SECTION HAC

HEATER & AIR CONDITIONING CONTROL SYSTEM

CONTENTS

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:0000000004498185

DETAILED FLOW

1. LISTEN TO CUSTOMER COMPLAINT

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

>> GO TO 2

2. VERIFY THE SYMPTOM WITH OPERATIONAL CHECK

Verify the symptom with operational check. Refer to HAC-5, "Description and Conditions".

>> GO TO 3

3. GO TO APPROPRIATE TROUBLE DIAGNOSIS

Go to appropriate trouble diagnosis. Refer to HAC-83, "Symptom Matrix Chart" below.

>> GO TO 4

4. REPAIR OR REPLACE

Repair or replace the specific parts.

>> GO TO 5

5. FINAL CHECK

Final check.

Is the inspection result normal?

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

INSPECTION AND ADJUSTMENT

Description and Conditions

INFOID:0000000004498186

DESCRIPTION

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

CONDITIONS:

- Engine running and at normal operation temperature.

Operational Check

INFOID:0000000004498187

STEP 1: Check Blower

1. Turn blower control dial clockwise, blower should operate on low speed.
2. Continue turning blower control dial clockwise, and continue checking blower speeds until all speeds are checked.
3. Leave blower on HI speed.

If NG, go to HAC-42, "Diagnosis Procedure".
If OK, continue with next check.

STEP 2: Check Discharge Air

1. Press each mode switch and press DEF ( ) switch.
2. Each mode position indicator should illuminate.
3. Confirm that discharge air comes out according to the air distribution table. Refer to HAC-14, "System Description".

NOTE:
Confirm that the compressor clutch is engaged (audio or visual inspection) and intake door is in the FRE ( ) position when the DEF ( ) is selected.

Intake door position is checked in the next step.
If NG, go to HAC-32, "Diagnosis Procedure".
If OK, continue with next check.

STEP 3: Check Recirculation

1. Press REC ( ) switch.
   Recirculation indicator should illuminate.
2. Press REC ( ) switch a second time.
3. Listen for intake door position change (you should hear blower sound change slightly).

If NG, go to HAC-35, "Diagnosis Procedure".
If OK, continue with next check.

STEP 4: Check Temperature Decrease

1. Turn the temperature dial counterclockwise to 18°C (60F°).
2. Check for cold air at discharge air outlets.

If NG, go to HAC-84, "Component Function Check".
If OK, continue with next check.

STEP 5: Check Temperature Increase

1. Turn the temperature dial clockwise to 32°C (90°F).
2. Check for hot air at discharge air outlets.

If NG, go to HAC-92, "Component Function Check".
If OK, continue with next check.

STEP 6: Check AUTO Mode

1. Press the AUTO switch.

2. Confirm that the compressor clutch engages (audio or visual inspection).
   (Discharge air and blower speed will depend on ambient, in-vehicle and set temperatures.)

If NG, go to HAC-61, "Diagnosis Procedure", then if necessary, HAC-46, "Component Function Check".
If all operational checks are OK (symptom can not be duplicated), go to Refer to Service Manual and perform tests as outlined to simulate driving condition environment. If symptom appears, refer to HAC-83, "Symptom Matrix Chart".

Auxiliary Mechanism Trimmers

INFOID:0000000004498188

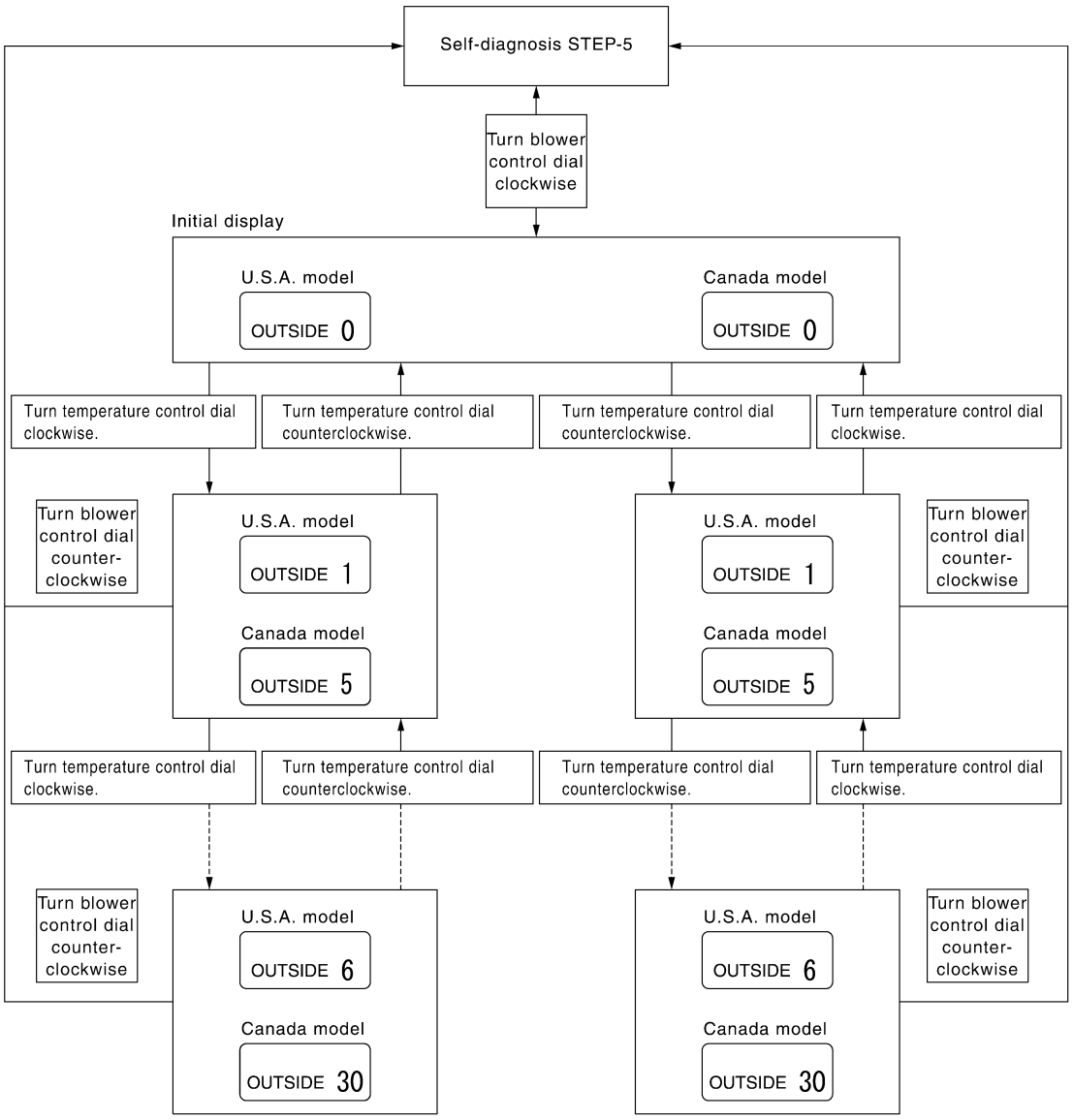
TEMPERATURE SETTING TRIMMER

The trimmer compensates for differences in range of ±3°C (±6°F) between temperature setting (displayed digitally) and temperature felt by customer.

Operating procedures for this trimmer are as follows:
1. Begin self-diagnosis STEP-5 mode. Refer to HAC-22, "Diagnosis Description".
2. Turn blower control dial clockwise to set system in auxiliary mode.
3. Display shows “61” in auxiliary mechanism. It takes approximately 3 seconds to enable setting operation.
4. Turn temperature control dial (LH) as desired. Temperature will change at a rate of 0.5°C (1.0°F) each time a dial is turned.

NOTE:
- A decimal point is not indicated on the display.

- Negative value is displayed on the LH temperature display.



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When battery cable is disconnected or battery voltage is below 10 V, trimmer operation is canceled. Temperature set becomes that of initial condition, i.e. 0°C (0°F).

FOOT POSITION SETTING TRIMMER

D/F1 stop position mode can be set.

Operating procedures for this trimmer are as follows:
1. Begin self-diagnosis STEP-5 mode. Refer to HAC-22, "Diagnosis Description".
2. Turn blower control dial clockwise to set system in auxiliary mode.
3. Press the OFF switch for each mode as desired.

MODE Stop Position				
	AUTO D/F1		Manual D/F1	
Blower speed display		DEF door		DEF door
1st speed	D/F1	OPEN	FOOT	CLOSED
2nd speed	D/F1	OPEN	D/F1	OPEN
3rd speed	FOOT	CLOSED	D/F1	OPEN
4th speed	FOOT	CLOSED	FOOT	CLOSED

When battery cable is disconnected or battery voltage is below 10 V, trimmer operation is canceled. Foot position mode set becomes that of initial condition.

INLET PORT MEMORY FUNCTION

When ignition switch is turned from OFF to ON, inlet port can be set to AUTO or manual.

Operating procedures for this trimmer are as follows:
1. Begin self-diagnosis STEP-5 mode. Refer to HAC-22, "Diagnosis Description".
2. Turn blower control dial clockwise to set system in auxiliary mode.
3. Press REC ( ) switch as desired.

LED status of REC ( ) position	LED status of DEF ( ) position	Setting status	
		REC ( )	FRE ( )
ON	ON	Memorized	Memorized
ON	OFF	Memorized (initial state)	Not memorized (AUTO control) (initial state)
OFF	ON	Not memorized (AUTO control)	Memorized
OFF	OFF	Not memorized (AUTO control)	Not memorized (AUTO control)

When battery cable is disconnected or battery voltage is below 10 V, memory function is canceled. Memory function set becomes that of initial condition.

FUNCTION DIAGNOSIS

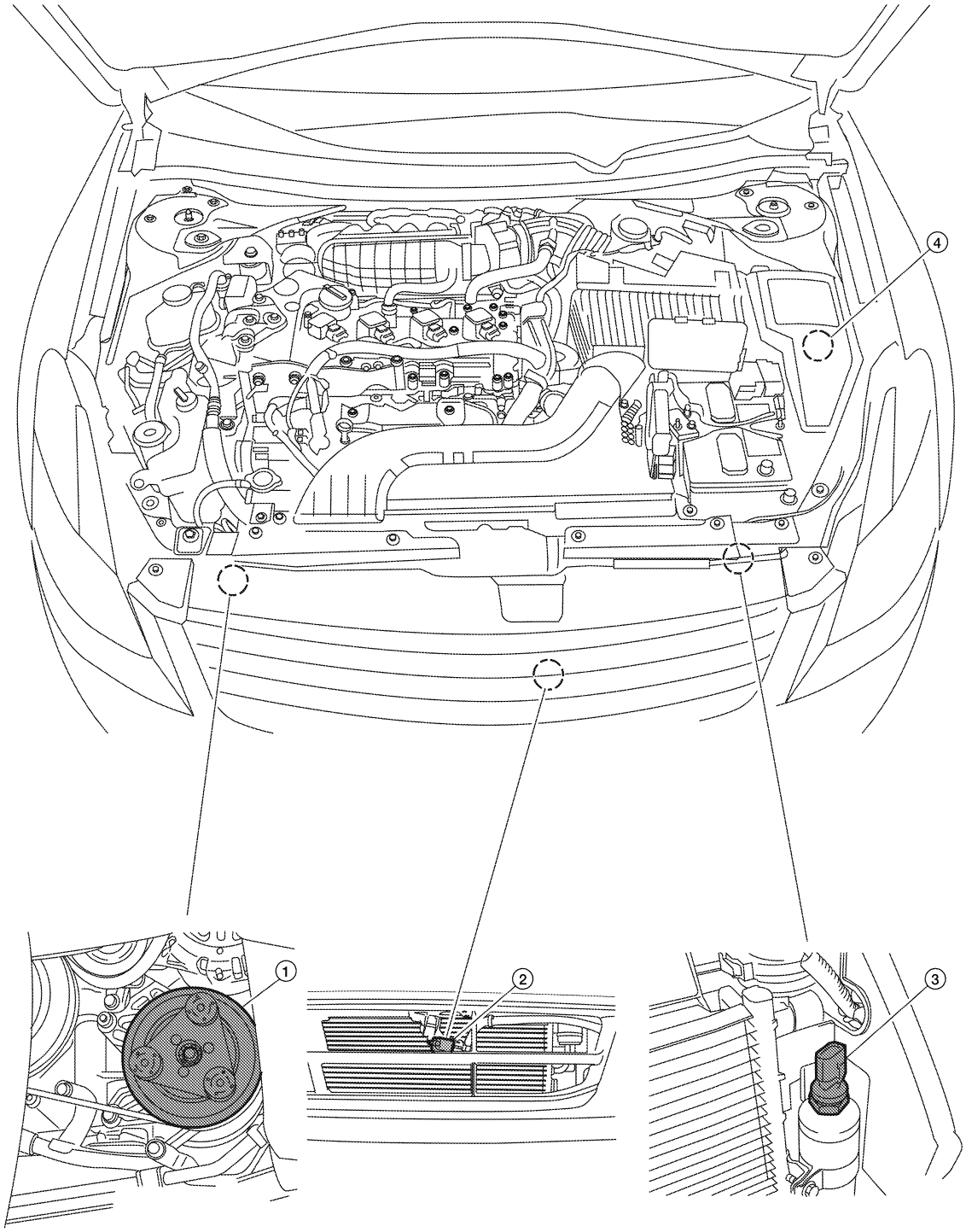
FUNCTION INFORMATION

Component Part Location

INFOID:0000000004498189

ENGINE COMPARTMENT

QR25DE Models



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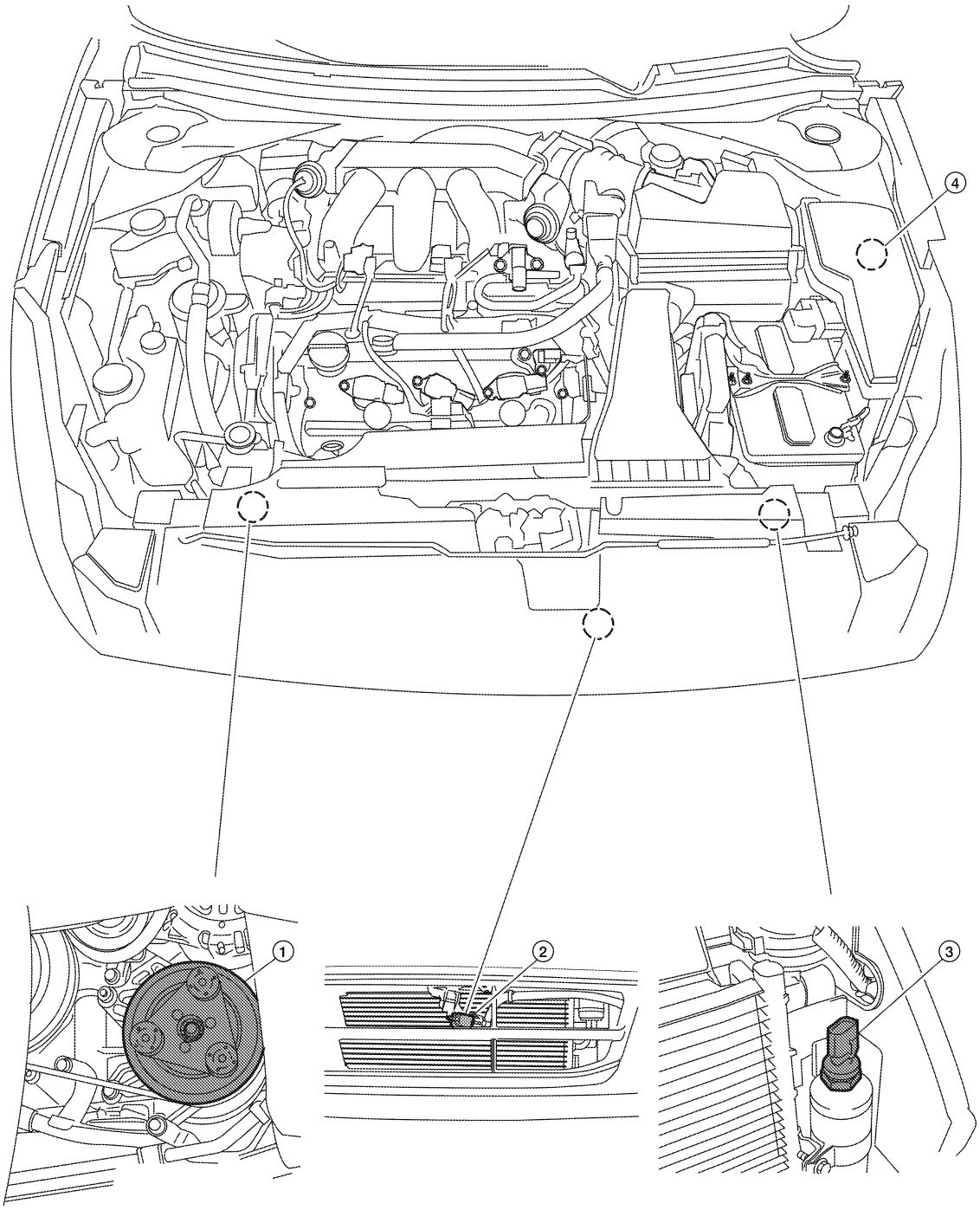
1. A/C compressor F3
2. Ambient sensor E211
3. Refrigerant pressure sensor E219
4. A/C relay (internal to IPDM E/R)

VQ35DE Models



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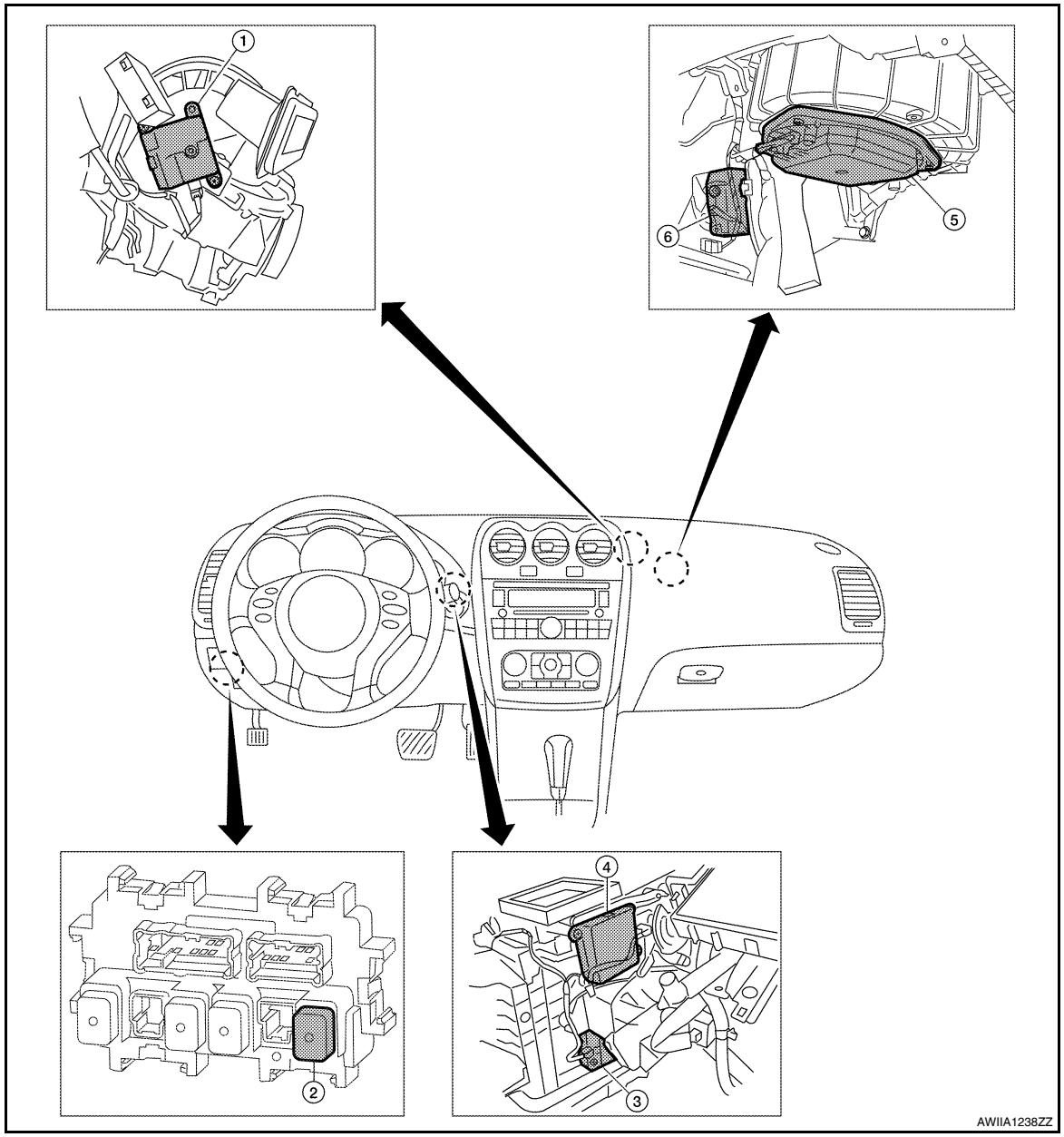
1. A/C compressor F3
2. Ambient sensor E211
3. Refrigerant pressure sensor E219
4. A/C relay (internal to IPDM E/R)



1. Intake door motor M126
2. Front blower motor relay J-4
3. Air mix door motor (LH) M128
4. Mode door motor M127
5. Blower motor M31
6. Air mix door motor (RH) M129

Component's Role

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Component	Reference
Air mix door motor	HAC-35, "Diagnosis Procedure"
Ambient sensor	HAC-50, "Diagnosis Procedure"
Blower motor	HAC-42, "Diagnosis Procedure"
A/C Compressor	HAC-47, "Diagnosis Procedure"
intake door motor	HAC-38, "Diagnosis Procedure"
Intake sensor	HAC-59, "Diagnosis Procedure"
In-vehicle sensor	HAC-53, "Diagnosis Procedure"

Component	Reference
Mode door motor	HAC-32, "Diagnosis Procedure"
Refrigerant pressure sensor	EC-975, "Diagnosis Procedure" (QR25DE) or EC-1503, "Diagnosis Procedure" (VQ35DE)
Sunload sensor	HAC-56, "Diagnosis Procedure"

REFRIGERATION SYSTEM

Refrigerant Cycle

INFOID:0000000004498333

Refrigerant flow

The refrigerant flows in the standard pattern, that is, through the compressor, the condenser with liquid tank, through the evaporator, and back to the compressor. The refrigerant evaporation through the evaporator coil is controlled by an externally equalized expansion valve, located inside the evaporator case.

Refrigerant System Protection

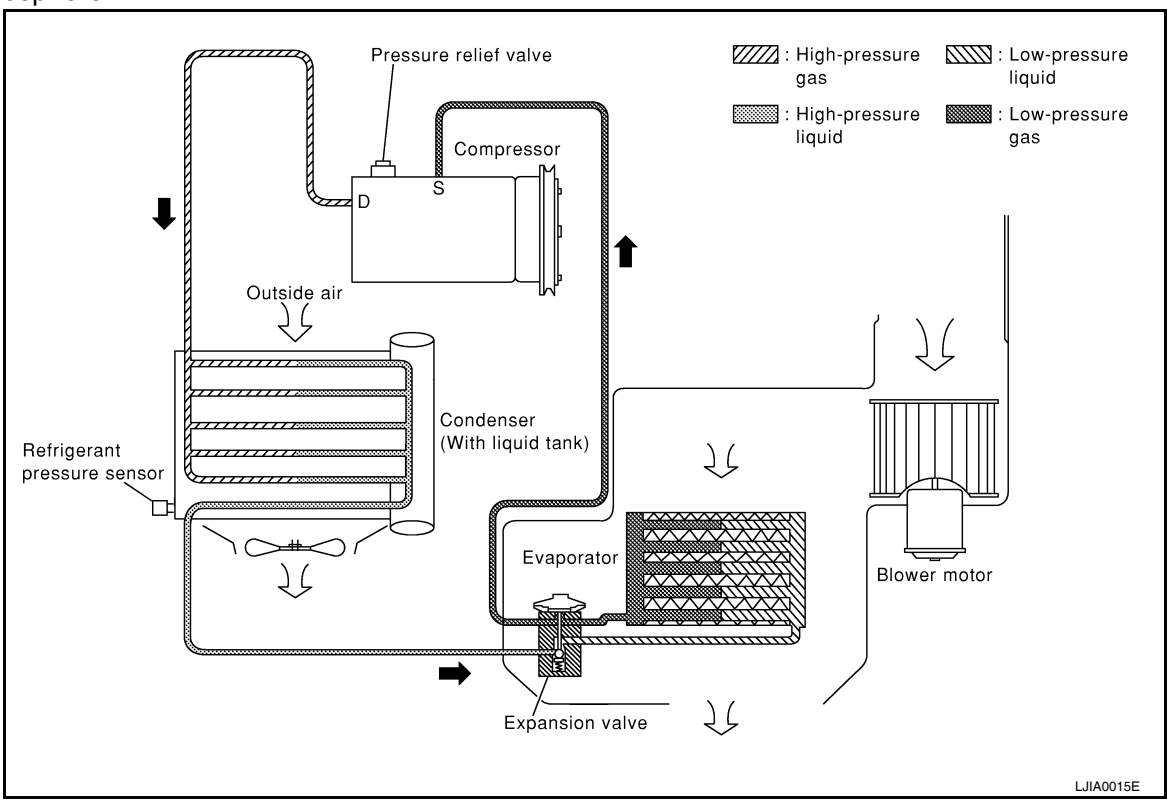
INFOID:0000000004498334

Refrigerant pressure sensor

The refrigerant system is protected against excessively high or low pressures by the refrigerant pressure sensor, located on the condenser. If the system pressure rises above or falls below the specifications, the refrigerant pressure sensor detects the pressure inside the refrigerant line and sends the voltage signal to the ECM. The ECM then ceases to supply power to the A/C relay which disengages and stops the compressor when pressure on the high pressure side (as detected by refrigerant pressure sensor) is over approximately 2,746 kPa (28 kg/cm^2, 398 psi), or below approximately 120 kPa (1.22 kg/cm^2, 17.4 psi).

Pressure Relief Valve

The refrigerant system is also protected by a pressure relief valve, located in the rear head of the compressor. When the pressure of refrigerant in the system increases to an abnormal level [more than 3,727 kPa (38 kg/cm^2, 540 psi)], the release port on the pressure relief valve automatically opens and releases refrigerant into the atmosphere.



AUTOMATIC AIR CONDITIONER SYSTEM

System Diagram

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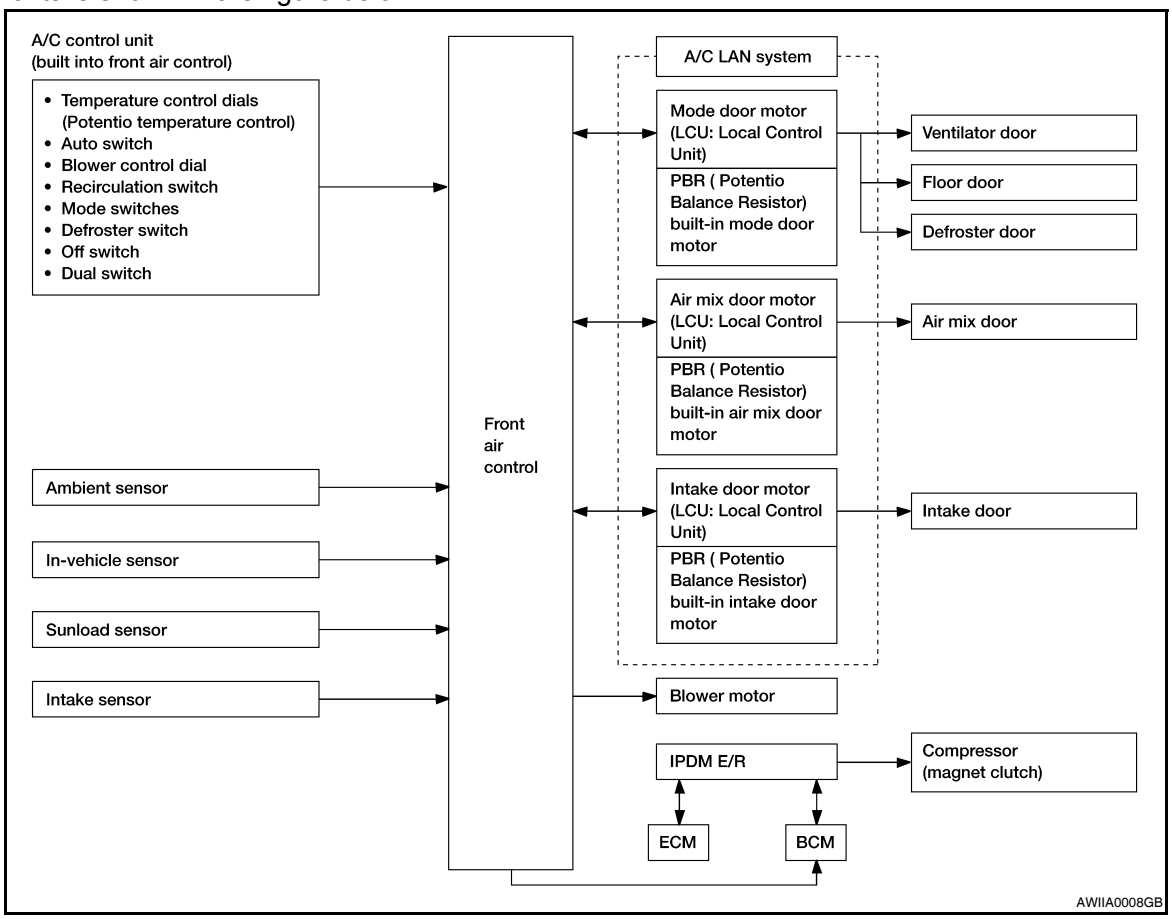
CONTROL SYSTEM

The control system consists of input sensors, switches, front air control and outputs. The relationship of these components is shown in the figure below:



System Description

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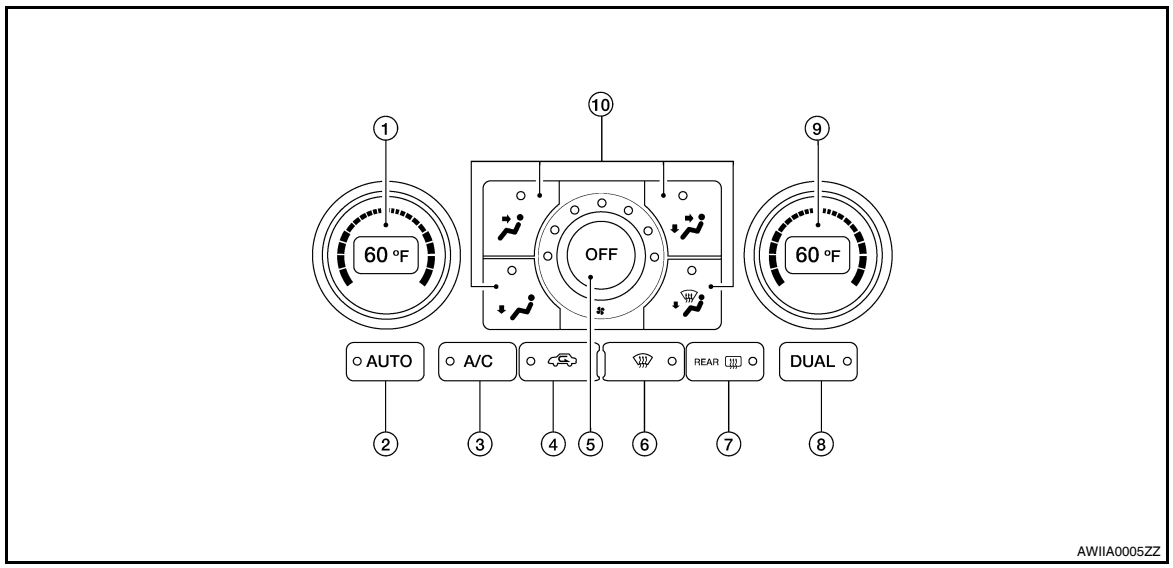
CONTROL OPERATION

Display Screen

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



1. Temperature control dial (LH)
2. AUTO switch
3. A/C ON/OFF switch
4. Air recirculation switch
5. OFF switch/blower control dial
6. Defroster switch
7. Rear window defogger switch
8. DUAL switch
9. Temperature control dial (RH)
10. Mode switches

AUTO Switch
- The compressor, intake door, air mix door, mode door 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 AUTO switch, air inlet, air outlet, blower speed, and discharge air temperature are automatically controlled.

Mode Switches
The air discharge outlets is controlled through the mode door.

Temperature Control Dial (Potentio Temperature Control) (LH)
The set temperature is increased or decreased with this dial.

Temperature Control Dial (Potentio Temperature Control) (RH)
- The set temperature is increased or decreased with this dial.
- When the temperature control dial is turned, the DUAL switch indicator will automatically illuminate.

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 is ON or OFF with this switch.
(Pressing the A/C switch when the A/C switch is ON will turn OFF the A/C switch and compressor.)

Blower Control Dial/OFF Switch
- The blower speed is manually controlled with this dial.
- Compressor and blower are OFF, intake doors and the mode doors are automatically controlled.

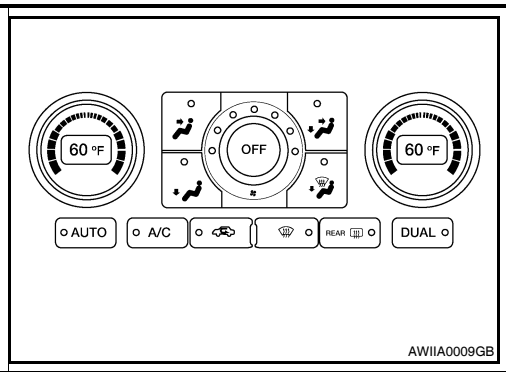
Rear Window Defogger Switch
This switch turns the rear window defogger ON and OFF.

DUAL Switch
- When the DUAL switch indicator is illuminated, the LH and RH temperature can each be set independently.
- When the DUAL switch indicator is not illuminated, the LH temperature setting is applied to both sides.

Recirculation ( ) Switch
- When REC ( ) switch is ON (REC LED ON), air inlet is fixed to REC.
- When press intake switch again (REC LED OFF), air inlet is fixed to fresh air.

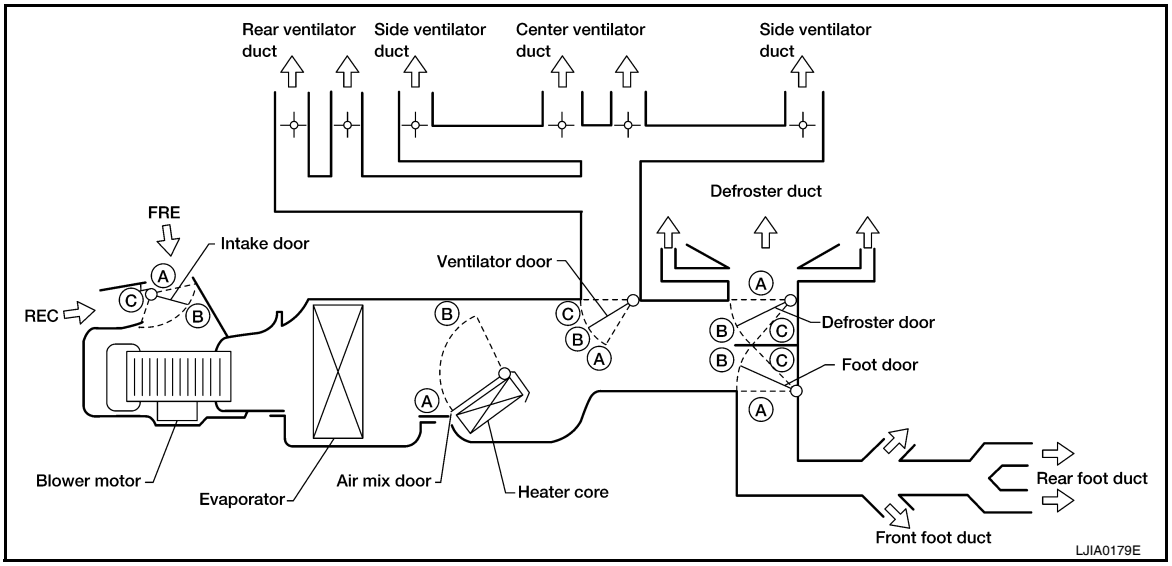
- When REC LED is turned ON, shifting mode position to D/F or DEF, or when compressor is turned from ON to OFF, the REC ( ) switch is automatically turned OFF.

DISCHARGE AIR FLOW



Mode door position	Air outlet/distribution		
	Vent	Foot	Defroster
	100%	—	—
	44%	56%	—
	17%	59%	24%
	16%	52%	32%
	12%	—	88%

SWITCHES AND THEIR CONTROL FUNCTION



Position or switch	MODE DIAL					AUTO SW	REC SW		Temperature DIAL		
	VENT	B/L	FOOT	D/F	DEF		ON	OFF	60 °F		
Door						AUTO	☀	○	"18"	—	"32"
Ventilator door	A	B	C	C	C	AUTO	—		—		
Foot door	A	B	C	C	A		—		—		
Defroster door	A	A	B	C	C		—		—		
Air mix door	—				—		—		A	AUTO	B
Intake door	—				C		A	AUTO*1	—		

*1: Automatically controlled when REC switch is OFF.

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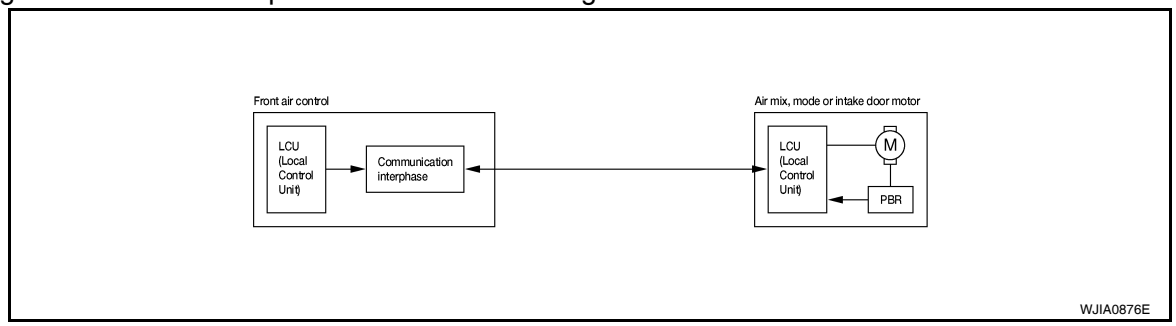
AIR CONDITIONER LAN CONTROL SYSTEM

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



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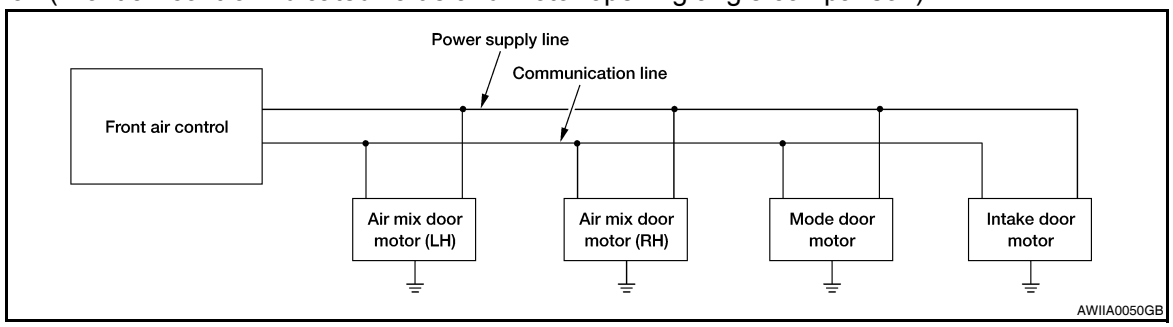
SYSTEM CONSTRUCTION

A small network is constructed between the front air control, mode door motor, air mix door motors and intake door motor. The front air control 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 motors.
Addresses, motor opening angle signals, motor stop signals and error checking messages are all transmitted through the data transmission lines connecting the front air control 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 (Front air control indicated value and motor opening angle comparison)



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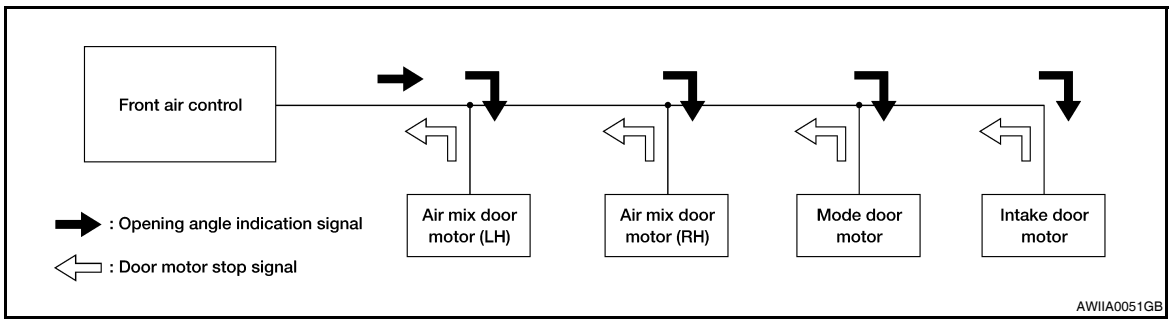
Operation

The front air control receives data from each of the sensors. The front air control sends mode door, air mix doors and intake door opening angle data to the mode door motor LCU, air mix door motors LCUs and intake door motor LCU.
The mode door motor, air mix door motors and intake door motor read their respective signals according to the address signal. Opening angle indication signals received from the front air control and each of the motor position sensors is compared by the LCUs in each door motor with the existing decision and opening angles. Subsequently, HOT/COLD, DEF/VENT and FRE/REC operation is selected. The new selection data is returned to the front air control.



Transmission Data and Transmission Order
Front air control data is transmitted consecutively to each of the doors motor following the form shown in figure below.

