. : Component Function Check

INFOID:0000000004199452

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 system. Refer to HAC-63, "A/C AUTO AMP. : Diagnosis Procedure".

A/C AUTO AMP. : Diagnosis Procedure

INFOID:0000000004199453

1.CHECK FOR AUDIO DTCS WITH CONSULT-III

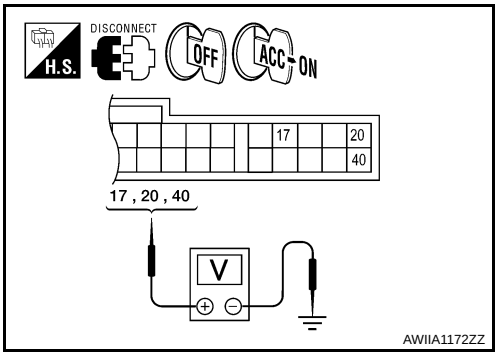
Using CONSULT-III, perform "SELF-DIAGNOSIS RESULTS" of MULTI AV.

Are there any audio DTCs present?

YES >> Go to audio DTC index. Refer to HAC-96, "DTC Index".
NO >> GO TO 2.

2.CHECK A/C AUTO AMP. POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect the A/C auto amp. connector.
3. Turn ignition switch ON.
4. Check voltage between A/C auto amp. harness connector M37 terminal 17, 20, 40 and ground.



(+)		(–)	Voltage		
A/C auto amp.		—	Ignition switch position		
Connector	Terminal		OFF	ACC	ON
M37	17	Ground	Approx. 0V	Battery voltage	Battery voltage
	20		Approx. 0V	Approx. 0V	Battery voltage
	40		Battery voltage	Battery voltage	Battery voltage

Is the inspection result normal?

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

3.CHECK FUSE

Check 10A fuses [Nos. 3, 6 and 17, located in the fuse block (J/B)].

NOTE:

Refer to PG-61, "Terminal Arrangement".

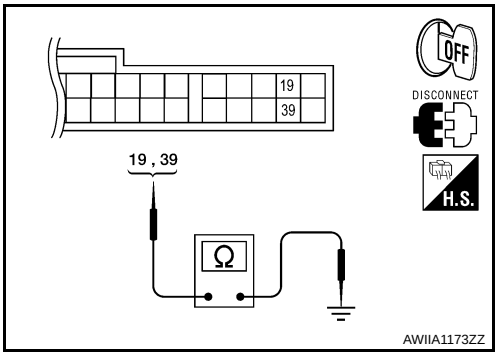
Is the inspection result normal?

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

4.CHECK A/C AUTO AMP. GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between A/C auto amp. harness connector M37 terminals 19, 39 and ground.

19, 39 - Ground : Continuity should exist.



Is the inspection result normal?

YES >> Replace the A/C auto amp. Refer to HAC-123, "Removal and Installation".
NO >> Repair the harnesses or connectors.

A/C AND AV SWITCH ASSEMBLY

A/C AND AV SWITCH ASSEMBLY : Component Function Check

INFOID:0000000004199455

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 and AV switch assembly. Refer to HAC-64, "A/C AND AV SWITCH ASSEMBLY : Diagnosis Procedure".

A/C AND AV SWITCH ASSEMBLY : Diagnosis Procedure

INFOID:0000000004199456

1.CHECK FOR AUDIO DTCS WITH CONSULT-III

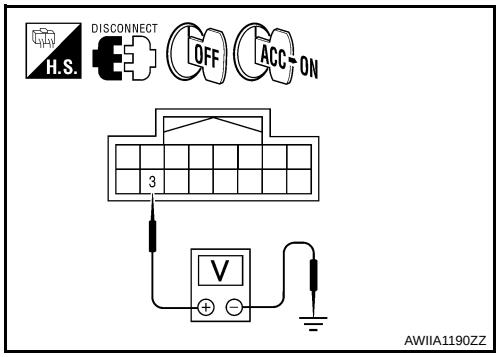
Using CONSULT-III, perform "SELF-DIAGNOSIS RESULTS" of MULTI AV.

Are there any audio DTCs present?

YES >> Go to audio DTC index. Refer to HAC-96, "DTC Index".
NO >> GO TO 2.

2. CHECK A/C AND AV SWITCH ASSEMBLY POWER SUPPLY

1. Disconnect the A/C and AV switch assembly connector.
2. Check voltage between A/C and AV switch assembly harness connector M98 terminal 3 and ground.



(+)		(–)	Voltage		
A/C and AV switch assembly		—	Ignition switch position		
Connector	Terminal		OFF	ACC	ON
M98	3	Ground	Approx. 0V	Battery voltage	Battery voltage

Is the inspection result normal?

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

3. CHECK FUSE

Check 10A fuse [No.17, located in the fuse block (J/B)].

NOTE:
Refer to PG-61, "Terminal Arrangement".

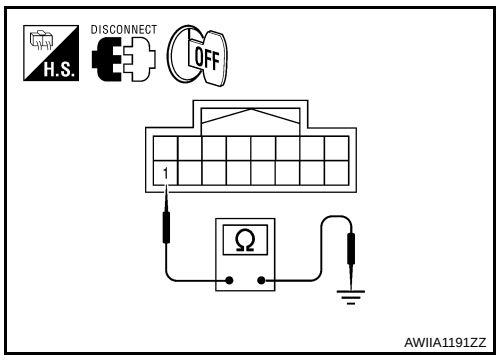
Is the inspection result normal?

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

4. CHECK A/C AND AV SWITCH ASSEMBLY GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between A/C and AV switch assembly harness connector M98 terminal 1 and ground.

1 - Ground : Continuity should exist.



Is the inspection result normal?

YES >> Replace the A/C and AV switch assembly. Refer to HAC-123, "Removal and Installation".
NO >> Repair the harnesses or connectors.

ECU DIAGNOSIS

A/C AUTO AMP.

Reference Value

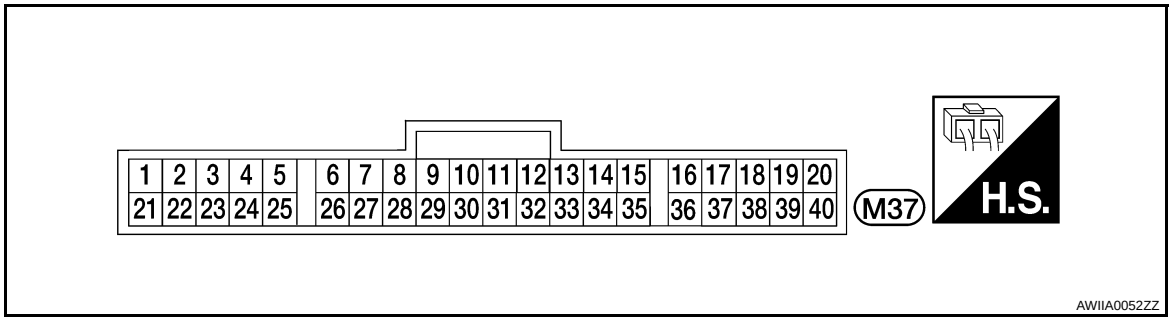
INFOID:0000000004199457

VALUES ON THE DIAGNOSIS TOOL

CONSULT-III MONITOR ITEM

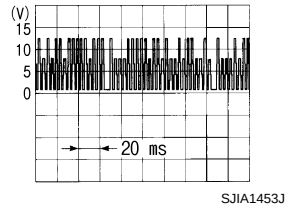
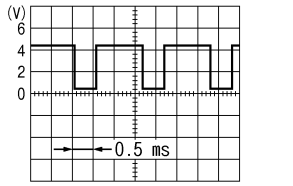
Monitor item	Condition		Value/Status
COMP REQ SIG	Engine: Run at idle after warming up	A/C switch: ON (Compressor operation status)	On
		A/C switch: OFF	Off
FAN REQ SIG	Engine: Run at idle after warming up	Blower fan: ON	On
		Blower fan: OFF	Off
AMB TEMP SEN	Ignition switch ON	—	22 - 131°F (–30 - 55°C)
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)
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

A/C AUTO AMP. HARNESS CONNECTOR TERMINAL LAYOUT



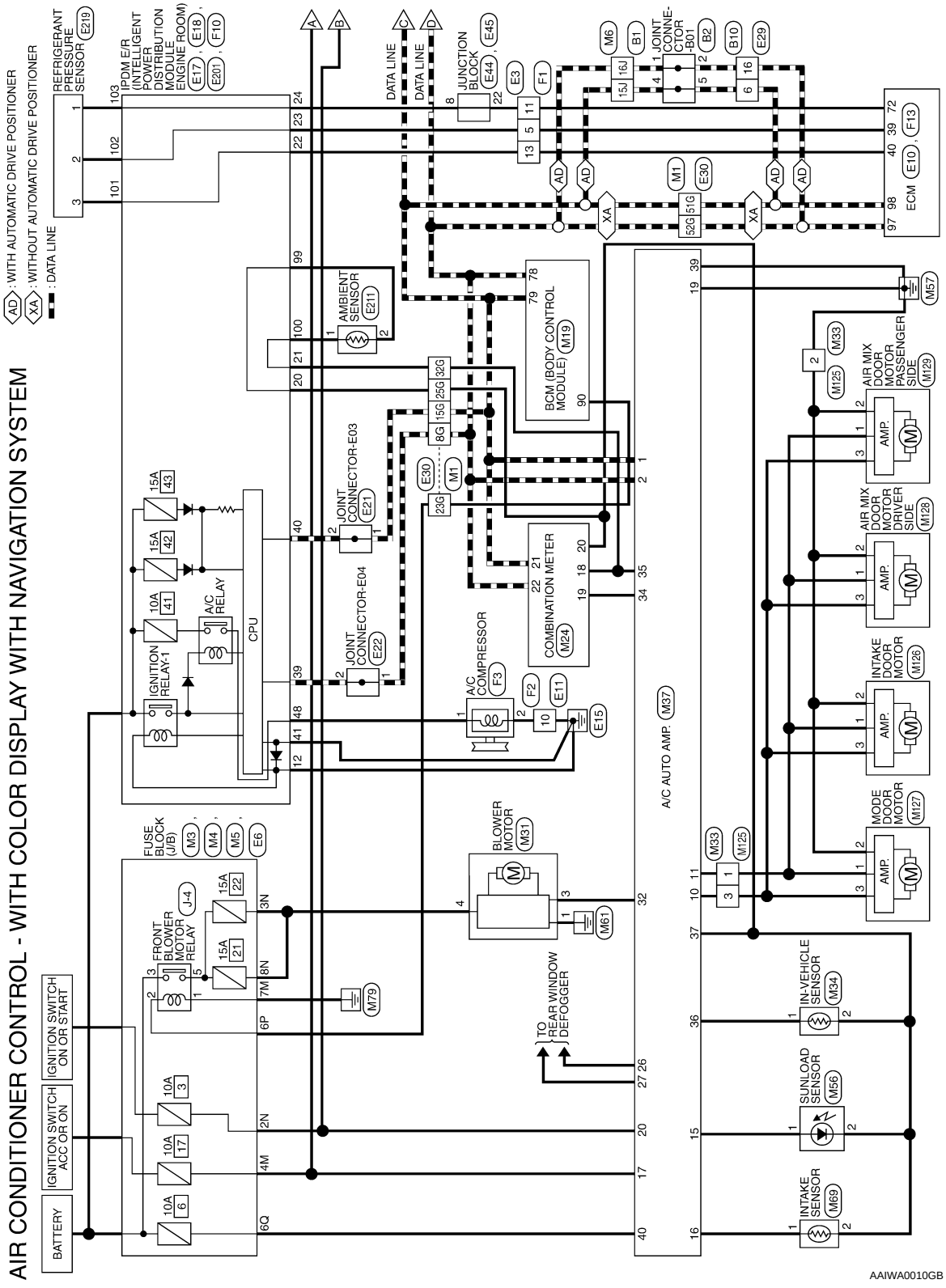
TERMINALS AND REFERENCE VALUES FOR A/C AUTO AMP.

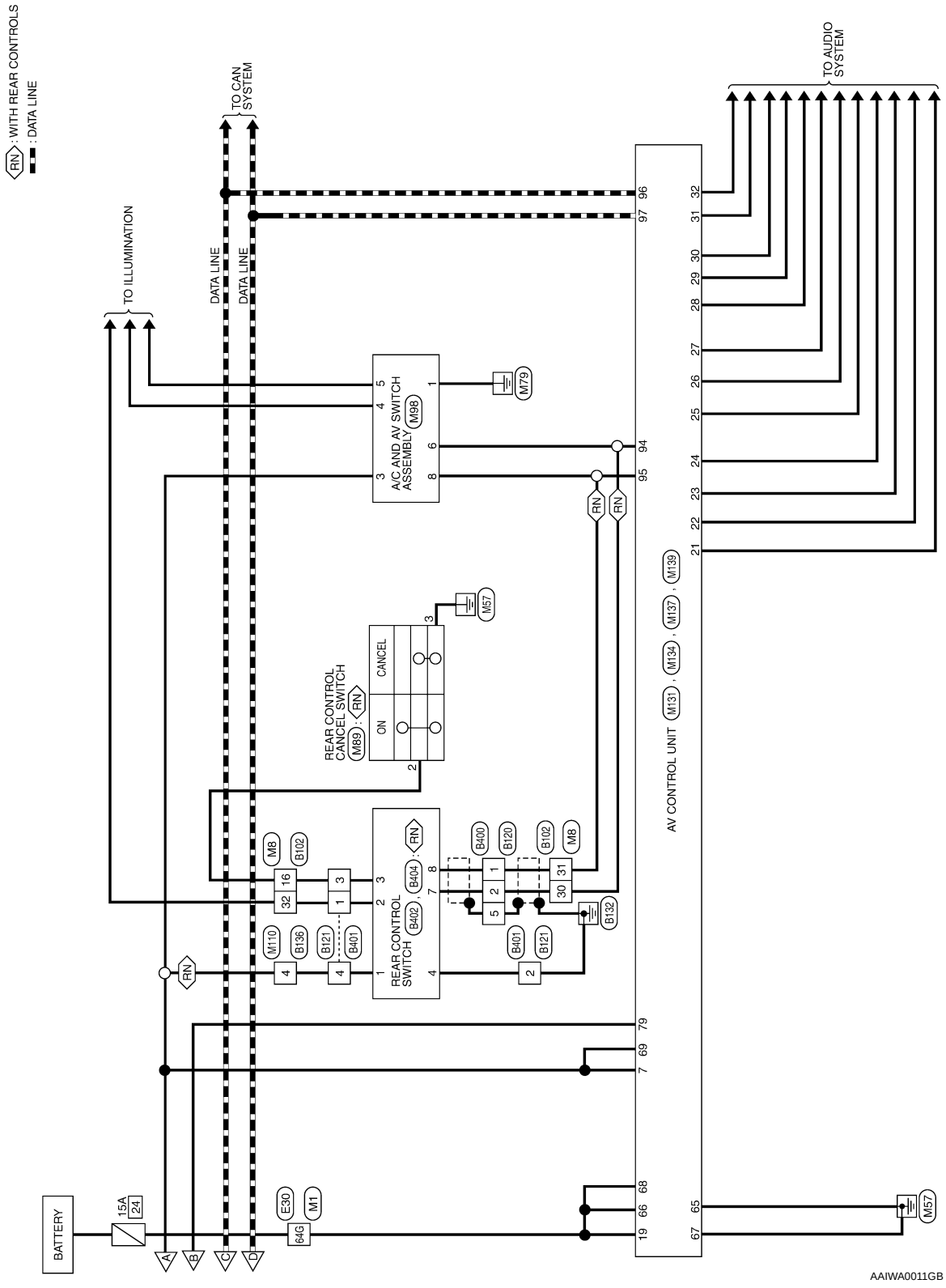
Terminal No.	Wire color	Item	Ignition switch	Condition	Value (Approx.)
1	L	CAN-H	ON	—	0 - 5V
2	P	CAN-L	ON	—	0 - 5V

Terminal No.	Wire color	Item	Ignition switch	Condition	Value (Approx.)
10	L/R	LAN signal	ON	—	 SJIA1453J
11	L/W	Power supply for each door motor	ON	—	Battery voltage
15	O	Sunload sensor	ON	—	0 - 5V
16	R/G	Intake sensor	ON	—	0 - 5V
17	V/Y	Power supply from ACC	ACC	—	Battery voltage
19	B	Ground	ON	—	0V
20	G	Power supply from IGN	ON	—	Battery voltage
26	—	—	—	—	Circuits not use for this model
27	—	—	—	—	
32	L/Y	Blower motor control signal	ON	Fan speed:1st speed (manual)	 JSIIA0096ZZ
34	P	Power supply for ambient meter	ON	—	5V
35	O/B	Ambient sensor	ON	—	0 - 5V
36	LG	In-vehicle sensor	ON	—	0 - 5V
37	B/Y	Sensor ground	—	—	0V
39	B	Ground	—	—	0V
40	Y/R	Power supply from BATT	—	—	Battery voltage

Wiring Diagram - Air Conditioner Control - With NAVI

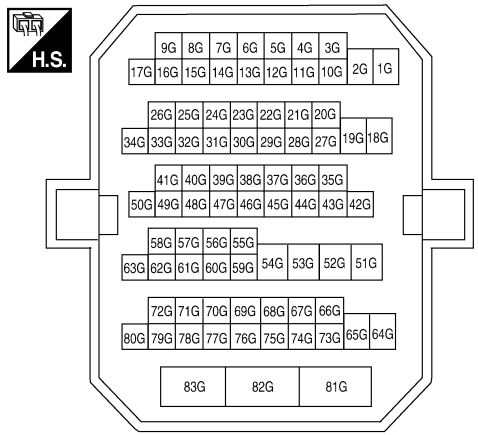
INFOID:0000000004199458




RN : WITH REAR CONTROLS
: DATA LINE
TO CAN SYSTEM
TO AUDIO SYSTEM
TO ILLUMINATION
DATA LINE
DATA LINE
A/C AND AV SWITCH ASSEMBLY M98
M79
REAR CONTROL CANCEL SWITCH RN : M89
CANCEL
ON
M57
REAR CONTROL SWITCH RN : B402 , B404
AV CONTROL UNIT M131 , M134 , M137 , M139
M8
B102
B400
B120
B132
M110
B136
B121
B401
BATTERY
15A 24
E30
M1
64G
A
B
C
D
AAIWA0011GB

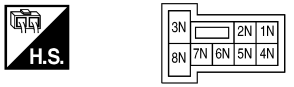
AIR CONDITIONER CONTROL CONNECTORS - WITH COLOR DISPLAY WITH NAVIGATION SYSTEM

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



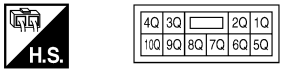
Terminal No.	Color of Wire	Signal Name
8G	P	–
15G	L	–
23G	Y	–
25G	B/Y	–
32G	O/B	–
51G	L	–
52G	P	–
64G	Y/R	–

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



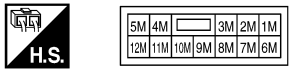
Terminal No.	Color of Wire	Signal Name
2N	G	–
3N	W/L	–
8N	W/L	–

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



Terminal No.	Color of Wire	Signal Name
6Q	Y/R	–

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



Terminal No.	Color of Wire	Signal Name
4M	V/Y	–
7M	B	–

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Connector No.	M8
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
16	BR	–
30	R	(EARLY PRODUCTION)
30	L	(LATE PRODUCTION)
31	P	(LATE PRODUCTION)
31	G	(EARLY PRODUCTION)
32	R/L	–

Connector No.	M31
Connector Name	BLOWER MOTOR
Connector Color	WHITE

H.S.

6	5	4	3	2	1

Terminal No.	Color of Wire	Signal Name
1	B	–
2	–	–
3	L/Y	–
4	W/L	–
5	–	–
6	–	–

Connector No.	M6
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
15J	L	–
16J	P	–

Connector No.	M24
Connector Name	COMBINATION METER
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	33	34	35	36	37	38	39	40

Terminal No.	Color of Wire	Signal Name
18	O/B	OAT
19	P	OAT POWER
20	B/Y	GND (OAT SENSOR)
21	L	CAN-H
22	P	CAN-L

Connector No.	M19
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	BLACK

H.S.

79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60
99	98	97	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80

Terminal No.	Color of Wire	Signal Name
78	P	CAN-L
79	L	CAN-H
90	Y	IGN2_CONT

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

H.S.

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

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

H.S.

Terminal No.	Color of Wire	Signal Name
1	LG	–
2	B/Y	–

Connector No.	M37
Connector Name	A/C AUTO AMP.
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	33	34	35	36	37	38	39	40

Terminal No.	Color of Wire	Signal Name
1	L	CAN-H
2	P	CAN-L
3	–	–
4	–	–
5	–	–
6	–	–
7	–	–
8	–	–
9	–	–
10	L/R	LAN SIG
11	L/W	VACTR
12	–	–
13	–	–
14	–	–
15	O	SUN SENS
16	R/G	INTAKE SENS
17	V/Y	ACC
18	–	–
19	B	GND
20	G	IGN
21	–	–
22	–	–
23	–	–
24	–	–
25	–	–
26	GR	RR DEF F B
27	GR/W	RR DEF ON
28	–	–
29	–	–
30	–	–
31	–	–
32	L/Y	FAN PWM
33	–	–
34	P	AMB POWER
35	O/B	AMB SENS
36	LG	INCAR SENS
37	B/Y	SENS GND
38	–	–
39	B	GND (POWER)
40	Y/R	BAT

AAIIA0016GB

Connector No.	M89
Connector Name	REAR CONTROL CANCEL SWITCH
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
2	BR	–
3	B	–

Connector No.	M69
Connector Name	INTAKE SENSOR
Connector Color	WHITE

H.S.

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

Connector No.	M56
Connector Name	SUNLOAD SENSOR
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	O	–
2	B/Y	–

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

H.S.

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

Connector No.	M110
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
4	V/Y	–

Connector No.	M98
Connector Name	A/C AND AV SWITCH ASSEMBLY
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	B	GND
3	V/Y	ACC
4	R/L	ILL+
5	R/Y	ILL CONT GND
6	R	CAN H
8	G	CAN L

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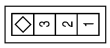
Connector No.	M126
Connector Name	INTAKE DOOR MOTOR
Connector Color	WHITE

H.S.

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

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

H.S.



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

Connector No.	M128
Connector Name	AIR MIX DOOR MOTOR DRIVER SIDE
Connector Color	WHITE

H.S.

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

Connector No.	M129
Connector Name	AIR MIX DOOR MOTOR PASSENGER SIDE
Connector Color	WHITE

H.S.

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

Connector No.	M131
Connector Name	AV CONTROL UNIT (WITH NAVI)
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
7	V/Y	ACC
19	Y/R	BAT

Connector No.	M134
Connector Name	AV CONTROL UNIT (WITH NAVI)
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
21	B	R
22	R	G
23	W	B
24	SHIELD	RGB GND
25	G	RGB SYNC
26	SHIELD	RGB SYNC GND
27	B	YS
28	R	HP
29	W	W
30	Y	IT DISP
31	BR	DISP IT
32	SHIELD	SHIELD

AAIIA0018GB

Connector No.	M139
Connector Name	AV CONTROL UNIT (WITH NAVI)
Connector Color	WHITE

H.S.

66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102	104
65	67	69	71	73	75	77	79	81	83	85	87	89	91	93	95	97	99	101	103

Terminal No.	Color of Wire	Signal Name
65	B	GND
66	Y/R	+B
67	B	GND
68	Y/R	+B
69	V/Y	ACC
79	G	IGN
94	R	M-CAN-H (EARLY PRODUCTION)
94	L	M-CAN-H (LATE PRODUCTION)
95	G	M-CAN-L (EARLY PRODUCTION)
95	P	M-CAN-L (LATE PRODUCTION)
96	L	V-CAN-H
97	P	V-CAN-L

Connector No.	E3
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

Terminal No.	Color of Wire	Signal Name
5	GR	–
11	GR	–
13	SB	–

Connector No.	E6
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
6P	Y	–

Connector No.	E10
Connector Name	ECM
Connector Color	BLACK

H.S.

81	85	89	93	97	101	105	109
82	86	90	94	98	102	106	110
83	87	91	95	99	103	107	111
84	88	92	96	100	104	108	112

Terminal No.	Color of Wire	Signal Name
97	P	CAN-L
98	L	CAN-H

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

H.S.

1	2		3	4
5	6	7	8	9	10

Terminal No.	Color of Wire	Signal Name
10	B/W	–

Connector No.	E17
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

H.S.

42	41	40	39
46	45	44	43

Terminal No.	Color of Wire	Signal Name
39	P	CAN-L
40	L	CAN-H
41	B	S-GND

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

H.S.

Terminal No.	Color of Wire	Signal Name
12	B	P-GND
20	L	AMB SENS GND-E/R
21	LG	AMB SENS SIG-E/R
22	SB	PD SENS GND-E/R
23	GR	PD SENS SIG-E/R
24	G	PD SENS PWR-E/R

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

H.S.

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

Connector No.	E29
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
6	L	–
16	P	–

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

H.S.

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

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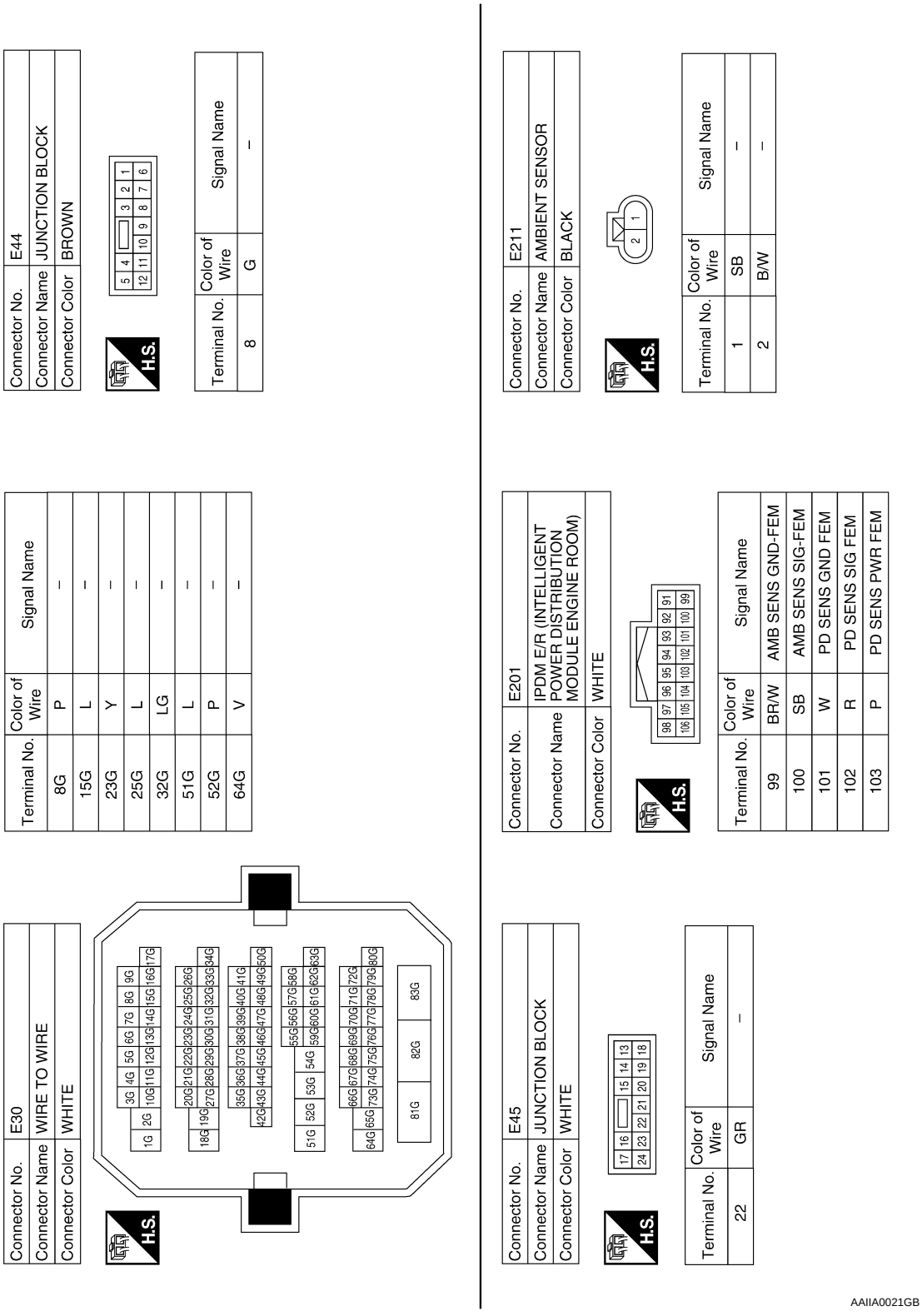
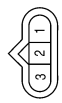

Connector No. E44
Connector Name JUNCTION BLOCK
Connector Color BROWN
H.S.
5 4 3 2 1
12 11 10 9 8 7 6
Terminal No. Color of Wire Signal Name
8 G –
Connector No. E211
Connector Name AMBIENT SENSOR
Connector Color BLACK
H.S.
2 1
Terminal No. Color of Wire Signal Name
1 SB –
2 B/W –
Terminal No. Color of Wire Signal Name
8G P –
15G L –
23G Y –
25G L –
32G LG –
51G L –
52G P –
64G V –
Connector No. E30
Connector Name WIRE TO WIRE
Connector Color WHITE
H.S.
3G 4G 5G 6G 7G 8G 9G
1G 2G 10G 11G 12G 13G 14G 15G 16G 17G
20G 21G 22G 23G 24G 25G 26G
18G 19G 27G 28G 29G 30G 31G 32G 33G 34G
35G 36G 37G 38G 39G 40G 41G
42G 43G 44G 45G 46G 47G 48G 49G 50G
55G 56G 57G 58G
51G 52G 53G 54G 59G 60G 61G 62G 63G
66G 67G 68G 69G 70G 71G 72G
64G 65G 73G 74G 75G 76G 77G 78G 79G 80G
81G 82G 83G
Connector No. E201
Connector Name IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color WHITE
H.S.
98 97 96 95 94 93 92 91
106 105 104 103 102 101 100 99
Terminal No. Color of Wire Signal Name
99 BR/W AMB SENS GND-FEM
100 SB AMB SENS SIG-FEM
101 W PD SENS GND FEM
102 R PD SENS SIG FEM
103 P PD SENS PWR FEM
Connector No. E45
Connector Name JUNCTION BLOCK
Connector Color WHITE
H.S.
17 16 15 14 13
24 23 22 21 20 19 18
Terminal No. Color of Wire Signal Name
22 GR –
AAIIA0021GB

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

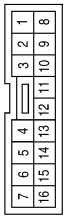
H.S.



Terminal No.	Color of Wire	Signal Name
1	P	AVCC 2
2	R	SIGNAL
3	W	GND

Connector No.	F1
Connector Name	WIRE TO WIRE
Connector Color	WHITE

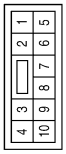
H.S.



Terminal No.	Color of Wire	Signal Name
5	R	–
11	BR/W	–
13	G	–

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

H.S.



Terminal No.	Color of Wire	Signal Name
10	B/W	–

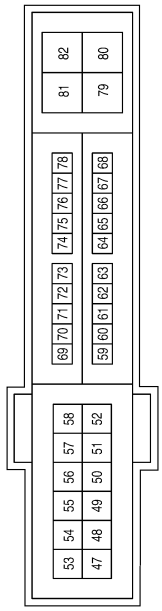
Connector No.	F3
Connector Name	A/C COMPRESSOR
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	W	A/C COMP
2	B/W	GND

Connector No.	F10
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
48	W	A/C COMP

AAIIA0022GB

Terminal No.	Color of Wire	Signal Name
15J	L	–
16J	P	–

Connector No.	B1
Connector Name	WIRE TO WIRE
Connector Color	BLACK

H.S.

Connector No.	B102
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
16	O	–
30	R	–
31	G	–
32	P	–

Connector No.	B10
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
6	L	–
16	P	–

Connector No.	F13
Connector Name	ECM
Connector Color	BROWN

H.S.

Terminal No.	Color of Wire	Signal Name
39	R	PDPRES
40	G	GNDA-PDPRES
72	GR	AVCC2-PDPRES

Connector No.	B2
Connector Name	JOINT CONNECTOR-B01
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	P	–
2	P	–
4	L	–
5	L	–

AAIIA0023GB

Connector No.	B136
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

Terminal No.	Color of Wire	Signal Name
4	Y	–

Connector No.	B121
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

4	3	2	1

Terminal No.	Color of Wire	Signal Name
1	P	–
2	B	–
3	O	–
4	Y	–

Connector No.	B120
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

4	3	2	1
6			5

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

Connector No.	B402
Connector Name	REAR CONTROL SWITCH
Connector Color	WHITE

H.S.

1	2	3	4

Terminal No.	Color of Wire	Signal Name
1	V/Y	–
2	R/L	–
3	BR	–
4	B	–

Connector No.	B401
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

1	2	3	4

Terminal No.	Color of Wire	Signal Name
1	R/L	–
2	B	–
3	BR	–
4	V/Y	–

Connector No.	B400
Connector Name	WIRE TO WIRE
Connector Color	GRAY

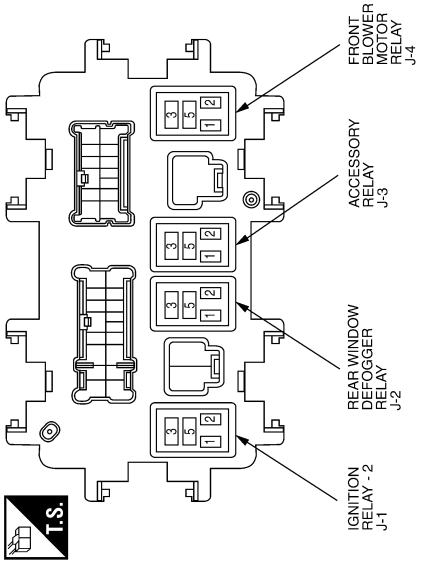
H.S.

1	2	3	4
5			6

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

ABIIA0120GB

Connector No.	J-4
Connector Name	FRONT BLOWER MOTOR RELAY
Connector Color	–



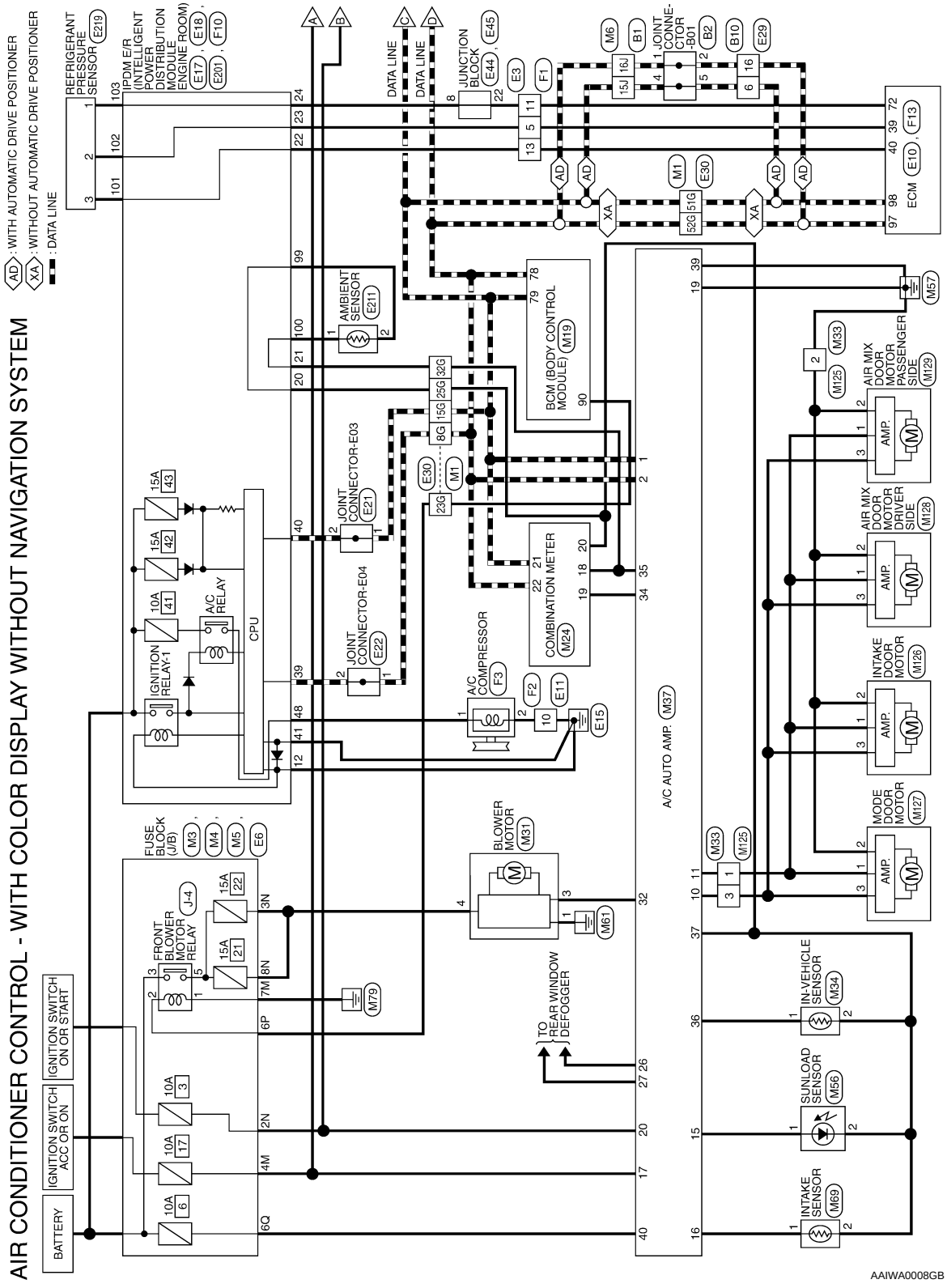
Connector No.	B404
Connector Name	REAR CONTROL SWITCH
Connector Color	GRAY

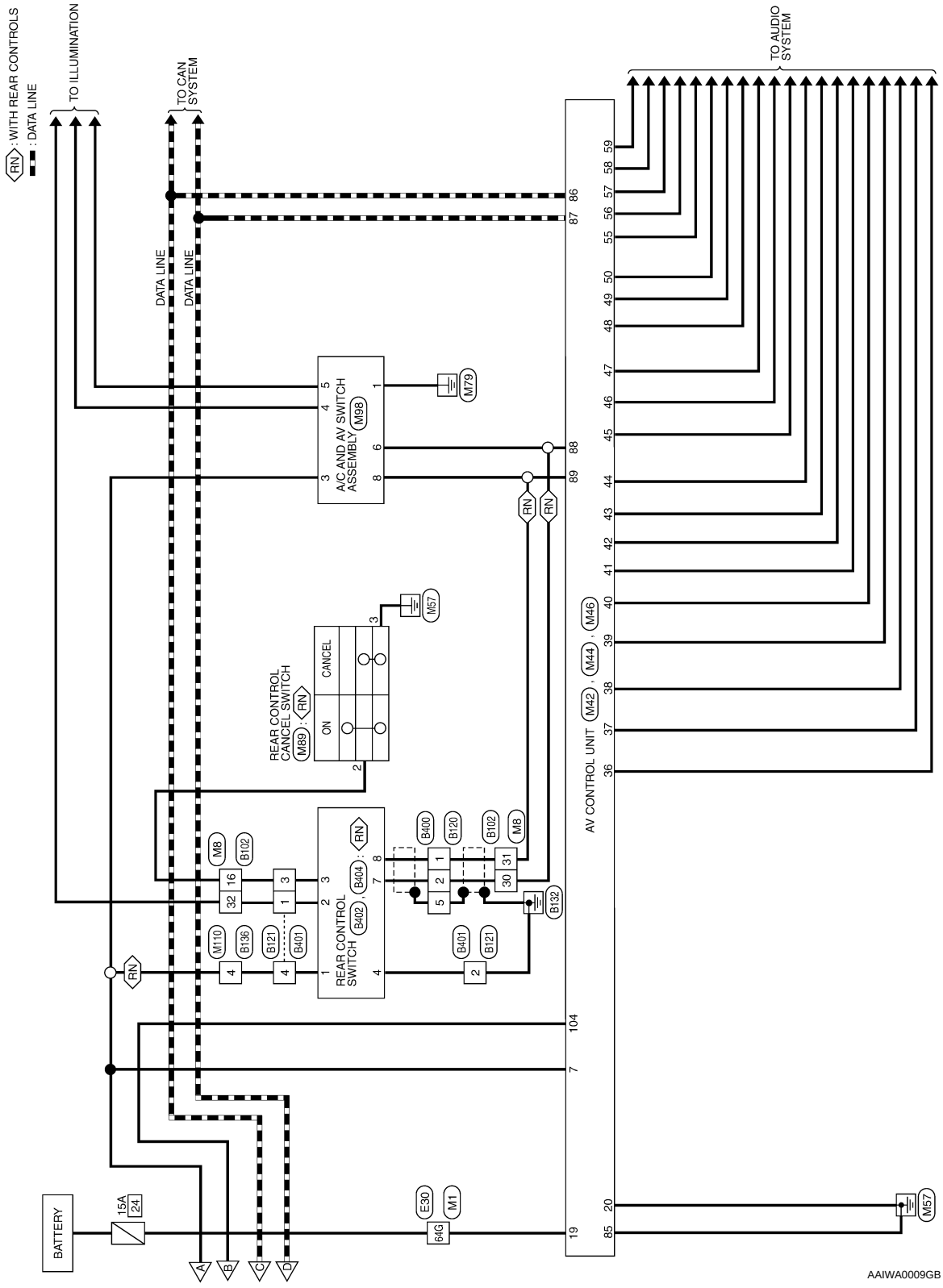
Terminal No.	Color of Wire	Signal Name
7	R	–
8	G	–

ABIIA0121GB

Wiring Diagram - Air Conditioner Control - Without NAVI

INFOID:0000000004215114

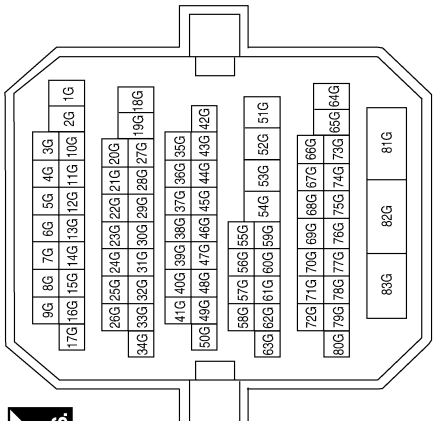



RN : WITH REAR CONTROLS
: DATA LINE
TO ILLUMINATION
TO CAN SYSTEM
TO AUDIO SYSTEM
DATA LINE
DATA LINE
A/C AND AV SWITCH ASSEMBLY M98
M79
REAR CONTROL CANCEL SWITCH M89 : RN
CANCEL
ON
M57
REAR CONTROL SWITCH B402 , B404 : RN
AV CONTROL UNIT M42 , M44 , M46
BATTERY
15A 24
E30
M1
64G
B400
B120
B102
M8
B132
B401
B121
M110
B136
AAIWA0009GB

AIR CONDITIONER CONTROL CONNECTORS - WITH COLOR DISPLAY WITHOUT NAVIGATION SYSTEM

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

H.S.



Terminal No.	Color of Wire	Signal Name
8G	P	–
15G	L	–
23G	Y	–
25G	B/Y	–
32G	O/B	–
51G	L	–
52G	P	–
64G	Y/R	–

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

H.S.

Terminal No.	Color of Wire	Signal Name
2N	G	–
3N	W/L	–
8N	W/L	–

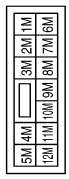
Connector No.	M4
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
6Q	Y/R	–

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

H.S.



Terminal No.	Color of Wire	Signal Name
4M	V/Y	–
7M	B	–

AAIIA0004GB

Connector No.	M6
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
15J	L	–
16J	P	–

Connector No.	M8
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
16	BR	–
30	R	(EARLY PRODUCTION)
30	L	(LATE PRODUCTION)
31	P	(LATE PRODUCTION)
31	G	(EARLY PRODUCTION)
32	R/L	–

Connector No.	M19
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	BLACK

H.S.

79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60
99	98	97	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80

Terminal No.	Color of Wire	Signal Name
78	P	CAN-L
79	L	CAN-H
90	Y	IGN2 CONT

Connector No.	M24
Connector Name	COMBINATION METER
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	33	34	35	36	37	38	39	40

Terminal No.	Color of Wire	Signal Name
18	O/B	OAT
19	P	OAT POWER
20	B/Y	GND (OAT SENSOR)
21	L	CAN-H
22	P	CAN-L

Connector No.	M31
Connector Name	BLOWER MOTOR
Connector Color	WHITE

H.S.

