SECTION HAC

HEATER & AIR CONDITIONING CONTROL SYSTEM

CONTENTS

WITH COLOR DISPLAY

BASIC INSPECTION

INSPECTION AND ADJUSTMENT

Operational Check

INFOID:0000000010050942

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-60, "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-11, "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-49, "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-57, "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-80, "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-86, "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-21, "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-21, "WITH COLOR DISPLAY : Symptom Matrix Chart" and perform the appropriate diagnosis.

Temperature Setting Trimmer

INFOID:0000000010050943

Description

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

How to set

Using CONSULT, perform “TEMP SET CORRECT” in “WORK SUPPORT” of HVAC.

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

NOTE:

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

Foot Position Setting Trimmer

INFOID:0000000010050944

Description

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

How to set

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

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

NOTE:

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

Inlet Port Memory Function (FRE)

INFOID:0000000010050945

Description

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

How to set

Using CONSULT, perform “FRE MEMORY SET” in “WORK SUPPORT” of HVAC.

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

NOTE:

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

Inlet Port Memory Function (REC)

INFOID:0000000010050946

Description

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

How to set

Using CONSULT, perform “REC MEMORY SET” in “WORK SUPPORT” of HVAC.

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

NOTE:

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

SYSTEM DESCRIPTION

COMPRESSOR CONTROL FUNCTION

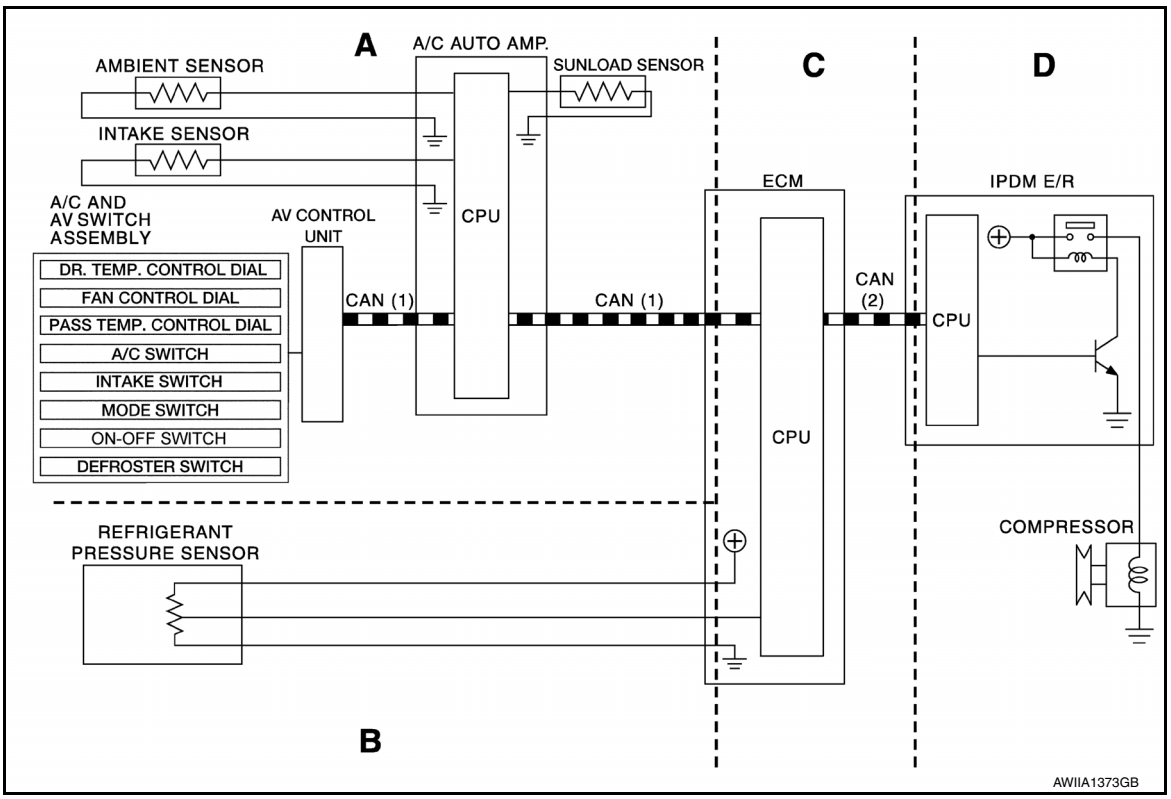
Description

INFOID:0000000010050947

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	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:0000000010050948

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**

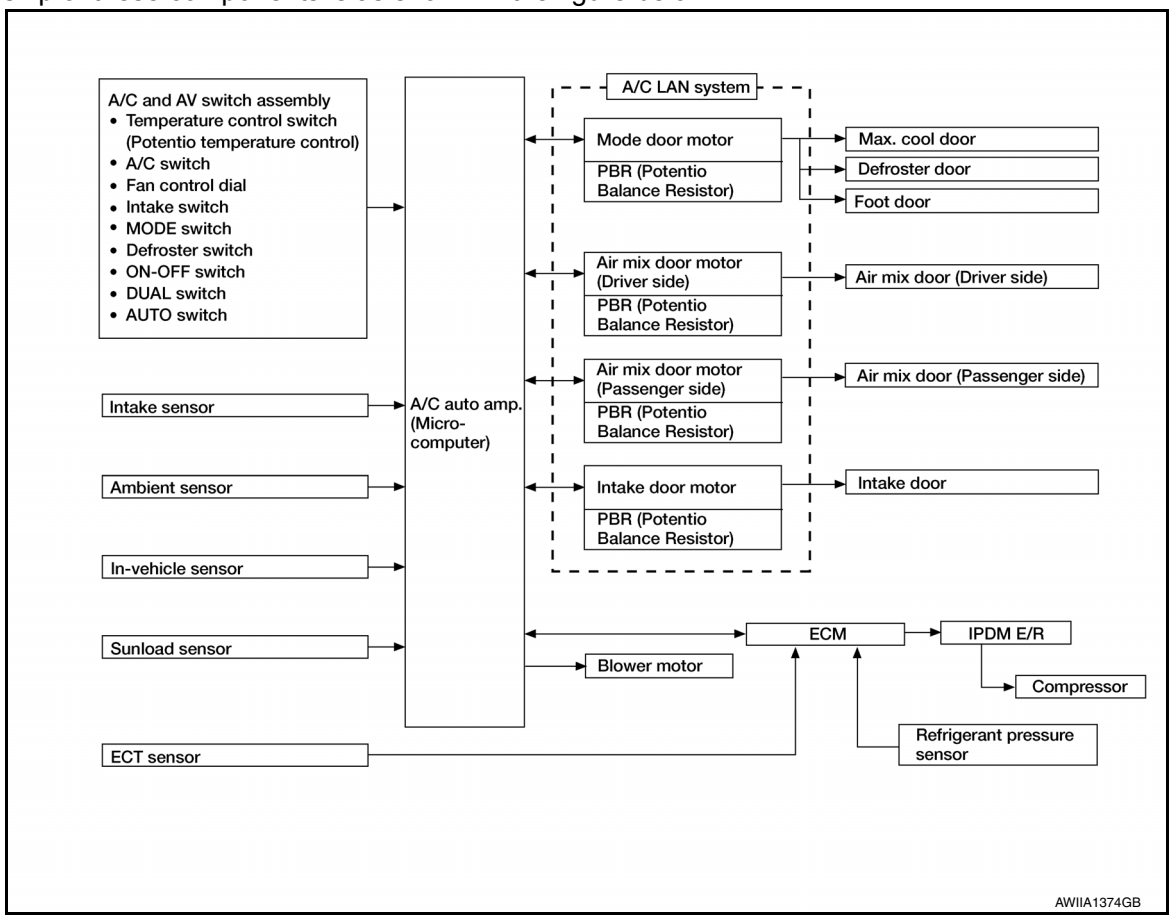
AUTOMATIC AIR CONDITIONER SYSTEM

System Diagram

INFOID:0000000010050949

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:



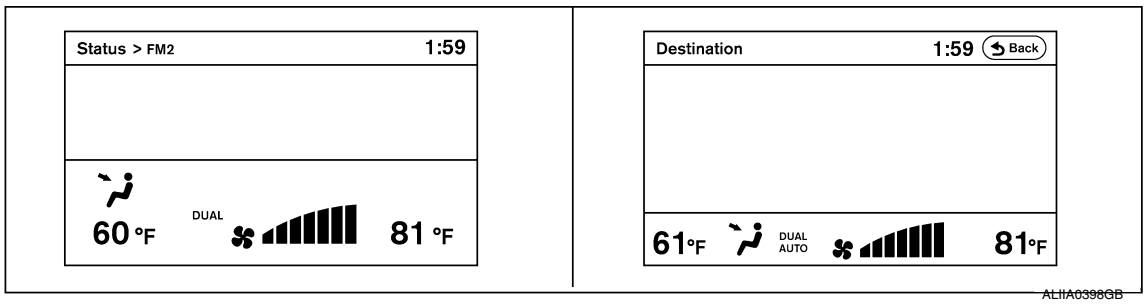
System Description

INFOID:0000000010050950

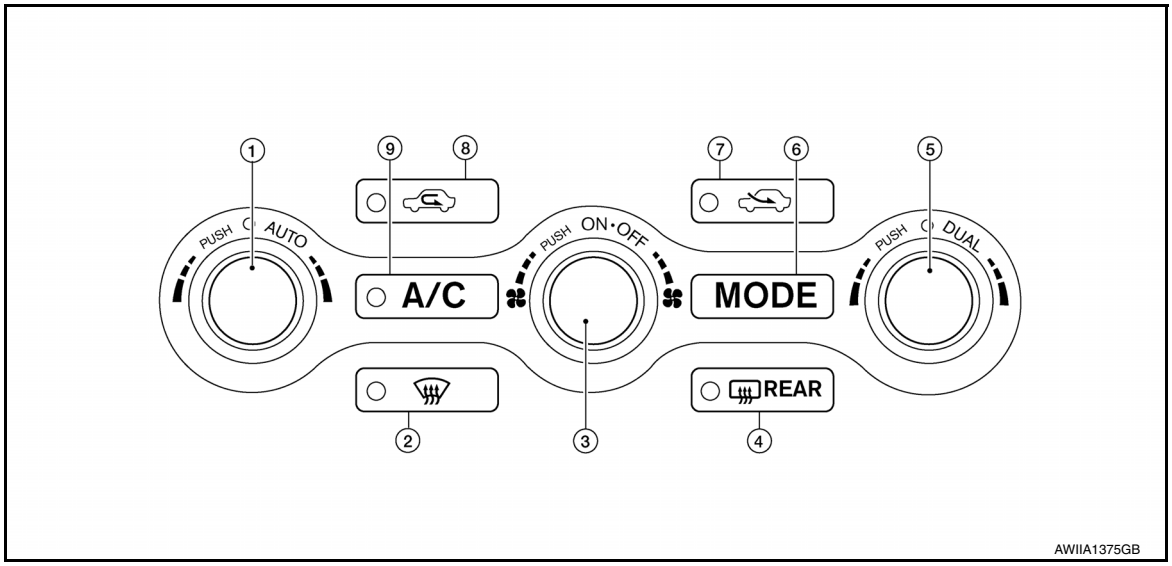
CONTROL OPERATION

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. ON - 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).

ON - 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.

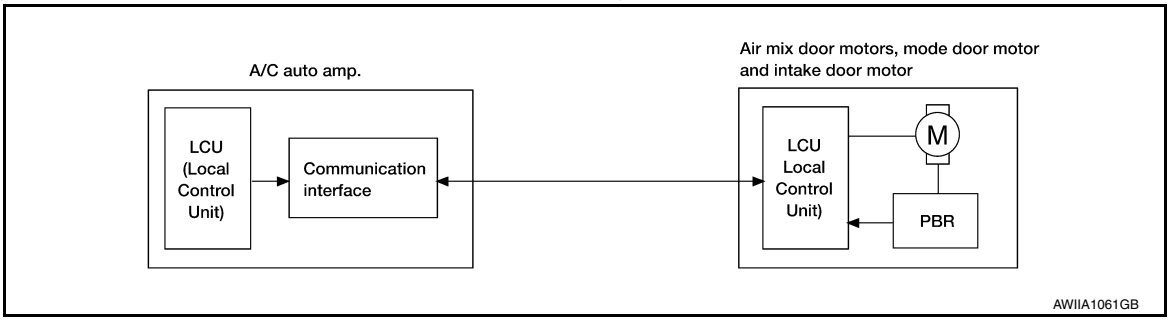
DUAL MODE SWITCH

- 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:0000000010050951

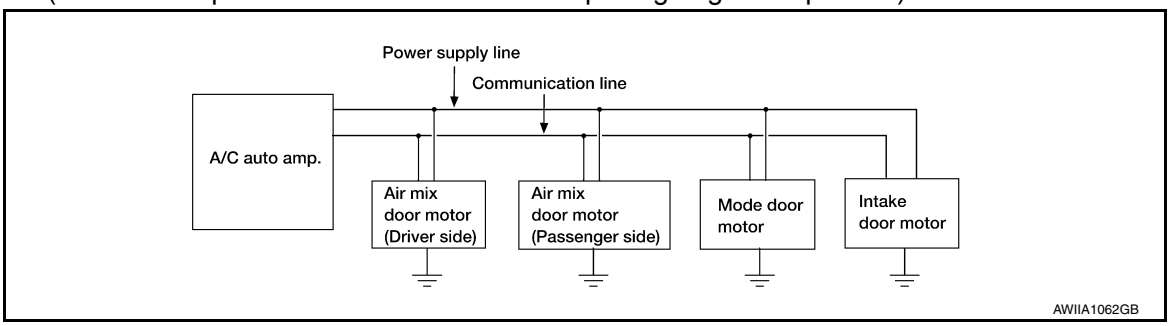
The LAN (Local Area Network) system consists of the A/C auto amp., the mode door motor, the air mix door motors and the intake door motor.
A configuration of these components is as shown in the figure below.



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.

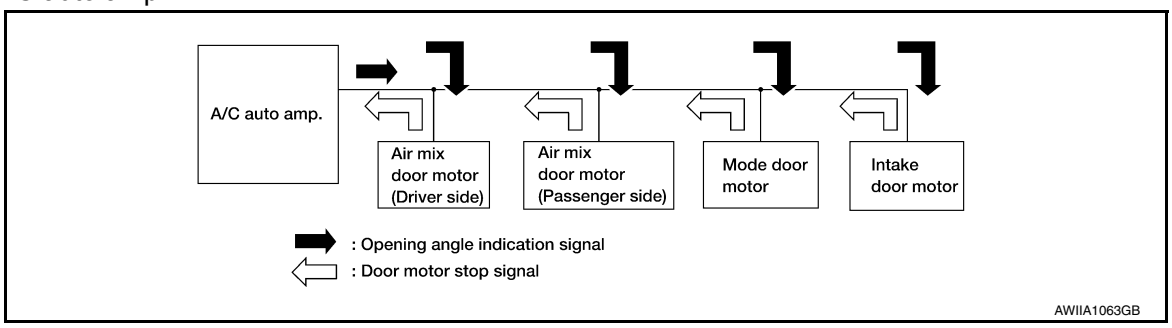
- Address
- Motor opening angle signals
- Data transmission
- Motor stop and drive decision
- Opening angle sensor (PBR function)
- Comparison
- Decision (A/C auto amp. indicated value and motor opening angle comparison)



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.

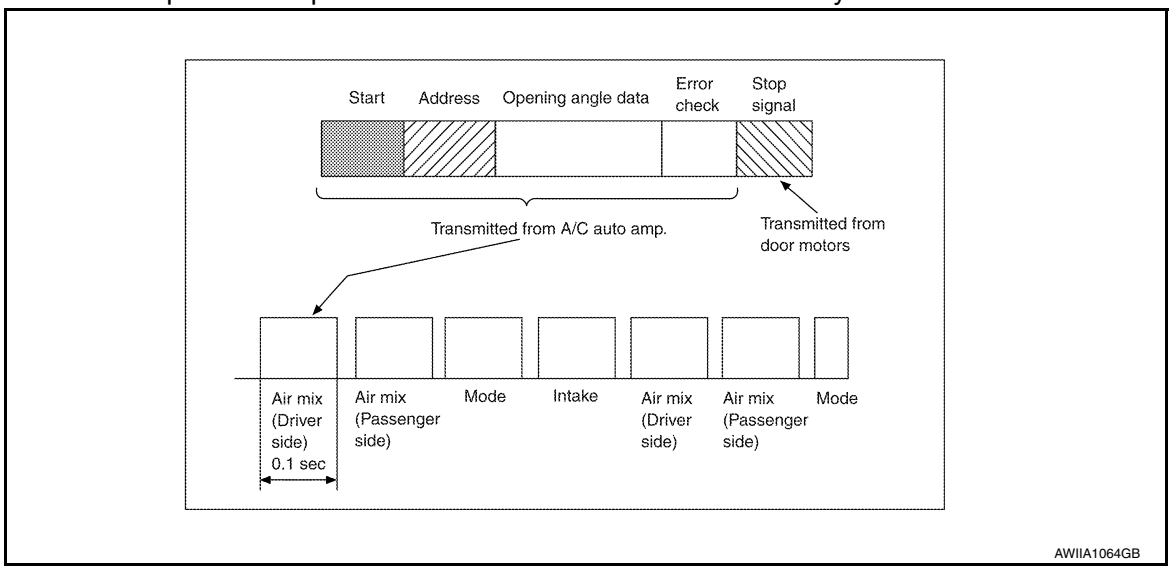
ERROR CHECK:

- 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.



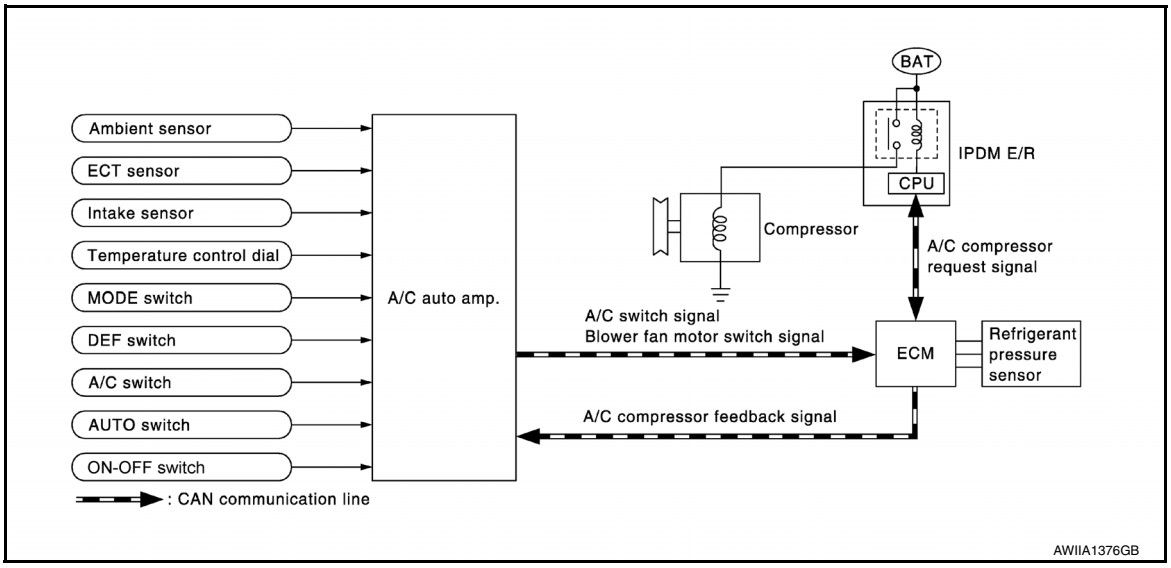
AIR MIX DOOR CONTROL (AUTOMATIC TEMPERATURE CONTROL)
- The air mix doors are automatically controlled so that in-vehicle temperature is maintained at a predetermined value by the temperature setting, ambient temperature, in-vehicle temperature and amount of sunload.

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

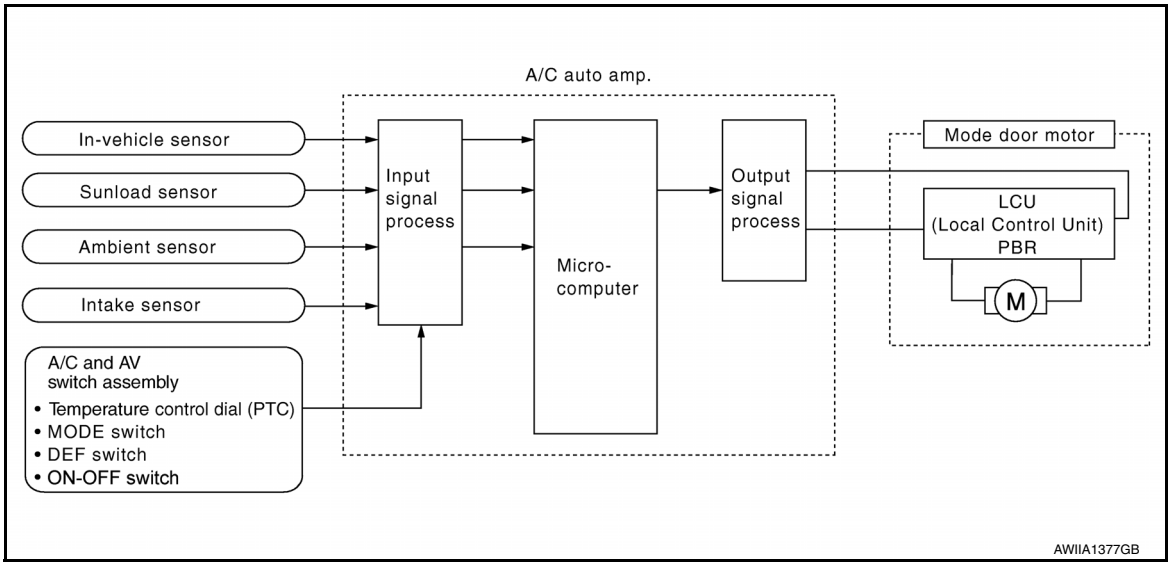


When A/C switch, AUTO switch or DEF ( ) switch is pressed, A/C auto amp. transmits compressor ON signal to ECM, via CAN communication.
ECM judges whether compressor can be turned ON, based on each sensor status (refrigerant pressure sensor signal, throttle angle, etc.). If it judges compressor can be 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:0000000010050952



System Description

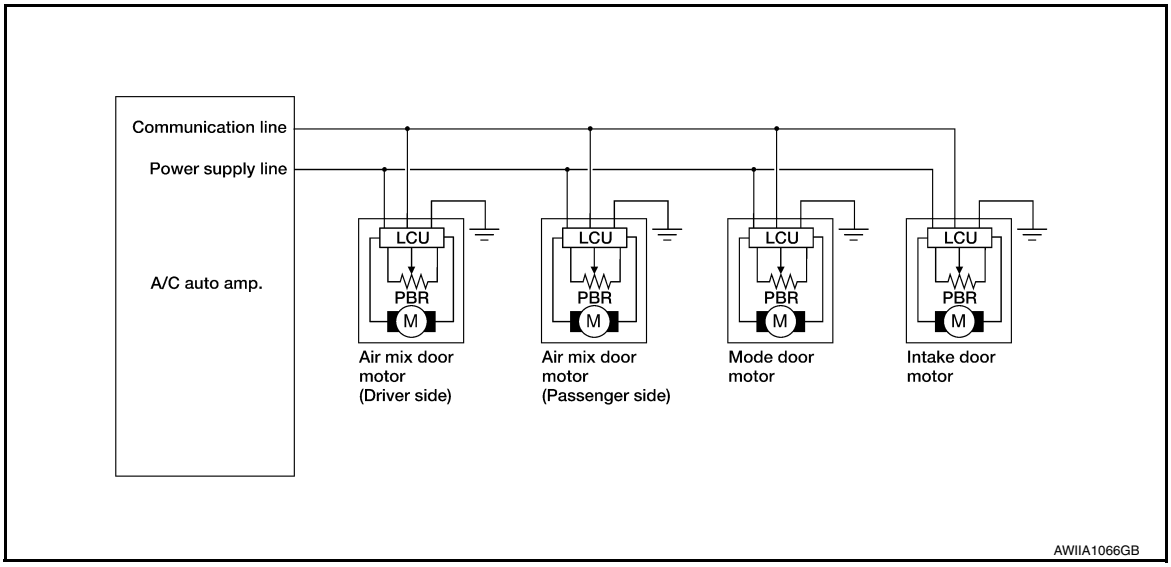
INFOID:0000000010050953

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

SYSTEM OPERATION

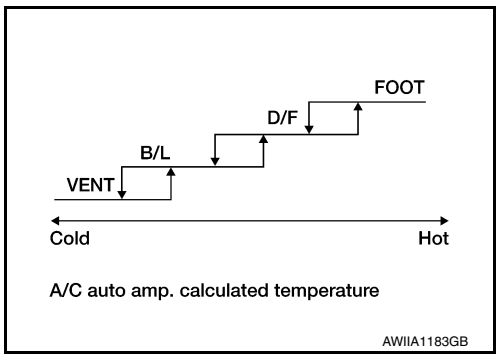
- The A/C auto amp. receives data from each of the sensors.
- The A/C auto amp. sends the air mix door, the mode door and the intake door opening angle data to the air mix door motor LCU(s), the mode door motor LCU and the intake door motor LCU.
- The air mix door motor(s), the mode door motor and the 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

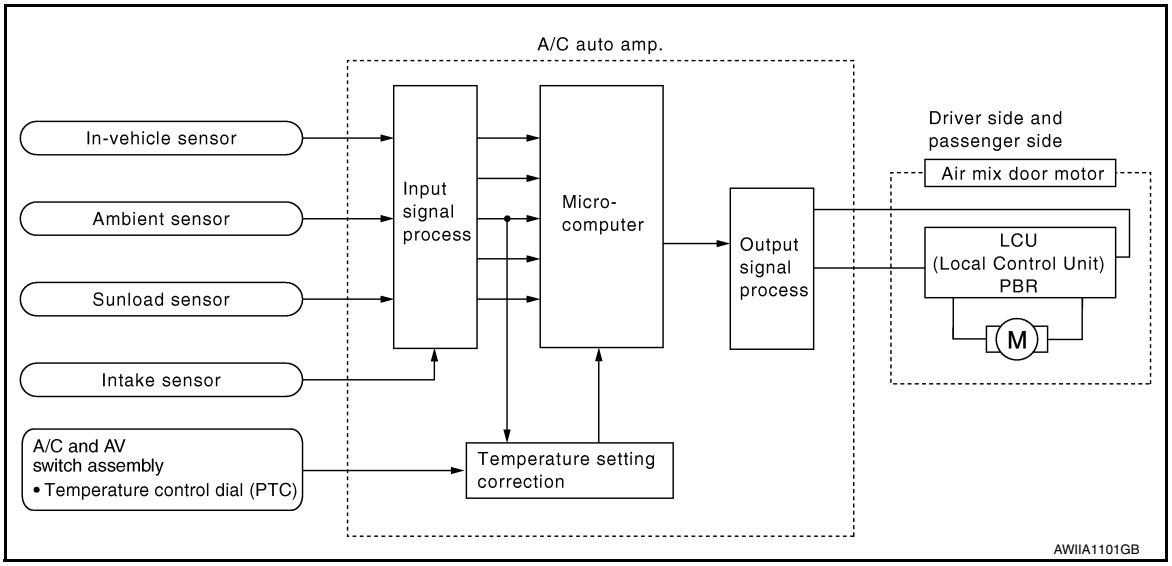
Mode position can be selected manually by pressing the MODE switch or the DEF switch on the A/C and AV switch assembly. Pressing the AUTO switch allows automatic control by the A/C auto amp. During the automatic control of a mode position, a mode door position (VENT, B/L, FOOT, or D/F) is selected based 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:0000000010050954



System Description

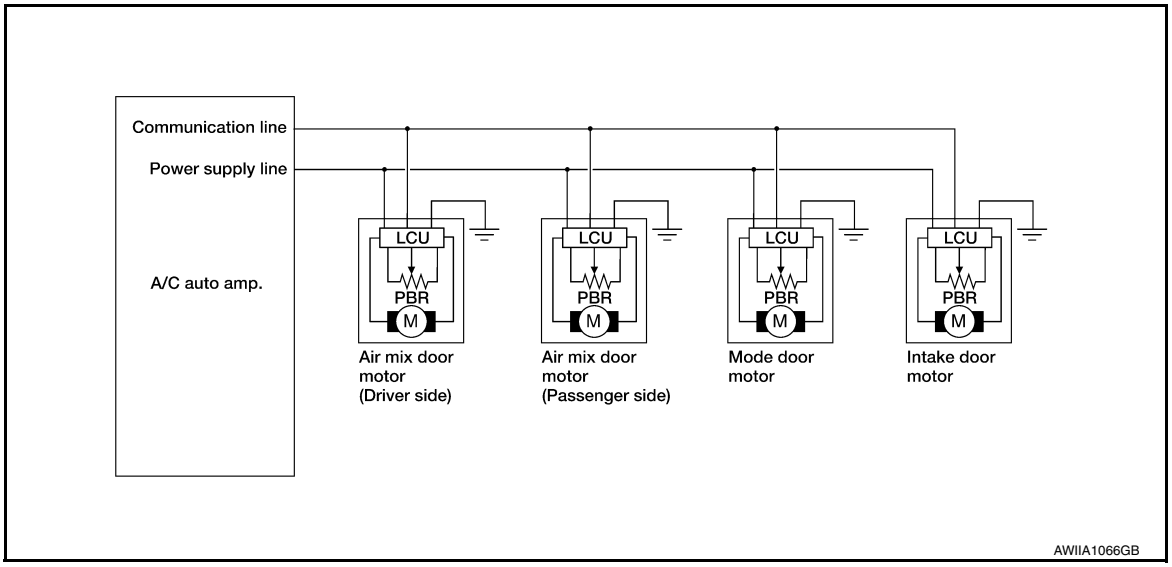
INFOID:0000000010050955

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

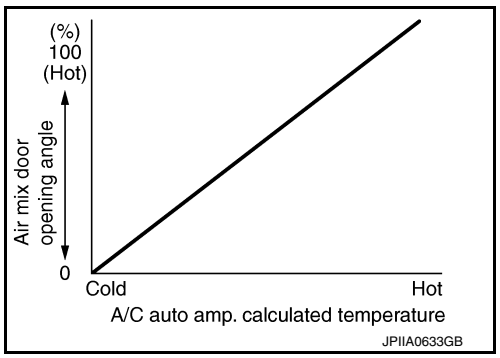
- The A/C auto amp. receives data from each of the sensors.
- The A/C auto amp. sends air mix door, the mode door and the intake door opening angle data to the air mix door motor LCU(s), the mode door motor LCU and the intake door motor LCU.
- The air mix door motor(s), the mode door motor and the intake 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

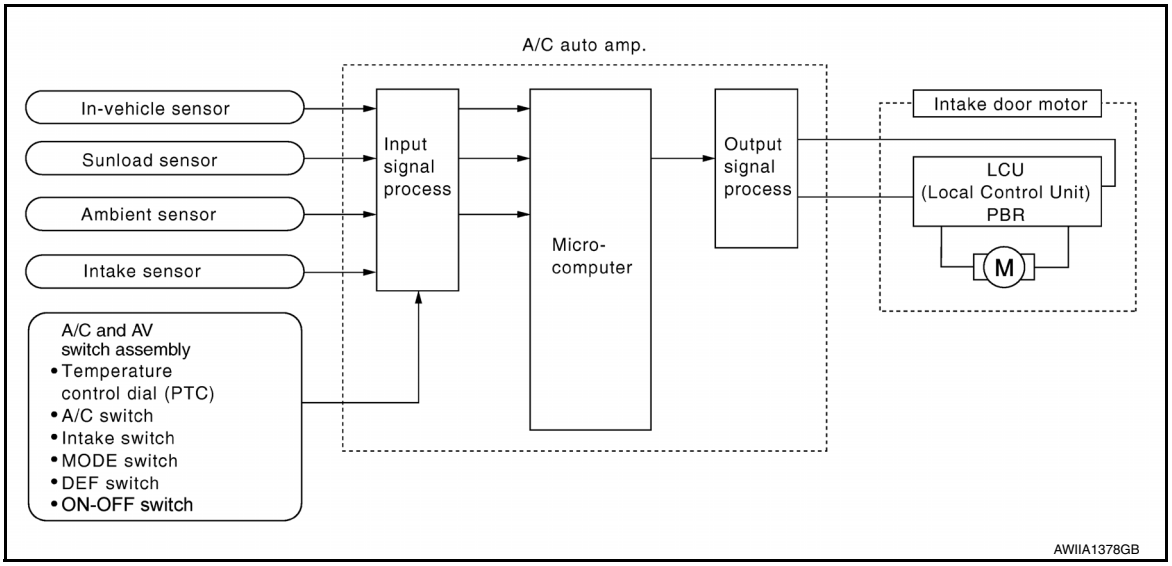
When ignition switch is ON, the A/C auto amp. continuously and automatically controls temperatures, regardless of air conditioner operational condition. When setting a target temperature with the temperature control switch, the A/C auto amp. corrects the set temperature and decides a target air mix door 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:0000000010050956



System Description

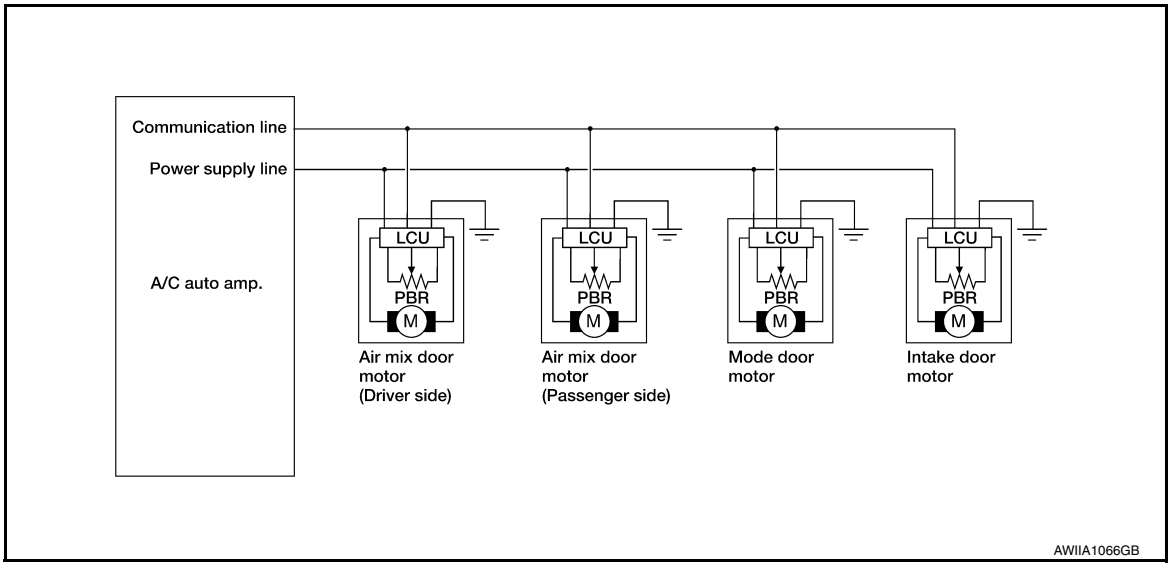
INFOID:0000000010050957

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.

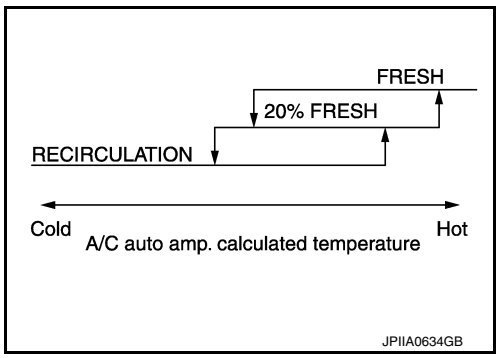
SYSTEM OPERATION

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



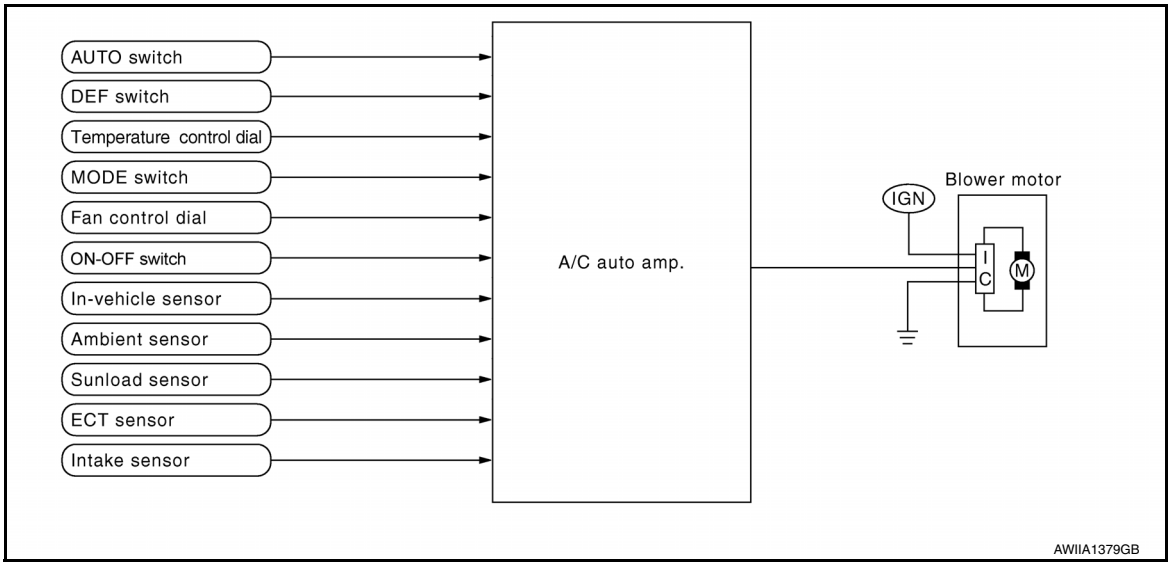
Intake Door Control Specification



BLOWER MOTOR CONTROL SYSTEM

System Diagram

INFOID:0000000010050958



System Description

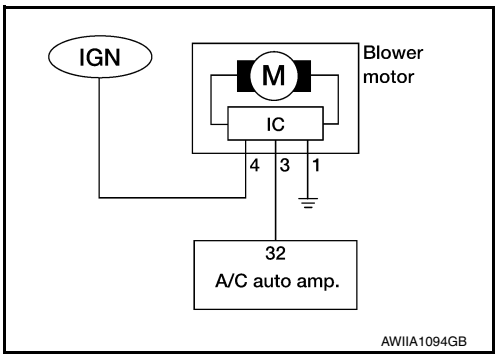
INFOID:0000000010050959

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

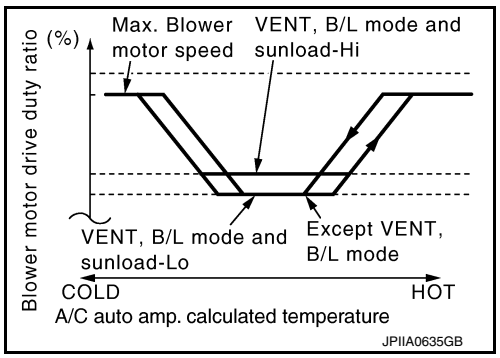
- For airflow, the manual selection (1-7) with the fan control dial has priority.
- If the AUTO switch is pressed or if the DEF switch is pressed while in the OFF condition, it changes to the automatic control by A/C auto amp.
- When increasing the airflow, it changes the duty ratio of the blower motor 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.

