

SECTION **HAC**

HEATER & AIR CONDITIONING CONTROL SYSTEM

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## BASIC INSPECTION

### DIAGNOSIS AND REPAIR WORKFLOW

#### Work Flow

INFOID:000000006388961

#### DETAILED FLOW

#### 1. LISTEN TO CUSTOMER COMPLAINT

---

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

>> GO TO 2

#### 2. VERIFY THE SYMPTOM WITH OPERATIONAL CHECK

---

Verify the symptom with operational check. Refer to [HAC-5, "Description and Conditions"](#).

>> GO TO 3

#### 3. GO TO APPROPRIATE TROUBLE DIAGNOSIS

---

Go to appropriate trouble diagnosis. Refer to [HAC-89, "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

INFOID:000000006388962

#### DESCRIPTION

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

#### CONDITIONS:

- Engine running and at normal operation temperature.


### Inspection Procedure

INFOID:000000006388963



#### Step 1: Check Blower

1. Turn blower control dial clockwise, blower should operate on low speed.
  2. Continue turning blower control dial clockwise, and continue checking blower speeds until all speeds are checked.
  3. Leave blower on HI speed.
- If NG, go to [HAC-47, "Diagnosis Procedure"](#).  
If OK, continue with next check.

#### Step 2: Check Discharge Air

1. Press each mode switch and press DEF () switch.
2. Each mode position indicator should illuminate.
3. Confirm that discharge air comes out according to the air distribution table. Refer to [HAC-13, "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-40, "Diagnosis Procedure"](#).

If OK, continue with next check.

#### Step 3: Check Recirculation

1. Press REC () switch.  
Recirculation indicator should illuminate.
  2. Press REC () switch a second time.
  3. Listen for intake door position change (you should hear blower sound change slightly).
- If NG, go to [HAC-42, "Diagnosis Procedure"](#).  
If OK, continue with next check.

#### Step 4: Check Temperature Decrease

1. Turn the temperature dial counterclockwise to 18°C (60°F°).
  2. Check for cold air at discharge air outlets.
- If NG, go to [HAC-90, "Component Function Check"](#).  
If OK, continue with next check.

#### Step 5: Check Temperature Increase

1. Turn the temperature dial clockwise to 32°C (90°F°).
  2. Check for hot air at discharge air outlets.
- If NG, go to [HAC-98, "Component Function Check"](#).  
If OK, continue with next check.

#### Step 6: Check Auto Mode

1. Press the AUTO switch.
  2. Confirm that the compressor clutch engages (audio or visual inspection).  
(Discharge air and blower speed will depend on ambient, in-vehicle and set temperatures.)
- If NG, go to [HAC-67, "Diagnosis Procedure"](#), then if necessary, [HAC-52, "Component Function Check"](#).  
If all operational checks are OK (symptom can not be duplicated), refer to [GI-38, "Work Flow"](#) and perform tests as outlined to simulate driving condition environment. If symptom appears, refer to [HAC-89, "Symptom Matrix Chart"](#).

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# INSPECTION AND ADJUSTMENT

< BASIC INSPECTION >

[AUTOMATIC AIR CONDITIONER]

INFOID:000000006388964

## Auxiliary Mechanism Trimmers

### Temperature Setting Trimmer

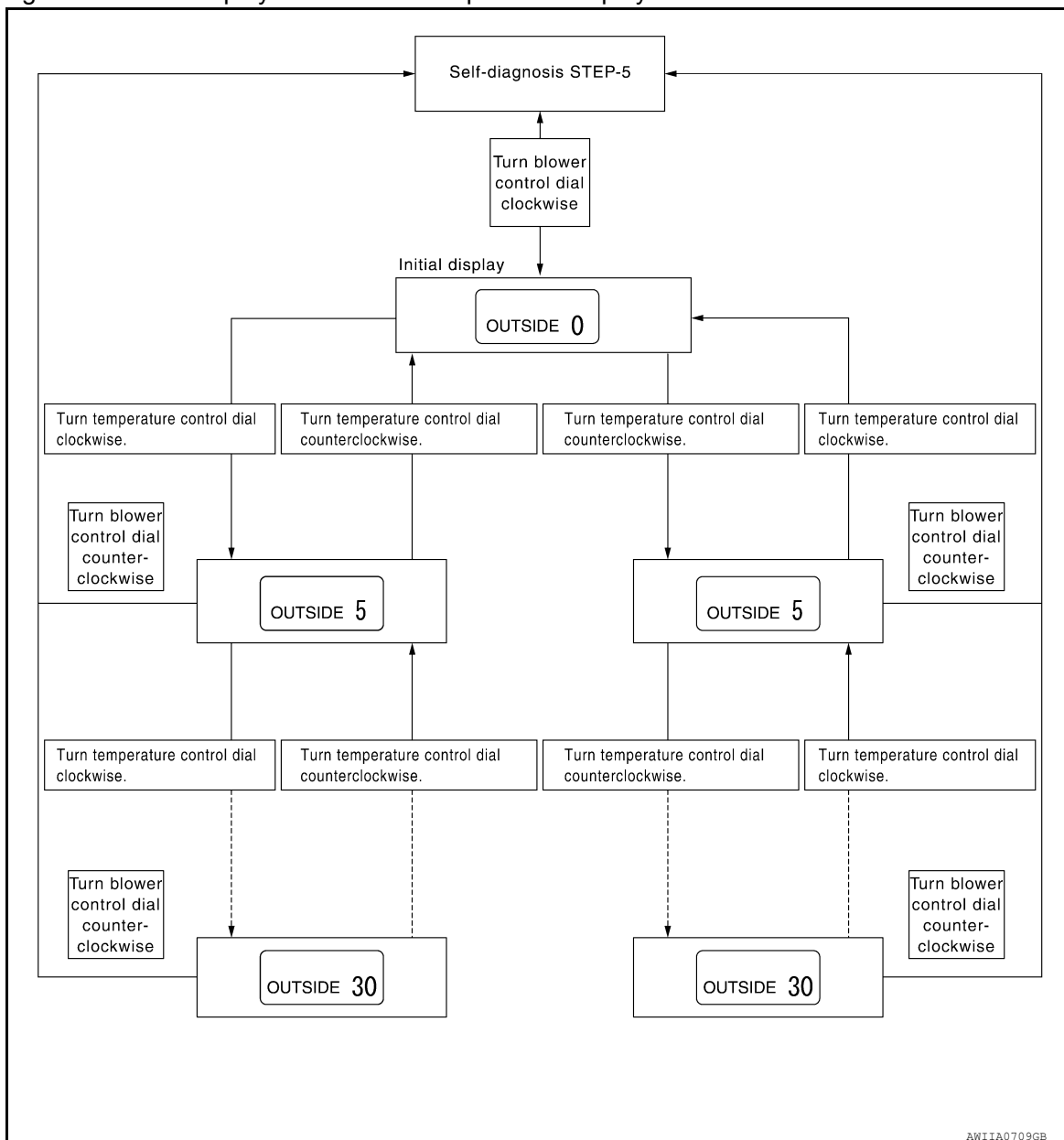
The trimmer compensates for differences in range of  $\pm 3^{\circ}\text{C}$  ( $\pm 6^{\circ}\text{F}$ ) between temperature setting (displayed digitally) and temperature felt by customer.

Operating procedures for this trimmer are as follows:

1. Begin self-diagnosis STEP-5 mode. Refer to [HAC-27. "Diagnosis Description"](#).
2. Turn blower control dial clockwise to set system in auxiliary mode.
3. Display shows "61" in auxiliary mechanism. It takes approximately 3 seconds to enable setting operation.
4. Turn temperature control dial (LH) as desired. Temperature will change at a rate of  $0.5^{\circ}\text{C}$  ( $1.0^{\circ}\text{F}$ ) 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.



# INSPECTION AND ADJUSTMENT

< BASIC INSPECTION >

[AUTOMATIC AIR CONDITIONER]

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

## Foot Position Setting Trimmer

D/F1 stop position mode can be set.

Operating procedures for this trimmer are as follows:

1. Begin self-diagnosis STEP-5 mode. Refer to [HAC-27. "Diagnosis Description"](#).
2. Turn blower control dial clockwise to set system in auxiliary mode.
3. Press the OFF switch for each mode as desired.


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





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

## Inlet Port Memory Function

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

Operating procedures for this trimmer are as follows:

1. Begin self-diagnosis STEP-5 mode. Refer to [HAC-27. "Diagnosis Description"](#).
2. Turn blower control dial clockwise to set system in auxiliary mode.
3. Press REC (  ) switch as desired.

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

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

# FUNCTION INFORMATION

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONER]

## SYSTEM DESCRIPTION

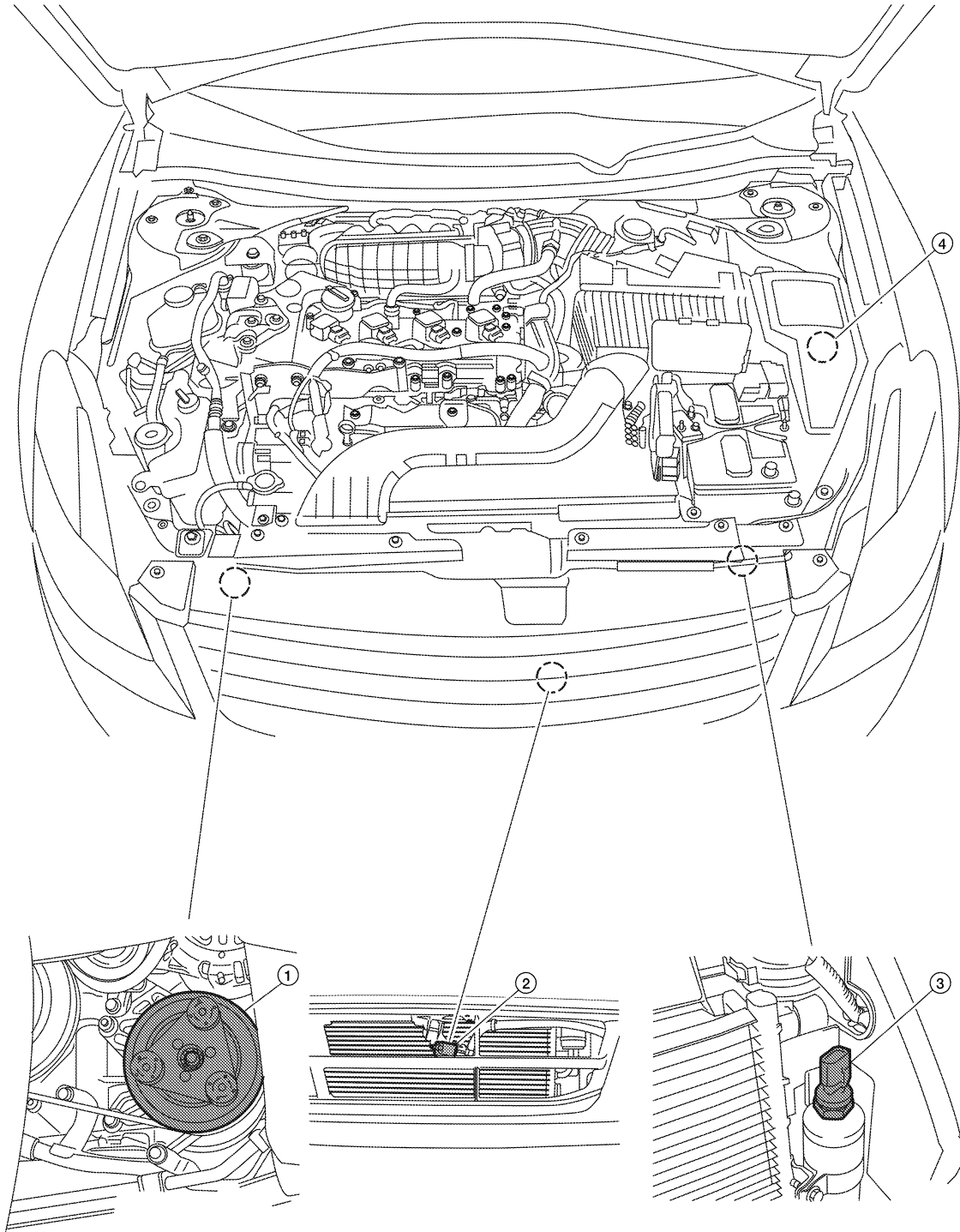
### FUNCTION INFORMATION

Component Part Location

INFOID:000000006388965

### ENGINE COMPARTMENT

QR25DE Models



ANI1A12362Z



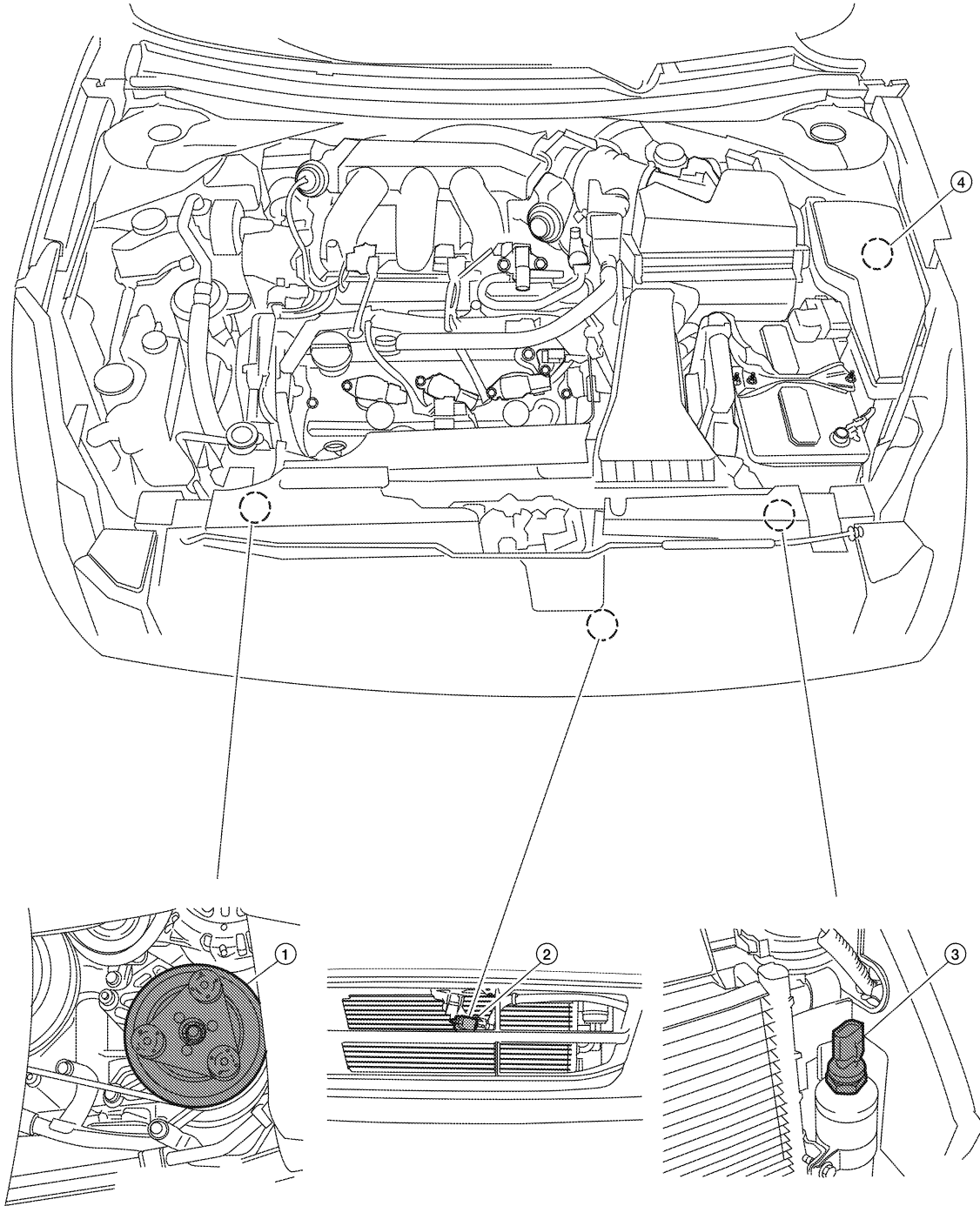
# FUNCTION INFORMATION

< SYSTEM DESCRIPTION >

[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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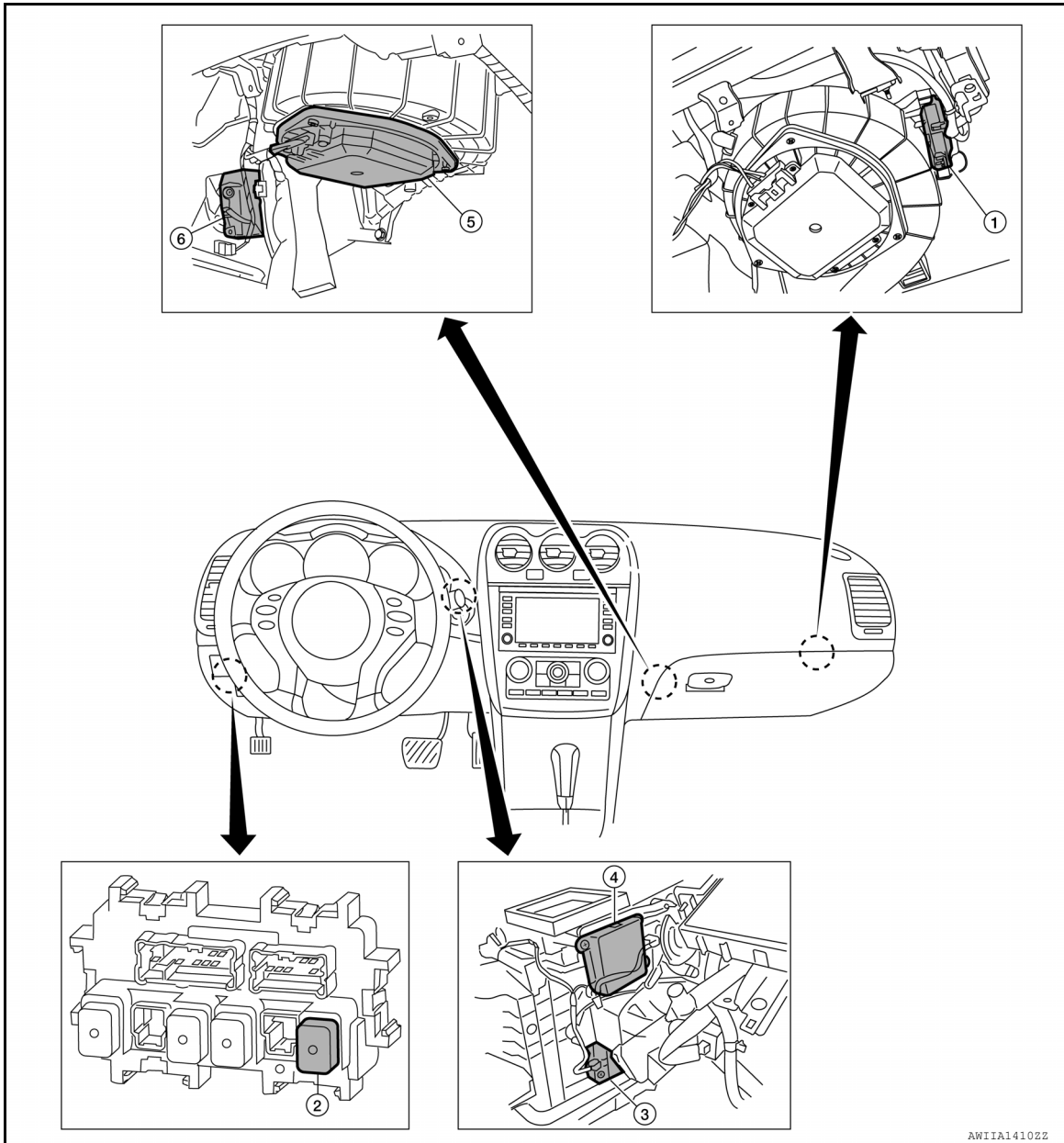
# FUNCTION INFORMATION

< SYSTEM DESCRIPTION >

[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)

## PASSENGER COMPARTMENT



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

## Component's role

INFOID:000000006388966

Component	Reference
Air mix door motor	<a href="#">HAC-42. "Diagnosis Procedure"</a>
Ambient sensor	<a href="#">HAC-56. "Diagnosis Procedure"</a>
Blower motor	<a href="#">HAC-47. "Diagnosis Procedure"</a>
A/C Compressor	<a href="#">HAC-52. "Diagnosis Procedure"</a>

# FUNCTION INFORMATION

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONER]

Component	Reference
intake door motor	<a href="#">HAC-45. "Diagnosis Procedure"</a>
Intake sensor	<a href="#">HAC-65. "Diagnosis Procedure"</a>
In-vehicle sensor	<a href="#">HAC-59. "Diagnosis Procedure"</a>
Mode door motor	<a href="#">HAC-40. "Diagnosis Procedure"</a>
Refrigerant pressure sensor	<a href="#">EC-271. "Diagnosis Procedure"</a> (QR25DE) or <a href="#">EC-636. "Diagnosis Procedure"</a> (VQ35DE)
Sunload sensor	<a href="#">HAC-62. "Diagnosis Procedure"</a>

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**HAC**

# REFRIGERATION SYSTEM

< SYSTEM DESCRIPTION >

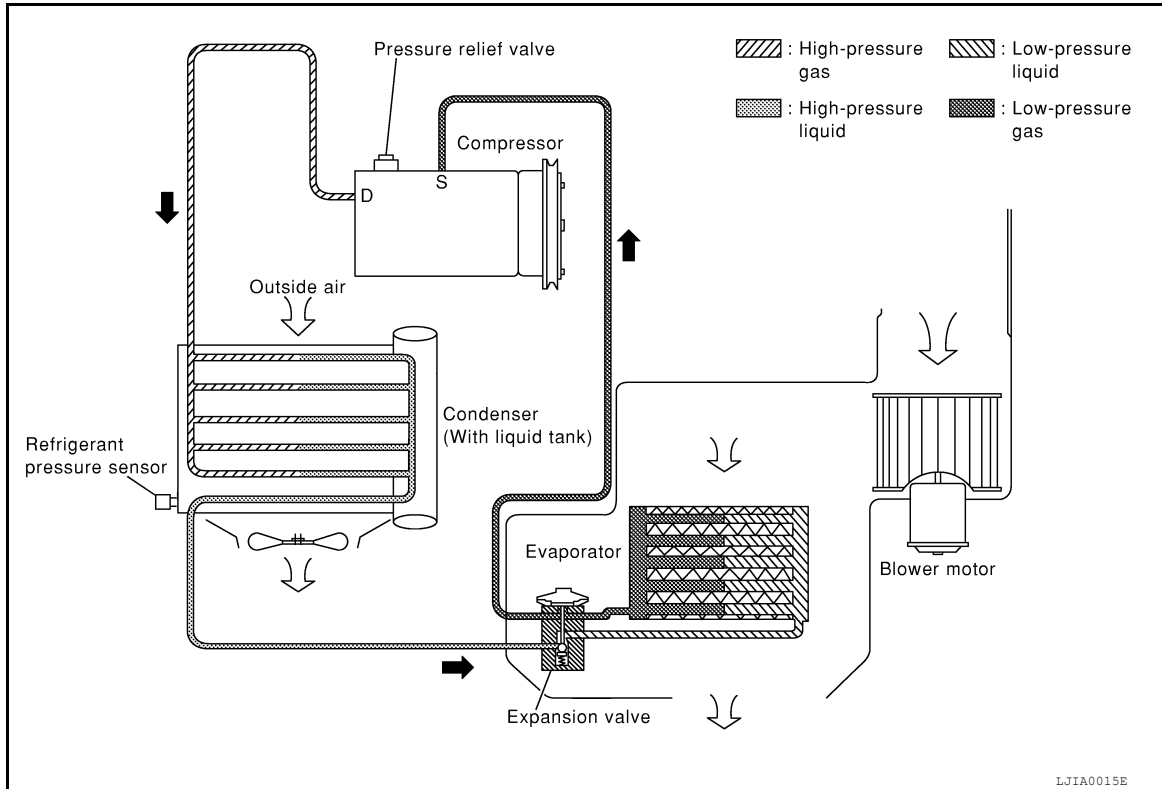
[AUTOMATIC AIR CONDITIONER]

## REFRIGERATION SYSTEM

### Refrigerant Cycle

INFOID:000000006388967

#### Refrigerant flow



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

### Refrigerant System Protection

INFOID:000000006388968

#### Refrigerant pressure sensor

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

#### Pressure Relief Valve

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

# AUTOMATIC AIR CONDITIONER SYSTEM

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONER]

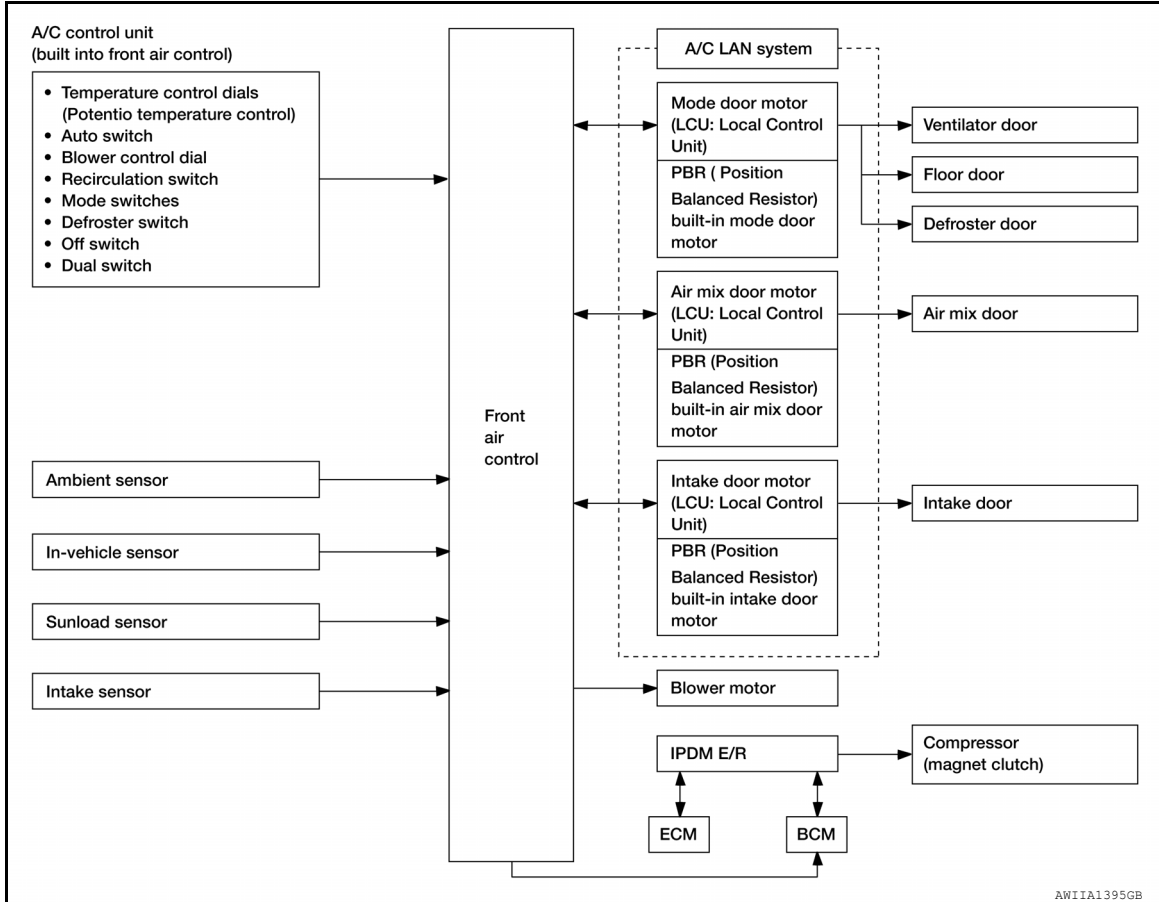
## AUTOMATIC AIR CONDITIONER SYSTEM

### System Diagram

INFOID:000000006388969

### CONTROL SYSTEM

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



### System Description

INFOID:000000006388970

### CONTROL OPERATION

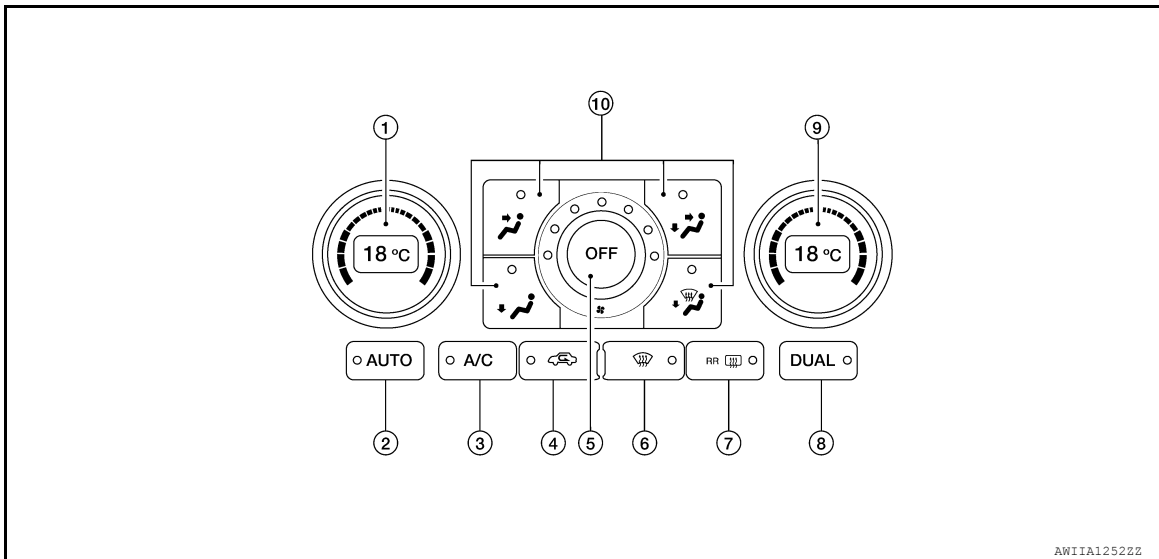
#### Display Screen

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

# AUTOMATIC AIR CONDITIONER SYSTEM

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONER]



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

## AUTO Switch

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

## Mode Switches

The air discharge outlets is controlled through the mode door.

## Temperature Control Dial (Potentio Temperature Control) (LH)

The set temperature is increased or decreased with this dial.

## Temperature Control Dial (Potentio Temperature Control) (RH)

- The set temperature is increased or decreased with this dial.
- When the temperature control dial is turned, the DUAL switch indicator will automatically illuminate.

## Defroster ( ) Switch

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

## A/C Switch

The compressor ON signal is controlled with this switch.

(Pressing the A/C switch when the A/C switch is ON will turn OFF the A/C switch and cancel the compressor ON signal. A fan ON signal must be present before the A/C switch will illuminate, the front air control will send a compressor ON signal, or the compressor will activate.)

## Blower Control Dial/OFF Switch

- The blower speed is manually controlled with this dial. When the blower is in any ON position, a fan ON signal is sent to the BCM.
- 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






# AUTOMATIC AIR CONDITIONER SYSTEM

## [AUTOMATIC AIR CONDITIONER]

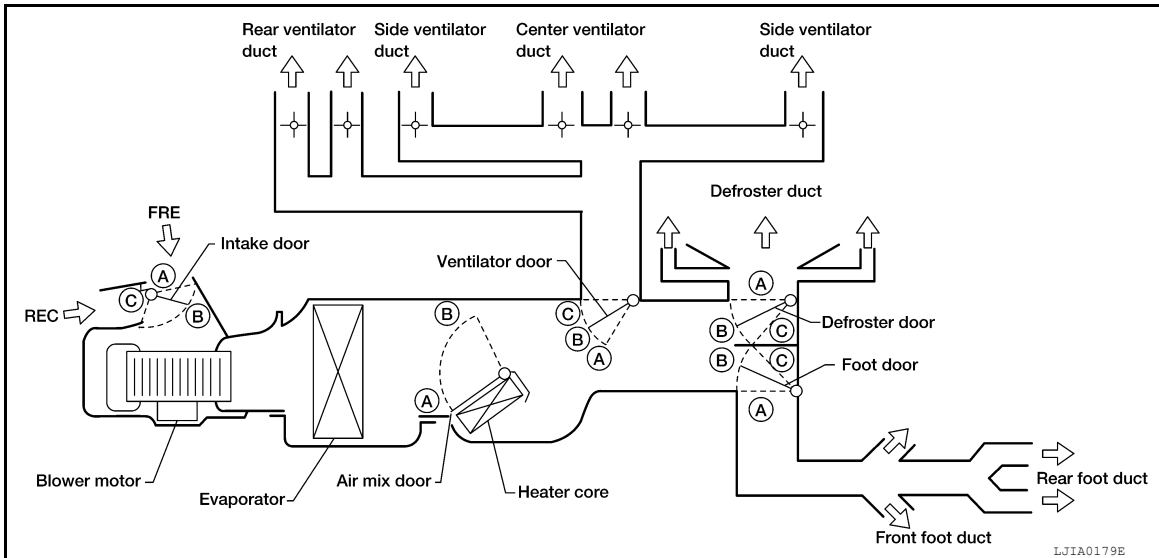
### < SYSTEM DESCRIPTION >

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

### DISCHARGE AIR FLOW

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








### SWITCHES AND THEIR CONTROL FUNCTION



# AUTOMATIC AIR CONDITIONER SYSTEM

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONER]

Position or switch	MODE DIAL					AUTO SW	REC SW		Temperature DIAL		
	VENT	B/L	FOOT	D/F	DEF		ON	OFF			
Door						AUTO					
	*	○				AUTO	*	○	18°C (60°F)	—	32°C (90°F)
Ventilator door	A	B	C	C	C		—		—		
Foot door	A	B	C	C	A		—		—		
Defroster door	A	A	B	C	C		—		—		
Air mix door	—			—			—		A	AUTO	B
Intake door	—			C			A	AUTO*1	—		

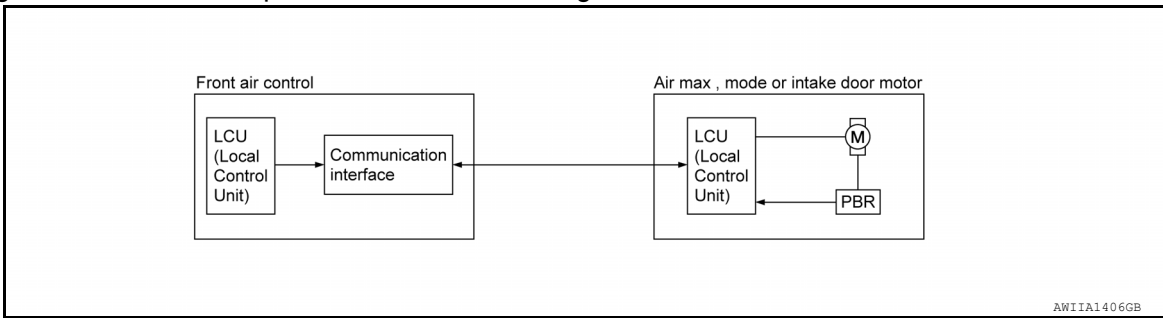
\*1: Automatically controlled when REC switch is OFF.

AWI1A1407GB

## 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.



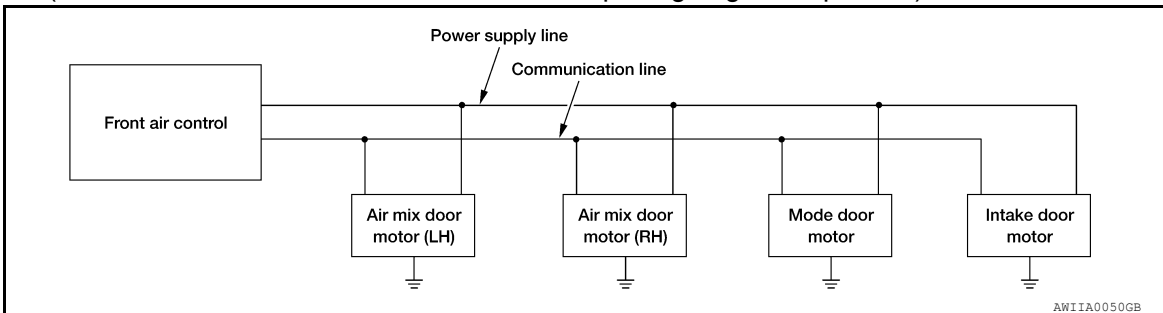
## SYSTEM CONSTRUCTION

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 motor.

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 (Position Balanced Resistor [PBR] function)
- Comparison
- Decision (Front air control indicated value and motor opening angle comparison)



Operation



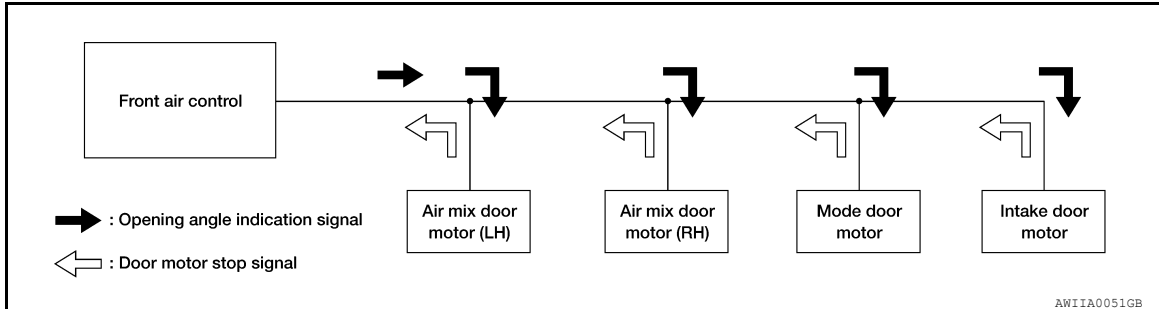
# AUTOMATIC AIR CONDITIONER SYSTEM

## [AUTOMATIC AIR CONDITIONER]

### < SYSTEM DESCRIPTION >

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:



# AUTOMATIC AIR CONDITIONER SYSTEM

## [AUTOMATIC AIR CONDITIONER]

### < SYSTEM DESCRIPTION >

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

Upon receipt of compressor ON signal from ECM, IPDM E/R turns air conditioner relay ON to operate compressor.

When sending compressor ON signal to IPDM E/R via CAN communication line, ECM simultaneously sends compressor feedback signal to ECM via CAN communication line.

### Component Part Location

INFOID:000000006388971

#### ENGINE COMPARTMENT

Refer to [HAC-8. "Component Part Location"](#).

#### PASSENGER COMPARTMENT

Refer to [HAC-8. "Component Part Location"](#).

### Component Description

INFOID:000000006388972

Refer to [HAC-10. "Component's role"](#).

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HAC

# DIAGNOSIS SYSTEM (BCM)

[AUTOMATIC AIR CONDITIONER]

< SYSTEM DESCRIPTION >

## DIAGNOSIS SYSTEM (BCM)

### AIR CONDITIONER

#### AIR CONDITIONER : CONSULT Function (BCM - AIR CONDITIONER)

INFOID:000000006921022

#### DATA MONITOR

Monitor Item [Unit]	Contents
FAN ON SIG [ON/OFF]	Display [FAN (On)/FAN (Off)] status as judged from blower fan motor switch signal
AIR COND SW [ON/OFF]	Display [COMP (On)/COMP (Off)] status as judged from air conditioner switch signal

## DIAGNOSIS SYSTEM (IPDM E/R)

## Diagnosis Description

INFOID:000000006921023

## AUTO ACTIVE TEST

## Description

In auto active test mode, the IPDM E/R sends a drive signal to the following systems to check their operation.

- Oil pressure warning lamp
- Front wiper (LO, HI)
- Parking lamps
- License plate lamps
- Tail lamps
- Front fog lamps (if equipped)
- Headlamps (LO, HI)
- A/C compressor (magnet clutch)
- Cooling fans

## Operation Procedure

1. Close the hood and lift the wiper arms from the windshield. (Prevent windshield damage due to wiper operation)

**NOTE:**

When auto active test is performed with hood opened, sprinkle water on windshield beforehand.

2. Turn ignition switch OFF.
3. Turn the ignition switch ON, and within 20 seconds, press the front door switch LH 10 times. Then turn the ignition switch OFF.

**CAUTION:**

**Close front door RH.**

4. Turn the ignition switch ON within 10 seconds. After that the horn sounds once and the auto active test starts.
5. The oil pressure warning lamp starts blinking when the auto active test starts.
6. After a series of the following operations is repeated 3 times, auto active test is completed.

**NOTE:**

When auto active test mode has to be cancelled halfway through test, turn ignition switch OFF.

