SECTION HAC

HEATER & AIR CONDITIONING CONTROL SYSTEM

CONTENTS

MANUAL AIR CONDITIONING

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:0000000006484323

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-6, "Description & Inspection".

>> GO TO 3.

3.GO TO APPROPRIATE TROUBLE DIAGNOSIS

Go to appropriate trouble diagnosis (Refer to HAC-86, "Diagnosis Chart By Symptom" below).

>> GO TO 4.

4.REPAIR OR REPLACE

Repair or replace the specific parts.

>> GO TO 5.

5.FINAL CHECK

Final check.

Is the inspection result normal?

YES >> CHECK OUT
NO >> GO TO 3.

INSPECTION AND ADJUSTMENT

Description & Inspection

INFOID:0000000006484324

DESCRIPTION

The purpose of the operational check is to check that the individual system operates normally.

Conditions : Engine running at normal operating temperature

INSPECTION PROCEDURE

Blower

1. Turn fan control dial to 1st speed. Blower should operate on low speed.
2. Turn fan control dial to 2nd speed, and continue checking blower speed until all speeds are checked.
3. Leave blower on max. speed.

If NG, go to trouble diagnosis procedure for HAC-43, "Diagnosis Procedure".
If OK, continue the check.

Discharge Air

1. Turn mode control dial to each position.
2. Confirm that discharge air comes out according to the air distribution table. Refer to HAC-12, "System Description".

If NG, go to trouble diagnosis procedure for HAC-37, "Diagnosis Procedure".
If OK, continue the check.

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

Intake Air

1. Press intake switch. REC ( ) indicator turns ON.
2. Press intake switch again. FRE ( ) indicator turns ON.
3. Listen for intake door position change. (Slight change of blower sound can be heard.)

If NG, go to trouble diagnosis procedure for HAC-41, "Diagnosis Procedure".
If OK, continue the check.

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

A/C Switch

1. Turn fan control dial to AUTO position.
2. Press A/C switch. A/C switch indicator turns ON.
   - Confirm that the magnet clutch engages (sound or visual inspection). (Discharge air and blower speed depend on ambient, in-vehicle, and set temperatures.)

If NG, go to trouble diagnosis procedure for HAC-60, "Diagnosis Procedure", then if necessary, trouble diagnosis procedure for HAC-47, "Diagnosis Procedure".

Temperature Decrease

1. Turn temperature control dial counterclockwise until “18” position.
2. Check for cool air at discharge air outlets.

If NG, go to trouble diagnosis procedure for HAC-87, "Inspection procedure".
If OK, continue the check.

Temperature Increase

1. Turn temperature control dial clockwise until “32” position.
2. Check for warm air at discharge air outlets.

If NG, go to trouble diagnosis procedure for HAC-89, "Inspection procedure".
If OK, continue the check.

Go to Incident Simulation Tests in GI-41, "Work Flow" and perform tests as outlined to simulate driving conditions environment if all operational checks are OK (symptom cannot be duplicated). Refer to HAC-86, "Diagnosis Chart By Symptom" and perform applicable trouble diagnosis procedures if symptom appears.

Temperature Setting Trimmer

INFOID:0000000006484325

DESCRIPTION

The trimmer compensates for differences in range of ±3°C between temperature setting (temperature control dial position) and temperature felt by customer.

Operating procedures for this trimmer are as per the following:

1. Set fan control dial to OFF.
2. Turn ignition switch ON.
3. Set in self-diagnosis mode as per the following. Press intake switch for at least 5 seconds within 10 seconds after starting engine (ignition switch is turned ON.).
4. When intake switch is pressed, temperature shifts in following order: 0°C → +1°C → +2°C → +3°C → –3°C → –2°C → –1°C → return to 0°C.

Setting temperature	Indicator status of each switch		
	FRE	REC	A/C
+3°C	OFF	ON	ON
+2°C	OFF	ON	OFF
+1°C	OFF	OFF	ON
0°C (Initial setting)	OFF	OFF	OFF
–1°C	ON	OFF	ON
–2°C	ON	ON	OFF
–3°C	ON	ON	ON

NOTE:
When battery cable is disconnected or battery voltage is below 9 V, trimmer operation is canceled. Temperature set becomes that of initial condition, i.e. 0°C.

Foot Position Setting Trimmer

INFOID:0000000006484326

DESCRIPTION

Wind distribution ratio in FOOT mode can be set.

Operating procedures for this trimmer are as per the following:

1. Set fan control dial to OFF.
2. Turn ignition switch ON.
3. Set in self-diagnosis mode as per the following. Press intake switch for at least 5 seconds within 10 seconds after starting engine (ignition switch is turned ON.).
4. Set fan control dial to AUTO.
5. Press intake switch as desired.

Type	Indicator status of each switch			Defroster door position	
	FRE	REC	A/C	Automatically controls the FOOT mode	Manually controls the FOOT mode
Type-A (Initial setting)	OFF	OFF	ON	OPEN	CLOSE
Type-B	OFF	ON	OFF	OPEN	OPEN
Type-C	OFF	ON	ON	CLOSE	OPEN
Type-D	ON	OFF	OFF	CLOSE	CLOSE

NOTE:
When battery cable is disconnected or battery voltage is below 9 V, memory function is canceled. Memory function set becomes that of initial condition.

SYSTEM DESCRIPTION

COMPRESSOR CONTROL FUNCTION

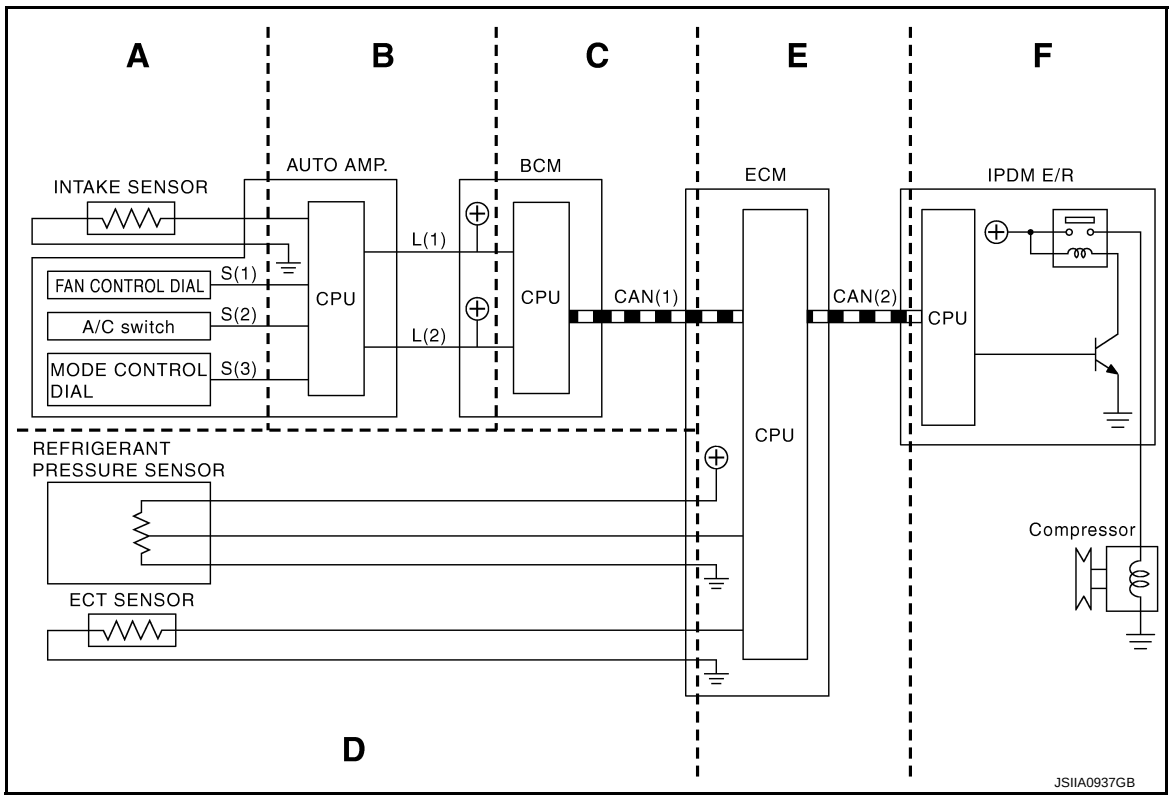
Description

INFOID:0000000006484327

PRINCIPLE OF OPERATION

Compressor is not activated.

Functional circuit diagram



L (1) : Fan ON signal
L (2) : A/C switch signal
S (1) : Fan ON signal
S (2) : A/C switch signal
S (3) : Defroster signal
CAN (1) : A/C switch signal
CAN (2) : A/C compressor request signal

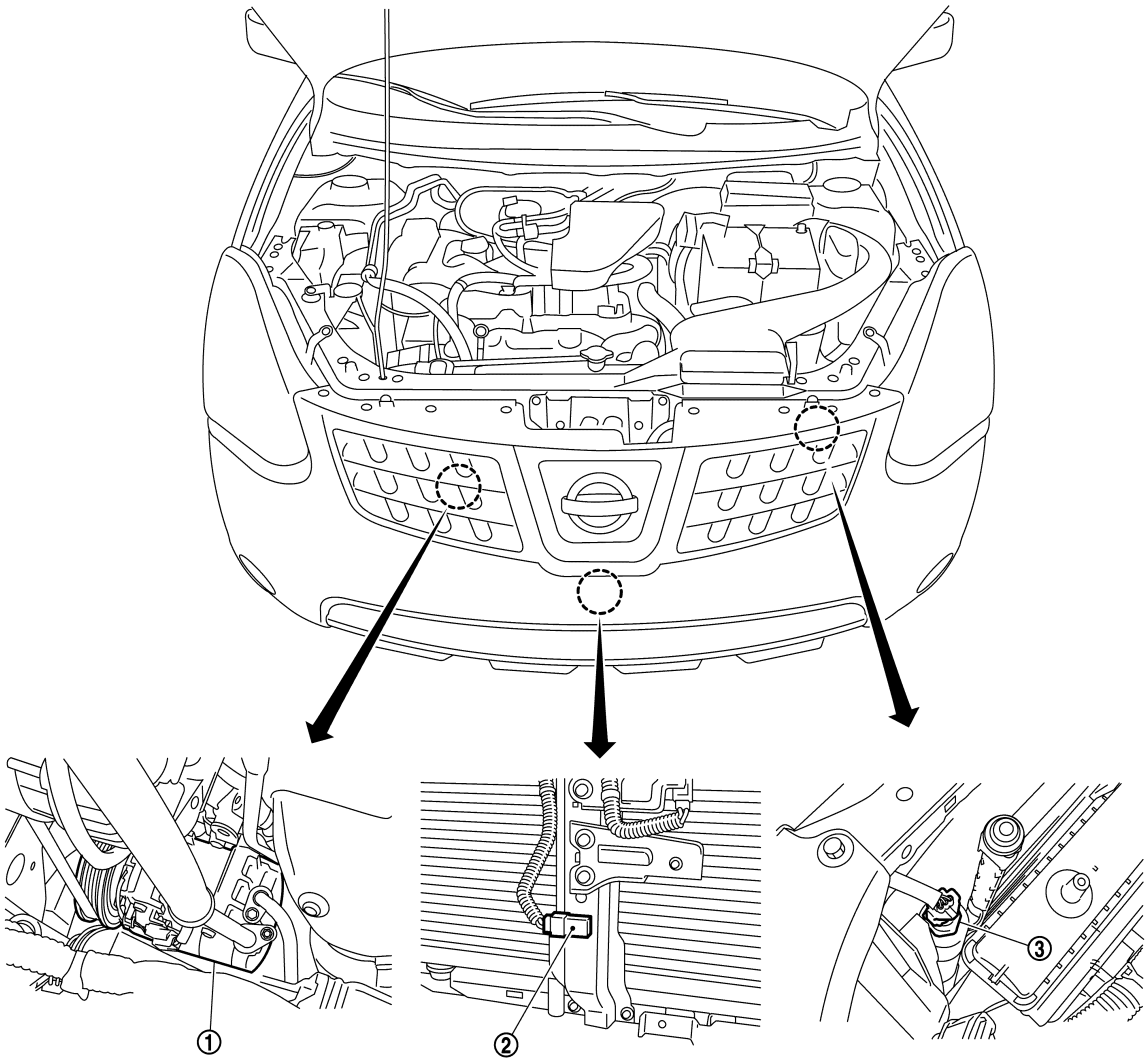
Functional initial inspection chart

Location		A	B	C	D	E	F
CONSULT-III	ECM DATA MONITOR				Yes	Yes	
	BCM DATA MONITOR		Yes	Yes			
	IPDM E/R DATA MONITOR					Yes	
AUTO ACTIVE TEST							Yes
Self-diagnosis function (except CAN diagnosis)		Yes	Yes				

Component Part Location

INFOID:0000000006484328

ENGINE COMPARTMENT



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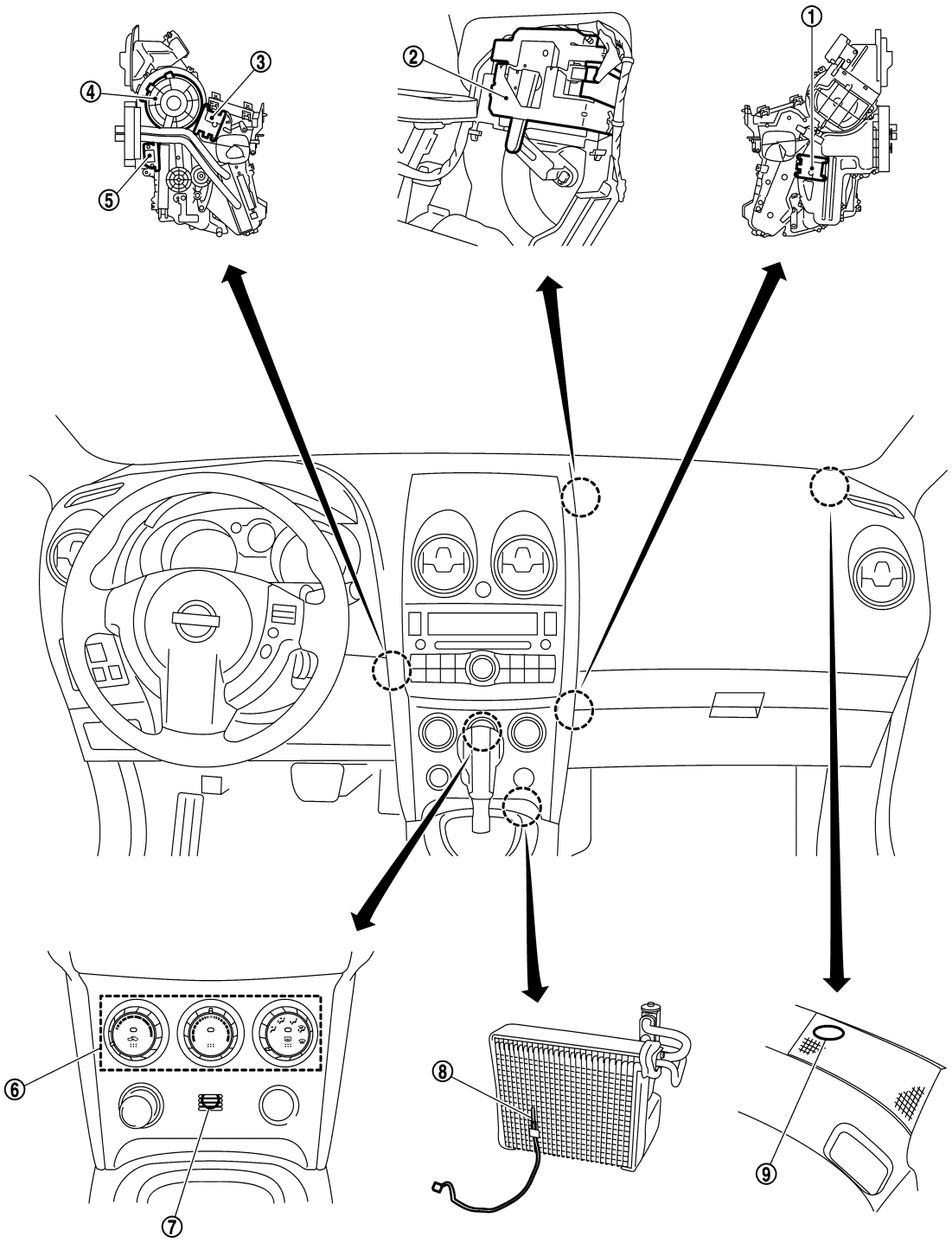
1. Compressor (Magnet clutch) 2. Ambient sensor 3. Refrigerant pressure sensor

PASSENGER COMPARTMENT



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1. Air mix door motor
2. Intake door motor
3. Mode door motor
4. Blower motor
5. Fan control amp.
6. Auto amp.
7. In-vehicle sensor
8. Intake sensor
9. Sunload sensor

Component Description

INFOID:0000000006484329

Component	Reference
Air mix door motor	HAC-39, "Description"
Ambient sensor	HAC-51, "Description"
Auto amp.	HAC-60, "Description"
Blower motor	HAC-43, "Description"
Compressor	HAC-47, "Description"
Fan control amp.	HAC-45, "Component Inspection (Blower Motor)"
Intake door motor	HAC-41, "Description"
Intake sensor	HAC-58, "Description"
In-vehicle sensor	HAC-53, "Description"
Mode door motor	HAC-37, "Description"
Refrigerant pressure sensor	EC-448, "Description" (For California), EC-900, "Description" [For USA (Federal) and Canada], EC-1246, "Description" (For Mexico)
Sunload sensor	HAC-55, "Description"

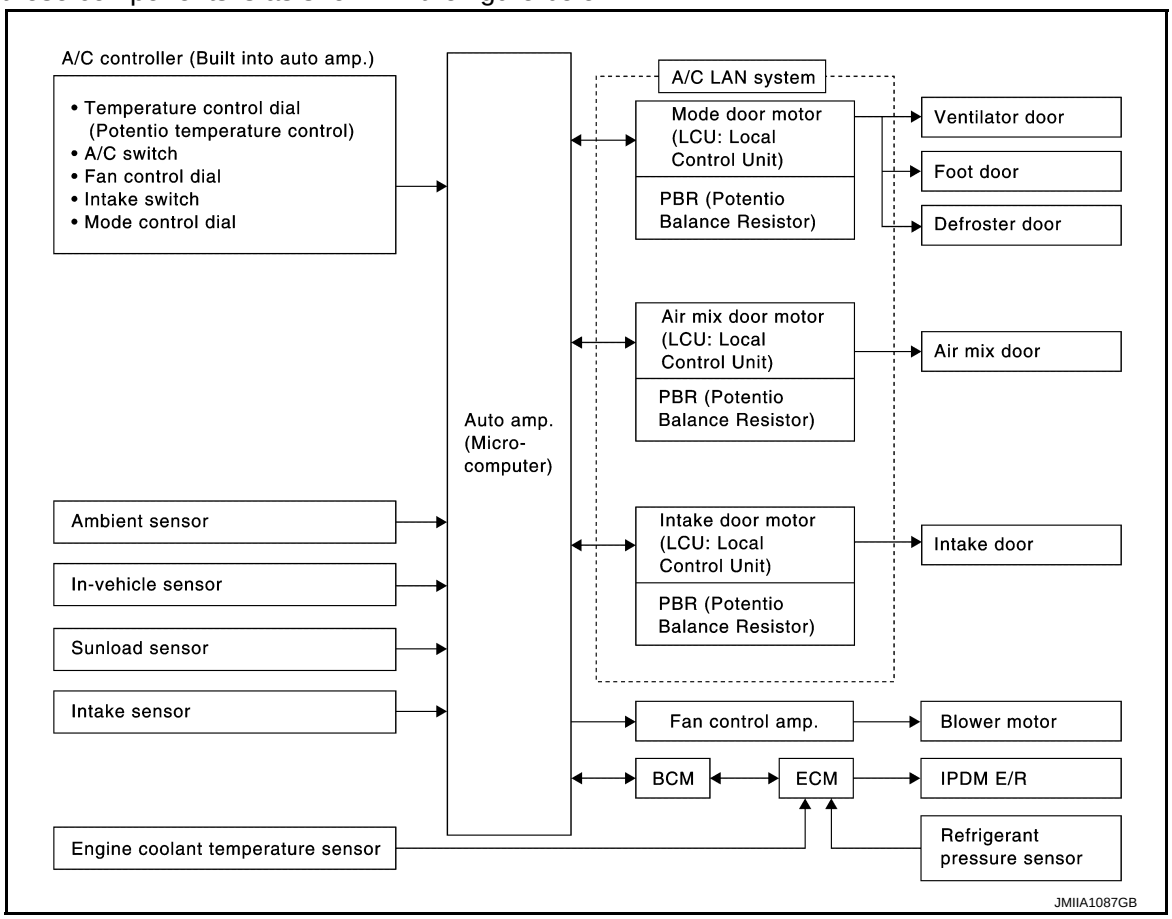
AUTOMATIC AIR CONDITIONER SYSTEM

System Diagram

INFOID:0000000006484330

CONTROL SYSTEM

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

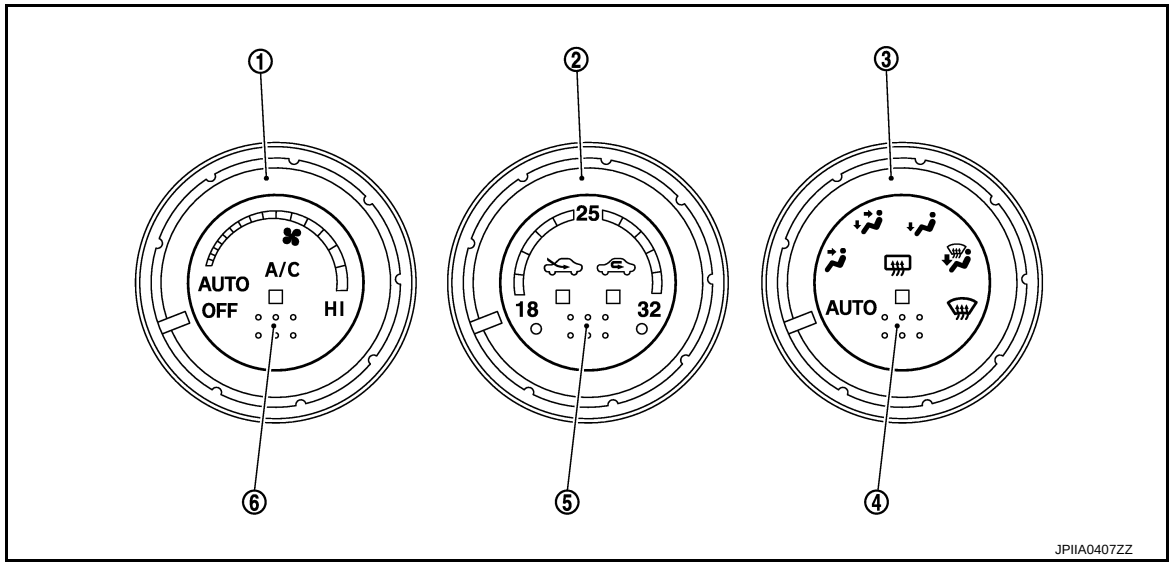


System Description

INFOID:0000000006484331

CONTROL OPERATION

Controller



1. Fan control dial
2. Temperature control dial
3. Mode control dial
4. Rear window defogger switch
5. Intake switch
6. A/C switch

1. Fan Control Dial

The blower speed is automatically or manually controlled with this dial. 25th speeds are available for manual control.

2. Temperature Control Dial (Potentio Temperature Control)

The set temperature is increased or decreased with this dial.

3. Mode Control Dial

The air discharge outlets is controlled by this dial.

Mode doors are set to the DEF ( ) position with this dial. Also, intake doors are set to the outside air position. When shifting mode control dial to DEF ( ) position under the following conditions, compressor is turned ON. (A/C indicator ON)

- Fan control dial: Except OFF
- A/C switch: OFF

4. Rear Window Defogger Switch

When illumination is ON, rear window is defogged.