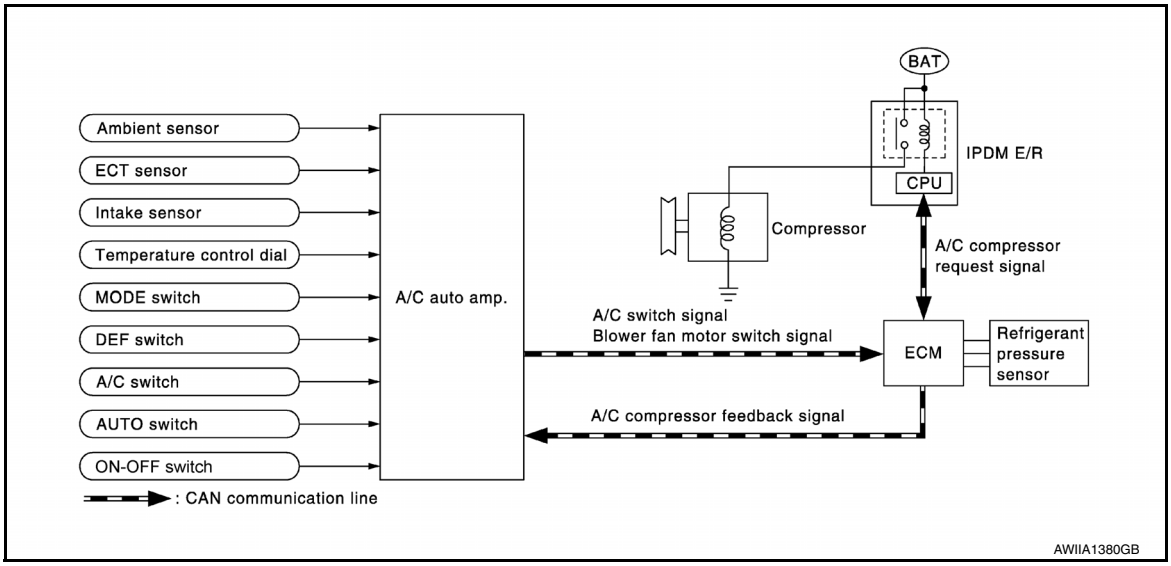
Start-up from usual or HOT SOAK Condition (Automatic mode)

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:0000000010050960



System Description

INFOID:0000000010050961

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:0000000010050962

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 Function

INFOID:0000000010050963

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

CONSULT 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.
CAN diag support monitor	The result of transmit/receive diagnosis of CAN communication can be read.
Work Support	Changes the setting for each system function.

SELF DIAGNOSTIC RESULT

Refer to HAC-65, "DTC Index".

Display Item List

DTC	Items (CONSULT screen terms)	Diagnostic item is detected when...	Possible cause
U1000	CAN COMM CIRCUIT	When A/C auto amp. is not transmitting or receiving CAN communication signal for 2 or more seconds.	CAN communication system
U1010	CONTROL UNIT (CAN)	When detecting error during the initial diagnosis of CAN controller of A/C auto amp.	A/C auto amp.
B257B	AMB TEMP SEN (SHORT)	Detected temperature at ambient sensor −55°C (131°F) or more	• Ambient sensor • A/C auto amp. • Harness and connector (Ambient sensor circuit is open, or there is a short in the circuit)
B257C	AMB TEMP SEN (OPEN)	Detected temperature at ambient sensor -30°C (-22°F) or less	
B2578	IN-CAR SENSOR (OUT OF RANGE [LOW])	Detected temperature at in-vehicle sensor 55°C (131°F) or more	• In-vehicle sensor • A/C auto amp. • Harness and connector (In-vehicle sensor circuit is open, or there is a short in the circuit)
B2579	IN-CAR SENSOR (OUT OF RANGE [HI])	Detected temperature at in-vehicle sensor -30°C (-22°F) or less	
B2581	EVAP TEMP SEN (SHORT)	Detected temperature at intake sensor 55°C (131°F) or more	• Intake sensor • A/C auto amp. • Harness and connector (Intake sensor circuit is open, or there is a short in the circuit)
B2582	EVAP TEMP SEN (OPEN)	Detected temperature at intake sensor -30°C (-22°F) or less	
B2630*	SUNLOAD SEN (SHORT)	Detected calorie at sunload sensor 1395 w/m^2 (1200 kcal/m^2·h) 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 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	[°C]	Ambient sensor value converted from ambient sensor signal received from ambient sensor
IN-VEH TEMP	[°C]	In-vehicle sensor value converted from in-vehicle sensor signal received from in-vehicle sensor
INT TEMP SEN	[°C]	Intake sensor value converted from intake sensor signal received from intake sensor
SUNLOAD SEN	[w/m^2]	Sunload sensor value converted from sunload sensor signal received from sunload sensor
AMB SEN CAL	[°C]	Ambient sensor value calculated by A/C auto amp.
IN-VEH CAL	[°C]	In-vehicle sensor value calculated by A/C auto amp.
INT TEMP CAL	[°C]	Intake sensor value calculated by A/C auto amp.
SUNL SEN CAL	[w/m^2]	Sunload sensor value calculated by A/C auto amp.
FAN DUTY	[%]	Duty ratio of blower motor judged by A/C auto amp.
XM	[°C]	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
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	OFF	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-6, "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-7, "Foot Position Setting Trimmer"
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-7, "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.

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000010050964

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:0000000010050965

DTC DETECTION LOGIC

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

Diagnosis Procedure

INFOID:0000000010050966

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT

1. Turn ignition switch ON and wait for 2 or more seconds.
2. Using CONSULT, 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-41, "Intermittent Incident".

U1010 CONTROL UNIT (CAN)

Description

INFOID:0000000010050967

Initial diagnosis of A/C auto amp.

DTC Logic

INFOID:0000000010050968

DTC DETECTION LOGIC

DTC	Items (CONSULT 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:0000000010050969

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT

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

Is DTC No.“U1010” displayed?

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

B257B, B257C AMBIENT SENSOR

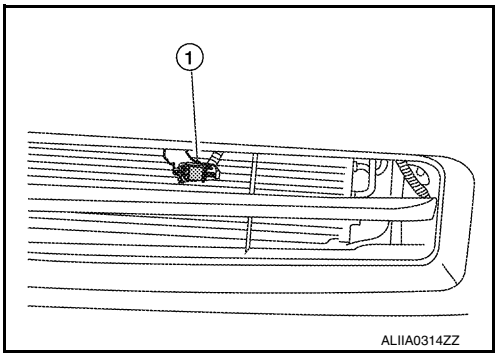
Description

INFOID:0000000010050970

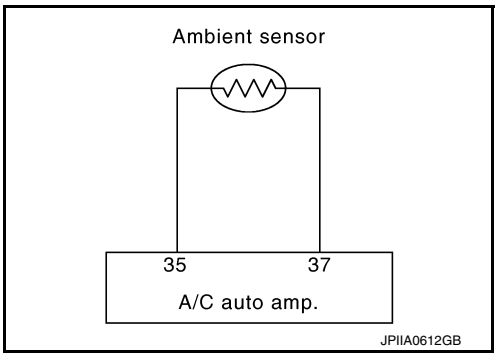
COMPONENT DESCRIPTION

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:0000000010050971

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-30, "DTC Logic" or HAC-31, "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 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

1. Using CONSULT, 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-30, "DTC Logic" or HAC-31, "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-33, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

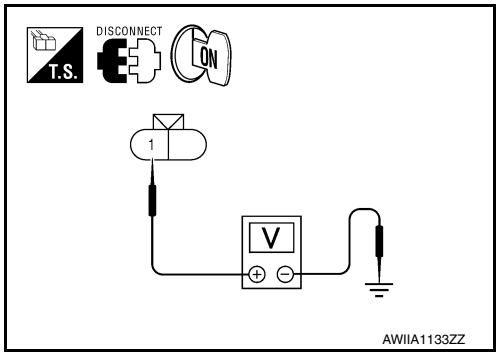
INFOID:0000000010050972

Regarding Wiring Diagram information, refer to HAC-67, "Wiring Diagram - With Color Display".

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



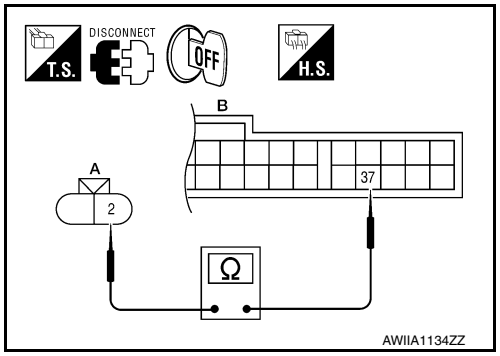
Is the inspection result normal?

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-34, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".
NO >> Replace ambient sensor. Refer to HAC-101, "Removal and Installation".

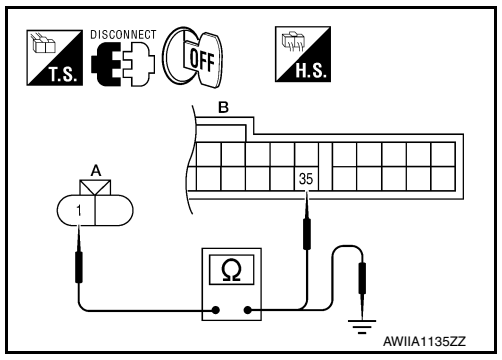
4.CHECK CONTINUITY BETWEEN AMBIENT SENSOR AND A/C AUTO AMP.

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-100, "Removal and Installation".
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000010050973

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-101, "Removal and Installation".

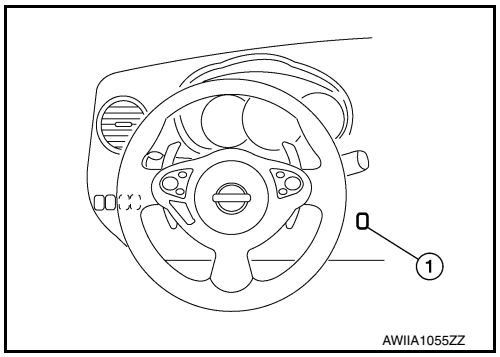
B2578, B2579 IN-VEHICLE SENSOR

Description

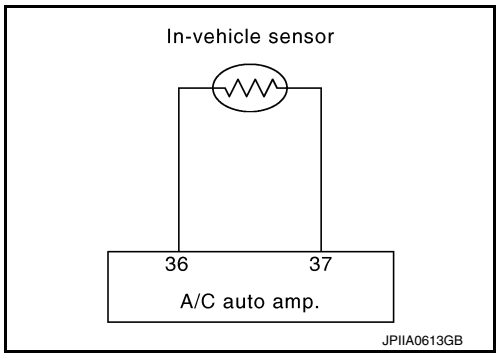
INFOID:0000000010050974

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.

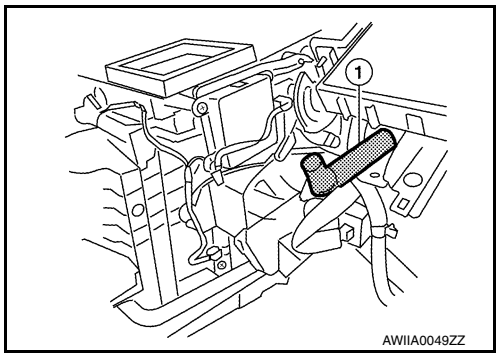


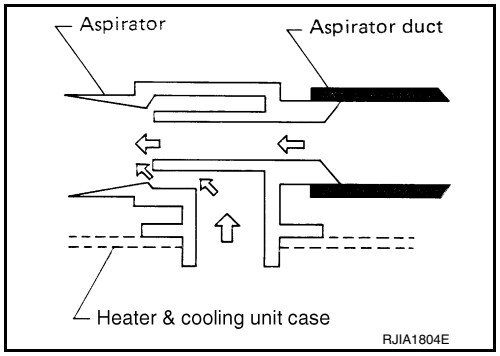
In-vehicle Sensor Circuit



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:0000000010050975

DTC DETECTION LOGIC

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-30, "DTC Logic" or HAC-31, "DTC Logic".

DTC	Items (CONSULT 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

1. Using CONSULT, 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-30, "DTC Logic" or HAC-31, "DTC Logic".

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

YES >> Perform trouble diagnosis for the in-vehicle sensor. Refer to HAC-36, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

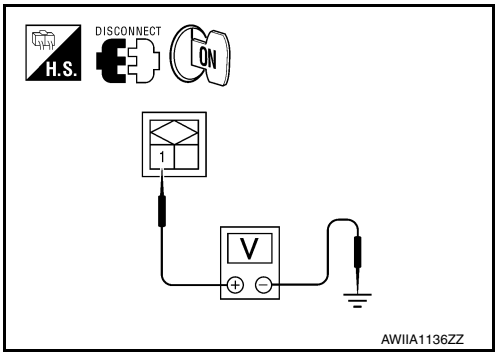
INFOID:0000000010050976

Regarding Wiring Diagram information, refer to HAC-67, "Wiring Diagram - With Color Display".

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



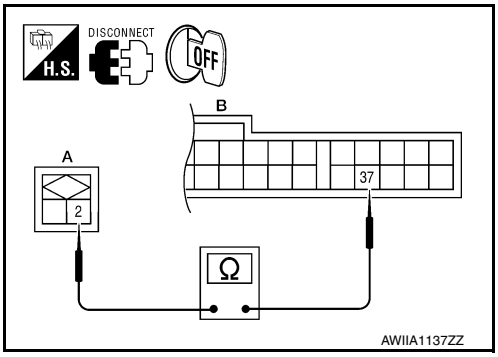
Is the inspection result normal?

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-37, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".
NO >> Replace in-vehicle sensor. Refer to HAC-102, "Removal and Installation".

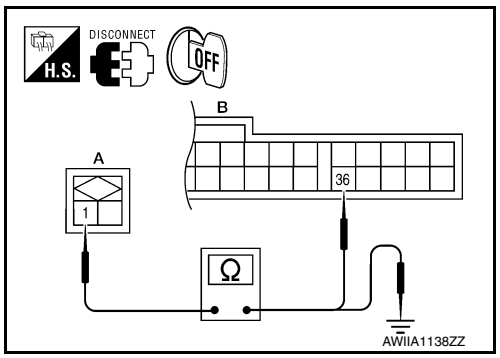
4. CHECK CONTINUITY BETWEEN IN-VEHICLE SENSOR AND A/C AUTO AMP.

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-100, "Removal and Installation".
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000010050977

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?

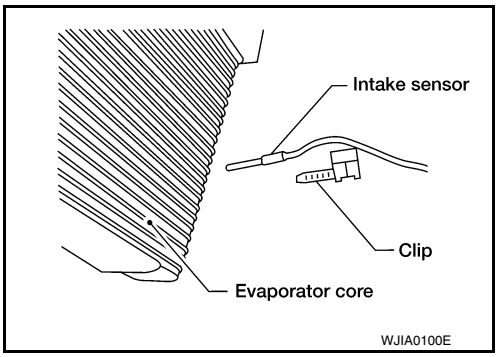
YES >> Inspection End.
NO >> Replace in-vehicle sensor. Refer to HAC-102, "Removal and Installation".

B2581, B2582 INTAKE SENSOR

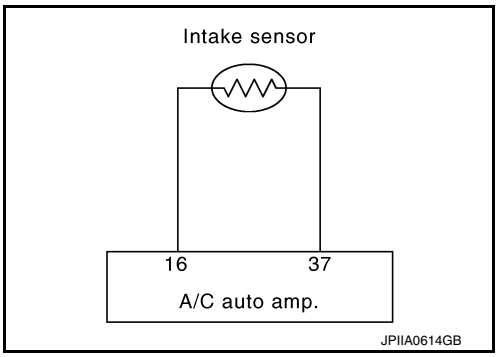
Description

INFOID:0000000010050978

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:0000000010050979

DTC DETECTION LOGIC

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-30, "DTC Logic" or HAC-31, "DTC Logic".

DTC	Items (CONSULT 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

1. Using CONSULT, 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-30, "DTC Logic" or HAC-31, "DTC Logic".

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

YES >> Perform trouble diagnosis for the intake sensor. Refer to HAC-38, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

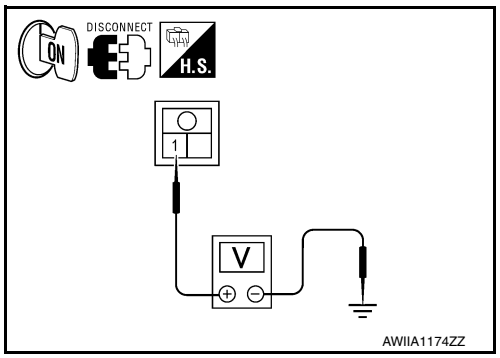
INFOID:0000000010050980

Regarding Wiring Diagram information, refer to HAC-67, "Wiring Diagram - With Color Display".

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



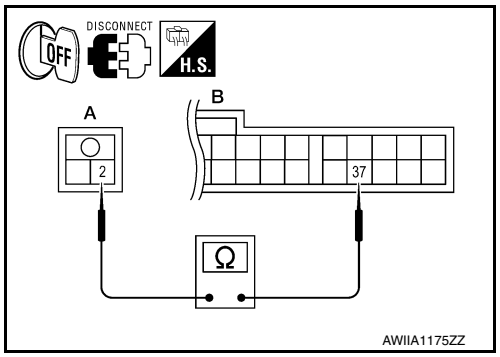
Is the inspection result normal?

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-39, "Component Inspection".

Is the inspection result normal?

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

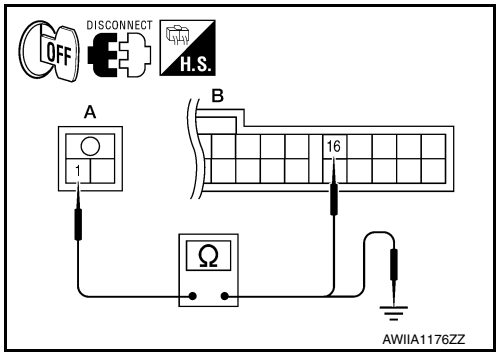
4.CHECK CONTINUITY BETWEEN INTAKE SENSOR AND A/C AUTO AMP.

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-100, "Removal and Installation".
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000010050981

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-104, "Removal and Installation".

B2630, B2631 SUNLOAD SENSOR

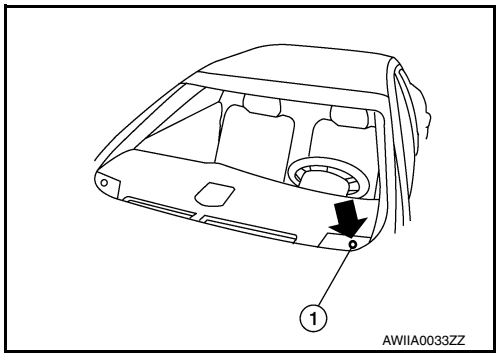
Description

INFOID:0000000010050982

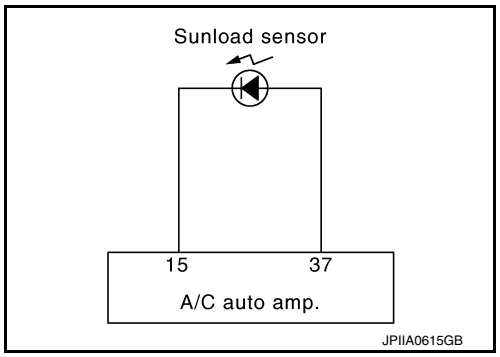
COMPONENT DESCRIPTION

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:0000000010050983

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-30, "DTC Logic" or HAC-31, "DTC Logic".
- Sunload sensor may register a malfunction when indoors, at dusk, or at other times when light is insufficient. When performing the diagnosis indoors, light the sunload sensor with a lamp (60W or more).

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

DTC CONFIRMATION PROCEDURE

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT

1. Using CONSULT, 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-30, "DTC Logic" or HAC-31, "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-42, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

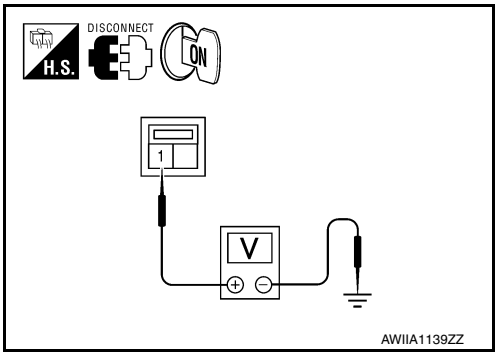
INFOID:0000000010050984

Regarding Wiring Diagram information, refer to HAC-67, "Wiring Diagram - With Color Display".

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



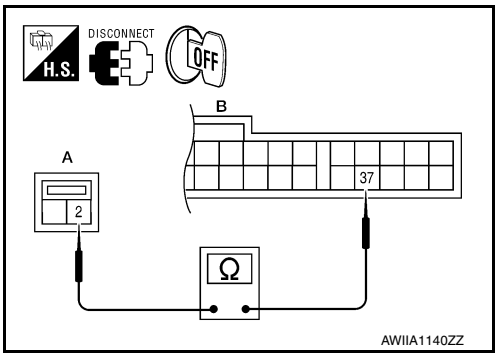
Is the inspection result normal?

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-43, "Component Inspection".

Is the inspection result normal?

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

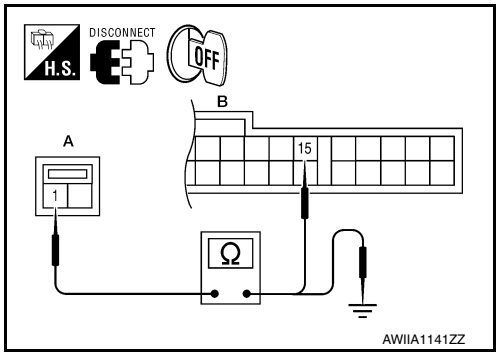
4.CHECK CONTINUITY BETWEEN SUNLOAD SENSOR AND A/C AUTO AMP.

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-100, "Removal and Installation".
NO >> Repair harness or connector.

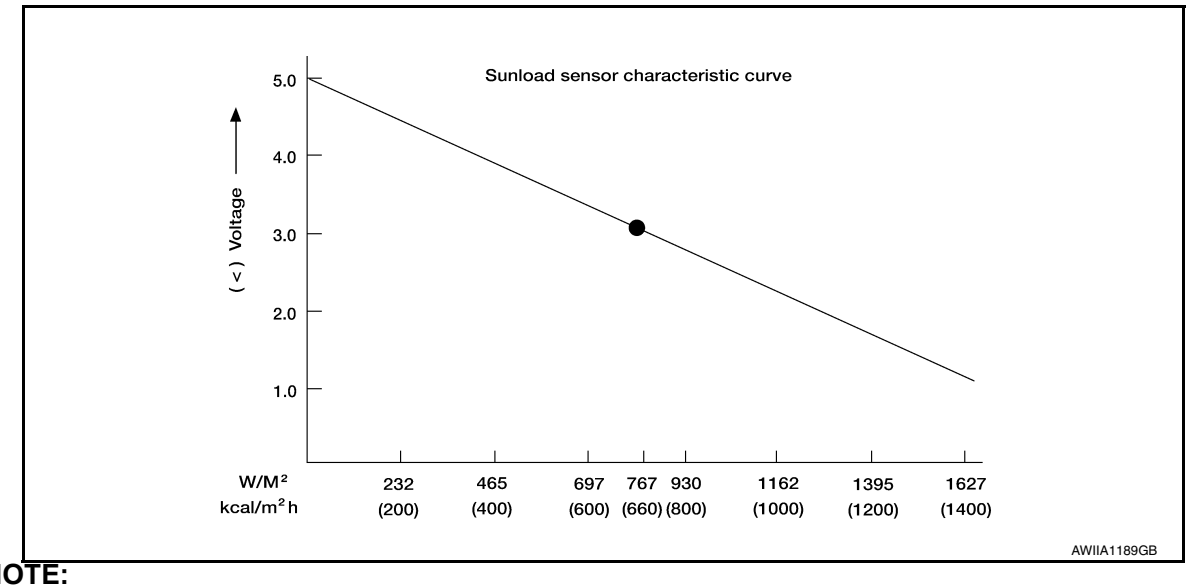
Component Inspection

INFOID:0000000010050985

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-103, "Removal and Installation".

B2632, B2633 AIR MIX DOOR MOTOR (DRIVER SIDE)

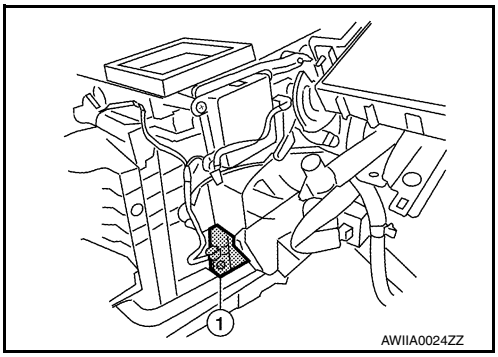
Description

INFOID:0000000010050986

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:0000000010050987

DTC DETECTION LOGIC

NOTE:

If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-30, "DTC Logic" or HAC-31, "DTC Logic".

DTC	Items (CONSULT 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

1. Using CONSULT, 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-30, "DTC Logic" or HAC-31, "DTC Logic".

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

YES >> Perform trouble diagnosis for the air mix door motor (driver side). Refer to HAC-45, "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. Refer to HAC-107, "AIR MIX DOOR MOTOR : Removal and Installation - Air Mix Door Motor (Driver Side)".

Diagnosis Procedure

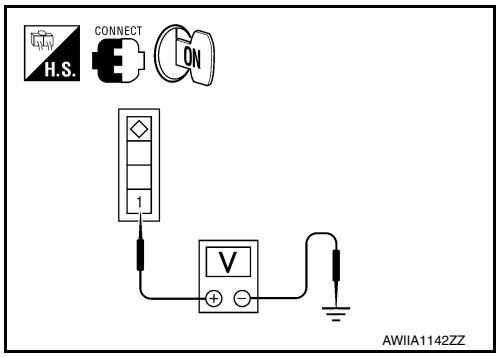
INFOID:0000000010050988

Regarding Wiring Diagram information, refer to HAC-67, "Wiring Diagram - With Color Display".

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

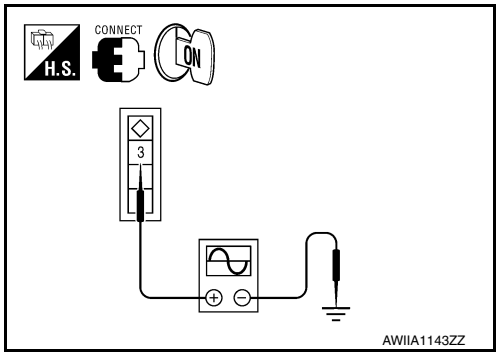


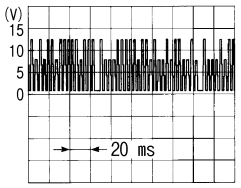
Is the inspection result normal?

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	

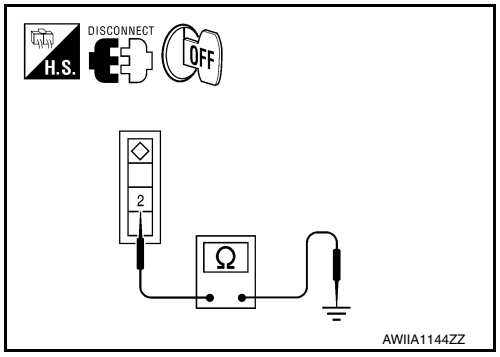
Is the inspection result normal?

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-107, "AIR MIX DOOR MOTOR : Removal and Installation - Air Mix Door Motor (Driver Side)".
NO >> Repair harness or connector.

B2634, B2635 AIR MIX DOOR MOTOR (PASSENGER SIDE)

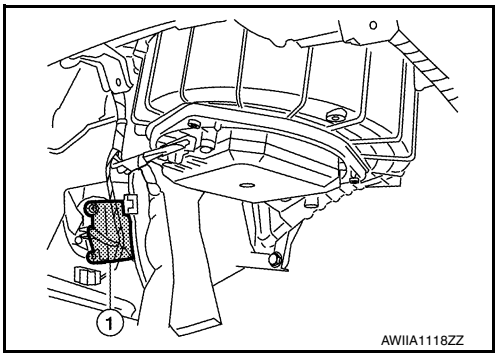
Description

INFOID:0000000010050989

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:0000000010050990

DTC DETECTION LOGIC

NOTE:

If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-30, "DTC Logic" or HAC-31, "DTC Logic".

DTC	Items (CONSULT 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

1. Using CONSULT, 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-30, "DTC Logic" or HAC-31, "DTC Logic".

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

YES >> Perform trouble diagnosis for the air mix door motor (passenger side). Refer to HAC-47, "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. Refer to HAC-107, "AIR MIX DOOR MOTOR : Removal and Installation - Air Mix Door Motor (Passenger Side)".

Diagnosis Procedure

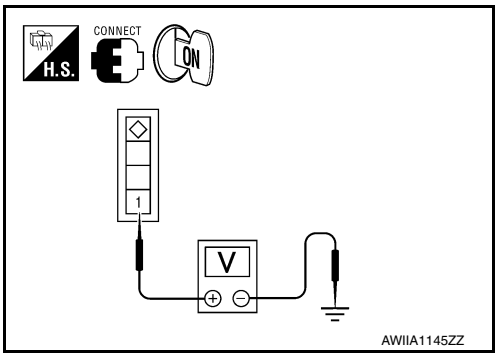
INFOID:0000000010050991

Regarding Wiring Diagram information, refer to HAC-67, "Wiring Diagram - With Color Display".

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

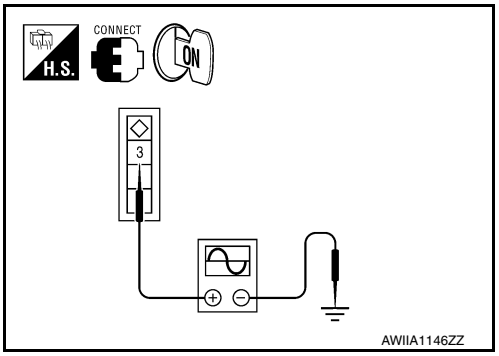


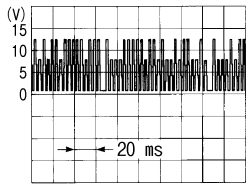
Is the inspection result normal?

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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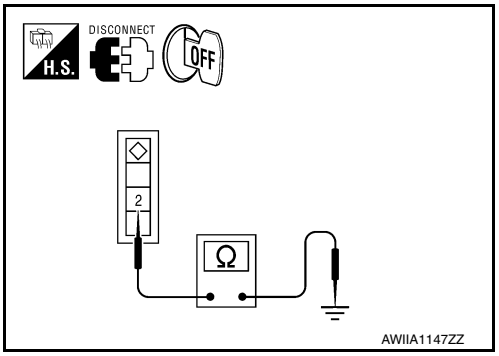
Is the inspection result normal?

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-107, "AIR MIX DOOR MOTOR : Removal and Installation - Air Mix Door Motor (Passenger Side)".
NO >> Repair harness or connector.

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

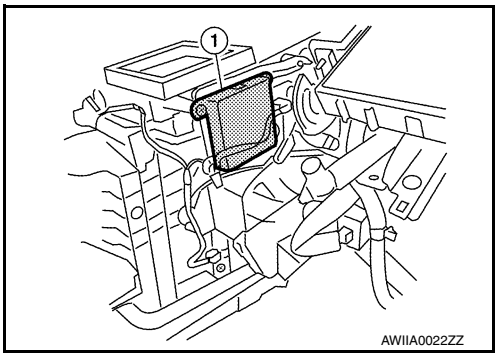
Description

INFOID:0000000010050992

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:0000000010050993

DTC DETECTION LOGIC

NOTE:

If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-30, "DTC Logic" or HAC-31, "DTC Logic".

DTC	Items (CONSULT 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

1. Using CONSULT, 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-30, "DTC Logic" or HAC-31, "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-49, "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-9, "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-107, "MODE DOOR MOTOR : Removal and Installation".

Diagnosis Procedure

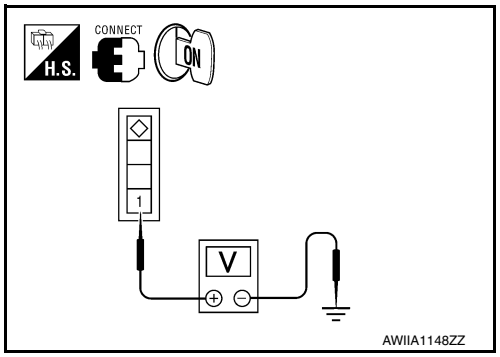
INFOID:0000000010050994

Regarding Wiring Diagram information, refer to HAC-67, "Wiring Diagram - With Color Display".

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

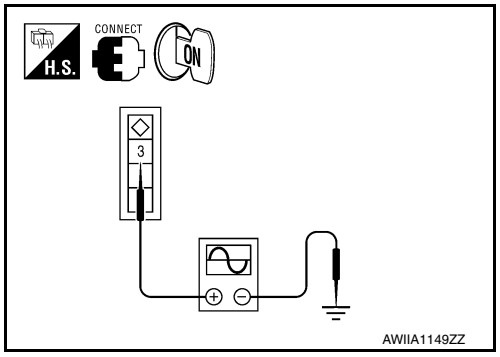


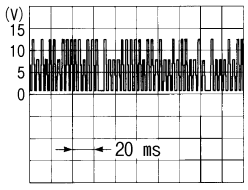
Is the inspection result normal?

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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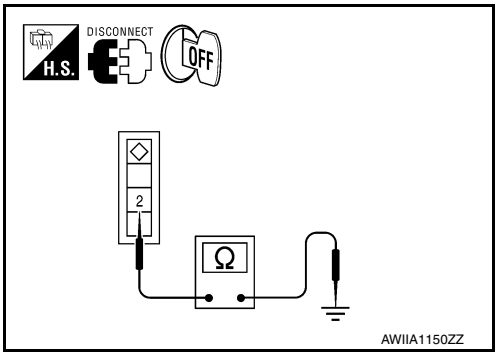
Is the inspection result normal?

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-107, "MODE DOOR MOTOR : Removal and Installation".

NO >> Repair harness or connector.

B263D, B263E, B263F INTAKE DOOR MOTOR

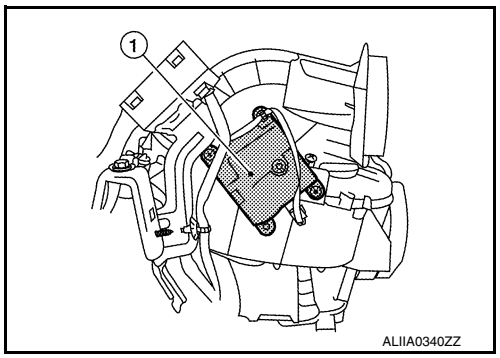
Description

INFOID:0000000010050995

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:0000000010050996

DTC DETECTION LOGIC

NOTE:

If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-30, "DTC Logic" or HAC-31, "DTC Logic".

DTC	Items (CONSULT 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

1. Using CONSULT, 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-30, "DTC Logic" or HAC-31, "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. Refer to HAC-107, "MODE DOOR MOTOR : Removal and Installation".

Diagnosis Procedure

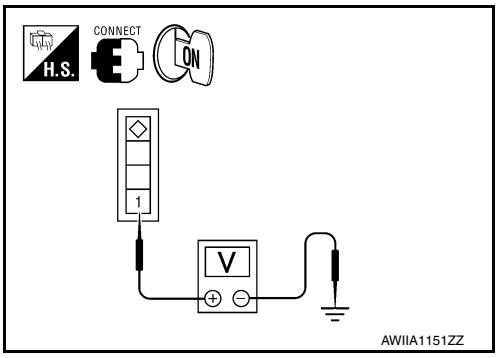
INFOID:0000000010050997

Regarding Wiring Diagram information, refer to HAC-67, "Wiring Diagram - With Color Display".

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

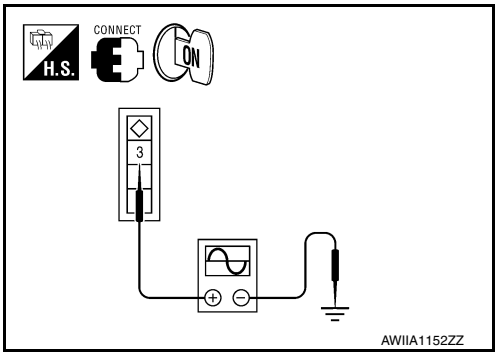


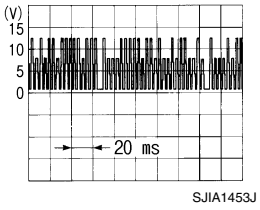
Is the inspection result normal?

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	

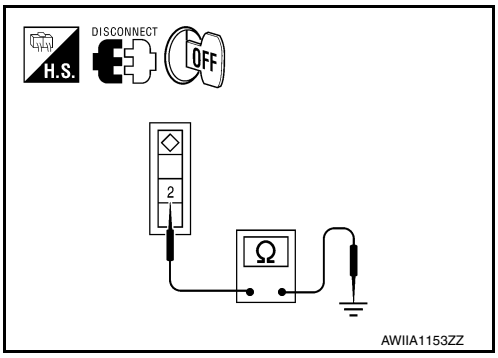
Is the inspection result normal?

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-107, "MODE DOOR MOTOR : Removal and Installation".
NO >> Repair harness or connector.

BLOWER MOTOR

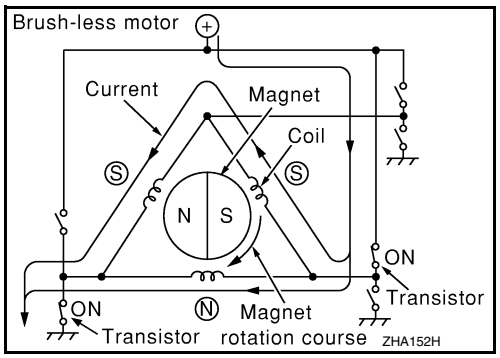
Description

INFOID:0000000010050998

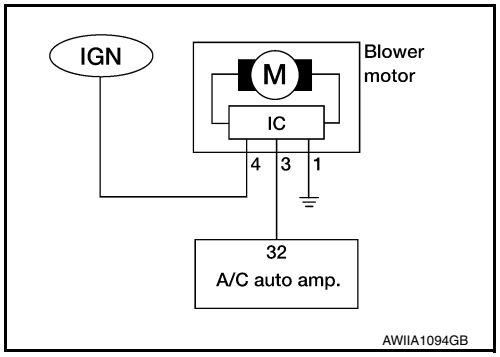
COMPONENT DESCRIPTION

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:0000000010050999

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:0000000010051000

Regarding Wiring Diagram information, refer to HAC-67, "Wiring Diagram - With Color Display".