**CAUTION:**

- **If auto active test mode cannot be actuated, check door switch system. Refer to [DLK-286](#), "Description".**
- **Do not start the engine.**

Inspection in Auto Active Test Mode

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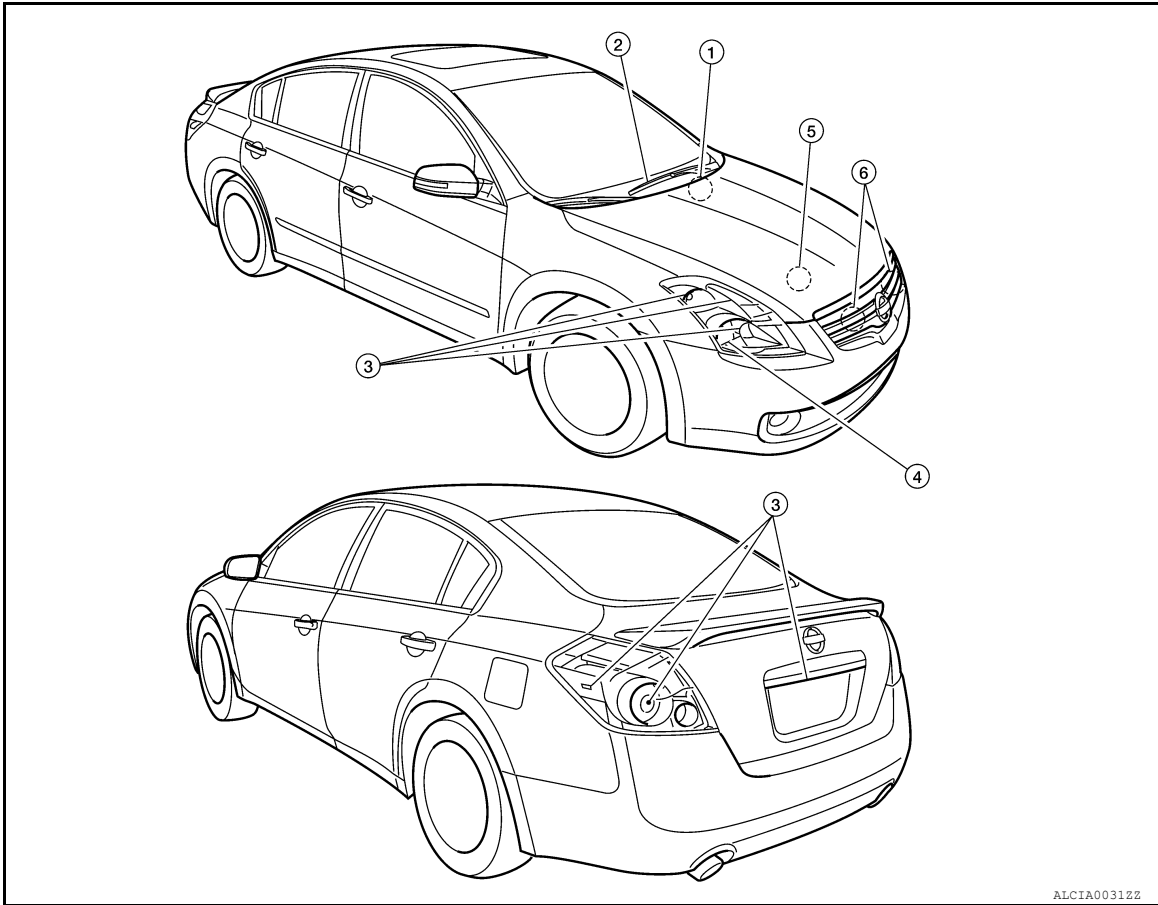
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# DIAGNOSIS SYSTEM (IPDM E/R)

[AUTOMATIC AIR CONDITIONER]

< SYSTEM DESCRIPTION >

When auto active test mode is actuated, the following 6 steps are repeated 3 times.



ALCIA0031ZZ

Operation sequence	Inspection Location	Operation
1	Oil pressure warning lamp	Blinks continuously during operation of auto active test
2	Front wiper	LO for 5 seconds → HI for 5 seconds
3	<ul style="list-style-type: none"> <li>• Parking lamps</li> <li>• License plate lamps</li> <li>• Tail lamps</li> <li>• Front fog lamps (if equipped)</li> </ul>	10 seconds
4	Headlamps	LO ↔ HI 5 times
5	A/C compressor (magnet clutch)	ON ↔ OFF 5 times
6*	Cooling fans	MID for 5 seconds → HI for 5 seconds

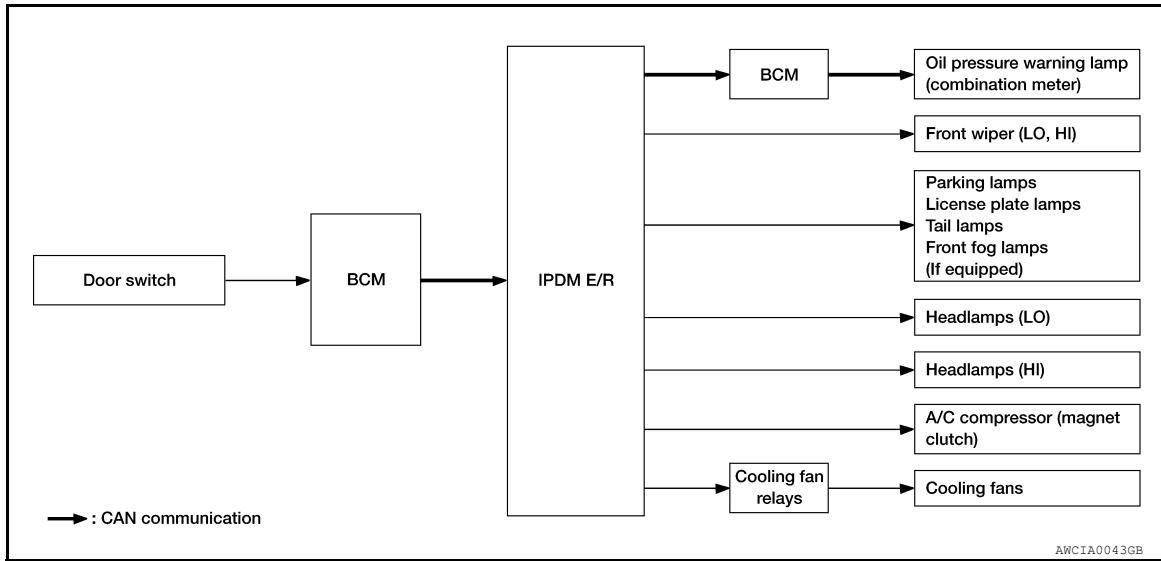
\*: Outputs duty ratio of 50% for 5 seconds → duty ratio of 100% for 5 seconds on the cooling fan control module.

# DIAGNOSIS SYSTEM (IPDM E/R)

## [AUTOMATIC AIR CONDITIONER]

### < SYSTEM DESCRIPTION >

#### Concept of auto active test



- IPDM E/R starts the auto active test with the door switch signals transmitted by BCM via CAN communication. Therefore, the CAN communication line between IPDM E/R and BCM is considered normal if the auto active test starts successfully.
- The auto active test facilitates troubleshooting if any systems controlled by IPDM E/R cannot be operated.

#### Diagnosis chart in auto active test mode

Symptom	Inspection contents	Possible cause
Any of the following components do not operate <ul style="list-style-type: none"> <li>• Parking lamps</li> <li>• License plate lamps</li> <li>• Tail lamps</li> <li>• Front fog lamps (if equipped)</li> <li>• Headlamp (HI, LO)</li> <li>• Front wiper</li> </ul>	Perform auto active test. Does the applicable system operate?	YES BCM signal input circuit
		NO <ul style="list-style-type: none"> <li>• Lamp or motor</li> <li>• Lamp or motor ground circuit</li> <li>• Harness or connector between IPDM E/R and applicable system</li> <li>• IPDM E/R</li> </ul>
A/C compressor does not operate	Perform auto active test. Does the magnet clutch operate?	YES <ul style="list-style-type: none"> <li>• Combination meter signal input circuit</li> <li>• CAN communication signal between combination meter and ECM</li> <li>• CAN communication signal between ECM and IPDM E/R</li> </ul>
		NO <ul style="list-style-type: none"> <li>• Magnet clutch</li> <li>• Harness or connector between IPDM E/R and magnet clutch</li> <li>• IPDM E/R</li> </ul>

# DIAGNOSIS SYSTEM (IPDM E/R)

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONER]

Symptom	Inspection contents	Possible cause
Oil pressure warning lamp does not operate	Perform auto active test. Does the oil pressure warning lamp blink?	YES <ul style="list-style-type: none"> <li>• Harness or connector between IPDM E/R and oil pressure switch</li> <li>• Oil pressure switch</li> <li>• IPDM E/R</li> </ul>
		NO <ul style="list-style-type: none"> <li>• CAN communication signal between IPDM E/R and BCM</li> <li>• CAN communication signal between BCM and combination meter</li> <li>• Combination meter</li> </ul>
Cooling fan does not operate	Perform auto active test. Does the cooling fan operate?	YES <ul style="list-style-type: none"> <li>• ECM signal input circuit</li> <li>• CAN communication signal between ECM and IPDM E/R</li> </ul>
		NO <ul style="list-style-type: none"> <li>• Cooling fan</li> <li>• Harness or connector between cooling fan and cooling fan relays</li> <li>• Cooling fan relays</li> <li>• Harness or connector between IPDM E/R and cooling fan relays</li> <li>• IPDM E/R</li> </ul>

## CONSULT Function (IPDM E/R)

INFOID:000000006921024

### APPLICATION ITEM

CONSULT performs the following functions via CAN communication with IPDM E/R.

Diagnosis mode	Description
ECU Identification	Allows confirmation of IPDM E/R part number.
Self Diagnostic Result	Displays the diagnosis results judged by IPDM E/R.
Data Monitor	Displays the real-time input/output data from IPDM E/R input/output data.
Active Test	IPDM E/R can provide a drive signal to electronic components to check their operations.
CAN Diag Support Monitor	The results of transmit/receive diagnosis of CAN communication can be read.

### SELF DIAGNOSTIC

Refer to [PCS-29, "DTC Index"](#).

### DATA MONITOR

Monitor item

Monitor Item [Unit]	MAIN SIGNALS	Description
MOTOR FAN REQ [%]	×	Displays the value of the cooling fan speed signal received from ECM via CAN communication.
AC COMP REQ [Off/On]	×	Displays the status of the A/C compressor request signal received from ECM via CAN communication.
TAIL&CLR REQ [Off/On]	×	Displays the status of the position light request signal received from BCM via CAN communication.
HL LO REQ [Off/On]	×	Displays the status of the low beam request signal received from BCM via CAN communication.
HL HI REQ [Off/On]	×	Displays the status of the high beam request signal received from BCM via CAN communication.



# DIAGNOSIS SYSTEM (IPDM E/R)

**[AUTOMATIC AIR CONDITIONER]**

< SYSTEM DESCRIPTION >

Monitor Item [Unit]	MAIN SIG- NALS	Description
FR FOG REQ [Off/On]	×	Displays the status of the front fog light request signal received from BCM via CAN communication.
FR WIP REQ [Stop/1LOW/Low/Hi]	×	Displays the status of the front wiper request signal received from BCM via CAN communication.
WIP AUTO STOP [STOP P/ACT P]	×	Displays the status of the front wiper auto stop signal judged by IPDM E/R.
WIP PROT [Off/BLOCK]	×	Displays the status of the front wiper fail-safe operation judged by IPDM E/R.
IGN RLY1 -REQ [Off/On]		Displays the status of the ignition switch ON signal received from BCM via CAN communication.
IGN RLY [Off/On]	×	Displays the status of the ignition relay judged by IPDM E/R.
PUSH SW [Off/On]		Displays the status of the push-button ignition switch judged by IPDM E/R.
INTER/NP SW [Off/On]		Displays the status of the clutch interlock switch (M/T models) or CVT shift position (CVT models) judged by IPDM E/R.
ST RLY CONT [Off/On]		Displays the status of the starter relay status signal received from BCM via CAN communication.
IHBT RLY -REQ [Off/On]		Displays the status of the starter control relay signal received from BCM via CAN communication.
ST/INH RLY [Off/ ST /INH]		Displays the status of the starter relay and starter control relay judged by IPDM E/R.
DETENT SW [Off/On]		Displays the status of the CVT shift selector (detention switch) judged by IPDM E/R.
S/L RLY -REQ [Off/On]		Displays the status of the steering lock relay request received from BCM via CAN communication.
S/L STATE [LOCK/UNLK/UNKWN]		Displays the status of the electronic steering column lock judged by IPDM E/R.
OIL P SW [Open/Close]		Displays the status of the oil pressure switch judged by IPDM E/R.
THFT HRN REQ [Off/On]		Displays the status of the theft warning horn request signal received from BCM via CAN communication.
HORN CHIRP [Off/On]		Displays the status of the horn reminder signal received from BCM via CAN communication.

## ACTIVE TEST

Test item

Test item	Operation	Description
HORN	On	Operates horn relay 1 and horn relay 2 for 20 ms.
	Off	OFF
FRONT WIPER	Lo	Operates the front wiper relay.
	Hi	Operates the front wiper relay and front wiper high relay.
MOTOR FAN	1	OFF
	2	Outputs 50% pulse duty signal (PWM signal) to the cooling fan control module.
	3	Outputs 80% pulse duty signal (PWM signal) to the cooling fan control module.
	4	Outputs 100% pulse duty signal (PWM signal) to the cooling fan control module.

# DIAGNOSIS SYSTEM (IPDM E/R)

[AUTOMATIC AIR CONDITIONER]

< SYSTEM DESCRIPTION >

Test item	Operation	Description
EXTERNAL LAMPS	Off	OFF
	TAIL	Operates the tail lamp relay.
	Lo	Operates the headlamp low relay.
	Hi	Operates the headlamp low relay and ON/OFF the headlamp high relay at 1 second intervals.
	Fog	Operates the front fog lamp relay.

# SELF-DIAGNOSIS FUNCTION

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONER]

## SELF-DIAGNOSIS FUNCTION

### Diagnosis Description

INFOID:000000006388975

#### 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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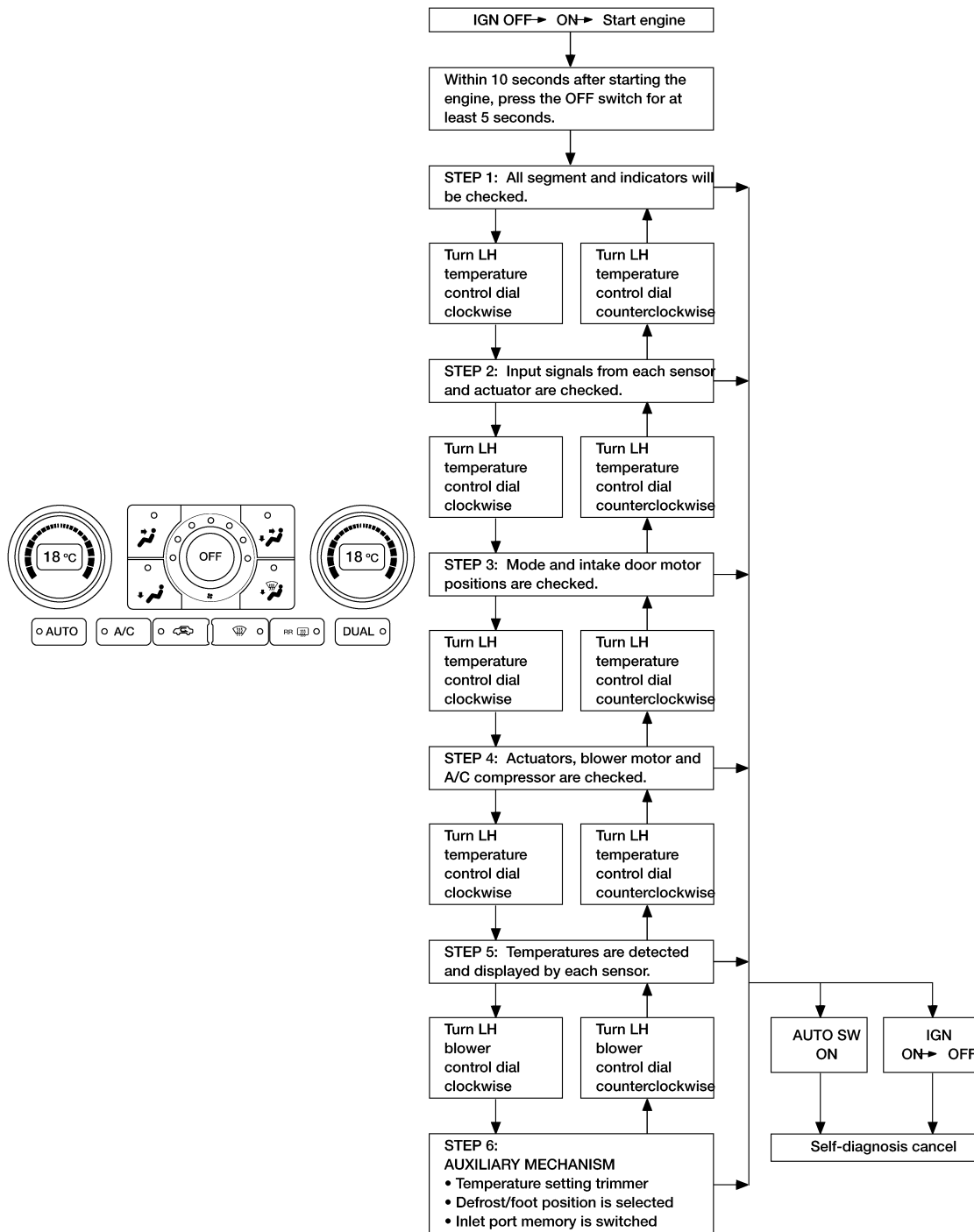
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# SELF-DIAGNOSIS FUNCTION

[AUTOMATIC AIR CONDITIONER]

< SYSTEM DESCRIPTION >

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



AW11A1256GB

## CONFIRMATION METHOD

### 1. SET IN SELF-DIAGNOSIS MODE

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

#### NOTE:

# SELF-DIAGNOSIS FUNCTION

[AUTOMATIC AIR CONDITIONER]

## < SYSTEM DESCRIPTION >

- 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.

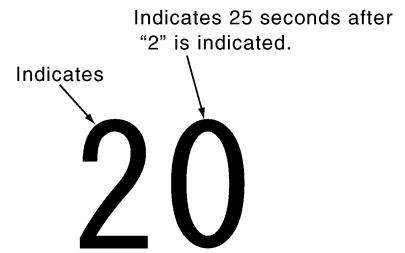
>> GO TO 2

## 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

Display (when all sensors are in good order)



## 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-9, "Removal and Installation"](#).

## 4. CHECK TO RETURN SELF-DIAGNOSIS STEP-2

Turn temperature control dial (LH) counterclockwise.

Return to self-diagnosis STEP-2?

- YES >> GO TO 5  
NO >> Malfunctioning front air control. Refer to [VTL-9, "Removal and Installation"](#).

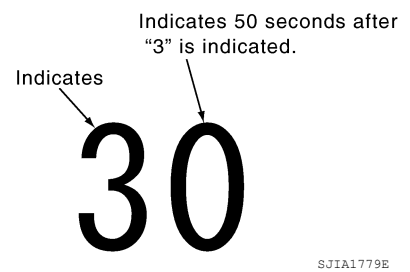
## 5. STEP-3: MODE DOOR AND INTAKE DOOR POSITIONS ARE CHECKED

Turn temperature control dial (LH) clockwise.


Does code No. 30 appear on the display?

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

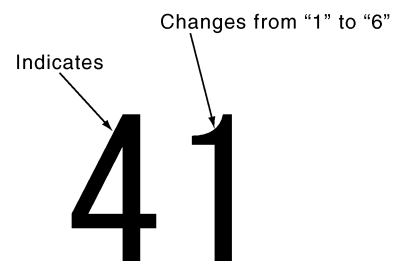
Display (when all doors are in good order)



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

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

>> GO TO 7








# SELF-DIAGNOSIS FUNCTION

[AUTOMATIC AIR CONDITIONER]

< SYSTEM DESCRIPTION >

## 7. CHECK ACTUATORS

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

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

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

Checks must be made visually, by listening to the sound, or by touching air outlets with hand, etc. for improper operation.

\*1: FOOT position during automatic control. Refer to [HAC-5, "Description and Conditions"](#).

Is the inspection result normal?

YES >> GO TO 8

NO >> • Air outlet does not change.

Go to Mode Door Motor Circuit. Refer to [HAC-40, "Diagnosis Procedure"](#).

• Discharge air temperature does not change.

Go to Air Mix Door Motor Circuit. Refer to [HAC-42, "Diagnosis Procedure"](#).

• Intake door does not change.

Go to Intake Door Motor Circuit. Refer to [HAC-45, "Diagnosis Procedure"](#).

• Blower motor operation is malfunctioning.

Go to Blower Motor Circuit. Refer to [HAC-47, "Diagnosis Procedure"](#).

• Magnet clutch does not engage.

Go to Magnet Clutch Circuit. Refer to [HAC-52, "Diagnosis Procedure"](#).


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

1. Turn temperature control dial (LH) clockwise.

2. Code No. 51 appears on the display.

>> GO TO 9

## 9. CHECK AMBIENT SENSOR

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

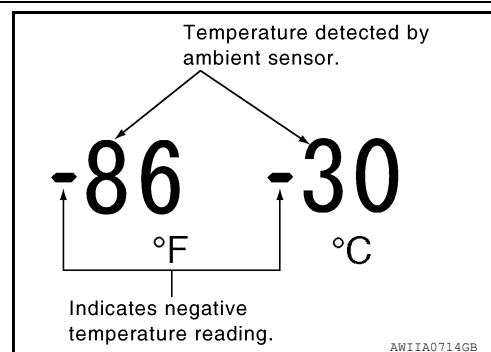
**NOTE:**

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

Is the inspection result normal?

YES >> GO TO 10

NO >> Go to Ambient Sensor Circuit. Refer to [HAC-56, "Diagnosis Procedure"](#).




# SELF-DIAGNOSIS FUNCTION

[AUTOMATIC AIR CONDITIONER]

< SYSTEM DESCRIPTION >

## 10. CHECK IN-VEHICLE SENSOR

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

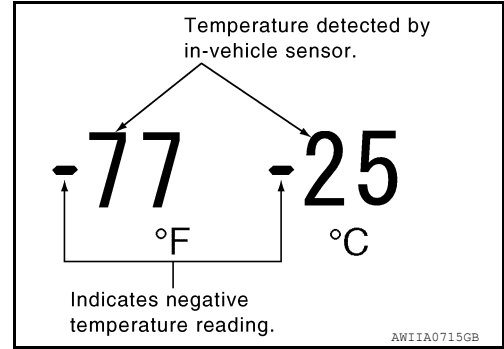
**NOTE:**

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-59. "Diagnosis Procedure"](#).



## 11. CHECK INTAKE SENSOR

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

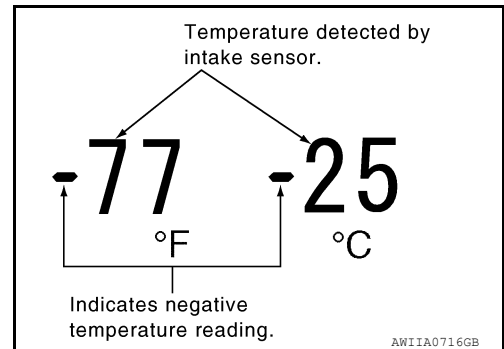
**NOTE:**

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

Is the inspection result normal?

YES >> GO TO 12

NO >> Go to Intake Sensor Circuit. Refer to [HAC-65. "Diagnosis Procedure"](#).



## 12. CHECK MALFUNCTIONING SENSOR AND DOOR MOTOR

Refer to the following chart for malfunctioning code No.

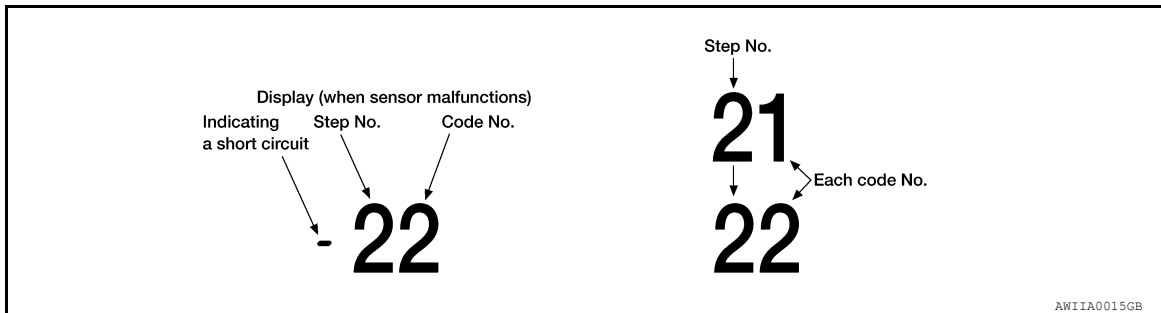
(If two or more sensors and door motors malfunction, corresponding code Nos. indicates 1 second each.)

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

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	<a href="#">HAC-56. "Diagnosis Procedure"</a>
22 / -22	In-vehicle sensor	<a href="#">HAC-59. "Diagnosis Procedure"</a>
24 / -24	Intake sensor	<a href="#">HAC-45. "Diagnosis Procedure"</a>
25 / -25	Sunload sensor *1	<a href="#">HAC-62. "Diagnosis Procedure"</a>
26 / -26	Air mix door motor PBR (LH)	<a href="#">HAC-42. "Diagnosis Procedure"</a>
27 / -27	Air mix door motor PBR (RH)	

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

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# SELF-DIAGNOSIS FUNCTION

< SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONER]

>> 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	<a href="#">HAC-40. "Diagnosis Procedure"</a>
32	B/L1	
33	B/L2	
34	AUTO D/F1	
35	D/F2	
36	DEF	
37	FRE	<a href="#">HAC-45. "Diagnosis Procedure"</a>
38	20% FRE	
39	REC	

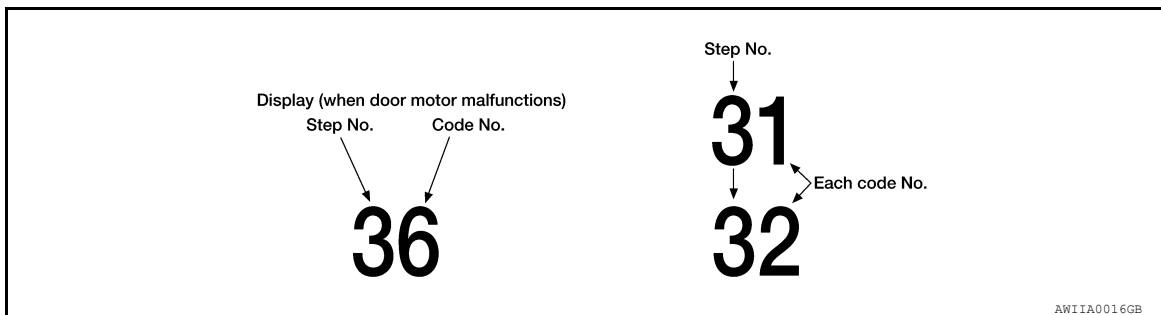
(If two or more mode or intake door motors malfunction, corresponding code Nos. indicates 1 second each.)

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

31→32→33→34→35→36 Return to 31

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

37→38→39→Return to 37



>> Inspection End

## Auxiliary Mechanism Trimmers

INFOID:000000006388976

Refer to [HAC-6. "Auxiliary Mechanism Trimmers"](#).



# LAN SYSTEM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

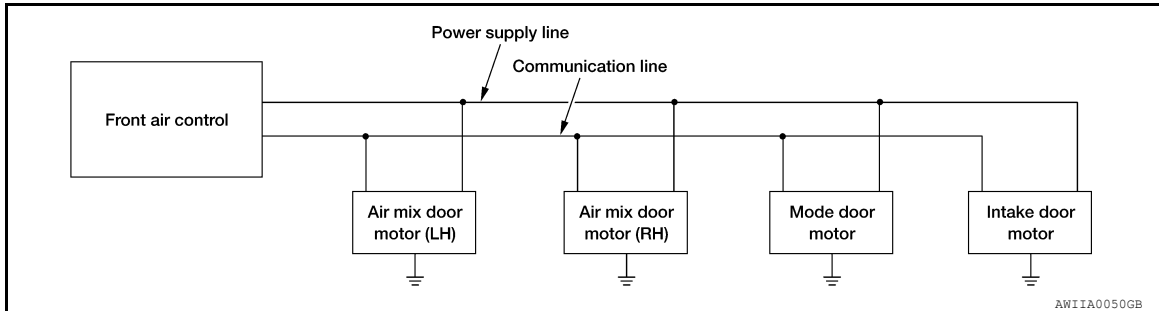
## DTC/CIRCUIT DIAGNOSIS

### LAN SYSTEM CIRCUIT

#### Description

INFOID:000000006388977

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



#### Diagnosis Procedure

INFOID:000000006388978

Regarding Wiring Diagram information, refer to [HAC-71, "Wiring Diagram - Coupe With Automatic"](#) or [HAC-80, "Wiring Diagram - Sedan With Automatic"](#).

#### DIAGNOSIS PROCEDURE FOR LAN CIRCUIT

##### 1. CHECK POWER SUPPLY FOR DOOR MOTORS

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

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

Is the inspection result normal?

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

##### 2. CHECK SIGNAL FOR DOOR MOTORS

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

Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal		
M37-3	Ground	1.5V

Is the inspection result normal?

- YES >> GO TO 13  
NO >> GO TO 7

##### 3. CHECK MODE DOOR MOTOR FOR SHORT TO GROUND

While checking for voltage between front air control connector M37 terminal 20 and ground, disconnect the mode door motor.

# LAN SYSTEM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

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

Is the inspection result normal?

YES >> Replace mode door motor. Refer to [VTL-20, "Removal and Installation"](#).

NO >> GO TO 4

## 4. CHECK INTAKE DOOR MOTOR FOR SHORT TO GROUND

While checking for voltage between front air control connector M37 terminal 20 and ground, disconnect the intake door motor.

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

Is the inspection result normal?

YES >> Replace intake door motor. Refer to [VTL-19, "Removal and Installation"](#).

NO >> GO TO 5

## 5. CHECK AIR MIX DOOR (RH) MOTOR FOR SHORT TO GROUND

While checking for voltage between front air control connector M37 terminal 20 and ground, disconnect the air mix door motor (RH).

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

Is the inspection result normal?

YES >> Replace air mix door motor (RH). Refer to [VTL-21, "Removal and Installation"](#).

NO >> GO TO 6

## 6. CHECK AIR MIX DOOR MOTOR (LH) FOR SHORT TO GROUND

While checking for voltage between front air control connector M37 terminal 20 and ground, disconnect the air mix door (LH) motor.

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

Is the inspection result normal?

YES >> Replace air mix door motor (LH). Refer to [VTL-21, "Removal and Installation"](#).

NO >> GO TO 11

## 7. CHECK MODE DOOR MOTOR FOR SHORT TO GROUND

While checking for voltage between front air control connector M37 terminal 3 and ground, disconnect the mode door motor.

# LAN SYSTEM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal		
M37-3	Ground	1.5V

Is the inspection result normal?

YES >> Replace mode door motor. Refer to [VTL-20, "Removal and Installation"](#).

NO >> GO TO 8

## 8. CHECK INTAKE DOOR MOTOR FOR SHORT TO GROUND

While checking for voltage between front air control connector M37 terminal 3 and ground, disconnect the intake door motor.

Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal		
M37-3	Ground	1.5V

Is the inspection result normal?

YES >> Replace intake door motor. Refer to [VTL-19, "Removal and Installation"](#).

NO >> GO TO 9

## 9. CHECK AIR MIX DOOR (RH) MOTOR FOR SHORT TO GROUND

While checking for voltage between front air control connector M37 terminal 3 and ground, disconnect the air mix door motor (RH).

Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal		
M37-3	Ground	1.5V

Is the inspection result normal?

YES >> Replace air mix door motor (RH). Refer to [VTL-21, "Removal and Installation"](#).

NO >> GO TO 10

## 10. CHECK AIR MIX DOOR MOTOR (LH) FOR SHORT TO GROUND

While checking for voltage between front air control connector M37 terminal 3 and ground, disconnect the air mix door (LH) motor.

Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal		
M37-3	Ground	1.5V

Is the inspection result normal?

YES >> Replace air mix door motor (LH). Refer to [VTL-21, "Removal and Installation"](#).

NO >> GO TO 12

## 11. CHECK DOOR MOTOR POWER SUPPLY FOR SHORT TO GROUND

1. Disconnect front air controller connector M37.
2. Check for continuity between front air control connector M37 terminal 20 and ground.

# LAN SYSTEM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

Terminals		Continuity
Connector - Terminal	Connector - Terminal	
M37-20	Ground	No

**Is the inspection result normal?**

YES >> Replace front air control. Refer to [VTL-9, "Removal and Installation"](#).

NO >> Replace harness or connector.

## 12. CHECK A/C LAN SIGNAL FOR SHORT TO GROUND

1. Disconnect front air controller connector M37.
2. Check for continuity between front air control connector M37 terminal 3 and ground.

Terminals		Continuity
Connector - Terminal	Connector - Terminal	
M37-3	Ground	No

**Is the inspection result normal?**

YES >> Replace front air control. Refer to [VTL-9, "Removal and Installation"](#).

NO >> Replace harness or connector.

## 13. CHECK POWER SUPPLY FOR MOTORS

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

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

**Is the inspection result normal?**

YES >> GO TO 14

NO >> Replace harness or connector.

## 14. CHECK SIGNAL FOR MOTORS

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.

Door motors	Terminals		Voltage (V) (Approx.)
	(+)	(-)	
	Connector - Terminal		
Mode	M127-1	Body ground	1.5V
Air mix (LH)	M128-1		
Air mix (RH)	M129-1		
Intake	M126-1		

# LAN SYSTEM CIRCUIT

[AUTOMATIC AIR CONDITIONER]

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

- YES >> GO TO 15  
NO >> Replace harness or connector.

## 15. CHECK MOTOR GROUND CIRCUIT


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

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

Is the inspection result normal?

- YES >> GO TO 16  
NO >> Replace harness or connector.

## 16. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - DISCHARGE AIR

1. Reconnect the front air control, mode door motor, air mix door motor (RH), air mix door motor (LH), and intake door motor.
2. Press ignition switch ON.
3. Turn blower motor to maximum speed.
4. Press each of the four mode position switches and then press the  (DEF) switch. Each position indicator should illuminate.
5. Confirm that discharge air comes out according to the air distribution table. Refer to [HAC-13. "System Description"](#).

### NOTE:

Confirm the intake door position is at  (FRESH) when  (DEF) or  (D/F) is selected.

Is the inspection result normal?


- YES >> GO TO 17  
NO >> Replace mode door motor. Refer to [VTL-20. "Removal and Installation"](#).

## 17. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE CHANGE (LH)

1. Start engine. Allow engine to reach operating temperature.
2. Press the A/C button to engage the A/C compressor. The A/C on indicator should illuminate.

### NOTE:

Confirm that the A/C compressor clutch is engaged (visual inspection).

3. Press  (VENT) mode position switch.
4. Turn the temperature control dial (LH) clockwise until 32°C (90°F) is displayed.
5. Check for hot air at (LH) discharge air outlets.
6. Turn the temperature control dial (LH) counterclockwise until 18°C (60°F) is displayed.
7. Check for cold air at (LH) discharge air outlets.

Is the inspection result normal?

- YES >> GO TO 18  
NO >> Replace air mix door motor (LH). Refer to [VTL-21. "Removal and Installation"](#).

## 18. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE CHANGE (RH)

1. Turn the temperature control dial (RH) clockwise until 32°C (90°F) is displayed.
2. Check for hot air at (RH) discharge air outlets.
3. Turn the temperature control dial (RH) counterclockwise until 18°C (60°F) is displayed.
4. Check for cold air at (RH) discharge air outlets.

Is the inspection result normal?

## LAN SYSTEM CIRCUIT





[AUTOMATIC AIR CONDITIONER]

< DTC/CIRCUIT DIAGNOSIS >

YES >> GO TO 19

NO >> Replace air mix door motor (RH). Refer to [VTL-21, "Removal and Installation"](#).

### 19. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - REC ( )

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

Is the inspection result normal?

YES >> Intermittent incident. Refer to [GI-42, "Intermittent Incident"](#).

NO >> Replace intake door motor. Refer to [VTL-19, "Removal and Installation"](#).

## MODE DOOR MOTOR

### Description

INFOID:000000006388979

### SYSTEM DESCRIPTION

#### Component Parts

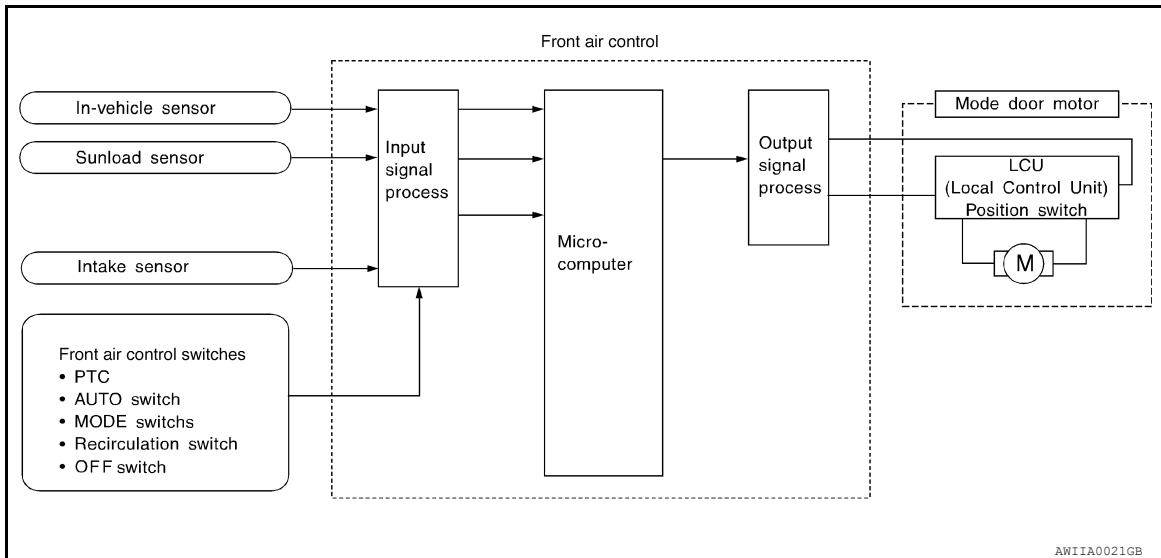
Mode door control system components are:

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

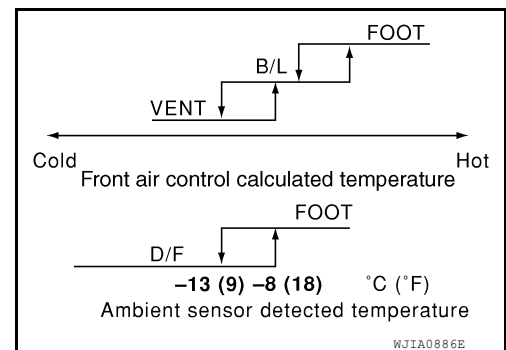
#### System Operation

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



# MODE DOOR MOTOR

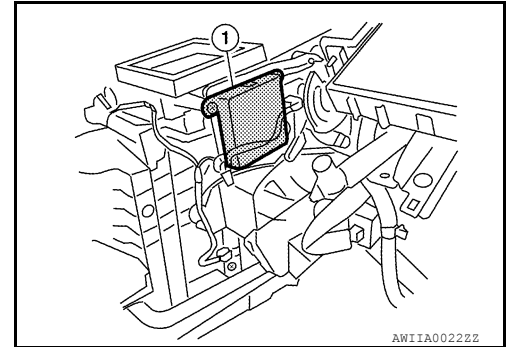
< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

## 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.



AW11A0022ZZ

INFOID:000000006388980

## Diagnosis Procedure


Regarding Wiring Diagram information, refer to [HAC-71, "Wiring Diagram - Coupe With Automatic"](#) or [HAC-80, "Wiring Diagram - Sedan With Automatic"](#).

### 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 ignition to ON.
2. Turn blower motor to maximum speed.
3. Press each of the four mode position switches and then press the  (DEF) switch. Each position indicator should illuminate.
4. Confirm that discharge air comes out according to the air distribution table. Refer to [HAC-13, "System Description"](#).

### NOTE:

Confirm 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 the LAN system. Refer to [HAC-33, "Diagnosis Procedure"](#).



# AIR MIX DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

## AIR MIX DOOR MOTOR

### Description

INFOID:000000006388981

### SYSTEM DESCRIPTION

#### Component Parts

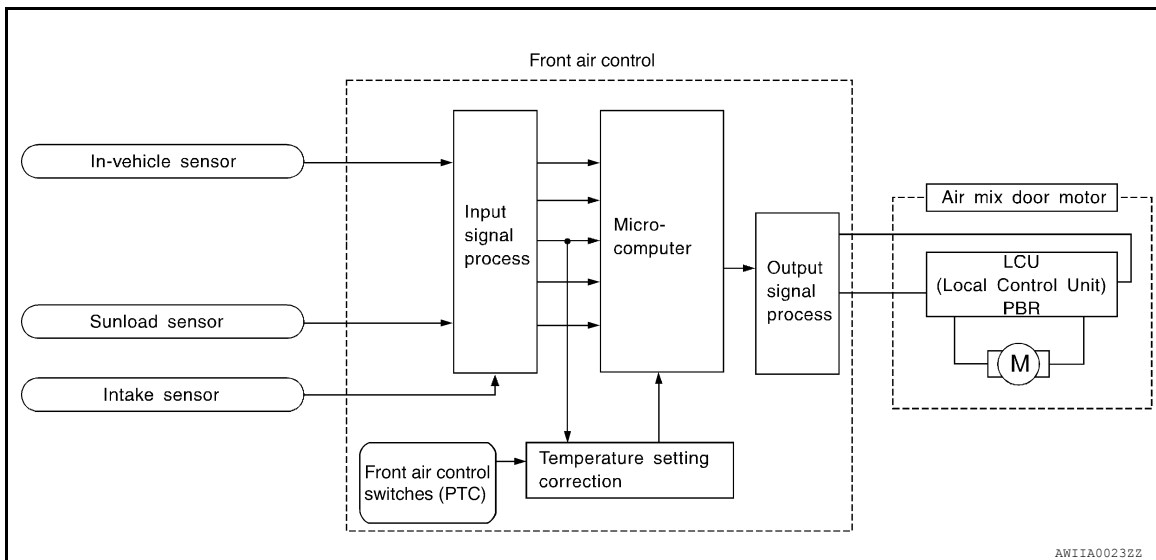
Air mix door control system components are:

- 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.

