

HEATER & AIR CONDITIONING CONTROL SYSTEM

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DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[AUTOMATIC AIR CONDITIONER]

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

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 <u>HAC-5</u>, "<u>Description and Conditions</u>".

>> GO TO 3

$3. \mathsf{GO}$ to appropriate trouble diagnosis

Go to appropriate trouble diagnosis. Refer to HAC-82, "Symptom Matrix Chart".

>> 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

< BASIC INSPECTION >

[AUTOMATIC AIR CONDITIONER]

INSPECTION AND ADJUSTMENT

Description and Conditions

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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

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STEP 1: Check Blower

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

If NG, go to HAC-38, "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.
- Confirm that discharge air comes out according to the air distribution table. Refer to <u>HAC-14</u>, "System <u>Description"</u>.

NOTE:

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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

- 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-34, "Diagnosis Procedure".

If OK, continue with next check.

STEP 4: Check Temperature Decrease

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

If NG, go to HAC-83, "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).
- Check for hot air at discharge air outlets.

If NG, go to HAC-91, "Component Function Check".

If OK, continue with next check.

STEP 6: Check AUTO Mode

1. Press the AUTO switch.

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INSPECTION AND ADJUSTMENT

< BASIC INSPECTION >

[AUTOMATIC AIR CONDITIONER]

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-58, "Diagnosis Procedure".

If all operational checks are OK (symptom can not be duplicated), refer to <u>GI-37, "Work Flow"</u> and perform tests as outlined to simulate driving conditions environment. If symptom appears, refer to <u>HAC-82, "Symptom Matrix Chart"</u>.

Auxiliary Mechanism Trimmers

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TEMPERATURE SETTING TRIMMER

The trimmer compensates for differences in range of $\pm 3^{\circ}$ C ($\pm 6^{\circ}$ F) between temperature setting (displayed digitally) and temperature felt by customer.

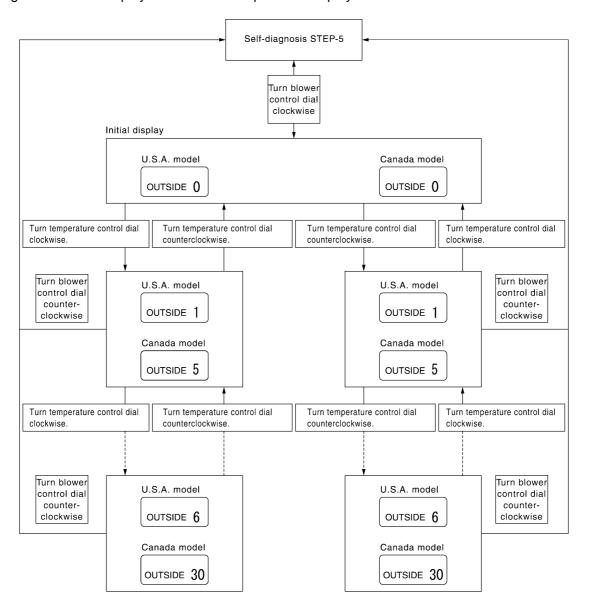
Operating procedures for this trimmer are as follows:

- 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.
- 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.



AWITA0610GB

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:

- Begin self-diagnosis STEP-5 mode. Refer to <u>HAC-22</u>. "<u>Diagnosis Description</u>".
- Turn blower control dial clockwise to set system in auxiliary mode.
- Press the OFF switch for each mode as desired.

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INSPECTION AND ADJUSTMENT

[AUTOMATIC AIR CONDITIONER]

		MODE Stop Position		
	_	MODE Stop Fosition	T	
		AUTO D/F1	Manual D/F	1
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	LED status of DEF	Se	tting status
() position	() position	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.

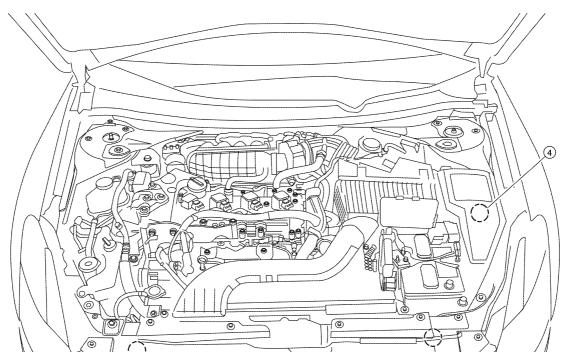
FUNCTION DIAGNOSIS

FUNCTION INFORMATION

Component Part Location

ENGINE COMPARTMENT

QR25DE Models



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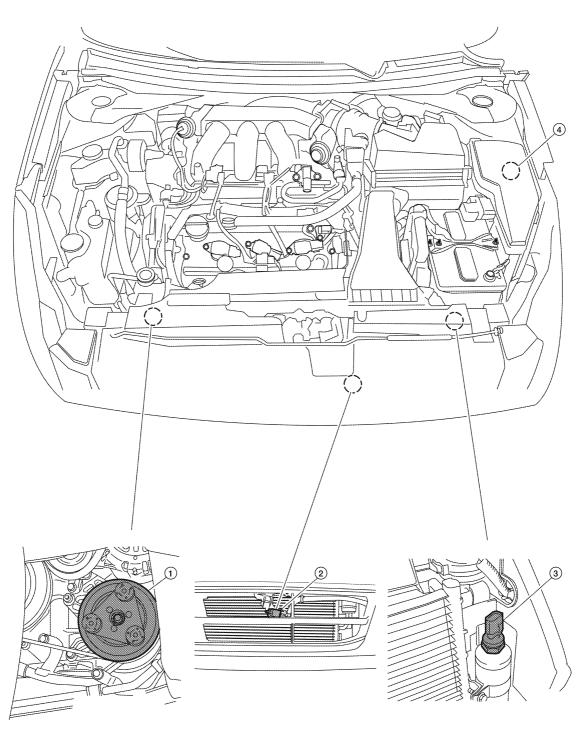
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[AUTOMATIC AIR CONDITIONER]

- 1. A/C compressor F3
- 2. Ambient sensor E211 (sedan location shown, Coupe location similar)
- 3. Refrigerant pressure sensor E219

4. A/C relay (internal to IPDM E/R)

VQ35DE Models



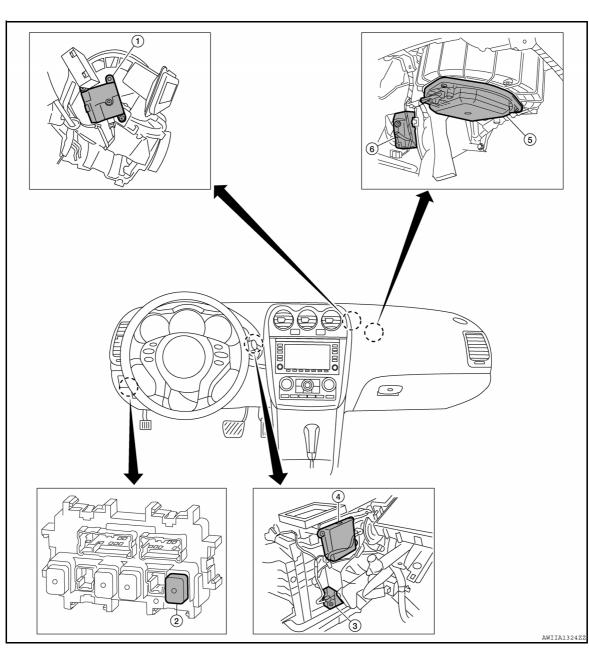
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[AUTOMATIC AIR CONDITIONER]

- 1. A/C compressor F3
- 2. Ambient sensor E211 (sedan location shown, couple location similar)
- 3. Refrigerant pressure sensor E219

4. A/C relay (internal to IPDM E/R)

PASSENGER COMPARTMENT



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

Component's Role

INFOID:0000000005432606

Component	Reference
Air mix door motor	HAC-34, "Diagnosis Procedure"
Ambient sensor	HAC-47, "Diagnosis Procedure"
Blower motor	HAC-38, "Diagnosis Procedure"
A/C Compressor	HAC-43, "Diagnosis Procedure"

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FUNCTION INFORMATION

< FUNCTION DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

Component	Reference
intake door motor	HAC-36, "Diagnosis Procedure"
Intake sensor	HAC-56, "Diagnosis Procedure"
In-vehicle sensor	HAC-50, "Diagnosis Procedure"
Mode door motor	HAC-32, "Diagnosis Procedure"
Refrigerant pressure sensor	EC-985, "Diagnosis Procedure" (QR25DE) or EC-1524, "Diagnosis Procedure" (VQ35DE)
Sunload sensor	HAC-53, "Diagnosis Procedure"

REFRIGERATION SYSTEM

Refrigerant Cycle

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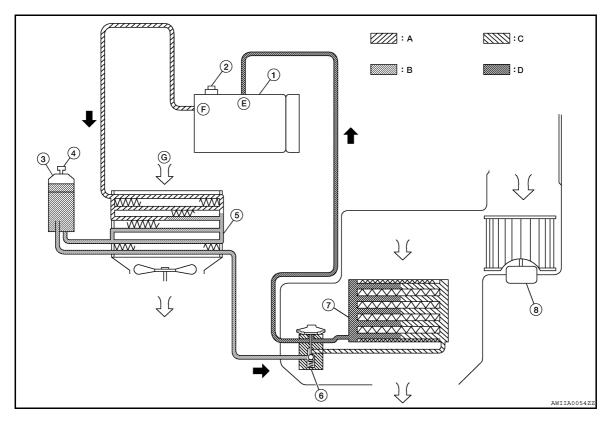
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Refrigerant flow



- 1. Electric compressor
- 4. Refrigerant pressure sensor
- 7. Evaporator
- B. High-pressure liquid
- E. Suction port

- 2. Pressure relief valve
- 5. Condenser
- 8. Blower motor
- C. Low-pressure liquid
- F. Discharge port

- 3. Liquid tank
- 6. Expansion valve
- A. High-pressure gas
- D. Low-pressure gas
- G Outside air

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

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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/cm², 398 psi), or below approximately 120 kPa (1.22 kg/cm², 17.4 psi).

Pressure Relief Valve

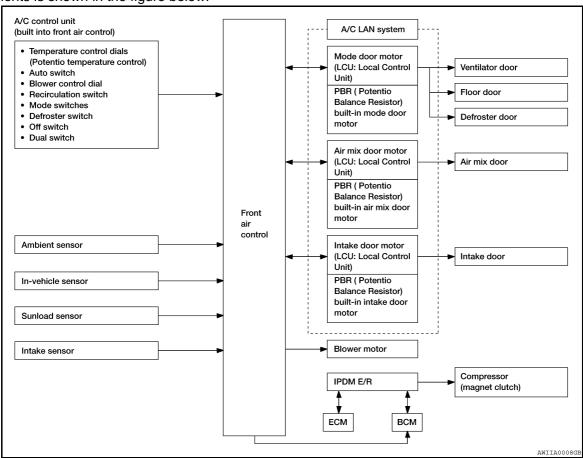
The refrigerant system is also protected by a pressure relief valve, located in the rear head of the compressor. When the pressure of refrigerant in the system increases to an abnormal level [more than 3,727 kPa (38 kg/cm², 540 psi)], the release port on the pressure relief valve automatically opens and releases refrigerant into the atmosphere.

AUTOMATIC AIR CONDITIONER SYSTEM

System Diagram

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:



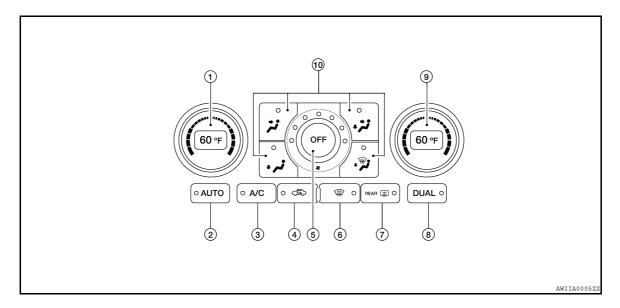
System Description

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CONTROL OPERATION

Display Screen

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



- Temperature control dial (LH)
- 4. Air recirculation switch
- 7. Rear window defogger switch
- 10. Mode switches

- 2: AUTO switch
- 5: OFF switch/blower control dial
- 8: DUAL switch

- 3: A/C ON/OFF switch
- 6: Defroster switch
- Temperature control dial (RH)

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.

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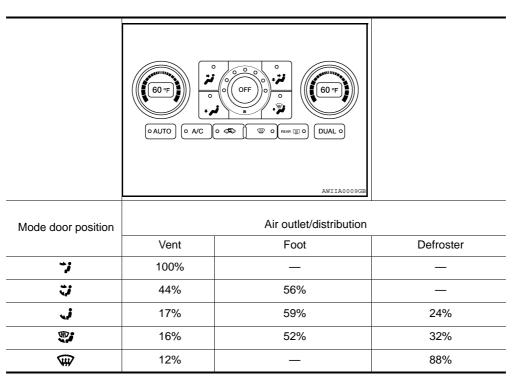
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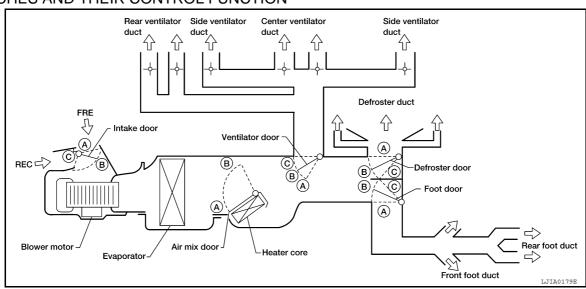
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• When REC LED is turned ON, shifting mode position to D/F or DEF, or when compressor is turned from ON to OFF, the REC () switch is automatically turned OFF.

DISCHARGE AIR FLOW



SWITCHES AND THEIR CONTROL FUNCTION



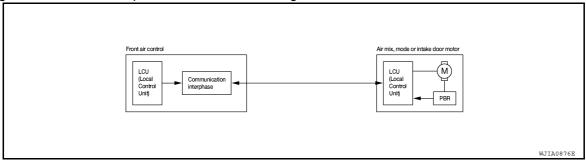
[AUTOMATIC AIR CONDITIONER]

Position or			MODE	DIAL		AUTO			Temperature DIAL		
switch	VENT	B/L	FOOT	D/F	DEF	sw	ON	OFF		ARTHURA AND AND AND AND AND AND AND AND AND AN	<i>a</i>)
	٠,	⋾	ţ	9	(P)	AUTO	ک	ව		60 °F))
Door	-	1					*	0	"18"	_	"32"
Ventilator door	А	В	С	С	С			_		_	
Foot door	Α	В	С	С	А		-			_	
Defroster door	А	Α	В	С	С	AUTO	-			_	
Air mix door		-			_		-		А	AUTO	В
Intake door		-	_		С		Α	AUTO*1			

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.



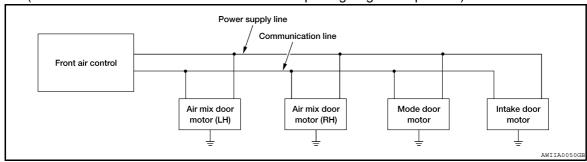
SYSTEM CONSTRUCTION

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)



Operation

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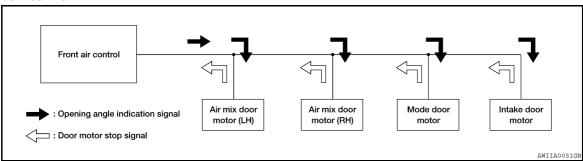
AUTOMATIC AIR CONDITIONER SYSTEM

< FUNCTION DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

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:

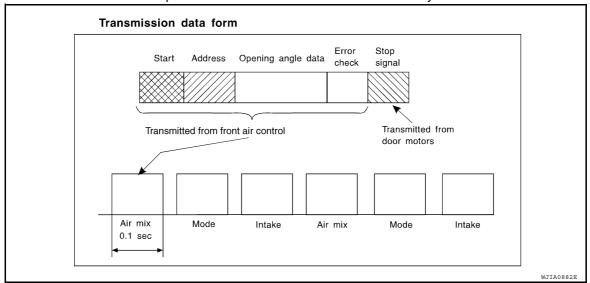
Data that shows the indicated door opening angle of each door motor.

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.

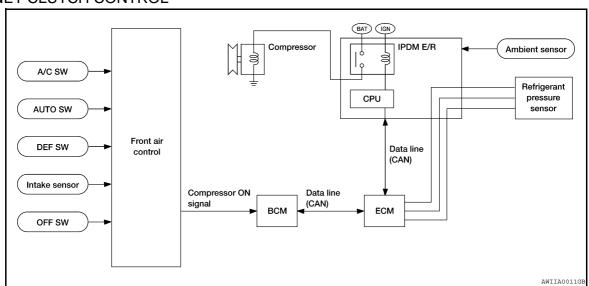
INTAKE DOOR CONTROL

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.

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AUTOMATIC AIR CONDITIONER SYSTEM

< FUNCTION DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

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

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ENGINE COMPARTMENT

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

PASSENGER COMPARTMENT

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

Component Description

INFOID:0000000005432612

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

DIAGNOSIS SYSTEM (ECM)

< FUNCTION DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

DIAGNOSIS SYSTEM (ECM)

CONSULT-III Function

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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 "operation or		Contents
IGNITION SW	"ON/OFF"	Displays "ON/OFF" status as judged from ignition switch signal.
HEATER FAN SW	"ON/OFF"	Displays "ON/OFF" status as judged from blower fan motor switch signal.
AIR COND SIG	"ON/OFF"	Displays "ON/OFF" status as judged from air conditioner switch signal.
AC PRESS SEN	"V"	Displays "Refrigerant pressure sensor for voltage" status as inputted from refrigerant pressure sensor.

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SELF-DIAGNOSIS FUNCTION

[AUTOMATIC AIR CONDITIONER]

SELF-DIAGNOSIS FUNCTION

Diagnosis Description

INFOID:0000000005432614

SELF-DIAGNOSIS SYSTEM

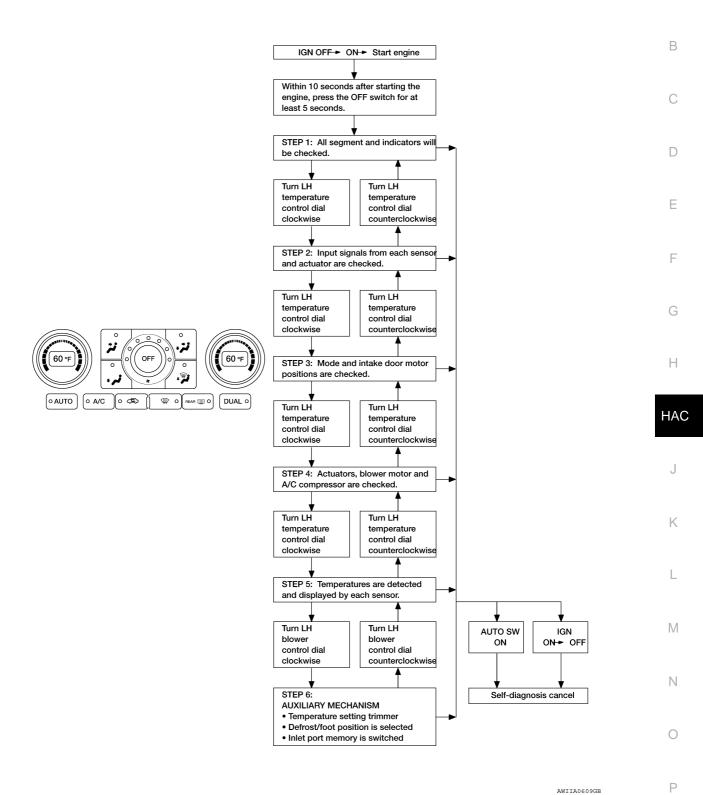
The self-diagnosis system is built into the front air control to quickly locate the cause of malfunctions.

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.

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



CONFIRMATION METHOD

1.SET IN SELF-DIAGNOSIS MODE

- Press ignition switch ON.
- 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:

SELF-DIAGNOSIS FUNCTION

< FUNCTION DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

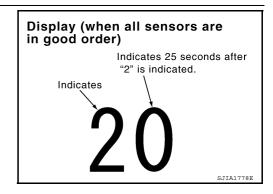
- If battery voltage drops below 12 V during diagnosis STEP-3, door motor speed becomes slower and as a result, the system may generate an error even when operation is normal. To avoid this, start engine before performing this diagnosis.
- Former STEP-1 (LEDs and display screen are checked) does not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

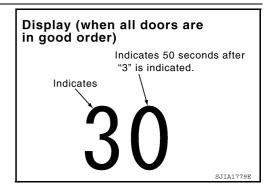
NO >> Malfunctioning front air control. Refer to <u>VTL-8</u>, "Removal and Installation".

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?

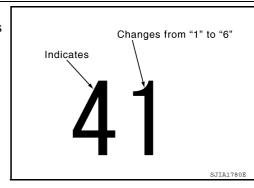
YES >> GO TO 6 NO >> GO TO 13



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

- 1. Turn temperature control dial (LH side) clockwise.

>> GO TO 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%	_	_
Ÿ	44%	56%	_
ų,	17%	59%	24%
977	16%	52%	32%
\P	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-34, "Diagnosis Procedure".
- Intake door does not change. Go to Intake Door Motor Circuit. Refer to HAC-36, "Diagnosis Procedure".
- Blower motor operation is malfunctioning. Go to Blower Motor Circuit. Refer to HAC-38, "Diagnosis Procedure".
- Magnet clutch does not engage. Go to Magnet Clutch Circuit. Refer to HAC-43, "Diagnosis Procedure".

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

- Turn temperature control dial (LH) clockwise.
- 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-47, "Diagnosis Procedure".

Temperature detected by ambient sensor. U.S.A. model Canada model Indicates negative temperature reading. P.TTA0151F HAC

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10. CHECK IN-VEHICLE SENSOR

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

NOTE:

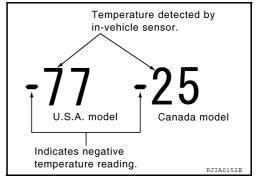
If the temperature indicated on the display greatly differs from the actual temperature, check sensor circuit first, and then check sensor.

Is the inspection result normal?

YES >> GO TO 11

NO

>> Go to In-vehicle Sensor Circuit. Refer to HAC-50, "Diagnosis Procedure".



11. CHECK INTAKE SENSOR

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

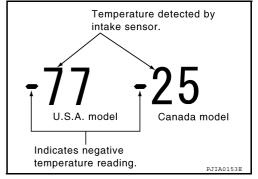
NOTE:

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 NO >> GO TO 12

>> Go to Intake Sensor Circuit. Refer to <u>HAC-56</u>, "<u>Diagnosis Procedure</u>".



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.)