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT

1. Using CONSULT, 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-30, "DTC Logic" or HAC-31, "DTC Logic".

Is any DTC No. displayed?

YES >> Perform diagnosis for the applicable DTC. Refer to HAC-65, "DTC Index".
NO >> GO TO 2.

2.CHECK WITH ACTIVE TEST OF CONSULT

1. Using CONSULT, perform “HVAC TEST”“ACTIVE TEST” of HVAC to check each output device. Refer to HAC-26, "CONSULT 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	OFF	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-62, "Terminal Arrangement" for fuse location.

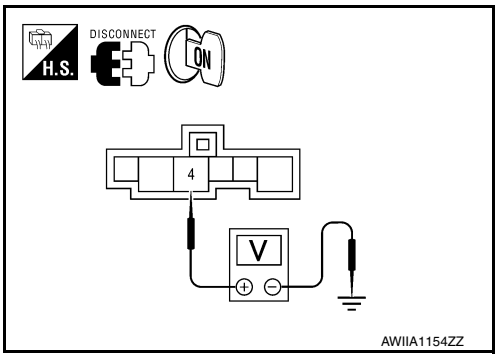
Is the inspection result normal?

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



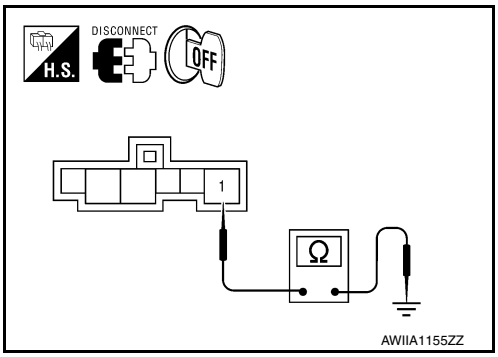
Is the inspection result normal?

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.



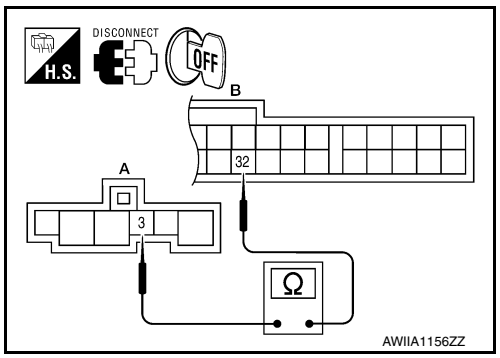
Is the inspection result normal?

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.

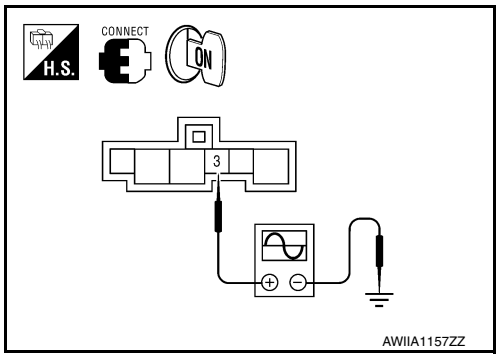


Is the inspection result normal?

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-16, "BLOWER MOTOR : Removal and Installation".
NO >> Replace the A/C auto amp. Refer to HAC-100, "Removal and Installation".

8. REPLACE FUSES

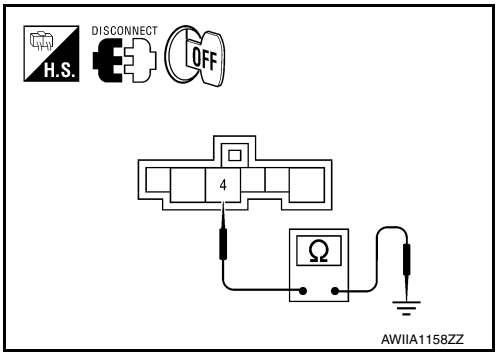
1. Replace fuses.
2. Activate the blower motor.

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-16, "BLOWER MOTOR : Removal and Installation".
NO >> Repair harness or connector.

10. CHECK POWER SUPPLY OF THE FRONT BLOWER MOTOR RELAY

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

2, 3 - Ground : Battery voltage

Is the inspection result normal?

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

11. CHECK FRONT BLOWER MOTOR RELAY GROUND CIRCUIT

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

1 - 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

Check continuity between blower motor harness connector M31 terminal 4 and front blower motor relay harness connector J-4 terminal 5.

5 - 4 : Continuity should exist.

Is the inspection result normal?

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

MAGNET CLUTCH

Description

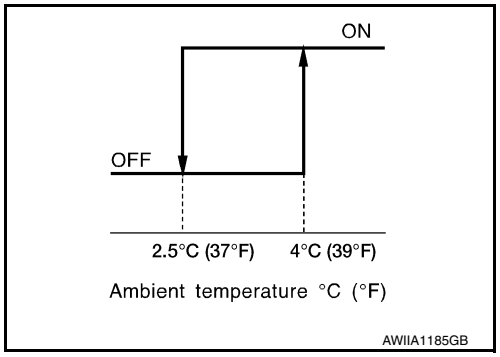
INFOID:0000000010051001

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:0000000010051002

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?

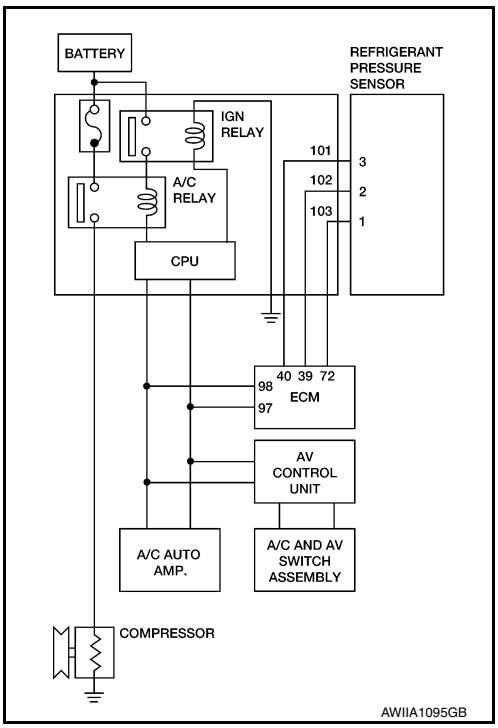
YES >> Inspection End.
NO >> Perform trouble diagnosis for the compressor. Refer to HAC-57, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000010051003

Regarding Wiring Diagram information, refer to HAC-67, "Wiring Diagram - With Color Display".

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-11, "Diagnosis Description".

Does it operate normally?

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

2. CHECK POWER SUPPLY FOR A/C COMPRESSOR

1. Turn ignition switch OFF.
2. Disconnect A/C compressor connector.
3. Start engine and press A/C switch.
4. 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-37, "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-64, "Fuse, Connector and Terminal Arrangement" for fuse location.

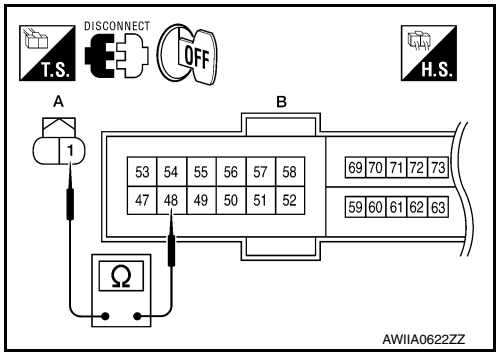
Is the inspection result normal?

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.



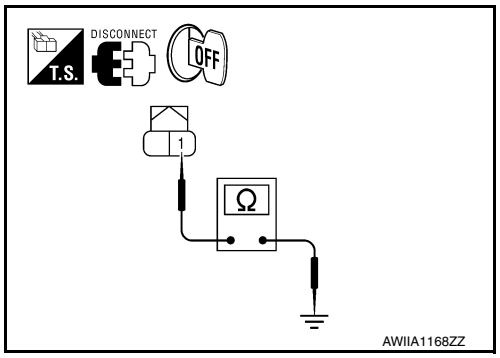
1 - 48 : Continuity should exist.

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-35, "Removal and Installation".
NO >> Repair harness or connector.

6. CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT

1. Using CONSULT, 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-30, "DTC Logic" or HAC-31, "DTC Logic".

Is any DTC No. displayed?

YES >> Perform diagnosis for the applicable DTC. Refer to HAC-65, "DTC Index".
NO >> GO TO 7.

7. CHECK A/C AUTO AMP. INPUT SIGNAL

Using CONSULT, check “On/Off” of “COMP REQ SIG” and “FAN REQ SIG” in “DATA MONITOR” of HVAC. Refer to HAC-26, "CONSULT Function".

A/C SWITCH ON : COMP REQ SIG On
A/C SWITCH OFF : COMP REQ SIG Off
FAN CONTROL DIAL ON : FAN REQ SIG On
FAN CONTROL DIAL OFF : FAN REQ SIG Off

Is the inspection result normal?

YES >> GO TO 8.
NO >> Replace A/C auto amp. Refer to HAC-100, "Removal and Installation".

8. CHECK REFRIGERANT PRESSURE SENSOR

Check refrigerant pressure sensor. Refer to EC-515, "Component Function Check".

Is the inspection result normal?

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

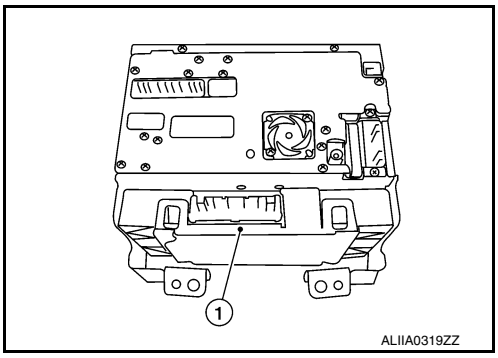
POWER SUPPLY AND GROUND CIRCUIT
A/C AUTO AMP.

A/C AUTO AMP. : Description

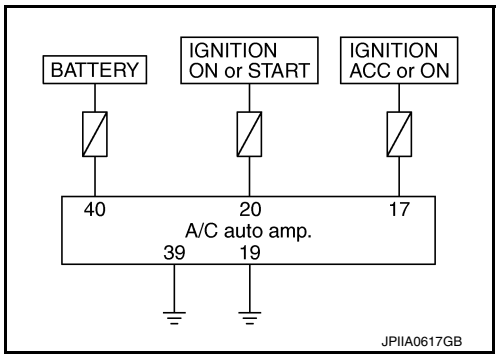
INFOID:0000000010051004

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:0000000010051005

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-60, "A/C AUTO AMP. : Diagnosis Procedure".

A/C AUTO AMP. : Diagnosis Procedure

INFOID:0000000010051006

Regarding Wiring Diagram information, refer to HAC-67, "Wiring Diagram - With Color Display".

1.CHECK FOR AUDIO DTCS WITH CONSULT

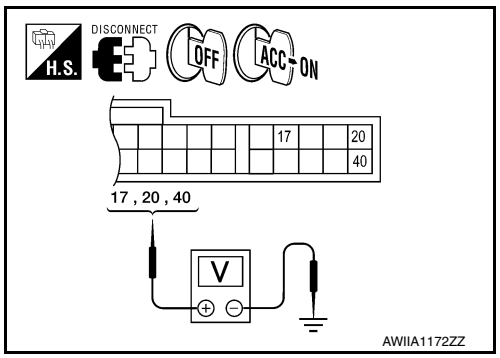
Using CONSULT, perform "SELF-DIAGNOSIS RESULTS" of MULTI AV.

Are there any audio DTCs present?

YES >> Go to audio DTC index. Refer to AV-437, "DTC Index" (color display with bose audio system without navigation), AV-607, "DTC Index" (color display with bose audio system and navigation) or AV-272, "DTC Index" (color display without bose audio system or navigation).
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-62, "Terminal Arrangement".

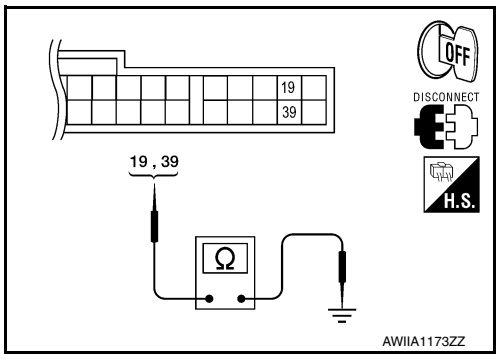
Is the inspection result normal?

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-100, "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:0000000010051007

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-62, "A/C AND AV SWITCH ASSEMBLY : Diagnosis Procedure".

A/C AND AV SWITCH ASSEMBLY : Diagnosis Procedure

INFOID:0000000010051008

Regarding Wiring Diagram information, refer to HAC-67, "Wiring Diagram - With Color Display".

1.CHECK FOR AUDIO DTCS WITH CONSULT

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

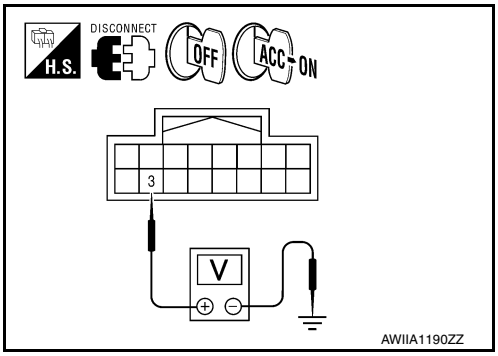
Are there any audio DTCs present?

YES >> Go to audio DTC index. Refer to AV-437, "DTC Index" (color display with bose audio system without navigation), AV-607, "DTC Index" (color display with bose audio system and navigation) or AV-272, "DTC Index" (color display without bose audio system or navigation).

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-62, "Terminal Arrangement".

Is the inspection result normal?

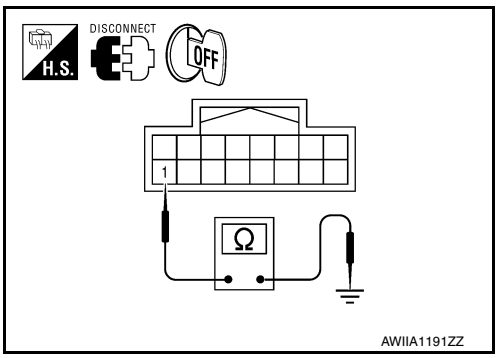
YES >> Check harness for open circuit. Repair or replace if necessary.

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-100, "Removal and Installation".

NO >> Repair the harnesses or connectors.

ECU DIAGNOSIS INFORMATION

A/C AUTO AMP.

Reference Value

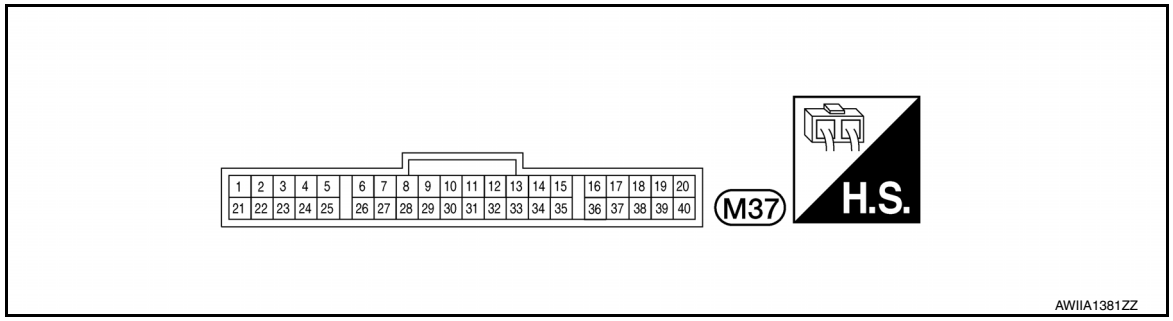
INFOID:0000000010051009

VALUES ON THE DIAGNOSIS TOOL

CONSULT MONITOR ITEM

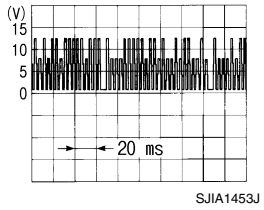
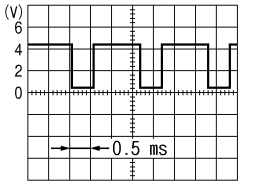
Monitor item	Condition		Value/Status
COMP REQ SIG	Engine: Run at idle after warming up	A/C switch: ON (Compressor operation status)	On
		A/C switch: OFF	Off
FAN REQ SIG	Engine: Run at idle after warming up	Blower fan: ON	On
		Blower fan: OFF	Off
AMB TEMP SEN	Ignition switch ON	—	22 - 131°F (–30 - 55°C)
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
27	—	—	—	—	Circuits not use for this model
32	L/Y	Blower motor control signal	ON	Fan speed:1st speed (manual)	 JSIIA0096ZZ
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

Fail-Safe

INFOID:0000000010051010

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:0000000010051011

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:0000000010051012

DTC	Items (CONSULT screen terms)	Reference
U1000	CAN COMM CIRCUIT	HAC-30, "DTC Logic"
U1010	CONTROL UNIT (CAN)	HAC-31, "DTC Logic"
B257B	AMB TEMP SEN (SHORT)	HAC-32, "DTC Logic"
B257C	AMB TEMP SEN (OPEN)	HAC-32, "DTC Logic"
B2578	IN CAR SENSOR (OUT OF RANGE [LOW])	HAC-35, "DTC Logic"
B2579	IN CAR SENSOR (OUT OF RANGE [HI])	HAC-35, "DTC Logic"
B2581	EVAP TEMP SEN (SHORT)	HAC-38, "DTC Logic"
B2582	EVAP TEMP SEN (OPEN)	HAC-38, "DTC Logic"
B2630*	SUNLOAD SEN (SHORT)	HAC-41, "DTC Logic"
B2631*	SUNLOAD SEN (OPEN)	HAC-41, "DTC Logic"
B2632	DR AIRMIX ACTR (SHORT)	HAC-44, "DTC Logic"
B2633	DR AIRMIX ACTR (OPEN)	HAC-44, "DTC Logic"
B2634	PASS AIRMIX ACTR (SHORT)	HAC-46, "DTC Logic"
B2635	PASS AIRMIX ACTR (OPEN)	HAC-46, "DTC Logic"
B2636	DR VENT DOOR FAIL	HAC-48, "DTC Logic"
B2637	DR B/L DOOR FAIL	HAC-48, "DTC Logic"
B2638	DR D/F1 DOOR FAIL	HAC-48, "DTC Logic"
B2639	DR DEF DOOR FAIL	HAC-48, "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-48, "DTC Logic"
B2655	B/L2 DOOR FAIL	HAC-48, "DTC Logic"

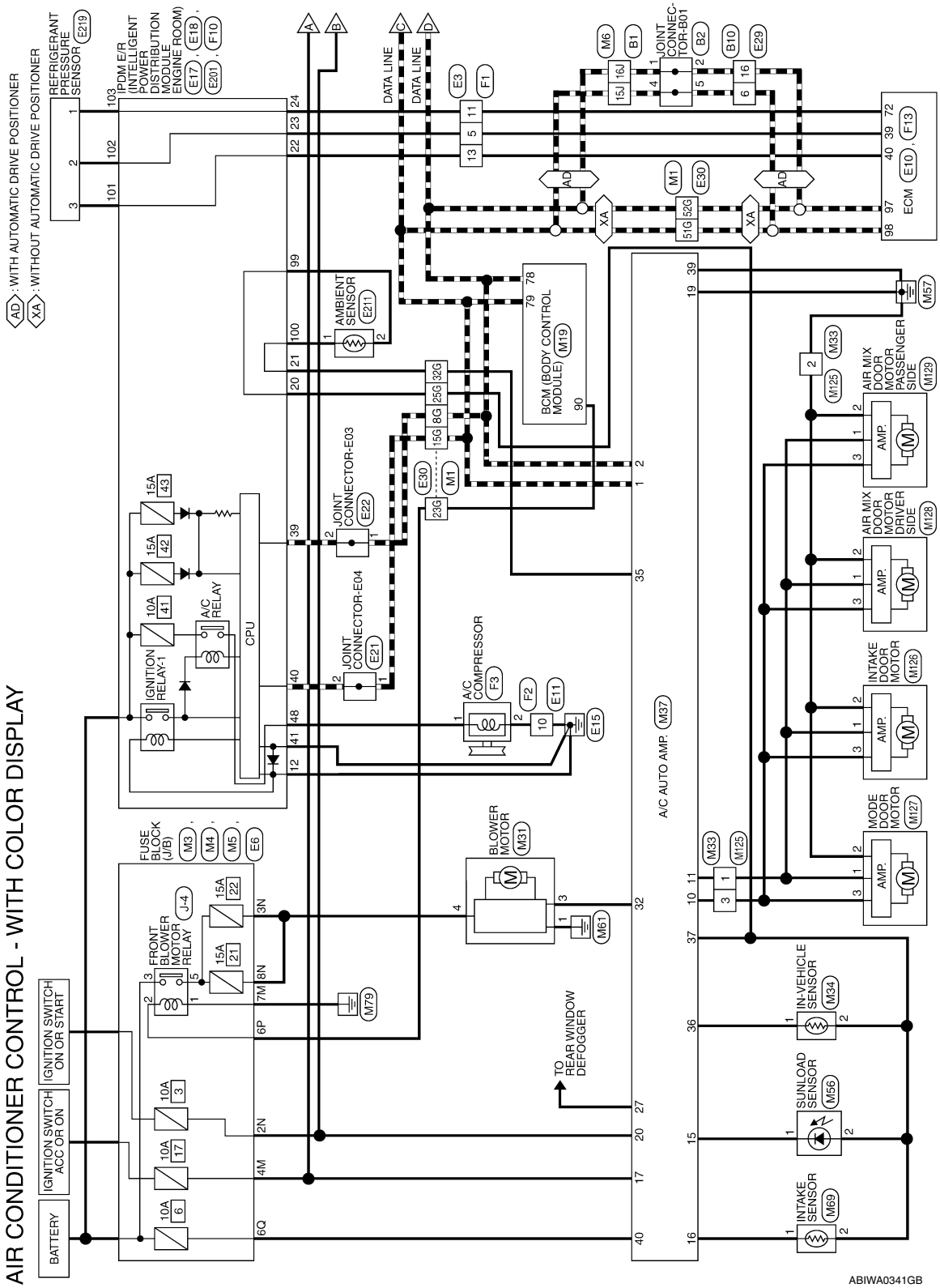
*: Perform self-diagnosis under direct sunlight. When performing indoors, aim a light (more than 60 W) at sunload sensor, otherwise self-diagnosis indicates a DTC even though the sunload sensor is functioning normally.

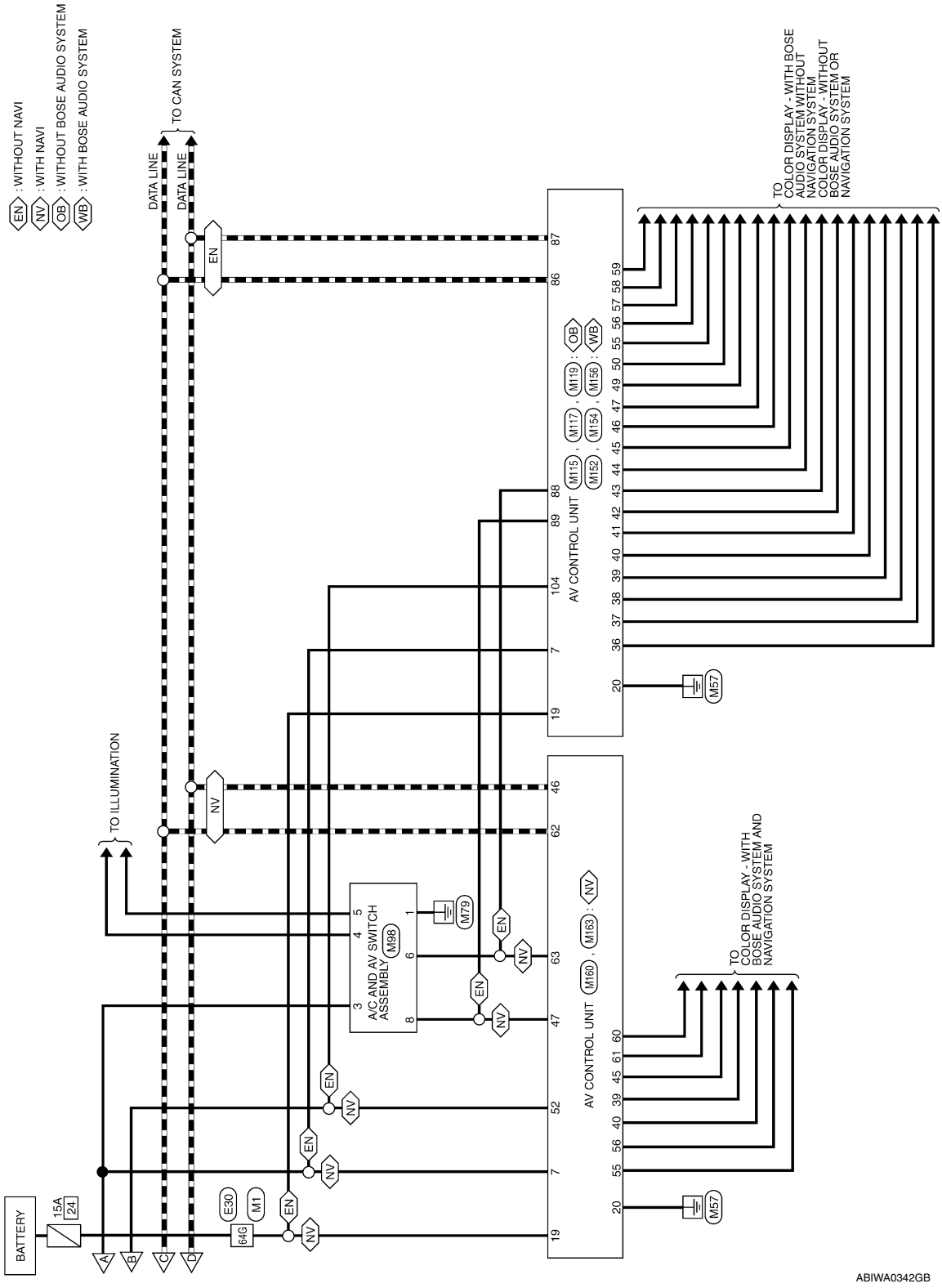
WIRING DIAGRAM

AIR CONDITIONER CONTROL

Wiring Diagram - With Color Display

INFOID:0000000010051013

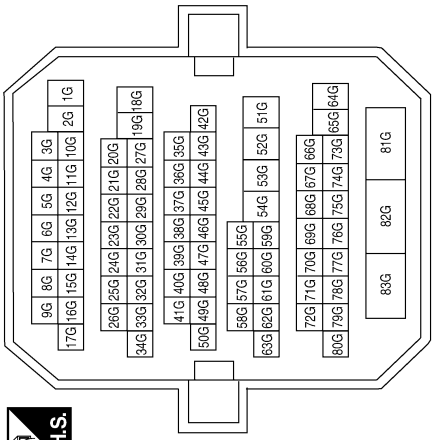



EN : WITHOUT NAVI
NV : WITH NAVI
OB : WITHOUT BOSE AUDIO SYSTEM
WB : WITH BOSE AUDIO SYSTEM
DATA LINE
DATA LINE
TO CAN SYSTEM
TO ILLUMINATION
BATTERY
15A
24
E30
64G
M1
A
B
C
D
EN
NV
A/C AND AV SWITCH ASSEMBLY
M98
M79
AV CONTROL UNIT
M160
M163
M115
M152
M117
M154
M119
M156
M57
TO COLOR DISPLAY - WITH BOSE AUDIO SYSTEM WITHOUT NAVIGATION SYSTEM
COLOR DISPLAY - WITHOUT BOSE AUDIO SYSTEM OR NAVIGATION SYSTEM
TO COLOR DISPLAY - WITH BOSE AUDIO SYSTEM AND NAVIGATION SYSTEM
ABIWA0342GB

AIR CONDITIONER CONTROL CONNECTORS - WITH COLOR DISPLAY

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

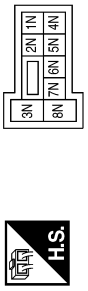
H.S.



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	–

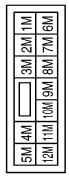
Connector No.	M4
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE

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	–

ABIIA0602GB

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	BLOWER FAN RELAY

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

H.S.

9J	8J	7J	6J	5J	4J	3J	2J	1J
17J	16J	15J	14J	13J	12J	11J	10J	
	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
	55J	54J	53J	52J	51J	50J	49J	
63J	62J	61J	60J	59J	58J	57J	56J	48J	47J
	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.	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	–

Connector No.	M33
Connector Name	WIRE TO WIRE
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.	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	–
3	L/Y	–
4	W/L	–

ABIIA1182GB

Connector No.	M56
Connector Name	SUNLOAD SENSOR
Connector Color	BLACK

H.S.

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

Terminal No.	Color of Wire	Signal Name
20	G	IGN
21	–	–
22	–	–
23	–	–
24	–	–
25	–	–
26	–	–
27	GR/W	RR DEF ON
28	–	–
29	–	–
30	–	–
31	–	–
32	L/Y	FAN PWM
33	–	–
34	–	–
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.

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

ABIIA0764GB

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.	M98
Connector Name	A/C AND AV SWITCH ASSEMBLY
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	B	–
3	V/Y	–
4	R/L	–
5	R/Y	–
6	L	–
8	P	–

Connector No.	M115
Connector Name	AV CONTROL UNIT (COLOR DISPLAY - WITHOUT BOSE AUDIO SYSTEM OR NAVIGATION SYSTEM)
Connector Color	WHITE

H.S.

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

Connector No.	M117
Connector Name	AV CONTROL UNIT (COLOR DISPLAY - WITHOUT BOSE AUDIO SYSTEM OR NAVIGATION SYSTEM)
Connector Color	WHITE

H.S.

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

Connector No.	M119
Connector Name	AV CONTROL UNIT (COLOR DISPLAY - WITHOUT BOSE AUDIO SYSTEM OR NAVIGATION SYSTEM)
Connector Color	WHITE

H.S.

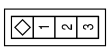
Terminal No.	Color of Wire	Signal Name
86	L	CAN-H
87	P	CAN-L
88	L	M-CAN H
89	P	M-CAN L
104	G	IGN

Terminal No.	Color of Wire	Signal Name
43	B	YS
44	BR	DISP IT
45	R	HP
46	LG	SIG GND
47	O	SIG VCC
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

ABIIA1183GB

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

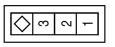
H.S.



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.	M127
Connector Name	MODE DOOR MOTOR
Connector Color	WHITE

H.S.

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

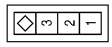
Connector No.	M128
Connector Name	AIR MIX DOOR MOTOR DRIVER SIDE
Connector Color	WHITE

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

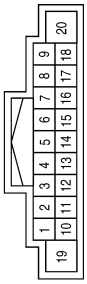
H.S.



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

Connector No.	M152
Connector Name	AV CONTROL UNIT (COLOR DISPLAY - WITH BOSE AUDIO SYSTEM WITHOUT NAVIGATION SYSTEM)
Connector Color	WHITE

H.S.



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

ABIIA1184GB

Connector No.	M154
Connector Name	AV CONTROL UNIT (COLOR DISPLAY - WITH BOSE AUDIO SYSTEM WITHOUT NAVIGATION SYSTEM)
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	W	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
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.	M156
Connector Name	AV CONTROL UNIT (COLOR DISPLAY - WITH BOSE AUDIO SYSTEM WITHOUT NAVIGATION SYSTEM)
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
86	L	CAN-H
87	P	CAN-L
88	L	M-CAN H
89	P	M-CAN L
104	G	IGN

Terminal No.	Color of Wire	Signal Name
56	B	NAVI COMP1 SYNC
60	SHIELD	SHIELD
61	BR	DISP IT
62	L	CAN-H
63	L	M-CAN H

Connector No.	M160
Connector Name	AV CONTROL UNIT (COLOR DISPLAY - WITH BOSE AUDIO SYSTEM AND NAVIGATION SYSTEM)
Connector Color	WHITE

H.S.

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

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

Connector No.	M163
Connector Name	AV CONTROL UNIT (COLOR DISPLAY - WITH BOSE AUDIO SYSTEM AND NAVIGATION SYSTEM)
Connector Color	WHITE

H.S.

33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64

Terminal No.	Color of Wire	Signal Name
39	W	NAVI COMP1+
40	R	NAVI COMP1-
45	Y	IT DISP
46	P	CAN-L
47	P	M-CAN L
52	G	IGN
55	SHIELD	NAVI COMP1 SHIELD

ABIIA1185GB

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	–

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	G	–
13	SB	–

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	GND (SIGNAL)

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	–

ABIIA1186GB

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
12	B	GND (POWER)
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	–

ABIIA1187GB

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.	F1
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
5	R	–
11	BR/W	–
13	G	–

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
18G	19G	20G	21G	22G	23G	24G	25G	26G
27G	28G	29G	30G	31G	32G	33G	34G
35G	36G	37G	38G	39G	40G	41G
42G	43G	44G	45G	46G	47G	48G	49G	50G
51G	52G	53G	54G	55G	56G	57G	58G
59G	60G	61G	62G	63G
64G	65G	66G	67G	68G	69G	70G	71G	72G
73G	74G	75G	76G	77G	78G	79G	80G
81G	82G	83G

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

H.S.

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

Connector No.	E211
Connector Name	AMBIENT SENSOR
Connector Color	BLACK

H.S.

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

ABIIA1188GB

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

H.S.

4	3		2	1
10	9	8	7	6	5

Terminal No.	Color of Wire	Signal Name
10	B	–

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

H.S.

1	2

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

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

H.S.

53	54	55	56	57	58
47	48	49	50	51	52

69	70	71	72	73		74	75	76	77	78		81	82
59	60	61	62	63		64	65	66	67	68		79	80

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

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

H.S.

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

Connector No.	F13
Connector Name	ECM
Connector Color	BROWN

H.S.

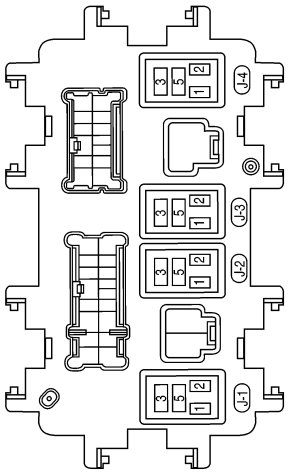
33	37	41	45	49	53	57	61	65	69	73	77
34	38	42	46	50	54	58	62	66	70	74	78
35	39	43	47	51	55	59	63	67	71	75	79
36	40	44	48	52	56	60	64	68	72	76	80

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

ABIIA1189GB

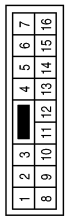
Connector No.	J-4
Connector Name	FUSE BLOCK (J/B) (FRONT BLOWER MOTOR RELAY)
Connector Color	–

T.S.



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

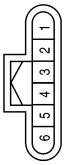
H.S.



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

Connector No.	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	–

ABIIA1197GB

SYMPTOM DIAGNOSIS

INSUFFICIENT COOLING

Component Function Check

INFOID:0000000010051014

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.

Is the inspection result normal?

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".

Does another symptom exist?

YES >> Refer to HA-21, "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, check the setting of “TEMP SET CORRECT” on “WORK SUPPORT” of HVAC. Refer to HAC-6, "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

1. Using CONSULT, 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-30, "DTC Logic" or HAC-31, "DTC Logic".

Is any DTC No. displayed?

YES >> Perform diagnosis for the applicable DTC. Refer to HAC-65, "DTC Index".
NO >> GO TO 7.

7. CHECK WITH ACTIVE TEST OF CONSULT

1. Using CONSULT, perform “HVAC TEST”“ACTIVE TEST” of HVAC to check each output device. Refer to HAC-26, "CONSULT 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	OFF	OFF	ON	ON

Does it operate normally?

YES >> GO TO 8.
NO-1 >> Air outlet does not change. Refer to HAC-49, "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-45, "Diagnosis Procedure" and HAC-47, "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-57, "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-486, "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-28, "Recycle Refrigerant" and HA-28, "Charge Refrigerant".

12. CHECK REFRIGERANT PRESSURE

Check refrigerant pressure with manifold gauge connected. Refer to EC-515, "Component Function Check".

Is the inspection result normal?