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

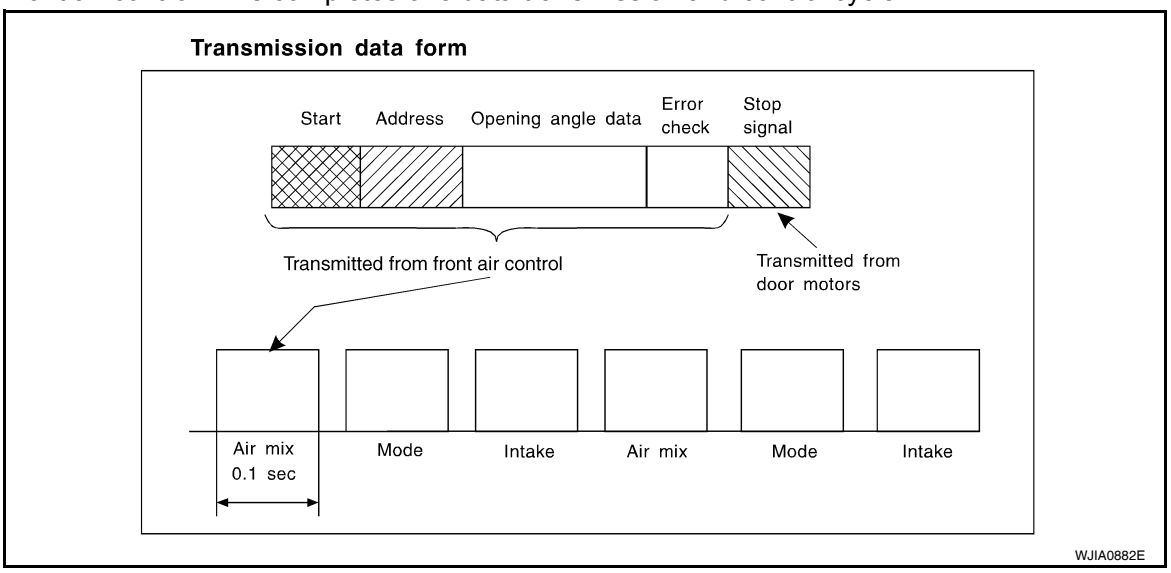
ADDRESS:
• Data sent from the front air control are selected according to data-based decisions made by the mode door motor, air mix door motors and intake door motor.
• If the addresses are identical, the opening angle data and error check signals are received by the door motor LCUs. The LCUs then make the appropriate error decision. If the opening angle data have no error, door control begins.
• If an error exists, the received data are rejected and 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 are 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 front air control. 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.

BLOWER SPEED CONTROL

Blower 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.

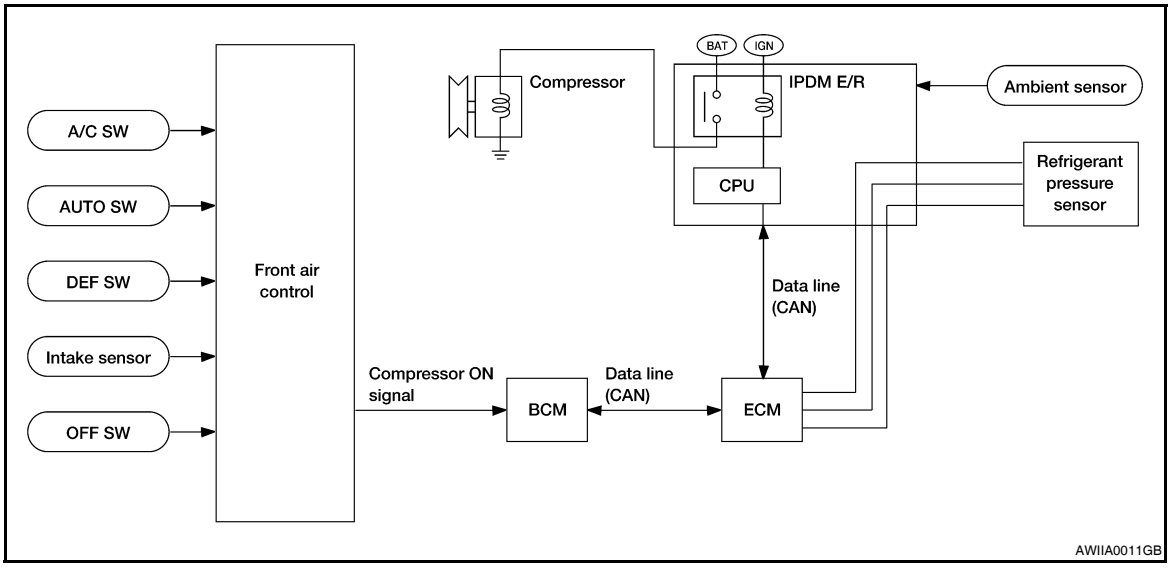
INTAKE DOOR CONTROL

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, front air control 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 ECM via CAN communication line.

Component Part Location

INFOID:0000000004498195

ENGINE COMPARTMENT
Refer to HAC-9, "Component Part Location".

PASSENGER COMPARTMENT
Refer to HAC-9, "Component Part Location".

Component Description

INFOID:0000000004498196

Refer to HAC-11, "Component's Role".

DIAGNOSIS SYSTEM (ECM)

CONSULT-III Function

INFOID:0000000004498198

CONSULT-III APPLICATION ITEMS

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

System part	Check item, diagnosis mode	Description
ECM	Data monitor	Displays ECM input data in real time.

DATA MONITOR

Display Item List

Monitor item name “operation or unit”		Contents
IGN ON SW	“ON/OFF”	Displays “IGN position (ON)/OFF, ACC position (OFF)” status as judged from ignition switch signal.
FAN ON SIG	“ON/OFF”	Displays “FAN (ON)/FAN (OFF)” status as judged from blower fan motor switch signal.
AIR COND SW	“ON/OFF”	Displays “COMP (ON)/COMP (OFF)” status as judged from air conditioner switch signal.
REFRIGERANT PRESSURE SENSOR	“V”	Displays “Refrigerant pressure sensor for voltage” status as inputted from refrigerant pressure sensor.

SELF-DIAGNOSIS FUNCTION

Diagnosis Description

INFOID:0000000004498199

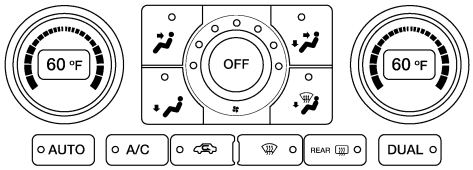
SELF-DIAGNOSIS SYSTEM

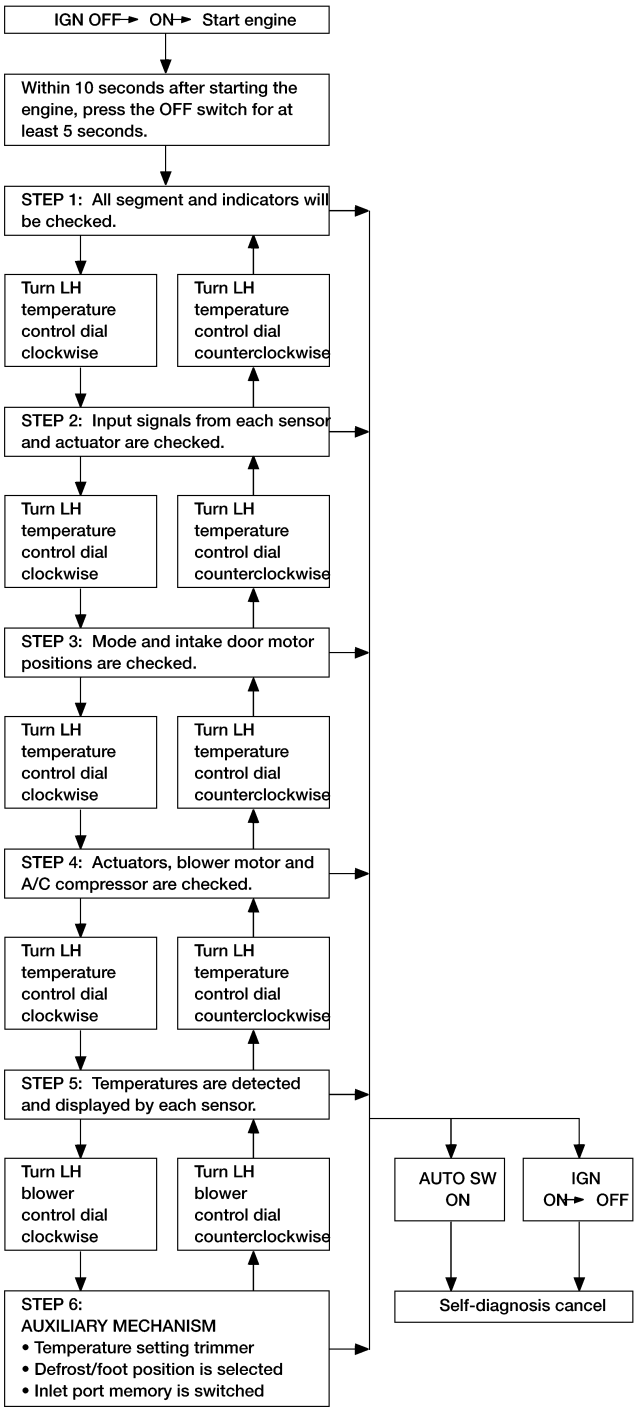
The self-diagnosis system is built into the front air control to quickly locate the cause of malfunctions.

SELF-DIAGNOSIS FUNCTION

The self-diagnosis system diagnoses sensors, door motors, blower motor, etc. by system line. Refer to applicable sections (items) for details. Shifting from normal control to the self-diagnosis system is accomplished by starting the engine (pressing the ignition switch to the ON position) and pressing OFF switch for at least 5 seconds. The OFF switch must be pressed within 10 seconds after starting the engine (ignition switch is pressed to the ON position). This system will be canceled by either pressing AUTO switch or pressing the ignition switch OFF. Shifting from one step is accomplished by means of turning temperature control dial (LH side), as required.

Shifting from STEP-5 to AUXILIARY MECHANISM is accomplished by turning the LH temperature control dial clockwise or counterclockwise.





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CONFIRMATION METHOD

1.SET IN SELF-DIAGNOSIS MODE

1. Press ignition switch ON.
2. Set in self-diagnosis mode as follows. Within 10 seconds after starting engine (ignition switch is pressed ON.), press OFF switch for at least 5 seconds.

NOTE:

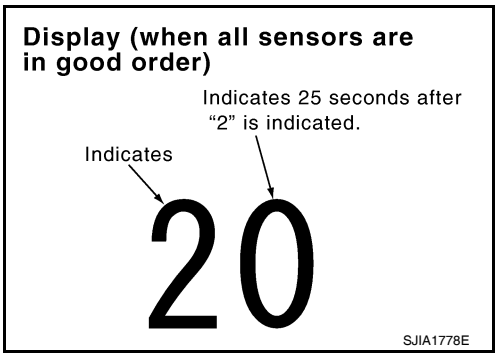
- If battery voltage drops below 12 V during diagnosis STEP-3, door motor speed becomes slower and as a result, the system may generate an error even when operation is normal. To avoid this, start engine before performing this diagnosis.
- Former STEP-1 (LEDs and display screen are checked) does not exist in this self-diagnosis function.

>> GO TO 2

2. STEP-2: SENSOR CIRCUITS ARE CHECKED FOR OPEN OR SHORT CIRCUIT

Does code No. 20 appear on the display?

YES >> GO TO 3
NO >> GO TO 12



3. CHECK TO ADVANCE SELF-DIAGNOSIS STEP-3

Turn temperature control dial (LH) clockwise.

Advance to self-diagnosis STEP-3?

YES >> GO TO 4
NO >> Replace front air control. (Temperature control dial is malfunctioning.) Refer to VTL-8, "Removal and Installation".

4. CHECK TO RETURN SELF-DIAGNOSIS STEP-2

Turn temperature control dial (LH) counterclockwise.

Return to self-diagnosis STEP-2?

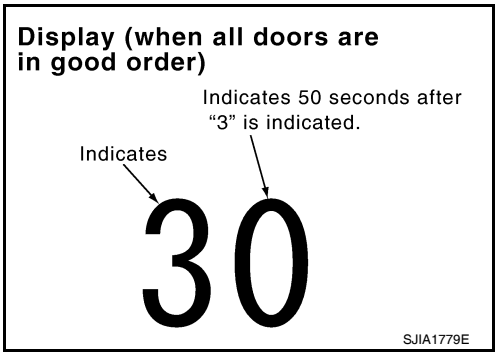
YES >> GO TO 5
NO >> Malfunctioning front air control. Refer to VTL-8, "Removal and Installation".

5. STEP-3: MODE DOOR AND INTAKE DOOR POSITIONS ARE CHECKED

Turn temperature control dial (LH) clockwise.

Does code No. 30 appear on the display?

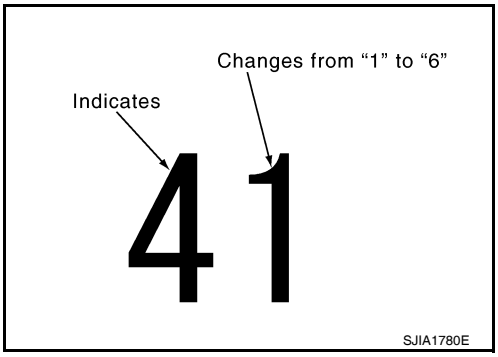
YES >> GO TO 6
NO >> GO TO 13



6. STEP-4: OPERATION OF EACH DOOR MOTOR IS CHECKED

1. Turn temperature control dial (LH side) clockwise.
2. Press (DEF) switch. Code No. of each door motor test is indicated on the display.

>> GO TO 7



7.CHECK ACTUATORS

Refer to the following chart and check discharge air flow, air temperature, blower motor duty ratio and compressor operation.

Mode door position	Air outlet/distribution		
	Vent	Foot	Defroster
	100%	—	—
	44%	56%	—
	17%	59%	24%
	16%	52%	32%
	12%	—	88%

Code No.	41	42	43	44	45	46
Mode door position	VENT	B/L 1	B/L 2	FOOT*1	D/F	DEF
Intake door position	REC	REC	20% FRE	FRE	FRE	FRE
Air mix door position	FULL COOL	FULL COOL	FULL HOT	FULL HOT	FULL HOT	FULL HOT
Blower motor duty ratio	37%	91%	65%	65%	65%	91%
Compressor	ON	ON	OFF	OFF	ON	ON

Checks must be made visually, by listening to the sound, or by touching air outlets with hand, etc. for improper operation.
*1: FOOT position during automatic control. Refer to HAC-5, "Description and Conditions".

Is the inspection result normal?

YES >> GO TO 8
NO >>
- Air outlet does not change.
  Go to Mode Door Motor Circuit. Refer to HAC-32, "Diagnosis Procedure".
- Discharge air temperature does not change.
  Go to Air Mix Door Motor Circuit. Refer to HAC-35, "Diagnosis Procedure".
- Intake door does not change.
  Go to Intake Door Motor Circuit. Refer to HAC-38, "Diagnosis Procedure".
- Blower motor operation is malfunctioning.
  Go to Blower Motor Circuit. Refer to HAC-42, "Diagnosis Procedure".
- Magnet clutch does not engage.
  Go to Magnet Clutch Circuit. Refer to HAC-47, "Diagnosis Procedure".

8.STEP-5: TEMPERATURE OF EACH SENSOR IS CHECKED

1. Turn temperature control dial (LH) clockwise.
2. Code No. 51 appears on the display.

>> GO TO 9

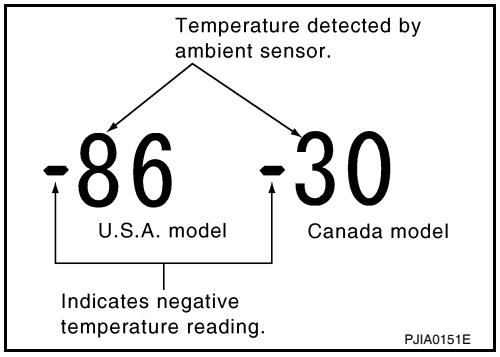
9.CHECK AMBIENT SENSOR

Press (DEF) switch one time. Temperature detected by ambient sensor is indicated on the display.

NOTE:
If the temperature indicated on the display greatly differs from the actual temperature, check sensor circuit first, and then check sensor.

Is the inspection result normal?

YES >> GO TO 10
NO >> Go to Ambient Sensor Circuit. Refer to HAC-50, "Diagnosis Procedure".



10. CHECK IN-VEHICLE SENSOR

Press (DEF) switch for the second time. Temperature detected by in-vehicle sensor is indicated on the display.

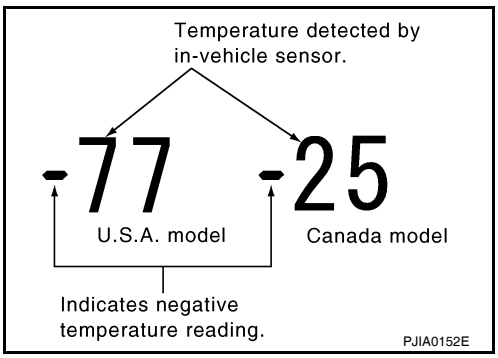
NOTE:

If the temperature indicated on the display greatly differs from the actual temperature, check sensor circuit first, and then check sensor.

Is the inspection result normal?

YES >> GO TO 11

NO >> Go to In-vehicle Sensor Circuit. Refer to HAC-53, "Diagnosis Procedure".



11. CHECK INTAKE SENSOR

Press (DEF) switch for the third time. Temperature detected by intake sensor is indicated on the display.

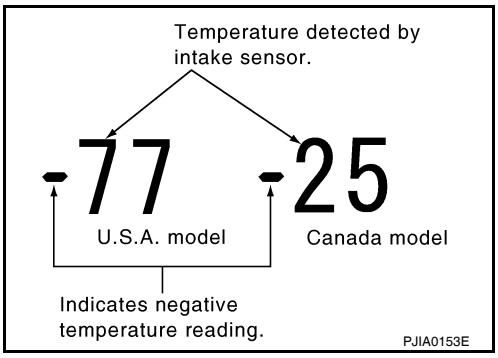
NOTE:

If the temperature indicated on the display greatly differs from the actual temperature, check sensor circuit first, and then check sensor.

Is the inspection result normal?

YES >> GO TO 12

NO >> Go to Intake Sensor Circuit. Refer to HAC-59, "Diagnosis Procedure".



12. CHECK MALFUNCTIONING SENSOR AND DOOR MOTOR

Refer to the following chart for malfunctioning code No.

(If two or more sensors and door motors malfunction, corresponding code Nos. indicates 1 second each.)

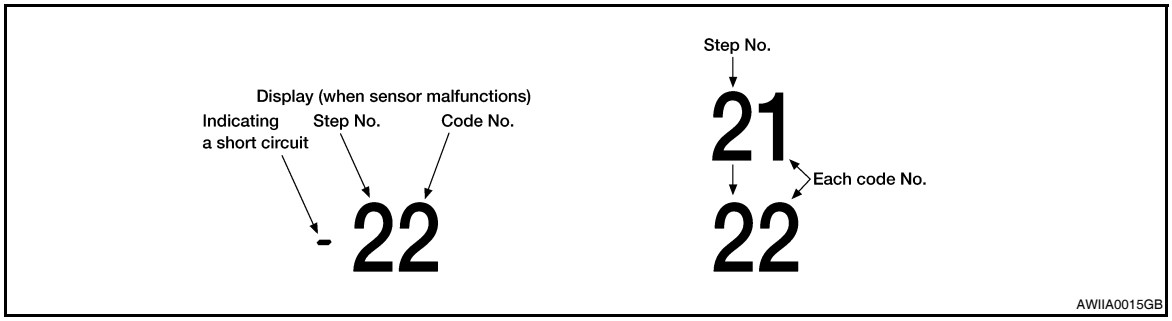
(If two door motors malfunction, corresponding code Nos. indicates 0.5 second each.)

*1: Perform self-diagnosis STEP-2 under sunshine.

When performing indoors, aim a light (more than 60W) at sunload sensor, otherwise code No. 25 will indicate despite that sunload sensor is functioning properly.

NOTE:

Code 20 will be displayed if all sensor s and PBR(s) are OK.



Code No.	Malfunctioning sensor and door motor (Including circuits)	Reference page
21 / –21	Ambient sensor	HAC-50, "Diagnosis Procedure"
22 / –22	In-vehicle sensor	HAC-53, "Diagnosis Procedure"
24 / –24	Intake sensor	HAC-38, "Diagnosis Procedure"
25 / –25	Sunload sensor *1	HAC-38, "Diagnosis Procedure"
26 / –26	Air mix door motor PBR (LH)	HAC-35, "Diagnosis Procedure"
27 / –27	Air mix door motor PBR (RH)	

>> Inspection End

13. CHECK MALFUNCTIONING DOOR MOTOR POSITION SWITCH

Mode and/or intake door motor PBR(s) is/are malfunctioning.

NOTE:

Code 30 will be displayed if all doors are OK.

Code No. *1 *2	Mode or intake door position		Reference page
31	VENT	Mode door motor	HAC-32, "Diagnosis Procedure"
32	B/L1		
33	B/L2		
34	AUTO D/F1		
35	D/F2		
36	DEF		
37	FRE	Intake door motor	HAC-38, "Diagnosis Procedure"
38	20% FRE		
39	REC		

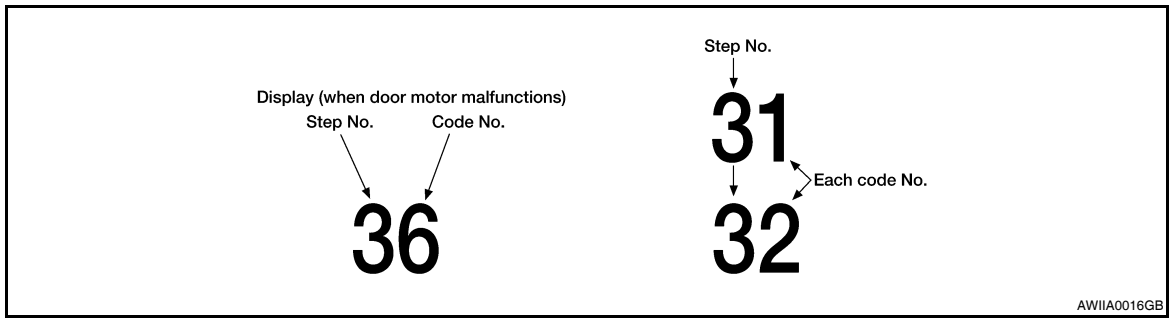
(If two or more mode or intake door motors malfunction, corresponding code Nos. indicates 1 second each.)

*1: If mode door motor harness connector is disconnected, the following display pattern will appear.

31→32→33→34→35→36 Return to 31

*2: If intake door motor harness connector is disconnected, the following display pattern will appear.

37→38→39→Return to 37



>> Inspection End

Auxiliary Mechanism Trimmers

INFOID:0000000004498200

Refer to HAC-6, "Auxiliary Mechanism Trimmers".

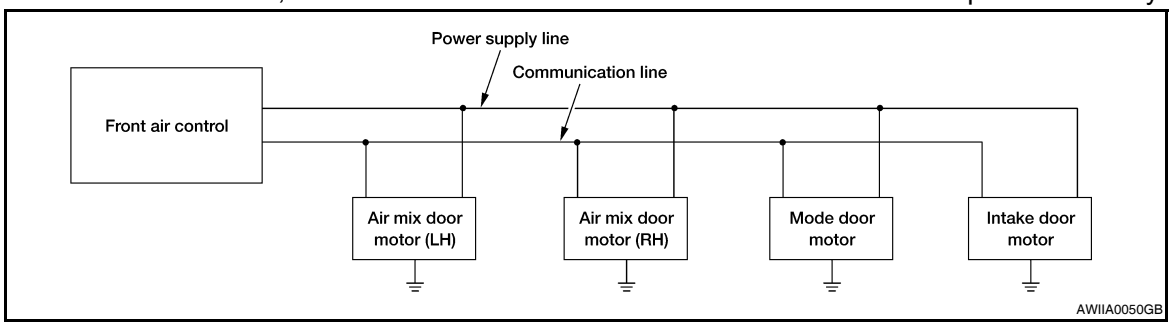
COMPONENT DIAGNOSIS

LAN SYSTEM CIRCUIT

Description

INFOID:0000000004498201

SYMPTOM: Mode door motor, intake door motor and/or air mix door motor does not operate normally.



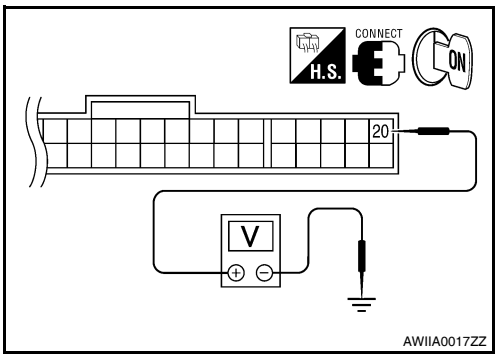
Diagnosis Procedure

INFOID:0000000004498202

DIAGNOSIS PROCEDURE FOR LAN CIRCUIT

1.CHECK POWER SUPPLY FOR DOOR MOTORS

1. Press ignition switch ON.
2. Check voltage between front air control connector M37 terminal 20 and ground.



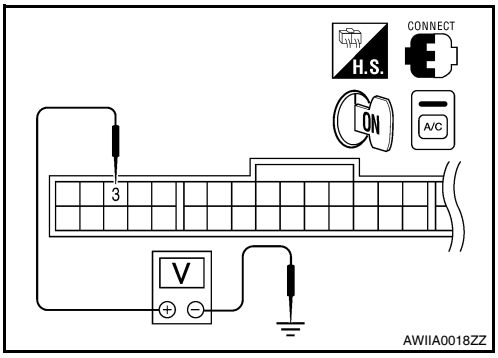
Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal		
M37-20	Body ground	12V

Is the inspection result normal?

YES >> GO TO 2
NO >> Replace front air control. Refer to VTL-8, "Removal and Installation".

2.CHECK SIGNAL FOR DOOR MOTORS

Check voltage between front air control connector M37 terminal 3 and ground.



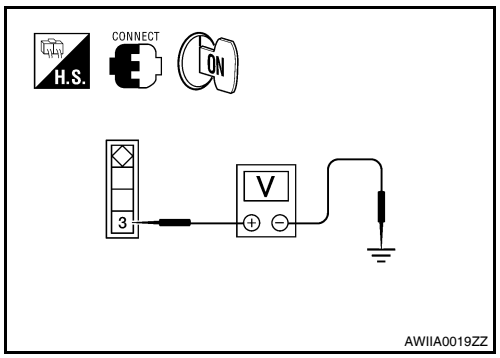
Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal		
M37-3	Ground	5.5V

Is the inspection result normal?

YES >> GO TO 3
NO >> Replace front air control. Refer to VTL-8, "Removal and Installation".

3.CHECK POWER SUPPLY FOR MOTOR

Check voltage between mode door motor connector M127 terminal 3 and ground, between air mix door motor (LH) connector M128 terminal 3 and ground, between air mix door motor (RH) connector M129 terminal 3 and ground, and between intake door motor connector M126 terminal 3 and ground.



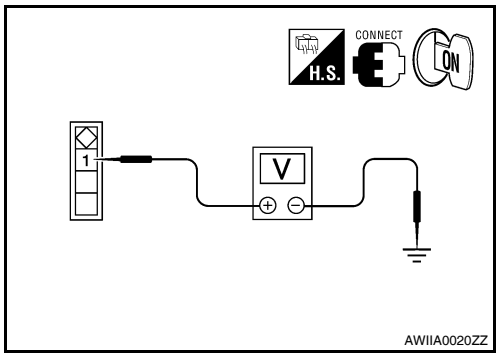
Door motors	Terminals		Voltage (V) (Approx.)
	(+) Connector - Terminal	(-)	
Mode	M127-3	Body ground	12V
Air mix (LH)	M128-3		
Air mix (RH)	M129-3		
Intake	M126-3		

Is the inspection result normal?

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

4. CHECK SIGNAL FOR MOTOR

Check voltage between mode door motor connector M127 terminal 1 and ground, between air mix door motor (LH) connector M128 terminal 1 and ground, between air mix door motor (RH) connector M129 terminal 1 and ground, and between intake door motor connector M58 terminal 1 and ground.



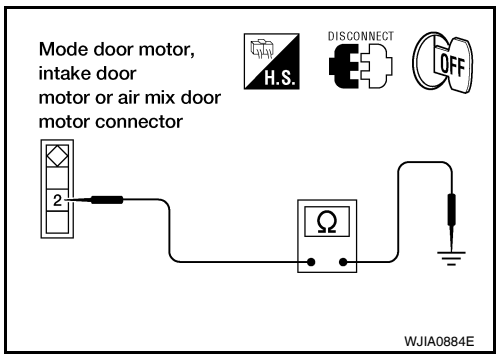
Door motors	Terminals		Voltage (V) (Approx.)
	(+) Connector - Terminal	(-)	
Mode	M127-1	Body ground	5.5V
Air mix (LH)	M128-1		
Air mix (RH)	M129-1		
Intake	M126-1		

Is the inspection result normal?

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

5. CHECK MOTOR GROUND CIRCUIT

1. Press ignition switch OFF.
2. Disconnect door motor connectors.
3. Check continuity between mode door motor connector M127 terminal 2 and ground, between air mix door motor (LH) connector M128 terminal 2 and ground, between air mix door motor (RH) connector M129 terminal 2 and ground, and between intake door motor connector M126 terminal 2 and ground.



Door motors	Terminals		Continuity
	(+) Connector - Terminal	(-)	
Mode	M127-2	Body ground	Yes
Air mix (LH)	M128-2		
Air mix (RH)	M129-2		
Intake	M126-2		

Is the inspection result normal?

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

6. CHECK MOTOR OPERATION

Disconnect and reconnect the motor connectors and confirm the motor operation.

Is the inspection result normal?

YES >> (Returns to normal operation.)
- Motor connector contacts dirty or damaged

NO >> (Does not operate normally.)
- GO TO 7

7. CHECK MODE DOOR MOTOR AND AIR MIX DOOR MOTORS OPERATION

1. Disconnect the intake door motor connector.
2. Reconnect the mode door motor connector and air mix door motor connectors, confirm the mode door motor and air mix door motors operation.

Is the inspection result normal?

YES >> (Mode door motor and air mix door motors operate normally.)
- Replace the intake door motor. refer to VTL-17, "Removal and Installation".

NO >> (Mode door motor and air mix door motor do not operate normally.)
- GO TO 8

8. CHECK AIR MIX DOOR MOTOR AND INTAKE DOOR MOTOR OPERATION

1. Disconnect mode door motor connector.
2. Reconnect the intake door motor connector, confirm the air mix door motors and intake door motor operation.

Is the inspection result normal?

YES >> (Air mix door motors and intake door motor operate normally.)
- Replace mode door motor. Refer to VTL-18, "Removal and Installation".

NO >> (Air mix door motors and intake door motor do not operate normally.)
- GO TO 9

9. CHECK INTAKE DOOR MOTOR AND MODE DOOR MOTOR OPERATION

1. Disconnect air mix door motor connectors.
2. Reconnect mode door motor connector, confirm the intake door motor and mode door motor operation.

Is the inspection result normal?

YES >> (Intake door motor and mode door motor operate normally.)
- Replace inoperative air mix door motor. Refer to VTL-19, "Removal and Installation".

NO >> (Intake door motor and mode door motor do not operate normally.)
- Replace front air control. Refer to VTL-8, "Removal and Installation".

MODE DOOR MOTOR

Description

INFOID:0000000004498203

SYSTEM DESCRIPTION

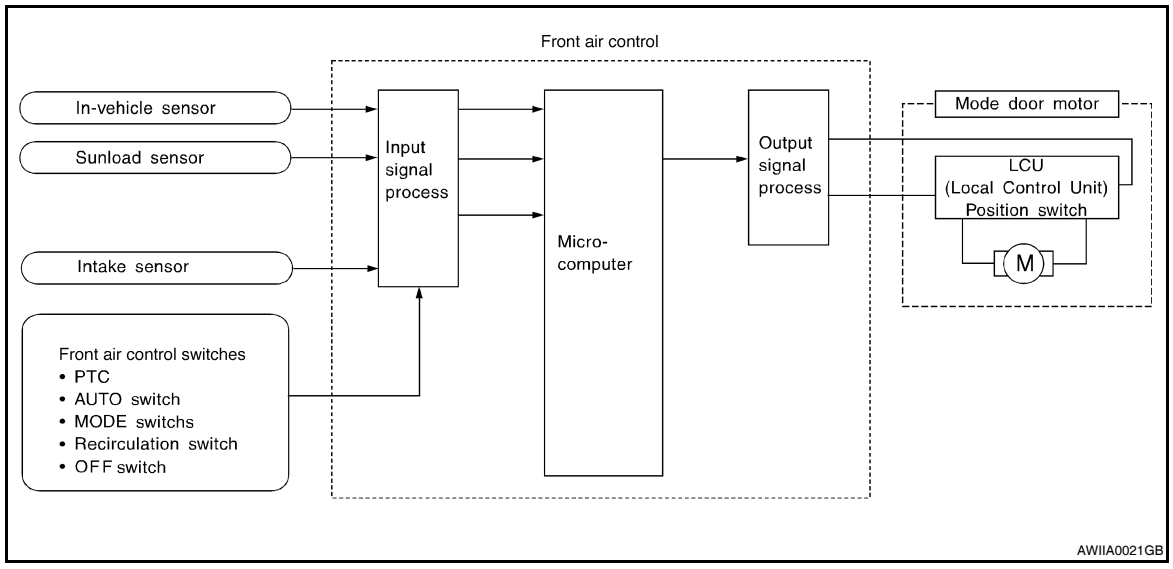
Component Parts

Mode door control system components are:
- Front air control
- Mode door motor (LCU)
- In-vehicle sensor
- Ambient sensor
- Sunload sensor
- Intake sensor

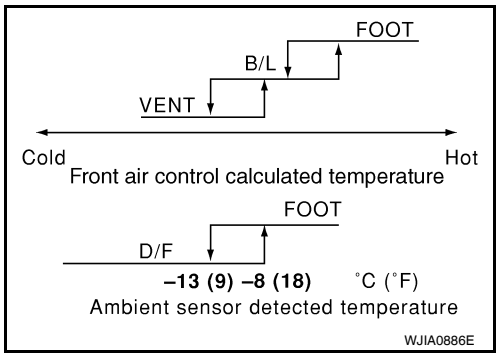
System Operation

The front air control receives data from each of the sensors. The front air control sends air mix door, mode door and intake door opening angle data to the air mix door motor LCU, mode door motor LCU and intake door motor LCU.

The air mix door motor, mode door motor and intake door motor read their respective signals according to the address signal. Opening angle indication signals received from the front air control and each of the motor position sensors are compared by the LCU's in each motor with the existing decision and opening angles. Subsequently, HOT/COLD or DEFROST/VENT or FRESH/RECIRCULATION operation is selected. The new selection data is returned to the front air control.



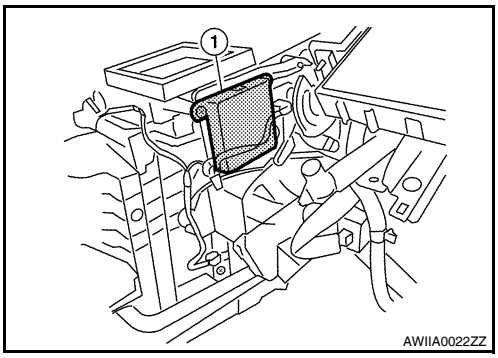
Mode Door Control Specification



COMPONENT DESCRIPTION

Mode Door Motor

The mode door motor (1) is attached to the heater and cooling unit assembly. It rotates so that air is discharged from the outlet set by the front air control. Motor rotation is conveyed to a link which activates the mode door.



Diagnosis Procedure

INFOID:0000000004498204

SYMPTOM: Mode door motor and/or air mix door motor does not operate normally.
Perform diagnostic procedure for LAN system circuit. Refer to HAC-28, "Diagnosis Procedure".

SYMPTOM:
- Air outlet does not change.
- Mode door motor does not operate normally.

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - DISCHARGE AIR

1. Press each of the four mode position switches and then press the (DEF) switch. Each position indicator should illuminate.
2. Confirm that discharge air comes out according to the air distribution table. Refer to HAC-14, "System Description".

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

Can a symptom be duplicated?

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

2. PERFORM COMPLETE OPERATIONAL CHECK

Perform a complete operational check and check for any symptoms. Refer to HAC-5, "Description and Conditions".

Can a symptom be duplicated?

YES >> Refer to HAC-83, "Symptom Matrix Chart".
NO >> System OK.

3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4

4. CHECK LAN SYSTEM CIRCUIT

Perform diagnostic procedure for the LAN system. Refer to HAC-28, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 5
NO >> Repair as necessary.

5. CHECK MODE DOOR OPERATION

Check and verify mode door mechanism for smooth operation in each mode.

Is the inspection result normal?

YES >> GO TO 6
NO >> Repair as necessary.

6. CHECK AMBIENT SENSOR CIRCUIT

Perform diagnostic procedure for the mode door motor. Refer to HAC-32, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 7
NO >> Repair as necessary.

7. CHECK IN-VEHICLE SENSOR CIRCUIT

Perform diagnostic procedure for the in-vehicle sensor circuit. Refer to HAC-53, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 8
NO >> Repair as necessary.

8. CHECK SUNLOAD SENSOR CIRCUIT

Perform diagnostic procedure for the sunload sensor circuit. Refer to HAC-56, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 9
NO >> Repair as necessary.

9. CHECK INTAKE SENSOR CIRCUIT

Perform diagnostic procedure for the intake sensor circuit. Refer to HAC-59, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 10
NO >> Repair as necessary.

10. CHECK AIR MIX DOOR MOTOR PBR CIRCUIT

Perform diagnostic procedure for the intake sensor circuit. Refer to HAC-35, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 11
NO >> Repair as necessary.

11. RECHECK FOR SYMPTOMS

Perform a complete operational check and check for any symptoms. Refer to HAC-5, "Description and Conditions".

Does another symptom exist?

YES >> Repair as necessary.
NO >> Replace front air control. Refer to VTL-8, "Removal and Installation".

DIAGNOSIS PROCEDURE FOR MODE DOOR MOTOR

SYMPTOM: Mode door motor does not operate normally.
Perform diagnosis procedure. Refer to HAC-28, "Diagnosis Procedure".

AIR MIX DOOR MOTOR

Description

INFOID:0000000004498205

SYSTEM DESCRIPTION

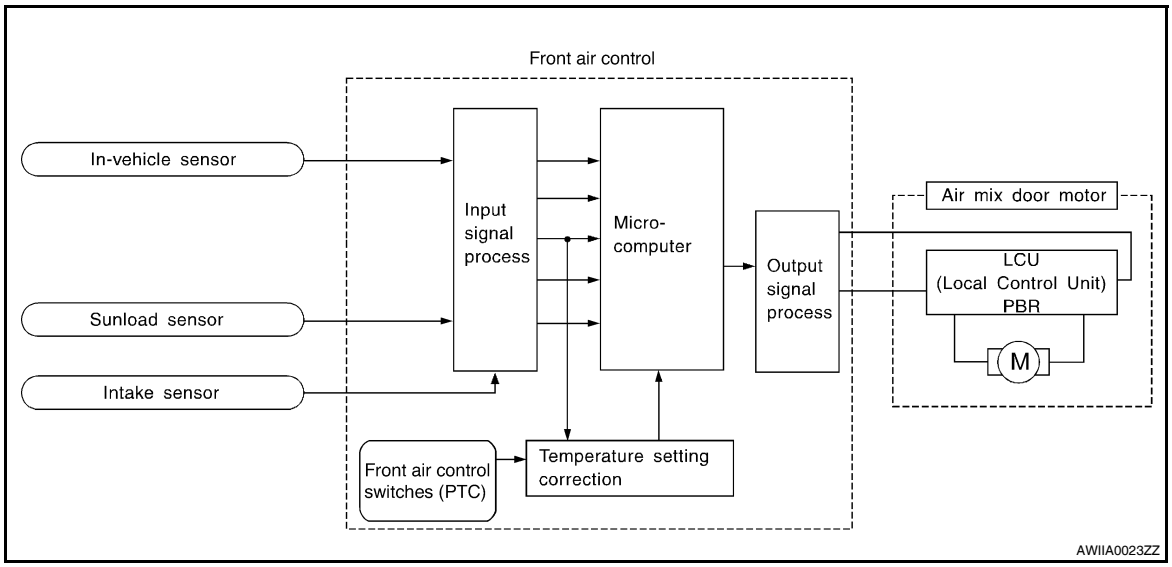
Component Parts

Air mix door control system components are:
- Front air control
- Air mix door motors (LCU)
- In-vehicle sensor
- Ambient sensor
- Sunload sensor
- Intake sensor

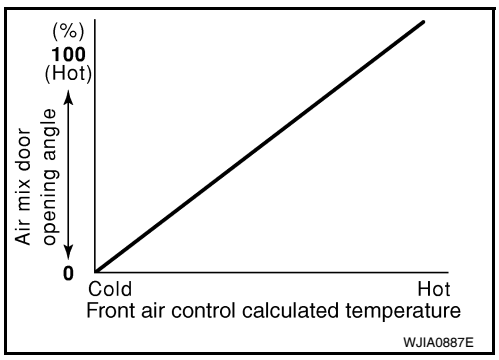
System Operation

The front air control receives data from each of the sensors. The front air control sends air mix door, mode door and intake door motor opening angle data to the air mix door motors LCU, mode door motor LCU and intake door motor LCU.

The air mix door motor, mode door motor and intake door motor read their respective signals according to the address signal. Opening angle indication signals received from the front air control and each of the motor position sensors are compared by the LCUs in each motor with the existing decision and opening angles. Subsequently, HOT/COLD or DEFROST/VENT or FRESH/RECIRCULATION operation is selected. The new selection data is returned to the front air control.



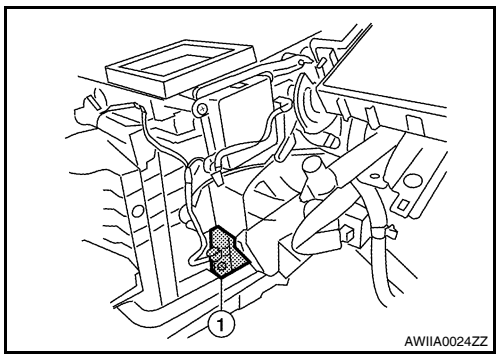
Air Mix Door Control Specification

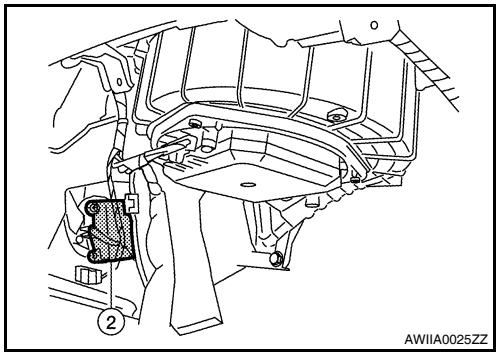


COMPONENT DESCRIPTION

Air Mix Door Motor

The air mix door motors LH (1) RH (2) are attached to the heater & cooling unit assembly. They rotates so that the air mix door is opened or closed to a position set by the front air control. Motor rotation is then conveyed through a shaft and the air mix door position feedback is then sent to the front air control by PBR built-in air mix door motor.





Diagnosis Procedure

INFOID:0000000004498206

SYMPTOM:
- Discharge air temperature does not change.
- Air mix door motor does not operate.

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE INCREASE

1. Turn the temperature control dial (LH) clockwise until 32°C (90°F) is displayed.
2. Check for hot air at discharge air outlets.

>> GO TO 2

2. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE DECREASE

1. Turn the temperature control dial (LH) counterclockwise until 18°C (60°F) is displayed.
2. Check for cold air at discharge air outlets.

Can a symptom be duplicated?

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

3. PERFORM COMPLETE OPERATIONAL CHECK

Perform a complete operational check and check for any symptoms. Refer to HAC-5, "Description and Conditions".

Is the inspection result normal?

YES >> Refer to HAC-83, "Symptom Matrix Chart".
NO >> System OK.

4. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 5

5. CHECK AIR MIX DOOR MOTOR OPERATION

Check and verify air mix door mechanism for smooth operation.

Is the inspection result normal?

YES >> GO TO 6
NO >> Repair as necessary.

6. CHECK LAN SYSTEM CIRCUIT

Perform diagnostic procedure for the LAN system. Refer to HAC-28, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 7
NO >> Repair as necessary.

7. CHECK AMBIENT SENSOR CIRCUIT

Perform diagnostic procedure for the mode door motor. Refer to HAC-32, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 8
NO >> Repair as necessary.

8. CHECK IN-VEHICLE SENSOR CIRCUIT

Perform diagnostic procedure for the in-vehicle sensor circuit. Refer to HAC-53, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 9
NO >> Repair as necessary.

9. CHECK SUNLOAD SENSOR CIRCUIT

Perform diagnostic procedure for the sunload sensor circuit. Refer to HAC-56, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 10
NO >> Repair as necessary.

10. CHECK INTAKE SENSOR CIRCUIT

Perform diagnostic procedure for the intake sensor circuit. Refer to HAC-59, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 11
NO >> Repair as necessary.

11. CHECK AIR MIX DOOR MOTOR PBR CIRCUIT

Perform diagnostic procedure for the intake sensor circuit. Refer to HAC-35, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 12
NO >> Repair as necessary.

12. RECHECK FOR SYMPTOMS

Perform a complete operational check and check for any symptoms. Refer to HAC-5, "Description and Conditions".

Does another symptom exist?

YES >> Repair as necessary.
NO >> Replace front air control. Refer to VTL-8, "Removal and Installation".

DIAGNOSIS PROCEDURE FOR AIR MIX DOOR MOTOR

SYMPTOM: Discharge air temperature does not change.
Perform diagnosis procedure. Refer to HAC-28, "Diagnosis Procedure".

INTAKE DOOR MOTOR

Description

INFOID:0000000004498207

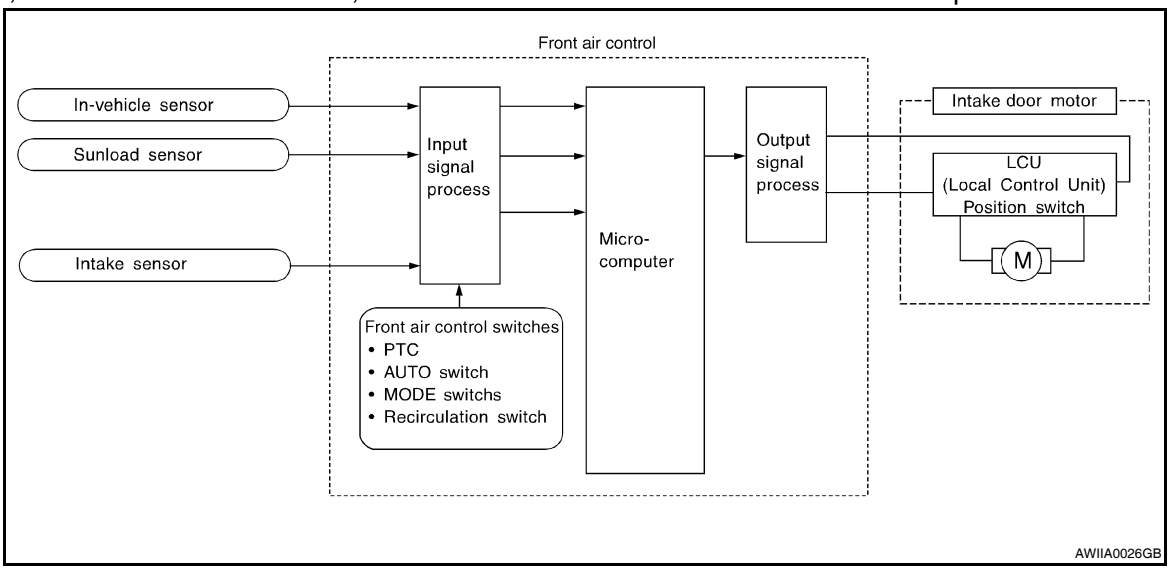
SYSTEM DESCRIPTION

Component Parts

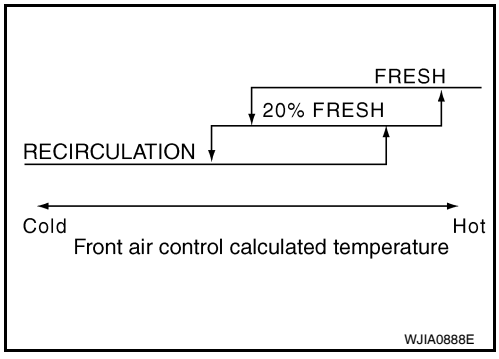
Intake door control system components are:
- Front air control
- Intake door motor (LCU)
- In-vehicle sensor
- Ambient sensor
- Sunload sensor
- Intake sensor

System Operation

The intake door control determines intake door position based on the ambient temperature, the intake air temperature and the in-vehicle temperature. When shifting mode position D/F, when the DEF or OFF switches are pressed, or when A/C switch is OFF, the front air. sets the intake door at the FRESH position.



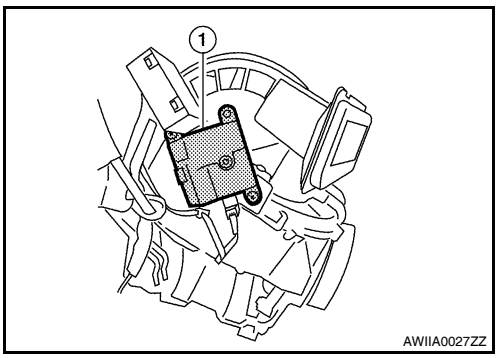
Intake Door Control Specification



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 front air control. Motor rotation is conveyed to a lever which activates the intake door.



Diagnosis Procedure

INFOID:0000000004498208

SYMPTOM:
- Intake door does not change.
- Intake door motor does not operate normally.

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - REC ( )

1. Press the vent mode.( ).
2. Press REC ( ) switch. The REC ( ) indicator should illumination.
3. Press REC ( ) switch again. The REC ( ) indicator should go out.
4. Listen for intake door position change (you should sound change slightly).

Can a symptom be duplicated?

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

2. PERFORM COMPLETE OPERATIONAL CHECK

Perform a complete operational check and check for any symptoms. Refer to HAC-5, "Description and Conditions".

Is the inspection result normal?

YES >> Refer to HAC-83, "Symptom Matrix Chart".
NO >> System OK.

3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4

4. CHECK INTAKE DOOR MOTOR OPERATION

Check and verify intake door mechanism for smooth operation.

Is the inspection result normal?

YES >> GO TO 5
NO >> Repair as necessary.

5. CHECK LAN SYSTEM CIRCUIT

Perform diagnostic procedure for the LAN system. Refer to HAC-28, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 6
NO >> Repair as necessary.

6. CHECK AMBIENT SENSOR CIRCUIT

Perform diagnostic procedure for the mode door motor. Refer to HAC-32, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 7
NO >> Repair as necessary.

7. CHECK IN-VEHICLE SENSOR CIRCUIT

Perform diagnostic procedure for the in-vehicle sensor circuit. Refer to HAC-53, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 8
NO >> Repair as necessary.

8. CHECK SUNLOAD SENSOR CIRCUIT

Perform diagnostic procedure for the sunload sensor circuit. Refer to HAC-56, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 9
NO >> Repair as necessary.

9. CHECK INTAKE SENSOR CIRCUIT

Perform diagnostic procedure for the intake sensor circuit. Refer to HAC-59, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 10
NO >> Repair as necessary.

10. CHECK AIR MIX DOOR MOTORS PBR CIRCUIT

Perform diagnostic procedure for the intake sensor circuit. Refer to HAC-35, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 11
NO >> Repair as necessary.

11. RECHECK FOR SYMPTOMS

Perform a complete operational check and check for any symptoms. Refer to HAC-5, "Description and Conditions".

Does another symptom exist?

YES >> Repair as necessary.
NO >> Replace front air control. Refer to VTL-8, "Removal and Installation".

DIAGNOSIS PROCEDURE FOR INTAKE DOOR MOTOR

SYMPTOM: Intake door motor does not operate normally.
Perform diagnosis procedure. Refer to HAC-28, "Diagnosis Procedure".

BLOWER MOTOR

Description

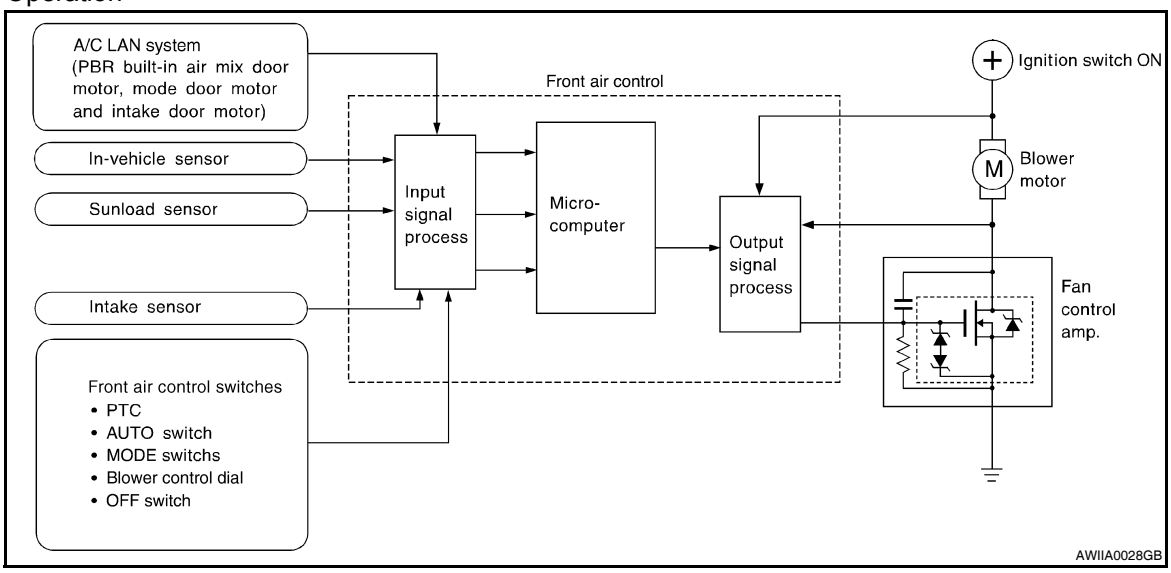
INFOID:0000000004498209

SYSTEM DESCRIPTION

Component Parts

Fan speed control system components are:
- Front air control
- A/C LAN system (PBR built-in mode door motor, air mix door motors and intake door motor)
- In-vehicle sensor
- Ambient sensor
- Sunload sensor
- Intake sensor
- Fan control amp.

System Operation



Automatic Mode

In the automatic mode, the blower motor speed is calculated by the front air control based on the input from the PBR, in-vehicle sensor, sunload sensor, intake sensor and ambient sensor.

When the air flow is increased, the duty ratio of the blower fan motor's drive signal is changed at 8%/sec. to prevent a sudden increase in air flow.

In addition to manual air flow control and the usual automatic air flow control, starting air flow control, low water temperature starting control and high passenger compartment temperature starting control are available.

Starting Fan Speed Control

Start up from COLD SOAK Condition (Automatic mode)

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

In the most extreme case (very low ambient) the blower starting delay will be 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), at which time the blower speed will increase to the objective speed.

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

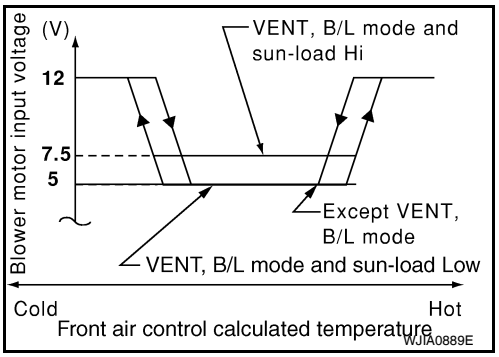
The blower will begin operation momentarily after the AUTO switch is pressed. The blower speed will gradually rise to the objective speed over a time period of 3 seconds or less (actual time depends on the objective blower speed).

Blower Speed Compensation

Sunload

When the in-vehicle temperature and the set temperature are very close, the blower will be operating at low speed. The low speed will vary depending on the sunload. During conditions of low or no sunload, the blower speed is at duty ratio 25%. During high sunload conditions, the front air control. raise the blower speed (duty ratio 49%).

Blower Speed Control Specification



Component Function Check

INFOID:0000000004498210

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - FRONT BLOWER

1. Rotate the blower control dial clockwise. Blower should operate.
2. Rotate the blower control dial clockwise, and continue checking blower speed until all speeds are checked.

Can a symptom be duplicated?

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

2. PERFORM COMPLETE OPERATIONAL CHECK

Perform a complete operational check and check for any symptoms. Refer to HAC-83, "Symptom Matrix Chart".

Is the inspection result normal?

YES >> Refer to HAC-83, "Symptom Matrix Chart".
NO >> System OK.

3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4

4. CHECK ENGINE COOLANT TEMPERATURE.

Check engine coolant temperature.

Is engine coolant temperature below 56°C (133°F)?

YES >> GO TO 5
NO >> Blower motor operation is normal.

5. CHECK BLOWER MOTOR STARTING SPEED.

Check blower motor starting blower speed control.

Is blower motor operation under starting blower speed control?

YES >> GO TO 6
NO >> Check blower motor circuit. Refer to HAC-42, "Diagnosis Procedure".

6. CHECK AMBIENT SENSOR CIRCUIT

Perform diagnostic procedure for the mode door motor. Refer toHAC-32, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 7

NO >> Repair as necessary.

7. CHECK IN-VEHICLE SENSOR CIRCUIT

Perform diagnostic procedure for the in-vehicle sensor circuit. Refer to HAC-53, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 8
NO >> Repair as necessary.

8. CHECK SUNLOAD SENSOR CIRCUIT

Perform diagnostic procedure for the sunload sensor circuit. Refer to HAC-56, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 9
NO >> Repair as necessary.

9. CHECK INTAKE SENSOR CIRCUIT

Perform diagnostic procedure for the intake sensor circuit. Refer to HAC-59, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 10
NO >> Repair as necessary.

10. RECHECK FOR SYMPTOMS

Perform a complete operational check and check for any symptoms. Refer to HAC-5, "Description and Conditions".

Does another symptom exist?

YES >> Repair as necessary.
NO >> Replace front air control. Refer to VTL-8, "Removal and Installation".

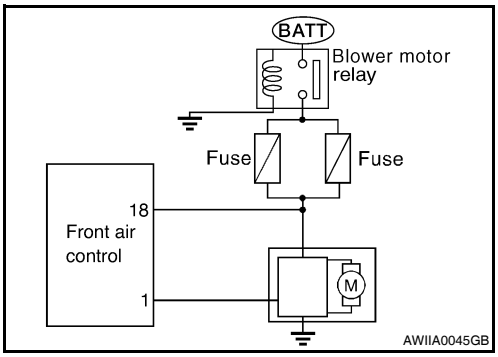
Diagnosis Procedure

INFOID:0000000004498211

SYMPTOM: Blower motor operation is malfunctioning.

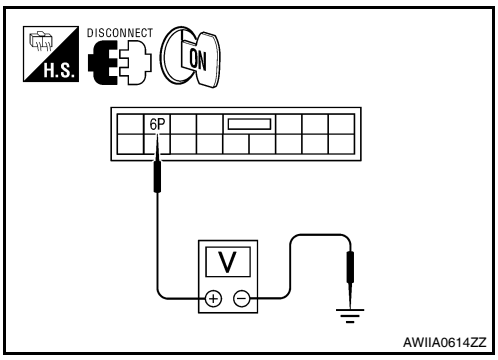
DIAGNOSIS PROCEDURE FOR BLOWER MOTOR

SYMPTOM: Blower motor operation is malfunctioning under starting blower speed control.



1. CHECK POWER SUPPLY FOR BLOWER MOTOR

1. Disconnect fuse block (J/B) connector.
2. Press ignition switch ON.
3. Check voltage between fuse block (J/B) harness connector E6 terminal P6 and ground.



Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal		
E6 - 6P	Body ground	12V

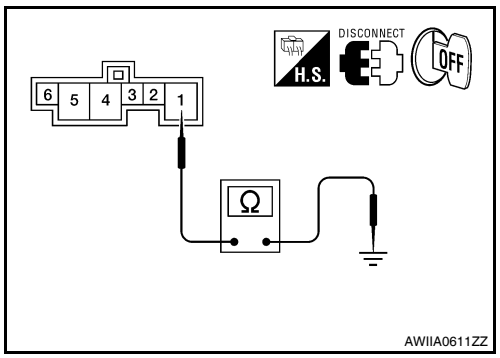
Is the inspection result normal?

YES >> GO TO 2

NO >> Check power supply circuit and 15A fuses [Nos. 21 and 22, located in the fuse block (J/B)].
- If OK, check for open circuit in wiring harness. Repair or replace as necessary.
- If OK, check fuses and check wiring harness for possible open or short circuit.
- If OK, GO TO 5

2. CHECK BODY GROUND CIRCUIT FOR BLOWER MOTOR

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



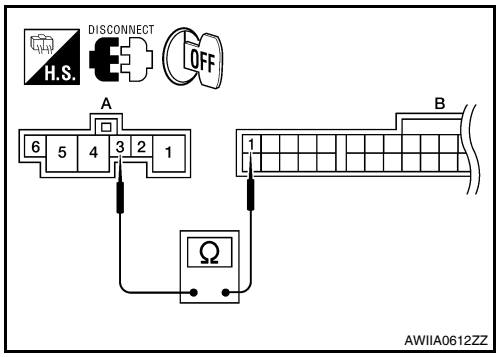
Terminal		Continuity
Connector - Terminal	Body ground	Yes
M31-1		

Is the inspection result normal?

YES >> Reconnect blower motor harness connector and GO TO 3
NO >> Repair harness or connector.

3. CHECK BLOWER MOTOR CONTROL CIRCUIT BETWEEN BLOWER MOTOR AND FRONT AIR CONTROL

1. Disconnect front air control harness connector.
2. Check continuity between blower motor harness connector M31 (A) terminal 3 and front air control harness connector M37 (B) terminal 1.



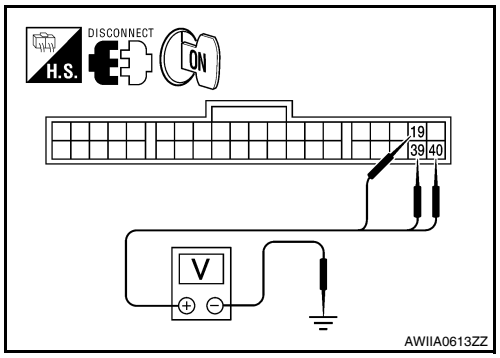
Terminals		Continuity
Connector - Terminal	Connector - Terminal	Yes
M31-3	M37-1	

Is the inspection result normal?

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

4. CHECK POWER SUPPLY FOR FRONT AIR CONTROL

1. Press ignition switch ON.
2. Check voltage between front air control harness connector M37 terminals 39, 19, 40 and ground.



Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal	Body ground	12V
M37-39		
M37-19		
M37-40		

Is the inspection result normal?

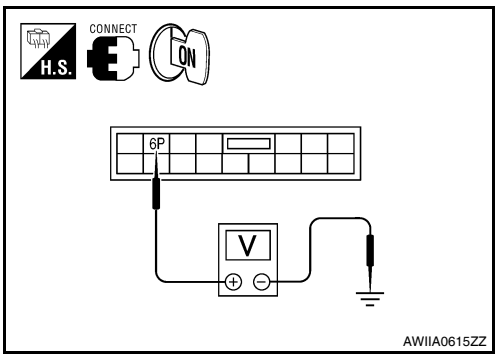
YES >> 1. Replace front air control. Refer to VTL-8, "Removal and Installation".
2. Confirm that blower motor operation is normal.

NO >>
- Check for open circuit in wiring harness. Repair or replace as necessary.
- If OK, replace fuse and check wiring harness for short circuit. Repair or replace an necessary.

5. CHECK POWER SUPPLY FOR FRONT BLOWER MOTOR RELAY

1. Connect fuse block (J/B) connector.
2. Press ignition switch ON.
3. Turn blower motor control dial to any speed except OFF.
4. Check voltage between fuse block (J/B) E6 terminal 6P and ground.

6P - Ground : Battery Voltage

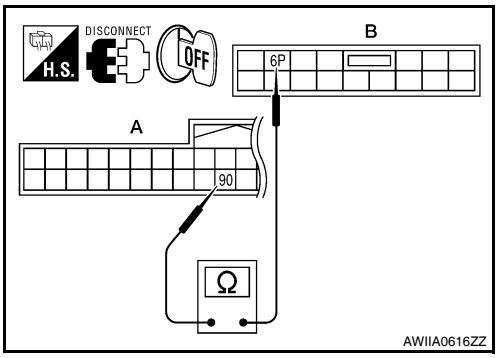


Is the inspection result normal?

YES >> GO TO 9
NO >> GO TO 6

6. CHECK POWER SUPPLY FOR FRONT BLOWER MOTOR RELAY FOR AN OPEN

1. Press ignition switch OFF.
2. Disconnect BCM harness connector M19.
3. Disconnect fuse block (J/B) connector.
4. Check continuity between BCM harness connector M19 (A) terminal 90 and fuse block (J/B) harness connector E6 (B) terminal 6P.



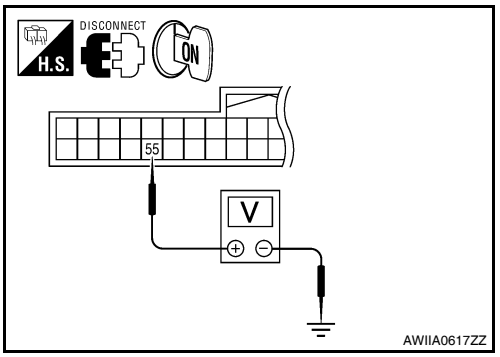
Terminal		Continuity
(+)	(-)	
Connector - Terminal	Connector - Terminal	Yes
M19-90	E6 - 6P	

Is the inspection result normal?

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

7. CHECK BLOWER FAN SWITCH SIGNAL FOR VOLTAGE

1. Disconnect BCM harness connector M18.
2. Press ignition switch ON.
3. Check voltage between BCM harness connector M18 terminal 55 and ground.



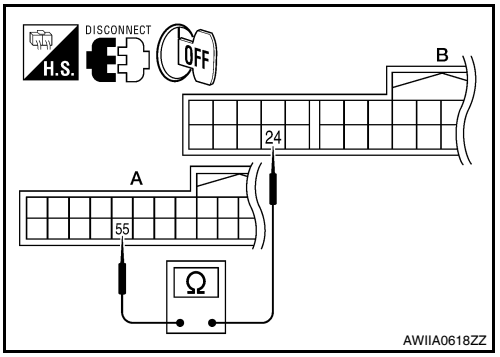
Terminal		Voltage (V) (Approx.) Continuity
(+)	(-)	
Connector - Terminal	Connector - Terminal	
M18-55	Ground	12V

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-96, "Removal and Installation".
NO >> GO TO 8

8. CHECK BLOWER FAN SWITCH SIGNAL CIRCUIT FOR AN OPEN

1. Press ignition switch OFF.
2. Disconnect front air control harness connector.
3. Check continuity between BCM harness connector M18 (A) terminal 55 and front air control harness connector M37 (B) terminal 24.



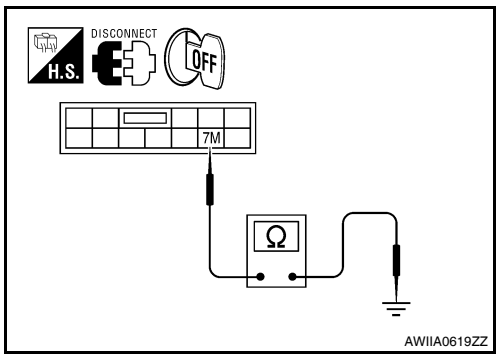
Terminal		Continuity
(+)	(-)	
Connector - Terminal	Connector - Terminal	Yes
M18 - 55	M37 - 24	

Is the inspection result normal?

YES >> Replace front air control. Refer to VTL-8, "Removal and Installation".
NO >> Repair harness or connector.

9. CHECK FRONT BLOWER MOTOR RELAY GROUND

1. Press ignition switch OFF.
2. Disconnect fuse block (J/B) harness connector M5.
3. Check continuity between fuse block (J/B) harness connector M5 terminal 7M and ground.



Terminal		Continuity
(+)	(-)	
Connector - Terminal	Connector - Terminal	Yes
M5 - 7M	Ground	

Is the inspection result normal?

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

MAGNET CLUTCH

Description

INFOID:0000000004498212

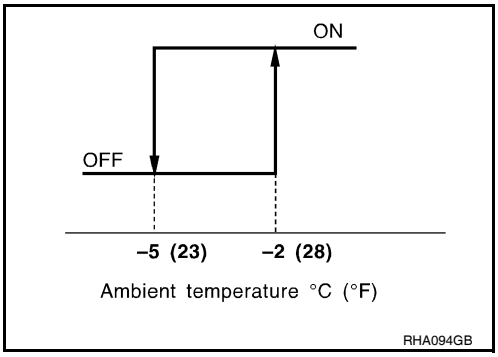
SYSTEM DESCRIPTION

Front air control controls A/C compressor operation by ambient temperature and signal from ECM.

Low Temperature Protection Control

Front air control will turn the A/C compressor ON or OFF as determined by a signal detected by ambient sensor.

When ambient temperature is greater than -2°C (28°F), the A/C compressor turns ON. The A/C compressor turns OFF when ambient temperature is less than -5°C (23°F).



Component Function Check

INFOID:0000000004498213

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - MAGNET CLUTCH

1. Press ignition switch ON.
2. Press vent switch ( ).
3. Press A/C switch.
4. Confirm that the A/C compressor clutch engages (sound or visual inspection). (Discharge air and blower speed will depend on ambient, in-vehicle and set temperatures).

Can a symptom be duplicated?

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

2. PERFORM COMPLETE OPERATIONAL CHECK

Perform a complete operational check and check for any symptoms. Refer to HAC-5, "Description and Conditions".

Is the inspection result normal?

YES >> Refer to HAC-83, "Symptom Matrix Chart".
NO >> System OK.

3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4

4. CHECK MAGNET CLUTCH MECHANISM

Check for magnet clutch operation.

Does the magnet clutch engage?

YES >> GO TO 5
NO >> Check magnet clutch circuit. Refer to HAC-47, "Diagnosis Procedure".

5. CHECK AMBIENT SENSOR CIRCUIT

Perform diagnostic procedure for the mode door motor. Refer to HAC-32, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 6
NO >> Repair as necessary.

6. CHECK IN-VEHICLE SENSOR CIRCUIT

Perform diagnostic procedure for the in-vehicle sensor circuit. Refer to HAC-53, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 7
NO >> Repair as necessary.

7. CHECK SUNLOAD SENSOR CIRCUIT

Perform diagnostic procedure for the sunload sensor circuit. Refer to HAC-56, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 8
NO >> Repair as necessary.

8. CHECK INTAKE SENSOR CIRCUIT

Perform diagnostic procedure for the intake sensor circuit. Refer to HAC-59, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 9
NO >> Repair as necessary.

9. CHECK AIR MIX DOOR MOTOR PBR CIRCUITS

Perform diagnostic procedure for the air mix door motor circuit. Refer to HAC-35, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 10
NO >> Repair as necessary.

10. RECHECK FOR SYMPTOMS

Perform a complete operational check and check for any symptoms. Refer to HAC-5, "Description and Conditions".

Does another symptom exist?

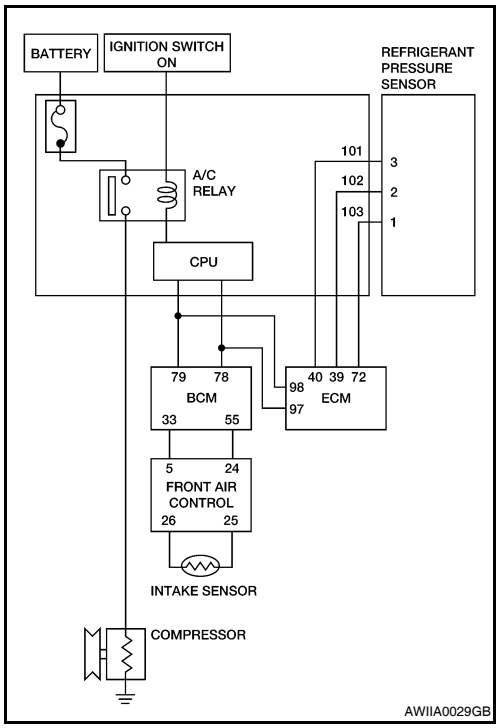
YES >> Repair as necessary.
NO >> Replace front air control. Refer to VTL-8, "Removal and Installation".

Diagnosis Procedure

INFOID:0000000004498214

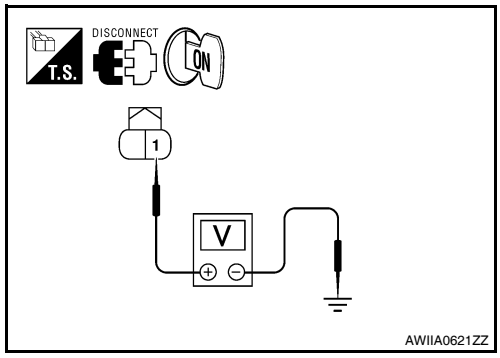
DIAGNOSIS PROCEDURE FOR MAGNET CLUTCH

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



1.CHECK POWER SUPPLY FOR A/C COMPRESSOR

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



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

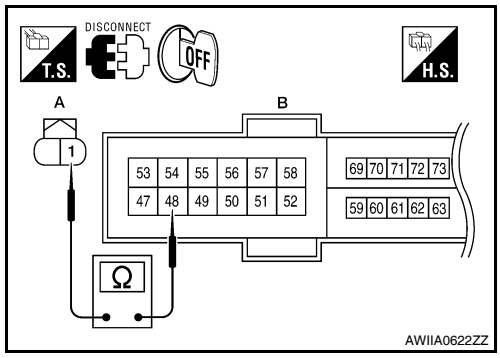
Is the inspection result normal?

YES >> Check magnet clutch coil.
1. If NG, replace magnet clutch. Refer to HA-35, "Removal and Installation for Compressor - QR25DE Models" or HA-36, "Removal and Installation for Compressor - VQ35DE Models".
2. If OK, check A/C compressor mounting points for looseness or corrosion and repair as necessary.

NO >> GO TO 2

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

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



Terminals		Continuity
Connector - Terminal	Connector - Terminal	Yes
F3 - 1	F10 - 48	

If OK, check harness for short to ground.

Is the inspection result normal?

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

3.CHECK FUSE IN IPDM E/R

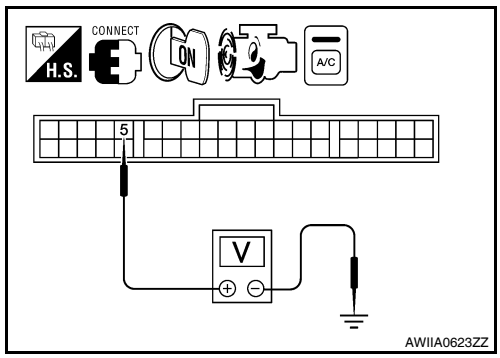
Check 10A fuse (No. 41 located in the IPDM E/R).

Is the inspection result normal?

YES >> GO TO 4
NO >> Replace fuse and check IPDM E/R for short circuit. Replace if necessary.

4.CHECK A/C COMPRESSOR ON SIGNAL

Check voltage between front air control connector M37 terminal 5 and ground, with A/C compressor ON and with A/C compressor OFF.



Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal	Body ground	A/C compressor ON: 0V A/C compressor OFF: 5V
M37 - 5		

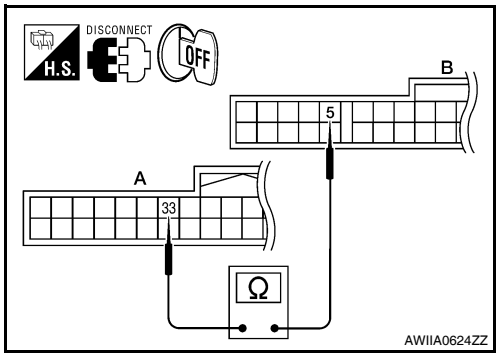
Is the inspection result normal?

YES >> GO TO 5
NO >> • When A/C compressor is ON and voltage is not approx. 0V, Replace front air control. Refer to VTL-8, "Removal and Installation".

• When A/C compressor is OFF and voltage is not approx. 5V, BCM is malfunctioning.

5. CHECK CONTINUITY BETWEEN BCM AND FRONT AIR CONTROL

1. Disconnect BCM connector M18 and front air control connector.
2. Check continuity between BCM harness connector M18 (A) terminal 33 and front air control connector M37 (B) terminal 5.



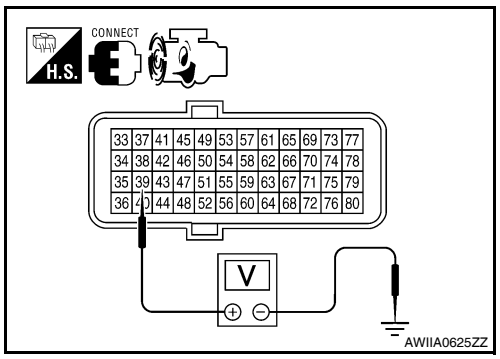
Terminals		Continuity
Connector - Terminal	Connector - Terminal	
M18 - 33	M37 - 5	Yes

Is the inspection result normal?

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

6. CHECK REFRIGERANT PRESSURE SENSOR INPUT SIGNAL

1. Reconnect all disconnected connectors.
2. Start the engine.
3. Check voltage between ECM harness connector F13 terminal 39 and ground.



Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector- Terminal	Body ground	12V
F13-39		

Is the inspection result normal?

YES >> GO TO 7
NO >> 1. Repair harness or connector.
2. Confirm that magnet clutch operation is normal.

7. CHECK REFRIGERANT PRESSURE SENSOR

Refer to EC-975, "Diagnosis Procedure" (QR25DE) or EC-1503, "Diagnosis Procedure"(VQ35DE).

Is the inspection result normal?

YES >> GO TO 8
NO >> Replace refrigerant pressure sensor. Refer to HA-44, "Removal and Installation for Refrigerant Pressure Sensor".

8. CHECK CAN COMMUNICATION CIRCUITS

Check CAN communication circuits between BCM to ECM and between ECM to IPDM E/R. Refer to LAN-13, "CAN Diagnosis with CONSULT-III".

Is the inspection result normal?

YES >> ECM malfunctioning.
NO >> Repair or replace component based on the result of diagnosis.

AMBIENT SENSOR

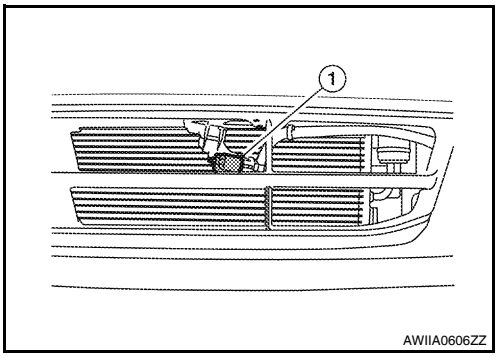
Description

INFOID:0000000004498215

COMPONENT DESCRIPTION

Ambient Sensor

The ambient sensor (1) is attached on the front bumper reinforcement. It detects ambient temperature and converts it into a resistance value which is then input into the front air control.



AMBIENT TEMPERATURE INPUT PROCESS

The automatic amplifier includes a processing circuit for the ambient sensor input. However, when the temperature detected by the ambient sensor increases quickly, the processing circuit retards the front air control function. It only allows the front air control to recognize an ambient temperature increase of 0.33°C (0.6°F) per 100 seconds.

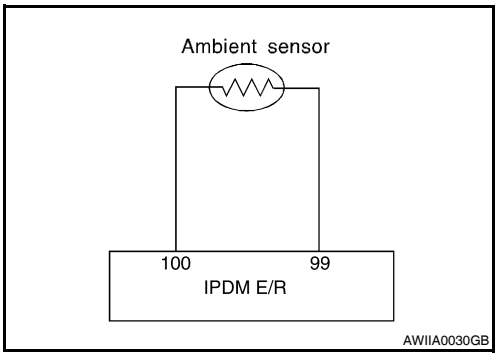
As an example, consider stopping for a cup of coffee after high speed driving. Although the actual ambient temperature has not changed, the temperature detected by the ambient sensor will increase. This is because the heat from the engine compartment can radiate to the front grille area, location of the ambient sensor.

Diagnosis Procedure

INFOID:0000000004498216

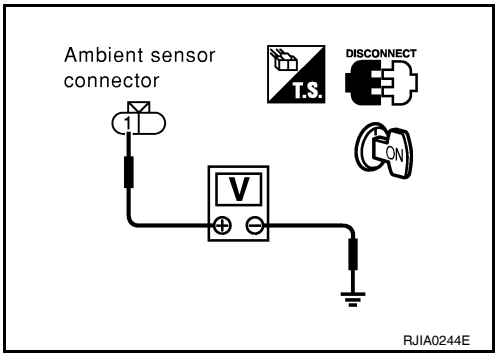
DIAGNOSIS PROCEDURE FOR AMBIENT SENSOR

SYMPTOM: Ambient sensor circuit is open or shorted.



1. CHECK VOLTAGE BETWEEN AMBIENT SENSOR HARNESS CONNECTOR AND BODY GROUND

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



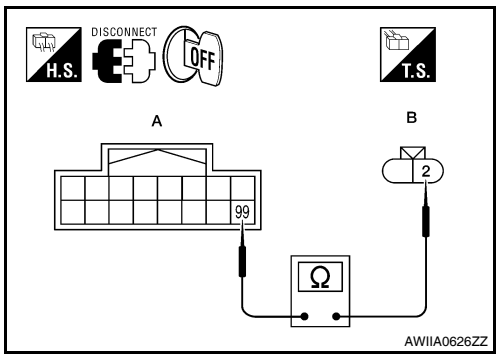
Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal	Body ground	5V
E211 - 1		

Is the inspection result normal?

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

2. CHECK AMBIENT SENSOR GROUND CIRCUIT BETWEEN AMBIENT SENSOR AND IPDM E/R

1. Press ignition switch OFF.
2. Disconnect IPDM E/R connector E201.
3. Check continuity between IPDM E/R harness connector M201 (A) terminal 99 and ambient sensor harness connector E211 (B) terminal 2.



Terminals		Continuity
Connector - Terminal	Connector - Terminal	Yes
E201 - 99	E211-2	

If OK, check harness for short.

Is the inspection result normal?

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

3. CHECK AMBIENT SENSOR

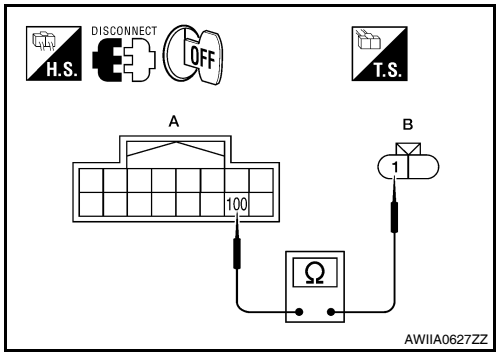
Check ambient sensor. Refer to HAC-51, "Component Inspection"

Is the inspection result normal?

YES >> 1. Replace front air control. Refer to VTL-8, "Removal and Installation".
2. Confirm system operation.
NO >> Replace ambient sensor. Refer to HA-43, "Removal and Installation".

4. CHECK AMBIENT SENSOR CIRCUIT BETWEEN AMBIENT SENSOR AND IPDM E/R

1. Press ignition switch OFF.
2. Disconnect IPDM E/R connector E201.
3. Check continuity between IPDM E/R harness connector E201 (A) terminal 100 and ambient sensor harness connector E211 (B) terminal 1.



Terminals		Continuity
Connector - Terminal	Connector - Terminal	Yes
E201 - 100	E211 - 1	

If OK, check harness for short.

Is the inspection result normal?

YES >> 1. Replace IPDM E/R. Refer to PCS-48, "Removal and Installation".
2. Confirm system operation.
NO >> Repair harness or connector.

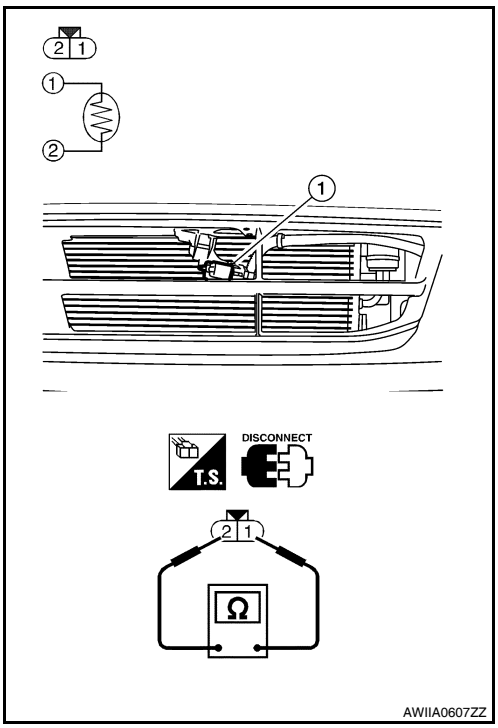
Component Inspection

INFOID:0000000004498217

Ambient Sensor

After disconnecting ambient sensor (1) harness connector E1, measure resistance between terminals 2 and 1 at sensor side, using the table below.

Temperature °C (°F)	Resistance kΩ
-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



If NG, replace ambient sensor. Refer to HA-43, "Removal and Installation".

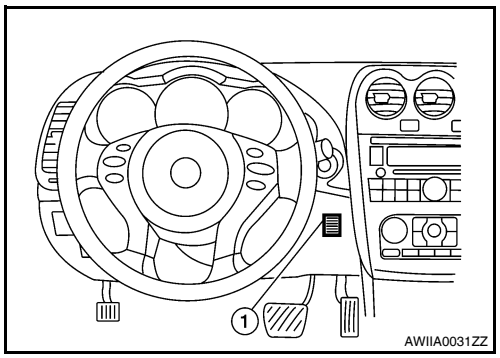
IN-VEHICLE SENSOR

Component Description

INFOID:0000000004498218

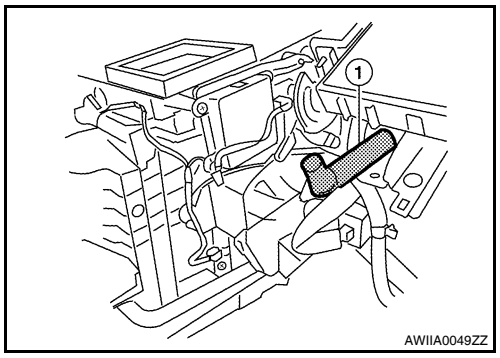
In-vehicle sensor

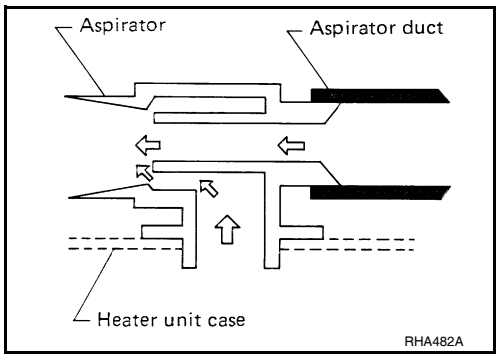
The in-vehicle sensor (1) is located on instrument lower panel LH. It converts variations in temperature of compartment air drawn from the aspirator into a resistance value. It is then input into the front air control.