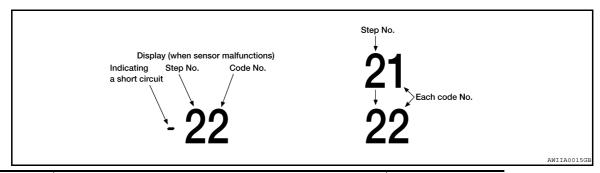
(If two door motors malfunction, corresponding code Nos. indicates 0.5 second each.)

*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-47, "Diagnosis Procedure"
22 / –22	In-vehicle sensor	HAC-50, "Diagnosis Procedure"
24 / –24	Intake sensor	HAC-36, "Diagnosis Procedure"
25 / –25	Sunload sensor *1	HAC-36, "Diagnosis Procedure"
26 / –26	Air mix door motor PBR (LH)	HAC-34, "Diagnosis
27 / –27	Air mix door motor PBR (RH)	Procedure"

>> Inspection End

13. CHECK MALFUNCTIONING DOOR MOTOR POSITION SWITCH

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

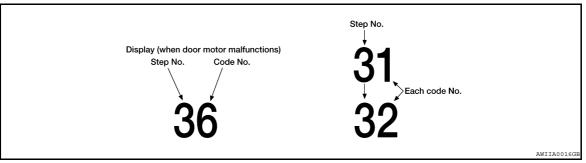
NOTE:

Code 30 will be displayed if all doors are OK.

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

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

 $^{37 \}rightarrow 38 \rightarrow 39 \rightarrow Return to 37$



>> Inspection End

Auxiliary Mechanism Trimmers

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

INFOID:0000000005432615

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

 $^{31 \}rightarrow 32 \rightarrow 33 \rightarrow 34 \rightarrow 35 \rightarrow 36$ Return to 31

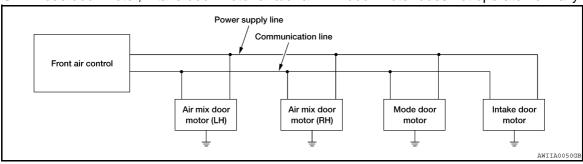
^{*2:} If intake door motor harness connector is disconnected, the following display pattern will appear.

COMPONENT DIAGNOSIS

LAN SYSTEM CIRCUIT

Description INFOID:000000005432616

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



Diagnosis Procedure

INFOID:0000000005432617

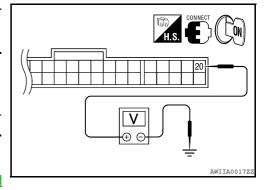
Regarding Wiring Diagram information, refer to <u>HAC-62</u>, "COUPE: Wiring <u>Diagram - Air Conditioner Control</u> (Auto) - Coupe" or <u>HAC-72</u>, "SEDAN: Wiring <u>Diagram - Air Conditioner Control</u> (Auto) - Sedan".

DIAGNOSIS PROCEDURE FOR LAN CIRCUIT

1. CHECK POWER SUPPLY FOR DOOR MOTORS

- 1. Press ignition switch ON.
- Check voltage between front air control connector M152 terminal 20 and ground.

Termi			
(+) (-)		Voltage (V) (Approx.)	
Connector - Terminal		(
M152-20	Body ground	12V	



Is the inspection result normal?

YES >> GO TO 2

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

2. CHECK SIGNAL FOR DOOR MOTORS

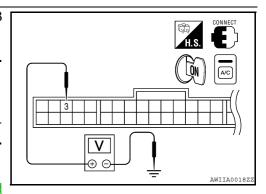
Check voltage between front air control connector M152 terminal 3 and ground.

Termin	V 14 0 0		
(+)	(-)	Voltage (V) (Approx.)	
Connector - Terminal	(-)		
M152-3	Ground	5.5V	

Is the inspection result normal?

YES >> GO TO 3

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

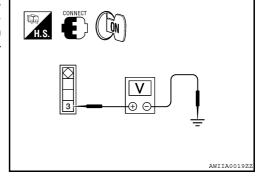


< COMPONENT DIAGNOSIS >

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.

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



Is the inspection result normal?

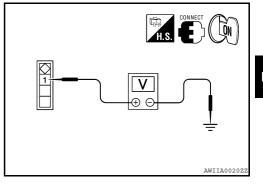
YES >> GO TO 4

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 M126 terminal 1 and ground.

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



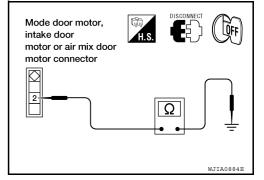
Is the inspection result normal?

YES >> GO TO 5

NO >> Replace harness or connector.

5. CHECK MOTOR GROUND CIRCUIT

- Press ignition switch OFF.
- 2. Disconnect door motor connectors.
- 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.



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	Terminals		
Door motors	(+)	(-)	Continuity
	Connector - Terminal	(-)	
Mode	M127-2		
Air mix (LH)	M128-2	Body ground	Yes
Air mix (RH)	M129-2	Body ground	162
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.
- 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

$8.\mathsf{CHECK}$ AIR MIX DOOR MOTOR AND INTAKE DOOR MOTOR OPERATION

- 1. Disconnect mode door motor connector.
- 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 <u>VTL-18. "Removal and Installation"</u>.

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

- 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?

NO

YES >> (Intake door motor and mode door motor operate normally.)

Replace inoperative air mix door motor. Refer to <u>VTL-19, "Removal and Installation"</u>.

>> (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:0000000005432618

SYSTEM DESCRIPTION

Component Parts

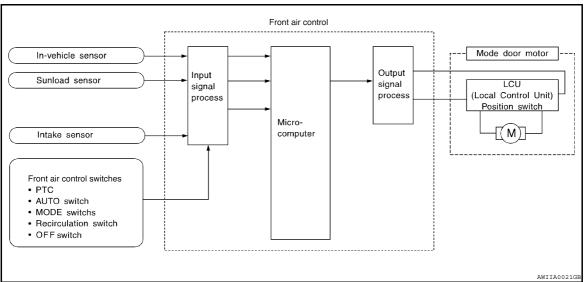
Mode door control system components are:

- Front air control
- Mode door motor (LCU)
- · In-vehicle sensor
- · Ambient sensor
- Sunload sensor
- · Intake sensor

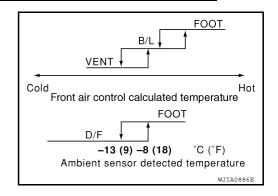
System Operation

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 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.



Mode Door Control Specification



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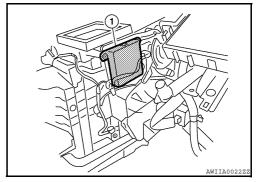
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COMPONENT DESCRIPTION

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:000000005432619

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 w (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 <a href="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.

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure for LAN system. Refer to HAC-28, "Diagnosis Procedure".

AIR MIX DOOR MOTOR

Description INFOID:0000000005432620

SYSTEM DESCRIPTION

Component Parts

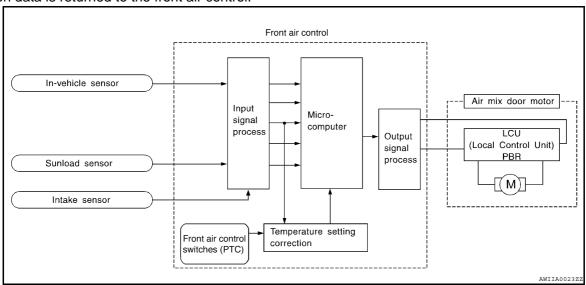
Air mix door control system components are:

- 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.

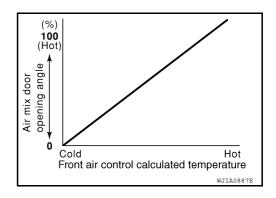
The air mix door motor, mode door motor and intake door motor read their respective signals according to the address signal. Opening angle indication signals received from the front air control and each of the motor position sensors are compared by the LCUs in each motor with the existing decision and 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



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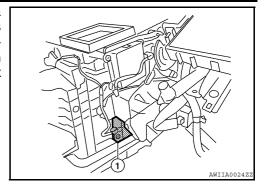
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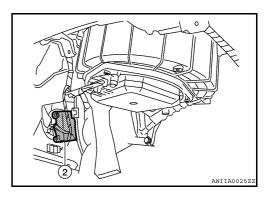
AIR MIX DOOR MOTOR

< COMPONENT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

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:0000000005432621

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

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

is the inspection result normal?

- YES >> Inspection End.
- NO >> Go to diagnosis procedure for LAN system. Refer to <u>HAC-28</u>, "<u>Diagnosis Procedure</u>".

INTAKE DOOR MOTOR

Description INFOID:000000005432622

SYSTEM DESCRIPTION

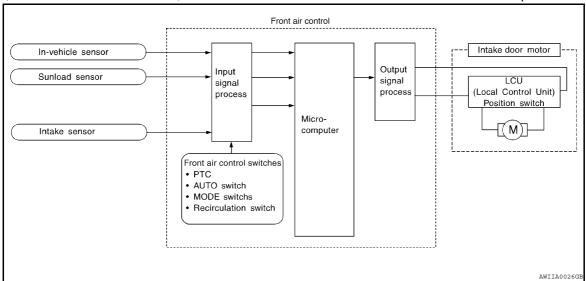
Component Parts

Intake door control system components are:

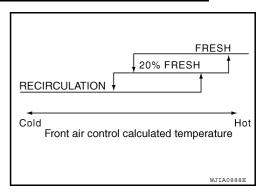
- Front air control
- Intake door motor (LCU)
- In-vehicle sensor
- · Ambient sensor
- Sunload sensor
- · Intake sensor

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 control sets the intake door at the FRESH position.



Intake Door Control Specification



COMPONENT DESCRIPTION

Intake Door Motor

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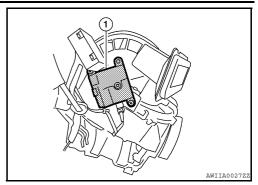
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INTAKE DOOR MOTOR

< COMPONENT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

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:0000000005432623

SYMPTOM:

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

INSPECTION FLOW

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

- 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 hear the sound change slightly).

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure for LAN system. Refer to HAC-28, "Diagnosis Procedure"

BLOWER MOTOR

Description INFOID:000000005432624

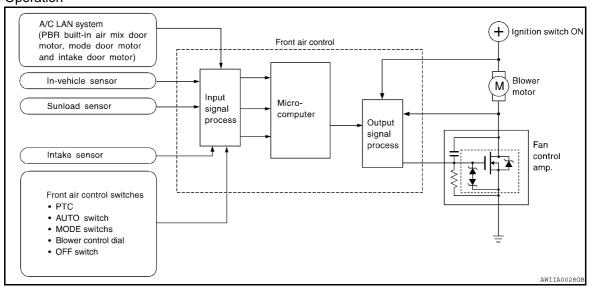
SYSTEM DESCRIPTION

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

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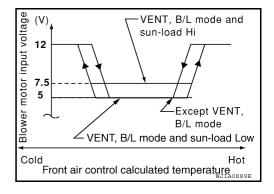
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When the in-vehicle temperature and the set temperature are very close, the blower will be operating at low speed. The low speed will vary depending on the sunload. During conditions of low or no sunload, the blower speed is at duty ratio of 25%. During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

Blower Speed Control Specification



Component Function Check

INFOID:0000000005432625

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - FRONT BLOWER

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

Is the inspection result normal?

YES >> Inspection End.

NO >> Perform diagnosis procedure for blower motor. Refer to HAC-38, "Diagnosis Procedure".

Diagnosis Procedure

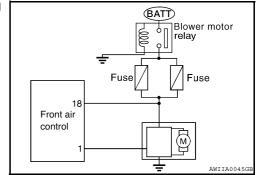
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Regarding Wiring Diagram information, refer to <u>HAC-62</u>, "COUPE: Wiring Diagram - Air Conditioner Control (Auto) - Coupe" or <u>HAC-72</u>, "SEDAN: Wiring Diagram - Air Conditioner Control (Auto) - Sedan".

SYMPTOM: Blower motor operation is malfunctioning.

DIAGNOSIS PROCEDURE FOR BLOWER MOTOR

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



1.PERFORM SELF-DIAGNOSIS STEP-4

Perform self-diagnosis STEP-4. Refer to HAC-22, "Diagnosis Description".

Code No.	41	42	43	44	45	46
Blower motor duty ratio	37%	91%	65%	65%	65%	91%

< COMPONENT DIAGNOSIS >

YES >> Inspection End.

NO >> GO TO 2

2. CHECK POWER SUPPLY FOR BLOWER MOTOR

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

4 - Ground : Battery voltage

Is the inspection result normal?

YES >> GO TO 3 NO >> GO TO 6

$3. \mathsf{CHECK}\ \mathsf{BODY}\ \mathsf{GROUND}\ \mathsf{CIRCUIT}\ \mathsf{FOR}\ \mathsf{BLOWER}\ \mathsf{MOTOR}$

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

Terminal		Continuity	
Connector - Terminal	nector - Terminal Body ground		
M31-1	Body ground	Yes	

DISCONNECT OFF

Is the inspection result normal?

YES >> GO TO 4

NO >> Repair harness or connector.

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

- 1. Disconnect front air control harness connector.
- Check continuity between blower motor harness connector M31

 (A) terminal 3 and front air control harness connector M152 (B) terminal 1.

Terminals		Continuity
Connector - Terminal	Connector - Terminal	Yes
M31-3	M152-1	163

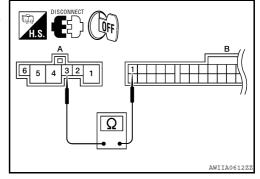
Is the inspection result normal?

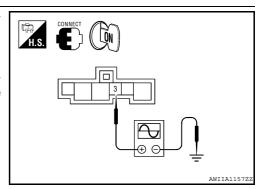
YES >> GO TO 5

NO >> Repair harness or connector.

5. CHECK FRONT AIR CONTROL OUTPUT SIGNAL

- Reconnect blower motor connector and front air control connector.
- Press ignition switch ON.
- 3. Set MODE switch to the VENT position.
- 4. Check the output waveform between blower motor harness connector M31 terminal 3 and ground using an oscilloscope, while varying the fan speed from 1 to 7.





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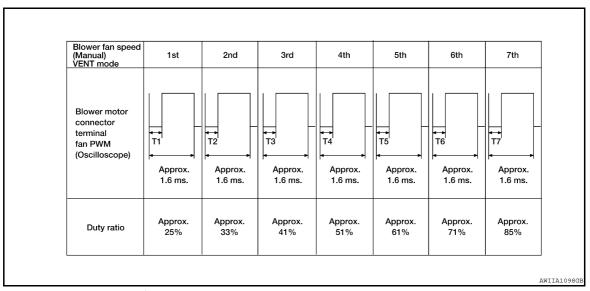
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Is the inspection result normal?

YES >> Replace the blower motor. Refer to VTL-14, "Removal and Installation".

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

6.CHECK FUSE

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

NOTE:

Refer to <u>PG-67</u>, "Fuse, Connector and Terminal Arrangement" (coupe) or <u>PG-139</u>, "Fuse, Connector and Terminal Arrangement" (sedan) for fuse location.

Is the inspection result normal?

YES >> GO TO 7 NO >> GO TO 12

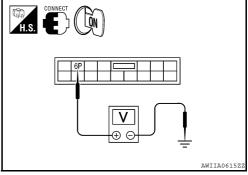
7.CHECK POWER SUPPLY FOR FRONT BLOWER MOTOR RELAY

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

6P - Ground : Battery Voltage

Is the inspection result normal?

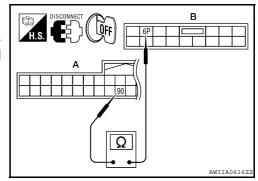
YES >> GO TO 11 NO >> GO TO 8



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

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

Termina	Continuity		
(+) (-)		Continuity	
Connector - Terminal	Connector - Terminal	Yes	
M19-90	E6 - 6P	162	



Is the inspection result normal?

[AUTOMATIC AIR CONDITIONER]

< COMPONENT DIAGNOSIS >

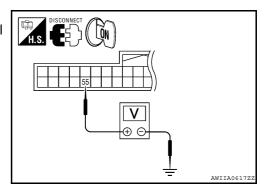
YES >> GO TO 9

NO >> Repair harness or connector.

9. CHECK BLOWER FAN SWITCH SIGNAL FOR VOLTAGE

- 1. Disconnect BCM harness connector M18.
- 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?

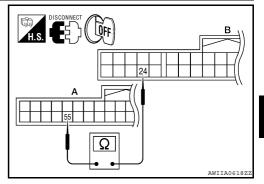
YES >> Replace BCM. Refer to <u>BCS-96</u>, "Removal and Installation".

NO >> GO TO 10

10.check blower fan switch signal circuit for an open

- Press ignition switch OFF.
- 2. Disconnect front air control harness connector.
- Check continuity between BCM harness connector M18 (A) terminal 55 and front air control harness connector M152 (B) terminal 24.

Termina	Continuity		
(+) (-)		Continuity	
Connector - Terminal	Connector - Terminal	Yes	
M18 - 55	M152 - 24	163	



Is the inspection result normal?

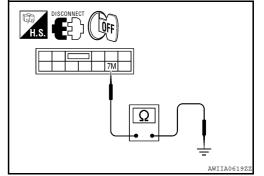
YES >> Replace front air control. Refer to VTL-8, "Removal and Installation".

NO >> Repair harness or connector.

11. CHECK FRONT BLOWER MOTOR RELAY GROUND

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

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



Is the inspection result normal?

YES >> Replace front blower motor relay.

NO >> Repair harness or connector.

12.REPLACE FUSES

- Reconnect blower motor connector.
- Replace fuses.
- 3. Activate the blower motor.

Does the fuse blow?

YES >> GO TO 13

NO >> Inspection End.

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[AUTOMATIC AIR CONDITIONER]

13. CHECK BLOWER MOTOR POWER SUPPLY CIRCUIT FOR SHORT

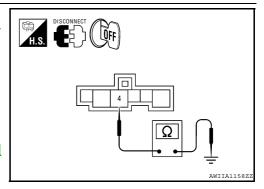
- 1. Turn ignition switch OFF.
- 2. Disconnect blower motor harness connector and front air control.
- 3. Check continuity between blower motor harness connector M31 terminal 4 and ground.

4 - Ground

: Continuity should not exist.

Is the inspection result normal?

- YES >> Replace blower motor. Refer to <u>VTL-14, "Removal and Installation"</u>.
- NO >> Repair harness or connector.



MAGNET CLUTCH

Description INFOID:000000005432627

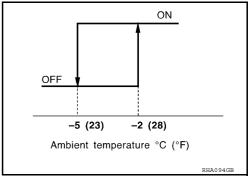
SYSTEM DESCRIPTION

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

INSPECTION FLOW

 ${f 1}$. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - MAGNET CLUTCH

- Press ignition switch ON.
- 2. Press vent switch (*).
- Press A/C switch.
- 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).

Is the inspection result normal?

YES >> Inspection End.

>> Perform diagnosis procedure to Magnet Clutch. Refer to HAC-43, "Diagnosis Procedure". NO

Diagnosis Procedure

Regarding Wiring Diagram information, refer to HAC-62, "COUPE: Wiring Diagram - Air Conditioner Control (Auto) - Coupe" or HAC-72, "SEDAN: Wiring Diagram - Air Conditioner Control (Auto) - Sedan".

DIAGNOSIS PROCEDURE FOR MAGNET CLUTCH

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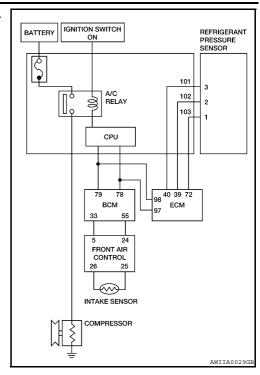
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[AUTOMATIC AIR CONDITIONER]

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



1. CHECK MAGNETIC CLUTCH WITH AUTO ACTIVE TEST

- 1. Perform auto active test. Refer to PCS-14, "Diagnosis Description".
- 2. Check that the A/C compressor clutch operates.

Does the A/C compressor clutch operate?

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

2. DATA MONITOR

- 1. Press ignition switch ON.
- 2. With CONSULT-III, select "ENGINE", then "DATA MONITOR" mode.
- 3. Select "AIR COND SIG" and monitor while pressing A/C switch ON and OFF.

Monitored Item	Condition	Status
AIR COND SIG	A/C switch OFF (LED OFF)	OFF
	A/C switch ON (LED ON)	ON

Is the inspection result normal?

YES >> Check refrigerant pressure sensor. Refer to <u>EC-486, "Diagnosis Procedure"</u> (QR25DE for California) or <u>EC-985, "Diagnosis Procedure"</u> (QR25DE for except for California) <u>EC-1524, "Diagnosis Procedure"</u> (VQ35DE).

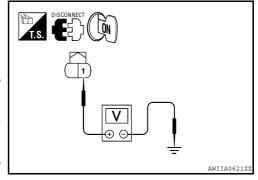
NO >> GO TO 6

3.CHECK POWER SUPPLY FOR A/C COMPRESSOR

FAUTOMATIC AIR CONDITIONER

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

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



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Is the inspection result normal?

YES Check magnet clutch coil.

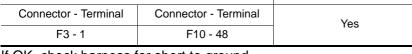
- If NG, replace magnet clutch. Refer to HA-30, "Removal and Installation for Compressor -QR25DE Models" or HA-31, "Removal and Installation for Compressor - VQ35DE Models".
- If OK, check A/C compressor ground circuit and repair as necessary.

NO >> GO TO 4

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

- Disconnect IPDM E/R connector F10.
- 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	163



If OK, check harness for short to ground.

Is the inspection result normal?

YES >> GO TO 5

NO >> Repair harness or connector.

5. CHECK FUSE IN IPDM E/R

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

Is the inspection result normal?

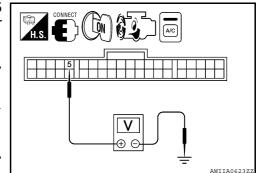
YES >> Replace IPDM E/R. Refer to PCS-47, "Removal and Installation".

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

6.CHECK A/C COMPRESSOR ON SIGNAL

Check voltage between front air control connector M152 terminal 5 and ground, with A/C compressor ON and with A/C compressor OFF.

Termin	Voltage (V)	
(+)	(-)	(Approx.)
Connector - Terminal	5	A/C compressor ON: 0V
M152 - 5	Body ground	A/C compressor OFF: 9-12V



Is the inspection result normal?

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

CHECK CONTINUITY BETWEEN BCM AND FRONT AIR CONTROL

- Disconnect BCM connector M18 and front air control connector.
- Check continuity between BCM harness connector M18 terminal 33 and front air control connector M152 2. terminal 5.

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MAGNET CLUTCH

[AUTOMATIC AIR CONDITIONER]

Terminals		Continuity
Connector - Terminal Connector - Terminal		Continuity
M18 - 33	M152 - 5	Yes

3. Check continuity between BCM harness connector M18 terminal 33 and ground.

Terminal		Continuity
Connector - Terminal	Ground	Continuity
M18 - 33	Ground	No

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-96, "Removal and Installation".