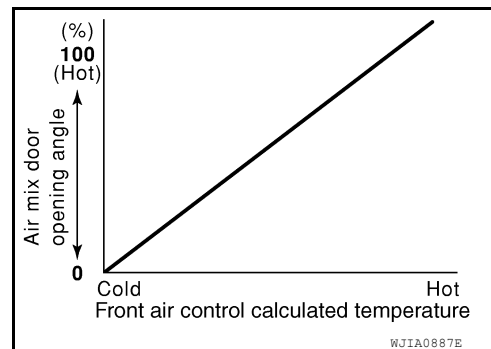
The air mix door motor, mode door motor and intake door motor read their respective signals according to the address signal. Opening angle indication signals received from the front air control and each of the motor position sensors are compared by the LCUs in each motor with the existing decision and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

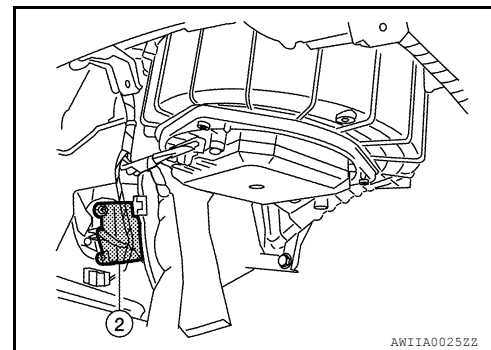
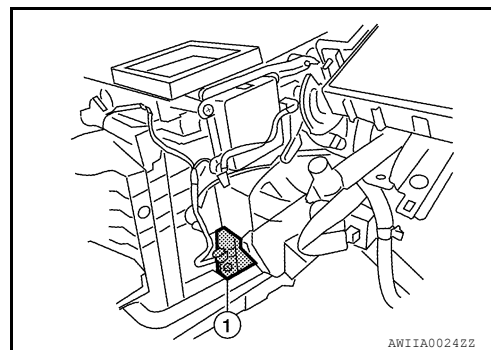


# AIR MIX DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

The air mix door motors LH (1) RH (2) are attached to the heater & cooling unit assembly. They rotate 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 Position Balanced Resistor (PBR) built-in air mix door motor.



## Diagnosis Procedure

INFOID:000000006388982

Regarding Wiring Diagram information, refer to [HAC-71, "Wiring Diagram - Coupe With Automatic"](#) or [HAC-80, "Wiring Diagram - Sedan With Automatic"](#).

### SYMPTOM:

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


### INSPECTION FLOW

#### 1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE CHANGE (LH)

1. Start engine. Allow engine to reach operating temperature.
2. Press the A/C button to engage the A/C compressor. The A/C on indicator should illuminate.

#### NOTE:

Confirm that the A/C compressor clutch is engaged (visual inspection).

3. Press  (VENT) mode position switch.
4. Turn the temperature control dial (LH) clockwise until 32°C (90°F) is displayed.
5. Check for hot air at (LH) discharge air outlets.
6. Turn the temperature control dial (LH) counterclockwise until 18°C (60°F) is displayed.
7. Check for cold air at (LH) discharge air outlets.

#### Is the inspection result normal?

YES >> GO TO 2

NO >> Go to diagnosis procedure for LAN system. Refer to [HAC-33, "Diagnosis Procedure"](#).

#### 2. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE CHANGE (RH)

1. Turn the temperature control dial (RH) clockwise until 32°C (90°F) is displayed.
2. Check for hot air at (RH) discharge air outlets.
3. Turn the temperature control dial (RH) counterclockwise until 18°C (60°F) is displayed.
4. Check for cold air at (RH) discharge air outlets.

#### Is the inspection result normal?

YES >> Inspection End.

# AIR MIX DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

NO >> Go to diagnosis procedure for LAN system. Refer to [HAC-33. "Diagnosis Procedure"](#).

A

B

C

D

E

F

G

H

**HAC**

J

K

L

M

N

O

P

# INTAKE DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

## INTAKE DOOR MOTOR

### Description

INFOID:000000006388983

### SYSTEM DESCRIPTION

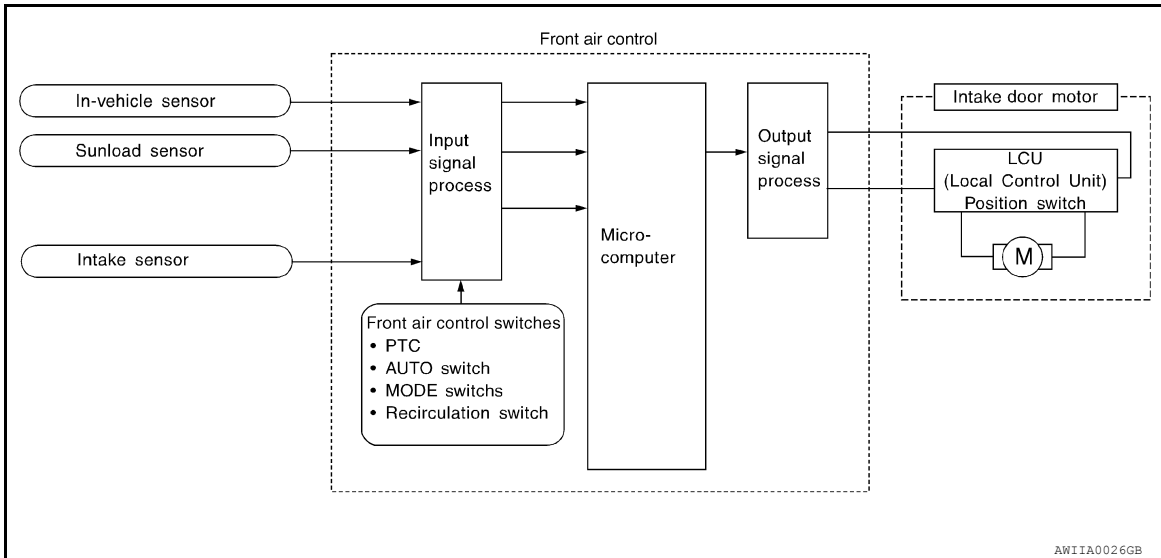
#### Component Parts

Intake door control system components are:

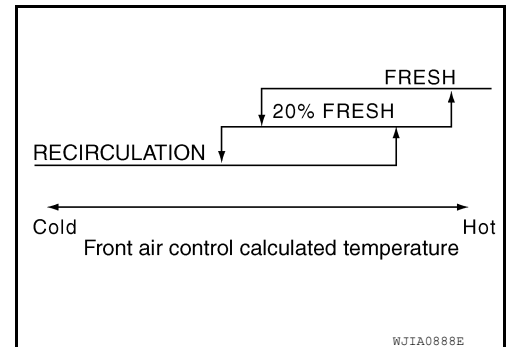
- Front air control
- Intake door motor (LCU)
- In-vehicle sensor
- Ambient sensor
- Sunload sensor
- Intake sensor

#### 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

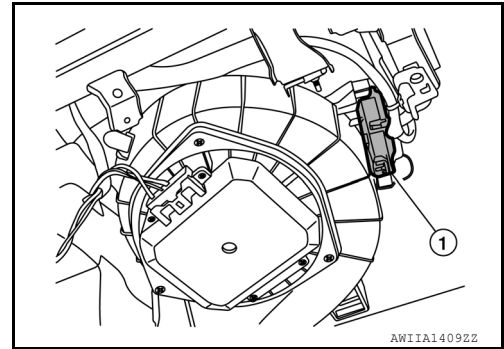
#### Intake Door Motor

# INTAKE DOOR MOTOR

[AUTOMATIC AIR CONDITIONER]

## < DTC/CIRCUIT DIAGNOSIS >

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.



INFOID:000000006388984

## Diagnosis Procedure






Regarding Wiring Diagram information, refer to [HAC-71, "Wiring Diagram - Coupe With Automatic"](#) or [HAC-80, "Wiring Diagram - Sedan With Automatic"](#).

### SYMPTOM:

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

### INSPECTION FLOW

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

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

#### Is the inspection result normal?

- YES >> Inspection End.
- NO >> Go to diagnosis procedure for the LAN system. Refer to [HAC-33, "Diagnosis Procedure"](#).

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HAC

## BLOWER MOTOR

### Description

INFOID:000000006388985

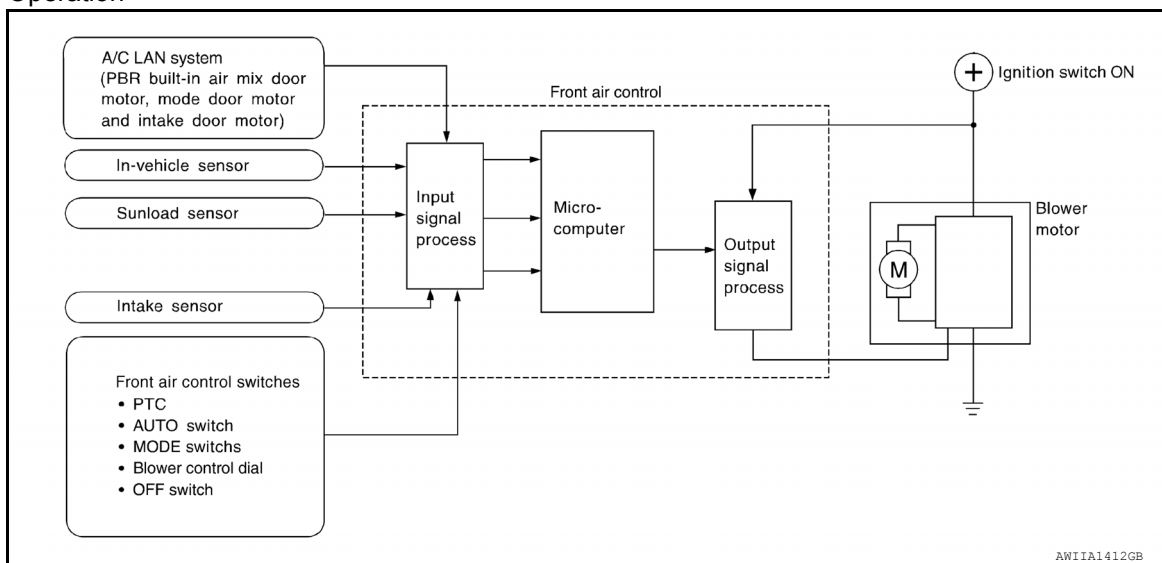
### SYSTEM DESCRIPTION

#### Component Parts

Fan speed control system components are:

- Front air control
- A/C LAN system (Position Balanced Resistor [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

# BLOWER MOTOR

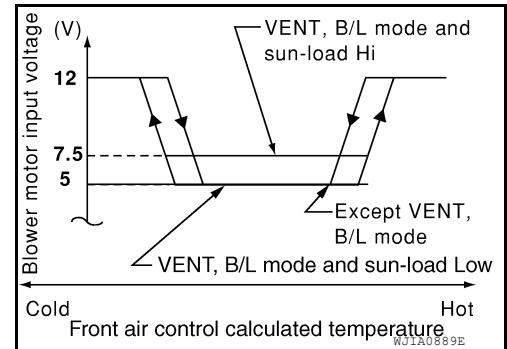
[AUTOMATIC AIR CONDITIONER]

## < DTC/CIRCUIT DIAGNOSIS >

### Sunload

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

### Blower Speed Control Specification



## Component Function Check

INFOID:000000006388986

### INSPECTION FLOW

#### 1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - FRONT BLOWER

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

#### Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to [HAC-47. "Diagnosis Procedure"](#).

## Diagnosis Procedure

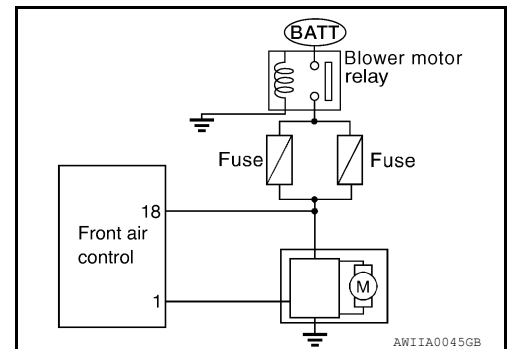
INFOID:000000006388987

Regarding Wiring Diagram information, refer to [HAC-71. "Wiring Diagram - Coupe With Automatic"](#) or [HAC-80. "Wiring Diagram - Sedan With Automatic"](#).

SYMPTOM: Blower motor operation is malfunctioning.

### DIAGNOSIS PROCEDURE FOR BLOWER MOTOR

SYMPTOM: Blower motor operation is malfunctioning.



#### 1.PERFORM SELF-DIAGNOSIS STEP-4

Perform self-diagnosis STEP-4. Refer to [HAC-27. "Diagnosis Description"](#).

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

# BLOWER MOTOR

[AUTOMATIC AIR CONDITIONER]

## < DTC/CIRCUIT DIAGNOSIS >

Does blower motor speed change according to each code No.?

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

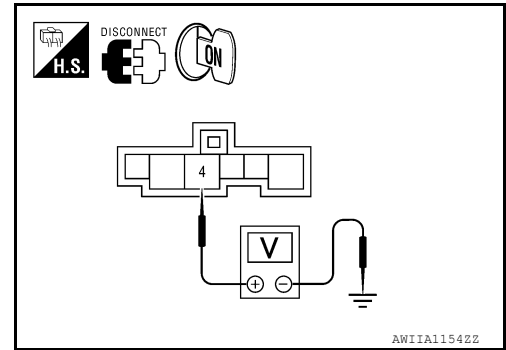
### 2. CHECK POWER SUPPLY FOR BLOWER MOTOR

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



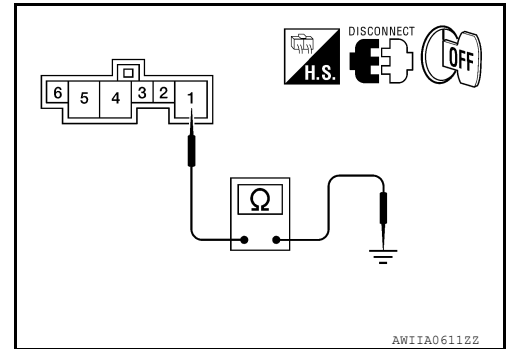
### 3. CHECK BODY GROUND CIRCUIT FOR BLOWER MOTOR

1. 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		

Is the inspection result normal?

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



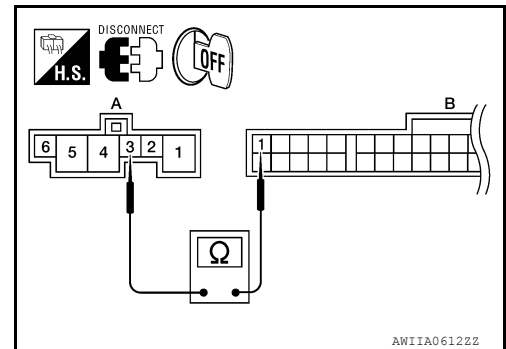
### 4. CHECK BLOWER MOTOR CONTROL CIRCUIT BETWEEN BLOWER MOTOR AND FRONT AIR CONTROL

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

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

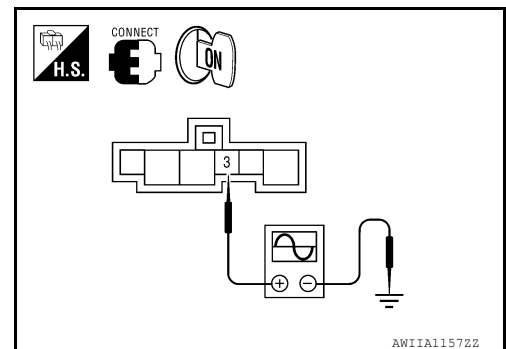
Is the inspection result normal?

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



### 5. CHECK FRONT AIR CONTROL OUTPUT SIGNAL

1. 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.

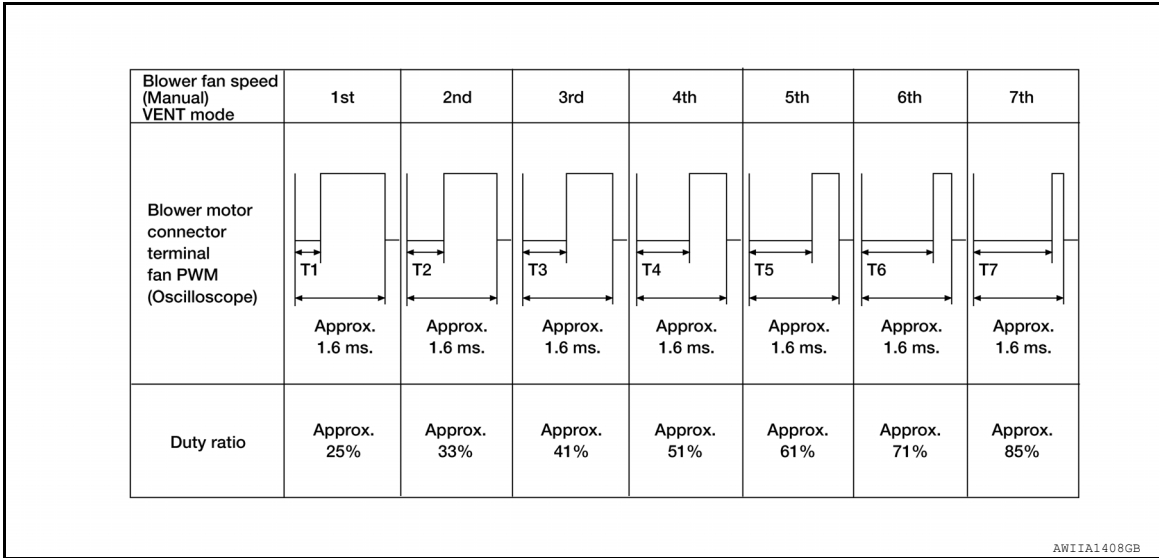




# BLOWER MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]



Is the inspection result normal?

YES >> Replace the blower motor. Refer to [VTL-17, "Removal and Installation"](#).

NO >> Replace the front air control. Refer to [VTL-9, "Removal and Installation"](#).

## 6. CHECK FUSE

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

### NOTE:

Refer to [PG-64, "Fuse, Connector and Terminal Arrangement"](#) (coupe) or [PG-136, "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

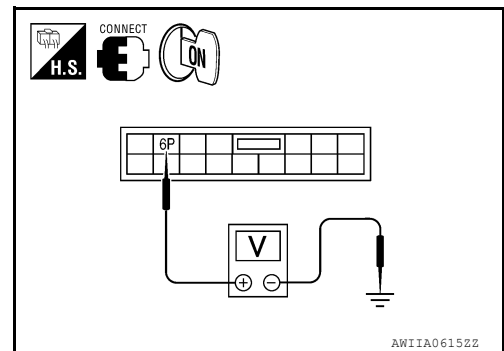
- Press ignition switch OFF.
- Disconnect fuse block (J/B) connector.
- Press ignition switch ON.
- Turn blower motor control dial to any speed except OFF.
- Check voltage between fuse block (J/B) connector E6 terminal 6P and ground.

**6P - Ground : Battery Voltage**

Is the inspection result normal?

YES >> GO TO 11

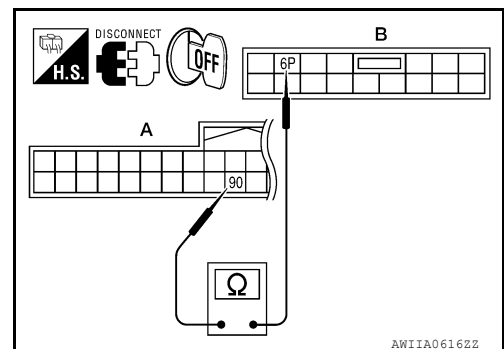
NO >> GO TO 8



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

- Press ignition switch OFF.
- 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.

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



Is the inspection result normal?

# BLOWER MOTOR

[AUTOMATIC AIR CONDITIONER]

## < DTC/CIRCUIT DIAGNOSIS >

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

### 9. CHECK BLOWER FAN SWITCH SIGNAL FOR VOLTAGE

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

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

Is the inspection result normal?

- YES >> Replace BCM. Refer to [BCS-92, "Removal and Installation"](#).  
 NO >> GO TO 10

### 10. CHECK BLOWER FAN SWITCH SIGNAL CIRCUIT FOR AN OPEN

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

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

Is the inspection result normal?

- YES >> Replace front air control. Refer to [VTL-9, "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		Continuity
(+)	(-)	
Connector - Terminal	Connector - Terminal	Yes
M5 - 7M	Ground	

Is the inspection result normal?

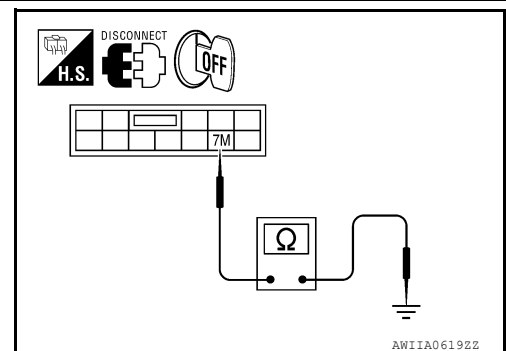
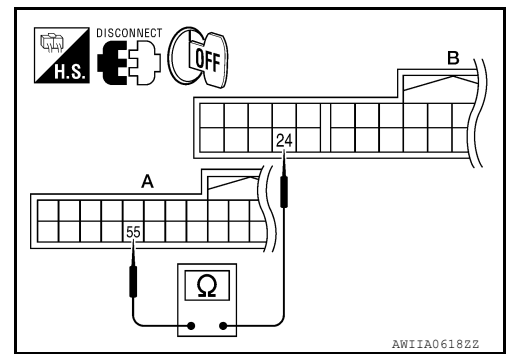
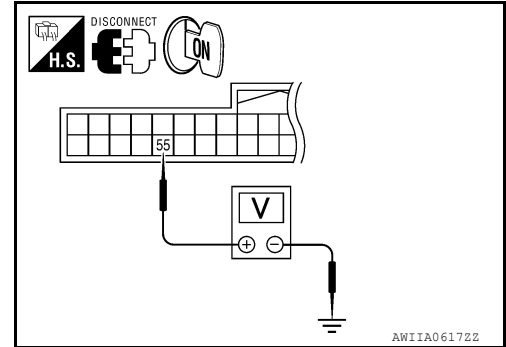
- YES >> Replace front blower motor relay.  
 NO >> Repair harness or connector.

### 12. REPLACE FUSES

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

Does the fuse blow?

- YES >> GO TO 13  
 NO >> Inspection End.



# BLOWER MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

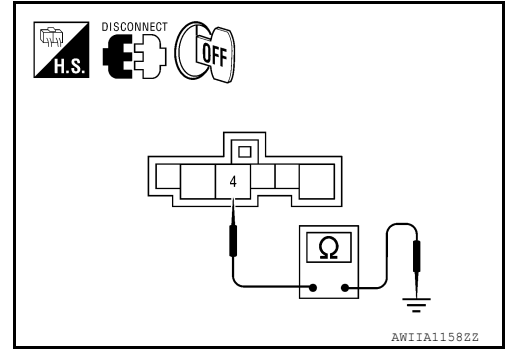
## 13. CHECK BLOWER MOTOR POWER SUPPLY CIRCUIT FOR SHORT

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 [VTL-17. "Removal and Installation"](#).
- NO >> Repair harness or connector.



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HAC

## MAGNET CLUTCH

### Description

INFOID:000000006388988

#### SYSTEM DESCRIPTION

When the blower speed dial is in one of the fan speed positions, the front air control outputs a fan ON signal to the BCM. When the A/C switch is pressed, the A/C switch LED illuminates and the front air control outputs a compressor ON signal to the BCM. Any mode control button can be selected. The front air control also monitors the intake sensor for low temperature. As long as the BCM receives a compressor ON signal and a fan ON signal from the front air control, the conditions required for the BCM to transmit a compressor ON request to the ECM have been met.

The BCM sends a compressor ON signal to ECM, via CAN communication line.

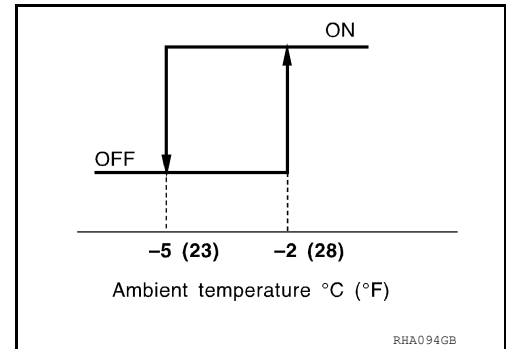
The ECM judges whether the compressor can be turned ON, based on each sensor status (refrigerant pressure sensor signal, throttle angle sensor, etc.). If it judges the compressor can be turned ON, it sends a compressor ON signal to IPDM E/R, via CAN communication line.

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

#### Low Temperature Protection Control

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

When ambient temperature is greater than  $-2^{\circ}\text{C}$  ( $28^{\circ}\text{F}$ ), the compressor turns ON. The compressor turns OFF when ambient temperature is less than  $-5^{\circ}\text{C}$  ( $23^{\circ}\text{F}$ ).




### Component Function Check

INFOID:000000006388989

#### INSPECTION FLOW

##### 1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - MAGNET CLUTCH

1. Start engine.
2. Press the VENT (  ) mode.
3. Press A/C switch.
4. Confirm that the A/C compressor clutch engages (sound or visual inspection).

#### Is the inspection result normal?

- YES >> Inspection End.
- NO >> Go to diagnosis procedure for magnet clutch circuit. Refer to [HAC-52, "Diagnosis Procedure"](#).

### Diagnosis Procedure

INFOID:000000006388990

Regarding Wiring Diagram information, refer to [HAC-71, "Wiring Diagram - Coupe With Automatic"](#) or [HAC-80, "Wiring Diagram - Sedan With Automatic"](#).

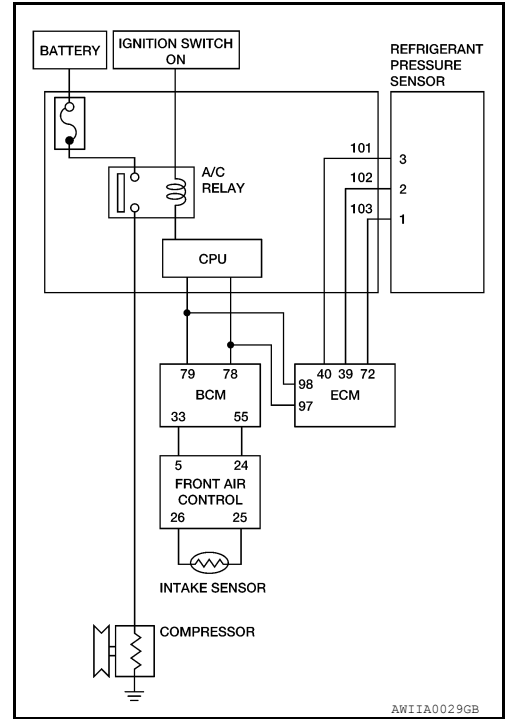
#### DIAGNOSIS PROCEDURE FOR MAGNET CLUTCH

# MAGNET CLUTCH

[AUTOMATIC AIR CONDITIONER]

< DTC/CIRCUIT DIAGNOSIS >

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, "CONSULT Function \(IPDM E/R\)"](#).
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, 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?

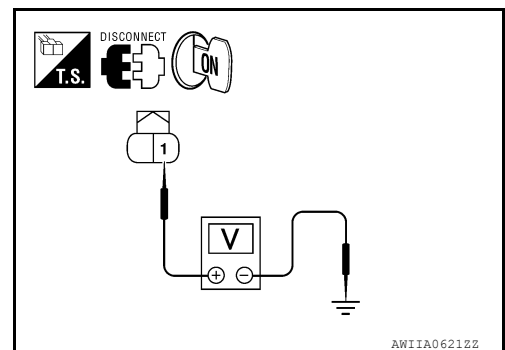
- YES >> Check refrigerant pressure sensor. Refer to [EC-271, "Diagnosis Procedure"](#) (QR25DE) or [EC-636, "Diagnosis Procedure"](#) (VQ35DE).  
NO >> GO TO 6

## 3. CHECK POWER SUPPLY FOR A/C COMPRESSOR

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

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

Is the inspection result normal?



# MAGNET CLUTCH

[AUTOMATIC AIR CONDITIONER]

## < DTC/CIRCUIT DIAGNOSIS >

- YES >> Check magnet clutch coil.
- If NG, replace magnet clutch. Refer to [HA-31, "Removal and Installation for Compressor - QR25DE Models"](#) or [HA-32, "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	
F3 - 1	F10 - 48	Yes

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-45, "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 5 and ground, with A/C compressor ON and with A/C compressor OFF.

Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal	Body ground	A/C compressor ON: 0V
M37 - 5		A/C compressor OFF: 9-12V

Is the inspection result normal?

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

### 7. CHECK CONTINUITY BETWEEN BCM AND FRONT AIR CONTROL

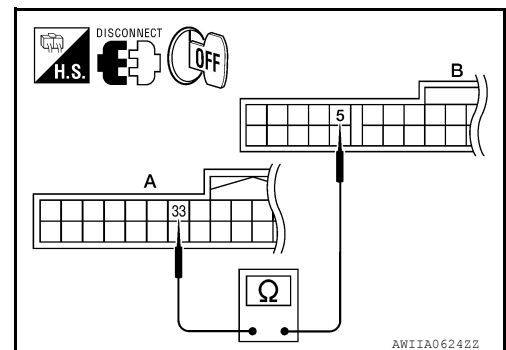
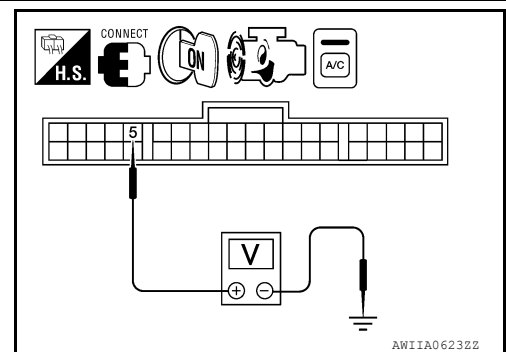
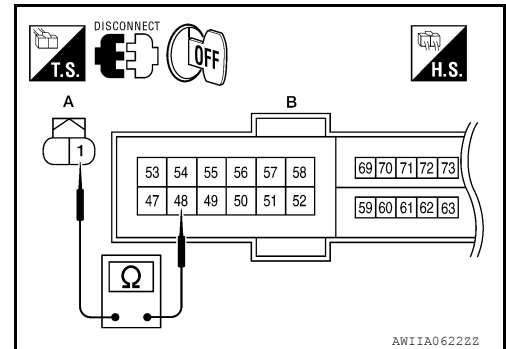
- Disconnect BCM connector M18 and front air control connector.
- Check continuity between BCM harness connector M18 (A) terminal 33 and front air control connector M37 (B) terminal 5.

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

Is the inspection result normal?

- YES >> Replace BCM. Refer to [BCS-92, "Removal and Installation"](#).  
 NO >> Repair harness or connector.

### 8. CHECK CAN COMMUNICATION CIRCUITS



# MAGNET CLUTCH

[AUTOMATIC AIR CONDITIONER]

< DTC/CIRCUIT DIAGNOSIS >

Check CAN communication circuits between BCM to ECM and between ECM to IPDM E/R. Refer to [LAN-12](#), "[CAN Diagnosis with CONSULT-III](#)".

Is the inspection result normal?

YES >> BCM malfunctioning.

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

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## AMBIENT SENSOR

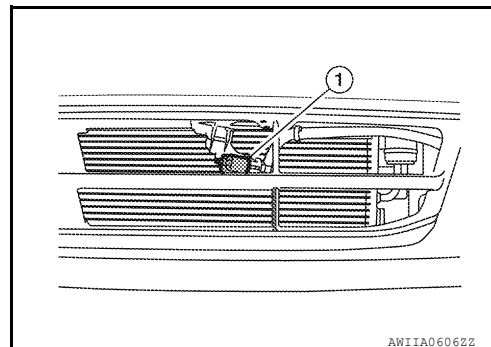
### Description

INFOID:000000006388991

### 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.

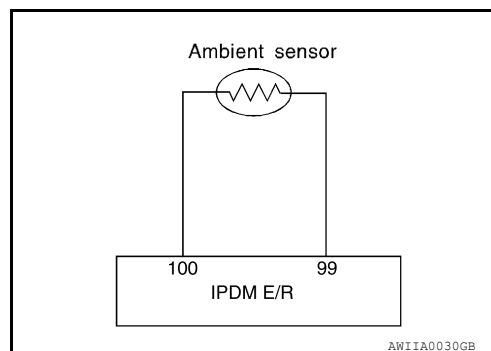
### Diagnosis Procedure

INFOID:000000006388992

Regarding Wiring Diagram information, refer to [HAC-71, "Wiring Diagram - Coupe With Automatic"](#) or [HAC-80, "Wiring Diagram - Sedan With Automatic"](#).

### DIAGNOSIS PROCEDURE FOR AMBIENT SENSOR

SYMPTOM: Ambient sensor circuit is open or shorted.



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



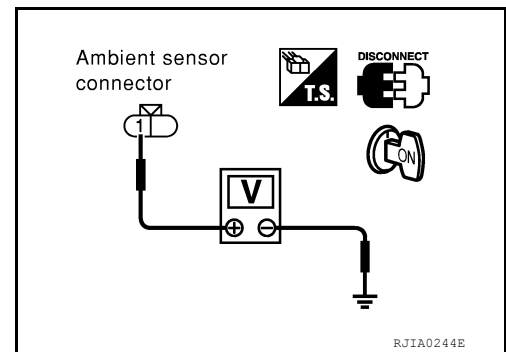
# AMBIENT SENSOR

[AUTOMATIC AIR CONDITIONER]

## < DTC/CIRCUIT DIAGNOSIS >

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

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



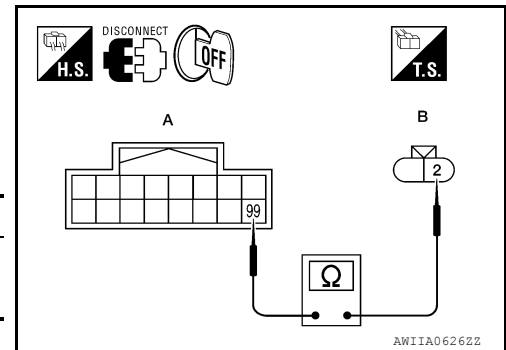
Is the inspection result normal?

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

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

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

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



If YES, check harness for short.

Is the inspection result normal?

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

## 3. CHECK AMBIENT SENSOR

Check ambient temperature sensor. Refer to [HAC-58, "Component Inspection & Special Repair Requirement"](#).

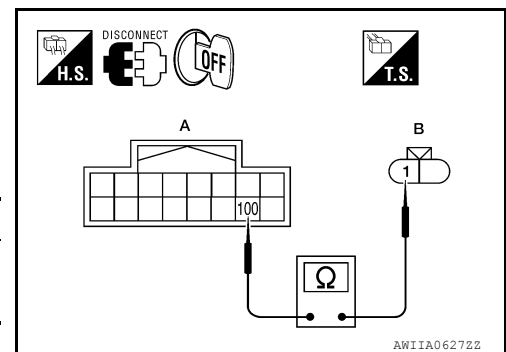
Is the inspection result normal?

- YES >> 1. Replace front air control. Refer to [VTL-9, "Removal and Installation"](#).  
2. Confirm system operation.  
NO >> Replace ambient sensor. Refer to [HA-40, "Removal and Installation"](#).

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

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

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



If OK, check harness for short.

Is the inspection result normal?

- YES >> 1. Replace IPDM E/R. Refer to [PCS-45, "Removal and Installation"](#).  
2. Confirm system operation.  
NO >> Repair harness or connector.

# AMBIENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

## Component Inspection & Special Repair Requirement

INFOID:000000006388993

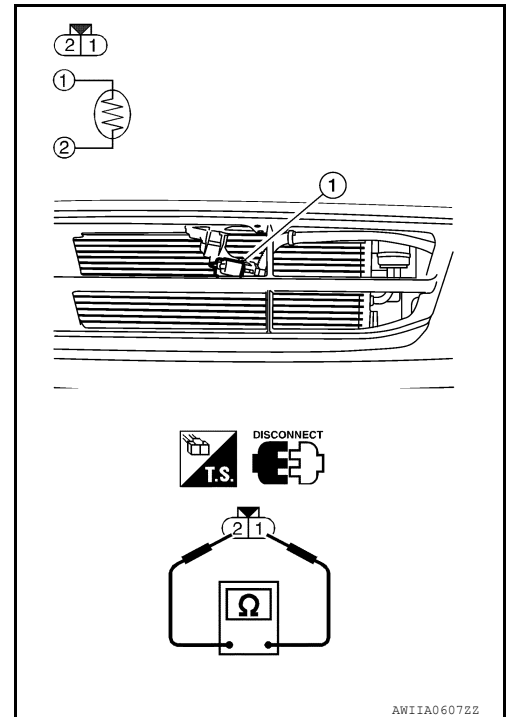
### COMPONENT INSPECTION

#### 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

If NG, replace ambient sensor. Refer to [HA-40, "Removal and Installation"](#).



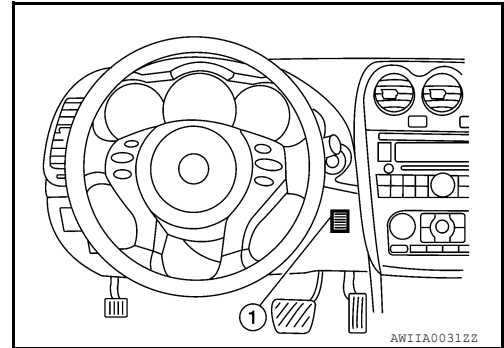
IN-VEHICLE SENSOR

Component Description

INFOID:000000006388994

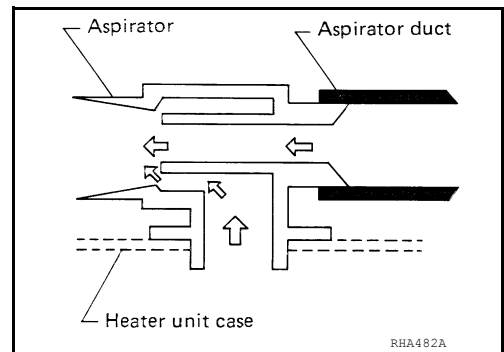
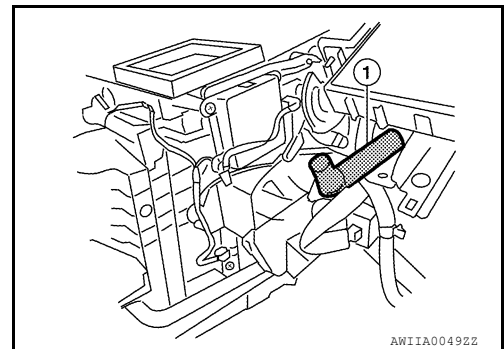
In-vehicle sensor

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:000000006388995

Regarding Wiring Diagram information, refer to [HAC-71, "Wiring Diagram - Coupe With Automatic"](#) or [HAC-80, "Wiring Diagram - Sedan With Automatic"](#).

DIAGNOSTIC PROCEDURE

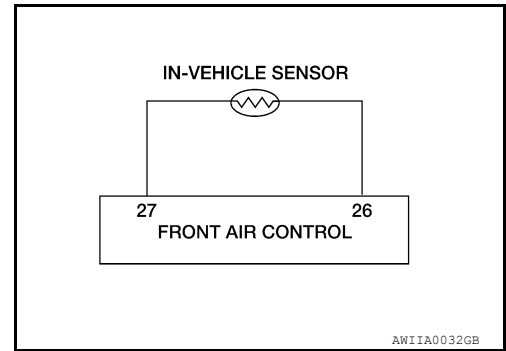
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# IN-VEHICLE SENSOR

[AUTOMATIC AIR CONDITIONER]

< DTC/CIRCUIT DIAGNOSIS >

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



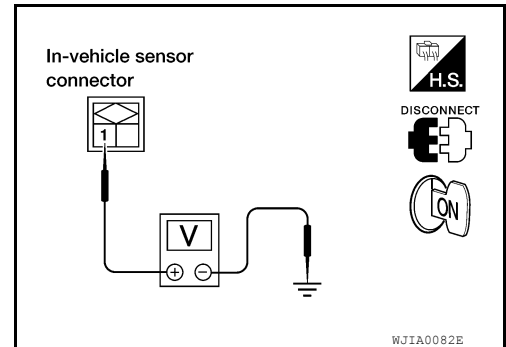
## 1. CHECK VOLTAGE BETWEEN IN-VEHICLE SENSOR HARNESS CONNECTOR AND BODY GROUND

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

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

Is the inspection result normal?

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



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

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

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

If OK, check harness for short.

Is the inspection result normal?

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

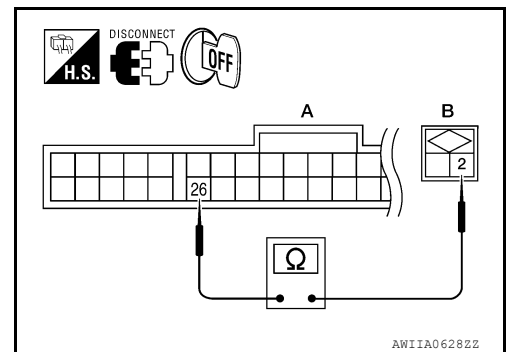
## 3. CHECK IN-VEHICLE SENSOR

Check in-vehicle sensor. Refer to [HAC-61. "Component Inspection & Special Repair Requirement"](#).

Is the inspection result normal?

- YES >> 1. Replace front air control. Refer to [VTL-9. "Removal and Installation"](#).  
2. Confirm system operation.  
NO >> 1. Replace in-vehicle sensor. Refer to [VTL-10. "Removal and Installation"](#).  
2. Confirm system operation.

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



# IN-VEHICLE SENSOR

[AUTOMATIC AIR CONDITIONER]

## < DTC/CIRCUIT DIAGNOSIS >

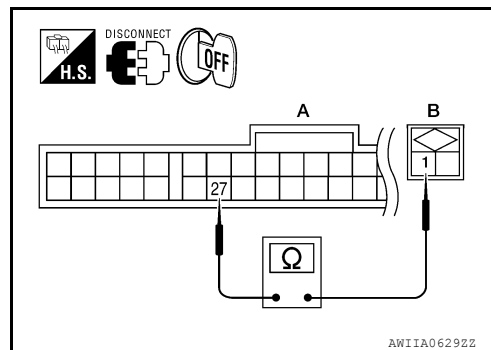
1. Press ignition switch OFF.
2. Disconnect front air control connector M37.
3. Check continuity between front air control harness connector M37 (A) terminal 27 and in-vehicle sensor harness connector M34 (B) terminal 1.

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

If OK, check harness for short.

Is the inspection result normal?

- YES >> 1. Replace front air control. Refer to [VTL-9, "Removal and Installation"](#).  
 2. Confirm system operation.
- NO >> Repair harness or connector.