5. Intake Switch

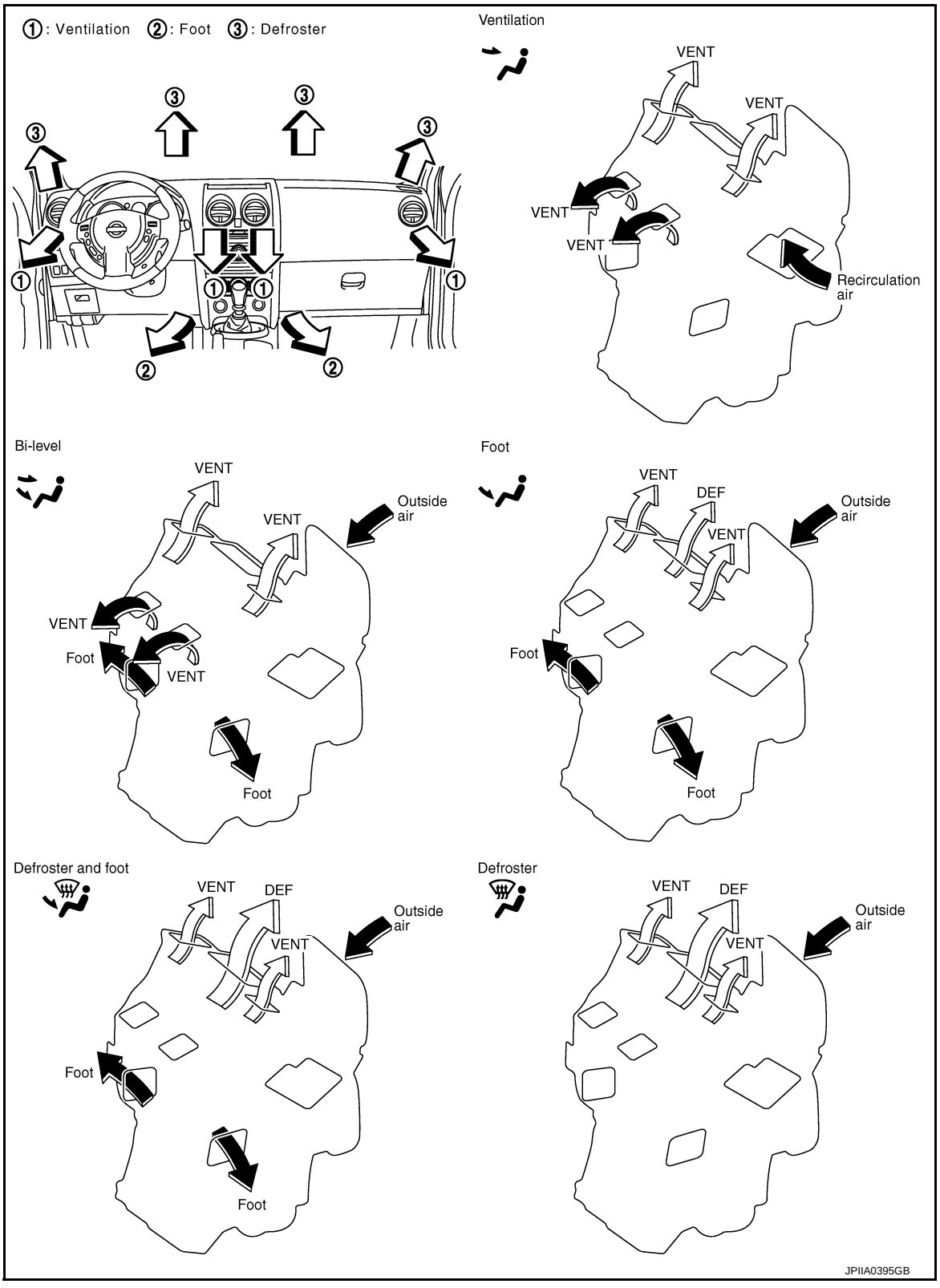
- When intake switch is ON, FRE ( ) indicator turns ON, and air inlet is fixed to FRE.
- When intake switch is pressed again, REC ( ) indicator turns ON, and air inlet is fixed to REC.
- When intake switch is pressed for approximately 1.5 seconds or longer, REC and FRE indicator blink twice. Then, automatic control mode is entered. Inlet status is displayed even during automatic control.
- Intake switch is automatically fixed to FRE mode when mode control dial is turned in DEF, or when compressor is turned from ON to OFF. Press intake switch to enter REC mode.

6. A/C Switch

Compressor is ON or OFF with this switch.

(Pressing the A/C switch when the fan control dial is ON turns OFF the A/C switch and compressor.)

DISCHARGE AIR FLOW



AIR DISTRIBUTION

Without Rear Foot Duct

Discharge air flow			
Mode door position	Air outlet/distribution		
	VENT	FOOT	DEF
	100%	—	—
	63%	37%	—
	13%	63%	24%
	12%	41%	47%
	18%	—	82%

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With Rear Foot Duct

Discharge air flow				
Mode door position	Air outlet/distribution			
	VENT	FOOT		DEF
		Front	Rear	
	100%	—	—	—
	60%	26%	14%	—
	13%	42%	24%	21%
	12%	28%	16%	44%
	18%	—	—	82%

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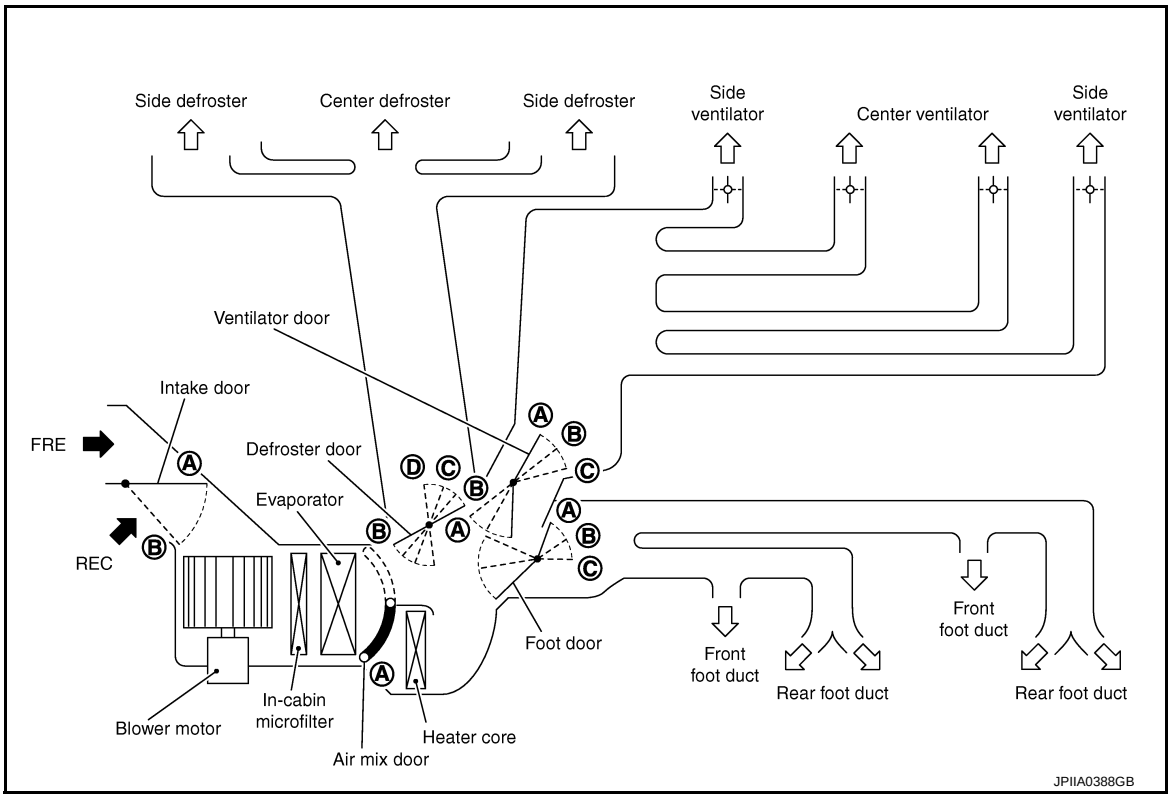
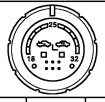
SWITCHES AND THEIR CONTROL FUNCTION



NOTE:
Ventilator door has center ventilator openings and side ventilator openings, side ventilator opening cannot be completely closed.

Position or switch / Door	Mode control dial								Intake switch		Temperature control dial		
	VENT	B/L	FOOT	FOOT2	D/F	D/F2	DEF	AUTO					
				—		—		—					
											18°C	⇔	32°C
Ventilator door	Ⓐ	Ⓑ	Ⓒ	Ⓒ	Ⓒ	Ⓒ	Ⓒ	AUTO	—		—		
Foot door	Ⓐ	Ⓑ	Ⓒ	Ⓑ	Ⓒ	Ⓑ	Ⓐ		—		—		
Defroster door	Ⓐ	Ⓐ	Ⓐ or Ⓑ *1	Ⓑ–Ⓒ	Ⓒ	Ⓒ–Ⓓ	Ⓓ		—		—		
Intake door	—						Ⓑ	—	Ⓐ *2 AUTO	Ⓑ *2 AUTO	—		
Air mix door	—						—	AUTO	—		Ⓐ	AUTO	Ⓑ

*1: This door position is selected only when the mode door is automatically controlled.
*2: Inlet status is displayed during automatic control.

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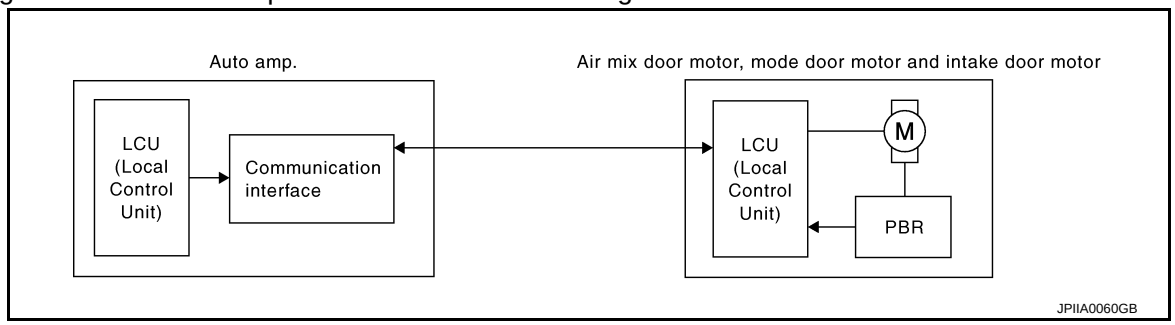
AIR CONDITIONER LAN CONTROL SYSTEM

The LAN (Local Area Network) system consists of auto amp., mode door motor, air mix door motor and intake door motor.

A configuration of these components is as shown in the figure below.



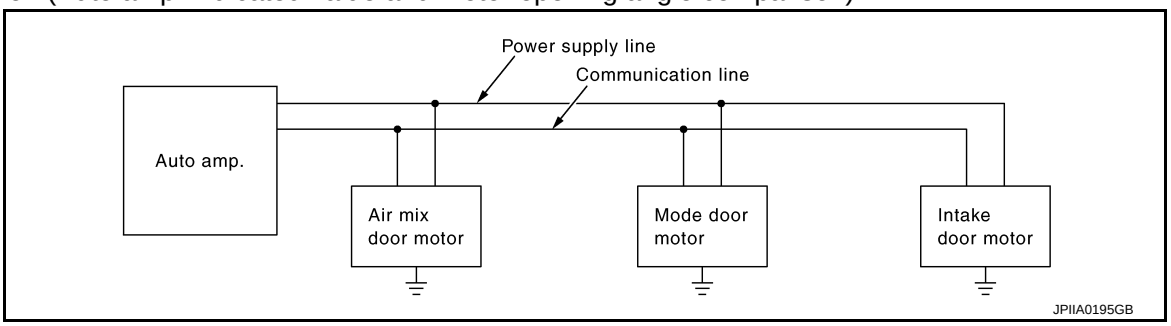
SYSTEM CONSTRUCTION

A small network is constructed between the auto amp., mode door motor, air mix door motor and intake door motor. The auto amp. and motors are connected by data transmission lines and motor power supply lines. The LAN network is built through the ground circuits of each door motor.

Addresses, motor opening angle signals, motor stop signals and error checking messages are all transmitted through the data transmission lines connecting the auto amp. and each door motor.

The following functions are contained in LCUs built into the mode door motor, the air mix door motor and the intake door motor.

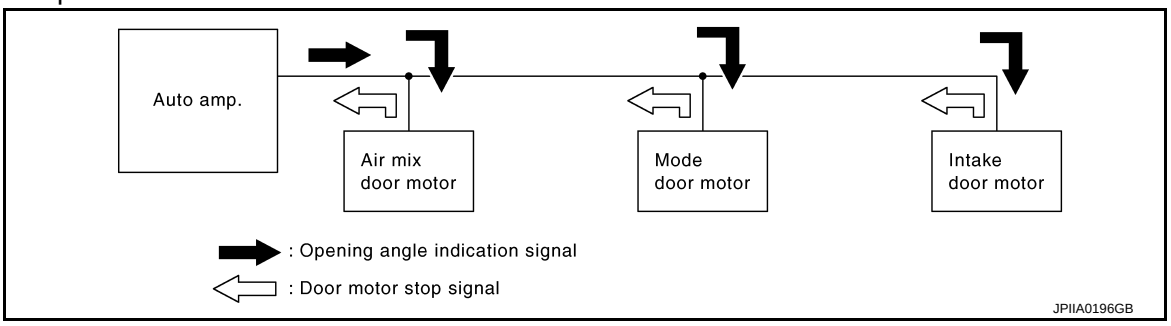
- Address
- Motor opening angle signals
- Data transmission
- Motor stop and drive decision
- Opening angle sensor (PBR function)
- Comparison
- Decision (Auto amp. indicated value and motor opening angle comparison)



Operation

The auto amp. receives data from each of the sensors. The auto amp. sends mode door, air mix door and intake door opening angle data to the mode door motor LCU, air mix door motor LCU 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 auto amp. and each of the motor position sensors is compared by the LCUs in each door motor with the existing decision and opening angles. Subsequently, HOT/COLD, DEF/VENT and FRE/REC operation is selected. The new selection data is returned to the auto amp.



Transmission Data and Transmission Order

Auto amp. data is transmitted consecutively to each of the door motor following the form as shown in the figure below.

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

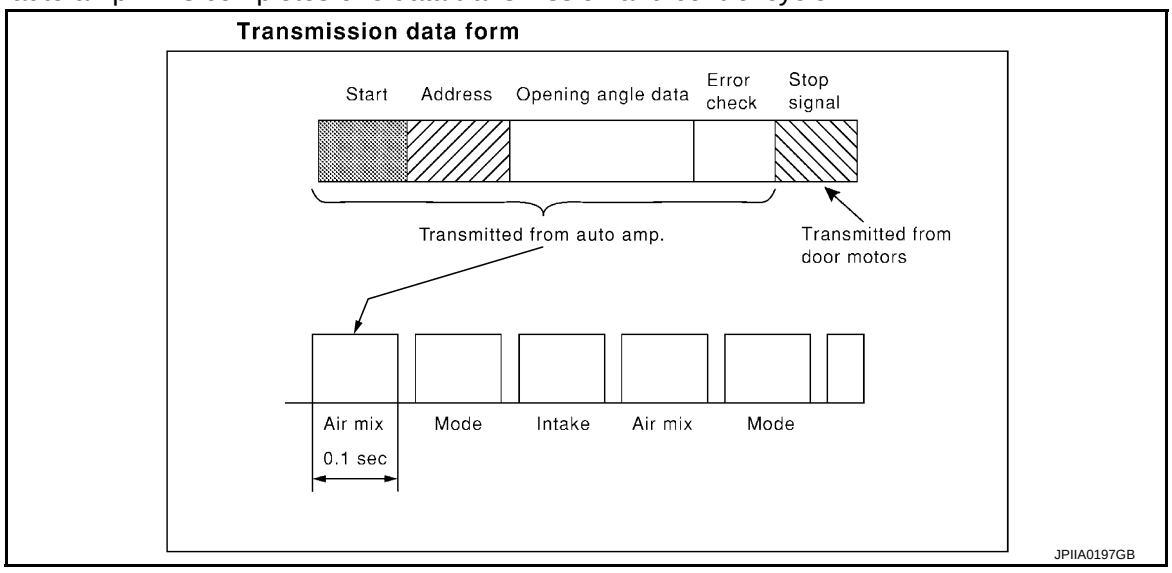
ADDRESS:
- Data sent from the auto amp. are selected according to data-based decisions made by the mode door motor, air mix door motor and intake door motor.
- If the addresses are identical, the opening angle data and error check signals are received by the door motor LCUs. The LCUs then make the appropriate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

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

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

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

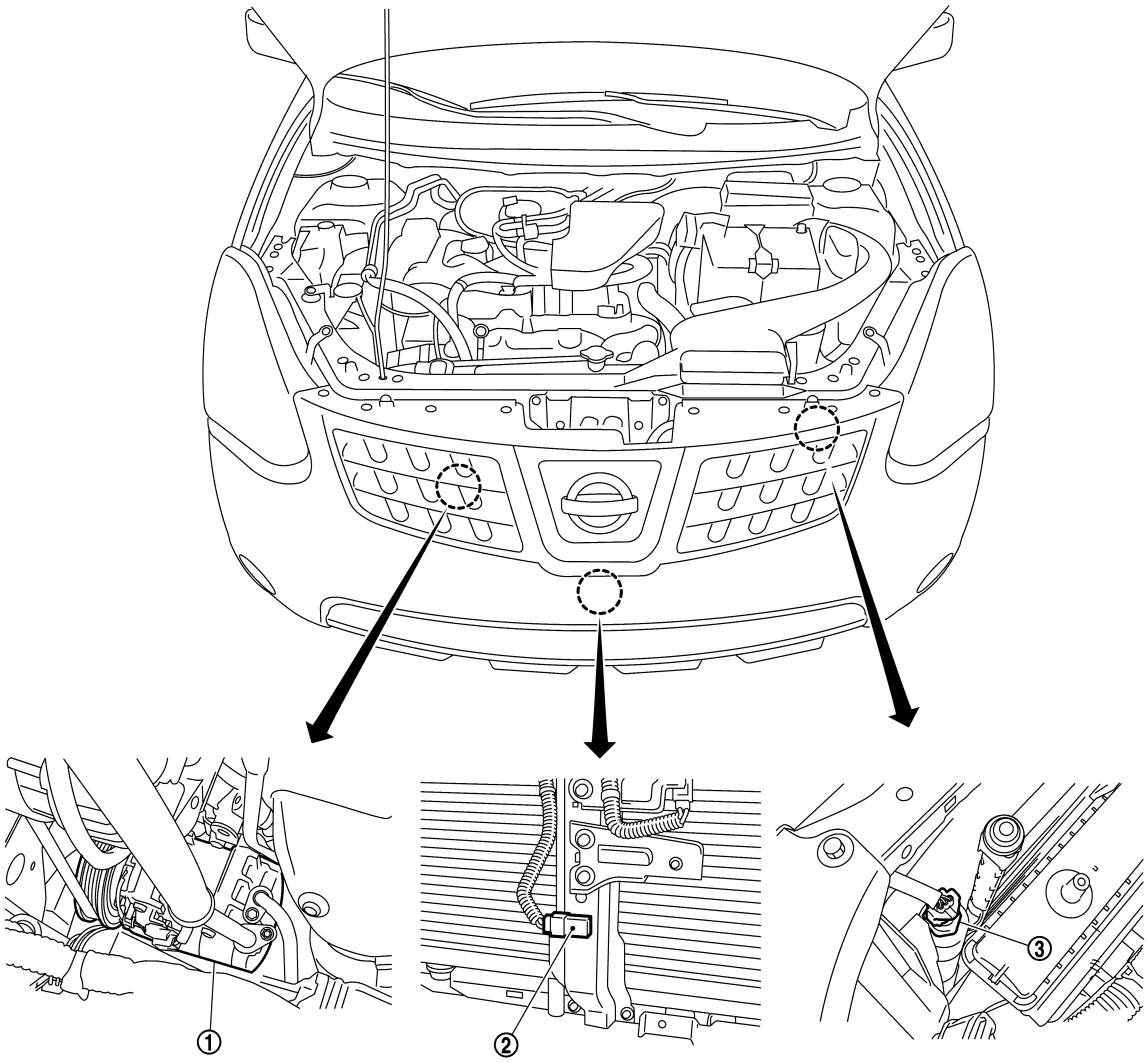
STOP SIGNAL:
- At the end of each transmission, a stop operation, in-operation, or internal malfunction message is delivered to the auto amp. This completes one data transmission and control cycle.



Component Part Location

INFOID:0000000006484332

ENGINE COMPARTMENT



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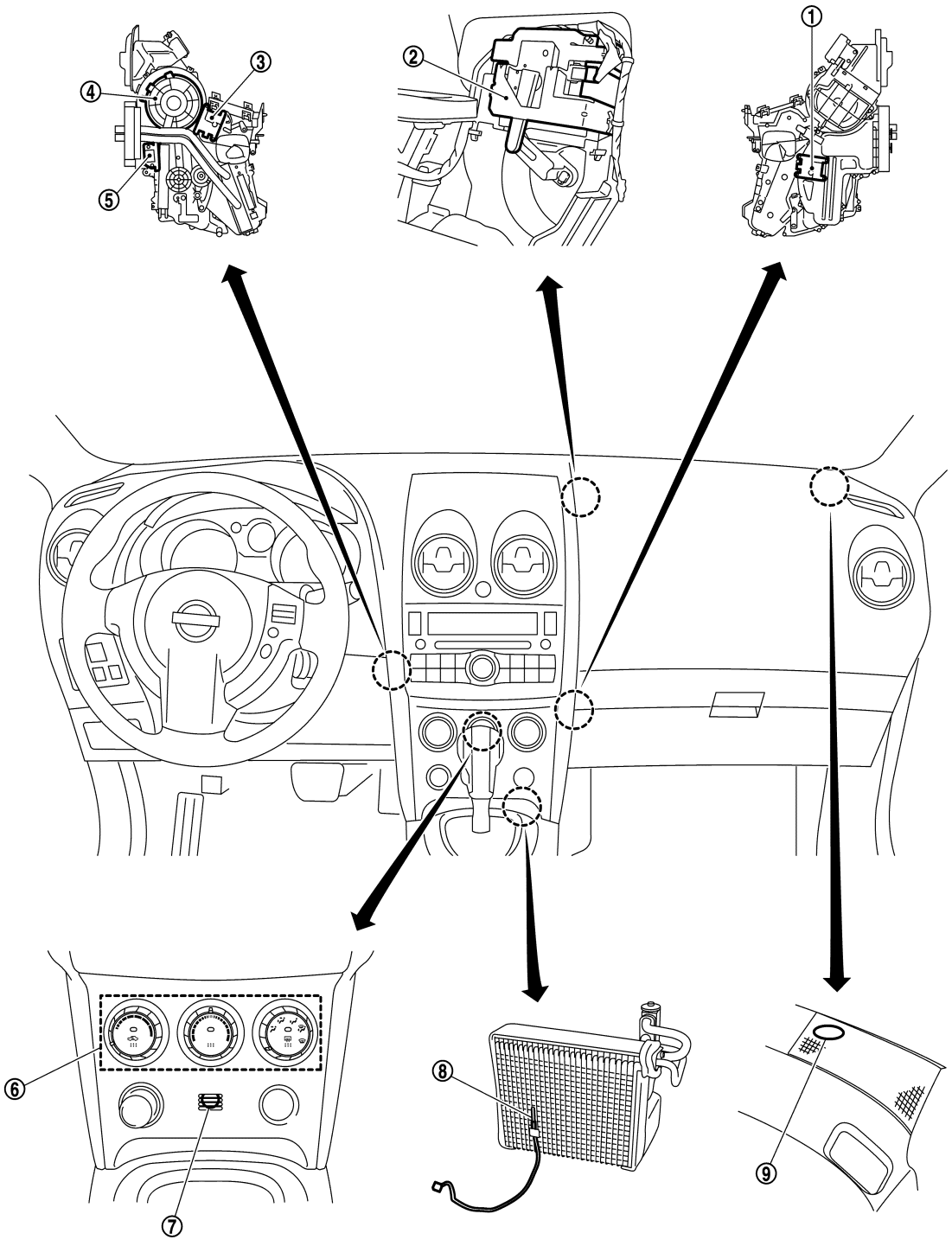
1. Compressor (Magnet clutch) 2. Ambient sensor 3. Refrigerant pressure sensor

PASSENGER COMPARTMENT



JMIIA1082ZZ

1. Air mix door motor
2. Intake door motor
3. Mode door motor
4. Blower motor
5. Fan control amp.
6. Auto amp.
7. In-vehicle sensor
8. Intake sensor
9. Sunload sensor

Component Description

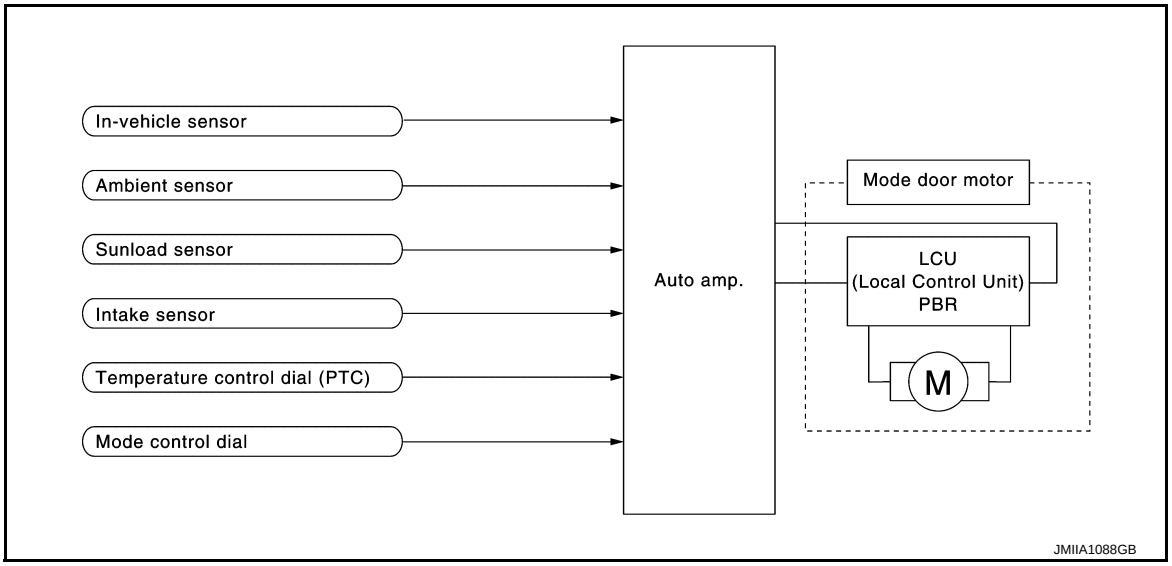
INFOID:0000000006484333

Component	Reference
Air mix door motor	HAC-39, "Description"
Ambient sensor	HAC-51, "Description"
Auto amp.	HAC-60, "Description"
Blower motor	HAC-43, "Description"
Compressor	HAC-47, "Description"
Fan control amp.	HAC-45, "Component Inspection (Blower Motor)"
Intake door motor	HAC-41, "Description"
Intake sensor	HAC-58, "Description"
In-vehicle sensor	HAC-53, "Description"
Mode door motor	HAC-37, "Description"
Refrigerant pressure sensor	EC-448, "Description" (For California), EC-900, "Description" [For USA (Federal) and Canada], EC-1246, "Description" (For Mexico)
Sunload sensor	HAC-55, "Description"