NO >> Repair harness or connector.

8. CHECK CAN COMMUNICATION CIRCUITS

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

Is the inspection result normal?

YES >> BCM malfunctioning.

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

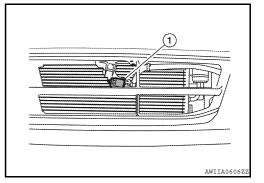
AMBIENT SENSOR

Description INFOID:0000000005432630

COMPONENT DESCRIPTION

Ambient Sensor

The ambient sensor (1) (sedan location shown, coupe location similar) 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

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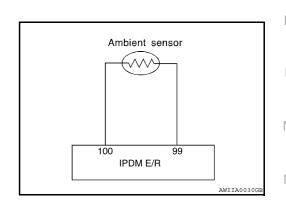
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Regarding Wiring Diagram information, refer to <u>HAC-62</u>, "COUPE: Wiring Diagram - Air Conditioner Control (Auto) - Coupe" or <u>HAC-72</u>, "SEDAN: Wiring Diagram - Air Conditioner Control (Auto) - Sedan".

DIAGNOSIS PROCEDURE FOR AMBIENT SENSOR

SYMPTOM: Ambient sensor circuit is open or shorted.



 ${f 1.}$ CHECK VOLTAGE BETWEEN AMBIENT SENSOR HARNESS CONNECTOR AND BODY GROUND

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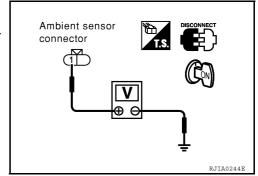
AMBIENT SENSOR

< COMPONENT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

- 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	Rody ground	5V
E211 - 1	Body ground	3 V



Is the inspection result normal?

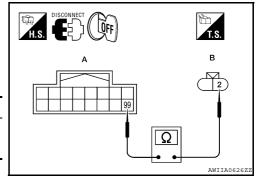
YES >> GO TO 2 NO >> GO TO 4

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.
- 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	163



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-48, "Component Inspection"

Is the inspection result normal?

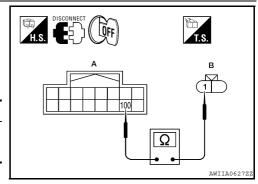
- YES >> 1. Replace front air control. Refer to <u>VTL-8</u>, "Removal and Installation".
 - 2. Confirm system operation.
- NO >> Replace ambient sensor. Refer to <u>HA-37, "Removal and Installation"</u>.

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

- 1. Press ignition switch OFF.
- 2. Disconnect IPDM E/R connector E201.
- Check continuity between IPDM E/R harness connector E201

 (A) terminal 100 and ambient sensor harness connector E211
 (B) terminal 1.

Terminals	
Connector - Terminal	Yes
E211 - 1	163
	Connector - Terminal



If OK, check harness for short.

Is the inspection result normal?

YES >> 1. Replace IPDM E/R. Refer to PCS-47, "Removal and Installation".

2. Confirm system operation.

NO >> Repair harness or connector.

Component Inspection

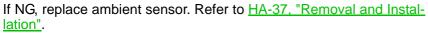
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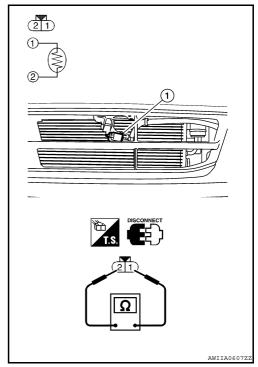
[AUTOMATIC AIR CONDITIONER]

Ambient Sensor

After disconnecting ambient sensor (1) harness connector E211, 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





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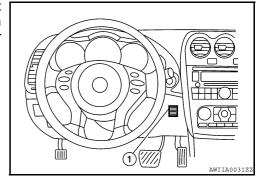
IN-VEHICLE SENSOR

Component Description

INFOID:0000000005432633

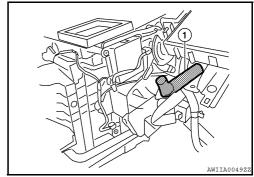
In-vehicle sensor

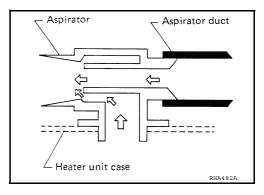
The in-vehicle sensor (1) is located on instrument lower panel LH. It converts variations in temperature of compartment air drawn from the aspirator into a resistance value. It is then input into the front air control.



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.





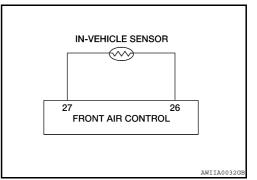
Diagnosis Procedure

INFOID:0000000005432634

Regarding Wiring Diagram information, refer to <u>HAC-62</u>, "COUPE: Wiring Diagram - Air Conditioner Control (Auto) - Coupe" or <u>HAC-72</u>, "SEDAN: Wiring Diagram - Air Conditioner Control (Auto) - Sedan".

DIAGNOSTIC PROCEDURE

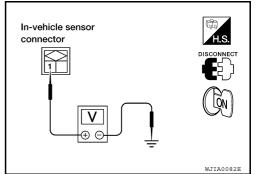
SYMPTOM: In-vehicle sensor circuit is open or shorted.



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	Body ground	J V



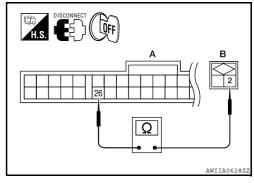
Is the inspection result normal?

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 M152.
- Check continuity between front air control harness connector M152 (A) terminal 26 and in-vehicle sensor harness connector M34 (B) terminal 2.

Terminals		Continuity
Connector - Terminal	Connector - Terminal	Yes
M152 - 26	M34 - 2	165



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-52, "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

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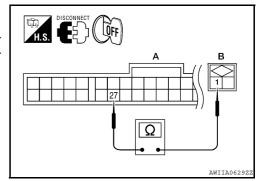
IN-VEHICLE SENSOR

< COMPONENT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

- Press ignition switch OFF.
- 2. Disconnect front air control connector M152.
- Check continuity between front air control harness connector M152 (A) terminal 27 and in-vehicle sensor harness connector M34 (B) terminal 1.

Terminals		Continuity
Connector - Terminal	Connector - Terminal	Yes
M152 - 27	M34 - 1	163



If OK, check harness for short.

Is the inspection result normal?

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

Component Inspection

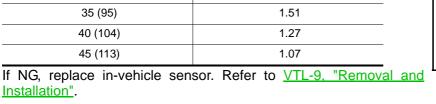
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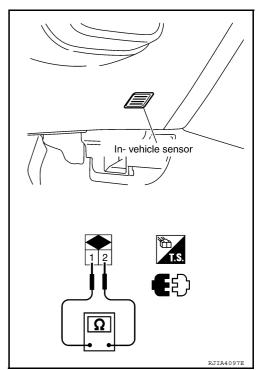
In-vehicle Sensor

Installation".

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



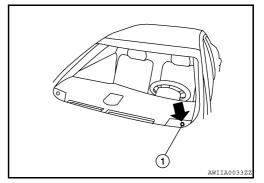


SUNLOAD SENSOR

Description INFOID:0000000005432636

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:0000000005432637

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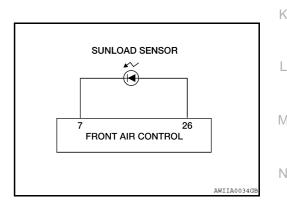
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Regarding Wiring Diagram information, refer to <u>HAC-62</u>, "COUPE: Wiring Diagram - Air Conditioner Control (Auto) - Coupe" or <u>HAC-72</u>, "SEDAN: Wiring Diagram - Air Conditioner Control (Auto) - Sedan".

DIAGNOSTIC PROCEDURE

SYMPTOM: Sunload sensor circuit is open or shorted.



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

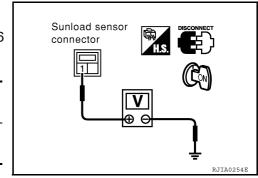
SUNLOAD SENSOR

< COMPONENT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

- 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	Body ground	5V
M56 - 1	Body ground	37



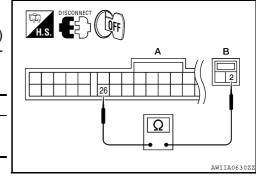
Is the inspection result normal?

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 M152.
- Check continuity between front air control connector M152 (A) terminal 26 and sunload sensor harness connector M56 (B) terminal 2.

Terminals		Continuity
Connector - Terminal	Connector - Terminal	Yes
M152 - 26	M56-2	163



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-55, "Component Inspection".

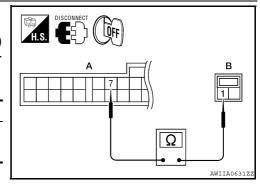
Is the inspection result normal?

- YES >> 1. Replace front air control. Refer to VTL-8, "Removal and Installation".
 - 2. Confirm system operation.
- NO >> 1. Replace sunload sensor. Refer to <u>VTL-10</u>, "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 M152.
- Check continuity between front air control connector M152 (A) terminal 7 and sunload sensor harness connector M56 (B) terminal 1.

Terminals		Continuity
Connector - Terminal	Connector - Terminal	Yes
M152 - 7 M56 - 1		res



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.

[AUTOMATIC AIR CONDITIONER]

Component Inspection

INFOID:0000000005432638

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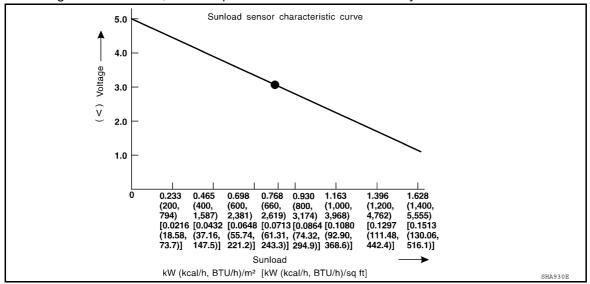
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Sunload Sensor

Measure voltage between front air control harness connector M152 terminal 7 and ground. If NG, replace front air control. Refer to <u>VTL-8</u>, "Removal and Installation".

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



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INTAKE SENSOR

Description INFOID:000000005432639

Intake Sensor

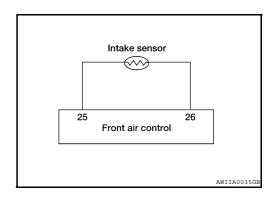
The intake sensor is located on the heater and cooling unit. It converts temperature of air after it passes through the evaporator into a resistance value which is then input to the front air control.

Diagnosis Procedure

INFOID:0000000005432640

Regarding Wiring Diagram information, refer to <u>HAC-62</u>, "COUPE: Wiring <u>Diagram - Air Conditioner Control</u> (Auto) - Coupe" or <u>HAC-72</u>, "SEDAN: Wiring <u>Diagram - Air Conditioner Control</u> (Auto) - Sedan".

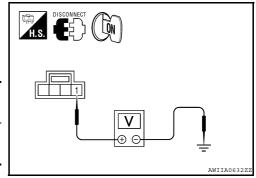
SYMPTOM: Intake sensor circuit is open or shorted.



1. Check voltage between intake sensor harness connector and body ground

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

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



Is the inspection result normal?

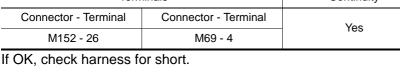
YES >> GO TO 2

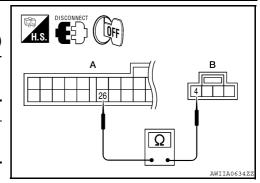
NO >> GO TO 4

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

- Press ignition switch OFF.
- Disconnect front air control connector M152.
- Check continuity between front air control connector M152 (A) terminal 26 and intake sensor harness connector M69 (B) terminal 4.

Connector - Terminal Connector - Terminal Yes M152 - 26 M69 - 4	Term	Continuity			
	Connector - Terminal	Connector - Terminal Connector - Terminal			
	M152 - 26	M69 - 4	165		





[AUTOMATIC AIR CONDITIONER]

Is the inspection result normal?

YES >> GO TO 3

NO

NO >> Repair harness or connector.

3. CHECK INTAKE SENSOR

Check intake sensor. Refer to <u>HAC-56</u>, "Diagnosis Procedure".

Is the inspection result normal?

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

2. Confirm system operation.

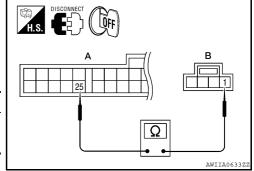
>> 1. Replace intake sensor. Refer to VTL-11, "Removal and Installation".

2. Confirm system operation.

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

- Press ignition switch OFF.
- 2. Disconnect front air control connector M152.
- Check continuity between front air control connector M152 (A) terminal 25 and intake sensor harness connector M69 (B) terminal 1.

	Continuity	
Connector - Terminal C	Connector - Terminal	Yes
M69 - 1	M152 - 25	165



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:0000000005432641

Intake Sensor

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

Resistance kΩ
12.34
9.62
7.56
6.00
4.80
3.87
3.15
2.57
2.12
1.76
1.47
1.23
1.04

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

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Revision: September 2009 HAC-57 2010 Altima

POWER SUPPLY AND GROUND CIRCUIT FOR FRONT AIR CONTROL [AUTOMATIC AIR CONDITIONER]

< COMPONENT DIAGNOSIS >

POWER SUPPLY AND GROUND CIRCUIT FOR FRONT AIR CONTROL

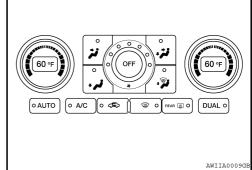
Description INFOID:0000000005432642

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.



POTENTIO TEMPERATURE CONTROL (PTC) The PTC is built into the front air control.

Component Function Check

INFOID:0000000005432643

COMPONENT INSPECTION

SYMPTOM: A/C system does not come on.

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - AUTO MODE

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

Is the inspection result normal?

YES >> Inspection End.

>> Go to diagnosis procedure for Power and Ground Circuit for Front Air Control. Refer to HAC-58, NO "Diagnosis Procedure".

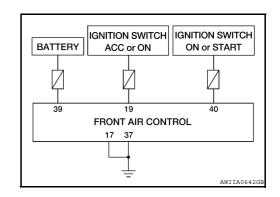
Diagnosis Procedure

INFOID:0000000005432644

Regarding Wiring Diagram information, refer to HAC-62, "COUPE: Wiring Diagram - Air Conditioner Control (Auto) - Coupe" or HAC-72, "SEDAN: Wiring Diagram - Air Conditioner Control (Auto) - Sedan".

DIAGNOSIS PROCEDURE FOR A/C SYSTEM

SYMPTOM: A/C system does not come on.



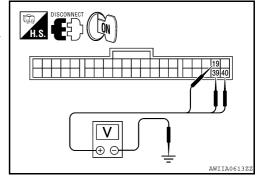
.CHECK POWER SUPPLY CIRCUIT FOR FRONT AIR CONTROL

POWER SUPPLY AND GROUND CIRCUIT FOR FRONT AIR CONTROL [AUTOMATIC AIR CONDITIONER]

< COMPONENT DIAGNOSIS >

- Disconnect front air control connector M152.
- Press ignition switch ON.
- Check voltage between front air control connector M152 terminals 19, 39 and 40, and ground.

Tern	Voltage (V)	
(+)	(-)	(Approx.)
Connector - Terminal		
M152-19	Body ground	12V
M152-39	Body ground	120
M152-40		



Is the inspection result normal?

YES >> GO TO 2

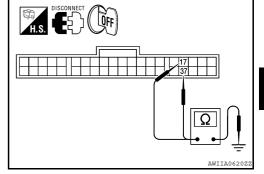
NO >> Check the following.

- 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

- Press ignition switch OFF.
- Check continuity between front air control connector M152 terminals 17 and 37 and ground.

Termi	Terminal					
(+)	(-)	Continuity				
Connector - Terminal						
M152-17	Body ground	Yes				
M152-37						



Is the inspection result normal?

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

Inspection End.

NO >> Repair or replace harness. Α

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ECU DIAGNOSIS

AIR CONDITIONER CONTROL

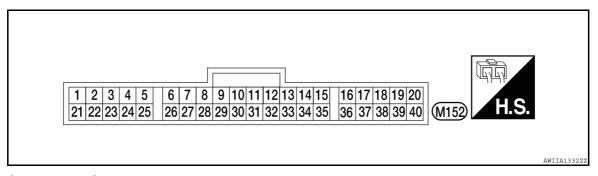
Reference Value

VALUES ON THE DIAGNOSIS TOOL

Display Item List

Monitor item "operation of		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

Termi- nal No.	Wire color	Item	Ignition switch	(Condition	Voltage (V) (Approx.)
1	L/Y	Blower motor feed back		Fan speed	5.0	
3	L/R	A/C LAN signal		1	_	5.5
					ON	0
5	SB	Compressor ON signal		Compressor	OFF	9 - 12
7	0	Sunload sensor			0 - 5	
9	G/W	Water temperature sensor		_		_
16	R/L	Light (+)	Con	Lighting switch	OFF	0
						1st position
17	В	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	Ø5	_		12
21	R/W	Power supply for A/C ON signal	(CON)		ON	4.6
20	CD	Rear defrost feed back		Defroster	ON	12
22 GR	Real dellost leed back		switch	OFF	0	

AIR CONDITIONER CONTROL

< ECU DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

Termi- nal No.	Wire color	Item	Ignition switch	(Condition	Voltage (V) (Approx.)
23	GR/W	Door defreet ON signal		Defroster	ON	0
23	GR/W	Rear defrost ON signal	switch		OFF	12
24	BR/W	Fan ON signal		Fon	ON	0
24	DR/W	Fail ON Signal	Fan –		OFF	10 - 12
25	R/G	Intake sensor			_	0 - 5
26	B/Y	Sensor ground	1 _			0
27	LG	In-vehicle sensor				0 - 5
28	O/B	Ambient sensor			_	5
31	Р	Ambient sensor VDD			_	5
36	R/Y	Light (-)	1		_	0
37	В	Ground	1		_	0
39	Y/R	Power supply for battery	1		_	12
40	G	Power supply for IGN	1		_	12

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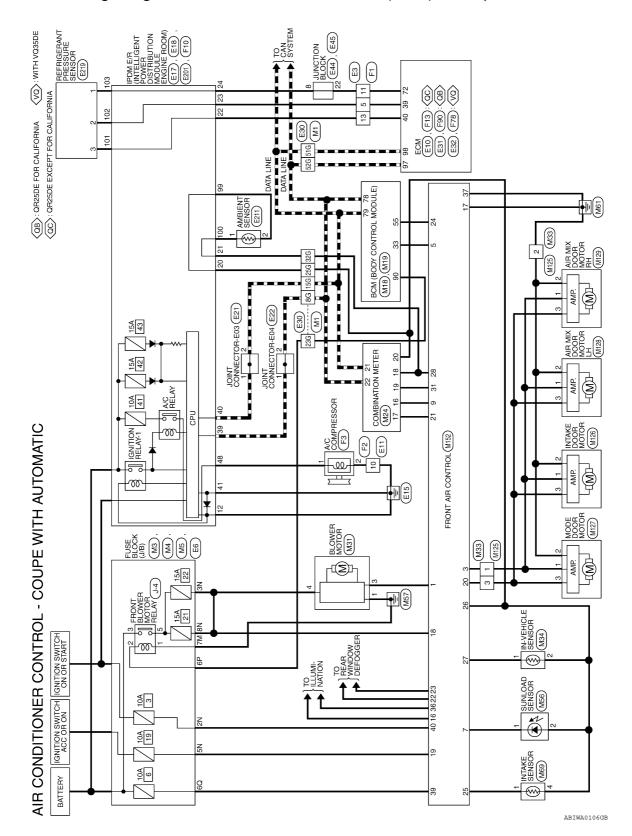
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WIRING DIAGRAM

AIR CONDITIONER CONTROL COUPE

COUPE: Wiring Diagram - Air Conditioner Control (Auto) - Coupe



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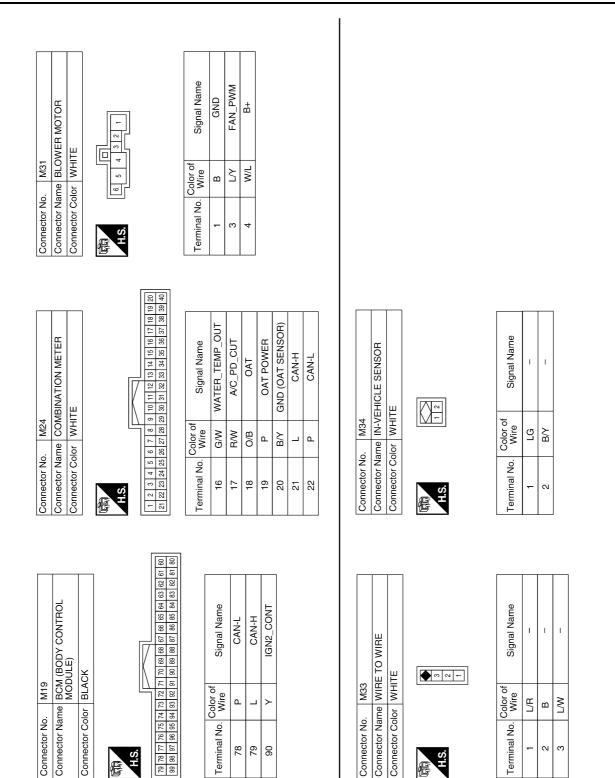
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	Connector No. M3 Connector Name FUSE BLOCK (J/B)				2N 1N 8N 5N 4N 1N				Signal Name	ı	1	1	ı			
	M3 M3	Nor			N S				Color of Wire	G	M/L	٨/٨	M/L			
	Connector No.	Connector Color WHITE			T C				Terminal No.	2N	3N	NS	N8			
OMATIC	92															
VITH AUTO	Signal Name	1	I	I	I	I	I	ı								
UPE V	Color of Wire	۵	_	>	В/Υ	O/B	٦	۵								
ORS - CO	Terminal No.	98	15G	23G	25G	32G	51G	52G								
AIR CONDITIONER CONTROL CONNECTORS - COUPE WITH AUTOMATIC	Connector No. M1 Connector Name WIRE TO WIRE	Connector Color WHITE			06 07 03 03 04 00 00 00 00 00 00 00 00 00 00 00 00	176 166 156 146 136 126 116		26G 25G 24G 23G 22G 21G 20G	346 336 326 316 306 236 236 236 136 106	50G 49G 48G 47G 46G 45G 44G 43G 42G	2	63G 62G 61G 60G 59G 54G 53G 52G 51G		726 716 706 896 886 876 866 876 886 886 876 886 886 88	836 826 816	