Aspirator

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



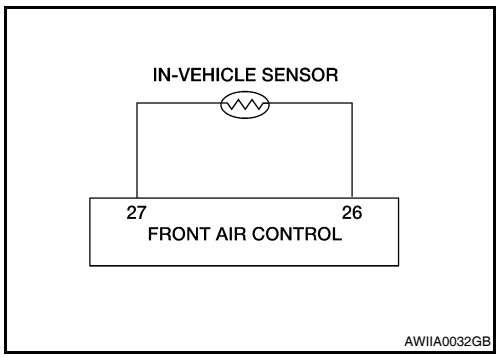


Diagnosis Procedure

INFOID:0000000004498219

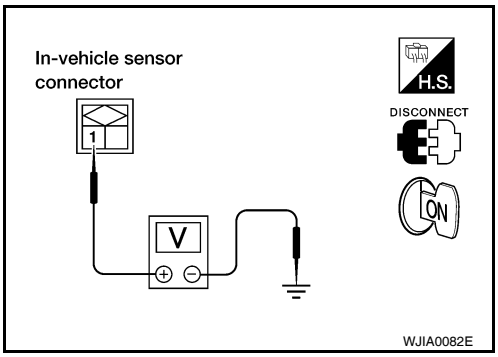
DIAGNOSTIC PROCEDURE

SYMPTOM: In-vehicle sensor circuit is open or shorted.



1. CHECK VOLTAGE BETWEEN IN-VEHICLE SENSOR HARNESS CONNECTOR AND BODY GROUND

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



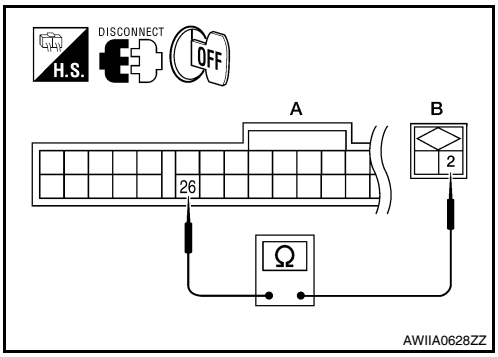
Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal	Body ground	5V
M34 - 1		

Is the inspection result normal?

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

2. CHECK IN-VEHICLE SENSOR GROUND CIRCUIT BETWEEN IN-VEHICLE SENSOR AND FRONT AIR CONTROL

1. Press ignition switch OFF.
2. Disconnect front air control connector M37.
3. Check continuity between front air control harness connector M37 (A) terminal 26 and in-vehicle sensor harness connector M34 (B) terminal 2.



Terminals		Continuity
Connector - Terminal	Connector - Terminal	Yes
M37 - 26	M34 - 2	

If OK, check harness for short.

Is the inspection result normal?

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

3. CHECK IN-VEHICLE SENSOR

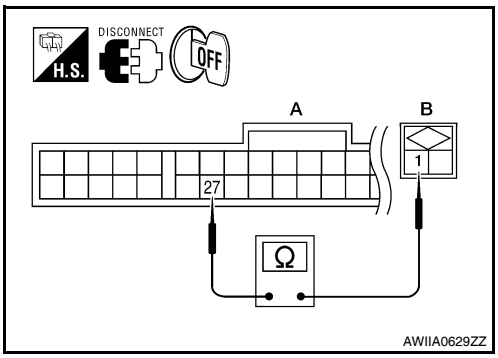
Check in-vehicle sensor. Refer to HAC-55, "Component Inspection".

Is the inspection result normal?

YES >> 1. Replace front air control. Refer to VTL-8, "Removal and Installation".
2. Confirm system operation.
NO >> 1. Replace in-vehicle sensor. Refer to VTL-9, "Removal and Installation".
2. Confirm system operation.

4. CHECK IN-VEHICLE SENSOR CIRCUIT BETWEEN AMBIENT SENSOR AND FRONT AIR CONTROL

1. Press ignition switch OFF.
2. Disconnect front air control connector M37.
3. Check continuity between front air control harness connector M37 (A) terminal 27 and in-vehicle sensor harness connector M34 (B) terminal 1.



Terminals		Continuity
Connector - Terminal	Connector - Terminal	Yes
M37 - 27	M34 - 1	

If OK, check harness for short.

Is the inspection result normal?

YES >> 1. Replace front air control. Refer to VTL-8, "Removal and Installation".
2. Confirm system operation.
NO >> Repair harness or connector.

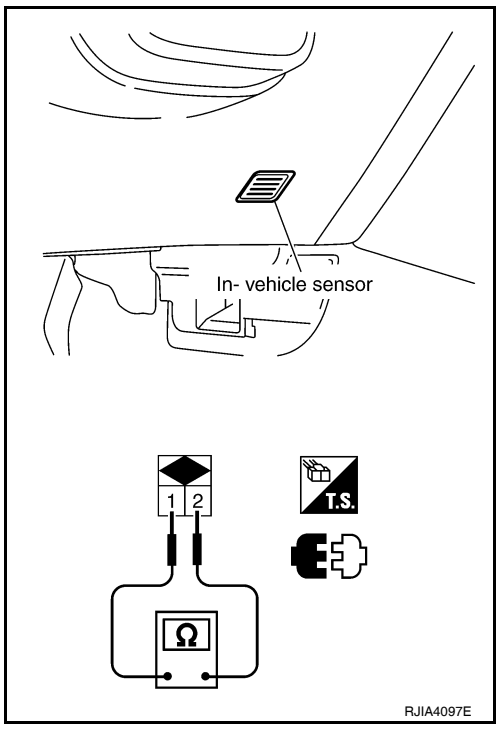
Component Inspection

INFOID:0000000004498220

In-vehicle Sensor

After disconnecting in-vehicle sensor connector M34, measure resistance between terminals 1 and 2 at sensor side, using the table below.

Temperature °C (°F)	Resistance kΩ
−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



If NG, replace in-vehicle sensor. Refer to VTL-9, "Removal and Installation".

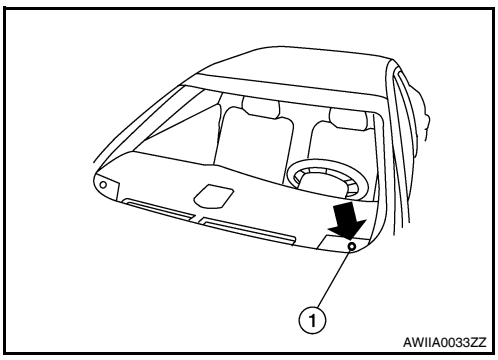
SUNLOAD SENSOR

Description

INFOID:0000000004498221

COMPONENT DESCRIPTION

The sunload sensor (1) is located on the LH tweeter 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 front air control.



SUNLOAD INPUT PROCESS

The front air control also includes a processing circuit which averages the variations in detected sunload over a period of time. This prevents drastic swings in the automatic temperature control system operation due to small or quick variations in detected sunload.

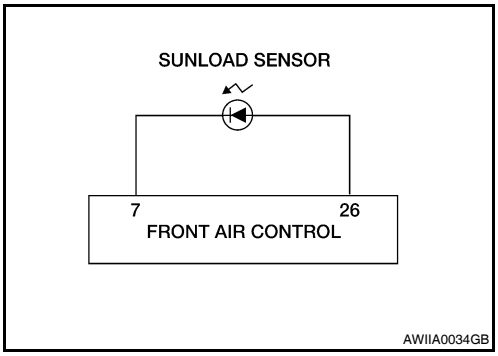
For example, consider driving along a road bordered by an occasional group of large trees. The sunload detected by the sunload sensor will vary whenever the trees obstruct the sunlight. The processing circuit averages the detected sunload over a period of time, so that the (insignificant) effect of the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

Diagnosis Procedure

INFOID:0000000004498222

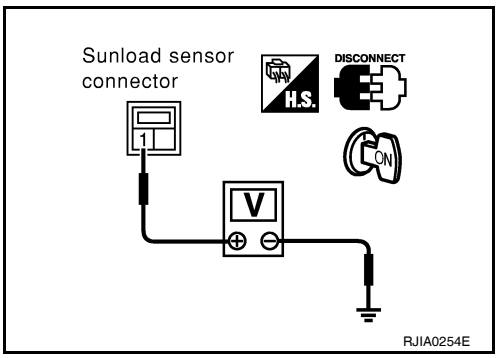
DIAGNOSTIC PROCEDURE

SYMPTOM: Sunload sensor circuit is open or shorted.



1. CHECK VOLTAGE BETWEEN SUNLOAD SENSOR HARNESS CONNECTOR AND BODY GROUND

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



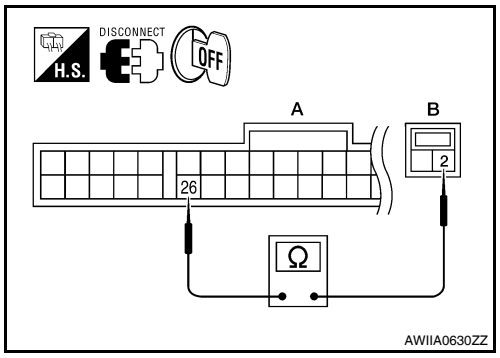
Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal M56 - 1	Body ground	5V

Is the inspection result normal?

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

2.CHECK SUNLOAD SENSOR GROUND CIRCUIT BETWEEN SUNLOAD SENSOR AND FRONT AIR CONTROL

1. Press ignition switch OFF.
2. Disconnect front air control connector M37.
3. Check continuity between front air control connector M37 (A) terminal 26 and sunload sensor harness connector M56 (B) terminal 2.



Terminals		Continuity
Connector - Terminal	Connector - Terminal	Yes
M37 - 26	M56-2	

If OK, check harness for short.

Is the inspection result normal?

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

3.CHECK SUNLOAD SENSOR

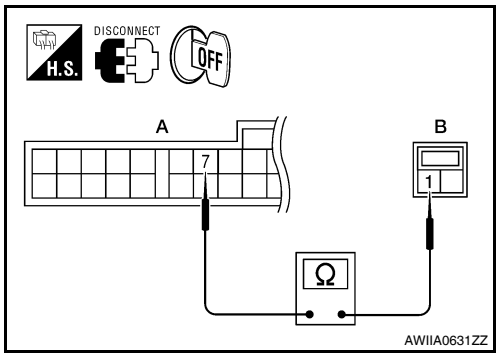
Check sunload sensor. Refer to HAC-57, "Component Inspection".

Is the inspection result normal?

YES >> 1. Replace front air control. Refer to VTL-8, "Removal and Installation".
2. Confirm system operation.
NO >> 1. Replace sunload sensor. Refer to VTL-10, "Removal and Installation".
2. Confirm system operation.

4.CHECK SUNLOAD SENSOR CIRCUIT BETWEEN SUNLOAD SENSOR AND FRONT AIR CONTROL

1. Press ignition switch OFF.
2. Disconnect front air control connector M37.
3. Check continuity between front air control connector M37 (A) terminal 7 and sunload sensor harness connector M56 (B) terminal 1.



Terminals		Continuity
Connector - Terminal	Connector - Terminal	Yes
M37 - 7	M56 - 1	

If OK, check harness for short.

Is the inspection result normal?

YES >> 1. Replace front air control. Refer to VTL-8, "Removal and Installation".
2. Confirm system operation.
NO >> Repair harness or connector.

Component Inspection

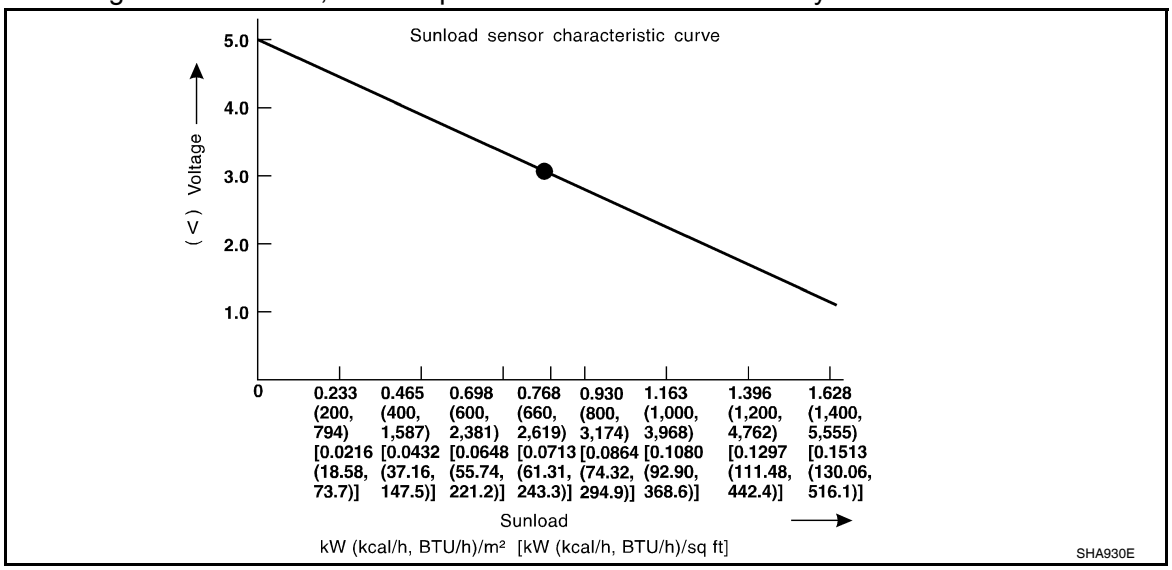
INFOID:0000000004498223

Sunload Sensor

Measure voltage between front air control harness connector M37 terminal 7 and ground.

If NG, replace front air control. Refer to VTL-8, "Removal and Installation".

• When checking sunload sensor, select a place where sun shines directly on it.



INTAKE SENSOR

Description

INFOID:0000000004498224

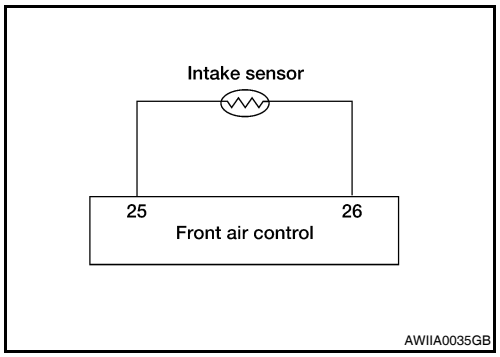
Intake Sensor

The intake sensor is located on the heater and cooling unit. It converts temperature of air after it passes through the evaporator into a resistance value which is then input to the front air control.

Diagnosis Procedure

INFOID:0000000004498225

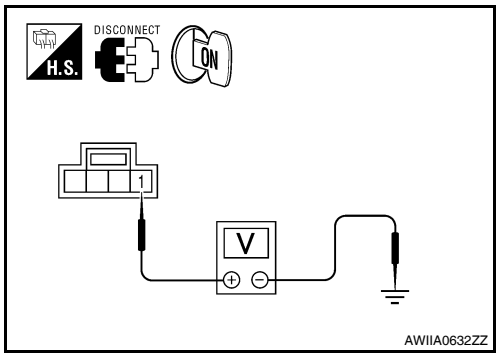
SYMPTOM: Intake sensor circuit is open or shorted.



1. CHECK VOLTAGE BETWEEN INTAKE SENSOR HARNESS CONNECTOR AND BODY GROUND

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

Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal	Body ground	5V
M69 - 1		



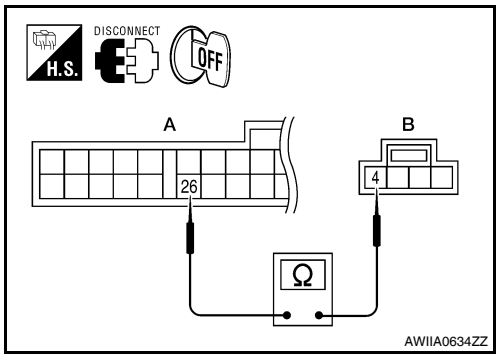
Is the inspection result normal?

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

2. CHECK INTAKE SENSOR GROUND CIRCUIT BETWEEN INTAKE SENSOR AND FRONT AIR CONTROL

1. Press ignition switch OFF.
2. Disconnect front air control connector M37.
3. Check continuity between front air control connector M37 (A) terminal 26 and intake sensor harness connector M69 (B) terminal 4.

Terminals		Continuity
Connector - Terminal	Connector - Terminal	Yes
M37 - 26	M69 - 4	



If OK, check harness for short.

Is the inspection result normal?

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

3. CHECK INTAKE SENSOR

Check intake sensor. Refer to HAC-59, "Diagnosis Procedure".

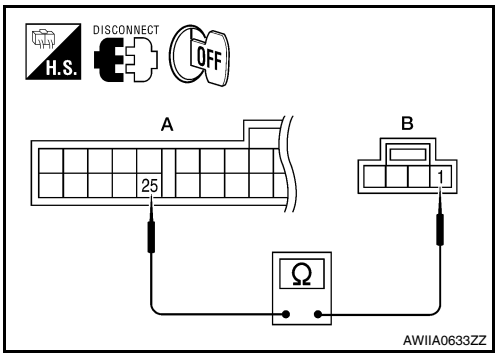
Is the inspection result normal?

YES >> 1. Replace front air control. Refer to VTL-8, "Removal and Installation".
2. Confirm system operation.

NO >> 1. Replace intake sensor. Refer to VTL-11, "Removal and Installation".
2. Confirm system operation.

4. CHECK INTAKE SENSOR CIRCUIT BETWEEN INTAKE SENSOR AND FRONT AIR CONTROL

1. Press ignition switch OFF.
2. Disconnect front air control connector M37.
3. Check continuity between front air control connector M37 (A) terminal 25 and intake sensor harness connector M69 (B) terminal 1.



Terminals		Continuity
Connector - Terminal	Connector - Terminal	Yes
M69 - 1	M37 - 25	

If OK, check harness for short.

Is the inspection result normal?

YES >> 1. Replace front air control, Refer to VTL-8, "Removal and Installation".
2. Confirm system operation.

NO >> Repair harness or connector.

Component Inspection

INFOID:0000000004498226

Intake Sensor

After disconnecting intake sensor harness connector, measure resistance between terminals 1 and 2 at sensor harness side, using the table below.

Temperature °C (°F)	Resistance kΩ
-15 (5)	12.34
-10 (14)	9.62
-5 (23)	7.56
0 (32)	6.00
5 (41)	4.80
10 (50)	3.87
15 (59)	3.15
20 (68)	2.57
25 (77)	2.12
30 (86)	1.76
35 (95)	1.47
40 (104)	1.23
45 (113)	1.04

If NG, replace intake sensor. Refer to VTL-11, "Removal and Installation".

POWER SUPPLY AND GROUND CIRCUIT FOR FRONT AIR CONTROL

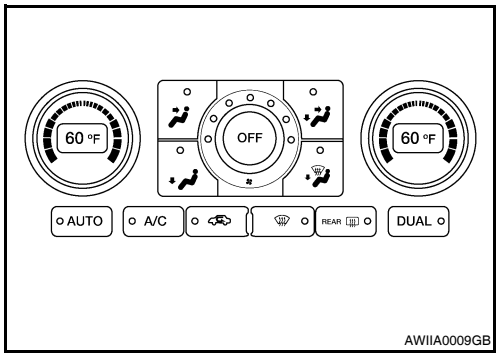
Description

INFOID:0000000004498227

COMPONENT DESCRIPTION

FRONT AIR CONTROL

The front air control has a built-in microcomputer which processes information sent from various sensors needed for air conditioner operation. The air mix door motors, mode door motor, intake door motor, blower motor and compressor are then controlled.
Signals from various switches and Potentio Temperature Control (PTC) are directly entered into front air control.



AWIIA0009GB

POTENTIO TEMPERATURE CONTROL (PTC)

The PTC is built into the front air control.

Component Function Check

INFOID:0000000004498228

COMPONENT INSPECTION

SYMPTOM: A/C system does not come on.

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - AUTO MODE

1. Press AUTO switch (indicator should illuminate).
2. Confirm that the compressor clutch engages (sound or visual inspection). (Discharge air and blower speed will depend on ambient, in-vehicle and set temperature.)

Can a symptom be duplicated?

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

2. PERFORM COMPLETE OPERATIONAL CHECK

Perform a complete operational check and check for any symptoms. Refer to HAC-5, "Description and Conditions".

Is the inspection result normal?

YES >> Refer to HAC-83, "Symptom Matrix Chart".
NO >> System OK.

3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4

4. CHECK MAIN POWER SUPPLY AND GROUND CIRCUIT

Check main power supply and ground circuit. Refer to HAC-61, "Diagnosis Procedure".

Is the inspection result normal?

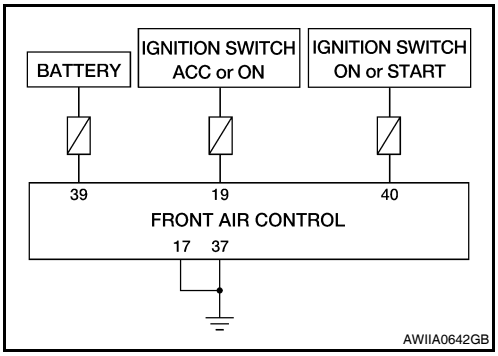
YES >> Replace front air control. Refer to VTL-8, "Removal and Installation".
NO >> Repair as necessary.

Diagnosis Procedure

INFOID:0000000004498229

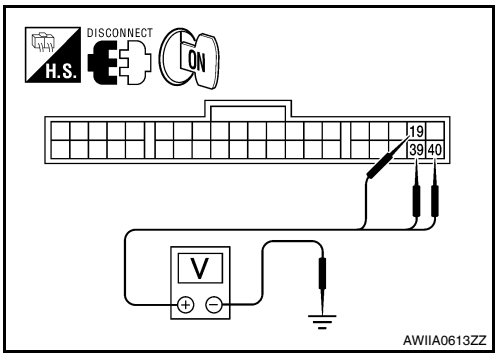
DIAGNOSIS PROCEDURE FOR A/C SYSTEM

SYMPTOM: A/C system does not come on.



1. CHECK POWER SUPPLY CIRCUIT FOR FRONT AIR CONTROL

1. Disconnect front air control connector M37.
2. Press ignition switch ON.
3. Check voltage between front air control connector M37 terminals 19, 39 and 40, and ground.



Terminals		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal	Body ground	12V
M37-19		
M37-39		
M37-40		

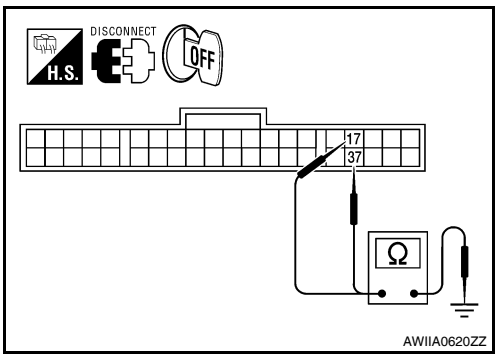
Is the inspection result normal?

YES >> GO TO 2

NO >> Check the following.
- 10A fuses [Nos. 6, 19, and 3, located in the fuse block (J/B)].
- If fuses are OK, check for open circuit in wiring harness. Repair or replace as necessary.
- If fuses are NG, replace fuse and check wiring harness for short circuit. Repair or replace as necessary.

2. CHECK BODY GROUND CIRCUIT FOR FRONT AIR CONTROL

1. Press ignition switch OFF.
2. Check continuity between front air control connector M37 terminals 17and 37 and ground.



Terminal		Continuity
(+)	(-)	
Connector - Terminal	Body ground	Yes
M37-17		
M37-37		

Is the inspection result normal?

YES >> • Replace front air control. Refer to VTL-8, "Removal and Installation".
• Inspection End.

NO >> Repair or replace harness.

ECU DIAGNOSIS

AIR CONDITIONER CONTROL

Reference Value

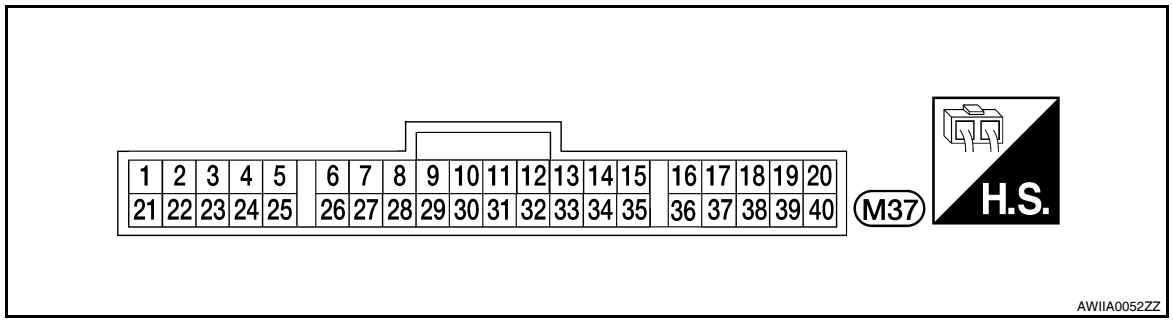
INFOID:0000000004498230

VALUES ON THE DIAGNOSIS TOOL

Display Item List

Monitor item name “operation or unit”		Contents
FAN ON SIG	“ON/OFF”	Displays “FAN (ON)/FAN (OFF)” status as judged from blower fan motor switch signal.
AIR COND SW	“ON/OFF”	Displays “COMP (ON)/COMP (OFF)” status as judged from air conditioner switch signal.

TERMINAL LAYOUT



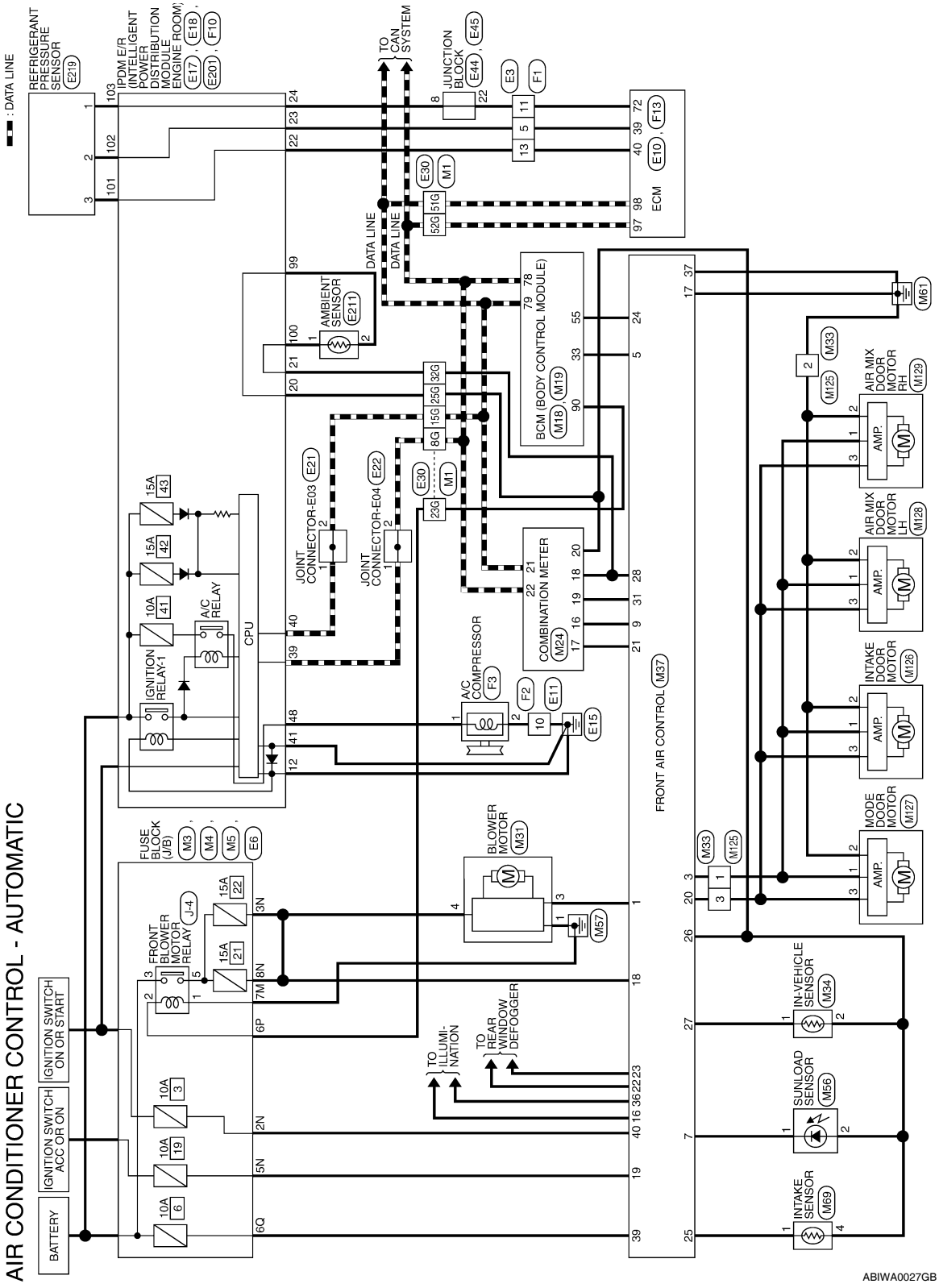
PHYSICAL VALUES

Terminal No.	Wire color	Item	Ignition switch	Condition		Voltage (V) (Approx.)
1	L/Y	Blower motor feed back		Fan speed	Low	7.0.- 10.0
3	L/R	A/C LAN signal		—		5.5
5	SB	Compressor ON signal		Compressor	ON	0
					OFF	12
7	O	Sunload sensor		—		0 - 5
9	G/W	Water temperature sensor		—		—
16	R/L	Light (+)		Lighting switch	OFF	0
					1st position	12
17	B	Ground		—		0
18	W/L	Power supply for IGN		—		12
19	V/Y	Power supply for ACC	ACC	—		12
20	L/W	Power supply for mode door motor, intake door motor, and air mix door motor LH and RH		—		12
21	R/W	Power supply for A/C ON signal			ON	4.6
22	GR	Rear defrost feed back		Defroster switch	ON	12
					OFF	0

Terminal No.	Wire color	Item	Ignition switch	Condition		Voltage (V) (Approx.)
23	GR/W	Rear defrost ON signal		Defroster switch	ON	0
					OFF	12
24	BR/W	Fan ON signal		Fan	ON	0
					OFF	5
25	R/G	Intake sensor		—		0 - 5
26	B/Y	Sensor ground		—		0
27	LG	In-vehicle sensor		—		0 - 5
28	O/B	Ambient sensor		—		5
31	P	Ambient sensor VDD		—		5
36	R/Y	Light (-)		—		0
37	B	Ground		—		0
39	Y/R	Power supply for battery		—		12
40	G	Power supply for IGN		—		12

Wiring Diagram - Air Conditioner Control (Auto) - Coupe

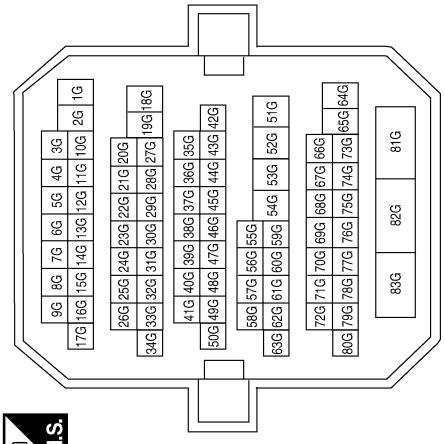
INFOID:0000000004498231



AIR CONDITIONER CONTROL CONNECTORS - AUTOMATIC

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

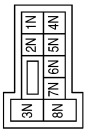
H.S.



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

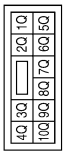
H.S.



Terminal No.	Color of Wire	Signal Name
2N	G	–
3N	W/L	–
5N	V/Y	–
8N	W/L	–

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

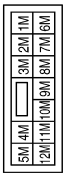
H.S.



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

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

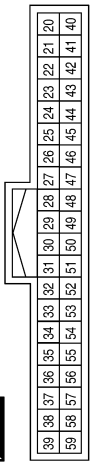
H.S.



Terminal No.	Color of Wire	Signal Name
7M	B	–

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

H.S.



Terminal No.	Color of Wire	Signal Name
33	SB	AIRCON_SW
55	BR/W	BLOWER_FAN_SW

ABIIA0147GB

Connector No.	M31
Connector Name	BLOWER MOTOR
Connector Color	WHITE

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

Connector No.	M24
Connector Name	COMBINATION METER
Connector Color	WHITE

Terminal No.	Color of Wire	Signal Name
16	G/W	WATER_TEMP_OUT
17	R/W	A/C_PD_CUT
18	O/B	OAT
19	P	OAT POWER
20	B/Y	GND (OAT SENSOR)
21	L	CAN-H
22	P	CAN-L

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

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

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

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

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

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

ABIIA0148GB

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

H.S.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	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/Y	FAN_PWN
3	L/R	LAN SIG
5	SB	COMP ON
7	O	SUN SENS
9	G/W	WATER_TEMP

Terminal No.	Color of Wire	Signal Name
16	R/L	ILL+
17	B	GND
18	W/L	IGN_2
19	V/Y	ACC
20	L/W	VACTR
21	R/W	PD_CUT
22	GR	RR_DEF_F/B
23	GR/W	RR_DEF_ON
24	BR/W	FAN ON
25	R/G	INT SENS
26	B/Y	SENS GND
27	LG	INC SENS
28	O/B	AMB SENS
31	P	AMB VDD
36	R/Y	ILL-
37	B	GND(POWER)
39	Y/R	BATT
40	G	IGN

Connector No.	M56
Connector Name	SUNLOAD SENSOR
Connector Color	BLACK

H.S.

1	2

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

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

H.S.

1	2	3

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

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

H.S.

1	2	3

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

Connector No.	M69
Connector Name	INTAKE SENSOR
Connector Color	WHITE

H.S.

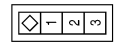
4	3	2	1

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

ABIIA0149GB

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

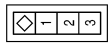
H.S.



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

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

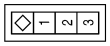
H.S.



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

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

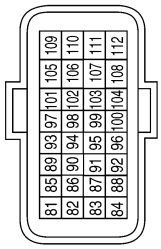
H.S.



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

Connector No.	E10
Connector Name	ECM
Connector Color	BLACK

H.S.



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

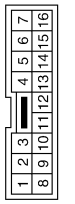
Connector No.	E6
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE

H.S.

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

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

H.S.



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

ABIIA0159GB

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

H.S.

1	2		3	4
5	6	7	8	9	10

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

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

H.S.

42	41	40	39
46	45	44	43

Terminal No.	Color of Wire	Signal Name
39	P	CAN-L
40	L	CAN-H
41	B	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	B/Y	AMB_SENS_GND-E/R
21	O/B	AMB_SENS_SIG-E/R
22	W/R	PD_SENS_GND-E/R
23	B/R	PD_SENS_SIG-E/R
24	BR/W	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	–

ABIIA0150GB

Terminal No.	Color of Wire	Signal Name
8G	P	–
15G	L	–
23G	Y	–
25G	L	-(WITH A/T)
25G	B/Y	-(WITH M/T)
32G	LG	-(WITH A/T)
32G	O/B	-(WITH M/T)
51G	L	–
52G	P	–

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

H.S.

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

H.S.

Terminal No.	Color of Wire	Signal Name
99	BR/W	AMB_SENS_GND-FEM
100	SB	AMB_SENS_SIG-FEM
101	O/L	PD_SENS_GND-FEM
102	R/B	PD_SENS_SIG-FEM
103	P	PDSENS_PWR-FEM

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

H.S.

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

Connector No.	E45
Connector Name	JUNCTION BLOCK
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
22	BR/W	–

Connector No.	E44
Connector Name	JUNCTION BLOCK
Connector Color	BROWN

H.S.

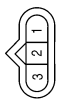
Terminal No.	Color of Wire	Signal Name
8	BR/W	–

ABIIA0151GB

Connector No.	E211
Connector Name	AMBIENT SENSOR
Connector Color	BLACK

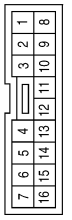
Terminal No.	Color of Wire	Signal Name
1	SB	AMB_SENS_SIG
2	BR/W	AMB_SENS_GND

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



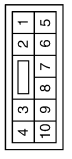
Terminal No.	Color of Wire	Signal Name
1	P	AVCC2
2	R	SIGNAL
3	W	GND

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



Terminal No.	Color of Wire	Signal Name
5	R	–
11	LG/B	–(QR25DE)
11	BR/W	–(VQ35DE)
13	G	–

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

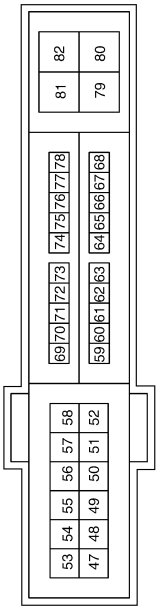


Terminal No.	Color of Wire	Signal Name
10	B/W	–

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

Terminal No.	Color of Wire	Signal Name
1	Y/R	A/C_COMP
2	B/W	GND

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



Terminal No.	Color of Wire	Signal Name
48	Y/R	A/C_COMP

ABIIA0158GB

Connector No.	F13
Connector Name	ECM (VQ35DE)
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

Connector No.	F13
Connector Name	ECM (QR25DE)
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	LG/B	AVCC2-PDPRES

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

T.S.

ABIIA0152GB

Wiring Diagram - Air Conditioner Control (Auto) - Sedan

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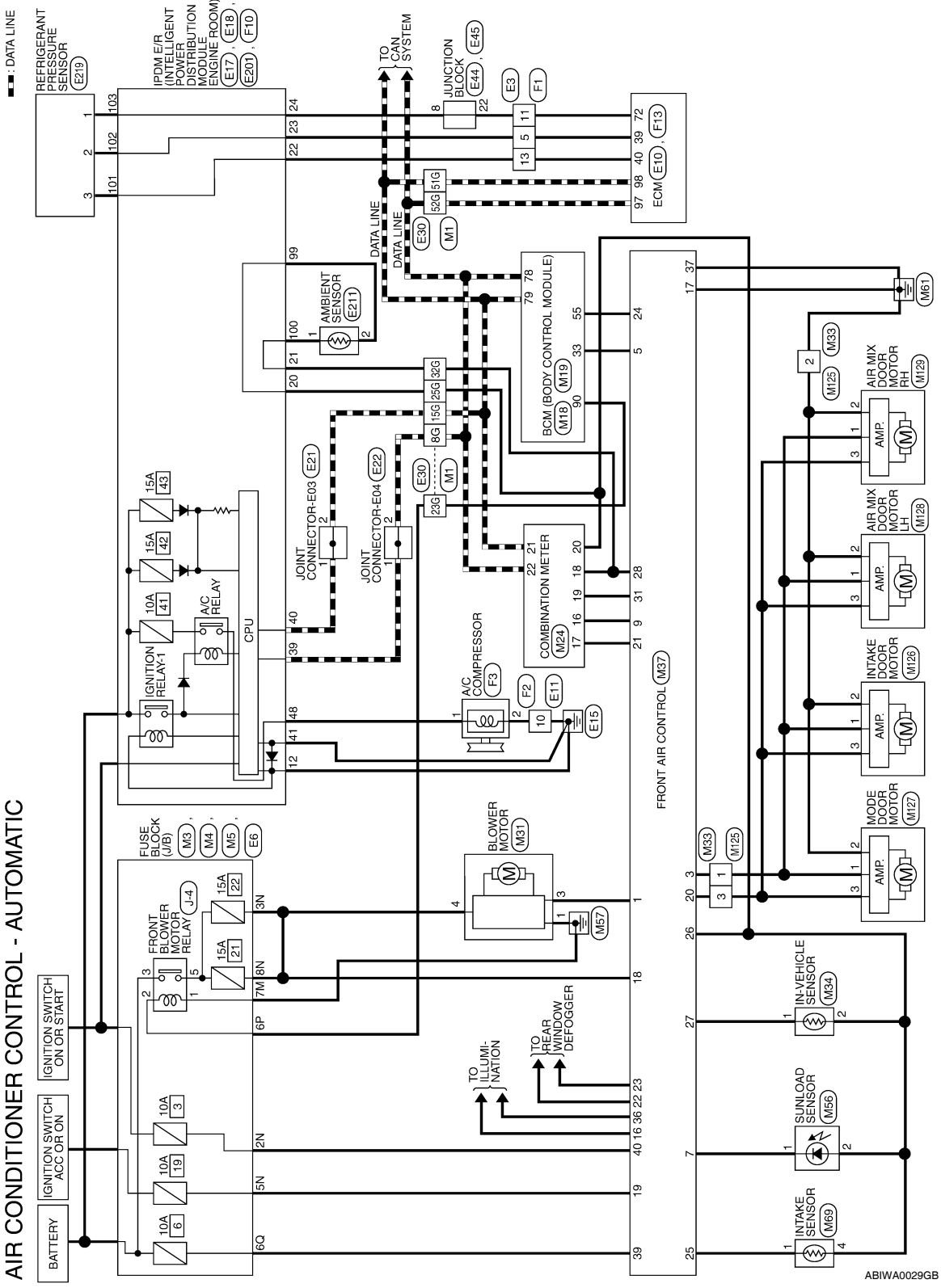
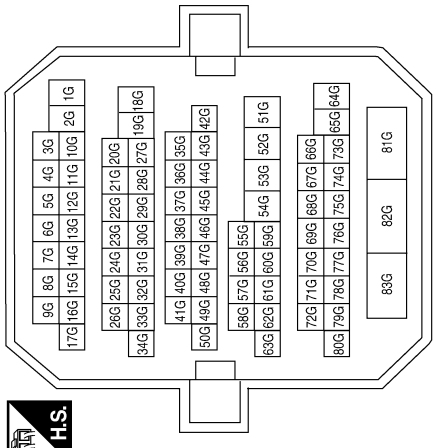


AIR CONDITIONER CONTROL CONNECTORS - AUTOMATIC

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

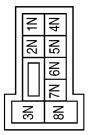
H.S.



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	–
5N	V/Y	–
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	–

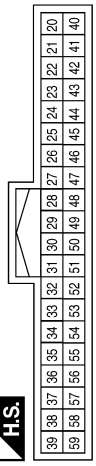
Connector No.	M5
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
7M	B	–

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

H.S.



Terminal No.	Color of Wire	Signal Name
33	SB	AIRCON_SW
55	BR/W	BLOWER_FAN_SW

ABIIA0171GB

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
80	Y	IGN2_CONT

Connector No.	M24
Connector Name	COMBINATION METER
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
16	G/W	WATER_TEMP_OUT
17	R/W	A/C_PD_CUT
18	O/B	OAT
19	P	OAT POWER
20	B/Y	GND (OAT SENSOR)
21	L	CAN-H
22	P	CAN-L

Connector No.	M31
Connector Name	BLOWER MOTOR
Connector Color	WHITE

H.S.