YES >> Perform diagnostic work flow. Refer to HAC-82, "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-82, "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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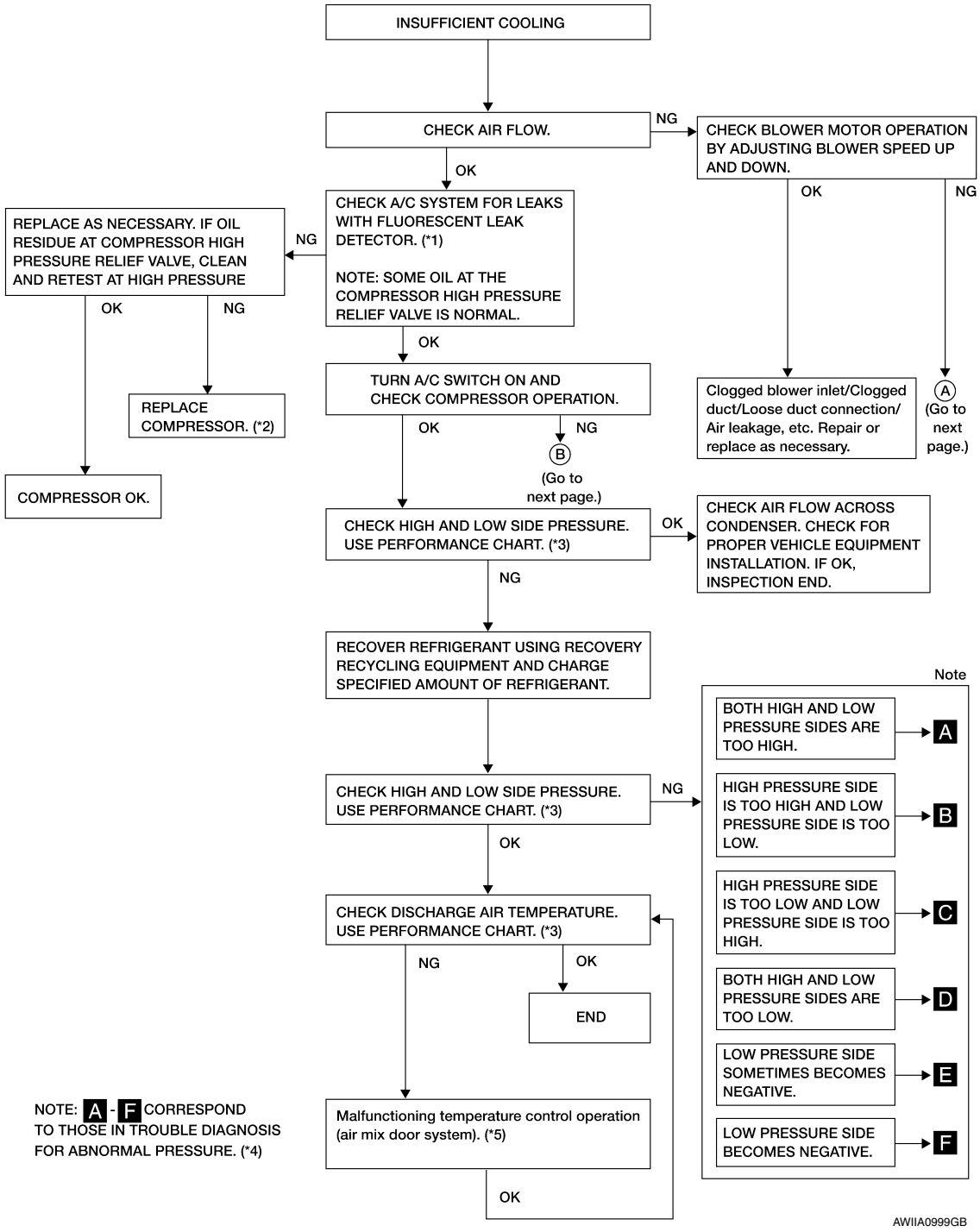


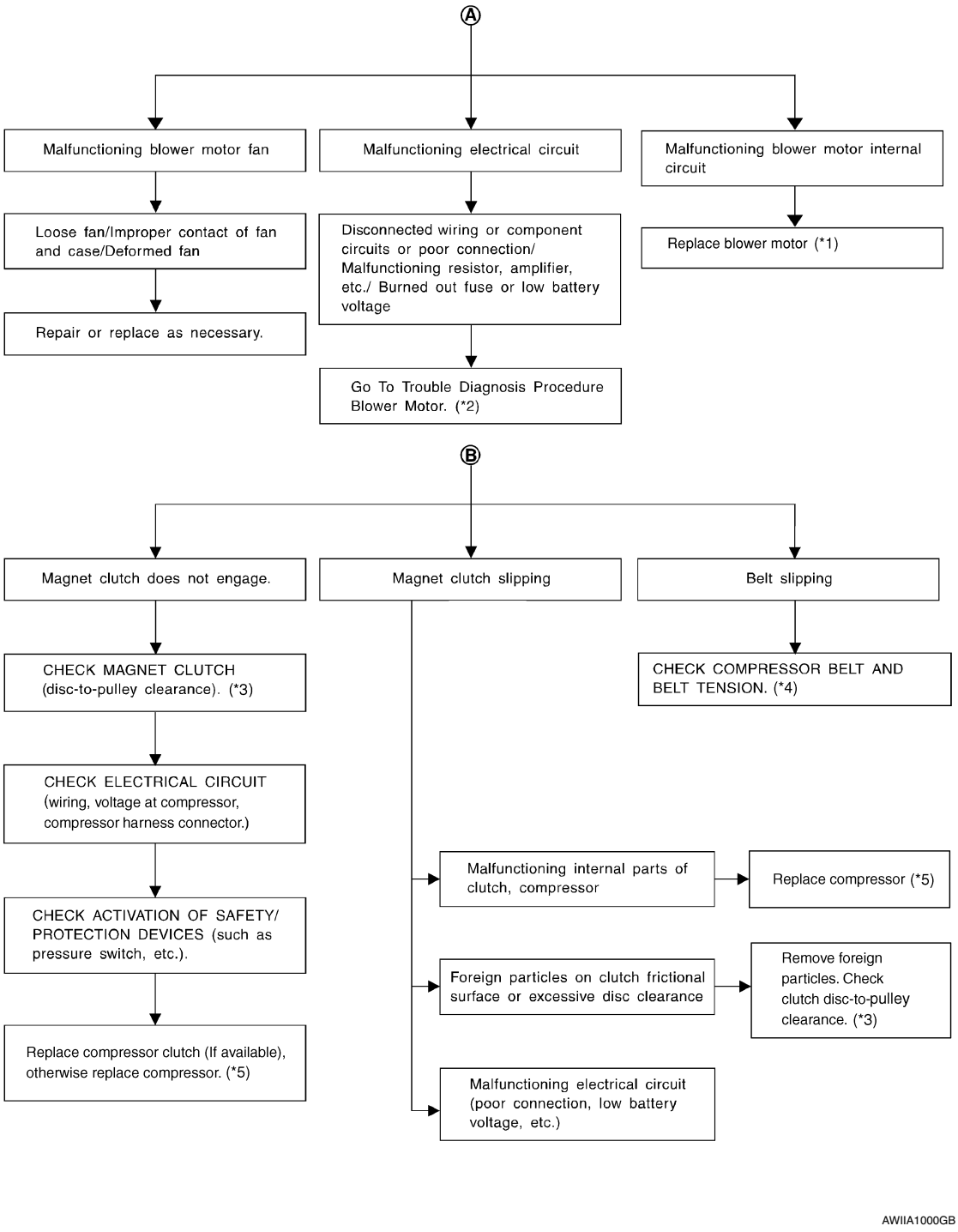
*1 HA-26, "Leak Test"

*2 HA-37, "Removal and Installation for Compressor"

*3 HAC-84, "Performance Chart"

*4 HA-19, "WITH COLOR DISPLAY : Trouble Diagnoses for Abnormal Pressure"

*5 HAC-45, "Diagnosis Procedure" (driver) or HAC-47, "Diagnosis Procedure" (passenger)



AWIIA1000GB

*1 VTL-16, "BLOWER MOTOR : Removal and Installation"
*2 HAC-53, "Diagnosis Procedure"
*3 HA-38, "Removal and Installation for Compressor Clutch"
*4 EM-14, "Checking Drive Belts"
*5 HA-37, "Removal and Installation for Compressor"

Performance Chart

INFOID:0000000010051016

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:0000000010051017

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.

Is the inspection result normal?

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".

Does another symptom exist?

YES >> Refer to HA-21, "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-10, "System Inspection".
2. Check hoses for leaks or kinks.
3. Check radiator cap. Refer to CO-10, "System Inspection".
4. Check for air in cooling system.

>> GO TO 5

5. CHECK SETTING OF TEMPERATURE SETTING TRIMMER

Using CONSULT, check the setting of “TEMP SET CORRECT” on “WORK SUPPORT” of HVAC. Refer to HAC-6, "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

1. Using CONSULT, 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-30, "DTC Logic" or HAC-31, "DTC Logic".

Is any DTC No. displayed?

YES >> Perform diagnosis for the applicable DTC. Refer to HAC-65, "DTC Index".
NO >> GO TO 7.

7. CHECK WITH ACTIVE TEST OF CONSULT

1. Using CONSULT, perform “HVAC TEST” in “ACTIVE TEST” of HVAC to check each output device. Refer to HAC-26, "CONSULT 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	OFF	OFF	ON	ON

Does it operate normally?

YES >> GO TO 8.
NO-1 >> Air outlet does not change. Refer to HAC-49, "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-45, "Diagnosis Procedure" and HAC-47, "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-57, "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. The inlet hose should be hot and the outlet hose should be warm.

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-22, "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-11, "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. The inlet hose should be hot and the outlet hose should be warm.

Is the inspection result normal?

YES >> System OK.
NO >> Replace heater core. Refer to HA-48, "HEATER CORE : Removal and Installation".

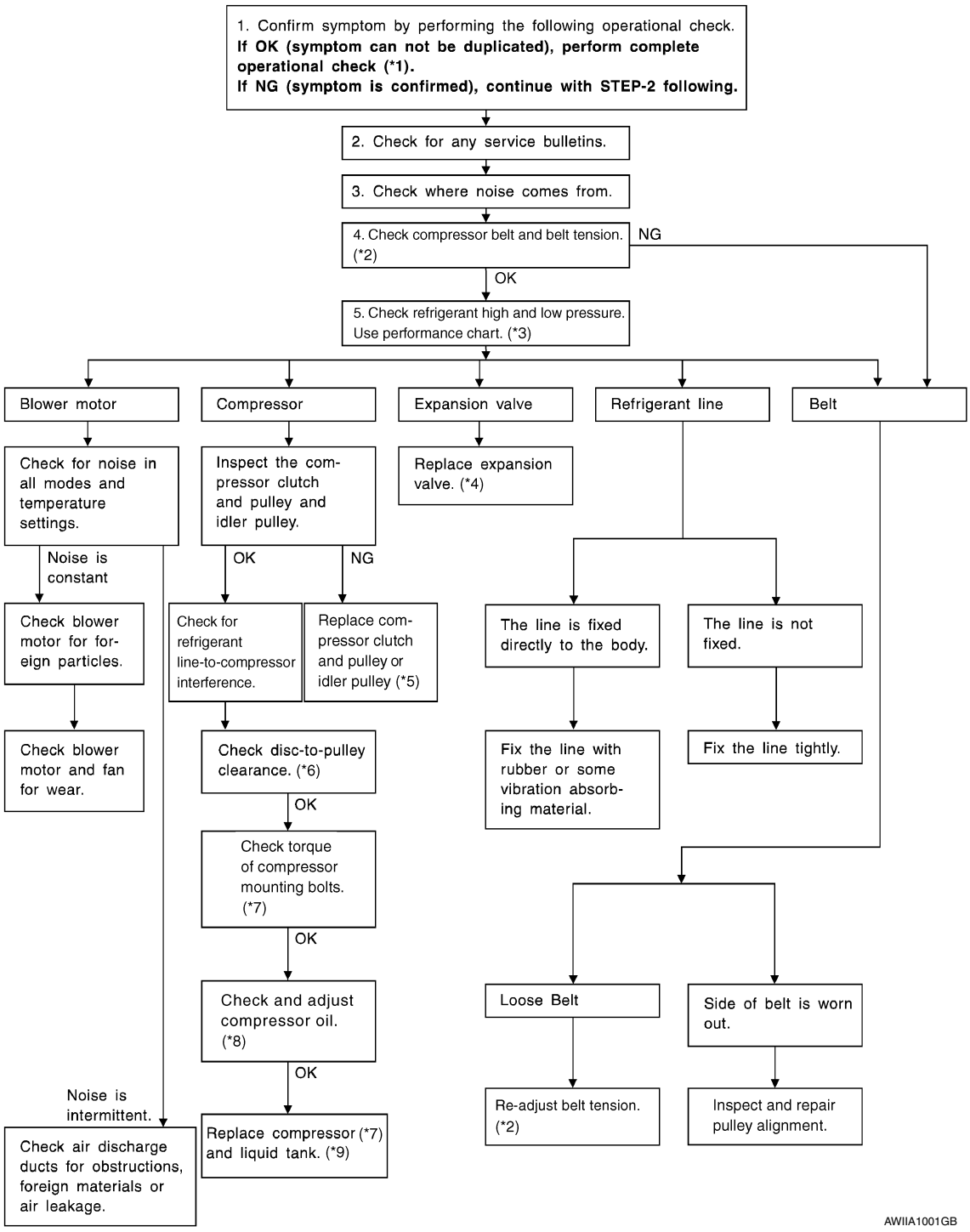
NOISE

Component Function Check

INFOID:0000000010051018

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

INSPECTION FLOW



*1	HAC-5, "Operational Check"	*2	EM-14, "Checking Drive Belts"	*3	HAC-84, "Performance Chart"
*4	HA-49, "EXPANSION VALVE : Removal and Installation for Expansion Valve"	*5	HA-38, "Removal and Installation for Compressor Clutch"	*6	HA-38, "Removal and Installation for Compressor Clutch"
*7	HA-37, "Removal and Installation for Compressor"	*8	HA-30, "Inspection"	*9	HA-45, "CONDENSER : Removal and Installation"

MEMORY FUNCTION DOES NOT OPERATE

Component Function Check

INFOID:0000000010051019

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-60, "A/C AUTO AMP. : Component Function Check".

PRECAUTION

PRECAUTIONS

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

INFOID:0000000009466341

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 WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

- **When working near the Airbag Diagnosis Sensor Unit or other Airbag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery and wait at least 3 minutes before performing any service.**

Precaution for Work

INFOID:0000000009466342

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

- Water soluble dirt:

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

- Oily dirt:

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

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

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

INFOID:0000000009466343

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. 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 or 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.

Precautions For Refrigerant System Service

INFOID:0000000009466344

WORKING WITH HFC-134a (R-134a)

CAUTION:

- **CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. Compressor malfunction is likely to occur if the refrigerants are mixed, refer to "CONTAMINATED REFRIGERANT" below. 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. Compressor malfunction is likely to occur if oil other than that specified is used.**
- **The specified HFC-134a (R-134a) oil rapidly absorbs moisture from the atmosphere. The following handling precautions must be observed:**

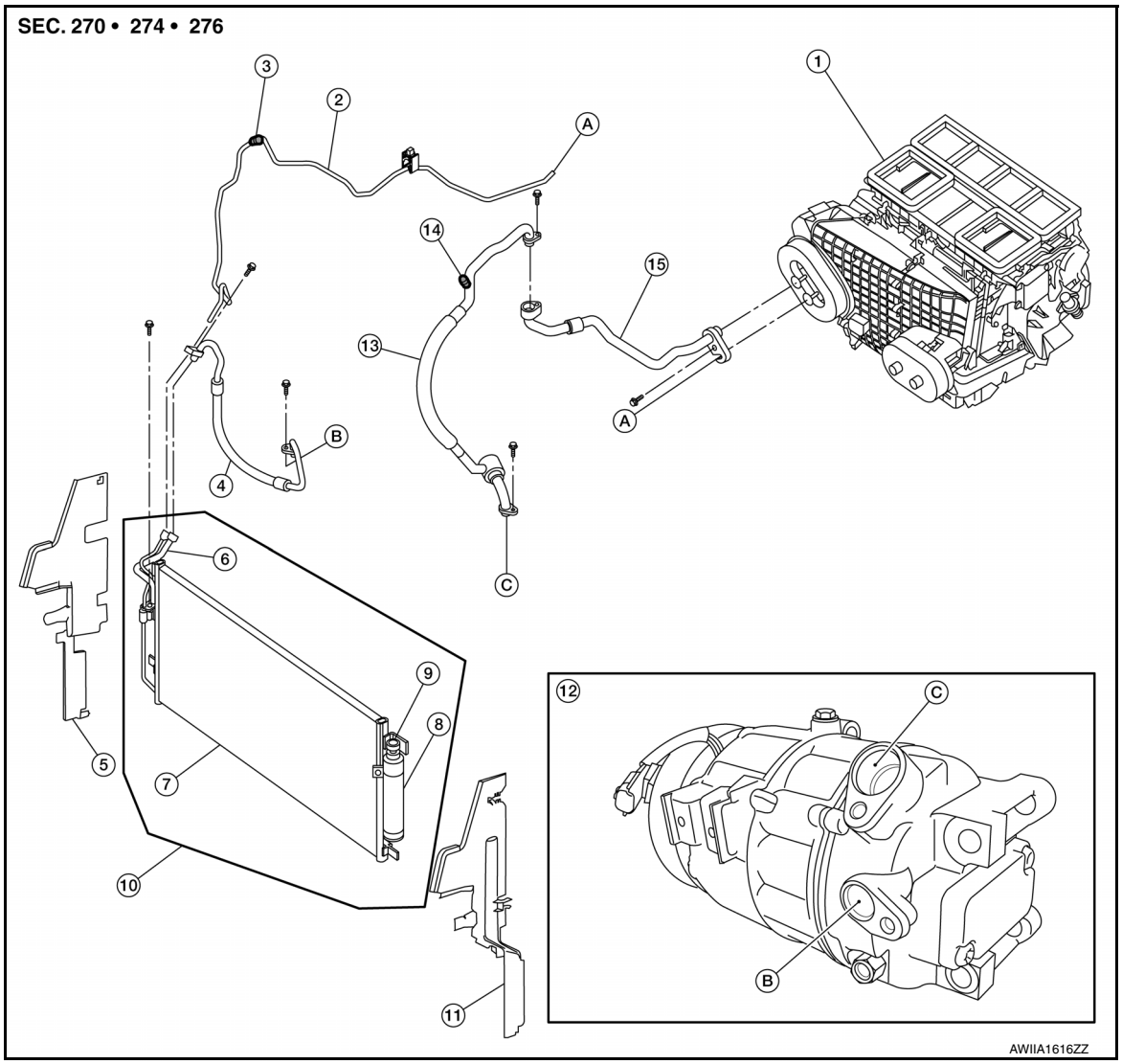
- Cap (seal) the component immediately to minimize the entry of moisture from the atmosphere when removing refrigerant components from a vehicle.
- Do not remove the caps (unseal) until just before connecting the components when installing refrigerant components to a vehicle. Connect all refrigerant loop components as quickly as possible to minimize the entry of moisture into system.
- Use only the specified oil from a sealed container. Reseal containers of oil immediately. Oil becomes moisture saturated and should not be used without proper sealing.
- Do not allow oil to come in contact with styrene foam parts. Damage may result.

GENERAL REFRIGERANT PRECAUTION

WARNING:

- **Do not breathe 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 J-2210 [HFC-134a (R-134a) recycling equipment] or J-2209 [HFC-134a (R-134a) recovery equipment]. Ventilate work area before resuming service if accidental system discharge occurs. Additional health and safety information may be obtained from refrigerant and oil manufacturers.**
- **Do not release refrigerant into the air. Use approved recovery/recycling recharging equipment to capture the refrigerant each 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 (126°F).**
- **Do not heat a refrigerant container with an open flame; Place the bottom of the container in a warm pail of water if container warming is required.**
- **Do not intentionally drop, puncture or incinerate refrigerant containers.**
- **Do not refrigerant away from open flames; poisonous gas is produced if refrigerant burns.**
- **Refrigerant displaces oxygen; therefore be certain to work in well ventilated areas to prevent suffocation.**
- **Do not pressure test or leakage 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.**

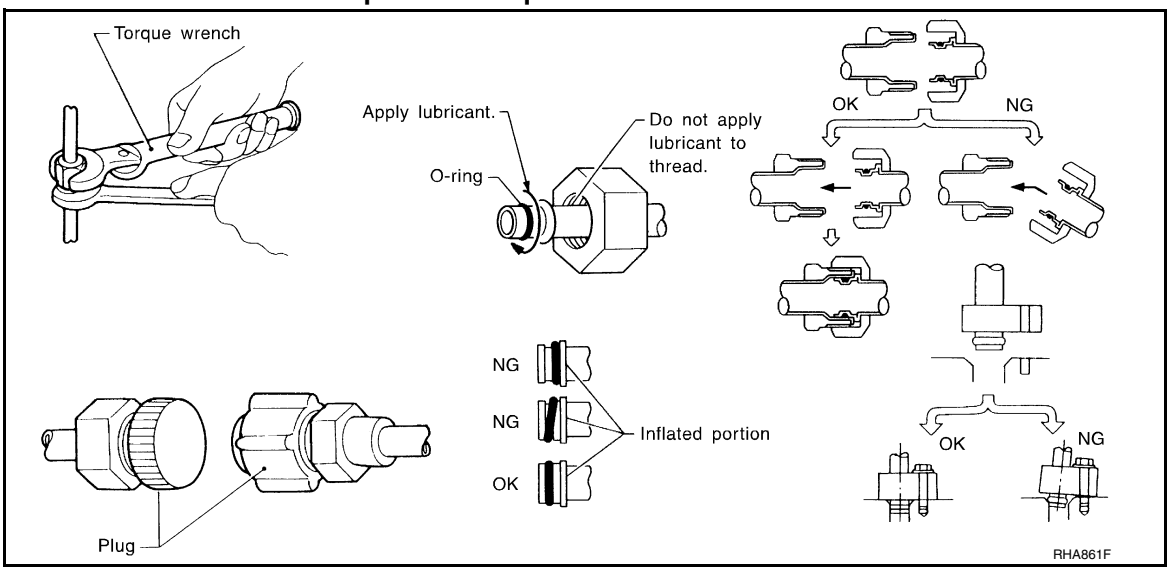
O-RING AND REFRIGERANT CONNECTION



1. Heater and cooling unit assembly	2. High-pressure pipe	3. High-pressure A/C service valve
4. High-pressure flexible hose	5. Air deflector (RH)	6. Junction pipe
7. Condenser	8. Liquid tank	9. Refrigerant pressure sensor
10. Condenser, liquid tank and refrigerant pressure sensor	11. Air deflector (LH)	12. Compressor
13. Low-pressure flexible hose	14. Low-pressure A/C service valve	15. Low-pressure pipe
A. High-pressure pipe to heater and cooling unit assembly	B. High-pressure flexible hose to compressor	C. Low-pressure flexible hose to compressor

A new type of refrigerant connection has been introduced to all refrigerant lines except the following locations:
- Expansion valve to evaporator
- Refrigerant pressure sensor to liquid tank

WARNING:
Check that 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:
Observe the following when replacing or cleaning refrigerant cycle components.
- **Store it in the same way as it is when mounted on the vehicle when the compressor is removed. Failure to do so will cause oil to enter the low-pressure chamber.**
- **Always use a torque wrench and a back-up wrench when connecting tubes.**
- **Immediately plug all openings to prevent entry of dust and moisture after disconnecting tubes.**
- **Connect the pipes at the final stage of the operation when installing an air conditioner in the vehicle. 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.**
- **Remove moisture thoroughly from the refrigeration system before charging the refrigerant.**
- **Always replace used O-rings.**
- **Apply oil to circle of the O-rings shown in illustration when connecting tube. Be careful not to apply oil to threaded portion.**
- **O-ring must be closely attached to the groove portion of tube.**
- **Be careful not to damage O-ring and tube when replacing the O-ring.**
- **Connect tube until a click can be heard. Then tighten the nut or bolt by hand. Check that the O-ring is installed to tube correctly.**
- **Perform leakage test and make sure that there is no leakage from connections after connecting line. Disconnect that line and replace the O-ring when the refrigerant leaking point is found. Then tighten connections of seal seat to the specified torque.**



CONTAMINATED REFRIGERANT
Take appropriate steps shown below if a refrigerant other than pure HFC-134a (R-134a) is identified in a vehicle:

- 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 service equipment and refrigerant supply.
- Suggest the customer return the vehicle to the location of previous service where the contamination may have occurred.
- In case of repairing, recover the refrigerant using only **dedicated equipment and containers. Do not recover contaminated refrigerant into the existing service equipment.** Contact a local refrigerant product retailer for available service if the facility does not have dedicated recovery equipment. 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.
- The air conditioner warranty is void if the vehicle is within the warranty period. Please contact Nissan Customer Affairs for further assistance.

COMPRESSOR

CAUTION:

- **Plug all openings to prevent moisture and foreign matter from entering.**
- **Store it in the same way as it is when mounted on the car when the compressor is removed.**
- **Follow "Maintenance of Oil Quantity in Compressor" exactly when replacing or repairing compressor. Refer to HA-30, "Description".**
- **Keep friction surfaces between clutch and pulley clean. Wipe it off by using a clean waste cloth moistened with thinner if the surface is contaminated with oil.**
- **Turn the compressor shaft by hand more than five turns in both directions after compressor service operation. This distributes oil equally inside the compressor. Let the engine idle and operate the compressor for one hour after the compressor is installed.**
- **Apply voltage to the new one and check for normal operation after replacing the compressor magnet clutch.**

LEAK DETECTION DYE

CAUTION:

- **The A/C system contains a fluorescent leak detection dye used for locating refrigerant leakages. An ultraviolet (UV) lamp is required to illuminate the dye when inspecting for leakages.**
- **Always wear fluorescence enhancing UV safety goggles to protect eyes and enhance the visibility of the fluorescent dye.**
- **The fluorescent dye leak detector is not a replacement for an electrical leak detector (SST: J-41995). The fluorescent dye leak detector should be used in conjunction with an electrical leak detector (SST: J-41995) to pin-point refrigerant leakages.**
- **Read and follow all manufacture's operating instructions and precautions prior to performing the work for the purpose of safety and customer's satisfaction.**
- **A compressor shaft seal should not necessarily be repaired because of dye seepage. The compressor shaft seal should only be repaired after confirming the leakage with an electrical leak detector (SST: J-41995).**
- **Always remove any remaining dye from the leakage area after repairs are completed to avoid a misdiagnosis during a future service.**
- **Do not allow dye to come into contact with painted body panels or interior components. Clean immediately with the approved dye cleaner if dye is spilled. 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 CFC-12 (R-12) A/C systems are different. Do not use HFC-134a (R-134a) leak detection dye in CFC-12 (R-12) A/C system or CFC-12 (R-12) leak detection dye in HFC-134a (R-134a) A/C system or A/C system damage may result.**
- **The fluorescent properties of the dye remains for three or more years unless a compressor malfunction occurs.**

NOTE:

Identification

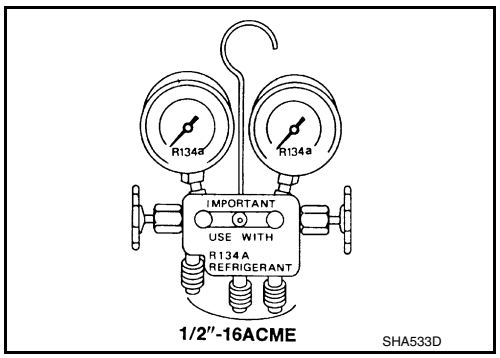
- Vehicles with factory installed fluorescent dye have a green label.
- Vehicles without factory installed fluorescent dye have a blue label.

Precaution for Service Equipment

INFOID:0000000009466345

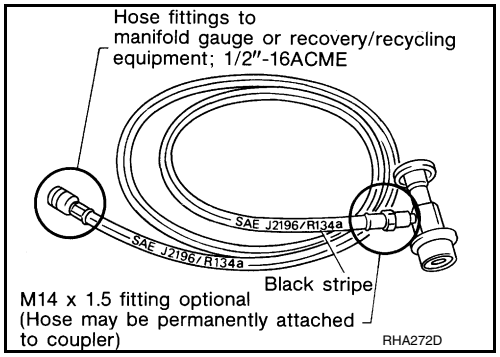
MANIFOLD GAUGE SET

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



SERVICE HOSES

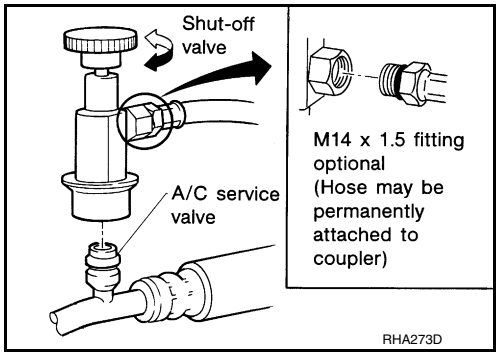
Be certain that the service hoses display the markings described (colored hose with black stripe). All hoses must include positive shut-off devices (either manual or automatic) near the end of the hoses opposite the manifold gauge.



SERVICE COUPLERS

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

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



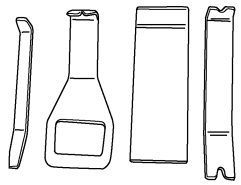
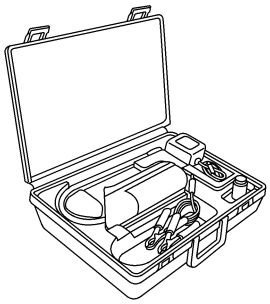
PREPARATION

PREPARATION

Special Service Tool

INFOID:0000000009466346

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

Tool number TechMate No.) Tool name	Description
— (J-46534) Trim Tool Set  AWJIA0483ZZ	Removing trim components
— (J-41995) Electronic refrigerant leak detector  AHA281A	Power supply: • DC 12V (battery terminal)

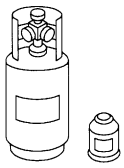
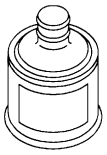
Commercial Service Tool

INFOID:0000000009466347

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

Sealant and/or Lubricant

INFOID:0000000009466348

Tool number (TechMate No.) Tool name		Description
— (—) HFC-134a (R-134a) Refrigerant	 S-NT196	Container color: Light blue Container marking: HFC-134a (R-134a) Fitting size: Thread size • large container 1/2”-16 ACME
— (—) NISSAN A/C System Oil Type S	 JMIIA1759ZZ	Type: Poly alkylene glycol oil (PAG), type S (DH-PS) Application: HFC-134a (R-134a) swash plate compressors Capacity: 40 m ℓ (1.4 US fl oz, 1.4 Imp fl oz)

REMOVAL AND INSTALLATION

CONTROL UNIT

Removal and Installation

INFOID:0000000009466349

A/C AND AV SWITCH ASSEMBLY

Removal and Installation

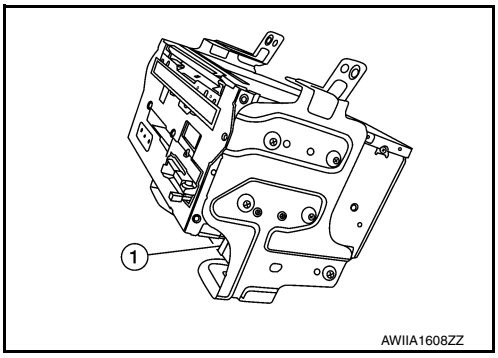
The A/C and AV switch assembly is located in cluster lid C.

- Refer to AV-481, "Removal and Installation" (BOSE W/COLOR DISPLAY).
- Refer to AV-652, "Removal and Installation" (BOSE W/COLOR DISPLAY W/NAVI).

A/C AUTO AMP.

Removal

1. Remove the AV control unit.
   - Refer to AV-481, "Removal and Installation" (BOSE W/COLOR DISPLAY).
   - Refer to AV-652, "Removal and Installation" (BOSE W/COLOR DISPLAY W/NAVI).
2. Remove the two A/C auto amp. bracket screws.
3. Remove the A/C auto amp. (1) from the bracket.



Installation

Installation is in the reverse order of removal.

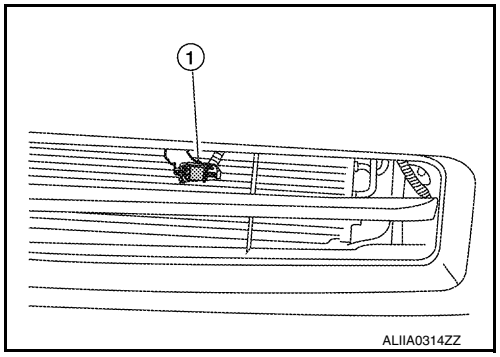
AMBIENT SENSOR

Removal and Installation

INFOID:0000000009466350

REMOVAL

1. From under the vehicle, disconnect the harness connector from the ambient sensor.
2. Release the two ambient sensor clips and remove the ambient sensor (1).



INSTALLATION

Installation is in the reverse order of removal.

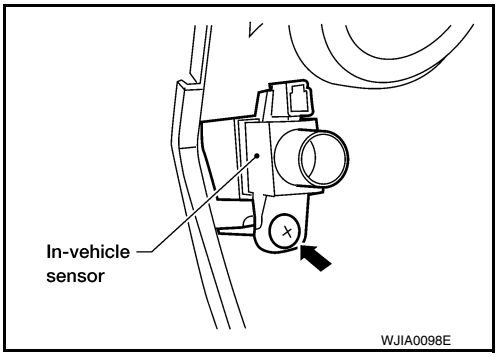
IN-VEHICLE SENSOR

Removal and Installation

INFOID:0000000009466351

REMOVAL

1. Remove the instrument lower panel LH. Refer to IP-19, "Removal and Installation".
2. Remove the in-vehicle sensor screw and the in-vehicle sensor.



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

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

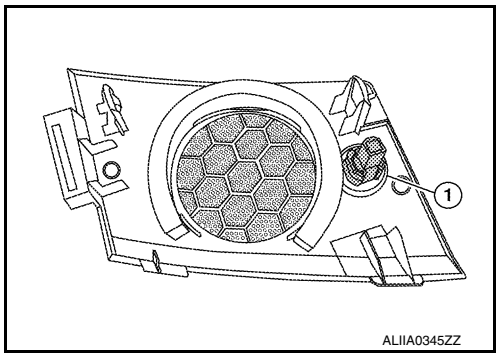
SUNLOAD SENSOR

Removal and Installation

INFOID:0000000009466352

REMOVAL

1. Remove the front LH speaker grille from the instrument panel. Refer to IP-10, "Exploded View".
2. Disconnect the harness connector from the sunload sensor.
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.

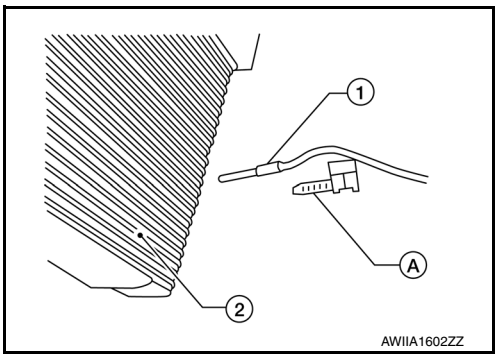
INTAKE SENSOR

Removal and Installation

INFOID:0000000009466353

REMOVAL

1. Remove the evaporator (2). Refer to HA-48, "EVAPORATOR : Removal and Installation".
2. Release the intake sensor clip (A), then remove the intake sensor (1).
   CAUTION:
   - **Mark the mounting position of the intake sensor.**
   - **Do not damage the evaporator core.**



INSTALLATION

Installation is in the reverse order of removal.

REFRIGERANT PRESSURE SENSOR

Removal and Installation

INFOID:0000000009466354

REMOVAL

1. Discharge the refrigerant. Refer to HA-28, "Recycle Refrigerant".
2. Remove the core support upper cover.
3. Disconnect the harness connector from the refrigerant pressure sensor.
4. Remove the refrigerant pressure sensor.
   CAUTION:
   Cap or wrap the opening of the refrigerant pressure sensor with suitable material such as vinyl tape to avoid the entry of air.

INSTALLATION

Installation is in the reverse order of removal.

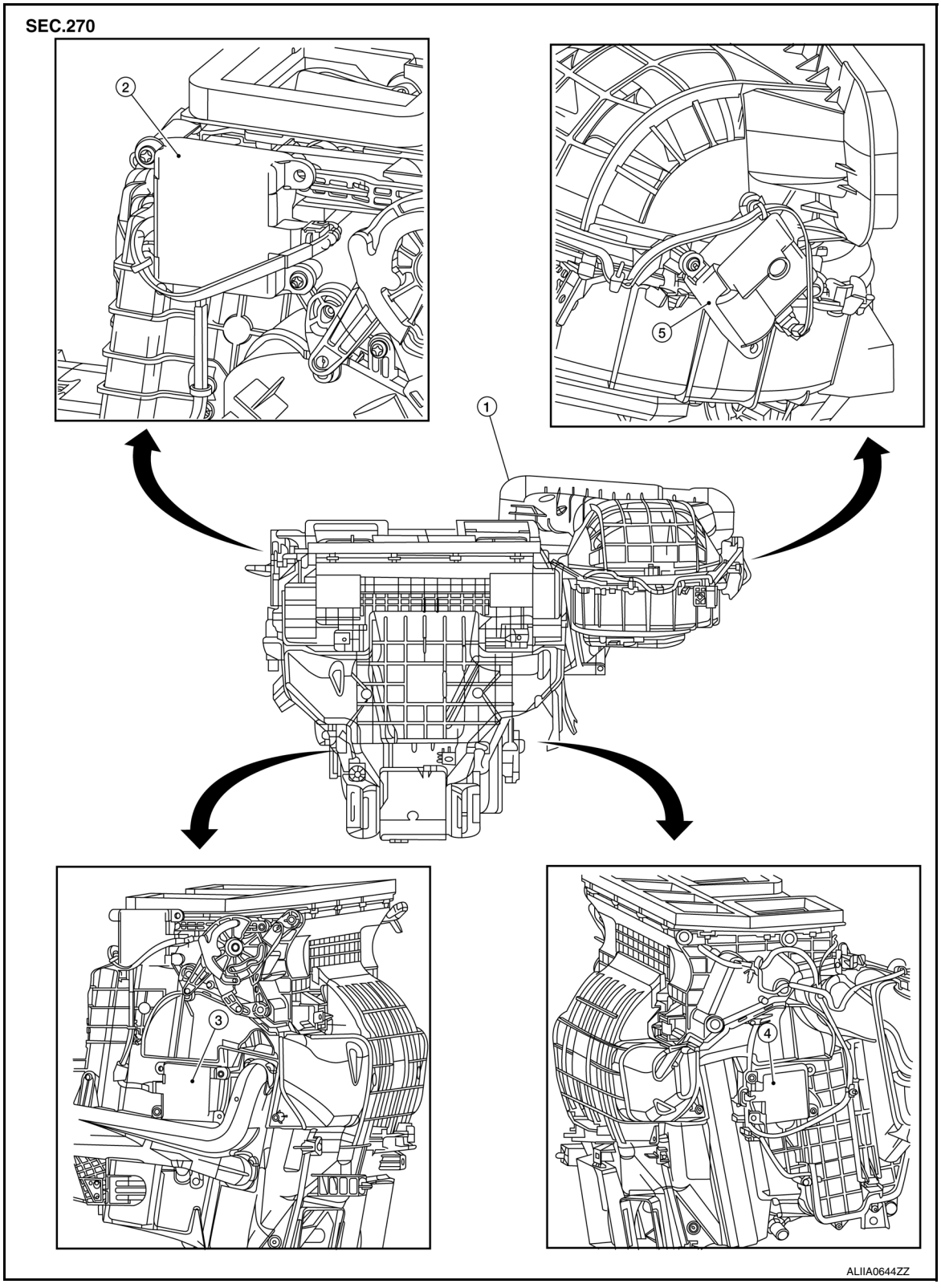
CAUTION:

- **Do not reuse O-ring.**
- **Apply A/C oil to the O-ring of the refrigerant pressure sensor for installation.**
- **After charging refrigerant, check for leaks. Refer to HA-26, "Leak Test".**

DOOR MOTOR

Exploded View

INFOID:0000000009466355



1. Heating and cooling unit assembly
2. Mode door motor
3. Air mix door motor (driver side)
4. Air mix door motor (passenger side)
5. Intake door motor

INTAKE DOOR MOTOR

INTAKE DOOR MOTOR : Removal and Installation

INFOID:0000000009466356

REMOVAL

1. Remove the glove box assembly. Refer to VTL-16, "BLOWER UNIT : Removal and Installation".
2. Remove the remote keyless entry receiver and bracket to reposition out of the way.
3. Disconnect the harness connector from the intake door motor.
4. Remove the intake door motor screws and intake door motor from the blower unit.

INSTALLATION

Installation is in the reverse order of removal.

MODE DOOR MOTOR

MODE DOOR MOTOR : Removal and Installation

INFOID:0000000009466357

REMOVAL

1. Remove the combination meter. Refer to MWI-122, "Removal and Installation".
2. Remove the BCM. Refer to BCS-79, "Removal and Installation".
3. Disconnect the harness connector from the mode door motor.
4. Remove the mode door motor screws and the mode door motor.

INSTALLATION

Installation is in the reverse order of removal.

AIR MIX DOOR MOTOR

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

INFOID:0000000009466358

REMOVAL

1. Remove the instrument lower panel LH. Refer to IP-19, "Removal and Installation".
2. Remove the upper floor connecting duct (LH). Refer to HA-47, "Exploded View".
3. Remove the tire pressure receiver.
4. Disconnect the harness connector from the air mix door motor.
5. Remove the air mix door motor screws and the air mix door motor (driver side).

INSTALLATION

Installation is in the reverse order of removal.

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

INFOID:0000000009466359

REMOVAL

1. Remove the glove box assembly. Refer to IP-19, "Removal and Installation".
2. Remove the upper floor connecting duct (RH). Refer to HA-47, "Exploded View".
3. Disconnect the harness connector from the air mix door motor.
4. Remove the air mix door motor screws and the air mix door motor (passenger side).

INSTALLATION

Installation is in the reverse order of removal.