Connector No. Connector Color Connector Color Mane Terminal No. TM Bane Tolor Tolor	Connector Name BCM (BODY CONTROL MODULE) Connector Color GREEN	(情報) (15.3) (15.4) (15	Terminal No. Color of Wire Signal Name	33 SB AIRCON_SW	55 BR/W BLOWER_FAN_SW
	M5 FUSE BLOCK (J/B) WHITE	4M			
MHTE WHITE Signal Name MA Signal Name MA Trof Signal Name MR	Connector No. Connector Color	ω ₀	Terminal No. W		
	Connector No. M4 Connector Name FUSE BLOCK (J/B) Connector Color WHITE	40 30	Color of Signal Name	Y/R –	

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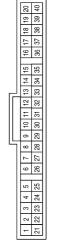
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	А
Connector No. M125 Connector Color WHITE Connector Color of Signal Name 1 L/R	В
MATE TO WHITE TO WHIT	С
No. Mame WIR No. Wire L/N No. Mire L/N No. Wire No	D
Connector No. M125 Connector Name WIRE TO WIRE Connector Color of Signal 1 L/R 2 B	Е
	F
Connector No. M69 Connector Name INTAKE SENSOR Connector Color WHITE Terminal No. Color of Signal Name Tonnector Name MODE DOOR MOTOR Connector Name MODE DOOR MOTOR Connector Name	G
Connector No. M69 Connector Name INTAKE Connector Color of MITE Terminal No. Wire Connector Name MODE D Connector Name MODE D Connector Name MODE D Connector Color of MITE Terminal No. Wire 1 L/R 2 B 3 L/W 3 L/W	
Connector No. P. Connector No. P. Connector Color V. Wij. P. Connector No. No. Connector No. No. Connector No. No. Connector No. No. Connector Color V. Color V. Color V. Connector Color V.	HAC
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Signal Name Signal Name Signal Name	L
Sign Sign	M
M56	N
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Connec Co	0

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Terminal No.	Color of Wire	Signal Name
15	_	_
16	R/L	ILL+
41	В	GND
18	M/L	IGN_2
19	V/Y	ACC
50	M/I	VACTR
21	B/W	PD_CUT
22	GR	RR_DEF_F/B
23	GR/W	RR_DEF_ON
24	BR/W	FAN ON
25	B/G	INT SENS
26	B/Y	SENS GND
27	LG	INC SENS
28	O/B	AMB SENS
29	1	_
30	_	_
31	Р	AMB VDD
32	1	_
33	1	1
34	-	-
35	1	-
36	R/Υ	ILL-
37	В	GND(POWER)
38	ı	1
39	Y/R	BATT
40	g	IGN

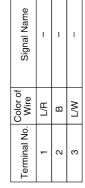
Connector No.	M152
Connector Name	Connector Name FRONT AIR CONTROL (WITH AUTO A/C)
Connector Color WHITE	WHITE



Signal Name	FAN_PWN	ı	LAN SIG	I	COMP ON	ı	SUN SENS	1	W/T SENS	ı	ı	ı	-	1
Color of Wire	5	1	L/R	_	SB	_	0	-	G/W	_	1	-	_	1
Terminal No.	-	2	3	4	5	9	2	8	6	10	7	12	13	14

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





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Connector No.	lo. E3		Connector No.	No.		Connector No.	o. E10	
Connector Name WIRE TO WIRE	lame WIR	E TO WIRE	Connector	Vame FUSE	Connector Name FUSE BLOCK (J/B)	Connector Na	ame ECM (Connector Name ECM (QR25DE EXCEPT FOR
Connector Color WHITE	Solor WHI		Connector	Connector Color WHITE	 			(CINID)
						Connector Color BLACK	SIOT BLACE	
á			é	-		Ą	Ĺ	
E	1 2 3 • 8 9 10 11	2 3 —— 4 5 6 7 9 10 11 12 13 14 15 16		7P 6P 5P 4P 16P 15P 14P 13P	7P 6P 5P 4P 7P 2P 1P 6P 15P 11P 10P 9P 8P		81 85 89 93 97 101	7101 105 109
Ŋ.			Ŋ.			H.Ö.	82 86 90 94 98 102 106 110 00 02 02 05 05 05 101 105 106 110	8 102 106 110
							84 88 92 96 100 104 108 112	0104 108 112
Terminal No. Wire	Color of Wire	Signal Name	Terminal No. Wire	Color of Wire	Signal Name			
ĸ	a.c.	1	99 9	>	1			
5 =	GR	1				Terminal No.	Color of Wire	Signal Name
13	SB	1				97	۵	CAN-L
						86	_	CAN-H

Connector No. E17										
Name		M E/R (INTELLIGENT	VER DISTRIBUTION DULE ENGINE ROOM)	ITE		11 40 39 15 44 43		CAN-L	CAN-H	GND (SIGNAL)
Name	E17		a MO	or WHI		42 4	Solor of Wire	۵	٦	В
Name	Connector No.		Connector Nar	Connector Col		H.S.	Terminal No.	39	40	41
) WIRE			4 0 0 10		Signal Name	1		
	ector No. E11	ector Name WIRE TO WIRE	ector Color WHITE				inal No. Wire	10		

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03		
Connector No. E21 Connector Name JOINT CONNECTOR-E03 Connector Color WHITE 本語 本語 本語 本語 本語 本語 本語 本語 本語 本	Signal Name	Signal Name
me JOINT (MHITE	Color of Wire L	Color of Wire Wire O/B / Y Y Y
Connector No. Connector Color Connector Color H.S.	Terminal No.	Terminal No. 8G 8G 15G 23G 25G 32G 51G 51G
Signal Name GND (POWER) AMB_SENS_GND-E/R AMB_SENS_GND-E/R PD_SENS_GND-E/R PD_SENS_GND-E/R PD_SENS_GND-E/R PD_SENS_GND-E/R		E30 WIRE TO WIRE
Color of Wire B/Y O/B W/R B/R B/R BR/W		0. E30 ame WIRE olor WHIT 16 26 106 16 26 106 126 436 4 516 526 5 816 816
Terminal No. 12 20 21 22 23 24	8 8	Connector No. E30
Connector No. E18 Connector Name POWER DISTRIBUTION MODULE ENGINE ROOM) Connector Color WHITE H.S.	10 11 12 13 14	Connector No. E22

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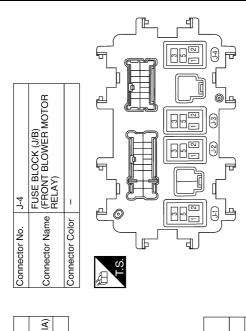
	TION BLOCK		9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Signal Name	ı			
E44	JUNC	2 2 1 1	12 11 10	olor of Vire				
Connector No. E44	Connector Name JUNCTION BLOCK	COLLINECTOR COIOR DECOVIN	明.S.H.S.	Color of Wire	∞			
ŏ	ŏ ċ	3		=				
	Connector Name ECM (WITH VQ35DE)	5	85 89 93 97 101 105 109 88 99 94 99 102 106 110 87 91 95 99 103 107 111 100 100 100 100 111			Signal Name	CAN-L	CAN-H
E32	ne ECM	D D	81 85 89 88 88 89 89 88 89 89 89 89 89 89 89	3	olor of	Wire	۵	٦
Connector No. E32	Connector Nar	CONTINECTOR COTOR BLACK	原 H.S.	<u>ال</u>		Terminal No. Wire	97	86
		_			_			
	ECM (QR25DE FOR CALIFORNIA)	X	89 93 97 101 105 109 99 94 98 102 106 110 90 65 00 100 107 111			Signal Name	CAN-L	CAN-H
E31	ne ECM (QR2	or BLA(81 85 89 82 86 90	8 8	201010	Wire	۵	_
Connector No. E31	Connector Name ECM (QR2	Connector Color BLACK	南 H.S.			Terminal No. Wire	97	86

Connector No.	E45	Connector No.	lo. E201		Connector No.	E211	
Connector Name JUNC1	JUNCTION BLOCK		<u>I</u>	IPDM E/R (INTELLIGENT	Connector Name AMBIENT SENSOR	ne AMBIE	INT SENSOR
Connector Color WHITE	WHITE	Connector N	ame MC	Connector Name POWER DISTRIBUTION MODULE ENGINE ROOM)	Connector Color	or BLACK	
r		Connector Color WHITE	olor WH	ITE	Ą		Г
	17 16 15 14 13 24 23 22 21 20 19 18		<u> </u>		H.S.		
		H.S.	98 97 96 106 105 104	98 97 96 95 94 93 92 91 106 105 104 103 102 101 100 99			
Co Perminal No.	Color of Signal Name	_			Color	Color of	Omol I Longia
			Color of			Wire	Olgilal Ivalife
22	GR –	Terminal No.	Wire	Signal Name	-	SB	AMB_SENS_SIG
		66	BR/W	AMB_SENS_GND-FEM	2	BR/W	AMB_SENS_GND
		100	SB	AMB_SENS_SIG-FEM			
		101	٥/٢	PD_SENS_GND-FEM			
		102	B/B	PD_SENS_SIG-FEM			
		103	۵	PDSENS PWR-FEM			

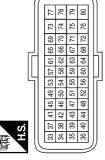
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nnector No. F2 nnector Name WIRE TO nnector Color WHITE	H.S. 10987651	Terminal No. Wire Signal Name	10 B –						Connector No E12	a di		Connector Color BROWN		H.S.		41 45 49 53 57 61 65 69 73	34 36 42 40 30 34 36 50 50 60 70 74 76 79 36 36 36 36 37 77 75 79 36 37 37 37 37 37 37 37 37 37 37 37 37 37	2/ 2/ 00 40 00 00 70 04 44 04		Terminal No. Wire Signal Name	39 L PDPRES	40 GR GNDA-PDPRES	72 V AVCC2-PDPRES
nector No. F1 nector Name WIRE TO WIR nector Color WHITE	H.S. 14 13 12 111 10 9 8	Terminal No. Color of Signal Name	5 L – (QR25DE)		11 V – (QR25DE)	11 R – (VQ35DE)	13 GR – (QR25DE)	13 SB – (VQ35DE)		Connector No. F10	IPDM E/R (INTELLIGENT		Connector Color WHITE		H.S.		53 54 55 56 57 58	47 48 49 50 51 52 59 59 60 61 62 63 64 65 66 67 68 80		Color of	II No. Wire	48 W A/C_COMP	
Connector No. E219 Connector Name REFRIGERANT PRESSURE SENSOR Connector Color BLACK	H.S.	Terminal No. Wire Signal Name	1 P AVCC2	<u>«</u>	3 W GND					Connector No. F3	_	Connector Color BLACK		H.S.			Terminal No. Wire Signal Name	1 W A/C_COMP	2 B GND		All	21770	04846

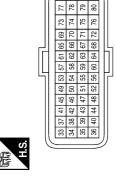
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Connector No.	F90
Connector Name ECM	ECM
	(QR25DE FOR CALIFORNI
Connector Color BROWN	BROWN



Signal Name	PDPRES	GNDA-PDPRE	AVCC2-PDPRE
Color of Wire	٦	GR	٧
Terminal No.	39	40	72



Color of Color of Wire 39 O 40 SB 72 R		Signal Name	PDPRES	GNDA-PDPRES	AVCC2-PDPRES
Terminal No. 39 40 72		Color of Wire	0	SB	В
		Terminal No.	39	40	72

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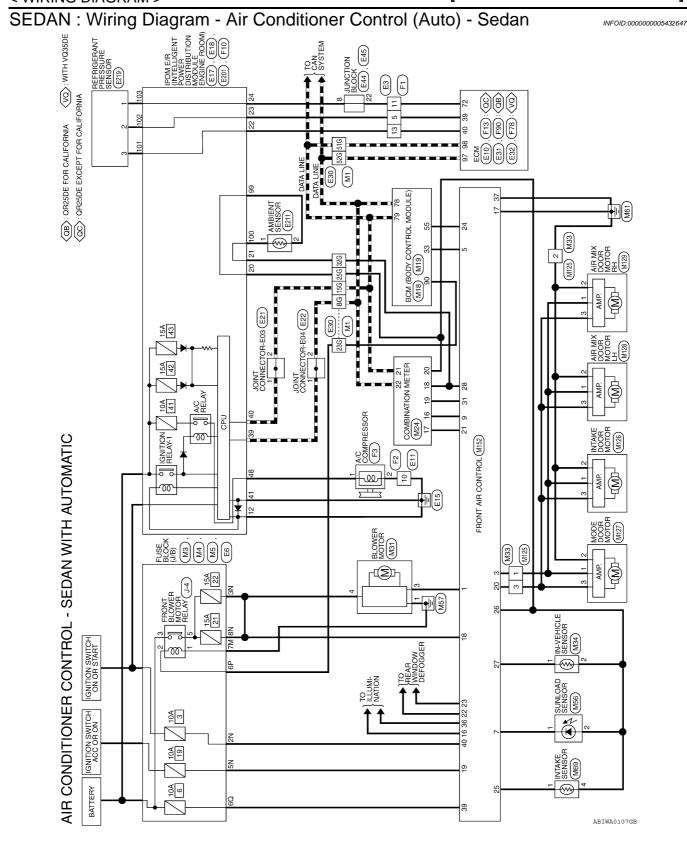
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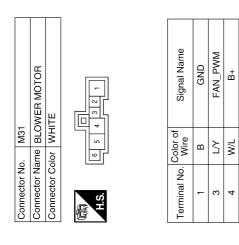
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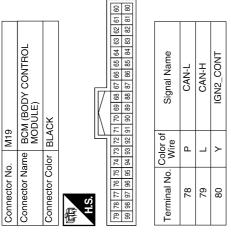
Connector No. M3 Connector Name FUSE BLOCK (J/B) Connector Color WHITE Terminal No. Wire Signal Name 2N G - 3N W/L - 5N V/Y - 8N W/L - 8N W/L -	Connector No. M18 Connector Name BCM (BODY CONTROL MODULE) Connector Color GREEN H.S. Sign 38 37 38 38 34 33 28 31 30 42 47 40 48 44 44 44 42 41 40	Terminal No. Wire Signal Name 33 SB AIRCON_SW 55 BR/W BLOWER_FAN_SW	A B C
or of Signal Name P	M5 FUSE BLOCK (J/B) WHITE AM	or of Signal Name Wire Signal Name B -	F G H
Terminal No. Col	Connector No. Connector Name Connector Color H.S.	Terminal No. Co	HA J K
266 246 36 46 36 46 36 46 36 46 36 46 36 46 36 46 36 46 36 46 36 46 36 46 36 46 36 46 36 46 36 36 36 36 36 36 36 36 36 36 36 36 36	HUSE BLOCK (J/B) HITE	Signal Name	L
Connector No. N Connector Name W Connector Name W Connector Color W Conn	Connector No. M Connector Name FI Connector Color W H.S.	Color Color O Wire O V/R	N O
	W1HE TO WIRE Wire Signal Name Signal Name	Mate	Connector Name Conn







Signal Name	WATER_TEMP_OUT	A/C_PD_CUT	OAT	OAT POWER	GND (OAT SENSOR)	CAN-H	CAN-L
Color of Wire	G/W	B/W	O/B	Ь	В/Υ	٦	Ь
Terminal No. Wire	16	17	18	19	20	21	22
		•					







	ш		Signa		
۱ ۱	lor WHITE		Color of Wire	ГG	B/Y
	Connector Color	师 H.S.	Terminal No.	1	2

l Name

	E TO WIRE	12	0 00-	Signal Name	ı	I	
M33	me WIR	lor WHITE		Color of Wire	4	В	
Connector No.	Connector Name WIRE TO WIRE	Connector Color	用.S.	Terminal No.	-	8	

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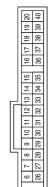
Connector No. M125 Connector Name WIRE TO WIRE Connector Color WHITE H.S.	Terminal No. Color of Wire Signal Name 1 L/R - 2 B - 3 L/W -	Connector No. M128 Connector Name AIR MIX DOOR MOTOR LH Connector Color WHITE	Terminal No. Wire Signal Name 1 L/R 2 B 3 L/W
Connector No. M69 Connector Name INTAKE SENSOR Connector Color WHITE	Terminal No. Color of Signal Name 1 R/G - 4 B/Y -	Connector No. M127 Connector Name MODE DOOR MOTOR Connector Color WHITE	Terminal No. Color of Signal Name 1 L/R – 2 B – 3 L/W –
Connector No. M56 Connector Name SUNLOAD SENSOR Connector Color BLACK	Terminal No. Color of Wire Signal Name 1 0 2 B/Y -	Connector No. M126 Connector Name INTAKE DOOR MOTOR Connector Color WHITE	Terminal No. Wire Signal Name 1 L/R

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Revision: September 2009 HAC-75 2010 Altima

	- ILL+
	ILL+
	GND
	IGN_2
	ACC
	VACTR
	PD_CUT
22 GH	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
29 –	_
30	_
31 P	AMB VDD
32 –	_
33 –	_
34	ı
35 –	-
36 R/Y	ILL-
37 B	GND(POWER)
38	ı
39 Y/R	BATT
40 G	IGN

Connector No.	M152
Connector Name	Connector Name FRONT AIR CONTROL (WITH AUTO A/C)
Connector Color WHITE	WHITE



4		_	_	_		_	_	_	_	_	_			_	_
	Signal Name	FAN_PWN	ı	LAN SIG	_	COMP ON	-	SNN SENS	I	M/T SENS	=	1	_	_	ı
	Color of Wire	≤	ı	L/R	-	SB	1	0	ı	G/W	1	ı	ı	1	ı
	Terminal No.	-	2	3	4	5	9	2	8	6	10	11	12	13	14

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



Signal Name	ı	_	I
Color of Wire	L/R	В	L/W
Terminal No.	-	2	က

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Connector No. E3	Connector No.	or No. E6		Connector No.). E 10	
Connector Name WIRE TO WIRE	Connecto	Connector Name FUSE BLOCK (J/B)	3LOCK (J/B)	Connector Na	ame ECM (Connector Name ECM (QR25DE EXCEPT FOR
Connector Color WHITE	Connecto	Connector Color WHITE			CALIF	CALIFORNIA)
				Connector Color BLACK	olor BLACF	
1 2 3 4 5 6 7	管	7P 6P 5P 4P	7P 6P 5P 4P			
H.S.	H.S.	101 141 161 161		H.S.	81 85 89 93 97 101 82 86 90 94 98 102	85 89 93 97 101 105 109 86 90 94 98 102 106 110
					83 87 91 95 99 103 107 111 84 88 92 96 100 104 108 112)103 107 111 0104 108 112
Terminal No. Wire Signal Name		Terminal No. Wire	Signal Name)	<u> </u>	
R. C.	d9	>	1			
				Terminal No.	Color of Wire	Signal Name
13 SB –				97	۵	CAN-L
				86	_	CAN-H

	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)	ТЕ	42 41 40 39 46 45 44 43	Signal Name	CAN-L	CAN-H	GND (SIGNAL)
		lor WH	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Color of Wire	۵	٦	В
COLLIECTO NO.	Connector Name	Connector Color WHITE	赋 H.S.	Terminal No.	39	40	41

	TO WIRE		■ 8	Signal Name	ı	
E11	ne WIRE	or WHITE	0 0	Color of Wire	B/W	
Connector No.	Connector Name WIRE TO WIRE	Connector Color WHITE	H.S.	Terminal No.	10	

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Connector No. E21	1		3 2 1				Signal Name	1	1	Signal Name	ı	1	ı	-	_	1	1	
. E21	olor WHITE	_	4				Color of Wire	١	_	Color of Wire	۵	_	>	٦	LG	_	Ь	
Connector No.	Connector Color			V			Terminal No.	-	a	Terminal No.	86	15G	23G	25G	32G	51G	52G	
Terminal No. 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		37 38	38 36	Connector No. E30	Connector Color WHITE				16 26 106 116 126 139 146 156 166 176	206 226 226 286	18G 19G 27G 28G 29G 30G 31G 32G 33G 34G	35G 36G 37G 38G 39G 40G 41G
Connector No. E18	Connector Name POWER DISTRIBUTION	MODOLE ENGINE	Connector Color WHITE			H.S.		9 10 11 12 13 14 Z526Z7Z8B29 3031323334 3	4 5 6 7 8	Connector No. E22 Connector Name LIOINT CONNECTOR-F04	WHITE	_		v.			Terminal No. Color of Signal Name	

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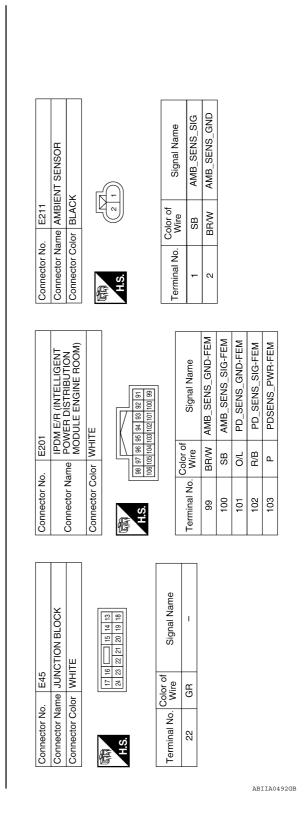
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	Connector Name JUNCTION BLOCK		2 Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z	Signal Name	1		
). E44	ume JUN		2 2 1 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Color of Wire	o o		
Connector No. E44	Connector Name JUNCTIC		向 H.S.	Terminal No. Wire	ω		
	Connector Name ECM (WITH VQ35DE)		85 89 93 97 1001 1005 1009 86 90 94 98 1002 1006 1100 87 91 95 99 1008 107 111 88 92 96 1000 104 108 112		Signal Name	CAN-L	CAN-H
. E32	ime ECN		81 85 89 82 86 90 83 87 91 84 88 92		Color of Wire	۵	_
Connector No. E32	Connector Name ECM (W		南 H.S.	9	Terminal No. Wire	97	98
	- a						
	ECM (QR25DE FOR CALIFORNIA)	X	88 88 8	2 96 100 104 108 112	Signal Name	CAN-L	CAN-H
E31	me ECM (QR2	or BLAC	8 8 8	84 88 92	Color of Wire	۵	
Connector No.	Connector Name COR2	Connector Color BLACK	H.S.		Terminal No. Wire	97	86



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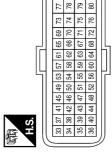
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Connector No. F2 Connector Name WIRE TO WIRE Connector Color WHITE	H.S. (10 9 8 7 6 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Terminal No. Color of Signal Name	10 B -						Connector No. F13	Connector Name ECM (QR25DE EXCEPT FOR	Connector Color BROWN	E	H.S.		41 45 49 53 57 61 65 69 73	34 38 42 46 50 54 58 62 66 70 74 78 38 62 64 47 8 50 62 64 70 74 78 78 78 78 78 78 78 78 78 78 78 78 78		 	Terminal No. Wire Signal Name	39 L PDPRES	40 GR GNDA-PDPRES	72 V AVCC2-PDPRES
Connector No. F1 Connector Name WIRE TO WIRE Connector Color WHITE	H.S. (16) 15 14 13 12 11 10 9 8	Terminal No. Wire Signal Name	5 L – (QR25DE)	5 O - (VQ35DE)	11 V – (QR25DE)	11 R – (VQ35DE)	13 GR – (QR25DE)	13 SB – (VQ35DE)		Connector No. FIU	Connector Name POWER DISTRIBUTION MODULE ENGINE ROOM)	Connector Color WHITE	£	H.S.		53 54 55 56 57 58	47 48 49 50 51 52 59 60 61 62 63 64 65 66 67 68 80		Color of	Il No. Wire	48 W A/C_COMP	
Connector No. E219 Connector Name REFRIGERANT PRESSURE SENSOR Connector Color BLACK	(3) (2) (1) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4	Terminal No. Wire Signal Name	1 P AVCC2	2 R SIGNAL	3 W GND				Orange Model	Confidence No.	Connector Name A/C COMPRESSOR Connector Color BLACK		H.S.			Terminal No. Color of Wire Signal Name	1 W A/C_COMP	2 B GND		ANG	T. C.	04936

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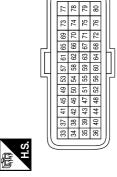
J-4	Connector Name (FRONT BLOWER MOTOR RELAY)	ı	
Connector No.	Connector Name	Connector Color	S. S. T. S.