6	5	4	3	2	1

Terminal No.	Color of Wire	Signal Name
1	B	–
2	–	–
3	L/Y	–
4	W/L	–
5	–	–
6	–	–

AAIIA0005GB

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

H.S.

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

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

H.S.

Terminal No.	Color of Wire	Signal Name
1	LG	–
2	B/Y	–

Connector No.	M37
Connector Name	A/C AUTO AMP.
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	33	34	35	36	37	38	39	40

Terminal No.	Color of Wire	Signal Name
1	L	CAN-H
2	P	CAN-L
3	–	–
4	–	–
5	–	–
6	–	–
7	–	–
8	–	–
9	–	–
10	L/R	LAN_SIG
11	L/W	VACTR
12	–	–
13	–	–
14	–	–
15	O	SUN SENS
16	R/G	INTAKE SENS
17	V/Y	ACC
18	–	–
19	B	GND
20	G	IGN
21	–	–
22	–	–
23	–	–
24	–	–
25	–	–
26	GR	RR DEF F B
27	GR/W	RR DEF ON
28	–	–
29	–	–
30	–	–
31	–	–
32	L/Y	FAN PWM
33	–	–
34	P	AMB POWER
35	O/B	AMB SENS
36	LG	INCAR SENS
37	B/Y	SENS GND
38	–	–
39	B	GND(POWER)
40	Y/R	BAT

AAIIA0006GB

Connector No.	M42
Connector Name	AV CONTROL UNIT (WITHOUT NAVI)
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

Terminal No.	Color of Wire	Signal Name
7	V/Y	ACC
19	Y/R	BAT
20	B	GND

Connector No.	M44
Connector Name	AV CONTROL UNIT (WITHOUT NAVI)
Connector Color	WHITE

H.S.

47	46	45	44	43	42	41	40	39	38	37	36
59	58	57	56	55	54	53	52	51	50	49	48

Terminal No.	Color of Wire	Signal Name
36	R/L	COMP OUT+
37	B	COMP OUT-
38	W	B
39	R	G
40	B	R
41	G	RGB SYNC

Terminal No.	Color of Wire	Signal Name
42	SHIELD	RGB SYNC GND
43	B	YS
44	BR	DISP IT
45	R	HP
46	LG	SIG GND
47	O	SIG VCC
48	R/W	COMP OUT SYNC
49	SHIELD	COMP OUT SHIELD
50	SHIELD	RGB GND
55	SHIELD	SHIELD
56	Y	IT DISP
57	W	VP
58	BR	INV GND
59	Y	INV VCC

Connector No.	M46
Connector Name	AV CONTROL UNIT (WITHOUT NAVI)
Connector Color	WHITE

H.S.

91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76
107	106	105	104	103	102	101	100	99	98	97	96	95	94	93	92

Terminal No.	Color of Wire	Signal Name
85	B	GND
86	L	CAN-H
87	P	CAN-L
88	R	M-CAN_H (EARLY PRODUCTION)
88	L	M-CAN_H (LATE PRODUCTION)
89	G	M-CAN_L (EARLY PRODUCTION)
89	P	M-CAN_L (LATE PRODUCTION)
104	G	IGN

Connector No.	M56
Connector Name	SUNLOAD SENSOR
Connector Color	BLACK

H.S.

1	2

Terminal No.	Color of Wire	Signal Name
1	O	–
2	B/Y	–

Connector No.	M69
Connector Name	INTAKE SENSOR
Connector Color	WHITE

H.S.

1	2

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

AAIIA0007GB

Connector No.	M89
Connector Name	REAR REMOTE CONTROL CANCEL SWITCH
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
2	BR	–
3	B	–

Connector No.	M98
Connector Name	A/C AND AV SWITCH ASSEMBLY
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	B	GND
3	V/Y	ACC
4	R/L	ILL+
5	R/Y	ILL CONT GND
6	R	CAN H
8	G	CAN L

Connector No.	M110
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
4	V/Y	–

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

H.S.

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

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

H.S.

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

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

H.S.

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

AAIIA0008GB

Connector No.	E3
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

Terminal No.	Color of Wire	Signal Name
5	GR	–
11	GR	–
13	SB	–

Connector No.	M129
Connector Name	AIR MIX DOOR MOTOR PASSENGER SIDE
Connector Color	WHITE

H.S.

3	2	1

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

Connector No.	M128
Connector Name	AIR MIX DOOR MOTOR DRIVER SIDE
Connector Color	WHITE

H.S.

3	2	1

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

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

H.S.

1	2	3	4
5	6	7	8	9	10

Terminal No.	Color of Wire	Signal Name
10	B/W	–

Connector No.	E10
Connector Name	ECM
Connector Color	BLACK

H.S.

81	85	89	93	97	101	105	109
82	86	90	94	98	102	106	110
83	87	91	95	99	103	107	111
84	88	92	96	100	104	108	112

Terminal No.	Color of Wire	Signal Name
97	P	CAN-L
98	L	CAN-H

Connector No.	E6
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
6P	Y	–

AAIIA0009GB

Connector No.	E17
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

H.S.

42	41	40	39
46	45	44	43

Terminal No.	Color of Wire	Signal Name
39	P	CAN-L
40	L	CAN-H
41	B	S-GND

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

H.S.

9	10	11	12	13	14
3	4	5	6	7	8

25	26	27	28	29	30	31	32	33	34	37	38
15	16	17	18	19	20	21	22	23	24	35	36

Terminal No.	Color of Wire	Signal Name
12	B	P-GND
20	L	AMB SENS GND-E/R
21	LG	AMB SENS SIG-E/R
22	SB	PD SENS GND-E/R
23	GR	PD SENS SIG-E/R
24	G	PD SENS PWR-E/R

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

H.S.

4	3	2	1

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

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

H.S.

4	3	2	1

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

Connector No.	E29
Connector Name	WIRE TO WIRE
Connector Color	WHITE

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
6	L	–
16	P	–

AAIIA0010GB

Connector No.	E44
Connector Name	JUNCTION BLOCK
Connector Color	BROWN

H.S.

5	4		3	2	1
12	11	10	9	8	7	6

Terminal No.	Color of Wire	Signal Name
8	G	–

Connector No.	E211
Connector Name	AMBIENT SENSOR
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	SB	–
2	BR/W	–

Terminal No.	Color of Wire	Signal Name
8G	P	–
15G	L	–
23G	Y	–
25G	L	–
32G	LG	–
51G	L	–
52G	P	–
64G	V	–

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

H.S.

98	97	96	95	94	93	92	91
106	105	104	103	102	101	100	99

Terminal No.	Color of Wire	Signal Name
99	BR/W	AMB SENS GND-FEM
100	SB	AMB SENS SIG-FEM
101	W	PD SENS GND FEM
102	R	PD SENS SIG FEM
103	P	PD SENS PWR FEM

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

H.S.

Connector No.	E45
Connector Name	JUNCTION BLOCK
Connector Color	WHITE

H.S.

17	16		15	14	13
24	23	22	21	20	19	18

Terminal No.	Color of Wire	Signal Name
22	GR	–

AAIIA0011GB

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

H.S.

Terminal No.	Color of Wire	Signal Name
1	P	AVCC 2
2	R	SIGNAL
3	W	GND

Connector No.	F1
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
5	R	–
11	BR/W	–
13	G	–

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

H.S.

Terminal No.	Color of Wire	Signal Name
10	B/W	–

Connector No.	F10
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
48	W	A/C COMP

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

H.S.

Terminal No.	Color of Wire	Signal Name
1	W	A/C COMP
2	B/W	GND

AAIIA0012GB

Terminal No.	Color of Wire	Signal Name
15J	L	–
16J	P	–

Connector No.	B1
Connector Name	WIRE TO WIRE
Connector Color	BLACK

H.S.

Connector No.	B102
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
16	O	–
30	R	–
31	G	–
32	P	–

Connector No.	B10
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
6	L	–
16	P	–

Connector No.	F13
Connector Name	ECM
Connector Color	BROWN

H.S.

Terminal No.	Color of Wire	Signal Name
39	R	PDPRES
40	G	GNDA-PDPRES
72	GR	AVCC2-PDPRES

Connector No.	B2
Connector Name	JOINT CONNECTOR-B01
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	P	–
2	P	–
4	L	–
5	L	–

AAIIA0013GB

Connector No.	B136
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

Terminal No.	Color of Wire	Signal Name
4	Y	–

Connector No.	B121
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

4	3	2	1

Terminal No.	Color of Wire	Signal Name
1	P	–
2	B	–
3	O	–
4	Y	–

Connector No.	B120
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

4	3	2	1
6			5

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

Connector No.	B402
Connector Name	REAR CONTROL SWITCH
Connector Color	WHITE

H.S.

1	2	3	4

Terminal No.	Color of Wire	Signal Name
1	V/Y	–
2	R/L	–
3	BR	–
4	B	–

Connector No.	B401
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

1	2	3	4

Terminal No.	Color of Wire	Signal Name
1	R/L	–
2	B	–
3	BR	–
4	V/Y	–

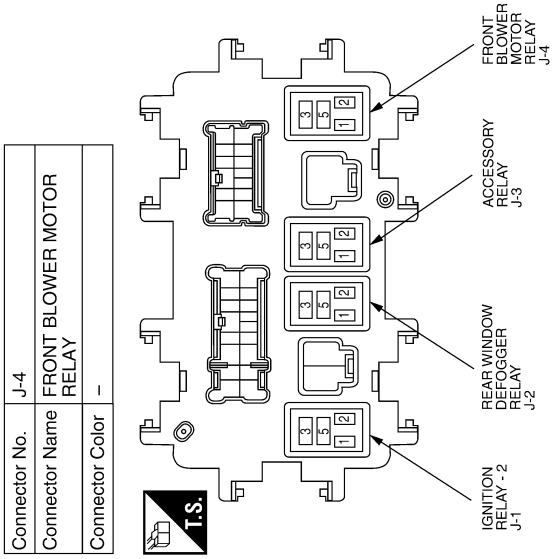
Connector No.	B400
Connector Name	WIRE TO WIRE
Connector Color	GRAY

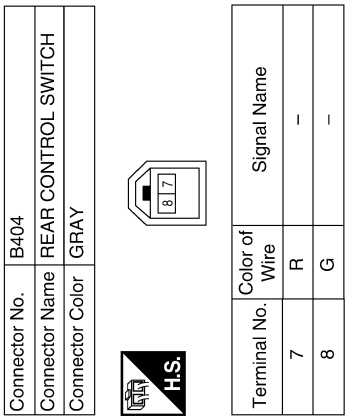
H.S.

1	2	3	4
5			6

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

ABIIA0118GB





ABIIA0119GB

Fail-Safe

INFOID:0000000004199459

FAIL-SAFE FUNCTION

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

Compressor : ON
Air outlet : AUTO
Air inlet : FRE (Fresh)
Blower fan speed : AUTO
Set temperature : Setting before communication error occurs
Display : OFF

DTC Inspection Priority Chart

INFOID:0000000004199460

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

Priority	Detected items (DTC)
1	• U1000: CAN COMM CIRCUIT • U1010: CONTROL UNIT (CAN)
2	• B257B: AMB TEMP SEN (SHORT) • B257C: AMB TEMP SEN (OPEN) • B2578: IN CAR SENSOR (OUT OF RANGE[LOW]) • B2579: IN CAR SENSOR (OUT OF RANGE[HI]) • B2581: EVAP TEMP SEN (SHORT) • B2582: EVAP TEMP SEN (OPEN) • B2630: SUNLOAD SEN (SHORT) • B2631: SUNLOAD SEN (OPEN) • B2632: DR AIRMIX ACTR (SHORT) • B2633: DR AIRMIX ACTR (OPEN) • B2634: PASS AIRMIX ACTR (SHORT) • B2635: PASS AIRMIX ACTR (OPEN) • B2636: DR VENT DOOR FAIL • B2637: DR B/L DOOR FAIL • B2638: DR D/F1 DOOR FAIL • B2639: DR DEF DOOR FAIL • B263D: FRE DOOR FAIL • B263E: 20P FRE DOOR FAIL • B263F: REC DOOR FAIL • B2654: D/F2 DOOR FAIL • B2655: B/L2 DOOR FAIL

DTC Index

INFOID:0000000004199461

DTC	Items (CONSULT-III screen terms)	Reference
U1000	CAN COMM CIRCUIT	HAC-31, "DTC Logic"
U1010	CONTROL UNIT (CAN)	HAC-32, "DTC Logic"
B257B	AMB TEMP SEN (SHORT)	HAC-33, "DTC Logic"
B257C	AMB TEMP SEN (OPEN)	HAC-33, "DTC Logic"
B2578	IN CAR SENSOR (OUT OF RANGE [LOW])	HAC-36, "DTC Logic"
B2579	IN CAR SENSOR (OUT OF RANGE [HI])	HAC-36, "DTC Logic"
B2581	EVAP TEMP SEN (SHORT)	HAC-39, "DTC Logic"
B2582	EVAP TEMP SEN (OPEN)	HAC-39, "DTC Logic"
B2630*	SUNLOAD SEN (SHORT)	HAC-42, "DTC Logic"
B2631*	SUNLOAD SEN (OPEN)	HAC-42, "DTC Logic"
B2632	DR AIRMIX ACTR (SHORT)	HAC-45, "DTC Logic"
B2633	DR AIRMIX ACTR (OPEN)	HAC-45, "DTC Logic"
B2634	PASS AIRMIX ACTR (SHORT)	HAC-47, "DTC Logic"

DTC	Items (CONSULT-III screen terms)	Reference
B2635	PASS AIRMIX ACTR (OPEN)	HAC-47, "DTC Logic"
B2636	DR VENT DOOR FAIL	HAC-49, "DTC Logic"
B2637	DR B/L DOOR FAIL	HAC-49, "DTC Logic"
B2638	DR D/F1 DOOR FAIL	HAC-49, "DTC Logic"
B2639	DR DEF DOOR FAIL	HAC-49, "DTC Logic"
B263D	FRE DOOR FAIL	HAC-51, "DTC Logic"
B263E	20P FRE DOOR FAIL	HAC-51, "DTC Logic"
B263F	REC DOOR FAIL	HAC-51, "DTC Logic"
B2654	D/F2 DOOR FAIL	HAC-49, "DTC Logic"
B2655	B/L2 DOOR FAIL	HAC-49, "DTC Logic"

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

SYMPTOM DIAGNOSIS

INSUFFICIENT COOLING

Component Function Check

INFOID:0000000004199463

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

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE DECREASE

1. Press the AUTO switch.
2. Turn temperature control dial (driver side) counterclockwise until 18°C (60°F) is displayed.
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-5, "Operational Check (Front)" or HAC-6, "Operational Check (Rear)".

Does another symptom exist?

YES >> Refer to HA-16, "WITH COLOR DISPLAY : Symptom Matrix Chart".
NO >> System OK.

3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4

4. CHECK DRIVE BELTS

Check compressor belt tension. Refer to EM-14, "Checking Drive Belts".

Is the inspection result normal?

YES >> GO TO 5
NO >> Adjust or replace A/C compressor belt. Refer to EM-14, "Removal and Installation".

5. CHECK SETTING OF TEMPERATURE SETTING TRIMMER

Using CONSULT-III, check the setting of “TEMP SET CORRECT” on “WORK SUPPORT” of HVAC. Refer to HAC-7, "Temperature Setting Trimmer".

1. Check that the temperature setting trimmer is set to “+ direction”.
   NOTE:
   The control temperature can be set with the setting of the temperature setting trimmer.
2. Set temperature control dial to “0”.

Is the symptom still present?

YES >> GO TO 6.
NO >> Inspection End.

6. CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.
2. Check if any DTC No. is displayed in the trouble diagnosis results.
   NOTE:
   If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-31, "DTC Logic" or HAC-32, "DTC Logic".

Is any DTC No. displayed?

YES >> Perform diagnosis for the applicable DTC. Refer to HAC-96, "DTC Index".
NO >> GO TO 7.

7. CHECK WITH ACTIVE TEST OF CONSULT-III

1. Using CONSULT-III, perform “HVAC TEST”“ACTIVE TEST” of HVAC to check each output device. Refer to HAC-27, "CONSULT-III Function".
   NOTE:
   Perform the ACTIVE TEST after starting the engine because the compressor is operating.
2. Refer to the table and check the outlet, inlet, airflow temperature, blower motor control signal, magnet clutch operation, and air mix ratio. Visually check each operating condition, by listening for noise, touching air outlets with a hand, etc.

	Test item					
	MODE 1	MODE 2	MODE 3	MODE 4	MODE 5	MODE 6
Mode door position	VENT1	B/L1	B/L2	FOOT	D/F	DEF
Intake door position	REC	REC	20%FRE	FRE	FRE	FRE
Air mix door position (driver & passenger side)	FULL COLD	FULL COLD	FULL HOT	FULL HOT	FULL HOT	FULL HOT
Blower motor duty ratio	37%	91%	65%	65%	65%	91%
Compressor (Magnet clutch)	ON	ON	ON	OFF	ON	ON

Does it operate normally?

YES >> GO TO 8.
NO-1 >> Air outlet does not change. Refer to HAC-50, "Diagnosis Procedure".
NO-2 >> Air inlet does not change. Refer to HAC-52, "Diagnosis Procedure".
NO-3 >> Discharge air temperature does not change. Refer to HAC-46, "Diagnosis Procedure" and HAC-48, "Diagnosis Procedure".
NO-4 >> Blower motor does not operate normally. Refer to HAC-53, "Diagnosis Procedure".
NO-5 >> Magnet clutch does not operate. Refer to HAC-61, "Diagnosis Procedure".

8. 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 9
NO >> Repair or replace air mix door control linkage.

9. CHECK COOLING FAN MOTOR OPERATION

Check and verify cooling fan motor for smooth operation.

Does cooling fan motor operate correctly?

YES >> GO TO 10
NO >> Check cooling fan motor. Refer to EC-453, "Component Function Check".

10. 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 11

11. CHECK REFRIGERANT PURITY

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

Is the inspection result normal?

YES >> GO TO 12
NO >> Check contaminated refrigerant. Refer to HA-34, "Collection and Charge".

12. CHECK REFRIGERANT PRESSURE

Check refrigerant pressure with manifold gauge connected. Refer to EC-481, "Component Function Check".

Is the inspection result normal?

YES >> Perform diagnostic work flow. Refer to HAC-100, "Diagnostic Work Flow".
NO >> GO TO 13

13. CHECK FOR EVAPORATOR FREEZE-UP

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

NOTE:

Evaporator freeze up usually occurs at sustained highway speeds in hot, humid conditions with blend door at full cold and blower on low speed, after 1-3 hours of continuous driving.

Does evaporator freeze up?

YES >> Perform diagnostic work flow. Refer HAC-100, "Diagnostic Work Flow".
NO >> GO TO 14

14. CHECK AIR DUCTS

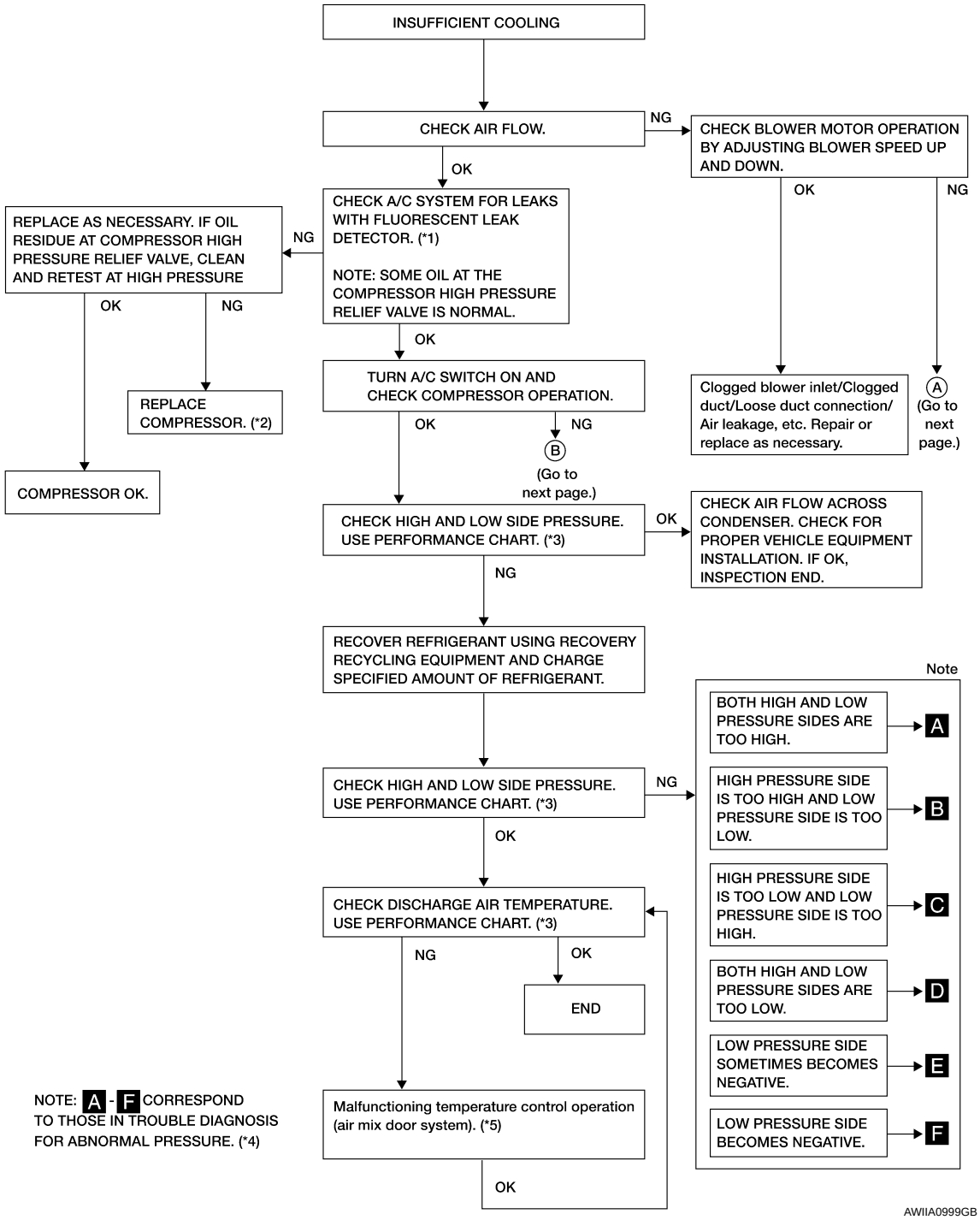
Check ducts for air leaks.

Is the inspection result normal?

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

Diagnostic Work Flow

INFOID:0000000004199464



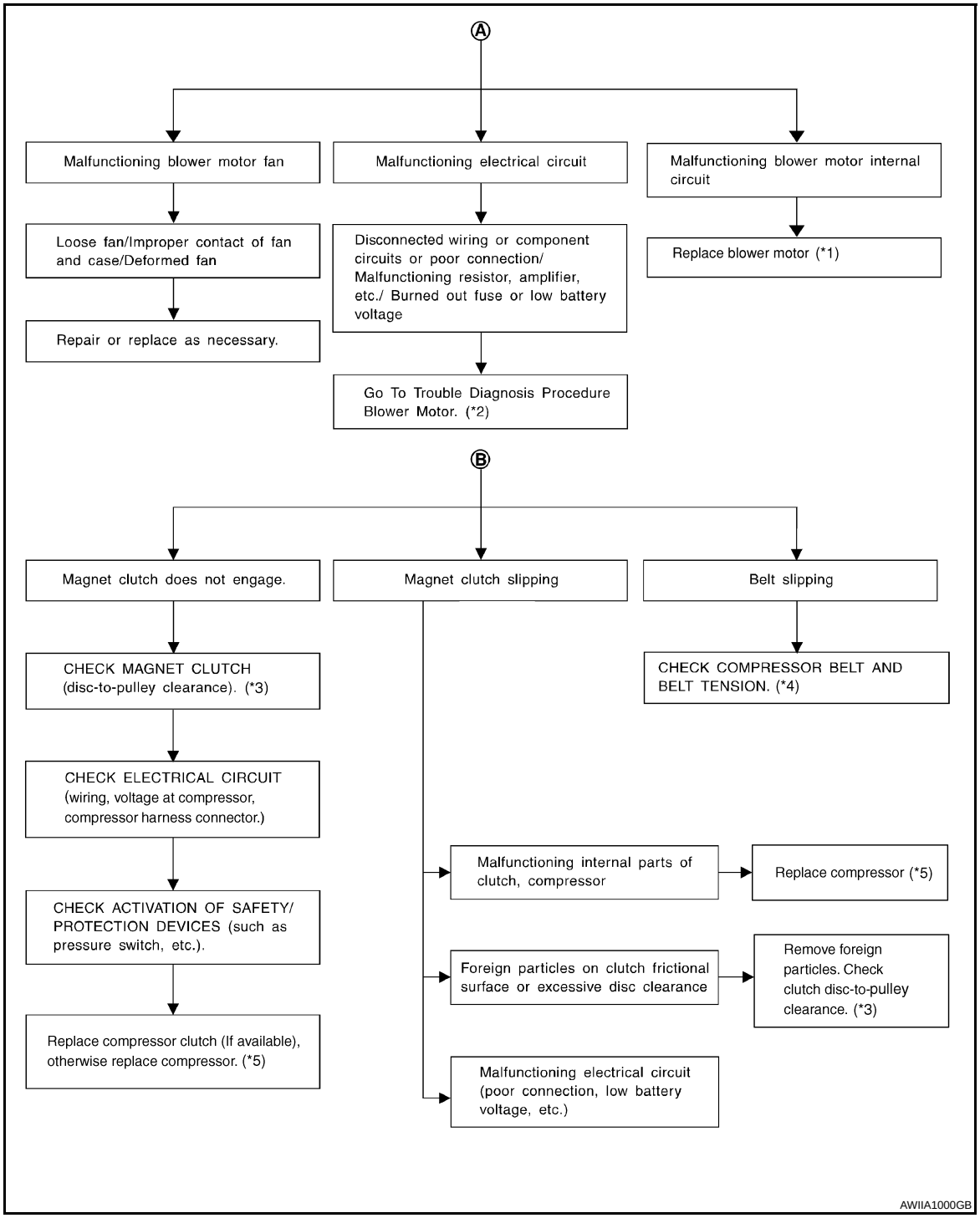
*1 HA-41, "Inspection"

*2 HA-44, "Removal and Installation for Compressor"

*3 HAC-102, "Performance Chart"

*4 HA-14, "WITH COLOR DISPLAY : Trouble Diagnoses for Abnormal Pressure"

*5 HAC-46, "Diagnosis Procedure" (driver) or HAC-48, "Diagnosis Procedure" (passenger)



*1 VTL-17, "BLOWER MOTOR : Removal and Installation"
*2 HAC-53, "Diagnosis Procedure"
*3 HA-45, "Removal and Installation for Compressor Clutch"
*4 EM-14, "Checking Drive Belts"
*5 HA-44, "Removal and Installation for Compressor"

Performance Chart

INFOID:0000000004199465

TEST CONDITION

Testing must be performed as follows:

Vehicle location	Indoors or in the shade (in a well-ventilated place)
Doors	Closed
Door windows	Open
Hood	Open
TEMP.	Max. COLD
Mode switch	(Ventilation) set
Intake switch	(Recirculation) set
(fan) speed	Max. speed set
Engine speed	Idle speed
Operate the air conditioning system for 10 minutes before taking measurements.	

TEST READING

Recirculating-to-discharge Air Temperature Table

Inside air (Recirculating air) at blower assembly inlet		Discharge air temperature at center ventilator °C (°F)
Relative humidity %	Air temperature °C (°F)	
50 - 60	25 (77)	10.0 - 12.3 (50 - 54)
	30 (86)	13.2 - 15.3 (56 - 60)
	35 (95)	17.2 - 21.0 (63 - 70)
60 - 70	25 (77)	12.3 - 14.9 (54 - 59)
	30 (86)	15.3 - 19.3 (60 - 67)
	35 (95)	21.0 - 24.4 (70 - 76)

Ambient Air Temperature-to-operating Pressure Table

Ambient air		High-pressure (Discharge side) kPa (kg/cm2, psi)	Low-pressure (Suction side) kPa (kg/cm2, psi)
Relative humidity %	Air temperature °C (°F)		
50 - 70	30 (86)	1,220 - 1,500 (12.44 - 15.30, 176.9 - 217.5)	240 - 295 (2.45 - 3.01, 34.8 - 42.8)
	35 (95)	1,360 - 1,690 (13.87 - 17.24, 197.2 - 245.1)	275 - 335 (2.81 - 3.42, 39.9 - 48.6)
	40 (104)	1,500 - 1,830 (12.44 - 18.67, 176.9 - 265.4)	310 - 375 (3.16 - 3.83, 45.0 - 54.4)

INSUFFICIENT HEATING

Component Function Check

INFOID:0000000004199467

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

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE INCREASE

1. Press the AUTO switch.
2. Turn temperature control dial (driver side) clockwise until 32°C (90°F) is displayed.
3. 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-5, "Operational Check (Front)" or HAC-6, "Operational Check (Rear)".

Does another symptom exist?

YES >> Refer to HA-16, "WITH COLOR DISPLAY : Symptom Matrix Chart".
NO >> System OK.

3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4

4. CHECK ENGINE COOLING SYSEM

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

>> GO TO 5

5. CHECK SETTING OF TEMPERATURE SETTING TRIMMER

Using CONSULT-III, check the setting of “TEMP SET CORRECT” on “WORK SUPPORT” of HVAC. Refer to HAC-7, "Temperature Setting Trimmer".

1. Check that the temperature setting trimmer is set to “– direction”.
   NOTE:
   The control temperature can be set by the temperature setting trimmer.
2. Set temperature control dial to “0”.

Is the symptom still present?

YES >> GO TO 6.
NO >> Inspection End.

6. CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.
2. Check if any DTC No. is displayed in the trouble diagnosis results.
   NOTE:
   If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-31, "DTC Logic" or HAC-32, "DTC Logic".

Is any DTC No. displayed?

YES >> Perform diagnosis for the applicable DTC. Refer to HAC-96, "DTC Index".
NO >> GO TO 7.

7. CHECK WITH ACTIVE TEST OF CONSULT-III

1. Using CONSULT-III, perform “HVAC TEST” in “ACTIVE TEST” of HVAC to check each output device. Refer to HAC-27, "CONSULT-III Function".
   NOTE:
   Perform the ACTIVE TEST after starting the engine because the compressor is operating.
2. Refer to the table and check the outlet, inlet, airflow temperature, blower motor control signal, magnet clutch operation, and air mix ratio. Visually check each operating condition, by listening for noise, touching air outlets with a hand, etc.

	Test item					
	MODE 1	MODE 2	MODE 3	MODE 4	MODE 5	MODE 6
Mode door position	VENT1	B/L1	B/L2	FOOT	D/F	DEF
Intake door position	REC	REC	20%FRE	FRE	FRE	FRE
Air mix door position (driver & passenger side)	FULL COLD	FULL COLD	FULL HOT	FULL HOT	FULL HOT	FULL HOT
Blower motor duty ratio	37%	91%	65%	65%	65%	91%
Compressor (Magnet clutch)	ON	ON	ON	OFF	ON	ON

Does it operate normally?

YES >> GO TO 8.
NO-1 >> Air outlet does not change. Refer to HAC-50, "Diagnosis Procedure".
NO-2 >> Air inlet does not change. Refer to HAC-52, "Diagnosis Procedure".
NO-3 >> Discharge air temperature does not change. Refer to HAC-46, "Diagnosis Procedure" and HAC-48, "Diagnosis Procedure".
NO-4 >> Blower motor does not operate normally. Refer to HAC-53, "Diagnosis Procedure".
NO-5 >> Magnet clutch does not operate. Refer to HAC-61, "Diagnosis Procedure".

8. CHECK AIR DUCTS

Check for disconnected or leaking air ducts.

Is the inspection result normal?

YES >> GO TO 9
NO >> Repair all disconnected or leaking air ducts.

9. CHECK HEATER HOSE TEMPERATURES

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

Is the inspection result normal?

YES >> Hot inlet hose and a warm outlet hose: GO TO 10
NO >> Both hoses warm: GO TO 11

10. CHECK ENGINE COOLANT SYSTEM

Check thermostat operation. Refer to CO-21, "Removal and Installation".

Is the inspection result normal?

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

11. CHECK HEATER HOSES

Check heater hoses for proper installation.

Is the inspection result normal?

YES >> System OK.
NO >> 1. Backflush heater core.
2. Drain the water from the system.
3. Refill system with new engine coolant. Refer to CO-10, "Changing Engine Coolant".
4. To retest GO TO 12

12. CHECK HEATER HOSE TEMPERATURES

1. Start engine and warm up to normal operating temperature.
2. Touch both the inlet and outlet heater hoses.

Is the inspection result normal?

YES >> System OK.
NO >> Replace heater core. Refer to HA-54, "HEATER CORE : Removal and Installation".

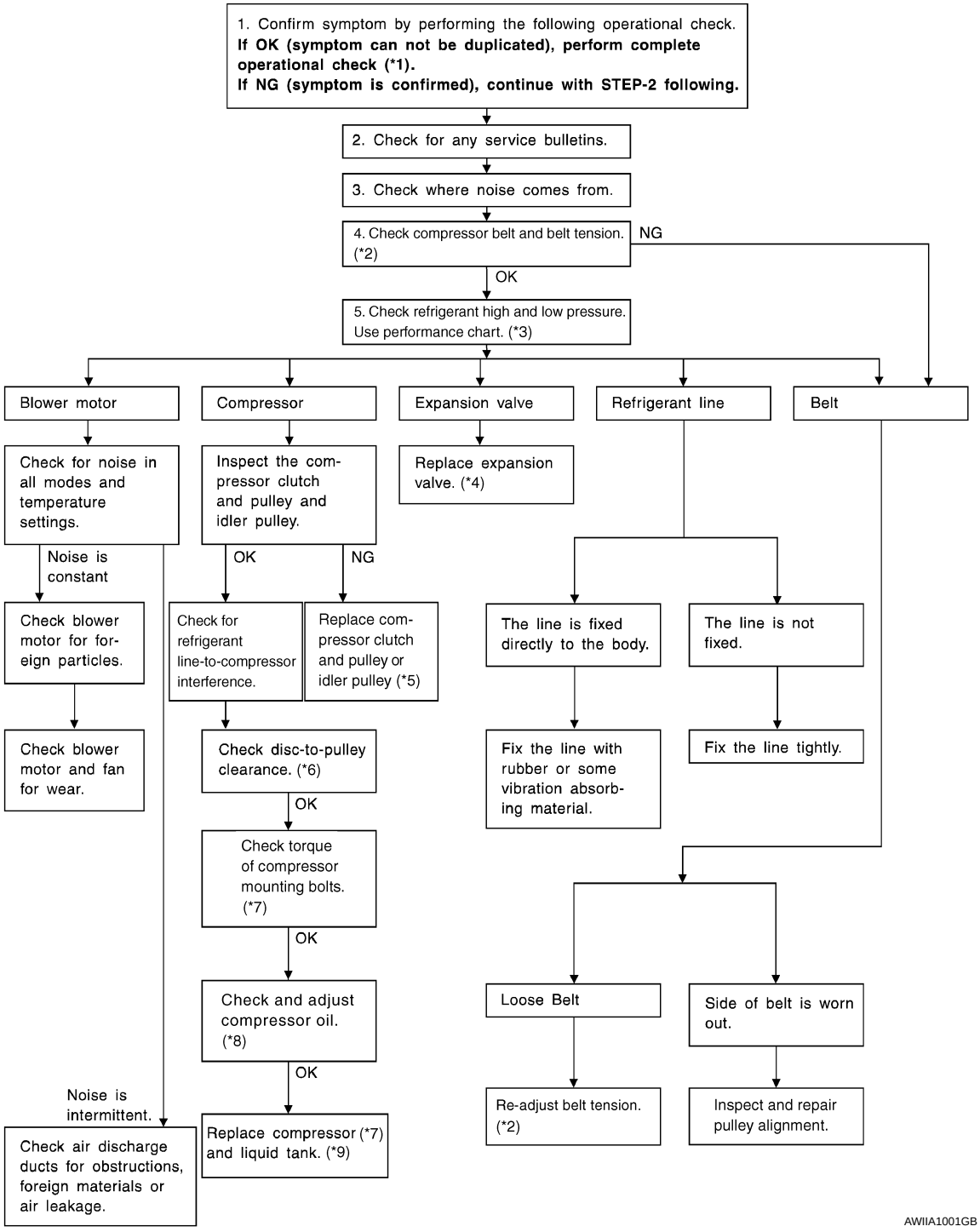
NOISE

Component Function Check

INFOID:0000000004199468

Symptom
- Noise
- Noise is heard when the A/C system operates.

INSPECTION FLOW



*1	HAC-5, "Operational Check (Front)"	*2	EM-14, "Checking Drive Belts"	*3	HAC-102, "Performance Chart"
*4	HA-56, "EXPANSION VALVE : Removal and Installation for Expansion Valve"	*5	HA-45, "Removal and Installation for Compressor Clutch"	*6	HA-45, "Removal and Installation for Compressor Clutch"
*7	HA-44, "Removal and Installation for Compressor"	*8	HA-36, "Maintenance of Oil Quantity"	*9	HA-51, "CONDENSER : Removal and Installation for Condenser"

MEMORY FUNCTION DOES NOT OPERATE

Component Function Check

INFOID:0000000004199469

Symptom
- Memory function does not operate normally.
- The setting is not maintained. (It returns to the initial condition.)

1.CHECK OPERATION

1. Set temperature control dial to 32°C (90°F).
2. Press the OFF switch.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON.
5. Press the AUTO switch.
6. Check that the set temperature is maintained.

Is the inspection result normal?

YES >> Inspection End.
NO >> Check power supply and ground circuit of A/C auto amp. Refer to HAC-63, "A/C AUTO AMP. : Component Function Check".

PRECAUTION

PRECAUTIONS

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

INFOID:0000000004335549

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

INFOID:0000000004399686

NOTE:

- Before removing and installing any control units, first turn the push-button ignition switch to the LOCK position, then disconnect both battery cables.
- After finishing work, confirm that all control unit connectors are connected properly, then re-connect both battery cables.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If a DTC is detected, perform trouble diagnosis according to self-diagnosis results.

This vehicle is equipped with a push-button ignition switch and a steering lock unit.
If the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.
If turning the steering wheel is required with the battery disconnected or discharged, follow the procedure below before starting the repair operation.

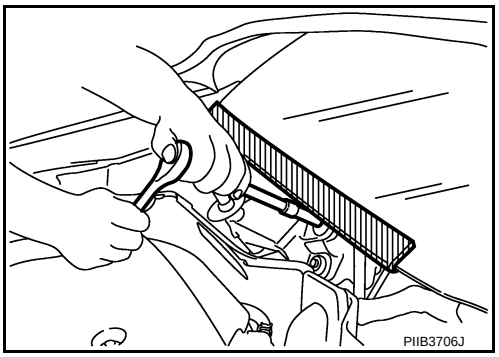
OPERATION PROCEDURE

1. Connect both battery cables.
   NOTE:
   Supply power using jumper cables if battery is discharged.
2. Carry the Intelligent Key or insert it to the key slot and turn the push-button ignition switch to ACC position. (At this time, the steering lock will be released.)
3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
4. Perform the necessary repair operation.
5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the push-button ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the push-button ignition switch is turned to LOCK position.)
6. Perform self-diagnosis check of all control units using CONSULT-III.

Precaution for Procedure without Cowl Top Cover

INFOID:0000000004335551

When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc.



Precautions For Xenon Headlamp Service

INFOID:0000000004335552

WARNING:

Comply with the following warnings to prevent any serious accident.

- **Disconnect the battery cable (negative terminal) or the power supply fuse before installing, removing, or touching the xenon headlamp (bulb included). The xenon headlamp contains high-voltage generated parts.**
- **Never work with wet hands.**
- **Check the xenon headlamp ON-OFF status after assembling it to the vehicle. Never turn the xenon headlamp ON in other conditions. Connect the power supply to the vehicle-side connector. (Turning it ON outside the lamp case may cause fire or visual impairments.)**
- **Never touch the bulb glass immediately after turning it OFF. It is extremely hot.**

CAUTION:

Comply with the following cautions to prevent any error and malfunction.

- **Install the xenon bulb securely. (Insufficient bulb socket installation may melt the bulb, the connector, the housing, etc. by high-voltage leakage or corona discharge.)**
- **Never perform HID circuit inspection with a tester.**
- **Never touch the xenon bulb glass with hands. Never put oil and grease on it.**
- **Dispose of the used xenon bulb after packing it in thick vinyl without breaking it.**
- **Never wipe out dirt and contamination with organic solvent (thinner, gasoline, etc.).**

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

INFOID:0000000004335553

WARNING:

- **CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. If the refrigerants are mixed compressor failure is likely to occur. Refer to HA-40, "Checking of Refrigerant Leaks". To determine the purity of HFC-134a (R-134a) in the vehicle and recovery tank, use Refrigerant Recovery/Recycling Recharging equipment and Refrigerant Identifier.**
- **Use only specified oil for the HFC-134a (R-134a) A/C system and HFC-134a (R-134a) components. If oil other than that specified is used, compressor failure is likely to occur.**
- **The specified HFC-134a (R-134a) oil rapidly absorbs moisture from the atmosphere. The following handling precautions must be observed:**

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

CONTAMINATED REFRIGERANT

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

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

General Refrigerant Precaution

INFOID:0000000004335554

WARNING:

- **Do not release refrigerant into the air. Use approved recovery/recycling equipment to capture the refrigerant every time an air conditioning system is discharged.**
- **Always wear eye and hand protection (goggles and gloves) when working with any refrigerant or air conditioning system.**
- **Do not store or heat refrigerant containers above 52°C (125°F).**
- **Do not heat a refrigerant container with an open flame; if container warming is required, place the bottom of the container in a pail of warm water.**
- **Do not intentionally drop, puncture, or incinerate refrigerant containers.**
- **Keep refrigerant away from open flames: poisonous gas will be produced if refrigerant burns.**
- **Refrigerant will displace oxygen, therefore be certain to work in well ventilated areas to prevent suffocation.**
- **Do not pressure test or leak test HFC-134a (R-134a) service equipment and/or vehicle air conditioning systems with compressed air during repair. Some mixtures of air and HFC-134a (R-134a) have been shown to be combustible at elevated pressures. These mixtures, if ignited, may cause injury or property damage. Additional health and safety information may be obtained from refrigerant manufacturers.**

Refrigerant Connection

INFOID:0000000004335555

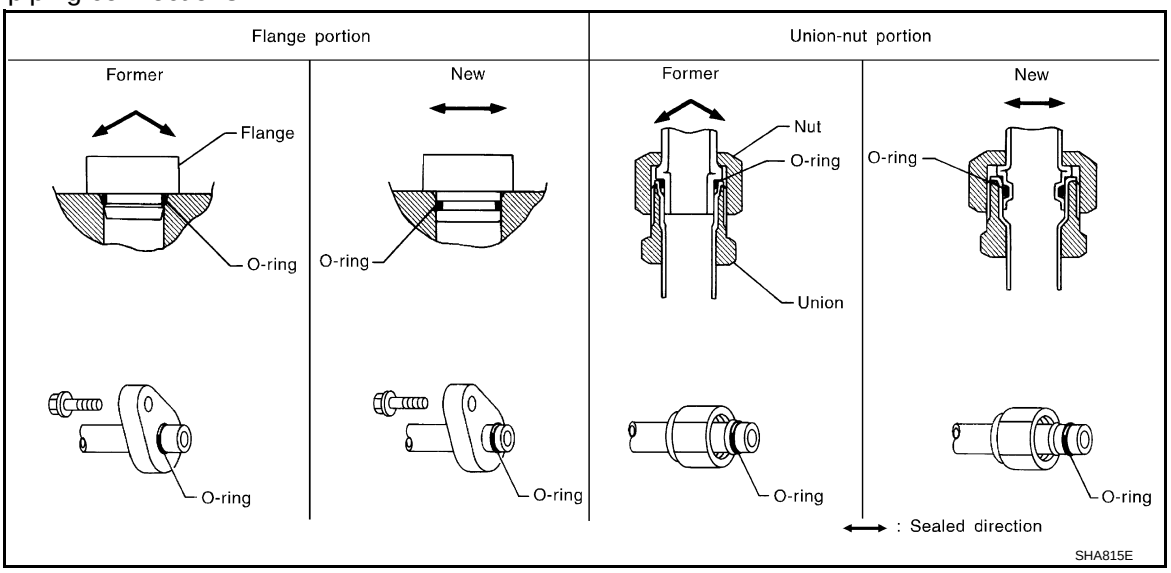
A new type refrigerant connection has been introduced to all refrigerant lines except the following locations.