BASIC INSPECTION

INSPECTION AND ADJUSTMENT

Operational Check

INFOID:0000000010051105

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-165, "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-157, "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-114, "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-153, "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-156, "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-161, "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-183, "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-189, "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-25, "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-25, "WITH MONOCHROME DISPLAY : Symptom Matrix Chart" and perform the appropriate diagnosis.

Temperature Setting Trimmer

INFOID:0000000010051106

Description

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

How to set

Using CONSULT, perform “TEMP SET CORRECT” in “WORK SUPPORT” of HVAC.

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

NOTE:

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

Foot Position Setting Trimmer

INFOID:0000000010051107

Description

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

How to set

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

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

NOTE:

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

Inlet Port Memory Function (FRE)

INFOID:0000000010051108

Description

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

How to set

Using CONSULT, perform “FRE MEMORY SET” in “WORK SUPPORT” of HVAC.

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

NOTE:

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

Inlet Port Memory Function (REC)

INFOID:0000000010051109

Description

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

How to set

Using CONSULT, perform “REC MEMORY SET” in “WORK SUPPORT” of HVAC.

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

NOTE:

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

SYSTEM DESCRIPTION

COMPRESSOR CONTROL FUNCTION

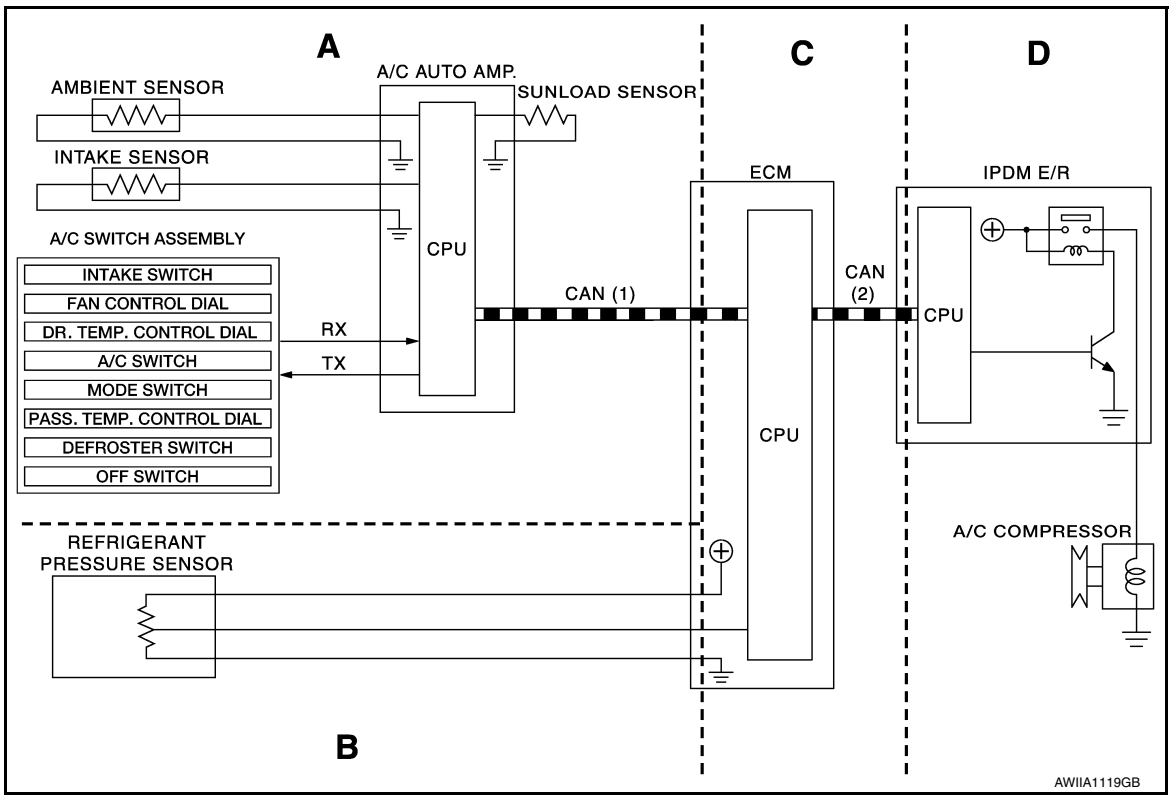
Description

INFOID:0000000010051110

PRINCIPLE OF OPERATION

A/C 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

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

Functional initial inspection chart

Location		A	B	C	D
CONSULT	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:0000000010051111

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**

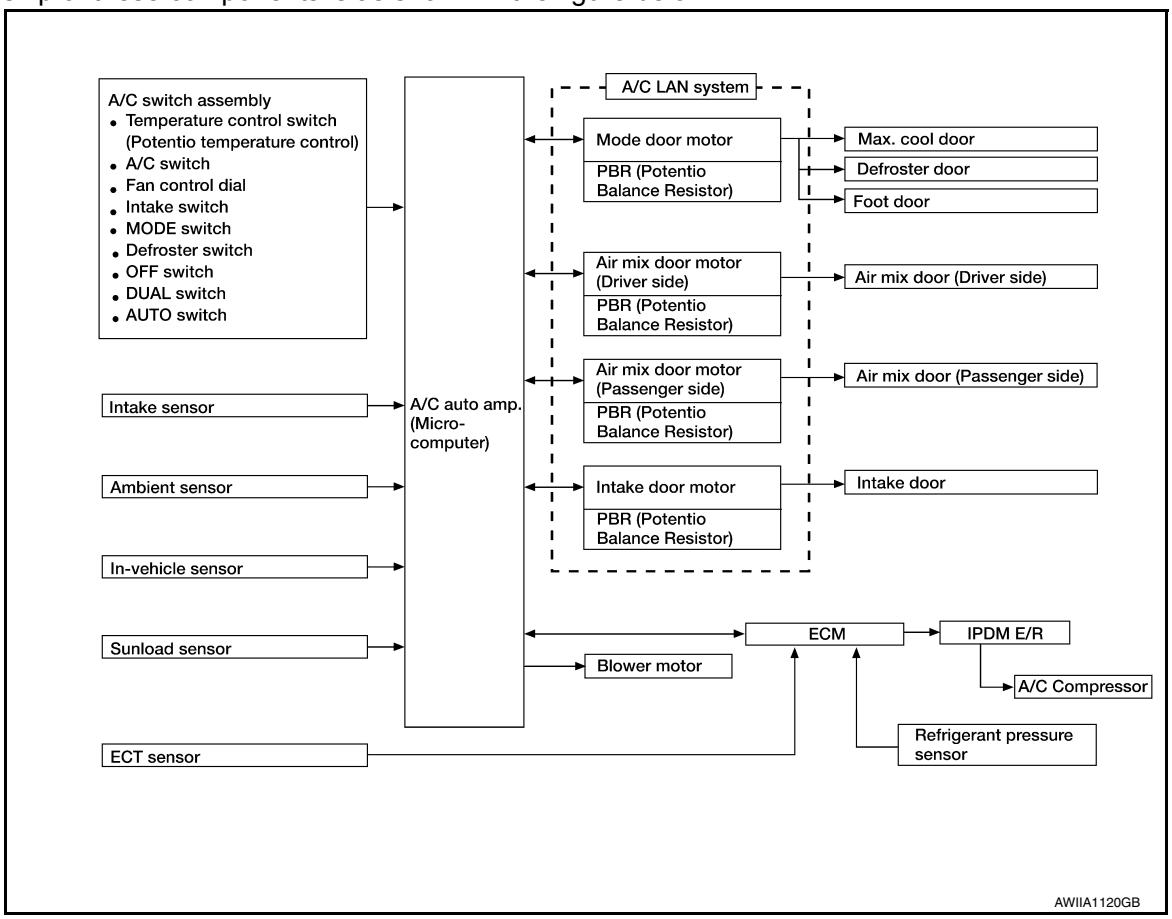
AUTOMATIC AIR CONDITIONER SYSTEM

System Diagram

INFOID:0000000010051112

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:



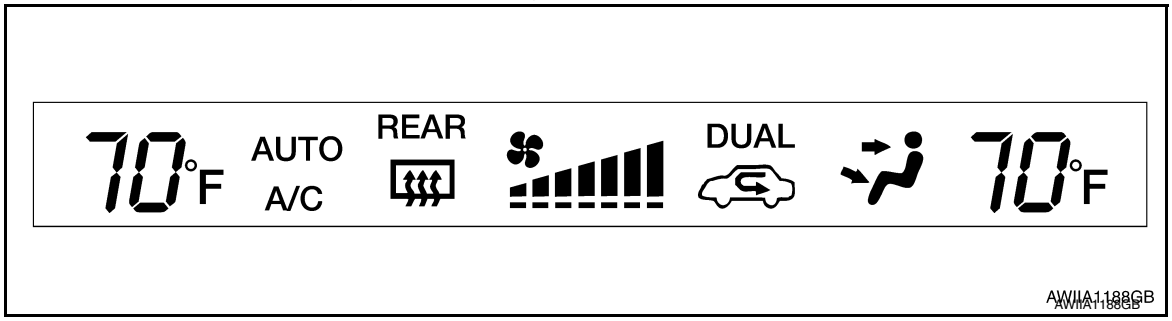
System Description

INFOID:0000000010051113

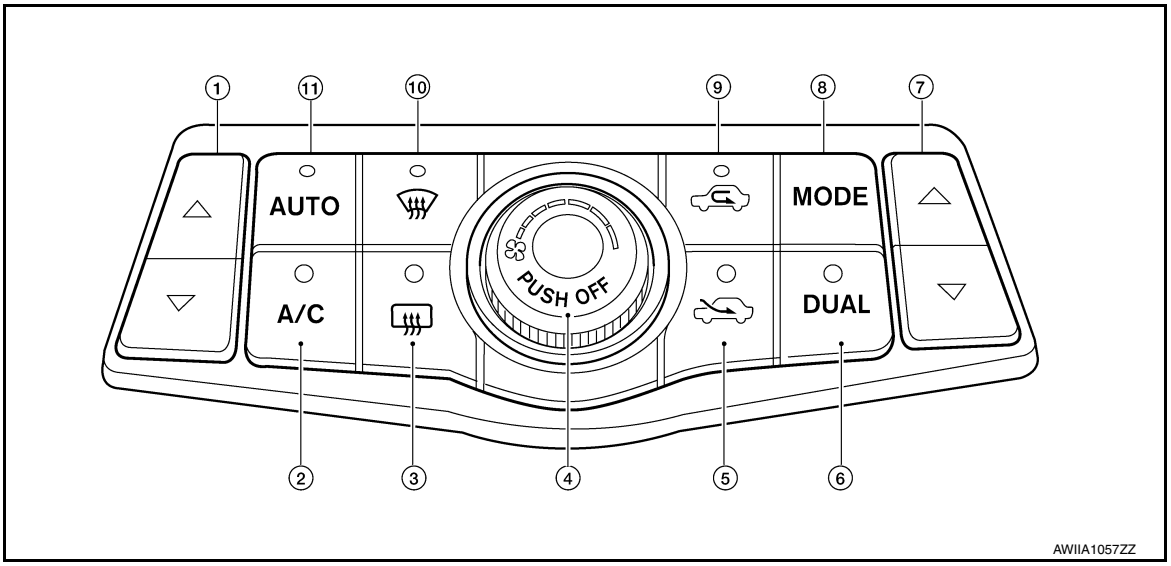
CONTROL OPERATION

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.

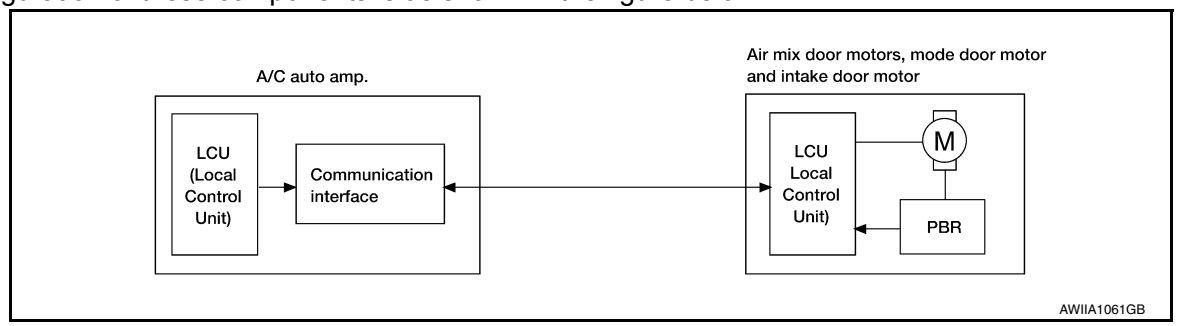
FRESH AIR ( ) SWITCH
- When the FRE switch is ON, the FRE switch indicator is turned ON, and air inlet is set to FRE.

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

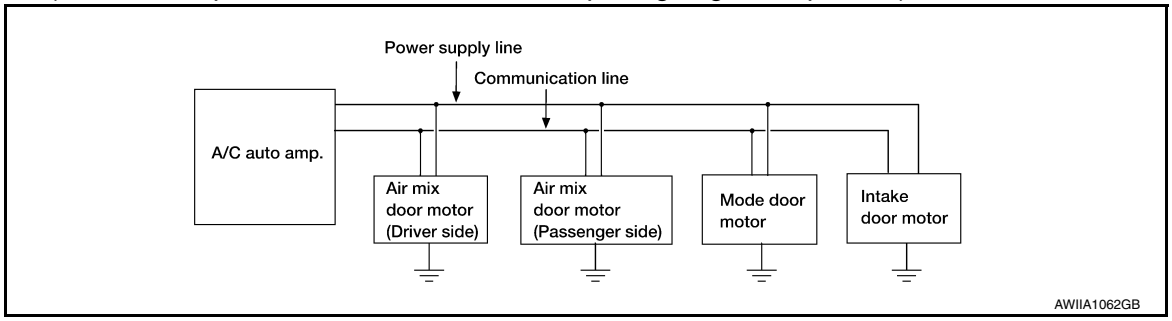
INFOID:0000000010051114

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.



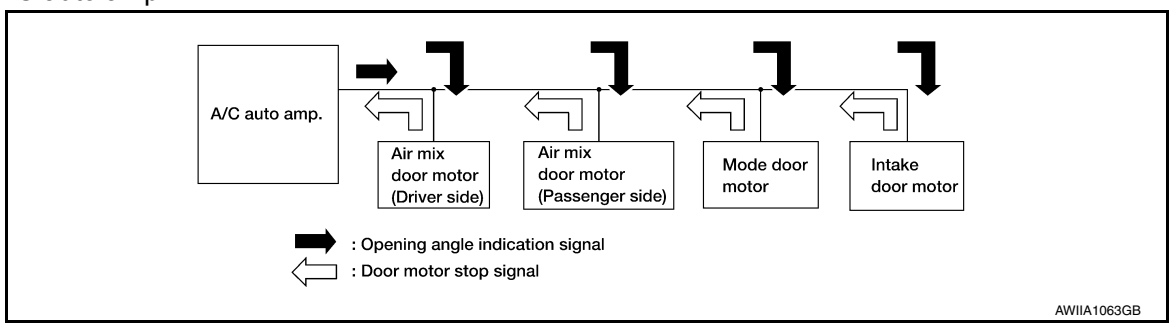
SYSTEM CONSTRUCTION

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.

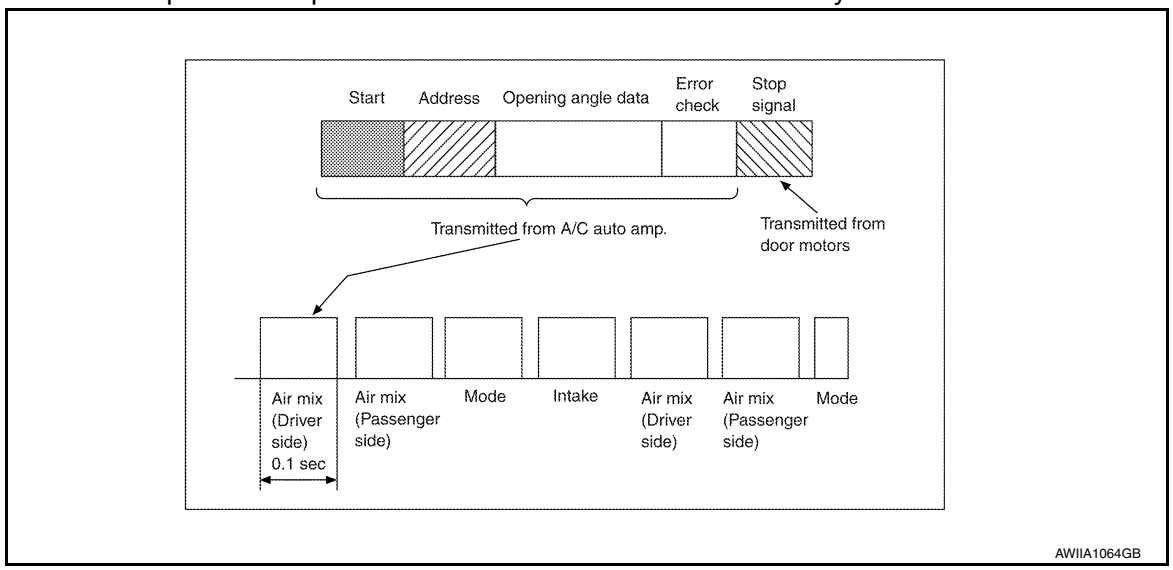
ERROR CHECK:

- 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.



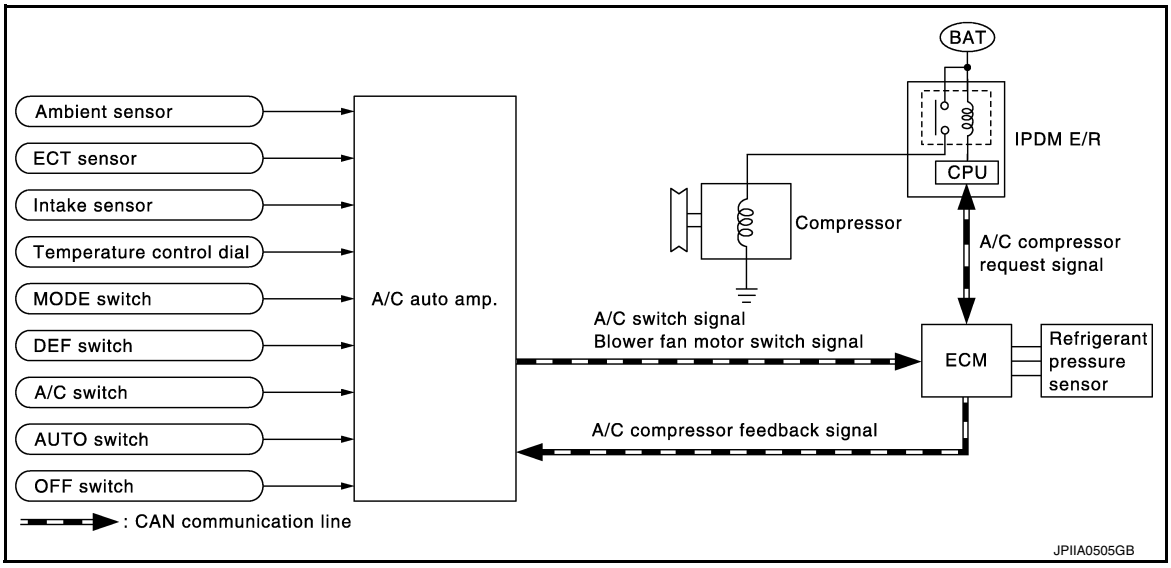
AIR MIX DOOR CONTROL (AUTOMATIC TEMPERATURE CONTROL)
- The air mix doors are automatically controlled so that in-vehicle temperature is maintained at a predetermined value by the temperature setting, ambient temperature, in-vehicle temperature and amount of sunload.

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

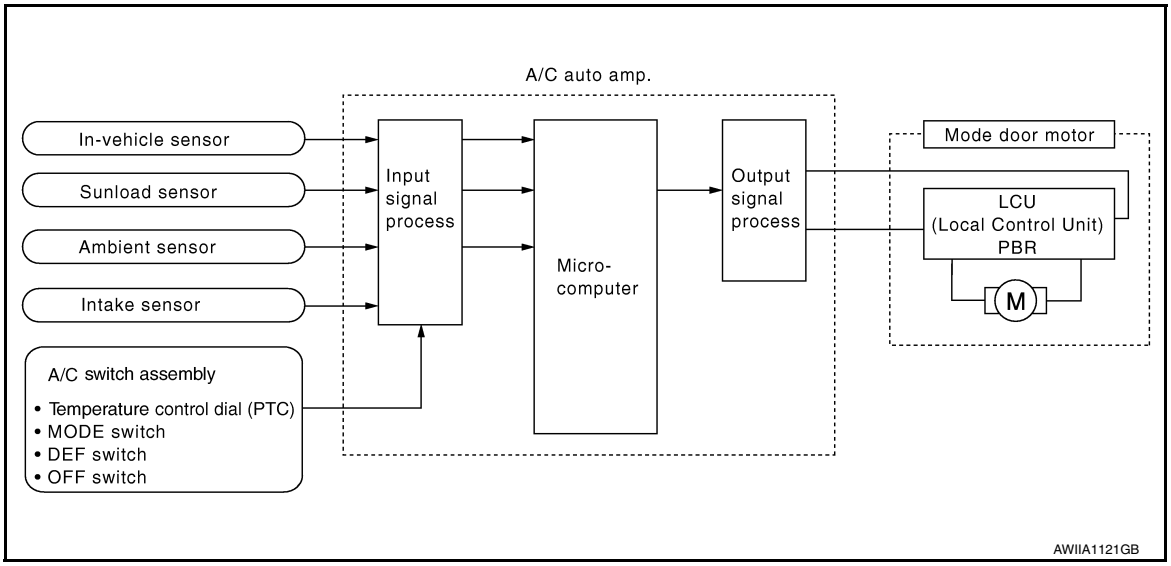


When A/C switch, AUTO switch or DEF ( ) switch is pressed, A/C auto amp. transmits compressor ON signal to ECM, via CAN communication.
ECM judges whether compressor can be turned ON, based on each sensor status (refrigerant pressure sensor signal, throttle angle, etc.). If it judges compressor can be 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:0000000010051115



System Description

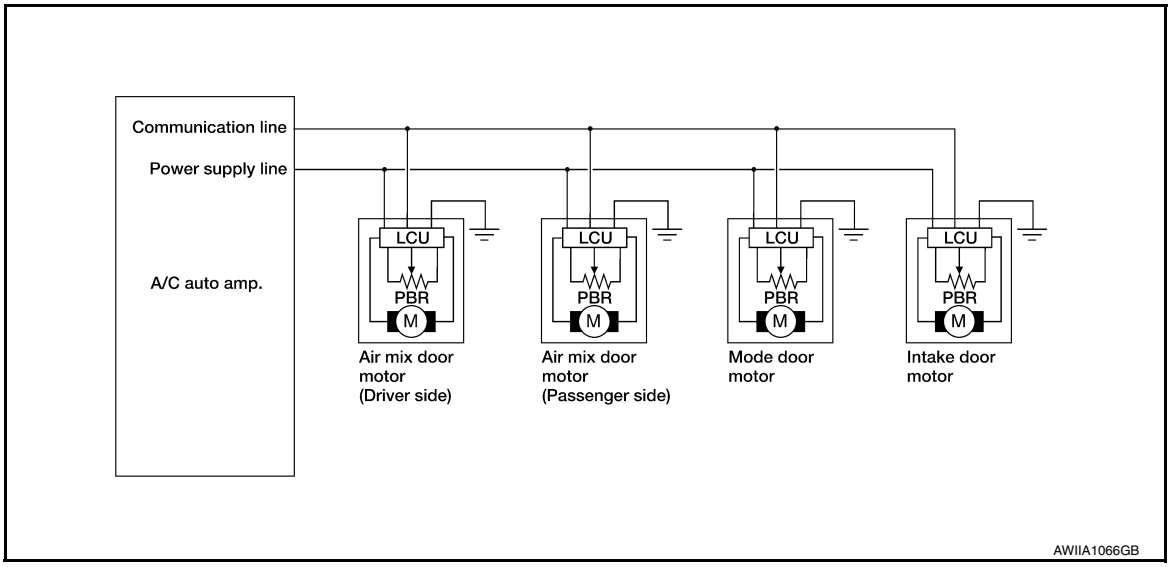
INFOID:0000000010051116

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

SYSTEM OPERATION

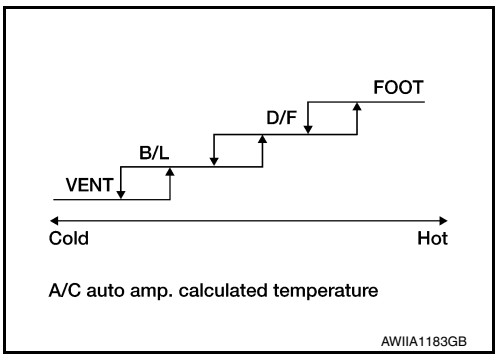
- The A/C auto amp. receives data from each of the sensors.
- The A/C auto amp. sends the air mix door, the mode door and the intake door opening angle data to the air mix door motor LCU(s), the mode door motor LCU and the intake door motor LCU.
- The air mix door motor(s), the mode door motor and the 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

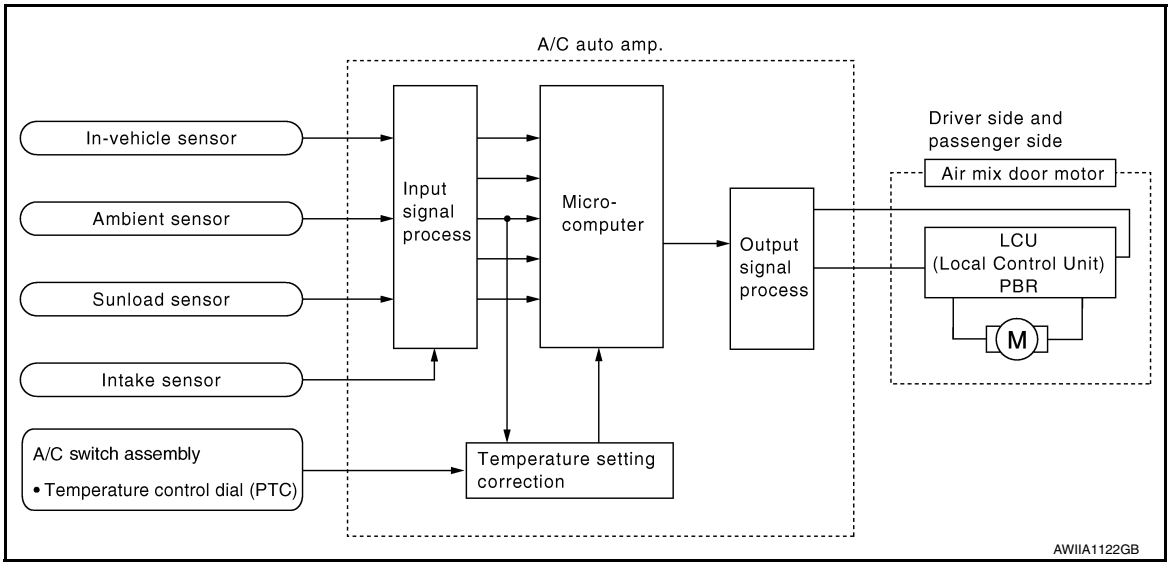
Mode position can be selected manually by pressing the MODE switch or the DEF switch on the A/C switch assembly. Pressing the AUTO switch allows automatic control by the A/C auto amp. During the automatic control of a mode position, a mode door position (VENT, B/L, FOOT, or D/F) is selected based on 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:0000000010051117



System Description

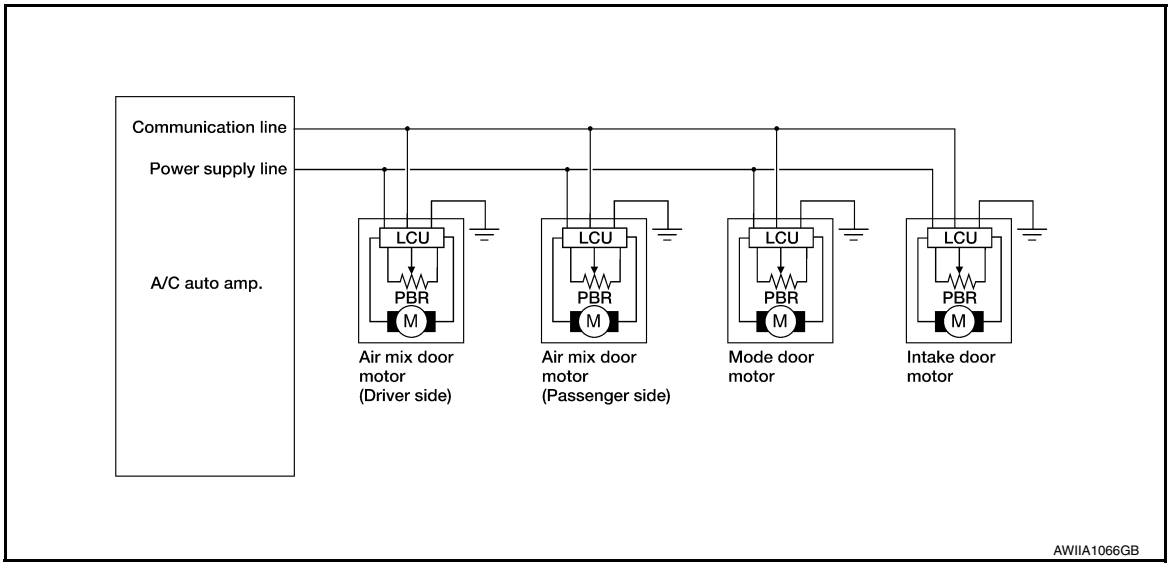
INFOID:0000000010051118

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

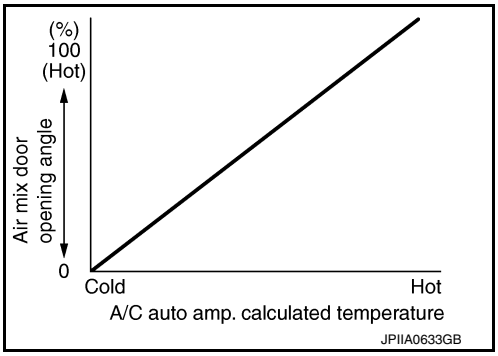
- The A/C auto amp. receives data from each of the sensors.
- The A/C auto amp. sends air mix door, the mode door and the intake door opening angle data to the air mix door motor LCU(s), the mode door motor LCU and the intake door motor LCU.
- The air mix door motor(s), the mode door motor and the intake 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

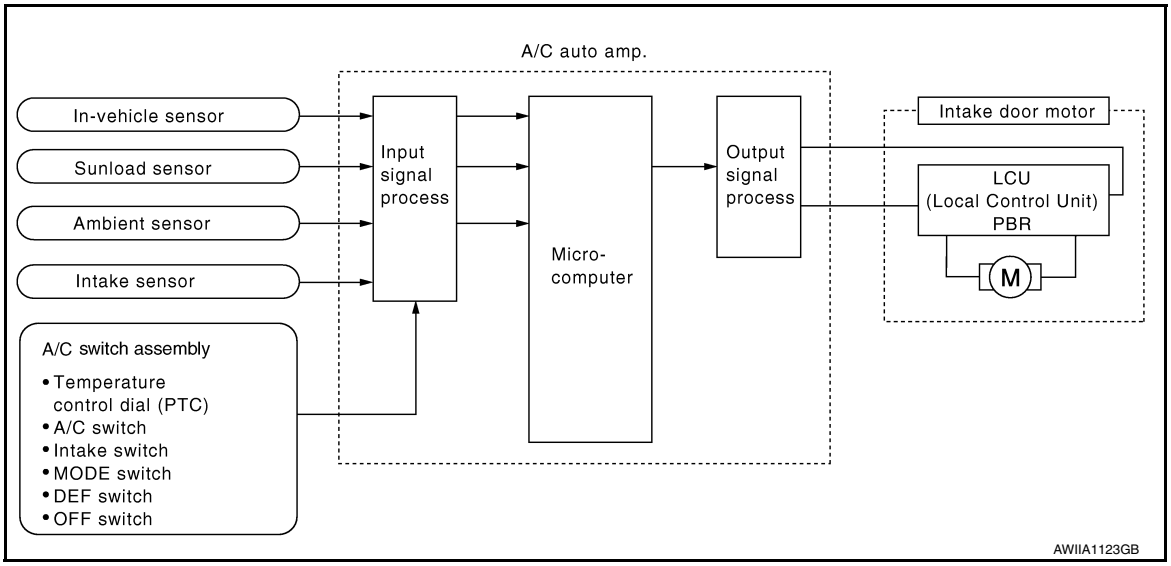
When ignition switch is ON, the A/C auto amp. continuously and automatically controls temperatures, regardless of air conditioner operational condition. When setting a target temperature with the temperature control switch, the A/C auto amp. corrects the set temperature and decides a target air mix door 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:0000000010051119



System Description

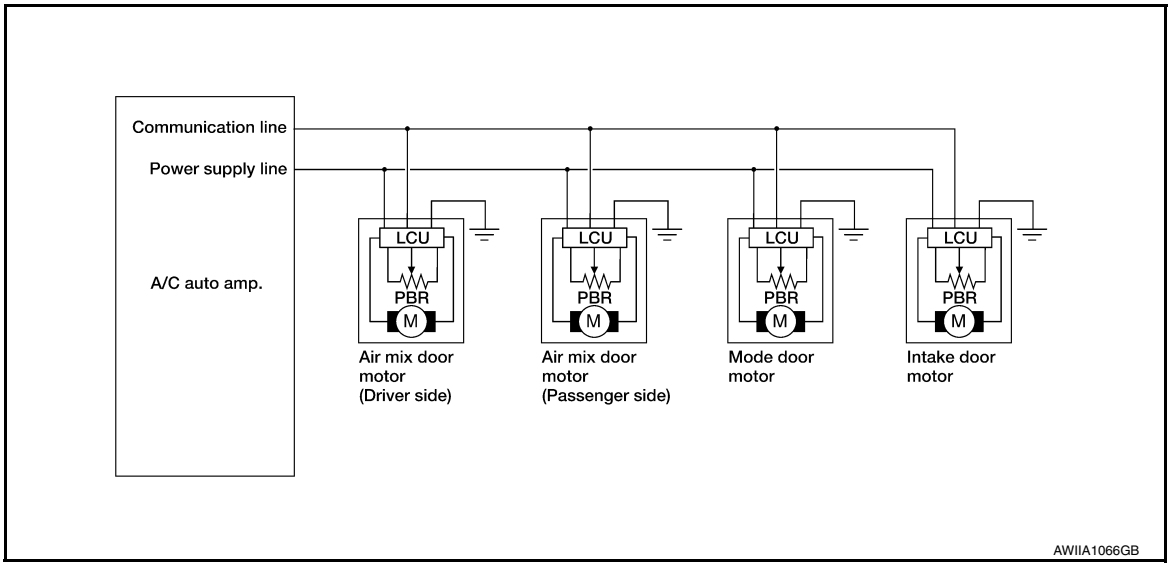
INFOID:0000000010051120

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.

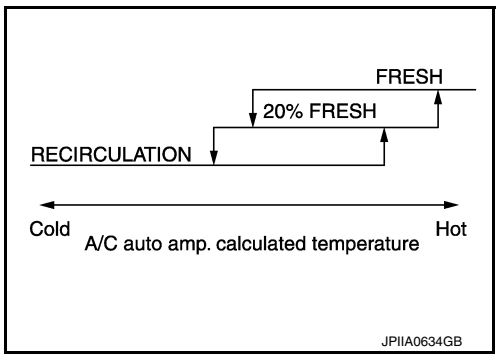
SYSTEM OPERATION

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



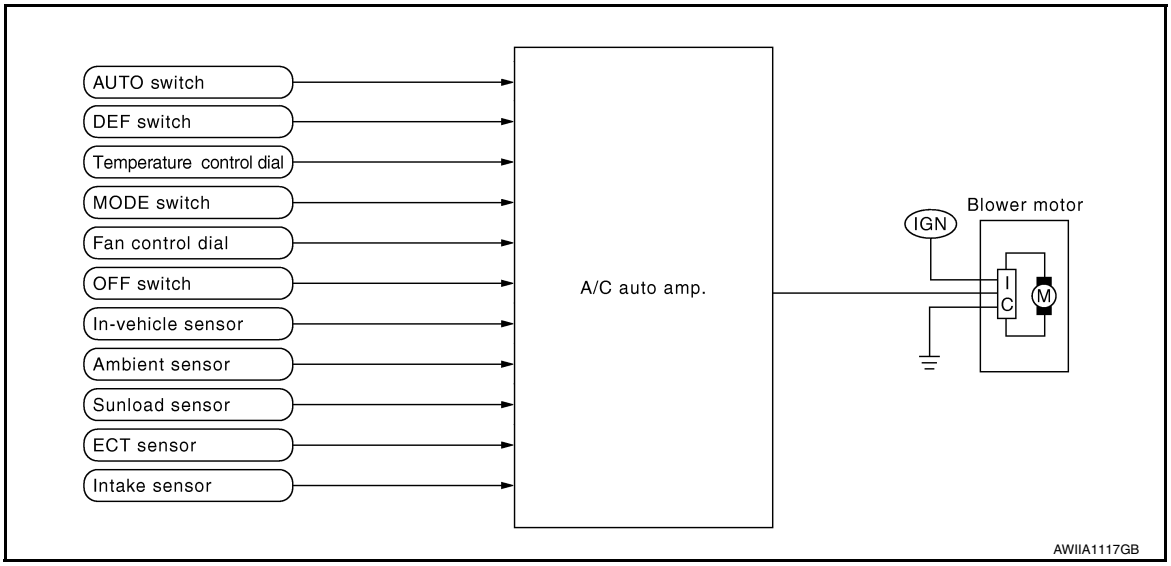
Intake Door Control Specification



BLOWER MOTOR CONTROL SYSTEM

System Diagram

INFOID:0000000010051121



System Description

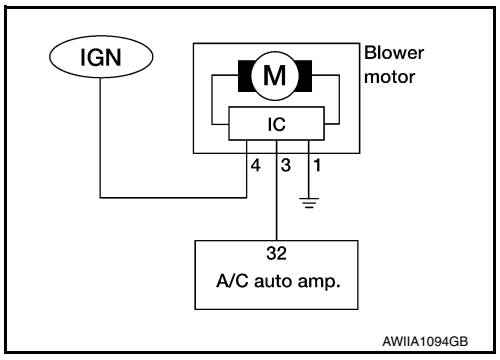
INFOID:0000000010051122

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

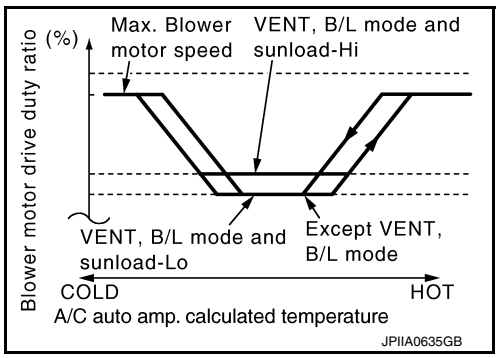
- For airflow, the manual selection (1-7) with the fan control dial has priority.
- If the AUTO switch is pressed or if the DEF switch is pressed while in the OFF condition, it changes to the automatic control by A/C auto amp.
- When increasing the airflow, it changes the duty ratio of the blower motor 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.