Connector No.	F90
Connector Name ECM (QR2	ECM (QR25DE FOR CALIFORNIA)
Connector Color BROWN	BROWN



Signal Name	PDPRES	GNDA-PDPRE	AVCC2-PDPRE
Color of Wire	٦	GR	>
Terminal No.	39	40	72

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



Signal Name	PDPRES	GNDA-PDPRES	AVCC2-PDPRES
Color of Wire	0	SB	ж
Terminal No.	68	40	72

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AIR CONDITIONER CONTROL

[AUTOMATIC AIR CONDITIONER]

SYMPTOM DIAGNOSIS

AIR CONDITIONER CONTROL

Symptom Matrix Chart

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SYMPTOM TABLE

Symptom	Reference Page			
A/C system does not come on.	Go to Trouble Diagnosis Procedure for A/C System.	HAC-58, "Diagnosis Procedure"		
Air outlet does not change.	Go to Trouble Diagnosis Procedure for Mode Door Motor. (LAN)	HAC-32, "Diagnosis		
Mode door motor does not operate normally.	Go to Trouble Diagnosis Procedure for Mode Door Motor. (LAN)	Procedure"		
Discharge air temperature does not change.		HAC 29 "Diagnosis		
Air mix door motor does not operate normally.	Go to Trouble Diagnosis Procedure for Air Mix Door Motor. (LAN)	HAC-28, "Diagnosis Procedure"		
Intake door does not change.	Go to Trouble Diagnosis Procedure for Intake Door Motor. (LAN)	HAC-28, "Diagnosis		
Intake door motor does not operate normally.	Go to Trouble Diagnosis Procedure for Intake Door Motor. (LAN)	<u>Procedure"</u>		
Blower motor operation is malfunctioning.	Go to Trouble Diagnosis Procedure for Blower Motor.	HAC-38, "Diagnosis Procedure"		
Magnet clutch does not engage.	Go to Trouble Diagnosis Procedure for Magnet Clutch.	HAC-43, "Diagnosis Procedure"		
Insufficient cooling	Go to Trouble Diagnosis Procedure for Insufficient Cooling.	HAC-83, "Component Function Check"		
Insufficient heating	Go to Trouble Diagnosis Procedure for Insufficient Heating.	HAC-91, "Component Function Check"		
Noise	Go to Trouble Diagnosis Procedure for Noise.	HAC-93, "Component Function Check"		

INSUFFICIENT COOLING

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

INSUFFICIENT COOLING

Component Function Check

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SYMPTOM: Insufficient cooling

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE DECREASE

- 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

$\mathbf{2}$. CHECK FOR ANY SYMPTOMS

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

Does another symptom exist?

YES >> Refer to <u>HAC-82</u>, "Symptom Matrix Chart".

NO >> System OK.

CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4

4. CHECK DRIVE BELTS

Check compressor belt tension. Refer to <u>EM-16</u>, "<u>Checking Drive Belts</u>" (QR25DE) or <u>EM-120</u>, "<u>Checking Drive Belts</u>" (VQ35DE).

Is the inspection result normal?

YES >> GO TO 5

NO >> Adjust or replace A/C compressor belt. Refer to <u>EM-16</u>, "<u>Removal and Installation</u>" (QR25DE) or <u>EM-120</u>, "<u>Removal and Installation</u>" (VQ35DE).

${f 5.}$ 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.

O. 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 <u>EC-460</u>, "Component Function Check" (QR25DE for California) <u>EC-959</u>, "Component Function Check" (QR25DE except for California) or <u>EC-1495</u>, "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.

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INSUFFICIENT COOLING

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

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-21, "HFC-134a (R-134a) Service Procedure".

9. CHECK REFRIGERANT PRESSURE

Check refrigerant pressure with manifold gauge connected. Refer to <u>HAC-87</u>, "Trouble <u>Diagnosis For Abnormal Pressure"</u>.

Is the inspection result normal?

YES >> Perform diagnostic work flow. Refer to HAC-84, "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 <u>HAC-84</u>, "<u>Diagnostic Work Flow</u>".

NO >> GO TO 11

11. CHECK AIR DUCTS

Check ducts for air leaks.

Is the inspection result normal?

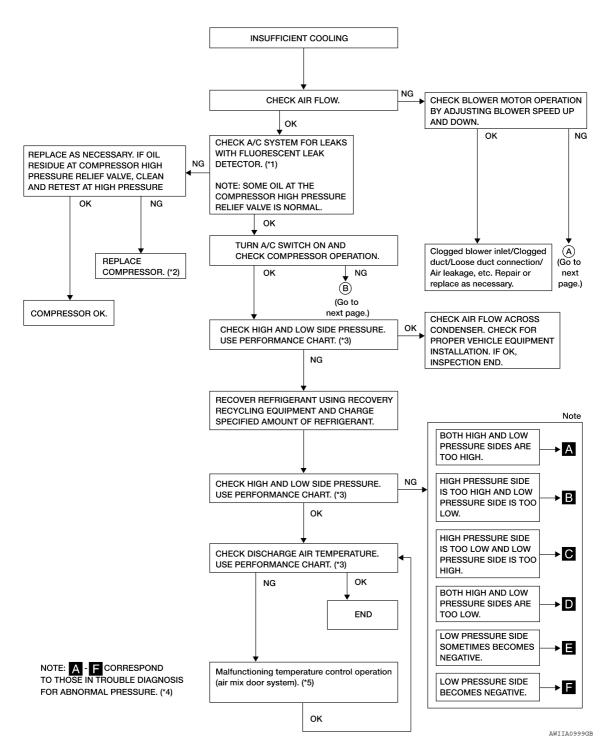
YES >> System OK.

NO >> Repair air leaks.

Diagnostic Work Flow

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[AUTOMATIC AIR CONDITIONER]



- HA-24, "Checking System for Leaks *2 Using the Fluorescent Leak Detector"
- HA-30, "Removal and Installation for *3 HAC-86, "Performance Chart" Compressor - QR25DE Models" or HA-31, "Removal and Installation for Compressor - VQ35DE Models"
- HAC-87, "Trouble Diagnosis For Ab- *5 HAC-34, "Diagnosis Procedure" normal Pressure"

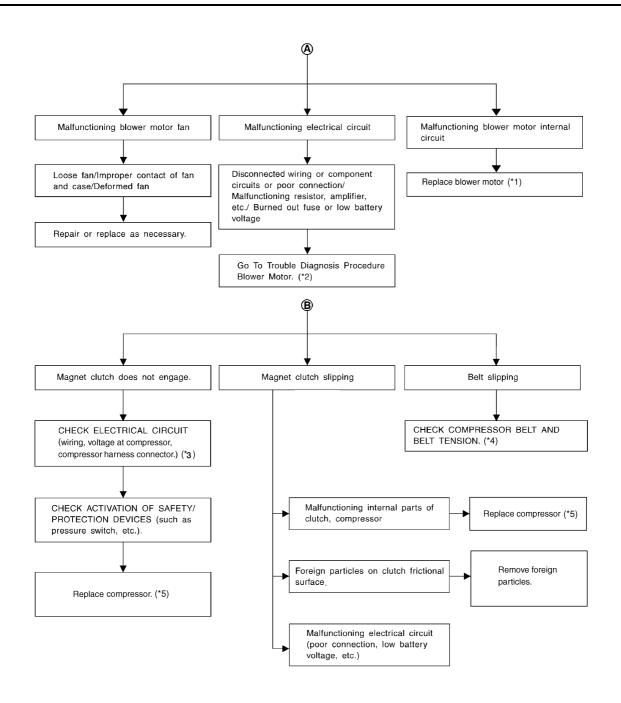
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- *1 VTL-15, "Removal and Installation"
- *4 EM-16, "Checking Drive Belts" (QR25DE) or EM-120, "Checking Drive Belts" (VQ35DE)
- *2 HAC-38, "Diagnosis Procedure"
- *5 HA-30, "Removal and Installation for Compressor - QR25DE Models" or HA-31, "Removal and Installation for Compressor - VQ35DE Models"

*3 HAC-43, "Diagnosis Procedure"

Performance Chart

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TEST CONDITION

Testing must be performed as follows:

INSUFFICIENT COOLING

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

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				

TEST READING

Recirculating-to-discharge Air Temperature Table

Inside air (Recirculating	air) at blower assembly inlet	Discharge air temperature at center ventilator						
Relative humidity %	Air temperature °C (°F)	°C (°F)						
	25 (77)	10.0 - 12.3 (50 - 54)						
50 - 60	30 (86)	13.2 - 15.3 (56 - 60)						
	35 (95)	17.2 - 21.0 (63 - 70)						
	25 (77)	12.3 - 14.9 (54 - 59)						
60 - 70	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)	Low-pressure (Suction side)	
Relative humidity %	Air temperature °C (°F)	kPa (kg/cm2, psi)	kPa (kg/cm2, psi)	
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

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

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[AUTOMATIC AIR CONDITIONER]

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
	Pressure is reduced soon after water is splashed on condenser.	Excessive refrigerant charge in refrigeration cycle	Reduce refrigerant until speci- fied 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.
Both high and low-pressure sides are too high.	Low-pressure pipe is not cold. When compressor is stopped high-pressure value quickly drops by approximately 196 kPa (2 kg/cm², 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 mal- function.	Check and repair each engine cooling system.
□ □ AC359A	 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. Improper thermal valve installation 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	
High-pressure side is too high and low-pressure side is too low.	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

INSUFFICIENT COOLING

[AUTOMATIC AIR CONDITIONER]

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Gauge indication	Refrigerant cycle	Probable cause	Corrective action
igh-pressure side is too low and w-pressure side is too high.	High and low-pressure sides become equal soon after compressor operation stops.	Compressor pressure operation is improper. ↓ Damaged inside compressor packings	Replace compressor.
(O) (H) AC356A	No temperature difference be- tween 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	Е
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. 	difference between liquid tank outlet and inlet. Outlet temperature is extremely low. Liquid tank inside is slightly clogged.		F
	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. 	HA(
	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-22, "Checking of Refrigerant Leaks".	J
	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. 	K L M
	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.	Ν
	Air flow volume is not enough or is too low.	Evaporator is frozen.	Check thermo control amp. and intake sensor operation. Replace compressor.	0

Low-pressure Side Sometimes Becomes Negative

INSUFFICIENT COOLING

[AUTOMATIC AIR CONDITIONER]

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
Low-pressure side sometimes becomes negative.	 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
Low-pressure side becomes negative.	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

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[AUTOMATIC AIR CONDITIONER]

INSUFFICIENT HEATING Α Component Function Check INFOID:000000005432653 SYMPTOM: Insufficient heating B INSPECTION FLOW SYMPTOM: Insufficient heating ${f 1}$. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE INCREASE Press the AUTO switch. D Turn temperature control dial (LH) clockwise until 32°C (90°F) is displayed. Check for hot air at discharge air outlets. Can a symptom be duplicated? F >> GO TO 3 YES 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? >> Refer to HAC-82, "Symptom Matrix Chart". NO >> System OK. Н 3. CHECK FOR SERVICE BULLETINS Check for any service bulletins. HAC >> GO TO 4 4. CHECK ENGINE COOLING SYSEM Check for proper engine coolant level. Refer to CO-11, "System Inspection" (QR25DE) or CO-33, "System Inspection" (VQ35DE). Check hoses for leaks or kinks. Check radiator cap. Refer to CO-11, "System Inspection" (QR25DE) or CO-33, "System Inspection" (VQ35DE). 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? YFS >> GO TO 6 Ν >> Check the air mix door motor circuit. Refer to HAC-34, "Diagnosis Procedure". NO 6. CHECK AIR DUCTS Check for disconnected or leaking air ducts. Is the inspection result normal? YES >> GO TO 7 P NO >> Repair all disconnected or leaking air ducts.

7. CHECK HEATER HOSE TEMPERATURES

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

Is the inspection result normal?

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INSUFFICIENT HEATING

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

YES >> GO TO 8

NO >> Both hoses warm: GO TO 9

8. CHECK ENGINE COOLANT SYSTEM

Check thermostat operation. Refer to CO-20, "Removal and Installation" (QR25DE) or CO-44, "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 <u>CO-12, "Changing Engine Coolant"</u> (QR25DE) or <u>CO-34, "Changing Engine Coolant"</u> (VQ35DE).
- 4. To retest GO TO 10

10. CHECK HEATER HOSE TEMPERATURES

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

Is the inspection result normal?

YES >> System OK.

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

NOISE

Component Function Check

Blower motor

Check for noise in

all modes and

Noise is constant Check blower

motor for for-

eign particles.

Check blower

motor and fan

Noise is

Check air discharge ducts for obstructions, foreign materials or air leakage

intermittent.

for wear.

temperature

settings.

Compressor

pulley.

ОК

Check for

refrigerant

interference.

(*6)

(*7)

line-to-compressor

Check torque

of compressor

mounting bolts.

OK Check and adjust compressor oil.

OK

Replace compressor (*6) and liquid tank. (*8)

Inspect the com-

pressor and idler

NG

Replace com-

pressor and

pulley or idler

pulley (*5)

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SYMPTOM: Noise INSPECTION FLOW

> 1. Confirm symptom by performing the following operational check. If OK (symptom can not be duplicated), perform complete operational check (*1).

If NG (symptom is confirmed), continue with STEP-2 following.

2. Check for any service bulletins. 3. Check where noise comes from. 4. Check compressor belt and belt tension. 5. Check refrigerant high and low pressure. Use performance chart. (*3) Expansion valve Refrigerant line Belt

Replace expansion valve. (*4)

> The line is fixed The line is not fixed. directly to the body.

> > Fix the line tightly.

Inspect and repair

pulley alignment.

Fix the line with rubber or some vibration absorb-

ing material.

Loose Belt Side of belt is worn out.

Re-adjust belt tension. (*2)

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NOISE

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

*1 HAC-5, "Operational Check" *2 EM-16, "Checking Drive Belts" *3 HAC-86, "Performance Chart" (QR25DE) or EM-120, "Checking Drive Belts" (VQ35DE) *4 HA-39, "Removal and Installation for *5 HA-30, "Removal and Installation for *6 HA-30, "Removal and Installation for Compressor - QR25DE Models" or Expansion Valve" Compressor - QR25DE Models" or HA-31, "Removal and Installation for HA-31, "Removal and Installation for Compressor - VQ35DE Models" Compressor - VQ35DE Models" *7 HA-18, "Maintenance of Oil Quantity *8 HA-36, "Removal and Installation for in Compressor" Condenser"

SELF-DIAGNOSIS CANNOT BE PERFORMED

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

SELF-DIAGNOSIS CANNOT BE PERFORMED

Diagnosis Procedure

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SYMPTOM: Self-diagnosis cannot be performed.

CHECK SELF-DIAGNOSIS FUNCTION

- Press ignition switch ON.
- 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.

>> GO TO 2 NO

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-82, "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.

>> GO TO 4 NO

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

Check power supply and ground circuit of front air control. Refer to HAC-58, "Diagnosis Procedure".

Is the inspection result normal?

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

NO >> Repair or replace malfunctioning part(s). HAC

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MEMORY FUNCTION DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

MEMORY FUNCTION DOES NOT OPERATE

Diagnosis Procedure

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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 <u>HAC-58</u>, "<u>Diagnosis Procedure</u>". Is the inspection result normal?

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

NO >> Repair or replace malfunctioning part(s).

PRECAUTION

PRECAUTIONS

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

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

WARNING:

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

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

WARNING:

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

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

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

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

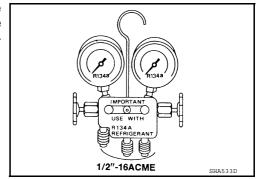
- Explain to the customer that environmental regulations prohibit the release of contaminated refrigerant into the atmosphere.
- Explain that recovery of the contaminated refrigerant could damage your service equipment and refrigerant supply.
- Suggest the customer return the vehicle to the location 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

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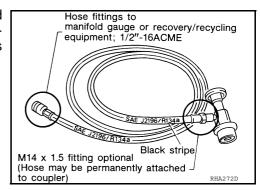
MANIFOLD GAUGE SET

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

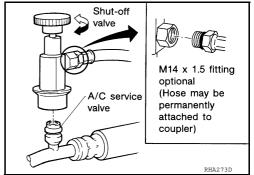
Be certain that the service hoses display the markings described (colored hose with black stripe). All hoses must include positive shutoff devices (either manual or automatic) near the end of the hoses opposite the manifold gauge.



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	



DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[MANUAL AIR CONDITIONER]

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< BASIC INSPECTION >	[MANOAL AIR CONDITIONER]
BASIC INSPECTION	
DIAGNOSIS AND REPAIR WORKFLOW	
Work Flow	INFOID:000000005432661
DETAILED FLOW	
1.LISTEN TO CUSTOMER COMPLAINT	
Listen to customer complaint. Get detailed information about the tom occurs.	conditions and environment when the symp-
>> GO TO 2	
2. VERIFY THE SYMPTOM WITH OPERATIONAL CHECK	
Verify the symptom with operational check. Refer to HAC-100, "C	Operational Check".
>> GO TO 3	
3.GO TO APPROPRIATE TROUBLE DIAGNOSIS	
Go to appropriate trouble diagnosis. Refer to HAC-150, "Sympton	m Matrix Chart".
>> 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

[MANUAL AIR CONDITIONER]

INSPECTION AND ADJUSTMENT

Description & Conditions

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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:000000005432663

STEP 1: Check Blower

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

If NG, go to HAC-122, "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.
- Confirm that discharge air comes out according to the air distribution table. Refer to <u>HAC-105</u>, "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-120, "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-120, "Diagnosis Procedure".

If OK, continue with next check.

STEP 4: Check Temperature Decrease

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

If NG, go to HAC-119, "Diagnosis Procedure".

If OK, continue with next check.

STEP 5: Check Temperature Increase

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

If NG, go to HAC-119, "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

INSPECTION AND ADJUSTMENT

< BASIC INSPECTION >

[MANUAL AIR CONDITIONER]

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

If NG, go to <u>HAC-58</u>, "<u>Diagnosis Procedure</u>", then if necessary, <u>HAC-127</u>, "<u>Diagnosis Procedure</u>". If all operational checks are OK (symptom can not be duplicated), refer to <u>GI-37</u>, "<u>Work Flow</u>" and perform tests as outlined to simulate driving conditions environment. If symptom appears, refer to <u>HAC-82</u>, "<u>Symptom Matrix Chart</u>".