- Expansion valve to cooling unit
- Evaporator pipes to evaporator (inside cooling unit)
- Refrigerant pressure sensor

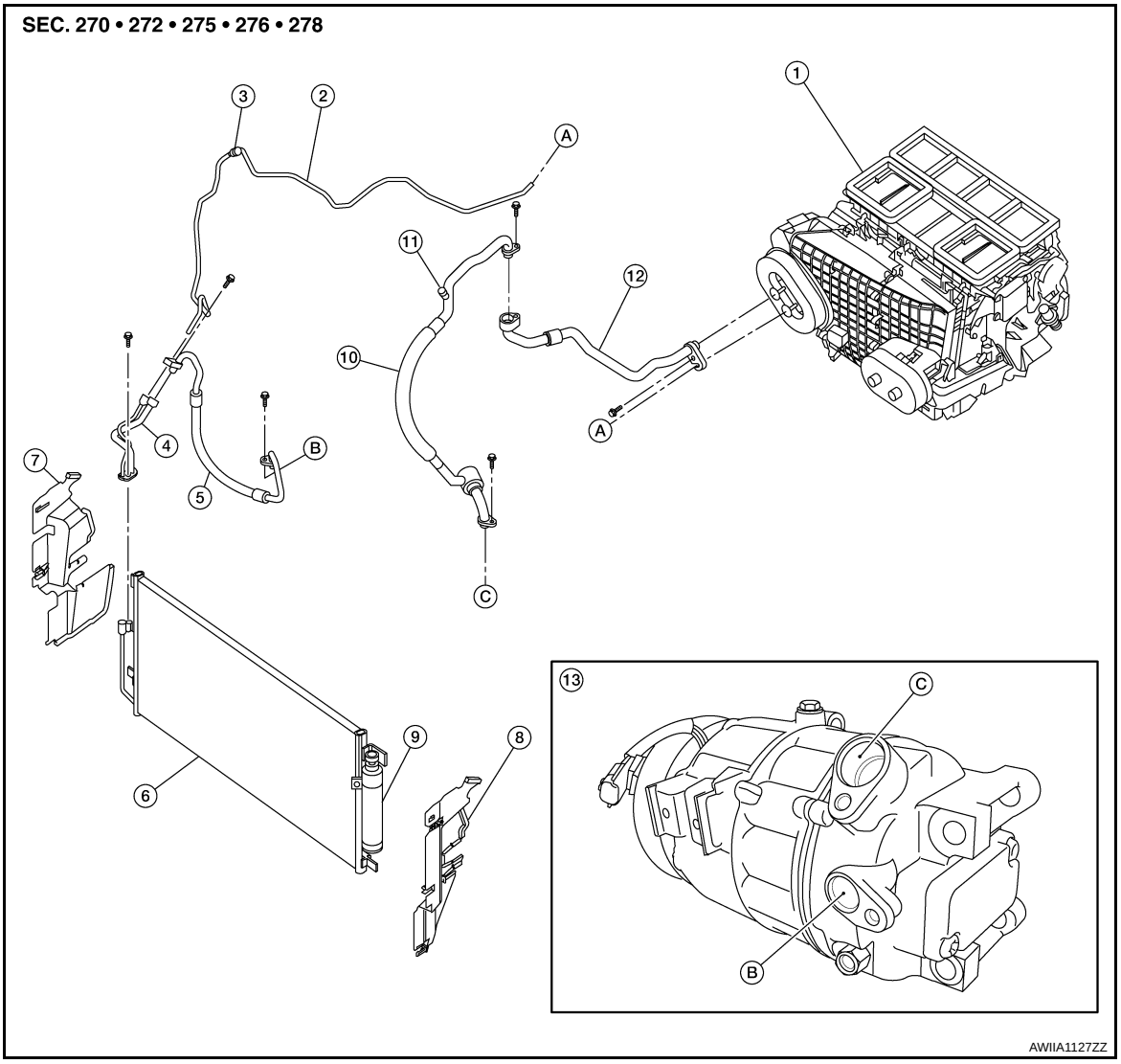
FEATURES OF NEW TYPE REFRIGERANT CONNECTION

- The O-ring has been relocated. It has also been provided with a groove for proper installation. This eliminates the chance of the O-ring being caught in, or damaged by, the mating part. The sealing direction of the O-ring is now set vertically in relation to the contacting surface of the mating part to improve sealing characteristics.

- The reaction force of the O-ring will not occur in the direction that causes the joint to pull out, thereby facilitating piping connections.



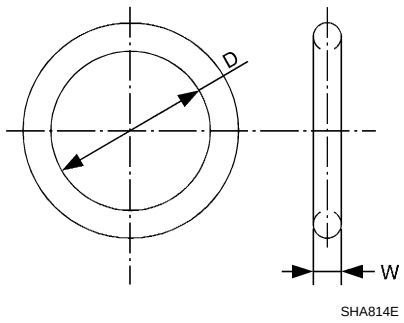
O-RING AND REFRIGERANT CONNECTION



1. Heater and cooling unit assembly
2. High-pressure pipe
3. High-pressure A/C service valve
4. Junction pipe
5. High-pressure flexible hose
6. Condenser and liquid tank
7. Air deflector RH
8. Air deflector LH
9. Liquid tank and refrigerant pressure sensor
10. Low-pressure flexible hose
11. Low-pressure A/C service valve
12. Low-pressure pipe
13. Compressor
A. High-pressure pipe to heater and cooling unit assembly
B. High-pressure flexible hose to compressor
C. Low-pressure flexible hose to compressor

CAUTION:
The new and former refrigerant connections use different O-ring configurations. Do not confuse O-rings since they are not interchangeable. If a wrong O-ring is installed, refrigerant will leak at, or around, the connection.

O-Ring Part Numbers and Specifications



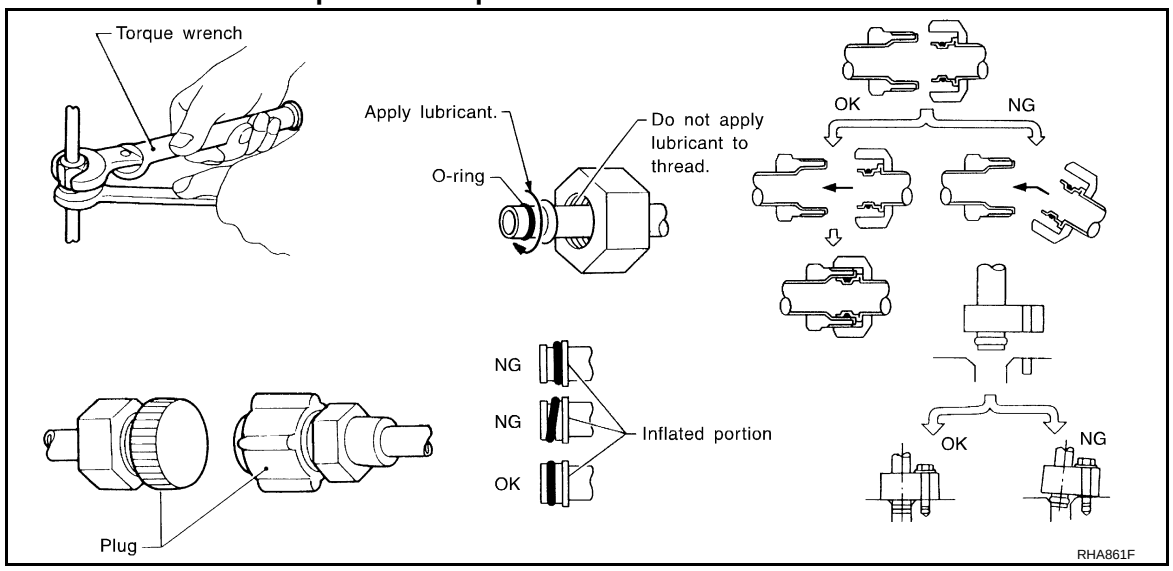
Connection type	O-ring size	Part number*	D mm (in)	W mm (in)
New	8	92471 N8210	6.8 (0.268)	1.85 (0.0728)
Former	10	J2476 89956	9.25 (0.3642)	1.78 (0.0701)
New	12	92472 N8210	10.9 (0.429)	2.43 (0.0957)
Former		92475 71L00	11.0 (0.433)	2.4 (0.094)
New	16	92473 N8210	13.6 (0.535)	2.43 (0.0957)
Former		92475 72L00	14.3 (0.563)	2.3 (0.091)
New	19	92474 N8210	16.5 (0.650)	2.43 (0.0957)
Former		92477 N8200	17.12 (0.6740)	1.78 (0.0701)
New	24	92195 AH300	21.8 (0.858)	2.4 (0.094)

*: Always check with the Parts Department for the latest parts information.

WARNING:
Make sure all refrigerant is discharged into the recycling equipment and the pressure in the system is less than atmospheric pressure. Then gradually loosen the discharge side hose fitting and remove it.

CAUTION:
When replacing or cleaning refrigerant cycle components, observe the following.
- **When the compressor is removed, store it in the same position as it is when mounted on the car. Failure to do so will cause oil to enter the low pressure chamber.**
- **When connecting tubes, always use a torque wrench and a back-up wrench.**
- **After disconnecting tubes, immediately plug all openings to prevent entry of dirt and moisture.**
- **When installing an air conditioner in the vehicle, connect the pipes as the final stage of the operation. Do not remove the seal caps of pipes and other components until just before required for connection.**
- **Allow components stored in cool areas to warm to working area temperature before removing seal caps. This prevents condensation from forming inside A/C components.**
- **Thoroughly remove moisture from the refrigeration system before charging the refrigerant.**
- **Always replace used O-rings.**
- **When connecting tube, apply oil to circle of the O-rings shown in illustration. Be careful not to apply oil to threaded portion.**
  Oil name: NISSAN A/C System Oil Type S or equivalent
- **O-ring must be closely attached to dented portion of tube.**
- **When replacing the O-ring, be careful not to damage O-ring and tube.**
- **Connect tube until you hear it click, then tighten the nut or bolt by hand until snug. Make sure that the O-ring is installed to tube correctly.**

- **After connecting line, conduct leak test and make sure that there is no leakage from connections. When the gas leaking point is found, disconnect that line and replace the O-ring. Then tighten connections of seal seat to the specified torque.**



Service Equipment

INFOID:0000000004335556

RECOVERY/RECYCLING EQUIPMENT

Follow the manufacturer's instructions for machine operation and machine maintenance. Never introduce any refrigerant other than that specified into the machine.

ELECTRONIC LEAK DETECTOR

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

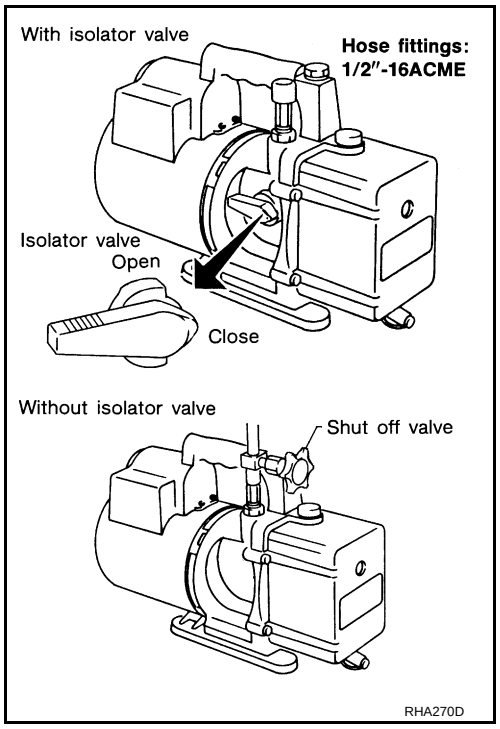
VACUUM PUMP

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

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

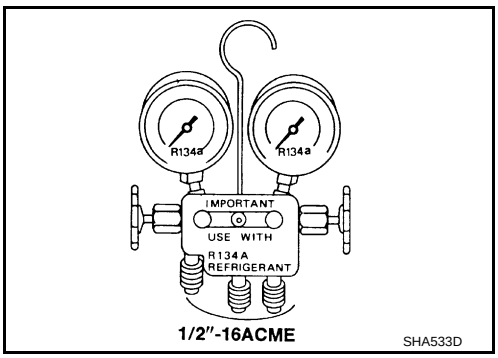
- Usually vacuum pumps have a manual isolator valve as part of the pump. Close this valve to isolate the service hose from the pump.
- For pumps without an isolator, use a hose equipped with a manual shut-off valve near the pump end. Close the valve to isolate the hose from the pump.
- If the hose has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

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



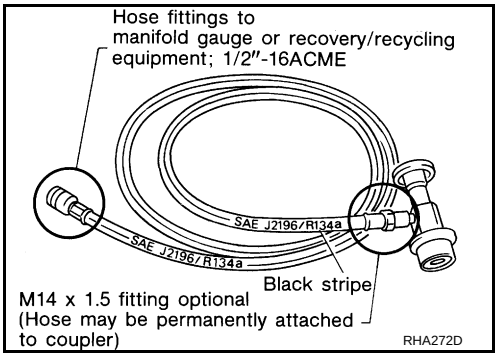
MANIFOLD GAUGE SET

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



SERVICE HOSES

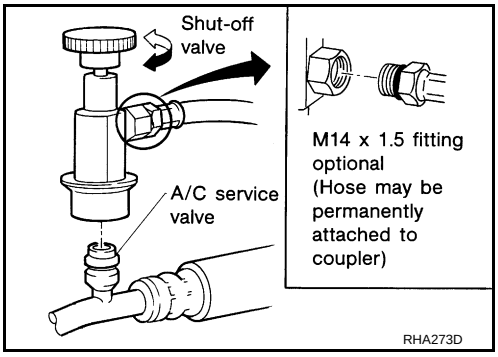
Be certain that the service hoses display the markings described (colored hose with black stripe). All hoses must include positive shut-off devices (either manual or automatic) near the end of the hoses opposite the manifold gauge.



SERVICE COUPLERS

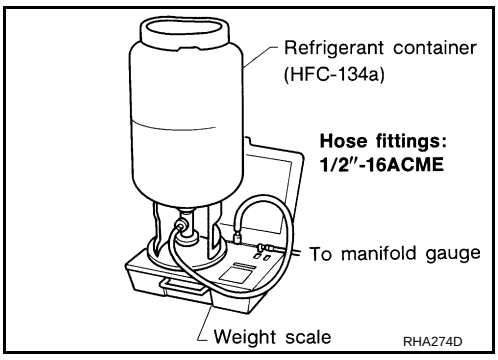
Never attempt to connect HFC-134a (R-134a) service couplers to a CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers will not properly connect to the CFC-12 (R-12) system. However, if an improper connection is attempted, discharging and contamination may occur.

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



WEIGHT SCALE

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



CHARGING CYLINDER

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

COMPRESSOR

General Precautions

INFOID:0000000004335557

- **Plug all openings to prevent moisture and foreign matter from entering.**
- **When the compressor is removed, store it in the same position as it is when mounted on the car.**
- **When replacing or repairing compressor, follow “Maintenance of Oil Quantity in Compressor” exactly. Refer to HA-36, "Maintenance of Oil Quantity".**
- **Keep friction surfaces between clutch and pulley clean. If the surface is contaminated with oil, wipe it off by using a clean waste cloth moistened with thinner.**
- **After compressor service operation, turn the compressor shaft by hand more than 5 turns in both directions. This will equally distribute oil inside the compressor. After the compressor is installed, let the engine idle and operate the compressor for 1 hour.**
- **After replacing the compressor magnet clutch, apply voltage to the new one and check for normal operation.**

LEAK DETECTION DYE

General Precautions

INFOID:0000000004335558

- The A/C system contains a fluorescent leak detection dye used for locating refrigerant leaks. An ultraviolet (UV) lamp is required to illuminate the dye when inspecting for leaks.
- Always wear fluorescence enhancing UV safety goggles to protect your eyes and enhance the visibility of the fluorescent dye.
- A compressor shaft seal should not be repaired because of dye seepage. The compressor shaft seal should only be repaired after confirming the leak with an electronic refrigerant leak detector (J-41995).
- Always remove any dye from the leak area after repairs are complete to avoid a misdiagnosis during a future service.
- Do not allow dye to come into contact with painted body panels or interior components. If dye is spilled, clean immediately with the approved dye cleaner. Fluorescent dye left on a surface for an extended period of time **cannot be removed**.
- Do not spray the fluorescent dye cleaning agent on hot surfaces (engine exhaust manifold, etc.).
- Do not use more than one refrigerant dye bottle (1/4 ounce / 7.4 cc) per A/C system.
- Leak detection dyes for HFC-134a (R-134a) and HC-12 (R-12) A/C systems are different. Do not use HFC-134a (R-134a) leak detection dye in R-12 A/C systems or HC-12 (R-12) leak detection dye in HFC-134a (R-134a) A/C systems or A/C system damage may result.
- The fluorescent properties of the dye will remain for over three years unless a compressor failure occurs.

IDENTIFICATION

Vehicles with factory installed fluorescent dye have a green label.

IDENTIFICATION LABEL FOR VEHICLE

Vehicles with factory installed fluorescent dye have this identification label on the underside of hood.

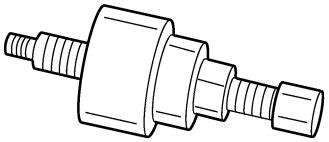
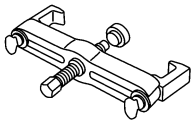
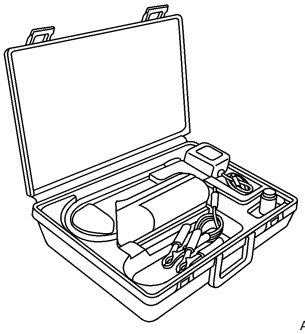
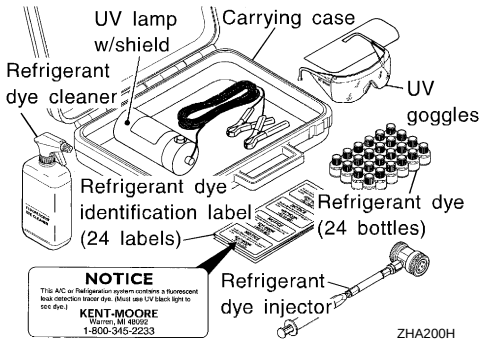
PREPARATION

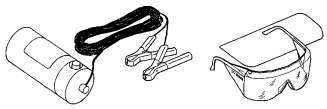
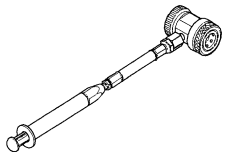
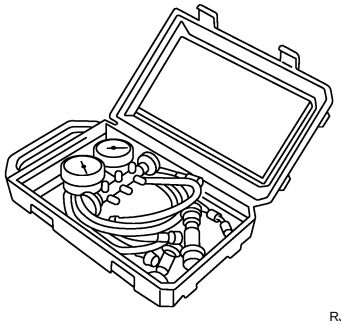
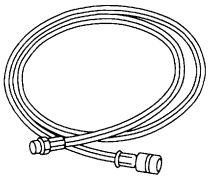
PREPARATION

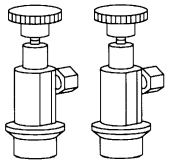
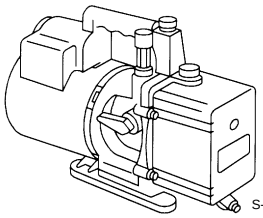
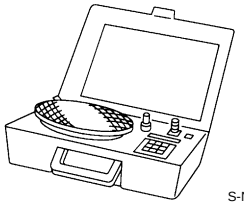
Special Service Tool

INFOID:0000000004335569

The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

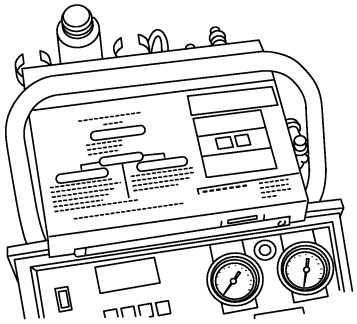
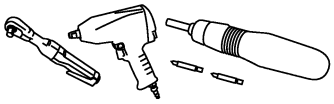
Tool number (Kent-Moore No.) Tool name	Description
— (J-38873-A) Drive plate installer  WJIA0367E	Installing pulley and drive plate
KV99233130 (J-29884) Pulley puller  LHA172	Removing pulley
K991J0130 (ACR2005-NI) ACR A/C Service Center  WJIA0293E	Refrigerant recovery, recycling and recharging
— (J-41995) Electronic refrigerant leak detector  AHA281A	Power supply: DC 12V (Battery terminal)
— (J-43926) Refrigerant dye leak detection kit Kit includes: (J-42220) UV lamp and UV safety goggles (J-41459) Refrigerant dye injector (J-41447) quantity 24 HFC-134a (R-134a) refrigerant dye (J-43872) Refrigerant dye cleaner  ZHA200H	Power supply: DC 12V (Battery terminal)

Tool number (Kent-Moore No.) Tool name		Description
— (J-42220) Fluorescent dye leak detector	 SHA438F	Power supply: DC 12V (Battery terminal) For checking refrigerant leak when fluorescent dye is installed in A/C system. Includes: UV lamp and UV safety goggles
— (J-41447) HFC-134a (R-134a) Fluorescent leak detection dye (Box of 24, 1/4 ounce bottles)	 Refrigerant dye (24 bottles) SHA439F	Application: For HFC-134a (R-134a) PAG oil Container: 1/4 ounce (7.4cc) bottle (Includes self-adhesive dye identification labels for affixing to vehicle after charging system with dye.)
— (J-41459) HFC-134a (R-134a) Dye injector Use with J-41447, 1/4 ounce bottle	 SHA440F	For injecting 1/4 ounce of fluorescent leak detection dye into A/C system.
— (J-43872) Refrigerant dye cleaner	 SHA441F	For cleaning dye spills.
— (J-39183-C) Manifold gauge set (with hoses and couplers)	 RJIA0196E	Identification: • The gauge face indicates R-134a. Fitting size: Thread size • 1/2” -16 ACME
Service hoses • (J-39500-72B) High side hose • (J-39500-72R) Low side hose • (J-39500-72Y) Utility hose	 S-NT201	Hose color: • Low side hose: Blue with black stripe • High side hose: Red with black stripe • Utility hose: Yellow with black stripe or green with black stripe Hose fitting to gauge: • 1/2” -16 ACME

Tool number (Kent-Moore No.) Tool name		Description
Service couplers • (J-39500-20A) High side coupler • (J-39500-24A) Low side coupler	 S-NT202	Hose fitting to service hose: • M14 x 1.5 fitting is optional or permanently attached.
— (J-39649) Vacuum pump (Including the isolator valve)	 S-NT203	Capacity: • Air displacement: 4 CFM • Micron rating: 20 microns • Oil capacity: 482 g (17 oz) Fitting size: Thread size • 1/2” -16 ACME
— (J-39650) Weight scale	 S-NT200	For measuring of refrigerant Fitting size: Thread size 1/2"-16 ACME

Commercial Service Tool

INFOID:0000000004335570

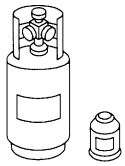
Tool number Tool name		Description
J-41810-NI Refrigerant identifier equipment HFC-134a (R-134a)	 RJIA0197E	Checking refrigerant purity and system contamination
Power tool	 PIIB1407E	Removing bolts and nuts

Sealant or/and Oil

INFOID:0000000004335571

- Never mix HFC-134a refrigerant and oil with CFC-12 (R-12) refrigerant and oil.
- Separate and non-interchangeable service equipment must be used for handling each type of refrigerant and oil.

- Refrigerant container fittings, service hose fittings and service equipment fittings (equipment which handles refrigerant and oil) are different between CFC-12 (R-12) and HFC-134a (R-134a). This is to avoid mixed use of the refrigerant and oil.
- Never use adapters that convert one size fitting to another, as refrigerant and oil contamination will occur and compressor failure will result.

Tool name	Description
Refrigerant HFC-134a (R-134a)  S-NT196	Container color: light blue Container marking: HFC-134a (R-134a) Fitting size: thread size • large container 1/2” -16 ACME
Genuine NISSAN A/C System Oil Type S  S-NT197	Type: poly alkaline glycol oil (PAG), type S Application: HFC-134a (R-134a) swash plate compressors (NISSAN only) Lubricity: 40 m ℓ (1.4 US fl oz, 1.4 Imp fl oz)

ON-VEHICLE REPAIR

CONTROL UNIT

Removal and Installation

INFOID:0000000004335612

A/C AND AV SWITCH ASSEMBLY FOR COLOR DISPLAY

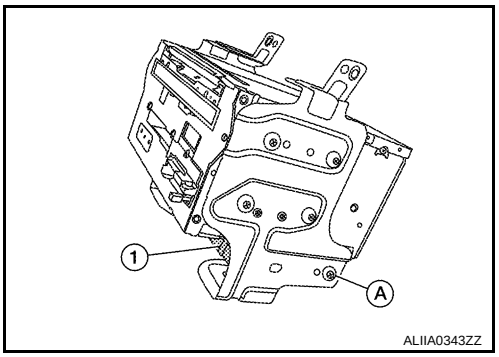
Removal and Installation

The front A/C switch assembly is integrated into the A/C and AV switch assembly in cluster lid C. Refer to AV-487, "Removal and Installation".

A/C AUTO AMP

Removal

1. Remove the audio unit. Refer to AV-485, "Removal and Installation".
2. Remove the two A/C auto amp bracket screws (A).
3. Remove the A/C auto amp (1) from the bracket.



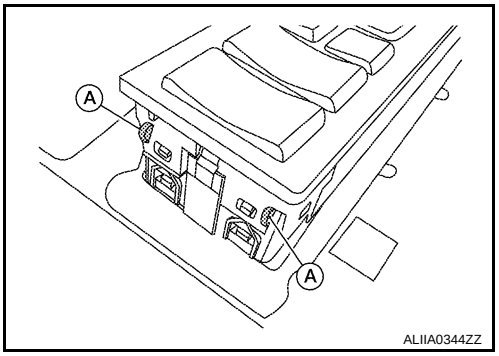
Installation

Installation is in the reverse order of removal.

REAR CONTROL SWITCH

Removal

1. Remove the rear cup holder from the rear seat armrest. Refer to SE-67, "Removal and Installation".
2. Release the two tabs (A) on the LH end of the rear control switch.
3. Unhook the RH end of the rear control switch and remove the rear control switch from the armrest.
4. Disconnect the rear control switch connectors and remove the rear control switch.



Installation

Installation is in the reverse order of removal.

REAR CONTROL CANCEL SWITCH

Removal

1. Remove the instrument panel lower cover (LH). Refer to IP-11, "Exploded View".
2. Remove the rear control cancel switch from the instrument panel lower cover (LH).

Installation

Installation is in the reverse order of removal.

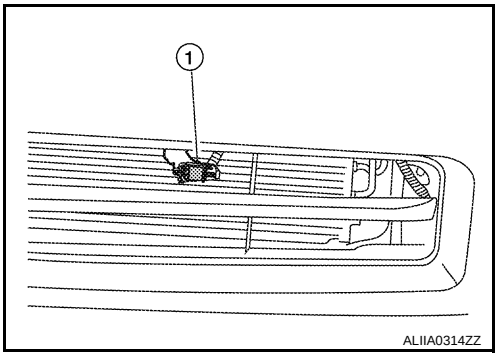
AMBIENT SENSOR

Removal and Installation

INFOID:0000000004335576

REMOVAL

1. From under the vehicle, disconnect the ambient sensor connector.
2. Release the ambient sensor clip and remove the ambient sensor (1).



INSTALLATION

Installation is in the reverse order of removal.

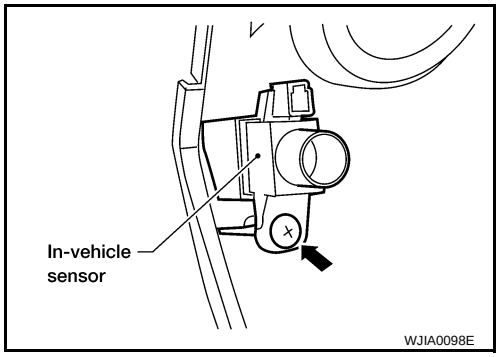
IN-VEHICLE SENSOR

Removal and Installation

INFOID:0000000004335613

REMOVAL

1. Remove the instrument panel lower cover LH. Refer to IP-12, "Removal and Installation".
2. Remove the in-vehicle sensor screw and remove the in-vehicle sensor.



INSTALLATION

Installation is in the reverse order of removal.

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

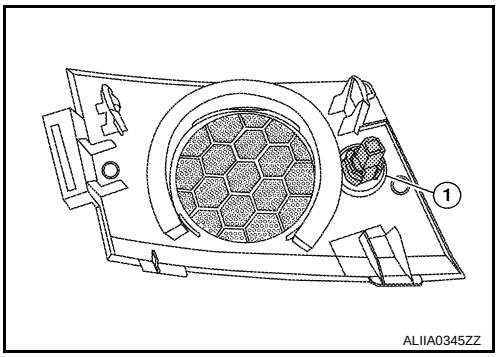
SUNLOAD SENSOR

Removal and Installation

INFOID:0000000004335614

REMOVAL

1. Remove the front LH speaker grille from the instrument panel. Refer to AV-67, "Removal and Installation".
2. Disconnect the sunload sensor connector.
3. Release the sunload sensor tabs and remove the sunload sensor (1) from the front LH speaker grille.



INSTALLATION

Installation is in the reverse order of removal.

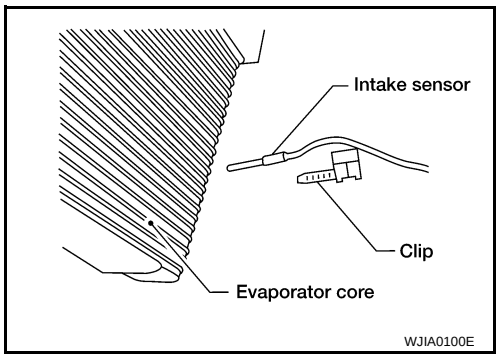
INTAKE SENSOR

Removal and Installation

INFOID:0000000004335615

REMOVAL

1. Remove the evaporator. Refer to HA-55, "EVAPORATOR : Removal and Installation".
2. Release the intake sensor clip and then remove the intake sensor.
   CAUTION:
   - **Mark the mounting position of the intake sensor.**
   - **Do not damage the evaporator core.**



INSTALLATION

Installation is in the reverse order of removal.

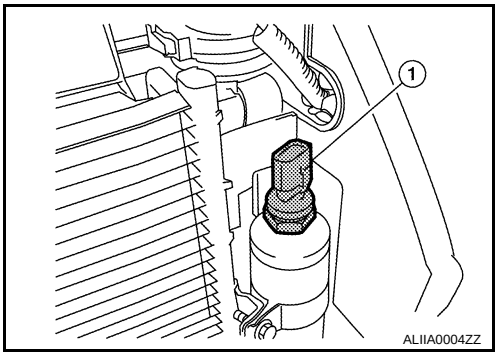
REFRIGERANT PRESSURE SENSOR

Removal and Installation for Refrigerant Pressure Sensor

INFOID:0000000004335577

REMOVAL

1. Discharge the refrigerant. Refer to HA-34, "Collection and Charge".
2. Remove the top filler panel.
3. Remove the front air duct.
4. Disconnect the refrigerant pressure sensor connector and remove the refrigerant pressure sensor (1) from the liquid tank on the condenser.
   CAUTION:
   Do not damage the condenser fins.



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

Replace the O-ring with a new one, then apply compressor oil to it for installation.

DOOR MOTOR

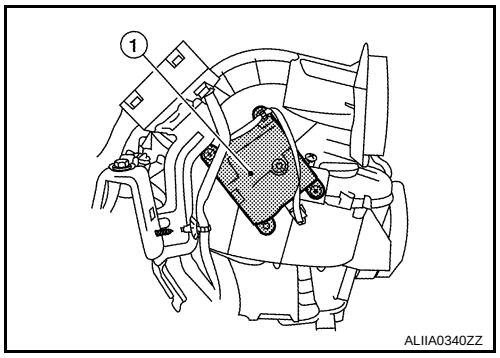
INTAKE DOOR MOTOR

INTAKE DOOR MOTOR : Removal and Installation

INFOID:0000000004335616

REMOVAL

1. Remove the glove box assembly. Refer to VTL-17, "BLOWER UNIT : Removal and Installation".
2. Remove the remote keyless entry receiver and bracket to reposition out of the way.
3. Disconnect the intake door motor connector.
4. Remove the intake door motor screws and remove intake door motor (1) from the blower unit.



INSTALLATION

Installation is in the reverse order of removal.

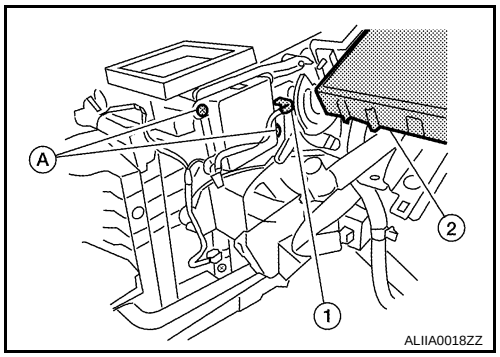
MODE DOOR MOTOR

MODE DOOR MOTOR : Removal and Installation

INFOID:0000000004335617

REMOVAL

1. Remove the combination meter. Refer to MWI-144, "Removal and Installation".
2. Remove the BCM (2). Refer to BCS-87, "Removal and Installation".
   NOTE:
   The illustration is shown with the heater and cooling unit assembly out of the vehicle for clarity.
3. Disconnect the mode door motor connector (1).
4. Remove the mode door motor screws (A) and then remove the mode door motor.



INSTALLATION

Installation is in the reverse order of removal.

AIR MIX DOOR MOTOR

AIR MIX DOOR MOTOR : Removal and Installation

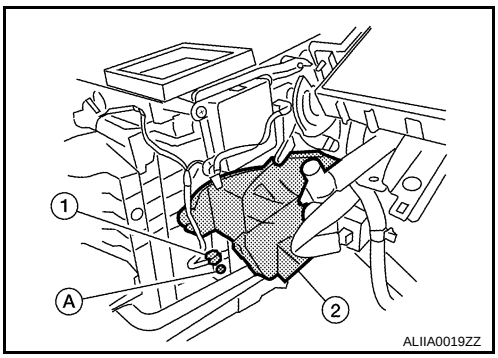
INFOID:0000000004335618

AIR MIX DOOR MOTOR - LH

Removal

1. Remove the instrument panel lower cover LH. Refer to IP-12, "Removal and Installation".
2. Remove the center console side finisher LH. Refer to IP-12, "Removal and Installation".

3. Remove the heater and cooling unit foot duct LH (2).
4. Disconnect the air mix door motor connector (1).
5. Remove the air mix door motor screws (A) and then remove the air mix door motor LH.

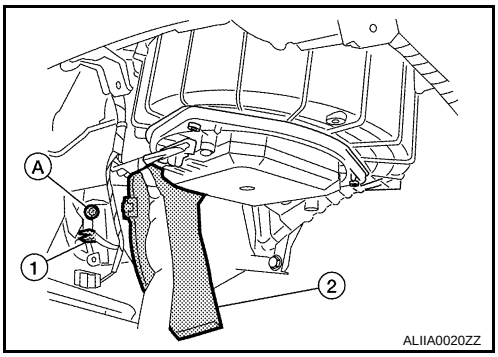


Installation
Installation is in the reverse order of removal.

AIR MIX DOOR MOTOR - RH

Removal

1. Remove the glove box. Refer to IP-12, "Removal and Installation".
2. Remove the heater and cooling unit foot duct RH (2).
3. Disconnect the air mix door motor connector (1).
4. Remove the air mix door motor screws (A) and then remove the air mix door motor RH.



Installation
Installation is in the reverse order of removal.

BASIC INSPECTION

INSPECTION AND ADJUSTMENT

Operational Check

INFOID:0000000004223591

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-186, "A/C AUTO AMP. : Diagnosis Procedure".

2.CHECK BLOWER MOTOR SPEED

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

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check blower motor system. Refer to HAC-178, "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-137, "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-175, "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-177, "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-183, "Diagnosis Procedure".

6. CHECK TEMPERATURE DECREASE

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

Is the inspection result normal?

YES >> GO TO 7.
NO >> Check for insufficient cooling. Refer to HAC-206, "Component Function Check".

7. CHECK TEMPERATURE INCREASE

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

Is the inspection result normal?

YES >> GO TO 8.
NO >> Check for insufficient heating. Refer to HAC-212, "Component Function Check".

8. CHECK DUAL MODE FUNCTION

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

Is the inspection result normal?

YES >> GO TO 9.
NO >> Refer to HA-20, "WITH MONOCHROME DISPLAY : Symptom Matrix Chart" and perform the appropriate diagnosis.

9. CHECK AUTO MODE

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

Is the inspection result normal?

YES >> Inspection End
NO >> Refer to HA-20, "WITH MONOCHROME DISPLAY : Symptom Matrix Chart" and perform the appropriate diagnosis.

Temperature Setting Trimmer

INFOID:0000000004223593

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-III, perform “TEMP SET CORRECT” in “WORK SUPPORT” of HVAC.

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

NOTE:

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

Foot Position Setting Trimmer

INFOID:0000000004223594

Description

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

How to set

Using CONSULT-III, perform “BLOW SET” in “WORK SUPPORT” of HVAC.

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

NOTE:

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

Inlet Port Memory Function (FRE)

INFOID:0000000004223595

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-III, perform “FRE MEMORY SET” in “WORK SUPPORT” of HVAC.

Work support items	Display	Setting
FRE MEMORY SET	WITHOUT (initial status)	Perform the memory of manual FRE
	WITH	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:0000000004223596

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-III, perform “REC MEMORY SET” in “WORK SUPPORT” of HVAC.

Work support items	Display	Setting
REC MEMORY SET	WITHOUT	Perform the memory of manual REC
	WITH (initial status)	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.

FUNCTION DIAGNOSIS

COMPRESSOR CONTROL FUNCTION

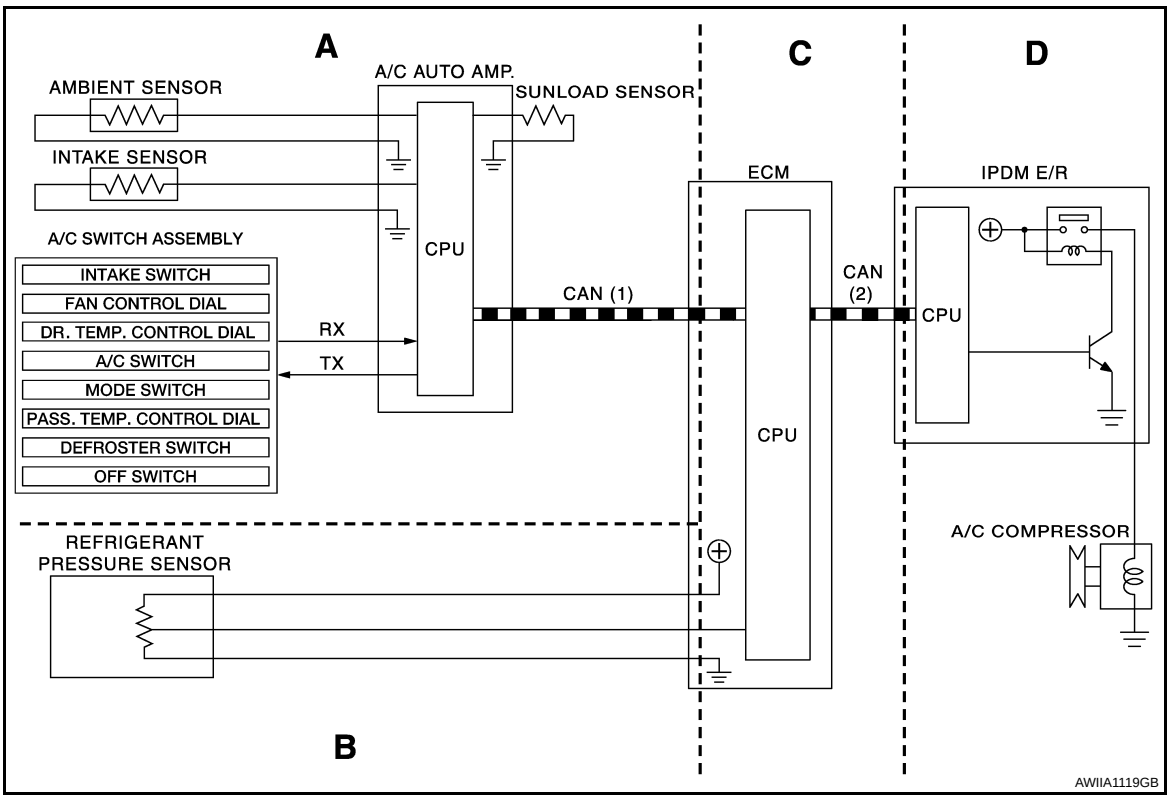
Description

INFOID:0000000004223601

PRINCIPLE OF OPERATION

A/C compressor is not activated.