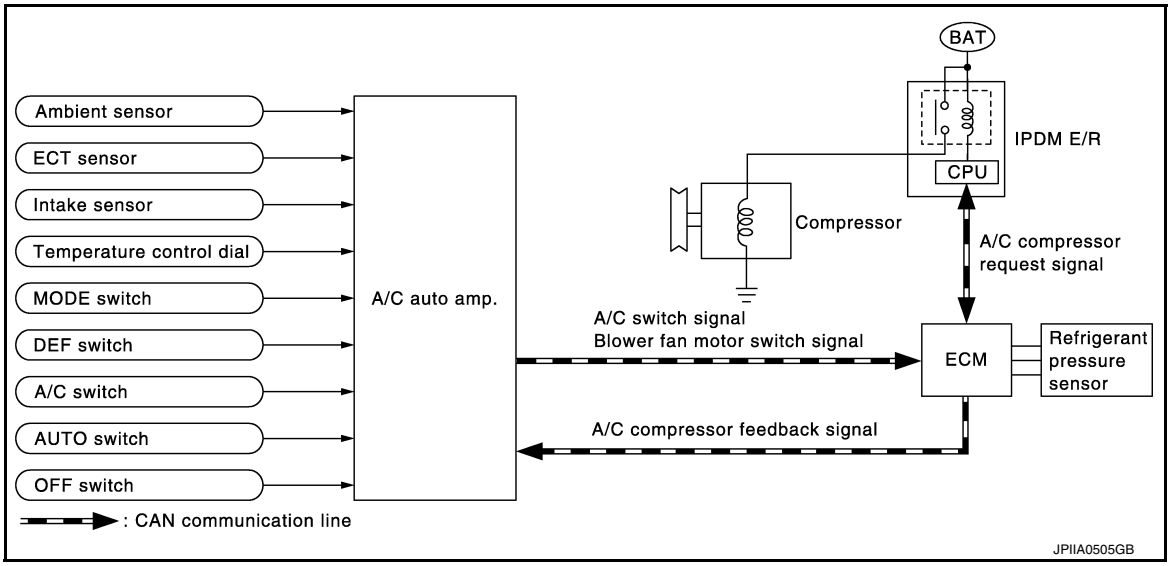
Start-up from usual or HOT SOAK Condition (Automatic mode)

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:0000000010051123



System Description

INFOID:0000000010051124

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:0000000010051125

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 Function

INFOID:0000000010051126

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

CONSULT 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.
CAN diag support monitor	The results of transmit/receive diagnosis of CAN communication can be read.
Work Support	Changes the setting for each system function.

SELF-DIAGNOSTIC RESULT

Refer to HAC-171, "DTC Index".

Display Item List

DTC	Items (CONSULT screen terms)	Diagnostic item is detected when...	Possible cause
U1000	CAN COMM CIRCUIT	When A/C auto amp. is not transmitting or receiving CAN communication signal for 2 or more seconds.	CAN communication system
U1010	CONTROL UNIT (CAN)	When detecting error during the initial diagnosis of CAN controller of A/C auto amp.	A/C auto amp.
B257B	AMB TEMP SEN (SHORT)	Detected temperature at ambient sensor 55°C (131°F) or more	• Ambient sensor • A/C auto amp. • Harness and connector (Ambient sensor circuit is open, or there is a short in the circuit)
B257C	AMB TEMP SEN (OPEN)	Detected temperature at ambient sensor −30°C (−22°F) or less	
B2578	IN-CAR SENSOR (OUT OF RANGE [LOW])	Detected temperature at in-vehicle sensor 55°C (131°F) or more	• In-vehicle sensor • A/C auto amp. • Harness and connector (In-vehicle sensor circuit is open, or there is a short in the circuit)
B2579	IN-CAR SENSOR (OUT OF RANGE [HI])	Detected temperature at in-vehicle sensor −30°C (−22°F) or less	
B2581	EVAP TEMP SEN (SHORT)	Detected temperature at intake sensor 55°C (131°F) or more	• Intake sensor • A/C auto amp. • Harness and connector (Intake sensor circuit is open, or there is a short in the circuit)
B2582	EVAP TEMP SEN (OPEN)	Detected temperature at intake sensor −30°C (−22°F) or less	
B2630*	SUNLOAD SEN (SHORT)	Detected calorie at sunload sensor 1395 w/m^2 (1200 kcal/m^2·h)	• Sunload sensor • A/C auto amp. • Harness and connector (Sunload sensor circuit is open, or there is a short in the circuit)
B2631*	SUNLOAD SEN (OPEN)	Detected calorie at sunload sensor 0 w/m^2 (0 kcal/m^2·h)	
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 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	[°C]	Ambient sensor value converted from ambient sensor signal received from ambient sensor
IN-VEH TEMP	[°C]	In-vehicle sensor value converted from in-vehicle sensor signal received from in-vehicle sensor
INT TEMP SEN	[°C]	Intake sensor value converted from intake sensor signal received from intake sensor
SUNLOAD SEN	[w/m^2]	Sunload sensor value converted from sunload sensor signal received from sunload sensor
AMB SEN CAL	[°C]	Ambient sensor value calculated by A/C auto amp.
IN-VEH CAL	[°C]	In-vehicle sensor value calculated by A/C auto amp.
INT TEMP CAL	[°C]	Intake sensor value calculated by A/C auto amp.
SUNL SEN CAL	[w/m^2]	Sunload sensor value calculated by A/C auto amp.
FAN DUTY	[%]	Duty ratio of blower motor judged by A/C auto amp.
XM	[°C]	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
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	OFF	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-109, "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-110, "Foot Position Setting Trimmer"
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-110, "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-111, "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.

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000010051127

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:0000000010051128

DTC DETECTION LOGIC

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

Diagnosis Procedure

INFOID:0000000010051129

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT

1. Turn ignition switch ON and wait for 2 or more seconds.
2. Using CONSULT, 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-41, "Intermittent Incident".

U1010 CONTROL UNIT (CAN)

Description

INFOID:0000000010051130

Initial diagnosis of A/C auto amp.

DTC Logic

INFOID:0000000010051131

DTC DETECTION LOGIC

DTC	Items (CONSULT 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:0000000010051132

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT

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

Is DTC No.“U1010” displayed?

YES >> Replace A/C auto amp. Refer to HAC-203, "Removal and Installation".
NO >> Inspection End.

B257B, B257C AMBIENT SENSOR

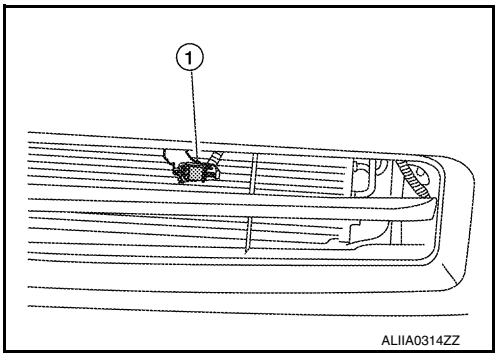
Description

INFOID:0000000010051133

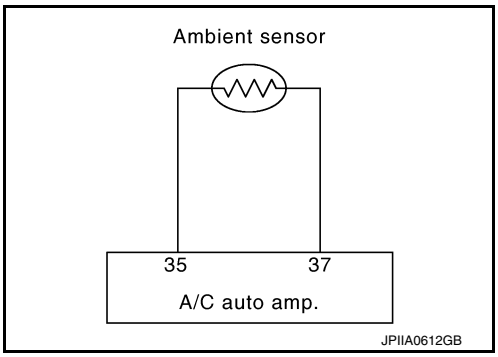
COMPONENT DESCRIPTION

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:0000000010051134

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-133, "DTC Logic" or HAC-134, "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 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

1. Using CONSULT 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-133, "DTC Logic" or HAC-134, "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-136, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

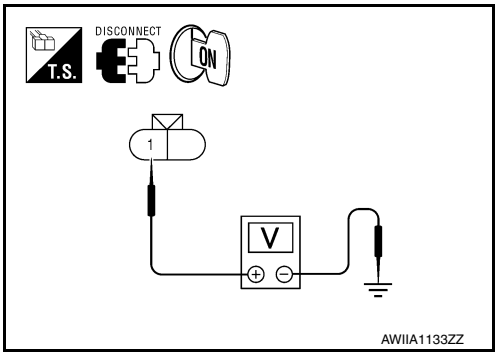
INFOID:0000000010051135

Regarding Wiring Diagram information, refer to HAC-173, "Wiring Diagram - With Monochrome Display".

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



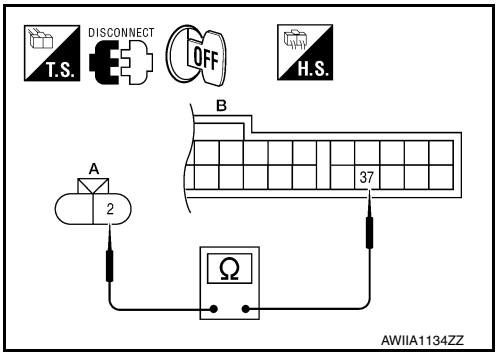
Is the inspection result normal?

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-137, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-203, "Removal and Installation".
NO >> Replace ambient sensor. Refer to HAC-204, "Removal and Installation".

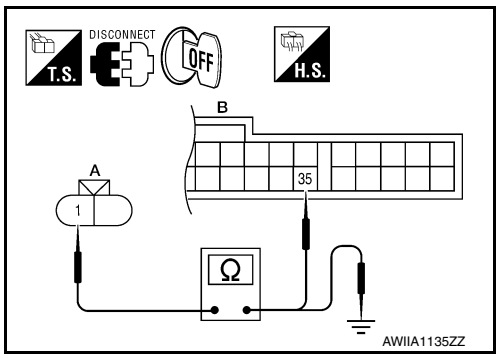
4.CHECK CONTINUITY BETWEEN AMBIENT SENSOR AND A/C AUTO AMP.

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-203, "Removal and Installation".
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000010051136

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-204, "Removal and Installation".

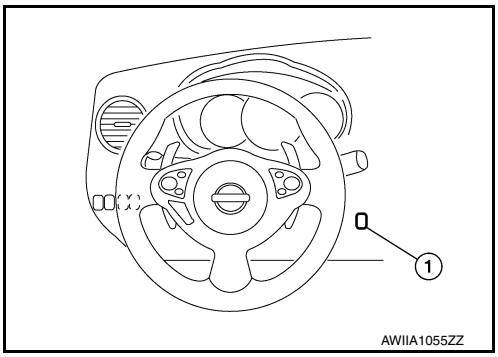
B2578, B2579 IN-VEHICLE SENSOR

Description

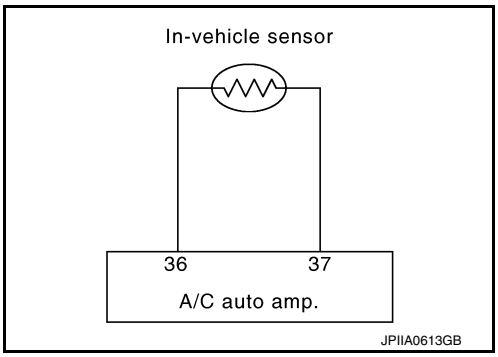
INFOID:0000000010051137

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.

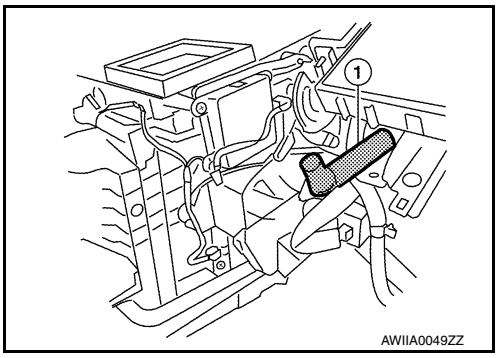


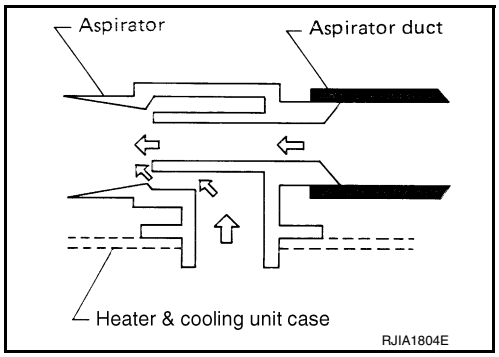
In-vehicle Sensor Circuit



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:0000000010051138

DTC DETECTION LOGIC

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-133, "DTC Logic" or HAC-134, "DTC Logic".

DTC	Items (CONSULT 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

1. Using CONSULT, 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-133, "DTC Logic" or HAC-134, "DTC Logic".

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

YES >> Perform trouble diagnosis for the in-vehicle sensor. Refer to HAC-139, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

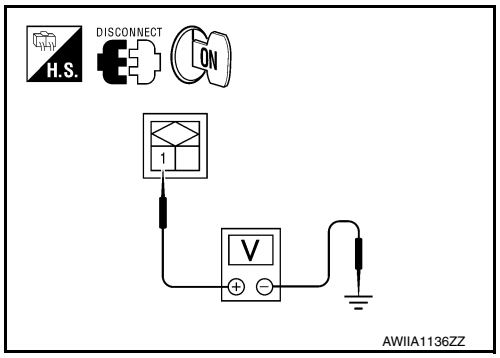
INFOID:0000000010051139

Regarding Wiring Diagram information, refer to HAC-173, "Wiring Diagram - With Monochrome Display".

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



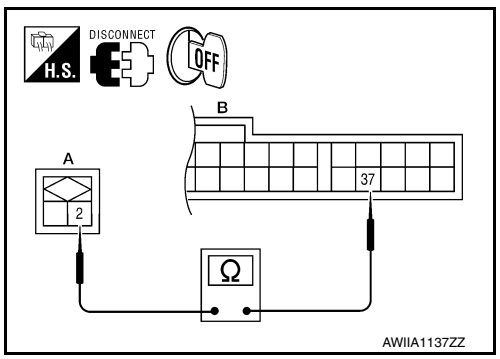
Is the inspection result normal?

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-140, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-203, "Removal and Installation".
NO >> Replace in-vehicle sensor. Refer to HAC-205, "Removal and Installation".

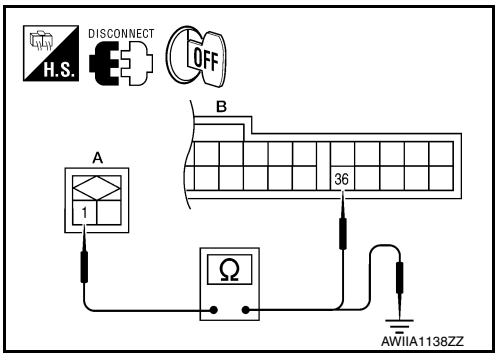
4. CHECK CONTINUITY BETWEEN IN-VEHICLE SENSOR AND A/C AUTO AMP.

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-203, "Removal and Installation".
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000010051140

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?

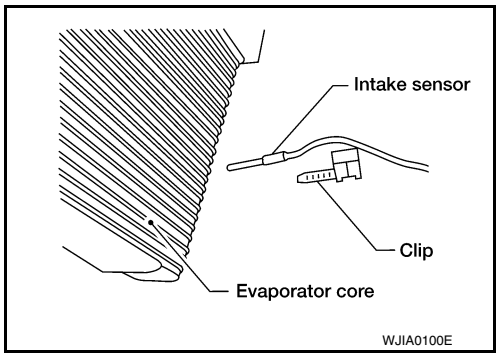
YES >> Inspection End.
NO >> Replace in-vehicle sensor. Refer to HAC-205, "Removal and Installation".

B2581, B2582 INTAKE SENSOR

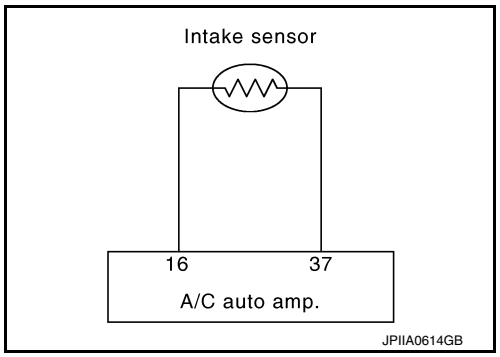
Description

INFOID:0000000010051141

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:0000000010051142

DTC DETECTION LOGIC

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-133, "DTC Logic" or HAC-134, "DTC Logic".

DTC	Items (CONSULT 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

1. Using CONSULT, 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-133, "DTC Logic" or HAC-134, "DTC Logic".

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

YES >> Perform trouble diagnosis for the intake sensor. Refer to HAC-141, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

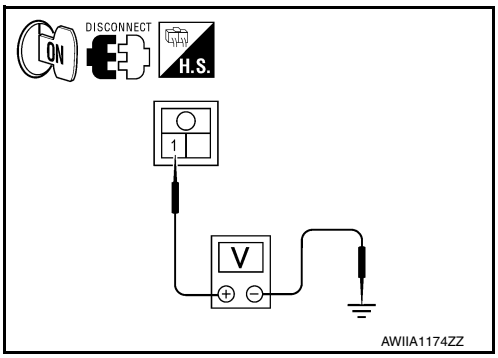
INFOID:0000000010051143

Regarding Wiring Diagram information, refer to HAC-173, "Wiring Diagram - With Monochrome Display".

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



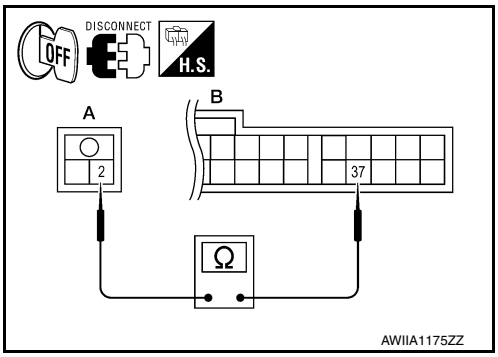
Is the inspection result normal?

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-142, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-203, "Removal and Installation".
NO >> Replace intake sensor. Refer to HAC-207, "Removal and Installation".

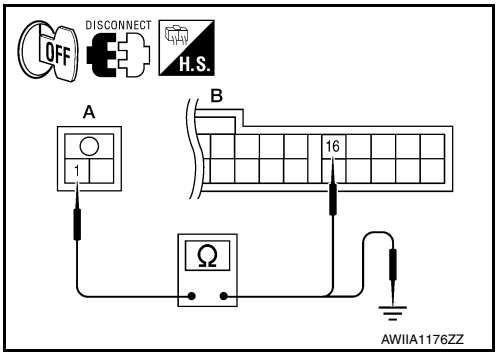
4.CHECK CONTINUITY BETWEEN INTAKE SENSOR AND A/C AUTO AMP.

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-203, "Removal and Installation".
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000010051144

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-207, "Removal and Installation".

B2630, B2631 SUNLOAD SENSOR

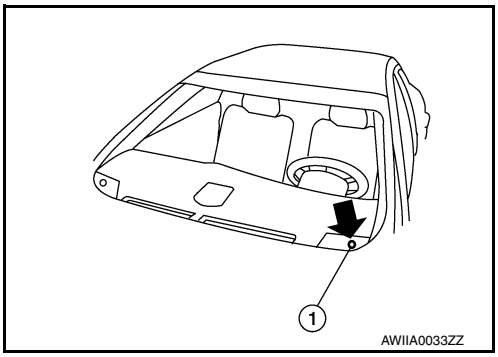
Description

INFOID:0000000010051145

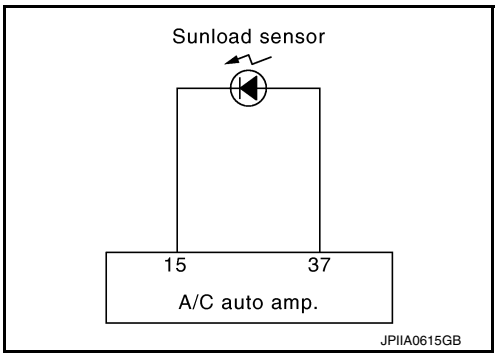
COMPONENT DESCRIPTION

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:0000000010051146

DTC DETECTION LOGIC

NOTE:

- If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-133, "DTC Logic" or HAC-134, "DTC Logic".
- Sunload sensor may register a malfunction when indoors, at dusk, or at other times when light is insufficient. When performing the diagnosis indoors, light the sunload sensor with a lamp (60W or more).

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

DTC CONFIRMATION PROCEDURE

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT

1. Using CONSULT, 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-133, "DTC Logic" or HAC-134, "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-145, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

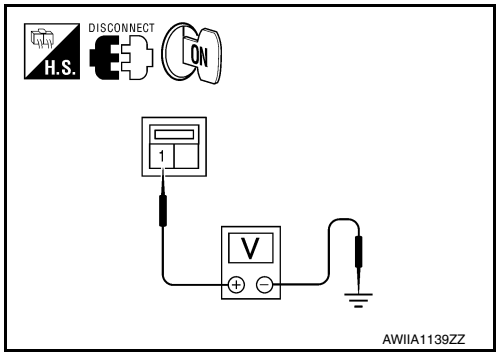
INFOID:0000000010051147

Regarding Wiring Diagram information, refer to HAC-173, "Wiring Diagram - With Monochrome Display".

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



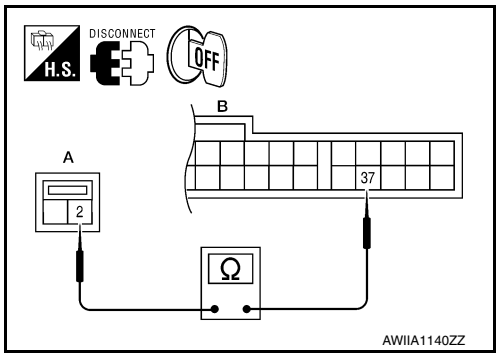
Is the inspection result normal?

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-146, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-203, "Removal and Installation".
NO >> Replace sunload sensor. Refer to HAC-206, "Removal and Installation".

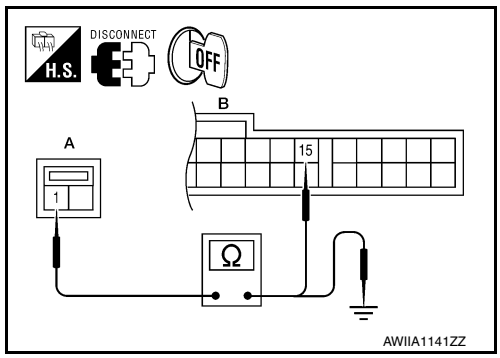
4.CHECK CONTINUITY BETWEEN SUNLOAD SENSOR AND A/C AUTO AMP.

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-203, "Removal and Installation".
NO >> Repair harness or connector.

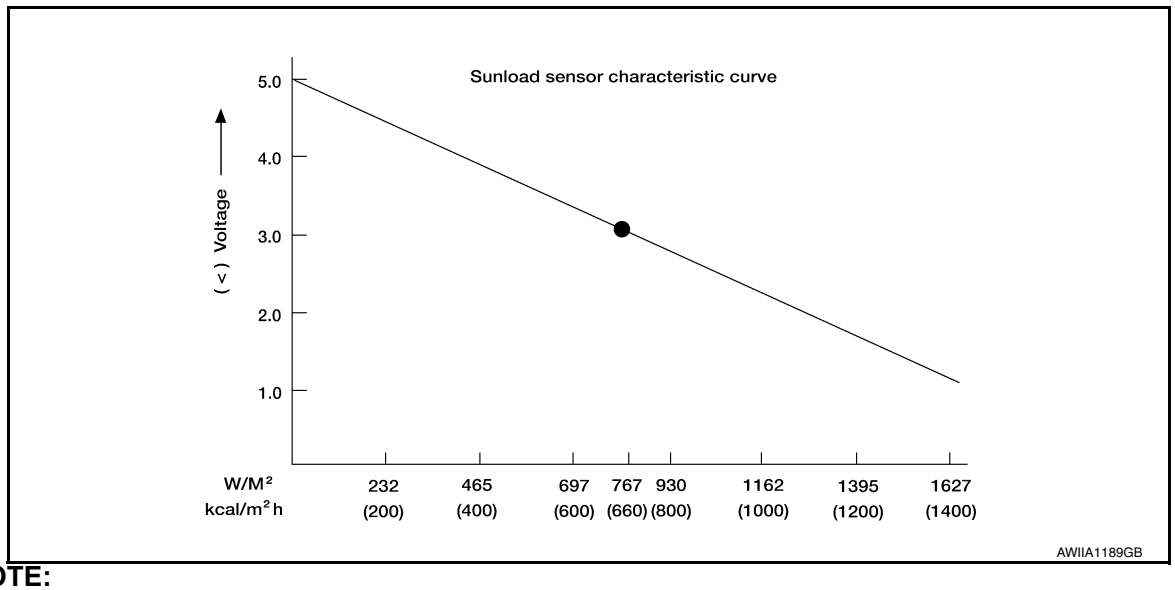
Component Inspection

INFOID:0000000010051148

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-206, "Removal and Installation".

B2632, B2633 AIR MIX DOOR MOTOR (DRIVER SIDE)

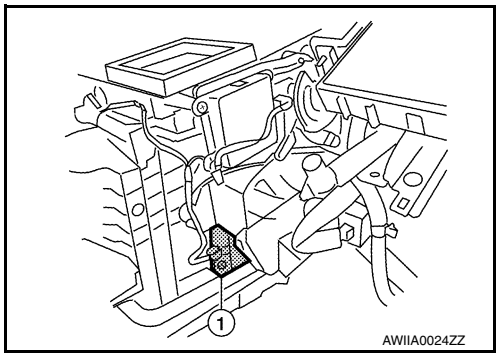
Description

INFOID:0000000010051149

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:0000000010051150

DTC DETECTION LOGIC

NOTE:

If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-133, "DTC Logic" or HAC-134, "DTC Logic".

DTC	Items (CONSULT 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

1. Using CONSULT, 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-133, "DTC Logic" or HAC-134, "DTC Logic".

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

YES >> Perform trouble diagnosis for the air mix door motor (driver side). Refer to HAC-148, "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. Refer to HAC-210, "AIR MIX DOOR MOTOR : Removal and Installation - Air Mix Door Motor (Driver Side)".

Diagnosis Procedure

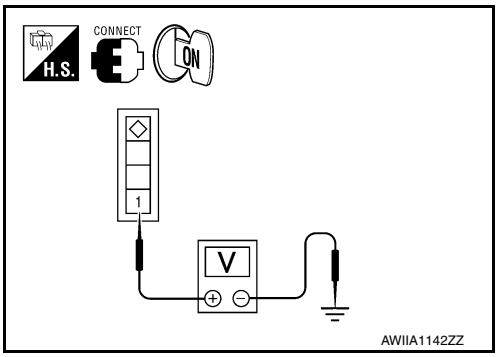
INFOID:0000000010051151

Regarding Wiring Diagram information, refer to HAC-173, "Wiring Diagram - With Monochrome Display".

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

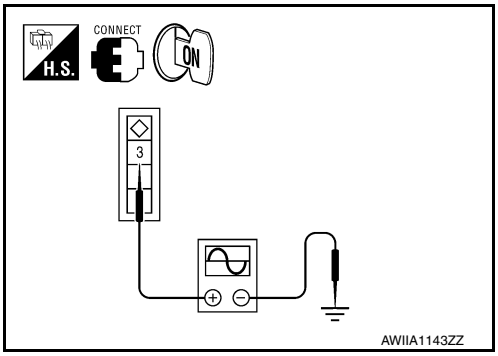


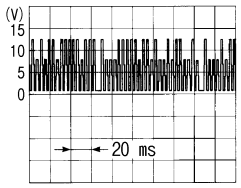
Is the inspection result normal?

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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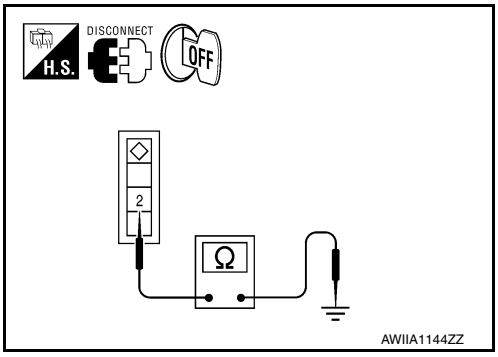
Is the inspection result normal?

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-210, "AIR MIX DOOR MOTOR : Removal and Installation - Air Mix Door Motor (Driver Side)".
NO >> Repair harness or connector.

B2634, B2635 AIR MIX DOOR MOTOR (PASSENGER SIDE)

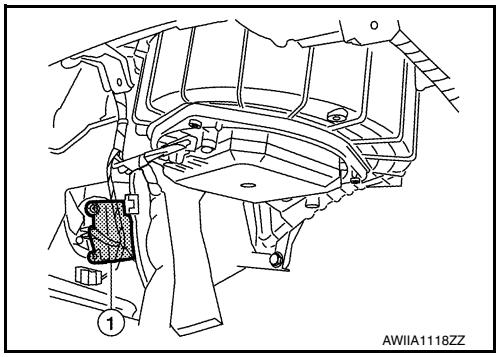
Description

INFOID:0000000010051152

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:0000000010051153

DTC DETECTION LOGIC

NOTE:
If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-133, "DTC Logic" or HAC-134, "DTC Logic".

DTC	Items (CONSULT 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

1. Using CONSULT, 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-133, "DTC Logic" or HAC-134, "DTC Logic".

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

YES >> Perform trouble diagnosis for the air mix door motor (passenger side). Refer to HAC-150, "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. Refer to HAC-210, "AIR MIX DOOR MOTOR : Removal and Installation - Air Mix Door Motor (Passenger Side)".

Diagnosis Procedure

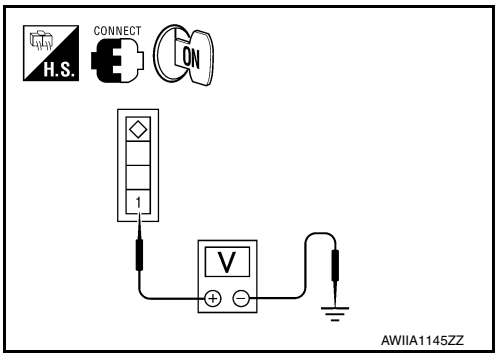
INFOID:0000000010051154

Regarding Wiring Diagram information, refer to HAC-173, "Wiring Diagram - With Monochrome Display".

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

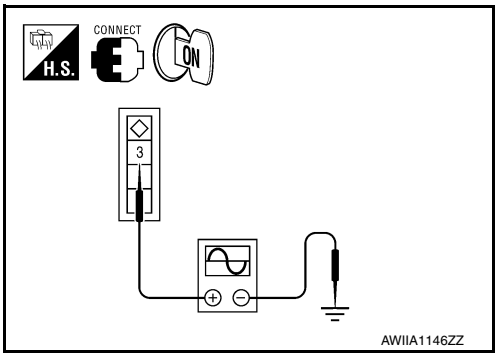


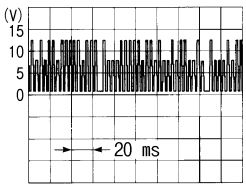
Is the inspection result normal?

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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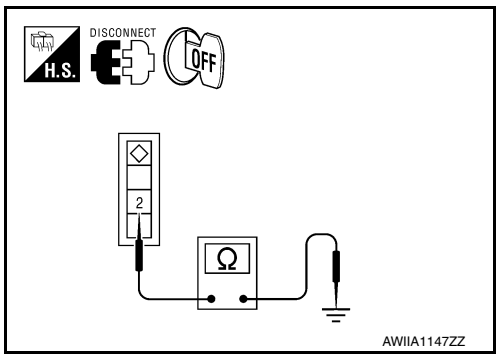
Is the inspection result normal?

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-210, "AIR MIX DOOR MOTOR : Removal and Installation - Air Mix Door Motor (Passenger Side)".

NO >> Repair harness or connector.

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

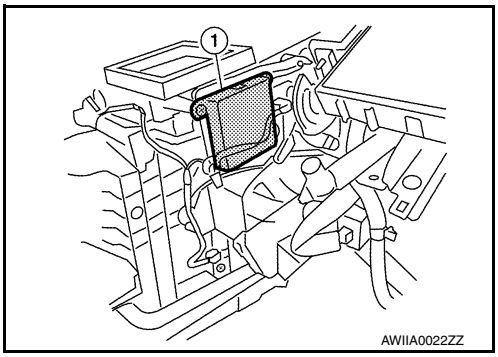
Description

INFOID:0000000010051155

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:0000000010051156

DTC DETECTION LOGIC

NOTE:

If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-133, "DTC Logic" or HAC-134, "DTC Logic".

DTC	Items (CONSULT 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

1. Using CONSULT, 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-133, "DTC Logic" or HAC-134, "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-153, "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-114, "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-210, "MODE DOOR MOTOR : Removal and Installation".

Diagnosis Procedure

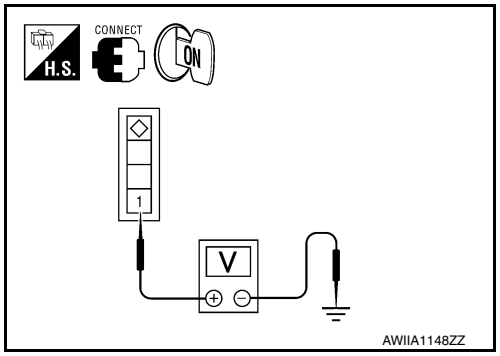
INFOID:0000000010051157

Regarding Wiring Diagram information, refer to HAC-173, "Wiring Diagram - With Monochrome Display".

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

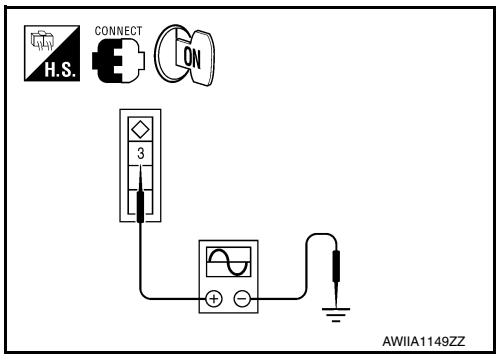


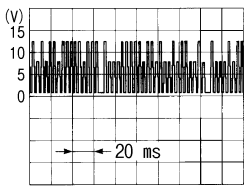
Is the inspection result normal?

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	

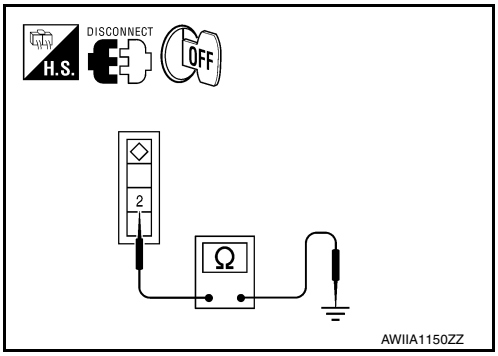
Is the inspection result normal?

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-210, "MODE DOOR MOTOR : Removal and Installation".

NO >> Repair harness or connector.

B263D, B263E, B263F INTAKE DOOR MOTOR

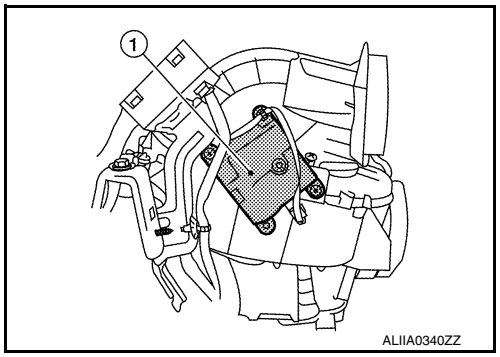
Description

INFOID:0000000010051158

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:0000000010051159

DTC DETECTION LOGIC

NOTE:

If DTC is displayed along with DTC U1000 or U1010, first diagnose the DTC U1000 or U1010. Refer to HAC-133, "DTC Logic" or HAC-134, "DTC Logic".

DTC	Items (CONSULT 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

1. Using CONSULT, 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-133, "DTC Logic" or HAC-134, "DTC Logic".

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

YES >> Perform trouble diagnosis for the intake door motor. Refer to HAC-156, "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. Refer to HAC-210, "INTAKE DOOR MOTOR : Removal and Installation".

Diagnosis Procedure

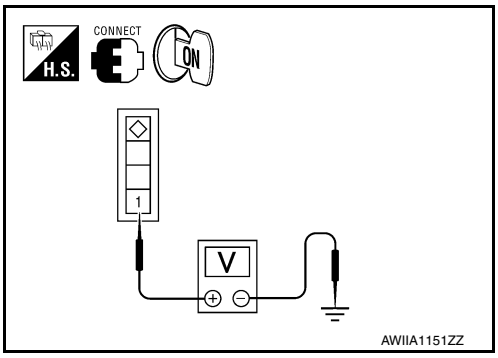
INFOID:0000000010051160

Regarding Wiring Diagram information, refer to HAC-173, "Wiring Diagram - With Monochrome Display".

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

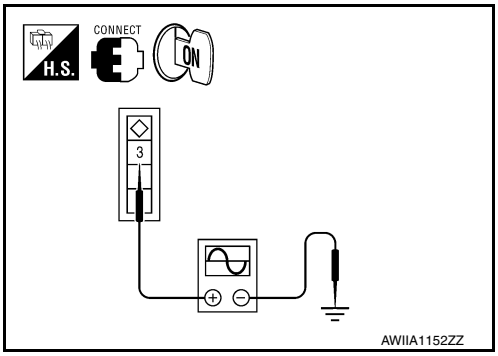


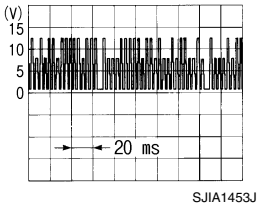
Is the inspection result normal?

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	

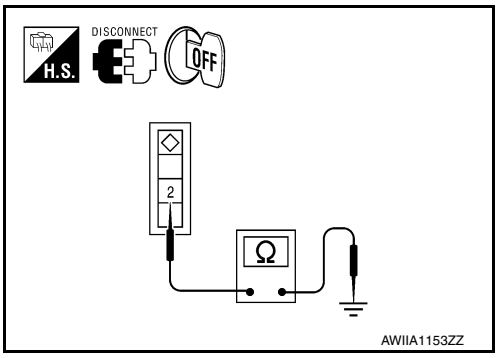
Is the inspection result normal?

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-210, "INTAKE DOOR MOTOR : Removal and Installation".
NO >> Repair harness or connector.