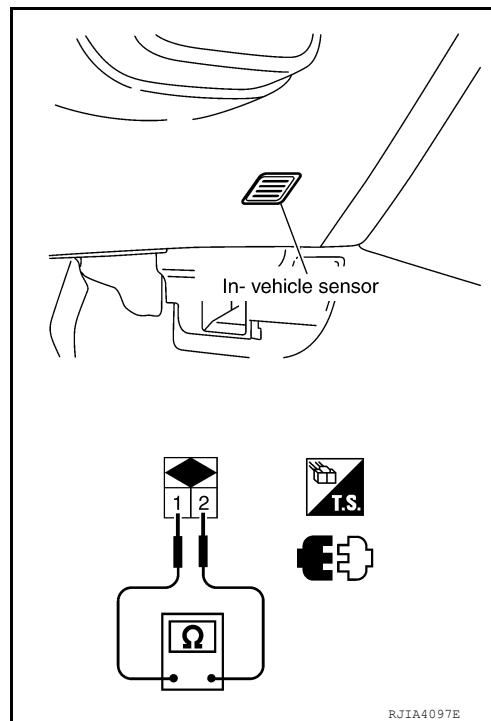
## Component Inspection & Special Repair Requirement

INFOID:000000006388996

### COMPONENT INSPECTION

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

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



If NG, replace in-vehicle sensor. Refer to [VTL-10, "Removal and Installation"](#).

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# SUNLOAD SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

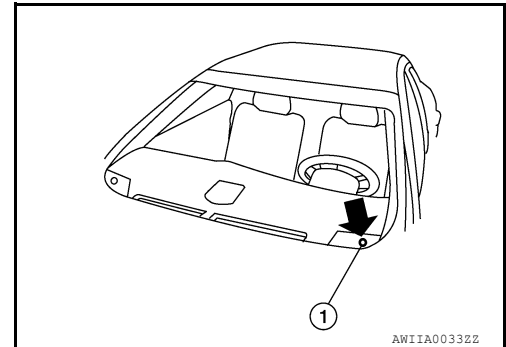
## SUNLOAD SENSOR

### Description

INFOID:000000006388997

#### COMPONENT DESCRIPTION

The sunload sensor (1) is located on the LH defroster grille. It detects sunload entering through windshield by means of a photo diode. The sensor converts the sunload into a current value which is then input into the 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.

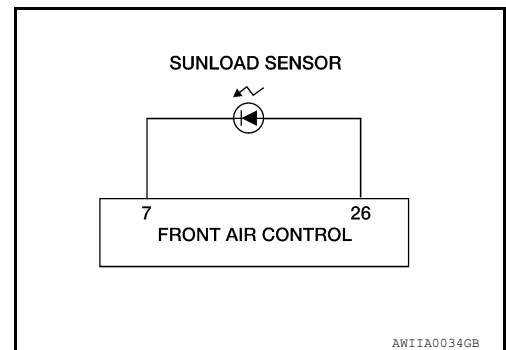
### Diagnosis Procedure

INFOID:000000006388998

Regarding Wiring Diagram information, refer to [HAC-71, "Wiring Diagram - Coupe With Automatic"](#) or [HAC-80, "Wiring Diagram - Sedan With Automatic"](#).

#### DIAGNOSTIC PROCEDURE

SYMPTOM: Sunload sensor circuit is open or shorted.



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

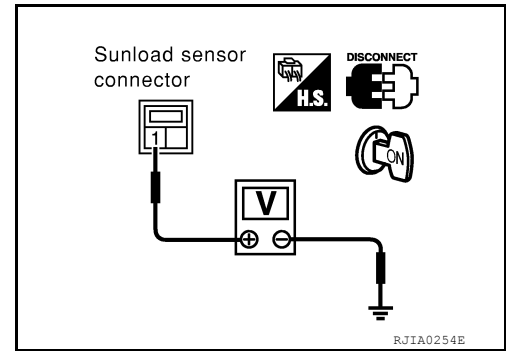
# SUNLOAD SENSOR

[AUTOMATIC AIR CONDITIONER]

## < DTC/CIRCUIT DIAGNOSIS >

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

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



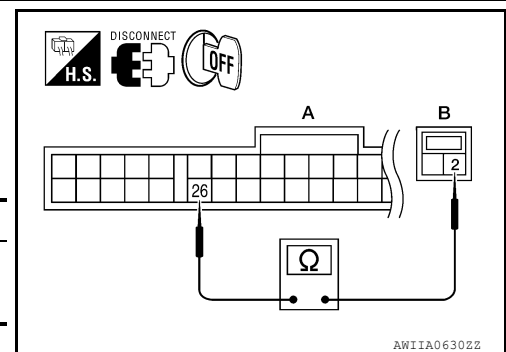
Is the inspection result normal?

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

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

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

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



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-64, "Component Inspection & Special Repair Requirement"](#).

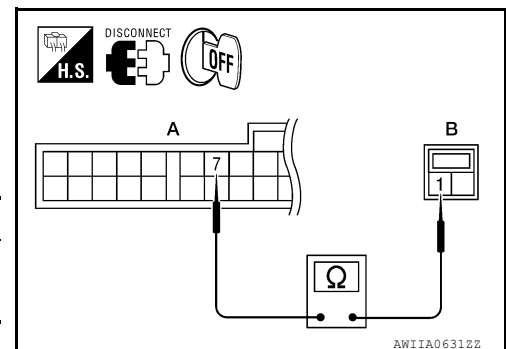
Is the inspection result normal?

- YES >> 1. Replace front air control. Refer to [VTL-9, "Removal and Installation"](#).  
2. Confirm system operation.  
NO >> 1. Replace sunload sensor. Refer to [VTL-11, "Removal and Installation"](#).  
2. Confirm system operation.

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

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

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



If OK, check harness for short.

Is the inspection result normal?

- YES >> 1. Replace front air control. Refer to [VTL-9, "Removal and Installation"](#).  
2. Confirm system operation.  
NO >> Repair harness or connector.

# SUNLOAD SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

## Component Inspection & Special Repair Requirement

INFOID:000000006388999

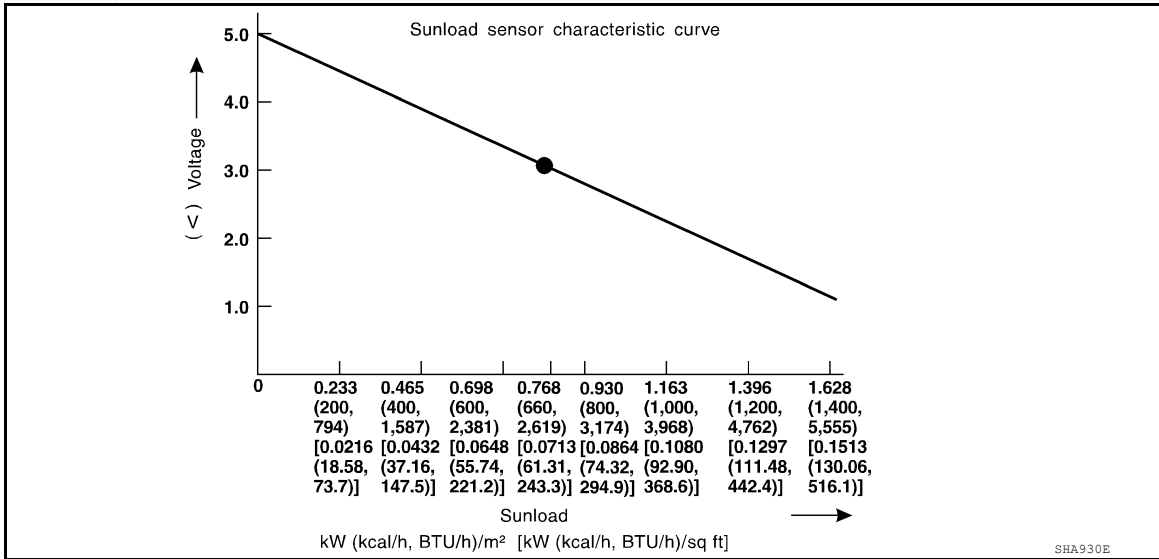
### COMPONENT INSPECTION

Sunload Sensor

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

If NG, replace front air control. Refer to [VTL-9, "Removal and Installation"](#).

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





# INTAKE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

## INTAKE SENSOR

### Description

INFOID:000000006389000

### COMPONENT DESCRIPTION

#### 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.

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

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

If NG, replace intake sensor. Refer to [VTL-12. "Removal and Installation"](#).

### Component Function Check

INFOID:000000006389001

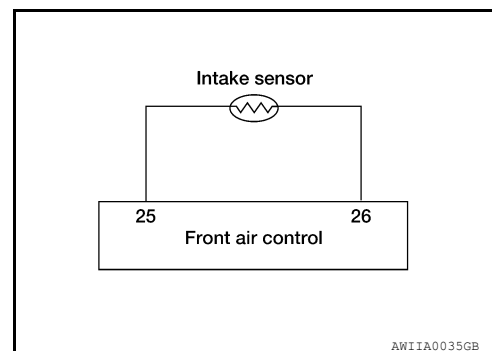
### Diagnosis Procedure

INFOID:000000006389002

Regarding Wiring Diagram information, refer to [HAC-71. "Wiring Diagram - Coupe With Automatic"](#) or [HAC-80. "Wiring Diagram - Sedan With Automatic"](#).

### DIAGNOSTIC PROCEDURE

SYMPTOM: Intake sensor circuit is open or shorted.



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

# INTAKE SENSOR

[AUTOMATIC AIR CONDITIONER]

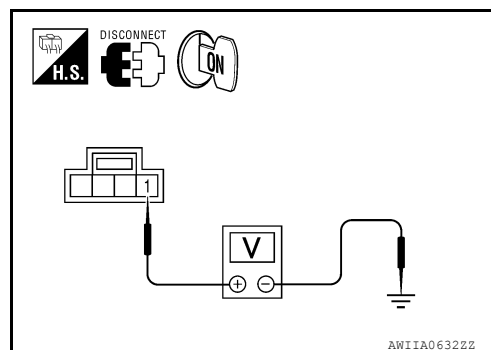
## < DTC/CIRCUIT DIAGNOSIS >

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

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

Is the inspection result normal?

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



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

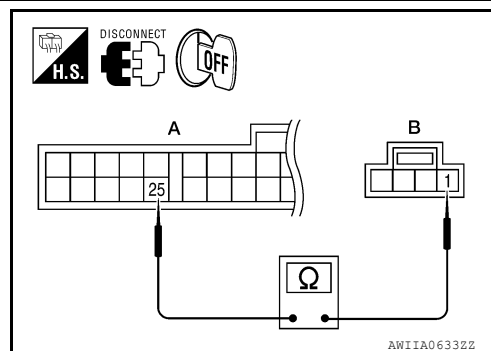
1. Press ignition switch OFF.
2. Disconnect front air control connector M37.
3. Check continuity between front air control connector M37 (A) terminal 25 and intake sensor harness connector M69 (B) terminal 1.

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

If OK, check harness for short.

Is the inspection result normal?

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



## 3. CHECK INTAKE SENSOR

Check intake sensor. Refer to [HAC-65, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES >> 1. Replace front air control. Refer to [VTL-9, "Removal and Installation"](#).  
2. Confirm system operation.  
NO >> 1. Replace intake sensor. Refer to [VTL-12, "Removal and Installation"](#).  
2. Confirm system operation.

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

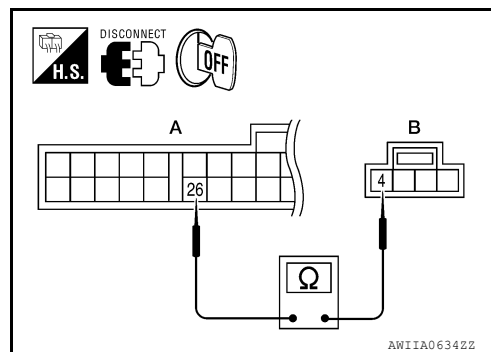
1. Press ignition switch OFF.
2. Disconnect front air control connector M37.
3. Check continuity between front air control connector M37 (A) terminal 26 and intake sensor harness connector M69 (B) terminal 4.

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

If OK, check harness for short.

Is the inspection result normal?

- YES >> 1. Replace front air control, Refer to [VTL-9, "Removal and Installation"](#).  
2. Confirm system operation.  
NO >> Repair harness or connector.



# POWER SUPPLY AND GROUND CIRCUIT FOR FRONT AIR CONTROL

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

## POWER SUPPLY AND GROUND CIRCUIT FOR FRONT AIR CONTROL

### Description

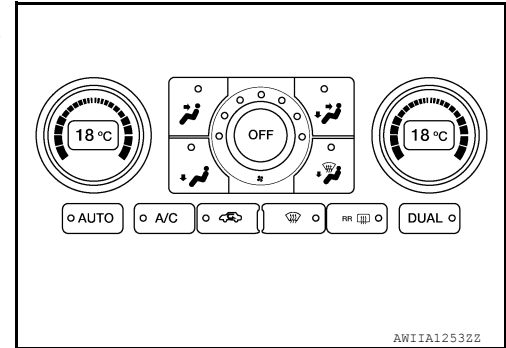
INFOID:000000006389003

### 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:000000006389004

### COMPONENT INSPECTION

SYMPTOM: A/C system does not come on.

#### INSPECTION FLOW

#### 1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - AUTO MODE

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

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to main power supply and ground circuit. Refer to [HAC-67, "Diagnosis Procedure"](#)

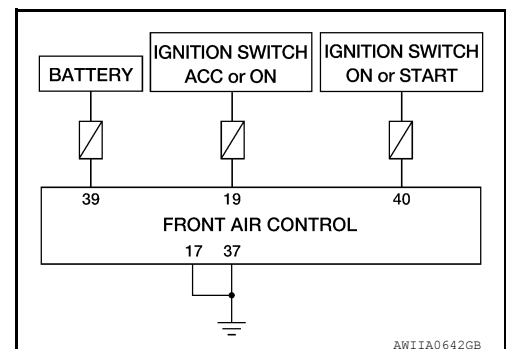
### Diagnosis Procedure

INFOID:000000006389005

Regarding Wiring Diagram information, refer to [HAC-71, "Wiring Diagram - Coupe With Automatic"](#) or [HAC-80, "Wiring Diagram - Sedan With Automatic"](#).

### DIAGNOSIS PROCEDURE FOR A/C SYSTEM

SYMPTOM: A/C system does not come on.



#### 1. CHECK POWER SUPPLY CIRCUIT FOR FRONT AIR CONTROL

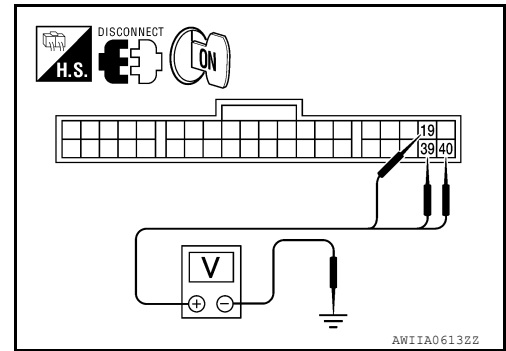
# POWER SUPPLY AND GROUND CIRCUIT FOR FRONT AIR CONTROL

[AUTOMATIC AIR CONDITIONER]

## < DTC/CIRCUIT DIAGNOSIS >

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

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



### Is the inspection result normal?

YES >> GO TO 2

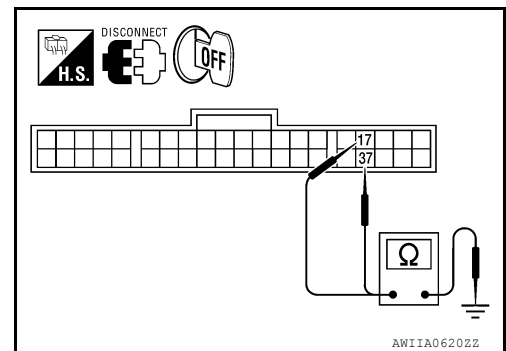
NO >> Check the following.

- 10A fuses [Nos. 6, 19, and 3, located in the fuse block (J/B)].
- If fuses are OK, check for open circuit in wiring harness. Repair or replace as necessary.
- If fuses are NG, replace fuse and check wiring harness for short circuit. Repair or replace as necessary.

## 2. CHECK BODY GROUND CIRCUIT FOR FRONT AIR CONTROL

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

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



### Is the inspection result normal?

YES >> • Replace front air control. Refer to [VTL-9. "Removal and Installation"](#).

- Inspection End.

NO >> Repair or replace harness.

# AIR CONDITIONER CONTROL

< ECU DIAGNOSIS INFORMATION >

[AUTOMATIC AIR CONDITIONER]

## ECU DIAGNOSIS INFORMATION

### AIR CONDITIONER CONTROL

#### Reference Value

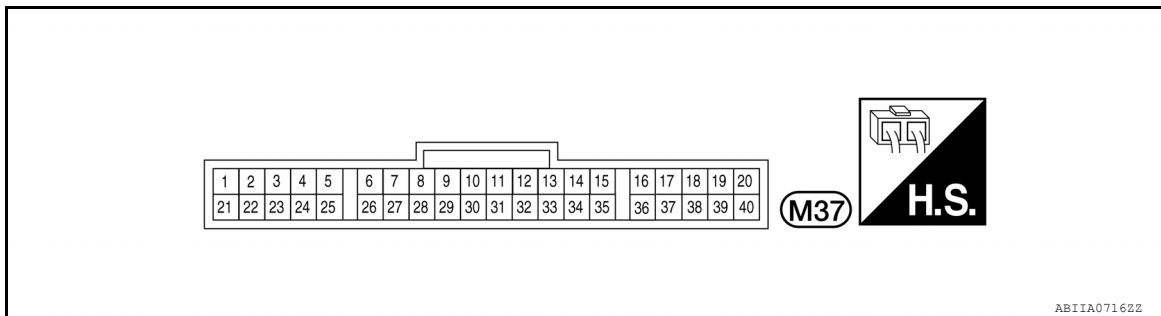
INFOID:000000006389006

#### VALUES ON THE DIAGNOSIS TOOL

##### Display Item List

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

#### TERMINAL LAYOUT




#### PHYSICAL VALUES

Terminal No.	Wire color	Item	Ignition switch	Condition		Voltage (V) (Approx.)
1	L/Y	Blower motor feed back		Fan speed	Low	0.3
3	L/R	A/C LAN signal		—		1-8
5	SB	Compressor ON signal		Compressor	ON	0
					OFF	2 - 2.5
7	O	Sunload sensor		—		0 - 5
9	G/W	Water temperature sensor		—		—
16	R/L	Light (+)			Lighting switch	OFF
			1st position		12	
17	B	Ground		—		0
18	W/L	Power supply for IGN		—		12
19	V/Y	Power supply for ACC	ACC	—		12
20	L/W	Power supply for mode door motor, intake door motor, and air mix door motor LH and RH		—		12
21	R/W	Power supply for A/C ON signal			ON	4.6
22	GR	Rear defrost feed back		Defroster switch	ON	12
					OFF	0

# AIR CONDITIONER CONTROL

< ECU DIAGNOSIS INFORMATION >

[AUTOMATIC AIR CONDITIONER]

Terminal No.	Wire color	Item	Ignition switch	Condition		Voltage (V) (Approx.)
23	GR/W	Rear defrost ON signal		Defroster switch	ON	0
					OFF	12
24	BR/W	Fan ON signal		Fan	ON	0
					OFF	9 - 12
25	R/G	Intake sensor			—	0 - 5
26	B/Y	Sensor ground			—	0
27	LG	In-vehicle sensor			—	0 - 5
28	O/B	Ambient sensor			—	5
31	P	Ambient sensor VDD			—	5
36	R/Y	Light (-)			—	0
37	B	Ground			—	0
39	Y/R	Power supply for battery			—	12
40	G	Power supply for IGN		—	12	

# AIR CONDITIONER CONTROL

[AUTOMATIC AIR CONDITIONER]

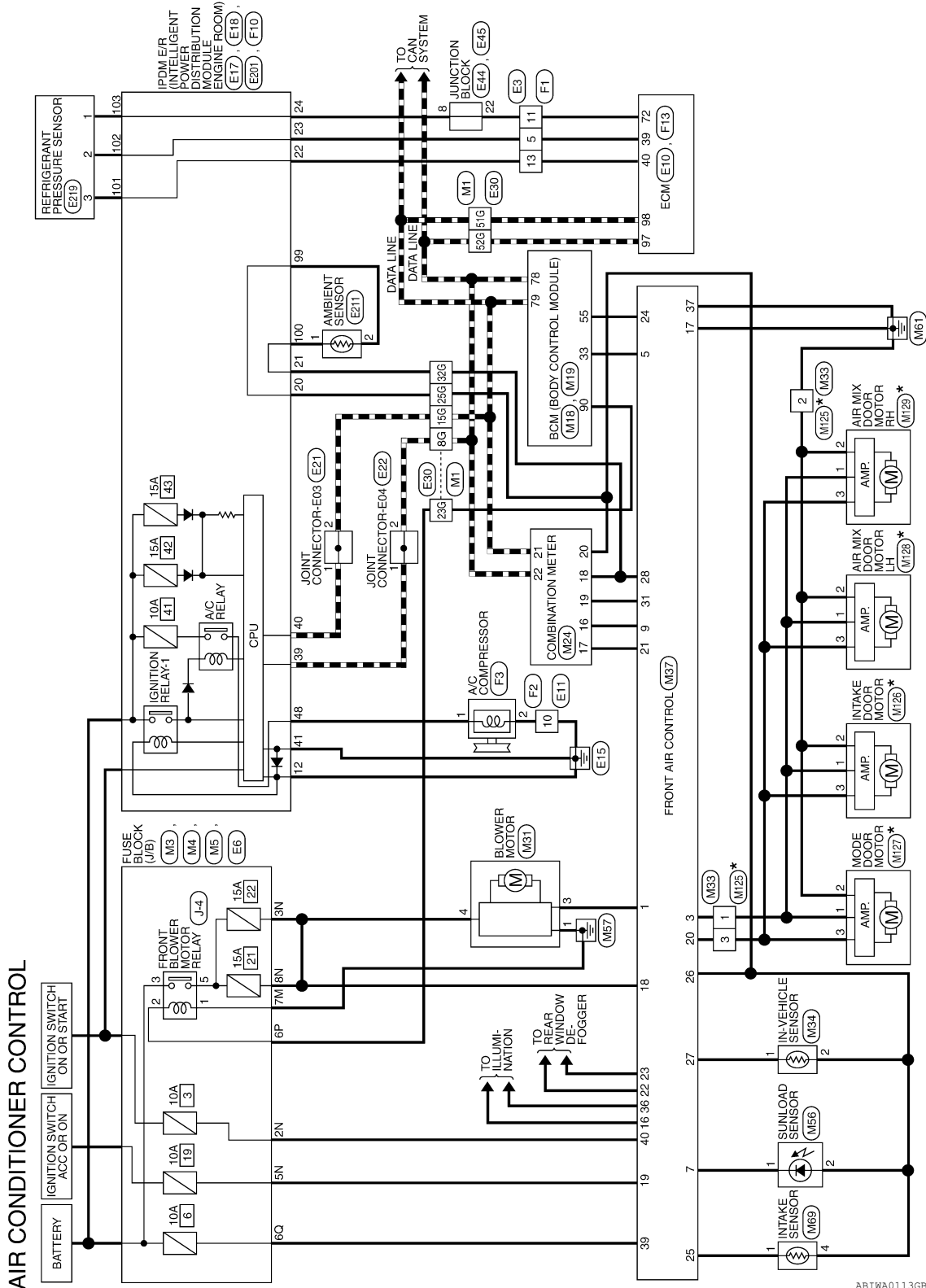
< WIRING DIAGRAM >

## WIRING DIAGRAM

### AIR CONDITIONER CONTROL

#### Wiring Diagram - Coupe With Automatic

INFOID:000000006389007



ABIWA0113GB

A  
B  
C  
D  
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F  
G  
H  
I  
J  
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M  
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O  
P

HAC

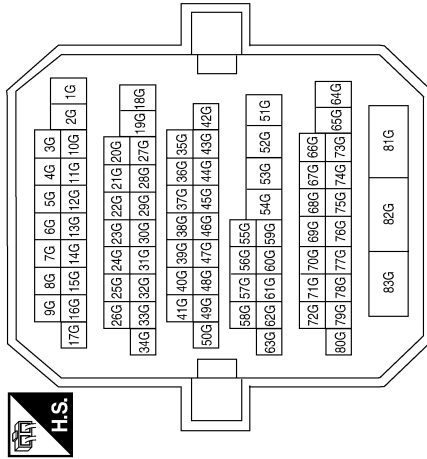
# AIR CONDITIONER CONTROL

[AUTOMATIC AIR CONDITIONER]

< WIRING DIAGRAM >

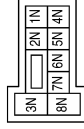
## AIR CONDITIONER CONTROL CONNECTORS

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



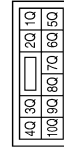
Terminal No.	Color of Wire	Signal Name
8G	P	-
15G	L	-
23G	Y	-
25G	B/Y	-
32G	O/B	-
51G	L	-
52G	P	-

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



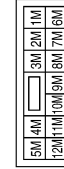
Terminal No.	Color of Wire	Signal Name
2N	G	-
3N	W/L	-
5N	V/Y	-
8N	W/L	-

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



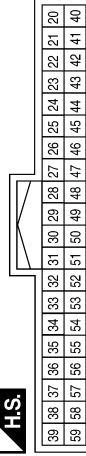
Terminal No.	Color of Wire	Signal Name
6Q	Y/R	-

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



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

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



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

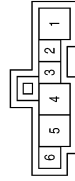


# AIR CONDITIONER CONTROL

[AUTOMATIC AIR CONDITIONER]

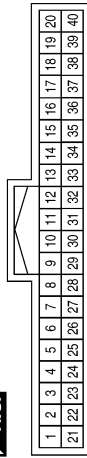
< WIRING DIAGRAM >

Connector No.	M31
Connector Name	BLOWER MOTOR
Connector Color	WHITE



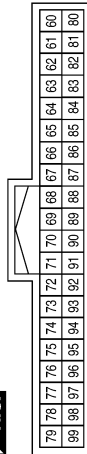
Terminal No.	Color of Wire	Signal Name
1	B	GND
3	L/Y	FAN_PWM
4	W/L	B+

Connector No.	M24
Connector Name	COMBINATION METER
Connector Color	WHITE



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

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



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

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



Terminal No.	Color of Wire	Signal Name
1	LG	INC SENS
2	B/Y	SENS GND

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



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

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A  
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HAC  
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P

# AIR CONDITIONER CONTROL

[AUTOMATIC AIR CONDITIONER]

< WIRING DIAGRAM >

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



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

Terminal No.	Color of Wire	Signal Name
1	L/Y	FAN PWM
2	-	-
3	L/R	LAN SIG
4	-	-
5	SB	COMP ON
6	-	-
7	O	SUN SENS
8	-	-
9	G/W	WATER TEMP

Terminal No.	Color of Wire	Signal Name
10	-	-
11	-	-
12	-	-
13	-	-
14	-	-
15	-	-
16	R/L	ILL+
17	B	GND
18	W/L	IGN 2
19	V/Y	ACC
20	L/W	VACTR
21	R/W	PD CUT
22	GR	RR DEF F/B
23	GR/W	RR DEF ON
24	BR/W	FAN ON
25	R/G	INT SENS
26	B/Y	SENS GND
27	LG	INC SENS

Terminal No.	Color of Wire	Signal Name
28	O/B	AMB SENS
29	-	-
30	-	-
31	P	AMB VDD
32	-	-
33	-	-
34	-	-
35	-	-
36	R/Y	ILL-
37	B	GND (POWER)
38	-	-
39	Y/R	BATT
40	G	IGN

Connector No.	M56
Connector Name	SUNLOAD SENSOR
Connector Color	BLACK



1	2
---	---

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

Connector No.	M69
Connector Name	INTAKE SENSOR
Connector Color	WHITE



4	3	2	1
---	---	---	---

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

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



3	2	1
---	---	---

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

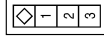
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# AIR CONDITIONER CONTROL

[AUTOMATIC AIR CONDITIONER]

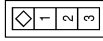
< WIRING DIAGRAM >

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



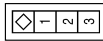
Terminal No.	Color of Wire	Signal Name
1	L/R	-
2	B	-
3	L/W	-

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



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

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



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

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



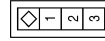
Terminal No.	Color of Wire	Signal Name
6P	Y	-

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



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

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



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

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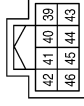
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# AIR CONDITIONER CONTROL

[AUTOMATIC AIR CONDITIONER]

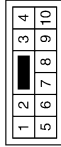
< WIRING DIAGRAM >

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



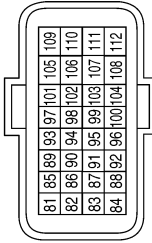
Terminal No.	Color of Wire	Signal Name
39	P	CAN-L
40	L	CAN-H
41	B	GND (SIGNAL)

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



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

Connector No.	E10
Connector Name	ECM
Connector Color	BLACK



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

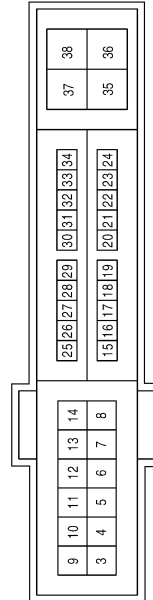
Connector No.	E21
Connector Name	JOINT CONNECTOR-E03
Connector Color	WHITE



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

Terminal No.	Color of Wire	Signal Name
12	B	GND (POWER)
20	L	AMB SENS GND-E/R
21	LG	AMB SENS SIG-E/R
22	W/R	PD SENS GND-E/R
23	BR	PD SENS SIG-E/R
24	BR/W	PD SENS PWR-E/R

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



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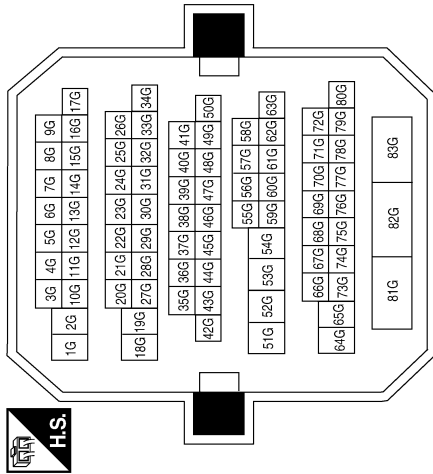
# AIR CONDITIONER CONTROL

[AUTOMATIC AIR CONDITIONER]

< WIRING DIAGRAM >

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

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



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

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

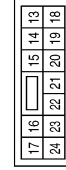


Connector No.	E201
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE



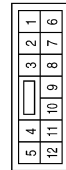
Terminal No.	Color of Wire	Signal Name
99	BR/W	AMB_SENS_GND-FEM
100	SB	AMB_SENS_SIG-FEM
101	O/L	PD_SENS_GND-FEM
102	R/B	PD_SENS_SIG-FEM
103	P	PD_SENS_PWR-FEM

Connector No.	E45
Connector Name	JUNCTION BLOCK
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
22	GR	-

Connector No.	E44
Connector Name	JUNCTION BLOCK
Connector Color	BROWN



Terminal No.	Color of Wire	Signal Name
8	G	-

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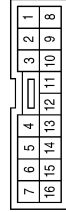
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# AIR CONDITIONER CONTROL

[AUTOMATIC AIR CONDITIONER]

< WIRING DIAGRAM >

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



Terminal No.	Color of Wire	Signal Name
5	L	- (QR25DE)
5	O	- (VQ35DE)
11	V	- (QR25DE)
11	R	- (VQ35DE)
13	GR	- (QR25DE)
13	SB	- (VQ35DE)

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



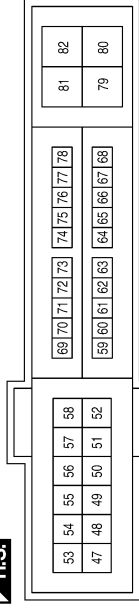
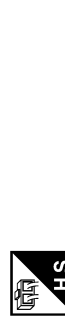
Terminal No.	Color of Wire	Signal Name
1	P	AVCC2
2	R	SIGNAL
3	W	GND

Connector No.	E211
Connector Name	AMBIENT SENSOR
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	SB	AMB_SENS_SIG
2	BRW	AMB_SENS_GND

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



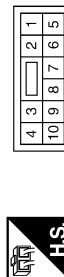
Terminal No.	Color of Wire	Signal Name
48	W	A/C_COMP

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



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

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



Terminal No.	Color of Wire	Signal Name
10	B	-

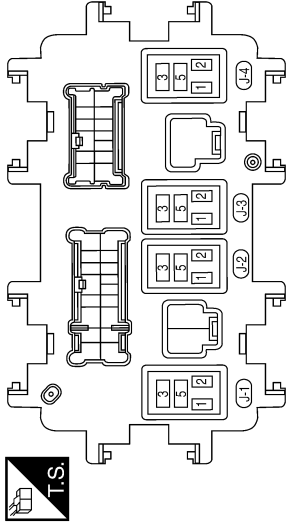
ABIIA0538GB

# AIR CONDITIONER CONTROL

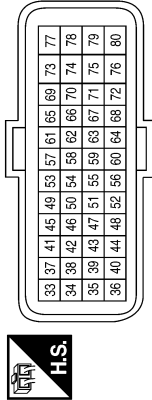
[AUTOMATIC AIR CONDITIONER]

< WIRING DIAGRAM >

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

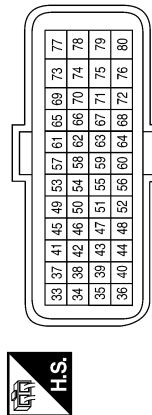


Connector No.	F13
Connector Name	ECM (WITH VQ35DE)
Connector Color	BROWN



Terminal No.	Color of Wire	Signal Name
39	O	PDPRES
40	SB	GND A-PDPRES
72	R	AVCC2-PDPRES

Connector No.	F13
Connector Name	ECM (WITH QR25DE)
Connector Color	BROWN



Terminal No.	Color of Wire	Signal Name
39	L	PDPRES
40	GR	GND A-PDPRES
72	V	AVCC2-PDPRES

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# AIR CONDITIONER CONTROL

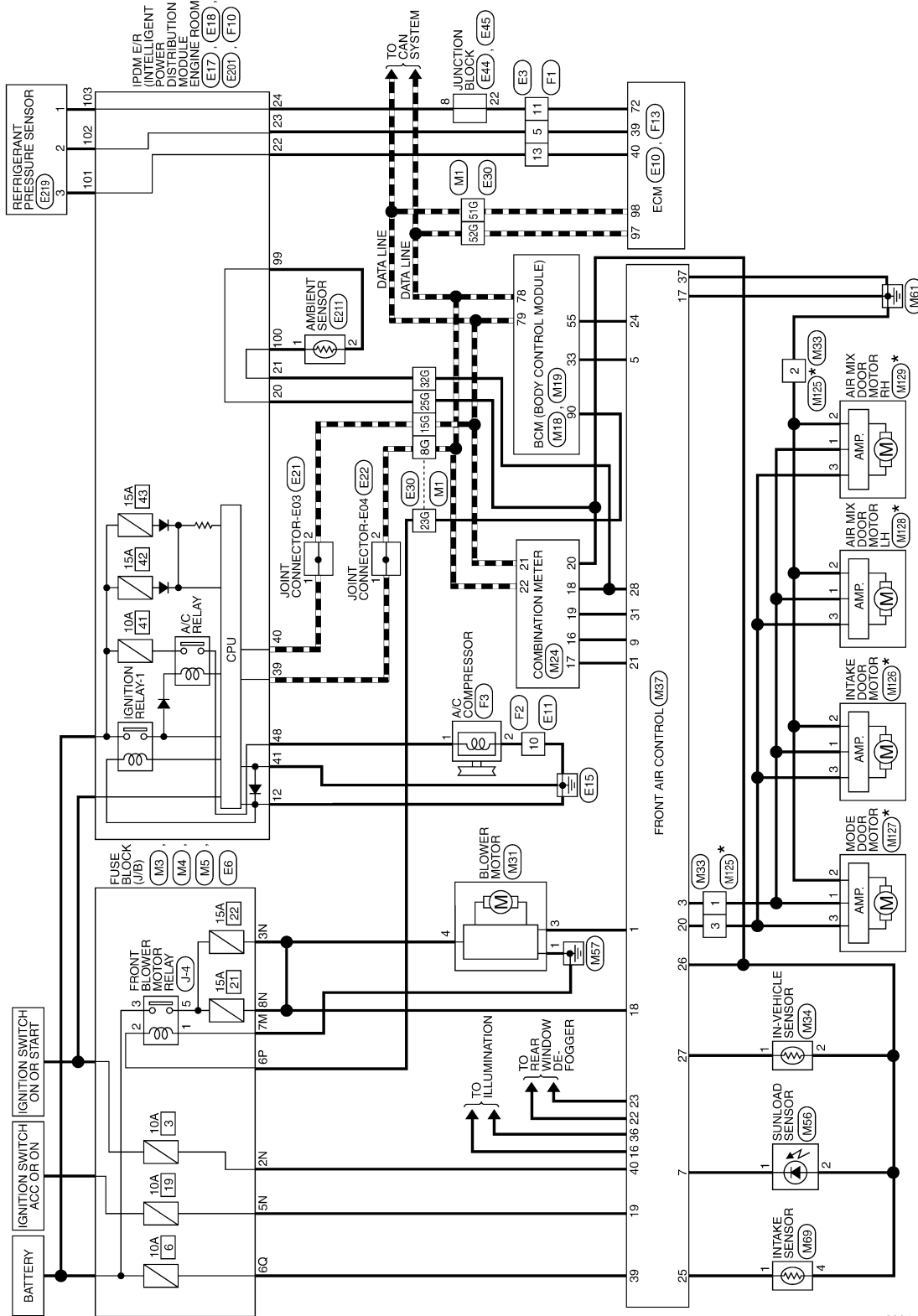
[AUTOMATIC AIR CONDITIONER]

< WIRING DIAGRAM >

## Wiring Diagram - Sedan With Automatic

INFOID:000000006389008

### AIR CONDITIONER CONTROL - AUTOMATIC



\* : THIS CONNECTOR IS NOT SHOWN IN "HARNES LAYOUT" OF PG SECTION.