MODE DOOR CONTROL SYSTEM

System Diagram

INFOID:0000000006484337



System Description

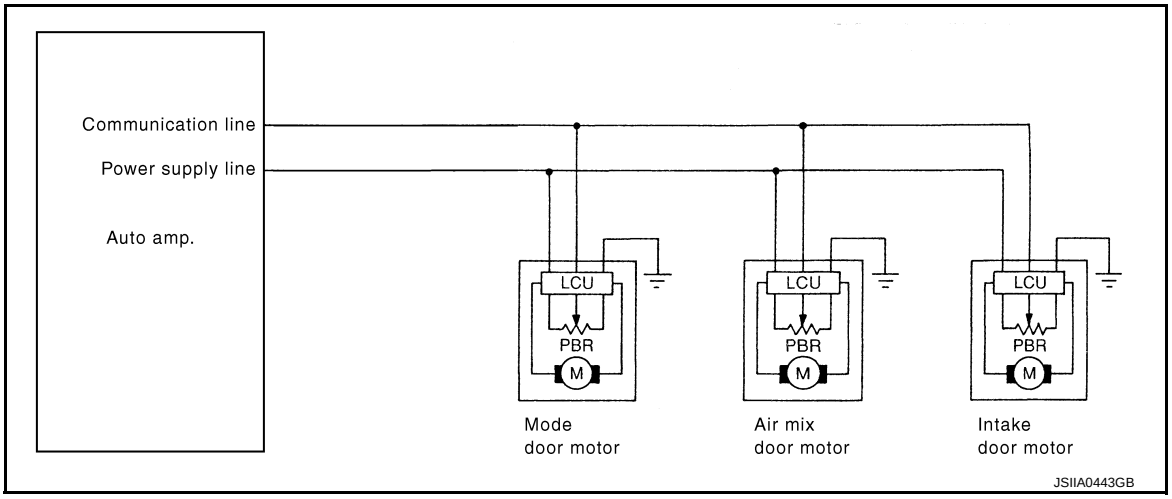
INFOID:0000000006484338

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

SYSTEM OPERATION

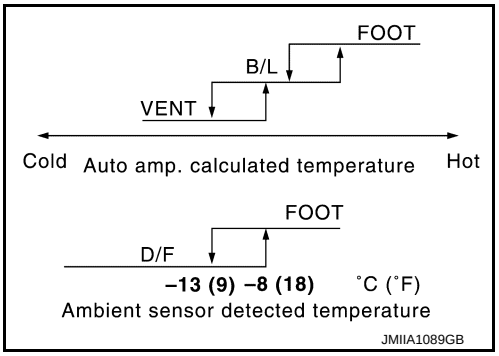
- The auto amp. receives data from each of the sensors.
- The auto amp. sends air mix door, mode door and intake door opening angle data to the air mix door motor LCU, mode door motor LCU and intake door motor LCU.
- The air mix door motor, mode door motor and intake door motor read their respective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

Door Motor Circuit



Mode Door Control Specification

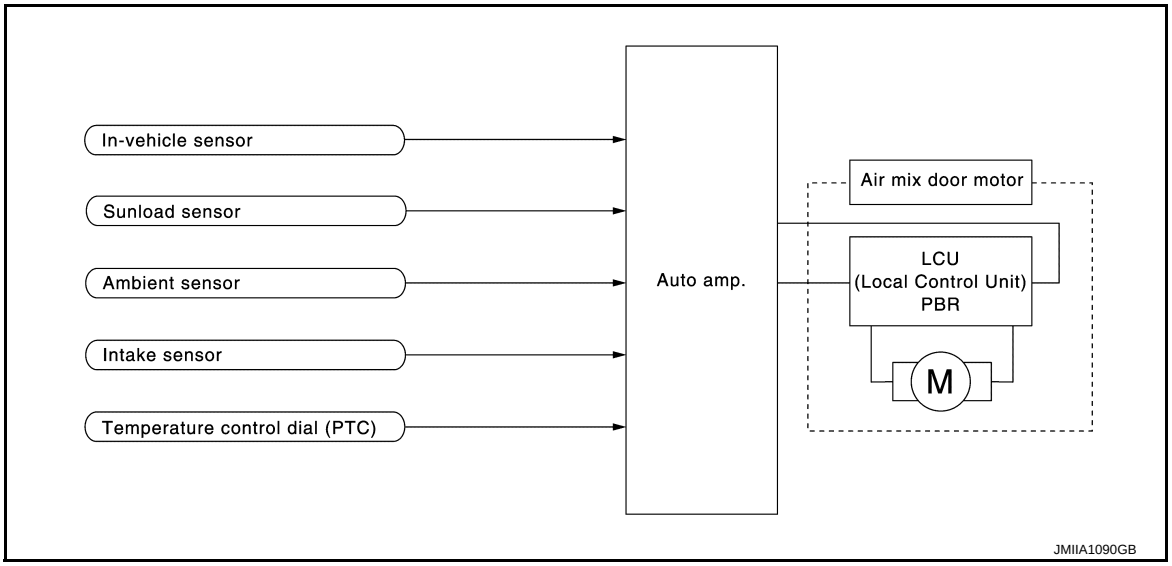
The mode position (auto-control or manual control) can be selected by mode control dial of the controller. Under automatic control, a mode door position (VENT, B/L, FOOT, or D/F) is selected depending on the (wind/air) temperature calculated by auto amp. based on a target air mix door opening angle and sunload. Also, D/F is selected to prevent windshield fogging especially when ambient temperature is extremely low with mode position FOOT.



AIR MIX DOOR CONTROL SYSTEM

System Diagram

INFOID:0000000006484339



System Description

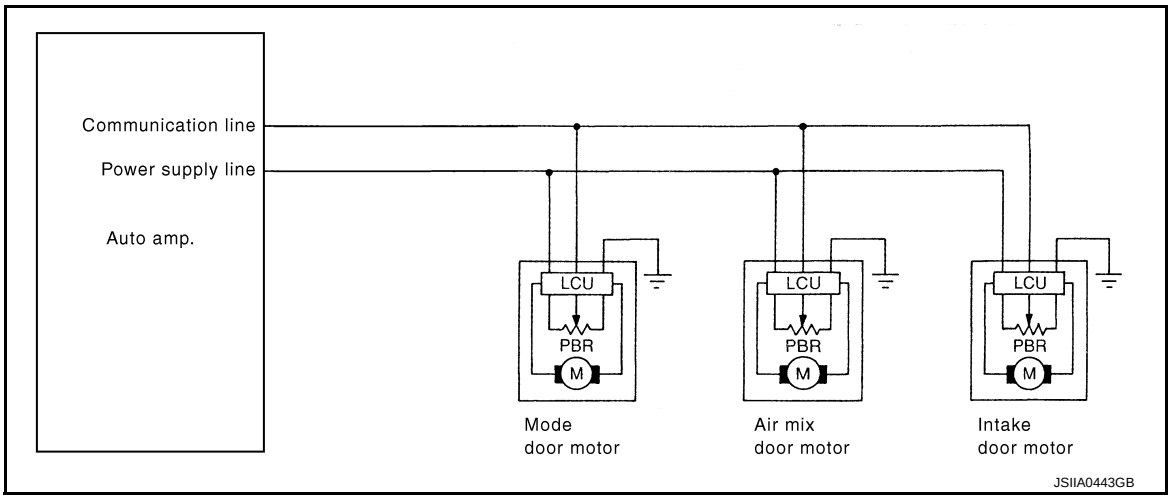
INFOID:0000000006484340

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

SYSTEM OPERATION

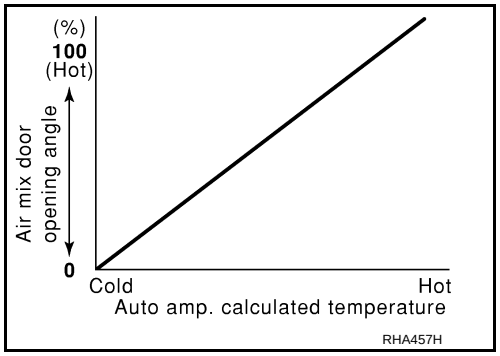
- The auto amp. receives data from each of the sensors.
- The auto amp. sends air mix door, mode door and intake door opening angle data to the air mix door motor LCU, mode door motor LCU and intake door motor LCU.
- The air mix door motor, mode door motor and intake door motor read their respective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

Door Motor Circuit



Air Mix Door Control Specification

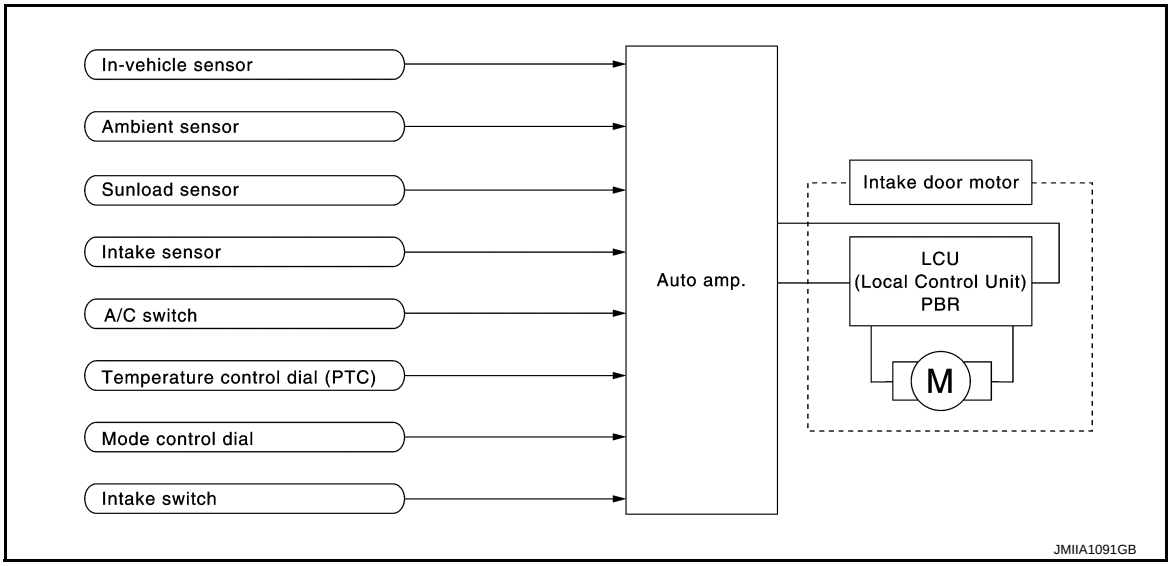
When ignition switch is ON, auto amp. continuously and automatically controls temperatures regardless of air conditioner operational condition. When setting a target temperature with temperature control dial, auto amp. corrects the set temperature and decides a target air mix door opening angle. Auto amp. controls air mix door according to the target air mix door opening angle and current air mix door opening angle for keeping an optimum air mix door opening angle. When a temperature control dial is set at “18”, air mix door is fixed at full cold, and when a temperature control dial is set at “32”, it is set at full hot.



INTAKE DOOR CONTROL SYSTEM

System Diagram

INFOID:0000000006484341



System Description

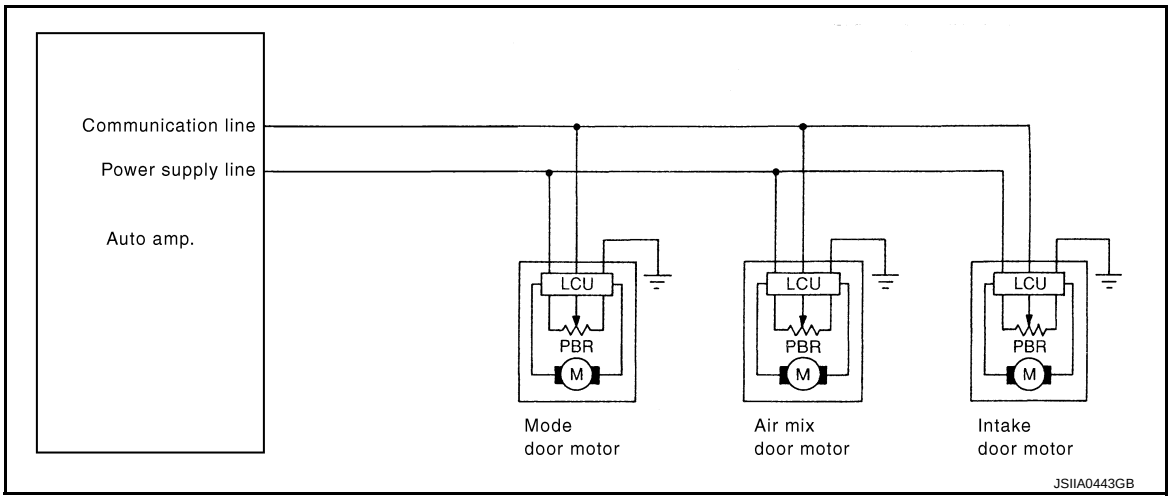
INFOID:0000000006484342

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

SYSTEM OPERATION

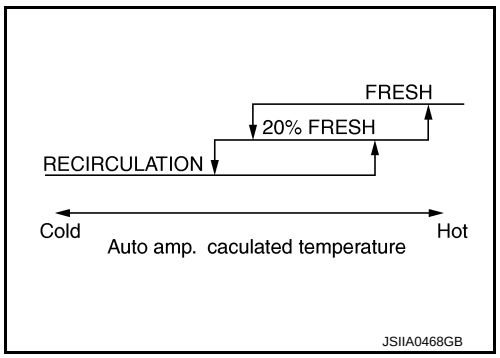
- The auto amp. receives data from each of the sensors.
- The auto amp. sends air mix door, mode door and intake door opening angle data to the air mix door motor LCU, mode door motor LCU and intake door motor LCU.
- The air mix door motor, mode door motor and intake door motor read their respective signals according to the address signal. Opening angle indication signals received from the auto amp. and each of the motor position sensors are compared by the LCUs in each door motor with the existing decision and opening angles.
- Subsequently, HOT/COLD, DEF/VENT and FRE/REC operation is selected. The new selection data are returned to the auto amp.
- The intake door control judges intake door position based on the ambient temperature, the intake air temperature and the in-vehicle temperature. When setting mode control dial to DEF position, fan control dial OFF position, the auto amp. sets the intake door at the FRE position.

Door Motor Circuit



Intake Door Control Specification

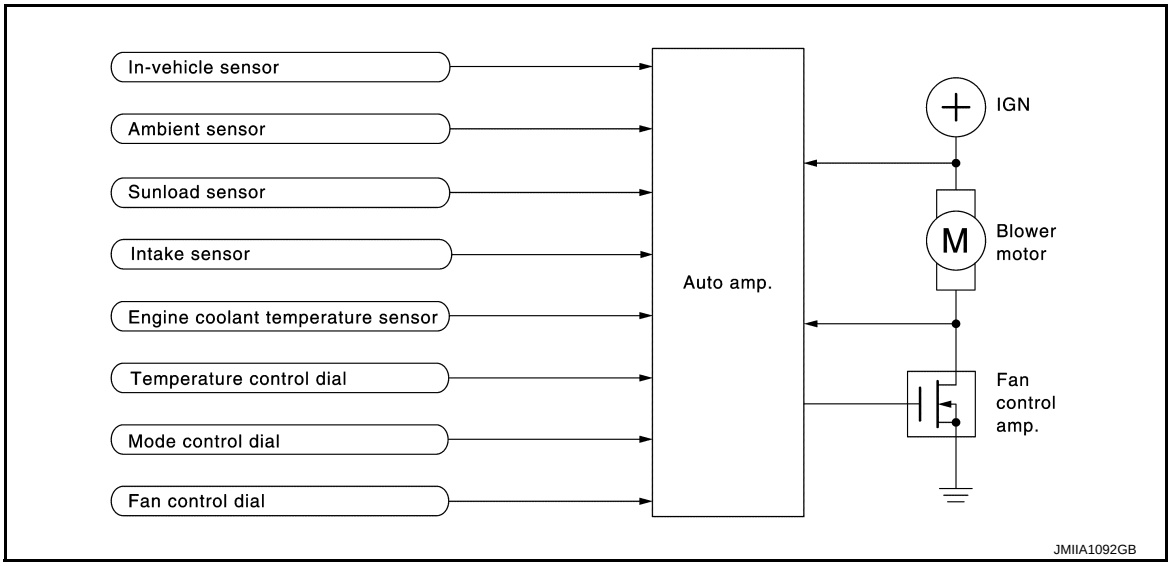
- Intake door position is basically fixed at FRE when FRE indicator of intake switch turns ON or mode control dial to DEF position, and fixed at REC when REC indicator of intake switch turns ON.
- Intake door automatic control selects FRE, 20%FRE, or REC depending on a target air mix door opening angle, based on in-vehicle temperature, ambient temperature, and sunload.



BLOWER MOTOR CONTROL SYSTEM

System Diagram

INFOID:0000000006484343



System Description

INFOID:0000000006484344

Blower speed is automatically controlled by the temperature setting, ambient temperature, in-vehicle temperature, intake temperature, amount of sunload and air mix door position.
With shifting fan control dial to AUTO, the blower motor starts to increase gradually air flow volume.
When engine coolant temperature is low, the blower motor operation is delayed to prevent cool air from flowing.

SYSTEM OPERATION

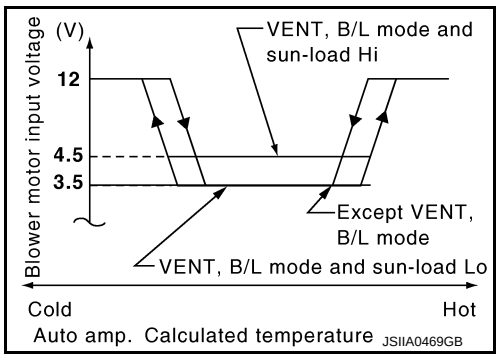
Automatic Mode
- In the automatic mode, the blower motor speed is calculated by the auto amp. based on the input from the PBR, in-vehicle sensor, sunload sensor, intake sensor and ambient sensor.
- The blower motor applied voltage ranges from approximately 4 V (lowest speed) to 12 V (highest speed).
- The control blower speed (in the range of 4 to 12 V), auto amp. supplies a gate voltage to the fan control amp.
  Based on this voltage, fan control amp. control voltage supplied to the blower motor.

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

Start up from usual or HOT SOAK Condition (Automatic mode)
- The blower will begin operation momentarily after the AUTO switch is pressed. The blower speed rises gradually to the objective speed over a time period of 3 seconds or less (actual time depends on the objective blower speed).

Blower Speed Compensation
Sunload
When the in-vehicle temperature and the set temperature are very close, the blower operates at low speed. The low speed varies depending on the sunload. During conditions of low or no sunload, the blower speed is low (approximately 4 V). During high sunload conditions, the auto amp. raise the blower speed (approximately 4.5 V).

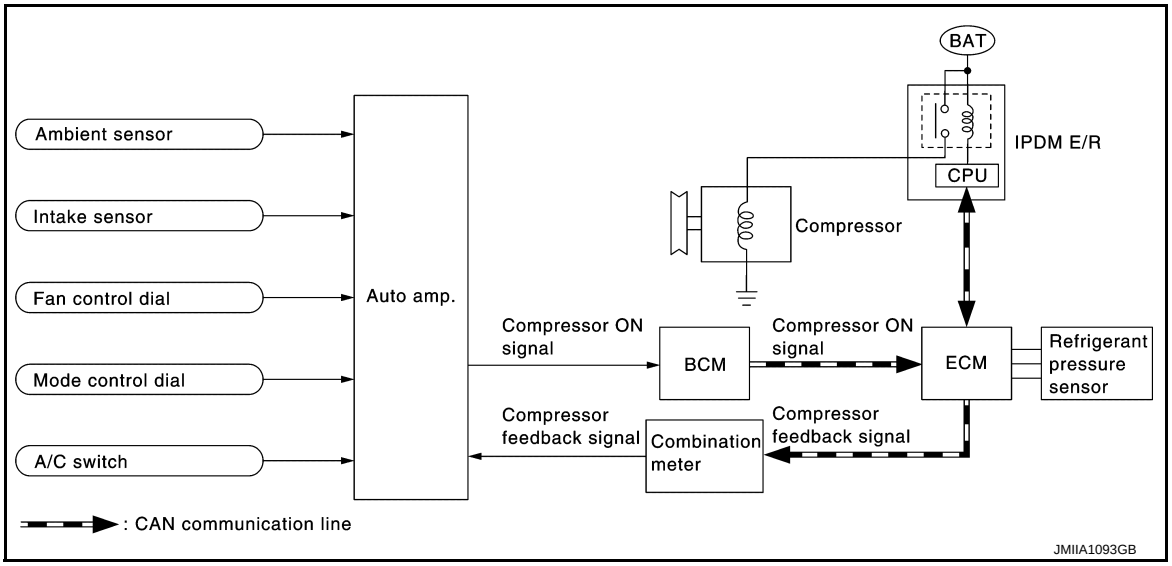
Fan Speed Control Specification



MAGNET CLUTCH CONTROL SYSTEM

System Diagram

INFOID:0000000006484345



System Description

INFOID:0000000006484346

Auto amp. controls compressor operation by ambient temperature, intake air temperature and signal from ECM.

SYSTEM OPERATION

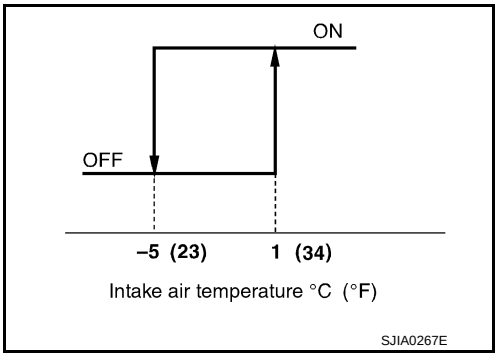
- Turn fan control dial to ON or set mode control dial to DEF position when A/C switch is pressed, auto amp. transmits compressor ON signal to BCM.
- BCM sends compressor ON signal to ECM, via CAN communication.
- ECM judges whether compressor can be turned ON, based on each sensor status (refrigerant-pressure sensor signal, throttle angle, etc.). If it judges compressor can be turned ON, it sends compressor ON signal to IPDM E/R, via CAN communication.
- Upon receipt of compressor ON signal from ECM, IPDM E/R turns air conditioner relay ON to operate compressor.
- When sending compressor ON signal to IPDM E/R via CAN communication, ECM simultaneously sends compressor feedback signal to auto amp. via CAN communication.
- Combination meter transmits compressor feedback signal to auto amp.
- Auto amp., then, uses input compressor feedback signal to control air inlet.

Compressor Protection Control

When the high-pressure side detected by the refrigerant pressure sensor is either approximately 2.74 MPa (approximately 27.9 kg/cm^2·G) or more, or approximately 0.14 MPa (approximately 1.4 kg/cm^2·G) or less, ECM turns the A/C relay OFF and stops the compressor.

Low Temperature Protection Control

- Auto amp. turns compressor ON or OFF as judged by a signal detected by ambient sensor and intake sensor.
- When intake air temperature is higher than 1°C (34°F), the compressor turns ON. The compressor turns OFF when intake air temperature is lower than –°C (23°F).



DIAGNOSIS SYSTEM (AUTO AMP.)

Diagnosis Description

INFOID:0000000006484334

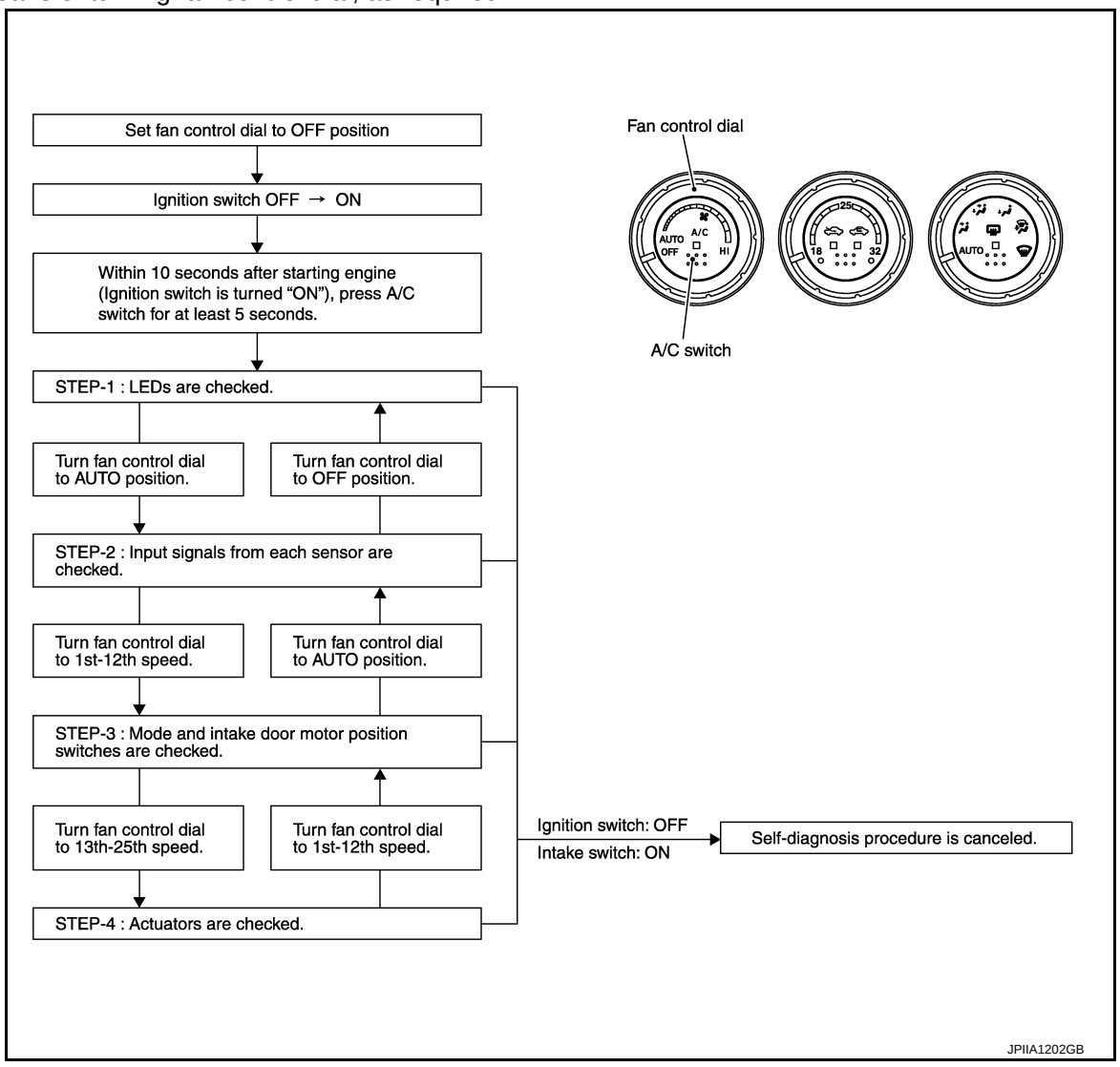
SELF-DIAGNOSIS SYSTEM

The self-diagnosis system is built into the auto amp. to quickly locate the cause of malfunctions.