Functional circuit diagram



CAN (1) : A/C switch signal
: Blower fan motor switch signal

RX : A/C switch signal
: Fan ON signal
: Defroster signal

CAN (2) : A/C compressor request signal

Functional initial inspection chart

Location		A	B	C	D
CONSULT-III	ECM DATA MONITOR		Yes	Yes	
	IPDM E/R DATA MONITOR			Yes	
	HVAC DATA MONITOR	Yes			
	Self-diagnosis function	Yes			
	ACTIVE TEST	Yes			Yes
AUTO ACTIVE TEST					Yes

Fail-Safe

INFOID:0000000004351817

FAIL-SAFE FUNCTION

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

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

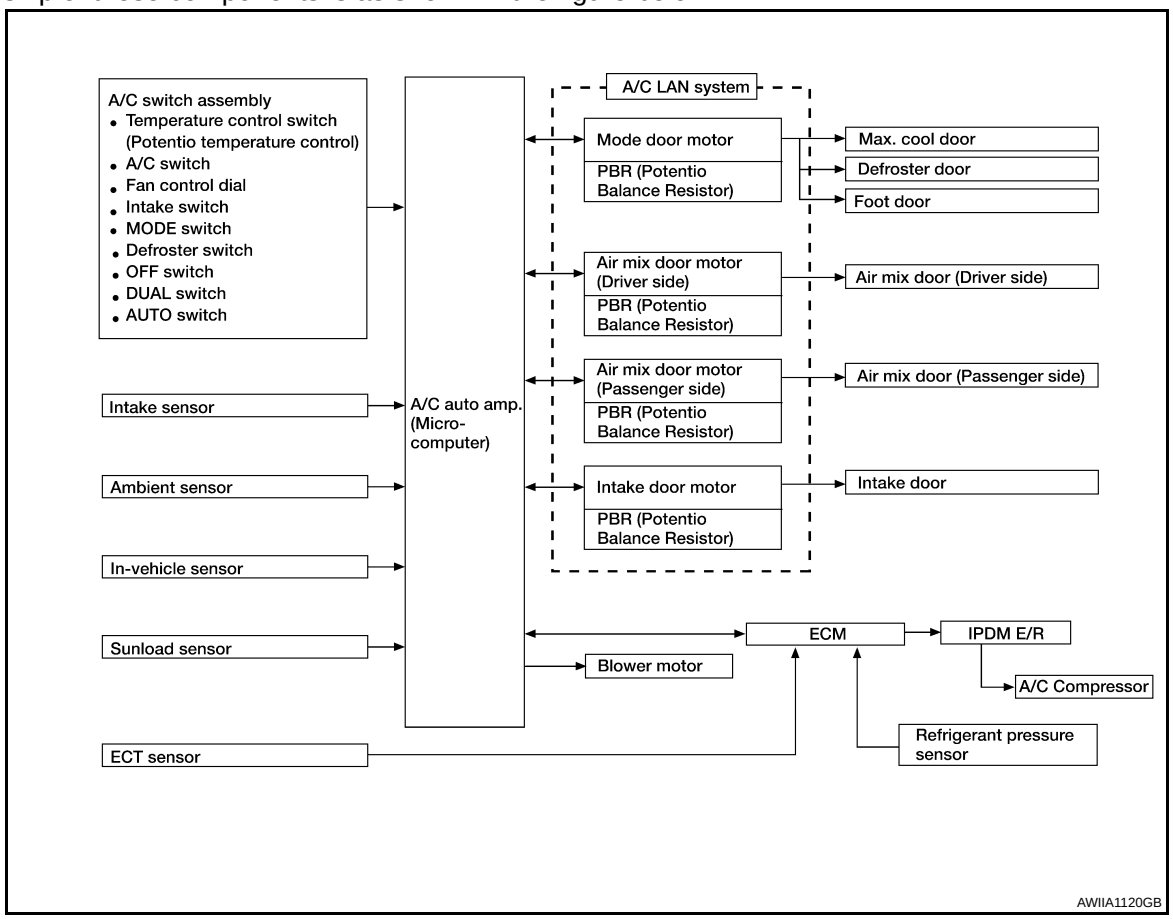
AUTOMATIC AIR CONDITIONER SYSTEM

System Diagram

INFOID:0000000004223603

CONTROL SYSTEM

The control system consists of input sensors, switches, the A/C auto amp. (microcomputer) and outputs. The relationship of these components is as shown in the figure below:



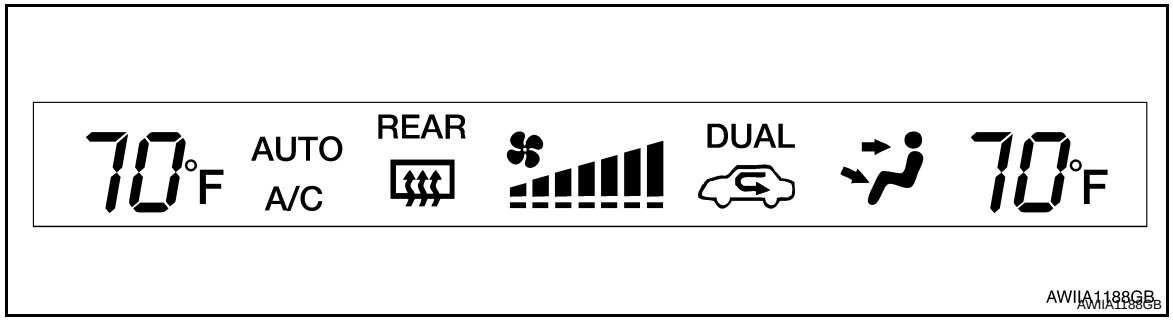
System Description

INFOID:0000000004223604

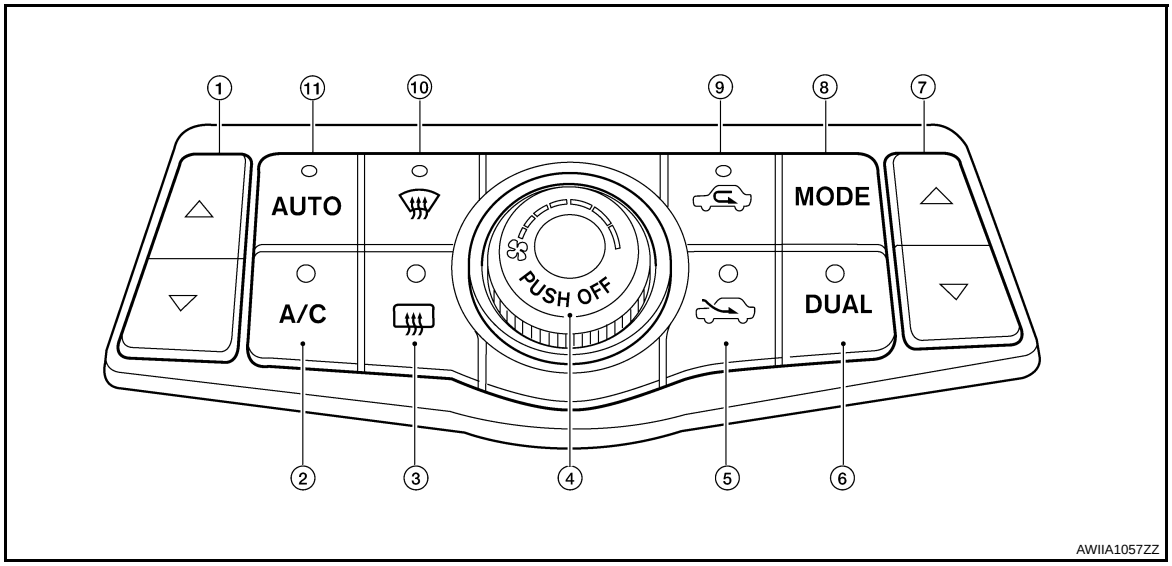
CONTROL OPERATION

Display

The operation status of the HVAC system is displayed on the screen.



A/C Switch Assembly



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

MODE SWITCH
The air discharge outlets are controlled with this switch.

TEMPERATURE CONTROL SWITCH (Driver Side)
The set temperature is increased or decreased with this switch.

TEMPERATURE CONTROL SWITCH (Passenger Side)
- The set temperature is increased or decreased with this switch.
- When the temperature control switch is pressed, DUAL mode indicator is turned ON.

AUTO SWITCH
- The A/C compressor, intake doors, air mix doors, mode doors and blower speed are automatically controlled so that the in-vehicle temperature will reach, and be maintained at the set temperature selected by the operator.
- When pressing the AUTO switch, air inlet, air outlet, fan speed, and discharge air temperature are automatically controlled.

DEFROSTER ( ) SWITCH
Mode doors are set to the defrost position with this switch. Also, intake doors are set to the outside air position, and A/C compressor turns ON.

A/C SWITCH
A/C compressor turns ON or OFF with this switch.
(Pressing the A/C switch, when the A/C switch is ON, turns OFF the A/C switch and A/C compressor.)

FAN CONTROL DIAL
The fan speed is manually controlled with this dial. Seven speeds are available for manual control (as shown on the display screen).

OFF SWITCH
A/C compressor and blower turn OFF, intake doors and the mode doors are automatically controlled.

REAR WINDOW DEFOGGER SWITCH
When indicator is ON, rear window is defogged.

RECIRCULATION ( ) SWITCH
- When the REC switch is ON, the REC switch indicator is turned ON, and air inlet is set to REC.

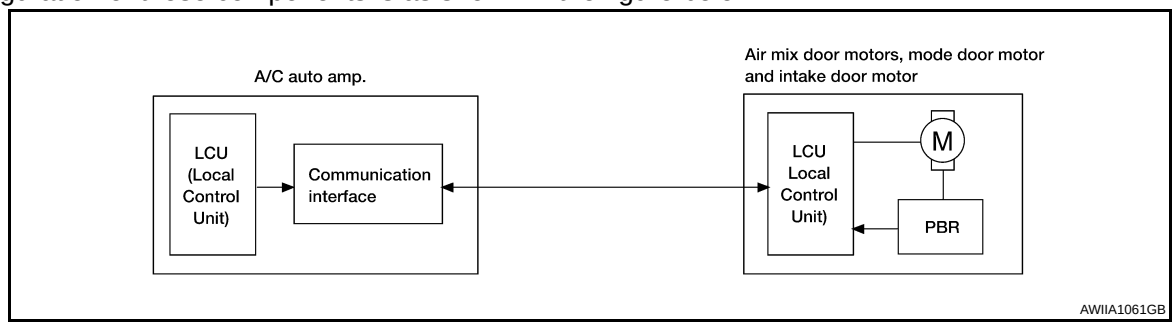
FRESH AIR ( ) SWITCH
- When the FRE switch is ON, the FRE switch indicator is turned ON, and air inlet is set to FRE.

DUAL MODE SWITCH
- When the DUAL switch indicator is ON, the driver side and passenger side temperature can each be set independently.
- When the DUAL switch indicator is OFF, the driver side outlet and setting temperature are applied to both sides.

Air Conditioner LAN Control System

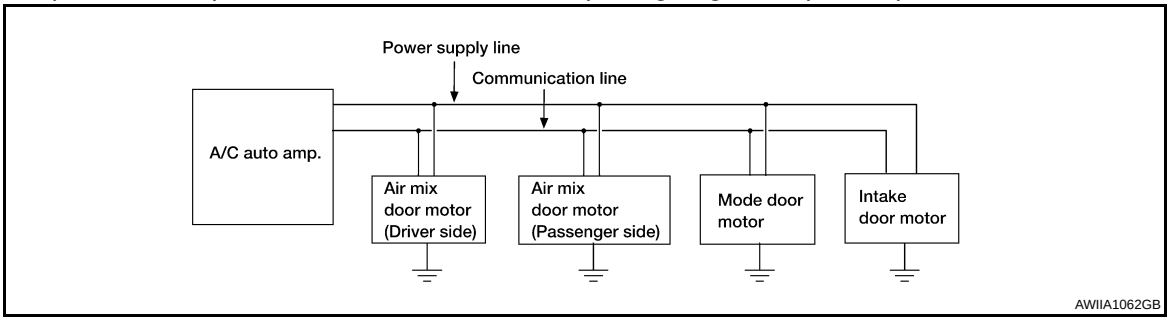
INFOID:0000000004223607

The LAN (Local Area Network) system consists of the A/C auto amp., the mode door motor, the air mix door motors and the intake door motor.
A configuration of these components is as shown in the figure below.



SYSTEM CONSTRUCTION

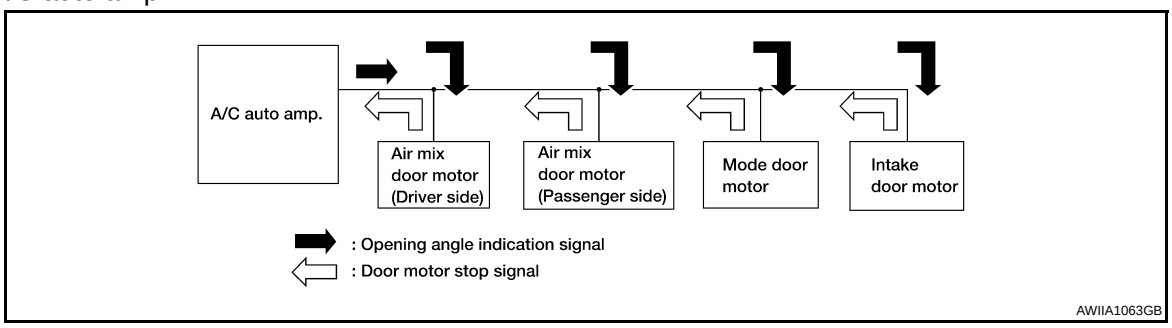
A small network exists between the A/C auto amp., the mode door motor, the air mix door motors and the intake door motor. The A/C auto amp. and motors are connected by data transmission lines and motor power supply lines. The LAN network is built through the ground circuits of each door motor.
Addresses, motor opening angle signals, motor stop signals and error checking messages are all transmitted through the data transmission lines connecting the A/C auto amp. and each door motor.
The following functions are contained in LCUs built into the mode door motor, the air mix door motors and the intake door motor.
- Address
- Motor opening angle signals
- Data transmission
- Motor stop and drive decision
- Opening angle sensor (PBR function)
- Comparison
- Decision (A/C auto amp. indicated value and motor opening angle comparison)



Operation

The A/C auto amp. receives data from each of the sensors. The A/C auto amp. sends mode door, the air mix door and the intake door opening angle data to the mode door motor LCU, the air mix door motor LCUs and the intake door motor LCU.
The mode door motor, the air mix door motors and the intake door motor read their respective signals according to the address signal. Opening angle indication signals received from the A/C auto amp. and each of the motor position sensors is compared by the LCUs in each door motor with the existing decision and opening

angles. Next, HOT/COLD, DEF/VENT or FRE/REC operation is selected. The new selection data is returned to the A/C auto amp.



TRANSMISSION DATA AND TRANSMISSION ORDER

A/C auto amp. data is transmitted consecutively to each of the door motors following the form as shown in the figure below.

START:

- Initial compulsory signal is sent to each of the door motors.

ADDRESS:

- Data sent from the A/C auto amp. is selected according to data-based decisions made by the mode door motor, the air mix door motors and the intake door motor.
- If the addresses are identical, the opening angle data and error check signals are received by the door motor LCUs. The LCUs then make the appropriate error decision. If the opening angle data has no error, door control begins.
- If an error exists, the received data is rejected and the corrected data is received. Finally, door control is based upon the corrected opening angle data.

OPENING ANGLE:

- Data that shows the indicated door opening angle of each door motor.

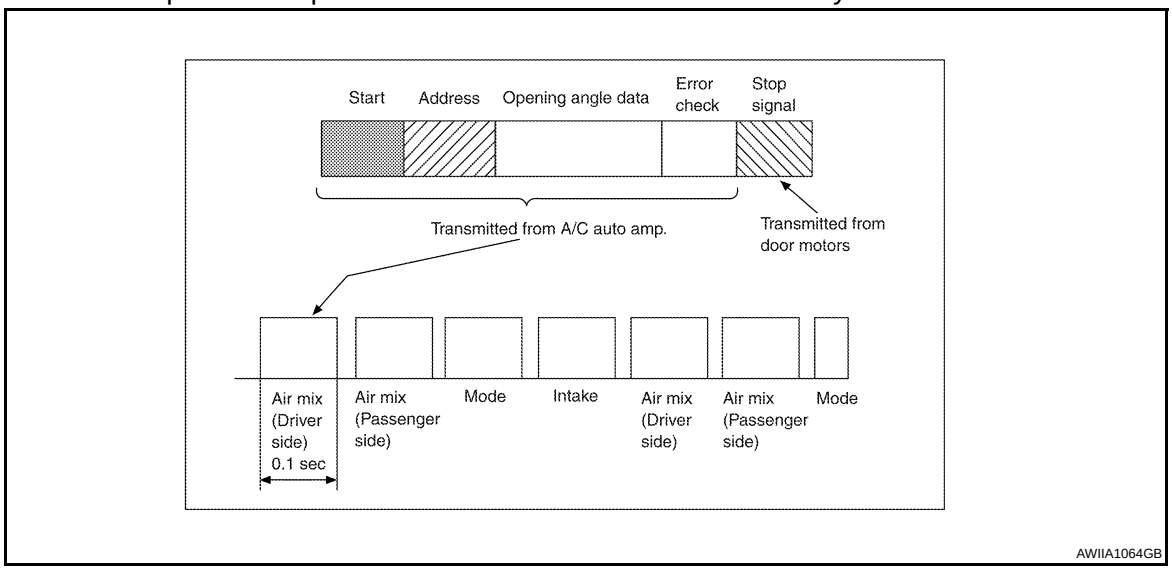
ERROR CHECK:

- In this procedure, transmitted and received data is checked for errors. Error data is then compiled. The error check prevents corrupted data from being used by the mode door motor, the air mix door motors and the intake door motor. Error data can be related to the following symptoms:

- Malfunction of electrical frequency
- Poor electrical connections
- Signal leakage from transmission lines
- Signal level fluctuation

STOP SIGNAL:

- At the end of each transmission, a stop operation, in-operation, or internal malfunction message is delivered to the A/C auto amp. This completes one data transmission and control cycle.



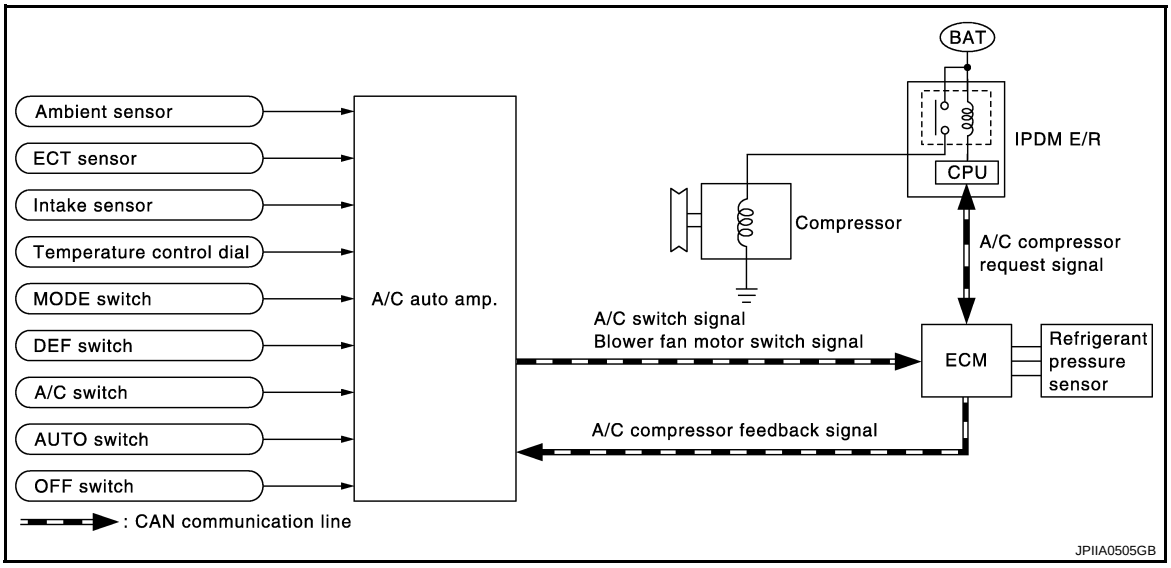
AIR MIX DOOR CONTROL (AUTOMATIC TEMPERATURE CONTROL)
- The air mix doors are automatically controlled so that in-vehicle temperature is maintained at a predetermined value by the temperature setting, ambient temperature, in-vehicle temperature and amount of sunload.

FAN SPEED CONTROL
- Fan speed is automatically controlled by the temperature setting, ambient temperature, in-vehicle temperature, intake temperature, amount of sunload and air mix door position.
  With pressing AUTO switch, the blower motor starts to gradually increase air flow volume.
  When engine coolant temperature is low, the blower motor operation is delayed to prevent cool air from flowing.

INTAKE DOOR CONTROL
- The intake doors are automatically controlled by the temperature setting, ambient temperature, in-vehicle temperature, intake temperature, amount of sunload and ON/OFF operation of the compressor.

MODE DOOR CONTROL
- The mode door is automatically controlled by the temperature setting, ambient temperature, in-vehicle temperature, intake temperature and amount of sunload.

MAGNET CLUTCH CONTROL

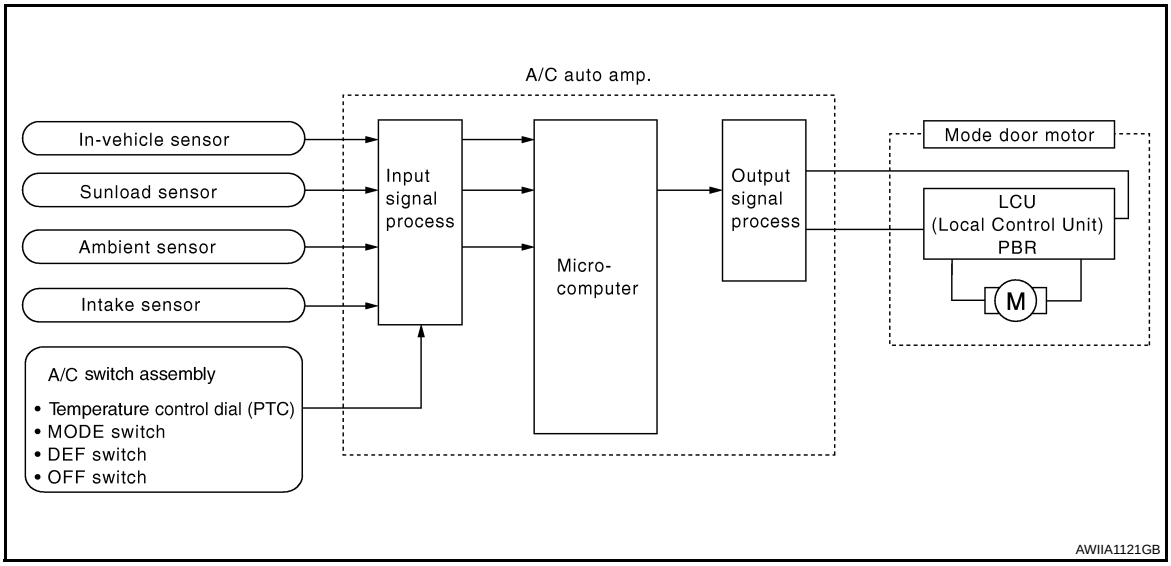


When A/C switch, AUTO switch or DEF ( ) switch is pressed, A/C auto amp. transmits compressor ON signal to ECM, via CAN communication.
ECM judges whether compressor can be turned ON, based on each sensor status (refrigerant pressure sensor signal, throttle angle, etc.). If it judges compressor can be turned ON, it sends compressor ON signal to IPDM E/R, via CAN communication.
Upon receipt of compressor ON signal from ECM, IPDM E/R turns air conditioner relay ON to operate compressor.
When sending compressor ON signal to IPDM E/R via CAN communication line, ECM simultaneously sends compressor feedback signal to A/C auto amp. via CAN communication line.

MODE DOOR CONTROL SYSTEM

System Diagram

INFOID:0000000004223608



System Description

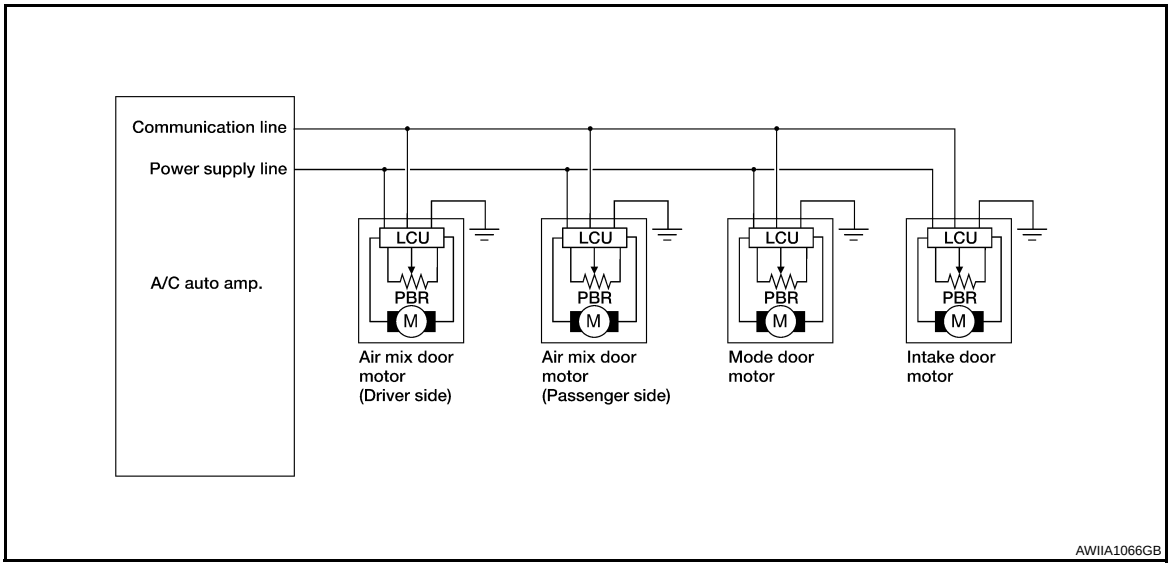
INFOID:0000000004223609

The mode door is automatically controlled by the temperature setting, ambient temperature, in-vehicle temperature, intake temperature and amount of sunload.

SYSTEM OPERATION

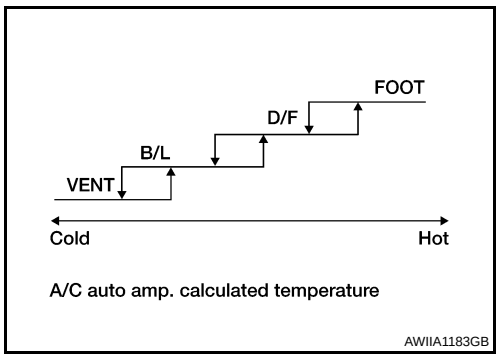
- The A/C auto amp. receives data from each of the sensors.
- The A/C auto amp. sends the air mix door, the mode door and the intake door opening angle data to the air mix door motor LCU(s), the mode door motor LCU and the intake door motor LCU.
- The air mix door motor(s), the mode door motor and the intake door motor read their respective signals according to the address signal. Opening angle indication signals received from the A/C auto amp. and each of the motor position sensors, are compared by the LCUs in each door motor with the existing decision and opening angles.
- Next, HOT/COLD, DEF/VENT or FRE/REC operation is selected. The newly selected data is returned to the A/C auto amp.

Door Motor Circuit



Mode Door Control Specification

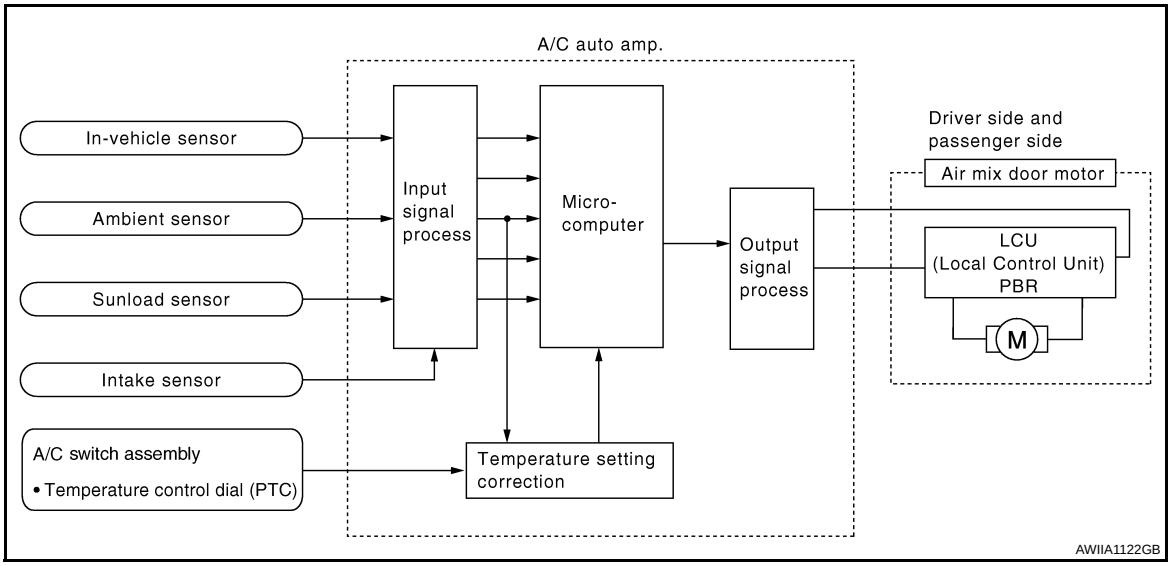
Mode position can be selected manually by pressing the MODE switch or the DEF switch on the A/C switch assembly. Pressing the AUTO switch allows automatic control by the A/C auto amp. During the automatic control of a mode position, a mode door position (VENT, B/L, FOOT, or D/F) is selected based on a target air mix door opening angle and the sunload sensor, calculated by the A/C auto amp. In addition, the D/F is selected to prevent windshield fogging only when ambient temperature is extremely low.



AIR MIX DOOR CONTROL SYSTEM

System Diagram

INFOID:0000000004223610



System Description

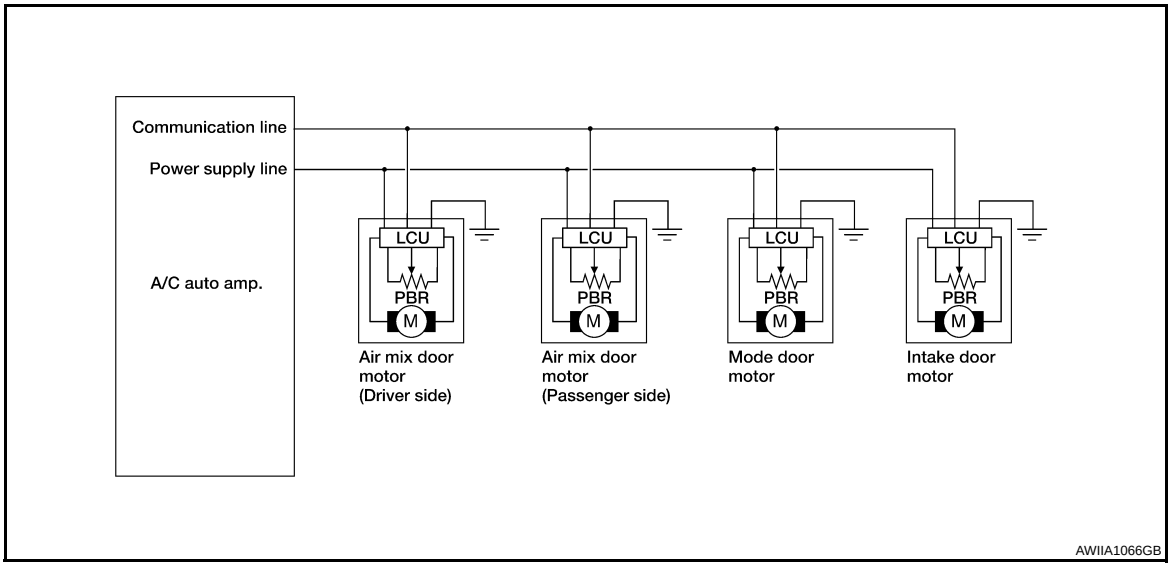
INFOID:0000000004223611

The air mix doors are automatically controlled so that in-vehicle temperature is maintained at a predetermined value by the temperature setting, ambient temperature, intake temperature and amount of sunload.

SYSTEM OPERATION

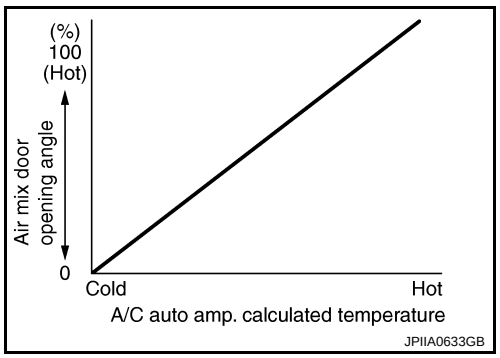
- The A/C auto amp. receives data from each of the sensors.
- The A/C auto amp. sends air mix door, the mode door and the intake door opening angle data to the air mix door motor LCU(s), the mode door motor LCU and the intake door motor LCU.
- The air mix door motor(s), the mode door motor and the intake door motor read their respective signals according to the address signal. Opening angle indication signals received from the A/C auto amp. and each of the motor position sensors, are compared by the LCUs in each door motor with the existing decision and opening angles.
- Next, HOT/COLD, DEF/VENT or FRE/REC operation is selected. The newly selected data is returned to the A/C auto amp.

Door Motor Circuit



Air Mix Door Control Specification

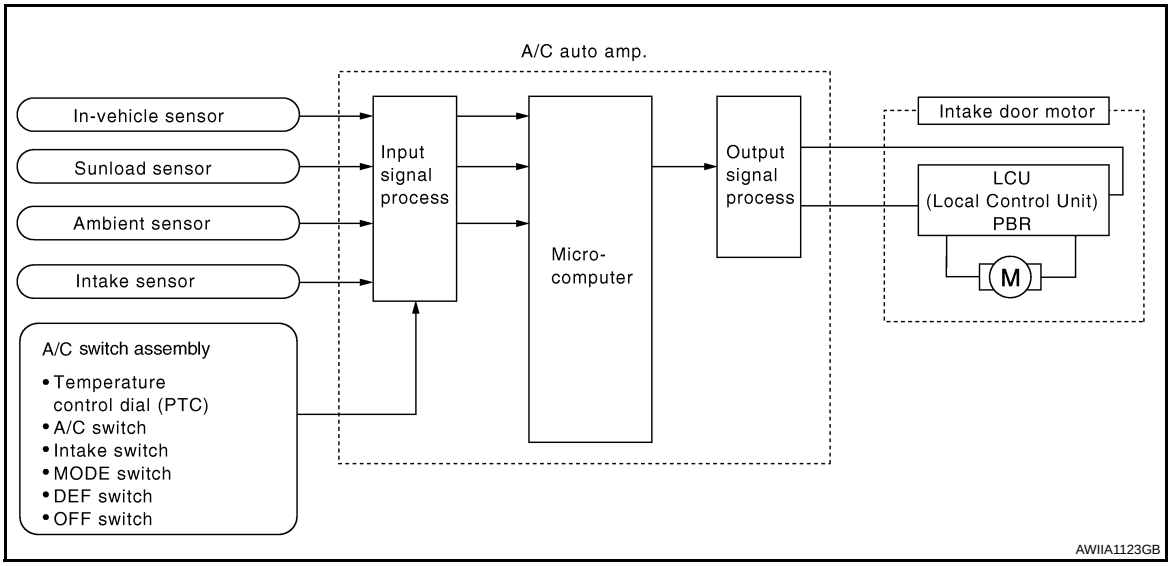
When ignition switch is ON, the A/C auto amp. continuously and automatically controls temperatures, regardless of air conditioner operational condition. When setting a target temperature with the temperature control switch, the A/C auto amp. corrects the set temperature and decides a target air mix door opening angle. The A/C auto amp. controls the air mix door, according to the target air mix door opening angle and the current air mix door opening angle, keeping an optimum air mix door opening angle. When the temperature is set at 18°C (60°F), air mix door is set on full-cold, and when the temperature is set at 32°C (90°F), it is set to full-hot.



INTAKE DOOR CONTROL SYSTEM

System Diagram

INFOID:0000000004223612



System Description

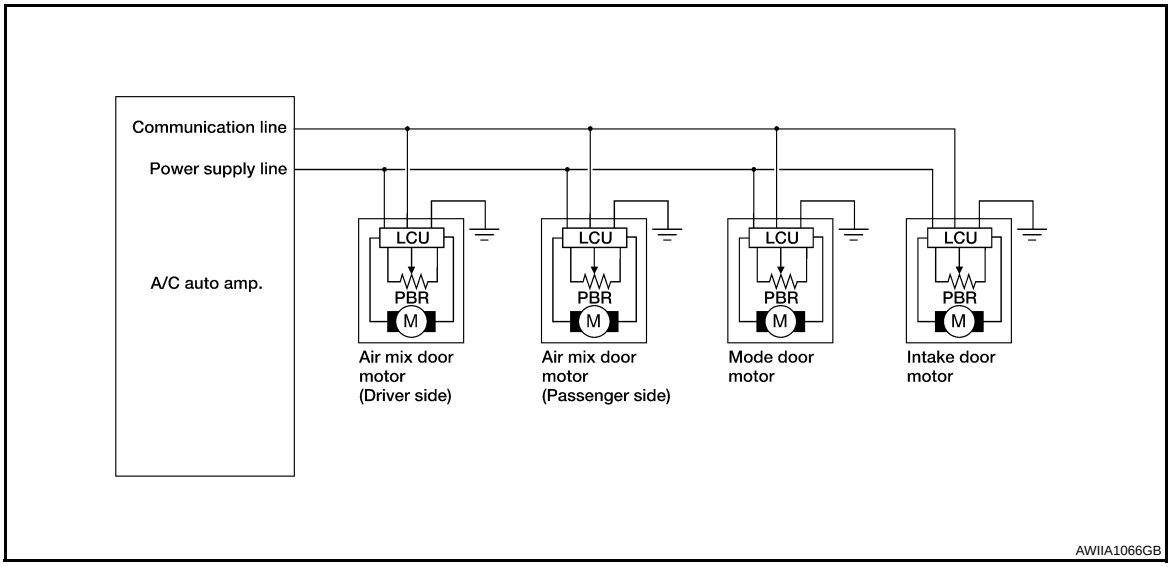
INFOID:0000000004223613

The intake doors are automatically controlled by the temperature setting, ambient temperature, in-vehicle temperature, intake temperature, amount of sunload and ON/OFF operation of the A/C compressor.

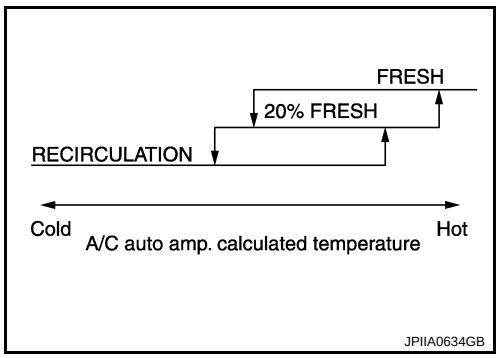
SYSTEM OPERATION

The intake door control judges intake door position based on the ambient temperature, the intake air temperature and the in-vehicle temperature. When in shifting mode position D/F, if the DEF or OFF switches are pressed, or when the A/C switch is OFF, the A/C auto amp. sets the intake door to the FRE position.

Door Motor Circuit



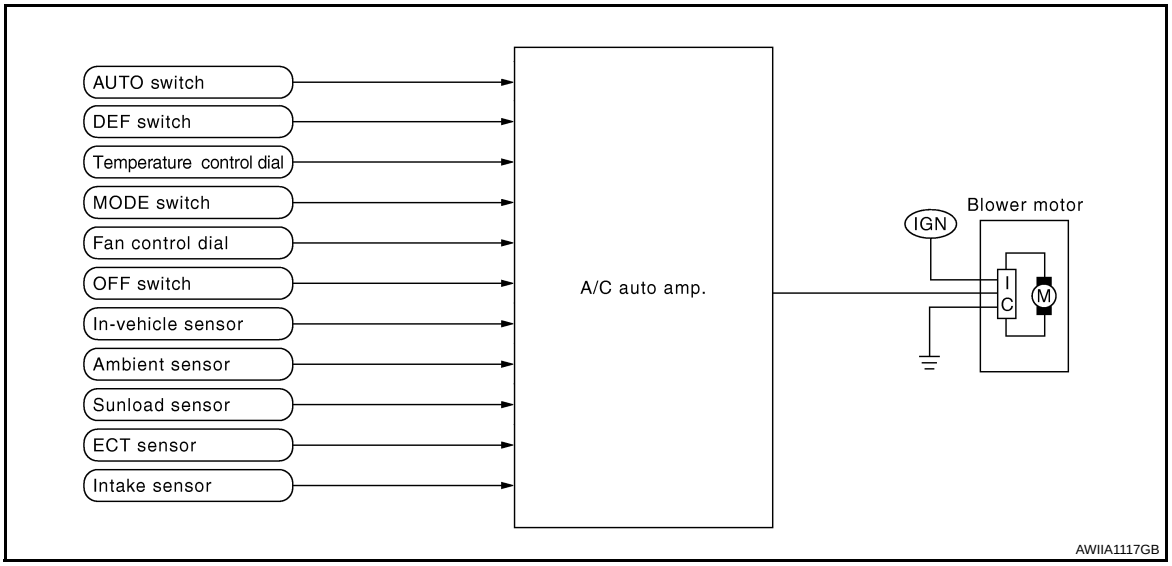
Intake Door Control Specification



BLOWER MOTOR CONTROL SYSTEM

System Diagram

INFOID:0000000004223614



System Description

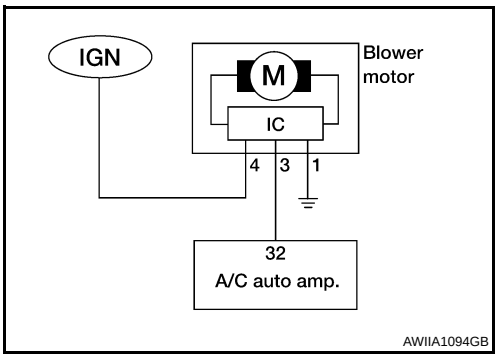
INFOID:0000000004223615

Fan speed is automatically controlled by the temperature setting, ambient temperature, in-vehicle temperature, intake temperature, amount of sunload and air mix door position.
By pressing the AUTO switch, the blower motor starts to gradually increase airflow volume.
When engine coolant temperature is low, the blower motor operation is delayed to prevent cool air from flowing.

SYSTEM OPERATION

System Operation

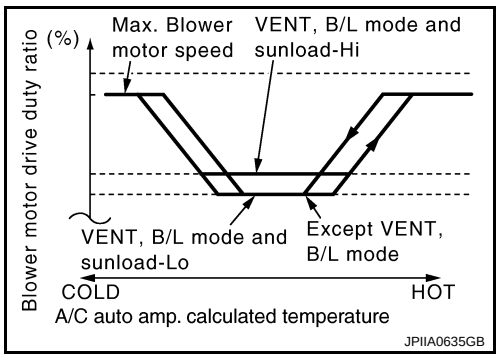
- For airflow, the manual selection (1-7) with the fan control dial has priority.
- If the AUTO switch is pressed or if the DEF switch is pressed while in the OFF condition, it changes to the automatic control by A/C auto amp.
- When increasing the airflow, it changes the duty ratio of the blower motor drive signal to prevent the airflow from suddenly increasing.
- There are the following types of airflow control: starting airflow control, starting airflow control at low coolant temperature, starting airflow control at high in-vehicle temperature, and airflow control at actuator operation in addition to manual control, normal automatic airflow control.



Normal Automatic Airflow Control

- When the target temperature is set by the temperature control switch of A/C switch assembly, the A/C auto amp. performs the calculation and decides the target according to the signal from each sensor.
- The A/C auto amp. changes the duty ratio of blower motor drive signal and controls the airflow, continuously, so that the airflow becomes the target airflow.
- The minimum airflow will change, according to the sunload, when the air discharge outlet is VENT or B/L.

Fan Speed Control Specification



Starting Airflow Control

- When starting the automatic control of airflow, the system gradually increases the duty ratio of the blower motor drive signal to prevent too much air from blowing.
- The time period from when the airflow changes from LO to HI is approximately 8 seconds.
- It becomes the starting airflow control at low coolant temperature according to the calculation result of the A/C auto amp. and engine coolant temperature [approximately 56°C (133°F) or less] during the automatic airflow control.
- Do not perform the starting airflow control when the air discharge outlet is set to DEF.

Starting Fan Speed Control

Start-up from COLD SOAK Condition (Automatic mode)

In cold start-up condition, where the engine coolant temperature is below 56°C (133°F), the blower does not operate for a short period of time (up to 150 seconds). The exact start delay time varies depending on the ambient temperature and engine coolant temperature.

In the most extreme case (very low ambient temperature) the blower start delay is 150 seconds, as described above. After this delay, the blower will operate at low speed until the engine coolant temperature rises above 56°C (133°F), and then the fan speed increases to the objective speed.

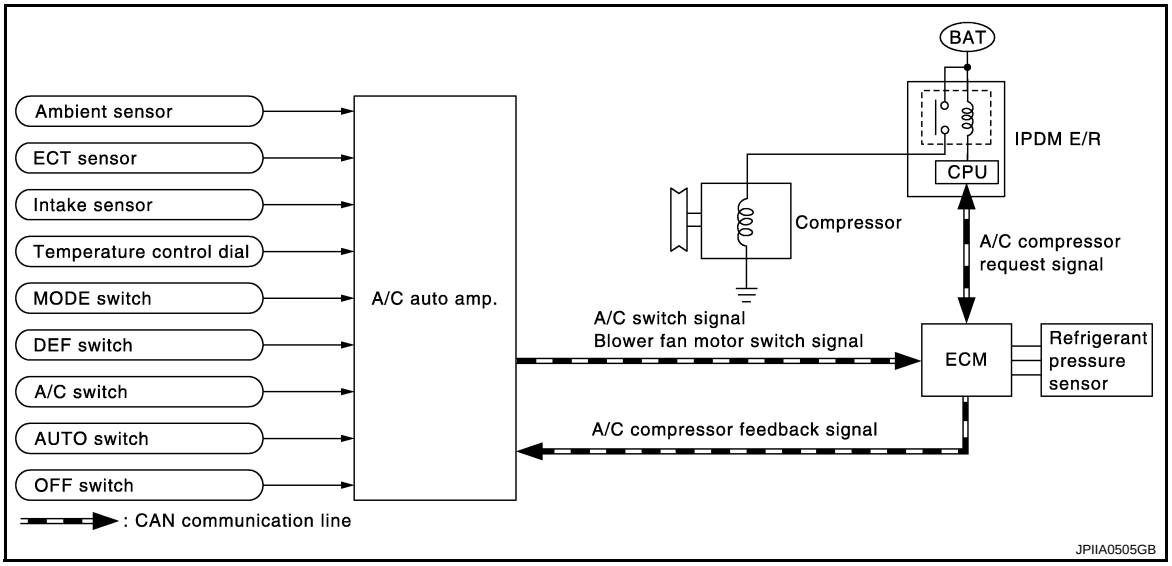
Start-up from usual or HOT SOAK Condition (Automatic mode)

The blower will begin operation momentarily after the AUTO switch is pressed. The fan speed rises gradually to the objective speed over a time period of 3 seconds or less (actual time depends on the objective fan speed).

MAGNET CLUTCH CONTROL SYSTEM

System Diagram

INFOID:0000000004223616



System Description

INFOID:0000000004223617

The A/C auto amp. controls A/C compressor operation by ambient temperature, intake air temperature and signal from ECM.