AAIWA0084GB



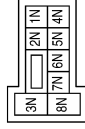
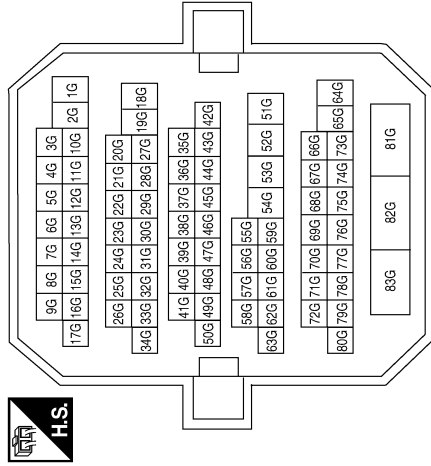
# AIR CONDITIONER CONTROL

[AUTOMATIC AIR CONDITIONER]

< WIRING DIAGRAM >

## AIR CONDITIONER CONTROL CONNECTORS - AUTOMATIC

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

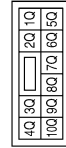


Terminal No.	Color of Wire	Signal Name
8G	P	-
15G	L	-
23G	Y	-
25G	B/Y	-
32G	O/B	-
51G	L	-
52G	P	-

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

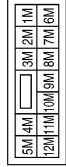
Terminal No.	Color of Wire	Signal Name
2N	G	-
3N	W/L	-
5N	V/Y	-
8N	W/L	-

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



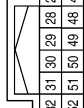
Terminal No.	6Q	Color of Wire	Y/R	Signal Name	-
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Connector No.	M5
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE



Terminal No.	7M	Color of Wire	B	Signal Name	-
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Connector No.	M18
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	GREEN



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

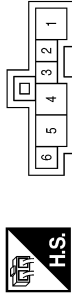
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# AIR CONDITIONER CONTROL

[AUTOMATIC AIR CONDITIONER]

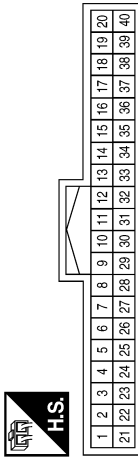
< WIRING DIAGRAM >

Connector No.	M31
Connector Name	BLOWER MOTOR
Connector Color	WHITE



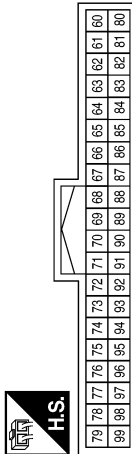
Terminal No.	Color of Wire	Signal Name
1	B	GND
3	L/Y	FAN_PWM
4	W/L	B+

Connector No.	M24
Connector Name	COMBINATION METER
Connector Color	WHITE



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

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



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

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



Terminal No.	Color of Wire	Signal Name
1	LG	INC SENS
2	B/Y	SENS GND

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



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

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# AIR CONDITIONER CONTROL

[AUTOMATIC AIR CONDITIONER]

< WIRING DIAGRAM >

Terminal No.	Color of Wire	Signal Name
28	O/B	AMB SENS
29	-	-
30	-	-
31	P	AMB VDD
32	-	-
33	-	-
34	-	-
35	-	-
36	R/Y	ILL-
37	B	GND (POWER)
38	-	-
39	Y/R	BATT
40	G	IGN

Terminal No.	Color of Wire	Signal Name
10	-	-
11	-	-
12	-	-
13	-	-
14	-	-
15	-	-
16	R/L	ILL+
17	B	GND
18	W/L	IGN 2
19	V/Y	ACC
20	L/W	VACTR
21	R/W	PD CUT
22	GR	RR DEF F/B
23	GR/W	RR DEF ON
24	BR/W	FAN ON
25	R/G	INT SENS
26	B/Y	SENS GND
27	LG	INC SENS

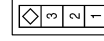
Connector No.	M37
Connector Name	FRONT AIR CONTROL (WITH AUTO A/C)
Connector Color	WHITE



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

Terminal No.	Color of Wire	Signal Name
1	L/Y	FAN PWM
2	-	-
3	L/R	LAN SIG
4	-	-
5	SB	COMP ON
6	-	-
7	O	SUN SENS
8	-	-
9	G/W	WATER TEMP

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



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

Connector No.	M69
Connector Name	INTAKE SENSOR
Connector Color	WHITE



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

Connector No.	M56
Connector Name	SUNLOAD SENSOR
Connector Color	BLACK



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

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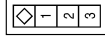
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# AIR CONDITIONER CONTROL

[AUTOMATIC AIR CONDITIONER]

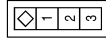
< WIRING DIAGRAM >

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



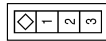
Terminal No.	Color of Wire	Signal Name
1	L/R	-
2	B	-
3	L/W	-

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



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

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



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

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



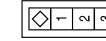
Terminal No.	Color of Wire	Signal Name
6P	Y	-

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



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

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



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

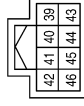
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# AIR CONDITIONER CONTROL

[AUTOMATIC AIR CONDITIONER]

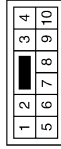
< WIRING DIAGRAM >

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



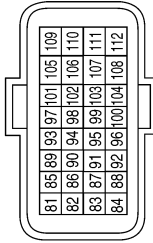
Terminal No.	Color of Wire	Signal Name
39	P	CAN-L
40	L	CAN-H
41	B	GND (SIGNAL)

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



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

Connector No.	E10
Connector Name	ECM
Connector Color	BLACK



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

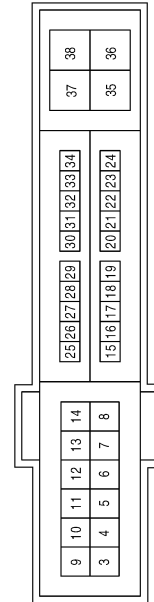
Connector No.	E21
Connector Name	JOINT CONNECTOR-E03
Connector Color	WHITE



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

Terminal No.	Color of Wire	Signal Name
12	B	GND (POWER)
20	L	AMB_SENS_GND-E/R
21	LG	AMB_SENS_SIG-E/R
22	W/R	PD_SENS_GND-E/R
23	B/R	PD_SENS_SIG-E/R
24	B/W	PD_SENS_PWR-E/R

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



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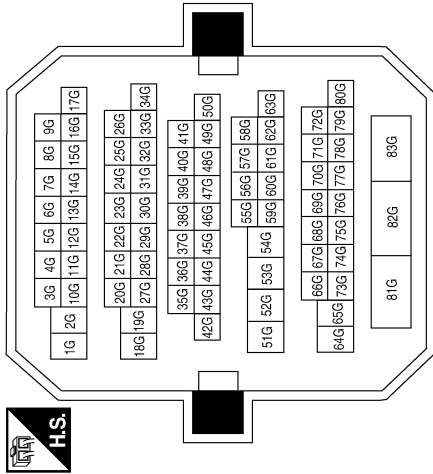
# AIR CONDITIONER CONTROL

[AUTOMATIC AIR CONDITIONER]

< WIRING DIAGRAM >

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

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

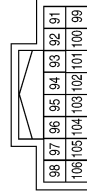


Connector No.	E22
Connector Name	JOINT CONNECTOR-E04
Connector Color	WHITE



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

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



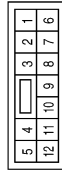
Terminal No.	Color of Wire	Signal Name
99	BRW	AMB_SENS_GND-FEM
100	SB	AMB_SENS_SIG-FEM
101	O/L	PD_SENS_GND-FEM
102	R/B	PD_SENS_SIG-FEM
103	P	PD_SENS_PWR-FEM

Connector No.	E45
Connector Name	JUNCTION BLOCK
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
22	GR	-

Connector No.	E44
Connector Name	JUNCTION BLOCK
Connector Color	BROWN



Terminal No.	Color of Wire	Signal Name
8	G	-

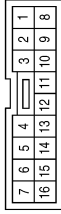
AB11A0545GB

# AIR CONDITIONER CONTROL

[AUTOMATIC AIR CONDITIONER]

< WIRING DIAGRAM >

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



Terminal No.	Color of Wire	Signal Name
5	L	-(QR25DE)
5	O	-(VQ35DE)
11	V	-(QR25DE)
11	R	-(VQ35DE)
13	GR	-(QR25DE)
13	SB	-(VQ35DE)

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



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

Connector No.	E211
Connector Name	AMBIENT SENSOR
Connector Color	BLACK



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

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



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

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



Terminal No.	Color of Wire	Signal Name
10	B	-

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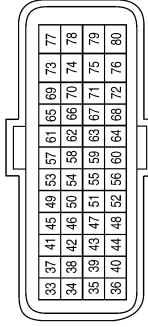
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# AIR CONDITIONER CONTROL

[AUTOMATIC AIR CONDITIONER]

< WIRING DIAGRAM >

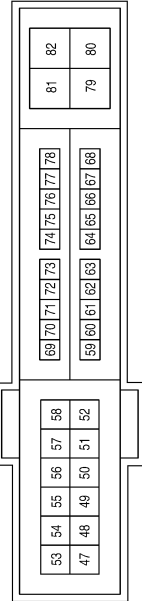
Connector No.	F13
Connector Name	ECM (WITH QR25DE)
Connector Color	BROWN



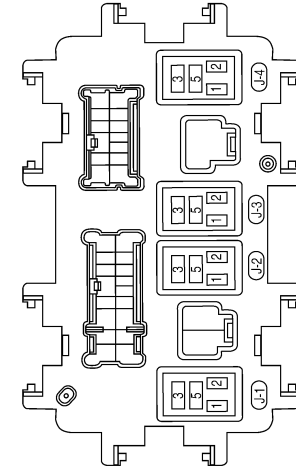
Terminal No.	Color of Wire	Signal Name
39	L	PDPRES
40	GR	GND A-PDPRES
72	V	AVCC2-PDPRES

Terminal No.	48	Color of Wire	W	Signal Name	A/C_COMP
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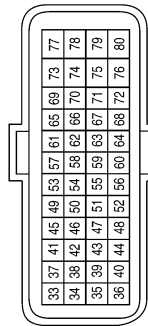
Connector No.	F10
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE



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



Connector No.	F13
Connector Name	ECM (WITH VQ35DE)
Connector Color	BROWN



Terminal No.	Color of Wire	Signal Name
39	O	PDPRES
40	SB	GND A - PDPRES
72	R	AVCC2 - PDPRES

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# AIR CONDITIONER CONTROL

[AUTOMATIC AIR CONDITIONER]

< SYMPTOM DIAGNOSIS >

## SYMPTOM DIAGNOSIS

### AIR CONDITIONER CONTROL

#### Symptom Matrix Chart

INFOID:000000006389009

#### SYMPTOM TABLE

Symptom	Reference Page	
A/C system does not come on.	Go to Trouble Diagnosis Procedure for A/C System.	<a href="#">HAC-67. "Diagnosis Procedure"</a>
Air outlet does not change.	Go to Trouble Diagnosis Procedure for Mode Door Motor. (LAN)	<a href="#">HAC-40. "Diagnosis Procedure"</a>
Mode door motor does not operate normally.		
Discharge air temperature does not change.	Go to Trouble Diagnosis Procedure for Air Mix Door Motor. (LAN)	<a href="#">HAC-33. "Diagnosis Procedure"</a>
Air mix door motor does not operate normally.		
Intake door does not change.	Go to Trouble Diagnosis Procedure for Intake Door Motor. (LAN)	<a href="#">HAC-33. "Diagnosis Procedure"</a>
Intake door motor does not operate normally.		
Blower motor operation is malfunctioning.	Go to Trouble Diagnosis Procedure for Blower Motor.	<a href="#">HAC-47. "Diagnosis Procedure"</a>
Magnet clutch does not engage.	Go to Trouble Diagnosis Procedure for Magnet Clutch.	<a href="#">HAC-52. "Diagnosis Procedure"</a>
Insufficient cooling	Go to Trouble Diagnosis Procedure for Insufficient Cooling.	<a href="#">HAC-90. "Component Function Check"</a>
Insufficient heating	Go to Trouble Diagnosis Procedure for Insufficient Heating.	<a href="#">HAC-98. "Component Function Check"</a>
Noise	Go to Trouble Diagnosis Procedure for Noise.	<a href="#">HAC-100. "Component Function Check"</a>

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# INSUFFICIENT COOLING

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

## INSUFFICIENT COOLING

### Component Function Check

INFOID:000000006389010

SYMPTOM: Insufficient cooling

#### INSPECTION FLOW

### 1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE DECREASE

---

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

Can a symptom be duplicated?

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

### 2. CHECK FOR ANY SYMPTOMS

---

Perform a complete operational check and check for any symptoms. Refer to [HAC-5. "Description and Conditions"](#).

Does another symptom exist?

- YES >> Refer to [HAC-89. "Symptom Matrix Chart"](#).  
NO >> System OK.

### 3. CHECK FOR SERVICE BULLETINS

---

Check for any service bulletins.

>> GO TO 4

### 4. CHECK DRIVE BELTS

---

Check compressor belt tension. Refer to [EM-16. "Checking Drive Belts"](#) (QR25DE) or [EM-122. "Checking Drive Belts"](#) (VQ35DE).

Is the inspection result normal?

- YES >> GO TO 5  
NO >> Adjust or replace compressor belt. Refer to [EM-16. "Removal and Installation"](#) (QR25DE) or [EM-122. "Removal and Installation"](#) (VQ35DE).

### 5. CHECK AIR MIX DOOR MOTOR OPERATION

---

Check and verify air mix door mechanism for smooth operation.

Does air mix door operate correctly?

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

### 6. CHECK COOLING FAN MOTOR OPERATION

---

Check and verify cooling fan motor for smooth operation.

Does cooling fan motor operation correctly

- YES >> GO TO 7  
NO >> Check cooling fan motor. Refer to [EC-237. "Component Inspection \(Cooling Fan Motor\)"](#) (QR25DE) or [EC-606. "Component Inspection \(Cooling Fan Motor\)"](#) (VQ35DE).

### 7. CHECK RECOVERY/RECYCLING EQUIPMENT BEFORE USAGE

---

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

>> GO TO 8

### 8. CHECK REFRIGERANT PURITY

---

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

# INSUFFICIENT COOLING

[AUTOMATIC AIR CONDITIONER]

< SYMPTOM DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 9

NO >> Check contaminated refrigerant. Refer to [HA-4, "Contaminated Refrigerant"](#).

## 9. CHECK REFRIGERANT PRESSURE

Check refrigerant pressure with manifold gauge connected. Refer to [HAC-94, "Trouble Diagnosis For Abnormal Pressure"](#).

Is the inspection result normal?

YES >> Perform performance test diagnoses. Refer to [HAC-91, "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 performance test diagnoses. Refer [HAC-91, "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

INFOID:000000006389011

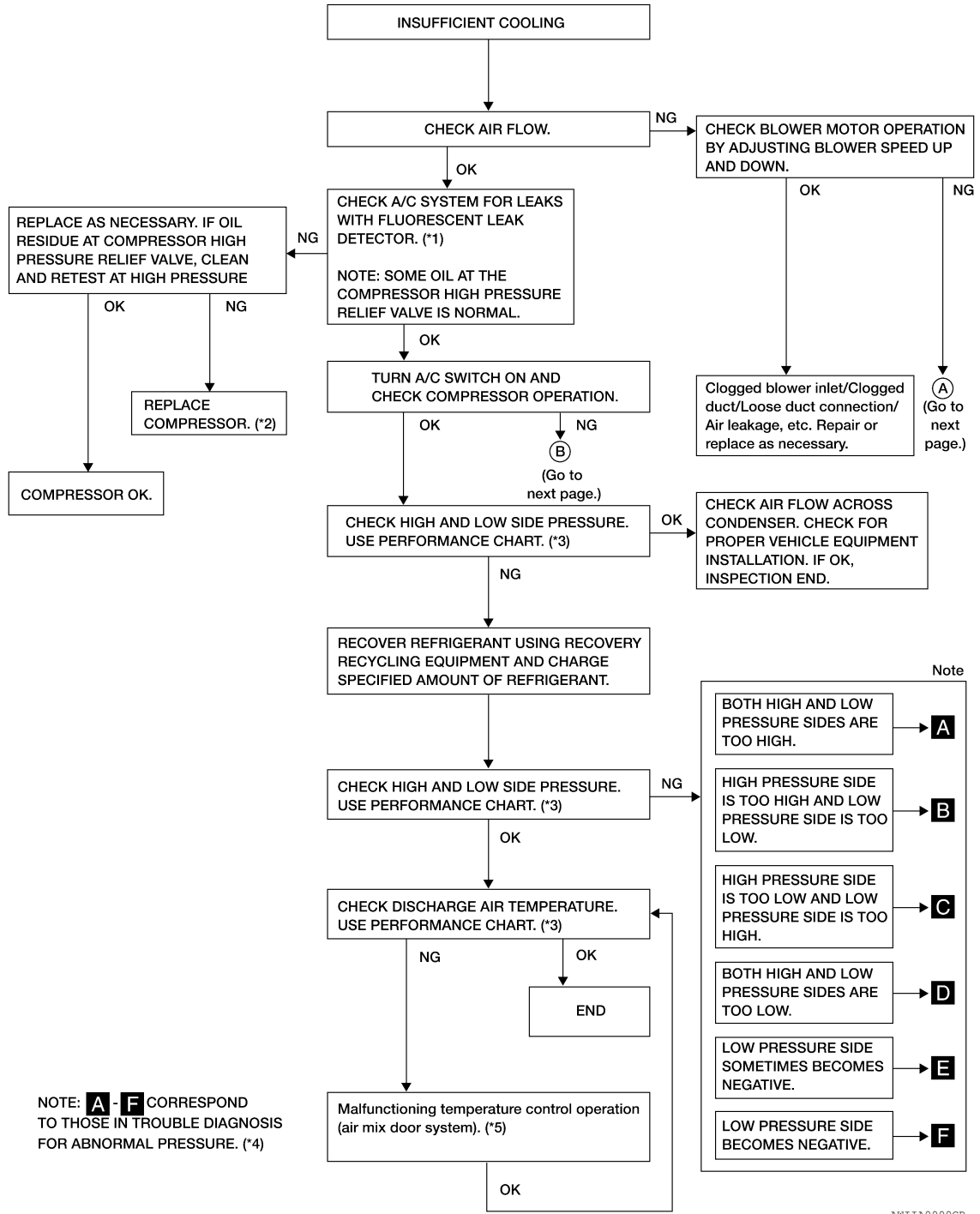
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# INSUFFICIENT COOLING

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]



NOTE: **A - F** CORRESPOND TO THOSE IN TROUBLE DIAGNOSIS FOR ABNORMAL PRESSURE. (\*4)

AW11A0999GB

\*1 [HA-25. "Checking System for Leaks Using the Fluorescent Leak Detector"](#)

\*2 [HA-31. "Removal and Installation for Compressor - QR25DE Models"](#) or [HA-32. "Removal and Installation for Compressor - VQ35DE Models"](#).

\*3 [HAC-94. "Performance Chart"](#)

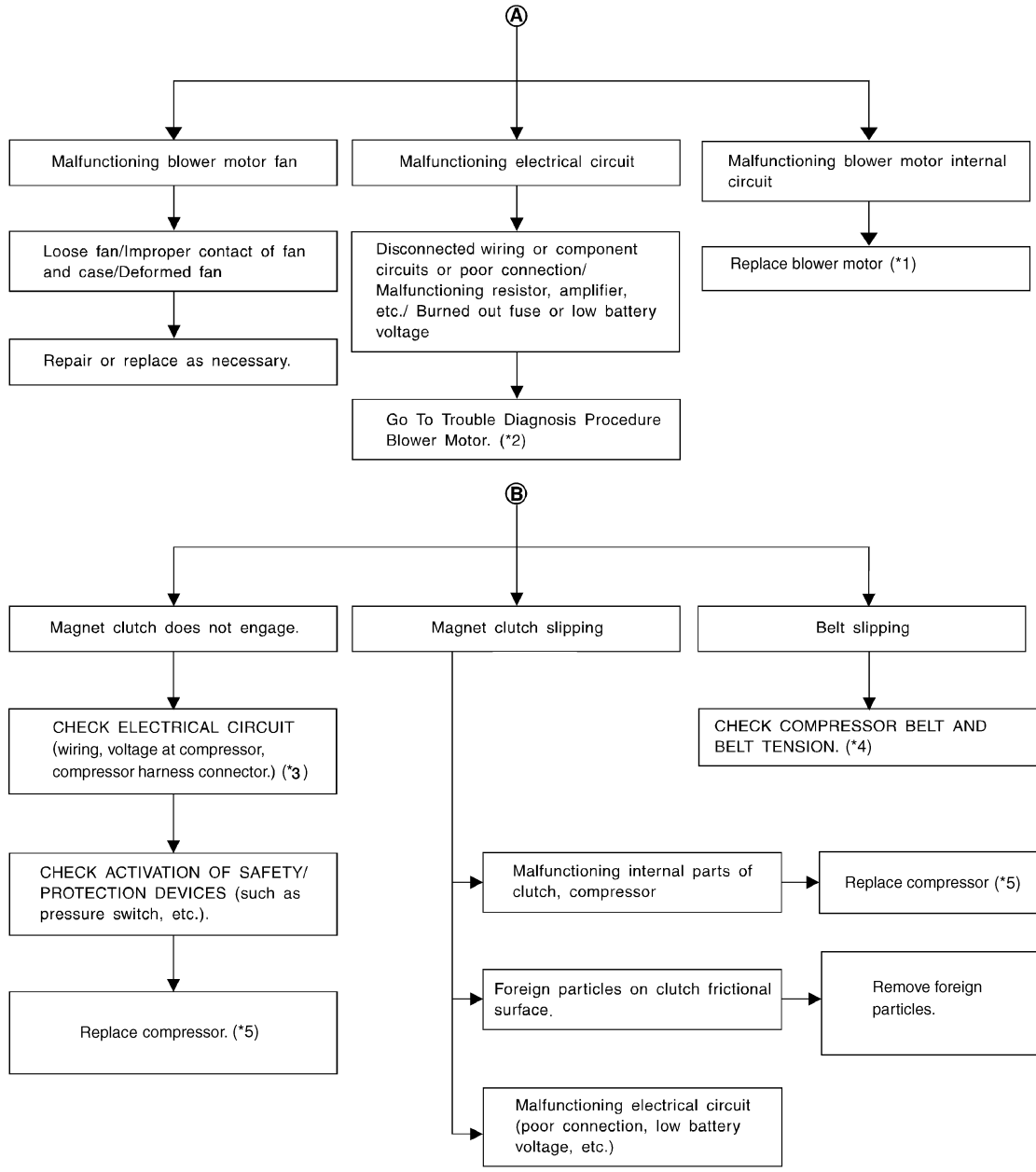
\*4 [HAC-94. "Trouble Diagnosis For Abnormal Pressure"](#)

\*5 [HAC-42. "Diagnosis Procedure"](#)

# INSUFFICIENT COOLING

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]



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\*1 [VTL-17, "Removal and Installation"](#)

\*2 [HAC-47, "Diagnosis Procedure"](#)

\*3 [HA-31, "Removal and Installation for Compressor - QR25DE Models"](#) or [HA-32, "Removal and Installation for Compressor - VQ35DE Models"](#)

\*4 [EM-16, "Checking Drive Belts" \(QR25DE\)](#) or [EM-122, "Checking Drive Belts" \(VQ35DE\)](#)

\*5 [HA-31, "Removal and Installation for Compressor - QR25DE Models"](#) or [HA-32, "Removal and Installation for Compressor - VQ35DE Models"](#)

# INSUFFICIENT COOLING

[AUTOMATIC AIR CONDITIONER]




< SYMPTOM DIAGNOSIS >

## Performance Chart

INFOID:000000006389012

### TEST CONDITION

Testing must be performed as follows:

Vehicle location	Indoors or in the shade (in a well-ventilated place)
Doors	Closed
Door windows	Open
Hood	Open
TEMP.	Max. COLD
Mode switch	 (Ventilation) set
Intake switch	 (Recirculation) set
 (blower) speed	Max. speed set
Engine speed	Idle speed

Operate the air conditioning system for 10 minutes before taking measurements.

### TEST READING

#### Recirculating-to-discharge Air Temperature Table

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

#### Ambient Air Temperature-to-operating Pressure Table

Ambient air		High-pressure (Discharge side) kPa (kg/cm <sup>2</sup> , psi)	Low-pressure (Suction side) kPa (kg/cm <sup>2</sup> , psi)
Relative humidity %	Air temperature °C (°F)		
50 - 70	30 (86)	1,220 - 1,500 (12.44 - 15.30, 176.9 - 217.5)	240 - 295 (2.45 - 3.01, 34.8 - 42.8)
	35 (95)	1,360 - 1,690 (13.87 - 17.24, 197.2 - 245.1)	275 - 335 (2.81 - 3.42, 39.9 - 48.6)
	40 (104)	1,500 - 1,830 (12.44 - 18.67, 176.9 - 265.4)	310 - 375 (3.16 - 3.83, 45.0 - 54.4)

### Trouble Diagnosis For Abnormal Pressure

INFOID:000000006389013

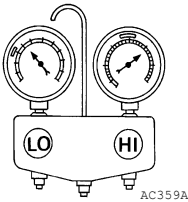
Whenever system's high and/or low side pressure is abnormal, diagnose using a manifold gauge. The marker above the gauge scale in the following tables indicates the standard (normal) pressure range. Since the standard (normal) pressure differs from vehicle to vehicle, refer to Ambient Air Temperature-to-operating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

Both High- and Low-pressure Sides are Too High

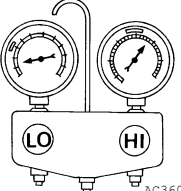
# INSUFFICIENT COOLING

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p><b>A</b> Both high and low-pressure sides are too high.</p> 	Pressure is reduced soon after water is splashed on condenser.	Excessive refrigerant charge in refrigeration cycle	Reduce refrigerant until specified pressure is obtained.
	Air suction by cooling fan is insufficient.	Insufficient condenser cooling performance ↓ 1. Condenser fins are clogged. 2. Improper fan rotation of cooling fan	<ul style="list-style-type: none"> <li>Clean condenser.</li> <li>Check and repair cooling fan as necessary.</li> </ul>
	<ul style="list-style-type: none"> <li>Low-pressure pipe is not cold.</li> <li>When compressor is stopped high-pressure value quickly drops by approximately 196 kPa (2 kg/cm<sup>2</sup>, 28 psi). It then decreases gradually thereafter.</li> </ul>	Poor heat exchange in condenser (After compressor operation stops, high pressure decreases too slowly.) ↓ Air in refrigeration cycle	Evacuate and recharge system.
	Engine tends to overheat.	Engine cooling systems malfunction.	Check and repair each engine cooling system.
	<ul style="list-style-type: none"> <li>An area of the low-pressure pipe is colder than areas near the evaporator outlet.</li> <li>Plates are sometimes covered with frost.</li> </ul>	<ul style="list-style-type: none"> <li>Excessive liquid refrigerant on low-pressure side</li> <li>Excessive refrigerant discharge flow</li> <li>Expansion valve is open a little compared with the specification.</li> </ul> ↓ 1. Improper thermal valve installation 2. Improper expansion valve adjustment	Replace expansion valve.

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

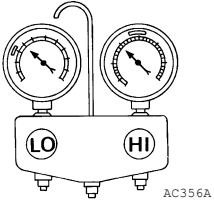
Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p><b>B</b> High-pressure side is too high and low-pressure side is too low.</p> 	Upper side of condenser and high-pressure side are hot, however, liquid tank is not so hot.	High-pressure tube or parts located between compressor and condenser are clogged or crushed.	<ul style="list-style-type: none"> <li>Check and repair or replace malfunctioning parts.</li> <li>Check lubricant for contamination.</li> </ul>

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

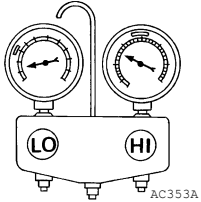
# INSUFFICIENT COOLING

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<b>C</b> 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 between high and low-pressure sides	Compressor pressure operation is improper. ↓ Damaged inside compressor packings.	Replace compressor.

**Both High- and Low-pressure Sides are Too Low**

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<b>D</b> Both high- and low-pressure sides are too low.  	<ul style="list-style-type: none"> <li>There is a big temperature difference between liquid tank outlet and inlet. Outlet temperature is extremely low.</li> <li>Liquid tank inlet and expansion valve are frosted.</li> </ul>	Liquid tank inside is slightly clogged.	<ul style="list-style-type: none"> <li>Replace desiccant assembly.</li> <li>Check lubricant for contamination.</li> </ul>
	<ul style="list-style-type: none"> <li>Temperature of expansion valve inlet is extremely low as compared with areas near liquid tank.</li> <li>Expansion valve inlet may be frosted.</li> <li>Temperature difference occurs somewhere in high-pressure side</li> </ul>	High-pressure pipe located between receiver drier and expansion valve is clogged.	<ul style="list-style-type: none"> <li>Check and repair malfunctioning parts.</li> <li>Check lubricant for contamination.</li> </ul>
	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 <a href="#">HA-23, "Checking of Refrigerant Leaks"</a> .
	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.	<ul style="list-style-type: none"> <li>Remove foreign particles by using compressed air.</li> <li>Check lubricant for contamination.</li> </ul>
	An area of the low-pressure pipe is colder than areas near the evaporator outlet.	Low-pressure pipe is clogged or crushed.	<ul style="list-style-type: none"> <li>Check and repair malfunctioning parts.</li> <li>Check lubricant for contamination.</li> </ul>
	Air flow volume is not enough or is too low.	Evaporator is frozen.	<ul style="list-style-type: none"> <li>Check thermo control amp. and intake sensor operation.</li> <li>Replace compressor.</li> </ul>

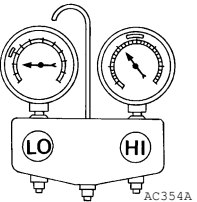
**Low-pressure Side Sometimes Becomes Negative**



# INSUFFICIENT COOLING

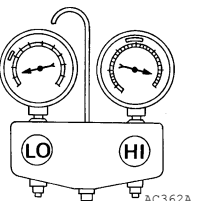
< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p><b>E</b> Low-pressure side sometimes becomes negative.</p>  <p style="text-align: right; font-size: small;">AC354A</p>	<ul style="list-style-type: none"> <li>• Air conditioning system does not function and does not cyclically cool the compartment air.</li> <li>• The system constantly functions for a certain period of time after compressor is stopped and restarted.</li> </ul>	<p>Refrigerant does not discharge cyclically.</p> <p>↓</p> <p>Moisture is frozen at expansion valve outlet and inlet.</p> <p>↓</p> <p>Water is mixed with refrigerant.</p>	<ul style="list-style-type: none"> <li>• Drain water from refrigerant or replace refrigerant.</li> <li>• Replace desiccant assembly.</li> </ul>

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## Low-pressure Side Becomes Negative

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p><b>F</b> Low-pressure side becomes negative.</p>  <p style="text-align: right; font-size: small;">AC362A</p>	<p>Liquid tank or front/rear side of expansion valve's pipe is frosted or dewed.</p>	<p>High-pressure side is closed and refrigerant does not flow.</p> <p>↓</p> <p>Expansion valve or liquid tank is frosted.</p>	<p>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.</p> <ul style="list-style-type: none"> <li>• If water is the cause, initially cooling is okay. Then the water freezes causing a blockage. Drain water from refrigerant or replace refrigerant.</li> <li>• If due to foreign particles, remove expansion valve and remove the particles with dry and compressed air (not shop air).</li> <li>• If either of the above methods cannot correct the problem, replace expansion valve.</li> <li>• Replace desiccant assembly.</li> <li>• Check lubricant for contamination.</li> </ul>

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**INSUFFICIENT HEATING****Component Function Check**

INFOID:000000006389014

SYMPTOM: Insufficient heating

**INSPECTION FLOW****1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE INCREASE**

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

Can a symptom be duplicated?

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

**2. CHECK FOR ANY SYMPTOMS**

Perform a complete operational check and check for any symptoms. Refer to [HAC-5. "Description and Conditions"](#).

Does another symptom exist?

- YES >> Refer to [HAC-89. "Symptom Matrix Chart"](#).  
NO >> System OK.

**3. CHECK FOR SERVICE BULLETINS**

Check for any service bulletins.

>> GO TO 4

**4. CHECK ENGINE COOLING SYSTEM**

1. Check for proper engine coolant level. Refer to [CO-11. "System Inspection"](#) (QR25DE) or [CO-34. "System Inspection"](#) (VQ35DE).
2. Check hoses for leaks or kinks.
3. Check radiator cap. Refer to [CO-11. "System Inspection"](#) (QR25DE) or [CO-34. "System Inspection"](#) (VQ35DE).
4. Check for air in cooling system.

>> GO TO 5

**5. CHECK AIR MIX DOOR MOTOR OPERATION**

Check and verify air mix door mechanism for smooth operation.

Does air mix door operate correctly?

- YES >> GO TO 6  
NO >> Check the air mix door motor circuit. Refer to [HAC-42. "Diagnosis Procedure"](#).

**6. CHECK AIR DUCTS**

Check for disconnected or leaking air ducts.

Is the inspection result normal?

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

**7. CHECK HEATER HOSE TEMPERATURES**

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

Is the inspection result normal?

- YES >> Hot inlet hose and a warm outlet hose: GO TO 8  
NO >> Both hoses warm: GO TO 9

# INSUFFICIENT HEATING

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

## 8. CHECK ENGINE COOLANT SYSTEM

Check thermostat operation. Refer to [CO-20. "Removal and Installation"](#) (QR25DE) or [CO-47. "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 inspection result normal?

YES >> System OK.

NO >> 1. Back flush heater core.

2. Drain the water from the system.

3. Refill system with new engine coolant. Refer to [CO-12. "Changing Engine Coolant"](#) (QR25DE) or [CO-35. "Changing Engine Coolant"](#) (VQ35DE).

4. To retest GO TO 10

## 10. CHECK HEATER HOSE TEMPERATURES

1. Start engine and warm up to normal operating temperature.

2. Touch both the inlet and outlet heater hoses. 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-23. "Removal and Installation"](#).

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# NOISE

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

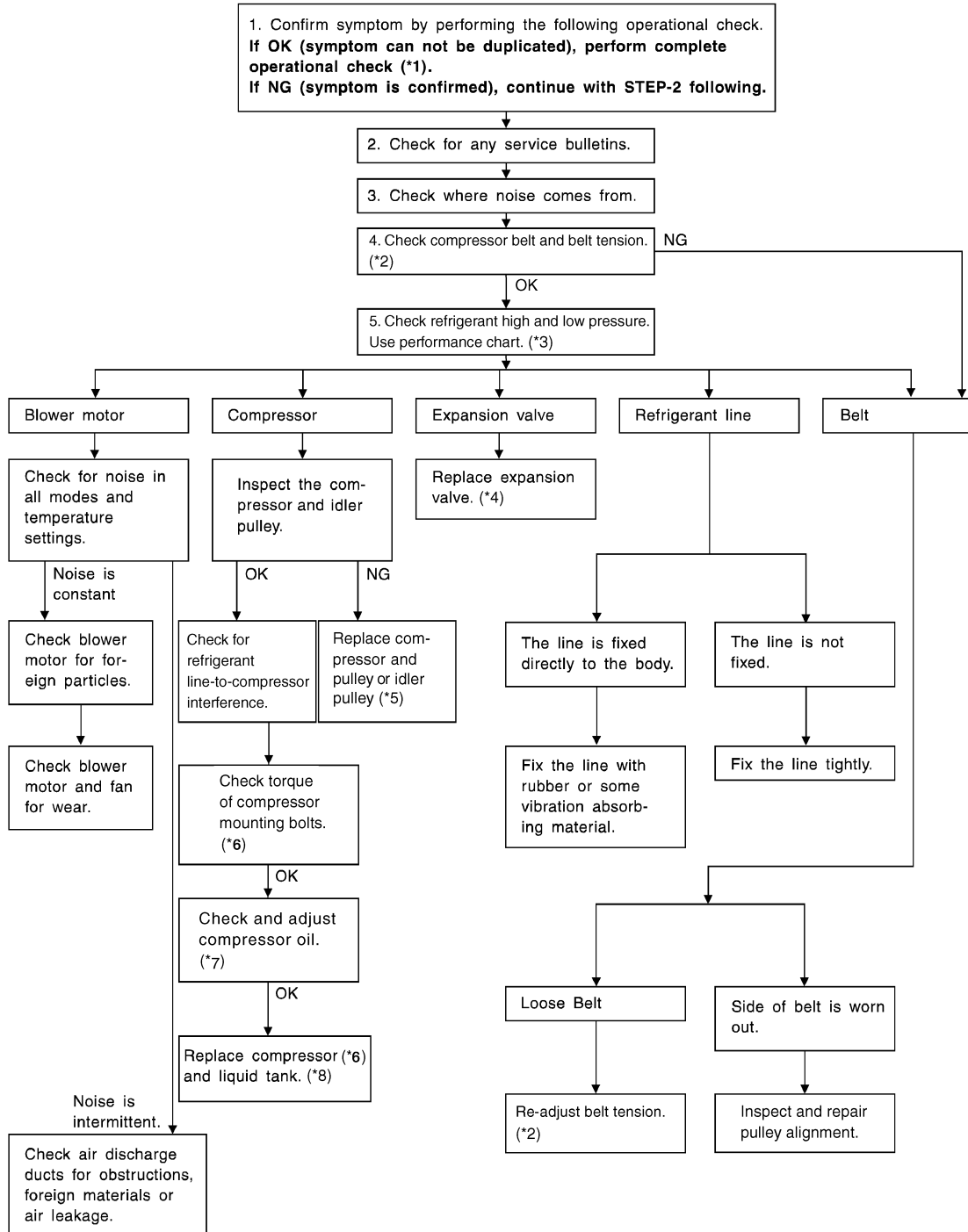
## NOISE

### Component Function Check

INFOID:000000006389015

SYMPTOM: Noise

### INSPECTION FLOW



AWI1A1241GB

# NOISE

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

*1 <a href="#">HAC-5. "Inspection Procedure"</a>	*2 <a href="#">EM-16. "Checking Drive Belts" (QR25DE) or EM-122. "Checking Drive Belts" (VQ35DE)</a>	*3 <a href="#">HAC-94. "Performance Chart"</a>	A
*4 <a href="#">HA-42. "Removal and Installation for Expansion Valve"</a>	*5 <a href="#">HA-31. "Removal and Installation for Compressor - QR25DE Models" or HA-32. "Removal and Installation for Compressor - VQ35DE Models"</a>	*6 <a href="#">HA-31. "Removal and Installation for Compressor - QR25DE Models" or HA-32. "Removal and Installation for Compressor - VQ35DE Models"</a>	B
*7 <a href="#">HA-31. "Removal and Installation for Compressor - QR25DE Models" or HA-32. "Removal and Installation for Compressor - VQ35DE Models"</a>	*8 <a href="#">HA-19. "Maintenance of Oil Quantity in Compressor"</a>	*9 <a href="#">HA-38. "Removal and Installation for Condenser"</a>	C
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# SELF-DIAGNOSIS CANNOT BE PERFORMED

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

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## SELF-DIAGNOSIS CANNOT BE PERFORMED

### Diagnosis Procedure

INFOID:000000006389016

SYMPTOM: Self-diagnosis cannot be performed.

#### 1. CHECK SELF-DIAGNOSIS FUNCTION

---

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

**NOTE:**

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

Does self-diagnosis function operate?

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

#### 2. PERFORM COMPLETE OPERATIONAL CHECK

---

Perform a complete operational check and check for any symptoms. Refer to [HAC-5, "Description and Conditions"](#).

Can a symptom be duplicated?

- YES >> Refer to [HAC-89, "Symptom Matrix Chart"](#).  
NO >> GO TO 3

#### 3. CHECK FOR SERVICE BULLETINS

---

Check for any service bulletins.

Have any service bulletins been issued?

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

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

---

Check power supply and ground circuit of front air control. Refer to [HAC-67, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES >> Replace front air control. Refer to [VTL-9, "Removal and Installation"](#).  
NO >> Repair or replace malfunctioning part(s).

# MEMORY FUNCTION DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONER]

## MEMORY FUNCTION DOES NOT OPERATE

### Diagnosis Procedure

INFOID:000000006389017

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

#### Inspection procedure

#### 1. CHECK OPERATION

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

#### Is the inspection result normal?

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

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

Check power supply and ground circuit of front air control. Refer to [HAC-67, "Diagnosis Procedure"](#).

#### Is the inspection result normal?

- YES >> Replace front air control. Refer to [VTL-9, "Removal and Installation"](#).  
NO >> Repair or replace malfunctioning part(s).

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HAC

## PRECAUTION

### PRECAUTIONS

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

INFOID:000000006921041

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

**WARNING:**

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

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

**WARNING:**

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

#### Precaution Necessary for Steering Wheel Rotation After Battery Disconnect

INFOID:000000006921039

**NOTE:**

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

This vehicle is equipped with a push-button ignition switch and a steering lock unit.

If the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

If turning the steering wheel is required with the battery disconnected or discharged, follow the procedure below before starting the repair operation.

#### OPERATION PROCEDURE

1. Connect both battery cables.

**NOTE:**

Supply power using jumper cables if battery is discharged.

2. Carry the Intelligent Key or insert it to the key slot and turn the push-button ignition switch to ACC position. (At this time, the steering lock will be released.)
3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
4. Perform the necessary repair operation.



# PRECAUTIONS

[AUTOMATIC AIR CONDITIONER]

< PRECAUTION >

- When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the push-button ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the push-button ignition switch is turned to LOCK position.)
- Perform self-diagnosis check of all control units using CONSULT.

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

INFOID:000000006389020

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

## CONTAMINATED REFRIGERANT

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

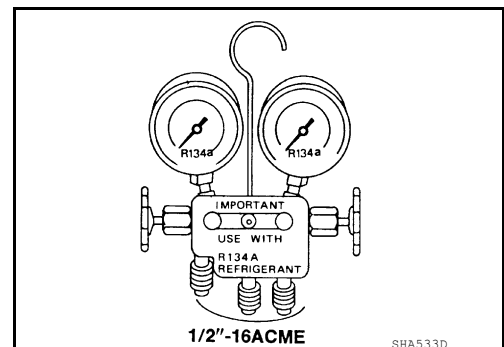
- Explain to the customer that environmental regulations prohibit the release of contaminated refrigerant into the atmosphere.
- Explain that recovery of the contaminated refrigerant could damage your service equipment and refrigerant supply.
- Suggest the customer return the vehicle to the location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

## Precaution for Service Equipment

INFOID:000000006389021

### 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.



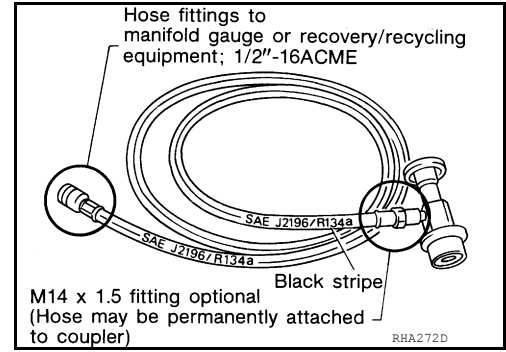
# PRECAUTIONS

## [AUTOMATIC AIR CONDITIONER]

### < PRECAUTION >

#### SERVICE HOSES

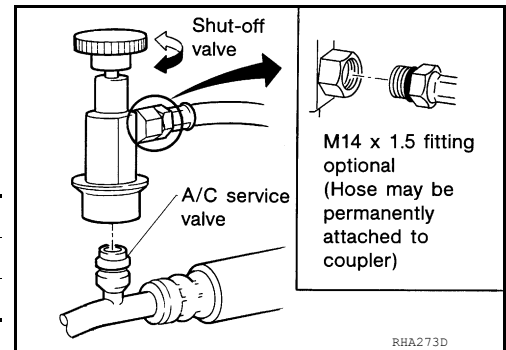
Be certain that the service hoses display the markings described (colored hose with black stripe). All hoses must include positive shut-off devices (either manual or automatic) near the end of the hoses opposite the manifold gauge.



#### SERVICE COUPLERS

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

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



## BASIC INSPECTION

### DIAGNOSIS AND REPAIR WORKFLOW

#### Work Flow

INFOID:000000006389022

#### DETAILED FLOW

#### 1. LISTEN TO CUSTOMER COMPLAINT

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

>> GO TO 2

#### 2. VERIFY THE SYMPTOM WITH OPERATIONAL CHECK

Verify the symptom with operational check. Refer to [HAC-108, "Description and Conditions"](#).

>> GO TO 3

#### 3. GO TO APPROPRIATE TROUBLE DIAGNOSIS

Go to appropriate trouble diagnosis. Refer to [HAC-158, "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

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## INSPECTION AND ADJUSTMENT

## Description and Conditions

INFOID:000000006389023

## DESCRIPTION

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

## CONDITIONS:

- Engine running and at normal operation temperature.

## Inspection Procedure

INFOID:000000006389024

## Step 1: Check Blower


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

3. Leave blower on HI speed.

If NG, go to [HAC-47, "Diagnosis Procedure"](#).

If OK, continue with next check.

## Step 2: Check Discharge Air

1. Press each mode switch and press DEF () switch.
2. Each mode position indicator should illuminate.
3. Confirm that discharge air comes out according to the air distribution table. Refer to [HAC-112, "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-135, "Diagnosis Procedure"](#).

If OK, continue with next check.

## Step 3: Check Recirculation

1. Press REC () switch.
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-135, "Diagnosis Procedure"](#).

If OK, continue with next check.

## Step 4: Check Temperature Decrease

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

If NG, go to [HAC-134, "Diagnosis Procedure"](#).

If OK, continue with next check.

## Step 5: Check Temperature Increase

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

If NG, go to [HAC-134, "Diagnosis Procedure"](#).

If OK, continue with next check.

## Step 6: Check Air Conditioner Switch (if equipped)

1. Turn blower control dial to the desired position and push the A/C switch to turn ON the air conditioner
2. Confirm that the A/C indicator illuminates and that the compressor clutch engages (audio or visual inspection).

If NG, go to [HAC-146, "Diagnosis Procedure"](#), then if necessary, [HAC-52, "Diagnosis Procedure"](#).