SELF-DIAGNOSIS FUNCTION

The self-diagnosis system diagnoses sensors, door motors, blower motor, etc. by system line.

- Switching to self-diagnosis STEP-1 to 4.
  Shifting from normal control to the self-diagnosis system is accomplished by starting the engine (turning the ignition switch from OFF to ON) and pressing A/C switch for at least 5 seconds. The A/C switch must be pressed within 10 seconds after starting the engine (ignition switch is turned ON). This system is canceled by either pressing intake switch or turning the ignition switch OFF. Shifting to the next step is accomplished by means of turning fan control dial, as required.

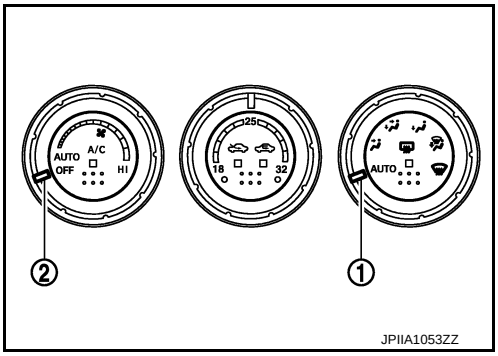


FUNCTION CONFIRMATION PROCEDURE

1. SET IN SELF-DIAGNOSIS MODE

1. Set the mode control dial to AUTO position (1).
2. Set the fan control dial to OFF position (2).
3. Turn ignition switch ON.
4. Set in self-diagnosis mode as per the following. Press A/C switch for at least 5 seconds within 10 seconds after starting engine (ignition switch is turned ON.).

CAUTION:
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.



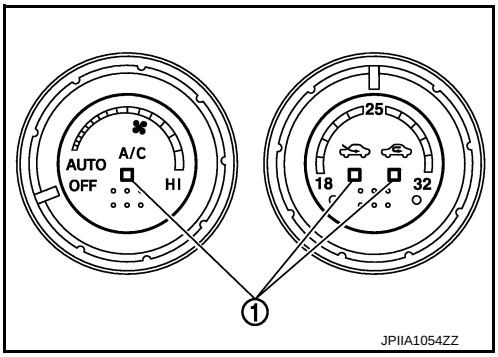
>> GO TO 2.

2. STEP-1: INDICATOR ARE CHECKED

Check all indicator illumination.

Is the inspection result normal?

YES >> GO TO 3.
NO >> Malfunctioning fan control dial or auto amp. Refer to HAC-93, "Inspection procedure".

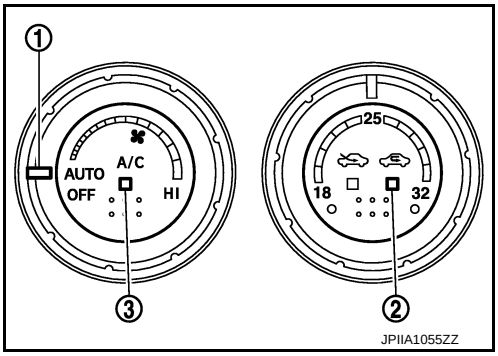


3. STEP-2: SENSOR CIRCUITS ARE CHECKED FOR OPEN OR SHORT CIRCUIT

1. Turn fan control dial to AUTO position (1).
   CAUTION:
   When switched to STEP-2, indicator of REC position (2) blinks for approximately 25 seconds.
2. Check A/C switch indicator (3) illumination.

Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 7.

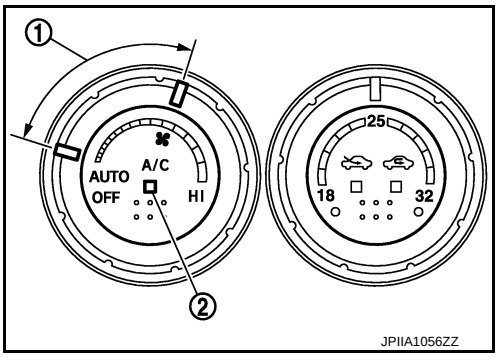


4. STEP-3: MODE DOOR AND INTAKE DOOR POSITIONS ARE CHECKED

1. Turn fan control dial to 1st - 12th speed (1).
   CAUTION:
   When switched to STEP-3, indicator of REC position blinks for approximately 50 seconds.
2. Check A/C switch indicator (2) illumination.

Is the inspection result normal?

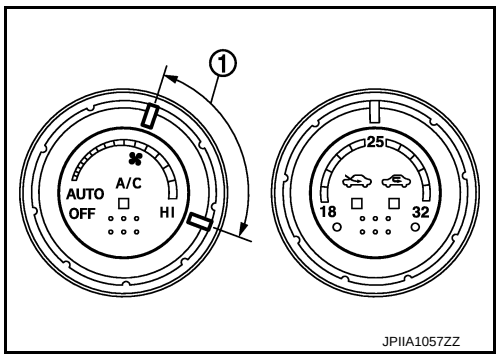
YES >> GO TO 5.
NO >> GO TO 8.



5. STEP-4: OPERATION OF EACH ACTUATOR IS CHECKED

1. Turn fan control dial to 13th - 25th speed (1).
2. Change operation status of air conditioner by changing mode control dial position.

>> GO TO 6.



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6. CHECK ACTUATORS

Refer to the following chart and confirm discharge air flow, air temperature, blower motor voltage and compressor operation.

STEP-No.*1	STEP-41	STEP-42	STEP-43	STEP-44	STEP-45	STEP-46
Mode control dial position	AUTO	VENT	B/L	FOOT	D/F	DEF
Mode door position	VENT	VENT	B/L	FOOT*2	D/F	DEF
Intake door position	REC	REC	REC	FRE	FRE	FRE
Air mix door position	FULL COLD	FULL COLD	FULL COLD	FULL HOT	FULL HOT	FULL HOT
Blower motor voltage	Approx. 4.5 V	Approx. 10.5 V	Approx. 8.5 V	Approx. 8.5 V	Approx. 8.5 V	Battery voltage
Compressor	ON	ON	OFF	OFF	ON	ON

Checks must be made visually, by listening to any noise, or by touching air outlets with hand, etc. for improper operation.
*1: STEP-Nos. 41 to 46 are for differentiation and they are not displayed.
*2: FOOT position during automatic control. Refer to HAC-7, "Foot Position Setting Trimmer".

Is the inspection result normal?

YES >> 1. Turn ignition switch OFF or intake switch ON.
2. INSPECTION END

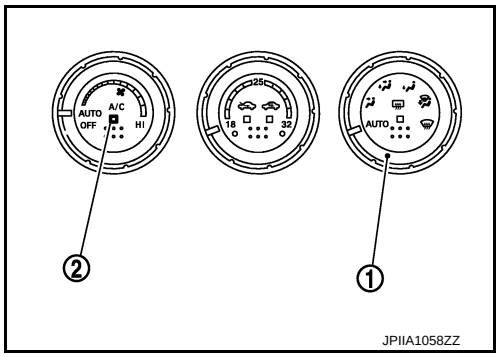
NO >>
- Air outlet does not change.
  Go to Mode Door Motor Circuit. Refer to HAC-37, "Diagnosis Procedure".
- Intake door does not change.
  Go to Intake Door Motor Circuit. Refer toHAC-41, "Diagnosis Procedure".
- Discharge air temperature does not change.
  Go to Air Mix Door Motor Circuit. Refer to HAC-39, "Diagnosis Procedure".
- Blower motor operation is malfunctioning.
  Go to Blower Motor Circuit. Refer to HAC-43, "Diagnosis Procedure".
- Magnet clutch does not engage.
  Go to Magnet Clutch Circuit. Refer to HAC-47, "Diagnosis Procedure".

7. CHECK MALFUNCTIONING SENSOR

Refer to the following chart.

CAUTION:

When switched to STEP-2, indicator of REC position blinks for approximately 25 seconds.



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Mode control dial (1) position	Unusual	Malfunctioning sensor or motor (Including circuits)	Reference
VENT ( )	A/C indicator (2): OFF	Ambient sensor	*2
B/L ( )		In-vehicle sensor	*3
FOOT ( )		Sunload sensor *1	*4
D/F ( )		Intake sensor	*5
DEF ( )		Air mix door motor (LCU) PBR	*6

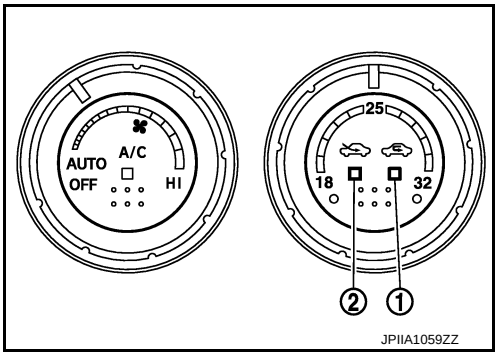
*1: Perform self-diagnosis STEP-2 under sunshine.
When performing indoors, aim a light (more than 60 W) at sunload sensor, otherwise indicator of A/C switch does not indicate despite that sunload sensor is functioning normally.
*2: HAC-51, "Diagnosis Procedure".
*3: HAC-53, "Diagnosis Procedure".
*4: HAC-55, "Diagnosis Procedure".
*5: HAC-58, "Diagnosis Procedure".
*6: HAC-39, "Diagnosis Procedure".

>> INSPECTION END

8. CHECK MALFUNCTIONING DOOR MOTOR POSITION SWITCH

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

CAUTION:
When switched to STEP-3, indicator of REC position blinks for approximately 50 seconds.



Unusual	Mode or intake door position	Reference
REC indicator (1): ON	Mode door motor	*1
FRE indicator (2): ON	Intake door motor	*2

*1: HAC-37, "Diagnosis Procedure".
*2: HAC-41, "Diagnosis Procedure".

>> INSPECTION END

DIAGNOSIS SYSTEM (BCM)

COMMON ITEM

COMMON ITEM : CONSULT-III Function (BCM - COMMON ITEM)

INFOID:0000000006598889

APPLICATION ITEM

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

Diagnosis mode	Function description
ECU Identification	BCM part number is displayed.
Self-Diagnostic Result	Displays the diagnosis results judged by BCM. Refer to BCS-62, "DTC Index".
Data Monitor	BCM input/output signals are displayed.
Active Test	The signals used to activate each device are forcibly supplied from BCM.
Work Support	Changes the setting for each system function.
Configuration	• Read and save the vehicle specification. • Write the vehicle specification when replacing BCM.
CAN Diag Support Monitor	Monitors the reception status of CAN communication viewed from BCM.

SYSTEM APPLICATION

BCM can perform the following functions for each system.

NOTE:

It can perform the diagnosis modes except the following for all sub system selection items.

×: Applicable item

System	CONSULT-III sub system selection item	Diagnosis mode		
		Work Support	Data Monitor	Active Test
Door lock	DOOR LOCK	×	×	×
Rear window defogger	REAR DEFOGGER		×	×
Warning chime	BUZZER		×	×
Interior room lamp control	INT LAMP	×	×	×
Remote keyless entry system	MULTI REMOTE ENT	×	×	×
Exterior lamp	HEAD LAMP	×	×	×
Wiper and washer	WIPER	×	×	×
Turn signal and hazard warning lamps	FLASHER		×	×
• Auto air conditioning system • Manual air conditioning system	AIR CONDITONER		×	
Intelligent Key system	INTELLIGENT KEY		×	
Combination switch	COMB SW		×	
Body control system	BCM	×		
Immobilizer	IMMU		×	×
Interior room lamp battery saver	BATTERY SAVER	×	×	×
Back door open	TRUNK		×	×
Vehicle security system	THEFT ALM	×	×	×
RAP system	RETAINED PWR	×	×	×
Signal buffer system	SIGNAL BUFFER		×	×
—	FUEL LID*			
TPMS	TPMS (AIR PRESSURE MONITOR)	×	×	×
Panic alarm system	PANIC ALARM			×

*: This item is displayed, but is not function.

AIR CONDITIONER

AIR CONDITIONER : CONSULT-III Function (BCM - AUTO AIR CONDITIONER)

INFOID:0000000006598890

DATA MONITOR

Display Item List

Monitor Item [Unit]		Contents
IGN SW	[On/Off]	Displays [ignition switch position (On)/OFF, ACC position (Off)] status as judged form ignition switch signal.
FAN ON SIG	[On/Off]	Displays [FAN (On)/FAN (Off)] status as judged form blower fan motor switch signal.
AIR COND SW	[On/Off]	Displays [COMP (On)/COMP (Off)] status as judged form air conditioner switch signal.

DTC/CIRCUIT DIAGNOSIS

MODE DOOR MOTOR

Description

INFOID:0000000006484347

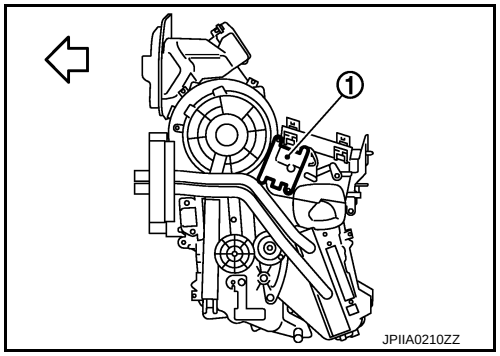
COMPONENT DESCRIPTION

Mode Door Motor

- The mode door motor (1) is attached to the A/C unit assembly.

⇦: Vehicle front

- It rotates so that air is discharged from the outlet set by the auto amp.
- Motor rotation is conveyed to a link which activates the mode door.



Component Function Check

INFOID:0000000006484348

1.CONFIRM SYMPTOM BY PERFORMING THE FOLLOWING OPERATIONAL CHECK

1. Turn mode control dial to each position.
2. Confirm that discharge air comes out according to the air distribution table. Refer to HAC-12, "System Description".

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

Is the inspection result normal?

YES >> INSPECTION END
NO >> Go to diagnosis procedure. Refer to HAC-37, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006484349

1.PERFORM SELF-DIAGNOSIS STEP-2

Perform self-diagnosis STEP-2. Refer to HAC-31, "Diagnosis Description", see Nos. 1 to 3.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Go to appropriate malfunctioning sensor circuit. Refer to HAC-31, "Diagnosis Description", see No. 7.

2.PERFORM SELF-DIAGNOSIS STEP-3

Perform self-diagnosis STEP-3. Refer to HAC-31, "Diagnosis Description", see Nos. 1 to 4.

Is the inspection result normal?

YES >> GO TO 6.
NO-1 >> REC ( ) indicator lamp ON: GO TO 3.
NO-2 >> FRE ( ) indicator lamp ON: Refer to HAC-41, "Diagnosis Procedure".

3.CHECK POWER SUPPLY FOR MODE DOOR MOTOR

Check voltage between mode door motor harness connector and ground.

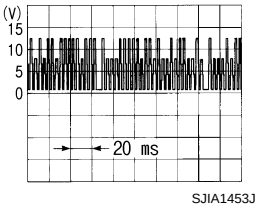
(+)		(–)	Voltage
Mode door motor		—	
Connector	Terminal		
M310	1	Ground	Battery voltage

Is the inspection result normal?

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

4. CHECK SIGNAL FOR MODE DOOR MOTOR

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

(+)		(–)	Voltage
Mode door motor		—	
Connector	Terminal		
M310	3	Ground	

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Is the inspection result normal?

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

5. CHECK MODE DOOR MOTOR GROUND CIRCUIT

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

Mode door motor		—	Continuity
Connector	Terminal		
M310	2	Ground	Existed

Is the inspection result normal?

YES >> Replace mode door motor.
NO >> Repair harness or connector.

6. PERFORM SELF-DIAGNOSIS STEP-4

Perform self-diagnosis STEP-4. Refer to HAC-31, "Diagnosis Description", see Nos. 1 to 6.

Is it operated normally?

YES >> INSPECTION END
NO >> GO TO 7.

7. CHECK MODE DOOR CONTROL LINKAGE

Check mode door control linkage is properly installed.

Is it installed normally?

YES >> Check each door, lever and link, and repair or replace the malfunctioning parts. Refer to HAC-119, "Exploded View".
NO >> Repair or adjust control linkage.

AIR MIX DOOR MOTOR

Description

INFOID:0000000006484350

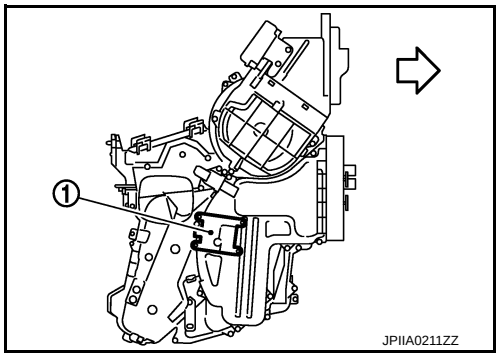
COMPONENT DESCRIPTION

Air Mix Door Motor

- The air mix door motor (1) is attached to the A/C unit assembly.

⇦: Vehicle front

- It rotates so that the air mix door is opened or closed to a position set by the auto amp.
- Motor rotation is then conveyed through a shaft and the air mix door position feedback is then sent to the auto amp. by PBR built-in air mix door motor.



Component Function Check

INFOID:0000000006484351

1.CONFIRM SYMPTOM BY PERFORMING THE FOLLOWING OPERATIONAL CHECK

1. Turn temperature control dial clockwise until “32” position.
2. Check for warm air at discharge air outlets.
3. Turn temperature control dial counterclockwise until “18” position.
4. Check for cool air at discharge air outlets.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Go to diagnosis procedure. Refer to HAC-39, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006484352

1.PERFORM SELF-DIAGNOSIS STEP-2

Perform self-diagnosis STEP-2. Refer to HAC-31, "Diagnosis Description", see Nos. 1 to 3.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Go to appropriate malfunctioning sensor circuit. Refer to HAC-31, "Diagnosis Description", see No. 7.

2.PERFORM SELF-DIAGNOSIS STEP-4

Perform self-diagnosis STEP-4. Refer to HAC-31, "Diagnosis Description", see Nos.1 to 6.

Is it operated normally?

YES >> INSPECTION END
NO >> GO TO 3.

3.CHECK AIR MIX DOOR MOTOR

Check air mix door motor is properly installed. Refer to HAC-119, "Exploded View".

Is it installed normally?

YES >> GO TO 4.
NO >> Replace air mix door motor.

4.CHECK POWER SUPPLY FOR AIR MIX DOOR MOTOR

Check voltage between air mix door motor harness connector and ground.

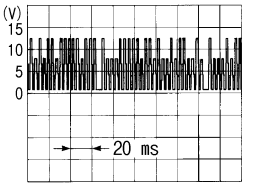
(+)		(–)	Voltage
Air mix door motor		—	
Connector	Terminal		
M306	1	Ground	Battery voltage

Is the inspection result normal?

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

5. CHECK SIGNAL FOR AIR MIX DOOR MOTOR

Confirm A/C LAN signal between air mix door motor harness connector and ground using an oscilloscope.

(+)		(–)	Voltage
Air mix door motor		—	
Connector	Terminal		
M306	3	Ground	 SJIA1453J

Is the inspection result normal?

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

6. CHECK AIR MIX DOOR MOTOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect air mix door motor connector.
3. Check continuity between air mix door motor harness connector and ground.

Air mix door motor		—	Continuity
Connector	Terminal		
M306	2	Ground	Existed

Is the inspection result normal?

YES >> Replace air mix door motor.
NO >> Repair harness or connector.

INTAKE DOOR MOTOR

Description

INFOID:0000000006484353

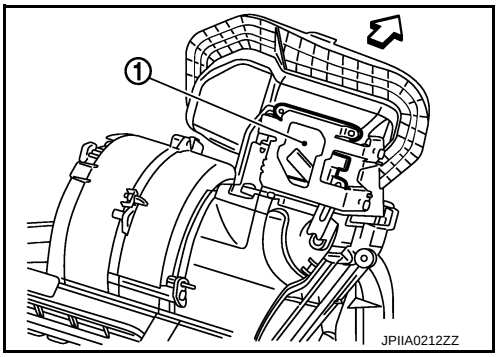
COMPONENT DESCRIPTION

Intake Door Motor

- The intake door motor (1) is attached to the A/C unit assembly.

⇦: Vehicle front

- It rotates so that air is drawn from inlets set by the auto amp.
- Motor rotation is conveyed to a lever which activates the intake door.



Component Function Check

INFOID:0000000006484354

1.CONFIRM SYMPTOM BY PERFORMING THE FOLLOWING OPERATIONAL CHECK

1. Press intake switch.
2. REC ( ) indicator turns ON.
3. Listen for intake door position change. (Slight change of blower sound can be heard.)
4. Press intake switch again.
5. FRE ( ) indicator turns ON.
6. Listen for intake door position change. (Slight change of blower sound can be heard.)

Is the inspection result normal?

YES >> INSPECTION END
NO >> Go to diagnosis procedure. Refer to HAC-41, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006484355

1.PERFORM SELF-DIAGNOSIS STEP-2

Perform self-diagnosis STEP-2. Refer to HAC-31, "Diagnosis Description", see Nos. 1 to 3.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Go to appropriate malfunctioning sensor circuit. Refer to HAC-31, "Diagnosis Description", see No. 7.

2.PERFORM SELF-DIAGNOSIS STEP-3

Perform self-diagnosis STEP-3. Refer to HAC-31, "Diagnosis Description", see Nos. 1 to 4.

Is the inspection result normal?

YES >> GO TO 6.
NO-1 >> REC ( ) indicator turns ON: Refer to HAC-37, "Diagnosis Procedure".
NO-2 >> FRE ( ) indicator turns ON: GO TO 3.

3.CHECK POWER SUPPLY FOR INTAKE DOOR MOTOR

Check voltage between intake door motor harness connector and ground.

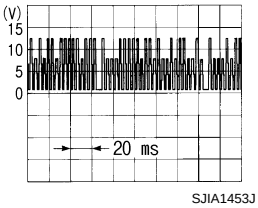
(+)		(–)	Voltage
Intake door motor		—	
Connector	Terminal		
M304	1	Ground	Battery voltage

Is the inspection result normal?

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

4.CHECK SIGNAL FOR INTAKE DOOR MOTOR

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

(+)		(–)	Voltage
Intake door motor		—	
Connector	Terminal		
M304	3	Ground	 SJIA1453J

Is the inspection result normal?

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

5.CHECK INTAKE DOOR MOTOR GROUND CIRCUIT

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

Intake door motor		—	Continuity
Connector	Terminal		
M304	2	Ground	Existed

Is the inspection result normal?

YES >> Replace intake door motor.
NO >> Repair harness or connector.

6.PERFORM SELF-DIAGNOSIS STEP-4

Perform self-diagnosis STEP-4. Refer to HAC-31, "Diagnosis Description", see Nos. 1 to 6.

Is the inspection result normal?

YES >> INSPECTION END
NO >> GO TO 7.

7.CHECK INTAKE DOOR CONTROL LINKAGE

Check intake door control linkage is properly installed.

Is it installed normally?

YES >> Check each door, lever and link, and repair or replace the malfunctioning parts. Refer to HAC-119, "Exploded View".
NO >> Repair or adjust control linkage.

BLOWER MOTOR

Description

INFOID:0000000006484356

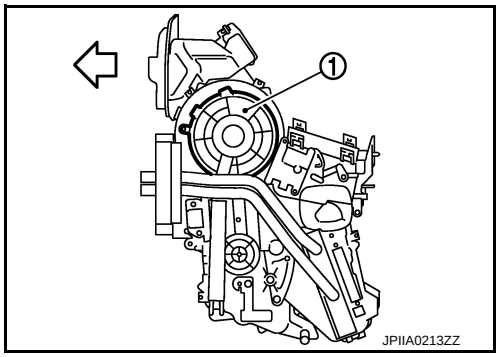
COMPONENT DESCRIPTION

Blower Motor

- The blower motor (1) utilizes a brush motor with a sirocco fan type.

⇦: Vehicle front

- The blower motor attached to A/C unit assembly.
- When FRE ( ) indicator turns ON, takes in fresh air forcibly from outside the vehicle, then provides it into inside the vehicle.
- When REC ( ) indicator turns ON, circulates air of inside the vehicle.



Component Function Check

INFOID:0000000006484357

1.CONFIRM SYMPTOM BY PERFORMING THE FOLLOWING OPERATIONAL CHECK

1. Turn fan control dial clockwise to 1st speed. Blower should operate on low speed.
2. Turn fan control dial clockwise to 2nd speed, 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-43, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006484358

1.PERFORM SELF-DIAGNOSIS STEP-4

Perform self-diagnosis STEP-4. Refer to HAC-31, "Diagnosis Description", see Nos. 1 to 6.

Code No.	41	42	43	44	45	46
Blower motor voltage	4.5 V	10.5 V	8.5 V			Battery voltage

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 ON.
2. Check voltage between blower motor harness connector and ground.

(+)		(–)	Voltage
Blower motor		—	
Connector	Terminal		
M312	1	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 7.

3.CHECK POWER SUPPLY FOR FAN CONTROL AMP.

Check voltage between fan control amp. harness connector and ground.

(+)		(–)	Voltage
Fan control amp.		—	
Connector	Terminal		
M311	3	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 11.

4. CHECK BLOWER MOTOR CONTROL SIGNAL

1. Turn mode control dial to VENT.
2. Turn fan control dial to 1st speed.
3. Check voltage between fan control amp. harness connector and ground.

(+)		(–)	Voltage
Fan control amp.		—	
Connector	Terminal		
M311	2	Ground	Approx. 2.5 V

Is the inspection result normal?

YES >> GO TO 5.
NO-1 >> In the case of less than approximately 2.5 V: GO TO 12.
NO-2 >> In the case of more than approximately 10 V: Replace auto amp.

5. CHECK FAN CONTROL AMP. GROUND CIRCUIT

1. Disconnect fan control amp. connector.
2. Check continuity between fan control amp. harness connector and ground.

Fan control amp.		—	Continuity
Connector	Terminal		
M311	1	Ground	Existed

Is the inspection result normal?