BLOWER MOTOR

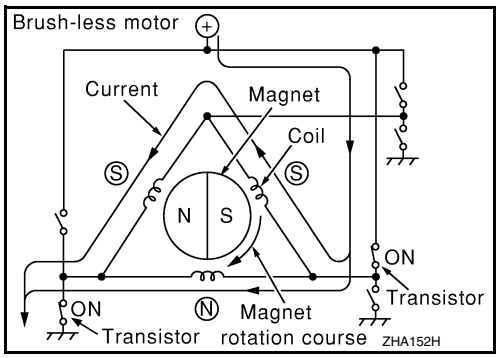
Description

INFOID:0000000010051161

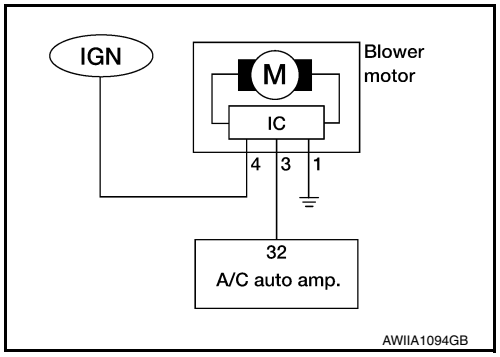
COMPONENT DESCRIPTION

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:0000000010051162

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-157, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000010051163

Regarding Wiring Diagram information, refer to HAC-173, "Wiring Diagram - With Monochrome Display".

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT

1. Using CONSULT, 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-133, "DTC Logic" or HAC-134, "DTC Logic".

Is any DTC No. displayed?

YES >> Perform diagnosis for the applicable DTC. Refer to HAC-171, "DTC Index".
NO >> GO TO 2.

2.CHECK WITH ACTIVE TEST OF CONSULT

1. Using CONSULT, perform “HVAC TEST”“ACTIVE TEST” of HVAC to check each output device. Refer to HAC-129, "CONSULT 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	OFF	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-62, "Terminal Arrangement" for fuse location.

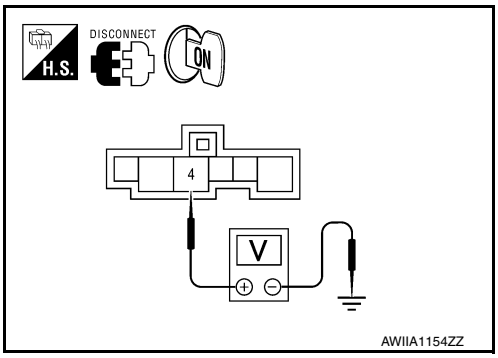
Is the inspection result normal?

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



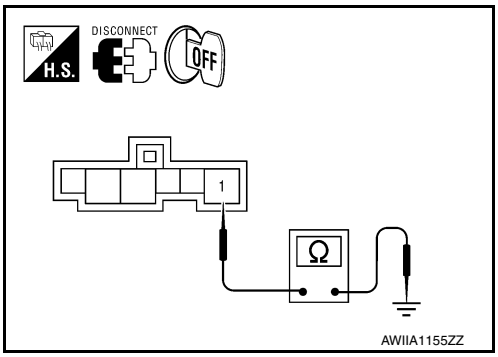
Is the inspection result normal?

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.



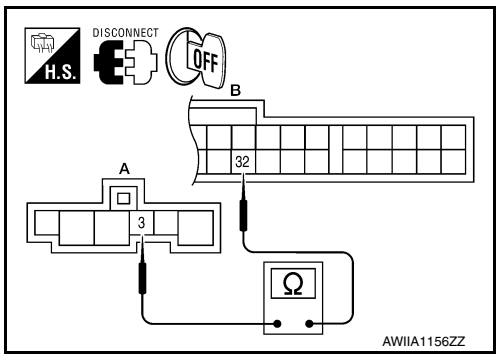
Is the inspection result normal?

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.

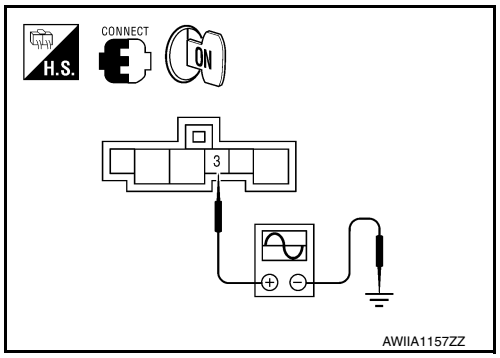


Is the inspection result normal?

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-16, "BLOWER MOTOR : Removal and Installation".
NO >> Replace the A/C auto amp. Refer to HAC-203, "Removal and Installation".

8. REPLACE FUSES

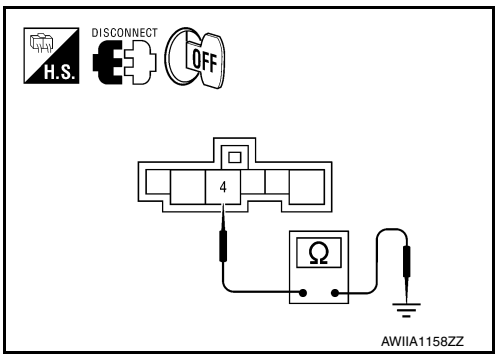
1. Replace fuses.
2. Activate the blower motor.

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-16, "BLOWER MOTOR : Removal and Installation".
NO >> Repair harness or connector.

10. CHECK POWER SUPPLY OF THE FRONT BLOWER MOTOR RELAY

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

2, 3 - Ground : Battery voltage

Is the inspection result normal?

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

11. CHECK FRONT BLOWER MOTOR RELAY GROUND CIRCUIT

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

1 - 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

Check continuity between blower motor harness connector M31 terminal 4 and front blower motor relay harness connector J-4 terminal 5.

5 - 4 : Continuity should exist.

Is the inspection result normal?

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

MAGNET CLUTCH

Description

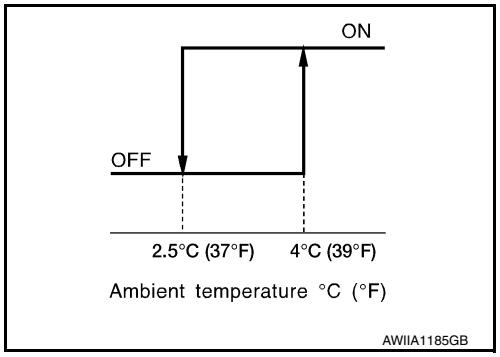
INFOID:0000000010051164

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:0000000010051165

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?

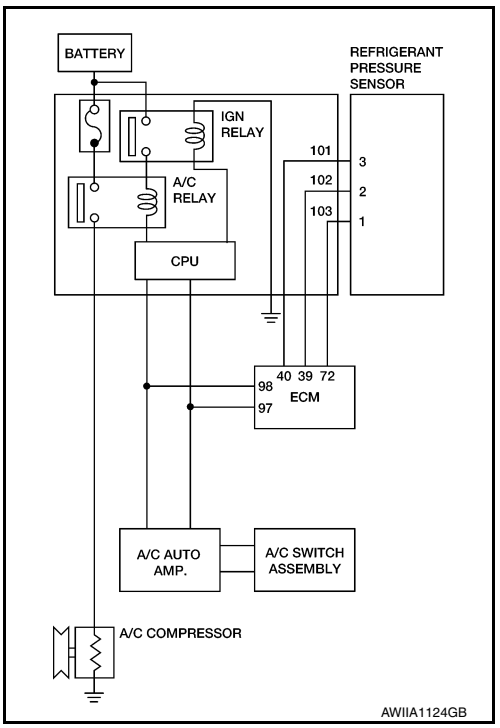
YES >> Inspection End.
NO >> Perform trouble diagnosis for the A/C compressor. Refer to HAC-161, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000010051166

Regarding Wiring Diagram information, refer to HAC-173, "Wiring Diagram - With Monochrome Display".

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-11, "Diagnosis Description".

Does it operate normally?

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

2. CHECK POWER SUPPLY FOR A/C COMPRESSOR

1. Turn ignition switch OFF.
2. Disconnect A/C compressor connector.
3. Start engine and press A/C switch.
4. 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-37, "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-64, "Fuse, Connector and Terminal Arrangement" for fuse location.

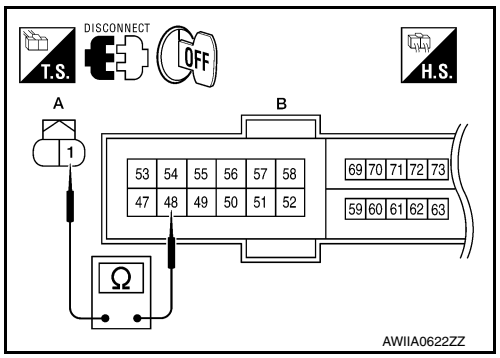
Is the inspection result normal?

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.



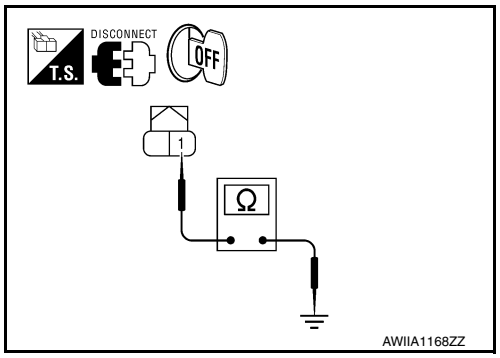
1 - 48 : Continuity should exist.

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-35, "Removal and Installation".
NO >> Repair harness or connector.

6. CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT

1. Using CONSULT, 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-133, "DTC Logic" or HAC-134, "DTC Logic".

Is any DTC No. displayed?

YES >> Perform diagnosis for the applicable DTC. Refer to HAC-171, "DTC Index".
NO >> GO TO 7.

7. CHECK A/C AUTO AMP. INPUT SIGNAL

Using CONSULT, check “On/Off” of “COMP REQ SIG” and “FAN REQ SIG” in “DATA MONITOR” of HVAC. Refer to HAC-129, "CONSULT Function".

A/C SWITCH ON	**: COMP REQ SIG On**
A/C SWITCH OFF	**: COMP REQ SIG Off**
FAN CONTROL DIAL ON	**: FAN REQ SIG On**
FAN CONTROL DIAL OFF	**: FAN REQ SIG Off**

Is the inspection result normal?

YES >> GO TO 8.
NO >> Replace A/C auto amp. Refer to HAC-203, "Removal and Installation".

8. CHECK REFRIGERANT PRESSURE SENSOR

Check refrigerant pressure sensor. Refer to EC-515, "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:0000000010051167

Regarding Wiring Diagram information, refer to HAC-173, "Wiring Diagram - With Monochrome Display".

1.CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT

1. Using CONSULT, 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-133, "DTC Logic" or HAC-134, "DTC Logic".

Is any DTC No. displayed?

YES >> Perform diagnosis for the applicable DTC. Refer to HAC-171, "DTC Index".
NO >> GO TO 2.

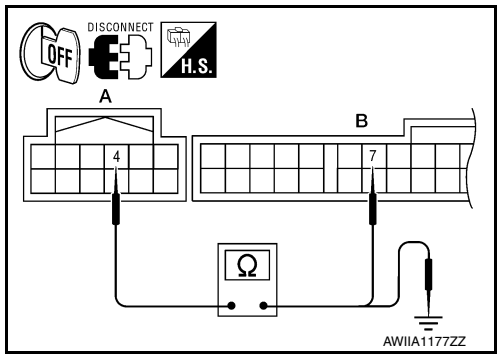
2.CHECK RX (A/C SWITCH ASSEMBLY → A/C AUTO AMP.) CIRCUIT CONTINUITY

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

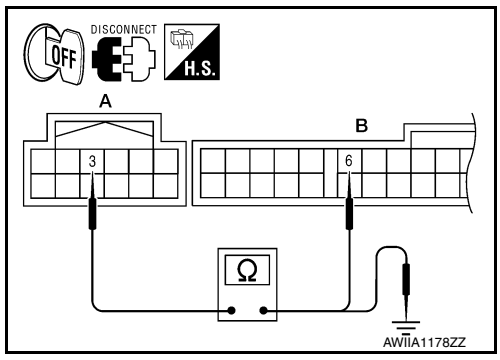
3.CHECK TX (A/C AUTO AMP. → A/C SWITCH ASSEMBLY) CIRCUIT CONTINUITY

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-166, "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:0000000010051168

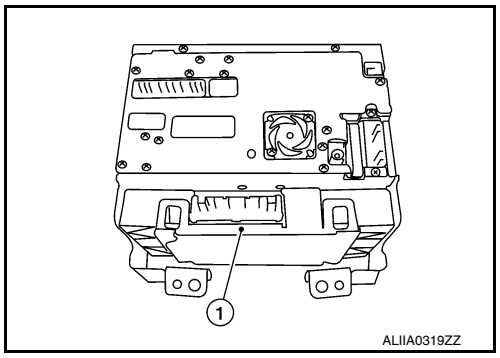
COMPONENT DESCRIPTION

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

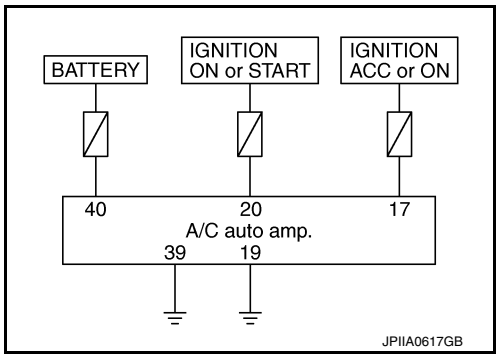
The A/C auto amp. (1) has a built-in microcomputer that processes information sent from various sensors needed for air conditioner operation. The air mix door motor(s), the mode door motor, the intake door motor, the blower motor and the A/C compressor are then controlled.

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:0000000010051169

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-165, "A/C AUTO AMP. : Diagnosis Procedure".

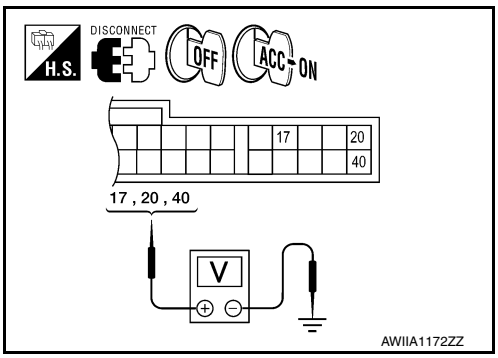
A/C AUTO AMP. : Diagnosis Procedure

INFOID:0000000010051170

Regarding Wiring Diagram information, refer to HAC-173, "Wiring Diagram - With Monochrome Display".

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-62, "Terminal Arrangement".

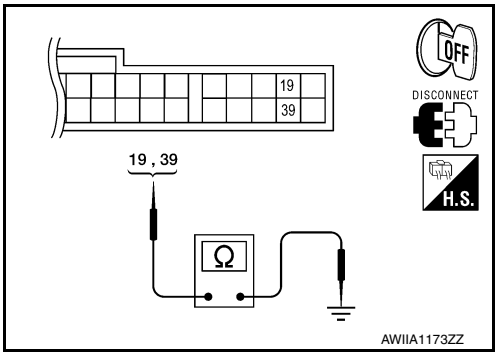
Is the inspection result normal?

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-203, "Removal and Installation".
NO >> Repair the harnesses or connectors.

A/C SWITCH ASSEMBLY

A/C SWITCH ASSEMBLY : Component Function Check

INFOID:0000000010051171

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-166, "A/C SWITCH ASSEMBLY : Diagnosis Procedure".

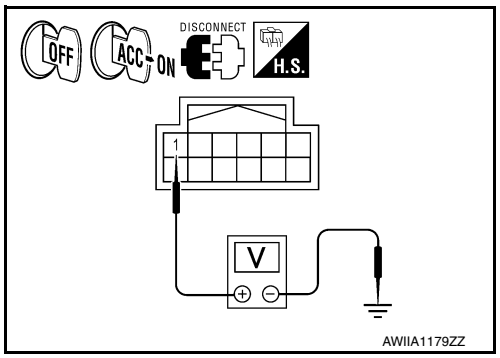
A/C SWITCH ASSEMBLY : Diagnosis Procedure

INFOID:0000000010051172

Regarding Wiring Diagram information, refer to HAC-173, "Wiring Diagram - With Monochrome Display".

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	Approx. 0V	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-62, "Terminal Arrangement".

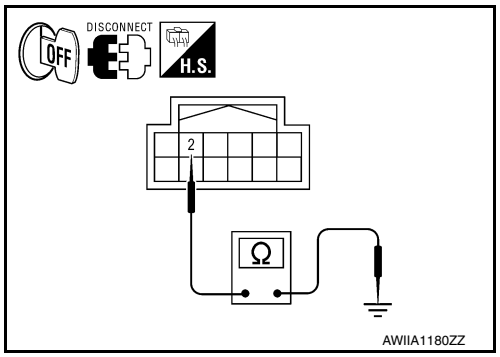
Is the inspection result normal?

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-203, "Removal and Installation".
NO >> Repair the harnesses or connectors.

A/C DISPLAY UNIT

A/C DISPLAY UNIT : Diagnosis Procedure

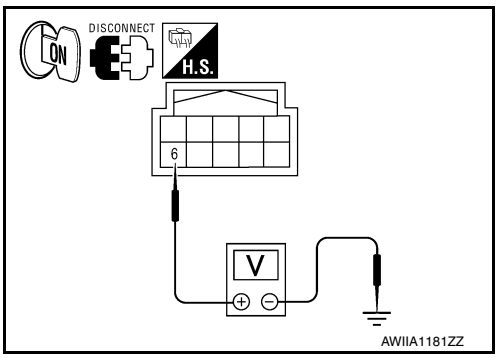
INFOID:0000000010051173

Regarding Wiring Diagram information, refer to HAC-173, "Wiring Diagram - With Monochrome Display".

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



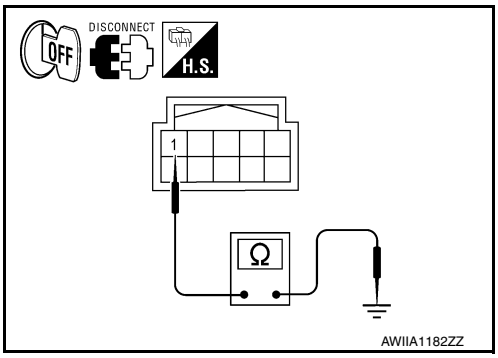
Is the inspection result normal?

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-203, "Removal and Installation".
NO >> Repair the harnesses or connectors.

ECU DIAGNOSIS INFORMATION

A/C AUTO AMP.

Reference Value

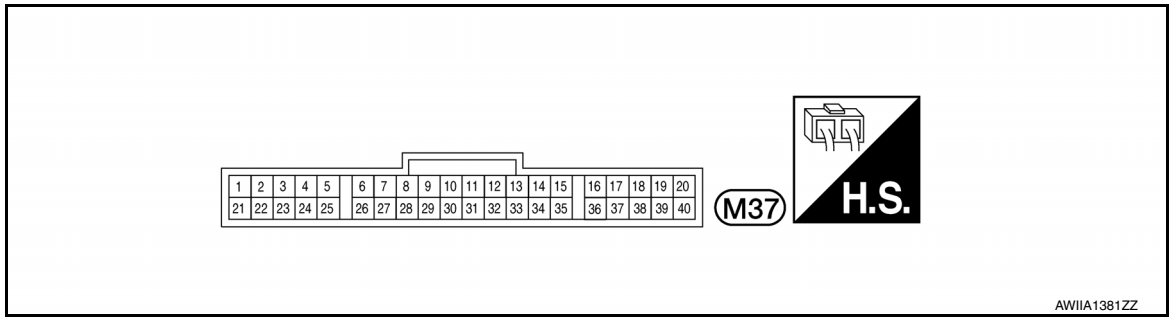
INFOID:0000000010051174

VALUES ON THE DIAGNOSIS TOOL

CONSULT MONITOR ITEM

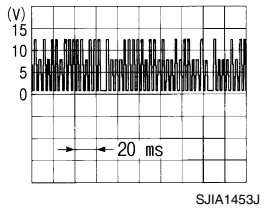
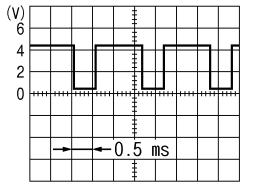
Monitor item	Condition		Value/Status
COMP REQ SIG	Engine: Run at idle after warming up	A/C switch: ON (A/C compressor operation status)	On
		A/C switch: OFF	Off
FAN REQ SIG	Engine: Run at idle after warming up	Blower fan: ON	On
		Blower fan: OFF	Off
AMB TEMP SEN	Ignition switch ON	—	22 - 131°F (–30 -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

DTC Inspection Priority Chart

INFOID:0000000010051175

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:0000000010051176

DTC	Items (CONSULT screen terms)	Reference
U1000	CAN COMM CIRCUIT	HAC-133, "DTC Logic"
U1010	CONTROL UNIT (CAN)	HAC-134, "DTC Logic"
B257B	AMB TEMP SEN (SHORT)	HAC-135, "DTC Logic"
B257C	AMB TEMP SEN (OPEN)	HAC-135, "DTC Logic"
B2578	IN CAR SENSOR (OUT OF RANGE [LOW])	HAC-138, "DTC Logic"
B2579	IN CAR SENSOR (OUT OF RANGE [HI])	HAC-138, "DTC Logic"
B2581	EVAP TEMP SEN (SHORT)	HAC-141, "DTC Logic"
B2582	EVAP TEMP SEN (OPEN)	HAC-141, "DTC Logic"
B2630*	SUNLOAD SEN (SHORT)	HAC-144, "DTC Logic"
B2631*	SUNLOAD SEN (OPEN)	HAC-144, "DTC Logic"
B2632	DR AIRMIX ACTR (SHORT)	HAC-147, "DTC Logic"
B2633	DR AIRMIX ACTR (OPEN)	HAC-147, "DTC Logic"
B2634	PASS AIRMIX ACTR (SHORT)	HAC-149, "DTC Logic"
B2635	PASS AIRMIX ACTR (OPEN)	HAC-149, "DTC Logic"
B2636	DR VENT DOOR FAIL	HAC-152, "DTC Logic"
B2637	DR B/L DOOR FAIL	HAC-152, "DTC Logic"
B2638	DR D/F1 DOOR FAIL	HAC-152, "DTC Logic"
B2639	DR DEF DOOR FAIL	HAC-152, "DTC Logic"
B263D	FRE DOOR FAIL	HAC-155, "DTC Logic"
B263E	20P FRE DOOR FAIL	HAC-155, "DTC Logic"
B263F	REC DOOR FAIL	HAC-155, "DTC Logic"
B2654	D/F2 DOOR FAIL	HAC-152, "DTC Logic"
B2655	B/L2 DOOR FAIL	HAC-152, "DTC Logic"

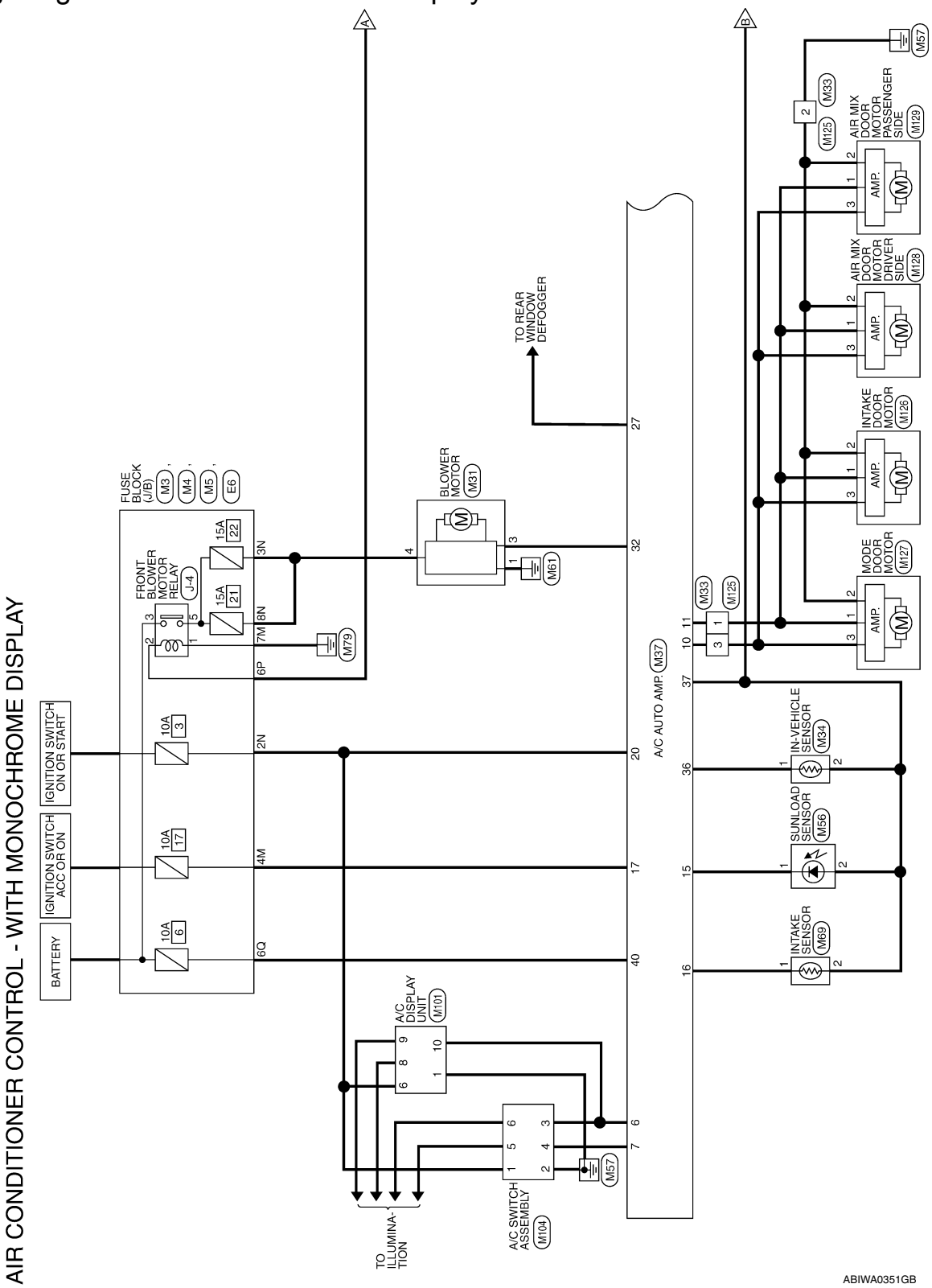
*: Perform self-diagnosis under direct sunlight. When performing indoors, aim a light (more than 60 W) at sunload sensor, otherwise self-diagnosisreports an error even though the sunload sensor is functioning normally.

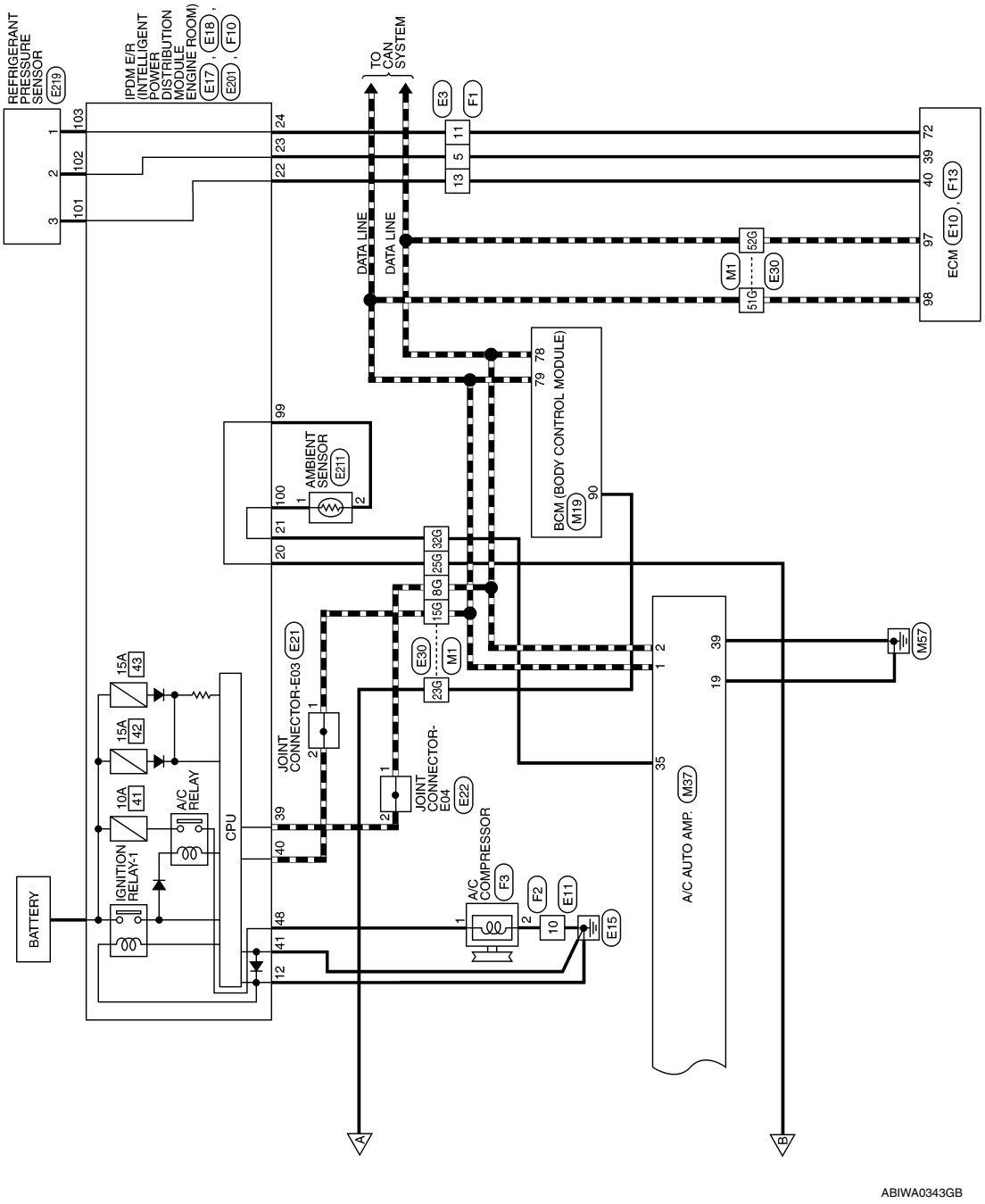
WIRING DIAGRAM

AIR CONDITIONER CONTROL

Wiring Diagram - With Monochrome Display

INFOID:0000000010051177




REFRIGERANT PRESSURE SENSOR E219
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) E17, E18, E201, F10
TO CAN SYSTEM
E3
F1
DATA LINE
DATA LINE
ECM E10, F13
M1
E30
52G
51G
BCM (BODY CONTROL MODULE) M19
AMBIENT SENSOR E211
JOINT CONNECTOR-E03 E21
JOINT CONNECTOR-E04 E22
A/C AUTO AMP. M37
M57
A/C COMPRESSOR F3
F2
E11
E15
BATTERY
IGNITION RELAY-1
A/C RELAY
CPU
15A 43
15A 42
10A 41
A
B
ABIWA0343GB

AIR CONDITIONER CONTROL CONNECTORS - WITH MONOCHROME DISPLAY

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	–

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	–

ABIIA0362GB

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	BLOWER FAN RELAY

Connector No.	M31
Connector Name	BLOWER MOTOR
Connector Color	WHITE

H.S.

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

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	–

ABIIA1190GB

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)
7	P	RX (SW>AMP)
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	–	–
27	GR/W	RR DEF ON
28	–	–
29	–	–
30	–	–
31	–	–
32	L/Y	FAN PWM
33	–	–
34	–	–
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.	M56
Connector Name	SUNLOAD SENSOR
Connector Color	BLACK

H.S.

1	2

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

ABIIA1191GB

Connector No.	M104
Connector Name	A/C SWITCH ASSEMBLY
Connector Color	WHITE

H.S.

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

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

Connector No.	M101
Connector Name	A/C DISPLAY UNIT
Connector Color	BLACK

H.S.

1	2	3	4	5
6	7	8	9	10

Terminal No.	Color of Wire	Signal Name
1	B	–
6	G	–
8	R/L	–
9	R/Y	–
10	L	–

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	–

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

H.S.

3
2
1

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.

3
2
1

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

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

H.S.

1
2
3

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

ABIIA1192GB

Connector No.	E3
Connector Name	WIRE TO WIRE
Connector Color	WHITE

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

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

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

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

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

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

Connector No.	E10
Connector Name	ECM
Connector Color	BLACK

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

Terminal No.	Color of Wire	Signal Name
6P	Y	–

ABIIA1193GB

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	GND (SIGNAL)

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
12	B	GND (POWER)
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	–

ABIIA1194GB

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.	F1
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
5	R	–
11	BR/W	–
13	G	–

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

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

H.S.

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

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

H.S.

3	2	1

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

Connector No.	E211
Connector Name	AMBIENT SENSOR
Connector Color	BLACK

H.S.

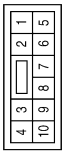
2	1

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

ABIIA1195GB

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

H.S.



Terminal No.	Color of Wire	Signal Name
10	B	–

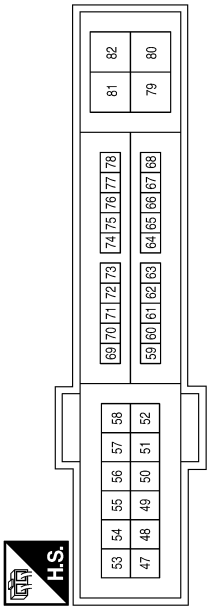
Connector No.	F3
Connector Name	A/C COMPRESSOR
Connector Color	BLACK

H.S.

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

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

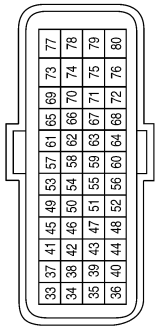
H.S.



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

Connector No.	F13
Connector Name	ECM
Connector Color	BROWN

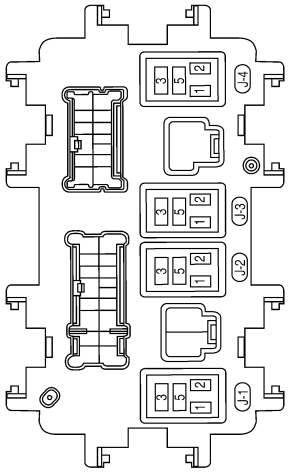
H.S.



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

Connector No.	J-4
Connector Name	FUSE BLOCK (J/B) (FRONT BLOWER MOTOR RELAY)
Connector Color	–

T.S.



ABIIA1196GB

SYMPTOM DIAGNOSIS

INSUFFICIENT COOLING

Component Function Check

INFOID:0000000010051178

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.

Is the inspection result normal?

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-108, "Operational Check".

Does another symptom exist?

YES >> Refer to HA-25, "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, check the setting of “TEMP SET CORRECT” on “WORK SUPPORT” of HVAC. Refer to HAC-109, "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

1. Using CONSULT, 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-133, "DTC Logic" or HAC-134, "DTC Logic".

Is any DTC No. displayed?

YES >> Perform diagnosis for the applicable DTC. Refer to HAC-171, "DTC Index".
NO >> GO TO 7.

7. CHECK WITH ACTIVE TEST OF CONSULT

1. Using CONSULT, perform “HVAC TEST”“ACTIVE TEST” of HVAC to check each output device. Refer to HAC-129, "CONSULT 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	OFF	OFF	ON	ON

Does it operate normally?

YES >> GO TO 8.
NO-1 >> Air outlet does not change. Refer to HAC-153, "Diagnosis Procedure".
NO-2 >> Air inlet does not change. Refer to HAC-156, "Diagnosis Procedure".
NO-3 >> Discharge air temperature does not change. Refer to HAC-148, "Diagnosis Procedure" and HAC-150, "Diagnosis Procedure".
NO-4 >> Blower motor does not operate normally. Refer to HAC-157, "Diagnosis Procedure".
NO-5 >> Magnet clutch does not operate. Refer to HAC-161, "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-486, "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-28, "Recycle Refrigerant" and HA-28, "Charge Refrigerant".

12. CHECK REFRIGERANT PRESSURE

Check refrigerant pressure with manifold gauge connected. Refer to HAC-187, "Performance Chart".

Is the inspection result normal?