6	5	4	3	2	1

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

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

H.S.

3
2
1

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

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	–

ABIIA0172GB

Connector No.	M56
Connector Name	SUNLOAD SENSOR
Connector Color	BLACK

H.S.

1	2

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

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

H.S.

1	2	3

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

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

H.S.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	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/Y	FAN_PWM
3	L/R	LAN SIG
5	SB	COMP ON
7	O	SUN SENS
9	G/W	WATER_TEMP
16	R/L	ILL +
17	B	GND

Terminal No.	Color of Wire	Signal Name
18	W/L	IGN_2
19	V/Y	ACC
20	L/W	VACTR
21	R/W	PD_CUT
22	GR	RR_DEF_F/B
23	GR/W	RR_DEF_ON
24	BR/W	FAN ON
25	R/G	INT SENS
26	B/Y	SENS GND
27	LG	INC SENS
28	O/B	AMB SENS
31	P	AMB VDD
36	R/Y	ILL-
37	B	GND (POWER)
39	Y/R	BATT
40	G	IGN

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	–

Connector No.	M69
Connector Name	INTAKE SENSOR
Connector Color	WHITE

H.S.

4	3	2	1

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

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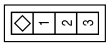
Connector No.	M127
Connector Name	MODE DOOR MOTOR
Connector Color	WHITE

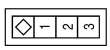
H.S.



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

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

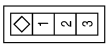
H.S.



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

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

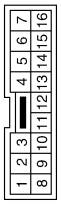
H.S.



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

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

H.S.



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

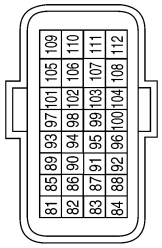
Connector No.	E6
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE

H.S.

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

Connector No.	E10
Connector Name	ECM
Connector Color	BLACK

H.S.



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

ABIIA0174GB

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

H.S.

1	2		3	4
5	6	7	8	9	10

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

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

H.S.

42	41	40	39
46	45	44	43

Terminal No.	Color of Wire	Signal Name
39	P	CAN-L
40	L	CAN-H
41	B	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	P-GND
20	B/Y	AMB_SENS_GND-E/R
21	O/B	AMB_SENS_SIG-E/R
22	W/R	PD_SENS_GND-E/R
23	B/R	PD_SENS_SIG-E/R
24	BR/W	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	–

ABIIA0175GB

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

H.S.

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

Connector No.	E30
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	– (WITH M/T)
25G	L	– (WITH A/T)
32G	O/B	– (WITH M/T)
32G	LG	– (WITH A/T)
51G	L	–
52G	P	–

Connector No.	E44
Connector Name	JUNCTION BLOCK
Connector Color	BROWN

H.S.

Terminal No.	Color of Wire	Signal Name
8	BR/W	–

Connector No.	E45
Connector Name	JUNCTION BLOCK
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
22	BR/W	–

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

H.S.

Terminal No.	Color of Wire	Signal Name
99	BR/W	AMB_SENS_GND-FEM
100	SB	AMB_SENS_SIG-FEM
101	O/L	PD_SENS_GND-FEM
102	R/B	PD_SENS_SIG-FEM
103	P	PDSENS_PWR-FEM

ABIIA0176GB

Connector No.	E211
Connector Name	AMBIENT SENSOR
Connector Color	BLACK

H.S.

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

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

H.S.

Terminal No.	Color of Wire	Signal Name
1	P	AVCC2
2	R	SIGNAL
3	W	GND

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

H.S.

Terminal No.	Color of Wire	Signal Name
5	R	–
11	LG/B	–(QR25DE)
11	BR/W	–(VQ35DE)
13	G	–

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

H.S.

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

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

H.S.

Terminal No.	Color of Wire	Signal Name
1	Y/R	A/C_COMP
2	B/W	GND

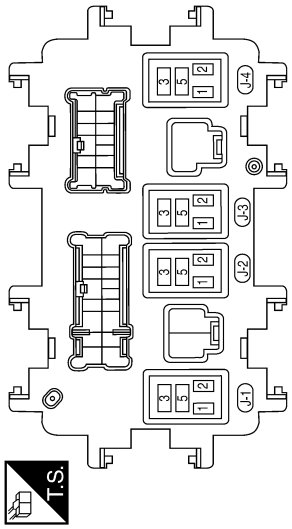
Connector No.	F10
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

H.S.

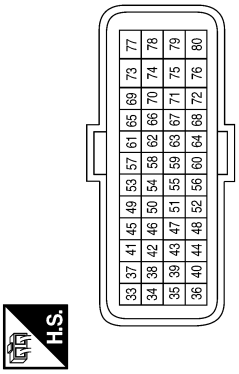
Terminal No.	Color of Wire	Signal Name
48	Y/R	A/C_COMP

ABIIA0177GB

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



Connector No.	F13
Connector Name	ECM
Connector Color	BROWN



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

ABIIA0178GB

SYMPTOM DIAGNOSIS

AIR CONDITIONER CONTROL

Symptom Matrix Chart

INFOID:0000000004498233

SYMPTOM TABLE

Symptom	Reference Page	
A/C system does not come on.	Go to Trouble Diagnosis Procedure for A/C System.	HAC-61, "Diagnosis Procedure"
Air outlet does not change.	Go to Trouble Diagnosis Procedure for Mode Door Motor. (LAN)	HAC-32, "Diagnosis Procedure"
Mode door motor does not operate normally.		
Discharge air temperature does not change.	Go to Trouble Diagnosis Procedure for Air Mix Door Motor. (LAN)	HAC-28, "Diagnosis Procedure"
Air mix door motor does not operate normally.		
Intake door does not change.	Go to Trouble Diagnosis Procedure for Intake Door Motor. (LAN)	HAC-28, "Diagnosis Procedure"
Intake door motor does not operate normally.		
Blower motor operation is malfunctioning.	Go to Trouble Diagnosis Procedure for Blower Motor.	HAC-42, "Diagnosis Procedure"
Magnet clutch does not engage.	Go to Trouble Diagnosis Procedure for Magnet Clutch.	HAC-47, "Diagnosis Procedure"
Insufficient cooling	Go to Trouble Diagnosis Procedure for Insufficient Cooling.	HAC-84, "Component Function Check"
Insufficient heating	Go to Trouble Diagnosis Procedure for Insufficient Heating.	HAC-92, "Component Function Check"
Noise	Go to Trouble Diagnosis Procedure for Noise.	HAC-94, "Component Function Check"

INSUFFICIENT COOLING

Component Function Check

INFOID:0000000004498234

SYMPTOM: Insufficient cooling

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE DECREASE

1. Press the AUTO switch.
2. Turn temperature control dial (LH) counterclockwise until 18°C (32°F) is displayed.
3. Check for cold air at discharge air outlets.

Can a symptom be duplicated?

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

2. CHECK FOR ANY SYMPTOMS

Perform a complete operational check and check for any symptoms. Refer to HAC-5, "Description and Conditions".

Does another symptom exist?

YES >> Refer to HAC-83, "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-16, "Checking Drive Belts" (QR25DE) or EM-121, "Checking Drive Belts" (VQ35DE).

Is the inspection result normal?

YES >> GO TO 5
NO >> Adjust or replace A/C compressor belt. Refer to EM-16, "Removal and Installation" (QR25DE) or EM-121, "Removal and Installation" (VQ35DE).

5. CHECK AIR MIX DOOR MOTOR OPERATION

Check and verify air mix door mechanism for smooth operation.

Does air mix door operate correctly?

YES >> GO TO 6
NO >> Repair or replace air mix door control linkage.

6. CHECK COOLING FAN MOTOR OPERATION

Check and verify cooling fan motor for smooth operation.

Does cooling fan motor operation correctly?

YES >> GO TO 7
NO >> Check cooling fan motor. Refer to EC-949, "Component Function Check" (QR25DE) or EC-1473, "Component Function Check" (VQ35DE).

7. CHECK RECOVERY/RECYCLING EQUIPMENT BEFORE USAGE

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

>> GO TO 8

8. CHECK REFRIGERANT PURITY

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

Is the inspection result normal?

YES >> GO TO 9
NO >> Check contaminated refrigerant. Refer to HA-24, "HFC-134a (R-134a) Service Procedure".

9. CHECK REFRIGERANT PRESSURE

Check refrigerant pressure with manifold gauge connected. Refer to HAC-88, "Trouble Diagnosis For Abnormal Pressure".

Is the inspection result normal?

YES >> Perform diagnostic work flow. Refer to HAC-85, "Diagnostic Work Flow".
NO >> GO TO 10

10. CHECK FOR EVAPORATOR FREEZE UP

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

Does evaporator freeze up?

YES >> Perform diagnostic work flow. Refer HAC-85, "Diagnostic Work Flow".
NO >> GO TO 11

11. CHECK AIR DUCTS

Check ducts for air leaks.

Is the inspection result normal?

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

Diagnostic Work Flow

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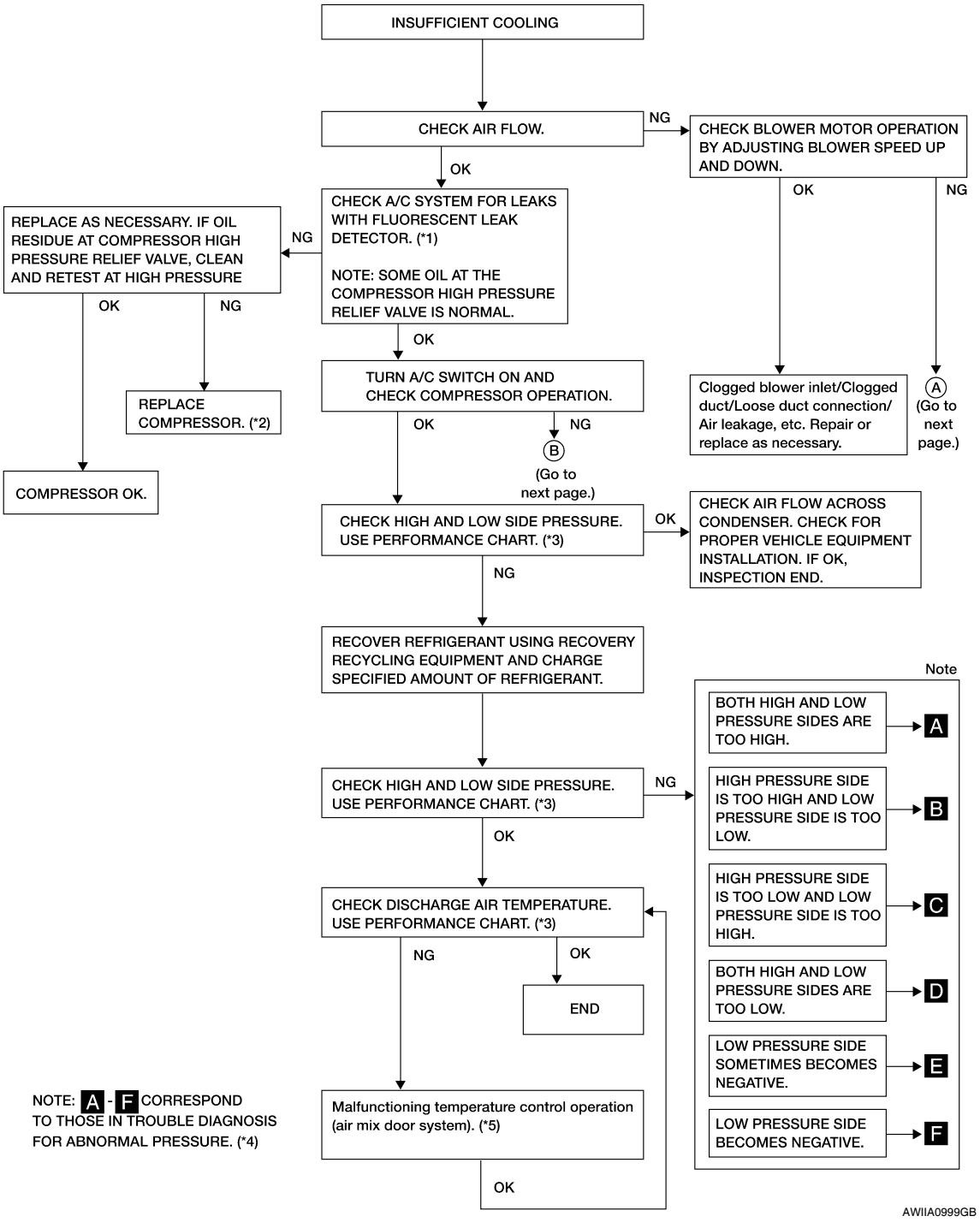
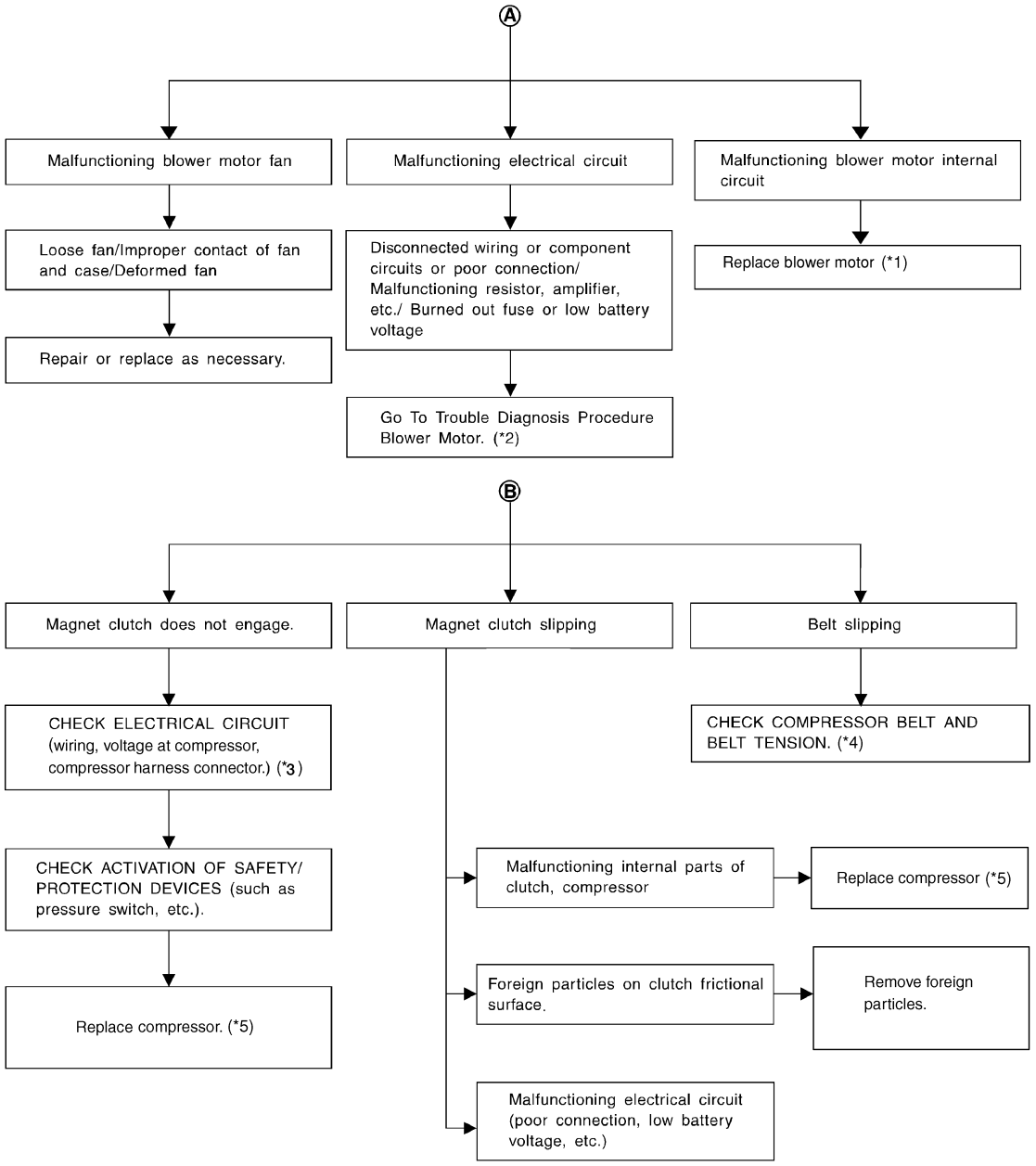


*1 HA-27, "Checking System for Leaks Using the Fluorescent Leak Detector"
*2 HA-35, "Removal and Installation for Compressor - QR25DE Models" or HA-36, "Removal and Installation for Compressor - VQ35DE Models"
*3 HAC-87, "Performance Chart"
*4 HAC-88, "Trouble Diagnosis For Abnormal Pressure"
*5 HAC-35, "Diagnosis Procedure"



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*1 VTL-15, "Removal and Installation"
*2 HAC-42, "Diagnosis Procedure"
*3 HAC-47, "Diagnosis Procedure"
*4 EM-16, "Checking Drive Belts" (QR25DE) or EM-121, "Checking Drive Belts" (VQ35DE)
*5 HA-35, "Removal and Installation for Compressor - QR25DE Models" or HA-36, "Removal and Installation for Compressor - VQ35DE Models"

Performance Chart

INFOID:0000000004498236

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
(blower) 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

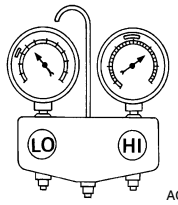
Ambient air		High-pressure (Discharge side) kPa (kg/cm2, psi)	Low-pressure (Suction side) kPa (kg/cm2, psi)
Relative humidity %	Air temperature °C (°F)		
50 - 70	30 (86)	1,220 - 1,500 (12.44 - 15.30, 176.9 - 217.5)	240 - 295 (2.45 - 3.01, 34.8 - 42.8)
	35 (95)	1,360 - 1,690 (13.87 - 17.24, 197.2 - 245.1)	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)

Trouble Diagnosis For Abnormal Pressure

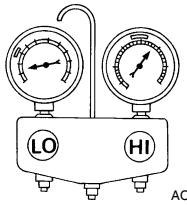
INFOID:0000000004498237

Whenever system's high and/or low side pressure is abnormal, diagnose using a manifold gauge. The marker above the gauge scale in the following tables indicates the standard (normal) pressure range. Since the standard (normal) pressure differs from vehicle to vehicle, refer to Ambient Air Temperature-to-operating Pressure Table above.

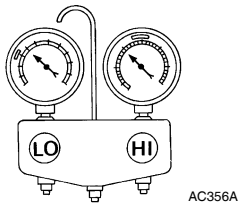
Both High- and Low-pressure Sides are Too High

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
A Both high and low-pressure sides are too high.  AC359A	Pressure is reduced soon after water is splashed on condenser.	Excessive refrigerant charge in refrigeration cycle	Reduce refrigerant until specified pressure is obtained.
	Air suction by cooling fan is insufficient.	Insufficient condenser cooling performance ↓ 1. Condenser fins are clogged. 2. Improper fan rotation of cooling fan	• Clean condenser. • Check and repair cooling fan as necessary.
	• Low-pressure pipe is not cold. • When compressor is stopped high-pressure value quickly drops by approximately 196 kPa (2 kg/cm^2, 28 psi). It then decreases gradually thereafter.	Poor heat exchange in condenser (After compressor operation stops, high pressure decreases too slowly.) ↓ Air in refrigeration cycle	Evacuate and recharge system.
	Engine tends to overheat.	Engine cooling systems malfunction.	Check and repair each engine cooling system.
	• An area of the low-pressure pipe is colder than areas near the evaporator outlet. • Plates are sometimes covered with frost.	• Excessive liquid refrigerant on low-pressure side • Excessive refrigerant discharge flow • Expansion valve is open a little compared with the specification. ↓ 1. Improper thermal valve installation 2. Improper expansion valve adjustment	Replace expansion valve.

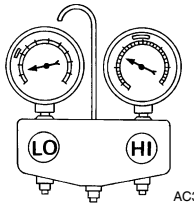
High-pressure Side is Too High and Low-pressure Side is Too Low

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
B High-pressure side is too high and low-pressure side is too low.  AC360A	Upper side of condenser and high-pressure side are hot, however, liquid tank is not so hot.	High-pressure tube or parts located between compressor and condenser are clogged or crushed.	• Check and repair or replace malfunctioning parts. • Check lubricant for contamination.

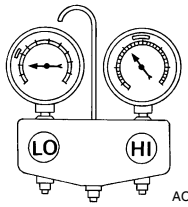
High-pressure Side is Too Low and Low-pressure Side is Too High

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
C High-pressure side is too low and low-pressure side is too high.  AC356A	High and low-pressure sides become equal soon after compressor operation stops.	Compressor pressure operation is improper. ↓ Damaged inside compressor packings	Replace compressor.
	No temperature difference between high and low-pressure sides	Compressor pressure operation is improper. ↓ Damaged inside compressor packings.	Replace compressor.

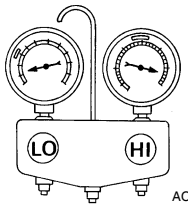
Both High- and Low-pressure Sides are Too Low

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
D Both high- and low-pressure sides are too low.  AC353A	• There is a big temperature difference between liquid tank outlet and inlet. Outlet temperature is extremely low. • Liquid tank inlet and expansion valve are frosted.	Liquid tank inside is slightly clogged.	• Replace desiccant assembly. • Check lubricant for contamination.
	• Temperature of expansion valve inlet is extremely low as compared with areas near liquid tank. • Expansion valve inlet may be frosted. • Temperature difference occurs somewhere in high-pressure side	High-pressure pipe located between receiver drier and expansion valve is clogged.	• Check and repair malfunctioning parts. • Check lubricant for contamination.
	Expansion valve and liquid tank are warm or only cool when touched.	Low refrigerant charge ↓ Leaking fittings or components	Check refrigerant for leaks. Refer to HA-25, "Checking of Refrigerant Leaks".
	There is a big temperature difference between expansion valve inlet and outlet while the valve itself is frosted.	Expansion valve closes a little compared with the specification. ↓ 1. Improper expansion valve adjustment 2. Malfunctioning thermal valve 3. Outlet and inlet may be clogged.	• Remove foreign particles by using compressed air. • Check lubricant for contamination.
	An area of the low-pressure pipe is colder than areas near the evaporator outlet.	Low-pressure pipe is clogged or crushed.	• Check and repair malfunctioning parts. • Check lubricant for contamination.
	Air flow volume is not enough or is too low.	Evaporator is frozen.	• Check thermo control amp. and intake sensor operation. • Replace compressor.

Low-pressure Side Sometimes Becomes Negative

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
E Low-pressure side sometimes becomes negative.  AC354A	• Air conditioning system does not function and does not cyclically cool the compartment air. • The system constantly functions for a certain period of time after compressor is stopped and restarted.	Refrigerant does not discharge cyclically. ↓ Moisture is frozen at expansion valve outlet and inlet. ↓ Water is mixed with refrigerant.	• Drain water from refrigerant or replace refrigerant. • Replace desiccant assembly.

Low-pressure Side Becomes Negative

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
F Low-pressure side becomes negative.  AC362A	Liquid tank or front/rear side of expansion valve's pipe is frosted or dewed.	High-pressure side is closed and refrigerant does not flow. ↓ Expansion valve or liquid tank is frosted.	Leave the system at rest until no frost is present. Start it again to check whether or not the problem is caused by water or foreign particles. • If water is the cause, initially cooling is okay. Then the water freezes causing a blockage. Drain water from refrigerant or replace refrigerant. • If due to foreign particles, remove expansion valve and remove the particles with dry and compressed air (not shop air). • If either of the above methods cannot correct the problem, replace expansion valve. • Replace desiccant assembly. • Check lubricant for contamination.

INSUFFICIENT HEATING

Component Function Check

INFOID:0000000004498239

SYMPTOM: Insufficient heating

INSPECTION FLOW

SYMPTOM: Insufficient heating

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE INCREASE

1. Press the AUTO switch.
2. Turn temperature control dial (LH) clockwise until 32°C (90°F) is displayed.
3. Check for hot air at discharge air outlets.

Can a symptom be duplicated?

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

2. CHECK FOR ANY SYMPTOMS

Perform a complete operational check and check for any symptoms. Refer to HAC-5, "Description and Conditions".

Does another symptom exist?

YES >> Refer to HAC-83, "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-11, "System Inspection" (QR25DE) or CO-34, "System Inspection" (VQ35DE).
2. Check hoses for leaks or kinks.
3. Check radiator cap. Refer to CO-11, "System Inspection" (QR25DE) or CO-34, "System Inspection" (VQ35DE).
4. Check for air in cooling system.

>> GO TO 5

5. CHECK AIR MIX DOOR MOTOR OPERATION

Check and verify air mix door mechanism for smooth operation.

Does air mix door operate correctly?

YES >> GO TO 6
NO >> Check the air mix door motor circuit. Refer to HAC-35, "Diagnosis Procedure".

6. CHECK AIR DUCTS

Check for disconnected or leaking air ducts.

Is the inspection result normal?

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

7. CHECK HEATER HOSE TEMPERATURES

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

Is the inspection result normal?

YES >> Hot inlet hose and a warm outlet hose: GO TO 8

NO >> Both hoses warm: GO TO 9

8. CHECK ENGINE COOLANT SYSTEM

Check thermostat operation. Refer to CO-21, "Removal and Installation" (QR25DE) or CO-46, "Removal and Installation" (VQ35DE).

Is the inspection result normal?

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

9. CHECK HEATER HOSES

Check heater hoses for proper installation.

Is the inspection result normal?

YES >> System OK.
NO >> 1. Back flush heater core.
2. Drain the water from the system.
3. Refill system with new engine coolant. Refer to CO-12, "Changing Engine Coolant" (QR25DE) or CO-35, "Changing Engine Coolant" (VQ35DE).
4. To retest GO TO 10

10. CHECK HEATER HOSE TEMPERATURES

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

Is the inspection result normal?

YES >> System OK.
NO >> Replace heater core Refer to VTL-22, "Removal and Installation".

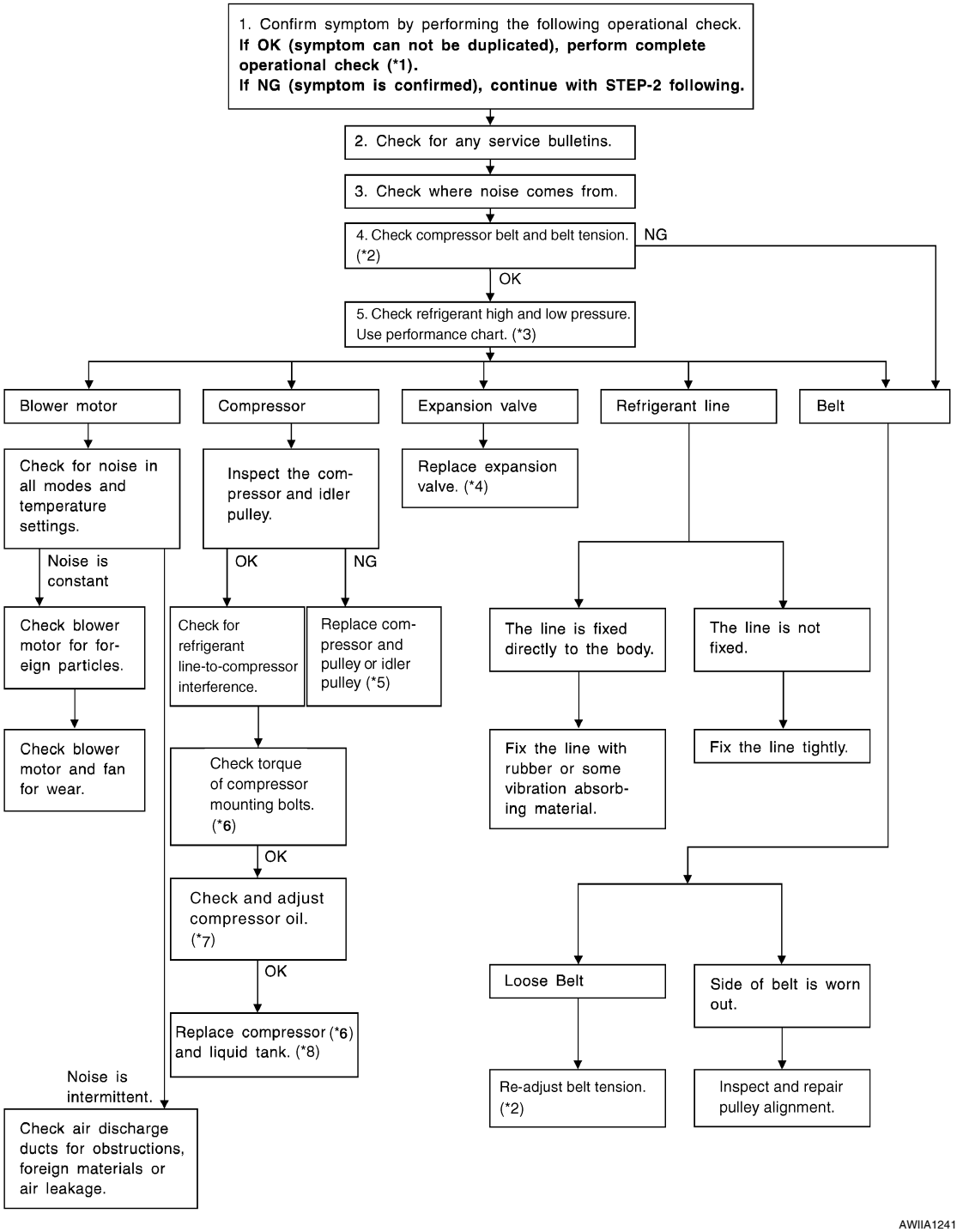
NOISE

Component Function Check

INFOID:0000000004498240

SYMPTOM: Noise

INSPECTION FLOW



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*1 HAC-5, "Operational Check"	*2 EM-16, "Checking Drive Belts" (QR25DE) or EM-121, "Checking Drive Belts" (VQ35DE)	*3 HAC-87, "Performance Chart"
*4 HA-45, "Removal and Installation for Expansion Valve"	*5 HA-35, "Removal and Installation for Compressor - QR25DE Models" or HA-36, "Removal and Installation for Compressor - VQ35DE Models"	*6 HA-35, "Removal and Installation for Compressor - QR25DE Models" or HA-36, "Removal and Installation for Compressor - VQ35DE Models"
*7 HA-21, "Maintenance of Oil Quantity in Compressor"	*8 HA-42, "Removal and Installation for Condenser"	

SELF-DIAGNOSIS CANNOT BE PERFORMED

Diagnosis Procedure

INFOID:0000000004498242

SYMPTOM: Self-diagnosis cannot be performed.

1.CHECK SELF-DIAGNOSIS FUNCTION

1. Press ignition switch ON.
2. Set in self-diagnosis mode as follows. Within 10 seconds after starting engine (ignition switch is Pressed ON.), press OFF switch for at least 5 seconds.

NOTE:

- If battery voltage drops below 12 V during diagnosis STEP-3, door motor speed becomes slower and as a result, the system may generate an error even when operation is normal. To avoid this, start engine before performing this diagnosis.
- Former STEP-1 (LEDs are checked) does not exist in this self-diagnosis function.
- OFF switch may not be recognized according to the timing of pressing it. Operate OFF switch after turning the intake switch LEDs (REC) ON.

Does self-diagnosis function operate?

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

2.PERFORM COMPLETE OPERATIONAL CHECK

Perform a complete operational check and check for any symptoms. Refer to HAC-5, "Description and Conditions".

Can a symptom be duplicated?

YES >> Refer to HAC-83, "Symptom Matrix Chart".
NO >> GO TO 3

3.CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

Have any service bulletins been issued?

YES >> Refer to appropriate bulletin.
NO >> GO TO 4

4.CHECK POWER SUPPLY AND GROUND CIRCUIT OF FRONT AIR CONTROL

Check power supply and ground circuit of front air control. Refer to HAC-61, "Diagnosis Procedure".

Is the inspection result normal?

YES >> Replace front air control. Refer to VTL-8, "Removal and Installation".
NO >> Repair or replace malfunctioning part(s).

MEMORY FUNCTION DOES NOT OPERATE

Diagnosis Procedure

INFOID:0000000004498244

SYMPTOM: Memory function does not operate. The setting is not maintained (it returns to the initial condition).

Inspection procedure

1.CHECK OPERATION

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

Is the inspection result normal?

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

2.CHECK POWER SUPPLY AND GROUND CIRCUIT OF FRONT AIR CONTROL

Check power supply and ground circuit of front air control. Refer to HAC-61, "Diagnosis Procedure".

Is the inspection result normal?

YES >> Replace front air control. Refer to VTL-8, "Removal and Installation".
NO >> Repair or replace malfunctioning part(s).

PRECAUTION

PRECAUTIONS

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

INFOID:0000000004498245

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.**

Precaution Necessary for Steering Wheel Rotation after Battery Disconnect

INFOID:0000000004498246

NOTE:

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

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

OPERATION PROCEDURE

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

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

INFOID:0000000004498247

WARNING:

- **CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. If the refrigerants are mixed compressor failure is likely to occur. Refer ATC 1 "CONTAMINATED REFRIDGERANT. To**

determine the purity of HFC-134a (R-134a) in the vehicle and recovery tank, use Refrigerant Recovery/Recycling Recharging equipment and Refrigerant Identifier.

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

CONTAMINATED REFRIGERANT

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

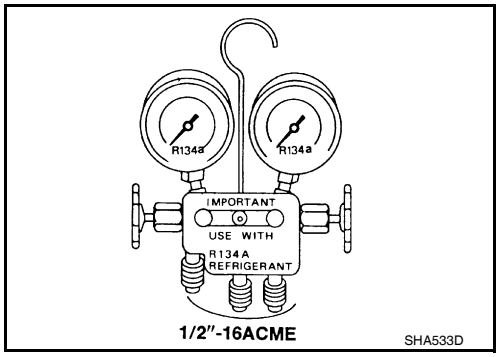
- Explain to the customer that environmental regulations prohibit the release of contaminated refrigerant into the atmosphere.
- Explain that recovery of the contaminated refrigerant could damage your service equipment and refrigerant supply.
- Suggest the customer return the vehicle to the location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

Precaution for Service Equipment

INFOID:0000000004498248

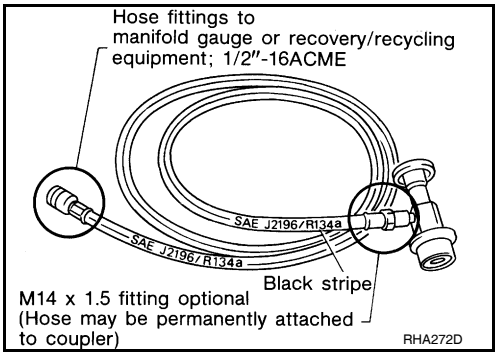
MANIFOLD GAUGE SET

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



SERVICE HOSES

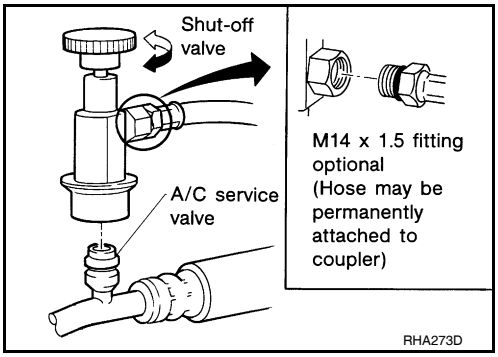
Be certain that the service hoses display the markings described (colored hose with black stripe). All hoses must include positive shut-off devices (either manual or automatic) near the end of the hoses opposite the manifold gauge.



SERVICE COUPLERS

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

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



BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:0000000004498256

DETAILED FLOW

1. LISTEN TO CUSTOMER COMPLAINT

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

>> GO TO 2

2. VERIFY THE SYMPTOM WITH OPERATIONAL CHECK

Verify the symptom with operational check. Refer to HAC-102, "Operational Check".

>> GO TO 3

3. GO TO APPROPRIATE TROUBLE DIAGNOSIS

Go to appropriate trouble diagnosis. Refer to HAC-155, "Symptom Matrix Chart" below.

>> GO TO 4

4. REPAIR OR REPLACE

Repair or replace the specific parts.

>> GO TO 5

5. FINAL CHECK

Final check.

Is the inspection result normal?

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

INSPECTION AND ADJUSTMENT

Description & Conditions

INFOID:0000000004498257

DESCRIPTION

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

CONDITIONS:

- Engine running and at normal operation temperature.

Operational Check

INFOID:0000000004498258

STEP 1: Check Blower

1. Turn blower control dial clockwise, blower should operate on low speed.
2. Continue turning blower control dial clockwise, and continue checking blower speeds until all speeds are checked.
3. Leave blower on HI speed.

If NG, go to HAC-127, "Diagnosis Procedure".
If OK, continue with next check.

STEP 2: Check Discharge Air

1. Press each mode switch and press DEF ( ) switch.
2. Each mode position indicator should illuminate.
3. Confirm that discharge air comes out according to the air distribution table. Refer to HAC-107, "System Description".

NOTE:
Confirm that the compressor clutch is engaged (audio or visual inspection) and intake door is in the FRE ( ) position when the DEF ( ) is selected.

Intake door position is checked in the next step.
If NG, go to HAC-124, "Diagnosis Procedure".
If OK, continue with next check.

STEP 3: Check Recirculation

1. Press REC ( ) switch.
   Recirculation indicator should illuminate.
2. Press REC ( ) switch a second time.
3. Listen for intake door position change (you should hear blower sound change slightly).

If NG, go toHAC-124, "Diagnosis Procedure".
If OK, continue with next check.

STEP 4: Check Temperature Decrease

1. Turn the temperature dial counterclockwise to maximum cold.
2. Check for cold air at discharge air outlets.

If NG, go to HAC-122, "Diagnosis Procedure".
If OK, continue with next check.

STEP 5: Check Temperature Increase

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

If NG, go toHAC-122, "Diagnosis Procedure".
If OK, continue with next check.

STEP 6: Check Air Conditioner Switch (if equipped)

1. Turn blower control dial to the desired position and push the A/C switch to turn ON the air conditioner

2. Confirm that the A/C indicator illuminates and that the compressor clutch engages (audio or visual inspection).

If NG, go to HAC-135, "Diagnosis Procedure", then if necessary, HAC-131, "Diagnosis Procedure".
If OK, listen to customer complaint (get detailed information about the conditions and environment when the symptom occurs). Verify the symptom and refer to HAC-155, "Symptom Matrix Chart".