SYSTEM OPERATION

When the A/C switch, the AUTO switch, or the DEF switch is pressed, or when shifting mode position to D/F, the A/C auto amp. transmits the A/C switch signal and blower fan motor switch signal to the ECM, via CAN communication.
ECM judges whether the A/C compressor can be turned ON, based on each sensor status (refrigerant-pressure sensor signal, throttle angle, etc.). If the ECM judges that the A/C compressor can be turned ON, it sends A/C compressor request signal to the IPDM E/R, via CAN communication.
Upon receipt of A/C compressor request signal from the ECM, the IPDM E/R turns the A/C relay ON to operate the A/C compressor.
When sending A/C compressor request signal to the IPDM E/R via CAN communication line, the ECM simultaneously sends A/C compressor feedback signal to A/C auto amp. via CAN communication line.
The ECM sends A/C compressor feedback signal to A/C auto amp., then, uses input A/C compressor feedback signal to control air inlet.

A/C compressor Protection Control

The ECM makes the A/C relay turn OFF and stops the A/C compressor when pressure on the high-pressure side, detected by the refrigerant pressure sensor, is over approximately 3,119 kPa (31.8 kg/cm^2, 452 psi), or below approximately 118 kPa (1.2 kg/cm^2, 17 psi).

Low Temperature Protection Control

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

CAN COMMUNICATION SYSTEM

System Description

INFOID:0000000004223618

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto each vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 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. For details, refer to LAN-24, "CAN System Specification Chart".

DIAGNOSIS SYSTEM (HVAC)

CONSULT-III Function

INFOID:0000000004223619

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

CONSULT-III application items

Diagnosis mode	Description
ECU Identification	Displays the A/C auto amp. number.
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.
Active Test	The signals used to activate each device are forcibly supplied from A/C auto amp.
Work Support	Changes the setting for each system function. • Difference between temperature setting and control temperature • FRE memory function setting • REC memory function setting • Blow setting to DEF in FOOT mode

SELF-DIAGNOSTIC RESULT

Refer to HAC-204, "DTC Index".

Display Item List

DTC	Items (CONSULT-III screen terms)	Diagnostic item is detected when...	Possible cause
U1000	CAN COMM CIRCUIT	When A/C auto amp. is not transmitting or receiving CAN communication signal for 2 or more seconds.	CAN communication system
U1010	CONTROL UNIT (CAN)	When detecting error during the initial diagnosis of CAN controller of A/C auto amp.	A/C auto amp.
B257B	AMB TEMP SEN (SHORT)	Detected temperature at ambient sensor 55°C (131°F) or more	• Ambient sensor • A/C auto amp. • Harness and connector (Ambient sensor circuit is open, or there is a short in the circuit)
B257C	AMB TEMP SEN (OPEN)	Detected temperature at ambient sensor –30°C (–22°F) or less	
B2578	IN-CAR SENSOR (OUT OF RANGE [LOW])	Detected temperature at in-vehicle sensor 55°C (131°F) or more	• In-vehicle sensor • A/C auto amp. • Harness and connector (In-vehicle sensor circuit is open, or there is a short in the circuit)
B2579	IN-CAR SENSOR (OUT OF RANGE [HI])	Detected temperature at in-vehicle sensor –30°C (–22°F) or less	
B2581	EVAP TEMP SEN (SHORT)	Detected temperature at intake sensor 55°C (131°F) or more	• Intake sensor • A/C auto amp. • Harness and connector (Intake sensor circuit is open, or there is a short in the circuit)
B2582	EVAP TEMP SEN (OPEN)	Detected temperature at intake sensor –30°C (–22°F) or less	
B2630*	SUNLOAD SEN (SHORT)	Detected calorie at sunload sensor 1395 w/m^2 (1200 kcal/m^2·h)	• Sunload sensor • A/C auto amp. • Harness and connector (Sunload sensor circuit is open, or there is a short in the circuit)
B2631*	SUNLOAD SEN (OPEN)	Detected calorie at sunload sensor 0 w/m^2 (0 kcal/m^2·h)	
B2632	DR AIRMIX ACTR (SHORT)	Air mix door PBR (driver side) position 5% or less	• Air mix door motor (driver side) • A/C auto amp. • Harness and connector (CAN communication line is open or shorted) (Air mix door motor is open or shorted)
B2633	DR AIRMIX ACTR (OPEN)	Air mix door PBR (driver side) position 95% or more	

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

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

DATA MONITOR

Display item list

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

Monitor item [Unit]		Description
ENG COOL TEMP	[°C]	Water temperature signal value received from ECM via CAN communication
VEHICLE SPEED	[Mph (km/h)]	Vehicle speed signal value received from meter via CAN communication

ACTIVE TEST

Test item	Description
ALL SEG	**NOTE:** • Item can be displayed but cannot be tested. • When choosing to turn “ALL SEG” on, error message is displayed but it is not malfunction.
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 door position	VENT1	B/L1	B/L2	FOOT	D/F	DEF
Intake door position	REC	REC	20%FRE	FRE	FRE	FRE
Air mix door position (driver & passenger side)	FULL COLD	FULL COLD	FULL HOT	FULL HOT	FULL HOT	FULL HOT
Blower motor duty ratio	37%	91%	65%	65%	65%	91%
A/C compressor (Magnet clutch)	ON	ON	ON	OFF	ON	ON

NOTE:

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

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-132, "Temperature Setting Trimmer"
BLOW SET (Blow setting to DEF in FOOT mode)	In the FOOT mode, the air blowing to the DEF can change ON/OFF.	HAC-133, "Foot Position Setting Trimmer"

Work item	Description	Reference
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), “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.	HAC-133, "Inlet Port Memory Function (FRE)"
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), “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.	HAC-134, "Inlet Port Memory Function (REC)"

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.

COMPONENT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000004223620

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, 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.
CAN Communication Signal Chart. Refer to LAN-14, "How to Use CAN Communication Signal Chart".

DTC Logic

INFOID:0000000004223621

DTC DETECTION LOGIC

DTC	Items (CONSULT-III 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

Diagnosis Procedure

INFOID:0000000004223622

1. CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Turn ignition switch ON and wait for 2 or more seconds.
2. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.

Is “CAN COMM CIRCUIT” displayed?

YES >> Perform trouble diagnosis for the CAN communication system. Refer to LAN-15, "Trouble Diagnosis Flow Chart".
NO >> Perform the intermittent malfunction diagnosis. Refer to GI-39, "Intermittent Incident".

U1010 CONTROL UNIT (CAN)

Description

INFOID:0000000004223623

Initial diagnosis of A/C auto amp.

DTC Logic

INFOID:0000000004223624

DTC DETECTION LOGIC

DTC	Items (CONSULT-III screen terms)	Diagnostic item is detected when...	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.

Diagnosis Procedure

INFOID:0000000004223625

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.

Is DTC No.“U1010” displayed?

YES >> Replace A/C auto amp. Refer to HAC-231, "Removal and Installation".
NO >> Inspection End.

B257B, B257C AMBIENT SENSOR

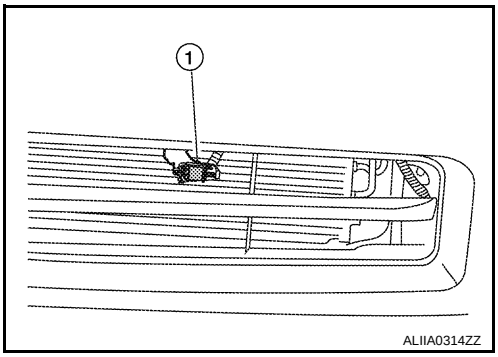
Description

INFOID:0000000004223626

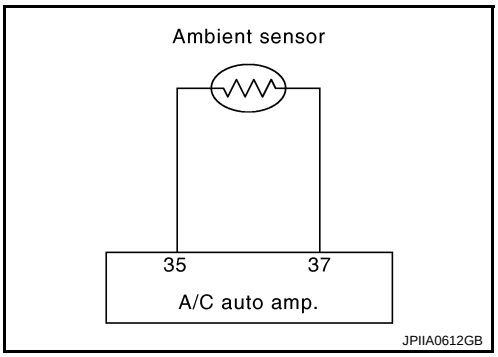
COMPONENT DESCRIPTION

Ambient Sensor

- The ambient sensor (1) is installed to the front bumper reinforcement.
- It detects ambient temperature and converts it into a resistance value which is then input into the A/C auto amp.



Ambient Sensor Circuit



AMBIENT TEMPERATURE INPUT PROCESS

The A/C auto amp. equips a processing circuit for the ambient sensor input. However, when the temperature detected by the ambient sensor increases quickly, the processing circuit retards the A/C auto amp. function. It only allows the A/C auto amp. to recognize an ambient temperature increase of 0.33°C (0.6°F) per 100 seconds.

As an example, consider stopping for a few minutes after high speed driving. Although the actual ambient temperature has not changed, the temperature detected by the ambient sensor increases. This is because the heat from the engine compartment can radiate to the front bumper area, the location of the ambient sensor.

DTC Logic

INFOID:0000000004223627

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-156, "DTC Logic" or HAC-157, "DTC Logic".
- If there is an open circuit in the ambient sensor, A/C auto amp. registers extreme cold [-30°C (-22°F)] and adjusts the temperature control warmer.

DTC	Items (CONSULT-III screen terms)	Diagnostic item is detected when...	Possible cause
B257B	AMB TEMP SEN (SHORT)	Detected temperature at ambient sensor 55°C (131°F) or more	• Ambient sensor • A/C auto amp. • Harness and connector (Ambient sensor circuit is open, or there is a short in the circuit)
B257C	AMB TEMP SEN (OPEN)	Detected temperature at ambient sensor –30°C (–22°F) or less	

DTC CONFIRMATION PROCEDURE

1. CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.
2. Check if any DTC No. is displayed in the self-diagnosis results.

NOTE:

- If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-156, "DTC Logic" or HAC-157, "DTC Logic".
- If there is an open circuit in the ambient sensor, A/C auto amp. registers extreme cold [-30°C (-22°F)] and adjusts the temperature control warmer.

Is DTC No.“B257B” or “B257C” displayed?

YES >> Perform trouble diagnosis for the ambient sensor. Refer to HAC-159, "Diagnosis Procedure".
NO >> Inspection End.

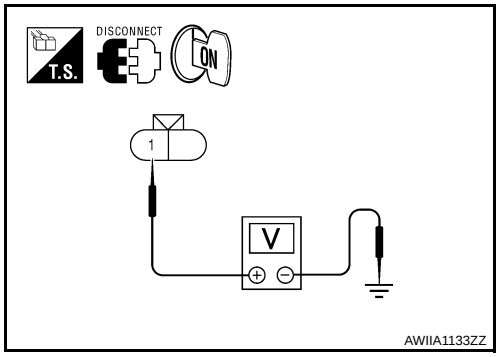
Diagnosis Procedure

INFOID:0000000004223628

1. CHECK VOLTAGE BETWEEN AMBIENT SENSOR AND GROUND

1. Disconnect ambient sensor connector.
2. Turn ignition switch ON.
3. Check voltage between ambient sensor harness connector E211 terminal 1 and ground.

1 - Ground : Approx. 5V



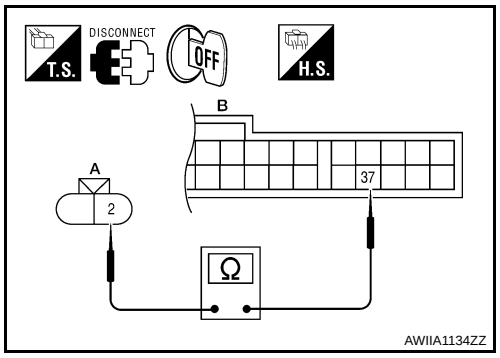
Is the inspection result normal?

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

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

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between ambient sensor harness connector E211 (A) terminal 2 and A/C auto amp. harness connector M37 (B) terminal 37.

2 - 37 : Continuity should exist.



Is the inspection result normal?

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

3. CHECK AMBIENT SENSOR

Check ambient sensor. Refer to HAC-160, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-231, "Removal and Installation".
NO >> Replace ambient sensor. Refer to HAC-232, "Removal and Installation".

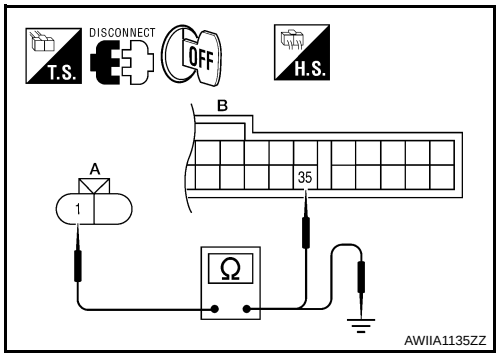
4. CHECK CONTINUITY BETWEEN AMBIENT SENSOR AND A/C AUTO AMP.

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between ambient sensor harness connector E211 (A) terminal 1 and A/C auto amp. harness connector M37 (B) terminal 35.

1 - 35 : Continuity should exist.

4. Check continuity between ambient sensor harness connector E211 (A) terminal 1 and ground.

1 - Ground : Continuity should not exist.



Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-231, "Removal and Installation".
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000004223629

1. CHECK AMBIENT SENSOR

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

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

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace ambient sensor. Refer to HAC-232, "Removal and Installation".

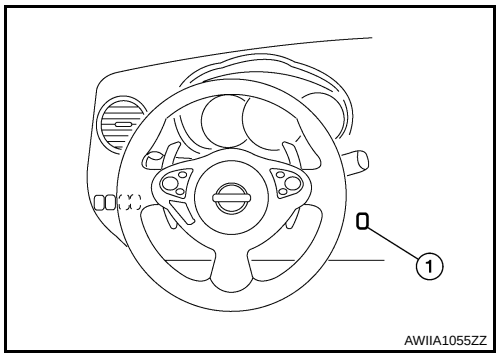
B2578, B2579 IN-VEHICLE SENSOR

Description

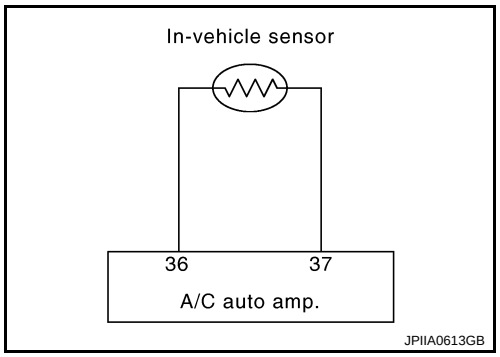
INFOID:0000000004223630

In-vehicle Sensor

- The in-vehicle sensor (1) is located on instrument lower cover (LH).
- It converts variations in compartment air temperature drawn from the aspirator into a resistance value. It is then input into the A/C auto amp.

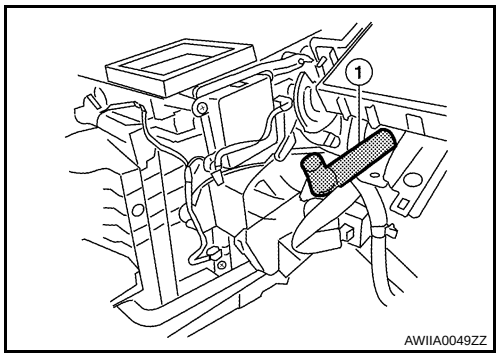


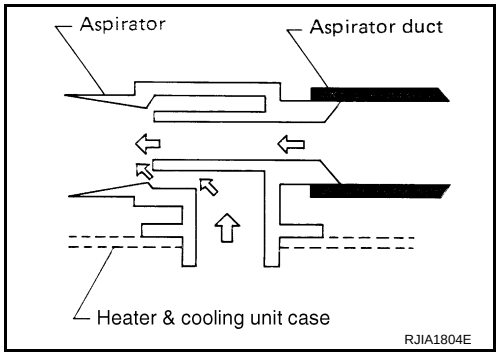
In-vehicle Sensor Circuit



Aspirator

The aspirator (1) is located on driver side of heater & cooling unit assembly. It produces vacuum pressure due to air discharged from the heater & cooling unit assembly, continuously taking compartment air in the aspirator.





DTC Logic

INFOID:0000000004223631

DTC DETECTION LOGIC

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-156, "DTC Logic" or HAC-157, "DTC Logic".

DTC	Items (CONSULT-III screen terms)	Diagnostic item is detected when...	Possible cause
B2578	IN-CAR SENSOR (OUT OF RANGE [LOW])	Detected temperature at in-vehicle sensor 55°C (131°F) or more	• In-vehicle sensor • A/C auto amp. • Harness and connector (In-vehicle sensor circuit is open, or there is a short in the circuit)
B2579	IN-CAR SENSOR (OUT OF RANGE [HI])	Detected temperature at in-vehicle sensor -30°C (-22°F) or less	

DTC CONFIRMATION PROCEDURE

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.
2. Check if any DTC No. is displayed in the self-diagnosis results.

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-156, "DTC Logic" or HAC-157, "DTC Logic".

Is DTC No.“B2578” or “B2579” displayed?

YES >> Perform trouble diagnosis for the in-vehicle sensor. Refer to HAC-162, "Diagnosis Procedure".
NO >> Inspection End.

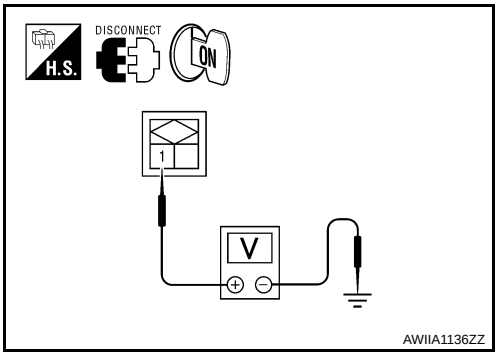
Diagnosis Procedure

INFOID:0000000004223632

1.CHECK IN-VEHICLE SENSOR POWER SUPPLY

1. Disconnect in-vehicle sensor connector.
2. Turn ignition switch ON.
3. Check voltage between in-vehicle sensor harness connector M34 terminal 1 and ground.

1 - Ground : Approx. 5V



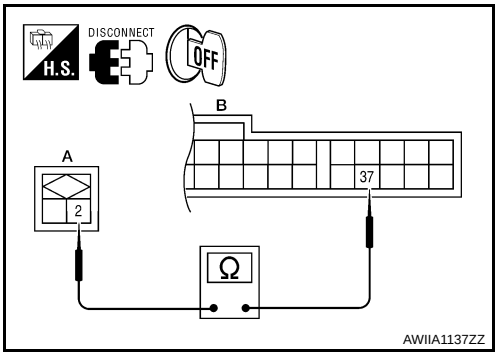
Is the inspection result normal?

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 M34 (A) terminal 2 and A/C auto amp. harness connector M37 (B) terminal 37.

2 - 37 : Continuity should exist.



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-163, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-231, "Removal and Installation".
NO >> Replace in-vehicle sensor. Refer to HAC-233, "Removal and Installation".

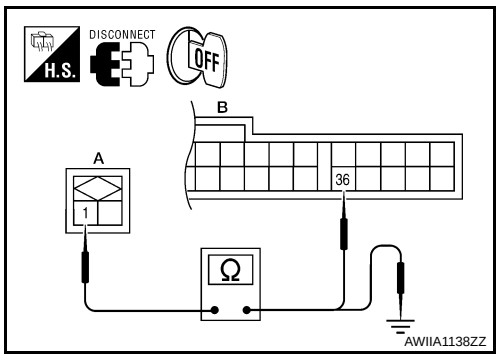
4.CHECK CONTINUITY BETWEEN IN-VEHICLE SENSOR AND A/C AUTO AMP.

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between in-vehicle sensor harness connector M34 (A) terminal 1 and A/C auto amp. harness connector M37 (B) terminal 36.

1 - 36 : Continuity should exist.

4. Check continuity between in-vehicle sensor harness connector M34 (A) terminal 1 and ground.

1 - Ground : Continuity should not exist.



Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-231, "Removal and Installation".
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000004223633

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?

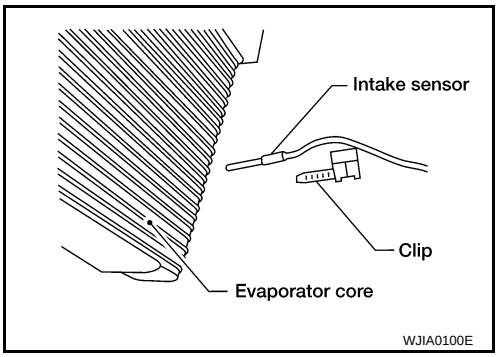
YES >> Inspection End.
NO >> Replace in-vehicle sensor. Refer to HAC-233, "Removal and Installation".

B2581, B2582 INTAKE SENSOR

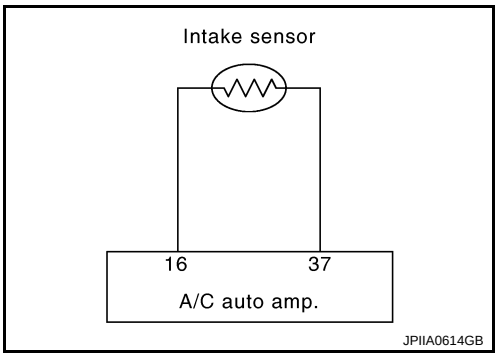
Description

INFOID:0000000004223634

Intake Sensor
- The intake sensor is located on the evaporator.
- It converts air temperature after it passes through the evaporator into a resistance value which is then input to the A/C auto amp.



Intake Sensor Circuit



DTC Logic

INFOID:0000000004223635

DTC DETECTION LOGIC

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-156, "DTC Logic" or HAC-157, "DTC Logic".

DTC	Items (CONSULT-III screen terms)	Diagnostic item is detected when...	Possible cause
B2581	EVAP TEMP SEN (SHORT)	Detected temperature at intake sensor 55°C (131°F) or more	• Intake sensor • A/C auto amp. • Harness and connector (Intake sensor circuit is open, or there is a short in the circuit)
B2582	EVAP TEMP SEN (OPEN)	Detected temperature at intake sensor -30°C (-22°F) or less	

DTC CONFIRMATION PROCEDURE

1. CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.
2. Check if any DTC No. is displayed in the self-diagnosis results.

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-156, "DTC Logic" or HAC-157, "DTC Logic".

Is DTC No.“B2581” or “B2582” displayed?

YES >> Perform trouble diagnosis for the intake sensor. Refer to HAC-164, "Diagnosis Procedure".
NO >> Inspection End.

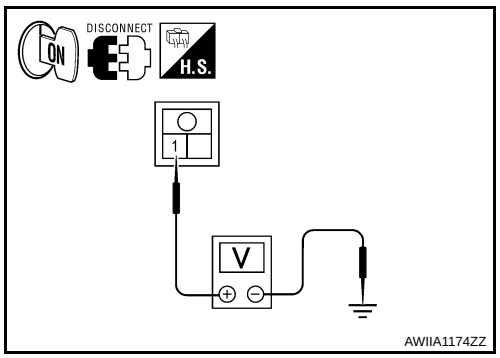
Diagnosis Procedure

INFOID:0000000004223636

1. CHECK INTAKE SENSOR POWER SUPPLY

1. Disconnect intake sensor connector.
2. Turn ignition switch ON.
3. Check voltage between intake sensor harness connector M69 terminal 1 and ground.

1 - Ground : Approx. 5V



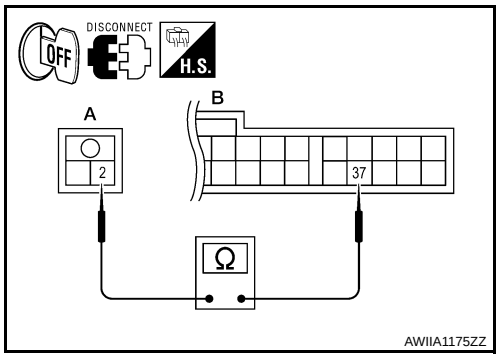
Is the inspection result normal?

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

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

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between intake sensor harness connector M69 (A) terminal 2 and A/C auto amp. harness connector M37 (B) terminal 37.

2 - 37 : Continuity should exist.



Is the inspection result normal?

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

3. CHECK INTAKE SENSOR

Check intake sensor. Refer to HAC-165, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-231, "Removal and Installation".
NO >> Replace intake sensor. Refer to HAC-235, "Removal and Installation".

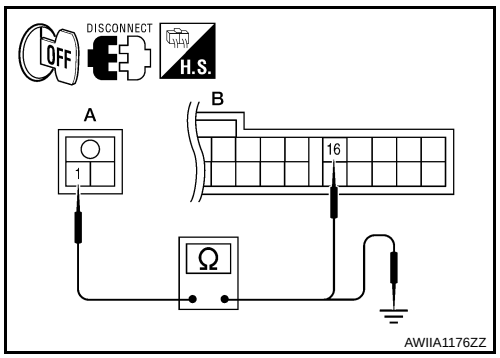
4. CHECK CONTINUITY BETWEEN INTAKE SENSOR AND A/C AUTO AMP.

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between intake sensor harness connector M69 (A) terminal 1 and A/C auto amp. harness connector M37 (B) terminal 16.

1 - 16 : Continuity should exist.

4. Check continuity between intake sensor harness connector M69 (A) terminal 1 and ground.

1 - Ground : Continuity should not exist.



Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-231, "Removal and Installation".
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000004223637

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)	18.63
		–10 (14)	14.15
		–5 (23)	10.86
		0 (32)	8.41
		5 (41)	6.58
		10 (50)	5.19
		15 (59)	4.12
		20 (68)	3.30
		25 (77)	2.67
		30 (86)	2.17
		35 (95)	1.78
		40 (104)	1.46
		45 (113)	1.21

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace intake sensor. Refer to HAC-235, "Removal and Installation".

B2630, B2631 SUNLOAD SENSOR

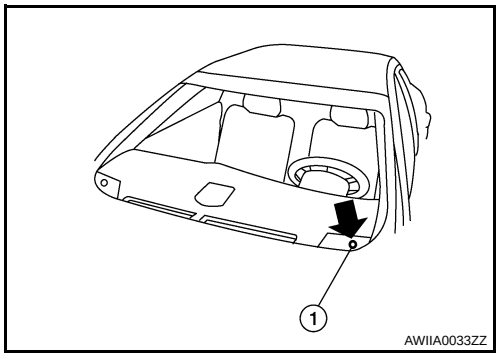
Description

INFOID:0000000004223638

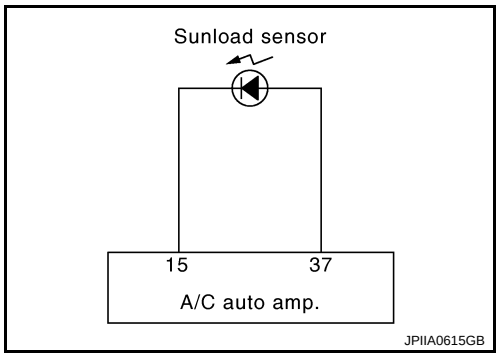
COMPONENT DESCRIPTION

Sunload Sensor

- The sunload sensor (1) is located on the driver side defroster grille.
- It detects sunload entering through windshield by means of a photo diode. The sensor converts the sunload into a current value, which is then input into the A/C auto amp.



Sunload Sensor Circuit



SUNLOAD INPUT PROCESS

The A/C auto amp. also equips a processing circuit which averages the variations in detected sunload over a period of time. This prevents drastic swings in the air temperature control system operation due to small or quick variations in detected sunload.

For example, consider driving along a road bordered by an occasional group of large trees. The sunload detected by the sunload sensor varies whenever the trees obstruct the sunlight. The processing circuit averages the detected sunload over a period of time, so that the (insignificant) effect of the trees momentarily obstructing the sunlight does not cause any change in the air temperature control system operation. On the other hand, shortly after entering a long tunnel, the system recognizes the change in sunload, and the system reacts accordingly.

DTC Logic

INFOID:0000000004223639

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-156, "DTC Logic" or HAC-157, "DTC Logic".
- Sunload sensor may register a malfunction when indoors, at dusk, or at other times when light is insufficient. When performing the diagnosis indoors, light the sunload sensor with a lamp (60W or more).

DTC	Items (CONSULT-III screen terms)	Diagnostic item is detected when...	Possible cause
B2630	SUNLOAD SEN (SHORT)	Detected calorie at sunload sensor 1395 w/m^2 (1200 kcal/m^2·h) or more	• Sunload sensor • A/C auto amp. • Harness and connector (Sunload sensor circuit is open, or there is a short in the circuit)
B2631	SUNLOAD SEN (OPEN)	Detected calorie at sunload sensor 0 w/m^2 (0 kcal/m^2·h)	

DTC CONFIRMATION PROCEDURE

1. CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.
2. Check if any DTC No. is displayed in the self-diagnosis results.

NOTE:

- If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-156, "DTC Logic" or HAC-157, "DTC Logic".
- Sunload sensor may register a malfunction when indoors, at dusk, or at other times when light is insufficient. When performing the diagnosis indoors, light the sunload sensor with a lamp (60W or more).

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

YES >> Perform trouble diagnosis for the sunload sensor. Refer to HAC-168, "Diagnosis Procedure".
NO >> Inspection End.

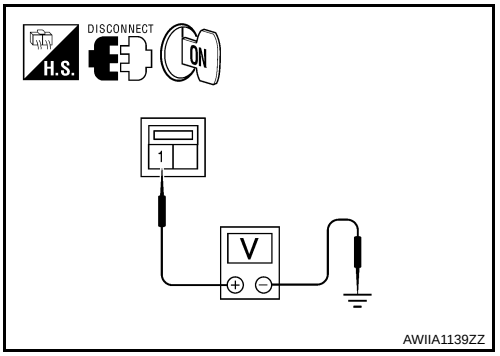
Diagnosis Procedure

INFOID:0000000004223640

1. CHECK SUNLOAD SENSOR POWER SUPPLY

1. Disconnect sunload sensor connector.
2. Turn ignition switch ON.
3. Check voltage between sunload sensor harness connector M56 terminal 1 and ground.

1 - Ground : Approx. 5V



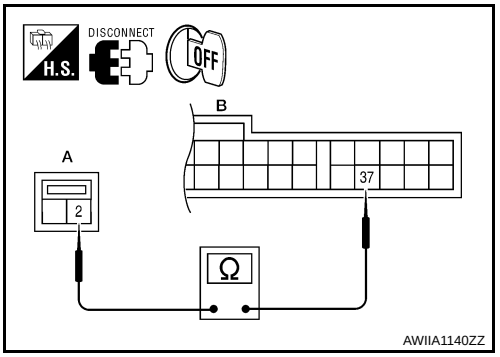
Is the inspection result normal?

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

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

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between sunload sensor harness connector M56 (A) terminal 2 and A/C auto amp. harness connector M37 (B) terminal 37.

2 - 37 : Continuity should exist.



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-169, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-231, "Removal and Installation".
NO >> Replace sunload sensor. Refer to HAC-234, "Removal and Installation".

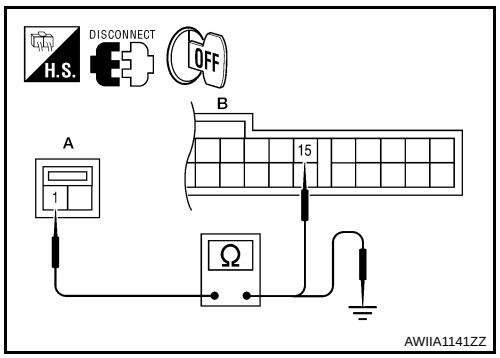
4. CHECK CONTINUITY BETWEEN SUNLOAD SENSOR AND A/C AUTO AMP.

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check continuity between sunload sensor harness connector M56 (A) terminal 1 and A/C auto amp. harness connector M37 (B) terminal 15.

1 - 15 : Continuity should exist.

4. Check continuity between sunload sensor harness connector M56 (A) terminal 1 and ground.

1 - Ground : Continuity should not exist.



Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-231, "Removal and Installation".
NO >> Repair harness or connector.

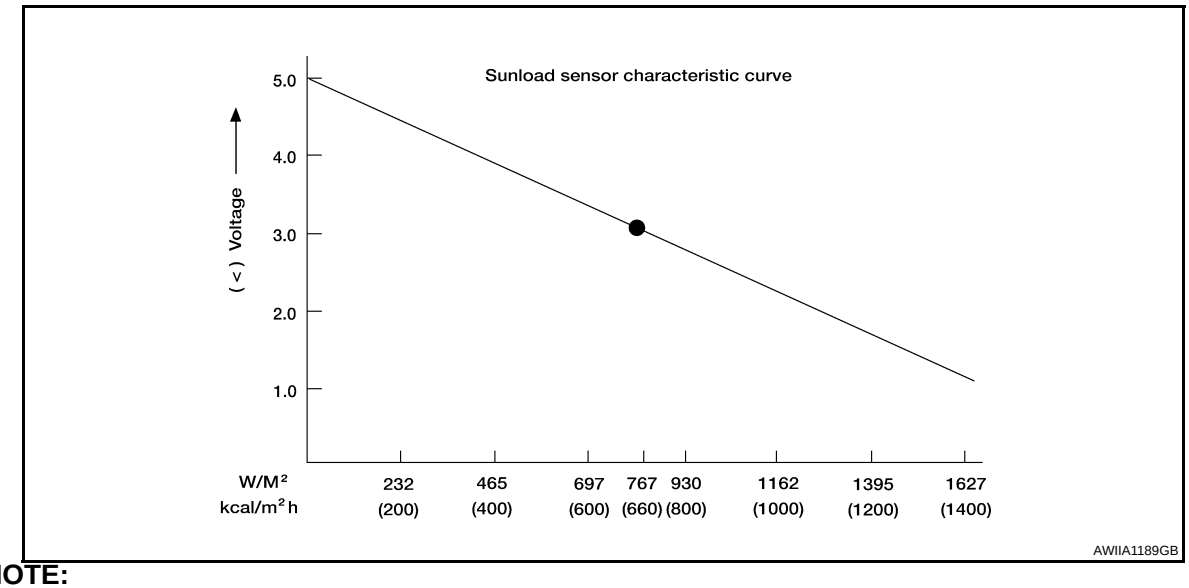
Component Inspection

INFOID:0000000004223641

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	
M37	15	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-234, "Removal and Installation".

B2632, B2633 AIR MIX DOOR MOTOR (DRIVER SIDE)

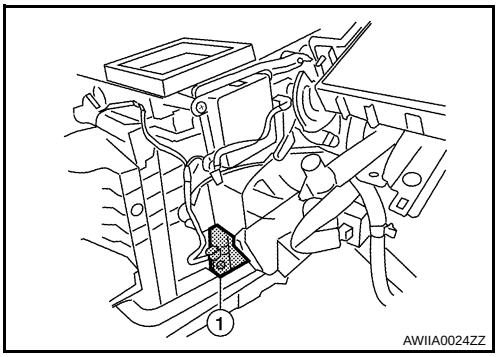
Description

INFOID:0000000004223642

COMPONENT DESCRIPTION

Air Mix Door Motor (driver side)

- The air mix door motor (driver side) (1) is attached to the heater & cooling unit assembly.
- It rotates so that the air mix door is opened or closed to a position set by the A/C auto amp.
- Motor rotation is then conveyed through a shaft and the air mix door position feedback is then sent to the A/C auto amp. by PBR built-in air mix door motor.



DTC Logic

INFOID:0000000004223643

DTC DETECTION LOGIC

NOTE:

If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-156, "DTC Logic" or HAC-157, "DTC Logic".

DTC	Items (CONSULT-III screen terms)	Diagnostic item is detected when...	Possible cause
B2632	DR AIRMIX ACTR (SHORT)	Air mix door PBR (driver side) position 5% or less	• Air mix door motor (driver side) • A/C auto amp. • Harness and connector (CAN communication line is open or shorted) (Air mix door motor is open or shorted)
B2633	DR AIRMIX ACTR (OPEN)	Air mix door PBR (driver side) position 95% or more	

DTC CONFIRMATION PROCEDURE

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.
2. Check if any DTC No. is displayed in the self-diagnosis results.

NOTE:

If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-156, "DTC Logic" or HAC-157, "DTC Logic".

Is DTC No.“B2632” or “B2633” displayed?

YES >> Perform trouble diagnosis for the air mix door motor (driver side). Refer to HAC-171, "Diagnosis Procedure".

NO >> GO TO 2.

2.FUNCTION INSPECTION

1. Press the temperature control switch (driver side) until 32°C (90°F) is displayed.
2. Check for warm air at discharge air outlets.
3. Operate the A/C compressor.
4. Press the temperature control switch (driver side) until 18°C (60°F) is displayed.
5. Check for cool air at air discharge outlets.

Does it operate normally?

YES >> Inspection End.

NO >> Check air mix door motor (driver side) installation, and repair or replace the malfunctioning parts.

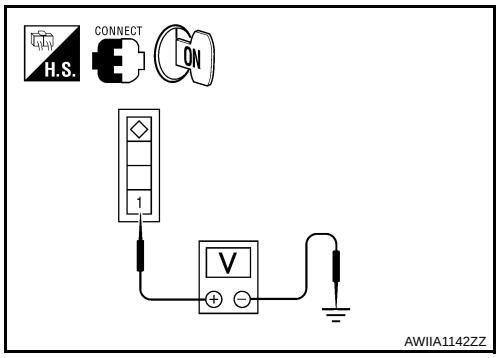
Diagnosis Procedure

INFOID:0000000004223644

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

1. Turn ignition switch ON.
2. Check voltage between air mix door motor (driver side) harness connector M128 terminal 1 and ground.

1 - Ground : Battery Voltage

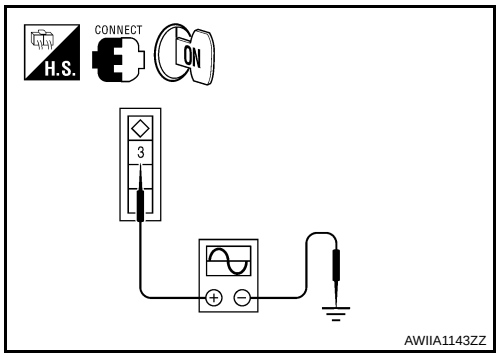


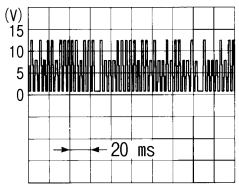
Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the harnesses or connectors.

2. CHECK SIGNAL FOR AIR MIX DOOR MOTOR (DRIVER SIDE)

Check the output waveform (LAN signal) between air mix door motor (driver side) harness connector M128 terminal 3 and ground using an oscilloscope.



(+)		(–)	Voltage
Air mix door motor (driver side)		—	
Connector	Terminal		
M128	3	Ground	

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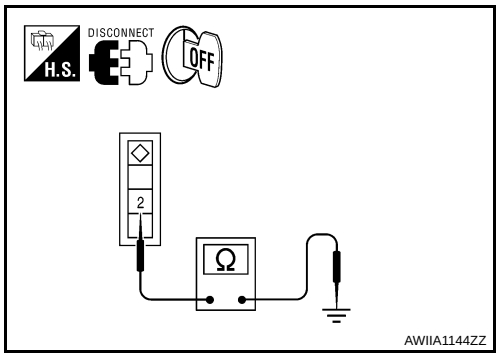
Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the harnesses or connectors.

3. CHECK AIR MIX DOOR MOTOR (DRIVER SIDE) GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect air mix door motor (driver side) connector.
3. Check continuity between air mix door motor (driver side) harness connector M128 terminal 2 and ground.

2 - Ground : Continuity should exist.



Is the inspection result normal?

YES >> Replace air mix door motor (driver side). Refer to HAC-237, "AIR MIX DOOR MOTOR : Removal and Installation".
NO >> Repair harness or connector.

B2634, B2635 AIR MIX DOOR MOTOR (PASSENGER SIDE)

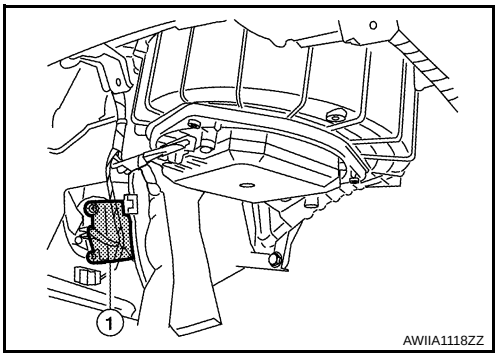
Description

INFOID:0000000004223645

COMPONENT DESCRIPTION

Air Mix Door Motor (passenger side)

- The air mix door motor (passenger side) (1) is attached to the heater & cooling unit assembly.
- It rotates so that the air mix door is opened or closed to a position set by the A/C auto amp.
- Motor rotation is then conveyed through a shaft and the air mix door position feedback is then sent to the A/C auto amp. by PBR built-in air mix door motor.



DTC Logic

INFOID:0000000004223646

DTC DETECTION LOGIC

NOTE:

If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-156, "DTC Logic" or HAC-157, "DTC Logic".

DTC	Items (CONSULT-III screen terms)	Diagnostic item is detected when...	Possible cause
B2634	PASS AIRMIX ACTR (SHORT)	Air mix door PBR (passenger side) position 5% or less	• Air mix door motor (passenger side) • A/C auto amp. • Harness and connector (CAN communication line is open or shorted) (Air mix door motor is open or shorted)
B2635	PASS AIRMIX ACTR (OPEN)	Air mix door PBR (passenger side) position 95% or more	

DTC CONFIRMATION PROCEDURE

1. CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.
2. Check if any DTC No. is displayed in the self-diagnosis results.

NOTE:

If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-156, "DTC Logic" or HAC-157, "DTC Logic".

Is DTC No.“B2634” or “B2635” displayed?

YES >> Perform trouble diagnosis for the air mix door motor (passenger side). Refer to HAC-173, "Diagnosis Procedure".

NO >> GO TO 2.

2. FUNCTION INSPECTION

1. Press the temperature control switch (passenger side) until 32°C (90°F) is displayed.
2. Check for warm air at discharge air outlets.
3. Operate the A/C compressor.
4. Press the temperature control switch (passenger side) until 18°C (60°F) is displayed.
5. Check for cool air at air discharge outlets.

Does it operate normally?

YES >> Inspection End.

NO >> Check air mix door motor (passenger side) installation, and repair or replace the malfunctioning parts.

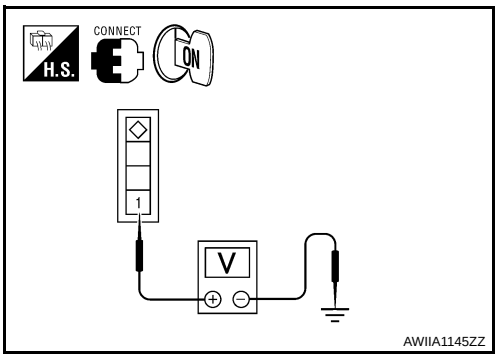
Diagnosis Procedure

INFOID:0000000004223647

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

1. Turn ignition switch ON.
2. Check voltage between air mix door motor (passenger side) harness connector M129 terminal 1 and ground.

1 - Ground :Battery Voltage

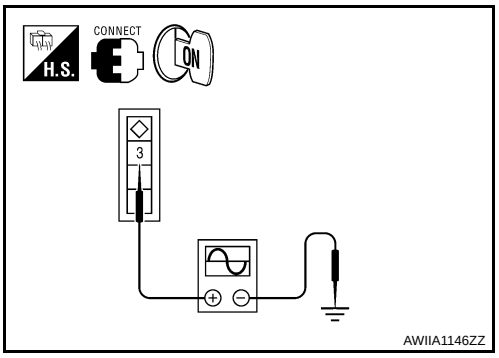


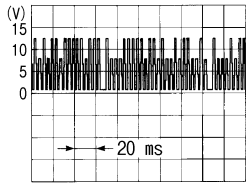
Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the harnesses or connectors.

2. CHECK SIGNAL FOR AIR MIX DOOR MOTOR (PASSENGER SIDE)

Check the output waveform (LAN signal) between air mix door motor (passenger side) harness connector M129 terminal 3 and ground using an oscilloscope.



(+)		(–)	Voltage
Air mix door motor (passenger side)		—	
Connector	Terminal		
M129	3	Ground	

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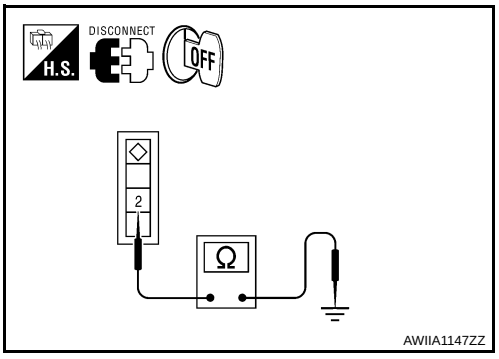
Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the harnesses or connectors.