YES >> Perform diagnostic work flow. Refer to HAC-185, "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-185, "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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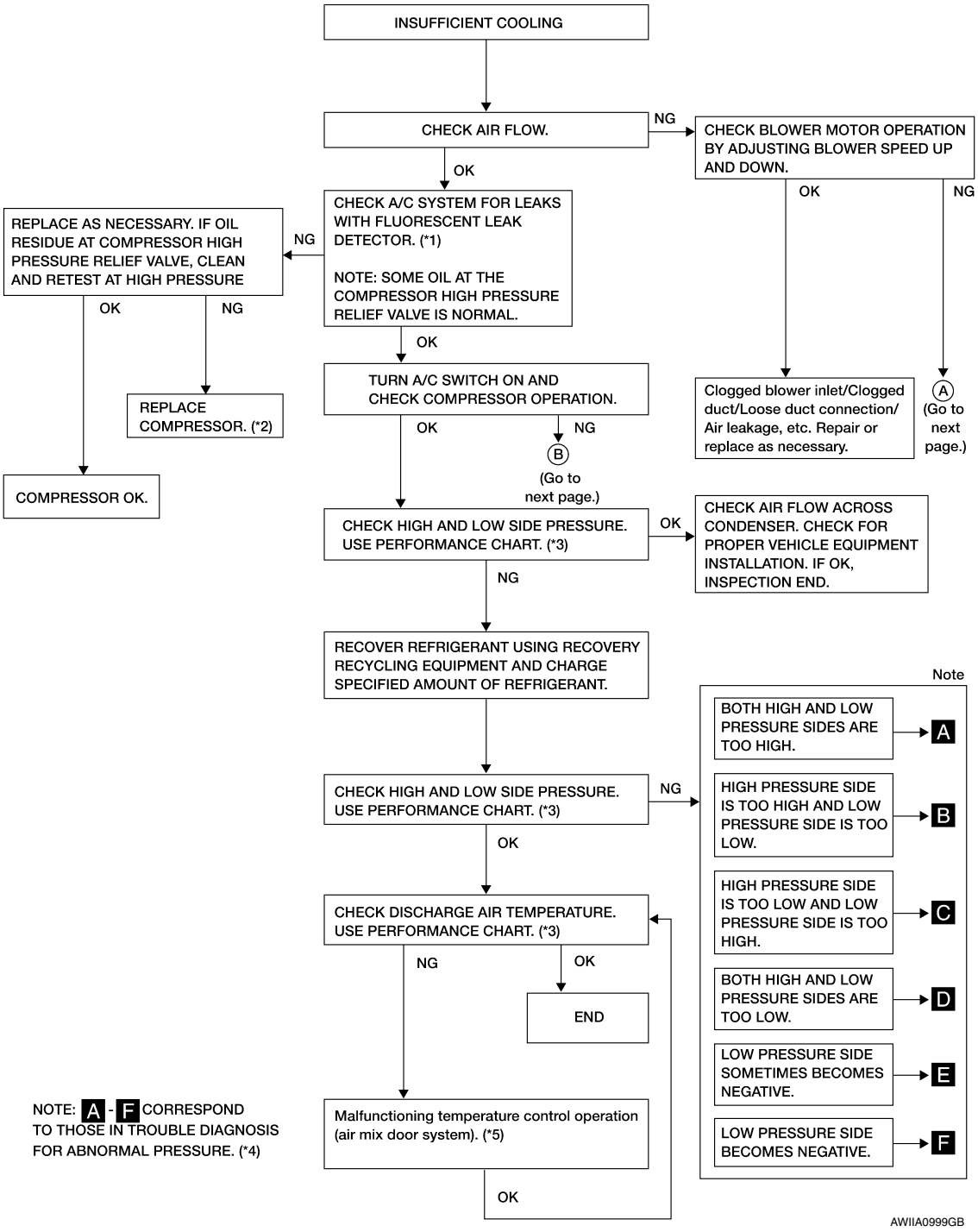


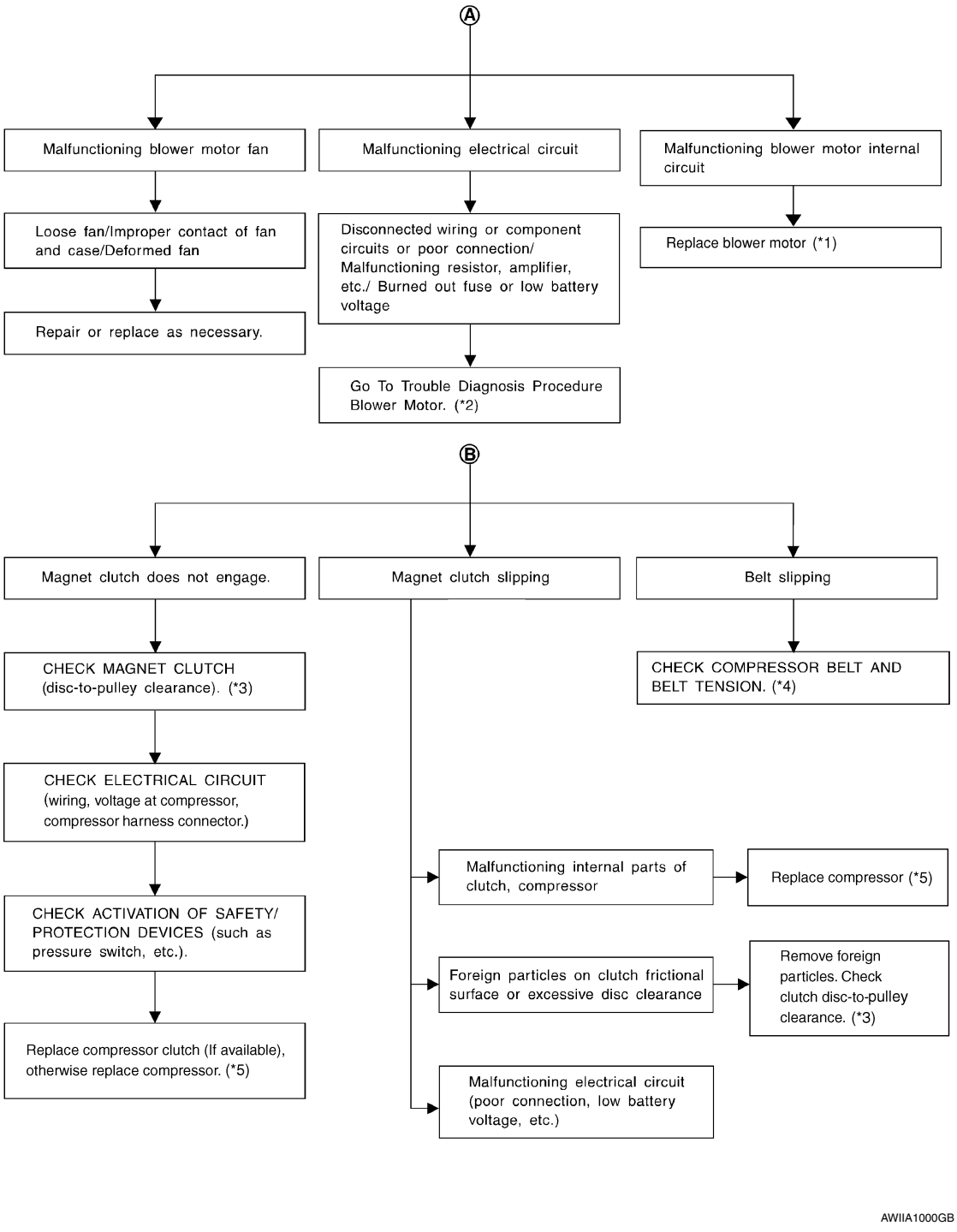
*1 HA-26, "Leak Test"

*2 HA-37, "Removal and Installation for Compressor"

*3 HAC-187, "Performance Chart"

*4 HA-22, "WITH MONOCHROME DISPLAY : Trouble Diagnoses for Abnormal Pressure"

*5 HAC-148, "Diagnosis Procedure" (driver) or HAC-150, "Diagnosis Procedure" (passenger)



AWIIA1000GB

*1 VTL-16, "BLOWER MOTOR : Removal and Installation"
*2 HAC-157, "Diagnosis Procedure"
*3 HA-38, "Removal and Installation for Compressor Clutch"
*4 EM-14, "Checking Drive Belts"
*5 HA-37, "Removal and Installation for Compressor"

Performance Chart

INFOID:0000000010051180

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:0000000010051181

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.

Is the inspection result normal?

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-108, "Operational Check".

Does another symptom exist?

YES >> Refer to HA-25, "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-10, "System Inspection".
2. Check hoses for leaks or kinks.
3. Check radiator cap. Refer to CO-10, "System Inspection".
4. Check for air in cooling system.

>> GO TO 5

5. CHECK SETTING OF TEMPERATURE SETTING TRIMMER

Using CONSULT, check the setting of “TEMP SET CORRECT” on “WORK SUPPORT” of HVAC. Refer to HAC-109, "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

1. Using CONSULT, 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-133, "DTC Logic" or HAC-134, "DTC Logic".

Is any DTC No. displayed?

YES >> Perform diagnosis for the applicable DTC. Refer to HAC-171, "DTC Index".
NO >> GO TO 7.

7. CHECK WITH ACTIVE TEST OF CONSULT

1. Using CONSULT, perform “HVAC TEST” in “ACTIVE TEST” of HVAC to check each output device. Refer to HAC-129, "CONSULT 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	OFF	OFF	ON	ON

Does it operate normally?

YES >> GO TO 8.
NO-1 >> Air outlet does not change. Refer to HAC-153, "Diagnosis Procedure".
NO-2 >> Air inlet does not change. Refer to HAC-156, "Diagnosis Procedure".
NO-3 >> Discharge air temperature does not change. Refer to HAC-148, "Diagnosis Procedure" and HAC-150, "Diagnosis Procedure".
NO-4 >> Blower motor does not operate normally. Refer to HAC-157, "Diagnosis Procedure".
NO-5 >> Magnet clutch does not operate. Refer to HAC-161, "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. The inlet hose should be hot and the outlet hose should be warm.

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-22, "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-11, "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. The inlet hose should be hot and the outlet hose should be warm.

Is the inspection result normal?

YES >> System OK.
NO >> Replace heater core. Refer to HA-48, "HEATER CORE : Removal and Installation".

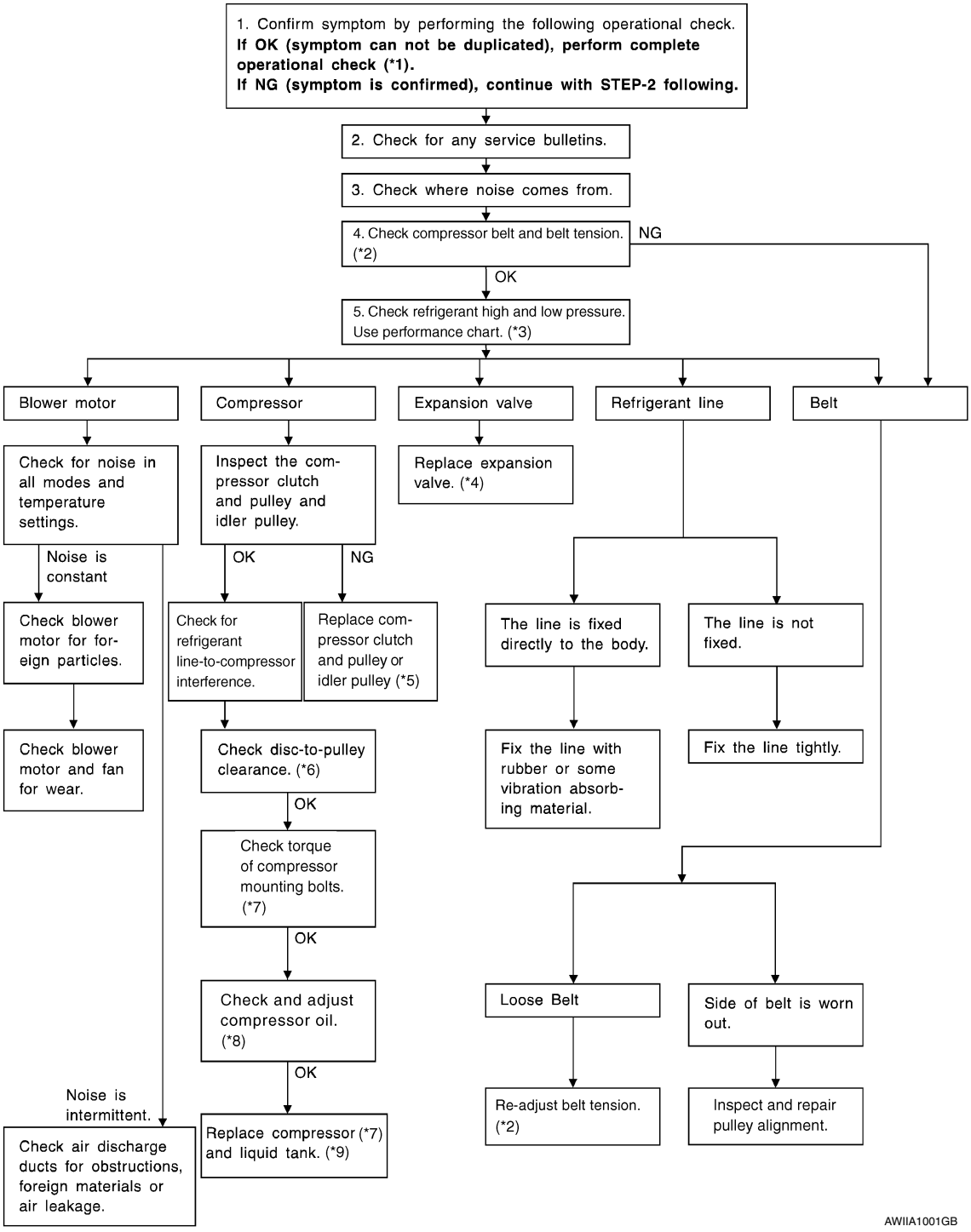
NOISE

Component Function Check

INFOID:0000000010051182

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

INSPECTION FLOW



*1	HAC-108, "Operational Check"	*2	EM-14, "Checking Drive Belts"	*3	HAC-187, "Performance Chart"
*4	HA-49, "EXPANSION VALVE : Removal and Installation for Expansion Valve"	*5	HA-38, "Removal and Installation for Compressor Clutch"	*6	HA-38, "Removal and Installation for Compressor Clutch"
*7	HA-37, "Removal and Installation for Compressor"	*8	HA-30, "Inspection"	*9	HA-45, "CONDENSER : Removal and Installation"

MEMORY FUNCTION DOES NOT OPERATE

Component Function Check

INFOID:0000000010051183

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-165, "A/C AUTO AMP. : Component Function Check".

PRECAUTION

PRECAUTIONS

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

INFOID:0000000009466439

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 WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

- **When working near the Airbag Diagnosis Sensor Unit or other Airbag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery and wait at least 3 minutes before performing any service.**

Precaution for Work

INFOID:0000000009466440

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

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

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

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

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

INFOID:0000000009466441

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. 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 lubricant for the HFC-134a (R-134a) A/C system and HFC-134a (R-134a) components. If lubricant other than that specified is used, compressor failure is likely to occur.**
- **The specified HFC-134a (R-134a) lubricant 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 lubricant from a sealed container. Immediately reseal containers of lubricant. Without proper sealing, lubricant will become moisture saturated and should not be used.
- Avoid breathing A/C refrigerant and lubricant 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 lubricant manufacturers.
- Do not allow A/C lubricant to come in contact with styrofoam parts or 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.

Precautions For Refrigerant System Service

INFOID:0000000009466442

WORKING WITH HFC-134a (R-134a)

CAUTION:

- **CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. Compressor malfunction is likely to occur if the refrigerants are mixed, refer to "CONTAMINATED REFRIGERANT" below. 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. Compressor malfunction is likely to occur if oil other than that specified is used.**
- **The specified HFC-134a (R-134a) oil rapidly absorbs moisture from the atmosphere. The following handling precautions must be observed:**

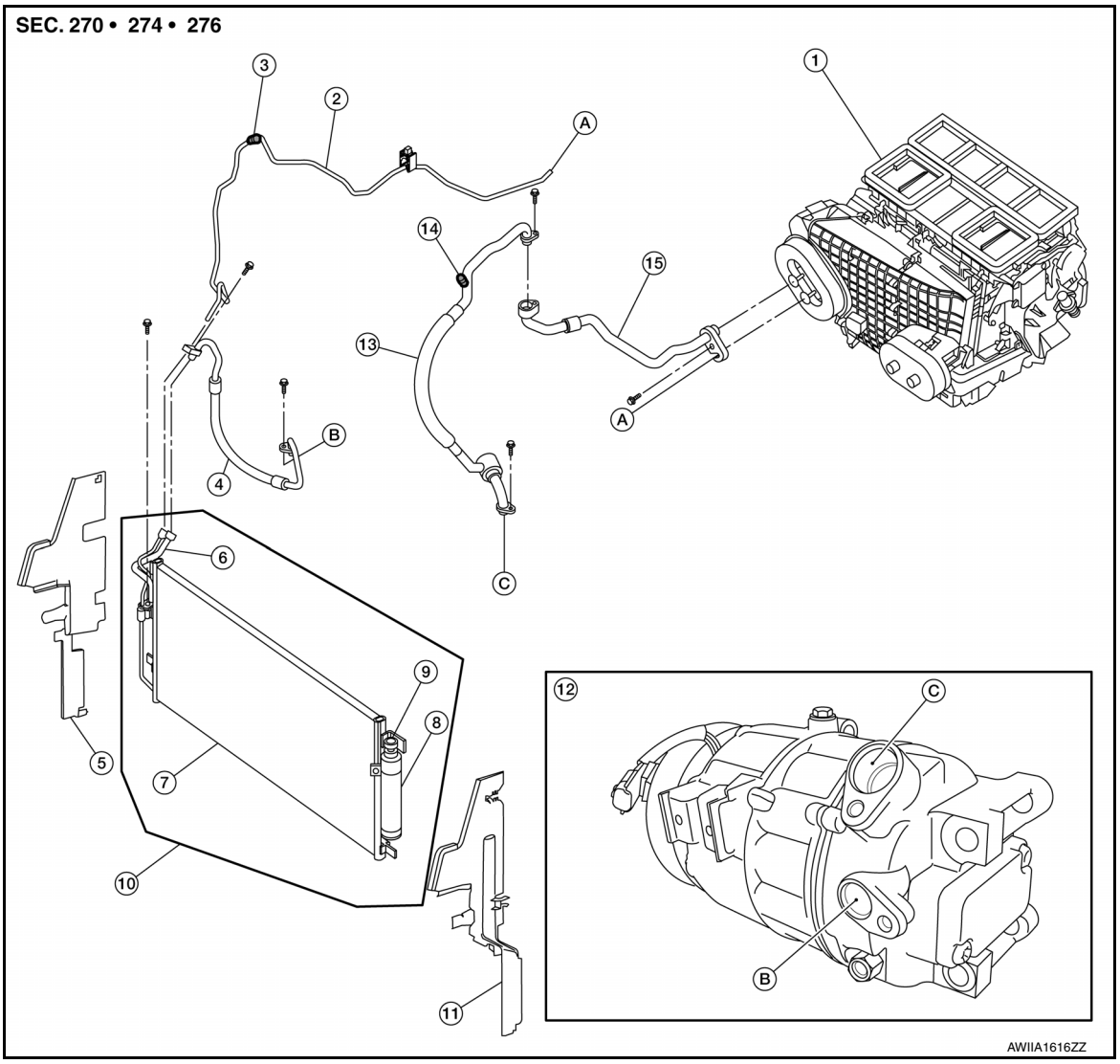
- Cap (seal) the component immediately to minimize the entry of moisture from the atmosphere when removing refrigerant components from a vehicle.
- Do not remove the caps (unseal) until just before connecting the components when installing refrigerant components to a vehicle. Connect all refrigerant loop components as quickly as possible to minimize the entry of moisture into system.
- Use only the specified oil from a sealed container. Reseal containers of oil immediately. Oil becomes moisture saturated and should not be used without proper sealing.
- Do not allow oil to come in contact with styrene foam parts. Damage may result.

GENERAL REFRIGERANT PRECAUTION

WARNING:

- **Do not breathe 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 J-2210 [HFC-134a (R-134a) recycling equipment] or J-2209 [HFC-134a (R-134a) recovery equipment]. Ventilate work area before resuming service if accidental system discharge occurs. Additional health and safety information may be obtained from refrigerant and oil manufacturers.**
- **Do not release refrigerant into the air. Use approved recovery/recycling recharging equipment to capture the refrigerant each 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 (126°F).**
- **Do not heat a refrigerant container with an open flame; Place the bottom of the container in a warm pail of water if container warming is required.**
- **Do not intentionally drop, puncture or incinerate refrigerant containers.**
- **Do not refrigerant away from open flames; poisonous gas is produced if refrigerant burns.**
- **Refrigerant displaces oxygen; therefore be certain to work in well ventilated areas to prevent suffocation.**
- **Do not pressure test or leakage 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.**

O-RING AND REFRIGERANT CONNECTION



1. Heater and cooling unit assembly	2. High-pressure pipe	3. High-pressure A/C service valve
4. High-pressure flexible hose	5. Air deflector (RH)	6. Junction pipe
7. Condenser	8. Liquid tank	9. Refrigerant pressure sensor
10. Condenser, liquid tank and refrigerant pressure sensor	11. Air deflector (LH)	12. Compressor
13. Low-pressure flexible hose	14. Low-pressure A/C service valve	15. Low-pressure pipe
A. High-pressure pipe to heater and cooling unit assembly	B. High-pressure flexible hose to compressor	C. Low-pressure flexible hose to compressor

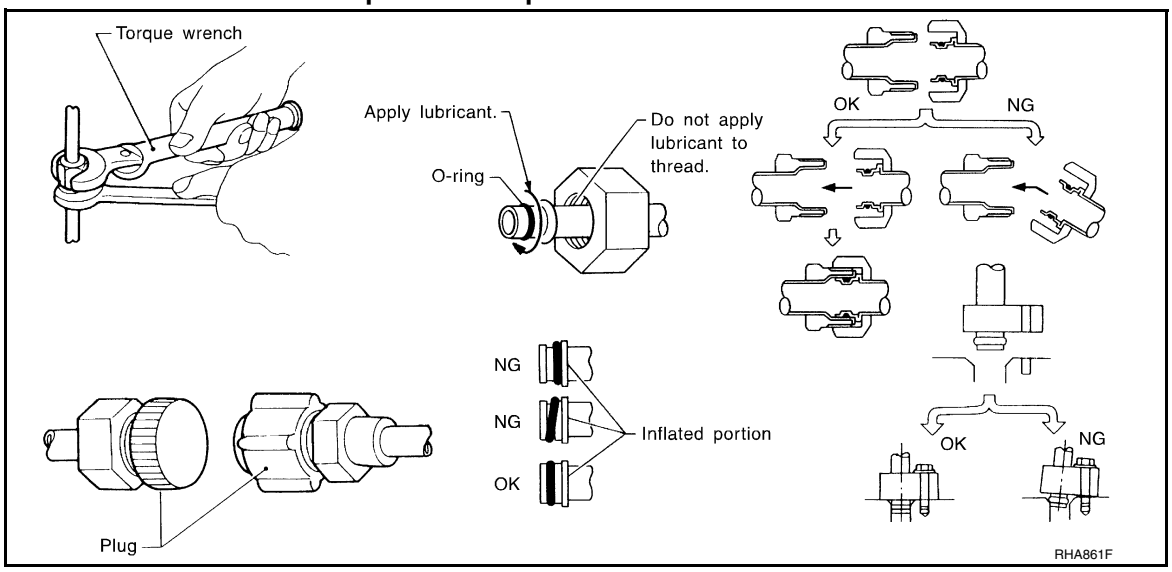
A new type of refrigerant connection has been introduced to all refrigerant lines except the following locations:
- Expansion valve to evaporator
- Refrigerant pressure sensor to liquid tank

WARNING:

Check that 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:

Observe the following when replacing or cleaning refrigerant cycle components.
- **Store it in the same way as it is when mounted on the vehicle when the compressor is removed. Failure to do so will cause oil to enter the low-pressure chamber.**
- **Always use a torque wrench and a back-up wrench when connecting tubes.**
- **Immediately plug all openings to prevent entry of dust and moisture after disconnecting tubes.**
- **Connect the pipes at the final stage of the operation when installing an air conditioner in the vehicle. 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.**
- **Remove moisture thoroughly from the refrigeration system before charging the refrigerant.**
- **Always replace used O-rings.**
- **Apply oil to circle of the O-rings shown in illustration when connecting tube. Be careful not to apply oil to threaded portion.**
- **O-ring must be closely attached to the groove portion of tube.**
- **Be careful not to damage O-ring and tube when replacing the O-ring.**
- **Connect tube until a click can be heard. Then tighten the nut or bolt by hand. Check that the O-ring is installed to tube correctly.**
- **Perform leakage test and make sure that there is no leakage from connections after connecting line. Disconnect that line and replace the O-ring when the refrigerant leaking point is found. Then tighten connections of seal seat to the specified torque.**



CONTAMINATED REFRIGERANT

Take appropriate steps shown below if a refrigerant other than pure HFC-134a (R-134a) is identified in a vehicle:

- 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 service equipment and refrigerant supply.
- Suggest the customer return the vehicle to the location of previous service where the contamination may have occurred.
- In case of repairing, recover the refrigerant using only **dedicated equipment and containers. Do not recover contaminated refrigerant into the existing service equipment.** Contact a local refrigerant product retailer for available service if the facility does not have dedicated recovery equipment. 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.
- The air conditioner warranty is void if the vehicle is within the warranty period. Please contact Nissan Customer Affairs for further assistance.

COMPRESSOR

CAUTION:

- **Plug all openings to prevent moisture and foreign matter from entering.**
- **Store it in the same way as it is when mounted on the car when the compressor is removed.**
- **Follow "Maintenance of Oil Quantity in Compressor" exactly when replacing or repairing compressor. Refer to HA-30, "Description".**
- **Keep friction surfaces between clutch and pulley clean. Wipe it off by using a clean waste cloth moistened with thinner if the surface is contaminated with oil.**
- **Turn the compressor shaft by hand more than five turns in both directions after compressor service operation. This distributes oil equally inside the compressor. Let the engine idle and operate the compressor for one hour after the compressor is installed.**
- **Apply voltage to the new one and check for normal operation after replacing the compressor magnet clutch.**

LEAK DETECTION DYE

CAUTION:

- **The A/C system contains a fluorescent leak detection dye used for locating refrigerant leakages. An ultraviolet (UV) lamp is required to illuminate the dye when inspecting for leakages.**
- **Always wear fluorescence enhancing UV safety goggles to protect eyes and enhance the visibility of the fluorescent dye.**
- **The fluorescent dye leak detector is not a replacement for an electrical leak detector (SST: J-41995). The fluorescent dye leak detector should be used in conjunction with an electrical leak detector (SST: J-41995) to pin-point refrigerant leakages.**
- **Read and follow all manufacture's operating instructions and precautions prior to performing the work for the purpose of safety and customer's satisfaction.**
- **A compressor shaft seal should not necessarily be repaired because of dye seepage. The compressor shaft seal should only be repaired after confirming the leakage with an electrical leak detector (SST: J-41995).**
- **Always remove any remaining dye from the leakage area after repairs are completed to avoid a misdiagnosis during a future service.**
- **Do not allow dye to come into contact with painted body panels or interior components. Clean immediately with the approved dye cleaner if dye is spilled. 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 CFC-12 (R-12) A/C systems are different. Do not use HFC-134a (R-134a) leak detection dye in CFC-12 (R-12) A/C system or CFC-12 (R-12) leak detection dye in HFC-134a (R-134a) A/C system or A/C system damage may result.**
- **The fluorescent properties of the dye remains for three or more years unless a compressor malfunction occurs.**

NOTE:

Identification

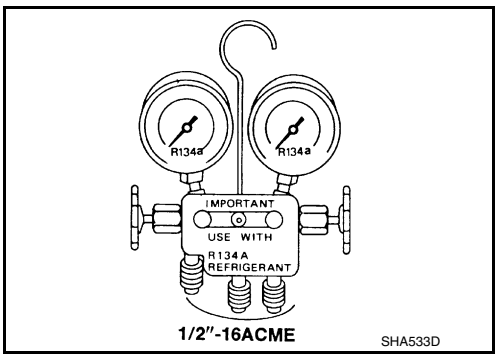
- Vehicles with factory installed fluorescent dye have a green label.
- Vehicles without factory installed fluorescent dye have a blue label.

Precaution for Service Equipment

INFOID:0000000009466443

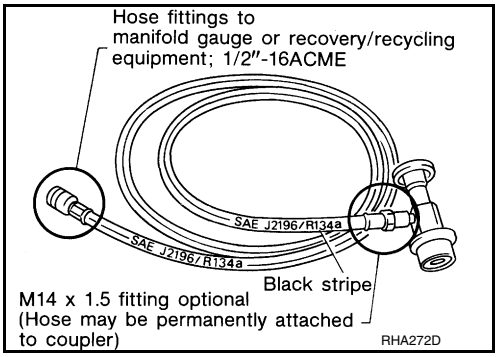
MANIFOLD GAUGE SET

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 lubricant.



SERVICE HOSES

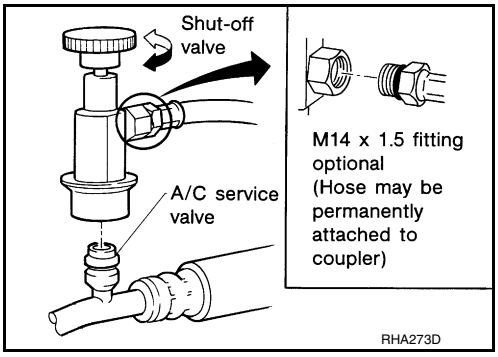
Be certain that the service hoses display the markings described (colored hose with black stripe). All hoses must include positive shut-off devices (either manual or automatic) near the end of the hoses opposite the manifold gauge.



SERVICE COUPLERS

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

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



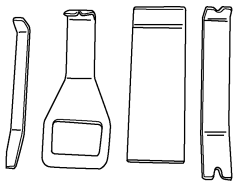
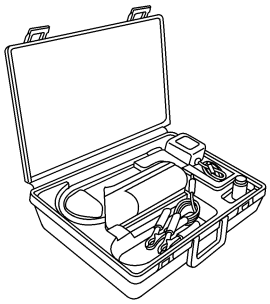
PREPARATION

PREPARATION

Special Service Tool

INFOID:0000000009466444

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

Tool number (TechMate No.) Tool name	Description
— (J-46534) Trim Tool Set  AWJIA0483ZZ	Removing trim components
— (J-41995) Electronic refrigerant leak detector  AHA281A	Power supply: • DC 12V (battery terminal)

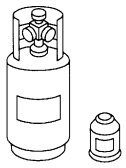
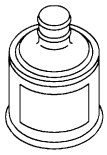
Commercial Service Tool

INFOID:0000000009466445

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

Sealant and/or Lubricant

INFOID:0000000009466446

Tool number (TechMate No.) Tool name		Description
— (—) HFC-134a (R-134a) Refrigerant	 S-NT196	Container color: Light blue Container marking: HFC-134a (R-134a) Fitting size: Thread size • large container 1/2”-16 ACME
— (—) NISSAN A/C System Oil Type S	 JMIIA1759ZZ	Type: Poly alkylene glycol oil (PAG), type S (DH-PS) Application: HFC-134a (R-134a) swash plate compressors Capacity: 40 m ℓ (1.4 US fl oz, 1.4 Imp fl oz)

REMOVAL AND INSTALLATION

CONTROL UNIT

Removal and Installation

INFOID:0000000009466447

A/C SWITCH ASSEMBLY

Removal

1. Remove cluster lid D. Refer to IP-10, "Exploded View".
2. Remove the A/C switch assembly from cluster lid D.

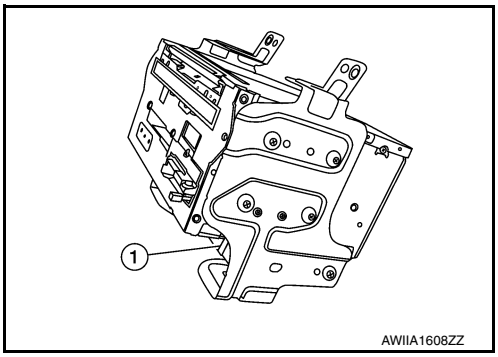
Installation

Installation is in the reverse order of removal.

A/C AUTO AMP.

Removal

1. Remove the audio unit.
   - Refer to AV-73, "Removal and Installation" (BASE AUDIO).
   - Refer to AV-161, "Removal and Installation" (BOSE W/MONOCHROME DISPLAY).
2. Remove the two A/C auto amp. bracket screws.
3. Remove the A/C auto amp. (1) from the bracket.



Installation

Installation is in the reverse order of removal.

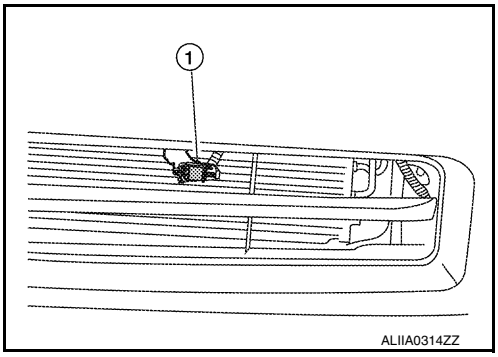
AMBIENT SENSOR

Removal and Installation

INFOID:0000000009466448

REMOVAL

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



INSTALLATION

Installation is in the reverse order of removal.

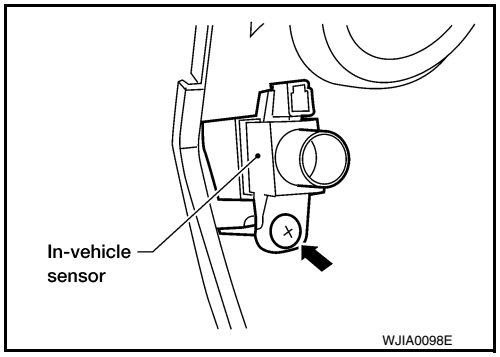
IN-VEHICLE SENSOR

Removal and Installation

INFOID:0000000009466449

REMOVAL

1. Remove the instrument lower panel LH. Refer to IP-19, "Removal and Installation".
2. Remove the in-vehicle sensor screw and the in-vehicle sensor.



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

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

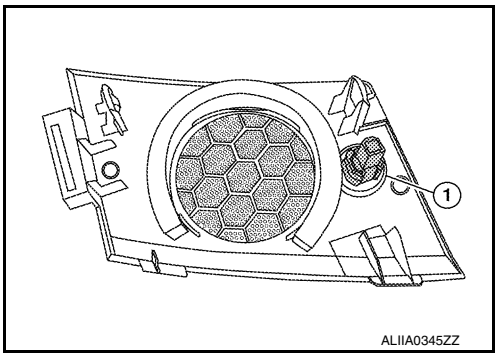
SUNLOAD SENSOR

Removal and Installation

INFOID:0000000009466450

REMOVAL

1. Remove the front LH speaker grille from the instrument panel. Refer to IP-10, "Exploded View".
2. Disconnect the harness connector from the sunload sensor.
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

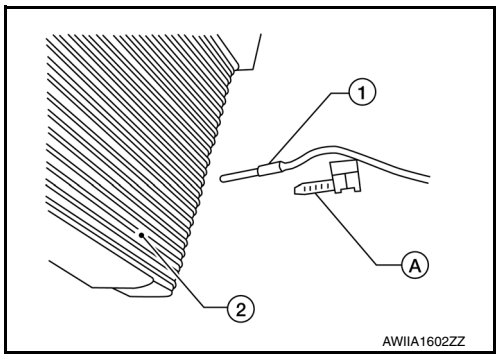
INFOID:0000000009466451

REMOVAL

1. Remove the evaporator (2). Refer to HA-48, "EVAPORATOR : Removal and Installation".
2. Release the intake sensor clip (A), then remove the intake sensor (1).

CAUTION:

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



INSTALLATION

Installation is in the reverse order of removal.

REFRIGERANT PRESSURE SENSOR

Removal and Installation

INFOID:0000000009466452

REMOVAL

1. Discharge the refrigerant. Refer to HA-28, "Recycle Refrigerant".
2. Remove the core support upper cover.
3. Disconnect the harness connector from the refrigerant pressure sensor.
4. Remove the refrigerant pressure sensor.
   CAUTION:
   Cap or wrap the opening of the refrigerant pressure sensor with suitable material such as vinyl tape to avoid the entry of air.

INSTALLATION

Installation is in the reverse order of removal.

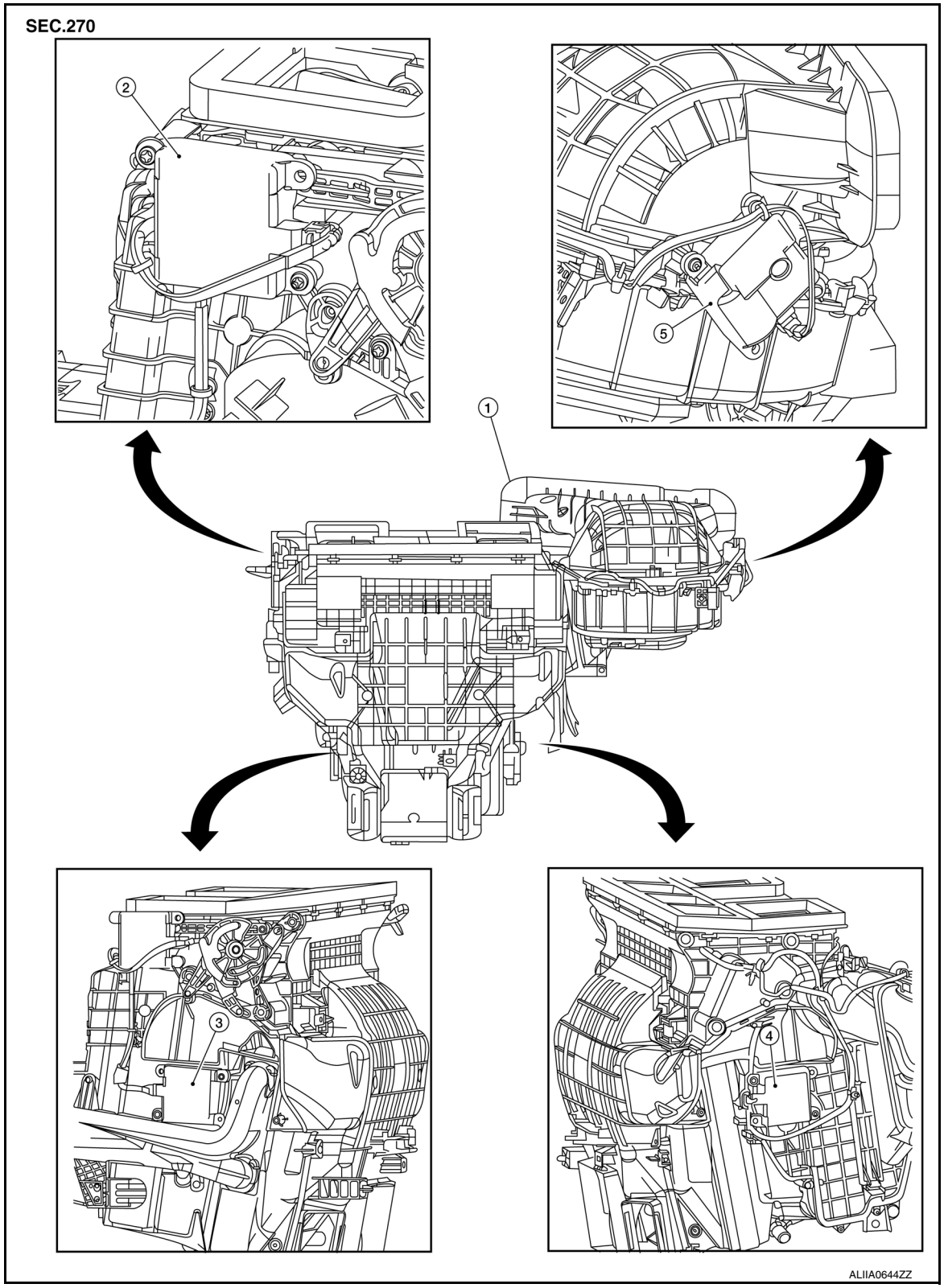
CAUTION:

- **Do not reuse O-ring.**
- **Apply A/C oil to the O-ring of the refrigerant pressure sensor for installation.**
- **After charging refrigerant, check for leaks. Refer to HA-26, "Leak Test".**

DOOR MOTOR

Exploded View

INFOID:0000000009466453



1. Heating and cooling unit assembly
2. Mode door motor
3. Air mix door motor (driver side)
4. Air mix door motor (passenger side)
5. Intake door motor

INTAKE DOOR MOTOR

INTAKE DOOR MOTOR : Removal and Installation

INFOID:0000000009466454

REMOVAL

1. Remove the glove box assembly. Refer to IP-20, "Removal and Installation".
2. Remove the remote keyless entry receiver and bracket to reposition out of the way.
3. Disconnect the harness connector from the intake door motor.
4. Remove the intake door motor screws and the intake door motor from the blower unit.

INSTALLATION

Installation is in the reverse order of removal.

MODE DOOR MOTOR

MODE DOOR MOTOR : Removal and Installation

INFOID:0000000009466455

REMOVAL

1. Remove the combination meter. Refer to MWI-122, "Removal and Installation".
2. Remove the BCM. Refer to BCS-79, "Removal and Installation".
3. Disconnect the harness connector from the mode door motor.
4. Remove the mode door motor screws and the mode door motor.

INSTALLATION

Installation is in the reverse order of removal.

AIR MIX DOOR MOTOR

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

INFOID:0000000009466456

REMOVAL

1. Remove the instrument lower panel LH. Refer to IP-19, "Removal and Installation".
2. Remove the upper floor connecting duct (LH). Refer to HA-47, "Exploded View".
3. Remove the tire pressure receiver.
4. Disconnect the harness connector from the air mix door motor.
5. Remove the air mix door motor screws and the air mix door motor (driver side).

INSTALLATION

Installation is in the reverse order of removal.

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

INFOID:0000000009466457

REMOVAL

1. Remove the glove box assembly. Refer to IP-20, "Removal and Installation".
2. Remove the upper floor connecting duct (RH). Refer to HA-47, "Exploded View".
3. Disconnect the harness connector from the air mix door motor.
4. Remove the air mix door motor screws and the air mix door motor (passenger side).

INSTALLATION

Installation is in the reverse order of removal.