FUNCTION DIAGNOSIS

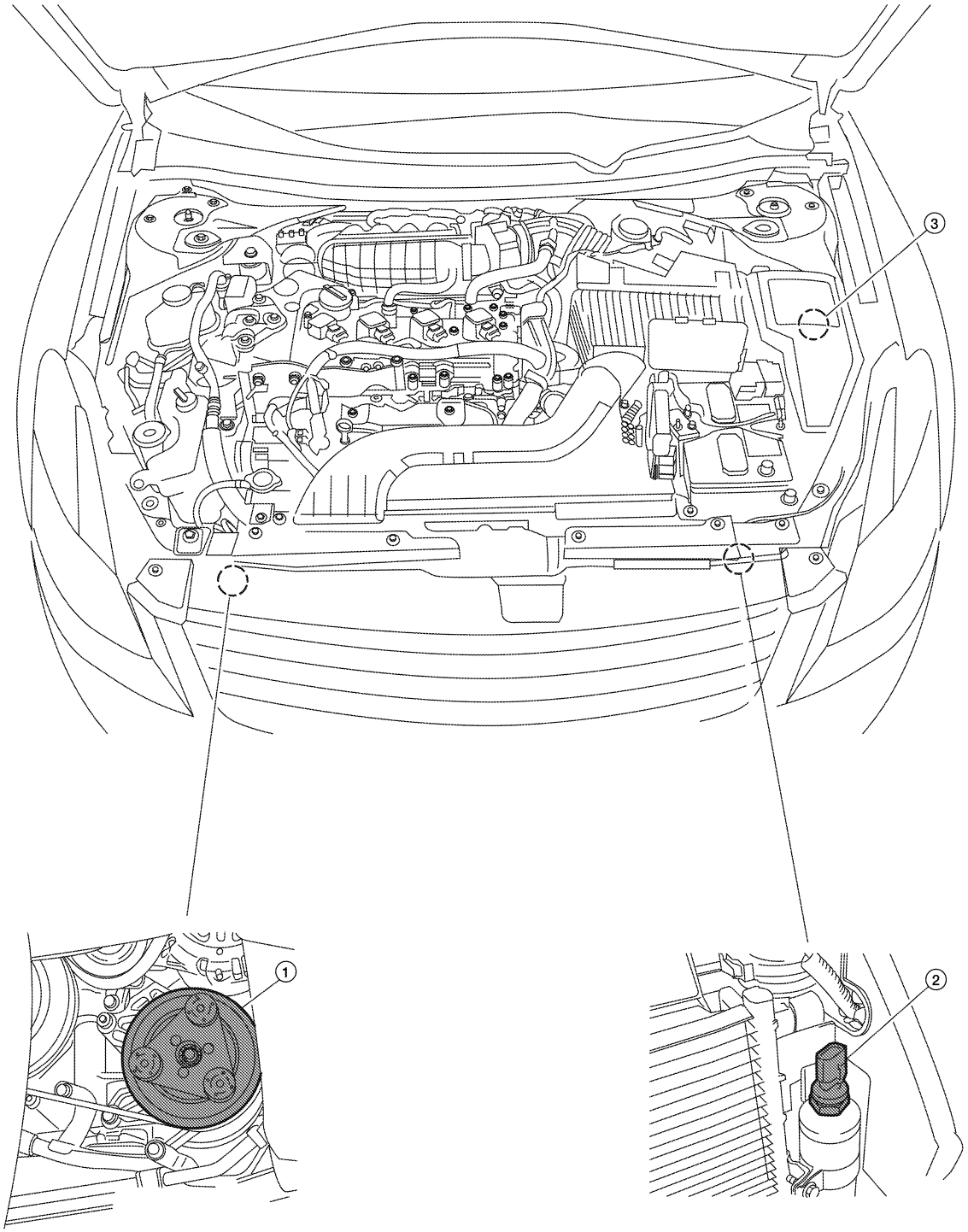
FUNCTION INFORMATION

Component Part Location

INFOID:0000000004498259

ENGINE COMPARTMENT

QR25DE Models



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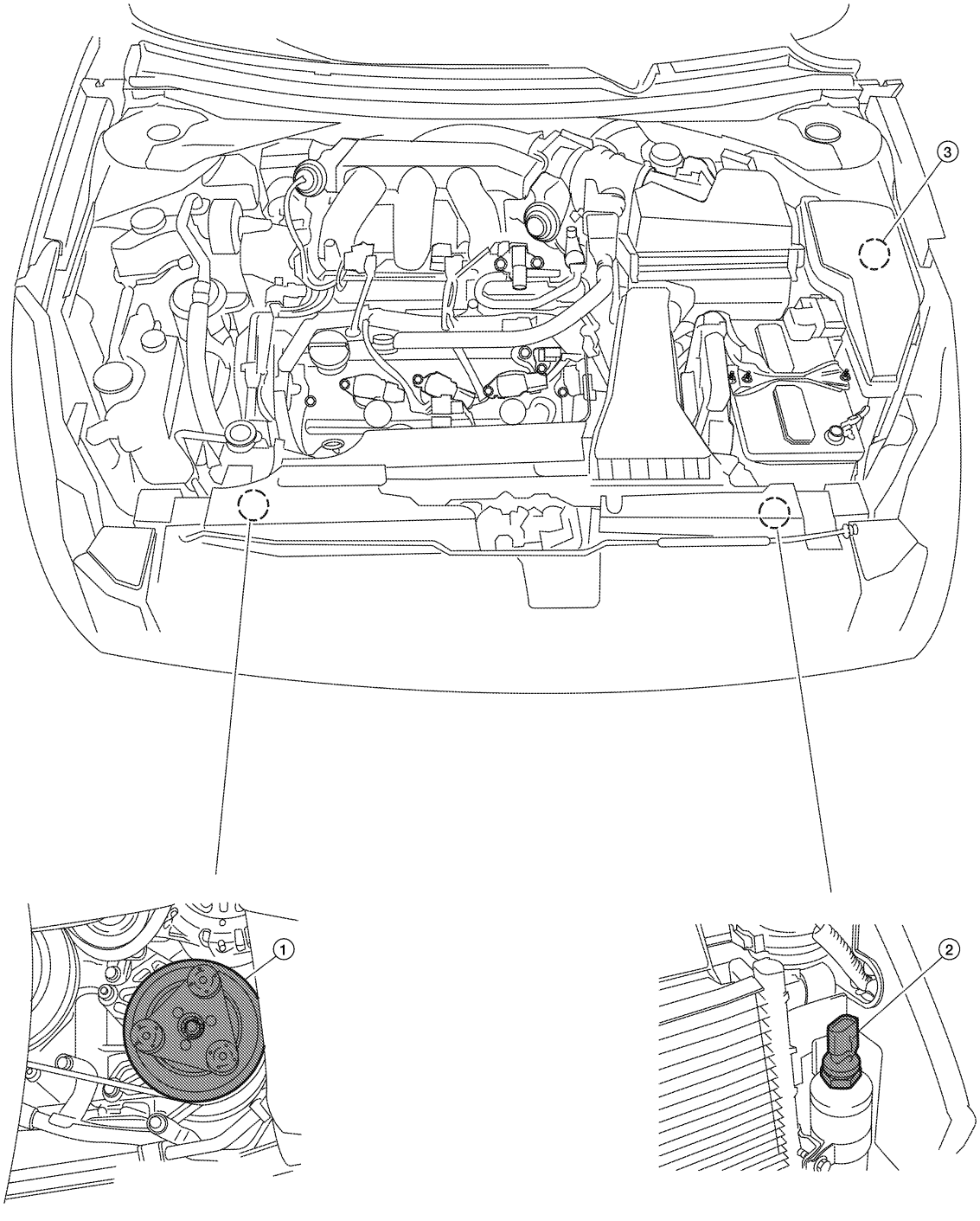
1. A/C compressor F3 2. Refrigerant pressure sensor E219 3. A/C relay (internal to IPDM E/R)

VQ35DE Models



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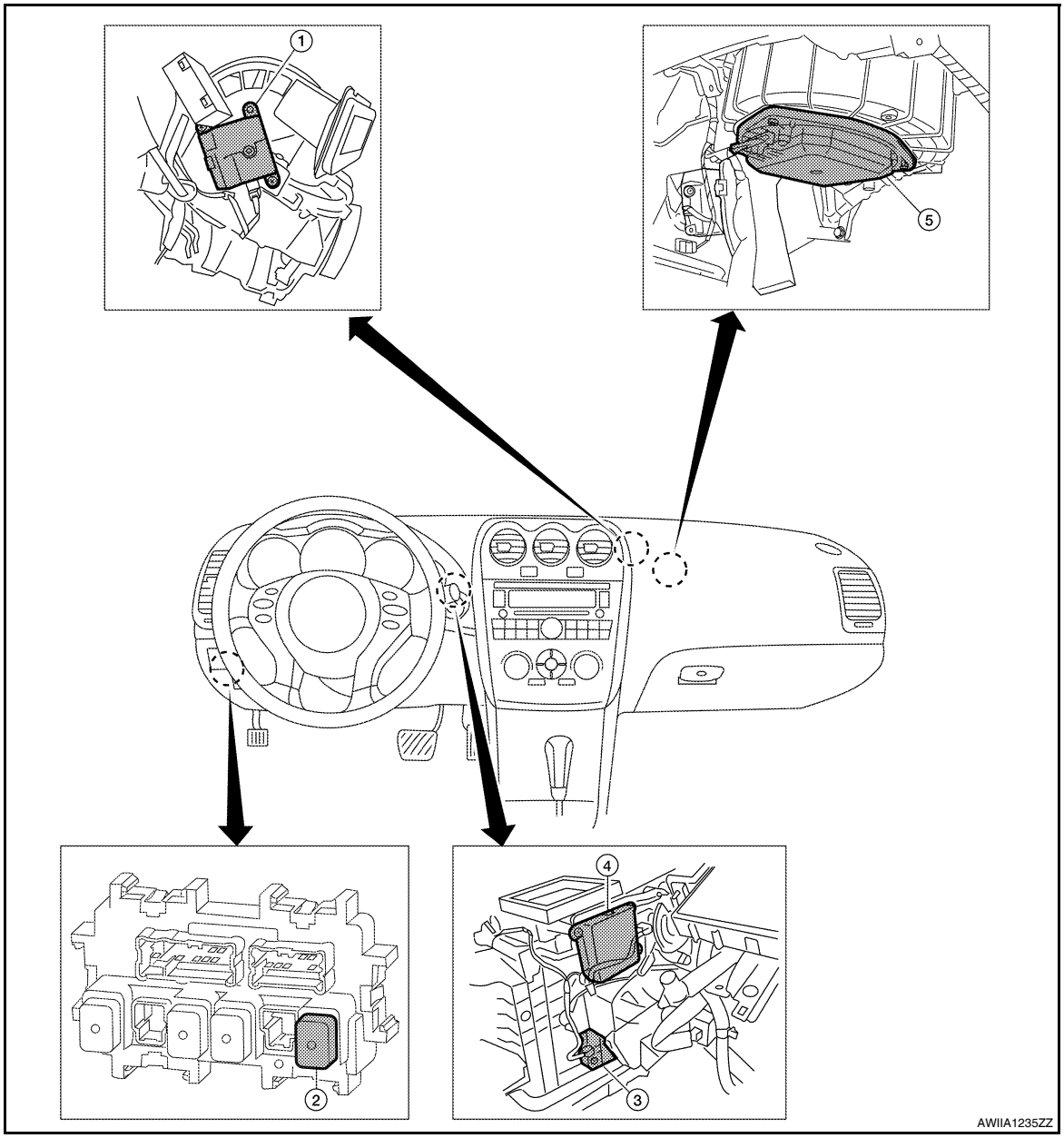
1. A/C compressor F3 2. Refrigerant pressure sensor E219 3. A/C relay (internal to IPDM E/R)

PASSENGER COMPARTMENT



1. Intake door motor M126
2. Front blower motor relay J-4
3. Air mix door motor M130
4. Mode door motor M127
5. Blower motor M31

Component's Role

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Component	Reference
Air mix door motor	HAC-122, "Diagnosis Procedure"
Blower motor	HAC-127, "Diagnosis Procedure"
A/C Compressor	HAC-131, "Diagnosis Procedure"
Intake door motor	HAC-124, "Diagnosis Procedure"
Mode door motor	HAC-119, "Diagnosis Procedure"
Refrigerant pressure sensor	EC-975, "Diagnosis Procedure" (QR25DE) or EC-1503, "Diagnosis Procedure" (VQ35DE)

AIR CONDITIONER CONTROL

System Diagram

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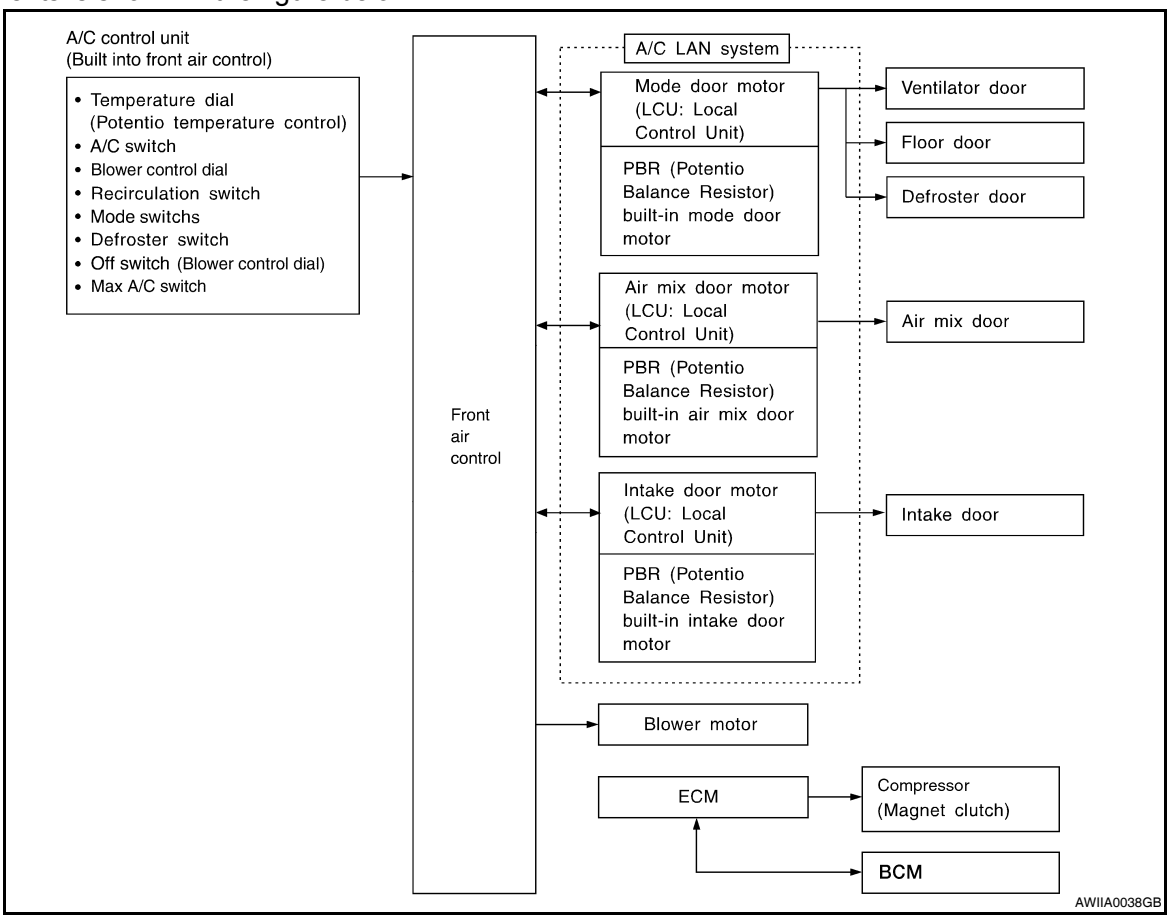
CONTROL SYSTEM

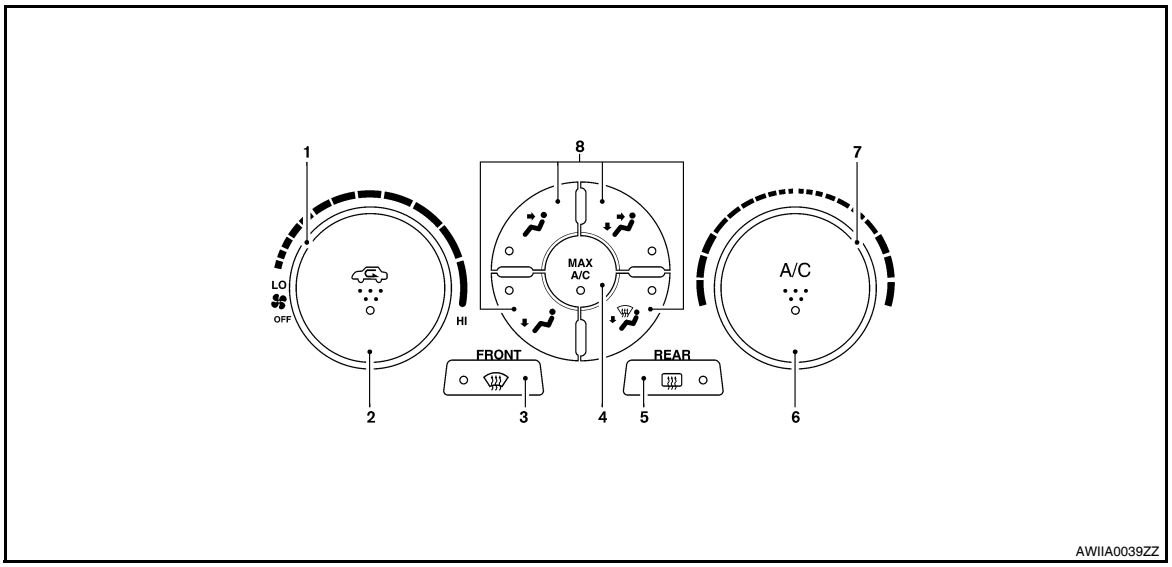
The control system consists of input sensors, switches, front air control and outputs. The relationship of these components is shown in the figure below:



System Description

INFOID:0000000004498262

CONTROL OPERATION



1. Blower control dial
2. Air recirculation switch
3. Defroster switch
4. MAX A/C ON/OFF switch
5. Rear defrost switch
6. A/C ON/OFF switch
7. Temperature control dial
8. Mode switches

Mode Switches
The air discharge outlets are controlled through the mode door.

Temperature Control Dial (Potentio Temperature Control) (LH)
The set temperature is increased or decreased with this dial.

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.

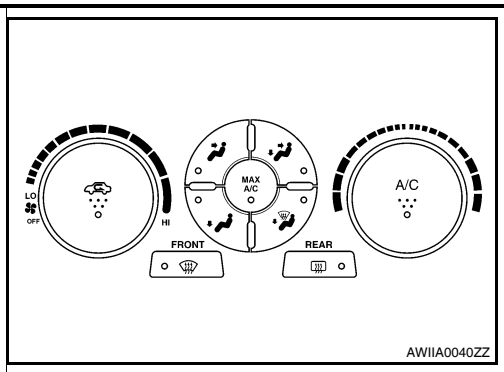
A/C Switch
Compressor is ON or OFF with this switch.
(Pressing the A/C switch when the A/C switch is ON will turn OFF the A/C switch and compressor.)

Blower control dial/OFF switch
- The blower speed is manually controlled with this dial.
- Compressor and blower are OFF, intake doors and the mode doors are automatically controlled.

Rear Window Defogger Switch
This switch turns the rear window defogger ON and OFF.

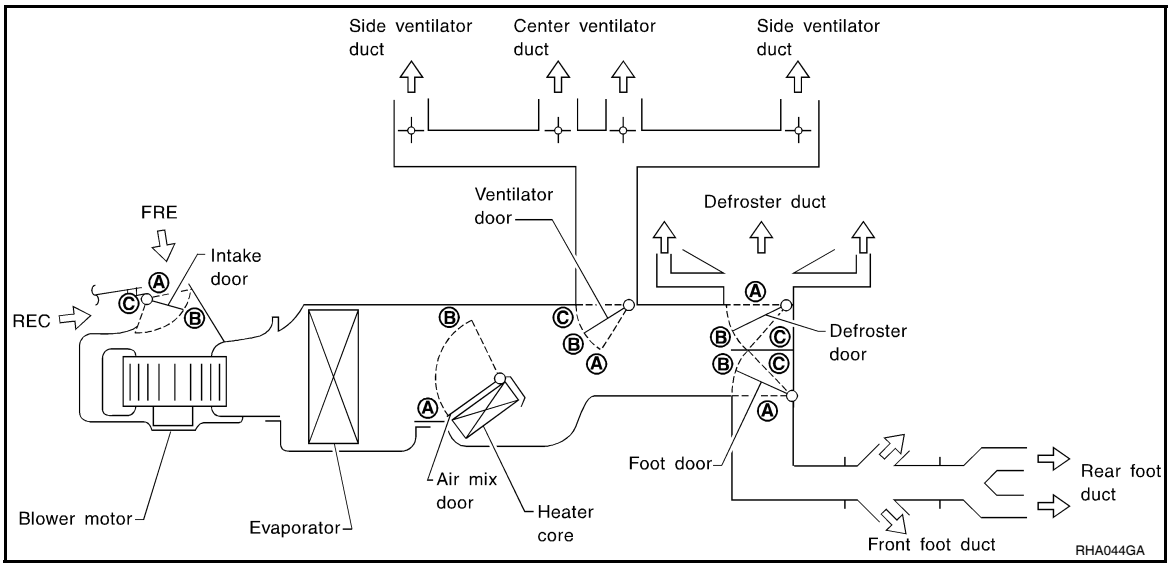
Recirculation ( ) Switch
- When REC ( ) switch is ON (REC LED ON), air inlet is fixed to REC.
- When press intake switch again (REC LED OFF), air inlet is fixed to fresh air.
- When REC LED is turned ON, shifting mode position to D/F or DEF, or when compressor is turned from ON to OFF, the REC ( ) switch is automatically turned OFF.

DISCHARGE AIR FLOW



Mode door position	Air outlet/distribution		
	Vent	Foot	Defroster
	100%	—	—
	44%	56%	—
	17%	59%	24%
	16%	52%	32%
	12%	—	88%

SWITCHES AND THEIR CONTROL FUNCTION



Position or switch	MODE DIAL						REC SW		Temperature DIAL		
	VENT	B/L	FOOT	D/F	DEF	MAX A/C	ON	OFF			
Door						MAX A/C			COLD	—	HOT
Ventilator door	A	B	C	C	C	A	—		—		
Foot door	A	B	C	C	A	A	—		—		
Defroster door	A	A	B	C	C	A	—		—		
Air mix door	—						—		A	—	B
Intake door	—				C	A	A	C	—		

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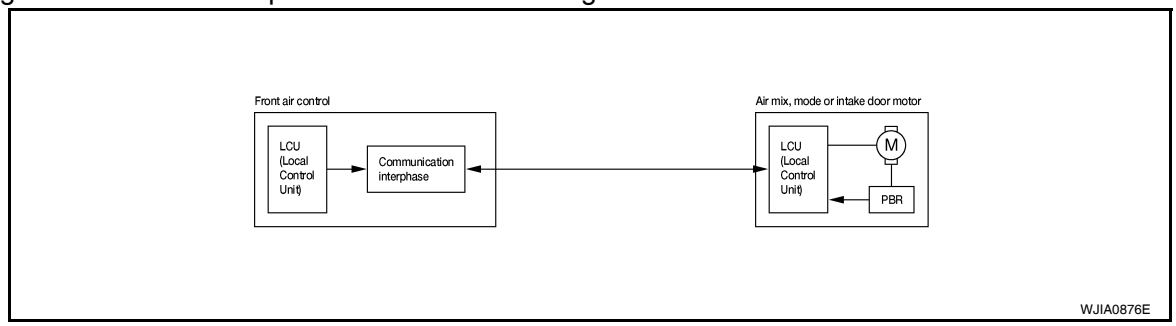
AIR CONDITIONER LAN CONTROL SYSTEM

The LAN (Local Area Network) system consists of front air control, mode door motor, air mix door motor and intake door motor.
A configuration of these components is shown in the figure below.



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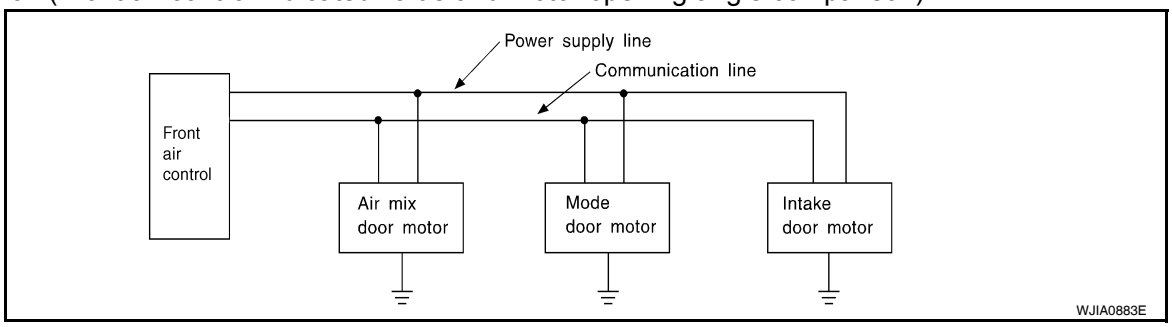
SYSTEM CONSTRUCTION

A small network is constructed between the front air control, mode door motor, air mix door motor and intake door motor. The front air control 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 motors.
Addresses, motor opening angle signals, motor stop signals and error checking messages are all transmitted through the data transmission lines connecting the front air control and each door motor.
The following functions are contained in LCUs built into the mode door motor, the air mix door motor and the intake door motor.

- Address
- Motor opening angle signals
- Data transmission
- Motor stop and drive decision
- Opening angle sensor (PBR function)
- Comparison
- Decision (Front air control indicated value and motor opening angle comparison)



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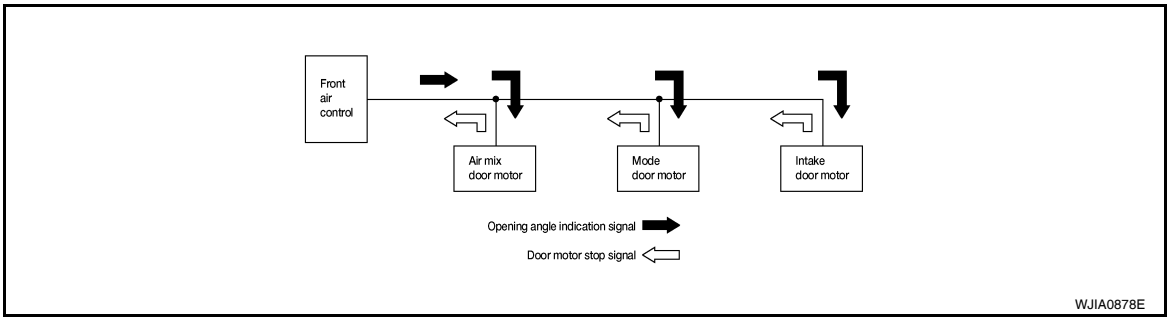
Operation

The front air control receives data from each of the sensors. The front air control sends mode door, air mix door and intake door opening angle data to the mode door motor LCU, air mix door motor LCUs and intake door motor LCU.
The mode door motor, air mix door motor and intake door motor read their respective signals according to the address signal. Opening angle indication signals received from the front air control and each of the motor position sensors is compared by the LCUs in each door motor with the existing decision and opening angles. Subsequently, HOT/COLD, DEF/VENT and FRE/REC operation is selected. The new selection data is returned to the front air control.



Transmission Data and Transmission Order
Front air control data is transmitted consecutively to each of the doors motor following the form shown in figure below.

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

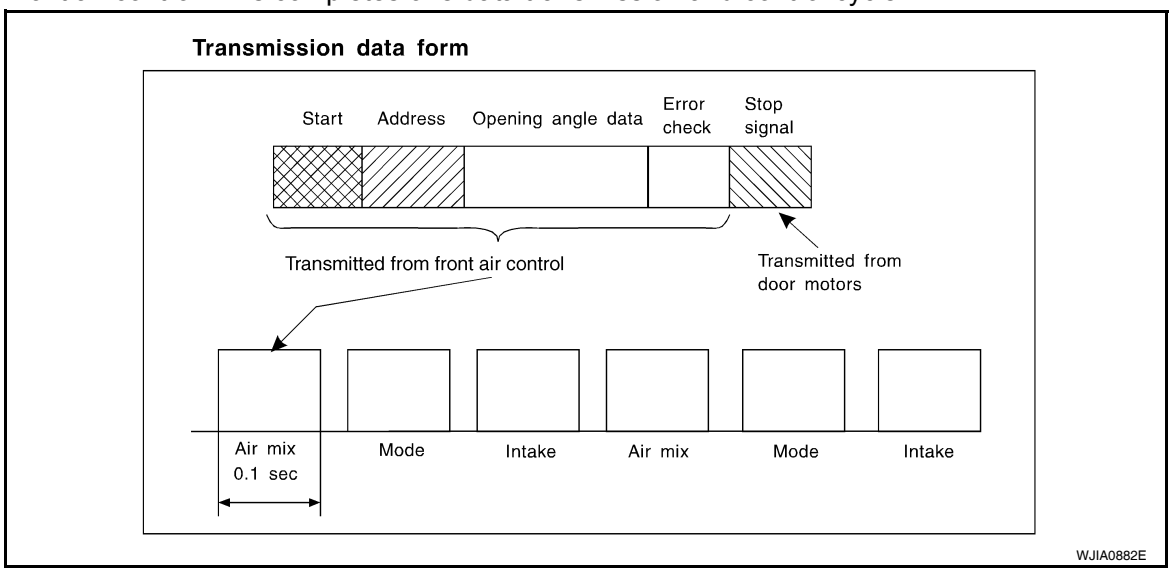
ADDRESS:
• Data sent from the front air control are selected according to data-based decisions made by the mode door motor, air mix door motors and intake door motor.
• If the addresses are identical, the opening angle data and error check signals are received by the door motor LCUs. The LCUs then make the appropriate error decision. If the opening angle data have no error, door control begins.
• If an error exists, the received data are rejected and 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 are then compiled. The error check prevents corrupted data from being used by the mode door motor, the air mix door motor 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 front air control. This completes one data transmission and control cycle.



AIR MIX DOOR CONTROL

The air mix door is controlled by the front air control based on input from the temperature dial setting--

A/C SWITCH

The air conditioner switch controls the A/C system. When the switch is pressed with the fan ON, the compressor will turn ON. The indicator will also illuminate.

TEMPERATURE CONTROL DIAL

Increases or decreases the set temperature.

BLOWER CONTROL DIAL

Manually controls the blower speed.
In the off position, the compressor and blower are OFF, the intake door is set to the outside air position.

RECIRCULATION ( ) SWITCH

OFF position: Outside air is drawn into the passenger compartment.
ON position: Interior air is recirculated inside the vehicle.

DEFROSTER SWITCH

Position the air mode doors to the defrost position. Also positions the intake doors to the outside air position. The compressor remains ON until the ignition is turned OFF.

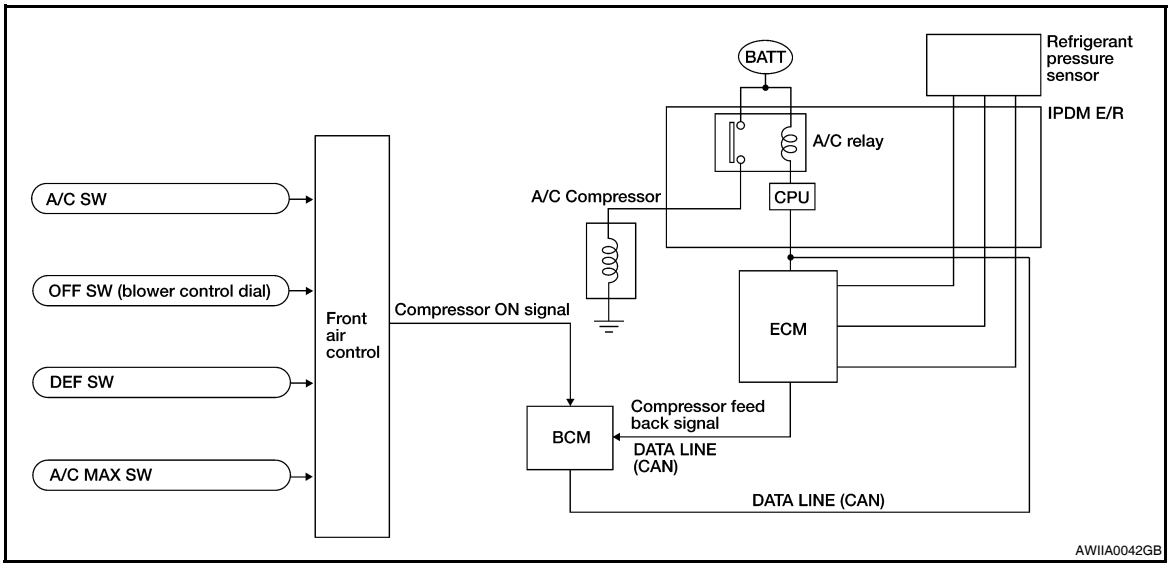
MODE SWITCHES

Controls the air discharge through control of mode door, also controls MAX A/C function.

REAR WINDOW DEFOGGER SWITCH

This switch turns the rear window defogger ON and OFF.

MAGNET CLUTCH CONTROL



When A/C switch is pressed, or the defroster mode switch is pressed, the front air control outputs a compressor ON signal to the BCM.
The BCM then sends a compressor ON signal to the ECM, via CAN communication line. The 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 A/C relay ON to operate compressor.

Component Part Location

INFOID:0000000004498263

ENGINE COMPARTMENT
Refer to HAC-104, "Component Part Location".

PASSENGER COMPARTMENT
Refer to HAC-104, "Component Part Location".

Component Description

INFOID:0000000004498264

Refer to HAC-106, "Component's Role".

DIAGNOSIS SYSTEM (ECM)

CONSULT-III Function

INFOID:0000000004498266

CONSULT-III APPLICATION ITEMS

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

System part	Check item, diagnosis mode	Description
ECM	Data monitor	Displays ECM input data in real time.

DATA MONITOR

Display Item List

Monitor item name “operation or unit”		Contents
IGN ON SW	“ON/OFF”	Displays “IGN position (ON)/OFF, ACC position (OFF)” status as judged from ignition switch signal.
FAN ON SIG	“ON/OFF”	Displays “FAN (ON)/FAN (OFF)” status as judged from blower fan motor switch signal.
AIR COND SW	“ON/OFF”	Displays “COMP (ON)/COMP (OFF)” status as judged from air conditioner switch signal.
REFRIGERANT PRESSURE SENSOR	“V”	Displays “Refrigerant pressure sensor for voltage” status as inputted from refrigerant pressure sensor.

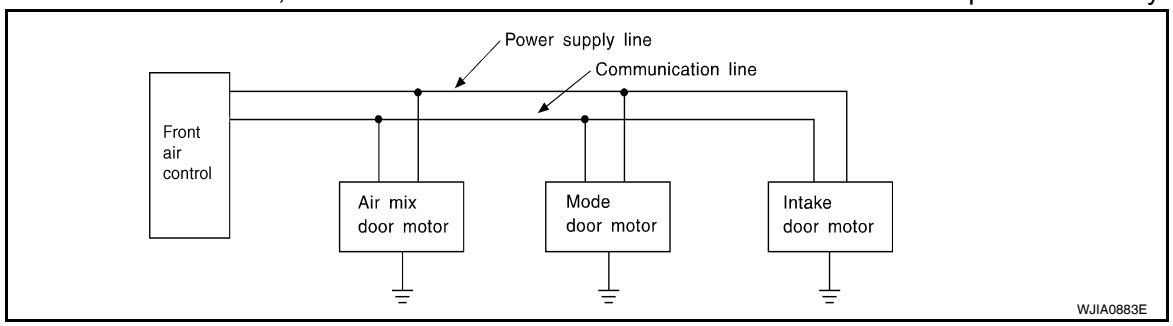
COMPONENT DIAGNOSIS

LAN SYSTEM CIRCUIT

Description

INFOID:0000000004498267

SYMPTOM: Mode door motor, intake door motor and/or air mix door motor does not operate normally.



Diagnosis Procedure

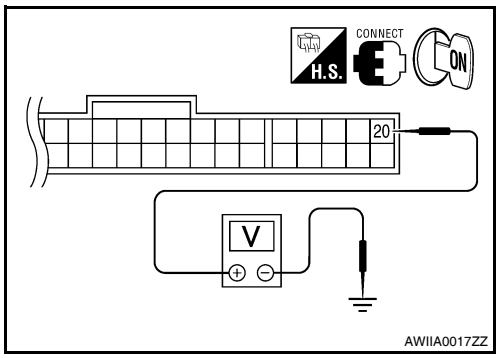
INFOID:0000000004498268

DIAGNOSIS PROCEDURE FOR LAN CIRCUIT

1.CHECK POWER SUPPLY FOR DOOR MOTORS

1. Press ignition switch ON.
2. Check voltage between front air control connector M37 terminal 20 and ground.

Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal		
M37-20	Body ground	12V



Is the inspection result normal?

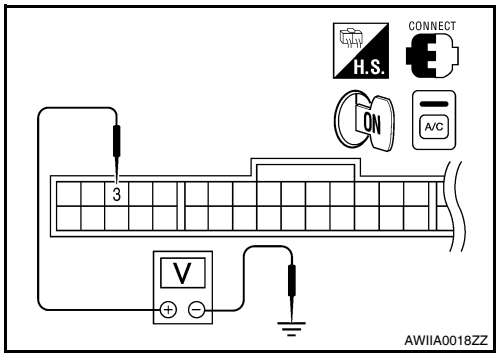
YES >> GO TO 2

NO >> Replace front air control. Refer to VTL-8, "Removal and Installation".

2.CHECK SIGNAL FOR DOOR MOTORS

Check voltage between front air control connector M37 terminal 3 and ground.

Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal		
M37-3	Ground	5.5V



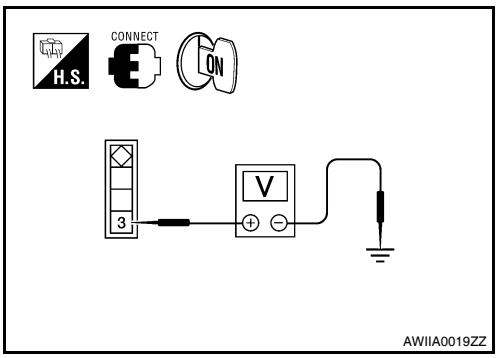
Is the inspection result normal?

YES >> GO TO 3

NO >> Replace front air control. Refer to VTL-8, "Removal and Installation".

3.CHECK POWER SUPPLY FOR MOTOR

Check voltage between mode door motor connector M127 terminal 3 and ground, between air mix door motor connector M130 terminal 3 and ground, and between intake door motor connector M126 terminal 3 and ground.



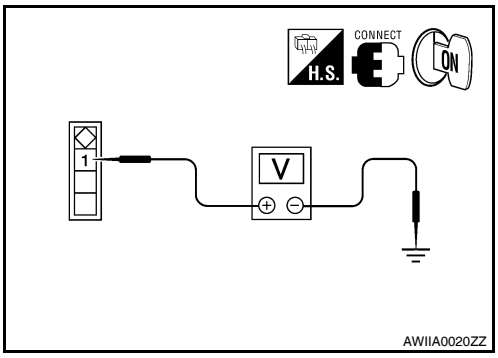
Door motors	Terminals		Voltage (V) (Approx.)
	(+) Connector - Terminal	(-)	
Mode	M127-3	Body ground	12V
Air mix	M130-3		
Intake	M126-3		

Is the inspection result normal?

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

4. CHECK SIGNAL FOR MOTOR

Check voltage between mode door motor connector M127 terminal 1 and ground, between air mix door motor connector M130 terminal 1 and ground, and between intake door motor connector M126 terminal 1 and ground.



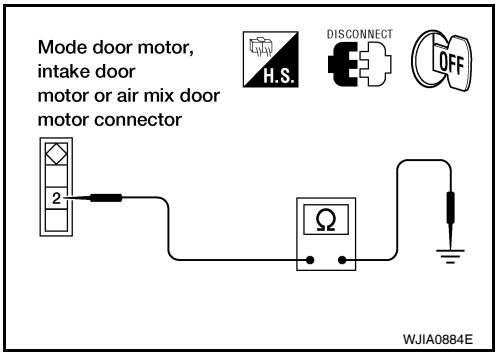
Door motors	Terminals		Voltage (V) (Approx.)
	(+) Connector - Terminal	(-)	
Mode	M127-1	Body ground	5.5V
Air mix	M130-1		
Intake	M126-1		

Is the inspection result normal?

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

5. CHECK MOTOR GROUND CIRCUIT

1. Press ignition switch OFF.
2. Disconnect door motor connectors.
3. Check continuity between mode door motor connector M127 terminal 2 and ground, between air mix door motor connector M130 terminal 2 and ground, and between intake door motor connector M126 terminal 2 and ground.



Door motors	Terminals		Continuity
	(+) Connector - Terminal	(-)	
Mode	M127-2	Body ground	Yes
Air mix	M130-2		
Intake	M126-2		

Is the inspection result normal?

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

6. CHECK MOTOR OPERATION

Disconnect and reconnect the motor connectors and confirm the motor operation.

Is the inspection result normal?

YES >> (Returns to normal operation.)
- Motor connector contacts dirty or damaged

NO >> (Does not operate normally.)
- GO TO 7

7. CHECK MODE DOOR MOTOR AND AIR MIX DOOR MOTOR OPERATION

1. Disconnect the intake door motor connector.
2. Reconnect the mode door motor connector and air mix door motor connector, confirm the mode door motor and air mix door motor operation.

Is the inspection result normal?

YES >> (Mode door motor and air mix door motor operate normally.)
- Replace the intake door motor. Refer to VTL-17, "Removal and Installation".

NO >> (Mode door motor and air mix door motor do not operate normally.)
- GO TO 8

8. CHECK AIR MIX DOOR MOTOR AND INTAKE DOOR MOTOR OPERATION

1. Disconnect mode door motor connector.
2. Reconnect the intake door motor connector, confirm the air mix door motor and intake door motor operation.

Is the inspection result normal?

YES >> (Air mix door motor and intake door motor operate normally.)
- Replace mode door motor. Refer to VTL-18, "Removal and Installation".

NO >> (Air mix door motor and intake door motor do not operate normally.)
- GO TO 9

9. CHECK INTAKE DOOR MOTOR AND MODE DOOR MOTOR OPERATION

1. Disconnect air mix door motor connector.
2. Reconnect mode door motor connector, confirm the intake door motor and mode door motor operation.

Is the inspection result normal?

YES >> (Intake door motor and mode door motor operate normally.)
- Replace inoperative air mix door motor. Refer to VTL-19, "Removal and Installation".

NO >> (Intake door motor and mode door motor do not operate normally.)
- Replace front air control. Refer to VTL-8, "Removal and Installation".

MODE DOOR MOTOR

Description

INFOID:0000000004498269

SYSTEM DESCRIPTION

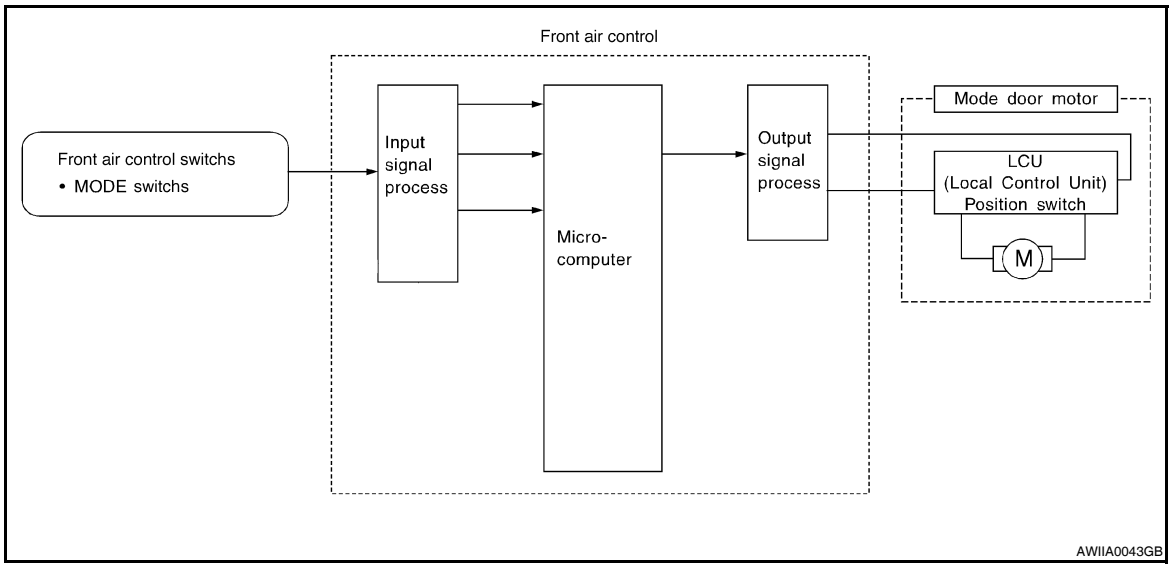
Component Parts

Mode door control system components are:
- Front air control
- Mode door motor (LCU)

System Operation

The front air control receives user inputs through its various dials and switches. The front air control sends air mix door, mode door and intake door opening angle data to the air mix door motor LCU, mode door motor LCU and intake door motor LCU.

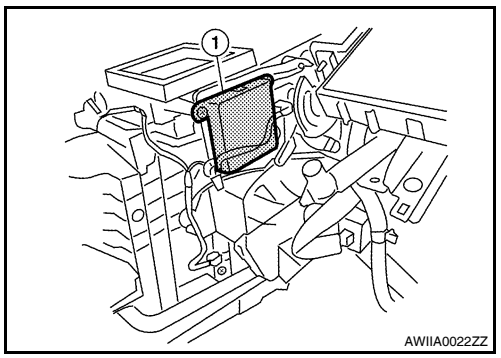
The air mix door motor, mode door motor and intake door motor read their respective signals according to the address signal. Opening angle indication signals received from the front air control and each of the motor position sensors are compared by the LCU's in each motor with the existing decision and opening angles. Subsequently, HOT/COLD or DEFROST/VENT or FRESH/RECIRCULATION operation is selected. The new selection data is returned to the front air control.



COMPONENT DESCRIPTION

Mode Door Motor

The mode door motor (1) is attached to the heater and cooling unit assembly. It rotates so that air is discharged from the outlet set by the front air control. Motor rotation is conveyed to a link which activates the mode door.



Diagnosis Procedure

INFOID:0000000004498270

SYMPTOM: Mode door motor and/or air mix door motor does not operate normally.
Perform diagnostic procedure for LAN system circuit. Refer to HAC-115, "Diagnosis Procedure".

SYMPTOM:
- Air outlet does not change.
- Mode door motor does not operate normally.

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - DISCHARGE AIR

1. Press each of the four mode position switches and then press the (DEF) switch. Each position indicator should illuminate.
2. Confirm that discharge air comes out according to the air distribution table. Refer to HAC-107, "System Description".

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

Can a symptom be duplicated?

YES >> GO TO 3
N0 >> GO TO 2

2. PERFORM COMPLETE OPERATIONAL CHECK

Perform a complete operational check and check for any symptoms. Refer to HAC-102, "Operational Check".

Can a symptom be duplicated?

YES >> Refer to HAC-155, "Symptom Matrix Chart".
NO >> System OK.

3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4

4. CHECK LAN SYSTEM CIRCUIT

Perform diagnostic procedure for the LAN system. Refer to HAC-115, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 5
NO >> Repair as necessary.

5. CHECK MODE DOOR OPERATION

Check and verify mode door mechanism for smooth operation in each mode.

Is the inspection result normal?

YES >> GO TO 6
NO >> Repair as necessary.