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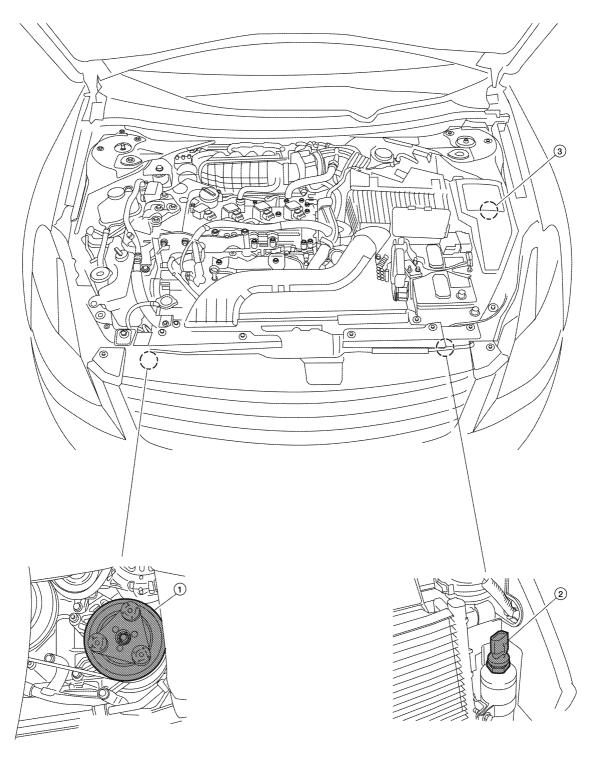
FUNCTION DIAGNOSIS

FUNCTION INFORMATION

Component Part Location

ENGINE COMPARTMENT

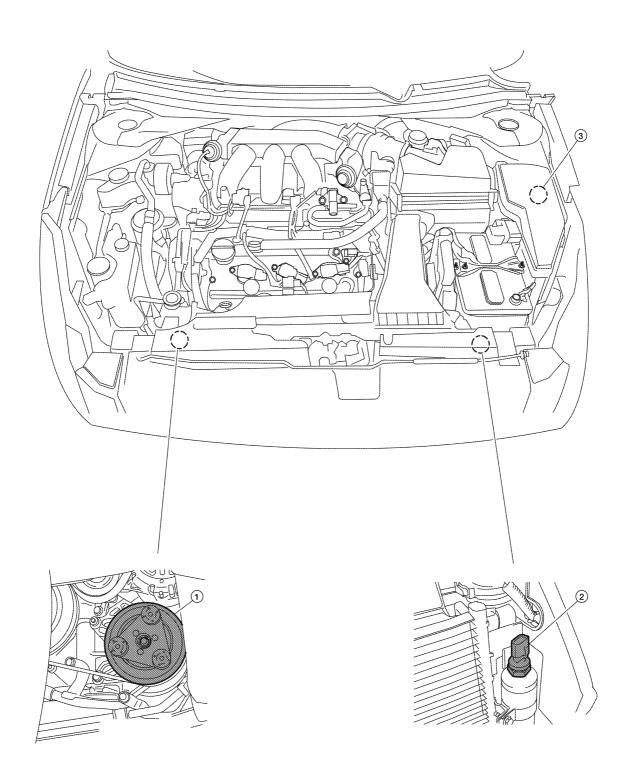
QR25DE Models



[MANUAL AIR CONDITIONER]

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

VQ35DE Models



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

PASSENGER COMPARTMENT

HAC-103 Revision: September 2009 2010 Altima HAC

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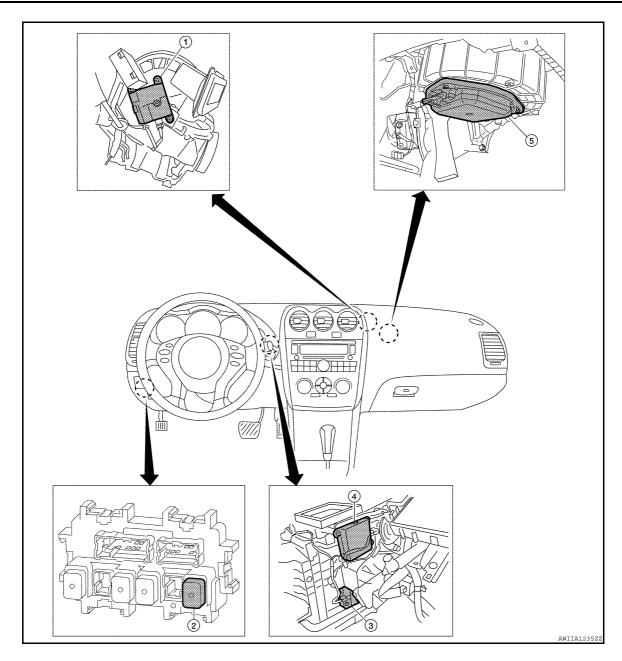
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- 1. Intake door motor M126
- 4. Mode door motor M127
- 2. Front blower motor relay J-4
- Blower motor M31
- 3. Air mix door motor M130

Component's Role

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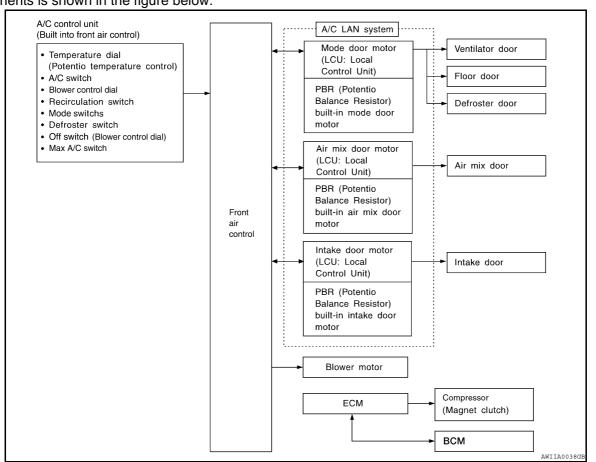
Component	Reference	
Air mix door motor	HAC-119. "Diagnosis Procedure"	
Blower motor	HAC-122, "Diagnosis Procedure"	
A/C Compressor	HAC-127, "Diagnosis Procedure"	
Intake door motor	HAC-120, "Diagnosis Procedure"	
Mode door motor	HAC-117, "Diagnosis Procedure"	
Refrigerant pressure sensor	EC-985, "Diagnosis Procedure" (QR25DE) or EC-1524, "Diagnosis Procedure" (VQ35DE)	

AIR CONDITIONER CONTROL

System Diagram INFOID:0000000005432666

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

CONTROL OPERATION

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HAC-105 Revision: September 2009 2010 Altima

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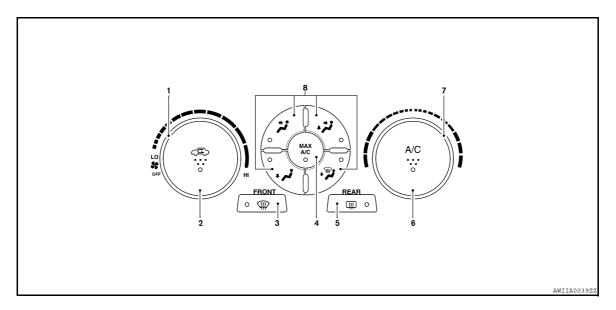
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- Blower control dial
- 4. MAX A/C ON/OFF switch
- 7. Temperature control dial
- 2: Air recirculation switch
- 5: Rear defrost switch
- 8: Mode switches

- 3: Defroster switch
- 6: A/C ON/OFF switch

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.

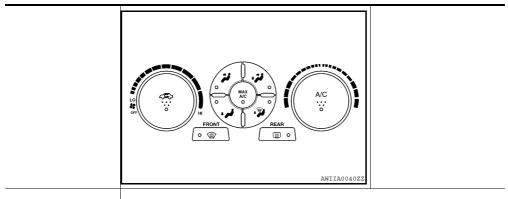
Rear Window Defogger Switch

This switch turns the rear window defogger ON and OFF.

Recirculation () Switch

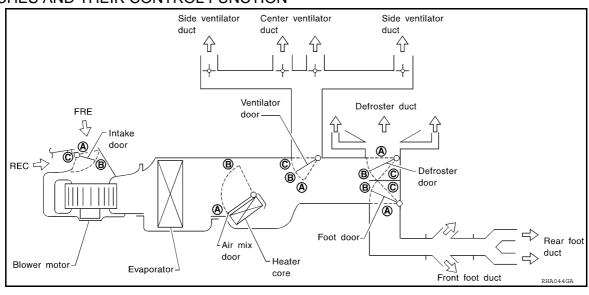
- When REC () switch is ON (REC LED ON), air inlet is fixed to REC.
- When press intake switch again (REC LED OFF), air inlet is fixed to fresh air.
- When REC LED is turned ON, shifting mode position to D/F or DEF, or when compressor is turned from ON to OFF, the REC () switch is automatically turned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

DISCHARGE AIR FLOW



Mode door position	Air outlet/distribution			
	Vent	Foot	Defroster	
*;	100%	_	_	
Ÿ	44%	56%	_	
ų,	17%	59%	24%	
*	16%	52%	32%	
₩	12%	_	88%	

SWITCHES AND THEIR CONTROL FUNCTION



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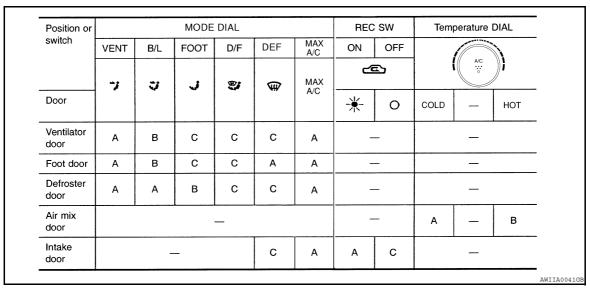
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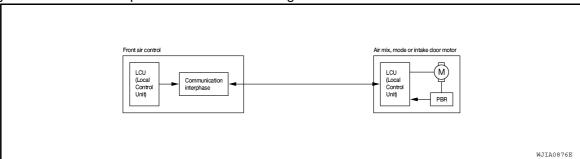
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AIR CONDITIONER LAN CONTROL SYSTEM

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.



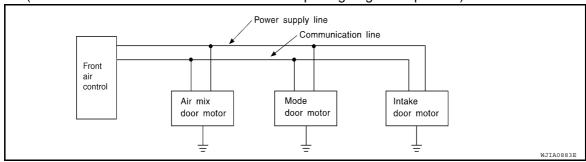
SYSTEM CONSTRUCTION

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)



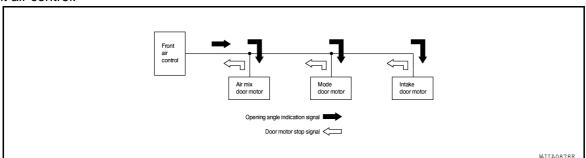
AIR CONDITIONER CONTROL

< FUNCTION DIAGNOSIS >

[MANUAL AIR CONDITIONER]

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:

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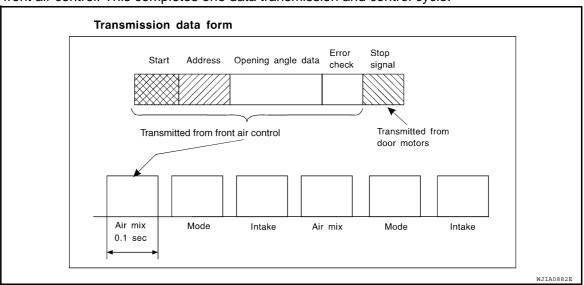
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AIR CONDITIONER CONTROL

< FUNCTION DIAGNOSIS >

[MANUAL AIR CONDITIONER]

• 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.

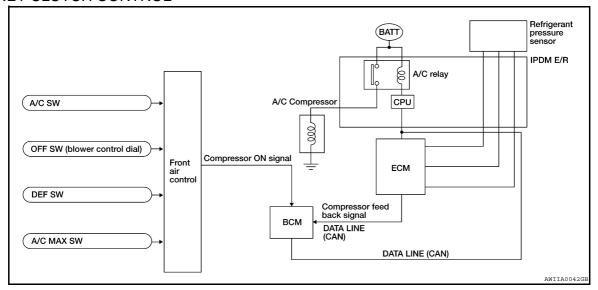
MODE SWITCHES

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

ENGINE COMPARTMENT

PASSENGER COMPARTMENT

Refer to HAC-102, "Component Part Location".

Refer to HAC-102, "Component Part Location".

Component Description

Refer to HAC-104, "Component's Role".

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INFOID:0000000005432669

DIAGNOSIS SYSTEM (ECM)

< FUNCTION DIAGNOSIS >

[MANUAL AIR CONDITIONER]

DIAGNOSIS SYSTEM (ECM)

CONSULT-III Function

INFOID:0000000005432670

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

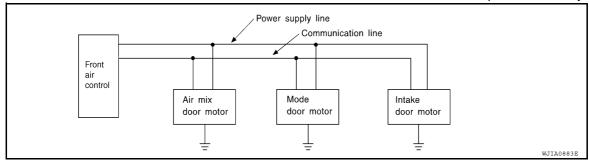
Monitor item name "operation or unit"		Contents	
IGNITION SW	"ON/OFF"	Displays "ON/OFF" status as judged from ignition switch signal.	
HEATER FAN SW	"ON/OFF"	Displays "ON/OFF" status as judged from blower fan motor switch signal.	
AIR COND SIG	"ON/OFF"	Displays "ON/OFF" status as judged from air conditioner switch signal.	
AC PRESS SEN	"V"	Displays "Refrigerant pressure sensor for voltage" status as inputted from refrigerant pressure sensor.	

COMPONENT DIAGNOSIS

LAN SYSTEM CIRCUIT

Description INFOID:000000005432671

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



Diagnosis Procedure

Regarding Wiring Diagram information, refer to <u>HAC-134</u>, "COUPE: Wiring Diagram - Air Conditioner Control (Manual) - Coupe" or <u>HAC-142</u>, "SEDAN: Wiring Diagram - Air Conditioner Control (Manual) - Sedan".

DIAGNOSIS PROCEDURE FOR LAN CIRCUIT

1. CHECK POWER SUPPLY FOR DOOR MOTORS

- Press ignition switch ON.
- 2. Check voltage between front air control connector M37 terminal 13 and ground.

Termi	Voltage (V) (Approx.)	
(+) (-)		
Connector - Terminal		()
M37-13	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.

Termina	Voltage (V) (Approx.)		
(+)			
Connector - Terminal	(-)	(11 -)	
M37-3	Ground	5.5V	

Is the inspection result normal?

YES >> GO TO 3

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

3.CHECK POWER SUPPLY FOR MOTOR

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INFOID:0000000005432672

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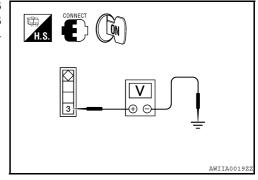
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[MANUAL AIR CONDITIONER]

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.

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



Is the inspection result normal?

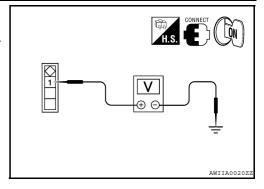
YES >> GO TO 4

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.

	Terminals			
Door motors	(+)	(-)	Voltage (V) (Approx.)	
	Connector - Terminal	(-)	(11 - /	
Mode	M127-1			
Air mix	M130-1	Body ground	5.5V	
Intake	M126-1			



Is the inspection result normal?

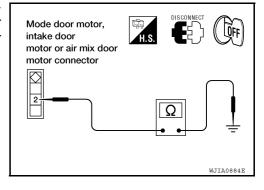
YES >> GO TO 5

NO >> Replace harness or connector.

5. CHECK MOTOR GROUND CIRCUIT

- Press ignition switch OFF.
- 2. Disconnect door motor connectors.
- 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.

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

LAN SYSTEM CIRCUIT

< COMPONENT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

Is the inspection result normal?	
YES >> (Returns to normal operation.) • Motor connector contacts dirty or damaged	Α
NO >> (Does not operate normally.) • GO TO 7	В
7. CHECK MODE DOOR MOTOR AND AIR MIX DOOR MOTOR OPERATION	
 Disconnect the intake door motor connector. Reconnect the mode door motor connector and air mix door motor connector, confirm the mode door motor and air mix door motor operation. 	С
Is the inspection result normal?	
 YES >> (Mode door motor and air mix door motor operate normally.) Replace the intake door motor. Refer to <u>VTL-17</u>, "Removal and Installation". NO >> (Mode door motor and air mix door motor do not operate normally.) 	D
• GO TO 8	Е
8.CHECK AIR MIX DOOR MOTOR AND INTAKE DOOR MOTOR OPERATION	
 Disconnect mode door motor connector. Reconnect the intake door motor connector, confirm the air mix door motor and intake door motor operation. 	F
Is the inspection result normal?	0
 YES >> (Air mix door motor and intake door motor operate normally.) Replace mode door motor. Refer to <u>VTL-18, "Removal and Installation"</u>. NO >> (Air mix door motor and intake door motor do not operate normally.) 	G
• GO TO 9	Н
9. CHECK INTAKE DOOR MOTOR AND MODE DOOR MOTOR OPERATION	
2. Reconnect mode door motor connector, confirm the intake door motor and mode door motor operation.	HA
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".	J
 NO >> (Intake door motor and mode door motor do not operate normally.) Replace front air control. Refer to <u>VTL-8</u>, "<u>Removal and Installation</u>". 	K
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Revision: September 2009 HAC-115 2010 Altima

MODE DOOR MOTOR

Description INFOID:0000000005432673

SYSTEM DESCRIPTION

Component Parts

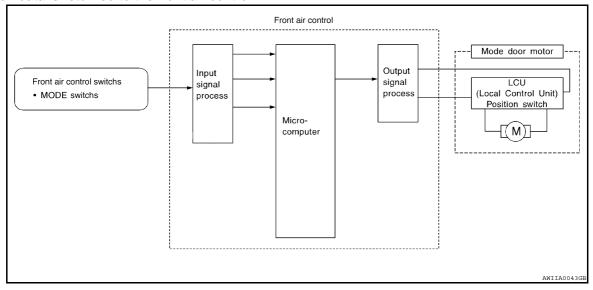
Mode door control system components are:

- 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 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.



COMPONENT DESCRIPTION

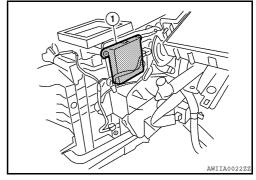
Mode Door Motor

MODE DOOR MOTOR

< COMPONENT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

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:0000000005432674

SYMPTOM: Mode door motor and/or air mix door motor does not operate normally. Perform diagnostic procedure for LAN system circuit. Refer to HAC-113, "Diagnosis Procedure".

SYMPTOM:

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

INSPECTION FLOW

${f 1}$. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - DISCHARGE AIR

- 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-105, "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.

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure for LAN system. Refer to <u>HAC-113. "Diagnosis Procedure"</u>.

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AIR MIX DOOR MOTOR

Description INFOID:000000005432675

SYSTEM DESCRIPTION

Component Parts

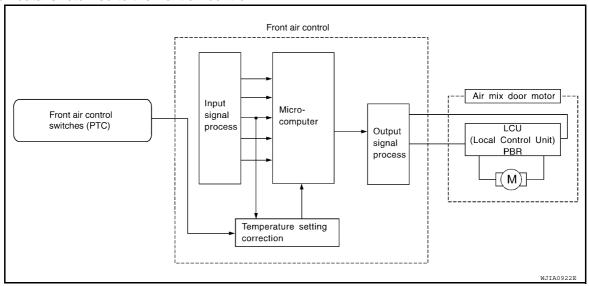
Air mix door control system components are:

- 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.

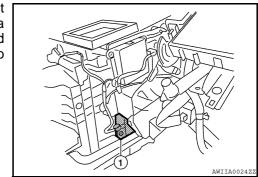
The air mix door motor, mode door motor and intake door motor read their respective signals according to the address signal. Opening angle indication signals received from the front air control and each of the motor position sensors are compared by the LCUs in each motor with the existing decision and 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.



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.



AIR MIX DOOR MOTOR

< COMPONENT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

Diagnosis Procedure INFOID:0000000005432676 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 Turn the temperature control dial clockwise to maximum heat. Check for hot air at discharge air outlets. >> GO TO 2 2. Confirm symptom by performing operation check - temperature decrease Turn the temperature control dial counterclockwise to maximum cold. Check for cold air at discharge air outlets. Can a symptom be duplicated? YES >> Inspection End. NO >> Go to diagnosis procedure for LAN system. Refer to HAC-113, "Diagnosis Procedure". HAC

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INTAKE DOOR MOTOR

Description INFOID:000000005432677

SYSTEM DESCRIPTION

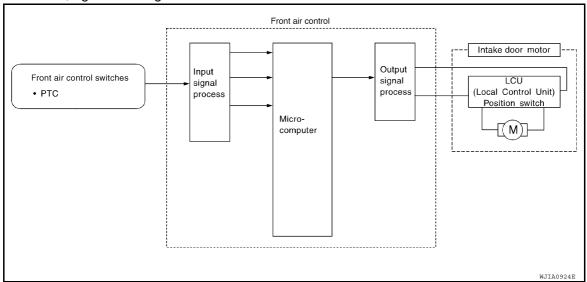
Component Parts

Intake door control system components are:

- Front air control
- Intake door motor (LCU)

System Operation

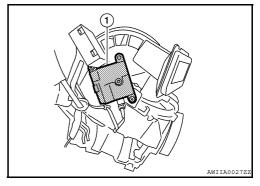
The intake door control determines the intake door position based on the position of the recirculation switch. When the recirculation switch is depressed the intake door motor rotates closing off the fresh air inlet and recirculating the cabin air. If the recirculation switch is depressed again, the 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:0000000005432678

SYMPTOM:

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

INSPECTION FLOW

- 1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK REC (\bigcirc)
- 1. Press the vent mode.(**).

INTAKE DOOR MOTOR

< COMPONENT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

- 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 >> Inspection End.

NO >> Go to diagnosis procedure for LAN system. Refer to <u>HAC-113</u>, "<u>Diagnosis Procedure</u>".

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BLOWER MOTOR

Description INFOID:000000005432679

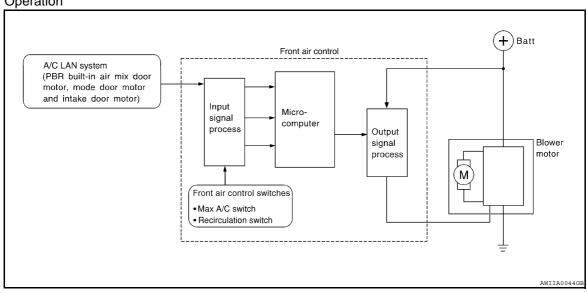
SYSTEM DESCRIPTION

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:0000000005432680

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - FRONT BLOWER

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

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to HAC-122, "Diagnosis Procedure".

Diagnosis Procedure

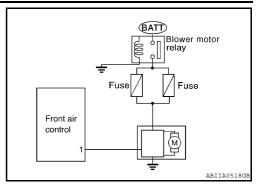
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Regarding Wiring Diagram information, refer to <u>HAC-134</u>, "COUPE: Wiring Diagram - Air Conditioner Control (Manual) - Coupe" or <u>HAC-142</u>, "SEDAN: Wiring Diagram - Air Conditioner Control (Manual) - Sedan".

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

4 - Ground : Battery voltage Is the inspection result normal?

YES >> GO TO 2

NO >> GO TO 5

2.CHECK BODY GROUND CIRCUIT FOR BLOWER MOTOR

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

Terminal		Continuity
Connector - Terminal	Body ground	Yes
M31-1	Body ground	

Is the inspection result normal?

YES >> GO TO 3

NO >> Repair harness or connector.

${f 3.}$ Check blower motor control circuit between blower motor and front air control

- Disconnect front air control harness connector.
- 2. Check continuity between blower motor harness connector M31 terminal 3 and front air control harness connector M37 terminal 1.

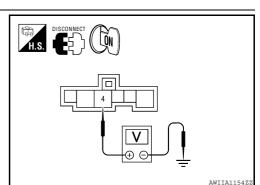
Terminals		Continuity	
Connector - Terminal	Connector - Terminal	Yes	
M31-3	M37-1	165	

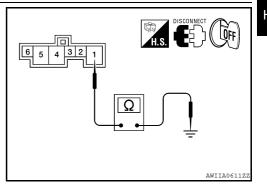
3. Check continuity between blower motor harness connector M31 terminal 3 and ground.

Terminals		Continuity
Connector - Terminal	Ground	No
M31-3	Giodila	NO

Is the inspection result normal?

YES >> GO TO 4





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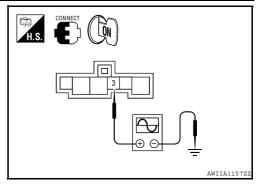
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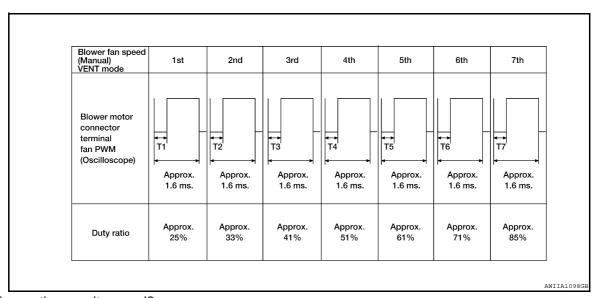
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NO >> Repair harness or connector.

4. CHECK FRONT AIR CONTROL OUTPUT SIGNAL

- Reconnect blower motor connector and front air control connector.
- 2. Press ignition switch ON.
- 3. Set MODE switch to the VENT position.
- 4. Check the output waveform between blower motor harness connector M31 terminal 3 and ground using an oscilloscope, while varying the fan speed from 1 to 7.





Is the inspection result normal?

YES >> Replace the blower motor. Refer to VTL-14, "Removal and Installation".

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

5. CHECK FUSE

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

NOTE:

Refer to <u>PG-67</u>, "Fuse, Connector and Terminal Arrangement" (coupe) <u>PG-139</u>, "Fuse, Connector and Terminal Arrangement" (sedan) for fuse location.

Is the inspection result normal?