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

6. CHECK BLOWER MOTOR FEEDBACK SIGNAL

1. Reconnect fan control amp. connector.
2. Turn ignition switch ON.
3. Turn fan control dial to 1st speed.
4. Check voltage between auto amp. harness connector and ground.

(+)		(–)	Condition	Voltage
Auto amp.		—		
Connector	Terminal			
M54	18	Ground	Blower speed: 1st (Blower motor operate.)	Approx. 10 V

Is the inspection result normal?

YES >> Replace auto amp.
NO >> Repair harness or connector.

7. CHECK POWER VOLTAGE OF BLOWER RELAY

1. Turn ignition switch OFF.
2. Remove blower relay. Refer to PG-99, "Fuse, Connector and Terminal Arrangement".
3. Turn ignition switch ON.

4. Check voltage between blower relay fuse block terminals and ground. Refer to PG-97, "Description" for relay terminal assignment.

(+)	(–)	Voltage
Blower relay	—	
1	Ground	Battery voltage
3		

Is the inspection result normal?

YES >> GO TO 9.
NO >> GO TO 8.

8. CHECK IGNITION SWITCH CIRCUIT

Check ignition switch circuit. Refer to DLK-69, "Diagnosis Procedure" (With Intelligent Key system), DLK-309, "Diagnosis Procedure" (Without Intelligent Key system).

Is the inspection result normal?

YES >> Repair harness or connector.
NO >> Replace malfunctioning parts.

9. CHECK BLOWER RELAY

1. Turn ignition switch OFF.
2. Install blower relay. Refer to PG-99, "Fuse, Connector and Terminal Arrangement".
3. Check operation sound of the blower relay after switching ignition switch ON.

Is the inspection result normal?

YES >> GO TO 10.
NO >> Replace blower relay.

10. CHECK FUSE

Check 15A fuse [Nos. 15 and 16, located in the fuse block (J/B)]. Refer to PG-99, "Fuse, Connector and Terminal Arrangement".

Is the inspection result normal?

YES >> Repair harness or connector.
NO >> Replace fuse.

11. CHECK CIRCUIT CONTINUITY BETWEEN BLOWER MOTOR AND FAN CONTROL AMP.

1. Turn ignition switch OFF.
2. Disconnect fan control amp. connector.
3. Check continuity between blower motor harness connector and fan control amp. harness connector.

Blower motor		Fan control amp.		Continuity
Connector	Terminal	Connector	Terminal	
M312	2	M311	3	Existed

Is the inspection result normal?

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

12. CHECK FAN CONTROL AMP.

Check fan control amp. Refer to HAC-45, "Component Inspection (Blower Motor)".

Is the inspection result normal?

YES >> Replace auto amp.
NO >> Replace fan control amp.

Component Inspection (Blower Motor)

INFOID:0000000006484359

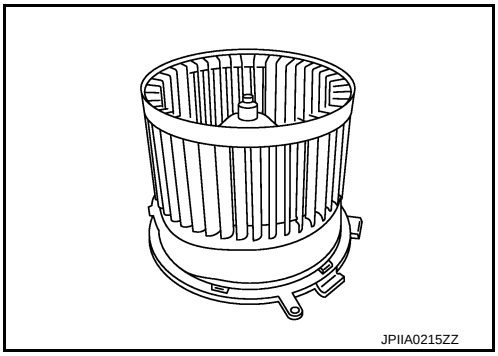
1. CHECK BLOWER MOTOR

1. Remove blower motor.

2. Confirm smooth rotation of the blower motor.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace blower motor.



Component Inspection (Fan Control Amp.)

INFOID:0000000006484360

1. CHECK FAN CONTROL AMP.

1. Turn ignition switch OFF.
2. Remove fan control amp. Refer to VTL-17, "Exploded View".
3. Check continuity between the fan control amp. terminals using analog circuit tester.

Terminal		Continuity
(+)	(–)	
1	2	Existed
2	1	Not existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace fan control amp.

MAGNET CLUTCH

Description

INFOID:0000000006484361

Magnet clutch drives a compressor, by a signal of IPDM E/R.

Component Function Check

INFOID:0000000006484362

1.CONFIRM SYMPTOM BY PERFORMING THE FOLLOWING OPERATIONAL CHECK

1. Turn fan control dial to AUTO position.
2. Press A/C switch.
3. A/C switch indicator turns ON. Confirm that the magnet clutch engages (sound or visual inspection). (Discharge air and blower speed depend on ambient, in-vehicle and set temperatures.)

Does the magnet clutch operate?

YES >> INSPECTION END
NO >> Go to Diagnosis Procedure. Refer to HAC-47, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006484363

1.PERFORM SELF-DIAGNOSIS STEP-2

Perform self-diagnosis STEP-2. Refer to HAC-31, "Diagnosis Description", see Nos. 1 to 3.

Is there any malfunction displayed?

YES >> Go to appropriate malfunctioning sensor circuit. Refer to HAC-31, "Diagnosis Description", see to No. 7.
NO >> GO TO 2.

2.PERFORM SELF-DIAGNOSIS STEP-4

Perform self-diagnosis STEP-4. Refer to HAC-31, "Diagnosis Description", see Nos. 1 to 6.

Is it operated normally?

YES >> INSPECTION END
NO >> GO TO 3.

3.PERFORM IPDM E/R AUTO ACTIVE TEST

Perform IPDM E/R auto active test. Refer to PCS-8, "Diagnosis Description".

Does the magnet clutch operate?

YES-1 >> WITH CONSULT-III: GO TO 7.
YES-2 >> WITHOUT CONSULT-III: GO TO 8.
NO >> Check 10A fuse (No. 51, located in IPDM E/R), and GO TO 4.

4.CHECK CIRCUIT CONTINUITY BETWEEN IPDM E/R AND COMPRESSOR

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and compressor (magnet clutch) connector.
3. Check continuity between IPDM E/R harness connector and compressor (magnet clutch) harness connector.

IPDM E/R		Compressor (Magnet clutch)		Continuity
Connector	Terminal	Connector	Terminal	
E15	55	F17	1	Existed

Is the inspection result normal?

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

5.CHECK CIRCUIT CONTINUITY BETWEEN COMPRESSOR GROUND

Check continuity between compressor (magnet clutch) harness connector and ground.

Compressor (Magnet clutch)		—	Continuity
Connector	Terminal		
F17	2	Ground	Existed

Is the inspection result normal?

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

6. CHECK MAGNET CLUTCH CIRCUIT

Check for operation sound when applying battery voltage direct current to terminal.

Is the inspection result normal?

YES >> 1. Replace IPDM E/R.
2. Refer to self-diagnosis procedure HAC-31, "Diagnosis Description" and perform self-diagnosis STEP-4. Confirm that magnet clutch operation normal.

NO >> 1. Replace compressor.
2. Refer to self-diagnosis procedure HAC-31, "Diagnosis Description" and perform self-diagnosis STEP-4. Confirm that magnet clutch operation normal.

7. CHECK BCM INPUT (COMPRESSOR ON) SIGNAL

Check compressor ON/OFF signal in “Data monitor” mode of “AIR CONDITIONER” of “BCM” using CONSULT-III. Refer to HAC-36, "AIR CONDITIONER : CONSULT-III Function (BCM - AUTO AIR CONDITIONER)".

A/C SWITCH ON : AIR COND SW On
A/C SWITCH OFF : AIR COND SW Off

Is the inspection result normal?

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

8. CHECK CIRCUIT CONTINUITY BETWEEN BCM AND AUTO AMP.

1. Turn ignition switch OFF.
2. Disconnect BCM harness connector and auto amp. harness connector.
3. Check continuity between BCM harness connector and auto amp. harness connector.

BCM		Auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M65	27	M54	4	Existed

Is the inspection result normal?

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

9. CHECK BCM

1. Connect BCM harness connector.
2. Turn ignition switch ON.
3. Check voltage between BCM harness connector and ground.

(+)		(–)	Voltage
BCM		—	
Connector	Terminal		
M65	27	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 10.
NO >> Replace BCM. Refer to BCS-66, "Removal and Installation".

10. CHECK COMPRESSOR ON SIGNAL

1. Turn ignition switch OFF.
2. Connect auto amp. harness connector.
3. Turn ignition switch ON.
4. Check voltage between auto amp. harness connector and ground.

(+)		(–)	Condition	Voltage
Auto amp.		—		
Connector	Terminal			
M54	4	Ground	A/C switch: ON (Blower motor operates.)	Approx. 0 V

Is the inspection result normal?

YES >> GO TO 11.
NO >> Replace auto amp.

11. CHECK REFRIGERANT PRESSURE SENSOR

Ⓦ WITH CONSULT-III
1. Start the engine.
2. Check voltage of refrigerant pressure sensor in “Data monitor” mode of “ECM” using CONSULT- III. Refer to EC-450, "Reference Value" (For California), EC-902, "Reference Value" [For USA (Federal) and Canada], or EC-1248, "Reference Value" (For Mexico).

Ⓦ WITHOUT CONSULT-III
1. Start the engine.
2. Check voltage between ECM harness connector and ground.

(+)		(–)	Condition	Voltage
ECM		—		
Connector	Terminal			
F8	39	Ground	A/C switch: ON (Blower motor operates.)	Approx. 1.0 - 4.0 V

Is the inspection result normal?

YES-1 >> Ⓦ WITH CONSULT-III: GO TO 12.
YES-2 >> Ⓦ WITHOUT CONSULT-III: GO TO 13.
NO >> Refer to EC-448, "Diagnosis Procedure" (For California), EC-900, "Diagnosis Procedure" [For USA (Federal) and Canada], or EC-1246, "Diagnosis Procedure" (For Mexico).

12. CHECK BCM INPUT (FAN ON) SIGNAL

Check FAN ON/OFF signal in “Data monitor” mode of “AIR CONDITIONER” of “BCM” using CONSULT-III. Refer to HAC-36, "AIR CONDITIONER : CONSULT-III Function (BCM - AUTO AIR CONDITIONER)".

FAN CONTROL DIAL ON : FAN ON SIG On
FAN CONTROL DIAL OFF : FAN ON SIG Off

Is the inspection result normal?

YES >> GO TO 16.
NO >> GO TO 13.

13. CHECK CIRCUIT CONTINUITY BETWEEN BCM AND AUTO AMP.

1. Turn ignition switch OFF.
2. Disconnect BCM connector and auto amp. connector.
3. Check continuity between BCM harness connector and auto amp. harness connector.

BCM		Auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M65	28	M54	19	Existed

Is the inspection result normal?

YES >> GO TO 14.
NO >> Repair harness or connector.

14. CHECK BCM

1. Connect BCM harness connector.
2. Turn ignition switch ON.
3. Check voltage between BCM harness connector and ground.

(+)		(–)	Voltage
BCM		—	
Connector	Terminal		
M65	28	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 15.
NO >> Replace BCM. Refer to BCS-66, "Removal and Installation".

15. CHECK FAN ON SIGNAL

1. Turn ignition switch OFF.
2. Connect auto amp. connector.
3. Turn ignition switch ON.
4. Check voltage between auto amp. harness connector and ground.

(+)		(–)	Condition	Voltage
Auto amp.		—		
Connector	Terminal			
M54	19	Ground	Fan control dial: ON	Approx. 0 V

Is the inspection result normal?

YES >> GO TO 16.
NO >> Replace auto amp.

16. CHECK CAN COMMUNICATION

Check CAN communication. Refer to LAN-15, "Trouble Diagnosis Flow Chart".
- ECM – IPDM E/R
- ECM – BCM

Is the inspection result normal?

YES >> Replace ECM.
NO >> Repair or replace malfunctioning part(s).

AMBIENT SENSOR

Description

INFOID:0000000006484364

COMPONENT DESCRIPTION

Ambient sensor detects ambient temperature and converts it into a resistance value which is then input into the auto amp.

AMBIENT TEMPERATURE INPUT PROCESS

The auto amp. equips a processing circuit for the ambient sensor input. However, when the temperature detected by the ambient sensor increases quickly, the processing circuit retards the auto amp. function. It only allows the auto amp. to recognize an ambient temperature increase of 0.33°C (0.6°F) per 100 seconds.
As an example, consider stopping for a few minutes after high speed driving. Although the actual ambient temperature has not changed, the temperature detected by the ambient sensor increases. This is because the heat from the engine compartment can radiate to the front bumper area, location of the ambient sensor.

Component Function Check

INFOID:0000000006484365

1. PERFORM SELF-DIAGNOSIS STEP-2

Perform self-diagnosis STEP-2. Refer to HAC-31, "Diagnosis Description", see Nos. 1 to 3.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Go to Diagnosis Procedure. Refer to HAC-51, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006484366

1. CHECK VOLTAGE BETWEEN AMBIENT SENSOR AND GROUND

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

(+)		(–)	Voltage
Ambient sensor		—	
Connector	Terminal		
E44	1	Ground	Approx. 5

Is the inspection result normal?

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

2. CHECK CIRCUIT CONTINUITY BETWEEN AMBIENT SENSOR AND AUTO AMP.

1. Turn ignition switch OFF.
2. Disconnect auto amp. connector.
3. Check continuity between ambient sensor harness connector and auto amp. harness connector.

Ambient sensor		Auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
E44	2	M55	24	Existed

Is the inspection result normal?

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

3. CHECK AMBIENT SENSOR

Refer to HAC-52, "Component Inspection".

Is the inspection result normal?

YES >> Replace auto amp.

NO >> Replace ambient sensor.

4.CHECK CIRCUIT CONTINUITY BETWEEN AMBIENT SENSOR AND AUTO AMP.

1. Turn ignition switch OFF.
2. Disconnect auto amp. connector.
3. Check continuity between ambient sensor harness connector and auto amp. harness connector.

Ambient sensor		Auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
E44	1	M54	9	Existed

4. Check continuity between ambient sensor harness connector and ground.

Ambient sensor		—	Continuity
Connector	Terminal		
E44	1	Ground	Not existed

Is the inspection result normal?

YES >> Replace auto amp.
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000006484367

1.CHECK AMBIENT SENSOR

1. Turn ignition switch ON.
2. Remove ambient sensor. Refer to HAC-114, "Removal and Installation".
3. Check resistance between ambient sensor terminals.

Terminal		Condition	Resistance kΩ
		Temperature °C (°F)	
1	2	–15 (5)	12.73
		–10 (14)	9.92
		–5 (23)	7.80
		0 (32)	6.19
		5 (41)	4.95
		10 (50)	3.99
		15 (59)	3.24
		20 (68)	2.65
		25 (77)	2.19
		30 (86)	1.81
		35 (90)	1.51
		40 (104)	1.27
		45 (113)	1.07

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace ambient sensor.

IN-VEHICLE SENSOR

Description

INFOID:0000000006484368

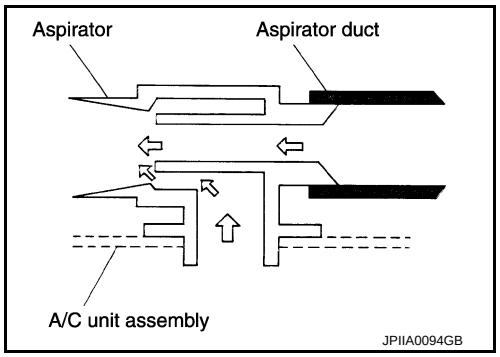
COMPONENT DESCRIPTION

In-vehicle Sensor

In-vehicle sensor converts variations in compartment air temperature drawn from the aspirator into a resistance value. It is then input into the auto amp.

Aspirator

Aspirator produces vacuum pressure due to air discharged from the A/C unit assembly, continuously taking compartment air in the aspirator.



Component Function Check

INFOID:0000000006484369

1. PERFORM SELF-DIAGNOSIS STEP-2

Perform self-diagnosis STEP-2. Refer to HAC-31, "Diagnosis Description", see Nos. 1 to 3.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Go to Diagnosis Procedure. Refer to HAC-53, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006484370

1. CHECK VOLTAGE BETWEEN IN-VEHICLE SENSOR AND GROUND

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

(+)		(–)	Voltage
In-vehicle sensor		—	
Connector	Terminal		
M41	1	Ground	Approx. 5

Is the inspection result normal?

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

2. CHECK CIRCUIT CONTINUITY BETWEEN IN-VEHICLE SENSOR AND AUTO AMP.

1. Turn ignition switch OFF.
2. Disconnect auto amp. connector.
3. Check continuity between in-vehicle sensor harness connector and auto amp. harness connector.

In-vehicle sensor		Auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M41	2	M55	24	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair harness or connector.

3.CHECK IN-VEHICLE SENSOR

Refer to HAC-54, "Component Inspection".

Is the inspection result normal?

YES >> Replace auto amp.
NO >> Replace in-vehicle sensor.

4.CHECK CIRCUIT CONTINUITY BETWEEN IN-VEHICLE SENSOR AND AUTO AMP.

1. Turn ignition switch OFF.
2. Disconnect auto amp. connector.
3. Check continuity between in-vehicle sensor harness connector and auto amp. harness connector.

In-vehicle sensor		Auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M41	1	M54	8	Existed

4. Check continuity between in-vehicle sensor harness connector and ground.

In-vehicle sensor		—	Continuity
Connector	Terminal		
M41	1	Ground	Not existed

Is the inspection result normal?

YES >> Replace auto amp.
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000006484371

1.CHECK IN-VEHICLE SENSOR

1. Turn ignition switch ON.
2. Remove in-vehicle sensor. Refer to HAC-115, "Removal and Installation".
3. Check resistance between in-vehicle sensor terminals.

Terminal		Condition	Resistance kΩ
		Temperature °C (°F)	
1	2	–15 (5)	12.73
		–10 (14)	9.92
		–5 (23)	7.80
		0 (32)	6.19
		5 (41)	4.95
		10 (50)	3.99
		15 (59)	3.24
		20 (68)	2.65
		25 (77)	2.19
		30 (86)	1.81
		35 (90)	1.51
		40 (104)	1.27
		45 (113)	1.07

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace in-vehicle sensor.

SUNLOAD SENSOR

Description

INFOID:0000000006484372

COMPONENT DESCRIPTION

Sunload Sensor

Sunload sensor 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 auto amp.

SUNLOAD INPUT PROCESS

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

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

Component Function Check

INFOID:0000000006484373

1. PERFORM SELF-DIAGNOSIS STEP-2

Perform self-diagnosis STEP-2. Refer to HAC-31, "Diagnosis Description", see Nos. 1 to 3.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Go to Diagnosis Procedure. Refer to HAC-55, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006484374

1. CHECK VOLTAGE BETWEEN SUNLOAD SENSOR AND GROUND

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

(+)		(–)	Voltage
Sunload sensor		—	
Connector	Terminal		
M64	1	Ground	Approx. 5

Is the inspection result normal?

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

2. CHECK CIRCUIT CONTINUITY BETWEEN SUNLOAD SENSOR AND AUTO AMP.

1. Turn ignition switch OFF.
2. Disconnect auto amp. connector.
3. Check continuity between sunload sensor harness connector and auto amp. harness connector.

Sunload sensor		Auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M64	2	M55	24	Existed

Is the inspection result normal?

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

3.CHECK SUNLOAD SENSOR

1. Reconnect sunload sensor connector and auto amp. connector.
2. Refer to HAC-56, "Component Inspection".

Is the inspection result normal?

YES >> Replace auto amp.
NO >> Replace sunload sensor.

4.CHECK CIRCUIT CONTINUITY BETWEEN SUNLOAD SENSOR AND AUTO AMP.

1. Turn ignition switch OFF.
2. Disconnect auto amp. connector.
3. Check continuity between sunload sensor harness connector and auto amp. harness connector.

Sunload sensor		Auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M64	1	M54	10	Existed

4. Check continuity between sunload sensor harness connector and ground.

Sunload sensor		—	Continuity
Connector	Terminal		
M64	1	Ground	Not existed

Is the inspection result normal?

YES >> Replace auto amp.
NO >> Repair harness or connector.

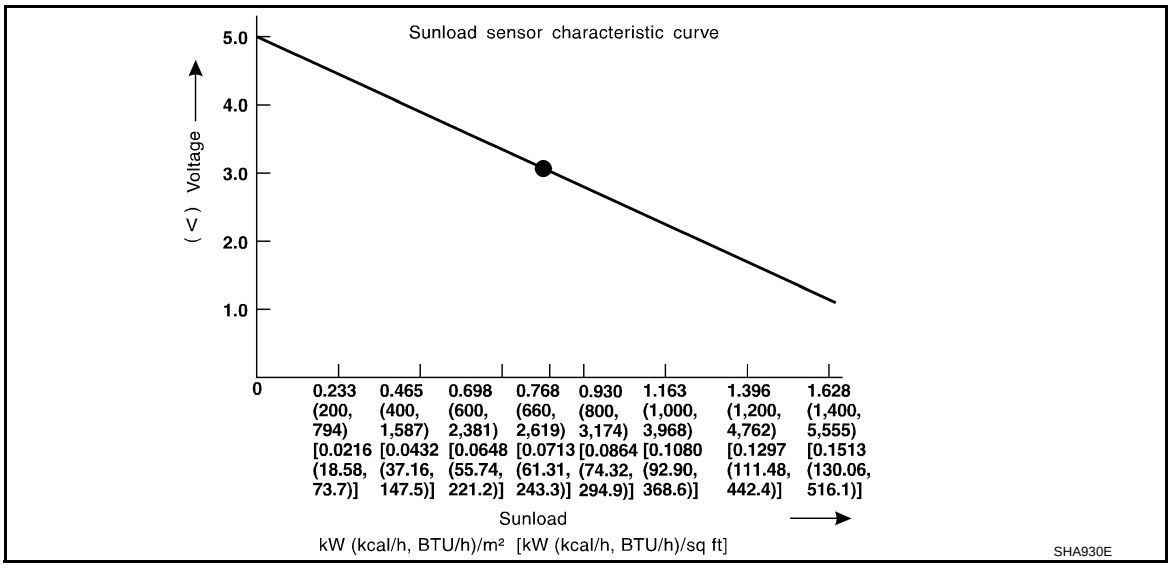
Component Inspection

INFOID:0000000006484375

1.CHECK SUNLOAD SENSOR

1. Turn ignition switch ON.
2. Check voltage between auto amp. harness connector and ground.

(+)		(–)
Auto amp.		—
Connector	Terminal	
M54	10	Ground



NOTE:

Select a place where sunshine directly on it when checking sunload sensor.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace sunload sensor.

INTAKE SENSOR

Description

INFOID:0000000006484376

COMPONENT DESCRIPTION

Intake Sensor
Intake sensor converts air temperature after it passes through the evaporator into a resistance value which is then input to the auto amp.

Component Function Check

INFOID:0000000006484377

1.PERFORM SELF-DIAGNOSIS STEP-2

Perform self-diagnosis STEP-2. Refer to HAC-31, "Diagnosis Description", see Nos. 1 to 3.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Go to Diagnosis Procedure. Refer to HAC-58, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006484378

1.CHECK VOLTAGE BETWEEN INTAKE SENSOR AND GROUND

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

(+)		(–)	Voltage
Intake sensor		—	
Connector	Terminal		
M42	1	Ground	Approx. 5

Is the inspection result normal?

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

2.CHECK CIRCUIT CONTINUITY BETWEEN INTAKE SENSOR AND AUTO AMP.

1. Turn ignition switch OFF.
2. Disconnect auto amp. connector.
3. Check continuity between intake sensor harness connector and auto amp. harness connector.

Intake sensor		Auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M42	2	M55	24	Existed

Is the inspection result normal?

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

3.CHECK INTAKE SENSOR

Refer to HAC-59, "Component Inspection".

Is the inspection result normal?

YES >> Replace auto amp.
NO >> Replace intake sensor.

4.CHECK CIRCUIT CONTINUITY BETWEEN INTAKE SENSOR AND AUTO AMP.

1. Turn ignition switch OFF.
2. Disconnect auto amp. connector.
3. Check continuity between intake sensor harness connector and auto amp. harness connector.

Intake sensor		Auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M42	1	M55	25	Existed

4. Check continuity between intake sensor harness connector and ground.

Intake sensor		—	Continuity
Connector	Terminal		
M42	1	Ground	Not existed

Is the inspection result normal?

YES >> Replace auto amp.
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000006484379

1.CHECK INTAKE SENSOR

1. Turn ignition switch ON.
2. Remove intake sensor. Refer to HAC-117, "Removal and Installation".
3. Check resistance between intake sensor terminals.

Terminal		Condition	Resistance kΩ
		Temperature °C (°F)	
1	2	–15 (5)	18.63
		–10 (14)	14.15
		–5 (23)	10.86
		0 (32)	8.41
		5 (41)	6.57
		10 (50)	5.19
		15 (59)	4.12
		20 (68)	3.30
		25 (77)	2.67
		30 (86)	2.17
		35 (90)	1.78
		40 (104)	1.46
		45 (113)	1.21

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace intake sensor.

POWER SUPPLY AND GROUND CIRCUIT FOR AUTO AMP.

Description

INFOID:0000000006484380

COMPONENT DESCRIPTION

Auto Amp. (Automatic Amplifier)

- The auto amp. has a built-in microcomputer which processes information sent from various sensors needed for air conditioner operation. The air mix door motor, mode door motor, intake door motor, blower motor and compressor are then controlled.
- The auto amp. is unitized with control mechanisms. Signal from various switches and potentio temperature control (PTC) are directly entered into auto amp.
- Self-diagnosis functions are also built into auto amp. to provide quick check of malfunctions in the auto air conditioner system.

Potentio Temperature Control (PTC)

The PTC is built into the auto amp. It can be set at an interval of 1°C in the 18°C to 32°C temperature range by turning temperature control dial.

Component Function Check

INFOID:0000000006484381

1.CONFIRM SYMPTOM BY PERFORMING THE FOLLOWING OPERATIONAL CHECK

1. Turn fan control dial to AUTO position.
2. Press A/C switch.
3. A/C switch indicator turns ON. Confirm that the magnet clutch engages (sound or visual inspection). (Discharge air and blower speed depend on ambient, in-vehicle and set temperatures.)

Does magnet clutch engaged?