3. CHECK AIR MIX DOOR MOTOR (PASSENGER SIDE) GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect air mix door motor (passenger side) connector.
3. Check continuity between air mix door motor (passenger side) harness connector M129 terminal 2 and ground.

2 - Ground : Continuity should exist.



Is the inspection result normal?

YES >> Replace air mix door motor (passenger side). Refer to HAC-237, "AIR MIX DOOR MOTOR : Removal and Installation".
NO >> Repair harness or connector.

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

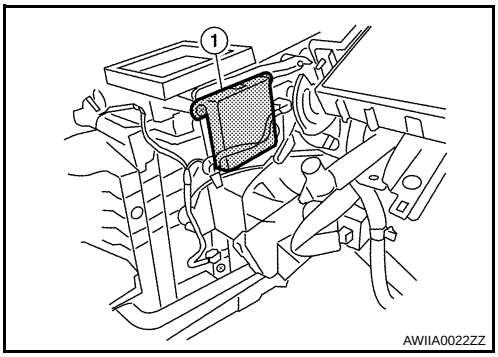
Description

INFOID:0000000004223648

COMPONENT DESCRIPTION

Mode Door Motor

- The mode door motor (1) is attached to the heater & cooling unit assembly.
- It rotates so that air is discharged from the outlet set by the A/C auto amp. Motor rotation is conveyed to a link which activates the mode door.



DTC Logic

INFOID:0000000004223649

DTC DETECTION LOGIC

NOTE:

If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-156, "DTC Logic" or HAC-157, "DTC Logic".

DTC	Items (CONSULT-III screen terms)	Diagnostic item is detected when...	Possible cause
B2636	DR VENT DOOR FAIL	When the malfunctioning door position is detected at VENT position	• Mode door motor • A/C auto amp. • Harness and connector (CAN communication line is open or shorted) (Mode door motor is open or shorted)
B2637	DR B/L DOOR FAIL	When the malfunctioning door position is detected at B/L position	
B2638	DR D/F1 DOOR FAIL	When the malfunctioning door position is detected at FOOT position	
B2639	DR DEF DOOR FAIL	When the malfunctioning door position is detected at DEF position	
B2654	D/F2 DOOR FAIL	When the malfunctioning door position is detected at D/F position	
B2655	B/L2 DOOR FAIL	When the malfunctioning door position is detected at B/L2 position	

DTC CONFIRMATION PROCEDURE

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.
2. Check if any DTC No. is displayed in the self-diagnosis results.

NOTE:

If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-156, "DTC Logic" or HAC-157, "DTC Logic".

Is DTC No.“B2636”, “B2637”, “B2638”, “B2639”, “B2654” or “B2655” displayed?

YES >> Perform trouble diagnosis for the mode door motor. Refer to HAC-175, "Diagnosis Procedure".
NO >> GO TO 2.

2.FUNCTION INSPECTION

1. Press MODE switch and DEF switch.
2. Each position indicator should change shape.
3. Confirm that air discharge comes out according to the air distribution table. Refer to HAC-137, "System Description".

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

Does it operate normally?

YES >> Inspection End.
NO >> Check mode door motor installation, and repair or replace the malfunctioning parts. Refer to HAC-237, "MODE DOOR MOTOR : Removal and Installation".

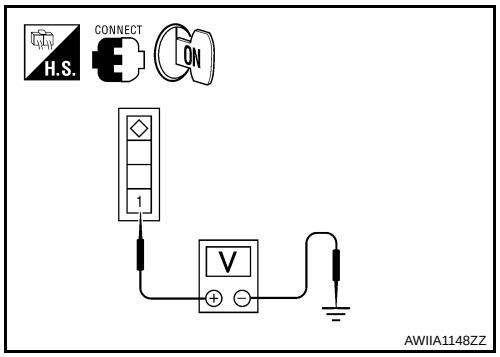
Diagnosis Procedure

INFOID:0000000004223650

1. CHECK MODE DOOR MOTOR POWER SUPPLY

1. Turn ignition switch ON.
2. Check voltage between mode door motor harness connector M127 terminal 1 and ground.

1 - Ground : Battery Voltage

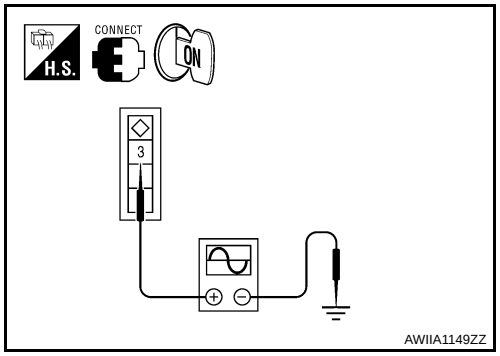


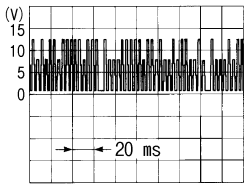
Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2. CHECK SIGNAL FOR MODE DOOR MOTOR

Confirm A/C LAN signal between mode door motor harness connector M127 terminal 3 and ground using an oscilloscope.



(+)		(–)	Voltage
Mode door motor		—	
Connector	Terminal		
M127	3	Ground	

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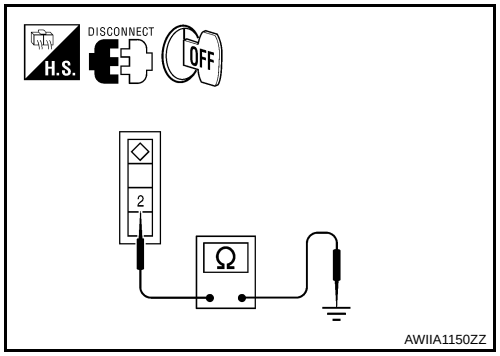
Is the inspection result normal?

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

3. CHECK MODE DOOR MOTOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect mode door motor connector.
3. Check continuity between mode door motor harness connector M127 terminal 2 and ground.

2 - Ground : Continuity should exist.



Is the inspection result normal?

YES >> Replace mode door motor. Refer to HAC-237, "MODE DOOR MOTOR : Removal and Installation".
NO >> Repair harness or connector.

B263D, B263E, B263F INTAKE DOOR MOTOR

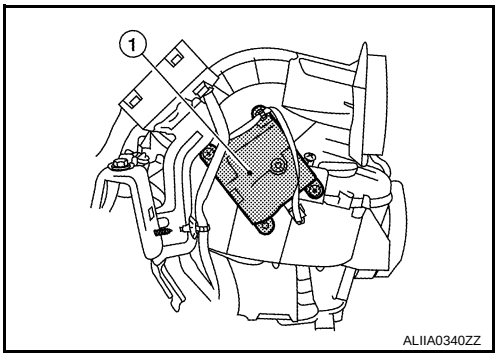
Description

INFOID:0000000004223651

COMPONENT DESCRIPTION

Intake Door Motor

- The intake door motor (1) is attached to the blower unit.
- It rotates so that air is drawn from inlets set by the A/C auto amp. Motor rotation is conveyed to a lever which activates the intake door.



DTC Logic

INFOID:0000000004223652

DTC DETECTION LOGIC

NOTE:

If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-156, "DTC Logic" or HAC-157, "DTC Logic".

DTC	Items (CONSULT-III screen terms)	Diagnostic item is detected when...	Possible cause
B263D	FRE DOOR FAIL	When the malfunctioning intake door position is detected at FRE position	• Intake door motor • A/C auto amp. • Harness and connector (CAN communication line is open or shorted) (Intake door motor is open or shorted)
B263E	20P FRE DOOR FAIL	When the malfunctioning intake door position is detected at 20% FRE position	
B263F	REC DOOR FAIL	When the malfunctioning intake door position is detected at REC position	

DTC CONFIRMATION PROCEDURE

1. CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.
2. Check if any DTC No. is displayed in the self-diagnosis results.

NOTE:

If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-156, "DTC Logic" or HAC-157, "DTC Logic".

Is DTC No.“B263D”, “B263E”, or “B263F” displayed?

YES >> Perform trouble diagnosis for the intake door motor. Refer to HAC-177, "Diagnosis Procedure".
NO >> GO TO 2.

2. FUNCTION INSPECTION

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

Does it operate normally?

YES >> Inspection End.
NO >> Check intake door motor installation, and repair or replace the malfunctioning parts.

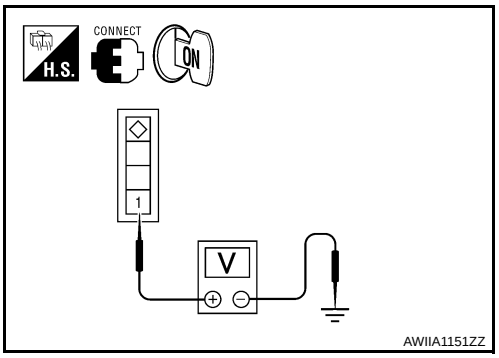
Diagnosis Procedure

INFOID:0000000004223653

1. CHECK INTAKE DOOR MOTOR POWER SUPPLY

1. Turn ignition switch ON.
2. Check voltage between intake door motor harness connector M126 terminal 1 and ground.

1 - Ground : Battery Voltage

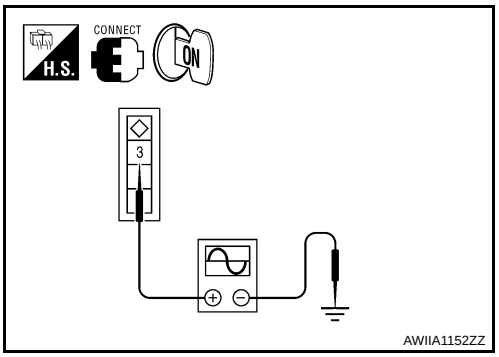


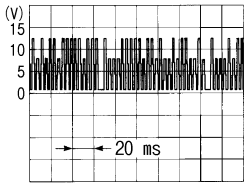
Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2. CHECK SIGNAL FOR INTAKE DOOR MOTOR

Confirm A/C LAN signal between intake door motor harness connector M126 terminal 3 and ground using an oscilloscope.



(+)		(–)	Voltage
Intake door motor		—	
Connector	Terminal		
M126	3	Ground	

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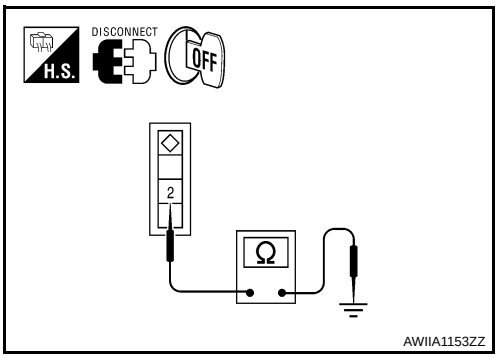
Is the inspection result normal?

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

3. CHECK INTAKE DOOR MOTOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect intake door motor connector.
3. Check continuity between intake door motor harness connector M126 terminal 2 and ground.

2 - Ground : Continuity should exist.



Is the inspection result normal?

YES >> Replace intake door motor. Refer to HAC-237, "INTAKE DOOR MOTOR : Removal and Installation".
NO >> Repair harness or connector.

BLOWER MOTOR

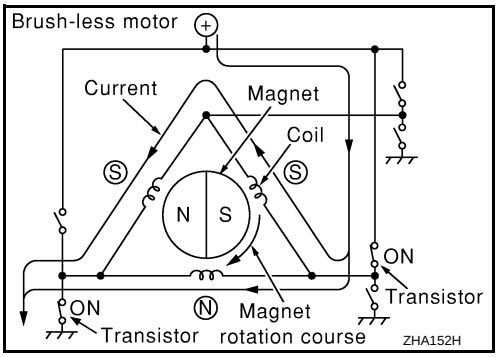
Description

INFOID:0000000004223654

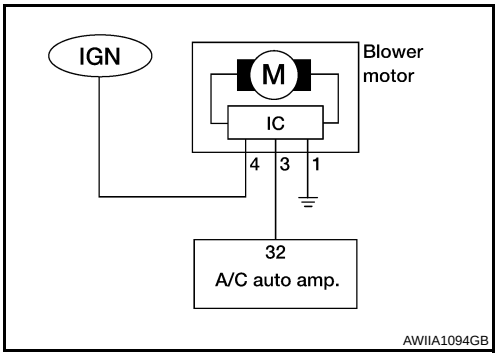
COMPONENT DESCRIPTION

Brush-less Motor

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



Blower Motor Circuit



Component Function Check

INFOID:0000000004223655

1.CHECK OPERATION

1. Warm up the engine.
2. Operate the fan control dial. Check that the fan speed and indicator are switched for all fan speeds.

Does it operate normally?

YES >> Inspection End.
NO >> Perform trouble diagnosis for the blower motor. Refer to HAC-178, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000004223656

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.
2. Check if any DTC No. is displayed in the self-diagnosis results.

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-156, "DTC Logic" or HAC-157, "DTC Logic".

Is any DTC No. displayed?

YES >> Perform diagnosis for the applicable DTC. Refer to HAC-204, "DTC Index".
NO >> GO TO 2.

2.CHECK WITH ACTIVE TEST OF CONSULT-III

1. Using CONSULT-III, perform “HVAC TEST”“ACTIVE TEST” of HVAC to check each output device. Refer to HAC-152, "CONSULT-III Function".
   NOTE:
   Perform the ACTIVE TEST after starting the engine, because the A/C compressor is operating.
2. Check that the blower motor control signal changes according to each indicator signal.

	Test item					
	MODE 1	MODE 2	MODE 3	MODE 4	MODE 5	MODE 6
Mode door position	VENT1	B/L1	B/L2	FOOT	D/F	DEF
Intake door position	REC	REC	20%FRE	FRE	FRE	FRE
Air mix door position (driver & passenger side)	FULL COLD	FULL COLD	FULL HOT	FULL HOT	FULL HOT	FULL HOT
Blower motor duty ratio	37%	91%	65%	65%	65%	91%
A/C compressor (Magnet clutch)	ON	ON	ON	OFF	ON	ON

NOTE:

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

Does it operate normally?

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

3. CHECK FUSE

Check 15A fuses (Nos. 21 and 22) located in fuse block (J/B).

NOTE:

Refer to PG-61, "Terminal Arrangement" for fuse location.

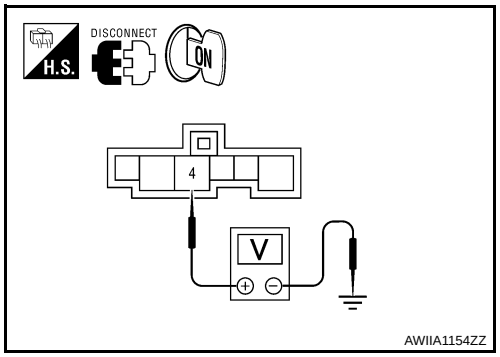
Is the inspection result normal?

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

4. CHECK POWER SUPPLY FOR BLOWER MOTOR

1. Turn ignition switch OFF.
2. Disconnect blower motor connector.
3. Turn ignition switch ON.
4. Check voltage between blower motor harness connector M31 terminal 4 and ground.

4 - Ground : Battery voltage



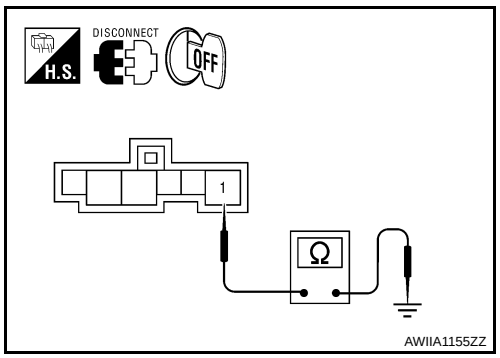
Is the inspection result normal?

YES >> GO TO 5.
NO >> GO TO 10.

5. CHECK BLOWER MOTOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between blower motor harness connector M31 terminal 1 and ground.

1 - Ground : Continuity should exist.



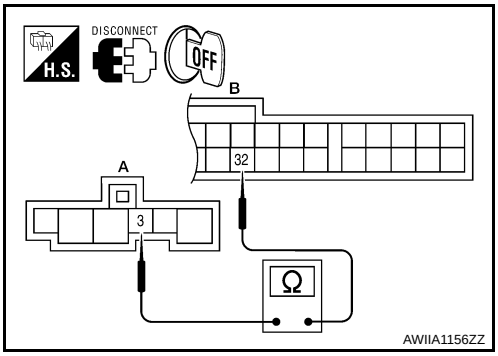
Is the inspection result normal?

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

6. CHECK BLOWER MOTOR CIRCUIT CONTINUITY

1. Disconnect A/C auto amp. connector.
2. Check continuity between blower motor harness connector M31 (A) terminal 3 and A/C auto amp. harness connector M37 (B) terminal 32.

3 - 32 : Continuity should exist.

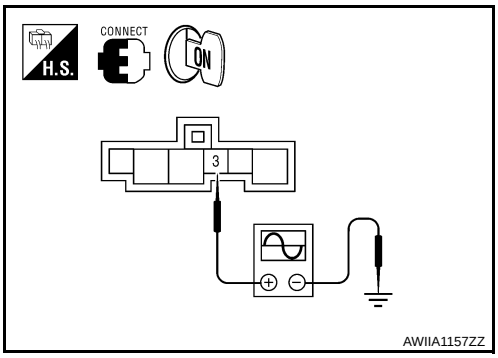


Is the inspection result normal?

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

7. CHECK A/C AUTO AMP. OUTPUT SIGNAL

1. Reconnect blower motor connector and A/C auto amp. connector.
2. Turn ignition switch ON.
3. Set MODE switch to the VENT position.
4. Check the output waveform between blower motor harness connector M31 terminal 3 and ground using an oscilloscope, while varying the fan speed from 1 to 7.



Blower fan speed (Manual) VENT mode	1st	2nd	3rd	4th	5th	6th	7th
Blower motor connector terminal fan PWM (Oscilloscope)	T1 Approx. 1.6 ms.	T2 Approx. 1.6 ms.	T3 Approx. 1.6 ms.	T4 Approx. 1.6 ms.	T5 Approx. 1.6 ms.	T6 Approx. 1.6 ms.	T7 Approx. 1.6 ms.
Duty ratio	Approx. 25%	Approx. 33%	Approx. 41%	Approx. 51%	Approx. 61%	Approx. 71%	Approx. 85%

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Is the inspection result normal?

YES >> Replace the blower motor. Refer to VTL-17, "BLOWER MOTOR : Removal and Installation".
NO >> Replace the A/C auto amp. Refer to HAC-231, "Removal and Installation".

8. REPLACE FUSES

1. Replace fuses.
2. Activate the blower motor.

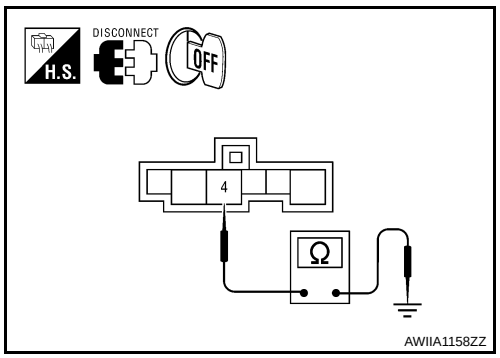
Does the fuse blow?

YES >> GO TO 9.
NO >> Inspection End.

9. CHECK BLOWER MOTOR POWER SUPPLY CIRCUIT FOR SHORT

1. Turn ignition switch OFF.
2. Disconnect blower motor harness connector.
3. Check continuity between blower motor harness connector M31 terminal 4 and ground.

4 - Ground : Continuity should not exist.



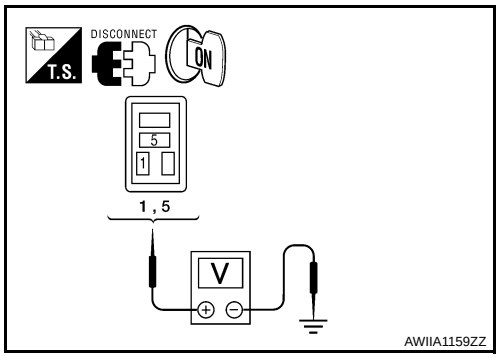
Is the inspection result normal?

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

10. CHECK POWER SUPPLY OF THE BLOWER MOTOR RELAY

1. Turn the ignition switch OFF.
2. Remove the blower motor relay.
3. Turn the ignition switch ON.
4. Check the voltage between blower motor relay harness connector J-4 terminals 1, 5 and ground.

1, 5 - Ground : Battery voltage



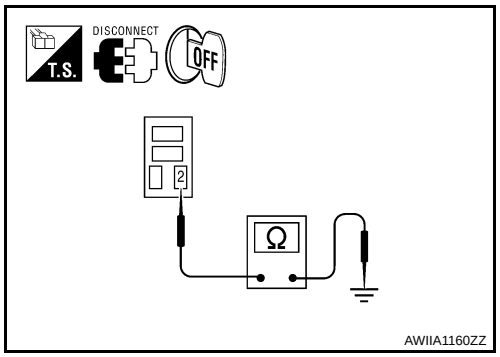
Is the inspection result normal?

YES >> GO TO 11.
NO >> Repair harness or connector.

11. CHECK BLOWER MOTOR RELAY GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between blower motor relay harness connector J-4 terminal 2 and ground.

2 - Ground : Continuity should exist.



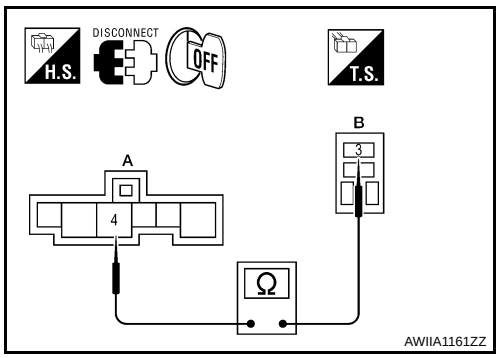
Is the inspection result normal?

YES >> GO TO 12.
NO >> Repair harness or connector.

12. CHECK BLOWER MOTOR SUPPLY CIRCUIT FOR OPEN

1. Disconnect A/C auto amp. connector.
2. Check continuity between blower motor harness connector M31 (A) terminal 4 and blower motor relay harness connector J-4 (B) terminal 3.

3 - 4 : Continuity should exist.



Is the inspection result normal?

YES >> Replace blower motor relay.
NO >> Repair harness or connector.

MAGNET CLUTCH

Description

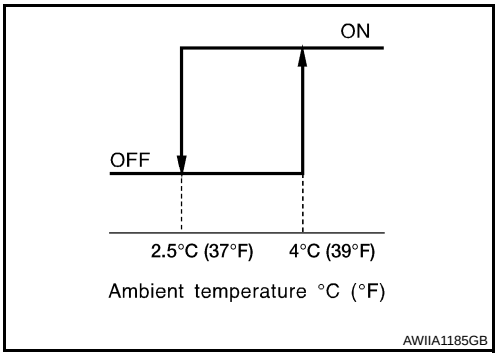
INFOID:0000000004223660

SYSTEM DESCRIPTION

A/C auto amp. controls A/C compressor operation by ambient temperature and signal from ECM.

Low Temperature Protection Control

A/C auto amp. will turn the A/C compressor ON or OFF as determined by a signal detected by ambient sensor.
When ambient temperature is greater than 4°C (39°F), the A/C compressor turns ON. The A/C compressor turns OFF when ambient temperature is less than 2.5°C (37°F).



Component Function Check

INFOID:0000000004223661

1. FUNCTION INSPECTIONS

1. Press AUTO switch. AUTO is indicated on the display.
2. Press the A/C switch.
3. Check that the indicator of the A/C switch turns on. Check visually and by sound that the A/C compressor is operating. (The discharge air temperature or fan speed varies depending on the ambient temperature, in-vehicle temperature, and temperature setting.)
4. Press the A/C switch again.
5. Check that the indicator of the A/C switch turns OFF. Check visually and by sound that the A/C compressor stops.

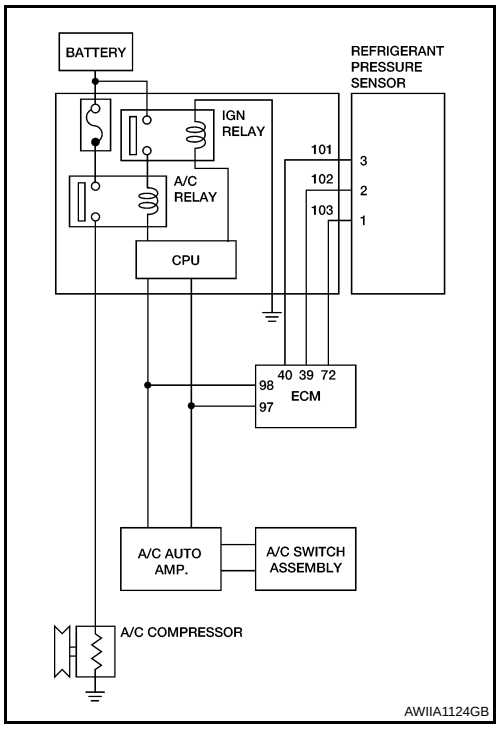
Does it operate normally?

YES >> Inspection End.
NO >> Perform trouble diagnosis for the A/C compressor. Refer to HAC-183, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000004223662

SYMPTOM: Magnet clutch does not engage when A/C switch is ON.



1. INSPECTION IN AUTO ACTIVE TEST MODE

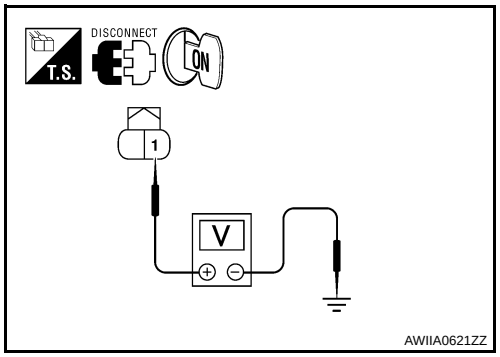
Perform “AUTO ACTIVE TEST”. Refer to PCS-13, "Diagnosis Description".

Does it operate normally?

YES >> GO TO 6.
NO >> GO TO 2.

2. CHECK POWER SUPPLY FOR A/C COMPRESSOR

1. Disconnect A/C compressor connector.
2. Start engine and press A/C switch.
3. Check voltage between A/C compressor harness connector F3 terminal 1 and ground.



Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal	Body ground	12V
F3-1		

Is the inspection result normal?

YES >> Check magnet clutch coil.
1. If NG, replace magnet clutch. Refer to HA-44, "Removal and Installation for Compressor".
2. If OK, check A/C compressor mounting points for looseness or corrosion and repair as necessary.

NO >> GO TO 3

3. CHECK FUSE

Check 10A fuse (No. 41) located in IPDM E/R.

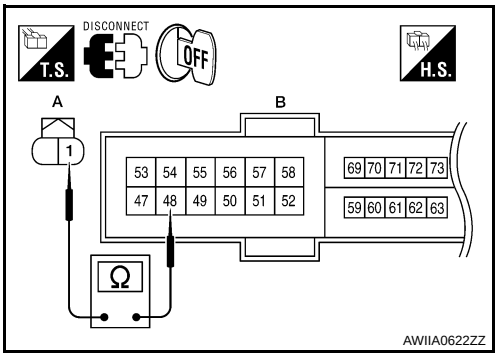
NOTE:
Refer to PG-63, "Fuse, Connector and Terminal Arrangement" for fuse location.

Is the inspection result normal?

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

4. CHECK CIRCUIT CONTINUITY BETWEEN A/C RELAY IN IPDM E/R AND A/C COMPRESSOR

1. Turn ignition switch ON.
2. Disconnect IPDM E/R connector F10 and A/C compressor connector F3.
3. Check continuity between A/C compressor harness connector F3 (A) terminal 1 and IPDM E/R harness connector F10 (B) terminal 48.



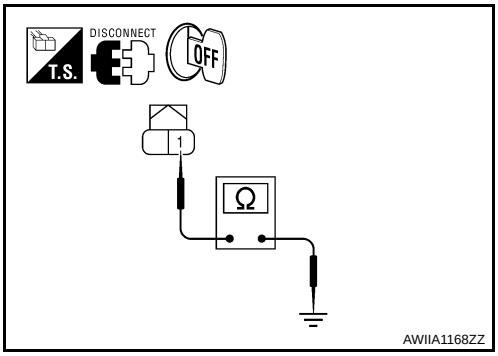
1 - 48 : Continuity should exist.

Is the inspection result normal?

YES >> Replace A/C Relay.
NO >> Repair harness or connector.

5. CHECK A/C COMPRESSOR CIRCUIT FOR SHORT

Check continuity between A/C compressor harness connector F3 terminal 1 and ground.



1 - Ground : Continuity should not exist.

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-40, "Removal and Installation".
NO >> Repair harness or connector.

6. CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.
2. Check if any DTC No. is displayed in the self-diagnosis results.

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-156, "DTC Logic" or HAC-157, "DTC Logic".

Is any DTC No. displayed?

YES >> Perform diagnosis for the applicable DTC. Refer to HAC-204, "DTC Index".
NO >> GO TO 7.

7. CHECK A/C AUTO AMP. INPUT SIGNAL

Using CONSULT-III, check “On/Off” of “AIR COND SIG” and “HEATER FAN SW” in “DATA MONITOR” of HVAC. Refer to HAC-152, "CONSULT-III Function".

A/C SWITCH ON	**: AIR COND SIG On**
A/C SWITCH OFF	**: AIR COND SIG Off**
FAN CONTROL DIAL ON	**: HEATER FAN SW On**
FAN CONTROL DIAL OFF	**: HEATER FAN SW Off**

Is the inspection result normal?

YES >> GO TO 8.
NO >> Replace A/C auto amp. Refer to HAC-231, "Removal and Installation".

8. CHECK REFRIGERANT PRESSURE SENSOR

Check refrigerant pressure sensor. Refer to EC-481, "Component Function Check".

Is the inspection result normal?

YES >> Inspection End.
NO >> Repair or replace malfunctioning parts.

A/C SWITCH ASSEMBLY SIGNAL CIRCUIT

Diagnosis Procedure

INFOID:0000000004251141

1. CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.
2. Check if any DTC No. is displayed in the self-diagnosis results.

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-156, "DTC Logic" or HAC-157, "DTC Logic".

Is any DTC No. displayed?

YES >> Perform diagnosis for the applicable DTC. Refer to HAC-204, "DTC Index".
NO >> GO TO 2.

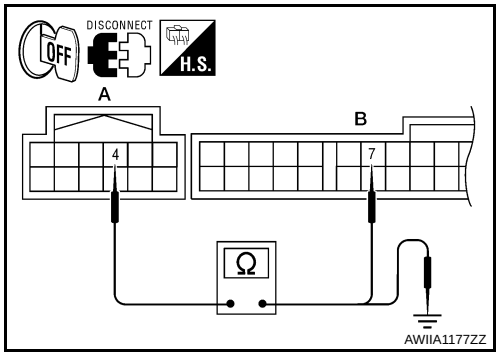
2. CHECK TX (A/C SWITCH ASSEMBLY → A/C AUTO AMP.) CIRCUIT CONTINUITY

1. Turn ignition switch OFF.
2. Disconnect the A/C switch assembly and the A/C auto amp. connectors.
3. Check continuity between A/C switch assembly harness connector M104 (A) terminal 4 and A/C auto amp. harness connector M37 (B) terminal 7.

4 - 7 : Continuity should exist.

4. Check continuity between A/C switch assembly harness connector M104 (A) terminal 4 and ground.

4 - Ground : Continuity should not exist.



Is the inspection result normal?

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

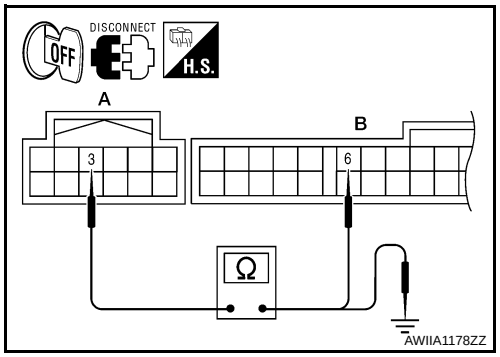
3. CHECK RX (A/C AUTO AMP. → A/C SWITCH ASSEMBLY) CIRCUIT CONTINUITY

1. Check continuity between A/C switch assembly harness connector M104 (A) terminal 3 and A/C auto amp. harness connector M37 (B) terminal 6.

3 - 6 : Continuity should exist.

2. Check continuity between A/C switch assembly harness connector M104 (A) terminal 3 and ground.

3 - Ground : Continuity should not exist.



Is the inspection result normal?

YES >> Perform trouble diagnosis for the A/C switch assembly. Refer to HAC-187, "A/C SWITCH ASSEMBLY : Diagnosis Procedure".
NO >> Repair harness or connector.

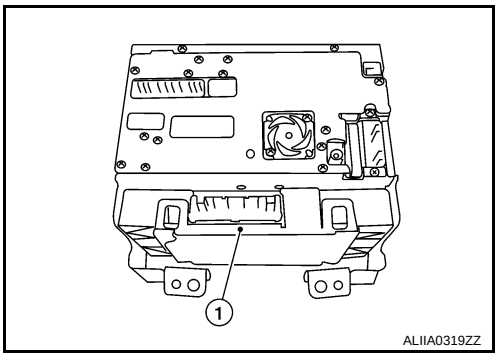
POWER SUPPLY AND GROUND CIRCUIT
A/C AUTO AMP.

A/C AUTO AMP. : Description

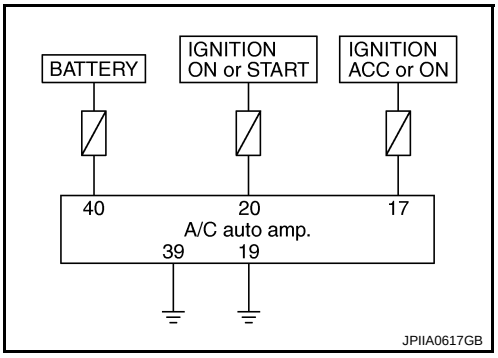
INFOID:0000000004223663

COMPONENT DESCRIPTION

A/C Auto Amp. (Air Conditioner Automatic Amplifier)
The A/C auto amp. (1) has a built-in microcomputer that processes information sent from various sensors needed for air conditioner operation. The air mix door motor(s), the mode door motor, the intake door motor, the blower motor and the A/C compressor are then controlled.
When the various switches and temperature control switches are operated, data is input to the A/C auto amp. from the AV switch assembly using CAN communication.
The A/C auto amp. is operated with control mechanisms. Signals from various switches and Potentio Temperature Control (PTC) are directly entered into the A/C auto amp.



Power Supply and Ground Circuit for A/C Auto Amp.



A/C AUTO AMP. : Component Function Check

INFOID:0000000004223664

1.CHECK OPERATION

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

Does it operate normally?

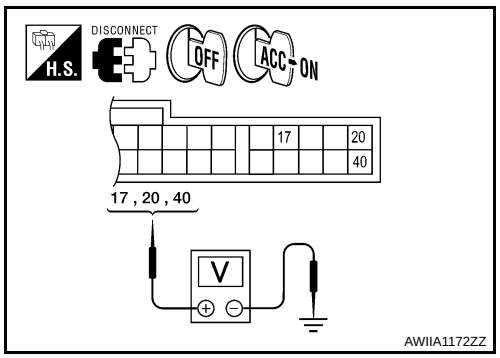
YES >> Inspection End.
NO >> Perform trouble diagnosis for the A/C system. Refer to HAC-186, "A/C AUTO AMP. : Diagnosis Procedure".

A/C AUTO AMP. : Diagnosis Procedure

INFOID:0000000004223665

1.CHECK A/C AUTO AMP. POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect the A/C auto amp. connector.
3. Turn ignition switch ON.
4. Check voltage between A/C auto amp. harness connector M37 terminals 17, 20, 40 and ground.



(+)		(–)	Voltage		
A/C auto amp.		—	Ignition switch position		
Connector	Terminal		OFF	ACC	ON
M37	17	Ground	Approx. 0V	Battery voltage	Battery voltage
	20		Approx. 0V	Approx. 0V	Battery voltage
	40		Battery voltage	Battery voltage	Battery voltage

Is the inspection result normal?

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

2.CHECK FUSE

Check 10A fuses [Nos. 3, 6 and 17, located in the fuse block (J/B)].

NOTE:
Refer to PG-61, "Terminal Arrangement".

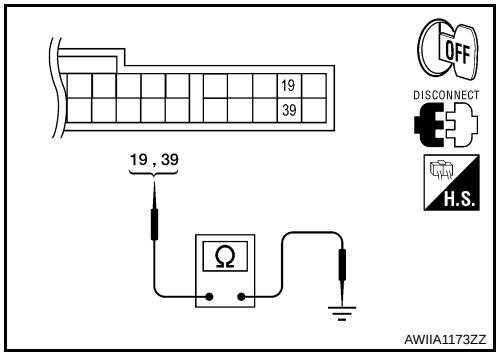
Is the inspection result normal?

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

3.CHECK A/C AUTO AMP. GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between A/C auto amp. harness connector M37 terminals 19, 39 and ground.

19, 39 - Ground : Continuity should exist.



Is the inspection result normal?

YES >> Replace the A/C auto amp. Refer to HAC-231, "Removal and Installation".
NO >> Repair the harnesses or connectors.

A/C SWITCH ASSEMBLY

A/C SWITCH ASSEMBLY : Component Function Check

INFOID:0000000004251143

1.CHECK OPERATION

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

Does it operate normally?

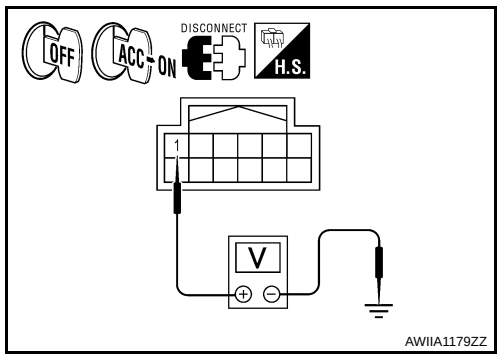
YES >> Inspection End.
NO >> Perform trouble diagnosis for the A/C switch assembly. Refer to HAC-187, "A/C SWITCH ASSEMBLY : Diagnosis Procedure".

A/C SWITCH ASSEMBLY : Diagnosis Procedure

INFOID:0000000004251144

1.CHECK A/C SWITCH ASSEMBLY POWER SUPPLY

1. Disconnect the A/C switch assembly connector.
2. Turn ignition switch ON.
3. Check voltage between A/C switch assembly harness connector M104 terminal 1 and ground.



(+)		(–)	Voltage		
A/C switch assembly		—	Ignition switch position		
Connector	Terminal		OFF	ACC	ON
M104	1	Ground	Approx. 0V	Battery voltage	Battery voltage

Is the inspection result normal?

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

2.CHECK FUSE

Check 10A fuse [No.3, located in the fuse block (J/B)].

NOTE:

Refer to PG-61, "Terminal Arrangement".

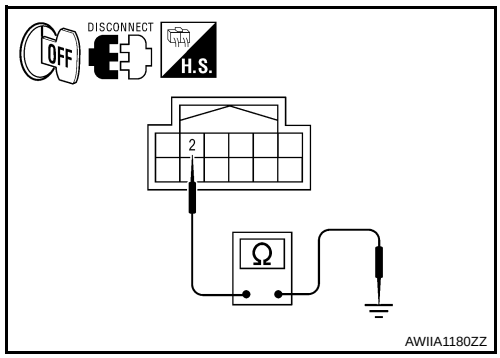
Is the inspection result normal?

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

3.CHECK A/C SWITCH ASSEMBLY GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between A/C switch assembly harness connector M104 terminal 2 and ground.

2 - Ground : Continuity should exist.



Is the inspection result normal?

YES >> Replace the A/C switch assembly. Refer to HAC-231, "Removal and Installation".
NO >> Repair the harnesses or connectors.

A/C DISPLAY UNIT

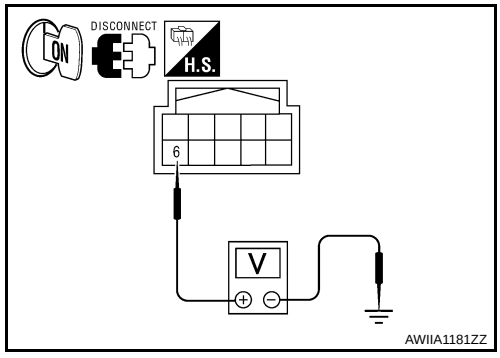
A/C DISPLAY UNIT : Diagnosis Procedure

INFOID:0000000004251142

1.CHECK A/C DISPLAY UNIT POWER SUPPLY CIRCUIT

1. Disconnect the A/C display unit connector.
2. Turn ignition switch ON.
3. Check voltage between A/C display unit harness connector M101 terminal 6 and ground.

6 - Ground : Battery voltage



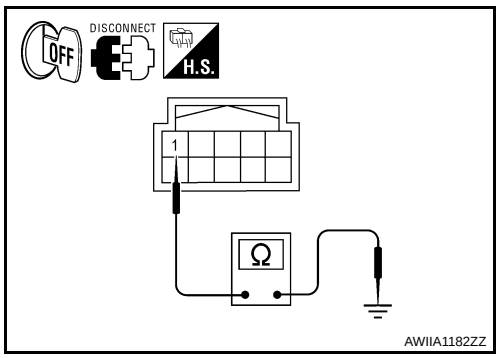
Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the harnesses or connectors.

2.CHECK GROUND CIRCUIT FOR A/C DISPLAY UNIT

1. Turn ignition switch OFF.
2. Check continuity between A/C display unit harness connector M101 terminal 1 and ground.

1 - Ground : Continuity should exist



Is the inspection result normal?

YES >> Replace the A/C display unit. Refer to HAC-231, "Removal and Installation".

NO >> Repair the harnesses or connectors.

ECU DIAGNOSIS

A/C AUTO AMP.