If all operational checks are OK (symptom can not be duplicated), refer to [GI-38, "Work Flow"](#) and perform tests as outlined to simulate driving conditions environment. If symptoms appear, refer to [HAC-158, "Symptom Matrix Chart"](#)

SYSTEM DESCRIPTION

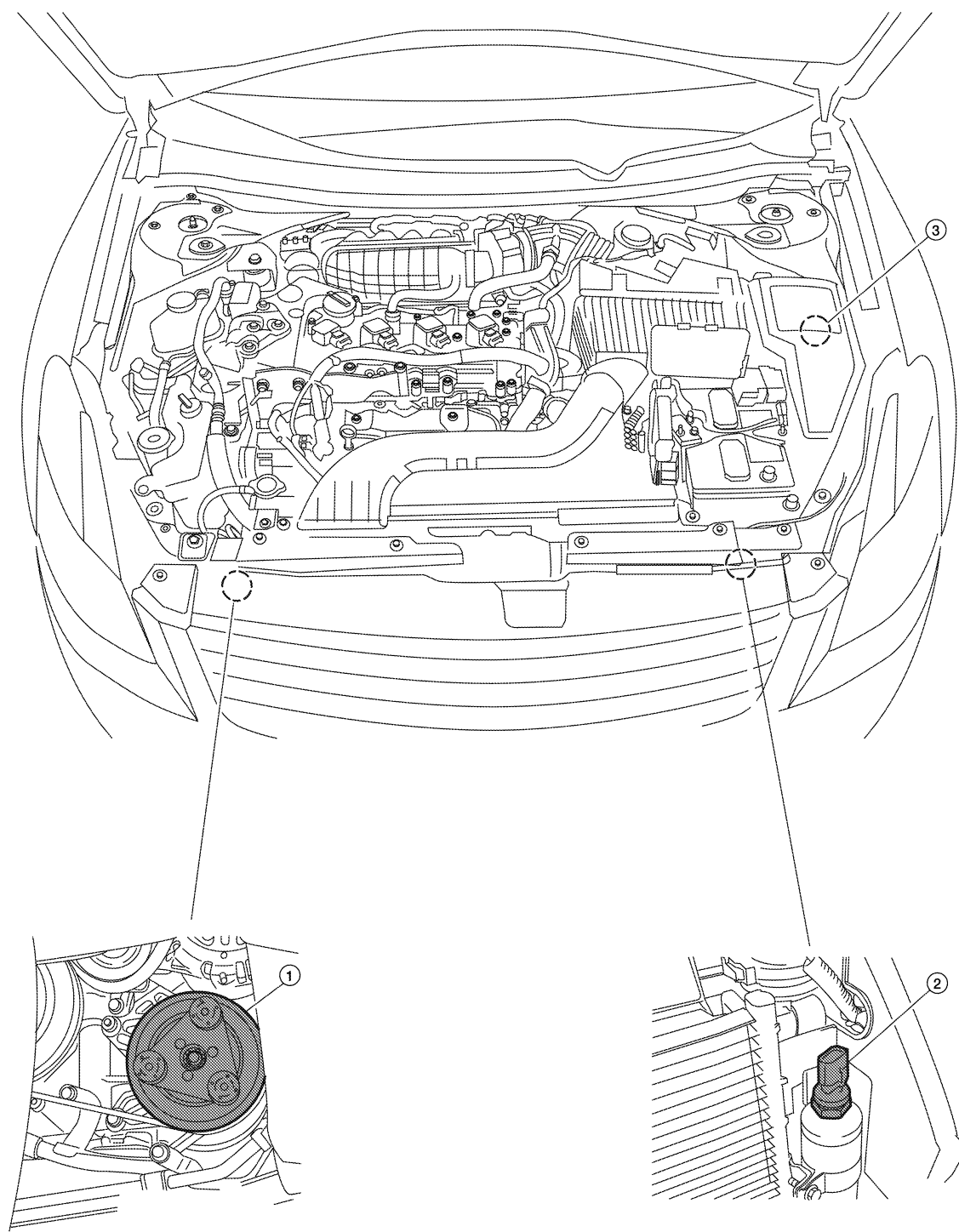
FUNCTION INFORMATION

Component Part Location

INFOID:000000006389025

ENGINE COMPARTMENT

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HAC  
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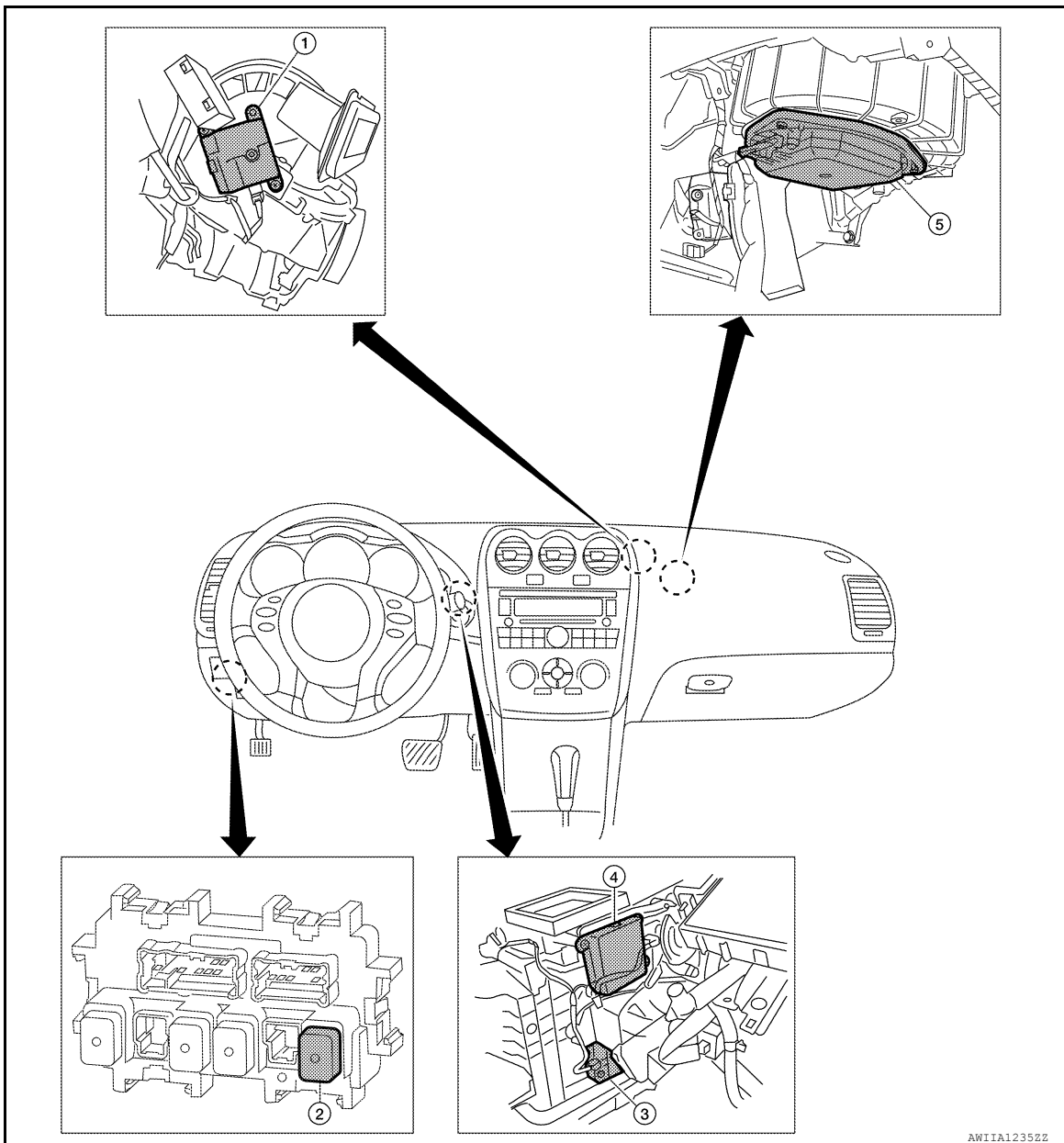
# FUNCTION INFORMATION

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]

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

## PASSENGER COMPARTMENT



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

## Component's role

INFOID:000000006389026

Component	Reference
Air mix door motor	<a href="#">HAC-42. "Diagnosis Procedure"</a>
Blower motor	<a href="#">HAC-137. "Diagnosis Procedure"</a>
A/C Compressor	<a href="#">HAC-142. "Diagnosis Procedure"</a>
Intake door motor	<a href="#">HAC-45. "Diagnosis Procedure"</a>

# FUNCTION INFORMATION

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]

Component	Reference
Mode door motor	<a href="#">HAC-40. "Diagnosis Procedure"</a>
Refrigerant pressure sensor	<a href="#">EC-271. "Diagnosis Procedure"</a>

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**HAC**

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# AIR CONDITIONER CONTROL

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]

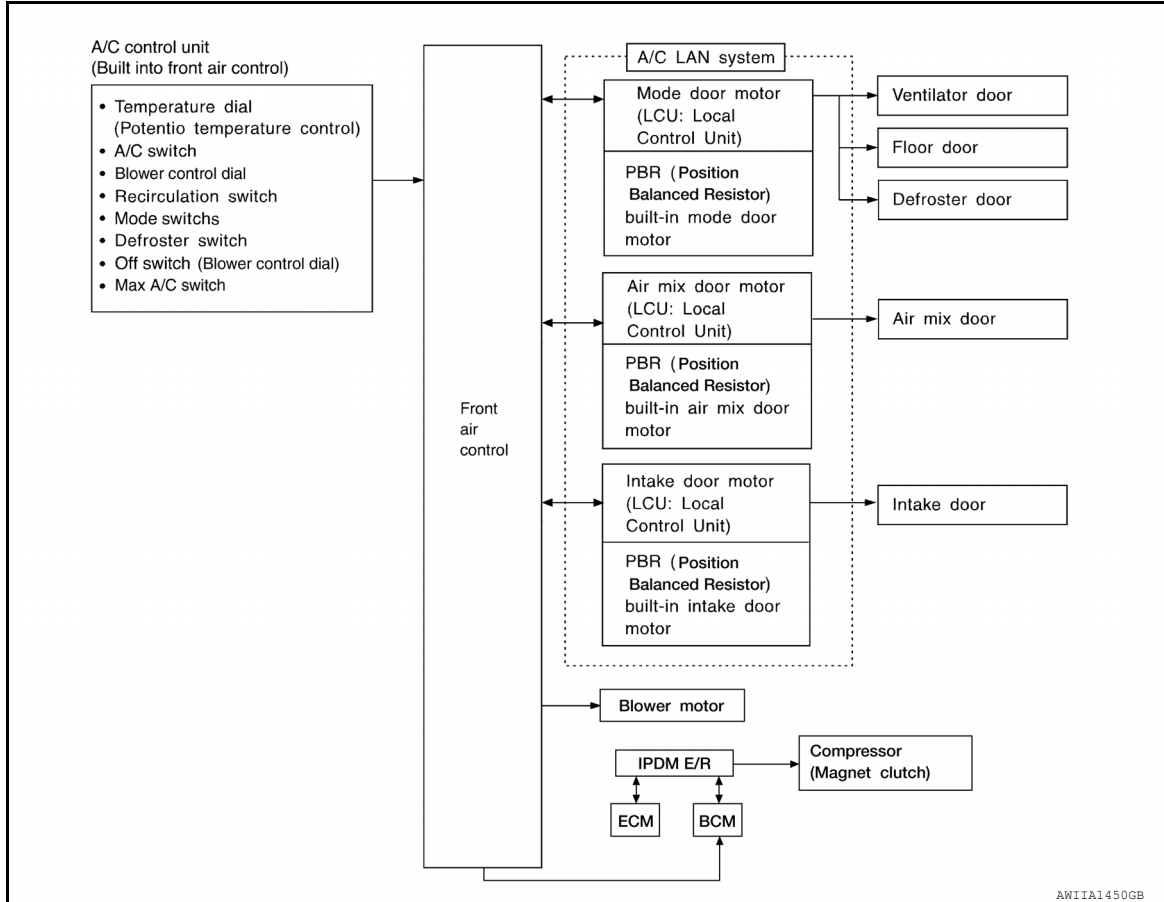
## AIR CONDITIONER CONTROL

### System Diagram

INFOID:000000006389027

### CONTROL SYSTEM

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



### System Description

INFOID:000000006389028

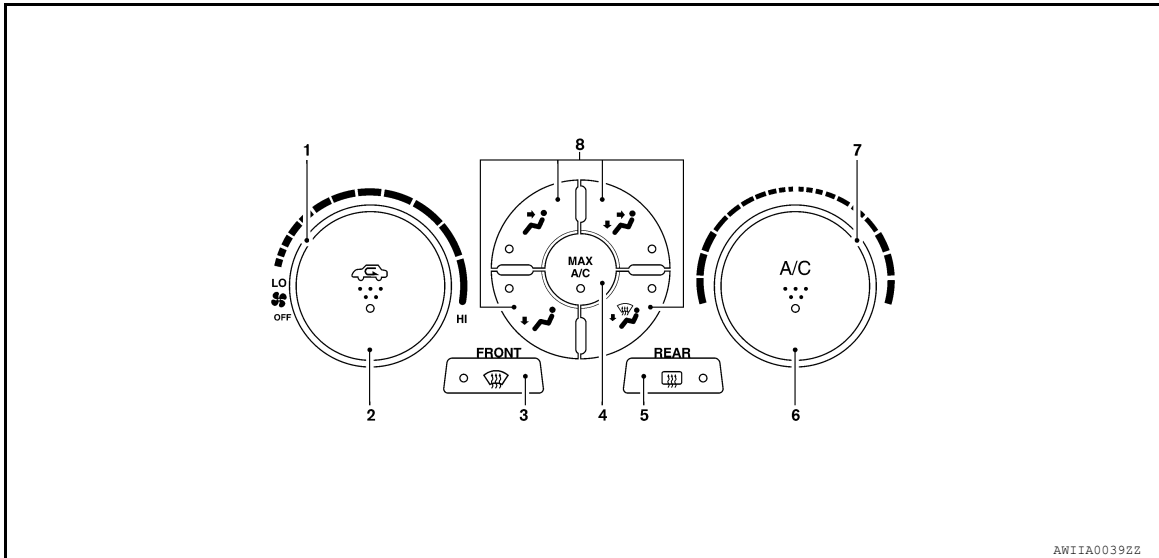
### CONTROL OPERATION



# AIR CONDITIONER CONTROL

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]



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

## Mode Switches

The air discharge outlets are controlled through the mode door.

## Temperature Control Dial (Potentio Temperature Control) (LH)

The set temperature is increased or decreased with this dial.

## DEFROSTER ( ) Switch

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

## A/C Switch

The compressor ON signal is controlled with this switch.

(Pressing the A/C switch when the A/C switch is ON will turn OFF the A/C switch and cancel the compressor ON signal. A fan ON signal must be present before the A/C switch will illuminate, the front air control will send a compressor ON signal, or the compressor will activate.)



## Blower control dial/OFF switch

- The blower speed is manually controlled with this dial. When the blower is in any ON position, a fan ON signal is sent to the BCM.
- 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.

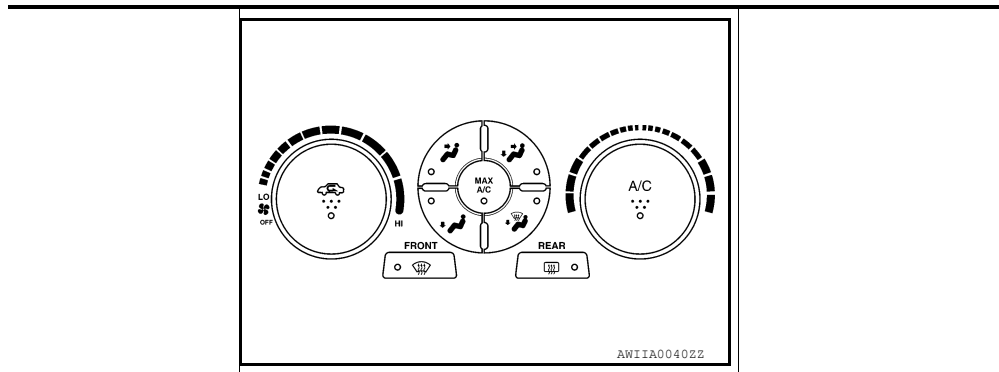
## DISCHARGE AIR FLOW

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# AIR CONDITIONER CONTROL

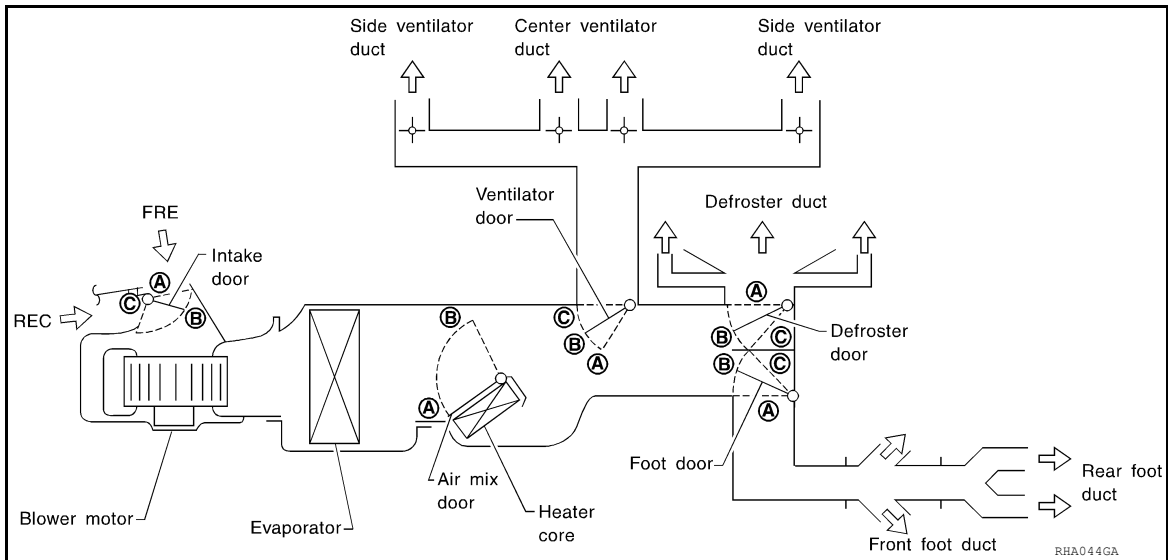
< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]



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

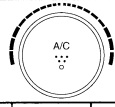







## SWITCHES AND THEIR CONTROL FUNCTION



# AIR CONDITIONER CONTROL

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]

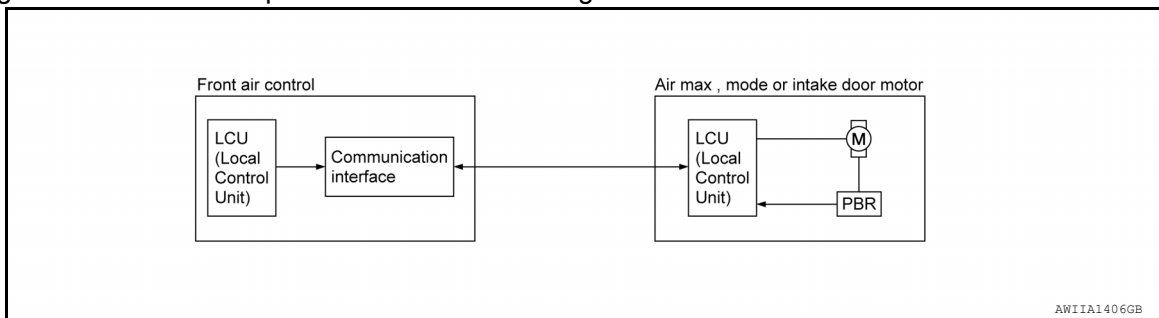
Position or switch	MODE DIAL						REC SW		Temperature DIAL		
	VENT	B/L	FOOT	D/F	DEF	MAX A/C	ON	OFF			
Door						MAX A/C			COLD	—	HOT
Ventilator door	A	B	C	C	C	A	—	—	—		
Foot door	A	B	C	C	A	A	—	—	—		
Defroster door	A	A	B	C	C	A	—	—	—		
Air mix door	—						—	—	A	—	B
Intake door	—				C	A	A	C	—		

AWIIA0041GB

## 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.



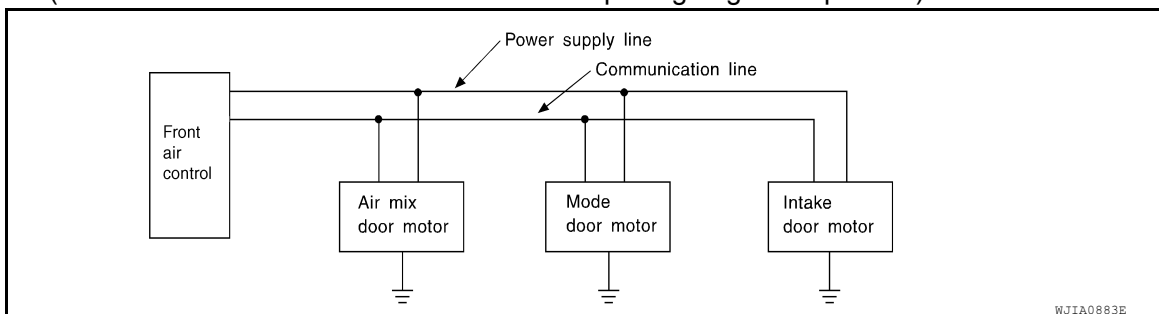
## SYSTEM CONSTRUCTION

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 motor.

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 (Position Balanced Resistor [PBR] function)
- Comparison
- Decision (Front air control indicated value and motor opening angle comparison)



Operation

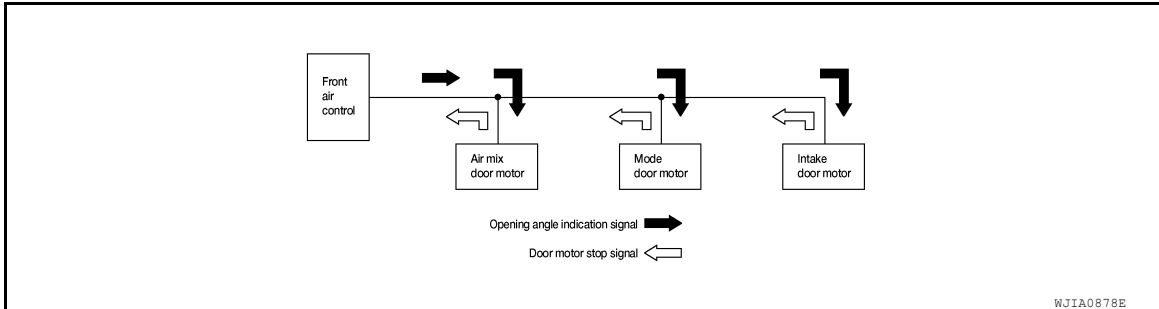
# AIR CONDITIONER CONTROL

< SYSTEM DESCRIPTION >

[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

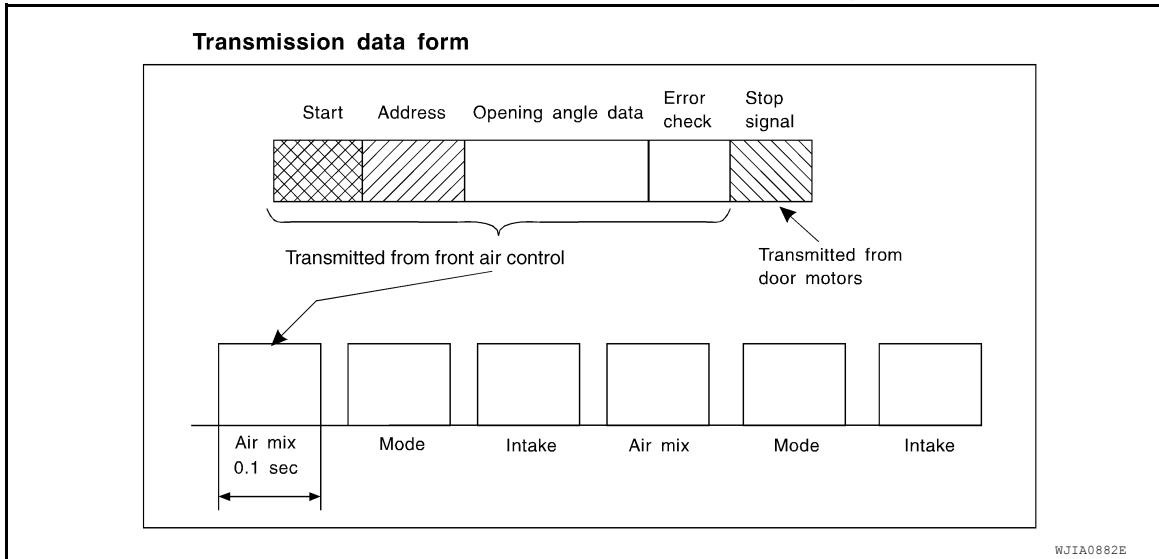
### STOP SIGNAL:

# AIR CONDITIONER CONTROL

< SYSTEM DESCRIPTION >

[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.

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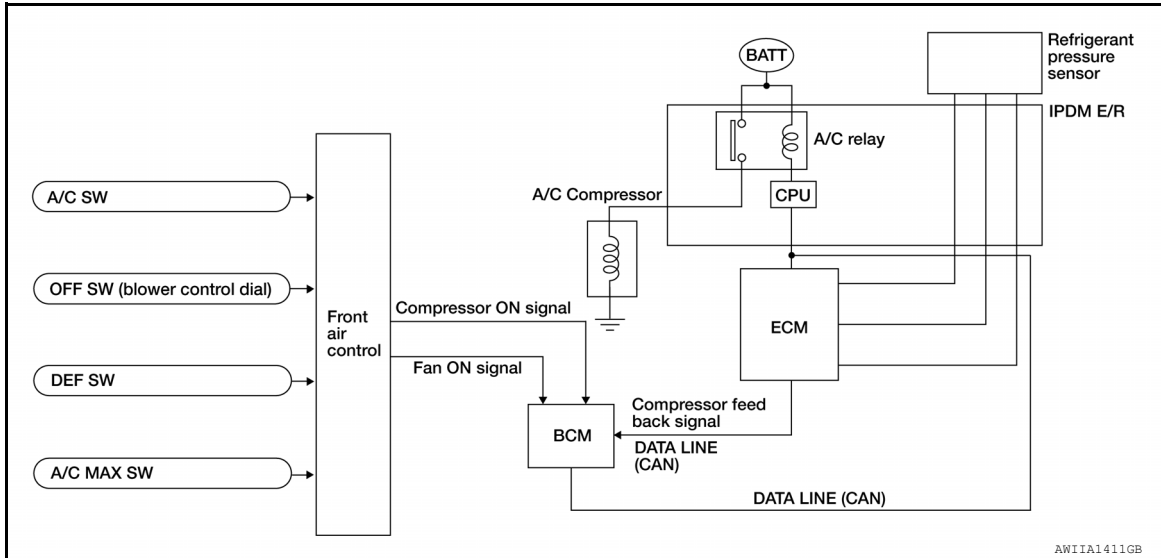
HAC

# AIR CONDITIONER CONTROL

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]

## MAGNET CLUTCH CONTROL



When A/C switch is pressed, or the defroster mode switch is pressed, the front air control transmits compressor ON and fan ON signals to the BCM. The BCM sends a compressor ON message to ECM, via CAN communication.

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

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

### Component Part Location

INFOID:000000006389029

#### ENGINE COMPARTMENT

Refer to [HAC-109, "Component Part Location"](#).

#### PASSENGER COMPARTMENT

Refer to [HAC-109, "Component Part Location"](#).

### Component Description

INFOID:000000006389030

Refer to [HAC-110, "Component's role"](#).

# DIAGNOSIS SYSTEM (BCM)

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]

## DIAGNOSIS SYSTEM (BCM)

### AIR CONDITIONER

#### AIR CONDITIONER : CONSULT Function (BCM - AIR CONDITIONER)

INFOID:000000006921031

#### DATA MONITOR

Monitor Item [Unit]	Contents
FAN ON SIG [ON/OFF]	Display [FAN (On)/FAN (Off)] status as judged from blower fan motor switch signal
AIR COND SW [ON/OFF]	Display [COMP (On)/COMP (Off)] status as judged from air conditioner switch signal

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DIAGNOSIS SYSTEM (IPDM E/R)

## Diagnosis Description

INFOID:000000006921026

## AUTO ACTIVE TEST

## Description

In auto active test mode, the IPDM E/R sends a drive signal to the following systems to check their operation.

- Oil pressure warning lamp
- Front wiper (LO, HI)
- Parking lamps
- License plate lamps
- Tail lamps
- Front fog lamps (if equipped)
- Headlamps (LO, HI)
- A/C compressor (magnet clutch)
- Cooling fans

## Operation Procedure

1. Close the hood and lift the wiper arms from the windshield. (Prevent windshield damage due to wiper operation)

**NOTE:**

When auto active test is performed with hood opened, sprinkle water on windshield beforehand.

2. Turn ignition switch OFF.
3. Turn the ignition switch ON, and within 20 seconds, press the front door switch LH 10 times. Then turn the ignition switch OFF.

**CAUTION:**

**Close front door RH.**

4. Turn the ignition switch ON within 10 seconds. After that the horn sounds once and the auto active test starts.
5. The oil pressure warning lamp starts blinking when the auto active test starts.
6. After a series of the following operations is repeated 3 times, auto active test is completed.

**NOTE:**

When auto active test mode has to be cancelled halfway through test, turn ignition switch OFF.

**CAUTION:**

- If auto active test mode cannot be actuated, check door switch system. Refer to [DLK-286. "Description"](#).
- Do not start the engine.

Inspection in Auto Active Test Mode

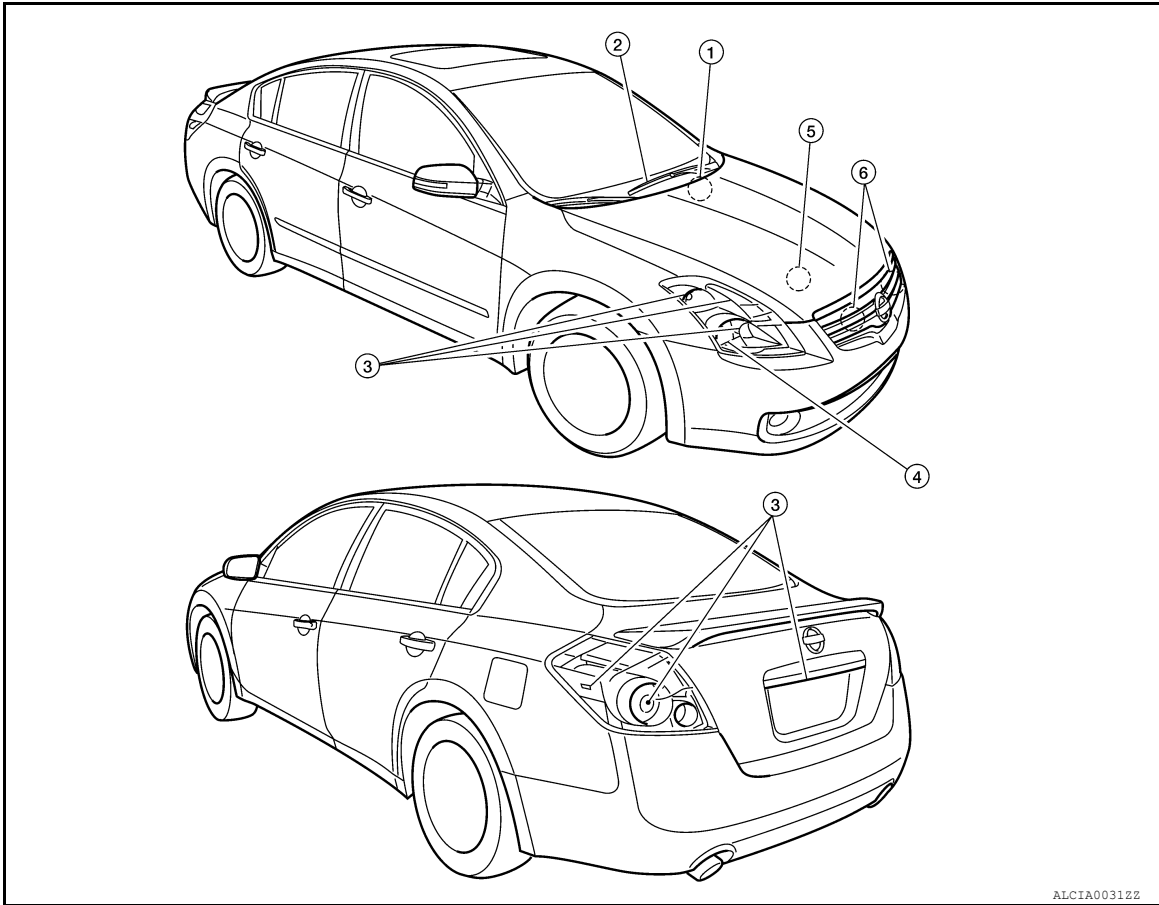


# DIAGNOSIS SYSTEM (IPDM E/R)

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]

When auto active test mode is actuated, the following 6 steps are repeated 3 times.



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Operation sequence	Inspection Location	Operation
1	Oil pressure warning lamp	Blinks continuously during operation of auto active test
2	Front wiper	LO for 5 seconds → HI for 5 seconds
3	<ul style="list-style-type: none"> <li>• Parking lamps</li> <li>• License plate lamps</li> <li>• Tail lamps</li> <li>• Front fog lamps (if equipped)</li> </ul>	10 seconds
4	Headlamps	LO ↔ HI 5 times
5	A/C compressor (magnet clutch)	ON ↔ OFF 5 times
6*	Cooling fans	MID for 5 seconds → HI for 5 seconds

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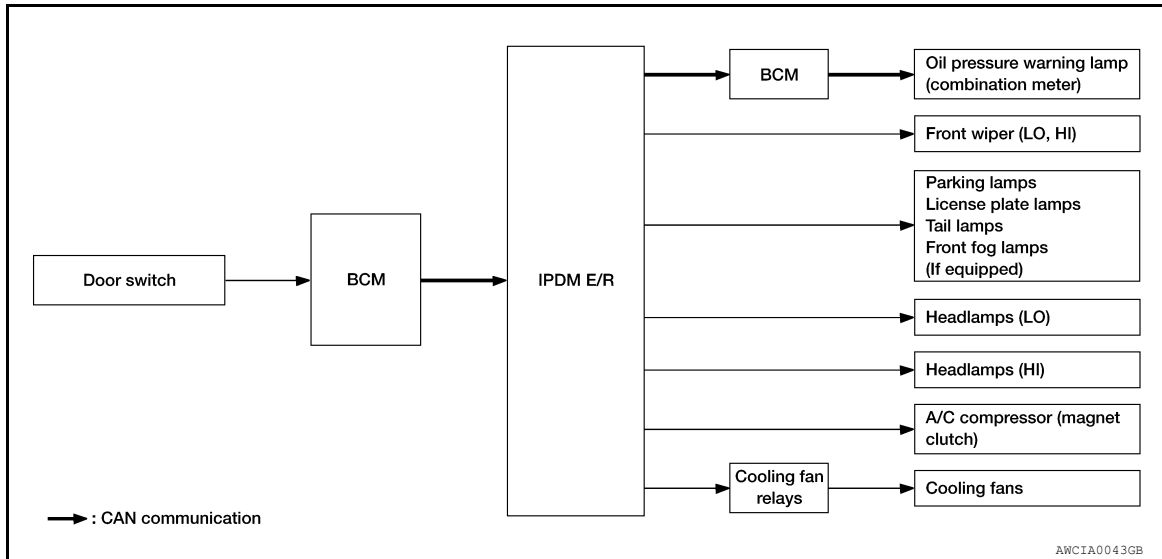
\*: Outputs duty ratio of 50% for 5 seconds → duty ratio of 100% for 5 seconds on the cooling fan control module.

# DIAGNOSIS SYSTEM (IPDM E/R)

[MANUAL AIR CONDITIONER]

< SYSTEM DESCRIPTION >

Concept of auto active test



- IPDM E/R starts the auto active test with the door switch signals transmitted by BCM via CAN communication. Therefore, the CAN communication line between IPDM E/R and BCM is considered normal if the auto active test starts successfully.
- The auto active test facilitates troubleshooting if any systems controlled by IPDM E/R cannot be operated.

Diagnosis chart in auto active test mode

Symptom	Inspection contents	Possible cause
Any of the following components do not operate <ul style="list-style-type: none"> <li>• Parking lamps</li> <li>• License plate lamps</li> <li>• Tail lamps</li> <li>• Front fog lamps (if equipped)</li> <li>• Headlamp (HI, LO)</li> <li>• Front wiper</li> </ul>	Perform auto active test. Does the applicable system operate?	YES BCM signal input circuit
		NO <ul style="list-style-type: none"> <li>• Lamp or motor</li> <li>• Lamp or motor ground circuit</li> <li>• Harness or connector between IPDM E/R and applicable system</li> <li>• IPDM E/R</li> </ul>
A/C compressor does not operate	Perform auto active test. Does the magnet clutch operate?	YES <ul style="list-style-type: none"> <li>• Combination meter signal input circuit</li> <li>• CAN communication signal between combination meter and ECM</li> <li>• CAN communication signal between ECM and IPDM E/R</li> </ul>
		NO <ul style="list-style-type: none"> <li>• Magnet clutch</li> <li>• Harness or connector between IPDM E/R and magnet clutch</li> <li>• IPDM E/R</li> </ul>

# DIAGNOSIS SYSTEM (IPDM E/R)

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONER]

Symptom	Inspection contents	Possible cause
Oil pressure warning lamp does not operate	Perform auto active test. Does the oil pressure warning lamp blink?	YES <ul style="list-style-type: none"> <li>• Harness or connector between IPDM E/R and oil pressure switch</li> <li>• Oil pressure switch</li> <li>• IPDM E/R</li> </ul>
		NO <ul style="list-style-type: none"> <li>• CAN communication signal between IPDM E/R and BCM</li> <li>• CAN communication signal between BCM and combination meter</li> <li>• Combination meter</li> </ul>
Cooling fan does not operate	Perform auto active test. Does the cooling fan operate?	YES <ul style="list-style-type: none"> <li>• ECM signal input circuit</li> <li>• CAN communication signal between ECM and IPDM E/R</li> </ul>
		NO <ul style="list-style-type: none"> <li>• Cooling fan</li> <li>• Harness or connector between cooling fan and cooling fan relays</li> <li>• Cooling fan relays</li> <li>• Harness or connector between IPDM E/R and cooling fan relays</li> <li>• IPDM E/R</li> </ul>

## CONSULT Function (IPDM E/R)

INFOID:000000006921027

### APPLICATION ITEM

CONSULT performs the following functions via CAN communication with IPDM E/R.

Diagnosis mode	Description
ECU Identification	Allows confirmation of IPDM E/R part number.
Self Diagnostic Result	Displays the diagnosis results judged by IPDM E/R.
Data Monitor	Displays the real-time input/output data from IPDM E/R input/output data.
Active Test	IPDM E/R can provide a drive signal to electronic components to check their operations.
CAN Diag Support Monitor	The results of transmit/receive diagnosis of CAN communication can be read.

### SELF DIAGNOSTIC

Refer to [PCS-29. "DTC Index"](#).

### DATA MONITOR

Monitor item

Monitor Item [Unit]	MAIN SIGNALS	Description
MOTOR FAN REQ [%]	×	Displays the value of the cooling fan speed signal received from ECM via CAN communication.
AC COMP REQ [Off/On]	×	Displays the status of the A/C compressor request signal received from ECM via CAN communication.
TAIL&CLR REQ [Off/On]	×	Displays the status of the position light request signal received from BCM via CAN communication.
HL LO REQ [Off/On]	×	Displays the status of the low beam request signal received from BCM via CAN communication.
HL HI REQ [Off/On]	×	Displays the status of the high beam request signal received from BCM via CAN communication.

# DIAGNOSIS SYSTEM (IPDM E/R)

**[MANUAL AIR CONDITIONER]**

## < SYSTEM DESCRIPTION >

Monitor Item [Unit]	MAIN SIG- NALS	Description
FR FOG REQ [Off/On]	×	Displays the status of the front fog light request signal received from BCM via CAN communication.
FR WIP REQ [Stop/1LOW/Low/Hi]	×	Displays the status of the front wiper request signal received from BCM via CAN communication.
WIP AUTO STOP [STOP P/ACT P]	×	Displays the status of the front wiper auto stop signal judged by IPDM E/R.
WIP PROT [Off/BLOCK]	×	Displays the status of the front wiper fail-safe operation judged by IPDM E/R.
IGN RLY1 -REQ [Off/On]		Displays the status of the ignition switch ON signal received from BCM via CAN communication.
IGN RLY [Off/On]	×	Displays the status of the ignition relay judged by IPDM E/R.
PUSH SW [Off/On]		Displays the status of the push-button ignition switch judged by IPDM E/R.
INTER/NP SW [Off/On]		Displays the status of the clutch interlock switch (M/T models) or CVT shift position (CVT models) judged by IPDM E/R.
ST RLY CONT [Off/On]		Displays the status of the starter relay status signal received from BCM via CAN communication.
IHBT RLY -REQ [Off/On]		Displays the status of the starter control relay signal received from BCM via CAN communication.
ST/INH RLY [Off/ ST /INH]		Displays the status of the starter relay and starter control relay judged by IPDM E/R.
DETENT SW [Off/On]		Displays the status of the CVT shift selector (detention switch) judged by IPDM E/R.
S/L RLY -REQ [Off/On]		Displays the status of the steering lock relay request received from BCM via CAN communication.
S/L STATE [LOCK/UNLK/UNKWN]		Displays the status of the electronic steering column lock judged by IPDM E/R.
OIL P SW [Open/Close]		Displays the status of the oil pressure switch judged by IPDM E/R.
THFT HRN REQ [Off/On]		Displays the status of the theft warning horn request signal received from BCM via CAN communication.
HORN CHIRP [Off/On]		Displays the status of the horn reminder signal received from BCM via CAN communication.