6. CHECK AIR MIX DOOR MOTOR PBR CIRCUIT

Perform diagnostic procedure for the intake sensor circuit. Refer to HAC-122, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 7
NO >> Repair as necessary.

7. RECHECK FOR SYMPTOMS

Perform a complete operational check and check for any symptoms. Refer to HAC-102, "Operational Check".

Does another symptom exist?

YES >> Repair as necessary.
NO >> Replace front air control. Refer to VTL-8, "Removal and Installation".

DIAGNOSIS PROCEDURE FOR MODE DOOR MOTOR

SYMPTOM: Mode door motor does not operate normally.
Perform diagnosis procedure. Refer to HAC-115, "Diagnosis Procedure".

AIR MIX DOOR MOTOR

Description

INFOID:0000000004498271

SYSTEM DESCRIPTION

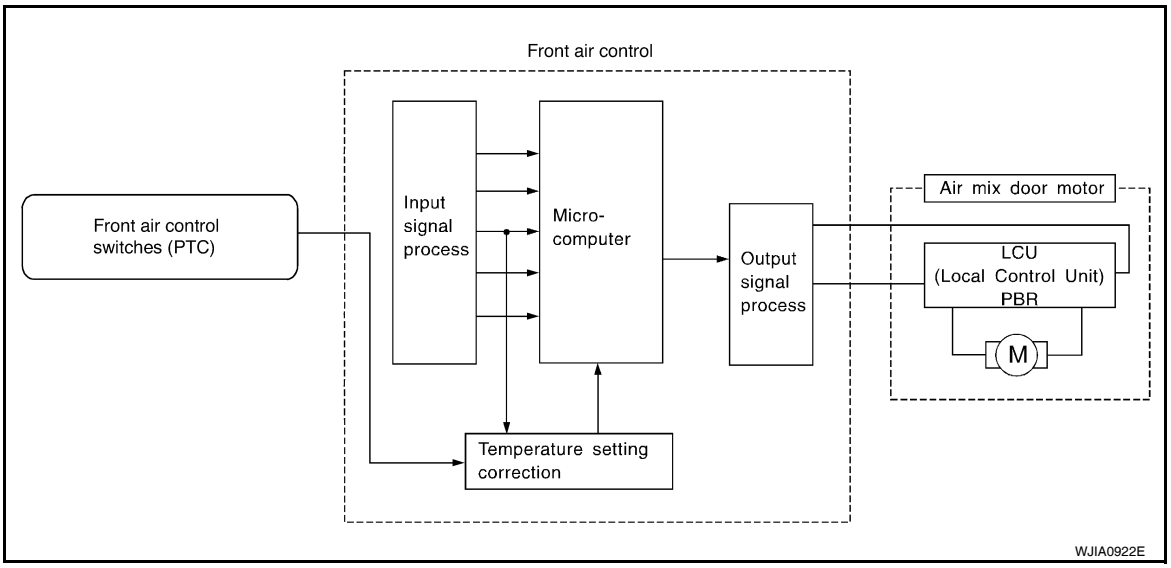
Component Parts

Air mix door control system components are:
- Front air control
- Air mix door motor (LCU)

System Operation

The front air control receives user inputs through its various dials and switches. The front air control sends air mix door, mode door and intake door opening angle data to the air mix door motor LCU, mode door motor LCU and intake door motor LCU.

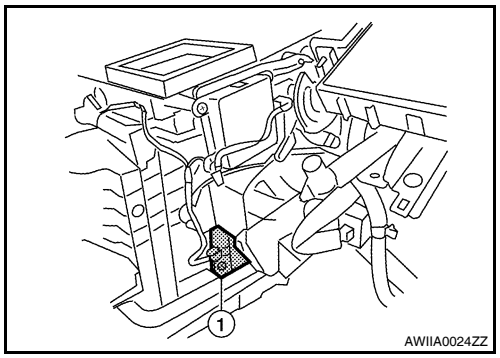
The air mix door motor, mode door motor and intake door motor read their respective signals according to the address signal. Opening angle indication signals received from the front air control and each of the motor position sensors are compared by the LCU's in each motor with the existing decision and opening angles. Subsequently, HOT/COLD or DEFROST/VENT or FRESH/RECIRCULATION operation is selected. The new selection data is returned to the front air control.



COMPONENT DESCRIPTION

Air Mix Door Motor

The air mix door motor (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 front air control. Motor rotation is then conveyed through a shaft and the air mix door position feedback is then sent to the front air control by PBR built-in air mix door motor.



Diagnosis Procedure

INFOID:0000000004498272

SYMPTOM:
- Discharge air temperature does not change.
- Air mix door motor does not operate.

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE INCREASE

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

>> GO TO 2

2. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE DECREASE

1. Turn the temperature control dial counterclockwise to maximum cold.
2. Check for cold air at discharge air outlets.

Can a symptom be duplicated?

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

3. PERFORM COMPLETE OPERATIONAL CHECK

Perform a complete operational check and check for any symptoms. Refer to HAC-102, "Operational Check".

Is the inspection result normal?

YES >> Refer to HAC-155, "Symptom Matrix Chart".
NO >> System OK.

4. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 5

5. CHECK AIR MIX DOOR MOTOR OPERATION

Check and verify air mix door mechanism for smooth operation.

Is the inspection result normal?

YES >> GO TO 6
NO >> Repair as necessary.

6. CHECK LAN SYSTEM CIRCUIT

Perform diagnostic procedure for the LAN system. Refer to HAC-115, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 7
NO >> Repair as necessary.

7. CHECK AIR MIX DOOR MOTOR PBR CIRCUIT

Perform diagnostic procedure for the intake sensor circuit. Refer to HAC-122, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 8
NO >> Repair as necessary.

8. RECHECK FOR SYMPTOMS

Perform a complete operational check and check for any symptoms. Refer to HAC-102, "Operational Check".

Does another symptom exist?

YES >> Repair as necessary.
NO >> Replace front air control. Refer to VTL-8, "Removal and Installation".

DIAGNOSIS PROCEDURE FOR AIR MIX DOOR MOTOR

SYMPTOM: Discharge air temperature does not change.
Perform diagnosis procedure. Refer to HAC-115, "Diagnosis Procedure".

INTAKE DOOR MOTOR

Description

INFOID:0000000004498273

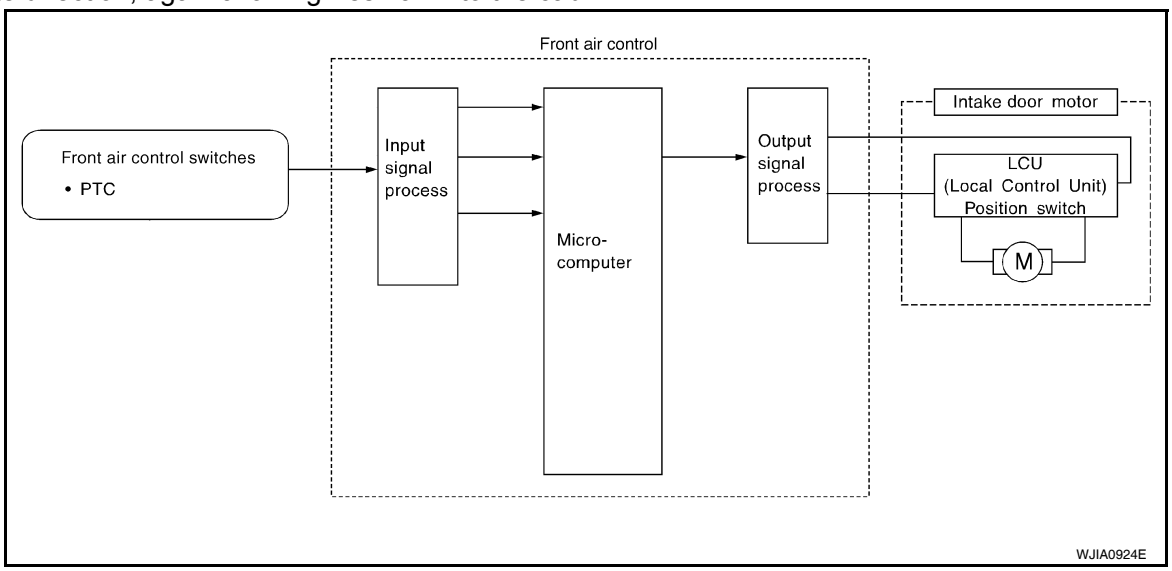
SYSTEM DESCRIPTION

Component Parts

Intake door control system components are:
- Front air control
- Intake door motor (LCU)

System Operation

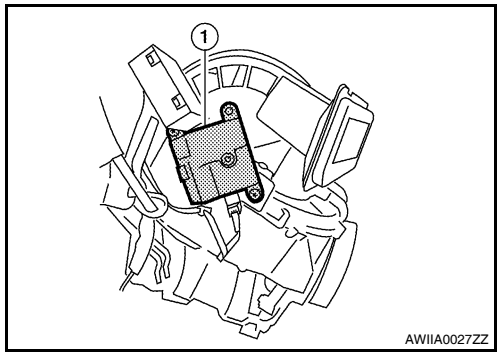
The intake door control determines the intake door position based on the position of the recirculation switch. When the recirculation switch is depressed the intake door motor rotates closing off the fresh air inlet and recirculating the cabin air. If the recirculation switch is depressed again, the intake door motor rotates in the opposite direction, again allowing fresh air into the cabin.



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 front air control. Motor rotation is conveyed to a lever which activates the intake door.



Diagnosis Procedure

INFOID:0000000004498274

SYMPTOM:
- Intake door does not change.
- Intake door motor does not operate normally.

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - REC ( )

1. Press the vent mode.( ).

2. Press REC ( ) switch. The REC ( ) indicator should illumination.
3. Press REC ( ) switch again. The REC ( ) indicator should go out.
4. Listen for intake door position change (you should sound change slightly).

Can a symptom be duplicated?

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

2. PERFORM COMPLETE OPERATIONAL CHECK

Perform a complete operational check and check for any symptoms. Refer to HAC-102, "Operational Check".

Is the inspection result normal?

YES >> Refer to HAC-155, "Symptom Matrix Chart".
NO >> System OK.

3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4

4. CHECK INTAKE DOOR MOTOR OPERATION

Check and verify intake door mechanism for smooth operation.

Is the inspection result normal?

YES >> GO TO 5
NO >> Repair as necessary.

5. CHECK LAN SYSTEM CIRCUIT

Perform diagnostic procedure for the LAN system. Refer to HAC-115, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 6
NO >> Repair as necessary.

6. CHECK AIR MIX DOOR MOTORS PBR CIRCUIT

Perform diagnostic procedure for the air mix door motor. Refer to HAC-122, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 7
NO >> Repair as necessary.

7. RECHECK FOR SYMPTOMS

Perform a complete operational check and check for any symptoms. Refer to HAC-102, "Operational Check".

Does another symptom exist?

YES >> Repair as necessary.
NO >> Replace front air control. Refer to VTL-8, "Removal and Installation".

DIAGNOSIS PROCEDURE FOR INTAKE DOOR MOTOR

SYMPTOM: Intake door motor does not operate normally.
Perform diagnosis procedure. Refer to HAC-115, "Diagnosis Procedure".

BLOWER MOTOR

Description

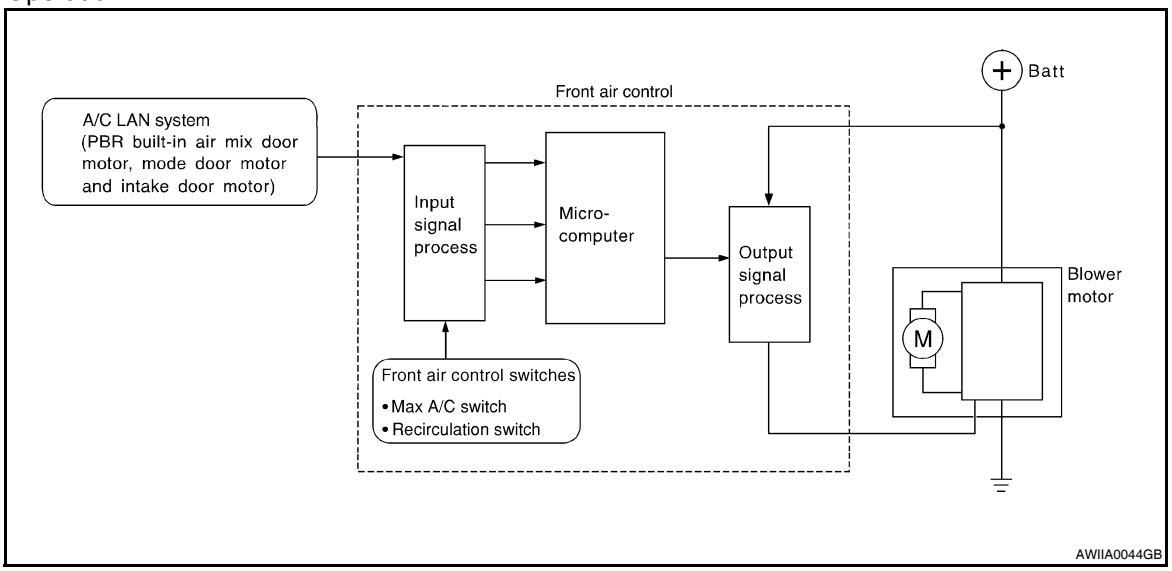
INFOID:0000000004498275

SYSTEM DESCRIPTION

Component Parts

Fan speed control system components are:
- Front air control
- A/C LAN system (PBR built-in mode door motor, air mix door motor and intake door motor)

System Operation



Component Function Check

INFOID:0000000004498276

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - FRONT BLOWER

1. Rotate the blower control dial clockwise. Blower should operate.
2. Rotate the blower control dial clockwise, and continue checking blower speed until all speeds are checked.

Can a symptom be duplicated?

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

2. PERFORM COMPLETE OPERATIONAL CHECK

Perform a complete operational check and check for any symptoms. Refer to HAC-155, "Symptom Matrix Chart".

Is the inspection result normal?

YES >> Refer to HAC-155, "Symptom Matrix Chart".
NO >> System OK.

3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4.

4. CHECK BLOWER MOTOR OPERATION

Check and verify blower motor operates in all speeds.

Does blower motor operate in all speeds?

YES >> GO TO 5.
NO >> Refer to HAC-127, "Diagnosis Procedure".

5. RECHECK FOR SYMPTOMS

Perform a complete operational check and check for any symptoms. Refer to HAC-155, "Symptom Matrix Chart".

Does another symptom exist?

YES >> Repair as necessary.
NO >> Replace front air control. Refer to VTL-8, "Removal and Installation".

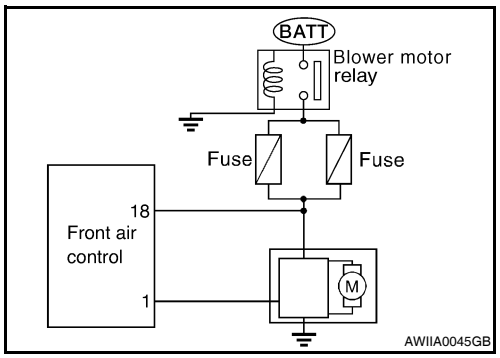
Diagnosis Procedure

INFOID:0000000004498277

SYMPTOM: Blower motor operation is malfunctioning.

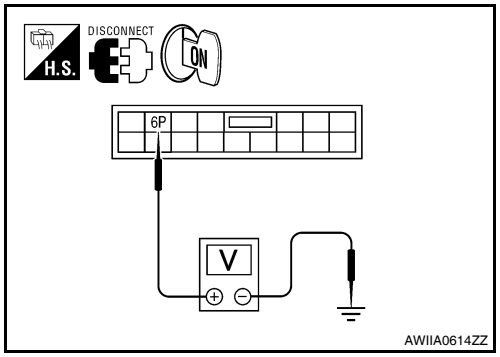
DIAGNOSIS PROCEDURE FOR BLOWER MOTOR

SYMPTOM: Blower motor operation is malfunctioning under starting blower speed control.



1. CHECK POWER SUPPLY FOR BLOWER MOTOR

1. Disconnect fuse block (J/B) connector.
2. Press ignition switch ON.
3. Check voltage between fuse block (J/B) harness connector E6 terminal P6 and ground.



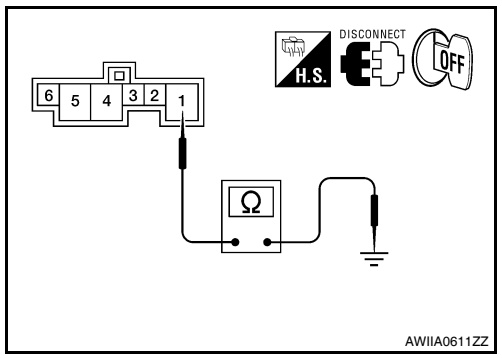
Terminal		Voltage (V) (Approx.)
(+) Connector - Terminal	(-)	
E6 - 6P	Body ground	12V

Is the inspection result normal?

YES >> GO TO 2.
NO >> Check power supply circuit and 15A fuses [Nos. 21 and 22, located in the fuse block (J/B)].
- If OK, check for open circuit in wiring harness. Repair or replace as necessary.
- If OK, check fuses and check wiring harness for possible open or short circuit.
- If OK, GO TO 5.

2. CHECK BODY GROUND CIRCUIT FOR BLOWER MOTOR

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



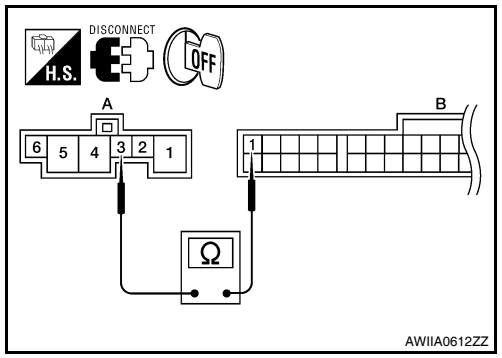
Terminal		Continuity
Connector - Terminal	Body ground	Yes
M31-1		

Is the inspection result normal?

YES >> Reconnect blower motor harness connector and GO TO 3.
NO >> Repair harness or connector.

3. CHECK BLOWER MOTOR CONTROL CIRCUIT BETWEEN BLOWER MOTOR AND FRONT AIR CONTROL

1. Disconnect front air control harness connector.
2. Check continuity between blower motor harness connector M31 (A) terminal 3 and front air control harness connector M37 (B) terminal 1.



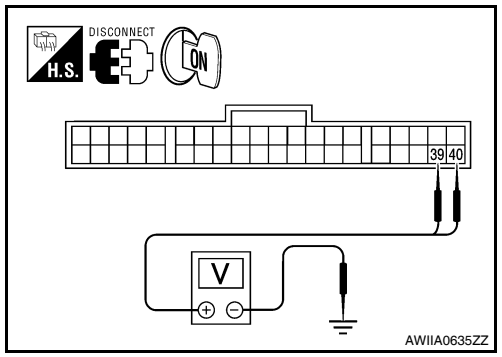
Terminals		Continuity
Connector - Terminal	Connector - Terminal	Yes
M31-3	M37-1	

Is the inspection result normal?

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

4. CHECK POWER SUPPLY FOR FRONT AIR CONTROL

1. Press ignition switch ON.
2. Check voltage between front air control harness connector M37 terminals 39, 40 and ground.



Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal	Body ground	12V
M37-39		
M37-40		

Is the inspection result normal?

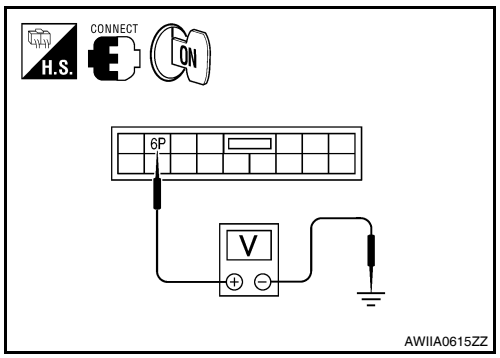
YES >> 1. Replace front air control. Refer to VTL-8, "Removal and Installation".
2. Confirm that blower motor operation is normal.

NO >> • Check for open circuit in wiring harness. Repair or replace as necessary.
• If OK, replace fuse and check wiring harness for short circuit. Repair or replace an necessary.

5. CHECK POWER SUPPLY FOR FRONT BLOWER MOTOR RELAY

1. Connect fuse block (J/B) connector.
2. Press ignition switch ON.
3. Turn blower motor control dial to any speed except OFF.
4. Check voltage between fuse block (J/B) E6 terminal 6P and ground.

6P - Ground : Battery Voltage



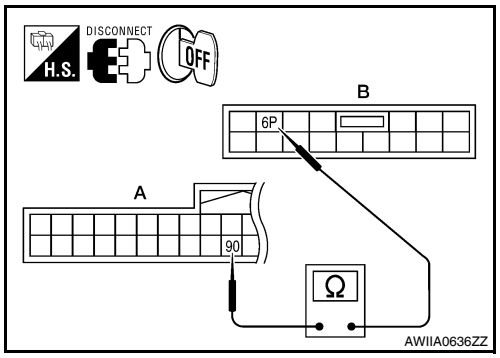
Is the inspection result normal?

YES >> GO TO 9.
NO >> GO TO 6.

6. CHECK POWER SUPPLY FOR FRONT BLOWER MOTOR RELAY FOR AN OPEN

1. Press ignition switch OFF.
2. Disconnect BCM harness connector M19.
3. Check continuity between BCM harness connector M19 (A) terminal 90 and fuse block (J/B) harness connector E6 (B) terminal 6P.

Terminal		Continuity
(+)	(-)	
Connector - Terminal	Connector - Terminal	Yes
M19-90	E6 - 6P	



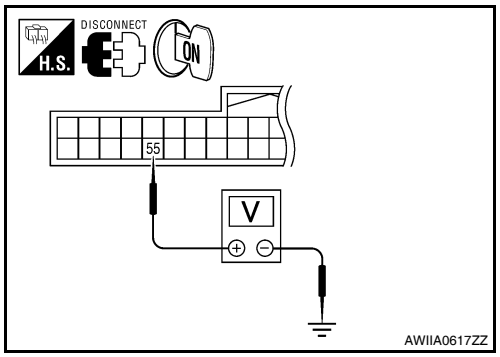
Is the inspection result normal?

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

7. CHECK BLOWER FAN SWITCH SIGNAL FOR VOLTAGE

1. Press ignition switch ON.
2. Disconnect BCM harness connector M18.
3. Check voltage between BCM harness connector M18 terminal 55 and ground.

Terminal		Voltage (V) (Approx.) Continuity
(+)	(-)	
Connector - Terminal	Connector - Terminal	12V
M18-55	Ground	



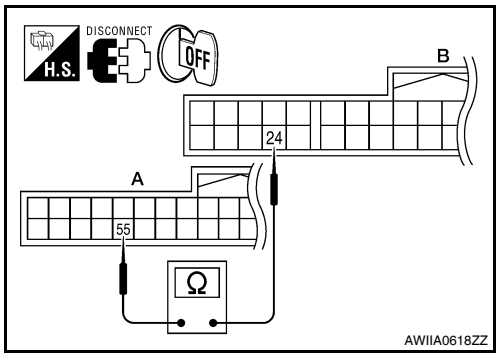
Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-96, "Removal and Installation".
NO >> GO TO 8.

8. CHECK BLOWER FAN SWITCH SIGNAL CIRCUIT FOR AN OPEN

1. Press ignition switch OFF.
2. Disconnect front air control harness connector.
3. Check continuity between BCM harness connector M18 (A) terminal 55 and front air control harness connector M37 (B) terminal 24.

Terminal		Continuity
(+)	(-)	
Connector - Terminal	Connector - Terminal	Yes
M18 - 55	M37 - 24	



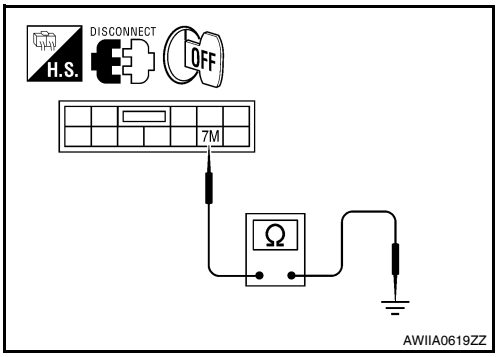
Is the inspection result normal?

YES >> Replace front air control. Refer to VTL-8, "Removal and Installation".

NO >> Repair harness or connector.

9. CHECK FRONT BLOWER MOTOR RELAY GROUND

1. Press ignition switch OFF.
2. Disconnect fuse block (J/B) harness connector M5.
3. Check continuity between fuse block (J/B) harness connector M5 terminal 7M and ground.



Terminal		Continuity
(+)	(-)	
Connector - Terminal	Connector - Terminal	Yes
M5 - 7M	Ground	

Is the inspection result normal?

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

MAGNET CLUTCH

Component Function Check

INFOID:0000000004498278

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - MAGNET CLUTCH

1. Press ignition switch ON.
2. Press vent switch ( ).
3. Press A/C switch.
4. Confirm that the compressor clutch engages (sound or visual inspection). (Discharge air and blower speed will depend on ambient, in-vehicle and set temperatures).

Can a symptom be duplicated?

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

2. PERFORM COMPLETE OPERATIONAL CHECK

Perform a complete operational check and check for any symptoms. Refer to HAC-102, "Operational Check".

Is the inspection result normal?

YES >> Refer to HAC-155, "Symptom Matrix Chart".
NO >> System OK.

3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4.

4. CHECK MAGNET CLUTCH MECHANISM

Check for magnet clutch operation.

Does the magnet clutch engage?

YES >> GO TO 5
NO >> Check magnet clutch circuit. Refer to HAC-131, "Diagnosis Procedure".

5. CHECK AIR MIX DOOR MOTOR PBR CIRCUITS

Perform diagnostic procedure for the air mix door motor circuit. Refer to HAC-122, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair as necessary.

6. RECHECK FOR SYMPTOMS

Perform a complete operational check and check for any symptoms. Refer to HAC-102, "Operational Check".

Does another symptom exist?

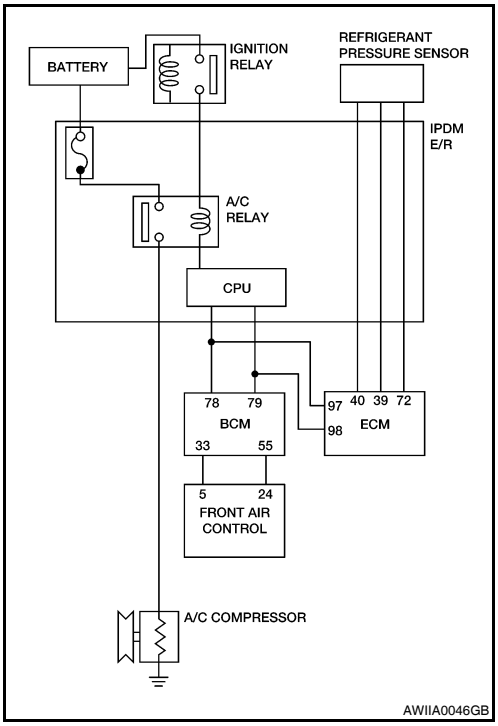
YES >> Repair as necessary.
NO >> Replace front air control. Refer to VTL-8, "Removal and Installation".

Diagnosis Procedure

INFOID:0000000004498279

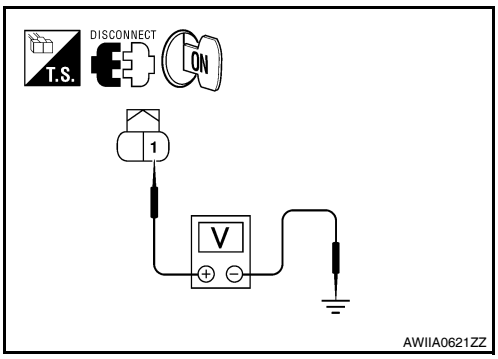
DIAGNOSIS PROCEDURE FOR MAGNET CLUTCH

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



1. CHECK POWER SUPPLY FOR COMPRESSOR

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



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

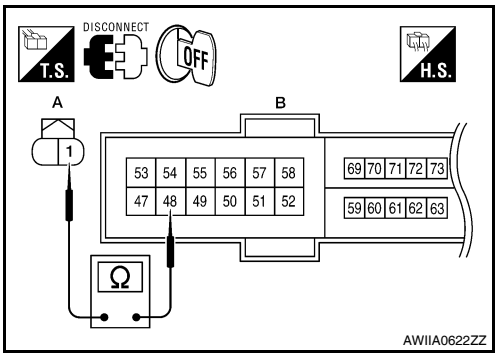
Is the inspection result normal?

YES >> Check magnet clutch coil.
1. If NG, replace magnet clutch. Refer to HA-35, "Removal and Installation for Compressor - QR25DE Models" or HA-36, "Removal and Installation for Compressor - VQ35DE Models".
2. If OK, check compressor mounting points for looseness or corrosion and repair as necessary.

NO >> GO TO 2.

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

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



Terminals		Continuity
Connector - Terminal	Connector - Terminal	Yes
F3 - 1	F10 - 48	

If OK, check harness for short to ground.

Is the inspection result normal?

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

3.CHECK FUSE IN IPDM E/R

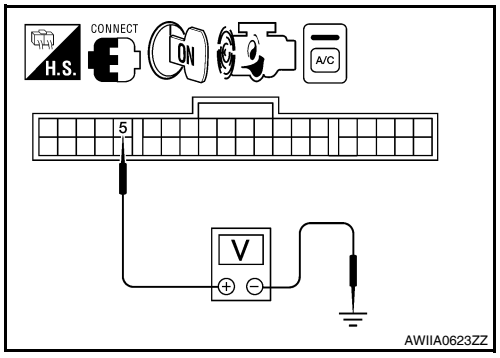
Check 10A fuse (No. 41 located in the IPDM E/R).

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace fuse and check IPDM E/R for short circuit. Replace if necessary.

4.CHECK COMPRESSOR ON SIGNAL

Check voltage between front air control connector M37 terminal 5 and ground, with A/C compressor ON and with A/C compressor OFF.



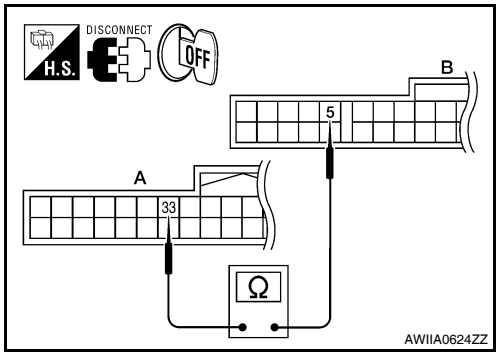
Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal	Body ground	Compressor ON: 0V Compressor OFF: 5V
M37 - 5		

Is the inspection result normal?

YES >> GO TO 5.
NO >> • When compressor is ON and voltage is not approx. 0V, Replace front air control. Refer to VTL-8, "Removal and Installation".
• When compressor is OFF and voltage is not approx. 5V, BCM is malfunctioning.

5.CHECK CONTINUITY BETWEEN BCM AND FRONT AIR CONTROL

1. Disconnect BCM connector M18 and front air control connector M37.
2. Check continuity between BCM harness connector M18 (A) terminal 33 and front air control connector M37 (B) terminal 5.



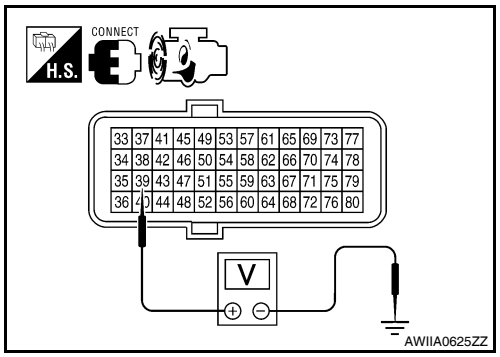
Terminals		Continuity
Connector - Terminal	Connector - Terminal	Yes
M18 - 33	M37 - 5	

Is the inspection result normal?

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

6.CHECK REFRIGERANT PRESSURE SENSOR INPUT SIGNAL

Check voltage between ECM harness connector F13 terminal 39 and ground.



Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector- Terminal	Body ground	12V
F13-39		

Is the inspection result normal?

YES >> GO TO 7.
NO >> 1. Repair harness or connector.
2. Confirm that magnet clutch operation is normal.

7.CHECK REFRIGERANT PRESSURE SENSOR

Refer to EC-975, "Diagnosis Procedure" (QR25DE) or EC-1503, "Diagnosis Procedure".(VQ35DE)

Is the inspection result normal?

YES >> GO TO 8.
NO >> Replace refrigerant pressure sensor. Refer to HA-44, "Removal and Installation for Refrigerant Pressure Sensor"

8. CHECK CAN COMMUNICATION CIRCUITS

Check CAN communication circuits between BCM to ECM and between ECM to IPDM E/R. Refer to LAN-13, "CAN Diagnosis with CONSULT-III".

Is the inspection result normal?

YES >> ECM malfunctioning.
NO >> Repair or replace component based on the result of diagnosis.

POWER SUPPLY AND GROUND CIRCUIT FOR FRONT AIR CONTROL

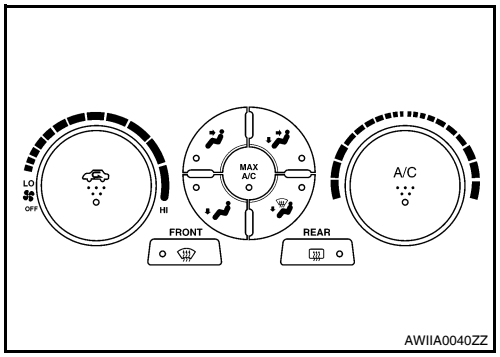
Description

INFOID:0000000004498280

COMPONENT DESCRIPTION

FRONT AIR CONTROL

The front air control has a built-in microcomputer which processes information sent from temperature control dial and various switches needed for air conditioner operation. The air mix door motor, mode door motor, intake door motor, blower motor and compressor are then controlled.



POTENTIO TEMPERATURE CONTROL (PTC)

The PTC is built into the front air control.

Component Function Check

INFOID:0000000004498281

COMPONENT INSPECTION

SYMPTOM: A/C system does not come on.

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK

1. Press A/C switch (indicator should illuminate).
2. Confirm that the compressor clutch engages (sound or visual inspection).

Can a symptom be duplicated?

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

2. PERFORM COMPLETE OPERATIONAL CHECK

Perform a complete operational check and check for any symptoms. Refer to HAC-102, "Operational Check".

Is the inspection result normal?

YES >> Refer to HAC-155, "Symptom Matrix Chart".
NO >> System OK.

3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4

4. CHECK MAIN POWER SUPPLY AND GROUND CIRCUIT

Check main power supply and ground circuit. Refer to HAC-135, "Diagnosis Procedure".

Is the inspection result normal?

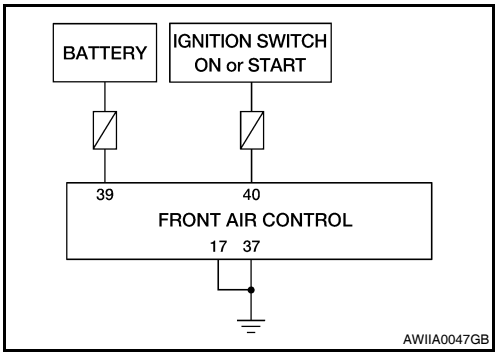
YES >> Replace front air control. Refer to VTL-8, "Removal and Installation".
NO >> Repair as necessary.

Diagnosis Procedure

INFOID:0000000004498282

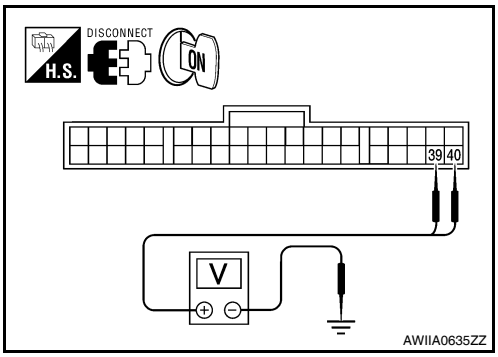
DIAGNOSIS PROCEDURE FOR A/C SYSTEM

SYMPTOM: A/C system does not come on.



1. CHECK POWER SUPPLY CIRCUIT FOR FRONT AIR CONTROL

1. Disconnect front air control connector M37.
2. Press ignition switch ON.
3. Check voltage between front air control connector M37 terminals 39 and 40, and ground.



Terminals		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal	Body ground	12V
M37-39		
M37-40		

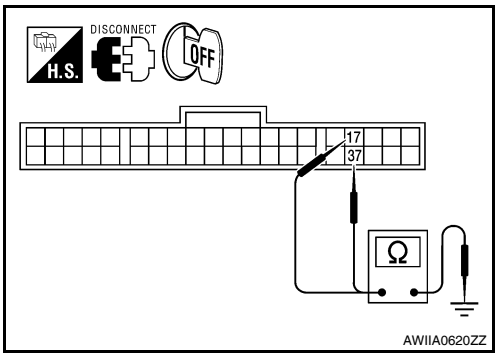
Is the inspection result normal?

YES >> GO TO 2

NO >> Check the following.
- 10A fuses [Nos. 6, and 3, located in the fuse block (J/B)].
- If fuses are OK, check for open circuit in wiring harness. Repair or replace as necessary.
- If fuses are NG, replace fuse and check wiring harness for short circuit. Repair or replace as necessary.

2. CHECK BODY GROUND CIRCUIT FOR FRONT AIR CONTROL

1. Press ignition switch OFF.
2. Check continuity between front air control connector M37 terminals 17and 37 and ground.



Terminal		Continuity
(+)	(-)	
Connector - Terminal	Body ground	Yes
M37-17		
M37-37		

Is the inspection result normal?

YES >> • Replace front air control. Refer to VTL-8, "Removal and Installation".
• Inspection End.

NO >> Repair or replace harness.

ECU DIAGNOSIS

AIR CONDITIONER CONTROL

Reference Value

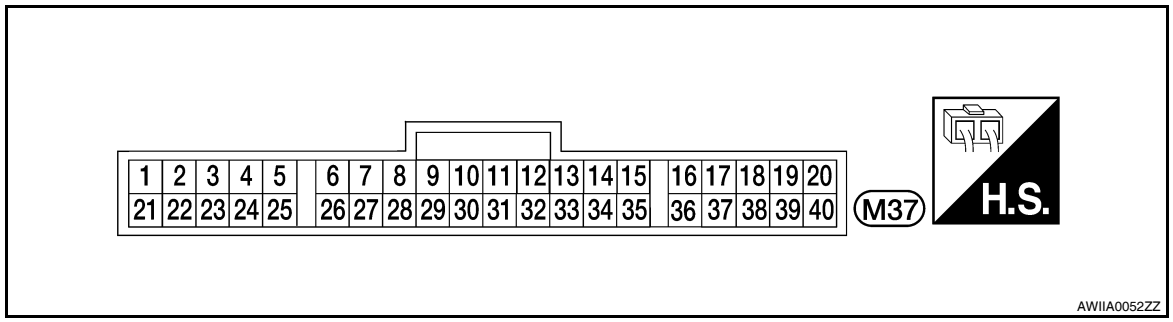
INFOID:0000000004498283

VALUES ON THE DIAGNOSIS TOOL

Display Item List

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

TERMINAL LAYOUT



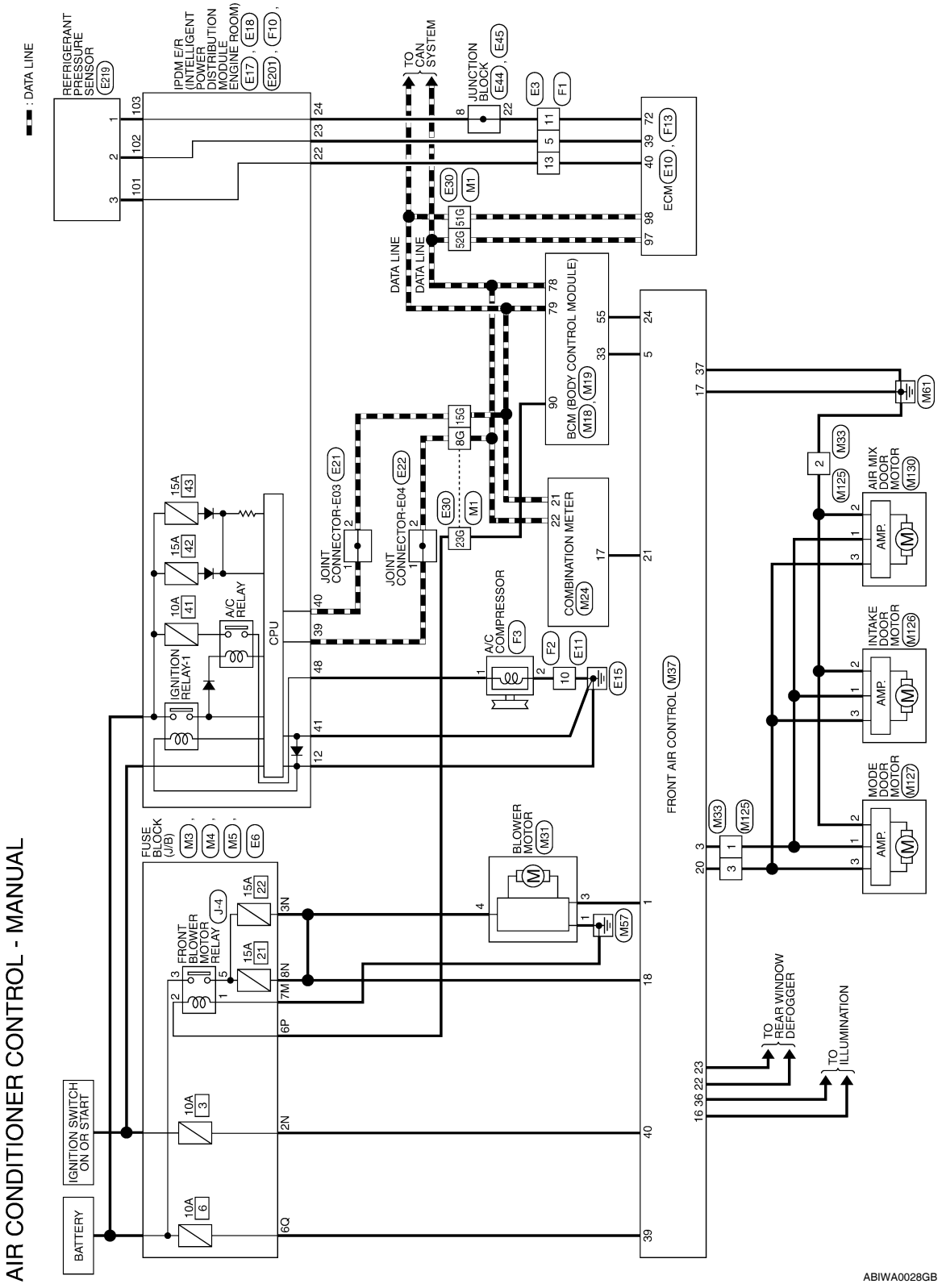
PHYSICAL VALUES

Terminal No.	Wire color	Item	Ignition switch	Condition		Voltage (V) (Approx.)
1	L/Y	Blower motor feed back		Fan speed	Low	7.0.- 10.0
3	L/R	A/C LAN signal		—		5.5
5	SB	Compressor ON signal		Compressor	ON	0
					OFF	12
16	R/L	Light (+)		Lighting switch	OFF	0
					1st position	12
17	B	Ground		—		0
18	W/L	Power supply for IGN		—		12
20	L/W	Power supply for mode door motor, intake door motor, and air mix door motor		—		12
21	R/W	Power supply for A/C ON signal			ON	4.6
22	GR	Rear defrost feed back		Defroster switch	ON	12
					OFF	0

Terminal No.	Wire color	Item	Ignition switch	Condition		Voltage (V) (Approx.)
23	GR/W	Rear defrost ON signal		Defroster switch	ON	0
					OFF	5
24	BR/W	Fan ON signal		Fan	ON	0
					OFF	5
36	R/Y	Light (-)		—		0
37	B	Ground		—		0
39	Y/R	Power supply for battery		—		12
40	G	Power supply for IGN		—		12

Wiring Diagram - Air Conditioner Control (Manual) - Coupe

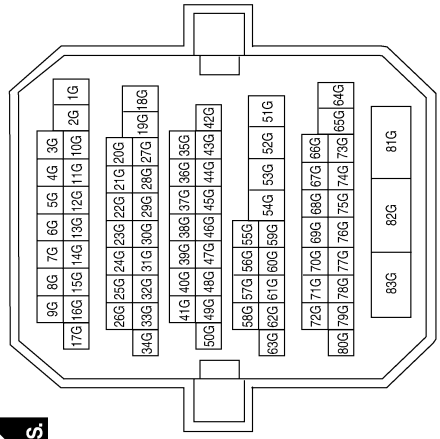
INFOID:0000000004498284



AIR CONDITIONER CONTROL CONNECTORS - MANUAL

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

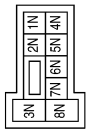
H.S.