YES >> INSPECTION END
NO >> Go to Diagnosis Procedure. Refer to HAC-60, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006484382

1.CHECK POWER SUPPLY CIRCUIT FOR AUTO AMP.

1. Disconnect auto amp. connector.
2. Check voltage between auto amp. harness connector and ground.

(+)		(–)	Ignition switch position		
Auto amp.		—	OFF	ACC	ON
Connector	Terminal				
M54	1	Ground	Approx. 0 V	Approx. 0 V	Battery voltage
	2		Battery voltage	Battery voltage	Battery voltage
	20		Approx. 0 V	Approx. 0 V	Battery voltage

Is the inspection result normal?

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

2.CHECK FUSE

Check 10A and 15A fuses [Nos. 1, 8, 15 and 16, located in the fuse block (J/B)]. Refer to PG-99, "Fuse, Connector and Terminal Arrangement".

Is the inspection result normal?

YES >> Check harness for open circuit. Repair or replace if necessary.
NO >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.

3.CHECK GROUND CIRCUIT FOR AUTO AMP.

1. Turn ignition switch OFF.
2. Check continuity between auto amp. harness connector and ground.

Auto amp.		—	Continuity
Connector	Terminal		
M54	3	Ground	Existed

Is the inspection result normal?

YES >> Replace auto amp.
NO >> Repair harness or connector.

ECU DIAGNOSIS INFORMATION

BCM (BODY CONTROL MODULE)

Reference Value

INFOID:0000000006599918

VALUES ON THE DIAGNOSIS TOOL

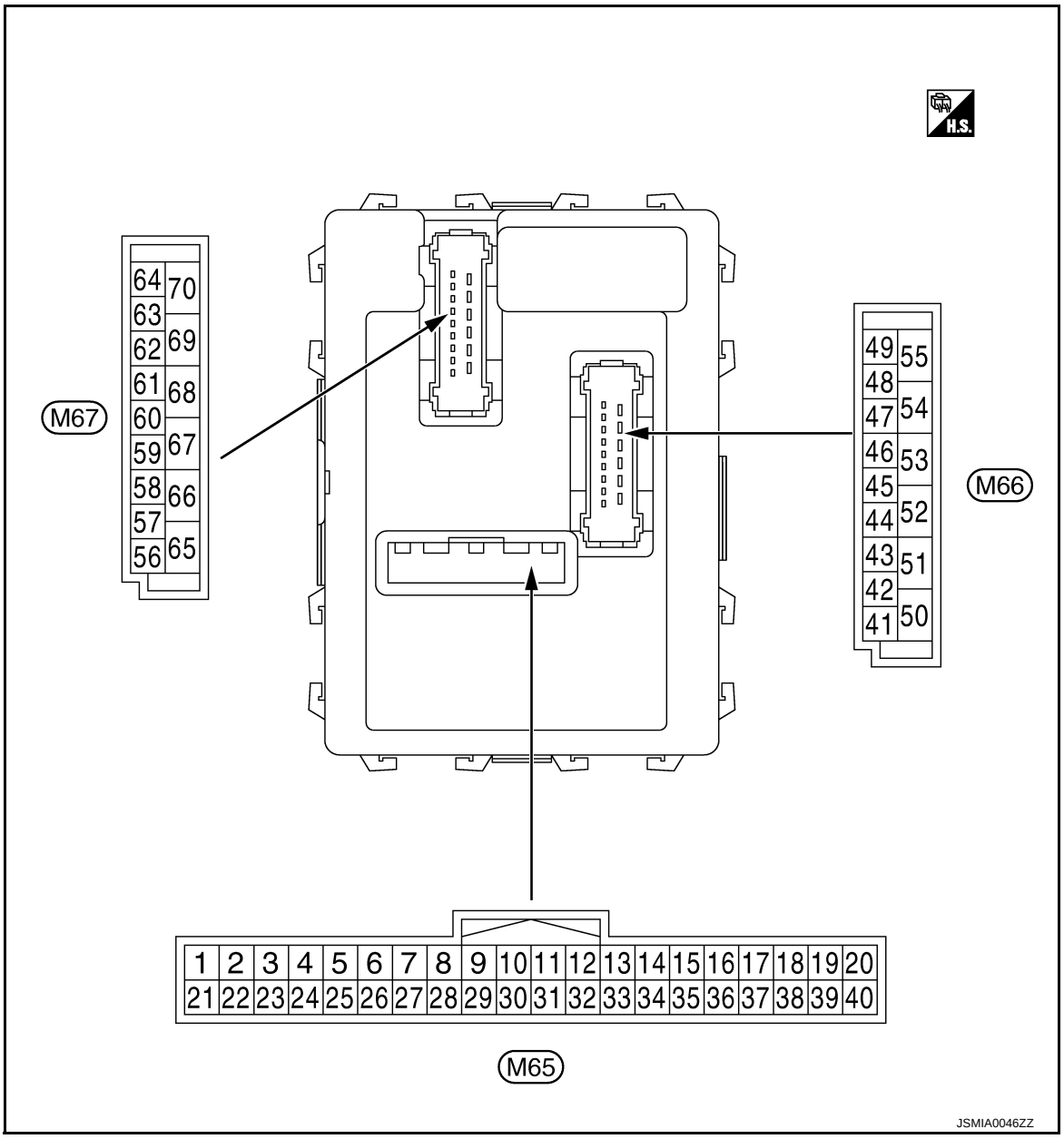
Monitor Item	Condition	Value/Status
IGN ON SW	Ignition switch OFF or ACC	Off
	Ignition switch ON	On
KEY ON SW	Mechanical key is removed from key cylinder	Off
	Mechanical key is inserted to key cylinder	On
CDL LOCK SW	Door lock/unlock switch does not operate	Off
	Press door lock/unlock switch to the lock side	On
CDL UNLOCK SW	Door lock/unlock switch does not operate	Off
	Press door lock/unlock switch to the unlock side	On
DOOR SW-DR	Driver's door closed	Off
	Driver's door opened	On
DOOR SW-AS	Passenger door closed	Off
	Passenger door opened	On
DOOR SW-RR	Rear RH door closed	Off
	Rear RH door opened	On
DOOR SW-RL	Rear LH door closed	Off
	Rear LH door opened	On
BACK DOOR SW	Back door closed	Off
	Back door opened	On
KEY CYL LK-SW	Other than driver door key cylinder LOCK position	Off
	Driver door key cylinder LOCK position	On
KEY CYL UN-SW	Other than driver door key cylinder UNLOCK position	Off
	Driver door key cylinder UNLOCK position	On
KEYLESS LOCK	“LOCK” button of key fob is not pressed	Off
	“LOCK” button of key fob is pressed	On
KEYLESS UNLOCK	“UNLOCK” button of key fob is not pressed	Off
	“UNLOCK” button of key fob is pressed	On
I-KEY LOCK	“LOCK” button of Intelligent Key or door request switch are not pressed	Off
	“LOCK” button of Intelligent Key or door request switch are pressed	On
I-KEY UNLOCK	“UNLOCK” button of Intelligent Key or door request switch are not pressed	Off
	“UNLOCK” button of Intelligent Key or door request switch are pressed	On
ACC ON SW	Ignition switch OFF	Off
	Ignition switch ACC or ON	On
REAR DEF SW	Rear window defogger switch OFF	Off
	Rear window defogger switch ON	On
LIGHT SW 1ST	Lighting switch OFF	Off
	Lighting switch 1ST	On

Monitor Item	Condition	Value/Status
BUCKLE SW	The seat belt (driver side) is unfastened. [Seat belt switch (driver side) OFF]	Off
	The seat belt (driver side) is fastened. [Seat belt switch (driver side) ON]	On
KEYLESS PANIC	PANIC button of key fob is not pressed	Off
	PANIC button of key fob is pressed	On
KEYLESS TRUNK	**NOTE:** The item is indicated, but not monitored.	Off
TRNK OPN MNTR	**NOTE:** The item is indicated, but not monitored.	Off
RKE LCK-UNLCK	LOCK/UNLOCK button of key fob is not pressed and held simultaneously	Off
	LOCK/UNLOCK button of key fob is pressed and held simultaneously	On
RKE KEEP UNLK	UNLOCK button of key fob is not pressed	Off
	UNLOCK button of key fob is pressed and held	On
HI BEAM SW	Lighting switch OFF	Off
	Lighting switch HI	On
HEAD LAMP SW 1	Lighting switch OFF	Off
	Lighting switch 2ND	On
HEAD LAMP SW 2	Lighting switch OFF	Off
	Lighting switch 2ND	On
AUTO LIGHT SW	Other than lighting switch AUTO	Off
	Lighting switch AUTO	On
PASSING SW	Other than lighting switch PASS	Off
	Lighting switch PASS	On
FR FOG SW	Front fog lamp switch OFF	Off
	Front fog lamp switch ON	On
RR FOG SW	**NOTE:** The item is indicated, but not monitored.	Off
TURN SIGNAL R	Turn signal switch OFF	Off
	Turn signal switch RH	On
TURN SIGNAL L	Turn signal switch OFF	Off
	Turn signal switch LH	On
ENGINE RUN	Engine stopped	Off
	Engine running	On
PKB SW	Parking brake switch is OFF	Off
	Parking brake switch is ON	On
CARGO LAMP SW	**NOTE:** The item is indicated, but not monitored.	Off
OPTICAL SENSOR	Bright outside of the vehicle	Close to 5 V
	Dark outside of the vehicle	Close to 0 V
IGN SW CAN	Ignition switch OFF or ACC	Off
	Ignition switch ON	On
FR WIPER HI	Front wiper switch OFF	Off
	Front wiper switch HI	On

Monitor Item	Condition	Value/Status
FR WIPER LOW	Front wiper switch OFF	Off
	Front wiper switch LO	On
FR WIPER INT	Front wiper switch OFF	Off
	Front wiper switch INT	On
FR WASHER SW	Front washer switch OFF	Off
	Front washer switch ON	On
INT VOLUME	Wiper intermittent dial is in a dial position 1 - 7	1 - 7
FR WIPER STOP	Any position other than front wiper stop position	Off
	Front wiper stop position	On
VEHICLE SPEED	While driving	Equivalent to speedometer reading
RR WIPER ON	Rear wiper switch OFF	Off
	Rear wiper switch ON	On
RR WIPER INT	Rear wiper switch OFF	Off
	Rear wiper switch INT	On
RR WASHER SW	Rear washer switch OFF	Off
	Rear washer switch ON	On
RR WIPER STOP	Rear wiper stop position	Off
	Other than rear wiper stop position	On
RR WIPER STP2	**NOTE:** The item is indicated, but not monitored.	Off
H/L WASH SW	**NOTE:** The item is indicated, but not monitored.	Off
HAZARD SW	Hazard switch OFF	Off
	Hazard switch ON	On
BRAKE SW	Brake pedal is not depressed	Off
	Brake pedal is depressed	On
FAN ON SIG	Blower fan motor switch OFF	Off
	Blower fan motor switch ON (other than OFF)	On
AIR COND SW	• A/C conditioner OFF (A/C switch indicator OFF) (Automatic air conditioner) • A/C switch OFF (Manual air conditioner)	Off
	• A/C conditioner ON (A/C switch indicator ON) (Automatic air conditioner) • A/C switch ON (Manual air conditioner)	On
I-KEY TRUNK	**NOTE:** The item is indicated, but not monitored.	Off
I-KEY PW DWN	UNLOCK button of Intelligent Key is not pressed	Off
	UNLOCK button of Intelligent Key is pressed and held	On
I-KEY PANIC	PANIC button of Intelligent Key is not pressed	Off
	PANIC button of Intelligent Key is pressed	On
PUSH SW	Return to ignition switch to “LOCK” position	Off
	Press ignition switch	On
TRNK OPNR SW	When back door opener switch is not pressed	Off
	When back door opener switch is pressed	On
TRUNK CYL SW	**NOTE:** The item is indicated, but not monitored.	Off

Monitor Item	Condition	Value/Status
HOOD SW	Close the hood **NOTE:** Vehicles of except for Mexico are OFF-fixed	Off
	Open the hood	On
OIL PRESS SW	• Ignition switch OFF or ACC • Engine running	Off
	Ignition switch ON	On
AIR PRESS FL	Ignition switch ON (Only when the signal from the transmitter is received)	Air pressure of front LH tire
AIR PRESS FR	Ignition switch ON (Only when the signal from the transmitter is received)	Air pressure of front RH tire
AIR PRESS RR	Ignition switch ON (Only when the signal from the transmitter is received)	Air pressure of rear RH tire
AIR PRESS RL	Ignition switch ON (Only when the signal from the transmitter is received)	Air pressure of rear LH tire
ID REGST FL1	ID of front LH tire transmitter is registered	Done
	ID of front LH tire transmitter is not registered	Yet
ID REGST FR1	ID of front RH tire transmitter is registered	Done
	ID of front RH tire transmitter is not registered	Yet
ID REGST RR1	ID of rear RH tire transmitter is registered	Done
	ID of rear RH tire transmitter is not registered	Yet
ID REGST RL1	ID of rear LH tire transmitter is registered	Done
	ID of rear LH tire transmitter is not registered	Yet
WARNING LAMP	Tire pressure indicator OFF	Off
	Tire pressure indicator ON	On
BUZZER	Tire pressure warning alarm is not sounding	Off
	Tire pressure warning alarm is sounding	On

TERMINAL LAYOUT

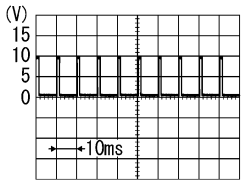
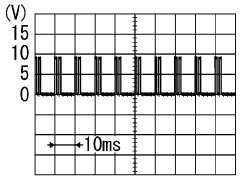
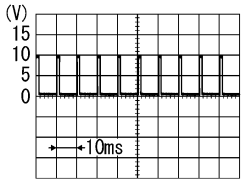
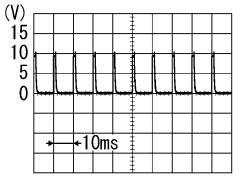
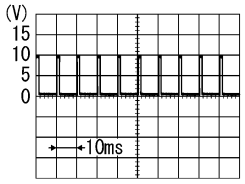


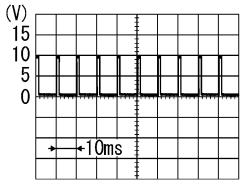
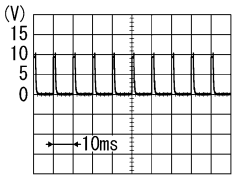
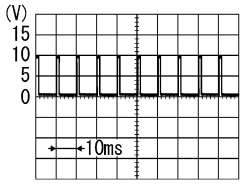
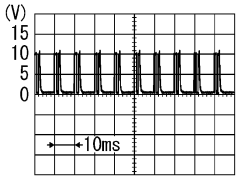
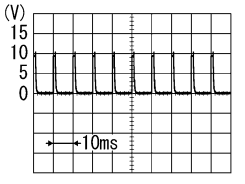
PHYSICAL VALUES

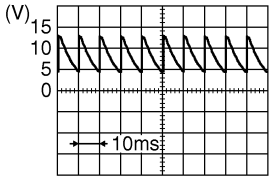
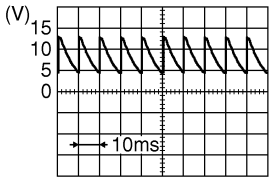
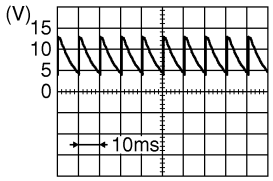
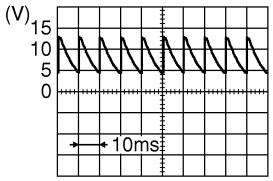
CAUTION:

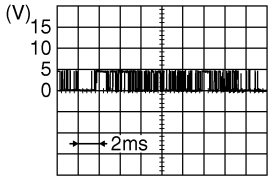
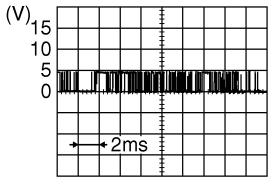
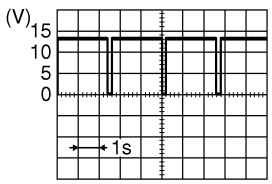
- **Check combination switch system terminal waveform under the loaded condition with lighting switch, turn signal switch and wiper switch OFF is not to be fluctuated by being overloaded.**
- **Turn wiper intermittent dial position to 4 except when checking waveform or voltage of wiper intermittent dial position. Wiper intermittent dial position can be confirmed on CONSULT-III. Refer to BCS-27, "COMB SW : CONSULT-III Function (BCM - COMB SW)".**
- **BCM reads the status of the combination switch at 10 ms internal normally. Refer to BCS-9, "System Diagram".**

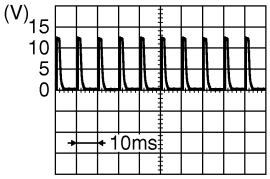
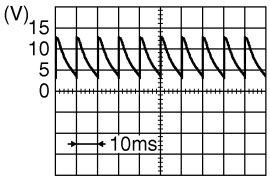
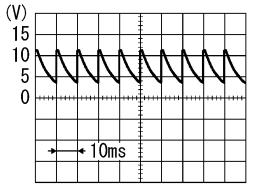
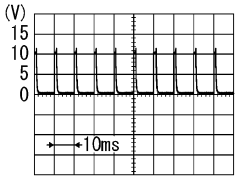
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
1 (V)	Ground	Ignition key hole illumination control	Output	Ignition key hole illumination	OFF	Battery voltage
					ON	0 V

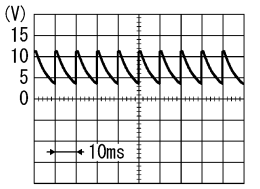
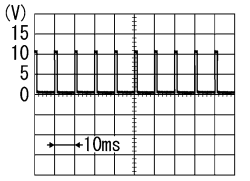
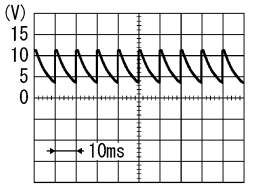
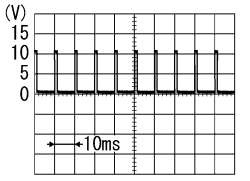
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
		Signal name	Input/ Output			
+	–					
2 (G)	Ground	Combination switch INPUT 5	Input	Combination switch (Wiper intermittent dial 4)	All switch OFF	0 V
					Turn signal switch RH Lighting switch HI Lighting switch 1ST	 PKIB4959J 1.0 V
					Lighting switch 2ND	 PKIB4953J 2.0 V
3 (Y)	Ground	Combination switch INPUT 4	Input	Combination switch (Wiper intermittent dial 4)	All switch OFF	0 V
					Turn signal switch LH Lighting switch PASS Lighting switch 2ND	 PKIB4959J 1.0 V
					Front fog lamp switch ON	 PKIB4955J 0.8 V
4 (W)	Ground	Combination switch INPUT 3	Input	Combination switch (Wiper intermittent dial 4)	All switch OFF	0 V
					Lighting switch AUTO Front wiper switch LO Front wiper switch MIST Front wiper switch INT	 PKIB4959J 1.0 V

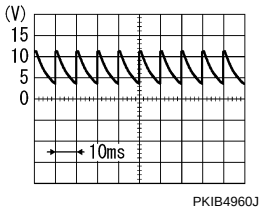
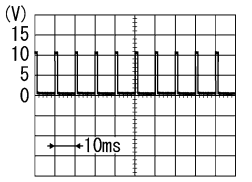
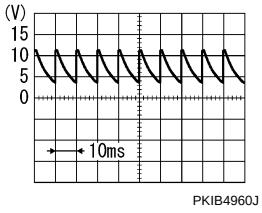
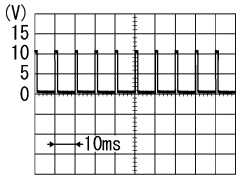
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
5 (R)	Ground	Combination switch INPUT 2	Input	Combination switch	All switch OFF (Wiper intermittent dial 4)	0 V
					Front washer switch (Wiper intermittent dial 4)	 PKIB4959J 1.0 V
					Rear washer ON (Wiper intermittent dial 4)	
					Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 5 • Wiper intermittent dial 6	
					Rear wiper switch ON (Wiper intermittent dial 4)	 PKIB4955J 0.8 V
6 (P)	Ground	Combination switch INPUT 1	Input	Combination switch	All switch OFF (Wiper intermittent dial 4)	0 V
					Front wiper switch HI (Wiper intermittent dial 4)	 PKIB4959J 1.0 V
					Rear wiper switch INT (Wiper intermittent dial 4)	
					Wiper intermittent dial 3 (All switch OFF)	
					Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 2	 PKIB4952J 1.7 V
					Any of the condition below with all switch OFF • Wiper intermittent dial 6 • Wiper intermittent dial 7	 PKIB4955J 0.8 V

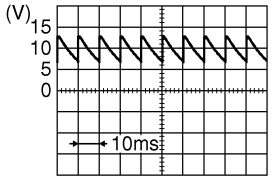
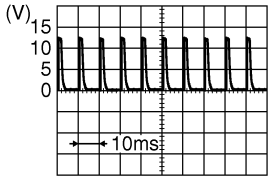
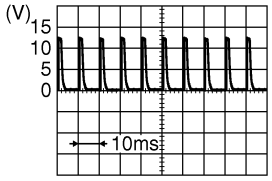
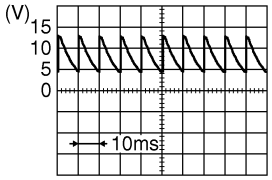
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
7 (L)	Ground	Door key cylinder switch UNLOCK signal	Input	Door key cylinder switch	NEUTRAL position	 JPMIA0587GB 8.0 - 8.5 V
					UNLOCK position	0 V
8 (R)	Ground	Door key cylinder switch LOCK signal	Input	Door key cylinder switch	NEUTRAL position	 JPMIA0587GB 8.0 - 8.5 V
					LOCK position	0 V
9 (R)	Ground	Stop lamp switch	Input	Stop lamp switch	OFF (Brake pedal is not depressed)	0 V
					ON (Brake pedal is depressed)	Battery voltage
10 (SB)	Ground	Rear window defogger switch	Input	Rear window defogger switch	Not pressed	Battery voltage
					Pressed	0 V
11 (SB)	Ground	Ignition switch ACC	Input	Ignition switch OFF		0 V
				Ignition switch ACC or ON		Battery voltage
12 (P)	Ground	Passenger door switch	Input	Passenger door switch	OFF (When passenger door closed)	 JPMIA0586GB 7.5 - 8.0 V
					ON (When passenger door opened)	0 V
13 (LG)	Ground	Rear door switch RH	Input	Rear door switch RH	OFF (When rear door RH closed)	 JPMIA0587GB 8.0 - 8.5 V
					ON (When rear door RH opened)	0 V

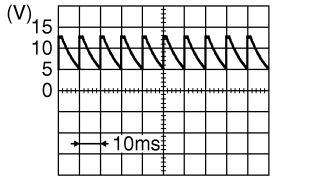
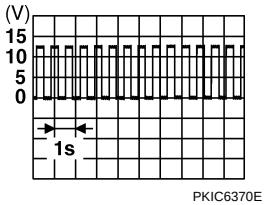
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
		Signal name	Input/ Output			
+	–					
14 (G)	Ground	Optical sensor	Input	Ignition switch ON	When bright outside of the vehicle	Close to 5 V
					When dark outside of the vehicle	Close to 0 V
17 (W)	Ground	Optical sensor power supply	Output	Ignition switch	OFF, ACC	0 V
					ON	5 V
18* (O)	Ground	Remote keyless entry receiver ground	Input	Ignition switch ON		0 V
19* (V)	Ground	Remote keyless entry receiver power supply	Input	Without Intelligent Key system	At any condition	5 V
				With Intelligent Key system	• Ignition switch OFF • For 3 seconds after ignition switch OFF to ON	0 V
					3 seconds or later after ignition switch OFF to ON	5 V
20* (GR)	Ground	Remote keyless entry receiver signal	Input	Without Intelligent Key system	At any condition	 JPMIA0589GB **NOTE:** The wave form changes according to signal-receiving condition.
				With Intelligent Key system	• Ignition switch OFF • For 3 seconds after ignition switch OFF to ON	0 V
					3 seconds or later after ignition switch OFF to ON	 JPMIA0589GB **NOTE:** The wave form changes according to signal-receiving condition.
21 (G)	Ground	NATS antenna amp.	Input/ Output	Just after inserting ignition key in key cylinder		Pointer of tester should move
23 (B)	Ground	Security indicator signal	Input	Security indicator	ON	0 V
					Blinking (Ignition switch OFF)	 JPMIA0590GB 12.0 V
					OFF	Battery voltage

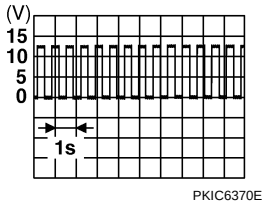
Terminal No. (Wire color) +	Terminal No. (Wire color) –	Description: Signal name	Description: Input/ Output	Condition		Value (Approx.)
25 (BR)	Ground	NATS antenna amp.	Input/ Output	Just after inserting ignition key in key cylinder		Pointer of tester should move
27 (Y)	Ground	A/C switch	Input	Ignition switch OFF		
				Ignition switch ON	A/C switch OFF	 JPMIA0591GB 1.6 V
					A/C switch ON	0 V
28 (LG)	Ground	Blower fan switch	Input	Ignition switch OFF		
				Ignition switch ON	Blower fan switch OFF	 JPMIA0592GB 7.0 - 7.5 V
					Blower fan switch ON	0 V
29 (W)	Ground	Hazard switch	Input	Hazard switch	OFF	Battery voltage
					ON	0 V
30 (G)	Ground	Back door opener switch	Input	Back door opener switch	Not pressed	Battery voltage
					Pressed	0 V
32 (BR)	Ground	Combination switch OUTPUT 5	Output	Combination switch	All switch OFF (Wiper intermittent dial 4)	 PKIB4960J 7.2 V
					Front fog lamp switch ON (Wiper intermittent dial 4)	
					Rear wiper switch ON (Wiper intermittent dial 4)	 PKIB4956J 1.0 V
					Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 2 • Wiper intermittent dial 6 • Wiper intermittent dial 7	