## ACTIVE TEST

### Test item

Test item	Operation	Description
HORN	On	Operates horn relay 1 and horn relay 2 for 20 ms.
	Off	OFF
FRONT WIPER	Lo	Operates the front wiper relay.
	Hi	Operates the front wiper relay and front wiper high relay.
MOTOR FAN	1	OFF
	2	Outputs 50% pulse duty signal (PWM signal) to the cooling fan control module.
	3	Outputs 80% pulse duty signal (PWM signal) to the cooling fan control module.
	4	Outputs 100% pulse duty signal (PWM signal) to the cooling fan control module.

# DIAGNOSIS SYSTEM (IPDM E/R)

< SYSTEM DESCRIPTION >

**[MANUAL AIR CONDITIONER]**

Test item	Operation	Description
EXTERNAL LAMPS	Off	OFF
	TAIL	Operates the tail lamp relay.
	Lo	Operates the headlamp low relay.
	Hi	Operates the headlamp low relay and ON/OFF the headlamp high relay at 1 second intervals.
	Fog	Operates the front fog lamp relay.

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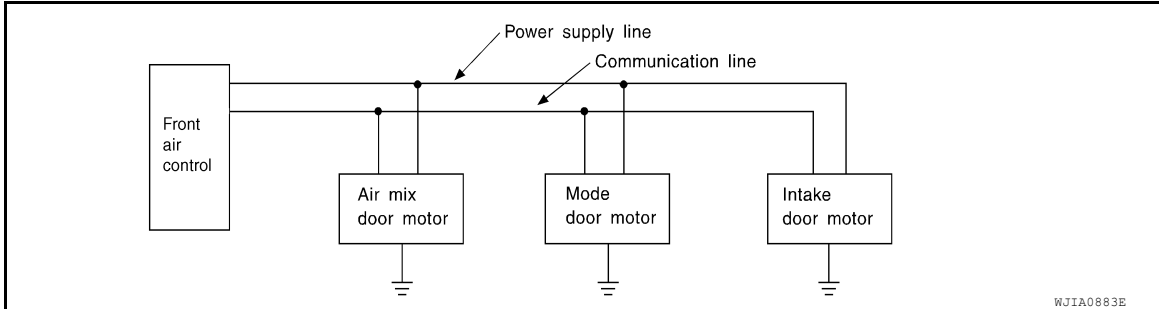
## DTC/CIRCUIT DIAGNOSIS

### LAN SYSTEM CIRCUIT

#### Description

INFOID:000000006389033

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



#### Diagnosis Procedure

INFOID:000000006389034

Regarding Wiring Diagram information, refer to [HAC-150. "Wiring Diagram - Manual"](#).

#### DIAGNOSIS PROCEDURE FOR LAN CIRCUIT

##### 1. CHECK POWER SUPPLY FOR DOOR MOTORS

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

Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal		
M37-13	Body ground	12V

Is the inspection result normal?

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

##### 2. CHECK SIGNAL FOR DOOR MOTORS

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

Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal		
M37-3	Ground	1.5V

Is the inspection result normal?

- YES >> GO TO 11  
 NO >> GO TO 6

##### 3. CHECK MODE DOOR MOTOR FOR SHORT TO GROUND

While checking for voltage between front air control connector M37 terminal 13 and ground, disconnect the mode door motor.

# LAN SYSTEM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal		
M37-13	Body ground	12V

Is the inspection result normal?

- YES >> Replace mode door motor. Refer to [VTL-20, "Removal and Installation"](#).  
NO >> GO TO 4

## 4. CHECK INTAKE DOOR MOTOR FOR SHORT TO GROUND

While checking for voltage between front air control connector M37 terminal 13 and ground, disconnect the intake door motor.

Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal		
M37-13	Body ground	12V

Is the inspection result normal?

- YES >> Replace intake door motor. Refer to [VTL-19, "Removal and Installation"](#).  
NO >> GO TO 5

## 5. CHECK AIR MIX DOOR MOTOR FOR SHORT TO GROUND

While checking for voltage between front air control connector M37 terminal 13 and ground, disconnect the air mix door motor.

Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal		
M37-13	Body ground	12V

Is the inspection result normal?

- YES >> Replace air mix door motor. Refer to [VTL-21, "Removal and Installation"](#).  
NO >> GO TO 9

## 6. CHECK MODE DOOR MOTOR FOR SHORT TO GROUND

While checking for voltage between front air control connector M37 terminal 3 and ground, disconnect the mode door motor.

Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal		
M37-3	Ground	1.5V

Is the inspection result normal?

- YES >> Replace mode door motor. Refer to [VTL-20, "Removal and Installation"](#).  
NO >> GO TO 7

## 7. CHECK INTAKE DOOR MOTOR FOR SHORT TO GROUND

While checking for voltage between front air control connector M37 terminal 3 and ground, disconnect the intake door motor.

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# LAN SYSTEM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal		
M37-3	Ground	1.5V

Is the inspection result normal?

- YES >> Replace intake door motor. Refer to [VTL-19, "Removal and Installation"](#).  
NO >> GO TO 8

## 8. CHECK AIR MIX DOOR MOTOR FOR SHORT TO GROUND

While checking for voltage between front air control connector M37 terminal 3 and ground, disconnect the air mix door motor.

Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal		
M37-3	Ground	1.5V

Is the inspection result normal?

- YES >> Replace air mix door motor. Refer to [VTL-21, "Removal and Installation"](#).  
NO >> GO TO 10

## 9. CHECK DOOR MOTOR POWER SUPPLY FOR SHORT TO GROUND

1. Disconnect front air controller connector M37.
2. Check for continuity between front air control connector M37 terminal 13 and ground.

Terminals		Continuity
Connector - Terminal	Connector - Terminal	
M37-13	Ground	No

Is the inspection result normal?

- YES >> Replace front air control. Refer to [VTL-9, "Removal and Installation"](#).  
NO >> Replace harness or connector.

## 10. CHECK A/C LAN SIGNAL FOR SHORT TO GROUND

1. Disconnect front air controller connector M37.
2. Check for continuity between front air control connector M37 terminal 3 and ground.

Terminals		Continuity
Connector - Terminal	Connector - Terminal	
M37-3	Ground	No

Is the inspection result normal?

- YES >> Replace front air control. Refer to [VTL-9, "Removal and Installation"](#).  
NO >> Replace harness or connector.

## 11. CHECK POWER SUPPLY FOR MOTORS

1. Press ignition switch OFF.
2. Disconnect mode door motor connector M127, intake door motor M126, and air mix door motor M130.
3. Press ignition switch ON.
4. 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.



# LAN SYSTEM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

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

Is the inspection result normal?

YES >> GO TO 12

NO >> Replace harness or connector.

## 12. CHECK SIGNAL FOR MOTORS

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

Door motors	Terminals		Voltage (V) (Approx.)
	(+)	(-)	
	Connector - Terminal		
Mode	M127-1	Body ground	1.5V
Air mix	M130-1		
Intake	M126-1		

Is the inspection result normal?

YES >> GO TO 13

NO >> Replace harness or connector.

## 13. CHECK MOTOR GROUND CIRCUIT

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


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

Is the inspection result normal?

YES >> GO TO 14

NO >> Replace harness or connector.

## 14. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - DISCHARGE AIR

1. Reconnect the front air control, mode door motor, air mix door motor, and intake door motor.
2. Press ignition switch ON.
3. Turn blower motor to maximum speed.
4. Press each of the four mode position switches and then press the  (DEF) switch. Each position indicator should illuminate.
5. Confirm that discharge air comes out according to the air distribution table. Refer to [HAC-112. "System Description"](#).

### NOTE:

Confirm the intake door position is at  (FRESH) when  (DEF) or  (D/F) is selected.

Is the inspection result normal?

## LAN SYSTEM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

YES >> GO TO 15


NO >> Replace mode door motor. Refer to [VTL-20, "Removal and Installation"](#).

### 15. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE CHANGE

1. Start engine. Allow engine to reach operating temperature.
2. Press the A/C button to engage the A/C compressor. The A/C on indicator should illuminate.

**NOTE:**

Confirm that the A/C compressor clutch is engaged (visual inspection).





3. Press  (VENT) mode position switch.
4. Turn the temperature control dial clockwise until 32°C (90°F) is displayed.
5. Check for hot air at discharge air outlets.
6. Turn the temperature control dial counterclockwise until 18°C (60°F) is displayed.
7. Check for cold air at discharge air outlets.

is the inspection result normal?

YES >> GO TO 16

NO >> Replace air mix door motor. Refer to [VTL-21, "Removal and Installation"](#).

### 16. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - REC ( )

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

Is the inspection result normal?

YES >> Intermittent incident. Refer to [GI-42, "Intermittent Incident"](#).

NO >> Replace intake door motor. Refer to [VTL-19, "Removal and Installation"](#).

MODE DOOR MOTOR

Description

INFOID:000000006389035

SYSTEM DESCRIPTION

Component Parts

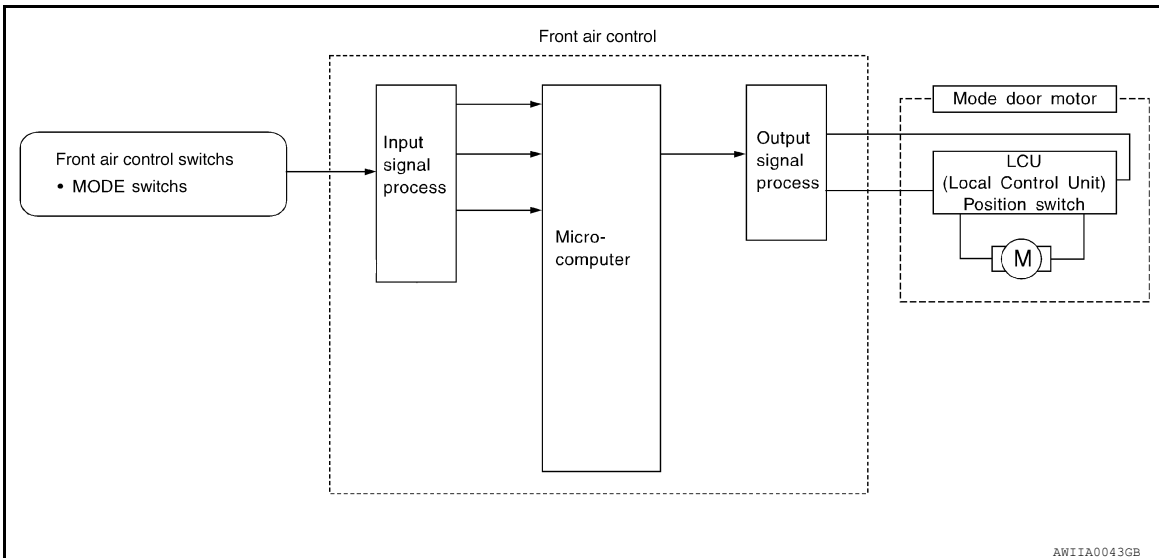
Mode door control system components are:

- 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

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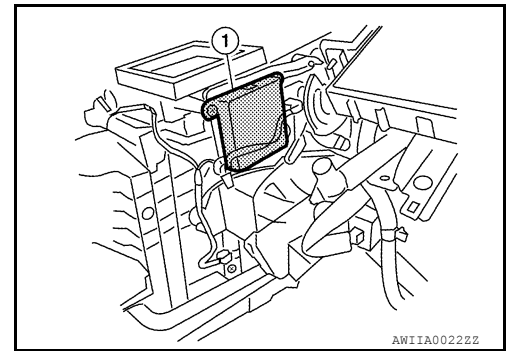
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# MODE DOOR MOTOR

## < DTC/CIRCUIT 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:000000006389036


Regarding Wiring Diagram information, refer to [HAC-126, "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 ignition switch ON.
2. Turn blower motor to maximum speed.
3. Press each of the four mode position switches and then press the  (DEF) switch. Each position indicator should illuminate.
4. Confirm that discharge air comes out according to the air distribution table. Refer to [HAC-13, "System Description"](#).

### NOTE:

Confirm that the 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-126, "Diagnosis Procedure"](#).

## AIR MIX DOOR MOTOR

### Description

INFOID:000000006389037

### SYSTEM DESCRIPTION

#### Component Parts

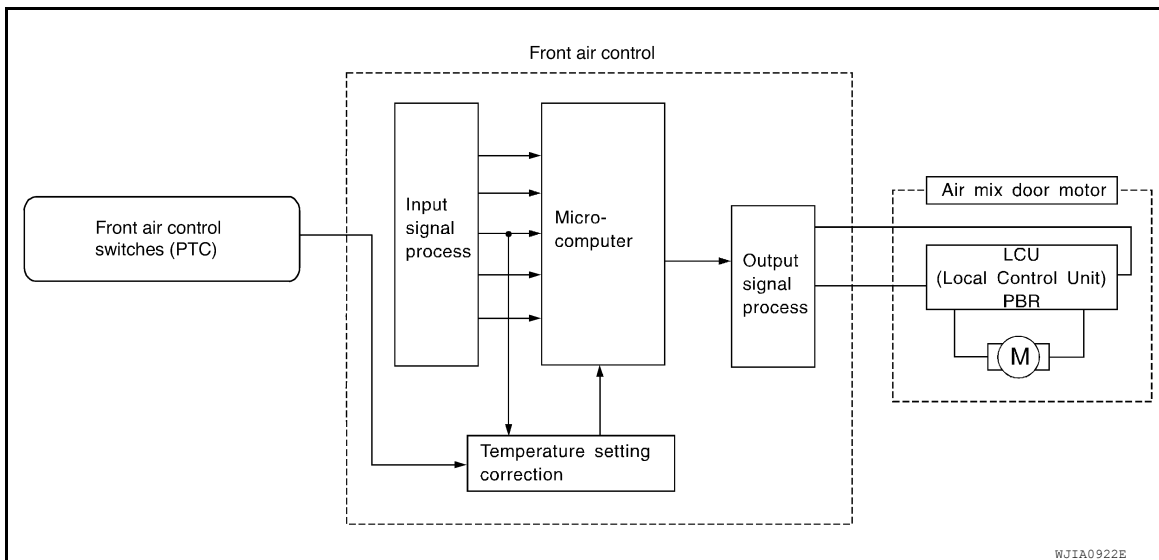
Air mix door control system components are:

- 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.

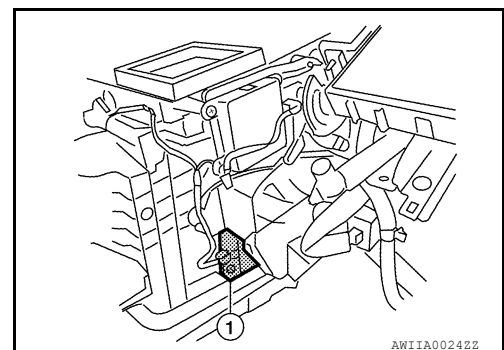
The air mix door motor, mode door motor and intake door motor read their respective signals according to the address signal. Opening angle indication signals received from the front air control and each of the motor position sensors are compared by the LCUs in each motor with the existing decision and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



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**Diagnosis Procedure**

INFOID:000000006389038

Regarding Wiring Diagram information, refer to [HAC-150. "Wiring Diagram - Manual"](#).

**SYMPTOM:**

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


**INSPECTION FLOW****1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE CHANGE**

---

1. Start engine. Allow engine to reach operating temperature.
2. Press the A/C button to engage the A/C compressor. The A/C on indicator should illuminate.

**NOTE:**

Confirm that the A/C compressor clutch is engaged (visual inspection).

3. Press  (VENT) mode position switch.
4. Turn the temperature control dial clockwise until 32°C (90°F) is displayed.
5. Check for hot air at discharge air outlets.
6. Turn the temperature control dial counterclockwise until 18°C (60°F) is displayed.
7. 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-126. "Diagnosis Procedure"](#).

## INTAKE DOOR MOTOR

### Description

INFOID:000000006389039

### SYSTEM DESCRIPTION

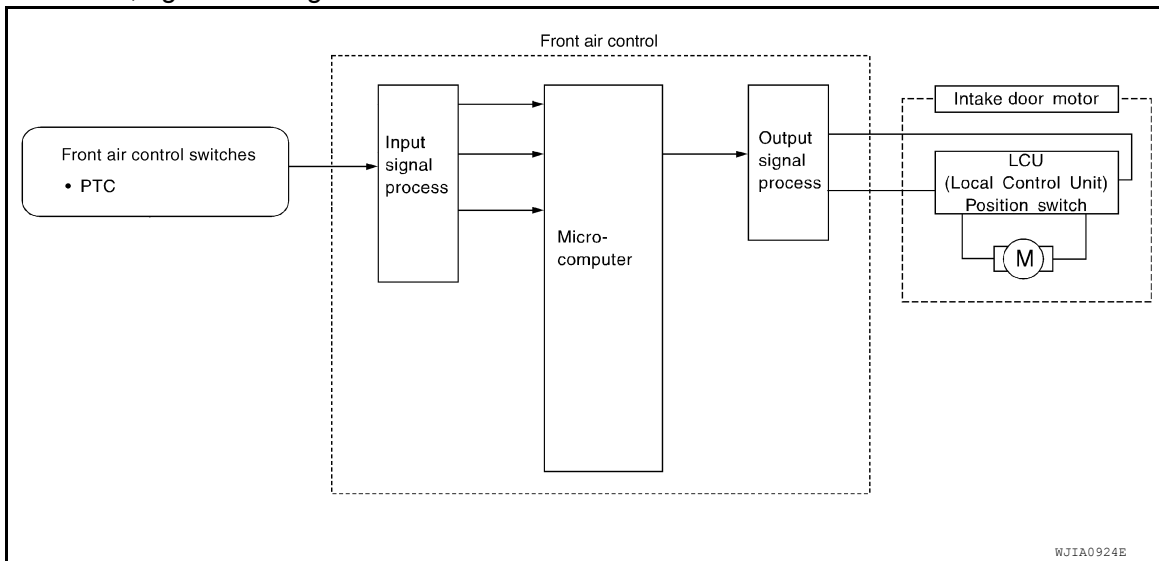
#### Component Parts

Intake door control system components are:

- Front air control
- Intake door motor (LCU)

#### System Operation

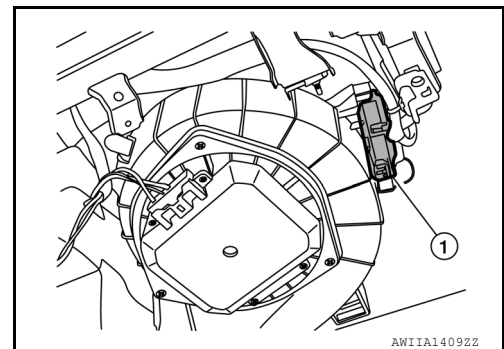
The intake door control determines the intake door position based on the position of the recirculation switch. When the recirculation switch is depressed the intake door motor rotates closing off the fresh air inlet and recirculating the cabin air. If the recirculation switch is depressed again, the 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:000000006389040

Regarding Wiring Diagram information, refer to [HAC-150, "Wiring Diagram - Manual"](#).

#### SYMPTOM:

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

#### INSPECTION FLOW

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

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



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## INTAKE DOOR MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

---

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

Can a symptom be duplicated?

YES >> Inspection End.

NO >> Go to diagnosis procedure for LAN system. Refer to [HAC-126. "Diagnosis Procedure"](#).



## BLOWER MOTOR

### Description

INFOID:000000006389041

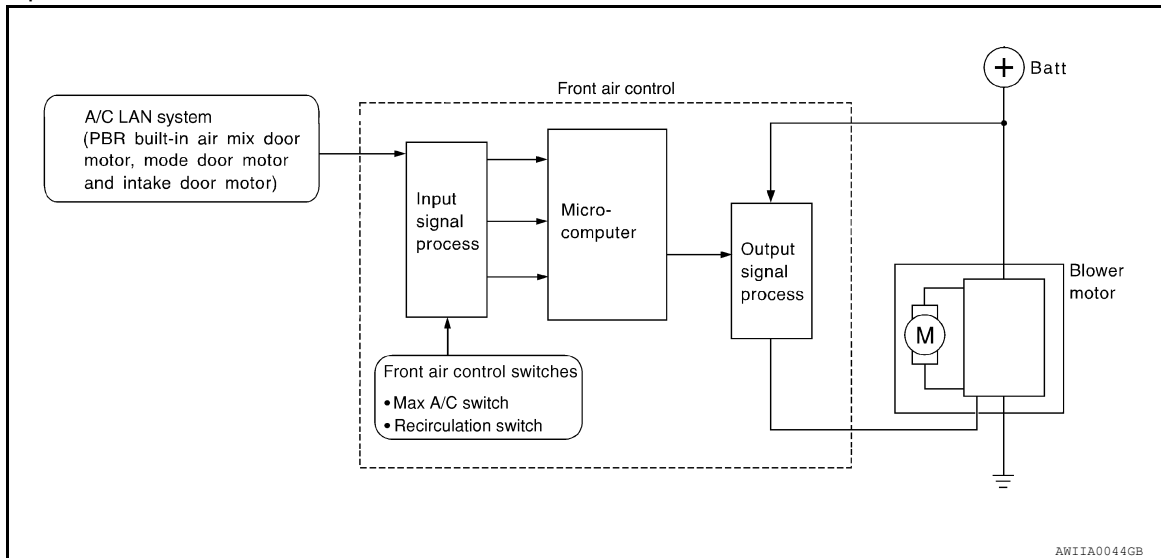
### SYSTEM DESCRIPTION

#### Component Parts

Fan speed control system components are:

- Front air control
- A/C LAN system (Position Balanced Resistor [PBR] built-in mode door motor, air mix door motor and intake door motor)

#### System Operation



### Component Function Check

INFOID:000000006389042

### INSPECTION FLOW

#### 1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - FRONT BLOWER

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

#### Can a symptom be duplicated?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to [HAC-126, "Diagnosis Procedure"](#).

### Diagnosis Procedure

INFOID:000000006389043

Regarding Wiring Diagram information, refer to [HAC-150, "Wiring Diagram - Manual"](#).

SYMPTOM: Blower motor operation is malfunctioning.

### DIAGNOSIS PROCEDURE FOR BLOWER MOTOR

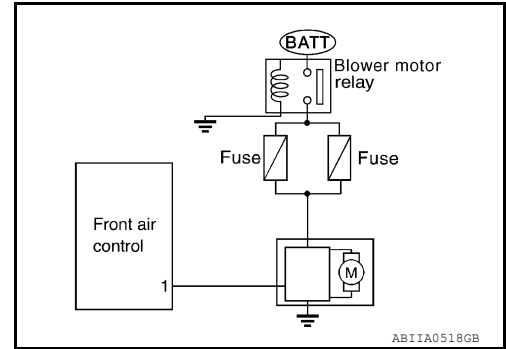
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# BLOWER MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

SYMPTOM: Blower motor operation is malfunctioning.



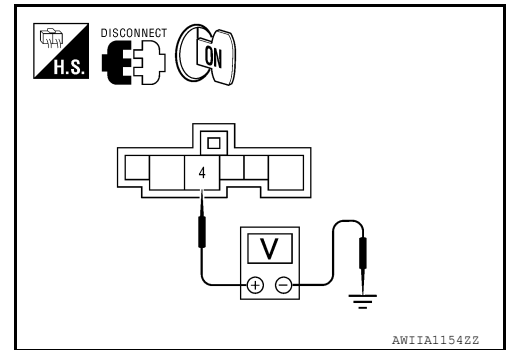
## 1. CHECK POWER SUPPLY FOR BLOWER MOTOR

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



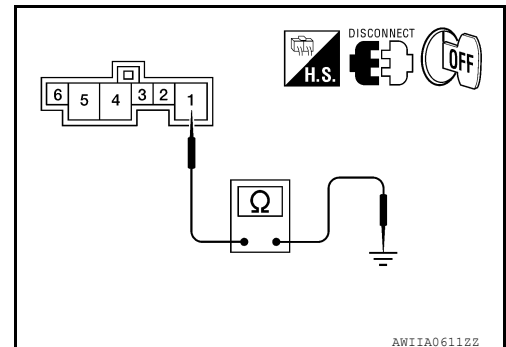
## 2. CHECK BODY GROUND CIRCUIT FOR BLOWER MOTOR

1. 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		

Is the inspection result normal?

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



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

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

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

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

Terminals		Continuity
Connector - Terminal	Ground	No
M31-3		

Is the inspection result normal?

- YES >> GO TO 4

# BLOWER MOTOR

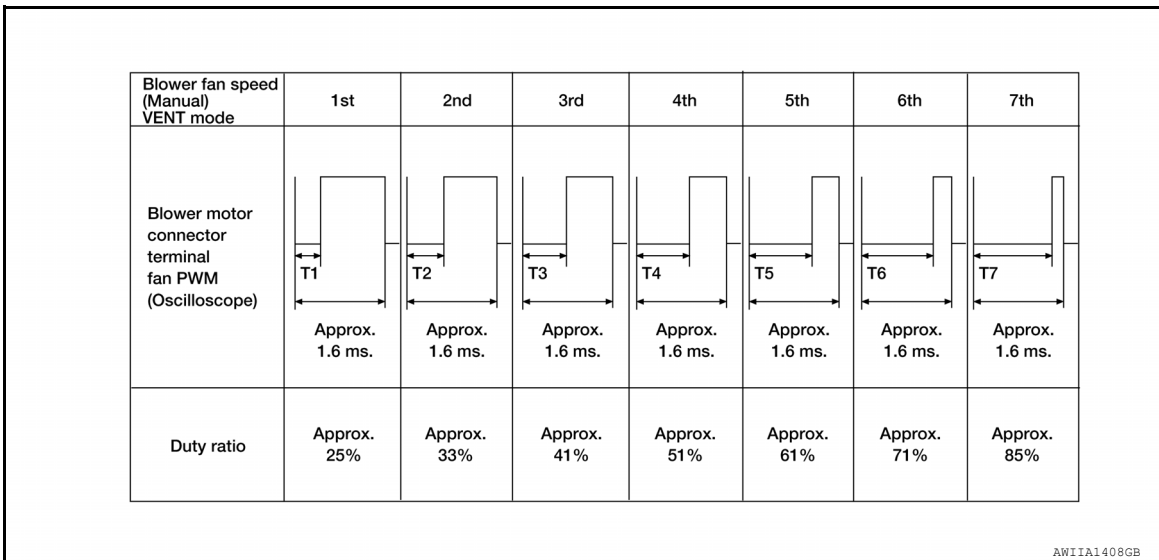
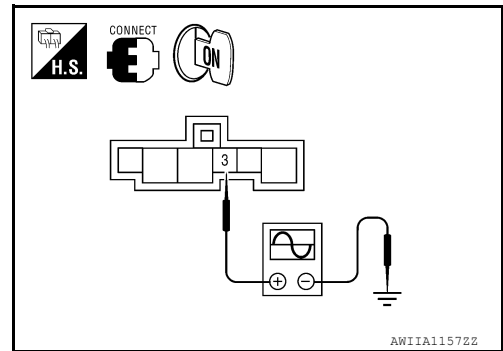
[MANUAL AIR CONDITIONER]

< DTC/CIRCUIT DIAGNOSIS >

NO >> Repair harness or connector.

## 4. CHECK FRONT AIR CONTROL OUTPUT SIGNAL

1. 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-17, "Removal and Installation"](#).

NO >> Replace the front air control. Refer to [VTL-9, "Removal and Installation"](#).

## 5. CHECK FUSE

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

**NOTE:**

Refer to [PG-62, "Terminal Arrangement"](#) for fuse location.

Is the inspection result normal?

YES >> GO TO 6

NO >> GO TO 11

## 6. CHECK POWER SUPPLY FOR FRONT BLOWER MOTOR RELAY

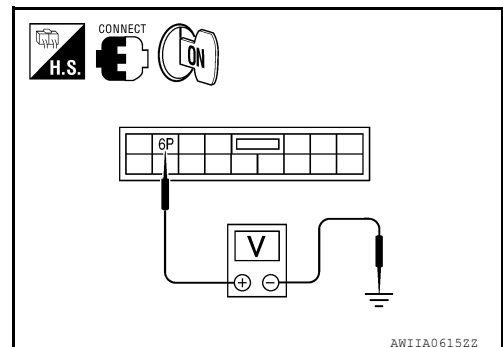
1. Press ignition switch OFF.
2. Disconnect fuse block (J/B) connector.
3. Press ignition switch ON.
4. Turn blower motor control dial to any speed except OFF.
5. Check voltage between fuse block (J/B) connector E6 terminal 6P and ground.

**6P - Ground : Battery Voltage**

Is the inspection result normal?

YES >> GO TO 10

NO >> GO TO 7



# BLOWER MOTOR

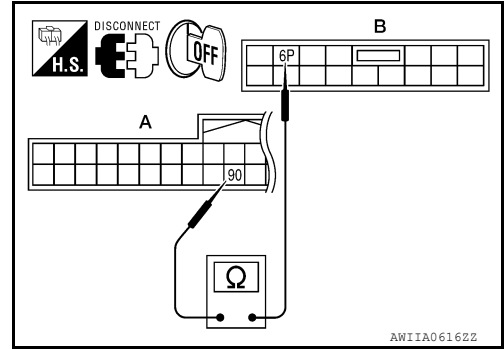
< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

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



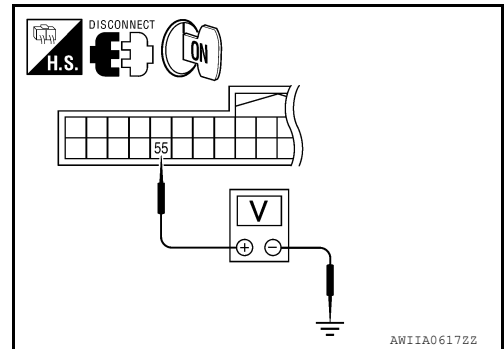
Is the inspection result normal?

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

## 8. CHECK BLOWER FAN SWITCH SIGNAL FOR VOLTAGE

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

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



Is the inspection result normal?

- YES >> Replace BCM. Refer to [BCS-92, "Removal and Installation"](#).  
 NO >> GO TO 9

## 9. CHECK BLOWER FAN SWITCH SIGNAL CIRCUIT FOR AN OPEN

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

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

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

Terminal		Continuity
(+)	(-)	
Connector - Terminal	Ground	No
M18 - 55		

Is the inspection result normal?

- YES >> Replace front air control. Refer to [VTL-9, "Removal and Installation"](#).  
 NO >> Repair harness or connector.

## 10. CHECK FRONT BLOWER MOTOR RELAY GROUND

# BLOWER MOTOR

[MANUAL AIR CONDITIONER]

## < DTC/CIRCUIT DIAGNOSIS >

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

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

### Is the inspection result normal?

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

## 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.

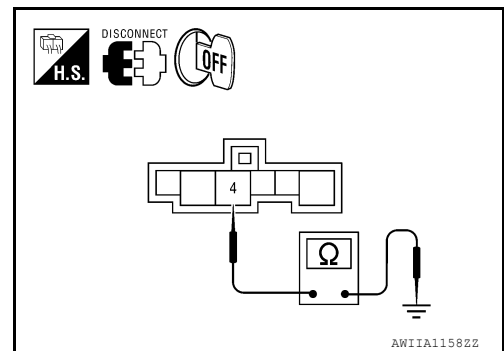
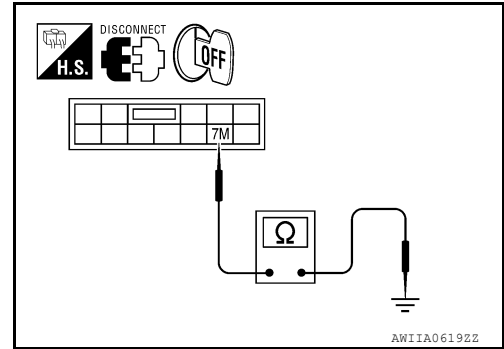
## 12. CHECK BLOWER MOTOR POWER SUPPLY CIRCUIT FOR SHORT

1. Turn ignition switch OFF.
2. Disconnect blower motor harness connector and front air 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 [VTL-17, "Removal and Installation"](#).  
 NO >> Repair harness or connector.



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## MAGNET CLUTCH

### Description

INFOID:000000006921604

#### SYSTEM DESCRIPTION

When the blower speed dial is in one of the fan speed positions, the front air control outputs a fan ON signal to the BCM. When the A/C switch is pressed, the A/C switch LED illuminates and the front air control outputs a compressor ON signal to the BCM. Any mode control button can be selected. As long as the BCM receives a compressor ON signal and a fan ON signal from the front air control, the conditions required for the BCM to transmit a compressor ON request to the ECM have been met.

The BCM sends a compressor ON signal to ECM, via CAN communication line.

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


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

### Component Function Check

INFOID:000000006389044

#### INSPECTION FLOW

##### 1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - MAGNET CLUTCH

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

#### Can a symptom be duplicated?

YES >> Inspection End.

NO >> Go to diagnosis procedure for Magnet Clutch. Refer to [HAC-142. "Diagnosis Procedure"](#).

### Diagnosis Procedure

INFOID:000000006389045

Regarding Wiring Diagram information, refer to [HAC-150. "Wiring Diagram - Manual"](#).

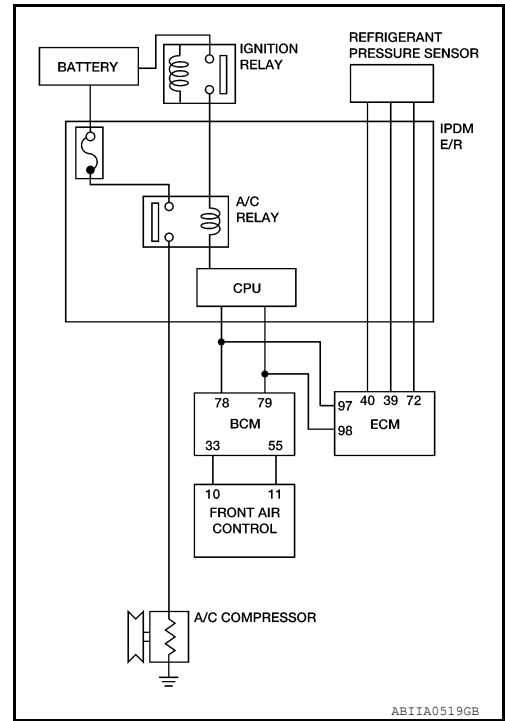
#### DIAGNOSIS PROCEDURE FOR MAGNET CLUTCH

# MAGNET CLUTCH

[MANUAL AIR CONDITIONER]

## < DTC/CIRCUIT DIAGNOSIS >

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



### 1. CHECK MAGNETIC CLUTCH WITH AUTO ACTIVE TEST

1. Start engine.
2. Press the VENT ( ) mode.
3. Perform auto active test. Refer to [PCS-11, "Diagnosis Description"](#).
4. 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, 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 [EC-271, "Diagnosis Procedure"](#) (QR25DE) or [EC-636, "Diagnosis Procedure"](#) (VQ35DE).  
NO >> GO TO 6

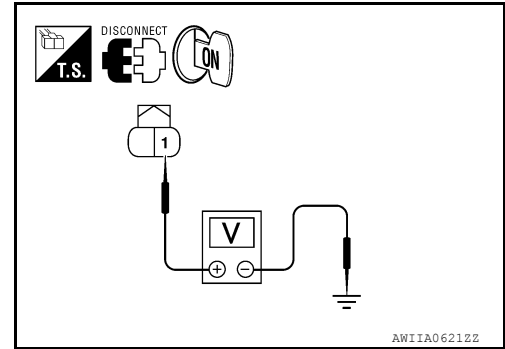
### 3. CHECK POWER SUPPLY FOR A/C COMPRESSOR

# MAGNET CLUTCH

[MANUAL AIR CONDITIONER]

## < DTC/CIRCUIT DIAGNOSIS >

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



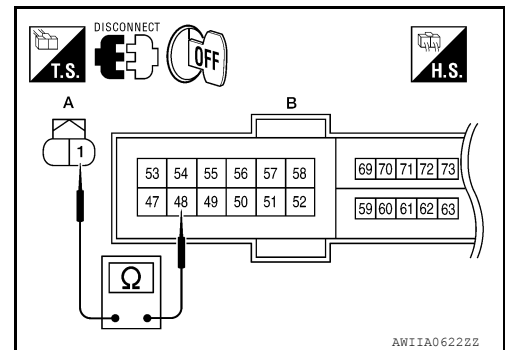
Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal	Body ground	12V
F3-1		

### Is the inspection result normal?

- YES >> Check magnet clutch coil.
1. If NG, replace magnet clutch. Refer to [HA-31. "Removal and Installation for Compressor - QR25DE Models"](#) or [HA-32. "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

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



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

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-45. "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.

Terminal		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal	Body ground	A/C compressor ON: 0V
M37 - 10		A/C compressor OFF: 9-12V

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



# MAGNET CLUTCH

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

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

Is the inspection result normal?

YES >> Replace BCM. Refer to [BCS-92. "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 [LAN-12. "CAN Diagnosis with CONSULT-III"](#).

Is the inspection result normal?

YES >> BCM malfunctioning.

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

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HAC

# POWER SUPPLY AND GROUND CIRCUIT FOR FRONT AIR CONTROL

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

## POWER SUPPLY AND GROUND CIRCUIT FOR FRONT AIR CONTROL

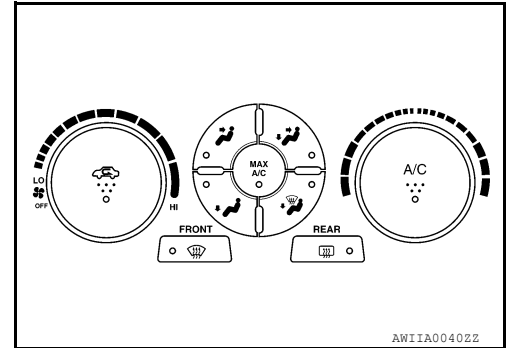
### Description

INFOID:000000006389046

### 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.



#### POTENTIAL TEMPERATURE CONTROL (PTC)

The PTC is built into the front air control.

### Component Function Check

INFOID:000000006389047

### COMPONENT INSPECTION

SYMPTOM: A/C system does not come on.

#### INSPECTION FLOW

### 1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK

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

#### Can a symptom be duplicated?

YES >> Inspection End.

NO >> Go to diagnosis procedure for Power Supply Circuit for Front Air Control. Refer to [HAC-146](#), "[Diagnosis Procedure](#)".

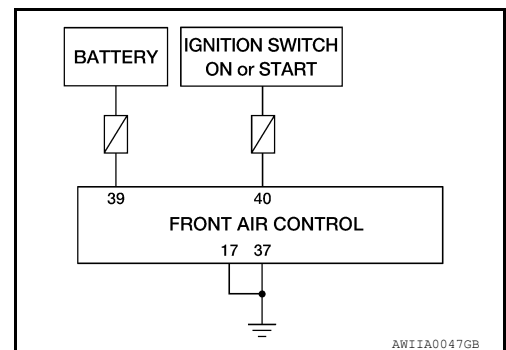
### Diagnosis Procedure

INFOID:000000006389048

Regarding Wiring Diagram information, refer to [HAC-150](#), "[Wiring Diagram - Manual](#)".

### DIAGNOSIS PROCEDURE FOR A/C SYSTEM

SYMPTOM: A/C system does not come on.



### 1. CHECK POWER SUPPLY CIRCUIT FOR FRONT AIR CONTROL

1. Disconnect front air control connector M37.
2. Press ignition switch ON.

# POWER SUPPLY AND GROUND CIRCUIT FOR FRONT AIR CONTROL

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONER]

3. Check voltage between front air control connector M37 terminals 15 and 14, and ground.

Terminals		Voltage (V) (Approx.)
(+)	(-)	
Connector - Terminal	Body ground	12V
M37-15		
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. CHECK BODY GROUND CIRCUIT FOR FRONT AIR CONTROL

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

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

Is the inspection result normal?

YES >> • Replace front air control. Refer to [VTL-9, "Removal and Installation"](#).  
• Inspection End.

NO >> Repair or replace harness.