YES >> GO TO 6

NO >> GO TO 11

6.CHECK POWER SUPPLY FOR FRONT BLOWER MOTOR RELAY

1. Press ignition switch OFF.

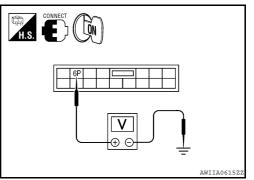
[MANUAL AIR CONDITIONER]

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

6P - Ground : Battery Voltage

Is the inspection result normal?

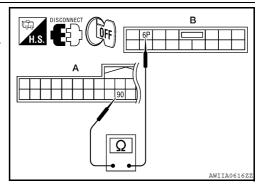
YES >> GO TO 10 NO >> GO TO 7



7.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	
(+) (-)		Continuity	
Connector - Terminal	Connector - Terminal	Yes	
M19-90	E6 - 6P	res	



Is the inspection result normal?

YES >> GO TO 8

NO >> Repair harness or connector.

8. CHECK BLOWER FAN SWITCH SIGNAL FOR VOLTAGE

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

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

DISCONNECT CON THE STATE OF THE

Is the inspection result normal?

YES >> Replace BCM. Refer to <u>BCS-96</u>, "Removal and Installation".

NO >> GO TO 9

9. CHECK BLOWER FAN SWITCH SIGNAL CIRCUIT FOR AN OPEN

- Press ignition switch OFF.
- 2. Disconnect front air control harness connector.
- Check continuity between BCM harness connector M18 terminal 55 and front air control harness connector M37 terminal 11.

Terminal		Continuity
(+) (-)		
Connector - Terminal	Connector - Terminal	Yes
M18 - 55	M37 - 11	162

Check continuity between BCM harness connector M18 terminal 55 and ground.

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Terminal		Continuity
(+)	(-)	Continuity
Connector - Terminal	Ground	Yes
M18 - 55	Ground	165

Is the inspection result normal?

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

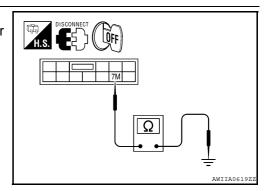
NO >> Repair harness or connector.

10. CHECK FRONT BLOWER MOTOR RELAY GROUND

1. Press ignition switch OFF.

2. Check continuity between fuse block (J/B) harness connector M5 terminal 7M and ground.

Terminal		Continuity	
(+)	(-)	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.

11.REPLACE FUSES

- 1. Reconnect blower motor connector.
- 2. Replace fuses.
- 3. Activate the blower motor.

Does the fuse blow?

YES >> GO TO 12

NO >> Inspection End.

12. CHECK BLOWER MOTOR POWER SUPPLY CIRCUIT FOR SHORT

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

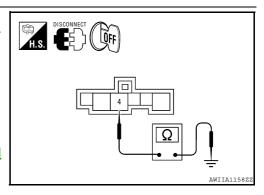
4 - Ground

: Continuity should not exist.

Is the inspection result normal?

YES >> Replace blower motor. Refer to <u>VTL-15</u>. "Removal and Installation".

NO >> Repair harness or connector.



MAGNET CLUTCH

Component Function Check

INFOID:0000000005432682

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INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - MAGNET CLUTCH

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

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure for Magnet Clutch. Refer to HAC-127, "Diagnosis Procedure".

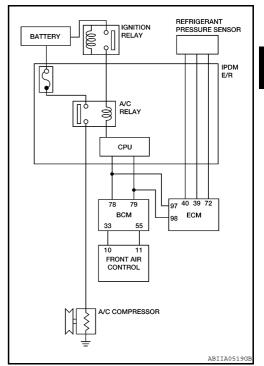
Diagnosis Procedure

INFOID:0000000005432683

Regarding Wiring Diagram information, refer to HAC-134, "COUPE: Wiring Diagram - Air Conditioner Control (Manual) - Coupe" or HAC-142, "SEDAN: Wiring Diagram - Air Conditioner Control (Manual) - Sedan".

DIAGNOSIS PROCEDURE FOR MAGNET CLUTCH

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



${f 1}$.CHECK MAGNETIC CLUTCH WITH AUTO ACTIVE TEST

- Perform auto active test. Refer to PCS-14, "Diagnosis Description".
- 2. Check that the A/C compressor clutch operates.

Does the A/C compressor clutch operate?

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

2. DATA MONITOR

- Press ignition switch ON.
- With CONSULT-III, select "ENGINE", then "DATA MONITOR" mode.

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Select "AIR COND SIG" and monitor while pressing A/C switch ON and OFF.

Monitored Item	Condition	Status
AIR COND SIG	A/C switch OFF (LED OFF)	OFF
AIR COND SIG	A/C switch ON (LED ON)	ON

Is the inspection result normal?

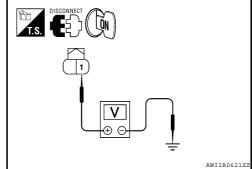
>> Check refrigerant pressure sensor. Refer to EC-486, "Diagnosis Procedure" (QR25DE for Califor-YES nia) or EC-985, "Diagnosis Procedure" (QR25DE except for California) or EC-1524, "Diagnosis Procedure" (VQ35DE).

NO >> GO TO 6

3.CHECK POWER SUPPLY FOR A/C COMPRESSOR

- 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	Body ground	12 V



Is the inspection result normal?

YES Check magnet clutch coil. >>

- If NG, replace magnet clutch. Refer to HA-30, "Removal and Installation for Compressor -QR25DE Models" or HA-31, "Removal and Installation for Compressor - VQ35DE Models".
- 2. If OK, check A/C compressor ground circuit and repair as necessary.

NO >> GO TO 4

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

- 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.

Tern	ninals	Continuity
Connector - Terminal	Connector - Terminal	Yes
F3 - 1	F10 - 48	163

If OK, check harness for short to ground.

Is the inspection result normal?

YES >> GO TO 5

NO >> Repair harness or connector.

5. CHECK FUSE IN IPDM E/R

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

Is the inspection result normal?

Revision: September 2009

YES >> Replace IPDM E/R. Refer to PCS-47, "Removal and Installation".

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

6.CHECK A/C COMPRESSOR ON SIGNAL

Check voltage between front air control connector M37 terminal 10 and ground, with A/C compressor ON and with A/C compressor OFF.

(+) (-) (Approx.)	Termin	al	Voltage (V)
	(+)	(-)	(Approx.)

	T.S. CED (ON)	
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55 56 57 58 47 48 49 50 51 52

69 70 71 72 73

59 60 61 62 63

AWIIA0622Z

MAGNET CLUTCH

< COMPONENT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

Connector - Terminal	D. I I	A/C compressor ON: 0V
M37 - 10	Body ground	A/C compressor OFF: 9-12V

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Is the inspection result normal?

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

7.CHECK CONTINUITY BETWEEN BCM AND FRONT AIR CONTROL

1. Disconnect BCM connector M18 and front air control connector.

Check continuity between BCM harness connector M18 terminal 33 and front air control connector M37 terminal 10.

Terminals		Continuity
Connector - Terminal	Connector - Terminal	Continuity
M18 - 33	M37 - 10	Yes

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-96, "Removal and Installation".

NO >> Repair harness or connector.

8. CHECK CAN COMMUNICATION CIRCUITS

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

Is the inspection result normal?

YES >> BCM malfunctioning.

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

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POWER SUPPLY AND GROUND CIRCUIT FOR FRONT AIR CONTROL [MANUAL AIR CONDITIONER]

< COMPONENT DIAGNOSIS >

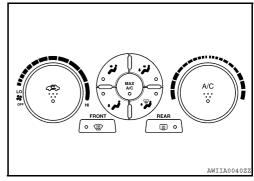
POWER SUPPLY AND GROUND CIRCUIT FOR FRONT AIR CONTROL

Description INFOID:0000000005432684

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:0000000005432685

COMPONENT INSPECTION

SYMPTOM: A/C system does not come on.

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK

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

Is the inspection result normal?

YES >> Inspection End.

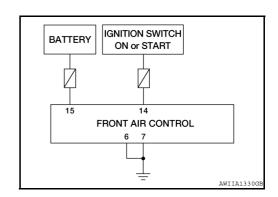
NO >> Go to diagnosis procedure for Power Supply Circuit for Front Air Control. Refer to HAC-130, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:000000005432686

DIAGNOSIS PROCEDURE FOR A/C SYSTEM

SYMPTOM: A/C system does not come on.



${f 1}$.CHECK POWER SUPPLY CIRCUIT FOR FRONT AIR CONTROL

- 1. Disconnect front air control connector M37.
- 2. Press ignition switch ON.
- Check voltage between front air control connector M37 terminals 15 and 14, and ground.

POWER SUPPLY AND GROUND CIRCUIT FOR FRONT AIR CONTROL [MANUAL AIR CONDITIONER]

< COMPONENT DIAGNOSIS >

Terminals		Voltage (V)
(+)	(-)	(Approx.)
Connector - Terminal		
M37-15	Body ground	12V
M37-14		

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.

$2.\mathsf{CHECK}$ body ground circuit for front air control

- Press ignition switch OFF.
- Check continuity between front air control connector M37 terminals 6and 7 and ground.

Termi	nal	Continuity
(+)	(-)	Continuity
Connector - Terminal		
M37-6	Body ground	Yes
M37-7		

Is the inspection result normal?

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

Inspection End.

NO >> Repair or replace harness. HAC

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ECU DIAGNOSIS

AIR CONDITIONER CONTROL

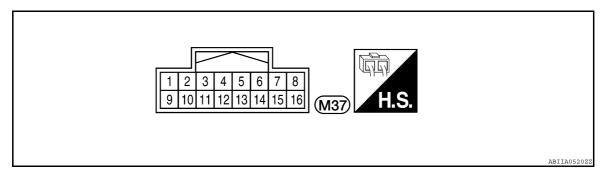
Reference Value

VALUES ON THE DIAGNOSIS TOOL

Display Item List

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

TERMINAL LAYOUT



PHYSICAL VALUES

Termi- nal 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
4	GR	Rear defrost feed back		Defroster	ON	12
4	GK	Real dellost leed back		switch	OFF	0
6	В	Ground	2		_	0
7	В	Ground			_	0
8	R/Y	Light (-)			_	0
9	R/W	Power supply for A/C ON signal			ON	4.6
					ON	0
10	SB	Compressor ON signal		Compressor	OFF	9 - 12

AIR CONDITIONER CONTROL

< ECU DIAGNOSIS >

[MANUAL AIR CONDITIONER]

Termi- nal No.	Wire color	Item	Ignition switch		Condition	Voltage (V) (Approx.)
11	BR/W	Fon ON signal		Fan	ON	0
11	DR/VV	Fan ON signal		ran	OFF	5
12	GR/W	Rear defrost ON signal	-	Defroster	ON	0
12	GR/VV	Real deliost ON signal		switch	OFF	5
13	L/W	Power supply for mode door motor, intake door motor, and air mix door motor	CON		_	12
14	G	Power supply for IGN			_	12
15	Y/R	Power supply for battery	-		_	12
16	R/L	Light (+)		Lighting switch	OFF	0
					1st position	12

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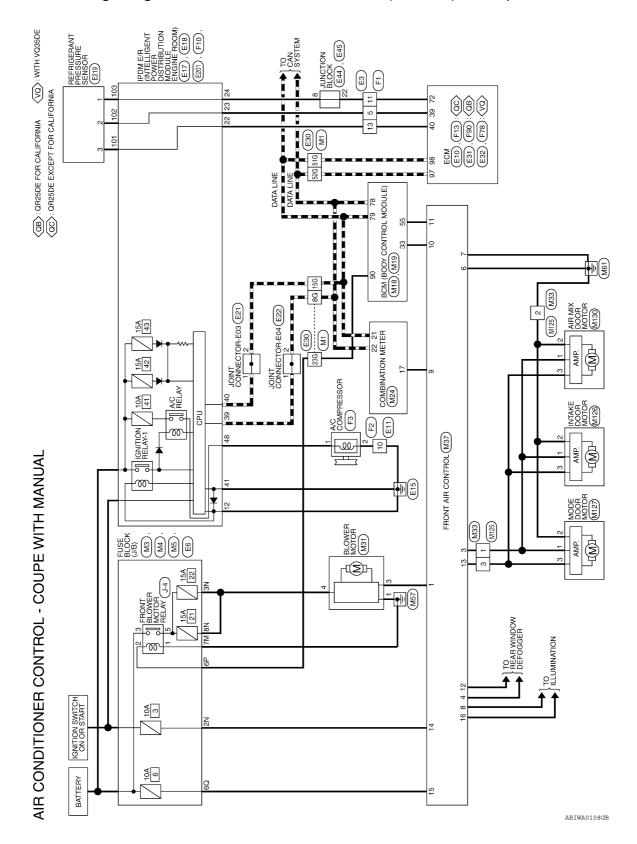
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WIRING DIAGRAM

AIR CONDITIONER CONTROL COUPE

COUPE: Wiring Diagram - Air Conditioner Control (Manual) - Coupe



AIR CONDITIONER CONTROL CONNECTORS - COUPE WITH MANUAL

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

			,							
	FUSE BLOCK (J/B)	11		N+ No	7N 6N 5N 4N		Signal Name	ı	ı	-
. M3		lor WH][لـ			Color of Wire	g	M/L	M/L
Connector No.	Connector Name	Connector Color WHITE		僵	H.S.		Terminal No.	2N	3N	N8
]				

Signal Name	I	-	I	I	_	
Color of Wire	۵	Т	\	_	Ь	
Terminal No. Wire	8G	15G	23G	51G	52G	

9G 8G 7G 6G 5G 4G 3G 7G 1G 7G 7	11G 40G 39G 38G 37G 38G 32G 50G 49G 48G 47G 48G 45G 44G 43G 42G 58G 57G 56G 55G 63G 62G 61G 60G 59G 54G 53G 52G 51G	726 716 706 696 686 676 666 806 799 789 776 766 755 746 736 656 646	836 826 816
H.S.		008	

			21 20 41 40			
	BCM (BODY CONTROL MODULE)	EN	27 26 25 24 23 22 47 46 45 44 43 42	Signal Name	AIRCON_SW	BLOWER_FAN_SW
. M18		lor GREEN	34 33 32 21 50 49 48	Color of Wire	SB	BR/W
Connector No.	Connector Name	Connector Color	H.S. 139 38 37 38 38 39 55 56 55 56	Terminal No.	33	55

		FUSE BLOCK (J/B)	ITE	SM 4M	Signal Name	1
NAG			lor WHITE	5M 4M [Color of Wire	В
N rotogado	Collinector No.	Connector Name	Connector Color	画 H.S.	Terminal No.	7M

	Connector Name FUSE BLOCK (J/B)	WHITE	40 30 10 10 10 10 10 10 1	Signal Name	
M4	me FU		40 30 100 90	Color of Wire	Ç
connector No.	Connector Na	Connector Color	所 H.S.	Terminal No.	00

Signal Name	_	
Color of Wire	Y/R	
Terminal No.	09	

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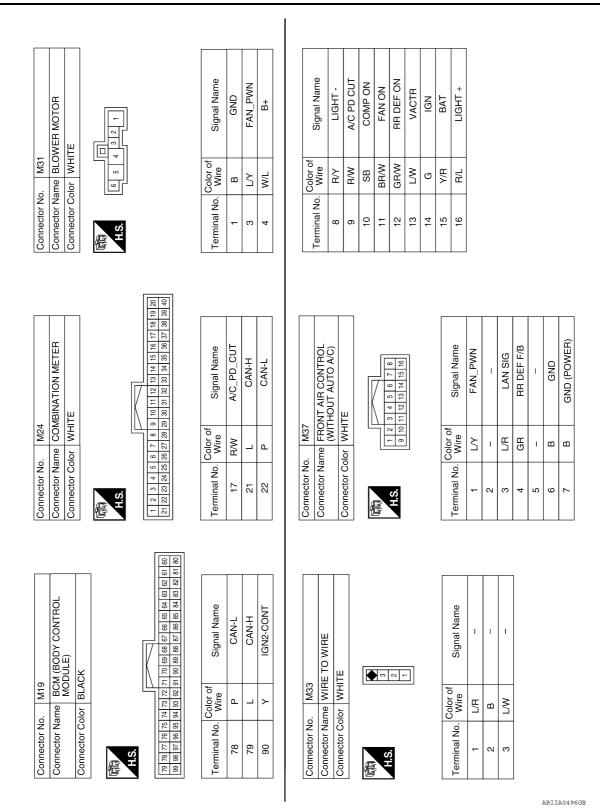
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Connector No. M127 Connector Name MODE DOOR MOTOR Connector Color WHITE		Signal Name	ı	ı	I	
me MODE lor WHITE		Color of Wire	4	В		
Connector No. M127 Connector Name MODE I Connector Color WHITE	ES.H	Color of Wire Wire	-	2	3	
			T			
Connector No. M126 Connector Name INTAKE DOOR MOTOR Connector Color WHITE		Signal Name	ı	ı	I	
ame INTAK		Color of Wire	5	В	M	
Connector No. M126 Connector Name INTAKE Connector Color WHITE	H.S.	Terminal No.	-	2	3	
			ı			
te to wire		Signal Name	ı	ı	ı	
lo. M125 lame WIRE color WHIT		Solor of Wire	L'A	В	LW	
Connector No. M125 Connector Name WIRE TO WIR Connector Color WHITE	斯 H.S.	Terminal No. Wire	-	2	3	

Commence Man	Connector Name AIR MIX D	IX DOOR MOTOR	Connector Name WIRE TO WIRE	ame WIRE	TO WIRE	Connector Nam	me FUSI	Connector Name FUSE BLOCK (J/B)
Connector Color WHITE	or WHITE		Connector Color WHITE	olor WHITE		Connector Color WHITE	lor WHI	ш
H.S.			H.S.	1 2 3 mm 4 5 6 7 8 9 10 11 112 13 14 15 16	4 5 6 7 13 14 15 16	E.S.	7P 6P 5P 4P 13P 13P 13P 13P 13P 13P 13P 13P 13P 13	7P 6P 5P 4P 7P 1P 1P 1P 1P 1P 1P 1
Terminal No. Color of Wire	Solor of Wire	Signal Name	Terminal No. Wire	Color of Wire	Signal Name	Color of Terminal No. Wire	Color of Wire	Signal Name
-	R.	ı	ß	GR	1	9	>	ı
2	В	ı	11	GR	I			
e	L/W	1	13	SB	ı			

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Revision: September 2009 HAC-137 2010 Altima

Connector No. E17 Connector Name PDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) Connector Color WHITE Color of Color of Signal Name Signal Name Signal Name Signal Name Signal Name CAN-L A0 L CAN-H CAN-H A1 B GND(SIGNAL)	Connector No. E22
Connector No. E11 Connector Name WIRE TO WIRE Connector Color WHITE Terminal No. Wire Signal Name 10 B/W -	Connector No. E21
Connector No. E10 Connector Name ECM (OR25DE EXCEPT FOR CALIFORNIA) Connector Color BLACK H.S.	Connector No. E18

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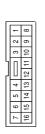
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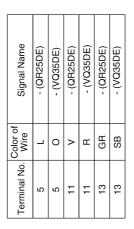
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Connector No. E31	Connector No. E45 Connector Name JUNCTION BLOCK Connector Color WHITE To lie 14 18 Lat 2 2 2 2 GR Signal Name 22 GR Signal Name
Signal Name	TION BLOCK VN Signal Name
Color of Wire Wire A	ame JUNCTIG
7 Perminal No. 8G 8G 15G 23G 51G 51G 52G	Connector No. E44 Connector Name JUNCTION BLOCK Connector Color BROWN State State
Connector No. E30 Connector Name WIRE TO WIRE Connector Color WHITE Connector Color WHITE 16 26 106 116 126 136 146 156 166 176 16 26 106 116 126 136 146 156 166 176 20 216 226 236 246 256 266 16 196 276 286 386 376 386 336 346 356 386 376 386 376 386 386 476 186 186 176 22 336 346 356 486 356 376 376 376 376 386 576 886 176 176 176 176 176 176 176 176 176 17	Connector No. E32 Connector Name ECM (WITH VQ35DE) Connector Color BLACK E2 E3 E3 E3 E3 E3 E3 E3

Revision: September 2009 HAC-139 2010 Altima













Signal Name

Color of Wire

Terminal No.

SIGNAL AVCC2

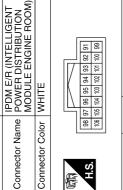
GND

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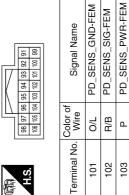


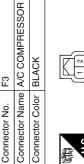




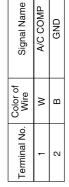
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Connector No.











O WIRE		7 6 5
WIRET	WHITE	4 3 [
Connector Name WIRE TO WIRE	Connector Color WHITE	E SH

Connector No.



Signal Name	I	
Color of Wire	В	
Terminal No.	10	

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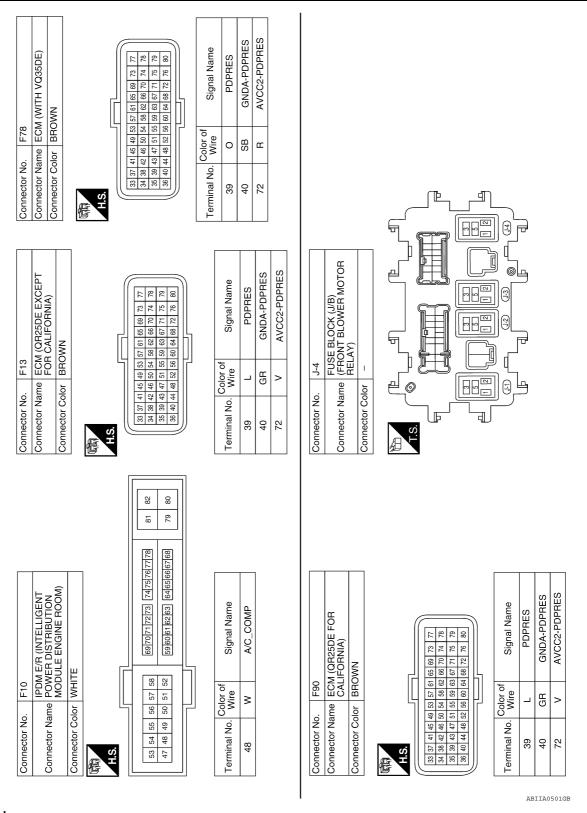
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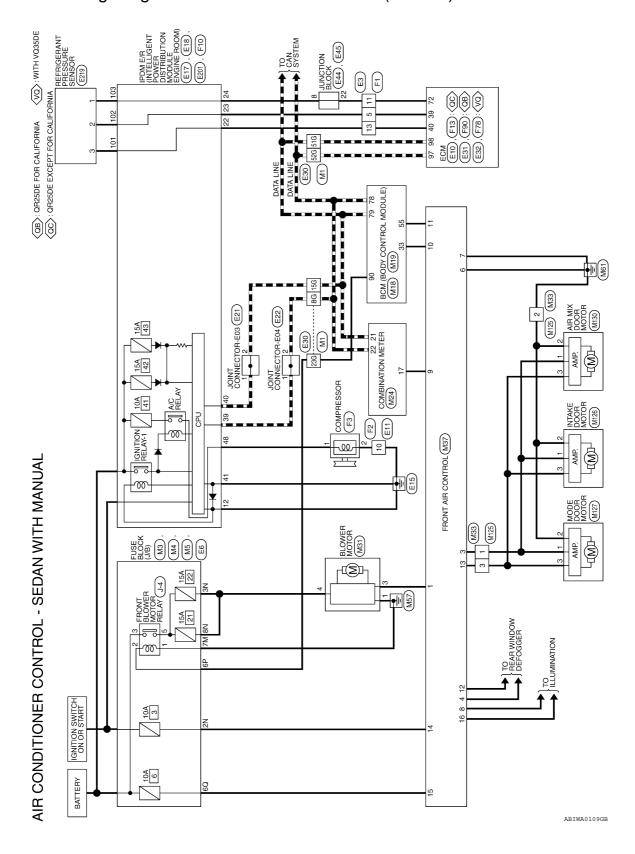
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SEDAN

SEDAN: Wiring Diagram - Air Conditioner Control (Manual) - Sedan

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AIRCON_SW BLOWER_FAN_SW

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AIR CONDITIONER CONTROL CONNECTORS - SEDAN WITH MANUAL

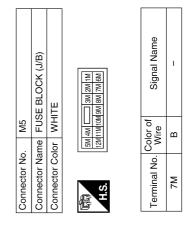
Connector Name WIRE TO WIRE Connector Color WHITE

Connector No.