Reference Value

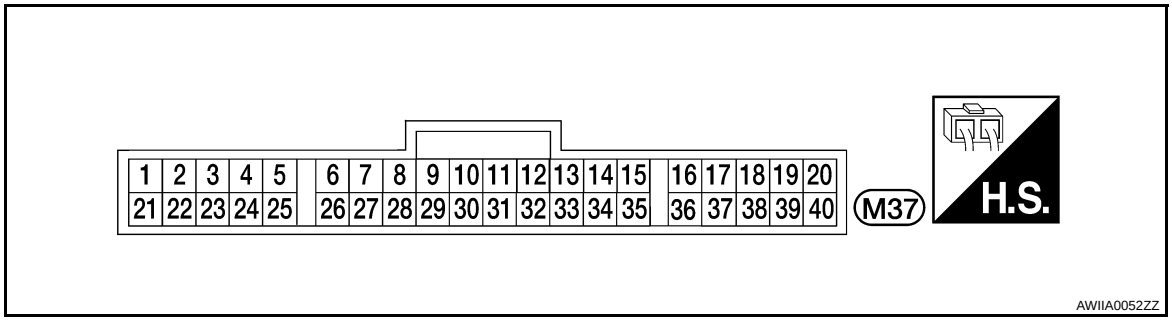
INFOID:0000000004223668

VALUES ON THE DIAGNOSIS TOOL

CONSULT-III MONITOR ITEM

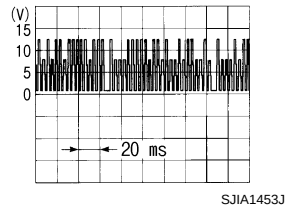
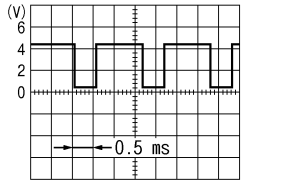
Monitor item	Condition		Value/Status
COMP REQ SIG	Engine: Run at idle after warming up	A/C switch: ON (A/C compressor operation status)	On
		A/C switch: OFF	Off
FAN REQ SIG	Engine: Run at idle after warming up	Blower fan: ON	On
		Blower fan: OFF	Off
AMB TEMP SEN	Ignition switch ON	—	22 - 131°F (–30 - 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)
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

A/C AUTO AMP. HARNESS CONNECTOR TERMINAL LAYOUT



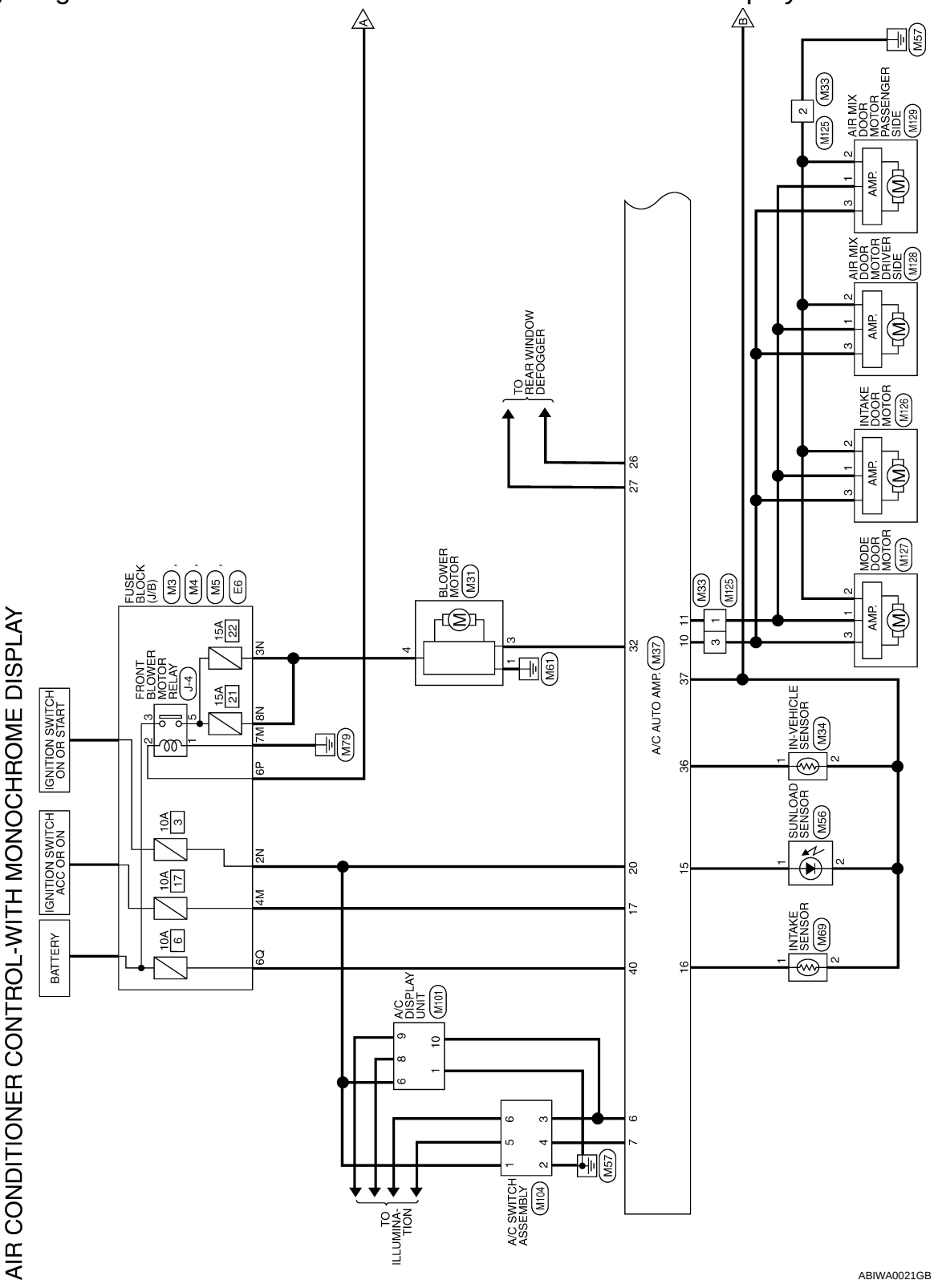
TERMINALS AND REFERENCE VALUES FOR A/C AUTO AMP.

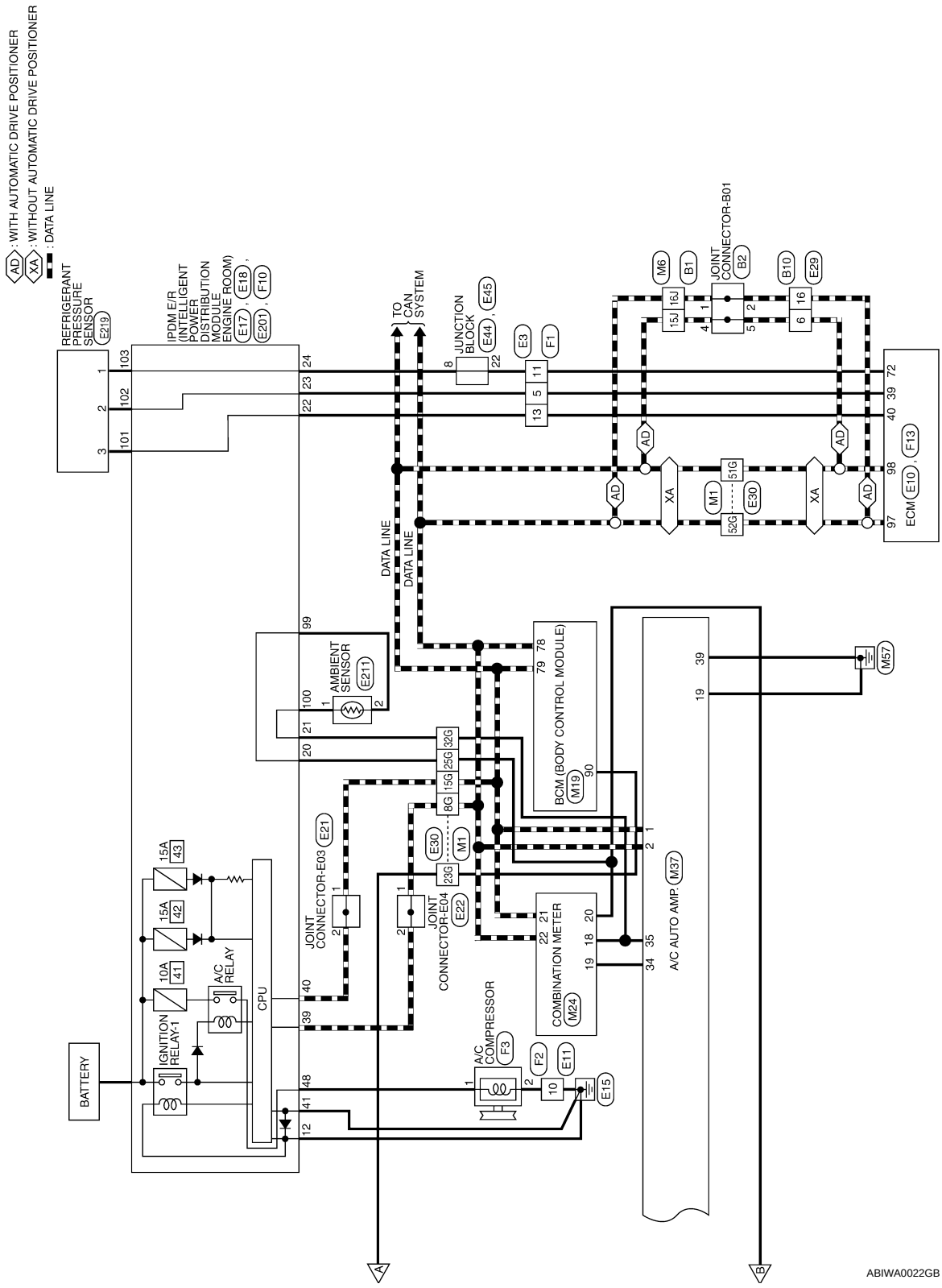
Terminal No.	Wire color	Item	Ignition switch	Condition	Value (Approx.)
1	L	CAN-H	ON	—	0 - 5V
2	P	CAN-L	ON	—	0 - 5V
6	L	TX (AMP > SW DISP)	ON	—	0 - 5V

Terminal No.	Wire color	Item	Ignition switch	Condition	Value (Approx.)
7	P	RX (SW > AMP)	ON	—	0 - 5V
10	L/R	LAN signal	ON	—	 SJIA1453J
11	L/W	Power supply for each door motor	ON	—	Battery voltage
15	O	Sunload sensor	ON	—	—
16	R/G	Intake sensor	ON	—	—
17	V/Y	Power supply from ACC	ACC	—	Battery voltage
19	B	Ground	ON	—	0V
20	G	Power supply from IGN	ON	—	Battery voltage
26	GR	Rear defrost feedback	ON	Defroster switch ON	Battery voltage
				Defroster switch OFF	0V
27	G/W	Rear defrost ON signal	ON	Defroster switch ON	0V
				Defroster switch OFF	Battery voltage
32	L/Y	Blower motor control signal	ON	Fan speed:1st speed (manual)	 JSIIA0096ZZ
34	P	Power supply for ambient meter	ON	—	5V
35	O/B	Ambient sensor	ON	—	0 - 5V
36	LG	In-vehicle sensor	ON	—	0 - 5V
37	B/Y	Sensor ground	—	—	0V
39	B	Ground	—	—	0V
40	Y/R	Power supply from BATT	—	—	Battery voltage

Wiring Diagram - Air Conditioner Control - With Monochrome Display

INFOID:0000000004223669




AD : WITH AUTOMATIC DRIVE POSITIONER
XA : WITHOUT AUTOMATIC DRIVE POSITIONER
: DATA LINE
REFRIGERANT PRESSURE SENSOR E219
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) E17, E18, E201, F10
TO CAN SYSTEM
JUNCTION BLOCK E44, E45
JOINT CONNECTOR-B01 M6, B1, B2
ECM E10, F13
DATA LINE
AMBIENT SENSOR E211
BCM (BODY CONTROL MODULE) M19
JOINT CONNECTOR-E03 E21
JOINT CONNECTOR-E04 E22
COMBINATION METER M24
A/C AUTO AMP. M37
A/C COMPRESSOR F3
BATTERY
IGNITION RELAY-1
A/C RELAY
CPU
ABIWA0022GB

AIR CONDITIONER CONTROL CONNECTORS -WITH MONOCHROME DISPLAY

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

H.S.

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

Terminal No.	Color of Wire	Signal Name
8G	P	–
15G	L	–
23G	Y	–
25G	B/Y	–
32G	O/B	–
51G	L	–
52G	P	–

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

H.S.

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

Terminal No.	Color of Wire	Signal Name
2N	G	–
3N	W/L	–
8N	W/L	–

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

H.S.

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

Terminal No.	Color of Wire	Signal Name
6Q	Y/R	–

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

H.S.

5M	4M		3M	2M	1M
12M	11M	10M	9M	8M	7M	6M

Terminal No.	Color of Wire	Signal Name
4M	V/Y	–
7M	B	–

ABIIA0108GB

Connector No.	M19
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	BLACK

H.S.

79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60
99	98	97	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80

Terminal No.	Color of Wire	Signal Name
78	P	CAN-L
79	L	CAN-H
90	Y	IGN2 CONT

Connector No.	M33
Connector Name	BLOWER MOTOR
Connector Color	WHITE

H.S.

1
2
3

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

Connector No.	M6
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
15J	P	–
16J	L	–

Connector No.	M31
Connector Name	BLOWER MOTOR
Connector Color	WHITE

H.S.

6	5	4	3	2	1

Terminal No.	Color of Wire	Signal Name
1	B	–
2	–	–
3	L/Y	–
4	W/L	–
5	–	–
6	–	–

Connector No.	M24
Connector Name	COMBINATION METER
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	33	34	35	36	37	38	39	40

Terminal No.	Color of Wire	Signal Name
18	O/B	OUTSIDE SENDER
19	P	OUTSIDE SENDER VAC
20	B/Y	OUTSIDE SENDER GND
21	L	CAN-H
22	P	CAN-L

ABIIA0109GB

Terminal No.	Color of Wire	Signal Name
18	–	–
19	B	GND
20	G	IGN
21	–	–
22	–	–
23	–	–
24	–	–
25	–	–
26	GR	RR DEF F B
27	G/W	RR DEF ON
28	–	–
29	–	–
30	–	–
31	–	–
32	L/Y	FAN PWM
33	–	–
34	P	AMB POWER
35	O/B	AMB SENS
36	LG	INCAR SENS
37	B/Y	SENS GND
38	–	–
39	B	GND(POWER)
40	Y/R	BAT

Connector No.	M37
Connector Name	A/C AUTO AMP.
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	33	34	35	36	37	38	39	40

Terminal No.	Color of Wire	Signal Name
1	L	CAN-H
2	P	CAN-L
3	–	–
4	–	–
5	–	–
6	L	TX (AMP>SW&DISP) (WITH MONOCHROME DISPLAY)
7	P	RX (SW>AMP)(WITH MONOCHROME DISPLAY)
8	–	–
9	–	–
10	L/R	LAN SIG
11	L/W	VACTR
12	–	–
13	–	–
14	–	–
15	O	SUN SENS
16	R/G	INTAKE SENS
17	V/Y	ACC

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

H.S.

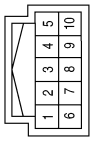
1 2

Terminal No.	Color of Wire	Signal Name
1	LG	–
2	B/Y	–

ABIIA0110GB

Connector No.	M101
Connector Name	A/C DISPLAY
Connector Color	BLACK

H.S.



Terminal No.	Color of Wire	Signal Name
1	B	GND
2	–	–
3	–	–
4	–	–
5	–	–
6	G	IGN
7	–	–
8	R/L	ILL+
9	R/Y	ILL-
10	L	RX (AMP>DISP)

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

H.S.

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

Connector No.	M69
Connector Name	INTAKE SENSOR
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
9	–	–
10	–	–
11	–	–
12	–	–

Connector No.	M56
Connector Name	SUNLOAD SENSOR
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	O	–
2	B/Y	–

Connector No.	M104
Connector Name	A/C SWITCH ASSEMBLY
Connector Color	WHITE

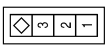
H.S.

Terminal No.	Color of Wire	Signal Name
1	G	IGN
2	B	GND
3	L	RX (AMP>SW)
4	P	TX (SW>AMP)
5	R/L	ILL +
6	R/Y	ILL -
7	–	–
8	–	–

ABIIA0111GB

Connector No.	M128
Connector Name	AIR MIX DOOR MOTOR DRIVER SIDE
Connector Color	WHITE

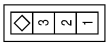
H.S.



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

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

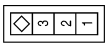
H.S.



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

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

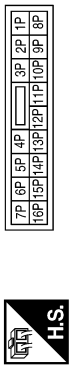
H.S.



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

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

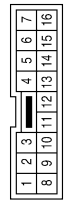
H.S.



Terminal No.	Color of Wire	Signal Name
6P	Y	–

Connector No.	E3
Connector Name	WIRE TO WIRE
Connector Color	WHITE

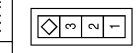
H.S.



Terminal No.	Color of Wire	Signal Name
5	GR	–
11	GR	–
13	SB	–

Connector No.	M129
Connector Name	AIR MIX DOOR MOTOR PASSENGER SIDE
Connector Color	WHITE

H.S.



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

ABIIA0112GB

Connector No.	E10
Connector Name	ECM
Connector Color	BLACK

H.S.

81	85	89	93	97	101	105	109
82	86	90	94	98	102	106	110
83	87	91	95	99	103	107	111
84	88	92	96	100	104	108	112

Terminal No.	Color of Wire	Signal Name
97	P	CAN-L
98	L	CAN-H

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

H.S.

1	2		3	4
5	6	7	8	9	10

Terminal No.	Color of Wire	Signal Name
10	B/W	–

Connector No.	E17
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

H.S.

42	41	40	39
46	45	44	43

Terminal No.	Color of Wire	Signal Name
39	P	CAN-L
40	L	CAN-H
41	B	S-GND

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

H.S.

9	10	11	12	13	14
3	4	5	6	7	8

25	26	27	28	29	30	31	32	33	34
15	16	17	18	19	20	21	22	23	24

37	38
35	36

Terminal No.	Color of Wire	Signal Name
7	GR	TAIL/ILLUMI
12	B	P-GND
20	L	AMB SENS GND-E/R
21	LG	AMB SENS SIG-E/R
22	SB	PD SENS GND-E/R
23	GR	PD SENS SIG-E/R
24	G	PD SENS PWR-E/R

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

H.S.

4	3	2	1

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

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

H.S.

4	3	2	1

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

ABIIA0113GB

Connector No.	E29
Connector Name	WIRE TO WIRE
Connector Color	WHITE

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
6	L	–
16	P	–

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

H.S.

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

Terminal No.	Color of Wire	Signal Name
8G	P	–
15G	L	–
23G	Y	–
25G	L	–
32G	LG	–
51G	L	–
52G	P	–

Connector No.	E44
Connector Name	JUNCTION BLOCK
Connector Color	BROWN

H.S.

5	4		3	2	1
12	11	10	9	8	7	6

Terminal No.	Color of Wire	Signal Name
8	G	–

Connector No.	E45
Connector Name	JUNCTION BLOCK
Connector Color	WHITE

H.S.

17	16		15	14	13
24	23	22	21	20	19	18

Terminal No.	Color of Wire	Signal Name
22	GR	–

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

H.S.

98	97	96	95	94	93	92	91
106	105	104	103	102	101	100	99

Terminal No.	Color of Wire	Signal Name
99	BR/W	AMB SENS GND-FEM
100	SB	AMB SENS SIG-FEM
101	W	PD SENS GND FEM
102	R	PD SENS SIG FEM
103	P	PD SENS PWR FEM

ABIIA0114GB

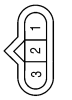
Connector No.	E211
Connector Name	AMBIENT SENSOR
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	SB	–
2	BR/W	–

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

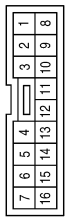
H.S.



Terminal No.	Color of Wire	Signal Name
1	P	AVCC 2
2	R	SIGNAL
3	W	GND

Connector No.	F1
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
5	R	–
11	BR/W	–
13	G	–

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

H.S.

Terminal No.	Color of Wire	Signal Name
10	B/W	–

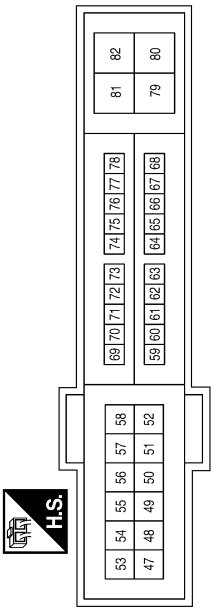
Connector No.	F3
Connector Name	A/C COMPRESSOR
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	W	A/C COMP
2	B/W	GND

Connector No.	F10
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

H.S.

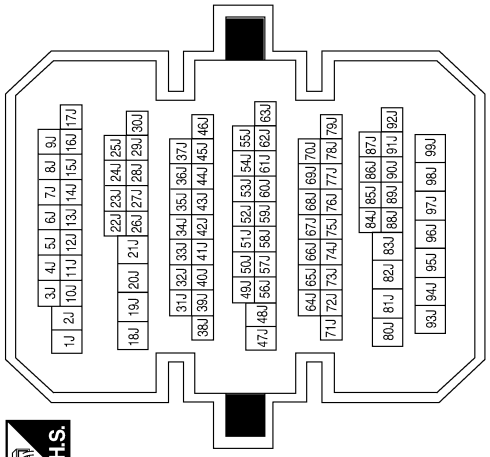


Terminal No.	Color of Wire	Signal Name
48	GR	A/C COMP

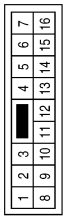
ABIIA0115GB

Terminal No.	Color of Wire	Signal Name
15J	L	–
16J	P	–

Connector No.	B1
Connector Name	WIRE TO WIRE
Connector Color	WHITE

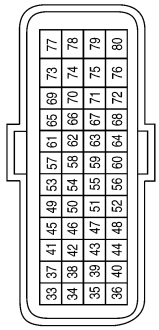


Connector No.	B10
Connector Name	WIRE TO WIRE
Connector Color	WHITE



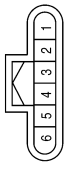
Terminal No.	Color of Wire	Signal Name
6	L	–
16	P	–

Connector No.	F13
Connector Name	ECM
Connector Color	BROWN



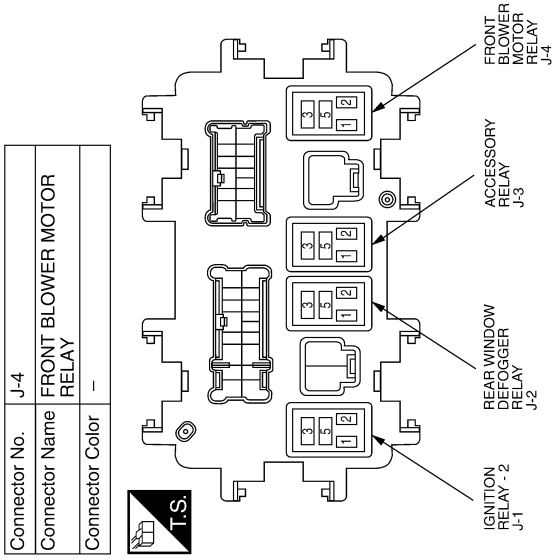
Terminal No.	Color of Wire	Signal Name
39	R	PDPRES
40	G	GNDA-PDPRES
72	GR	AVCC2-PDPRES

Connector No.	B2
Connector Name	JOINT CONNECTOR-B01
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	P	–
2	P	–
4	L	
5	L	

ABIIA0116GB



ABIIA0117GB

DTC Inspection Priority Chart

INFOID:0000000004223672

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

Priority	Detected items (DTC)
1	• U1000: CAN COMM CIRCUIT • U1010: CONTROL UNIT (CAN)
2	• B257B: AMB TEMP SEN (SHORT) • B257C: AMB TEMP SEN (OPEN) • B2578: IN CAR SENSOR (OUT OF RANGE[LOW]) • B2579: IN CAR SENSOR (OUT OF RANGE[HI]) • B2581: EVAP TEMP SEN (SHORT) • B2582: EVAP TEMP SEN (OPEN) • B2630: SUNLOAD SEN (SHORT) • B2631: SUNLOAD SEN (OPEN) • B2632: DR AIRMIX ACTR (SHORT) • B2633: DR AIRMIX ACTR (OPEN) • B2634: PASS AIRMIX ACTR (SHORT) • B2635: PASS AIRMIX ACTR (OPEN) • B2636: DR VENT DOOR FAIL • B2637: DR B/L DOOR FAIL • B2638: DR D/F1 DOOR FAIL • B2639: DR DEF DOOR FAIL • B263D: FRE DOOR FAIL • B263E: 20P FRE DOOR FAIL • B263F: REC DOOR FAIL • B2654: D/F2 DOOR FAIL • B2655: B/L2 DOOR FAIL

DTC Index

INFOID:0000000004223673

DTC	Items (CONSULT-III screen terms)	Reference
U1000	CAN COMM CIRCUIT	HAC-156, "DTC Logic"
U1010	CONTROL UNIT (CAN)	HAC-157, "DTC Logic"
B257B	AMB TEMP SEN (SHORT)	HAC-158, "DTC Logic"
B257C	AMB TEMP SEN (OPEN)	HAC-158, "DTC Logic"
B2578	IN CAR SENSOR (OUT OF RANGE [LOW])	HAC-161, "DTC Logic"
B2579	IN CAR SENSOR (OUT OF RANGE [HI])	HAC-161, "DTC Logic"
B2581	EVAP TEMP SEN (SHORT)	HAC-164, "DTC Logic"
B2582	EVAP TEMP SEN (OPEN)	HAC-164, "DTC Logic"
B2630*	SUNLOAD SEN (SHORT)	HAC-167, "DTC Logic"
B2631*	SUNLOAD SEN (OPEN)	HAC-167, "DTC Logic"
B2632	DR AIRMIX ACTR (SHORT)	HAC-170, "DTC Logic"
B2633	DR AIRMIX ACTR (OPEN)	HAC-170, "DTC Logic"
B2634	PASS AIRMIX ACTR (SHORT)	HAC-172, "DTC Logic"
B2635	PASS AIRMIX ACTR (OPEN)	HAC-172, "DTC Logic"
B2636	DR VENT DOOR FAIL	HAC-174, "DTC Logic"
B2637	DR B/L DOOR FAIL	HAC-174, "DTC Logic"
B2638	DR D/F1 DOOR FAIL	HAC-174, "DTC Logic"
B2639	DR DEF DOOR FAIL	HAC-174, "DTC Logic"
B263D	FRE DOOR FAIL	HAC-176, "DTC Logic"
B263E	20P FRE DOOR FAIL	HAC-176, "DTC Logic"
B263F	REC DOOR FAIL	HAC-176, "DTC Logic"
B2654	D/F2 DOOR FAIL	HAC-174, "DTC Logic"
B2655	B/L2 DOOR FAIL	HAC-174, "DTC Logic"

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

SYMPTOM DIAGNOSIS

INSUFFICIENT COOLING

Component Function Check

INFOID:0000000004223675

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

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE DECREASE

1. Press the AUTO switch.
2. Turn temperature control switch (driver side) counterclockwise until 18°C (60°F) is displayed.
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-131, "Operational Check".

Does another symptom exist?

YES >> Refer to HA-20, "WITH MONOCHROME DISPLAY : Symptom Matrix Chart".
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-14, "Checking Drive Belts".

Is the inspection result normal?

YES >> GO TO 5
NO >> Adjust or replace A/C compressor belt. Refer to EM-14, "Removal and Installation".

5. CHECK SETTING OF TEMPERATURE SETTING TRIMMER

Using CONSULT-III, check the setting of “TEMP SET CORRECT” on “WORK SUPPORT” of HVAC. Refer to HAC-132, "Temperature Setting Trimmer".

1. Check that the temperature setting trimmer is set to “+ direction”.
   NOTE:
   The control temperature can be set with the setting of the temperature setting trimmer.
2. Set temperature control dial to “0”.

Is the symptom still present?

YES >> GO TO 6.
NO >> Inspection End.

6. CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.
2. Check if any DTC No. is displayed in the trouble diagnosis results.
   NOTE:
   If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-156, "DTC Logic" or HAC-157, "DTC Logic".

Is any DTC No. displayed?

YES >> Perform diagnosis for the applicable DTC. Refer to HAC-204, "DTC Index".
NO >> GO TO 7.

7. CHECK WITH ACTIVE TEST OF CONSULT-III

1. Using CONSULT-III, perform “HVAC TEST”“ACTIVE TEST” of HVAC to check each output device. Refer to HAC-152, "CONSULT-III Function".
   NOTE:
   Perform the ACTIVE TEST after starting the engine because the A/C compressor is operating.
2. Refer to the table and check the outlet, inlet, airflow temperature, blower motor control signal, magnet clutch operation, and air mix ratio. Visually check each operating condition, by listening for noise, touching air outlets with a hand, etc.

	Test item					
	MODE 1	MODE 2	MODE 3	MODE 4	MODE 5	MODE 6
Mode door position	VENT1	B/L1	B/L2	FOOT	D/F	DEF
Intake door position	REC	REC	20%FRE	FRE	FRE	FRE
Air mix door position (driver & passenger side)	FULL COLD	FULL COLD	FULL HOT	FULL HOT	FULL HOT	FULL HOT
Blower motor duty ratio	37%	91%	65%	65%	65%	91%
A/C compressor (Magnet clutch)	ON	ON	ON	OFF	ON	ON

Does it operate normally?

YES >> GO TO 8.
NO-1 >> Air outlet does not change. Refer to HAC-175, "Diagnosis Procedure".
NO-2 >> Air inlet does not change. Refer to HAC-177, "Diagnosis Procedure".
NO-3 >> Discharge air temperature does not change. Refer to HAC-171, "Diagnosis Procedure" and HAC-173, "Diagnosis Procedure".
NO-4 >> Blower motor does not operate normally. Refer to HAC-178, "Diagnosis Procedure".
NO-5 >> Magnet clutch does not operate. Refer to HAC-183, "Diagnosis Procedure".

8. 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 9
NO >> Repair or replace air mix door control linkage.

9. CHECK COOLING FAN MOTOR OPERATION

Check and verify cooling fan motor for smooth operation.

Does cooling fan motor operate correctly?

YES >> GO TO 10
NO >> Check cooling fan motor. Refer to EC-456, "Component Inspection (Cooling Fan Motor)".

10. 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 11

11. CHECK REFRIGERANT PURITY

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

Is the inspection result normal?

YES >> GO TO 12
NO >> Check contaminated refrigerant. Refer to HA-34, "Collection and Charge".

12. CHECK REFRIGERANT PRESSURE

Check refrigerant pressure with manifold gauge connected. Refer to HAC-210, "Performance Chart".

Is the inspection result normal?

YES >> Perform diagnostic work flow. Refer to HAC-208, "Diagnostic Work Flow".
NO >> GO TO 13

13. CHECK FOR EVAPORATOR FREEZE-UP

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

NOTE:

Evaporator freeze up usually occurs at sustained highway speeds in hot, humid conditions with blend door at full-cold and blower on low speed, after 1-3 hours of continuous driving.

Does evaporator freeze up?

YES >> Perform diagnostic work flow. Refer HAC-208, "Diagnostic Work Flow".
NO >> GO TO 14

14. CHECK AIR DUCTS

Check ducts for air leaks.

Is the inspection result normal?

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

Diagnostic Work Flow

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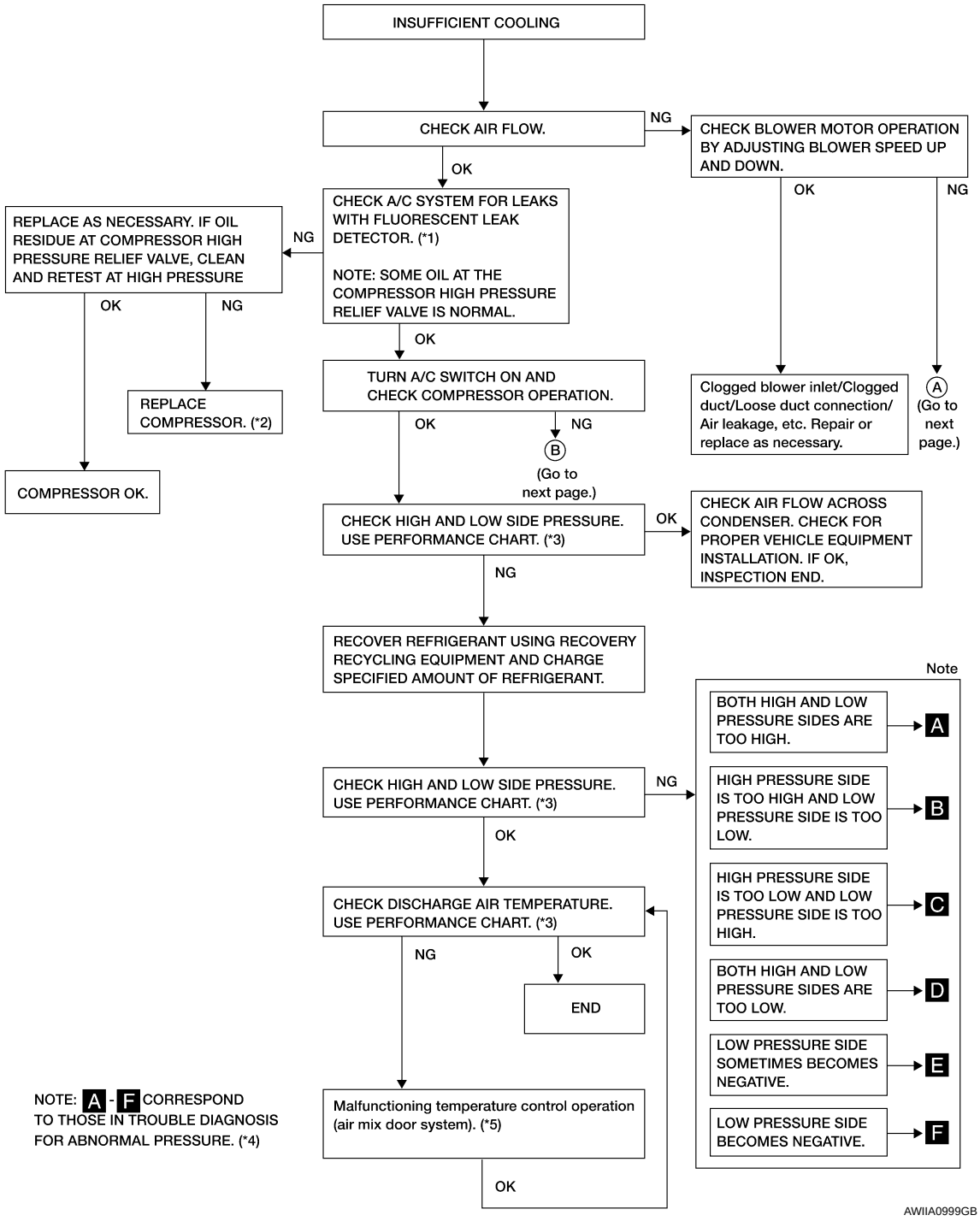


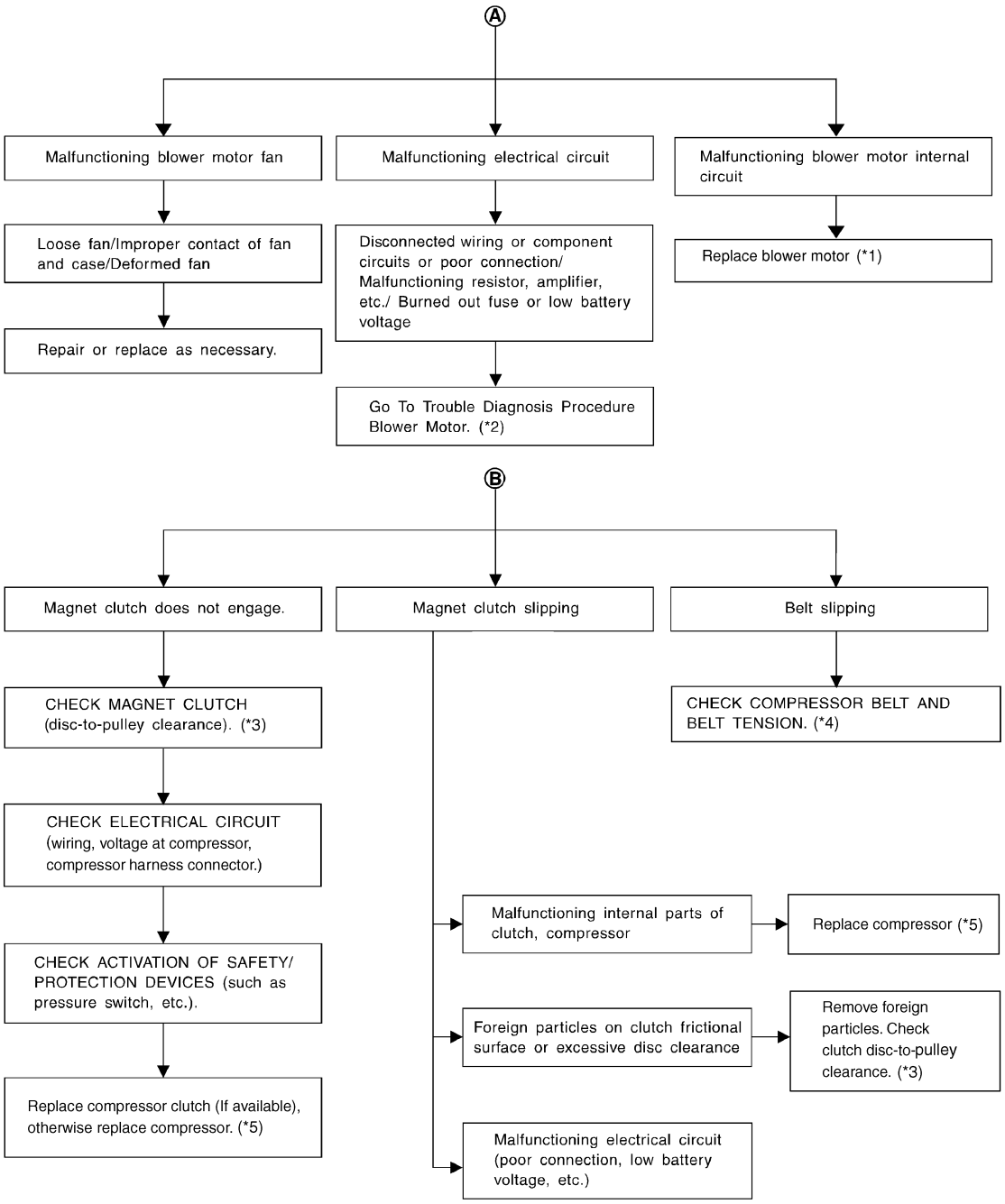
*1 HA-41, "Inspection"

*2 HA-44, "Removal and Installation for Compressor"

*3 HAC-210, "Performance Chart"

*4 HA-17, "WITH MONOCHROME DISPLAY : Trouble Diagnoses for Abnormal Pressure"

*5 HAC-171, "Diagnosis Procedure" (driver) or HAC-173, "Diagnosis Procedure" (passenger)



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*1 VTL-17, "BLOWER MOTOR : Removal and Installation"
*2 HAC-178, "Diagnosis Procedure"
*3 HA-45, "Removal and Installation for Compressor Clutch"
*4 EM-14, "Checking Drive Belts"
*5 HA-44, "Removal and Installation for Compressor"

Performance Chart

INFOID:0000000004223677

TEST CONDITION

Testing must be performed as follows:

Vehicle location	Indoors or in the shade (in a well-ventilated place)
Doors	Closed
Door windows	Open
Hood	Open
TEMP.	Max. COLD
Mode switch	(Ventilation) set
Intake switch	(Recirculation) set
(fan) speed	Max. speed set
Engine speed	Idle speed
Operate the air conditioning system for 10 minutes before taking measurements.	

TEST READING

Recirculating-to-discharge Air Temperature Table

Inside air (Recirculating air) at blower assembly inlet		Discharge air temperature at center ventilator °C (°F)
Relative humidity %	Air temperature °C (°F)	
50 - 60	25 (77)	10.0 - 12.3 (50 - 54)
	30 (86)	13.2 - 15.3 (56 - 60)
	35 (95)	17.2 - 21.0 (63 - 70)
60 - 70	25 (77)	12.3 - 14.9 (54 - 59)
	30 (86)	15.3 - 19.3 (60 - 67)
	35 (95)	21.0 - 24.4 (70 - 76)

Ambient Air Temperature-to-operating Pressure Table

Ambient air		High-pressure (Discharge side) kPa (kg/cm2, psi)	Low-pressure (Suction side) kPa (kg/cm2, psi)
Relative humidity %	Air temperature °C (°F)		
50 - 70	30 (86)	1,220 - 1,500 (12.44 - 15.30, 176.9 - 217.5)	240 - 295 (2.45 - 3.01, 34.8 - 42.8)
	35 (95)	1,360 - 1,690 (13.87 - 17.24, 197.2 - 245.1)	275 - 335 (2.81 - 3.42, 39.9 - 48.6)
	40 (104)	1,500 - 1,830 (12.44 - 18.67, 176.9 - 265.4)	310 - 375 (3.16 - 3.83, 45.0 - 54.4)

INSUFFICIENT HEATING

Component Function Check

INFOID:0000000004223679

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

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE INCREASE

1. Press the AUTO switch.
2. Turn temperature control switch (driver side) clockwise until 32°C (90°F) is displayed.
3. 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-131, "Operational Check".

Does another symptom exist?

YES >> Refer to HA-20, "WITH MONOCHROME DISPLAY : Symptom Matrix Chart".
NO >> System OK.

3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4

4. CHECK ENGINE COOLING SYSEM

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

>> GO TO 5

5. CHECK SETTING OF TEMPERATURE SETTING TRIMMER

Using CONSULT-III, check the setting of “TEMP SET CORRECT” on “WORK SUPPORT” of HVAC. Refer to HAC-132, "Temperature Setting Trimmer".

1. Check that the temperature setting trimmer is set to “– direction”.
   NOTE:
   The control temperature can be set by the temperature setting trimmer.
2. Set temperature control dial to “0”.

Is the symptom still present?

YES >> GO TO 6.
NO >> Inspection End.

6. CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

1. Using CONSULT-III, perform “SELF-DIAGNOSIS RESULTS” of HVAC.
2. Check if any DTC No. is displayed in the trouble diagnosis results.
   NOTE:
   If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-156, "DTC Logic" or HAC-157, "DTC Logic".

Is any DTC No. displayed?

YES >> Perform diagnosis for the applicable DTC. Refer to HAC-204, "DTC Index".
NO >> GO TO 7.

7. CHECK WITH ACTIVE TEST OF CONSULT-III

1. Using CONSULT-III, perform “HVAC TEST” in “ACTIVE TEST” of HVAC to check each output device. Refer to HAC-152, "CONSULT-III Function".
   NOTE:
   Perform the ACTIVE TEST after starting the engine because the A/C compressor is operating.
2. Refer to the table and check the outlet, inlet, airflow temperature, blower motor control signal, magnet clutch operation, and air mix ratio. Visually check each operating condition, by listening for noise, touching air outlets with a hand, etc.

	Test item					
	MODE 1	MODE 2	MODE 3	MODE 4	MODE 5	MODE 6
Mode door position	VENT1	B/L1	B/L2	FOOT	D/F	DEF
Intake door position	REC	REC	20%FRE	FRE	FRE	FRE
Air mix door position (driver & passenger side)	FULL COLD	FULL COLD	FULL HOT	FULL HOT	FULL HOT	FULL HOT
Blower motor duty ratio	37%	91%	65%	65%	65%	91%
A/C Compressor (Magnet clutch)	ON	ON	ON	OFF	ON	ON

Does it operate normally?

YES >> GO TO 8.
NO-1 >> Air outlet does not change. Refer to HAC-175, "Diagnosis Procedure".
NO-2 >> Air inlet does not change. Refer to HAC-177, "Diagnosis Procedure".
NO-3 >> Discharge air temperature does not change. Refer to HAC-171, "Diagnosis Procedure" and HAC-173, "Diagnosis Procedure".
NO-4 >> Blower motor does not operate normally. Refer to HAC-178, "Diagnosis Procedure".
NO-5 >> Magnet clutch does not operate. Refer to HAC-183, "Diagnosis Procedure".

8. CHECK AIR DUCTS

Check for disconnected or leaking air ducts.

Is the inspection result normal?

YES >> GO TO 9
NO >> Repair all disconnected or leaking air ducts.

9. CHECK HEATER HOSE TEMPERATURES

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

Is the inspection result normal?

YES >> Hot inlet hose and a warm outlet hose: GO TO 10
NO >> Both hoses warm: GO TO 11

10. CHECK ENGINE COOLANT SYSTEM

Check thermostat operation. Refer to CO-21, "Removal and Installation".

Is the inspection result normal?

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

11. CHECK HEATER HOSES

Check heater hoses for proper installation.

Is the inspection result normal?

YES >> System OK.
NO >> 1. Backflush heater core.
2. Drain the water from the system.
3. Refill system with new engine coolant. Refer to CO-10, "Changing Engine Coolant".
4. To retest GO TO 12

12. CHECK HEATER HOSE TEMPERATURES

1. Start engine and warm up to normal operating temperature.
2. Touch both the inlet and outlet heater hoses.

Is the inspection result normal?

YES >> System OK.
NO >> Replace heater core. Refer to HA-54, "HEATER CORE : Removal and Installation".