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
		Signal name	Input/ Output			
+	–					
33 (GR)	Ground	Combination switch OUTPUT 4	Output	Combination switch	All switch OFF (Wiper intermittent dial 4)	 PKIB4960J 7.2 V
					Lighting switch 1ST (Wiper intermittent dial 4)	
					Lighting switch AUTO (Wiper intermittent dial 4)	 PKIB4958J 1.2 V
					Rear wiper switch INT (Wiper intermittent dial 4)	
					Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 5 • Wiper intermittent dial 6	
34 (L)	Ground	Combination switch OUTPUT 3	Output	Combination switch	All switch OFF (Wiper intermittent dial 4)	 PKIB4960J 7.2 V
					Lighting switch 2ND (Wiper intermittent dial 4)	
					Lighting switch HI (Wiper intermittent dial 4)	 PKIB4958J 1.2 V
					Rear washer switch ON (Wiper intermittent dial 4)	
					Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 2 • Wiper intermittent dial 3	

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
35 (B)	Ground	Combination switch OUTPUT 2	Output	Combination switch (Wiper intermittent dial 4)	All switch OFF	 PKIB4960J 7.2 V
					Lighting switch 2ND Lighting switch PASS Front wiper switch INT Front wiper switch HI	 PKIB4958J 1.2 V
36 (V)	Ground	Combination switch OUTPUT 1	Output	Combination switch (Wiper intermittent dial 4)	All switch OFF	 PKIB4960J 7.2 V
					Turn signal switch RH Turn signal switch LH Front wiper switch LO (Front wiper switch MIST) Front washer switch ON	 PKIB4958J 1.2 V
37 (LG)	Ground	Key switch	Input	Insert mechanical key into ignition key cylinder		Battery voltage
				Remove mechanical key from ignition key cylinder		0 V
38 (G)	Ground	Ignition switch ON	Input	Ignition switch OFF or ACC		0 V
				Ignition switch ON or START		Battery voltage
39 (L)	Ground	CAN-H	Input/ Output	—		—
40 (P)	Ground	CAN-L	Input/ Output	—		—

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
43 (V)	Ground	Back door switch	Input	Back door switch	OFF (When back door closed)	 JPMIA0593GB 9.5 - 10.0 V
					ON (When back door opened)	0 V
44 (B)	Ground	Rear wiper auto stop	Input	Ignition switch ON	Rear wiper stop position	0 V
					Any position other than rear wiper stop position	Battery voltage
45 (P)	Ground	Door lock and unlock switch LOCK signal	Input	Door lock and unlock switch	NEUTRAL position	 JPMIA0591GB 1.6 V
					LOCK position	0 V
46 (BR)	Ground	Door lock and unlock switch UNLOCK signal	Input	Door lock and unlock switch	NEUTRAL position	 JPMIA0591GB 1.6 V
					UNLOCK position	0 V
47 (W)	Ground	Driver door switch	Input	Driver door switch	OFF (When driver door closed)	 JPMIA0587GB 8.0 - 8.5 V
					ON (When driver door opened)	0 V

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
48 (GR)	Ground	Rear door switch LH	Input	Rear door switch LH	OFF (When rear door LH closed)	 JPMIA0594GB 8.5 - 9.0 V
					ON (When rear door LH opened)	0 V
49 (L)	Ground	Luggage room lamp control	Output	Luggage room lamp switch DOOR position	Back door is closed (Luggage room lamp turns OFF)	Battery voltage
					Back door is opened (Luggage room lamp turns ON)	0 V
53 (V)	Ground	Back door open	Output	Back door opener switch	Not pressed (Back door actuator is activated)	0 V
					Pressed (Back door actuator is activated)	Battery voltage
55 (SB)	Ground	Rear wiper motor	Output	Ignition switch ON	Rear wiper switch OFF	0 V
					Rear wiper switch ON	Battery voltage
56 (Y)	Ground	Interior room lamp power supply	Output	After passing the interior room lamp battery saver operation time		0 V
				Any other time after passing the interior room lamp battery saver operation time		Battery voltage
57 (G)	Ground	Battery power supply	Input	Ignition switch OFF		Battery voltage
59 (L)	Ground	Driver door UNLOCK	Output	Driver door	UNLOCK (Actuator is activated)	Battery voltage
					Other then UNLOCK (Actuator is not activated)	0 V
60 (BR)	Ground	Turn signal LH	Output	Ignition switch ON	Turn signal switch OFF	0 V
					Turn signal switch LH	 PKIC6370E 6.0 V

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
61 (GR)	Ground	Turn signal RH	Output	Ignition switch ON	Turn signal switch OFF	0 V
					Turn signal switch RH	 6.0 V
63 (R)	Ground	Interior room lamp timer control	Output	Interior room lamp	OFF	Battery voltage
					ON	0 V
65 (V)	Ground	All doors LOCK	Output	All doors	LOCK (Actuator is activated)	Battery voltage
					Other then LOCK (Actuator is not activated)	0 V
66 (G)	Ground	Passenger door and rear door UNLOCK	Output	Passenger door and rear door	UNLOCK (Actuator is activated)	Battery voltage
					Other then UNLOCK (Actuator is not activated)	0 V
67 (B)	Ground	Ground	Output	Ignition switch ON		0 V
68 (L)	Ground	P/W power supply (RAP)	Output	Ignition switch ON		Battery voltage
69 (P)	Ground	P/W power supply (BAT)	Output	Ignition switch OFF		Battery voltage
70 (Y)	Ground	Battery power supply	Input	Ignition switch OFF		Battery voltage

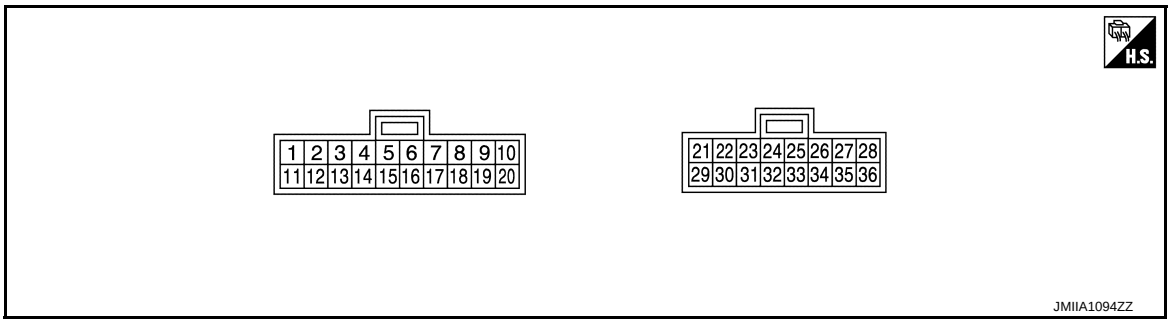
*: Except for Mexico with Intelligent Key

AUTO AMP.

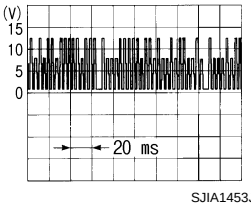
Reference Value

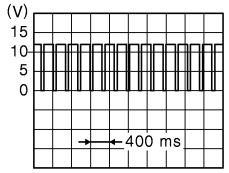
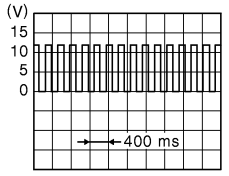
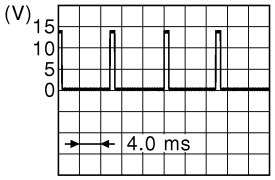
INFOID:0000000006484384

TERMINAL LAYOUT



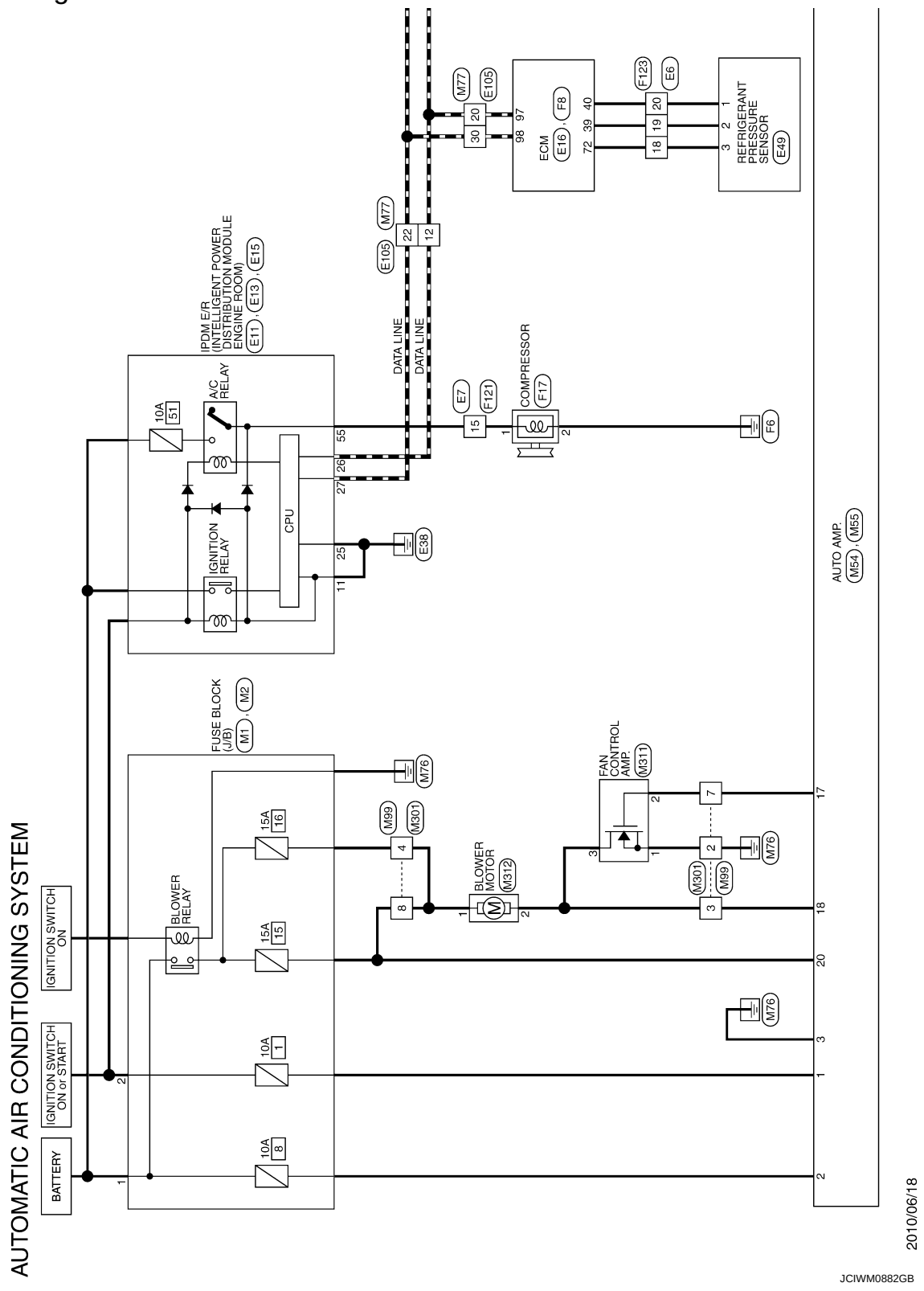
PHYSICAL VALUES

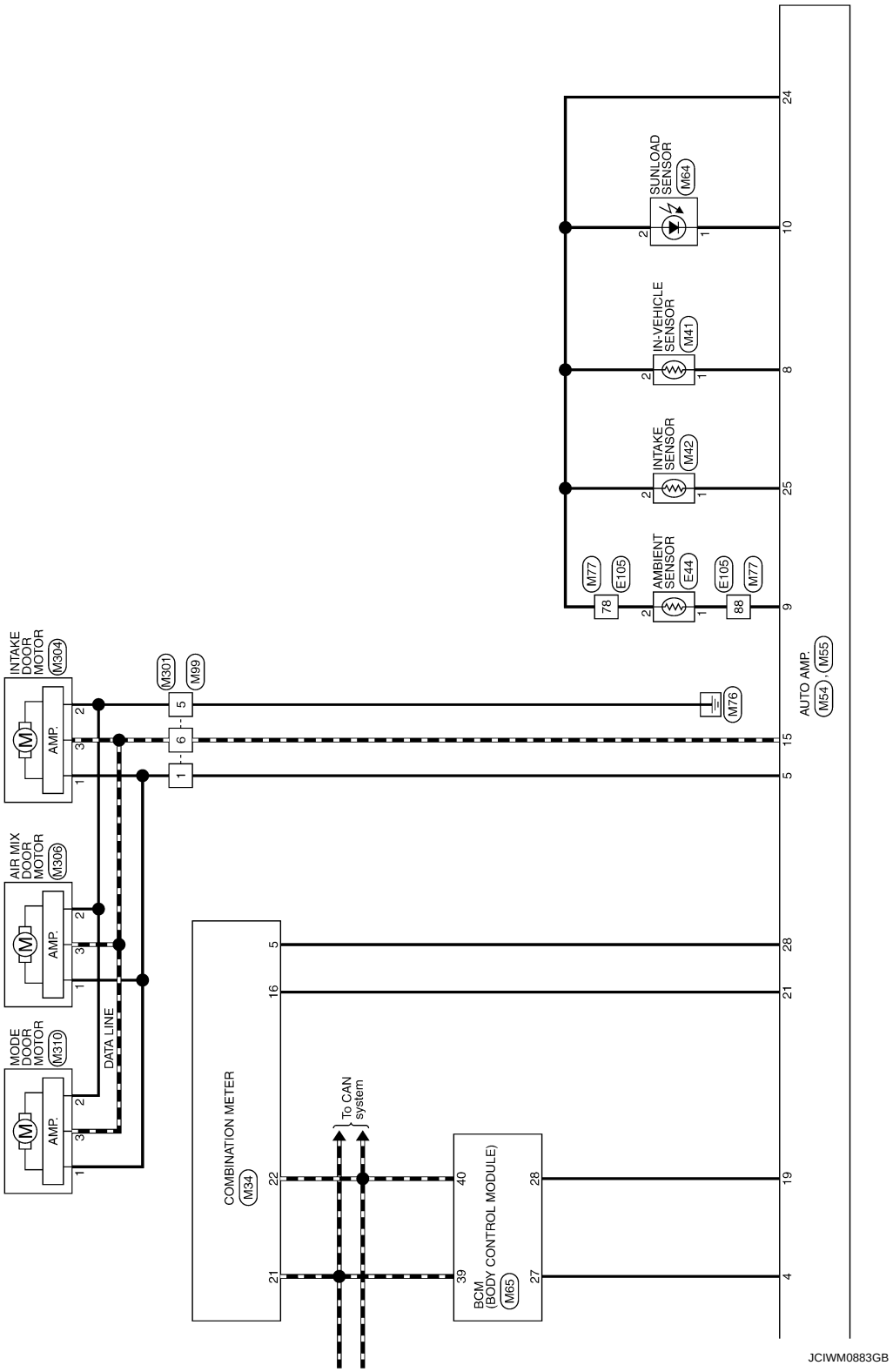
Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	–	Signal name	Input/ Output		
1 (W)	Ground	Power supply for IGN	—	Ignition switch ON	Battery voltage
2 (LG)	Ground	Power supply for BATT	—	Ignition switch OFF	Battery voltage
3 (B)	Ground	Ground	—	Ignition switch ON	0 V
4 (Y)	Ground	A/C (Compressor ON) signal	Output	Compressor OFF	12 V
				Compressor ON	0 V
5 (G)	Ground	Power supply for each door motor	—	Ignition switch ON	Battery voltage
8 (LG)	Ground	In-vehicle sensor	Input	—	—
9 (BR)	Ground	Ambient sensor	Input	—	—
10 (Y)	Ground	Sunload sensor	Input	—	—
11 (SB)	Ground	Illumination ground	—	Light switch ON	0 V
12 (GR)	Ground	Power supply for illumination	—	Light switch OFF	0 V
				Light switch ON	12 V
15 (V)	Ground	LAN signal	Input/ Output	—	 SJIA1453J
17 (L)	Ground	Fan control amp. control signal	Output	• Ignition switch ON • Blower speed: OFF	0 V
				• Ignition switch ON • Blower speed: 1st - 23rd	2.5 - 3.5 V
				• Ignition switch ON • Blower speed: 24th - 25th	10 V

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	–	Signal name	Input/ Output		
18 (R)	Ground	Blower motor feedback	Input	• Ignition switch ON • Blower speed: OFF	Battery voltage
				• Ignition switch ON • Blower speed: 1st	10 V
				• Ignition switch ON • Blower speed: 25th	0 V
19 (LG)	Ground	Blower motor ON signal	Output	Fan control dial: OFF	12 V
				Fan control dial: ON (Blower motor operate.)	0 V
20 (Y)	Ground	Power supply from IGN 2	—	Ignition switch ON	Battery voltage
21 (O)	Ground	Engine coolant temperature sensor	Input	At idle [after warming up, approx. 20°C (68°F)] NOTE: The wave forms vary depending on coolant temperature.	 JSIIA0459GB
				At idle [after warming up, approx. 80°C (176°F)] NOTE: The wave forms vary depending on coolant temperature.	 JSIIA0460GB
22 (SB)	Ground	Rear window defogger ON signal	Output	When rear window defogger switch is released.	 JPIIA0013GB
				When rear window defogger switch is being pressed.	0 V
23 (GR)	Ground	Rear window defogger feedback signal	Input	Rear window defogger switch: OFF	0 V
				Rear window defogger switch: ON	12 V
24 (R)	Ground	Sensor ground	—	Ignition switch ON	0 V
25 (O)	Ground	Intake sensor	Input	—	—
28 (BR)	Ground	Auto amp. connection recognition signal	Output	Ignition switch ON	5 V

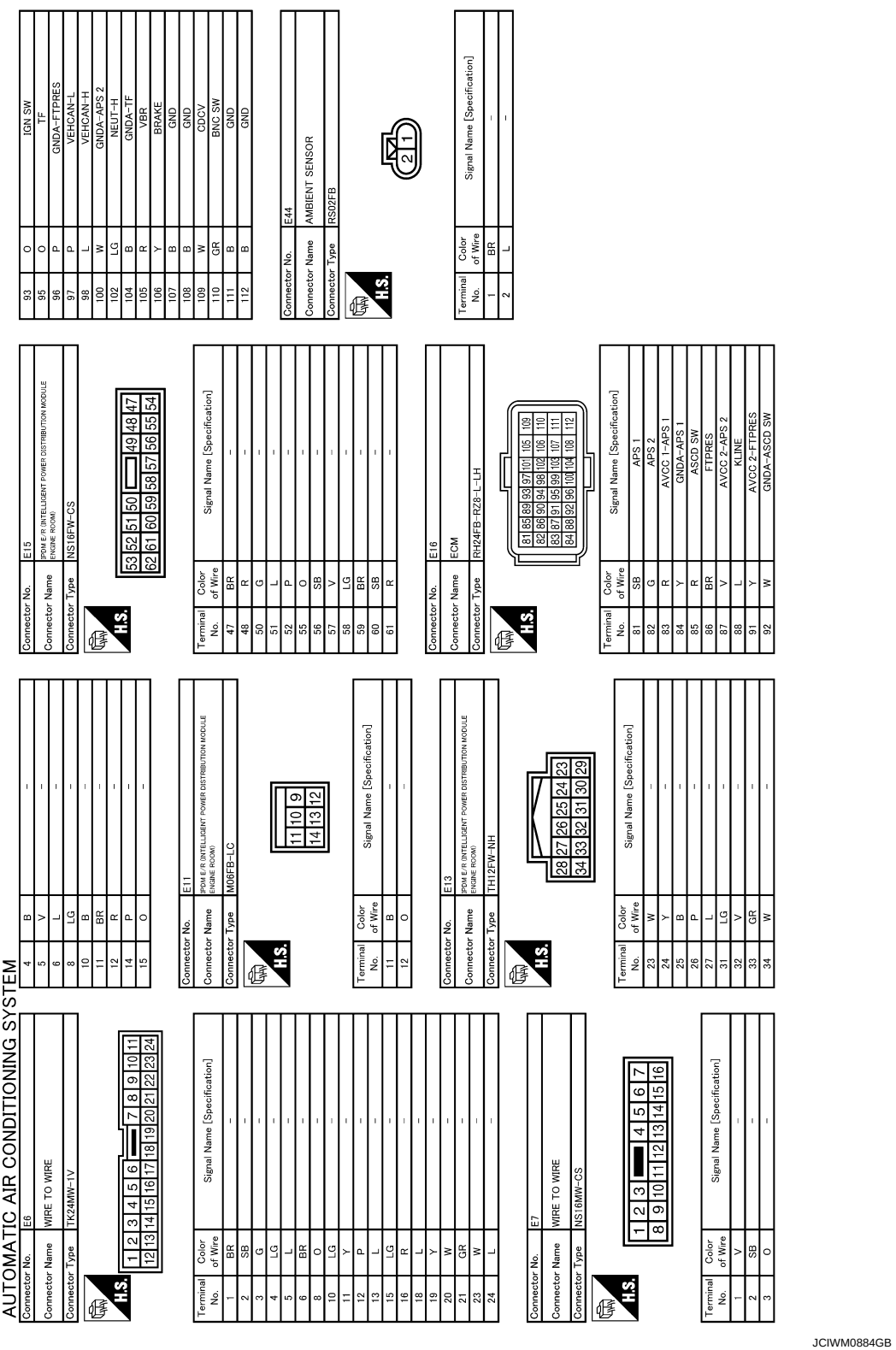
Wiring Diagram — AIR CONDITIONER CONTROL SYSTEM —

INFOID:0000000006484385




SUNLOAD SENSOR M64
IN-VEHICLE SENSOR M41
INTAKE SENSOR M42
AMBIENT SENSOR E44
M77
E105
78
88
INTAKE DOOR MOTOR M304
AIR MIX DOOR MOTOR M306
MODE DOOR MOTOR M310
AMP.
DATA LINE
M301
M99
M76
AUTO AMP. M54, M55
COMBINATION METER M34
To CAN system
BCM (BODY CONTROL MODULE) M65
JCIWM0883GB

AUTOMATIC AIR CONDITIONING SYSTEM



JCIWM0884GB

AUTOMATIC AIR CONDITIONING SYSTEM

Connector No.	E49
Connector Name	REFRIGERANT PRESSURE SENSOR
Connector Type	RK03FB

H.S.

1 2 3

Terminal No.	Color of Wire	Signal Name [Specification]
1	W	–
2	Y	–
3	L	–

Connector No.	E105
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
1	W	–
2	O	–
3	LG	–
4	V	–
5	Y	–
6	G	–
7	R	–
8	GR	–
9	BR	–
10	L	–
11	GR	–
12	P	–
14	L	–
15	V	–
19	R	–
20	P	–
21	L	–
22	L	–
24	LG	–
25	SB	–
30	L	–
31	BR	–
42	Y	–
43	SHIELD	–
51	L	–
52	W	–
53	BR	–
54	Y	–
60	O	–
61	BR	–
62	R	–
63	P	–
69	G	–
70	B	–
71	O	–
72	LG	–
78	L	–
79	V	–
80	Y	–
81	W	–
82	R	–
83	L	–
88	BR	–
89	R	–
90	GR	–
91	R	–
92	O	–
93	BR	–
94	W	–
96	BR	–
97	G	–
99	SB	–
100	L	–

Connector No.	F8
Connector Name	ECM
Connector Type	RH40FBR-RZ8-L-LH

H.S.

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

Terminal No.	Color of Wire	Signal Name [Specification]
33	P	O2SR 1
34	V	O2SR 2, 3RD O2S
35	L	GNDA–O2SR 1, 2, 3
36	R	GNDA–TPS–B 1
37	W	TPS 1–B 1
38	G	TPS 2–B 1
39	Y	PDPRES
40	W	GNDA–PDPRES
45	V	AF+1
46	P	TW
47	B	AVCC 1–TPS–B 1
49	LG	AF–1
50	BR	TA 1
52	O	GNDA–TW, SCVPOS
54	W	SCVPOS
56	R	QA–, GNDA–TA 1
58	L	QA 1+
59	V	AVCC 1–PHASE#1
60	B	GND–POS
61	W	KNK 1
64	Y	GND–PHASE#1
65	R	POS
67	SHIELD	GNDA–KNK 1
69	G	PHASE#1
72	L	AVCC 2–PDP, SCVPOS
76	P	AVCC 2–POS
77	R	BATT
78	O	CVTC#1

Connector No.	F17
Connector Name	COMPRESSOR
Connector Type	RH02FB

H.S.