Connector No.	o. M3	
Connector Name		FUSE BLOCK (J/B)
Connector Color	olor WH	WHITE
H.S.		3N
Terminal No. Wire	Color of Wire	Signal Name
NS NS	ŋ	ı
NE	M/L	-
N8	M/L	ı

						,
Signal Name	-	-	ı	-	_	
Color of Wire	۵	7	>	٦	Д	
Terminal No. Wire	8G	15G	23G	51G	52G	

Connector No.	M18	
Connector Name		BCM (BODY CONTROL MODULE)
Connector Color	olor GREEN	EN
(南京) H.S.		
39 38 37 36 35	36 35 34 33 32 31	31 30 29 28 27 26 25 24 23 22 21 20
59 58 57 56 55	54 53 52 51	50 49 48 47 46 45 44 43 42 41 40
Terminal No.	Color of Wire	Signal Name



Connector No.	o. M4	
Connector Name		FUSE BLOCK (J/B)
Connector Color WHITE	olor WE	IITE
斯 H.S.	40 30 100 90	40 30 10 20 10 10 100 80 70 80 50
Terminal No.	Color of Wire	Signal Name
09	Y/R	1

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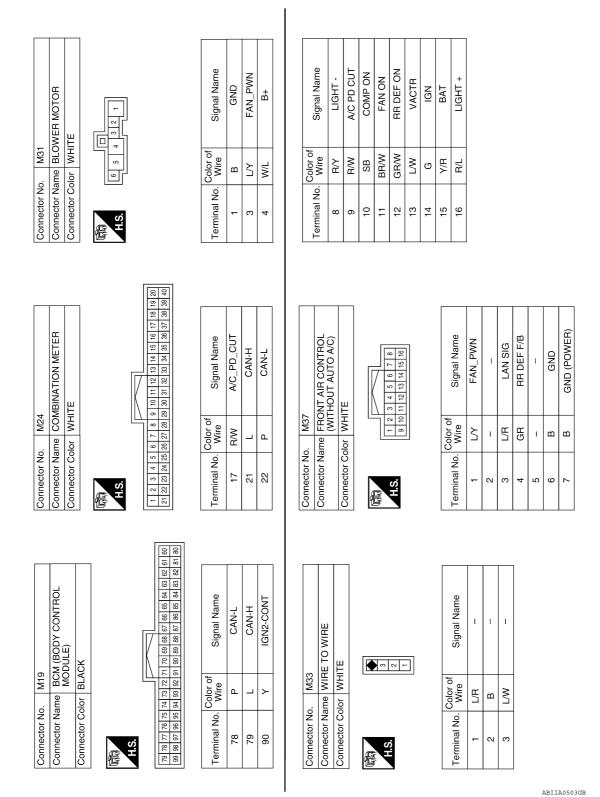
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27	Connector Name MODE DOOR MOTOR	IITE	<u></u>	f Signal Name	ı	ı	ı
Σ	me MC	lor WH		Color o Wire	L'A	В	<u>~</u>
Connector No. M127	Connector Na	Connector Color WHITE	H.S.	Terminal No. Wire	-	2	3
97	Connector Name INTAKE DOOR MOTOR	ТЕ		Signal Name	ı	ı	ı
. M12	ıme INT	lor WF		Color of Wire	L/R	В	ΓW
Connector No. M126	Connector Na	Connector Color WHITE	原 H.S.	Terminal No. Wire	ļ	2	8
125	IRE TO WIRE	HITE		Signal Name	ı	I	ı
No.	Vame W	Solor W		Color of Wire	L/R	В	ΓW
Connector No. M125	Connector Name WIRE TO WI	Connector Color WHITE	H.S.	Terminal No. Wire	-	2	က

						1
ı	ı			Connector Name FUSE BLOCK (J/B)	ITE	PP 6P 5P 4P 2P 1P 6P 1SP 14P 1SP 12P 11P 1SP 12P 11P 1SP 1SP 1SP 1SP 1SP 1SP 1SP 1SP 1S
В	M). E6	ıme FU	olor WF	7P 6P 5P 4P 16P 15P 14P 13P
2	ဗ		Connector No. E6	Connector Na	Connector Color WHITE	语 U
ı	ı			RE TO WIRE	ITE	1 2 3 — 4 5 6 7 8 9 10 11 12 13 14 15 16
В	L/W). E3	ame WIF	olor WH	1 2 3 8 9 10 1
2	င		Connector No.	Connector Name WIRE TO WIRE	Connector Color WHITE	
					1	1
ı	ı		130	lame AIR MIX DOOR MOTOR	HTE	
В			lo. M130	lame Al	olor WHITE	

Connector No. E6	Connector Name FUSE BLOCK (J/B)	Connector Color WHITE	(下) (P) (SP) (4P) ((二) (3P) (2P) (1P) (1SP) (4P) (4P) (4P) (4P) (4P) (4P) (4P) (4	Terminal No. Wire Signal Name	- A		
83	VIRE TO WIRE	VHITE	8 9 10 11 12 13 14 15 16	of Signal Name	ı	ı	ı
Connector No. E3	Connector Name WIRE TO WIRE	Connector Color WHITE	H.S.	Terminal No. Wire	5 GR	11 GR	13 SB
			<u> </u>				
30	Connector Name AIR MIX DOOR MOTOR	ITE		Signal Name	1	I	ı
). M18	ame AIR	olor WH		Color of Wire	L/R	В	M
Connector No. M130	Connector Na	Connector Color WHITE	H.S.	Terminal No. Wire	-	2	က

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Connector No. E17 Connector Name POWER DISTRIBUTION MODULE ENGINE ROOM) Connector Color WHITE ##.S. ##.S. ##.S. ##.S. ##.S.	Terminal No. Color of Wire Signal Name 39 P CAN-L 40 L CAN-H 41 B GND(SIGNAL)	Connector No. E22 Connector Name JOINT CONNECTOR-E04 Connector Color WHITE H.S. Terminal No. Color of Signal Name 1 P - 2 P - 2 P -
E11 MHTE Olor of	Terminal No. Wire Signal Name	Connector No. E21
Connector No. E10 Connector Name ECM (GR25DE EXCEPT FOR CALIFORNIA) Connector Color BLACK	Terminal No. Color of Wire Signal Name 97 P CAN-L 98 L CAN-H	PDM E/R (INTELLIGENT PDM E/R (INTELLIGENT POWER DISTRIBUTION PD SENS_GIG-E/R PD SENS_BIG-E/R PD SENS_BIG-E/R

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Connector No. E31	Connector No. E45
Terminal No. Wire Signal Name 8G P	Connector No. E44
Connector No. E30 Connector Name WIRE TO WIRE Connector Color WHITE 16 26 46 56 66 76 86 96 16 26 106 116 126 136 146 156 166 176 20 216 226 236 246 256 266 160 190 270 286 286 376 386 386 386 386 386 386 386 386 386 38	Connector No. E32 Connector Name ECM (WITH VQ35DE) Connector Color BLACK BLACK

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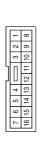
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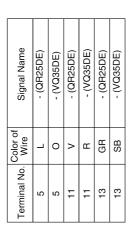
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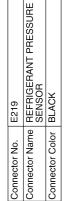
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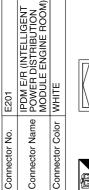


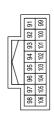


SIGNAL AVCC2

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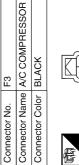


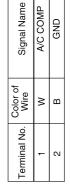


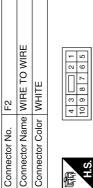


Signal Name	PD_SENS_GND-FEM	PD_SENS_SIG-FEM	PD_SENS_PWR-FEM
Color of Wire	J/O	R/B	Ь
Terminal No.	101	102	103













Signal Name	I	
Color of Wire	В	
Terminal No.	10	

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SYMPTOM DIAGNOSIS

AIR CONDITIONER CONTROL

Symptom Matrix Chart

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SYMPTOM TABLE

Symptom	Reference Page	
A/C system does not come on.	Go to Trouble Diagnosis Procedure for A/C System.	HAC-130, "Diagno- sis Procedure"
Air outlet does not change.	Go to Trouble Diagnosis Procedure for Mode Door Motor. (LAN)	HAC-117, "Diagno-
Mode door motor does not operate normally.	Go to Houble Diagnosis Procedure for Mode Door Motor. (LAN)	sis Procedure"
Discharge air temperature does not change.		HAC-113, "Diagno-
Air mix door motor does not operate normally.	Go to Trouble Diagnosis Procedure for Air Mix Door Motor. (LAN)	sis Procedure"
Intake door does not change.	Go to Trouble Diagnosis Procedure for Intake Door Motor. (LAN)	HAC-113, "Diagno-
Intake door motor does not operate normally.	Go to Trouble Diagnosis Procedure for Intake Door Motor. (LAN)	sis Procedure"
Blower motor operation is malfunctioning.	Go to Trouble Diagnosis Procedure for Blower Motor.	HAC-122, "Diagno- sis Procedure"
Magnet clutch does not engage.	Go to Trouble Diagnosis Procedure for Magnet Clutch.	HAC-127, "Diagno- sis Procedure"
Insufficient cooling	Go to Trouble Diagnosis Procedure for Insufficient Cooling.	HAC-151, "Component Function Check"
Insufficient heating	Go to Trouble Diagnosis Procedure for Insufficient Heating.	HAC-159, "Component Function Check"
Noise	Go to Trouble Diagnosis Procedure for Noise.	HAC-161, "Compo- nent Function Check"

INSUFFICIENT COOLING

< SYMPTOM DIAGNOSIS >

[MANUAL AIR CONDITIONER]

INSUFFICIENT COOLING

Component Function Check

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SYMPTOM: Insufficient cooling

INSPECTION FLOW

${f 1}$. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE DECREASE

- Press the A/C switch.
- Turn temperature control dial counterclockwise to maximum cold.
- 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-100, "Description & Conditions".

Does another symptom exist?

>> Refer to HAC-150, "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-120, "Checking Drive Belts" (VQ35DE).

Is the inspection result normal?

YES >> GO TO 5

>> Adjust or replace compressor belt. Refer to EM-16, "Removal and Installation" (QR25DE) or EM-NO 120, "Removal and Installation" (VQ35DE).

$oldsymbol{5}$. CHECK AIR MIX DOOR MOTOR OPERATION

Check and verify air mix door mechanism for smooth operation.

Does air mix door operate correctly?

YFS >> GO TO 6

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

O. 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-959, "Component Function Check" (QR25DE) or EC-1495, "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

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

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INSUFFICIENT COOLING

< SYMPTOM DIAGNOSIS >

[MANUAL AIR CONDITIONER]

Is the inspection result normal?

YES >> GO TO 9

NO >> Check contaminated refrigerant. Refer to HA-21, "HFC-134a (R-134a) Service Procedure".

9. CHECK REFRIGERANT PRESSURE

Check refrigerant pressure with manifold gauge connected. Refer to <u>HAC-155</u>, "Trouble <u>Diagnosis For Abnormal Pressure"</u>.

Is the inspection result normal?

YES >> Perform diagnostic work flow. Refer to <u>HAC-152</u>, "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 <u>HAC-152</u>, "Diagnostic Work Flow".

NO >> GO TO 11

11. CHECK AIR DUCTS

Check ducts for air leaks.

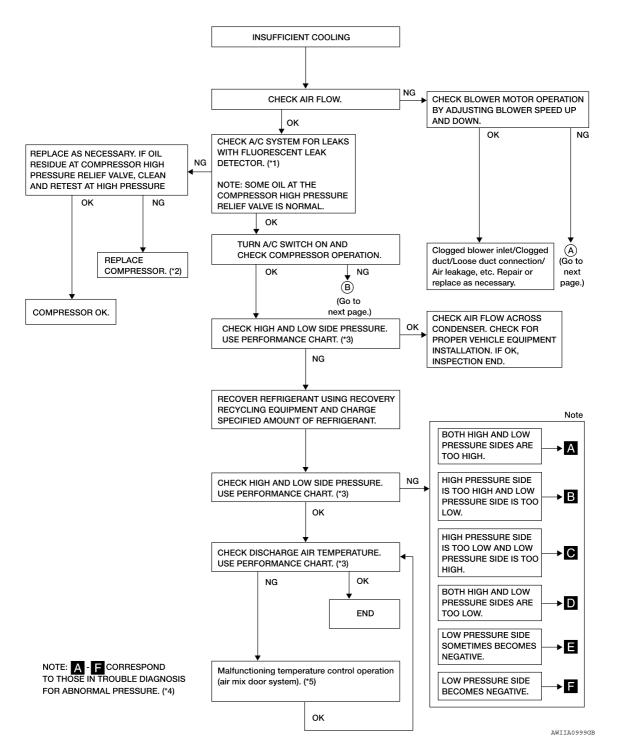
Is the inspection result normal?

YES >> System OK.

NO >> Repair air leaks.

Diagnostic Work Flow

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HA-24, "Checking System for Leaks *2 Using the Fluorescent Leak Detector"

Abnormal Pressure"

- HA-30, "Removal and Installation for *3 HAC-119, "Diagnosis Procedure" Compressor - QR25DE Models" or HA-31, "Removal and Installation for Compressor - VQ35DE Models"
- HAC-155, "Trouble Diagnosis For *5 HAC-119, "Diagnosis Procedure"

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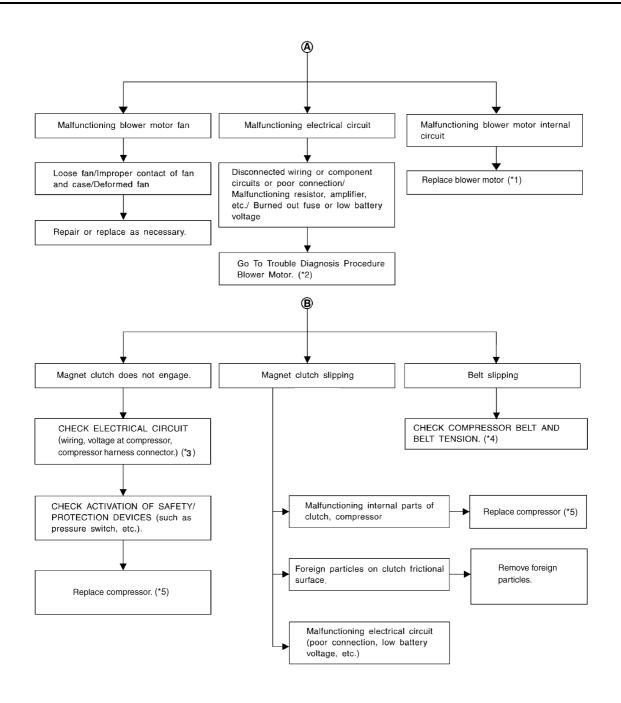
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- *1 VTL-15, "Removal and Installation"
- *4 EM-16, "Checking Drive Belts" (QR25DE) or EM-120, "Checking Drive Belts" (VQ35DE)
- *2 HAC-122, "Diagnosis Procedure"
- *5 HA-30, "Removal and Installation for Compressor - QR25DE Models" or HA-31, "Removal and Installation for Compressor - VQ35DE Models"

*3 HAC-127, "Diagnosis Procedure"

Performance Chart

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TEST CONDITION

Testing must be performed as follows:

INSUFFICIENT COOLING

< SYMPTOM DIAGNOSIS >

[MANUAL AIR CONDITIONER]

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

Ambient Air Temperature-to-operating Pressure Table

Amb	ient air	- High-pressure (Discharge side)	Low-pressure (Suction side)	
Relative humidity %	Air temperature °C (°F)	kPa (kg/cm2, psi)	kPa (kg/cm2, psi)	
	30 (86)	1,220 - 1,500 (12.44 - 15.30, 176.9 - 217.5)	240 - 295 (2.45 - 3.01, 34.8 - 42.8)	
50 - 70	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

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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

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Gauge indication	Refrigerant cycle	Probable cause	Corrective action
Both high and low-pressure sides are too high.	Pressure is reduced soon after water is splashed on condenser.	Excessive refrigerant charge in refrigeration cycle	Reduce refrigerant until speci- fied 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/cm², 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 mal- function.	Check and repair each engine cooling system.
Ф В А AC359A	 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. Improper thermal valve installation 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
High-pressure side is too high and low-pressure side is too low.	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
High-pressure side is too low and low-pressure side is too high.	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 be- tween high and low-pressure sides	Compressor pressure operation is improper. Understand the compressor packings.	Replace compressor.

Both High- and Low-pressure Sides are Too Low

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
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-22, "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

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Gauge indication	Refrigerant cycle	Probable cause	Corrective action
Low-pressure side sometimes becomes negative.	 Air conditioning system does not function and does not cy- clically cool the compart- ment air. The system constantly func- tions 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
Low-pressure side becomes negative.	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.

Is the inspection result normal?

>> GO TO 8

>> Both hoses warm: GO TO 9

8. CHECK ENGINE COOLANT SYSTEM

YES

NO

INSUFFICIENT HEATING Α Component Function Check INFOID:000000005432695 SYMPTOM: Insufficient heating B INSPECTION FLOW ${f 1}$. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE INCREASE Turn temperature control dial clockwise to maximum heat. 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 Е Perform a complete operational check and check for any symptoms. Refer to HAC-100, "Description & Conditions". Does another symptom exist? >> Refer to HAC-150, "Symptom Matrix Chart". NO >> System OK. CHECK FOR SERVICE BULLETINS Check for any service bulletins. Н >> GO TO 4 4. CHECK ENGINE COOLING SYSTEM HAC Check for proper engine coolant level. Refer to CO-11, "System Inspection" (QR25DE) or CO-33, "System Inspection" (VQ35DE). Check hoses for leaks or kinks. Check radiator cap. Refer to CO-11, "System Inspection" (QR25DE) or CO-33, "System Inspection" (VQ35DE). Check for air in cooling system. >> GO TO 5 ${f 5.}$ 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 M NO >> Check the air mix door motor circuit. Refer to HAC-119, "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 Start engine and warm it up to normal operating temperature. Touch both the inlet and outlet heater hoses. The inlet hose should be hot and the outlet hose should be warm.

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INSUFFICIENT HEATING

< SYMPTOM DIAGNOSIS >

[MANUAL AIR CONDITIONER]

Check thermostat operation. Refer to CO-20, "Removal and Installation" (QR25DE) or CO-44, "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 <u>CO-12, "Changing Engine Coolant"</u> (QR25DE) or CO-34, "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.
- Touch both the inlet and outlet heater hoses. The inlet hose should be hot and the outlet hose should be warm

Is the inspection result normal?

YES >> System OK.

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

NOISE

Component Function Check

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SYMPTOM: Noise

INSPECTION FLOW

Confirm symptom by performing the following operational check.
 If OK (symptom can not be duplicated), perform complete operational check (*1).

If NG (symptom is confirmed), continue with STEP-2 following.

Replace expansion

valve. (*4)

NG

2. Check for any service bulletins.

3. Check where noise comes from.

4. Check compressor belt and belt tension.

(*2)

OK

5. Check refrigerant high and low pressure.
Use performance chart. (*3)

Expansion valve

Refrigerant line

Belt

Check for noise in all modes and temperature settings.

Inspect the compressor and idler pulley.

Check blower motor for foreign particles.

Check for refrigerant line-to-compressor and pulley or idler pulley (*5)

ОК

Compressor

Check blower motor and fan for wear.

Blower motor

Noise is

OK
Check and adjust compressor oil.
(*7)

OK

Replace compressor (*6) and liquid tank. (*8)

Check torque

of compressor

mounting bolts.

(*6)

intermittent. ↓

Check air discharge ducts for obstructions, foreign materials or air leakage.

Noise is

The line is fixed directly to the body.

The line is not fixed.

Fix the line tightly.

Fix the line with rubber or some vibration absorbing material.

Loose Belt
Side of belt is worn out.

Re-adjust belt tension.
(*2)

Inspect and repair pulley alignment.

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NOISE

[MANUAL AIR CONDITIONER]

*1 HAC-100, "Operational Check" *2 EM-16, "Checking Drive Belts" *3 HAC-154, "Performance Chart" (QR25DE) or EM-120, "Checking Drive Belts" (VQ35DE) *4 HA-39, "Removal and Installation for *5 HA-30, "Removal and Installation for *6 HA-30, "Removal and Installation for Compressor - QR25DE Models" or Expansion Valve" Compressor - QR25DE Models" or HA-31, "Removal and Installation for HA-31, "Removal and Installation for Compressor - VQ35DE Models" Compressor - VQ35DE Models" *7 HA-18, "Maintenance of Oil Quantity *8 HA-36, "Removal and Installation for in Compressor" Condenser"

PRECAUTION

PRECAUTIONS

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

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

WARNING:

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

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

WARNING:

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

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

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

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

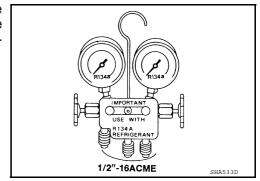
- Explain to the customer that environmental regulations prohibit the release of contaminated refrigerant into the atmosphere.
- Explain that recovery of the contaminated refrigerant could damage your service equipment and refrigerant supply.
- Suggest the customer return the vehicle to the location 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

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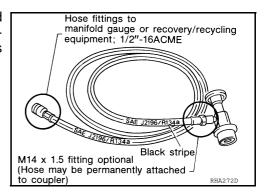
MANIFOLD GAUGE SET

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 shutoff 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