Terminal No.	Color of Wire	Signal Name
8G	P	–
15G	L	–
23G	Y	–
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	–

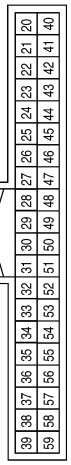
Connector No.	M5
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
7M	B	–

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

H.S.



Terminal No.	Color of Wire	Signal Name
33	SB	AIRCON_SW
55	BR/W	BLOWER_FAN_SW

ABIIA0153GB

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

H.S.

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

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

Connector No.	M24
Connector Name	COMBINATION METER
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
17	R/W	A/C_PD_CUT
21	L	CAN-H
22	P	CAN-L

Connector No.	M31
Connector Name	BLOWER MOTOR
Connector Color	WHITE

H.S.

6	5	4	3	2	1

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

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

H.S.

3
2
1

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

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

H.S.

1	2	3	4	5		6	7	8	9	10	11	12	13	14	15		16	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/Y	FAN_PWN
3	L/R	LAN SIG
5	SB	COMP ON
16	R/L	ILL+
17	B	GND

Terminal No.	Color of Wire	Signal Name
18	W/L	IGN_2
20	L/W	VACTR
21	R/W	PD_CUT
22	GR	RR_DEF_F/B
23	GR/W	RR_DER_ON
24	BR/W	FAN ON
36	R/Y	ILL-
37	B	GND(POWER)
39	Y/T	BATT
40	G	IGN

ABIIA0160GB

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

H.S.

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

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

H.S.

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

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

H.S.

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

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

H.S.

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

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

H.S.

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

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

H.S.

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

ABIIA0161GB

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.	E11
Connector Name	WIRE TO WIRE
Connector Color	WHITE

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

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

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

Terminal No.	Color of Wire	Signal Name
12	B	GND(POWER)
22	W/R	PD_SENS_GND-E/R
23	B/R	PD_SENS_SIG-E/R
24	BR/W	PD_SENS PWR-E/R

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

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

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

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

ABIIA0154GB

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

H.S.

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

Connector No.	E44
Connector Name	JUNCTION BLOCK
Connector Color	BROWN

H.S.

Terminal No.	Color of Wire	Signal Name
8	BR/W	–

Connector No.	E45
Connector Name	JUNCTION BLOCK
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
22	BR/W	–

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

H.S.

Terminal No.	Color of Wire	Signal Name
101	O/L	PD_SENS_GND-FEM
102	R/B	PD_SENS_SIG-FEM
103	P	PD_SENS_PWR-FEM

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

H.S.

Terminal No.	Color of Wire	Signal Name
1	P	AVCC2
2	R	SIGNAL
3	W	GND

ABIIA0155GB

Connector No.	E219
Connector Name	REFRIGERANT PRESSURE SENSOR (QR CAL)
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	P	AVCC2
2	R/B	SIGHAL
3	O/L	GND

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

H.S.

Terminal No.	Color of Wire	Signal Name
5	R	–
11	LG/B	– (QR25DE)
11	BR/W	– (VQ35DE)
13	G	–

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

H.S.

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

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

H.S.

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

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

H.S.

Terminal No.	Color of Wire	Signal Name
48	Y/R	A/C_COMP

Connector No.	F13
Connector Name	ECM (QR25DE)
Connector Color	BROWN

H.S.

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

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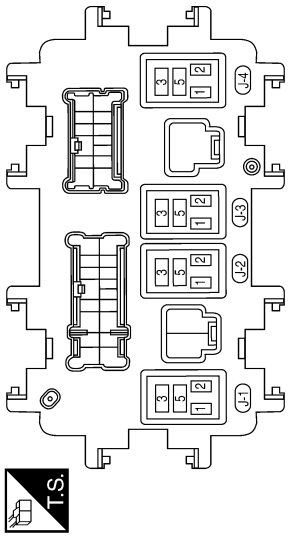
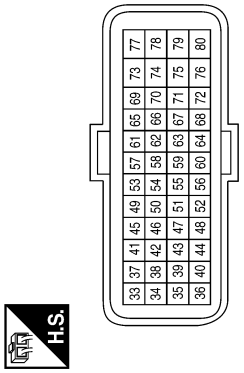
Connector No.	J-4
Connector Name	FRONT BLOWER MOTOR RELAY
Connector Color	–



Connector No.	F13
Connector Name	ECM (VQ35DE)
Connector Color	BROWN



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

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Wiring Diagram - Air Conditioner Control (Manual) - Sedan

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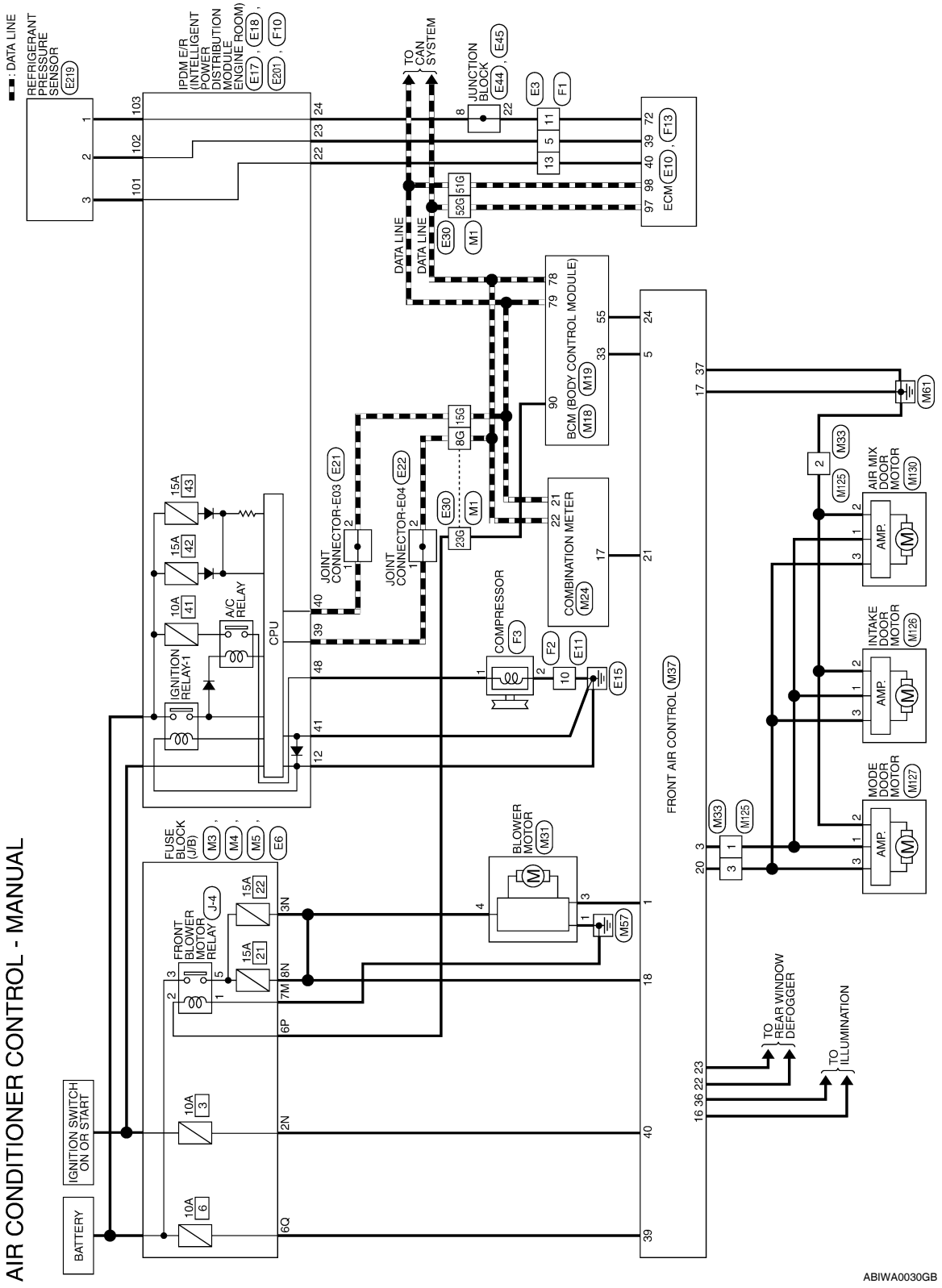
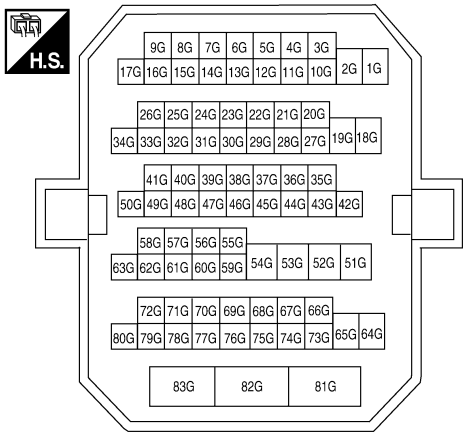


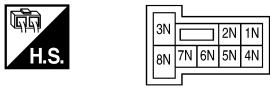
AIR CONDITIONER CONTROL CONNECTORS - MANUAL

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



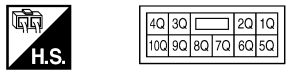
Terminal No.	Color of Wire	Signal Name
8G	P	–
15G	L	–
23G	Y	–
51G	L	–
52G	P	–

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



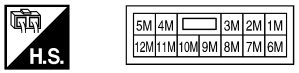
Terminal No.	Color of Wire	Signal Name
2N	G	–
3N	W/L	–
8N	W/L	–

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



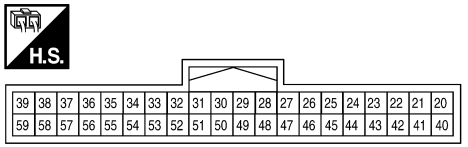
Terminal No.	Color of Wire	Signal Name
6Q	Y/R	–

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



Terminal No.	Color of Wire	Signal Name
7M	B	–

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



Terminal No.	Color of Wire	Signal Name
33	SB	AIRCON_SW
55	BR/W	BLOWER_FAN_SW

ABIIA0179GB

Connector No.	M31
Connector Name	BLOWER MOTOR
Connector Color	WHITE

H.S.

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

Connector No.	M24
Connector Name	COMBINATION METER
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
17	R/W	A/C_PD_CUT
21	L	CAN-H
22	P	CAN-L

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

H.S.

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

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

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

H.S.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	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/Y	FAN_PWM
3	L/R	LAN SIG
5	SB	COMP ON
16	R/L	ILL+
17	B	GND

Terminal No.	Color of Wire	Signal Name
18	W/L	IGN_2
20	L/W	VACTR
21	R/W	PD_CUT
22	GR	RR_DEF_F/B
23	GR/W	RR_DEF_ON
24	BR/W	FAN ON
36	R/Y	ILL-
37	B	GND (POWER)
39	Y/R	BATT
40	G	IGN

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

H.S.

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

ABIIA0180GB

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.	M130
Connector Name	AIR MIX DOOR MOTOR
Connector Color	WHITE

H.S.

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

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

H.S.

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

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

H.S.

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

ABIIA0181GB

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.	E11
Connector Name	WIRE TO WIRE
Connector Color	WHITE

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

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

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

Terminal No.	Color of Wire	Signal Name
12	B	GND (POWER)
22	W/R	PD_SENS_GND-E/R
23	B/R	PD_SENS_SIG-E/R
24	BR/W	PD_SENS PWR-E/R

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

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

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

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

ABIIA0182GB

Connector No.	E44
Connector Name	JUNCTION BLOCK
Connector Color	BROWN

H.S.

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

Terminal No.	Color of Wire	Signal Name
8	BR/W	–

Connector No.	E219
Connector Name	REFRIGERANT PRESSURE SENSOR (WITHOUT QR25DE AND CALIFORNIA EMISSIONS)
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	P	AVCC2
2	R	SIGNAL
3	W	GND

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

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

H.S.

Terminal No.	Color of Wire	Signal Name
101	O/L	PD_SENS_GND-FEM
102	R/B	PD_SENS_SIG-FEM
103	P	PD_SENS_PWR-FEM

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

H.S.

Connector No.	E45
Connector Name	JUNCTION BLOCK
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
22	BR/W	–

ABIIA0183GB

Connector No.	E219
Connector Name	REFRIGERANT PRESSURE SENSOR (WITH QR25DE AND CALIFORNIA EMISSIONS)
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	P	AVCC2
2	R/B	SIGNAL
3	O/L	GND

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

H.S.

Terminal No.	Color of Wire	Signal Name
5	R	–
11	LG/B	– (QR25DE)
11	BR/W	– (VQ35DE)
13	G	–

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

H.S.

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

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

H.S.

Terminal No.	Color of Wire	Signal Name
1	Y/R	A/C_COMP
2	B/W	GND

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

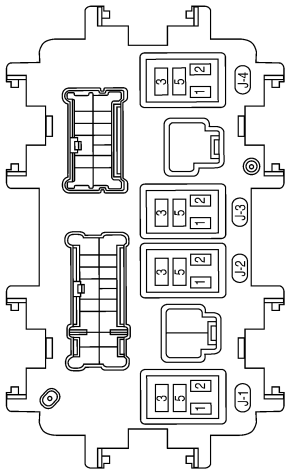
H.S.

Terminal No.	Color of Wire	Signal Name
48	Y/R	A/C_COMP

ABIIA0184GB

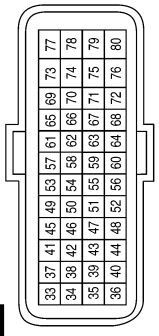
Connector No.	J-4
Connector Name	FRONT BLOWER MOTOR RELAY
Connector Color	–

T.S.



Connector No.	F13
Connector Name	ECM (VQ35DE)
Connector Color	BROWN

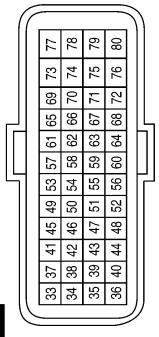
H.S.



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

Connector No.	F13
Connector Name	ECM (QR25DE)
Connector Color	BROWN

H.S.



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

ABIIA0185GB

SYMPTOM DIAGNOSIS

AIR CONDITIONER CONTROL

Symptom Matrix Chart

INFOID:0000000004498288

SYMPTOM TABLE

Symptom	Reference Page	
A/C system does not come on.	Go to Trouble Diagnosis Procedure for A/C System.	HAC-135, "Diagnosis Procedure"
Air outlet does not change.	Go to Trouble Diagnosis Procedure for Mode Door Motor. (LAN)	HAC-119, "Diagnosis Procedure"
Mode door motor does not operate normally.		
Discharge air temperature does not change.	Go to Trouble Diagnosis Procedure for Air Mix Door Motor. (LAN)	HAC-115, "Diagnosis Procedure"
Air mix door motor does not operate normally.		
Intake door does not change.	Go to Trouble Diagnosis Procedure for Intake Door Motor. (LAN)	HAC-115, "Diagnosis Procedure"
Intake door motor does not operate normally.		
Blower motor operation is malfunctioning.	Go to Trouble Diagnosis Procedure for Blower Motor.	HAC-127, "Diagnosis Procedure"
Magnet clutch does not engage.	Go to Trouble Diagnosis Procedure for Magnet Clutch.	HAC-131, "Diagnosis Procedure"
Insufficient cooling	Go to Trouble Diagnosis Procedure for Insufficient Cooling.	HAC-156, "Component Function Check"
Insufficient heating	Go to Trouble Diagnosis Procedure for Insufficient Heating.	HAC-164, "Component Function Check"
Noise	Go to Trouble Diagnosis Procedure for Noise.	HAC-166, "Component Function Check"

INSUFFICIENT COOLING

Component Function Check

INFOID:0000000004498289

SYMPTOM: Insufficient cooling

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE DECREASE

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

Can a symptom be duplicated?

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

2. CHECK FOR ANY SYMPTOMS

Perform a complete operational check and check for any symptoms. Refer to HAC-102, "Description & Conditions".

Does another symptom exist?

YES >> Refer to HAC-155, "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-16, "Checking Drive Belts" (QR25DE) or EM-121, "Checking Drive Belts" (VQ35DE).

Is the inspection result normal?

YES >> GO TO 5
NO >> Adjust or replace compressor belt. Refer to EM-16, "Removal and Installation" (QR25DE) or EM-121, "Removal and Installation" (VQ35DE).

5. CHECK AIR MIX DOOR MOTOR OPERATION

Check and verify air mix door mechanism for smooth operation.

Does air mix door operate correctly?

YES >> GO TO 6
NO >> Repair or replace air mix door control linkage.

6. CHECK COOLING FAN MOTOR OPERATION

Check and verify cooling fan motor for smooth operation.

Does cooling fan motor operation correctly?

YES >> GO TO 7
NO >> Check cooling fan motor. Refer to EC-949, "Component Function Check" (QR25DE) or EC-1473, "Component Function Check" (VQ35DE).

7. CHECK RECOVERY/RECYCLING EQUIPMENT BEFORE USAGE

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

>> GO TO 8

8. CHECK REFRIGERANT PURITY

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

Is the inspection result normal?

YES >> GO TO 9
NO >> Check contaminated refrigerant. Refer to HA-24, "HFC-134a (R-134a) Service Procedure".

9. CHECK REFRIGERANT PRESSURE

Check refrigerant pressure with manifold gauge connected. Refer to HAC-160, "Trouble Diagnosis For Abnormal Pressure".

Is the inspection result normal?

YES >> Perform diagnostic work flow. Refer to HAC-157, "Diagnostic Work Flow".
NO >> GO TO 10

10. CHECK FOR EVAPORATOR FREEZE UP

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

Does evaporator freeze up?

YES >> Perform diagnostic work flow. Refer HAC-157, "Diagnostic Work Flow".
NO >> GO TO 11

11. CHECK AIR DUCTS

Check ducts for air leaks.

Is the inspection result normal?

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

Diagnostic Work Flow

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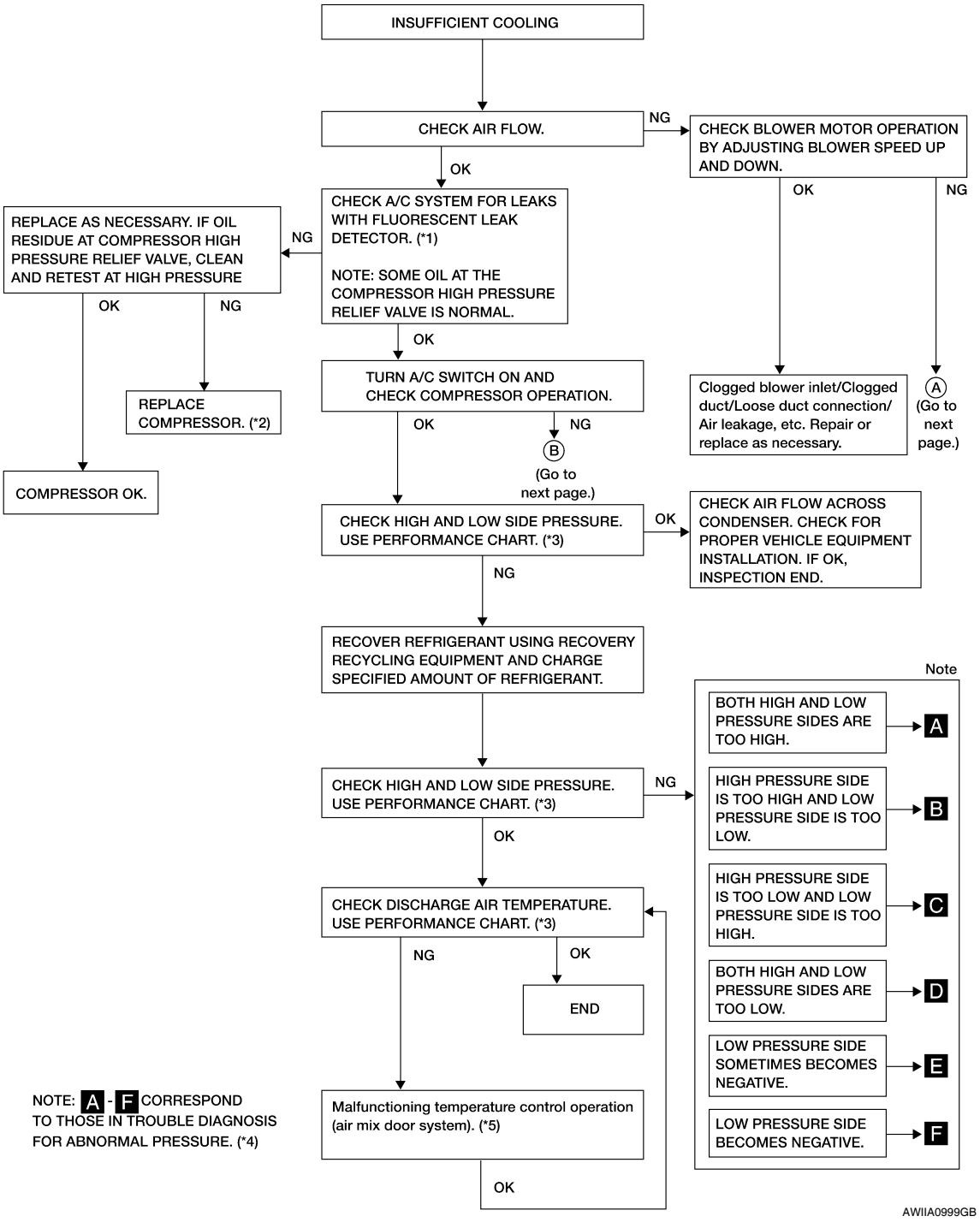
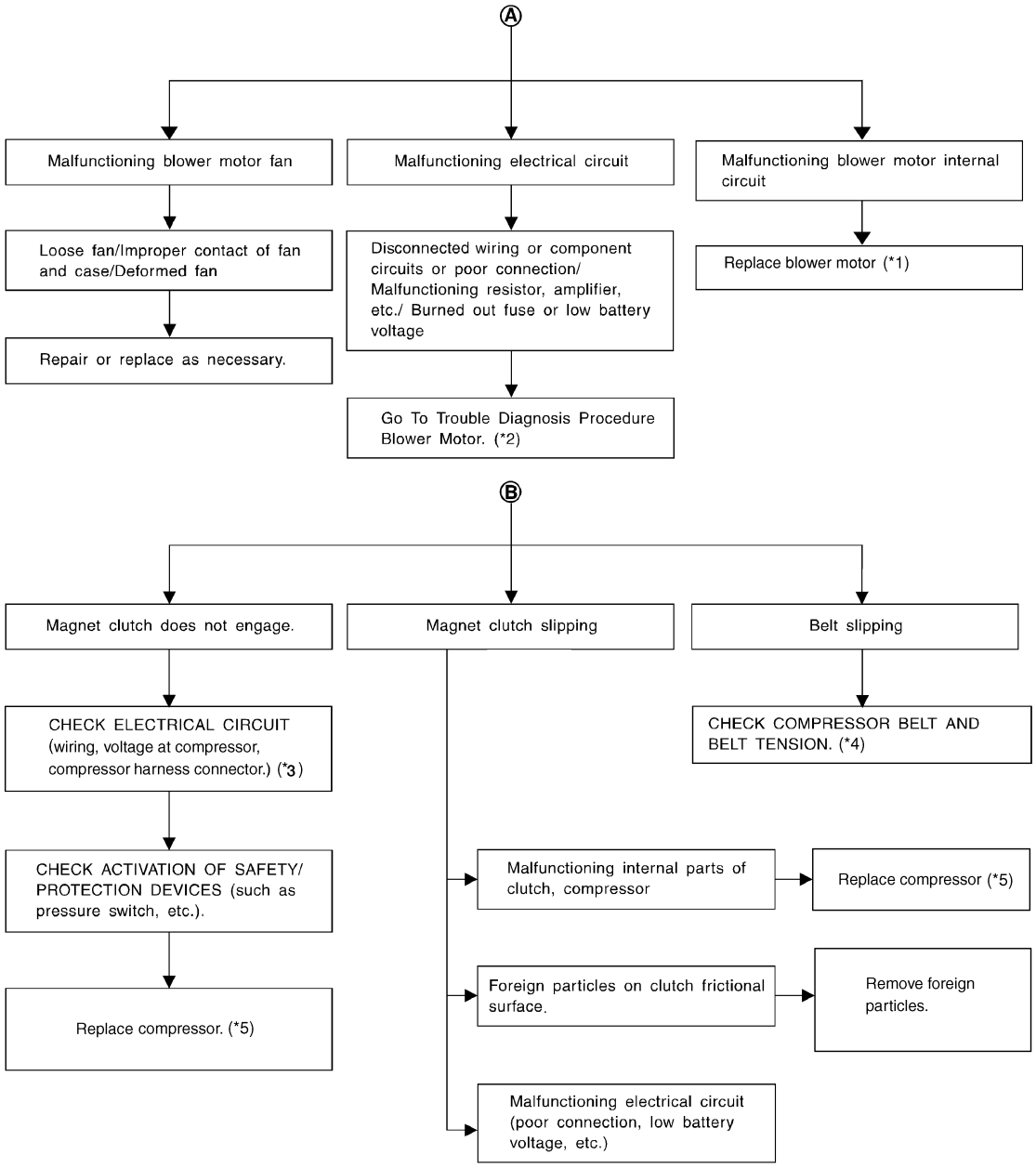


*1 HA-27, "Checking System for Leaks Using the Fluorescent Leak Detector"
*2 HA-35, "Removal and Installation for Compressor - QR25DE Models" or HA-36, "Removal and Installation for Compressor - VQ35DE Models"
*3 HAC-122, "Diagnosis Procedure"
*4 HAC-160, "Trouble Diagnosis For Abnormal Pressure"
*5 HAC-122, "Diagnosis Procedure"



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*1 VTL-15, "Removal and Installation"
*2 HAC-127, "Diagnosis Procedure"
*3 HAC-131, "Diagnosis Procedure"
*4 EM-16, "Checking Drive Belts" (QR25DE) or EM-121, "Checking Drive Belts" (VQ35DE)
*5 HA-35, "Removal and Installation for Compressor - QR25DE Models" or HA-36, "Removal and Installation for Compressor - VQ35DE Models"

Performance Chart

INFOID:0000000004498291

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
(blower) 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

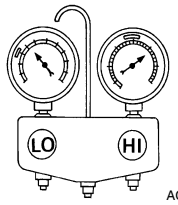
Ambient air		High-pressure (Discharge side) kPa (kg/cm2, psi)	Low-pressure (Suction side) kPa (kg/cm2, psi)
Relative humidity %	Air temperature °C (°F)		
50 - 70	30 (86)	1,220 - 1,500 (12.44 - 15.30, 176.9 - 217.5)	240 - 295 (2.45 - 3.01, 34.8 - 42.8)
	35 (95)	1,360 - 1,690 (13.87 - 17.24, 197.2 - 245.1)	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)

Trouble Diagnosis For Abnormal Pressure

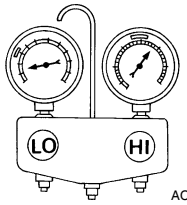
INFOID:0000000004498292

Whenever system's high and/or low side pressure is abnormal, diagnose using a manifold gauge. The marker above the gauge scale in the following tables indicates the standard (normal) pressure range. Since the standard (normal) pressure differs from vehicle to vehicle, refer to Ambient Air Temperature-to-operating Pressure Table above.

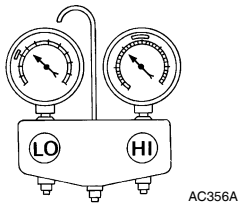
Both High- and Low-pressure Sides are Too High

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
A Both high and low-pressure sides are too high.  AC359A	Pressure is reduced soon after water is splashed on condenser.	Excessive refrigerant charge in refrigeration cycle	Reduce refrigerant until specified pressure is obtained.
	Air suction by cooling fan is insufficient.	Insufficient condenser cooling performance ↓ 1. Condenser fins are clogged. 2. Improper fan rotation of cooling fan	• Clean condenser. • Check and repair cooling fan as necessary.
	• Low-pressure pipe is not cold. • When compressor is stopped high-pressure value quickly drops by approximately 196 kPa (2 kg/cm^2, 28 psi). It then decreases gradually thereafter.	Poor heat exchange in condenser (After compressor operation stops, high pressure decreases too slowly.) ↓ Air in refrigeration cycle	Evacuate and recharge system.
	Engine tends to overheat.	Engine cooling systems malfunction.	Check and repair each engine cooling system.
	• An area of the low-pressure pipe is colder than areas near the evaporator outlet. • Plates are sometimes covered with frost.	• Excessive liquid refrigerant on low-pressure side • Excessive refrigerant discharge flow • Expansion valve is open a little compared with the specification. ↓ 1. Improper thermal valve installation 2. Improper expansion valve adjustment	Replace expansion valve.

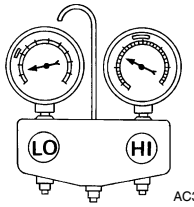
High-pressure Side is Too High and Low-pressure Side is Too Low

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
B High-pressure side is too high and low-pressure side is too low.  AC360A	Upper side of condenser and high-pressure side are hot, however, liquid tank is not so hot.	High-pressure tube or parts located between compressor and condenser are clogged or crushed.	• Check and repair or replace malfunctioning parts. • Check lubricant for contamination.

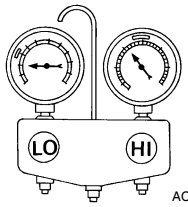
High-pressure Side is Too Low and Low-pressure Side is Too High

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
C High-pressure side is too low and low-pressure side is too high.  AC356A	High and low-pressure sides become equal soon after compressor operation stops.	Compressor pressure operation is improper. ↓ Damaged inside compressor packings	Replace compressor.
	No temperature difference between high and low-pressure sides	Compressor pressure operation is improper. ↓ Damaged inside compressor packings.	Replace compressor.

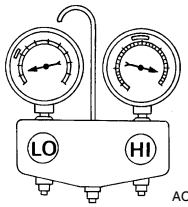
Both High- and Low-pressure Sides are Too Low

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
D Both high- and low-pressure sides are too low.  AC353A	• There is a big temperature difference between liquid tank outlet and inlet. Outlet temperature is extremely low. • Liquid tank inlet and expansion valve are frosted.	Liquid tank inside is slightly clogged.	• Replace desiccant assembly. • Check lubricant for contamination.
	• Temperature of expansion valve inlet is extremely low as compared with areas near liquid tank. • Expansion valve inlet may be frosted. • Temperature difference occurs somewhere in high-pressure side	High-pressure pipe located between receiver drier and expansion valve is clogged.	• Check and repair malfunctioning parts. • Check lubricant for contamination.
	Expansion valve and liquid tank are warm or only cool when touched.	Low refrigerant charge ↓ Leaking fittings or components	Check refrigerant for leaks. Refer to HA-25, "Checking of Refrigerant Leaks".
	There is a big temperature difference between expansion valve inlet and outlet while the valve itself is frosted.	Expansion valve closes a little compared with the specification. ↓ 1. Improper expansion valve adjustment 2. Malfunctioning thermal valve 3. Outlet and inlet may be clogged.	• Remove foreign particles by using compressed air. • Check lubricant for contamination.
	An area of the low-pressure pipe is colder than areas near the evaporator outlet.	Low-pressure pipe is clogged or crushed.	• Check and repair malfunctioning parts. • Check lubricant for contamination.
	Air flow volume is not enough or is too low.	Evaporator is frozen.	• Check thermo control amp. and intake sensor operation. • Replace compressor.

Low-pressure Side Sometimes Becomes Negative

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
E Low-pressure side sometimes becomes negative.  AC354A	• Air conditioning system does not function and does not cyclically cool the compartment air. • The system constantly functions for a certain period of time after compressor is stopped and restarted.	Refrigerant does not discharge cyclically. ↓ Moisture is frozen at expansion valve outlet and inlet. ↓ Water is mixed with refrigerant.	• Drain water from refrigerant or replace refrigerant. • Replace desiccant assembly.

Low-pressure Side Becomes Negative

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
F Low-pressure side becomes negative.  AC362A	Liquid tank or front/rear side of expansion valve's pipe is frosted or dewed.	High-pressure side is closed and refrigerant does not flow. ↓ Expansion valve or liquid tank is frosted.	Leave the system at rest until no frost is present. Start it again to check whether or not the problem is caused by water or foreign particles. • If water is the cause, initially cooling is okay. Then the water freezes causing a blockage. Drain water from refrigerant or replace refrigerant. • If due to foreign particles, remove expansion valve and remove the particles with dry and compressed air (not shop air). • If either of the above methods cannot correct the problem, replace expansion valve. • Replace desiccant assembly. • Check lubricant for contamination.

INSUFFICIENT HEATING

Component Function Check

INFOID:0000000004498293

SYMPTOM: Insufficient heating

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE INCREASE

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

Can a symptom be duplicated?

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

2. CHECK FOR ANY SYMPTOMS

Perform a complete operational check and check for any symptoms. Refer to HAC-102, "Description & Conditions".

Does another symptom exist?

YES >> Refer to HAC-155, "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-11, "System Inspection" (QR25DE) or CO-34, "System Inspection" (VQ35DE).
2. Check hoses for leaks or kinks.
3. Check radiator cap. Refer to CO-11, "System Inspection" (QR25DE) or CO-34, "System Inspection" (VQ35DE).
4. Check for air in cooling system.

>> GO TO 5

5. CHECK AIR MIX DOOR MOTOR OPERATION

Check and verify air mix door mechanism for smooth operation.

Does air mix door operate correctly?

YES >> GO TO 6
NO >> Check the air mix door motor circuit. Refer to HAC-122, "Diagnosis Procedure".

6. CHECK AIR DUCTS

Check for disconnected or leaking air ducts.

Is the inspection result normal?

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

7. CHECK HEATER HOSE TEMPERATURES

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

Is the inspection result normal?

YES >> Hot inlet hose and a warm outlet hose: GO TO 8
NO >> Both hoses warm: GO TO 9

8. CHECK ENGINE COOLANT SYSTEM

Check thermostat operation. Refer to CO-21, "Removal and Installation" (QR25DE) or CO-46, "Removal and Installation" (VQ35DE).

Is the inspection result normal?

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

9. CHECK HEATER HOSES

Check heater hoses for proper installation.

Is the inspection result normal?

YES >> System OK.
NO >> 1. Back flush heater core.
2. Drain the water from the system.
3. Refill system with new engine coolant. Refer to CO-12, "Changing Engine Coolant" (QR25DE) or CO-35, "Changing Engine Coolant" (VQ35DE).
4. To retest GO TO 10

10. CHECK HEATER HOSE TEMPERATURES

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

Is the inspection result normal?

YES >> System OK.
NO >> Replace heater core Refer to VTL-22, "Removal and Installation".

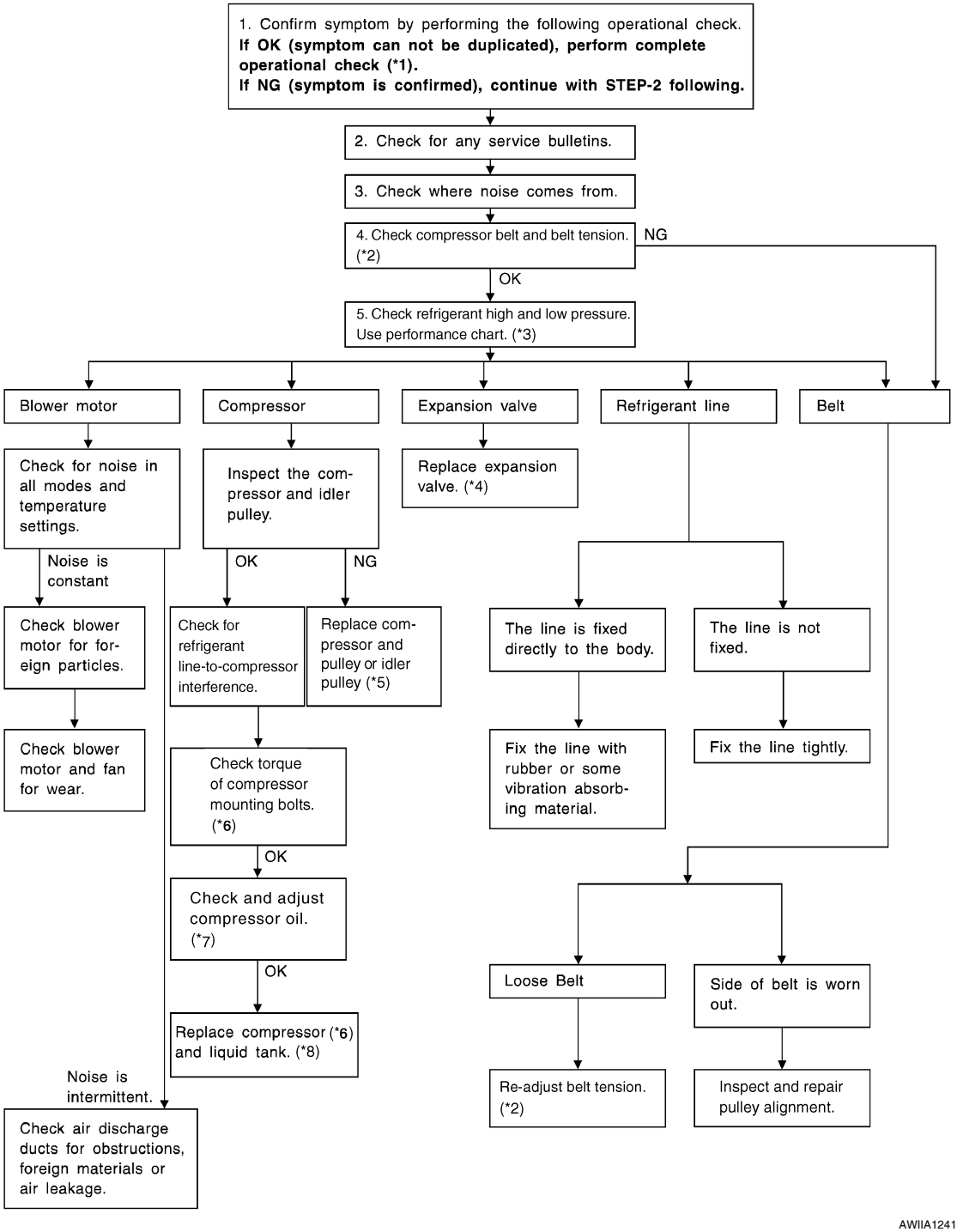
NOISE

Component Function Check

INFOID:0000000004498294

SYMPTOM: Noise

INSPECTION FLOW



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*1	HAC-102, "Operational Check"	*2	EM-16, "Checking Drive Belts" (QR25DE) or EM-121, "Checking Drive Belts" (VQ35DE)	*3	HAC-159, "Performance Chart"
*4	HA-45, "Removal and Installation for Expansion Valve"	*5	HA-35, "Removal and Installation for Compressor - QR25DE Models" or HA-36, "Removal and Installation for Compressor - VQ35DE Models"	*6	HA-35, "Removal and Installation for Compressor - QR25DE Models" or HA-36, "Removal and Installation for Compressor - VQ35DE Models"
*7	HA-21, "Maintenance of Oil Quantity in Compressor"	*8	HA-42, "Removal and Installation for Condenser"		

PRECAUTION

PRECAUTIONS

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

INFOID:0000000004498295

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.**

Precaution Necessary for Steering Wheel Rotation after Battery Disconnect

INFOID:0000000004498296

NOTE:

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

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

OPERATION PROCEDURE

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

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

INFOID:0000000004498297

WARNING:

- **CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. If the refrigerants are mixed compressor failure is likely to occur. Refer ATC 1 "CONTAMINATED REFRIDGERANT. To**

determine the purity of HFC-134a (R-134a) in the vehicle and recovery tank, use Refrigerant Recovery/Recycling Recharging equipment and Refrigerant Identifier.

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

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

CONTAMINATED REFRIGERANT

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

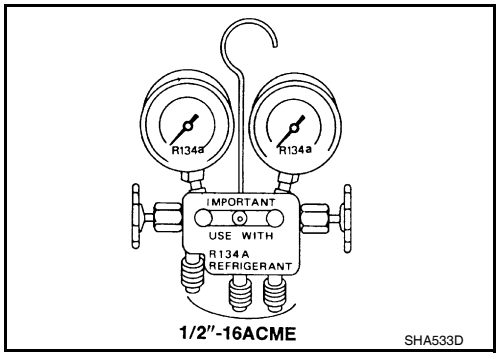
- Explain to the customer that environmental regulations prohibit the release of contaminated refrigerant into the atmosphere.
- Explain that recovery of the contaminated refrigerant could damage your service equipment and refrigerant supply.
- Suggest the customer return the vehicle to the location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

Precaution for Service Equipment

INFOID:0000000004498298

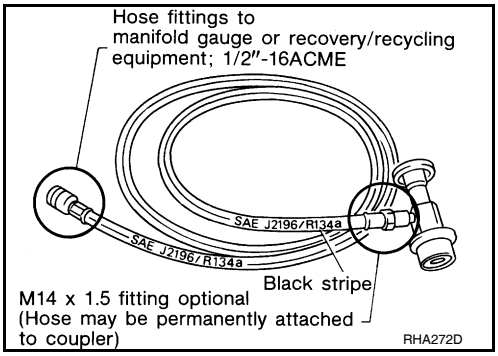
MANIFOLD GAUGE SET

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



SERVICE HOSES

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



SERVICE COUPLERS

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

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