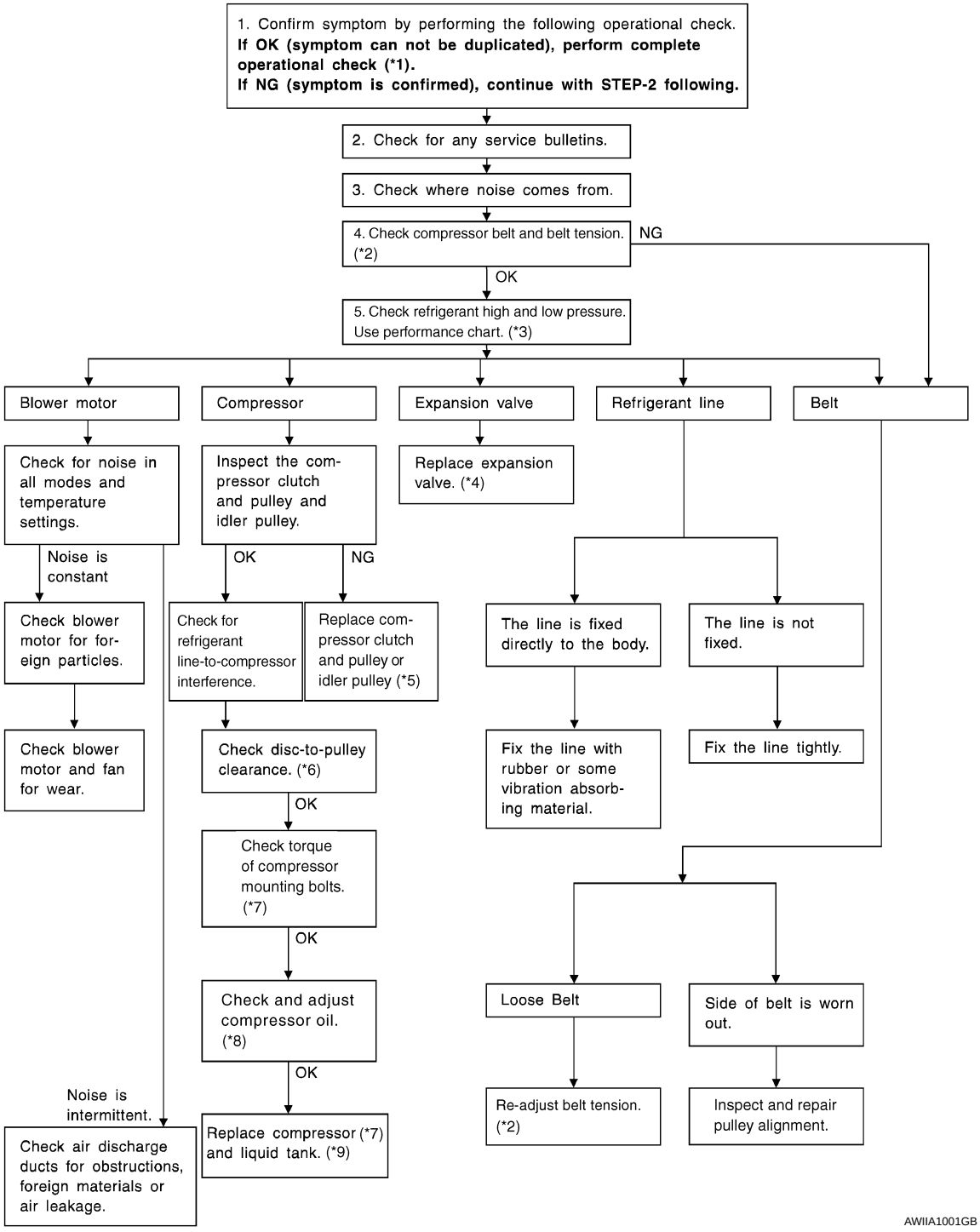
NOISE

Component Function Check

INFOID:0000000004223680

Symptom
- Noise
- Noise is heard when the A/C system operates.

INSPECTION FLOW



*1	HAC-131, "Operational Check"	*2	EM-14, "Checking Drive Belts"	*3	HAC-210, "Performance Chart"
*4	HA-56, "EXPANSION VALVE : Removal and Installation for Expansion Valve"	*5	HA-45, "Removal and Installation for Compressor Clutch"	*6	HA-45, "Removal and Installation for Compressor Clutch"
*7	HA-44, "Removal and Installation for Compressor"	*8	HA-36, "Maintenance of Oil Quantity"	*9	HA-51, "CONDENSER : Removal and Installation for Condenser"

MEMORY FUNCTION DOES NOT OPERATE

Component Function Check

INFOID:0000000004223681

Symptom
- Memory function does not operate normally.
- The setting is not maintained. (It returns to the initial condition.)

1.CHECK OPERATION

1. Set temperature control switch to 32°C (90°F).
2. Press the OFF switch.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON.
5. Press the AUTO switch.
6. Check that the set temperature is maintained.

Is the inspection result normal?

YES >> Inspection End.
NO >> Check power supply and ground circuit of A/C auto amp. Refer to HAC-186, "A/C AUTO AMP. : Component Function Check".

PRECAUTION

PRECAUTIONS

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

INFOID:0000000004335559

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

INFOID:0000000004399688

NOTE:

- Before removing and installing any control units, first turn the push-button ignition switch to the LOCK position, then disconnect both battery cables.
- After finishing work, confirm that all control unit connectors are connected properly, then re-connect both battery cables.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If a DTC is detected, perform trouble diagnosis according to self-diagnosis results.

This vehicle is equipped with a push-button ignition switch and a steering lock unit.
If the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.
If turning the steering wheel is required with the battery disconnected or discharged, follow the procedure below before starting the repair operation.

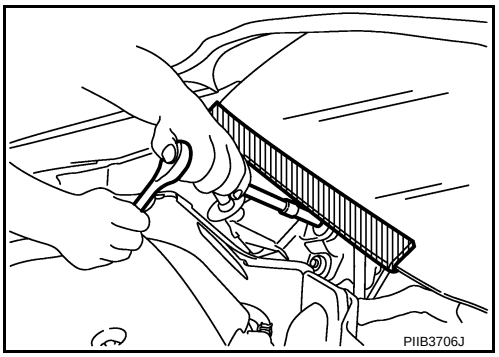
OPERATION PROCEDURE

1. Connect both battery cables.
   NOTE:
   Supply power using jumper cables if battery is discharged.
2. Carry the Intelligent Key or insert it to the key slot and turn the push-button ignition switch to ACC position. (At this time, the steering lock will be released.)
3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
4. Perform the necessary repair operation.
5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the push-button ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the push-button ignition switch is turned to LOCK position.)
6. Perform self-diagnosis check of all control units using CONSULT-III.

Precaution for Procedure without Cowl Top Cover

INFOID:0000000004335561

When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc.



Precautions For Xenon Headlamp Service

INFOID:0000000004335562

WARNING:

Comply with the following warnings to prevent any serious accident.

- **Disconnect the battery cable (negative terminal) or the power supply fuse before installing, removing, or touching the xenon headlamp (bulb included). The xenon headlamp contains high-voltage generated parts.**
- **Never work with wet hands.**
- **Check the xenon headlamp ON-OFF status after assembling it to the vehicle. Never turn the xenon headlamp ON in other conditions. Connect the power supply to the vehicle-side connector. (Turning it ON outside the lamp case may cause fire or visual impairments.)**
- **Never touch the bulb glass immediately after turning it OFF. It is extremely hot.**

CAUTION:

Comply with the following cautions to prevent any error and malfunction.

- **Install the xenon bulb securely. (Insufficient bulb socket installation may melt the bulb, the connector, the housing, etc. by high-voltage leakage or corona discharge.)**
- **Never perform HID circuit inspection with a tester.**
- **Never touch the xenon bulb glass with hands. Never put oil and grease on it.**
- **Dispose of the used xenon bulb after packing it in thick vinyl without breaking it.**
- **Never wipe out dirt and contamination with organic solvent (thinner, gasoline, etc.).**

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

INFOID:0000000004335563

WARNING:

- **CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. If the refrigerants are mixed compressor failure is likely to occur. Refer to HA-40, "Checking of Refrigerant Leaks". To determine the purity of HFC-134a (R-134a) in the vehicle and recovery tank, use Refrigerant Recovery/Recycling Recharging equipment and Refrigerant Identifier.**
- **Use only specified oil for the HFC-134a (R-134a) A/C system and HFC-134a (R-134a) components. If oil other than that specified is used, compressor failure is likely to occur.**
- **The specified HFC-134a (R-134a) oil rapidly absorbs moisture from the atmosphere. The following handling precautions must be observed:**

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

CONTAMINATED REFRIGERANT

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

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

General Refrigerant Precaution

INFOID:0000000004335564

WARNING:

- **Do not release refrigerant into the air. Use approved recovery/recycling equipment to capture the refrigerant every time an air conditioning system is discharged.**
- **Always wear eye and hand protection (goggles and gloves) when working with any refrigerant or air conditioning system.**
- **Do not store or heat refrigerant containers above 52°C (125°F).**
- **Do not heat a refrigerant container with an open flame; if container warming is required, place the bottom of the container in a pail of warm water.**
- **Do not intentionally drop, puncture, or incinerate refrigerant containers.**
- **Keep refrigerant away from open flames: poisonous gas will be produced if refrigerant burns.**
- **Refrigerant will displace oxygen, therefore be certain to work in well ventilated areas to prevent suffocation.**
- **Do not pressure test or leak test HFC-134a (R-134a) service equipment and/or vehicle air conditioning systems with compressed air during repair. Some mixtures of air and HFC-134a (R-134a) have been shown to be combustible at elevated pressures. These mixtures, if ignited, may cause injury or property damage. Additional health and safety information may be obtained from refrigerant manufacturers.**

Refrigerant Connection

INFOID:0000000004335565

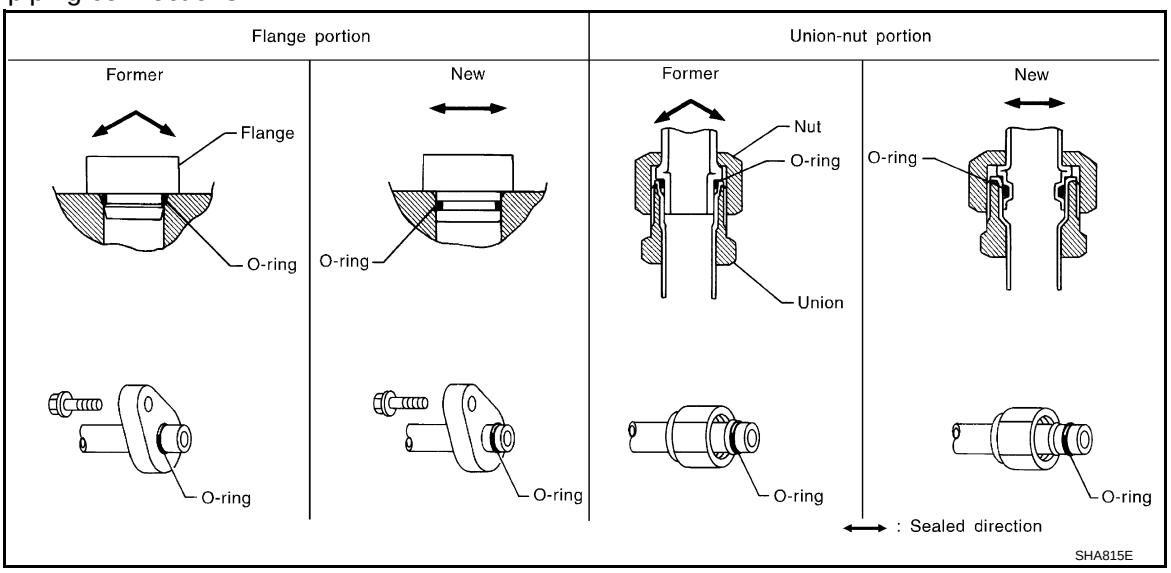
A new type refrigerant connection has been introduced to all refrigerant lines except the following locations.

- Expansion valve to cooling unit
- Evaporator pipes to evaporator (inside cooling unit)
- Refrigerant pressure sensor

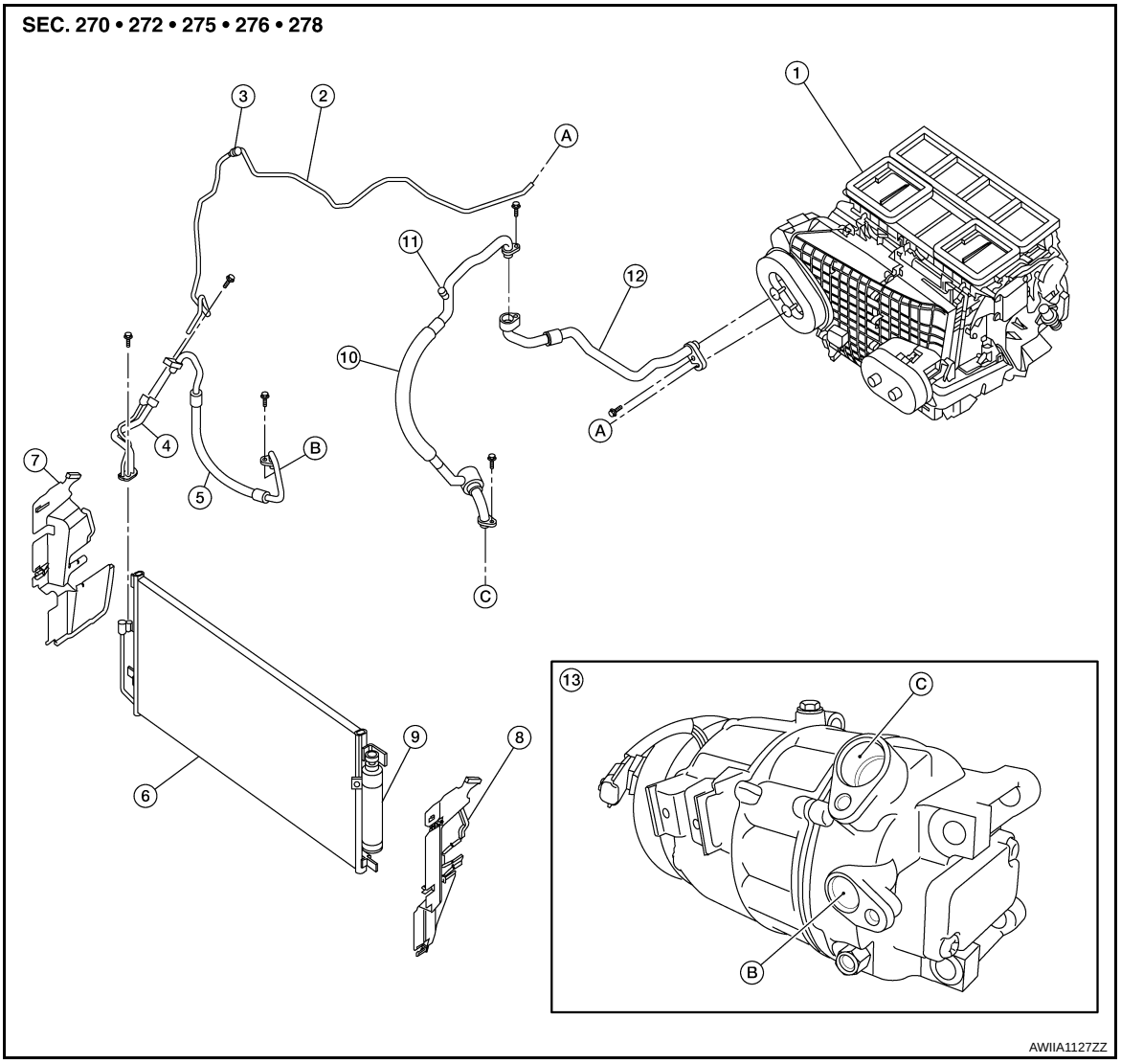
FEATURES OF NEW TYPE REFRIGERANT CONNECTION

- The O-ring has been relocated. It has also been provided with a groove for proper installation. This eliminates the chance of the O-ring being caught in, or damaged by, the mating part. The sealing direction of the O-ring is now set vertically in relation to the contacting surface of the mating part to improve sealing characteristics.

- The reaction force of the O-ring will not occur in the direction that causes the joint to pull out, thereby facilitating piping connections.



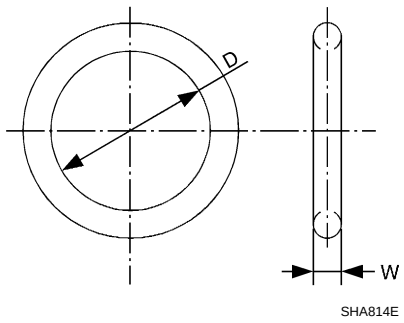
O-RING AND REFRIGERANT CONNECTION



1. Heater and cooling unit assembly
2. High-pressure pipe
3. High-pressure A/C service valve
4. Junction pipe
5. High-pressure flexible hose
6. Condenser and liquid tank
7. Air deflector RH
8. Air deflector LH
9. Liquid tank and refrigerant pressure sensor
10. Low-pressure flexible hose
11. Low-pressure A/C service valve
12. Low-pressure pipe
13. Compressor
A. High-pressure pipe to heater and cooling unit assembly
B. High-pressure flexible hose to compressor
C. Low-pressure flexible hose to compressor

CAUTION:
The new and former refrigerant connections use different O-ring configurations. Do not confuse O-rings since they are not interchangeable. If a wrong O-ring is installed, refrigerant will leak at, or around, the connection.

O-Ring Part Numbers and Specifications



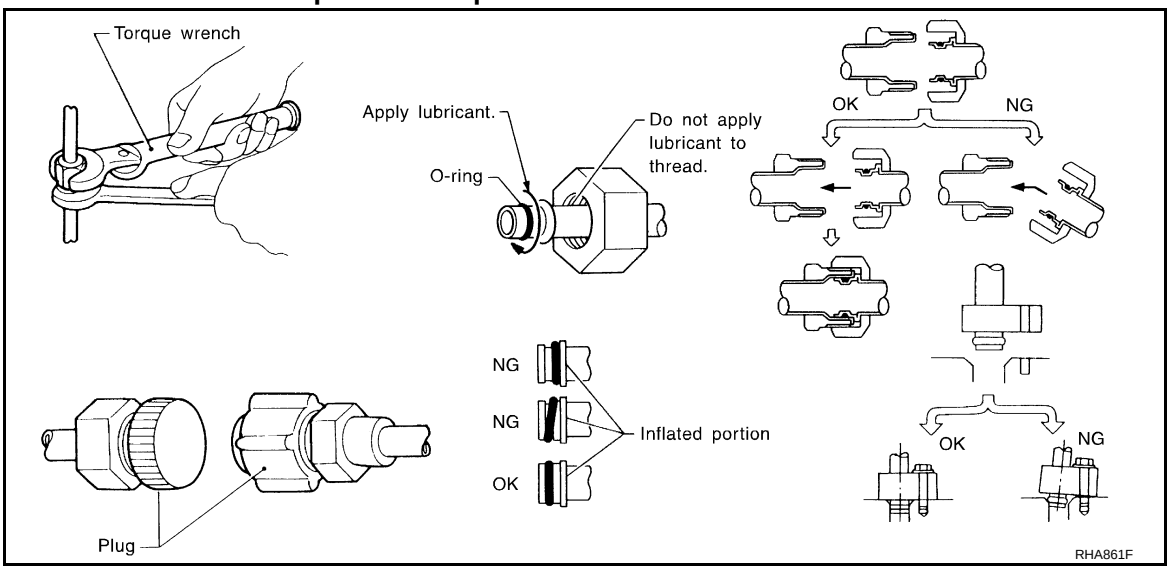
Connection type	O-ring size	Part number*	D mm (in)	W mm (in)
New	8	92471 N8210	6.8 (0.268)	1.85 (0.0728)
Former	10	J2476 89956	9.25 (0.3642)	1.78 (0.0701)
New	12	92472 N8210	10.9 (0.429)	2.43 (0.0957)
Former		92475 71L00	11.0 (0.433)	2.4 (0.094)
New	16	92473 N8210	13.6 (0.535)	2.43 (0.0957)
Former		92475 72L00	14.3 (0.563)	2.3 (0.091)
New	19	92474 N8210	16.5 (0.650)	2.43 (0.0957)
Former		92477 N8200	17.12 (0.6740)	1.78 (0.0701)
New	24	92195 AH300	21.8 (0.858)	2.4 (0.094)

*: Always check with the Parts Department for the latest parts information.

WARNING:
Make sure all refrigerant is discharged into the recycling equipment and the pressure in the system is less than atmospheric pressure. Then gradually loosen the discharge side hose fitting and remove it.

CAUTION:
When replacing or cleaning refrigerant cycle components, observe the following.
- **When the compressor is removed, store it in the same position as it is when mounted on the car. Failure to do so will cause oil to enter the low pressure chamber.**
- **When connecting tubes, always use a torque wrench and a back-up wrench.**
- **After disconnecting tubes, immediately plug all openings to prevent entry of dirt and moisture.**
- **When installing an air conditioner in the vehicle, connect the pipes as the final stage of the operation. Do not remove the seal caps of pipes and other components until just before required for connection.**
- **Allow components stored in cool areas to warm to working area temperature before removing seal caps. This prevents condensation from forming inside A/C components.**
- **Thoroughly remove moisture from the refrigeration system before charging the refrigerant.**
- **Always replace used O-rings.**
- **When connecting tube, apply oil to circle of the O-rings shown in illustration. Be careful not to apply oil to threaded portion.**
  Oil name: NISSAN A/C System Oil Type S or equivalent
- **O-ring must be closely attached to dented portion of tube.**
- **When replacing the O-ring, be careful not to damage O-ring and tube.**
- **Connect tube until you hear it click, then tighten the nut or bolt by hand until snug. Make sure that the O-ring is installed to tube correctly.**

- **After connecting line, conduct leak test and make sure that there is no leakage from connections. When the gas leaking point is found, disconnect that line and replace the O-ring. Then tighten connections of seal seat to the specified torque.**



Service Equipment

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RECOVERY/RECYCLING EQUIPMENT

Follow the manufacturer's instructions for machine operation and machine maintenance. Never introduce any refrigerant other than that specified into the machine.

ELECTRONIC LEAK DETECTOR

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

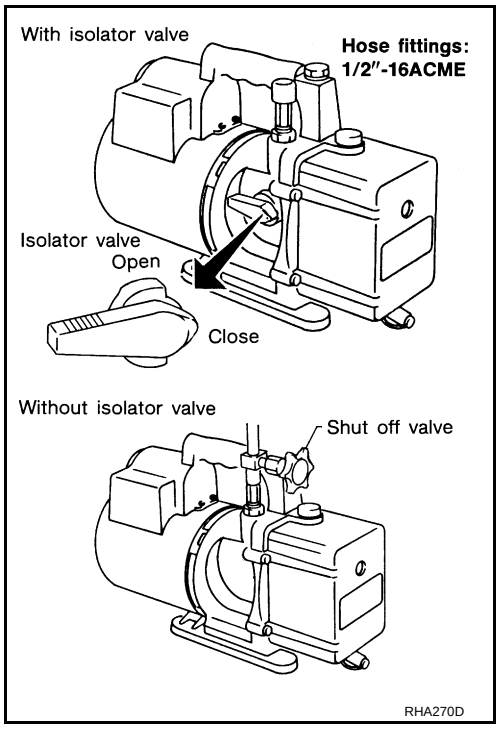
VACUUM PUMP

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

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

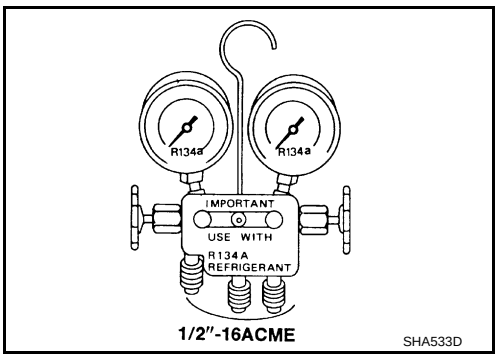
- Usually vacuum pumps have a manual isolator valve as part of the pump. Close this valve to isolate the service hose from the pump.
- For pumps without an isolator, use a hose equipped with a manual shut-off valve near the pump end. Close the valve to isolate the hose from the pump.
- If the hose has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

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



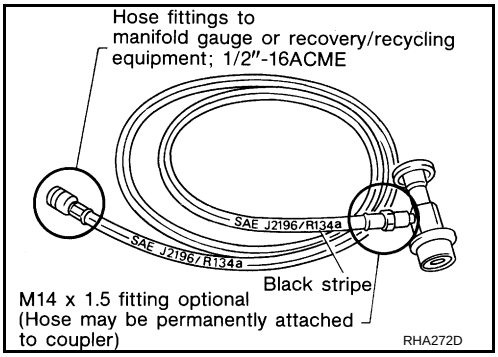
MANIFOLD GAUGE SET

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



SERVICE HOSES

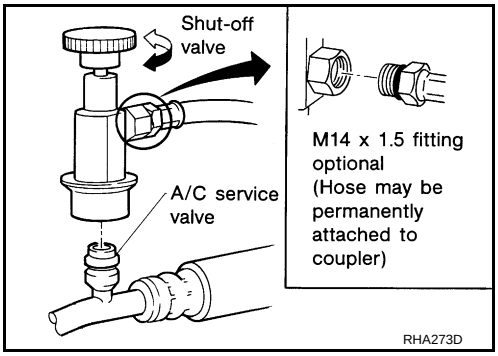
Be certain that the service hoses display the markings described (colored hose with black stripe). All hoses must include positive shut-off devices (either manual or automatic) near the end of the hoses opposite the manifold gauge.



SERVICE COUPLERS

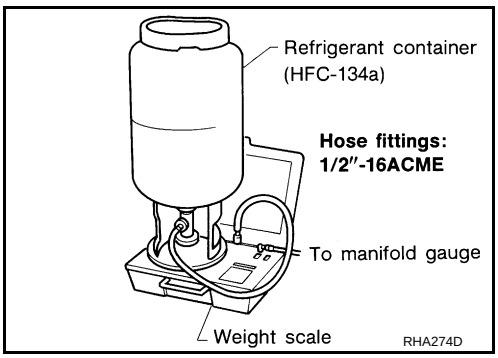
Never attempt to connect HFC-134a (R-134a) service couplers to a CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers will not properly connect to the CFC-12 (R-12) system. However, if an improper connection is attempted, discharging and contamination may occur.

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



WEIGHT SCALE

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



CHARGING CYLINDER

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

COMPRESSOR

General Precautions

INFOID:0000000004335567

- **Plug all openings to prevent moisture and foreign matter from entering.**
- **When the compressor is removed, store it in the same position as it is when mounted on the car.**
- **When replacing or repairing compressor, follow “Maintenance of Oil Quantity in Compressor” exactly. Refer to HA-36, "Maintenance of Oil Quantity".**
- **Keep friction surfaces between clutch and pulley clean. If the surface is contaminated with oil, wipe it off by using a clean waste cloth moistened with thinner.**
- **After compressor service operation, turn the compressor shaft by hand more than 5 turns in both directions. This will equally distribute oil inside the compressor. After the compressor is installed, let the engine idle and operate the compressor for 1 hour.**
- **After replacing the compressor magnet clutch, apply voltage to the new one and check for normal operation.**

LEAK DETECTION DYE

General Precautions

INFOID:0000000004335568

- The A/C system contains a fluorescent leak detection dye used for locating refrigerant leaks. An ultraviolet (UV) lamp is required to illuminate the dye when inspecting for leaks.
- Always wear fluorescence enhancing UV safety goggles to protect your eyes and enhance the visibility of the fluorescent dye.
- A compressor shaft seal should not be repaired because of dye seepage. The compressor shaft seal should only be repaired after confirming the leak with an electronic refrigerant leak detector (J-41995).
- Always remove any dye from the leak area after repairs are complete to avoid a misdiagnosis during a future service.
- Do not allow dye to come into contact with painted body panels or interior components. If dye is spilled, clean immediately with the approved dye cleaner. Fluorescent dye left on a surface for an extended period of time **cannot be removed**.
- Do not spray the fluorescent dye cleaning agent on hot surfaces (engine exhaust manifold, etc.).
- Do not use more than one refrigerant dye bottle (1/4 ounce / 7.4 cc) per A/C system.
- Leak detection dyes for HFC-134a (R-134a) and HC-12 (R-12) A/C systems are different. Do not use HFC-134a (R-134a) leak detection dye in R-12 A/C systems or HC-12 (R-12) leak detection dye in HFC-134a (R-134a) A/C systems or A/C system damage may result.
- The fluorescent properties of the dye will remain for over three years unless a compressor failure occurs.

IDENTIFICATION

Vehicles with factory installed fluorescent dye have a green label.

IDENTIFICATION LABEL FOR VEHICLE

Vehicles with factory installed fluorescent dye have this identification label on the underside of hood.

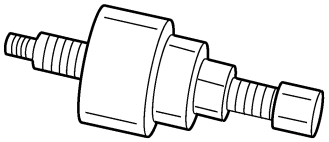
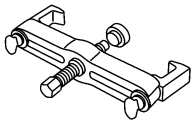
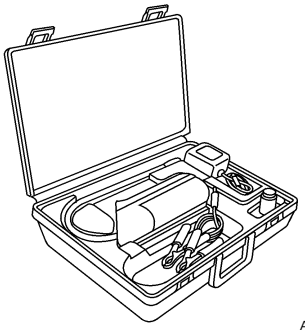
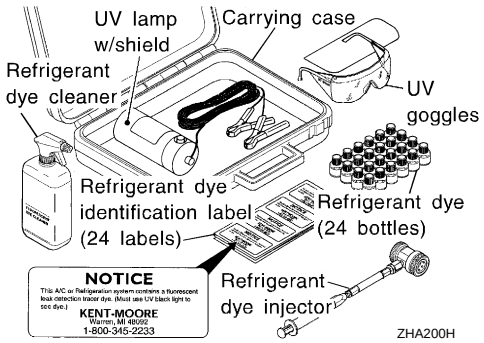
PREPARATION

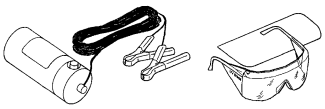
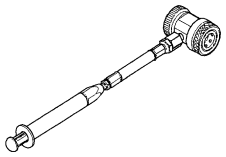
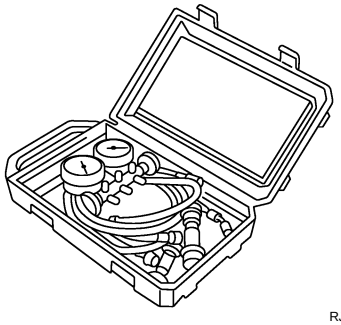
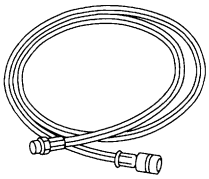
PREPARATION

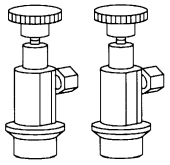
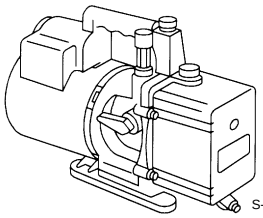
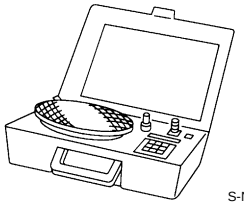
Special Service Tool

INFOID:0000000004335572

The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

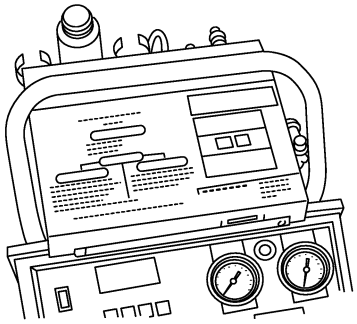
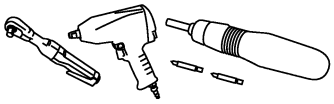
Tool number (Kent-Moore No.) Tool name	Description
— (J-38873-A) Drive plate installer  WJIA0367E	Installing pulley and drive plate
KV99233130 (J-29884) Pulley puller  LHA172	Removing pulley
K991J0130 (ACR2005-NI) ACR A/C Service Center  WJIA0293E	Refrigerant recovery, recycling and recharging
— (J-41995) Electronic refrigerant leak detector  AHA281A	Power supply: DC 12V (Battery terminal)
— (J-43926) Refrigerant dye leak detection kit Kit includes: (J-42220) UV lamp and UV safety goggles (J-41459) Refrigerant dye injector (J-41447) quantity 24 HFC-134a (R-134a) refrigerant dye (J-43872) Refrigerant dye cleaner  ZHA200H	Power supply: DC 12V (Battery terminal)

Tool number (Kent-Moore No.) Tool name		Description
— (J-42220) Fluorescent dye leak detector	 SHA438F	Power supply: DC 12V (Battery terminal) For checking refrigerant leak when fluorescent dye is installed in A/C system. Includes: UV lamp and UV safety goggles
— (J-41447) HFC-134a (R-134a) Fluorescent leak detection dye (Box of 24, 1/4 ounce bottles)	 Refrigerant dye (24 bottles) SHA439F	Application: For HFC-134a (R-134a) PAG oil Container: 1/4 ounce (7.4cc) bottle (Includes self-adhesive dye identification labels for affixing to vehicle after charging system with dye.)
— (J-41459) HFC-134a (R-134a) Dye injector Use with J-41447, 1/4 ounce bottle	 SHA440F	For injecting 1/4 ounce of fluorescent leak detection dye into A/C system.
— (J-43872) Refrigerant dye cleaner	 SHA441F	For cleaning dye spills.
— (J-39183-C) Manifold gauge set (with hoses and couplers)	 RJIA0196E	Identification: • The gauge face indicates R-134a. Fitting size: Thread size • 1/2” -16 ACME
Service hoses • (J-39500-72B) High side hose • (J-39500-72R) Low side hose • (J-39500-72Y) Utility hose	 S-NT201	Hose color: • Low side hose: Blue with black stripe • High side hose: Red with black stripe • Utility hose: Yellow with black stripe or green with black stripe Hose fitting to gauge: • 1/2” -16 ACME

Tool number (Kent-Moore No.) Tool name		Description
Service couplers • (J-39500-20A) High side coupler • (J-39500-24A) Low side coupler	 S-NT202	Hose fitting to service hose: • M14 x 1.5 fitting is optional or permanently attached.
— (J-39649) Vacuum pump (Including the isolator valve)	 S-NT203	Capacity: • Air displacement: 4 CFM • Micron rating: 20 microns • Oil capacity: 482 g (17 oz) Fitting size: Thread size • 1/2” -16 ACME
— (J-39650) Weight scale	 S-NT200	For measuring of refrigerant Fitting size: Thread size 1/2"-16 ACME

Commercial Service Tool

INFOID:0000000004335573

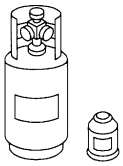
Tool number Tool name		Description
J-41810-NI Refrigerant identifier equipment HFC-134a (R-134a)	 RJIA0197E	Checking refrigerant purity and system contamination
Power tool	 PIIB1407E	Removing bolts and nuts

Sealant or/and Oil

INFOID:0000000004335574

- Never mix HFC-134a refrigerant and oil with CFC-12 (R-12) refrigerant and oil.
- Separate and non-interchangeable service equipment must be used for handling each type of refrigerant and oil.

- Refrigerant container fittings, service hose fittings and service equipment fittings (equipment which handles refrigerant and oil) are different between CFC-12 (R-12) and HFC-134a (R-134a). This is to avoid mixed use of the refrigerant and oil.
- Never use adapters that convert one size fitting to another, as refrigerant and oil contamination will occur and compressor failure will result.

Tool name	Description
Refrigerant HFC-134a (R-134a)  S-NT196	Container color: light blue Container marking: HFC-134a (R-134a) Fitting size: thread size • large container 1/2” -16 ACME
Genuine NISSAN A/C System Oil Type S  S-NT197	Type: poly alkaline glycol oil (PAG), type S Application: HFC-134a (R-134a) swash plate compressors (NISSAN only) Lubricity: 40 m ℓ (1.4 US fl oz, 1.4 Imp fl oz)

ON-VEHICLE REPAIR

CONTROL UNIT

Removal and Installation

INFOID:0000000004335619

A/C SWITCH ASSEMBLY FOR MONOCHROME DISPLAY

Removal

1. Remove the cluster lid D. Refer to IP-11, "Exploded View".
2. Remove the A/C switch assembly from cluster lid D.

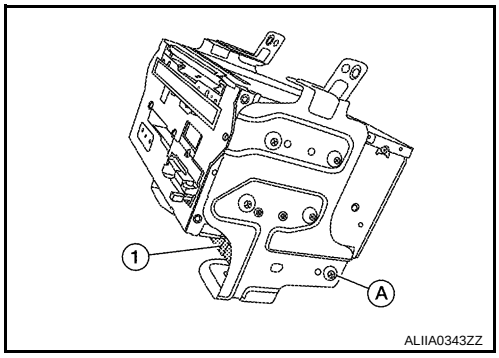
Installation

Installation is in the reverse order of removal.

A/C AUTO AMP

Removal

1. Remove the audio unit. Refer to AV-485, "Removal and Installation".
2. Remove the two A/C auto amp bracket screws (A).
3. Remove the A/C auto amp (1) from the bracket.



Installation

Installation is in the reverse order of removal.

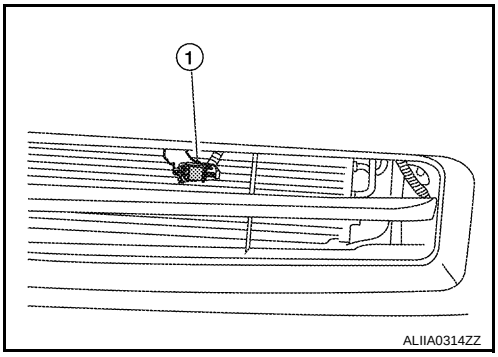
AMBIENT SENSOR

Removal and Installation

INFOID:0000000004335620

REMOVAL

1. From under the vehicle, disconnect the ambient sensor connector.
2. Release the ambient sensor clip and remove the ambient sensor (1).



INSTALLATION

Installation is in the reverse order of removal.

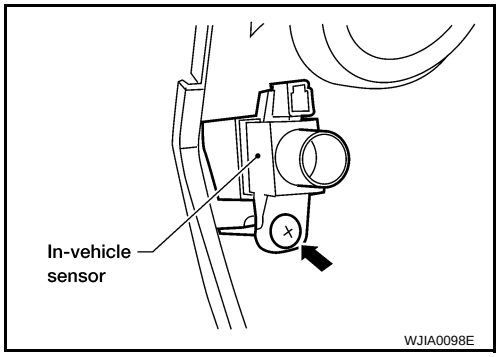
IN-VEHICLE SENSOR

Removal and Installation

INFOID:0000000004335621

REMOVAL

1. Remove the instrument panel lower cover LH. Refer to IP-12, "Removal and Installation".
2. Remove the in-vehicle sensor screw and remove the in-vehicle sensor.



INSTALLATION

Installation is in the reverse order of removal.

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

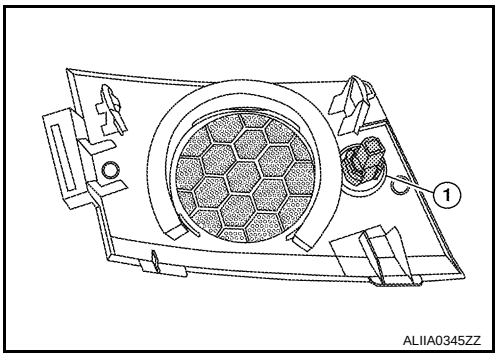
SUNLOAD SENSOR

Removal and Installation

INFOID:0000000004335622

REMOVAL

1. Remove the front LH speaker grille from the instrument panel. Refer to AV-67, "Removal and Installation".
2. Disconnect the sunload sensor connector.
3. Release the sunload sensor tabs and remove the sunload sensor (1) from the front LH speaker grille.



INSTALLATION

Installation is in the reverse order of removal.

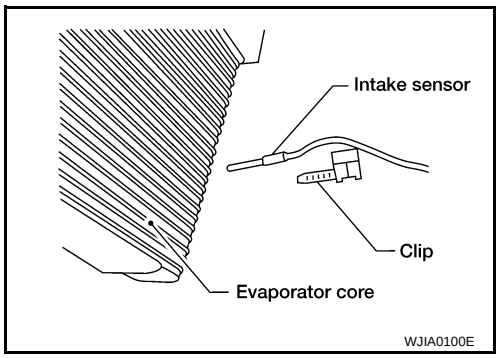
INTAKE SENSOR

Removal and Installation

INFOID:0000000004335623

REMOVAL

1. Remove the evaporator. Refer to HA-55, "EVAPORATOR : Removal and Installation".
2. Release the intake sensor clip and then remove the intake sensor.
   CAUTION:
   - **Mark the mounting position of the intake sensor.**
   - **Do not damage the evaporator core.**



INSTALLATION

Installation is in the reverse order of removal.

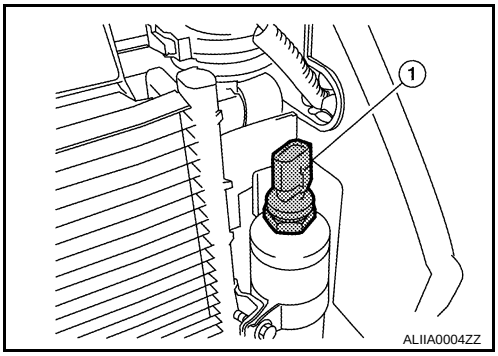
REFRIGERANT PRESSURE SENSOR

Removal and Installation for Refrigerant Pressure Sensor

INFOID:0000000004335624

REMOVAL

1. Discharge the refrigerant. Refer to HA-34, "Collection and Charge".
2. Remove the top filler panel.
3. Remove the front air duct.
4. Disconnect the refrigerant pressure sensor connector and remove the refrigerant pressure sensor (1) from the liquid tank on the condenser.
   CAUTION:
   Do not damage the condenser fins.



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

Replace the O-ring with a new one, then apply compressor oil to it for installation.

DOOR MOTOR

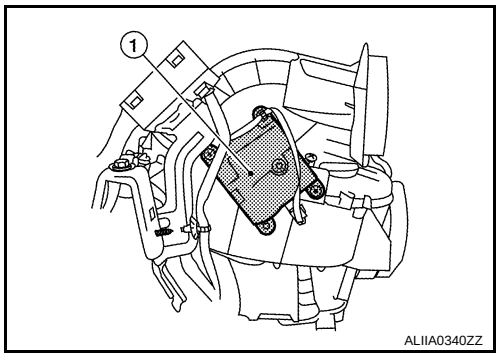
INTAKE DOOR MOTOR

INTAKE DOOR MOTOR : Removal and Installation

INFOID:0000000004335625

REMOVAL

1. Remove the glove box assembly. Refer to VTL-17, "BLOWER UNIT : Removal and Installation".
2. Remove the remote keyless entry receiver and bracket to reposition out of the way.
3. Disconnect the intake door motor connector.
4. Remove the intake door motor screws and remove intake door motor (1) from the blower unit.



INSTALLATION

Installation is in the reverse order of removal.

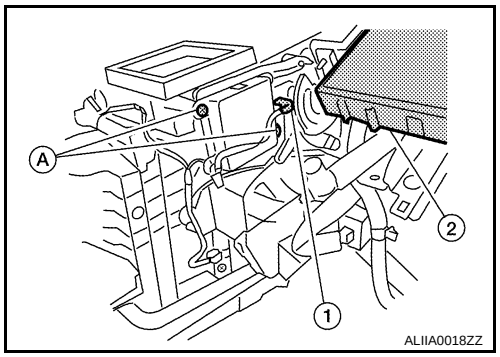
MODE DOOR MOTOR

MODE DOOR MOTOR : Removal and Installation

INFOID:0000000004335626

REMOVAL

1. Remove the combination meter. Refer to MWI-144, "Removal and Installation".
2. Remove the BCM (2). Refer to BCS-87, "Removal and Installation".
   NOTE:
   The illustration is shown with the heater and cooling unit assembly out of the vehicle for clarity.
3. Disconnect the mode door motor connector (1).
4. Remove the mode door motor screws (A) and then remove the mode door motor.



INSTALLATION

Installation is in the reverse order of removal.

AIR MIX DOOR MOTOR

AIR MIX DOOR MOTOR : Removal and Installation

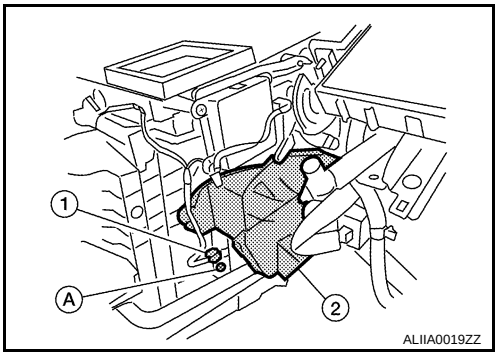
INFOID:0000000004335627

AIR MIX DOOR MOTOR - LH

Removal

1. Remove the instrument panel lower cover LH. Refer to IP-12, "Removal and Installation".
2. Remove the center console side finisher LH. Refer to IP-12, "Removal and Installation".

3. Remove the heater and cooling unit foot duct LH (2).
4. Disconnect the air mix door motor connector (1).
5. Remove the air mix door motor screws (A) and then remove the air mix door motor LH.

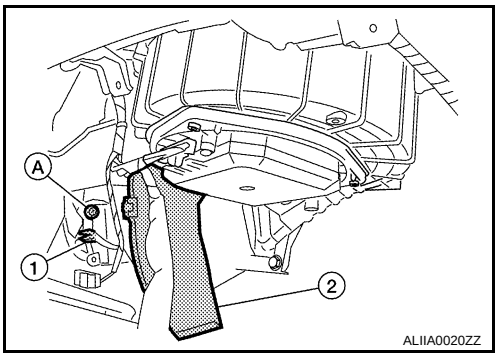


Installation
Installation is in the reverse order of removal.

AIR MIX DOOR MOTOR - RH

Removal

1. Remove the glove box. Refer to IP-12, "Removal and Installation".
2. Remove the heater and cooling unit foot duct RH (2).
3. Disconnect the air mix door motor connector (1).
4. Remove the air mix door motor screws (A) and then remove the air mix door motor RH.



Installation
Installation is in the reverse order of removal.