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HAC

# AIR CONDITIONER CONTROL

< ECU DIAGNOSIS INFORMATION >

[MANUAL AIR CONDITIONER]

## ECU DIAGNOSIS INFORMATION

### AIR CONDITIONER CONTROL

#### Reference Value

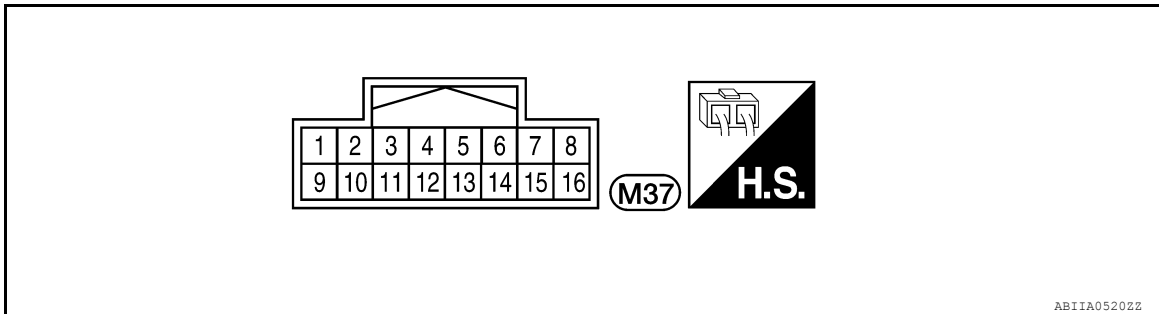
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#### VALUES ON THE DIAGNOSIS TOOL

##### Display Item List

Monitor item name "operation or unit"	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

Terminal No.	Wire color	Item	Ignition switch	Condition		Voltage (V) (Approx.)
1	L/Y	Blower motor feed back		Fan speed	Low	7.0.- 10.0
3	L/R	A/C LAN signal		—		5.5
4	GR	Rear defrost feed back		Defroster switch	ON	12
					OFF	0
6	B	Ground		—		0
7	B	Ground		—		0
8	R/Y	Light (-)		—		0
9	R/W	Power supply for A/C ON signal			ON	4.6
10	SB	Compressor ON signal		Compressor	ON	0
					OFF	9 - 12

# AIR CONDITIONER CONTROL

< ECU DIAGNOSIS INFORMATION >

[MANUAL AIR CONDITIONER]

Terminal No.	Wire color	Item	Ignition switch	Condition		Voltage (V) (Approx.)
11	BR/W	Fan ON signal		Fan	ON	0
					OFF	5
12	GR/W	Rear defrost ON signal		Defroster switch	ON	0
					OFF	5
13	L/W	Power supply for mode door motor, intake door motor, and air mix door motor		—		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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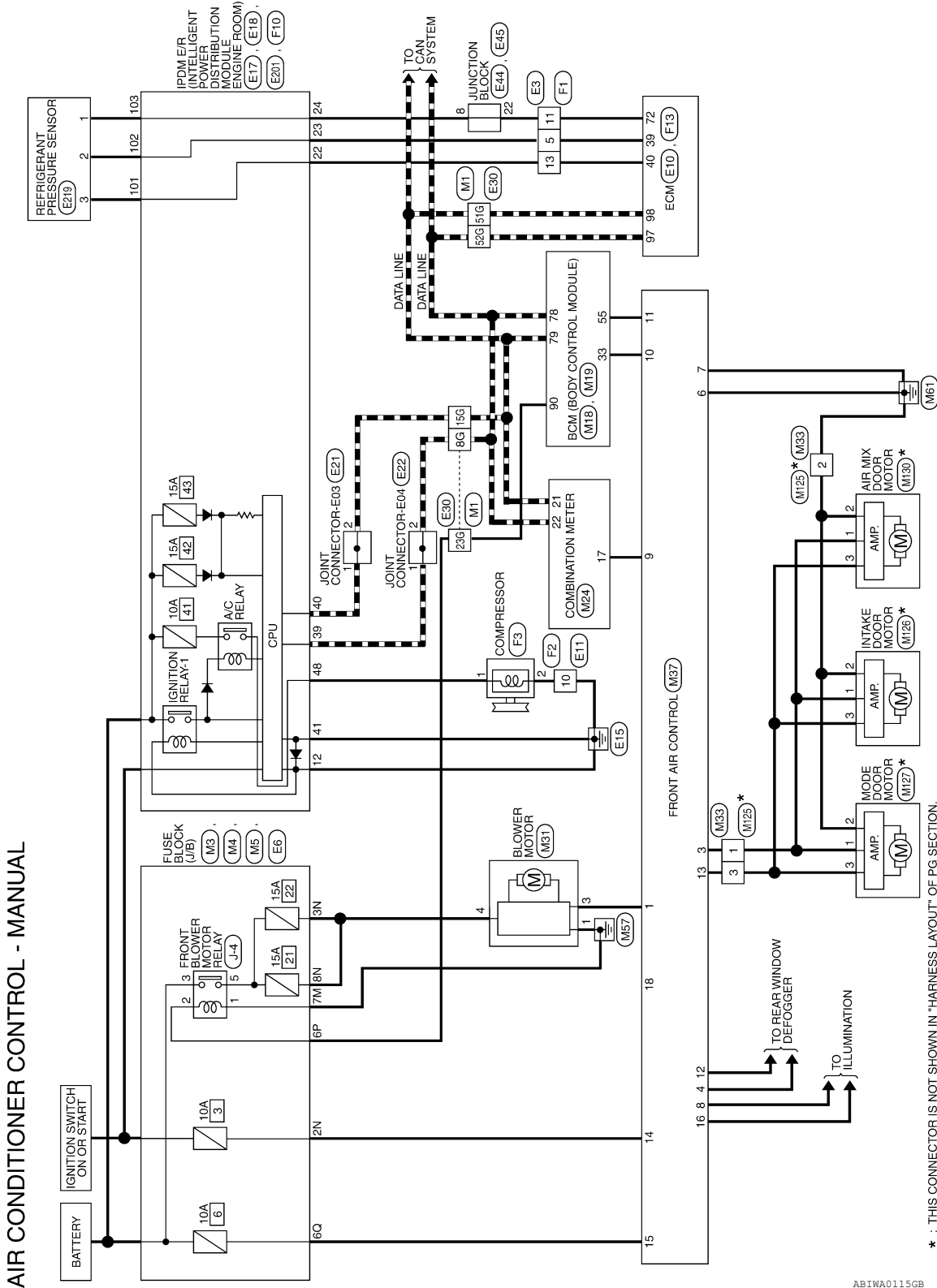
< WIRING DIAGRAM >

# WIRING DIAGRAM

## AIR CONDITIONER CONTROL

### Wiring Diagram - Manual

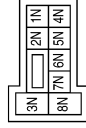
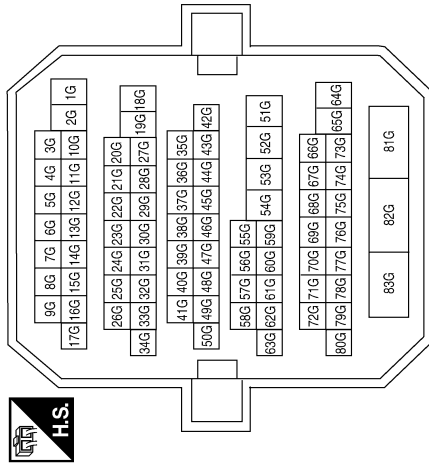
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ABIWA0115GB

## AIR CONDITIONER CONTROL CONNECTORS - MANUAL

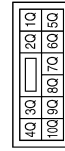
Connector No.	M1
Connector Name	WIRE TO WIRE
Connector Color	WHITE



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

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

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



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

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



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

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



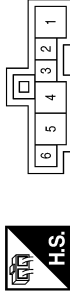
Terminal No.	Color of Wire	Signal Name
33	SB	AIRCON_SW
55	BR/W	BLOWER_FAN_SW

# AIR CONDITIONER CONTROL

< WIRING DIAGRAM >

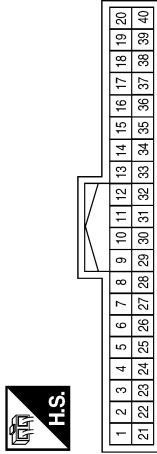
[MANUAL AIR CONDITIONER]

Connector No.	M31
Connector Name	BLOWER MOTOR
Connector Color	WHITE



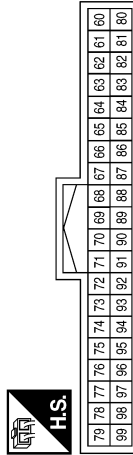
Terminal No.	Color of Wire	Signal Name
1	B	GND
3	L/Y	FAN_FWM
4	W/L	B+

Connector No.	M24
Connector Name	COMBINATION METER
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
17	R/W	A/C_PD_CUT
21	L	CAN-H
22	P	CAN-L

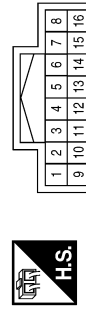
Connector No.	M19
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	BLACK



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

Terminal No.	Color of Wire	Signal Name
8	R/Y	LIGHT -
9	R/W	A/C PD CUT
10	SB	COMP ON
11	BR/W	FAN ON
12	GR/W	RR DEF ON
13	L/W	VACTR
14	G	IGN
15	Y/R	BAT
16	R/L	LIGHT +

Connector No.	M37
Connector Name	FRONT AIR CONTROL (WITHOUT AUTO A/C)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	L/Y	FAN_PWM
2	-	-
3	L/R	LAN SIG
4	GR	RR DEF F/B
5	-	-
6	B	GND
7	B	GND (POWER)

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



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

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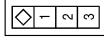


# AIR CONDITIONER CONTROL

[MANUAL AIR CONDITIONER]

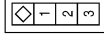
< WIRING DIAGRAM >

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



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

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



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

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



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

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



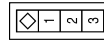
Terminal No.	Color of Wire	Signal Name
6P	Y	-

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



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

Connector No.	M130
Connector Name	AIR MIX DOOR MOTOR
Connector Color	WHITE



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

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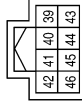
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# AIR CONDITIONER CONTROL

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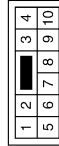
[MANUAL AIR CONDITIONER]

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



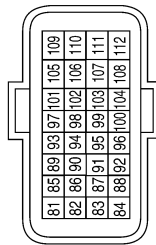
Terminal No.	Color of Wire	Signal Name
39	P	CAN-L
40	L	CAN-H
41	B	GND (SIGNAL)

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



Terminal No.	Color of Wire	Signal Name
10	BW	-

Connector No.	E10
Connector Name	ECM
Connector Color	BLACK



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

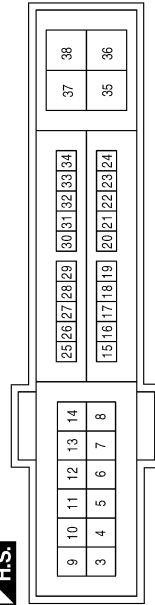
Connector No.	E21
Connector Name	JOINT CONNECTOR-E03
Connector Color	WHITE



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

Terminal No.	Color of Wire	Signal Name
12	B	GND (POWER)
22	W/R	PD SENS GND-E/R
23	BR	PD SENS SIG-E/R
24	BRW	PD SENS PWR-E/R

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



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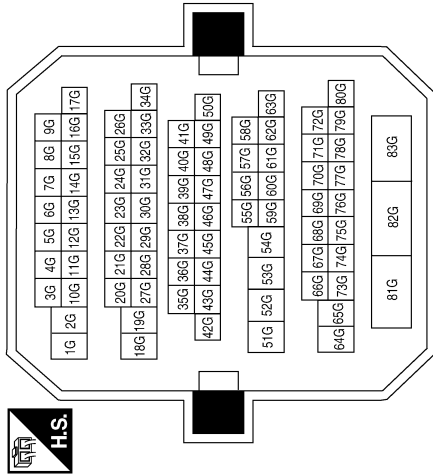
# AIR CONDITIONER CONTROL

< WIRING DIAGRAM >

[MANUAL AIR CONDITIONER]

Terminal No.	Color of Wire	Signal Name
8G	P	-
15G	L	-
23G	Y	-
51G	L	-
52G	P	-

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



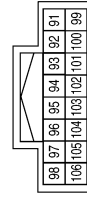
Connector No.	E22
Connector Name	JOINT CONNECTOR-E04
Connector Color	WHITE



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

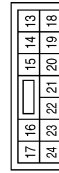


Connector No.	E201
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE



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

Connector No.	E45
Connector Name	JUNCTION BLOCK
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
22	GR	-

Connector No.	E44
Connector Name	JUNCTION BLOCK
Connector Color	BROWN



Terminal No.	Color of Wire	Signal Name
8	G	-

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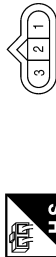
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# AIR CONDITIONER CONTROL

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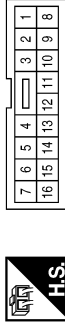
[MANUAL AIR CONDITIONER]

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



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

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



Terminal No.	Color of Wire	Signal Name
5	L	-
11	V	-
13	GR	-

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



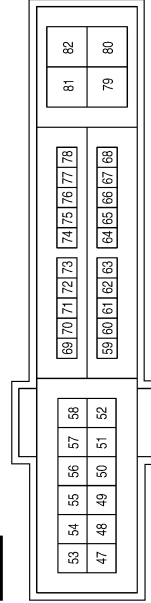
Terminal No.	Color of Wire	Signal Name
10	B	-

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



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

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



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

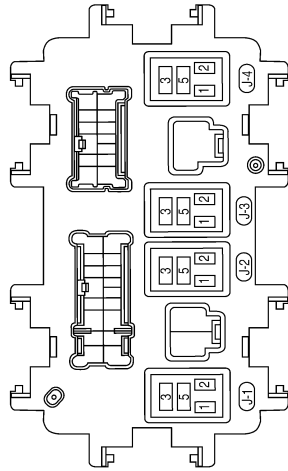
# AIR CONDITIONER CONTROL

< WIRING DIAGRAM >

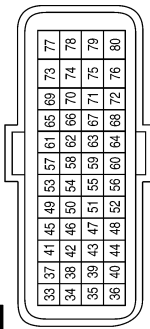
[MANUAL AIR CONDITIONER]

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



Connector No.	F-13
Connector Name	ECM (WITH QR25DE)
Connector Color	BROWN



Terminal No.	Color of Wire	Signal Name
39	L	PDPRES
40	GR	GND A-PDPRES
72	V	AVCC2-PDPRES

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# SYMPTOM DIAGNOSIS

## AIR CONDITIONER CONTROL

### Symptom Matrix Chart

INFOID:000000006389051

#### SYMPTOM TABLE

Symptom	Reference Page	
A/C system does not come on.	Go to Trouble Diagnosis Procedure for A/C System.	<a href="#">HAC-146. "Diagnosis Procedure"</a>
Air outlet does not change.	Go to Trouble Diagnosis Procedure for Mode Door Motor. (LAN)	<a href="#">HAC-132. "Diagnosis Procedure"</a>
Mode door motor does not operate normally.		
Discharge air temperature does not change.	Go to Trouble Diagnosis Procedure for Air Mix Door Motor. (LAN)	<a href="#">HAC-126. "Diagnosis Procedure"</a>
Air mix door motor does not operate normally.		
Intake door does not change.	Go to Trouble Diagnosis Procedure for Intake Door Motor. (LAN)	<a href="#">HAC-126. "Diagnosis Procedure"</a>
Intake door motor does not operate normally.		
Blower motor operation is malfunctioning.	Go to Trouble Diagnosis Procedure for Blower Motor.	<a href="#">HAC-137. "Diagnosis Procedure"</a>
Magnet clutch does not engage.	Go to Trouble Diagnosis Procedure for Magnet Clutch.	<a href="#">HAC-142. "Diagnosis Procedure"</a>
Insufficient cooling	Go to Trouble Diagnosis Procedure for Insufficient Cooling.	<a href="#">HAC-159. "Component Function Check"</a>
Insufficient heating	Go to Trouble Diagnosis Procedure for Insufficient Heating.	<a href="#">HAC-167. "Component Function Check"</a>
Noise	Go to Trouble Diagnosis Procedure for Noise.	<a href="#">HAC-169. "Component Function Check"</a>

**INSUFFICIENT COOLING****Component Function Check**

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SYMPTOM: Insufficient cooling

**INSPECTION FLOW****1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE DECREASE**

1. Press the A/C switch.
2. Turn temperature control dial counterclockwise to maximum cold.
3. Check for cold air at discharge air outlets.

Can a symptom be duplicated?

YES &gt;&gt; GO TO 3

NO &gt;&gt; GO TO 2

**2. CHECK FOR ANY SYMPTOMS**

Perform a complete operational check and check for any symptoms. Refer to [HAC-108, "Description and Conditions"](#).

Does another symptom exist?YES >> Refer to [HAC-158, "Symptom Matrix Chart"](#).

NO &gt;&gt; System OK.

**3. CHECK FOR SERVICE BULLETINS**

Check for any service bulletins.

&gt;&gt; GO TO 4

**4. CHECK DRIVE BELTS**Check compressor belt tension. Refer to [EM-16, "Checking Drive Belts"](#).Is the inspection result normal?

YES &gt;&gt; GO TO 5

NO >> Adjust or replace compressor belt. Refer to [EM-16, "Removal and Installation"](#).**5. CHECK AIR MIX DOOR MOTOR OPERATION**

Check and verify air mix door mechanism for smooth operation.

Does air mix door operate correctly?

YES &gt;&gt; GO TO 6

NO &gt;&gt; Repair or replace air mix door control linkage.

**6. CHECK COOLING FAN MOTOR OPERATION**

Check and verify cooling fan motor for smooth operation.

Does cooling fan motor operation correctly?

YES &gt;&gt; GO TO 7

NO >> Check cooling fan motor. Refer to [EC-234, "Component Function Check"](#).**7. CHECK RECOVERY/RECYCLING EQUIPMENT BEFORE USAGE**

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

&gt;&gt; GO TO 8

**8. CHECK REFRIGERANT PURITY**

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

Is the inspection result normal?

YES &gt;&gt; GO TO 9

# INSUFFICIENT COOLING

[MANUAL AIR CONDITIONER]

< SYMPTOM DIAGNOSIS >

NO >> Check contaminated refrigerant. Refer to [HA-22, "HFC-134a \(R-134a\) Service Procedure"](#).

## 9. CHECK REFRIGERANT PRESSURE

Check refrigerant pressure with manifold gauge connected. Refer to [HAC-163, "Trouble Diagnosis For Abnormal Pressure"](#).

Is the inspection result normal?

YES >> Perform performance test diagnoses. Refer to [HAC-160, "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 performance test diagnoses. Refer [HAC-160, "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

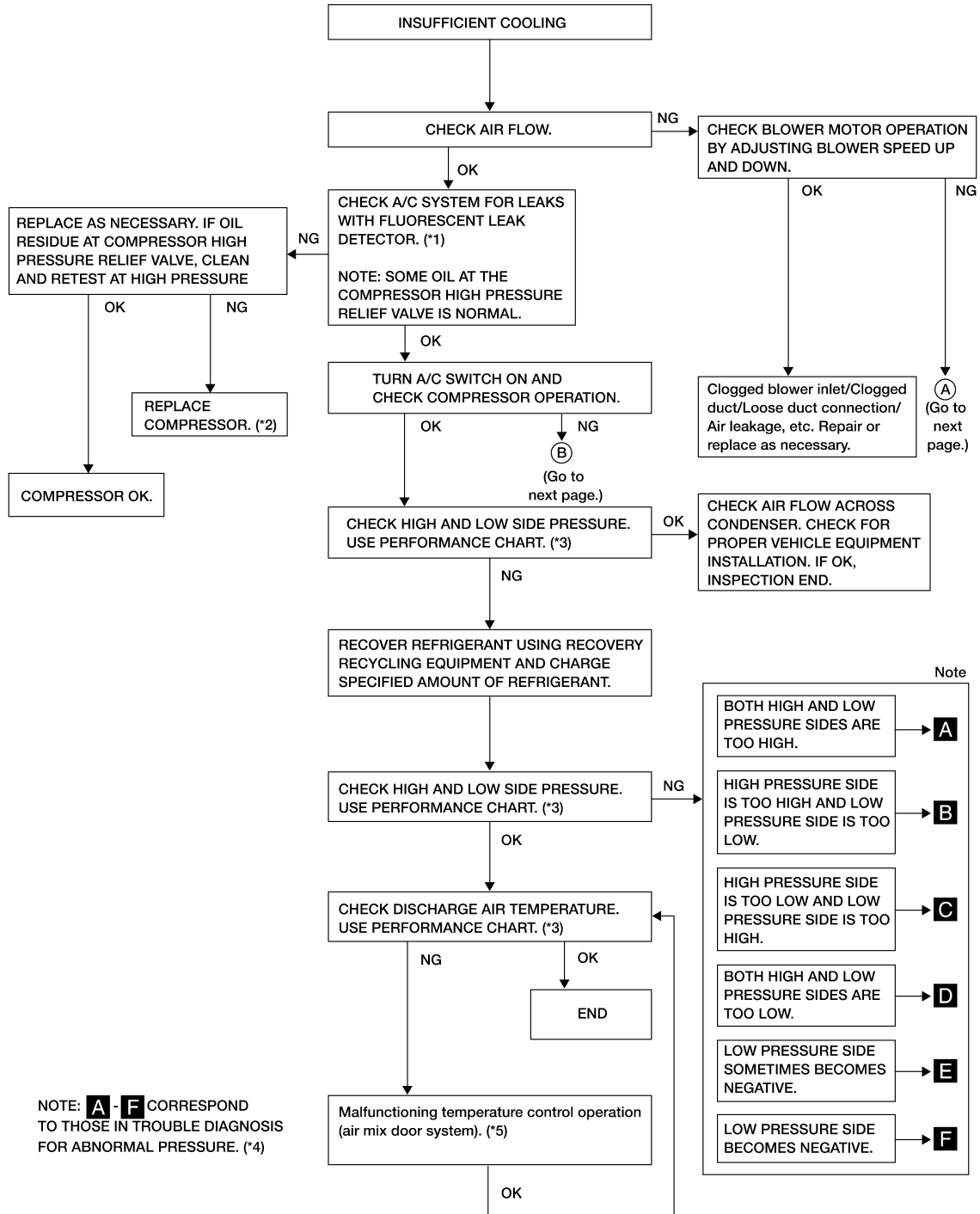
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# INSUFFICIENT COOLING

< SYMPTOM DIAGNOSIS >

[MANUAL AIR CONDITIONER]



\*1 [HA-25. "Checking System for Leaks Using the Fluorescent Leak Detector"](#)  
 \*4 [HAC-163. "Trouble Diagnosis For Abnormal Pressure"](#)

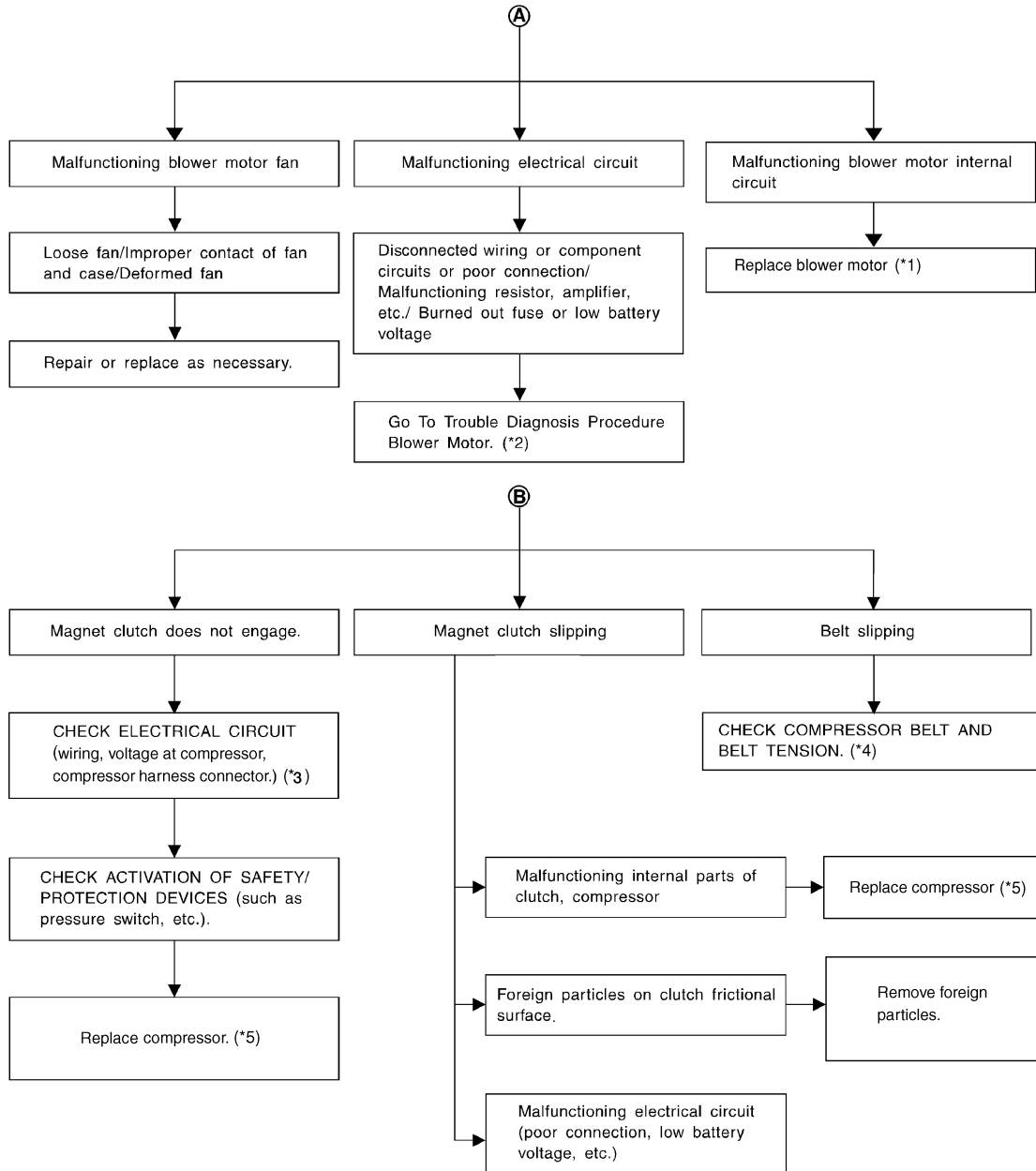
\*2 [HA-31. "Removal and Installation for Compressor - QR25DE Models"](#)  
 \*5 [HAC-134. "Diagnosis Procedure"](#)

\*3 [HAC-162. "Performance Chart"](#)

# INSUFFICIENT COOLING

< SYMPTOM DIAGNOSIS >

[MANUAL AIR CONDITIONER]



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\*1 [VTL-17, "Removal and Installation"](#)

\*2 [HAC-137, "Diagnosis Procedure"](#)

\*3 [HA-31, "Removal and Installation for Compressor - QR25DE Models"](#)

\*4 [EM-16, "Checking Drive Belts"](#)

\*5 [HA-31, "Removal and Installation for Compressor - QR25DE Models"](#)

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

### Ambient Air Temperature-to-operating Pressure Table

Ambient air		High-pressure (Discharge side) kPa (kg/cm <sup>2</sup> , psi)	Low-pressure (Suction side) kPa (kg/cm <sup>2</sup> , psi)
Relative humidity %	Air temperature °C (°F)		
50 - 70	30 (86)	1,220 - 1,500 (12.44 - 15.30, 176.9 - 217.5)	240 - 295 (2.45 - 3.01, 34.8 - 42.8)
	35 (95)	1,360 - 1,690 (13.87 - 17.24, 197.2 - 245.1)	275 - 335 (2.81 - 3.42, 39.9 - 48.6)
	40 (104)	1,500 - 1,830 (12.44 - 18.67, 176.9 - 265.4)	310 - 375 (3.16 - 3.83, 45.0 - 54.4)

## Trouble Diagnosis For Abnormal Pressure

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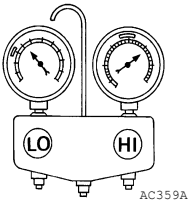
Whenever system's high and/or low side pressure is abnormal, diagnose using a manifold gauge. The marker above the gauge scale in the following tables indicates the standard (normal) pressure range. Since the standard (normal) pressure differs from vehicle to vehicle, refer to Ambient Air Temperature-to-operating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

Both High- and Low-pressure Sides are Too High

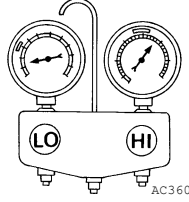
# INSUFFICIENT COOLING

< SYMPTOM DIAGNOSIS >

[MANUAL AIR CONDITIONER]

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p><b>A</b> Both high and low-pressure sides are too high.</p> 	Pressure is reduced soon after water is splashed on condenser.	Excessive refrigerant charge in refrigeration cycle	Reduce refrigerant until specified pressure is obtained.
	Air suction by cooling fan is insufficient.	Insufficient condenser cooling performance ↓ 1. Condenser fins are clogged. 2. Improper fan rotation of cooling fan	<ul style="list-style-type: none"> <li>• Clean condenser.</li> <li>• Check and repair cooling fan as necessary.</li> </ul>
	<ul style="list-style-type: none"> <li>• Low-pressure pipe is not cold.</li> <li>• When compressor is stopped high-pressure value quickly drops by approximately 196 kPa (2 kg/cm<sup>2</sup>, 28 psi). It then decreases gradually thereafter.</li> </ul>	Poor heat exchange in condenser (After compressor operation stops, high pressure decreases too slowly.) ↓ Air in refrigeration cycle	Evacuate and recharge system.
	Engine tends to overheat.	Engine cooling systems malfunction.	Check and repair each engine cooling system.
	<ul style="list-style-type: none"> <li>• An area of the low-pressure pipe is colder than areas near the evaporator outlet.</li> <li>• Plates are sometimes covered with frost.</li> </ul>	<ul style="list-style-type: none"> <li>• Excessive liquid refrigerant on low-pressure side</li> <li>• Excessive refrigerant discharge flow</li> <li>• Expansion valve is open a little compared with the specification.</li> </ul> ↓ 1. Improper thermal valve installation 2. Improper expansion valve adjustment	Replace expansion valve.

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

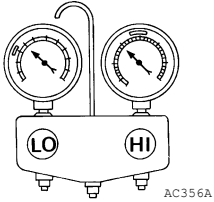
Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p><b>B</b> High-pressure side is too high and low-pressure side is too low.</p> 	Upper side of condenser and high-pressure side are hot, however, liquid tank is not so hot.	High-pressure tube or parts located between compressor and condenser are clogged or crushed.	<ul style="list-style-type: none"> <li>• Check and repair or replace malfunctioning parts.</li> <li>• Check lubricant for contamination.</li> </ul>

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

# INSUFFICIENT COOLING

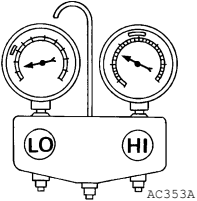
< SYMPTOM DIAGNOSIS >

[MANUAL AIR CONDITIONER]

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p><b>C</b> High-pressure side is too low and low-pressure side is too high.</p>  <p style="text-align: right; font-size: small;">AC356A</p>	High and low-pressure sides become equal soon after compressor operation stops.	Compressor pressure operation is improper. ↓ Damaged inside compressor packings	Replace compressor.
	No temperature difference between high and low-pressure sides	Compressor pressure operation is improper. ↓ Damaged inside compressor packings.	Replace compressor.

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## Both High- and Low-pressure Sides are Too Low

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p><b>D</b> Both high- and low-pressure sides are too low.</p>  <p style="text-align: right; font-size: small;">AC353A</p>	<ul style="list-style-type: none"> <li>There is a big temperature difference between liquid tank outlet and inlet. Outlet temperature is extremely low.</li> <li>Liquid tank inlet and expansion valve are frosted.</li> </ul>	Liquid tank inside is slightly clogged.	<ul style="list-style-type: none"> <li>Replace desiccant assembly.</li> <li>Check lubricant for contamination.</li> </ul>
	<ul style="list-style-type: none"> <li>Temperature of expansion valve inlet is extremely low as compared with areas near liquid tank.</li> <li>Expansion valve inlet may be frosted.</li> <li>Temperature difference occurs somewhere in high-pressure side</li> </ul>	High-pressure pipe located between receiver drier and expansion valve is clogged.	<ul style="list-style-type: none"> <li>Check and repair malfunctioning parts.</li> <li>Check lubricant for contamination.</li> </ul>
	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 <a href="#">HA-23, "Checking of Refrigerant Leaks"</a> .
	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.	<ul style="list-style-type: none"> <li>Remove foreign particles by using compressed air.</li> <li>Check lubricant for contamination.</li> </ul>
	An area of the low-pressure pipe is colder than areas near the evaporator outlet.	Low-pressure pipe is clogged or crushed.	<ul style="list-style-type: none"> <li>Check and repair malfunctioning parts.</li> <li>Check lubricant for contamination.</li> </ul>
	Air flow volume is not enough or is too low.	Evaporator is frozen.	Replace compressor.

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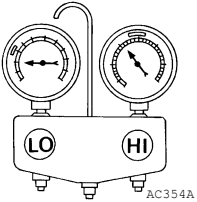
## Low-pressure Side Sometimes Becomes Negative

P

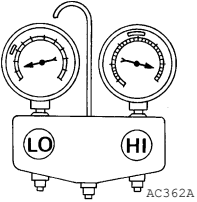
# INSUFFICIENT COOLING

< SYMPTOM DIAGNOSIS >

[MANUAL AIR CONDITIONER]

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p><b>E</b> Low-pressure side sometimes becomes negative.</p>  <p style="text-align: right; font-size: small;">AC354A</p>	<ul style="list-style-type: none"> <li>• Air conditioning system does not function and does not cyclically cool the compartment air.</li> <li>• The system constantly functions for a certain period of time after compressor is stopped and restarted.</li> </ul>	<p>Refrigerant does not discharge cyclically.</p> <p>↓</p> <p>Moisture is frozen at expansion valve outlet and inlet.</p> <p>↓</p> <p>Water is mixed with refrigerant.</p>	<ul style="list-style-type: none"> <li>• Drain water from refrigerant or replace refrigerant.</li> <li>• Replace desiccant assembly.</li> </ul>

## Low-pressure Side Becomes Negative

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p><b>F</b> Low-pressure side becomes negative.</p>  <p style="text-align: right; font-size: small;">AC362A</p>	<p>Liquid tank or front/rear side of expansion valve's pipe is frosted or dewed.</p>	<p>High-pressure side is closed and refrigerant does not flow.</p> <p>↓</p> <p>Expansion valve or liquid tank is frosted.</p>	<p>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.</p> <ul style="list-style-type: none"> <li>• If water is the cause, initially cooling is okay. Then the water freezes causing a blockage. Drain water from refrigerant or replace refrigerant.</li> <li>• If due to foreign particles, remove expansion valve and remove the particles with dry and compressed air (not shop air).</li> <li>• If either of the above methods cannot correct the problem, replace expansion valve.</li> <li>• Replace desiccant assembly.</li> <li>• Check lubricant for contamination.</li> </ul>

# INSUFFICIENT HEATING

< SYMPTOM DIAGNOSIS >

[MANUAL AIR CONDITIONER]

## INSUFFICIENT HEATING

### Description

INFOID:000000006389056

SYMPTOM: Insufficient heating

### Component Function Check

INFOID:000000006389057

### INSPECTION FLOW

#### 1. CONFIRM SYMPTOM BY PERFORMING OPERATION CHECK - TEMPERATURE INCREASE

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

##### Can a symptom be duplicated?

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

#### 2. CHECK FOR ANY SYMPTOMS

Perform a complete operational check and check for any symptoms. Refer to [HAC-108. "Description and Conditions"](#).

##### Does another symptom exist?

- YES >> Refer to [HAC-158. "Symptom Matrix Chart"](#).  
NO >> System OK.

#### 3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4

#### 4. CHECK ENGINE COOLING SYSEM

1. Check for proper engine coolant level. Refer to [CO-11. "System Inspection"](#).
2. Check hoses for leaks or kinks.
3. Check radiator cap. Refer to [CO-11. "System Inspection"](#).
4. Check for air in cooling system.

>> GO TO 5

#### 5. CHECK AIR MIX DOOR MOTOR OPERATION

Check and verify air mix door mechanism for smooth operation.

##### Does air mix door operate correctly?

- YES >> GO TO 6  
NO >> Check the air mix door motor circuit. Refer to [HAC-134. "Diagnosis Procedure"](#).

#### 6. CHECK AIR DUCTS

Check for disconnected or leaking air ducts.

##### Is the inspection result normal?

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

#### 7. CHECK HEATER HOSE TEMPERATURES

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

##### Is the inspection result normal?

- YES >> Hot inlet hose and a warm outlet hose: GO TO 8  
NO >> Both hoses warm: GO TO 9

A

B

C

D

E

F

G

H

HAC

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P

## INSUFFICIENT HEATING

< SYMPTOM DIAGNOSIS >

[MANUAL AIR CONDITIONER]

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### 8. CHECK ENGINE COOLANT SYSTEM

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Check thermostat operation. Refer to [CO-20. "Removal and Installation"](#).

Is the inspection result normal?

YES >> System OK.

NO >> Repair or replace as necessary.

### 9. CHECK HEATER HOSES

---

Check heater hoses for proper installation.

Is the inspection result normal?

YES >> System OK.

NO >> 1. Back flush heater core.

2. Drain the water from the system.

3. Refill system with new engine coolant. Refer to [CO-12. "Changing Engine Coolant"](#).

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-23. "Removal and Installation"](#).



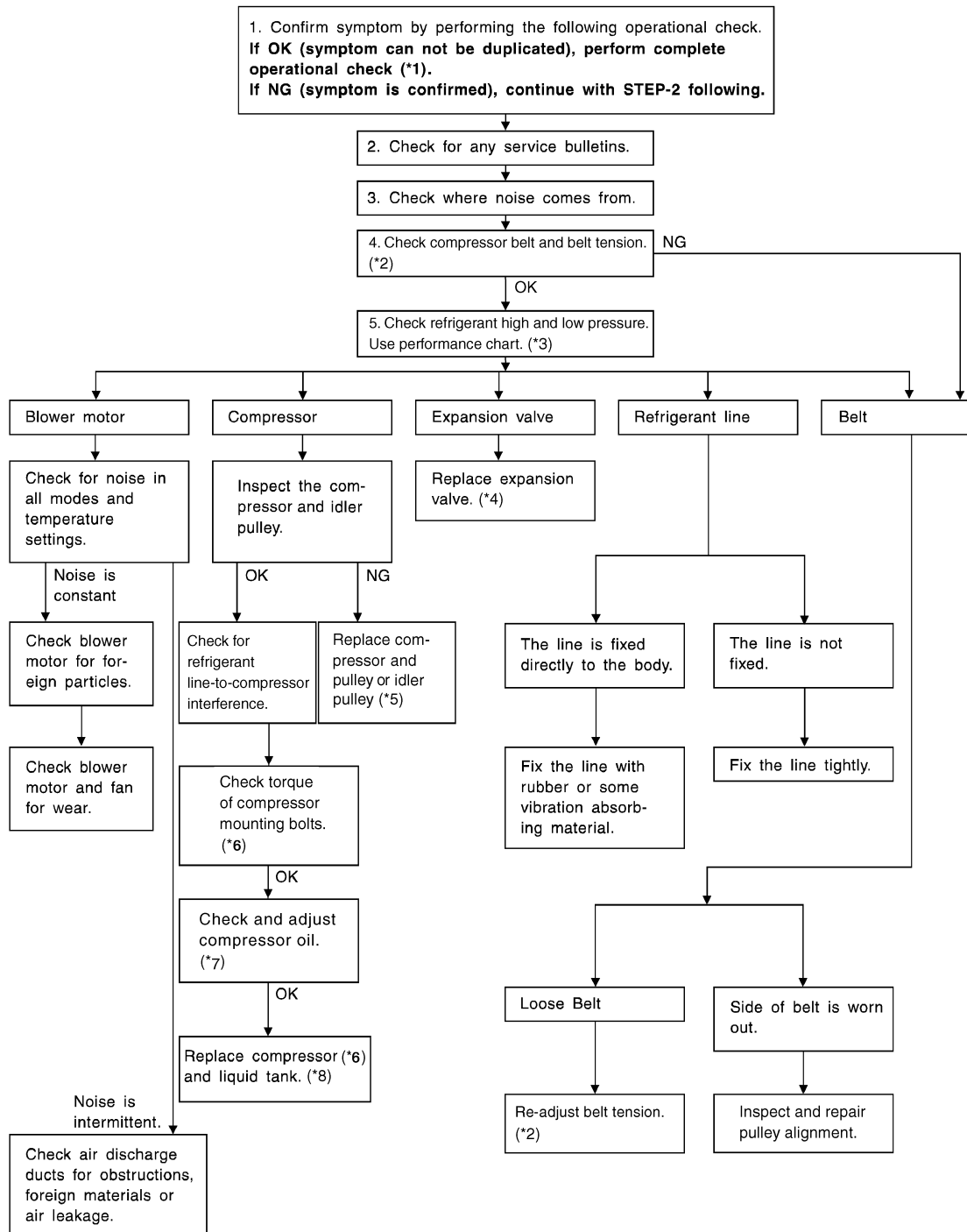
## NOISE

### Component Function Check

INFOID:000000006389058

SYMPTOM: Noise

### INSPECTION FLOW



AWI1A1241GB

\*1 [HAC-108, "Inspection Procedure"](#)

\*2 [EM-16, "Checking Drive Belts"](#)

\*3 [HAC-162, "Performance Chart"](#)

\*4 [HA-42, "Removal and Installation for Expansion Valve"](#)

\*5 [HA-31, "Removal and Installation for Compressor - QR25DE Models"](#)

\*6 [HA-31, "Removal and Installation for Compressor - QR25DE Models"](#)

\*7 [HA-31, "Removal and Installation for Compressor - QR25DE Models"](#)

\*8 [HA-19, "Maintenance of Oil Quantity in Compressor"](#)

\*9 [HA-38, "Removal and Installation for Condenser"](#)

## PRECAUTION

### PRECAUTIONS

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

INFOID:000000006921045

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

**WARNING:**

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

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

**WARNING:**

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

#### Precaution Necessary for Steering Wheel Rotation After Battery Disconnect

INFOID:000000006921047

**NOTE:**

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

This vehicle is equipped with a push-button ignition switch and a steering lock unit.

If the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

If turning the steering wheel is required with the battery disconnected or discharged, follow the procedure below before starting the repair operation.

#### OPERATION PROCEDURE

1. Connect both battery cables.

**NOTE:**

Supply power using jumper cables if battery is discharged.

2. Carry the Intelligent Key or insert it to the key slot and turn the push-button ignition switch to ACC position. (At this time, the steering lock will be released.)
3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
4. Perform the necessary repair operation.

# PRECAUTIONS

[MANUAL AIR CONDITIONER]

< PRECAUTION >

- When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the push-button ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the push-button ignition switch is turned to LOCK position.)
- Perform self-diagnosis check of all control units using CONSULT.

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

INFOID:000000006389061

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

## CONTAMINATED REFRIGERANT

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

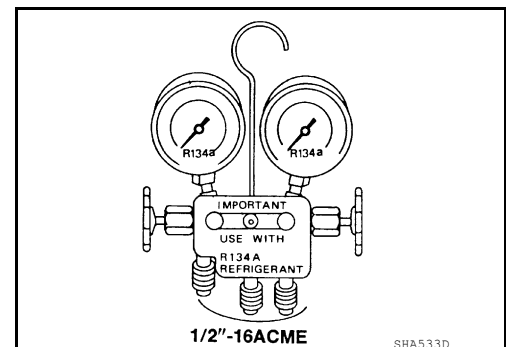
- Explain to the customer that environmental regulations prohibit the release of contaminated refrigerant into the atmosphere.
- Explain that recovery of the contaminated refrigerant could damage your service equipment and refrigerant supply.
- Suggest the customer return the vehicle to the location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

## Precaution for Service Equipment

INFOID:000000006389062

### 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.



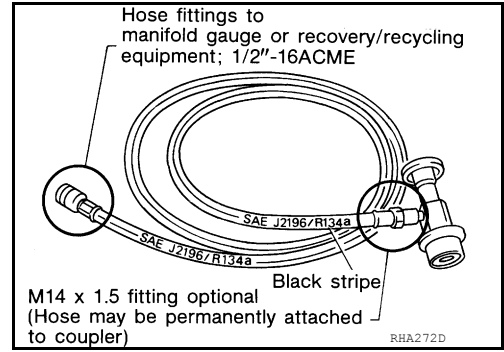
# PRECAUTIONS

[MANUAL AIR CONDITIONER]

## < PRECAUTION >

### SERVICE HOSES

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



### SERVICE COUPLERS

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

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