1 2

Terminal No.	Color of Wire	Signal Name [Specification]
1	Y	–
2	B	–

Connector No.	F12I
Connector Name	WIRE TO WIRE
Connector Type	NS16FW-CS

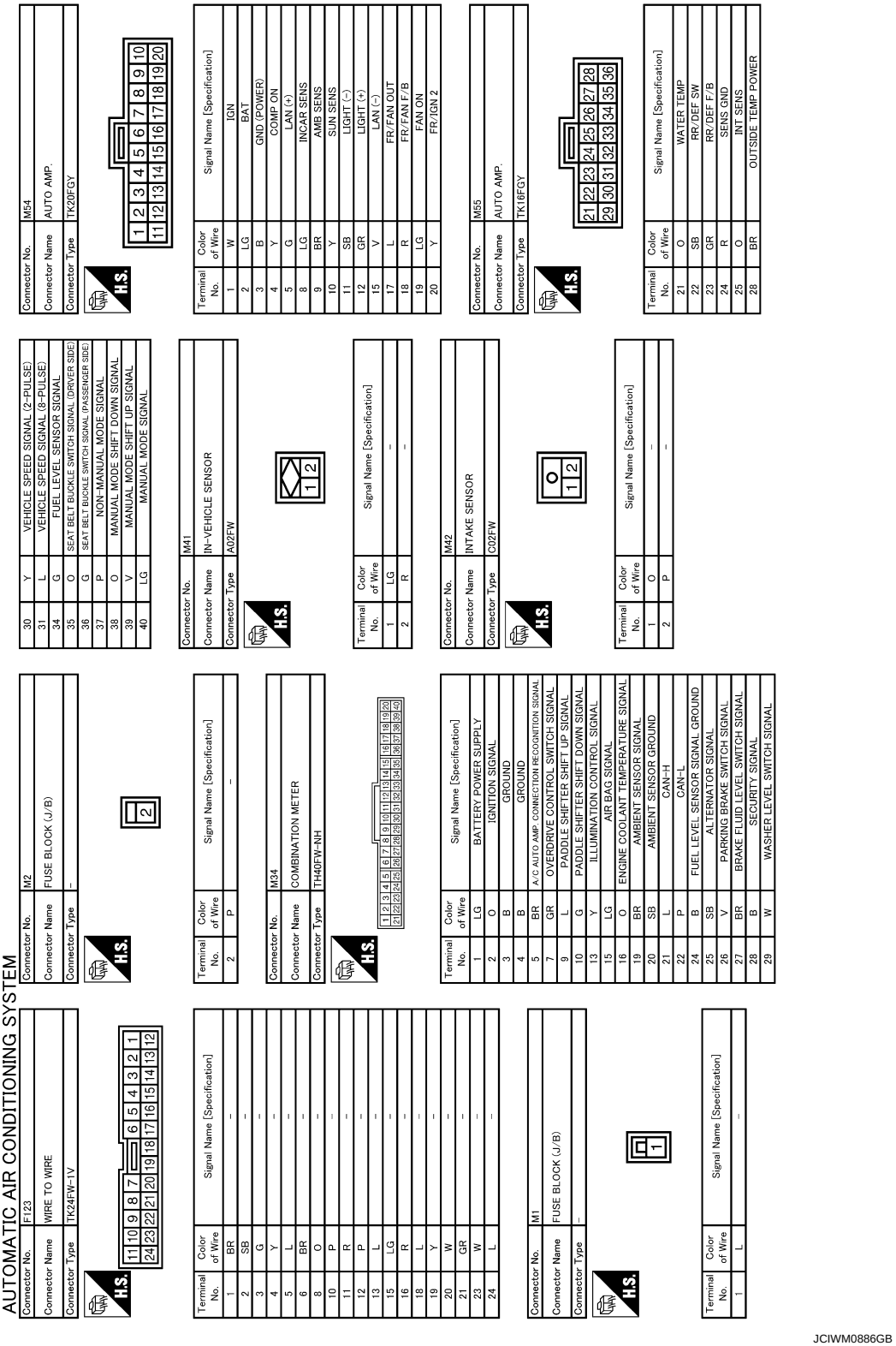
H.S.

7	6	5	4		3	2	1
16	15	14	13	12	11	10	9

Terminal No.	Color of Wire	Signal Name [Specification]
1	V	–
2	SB	–
3	O	–
4	B	–
5	V	–
6	L	–
8	LG	–
10	B	–
11	BR	–
12	R	–
14	P	–
15	Y	–

JCIWM0885GB

AUTOMATIC AIR CONDITIONING SYSTEM



JCIWM0886GB

AUTOMATIC AIR CONDITIONING SYSTEM

Connector No.	M64
Connector Name	SUNLOAD SENSOR
Connector Type	K02FB

H.S.

1 2

Terminal No.	Color of Wire	Signal Name [Specification]
1	Y	–
2	R	–

Connector No.	M65
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FW-NH

H.S.

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

Terminal No.	Color of Wire	Signal Name [Specification]
1	V	KEY RING OUTPUT
2	G	INPUT 5
3	Y	INPUT 4
4	W	INPUT 3
5	R	INPUT 2
6	P	INPUT 1
7	L	KEY CYC UNLOCK
8	R	KEY CYL LOCK SW
9	R	BRAKE SW
10	SB	RR DEF SW
11	SB	ACC
12	P	DR SW AS
13	LG	DR SW RR
14	G	AUTO LIGHT SENS INPUT
17	W	SENS POWER SUPPLY
18	O	KEYLESS TUNER SENS GND
19	V	KEYLESS TUNER POWER
20	GR	KEYLESS TUNER SIGNAL
21	G	IMMOBI ANT (CLOCK)
23	B	SECURITY IND OUT PUT
25	BR	IMMOBI ANT (RX, TX)
27	Y	AIRCON SW
28	LG	BLOWER FAN SW
29	W	HAZARD SW
30	G	BACK DOOR OPEN SW
32	BR	OUTPUT 5
33	GR	OUTPUT 4
34	L	OUTPUT 3
35	B	OUTPUT 2
36	V	OUTPUT 1
37	LG	KEY SW
38	G	IGN
39	L	CAN-H
40	P	CAN-L

Connector No.	M77
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
1	BR	–
2	O	–
3	LG	–
4	Y	–
5	Y	–
6	G	–
7	R	–
8	GR	–
9	BR	–
10	L	–
11	GR	–
12	P	–
14	SB	–
15	V	–
19	R	–
20	P	–
21	O	–
22	L	–
24	BR	–
25	W	–
30	L	–
31	W	–
42	O	–
43	SHIELD	–
51	W	–
52	SB	–
53	L	–
54	Y	–
60	O	–
61	BR	–
62	G	–
63	P	–
69	W	–
70	B	–
71	P	–
72	O	–
78	SB	–
79	V	–
80	L	–
81	W	–
82	B	–
83	LG	–
88	BR	–
89	G	–
90	GR	–
91	R	–
92	L	–
93	P	–
94	W	–
96	BR	–
97	G	–
99	SB	–
100	Y	–

Connector No.	M99
Connector Name	WIRE TO WIRE
Connector Type	M08FW-GY-LC

H.S.

4 3 2 1
8 7 6 5

Terminal No.	Color of Wire	Signal Name [Specification]
1	G	–
2	B	–
3	R	–
4	GR	–
5	B	–
6	V	–
7	L	–
8	Y	–

Connector No.	M301
Connector Name	WIRE TO WIRE
Connector Type	M08MW-GY-LC

H.S.

1 2 3 4
5 6 7 8

Terminal No.	Color of Wire	Signal Name [Specification]
1	W	–
2	B	–
3	R	–
4	Y	–
5	B	–
6	V	–
7	L	–
8	Y	–

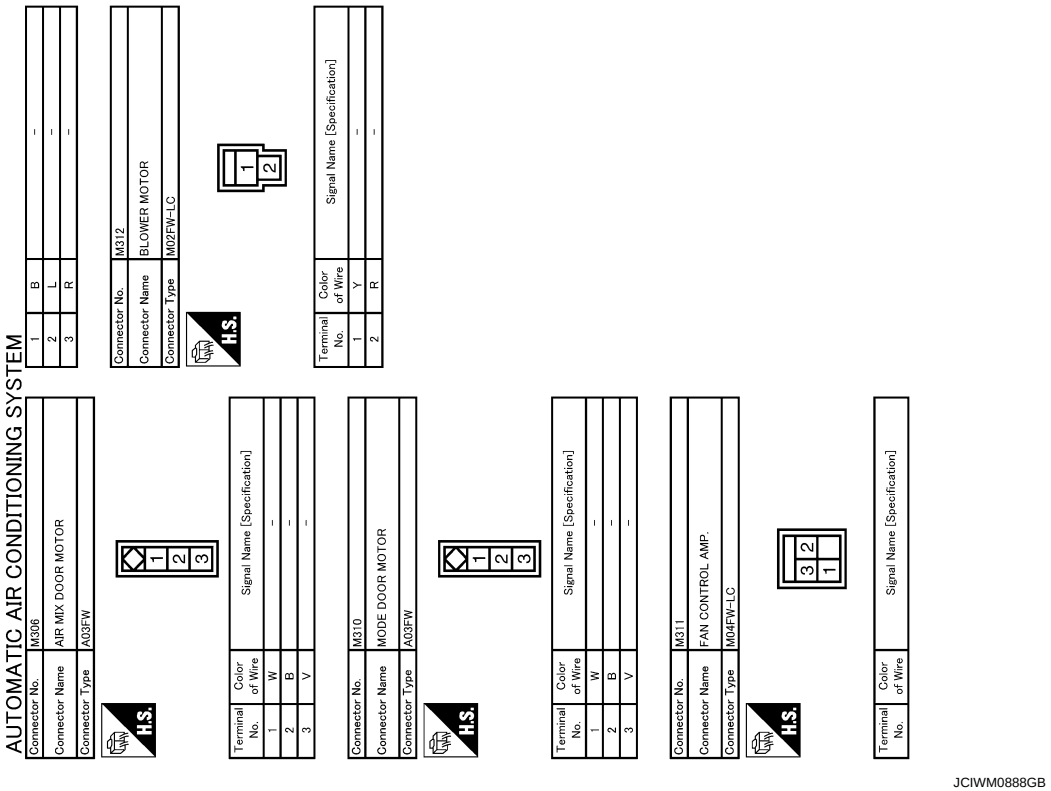
Connector No.	M304
Connector Name	INTAKE DOOR MOTOR
Connector Type	A03FW

H.S.

1 2 3

Terminal No.	Color of Wire	Signal Name [Specification]
1	W	–
2	B	–
3	V	–

JCIWM0887GB


AUTOMATIC AIR CONDITIONING SYSTEM
Connector No. M306
Connector Name AIR MIX DOOR MOTOR
Connector Type A03FW
H.S.
Terminal No. Color of Wire Signal Name [Specification]
1 W -
2 B -
3 V -
Connector No. M310
Connector Name MODE DOOR MOTOR
Connector Type A03FW
H.S.
Terminal No. Color of Wire Signal Name [Specification]
1 W -
2 B -
3 V -
Connector No. M311
Connector Name FAN CONTROL AMP.
Connector Type M04FW-LC
H.S.
Terminal No. Color of Wire Signal Name [Specification]
1 B -
2 L -
3 R -
Connector No. M312
Connector Name BLOWER MOTOR
Connector Type M02FW-LC
H.S.
Terminal No. Color of Wire Signal Name [Specification]
1 Y -
2 R -
JCIWM0888GB

SYMPTOM DIAGNOSIS

AIR CONDITIONER CONTROL

Diagnosis Chart By Symptom

INFOID:0000000006484386

Symptom	Reference	
A/C system does not activate.	Go to Trouble Diagnosis Procedure for A/C System.	HAC-60, "Diagnosis Procedure"
Air outlet does not change.	Go to Trouble Diagnosis Procedure for Mode Door Motor. (LAN)	HAC-37, "Diagnosis Procedure"
Mode door motor does not operate normally.		
Discharge air temperature does not change.	Go to Trouble Diagnosis Procedure for Air Mix Door Motor. (LAN)	HAC-39, "Diagnosis Procedure"
Air mix door motor does not operate normally.		
Intake door does not change.	Go to Trouble Diagnosis Procedure for Intake Door Motor. (LAN)	HAC-41, "Diagnosis Procedure"
Intake door motor does not operate normally.		
Blower motor operation is malfunctioning.	Go to Trouble Diagnosis Procedure for Blower Motor.	HAC-43, "Diagnosis Procedure"
Magnet clutch does not engage.	Go to Trouble Diagnosis Procedure for Magnet Clutch.	HAC-47, "Diagnosis Procedure"
Insufficient cooling	Go to Trouble Diagnosis Procedure for Insufficient Cooling.	HAC-87, "Inspection procedure"
No cool air comes out (Air flow volume is normal.)		
Insufficient heating	Go to Trouble Diagnosis Procedure for Insufficient Heating.	HAC-89, "Inspection procedure"
No warm air comes out (Air flow volume is normal.)		
Noise	Go to Trouble Diagnosis Procedure for Noise.	HAC-91, "Inspection procedure"
Self-diagnosis cannot be performed.	Go to Trouble Diagnosis Procedure for Self-diagnosis.	HAC-93, "Inspection procedure"

INSUFFICIENT COOLING

Description

INFOID:0000000006484387

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

Inspection procedure

INFOID:0000000006484388

1. CHECK WITH A GAUGE OF RECOVERY/RECYCLING RECHARGING EQUIPMENT

Connect the recovery/recycling recharging equipment to the vehicle and perform the pressure inspection with the gauge.

Is there refrigerant?

YES >> GO TO 2.
NO-1 >> Check for refrigerant leakages with the refrigerant leakage detecting fluorescent leak detector. Refer to HA-39, "Inspection".
NO-2 >> GO TO 2 after repairing or replacing the parts according to the inspection results.

2. CHECK CHARGED REFRIGERANT AMOUNT

1. Connect the recovery/recycling recharging to the vehicle and discharge the refrigerant.
2. Recharge with the proper amount of refrigerant and perform the inspection with the refrigerant leakage detecting fluorescent leak detector. Refer to HA-39, "Inspection".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Refill the refrigerant and repair or replace the parts according to the inspection results.

3. CHECK REFRIGERANT CYCLE PRESSURE

Connect the recovery/recycling recharging equipment to the vehicle and perform the performance test. Refer to HA-37, "Performance Chart".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Perform the diagnosis with the gauge pressure. Refer to HA-7, "Trouble Diagnosis For Unusual Pressure".

4. CHECK SETTING OF TEMPERATURE SETTING TRIMMER

Check the setting of temperature setting trimmer. Refer to HAC-7, "Temperature Setting Trimmer".

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

Are the symptoms solved?

YES >> Perform the setting separately if necessary.
NO >> GO TO 5.

5. PERFORM SELF-DIAGNOSIS STEP-2

Perform self-diagnosis STEP-2. Refer to HAC-31, "Diagnosis Description", see Nos. 1 to 3.

Is the inspection result normal?

YES >> GO TO 6.
NO >> Go to appropriate malfunctioning sensor circuit. Refer to HAC-31, "Diagnosis Description", see No. 7.

6. PERFORM SELF-DIAGNOSIS STEP-4

Perform self-diagnosis STEP-4. Refer to HAC-31, "Diagnosis Description", see Nos.1 to 6.

Is it operated normally?

YES >> GO TO 7.
NO >> Perform the diagnosis applicable to each output device.

7. CHECK DRIVE BELT

Check tension of the drive belt. Refer to EM-16, "Checking".

Is the inspection result normal?

YES >> GO TO 8.
NO >> Adjust or replace the drive belt.

8. CHECK AIR LEAKAGE FROM DUCT

Check duct and nozzle, etc. of A/C system for air leakage.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair or replace parts according to the inspection results.

INSUFFICIENT HEATING

Description

INFOID:0000000006484389

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

Inspection procedure

INFOID:0000000006484390

1.CHECK COOLING SYSTEM

1. Check engine coolant level and check for leakage. Refer to CO-10, "Inspection".
2. Check radiator cap. Refer to CO-15, "RADIATOR CAP : Inspection".
3. Check water flow sounds of engine coolant. Refer to CO-11, "Refilling".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Refill the engine coolant and repair or replace the parts according to the inspection results.

2.CHECK SETTING OF TEMPERATURE SETTING TRIMMER

1. Check the setting of temperature setting trimmer. Refer to HAC-7, "Temperature Setting Trimmer".
2. Check that the temperature setting trimmer is set to “– direction”.
   NOTE:
   The control temperature can be set with the setting of temperature setting trimmer.
3. Set temperature control dial to “0”.

Are the symptoms solved?

YES >> Perform the setting separately if necessary.
NO >> GO TO 3

3.CHECK OPERATION

1. Turn temperature control dial and raise temperature setting to 32°C after warming up the engine.
2. Check that warm air blows from outlets.

Is the inspection result normal?

YES >> INSPECTION END
NO >> GO TO 4.

4.PERFORM SELF-DIAGNOSIS STEP-2

Perform self-diagnosis STEP-2. Refer to HAC-31, "Diagnosis Description", see Nos. 1 to 3.

Is the inspection result normal?

YES >> GO TO 5.
NO >> Go to appropriate malfunctioning sensor circuit. Refer to HAC-31, "Diagnosis Description", see No. 7.

5.PERFORM SELF-DIAGNOSIS STEP-4

Perform self-diagnosis STEP-4. Refer to HAC-31, "Diagnosis Description", see Nos. 1 to 6.

Is it installed normally?

YES >> GO TO 6.
NO >> Perform the diagnosis applicable to each output device.

6.CHECK AIR LEAKAGE FROM DUCT

Check duct and nozzle, etc. of A/C system for air leakage.

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair or replace parts according to the inspection results.

7.CHECK HEATER HOSE INSTALLATION CONDITION

Check the heater hose installation condition visually (for twist, crush, etc.).

Is the inspection result normal?

YES >> GO TO 8.
NO >> Repair or replace parts according to the inspection results.

8. CHECK TEMPERATURE OF HEATER HOSE

1. Check the temperature of inlet hose and outlet hose of heater core.
2. Check that the inlet side of heater core is hot and the outlet side is slightly lower than/almost equal to the inlet side.

CAUTION:
The temperature inspection should be performed in a short time because the engine coolant temperature is too hot.

Is the inspection result normal?

YES >> GO TO 9.
NO >> Replace the heater core after performing the procedures after the cooling system inspection again. GO TO 1.

9. REPLACE HEATER CORE

Replace the heater core. Refer to HA-54, "HEATER CORE : Removal and Installation".

Are the symptoms solved?

YES >> INSPECTION END
NO >> Perform the procedures after the cooling system inspection again. GO TO 1.

NOISE

Description

INFOID:0000000006484391

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

Inspection procedure

INFOID:0000000006484392

1.CHECK OPERATION

1. Operate the A/C system and check the operation. Refer to HAC-6, "Description & Inspection".
2. Check the parts where noise is occurring.

Can the parts where noise is occurring be checked?

YES-1 >> Noise from blower motor: GO TO 2.
YES-2 >> Noise from compressor: GO TO 3.
YES-3 >> Noise from expansion valve: GO TO 4.
YES-4 >> Noise from A/C piping (pipe, flexible hose): GO TO 6.
YES-5 >> Noise from drive belt: GO TO 7.
NO >> INSPECTION END

2.CHECK BLOWER MOTOR

1. Remove blower motor. Refer to VTL-16, "Removal and Installation".
2. Remove foreign materials that are in the A/C unit assembly.
3. Check the noise from blower motor again.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace blower motor.

3.REPLACE COMPRESSOR

1. Correct the refrigerant with recovery/recycling recharging equipment.
2. Recharge with the proper amount of the collected refrigerant after recycling or new refrigerant.
3. Check for the noise from compressor again.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace compressor.

4.CHECK WITH GAUGE PRESSURE

Perform the diagnosis with the gauge pressure. Refer to HA-7, "Trouble Diagnosis For Unusual Pressure".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace malfunctioning part(s).

5.REPLACE EXPANSION VALVE

1. Correct the refrigerant with recovery/recycling recharging equipment.
2. Recharge with the proper amount of the collected refrigerant after recycling or new refrigerant.
3. Check for the noise from expansion valve again.

Are the symptoms solved?

YES >> INSPECTION END
NO >> Replace expansion valve.

6.CHECK A/C PIPING (PIPE, FLEXIBLE HOSE)

1. Check A/C piping [pipe, flexible hose (for deformation and damage, etc.)].
2. Check the installation condition of clips and brackets, etc. of A/C piping (pipe, flexible hose).

Is the inspection result normal?

YES >> Fix the line with rubber or come vibration absorbing material.
NO >> Repair or replace parts according to the inspection results.

7.CHECK DRIVE BELT

Check tension of the drive belt. Refer to EM-16, "Checking".

Is the inspection result normal?

YES >> Check the noise from compressor: GO TO 3.
NO >> Adjust or replace the drive belt according to the inspection results.

SELF-DIAGNOSIS CANNOT BE PERFORMED

Description

INFOID:0000000006484393

Symptom: Self-diagnosis function does not operate normally.

Inspection procedure

INFOID:0000000006484394

1.CHECK SELF-DIAGNOSIS FUNCTION

1. Set the fan control dial to OFF position.
2. Turn ignition switch ON.
3. Set in self-diagnosis mode as per the following.
   Within 10 seconds after starting engine (ignition switch is turned ON.), press A/C 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. Start engine before performing this diagnosis to avoid this.

Does self-diagnosis function operate?

YES >> INSPECTION END
NO >> GO TO 2.

2.CHECK POWER SUPPLY AND GROUND CIRCUIT OF AUTO AMP.

Check power supply and ground circuit of auto amp. Refer to HAC-60, "Component Function Check".

Is the inspection result normal?

YES >> Replace auto amp.
NO >> Repair or replace malfunctioning part(s).

PRECAUTION

PRECAUTIONS

FOR USA AND CANADA

FOR USA AND CANADA : Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:0000000006601199

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 “SRS AIR BAG” and “SEAT BELT” 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 that 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 “SRS AIR BAG”.**
- **Never 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 Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never 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.**

FOR USA AND CANADA : Precaution Necessary for Steering Wheel Rotation After Battery Disconnect

INFOID:0000000006601200

NOTE:

- This Procedure is applied only to models with Intelligent Key system and NVIS/IVIS (NISSAN/INFINITI VEHICLE IMMOBILIZER SYSTEM - NATS).
- Remove and install all control units after disconnecting both battery cables with the ignition switch in the ″LOCK″ position.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If DTC is detected, perform trouble diagnosis according to self-diagnostic results.

For models equipped with the Intelligent Key system and NVIS/IVIS, an electrically controlled steering lock mechanism is adopted on the key cylinder.
For this reason, if the battery is disconnected or if the battery is discharged, the steering wheel will lock and steering wheel rotation will become impossible.
If steering wheel rotation is required when battery power is interrupted, follow the procedure below before starting the repair operation.

OPERATION PROCEDURE

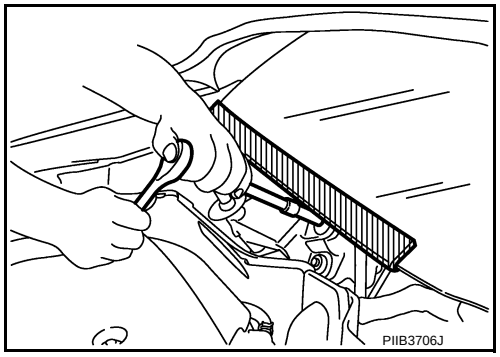
1. Connect both battery cables.
   NOTE:
   Supply power using jumper cables if battery is discharged.
2. Use the Intelligent Key or mechanical key to turn the ignition switch to the ″ACC″ position. At this time, the steering lock will be released.

3. Disconnect both battery cables. The steering lock will remain released and the steering wheel can be rotated.
4. Perform the necessary repair operation.
5. When the repair work is completed, return the ignition switch to the "LOCK" position before connecting the battery cables. (At this time, the steering lock mechanism will engage.)
6. Perform a self-diagnosis check of all control units using CONSULT-III.

FOR USA AND CANADA : Precaution for Procedure without Cowl Top Cover

INFOID:0000000006601201

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



FOR USA AND CANADA : Precautions For Xenon Headlamp Service

INFOID:0000000006601202

WARNING:

Comply with the following warnings to prevent any serious accident.

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

CAUTION:

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

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

FOR USA AND CANADA : Working with HFC-134a (R-134a)

INFOID:0000000006601203

CAUTION:

- **CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. Compressor malfunction is likely to occur if the refrigerants are mixed, refer to "CONTAMINATED REFRIGERANT" below. To determine the purity of HFC-134a (R-134a) in the vehicle and recovery tank, use Refrigerant Recovery/Recycling Recharging equipment and Refrigerant Identifier.**
- **Use only specified lubricant for the HFC-134a (R-134a) A/C system and HFC-134a (R-134a) components. Compressor malfunction is likely to occur if lubricant other than that specified is used.**
- **The specified HFC-134a (R-134a) lubricant rapidly absorbs moisture from the atmosphere. The following handling precautions must be observed:**
- **Cap (seal) immediately the component to minimize the entry of moisture from the atmosphere when removing refrigerant components from a vehicle.**
- **Never remove the caps (unseal) until just before connecting the components when installing refrigerant components to a vehicle. Connect all refrigerant loop components as quickly as possible to minimize the entry of moisture into system.**
- **Use only the specified lubricant from a sealed container. Reseal immediately containers of lubricant. Lubricant becomes moisture saturated and should not be used without proper sealing.**

- **Never allow lubricant (NISSAN A/C System Oil Type S) to come in contact with styrene foam parts. Damage may result.**

CONTAMINATED REFRIGERANT

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

- Explain to the customer that environmental regulations prohibit the release of contaminated refrigerant into the atmosphere.
- Explain that recovery of the contaminated refrigerant could damage service equipment and refrigerant supply.
- Suggest the customer return the vehicle to the location of previous service where the contamination may have occurred.
- In case of repairing, recover the refrigerant using only **dedicated equipment and containers. Never recover contaminated refrigerant into the existing service equipment.** Contact a local refrigerant product retailer for available service if the facility does not have dedicated recovery equipment. This refrigerant must be disposed of in accordance with all federal and local regulations. In addition, replacement of all refrigerant system components on the vehicle is recommended.
- The air conditioner warranty is void if the vehicle is within the warranty period. Please contact Nissan Customer Affairs for further assistance.

FOR USA AND CANADA : General Refrigerant Precaution

INFOID:0000000006601204

WARNING:

- **Never breath A/C refrigerant and lubricant vapor or mist. Exposure may irritate eyes, nose and throat. Use only approved recovery/recycling equipment to discharge HFC-134a (R-134a) refrigerant. Ventilate work area before resuming service if accidental system discharge occurs. Additional health and safety information may be obtained from refrigerant and lubricant manufacturers.**
- **Never release refrigerant into the air. Use approved recovery/recycling equipment to capture the refrigerant each time an air conditioning system is discharged.**
- **Wear always eye and hand protection (goggles and gloves) when working with any refrigerant or air conditioning system.**
- **Never store or heat refrigerant containers above 52°C (126°F).**
- **Never heat a refrigerant container with an open flame; Place the bottom of the container in a warm pail of water if container warming is required.**
- **Never intentionally drop, puncture, or incinerate refrigerant containers.**
- **Keep refrigerant away from open flames: poisonous gas is produced if refrigerant burns.**
- **Refrigerant displaces oxygen, therefore be certain to work in well ventilated areas to prevent suffocation.**
- **Never pressure test or leakage test HFC-134a (R-134a) service equipment and/or vehicle air conditioning systems with compressed air during repair. Some mixtures of air and HFC-134a (R-134a) have been shown to be combustible at elevated pressures. These mixtures, if ignited, may cause injury or property damage. Additional health and safety information may be obtained from refrigerant manufacturers.**

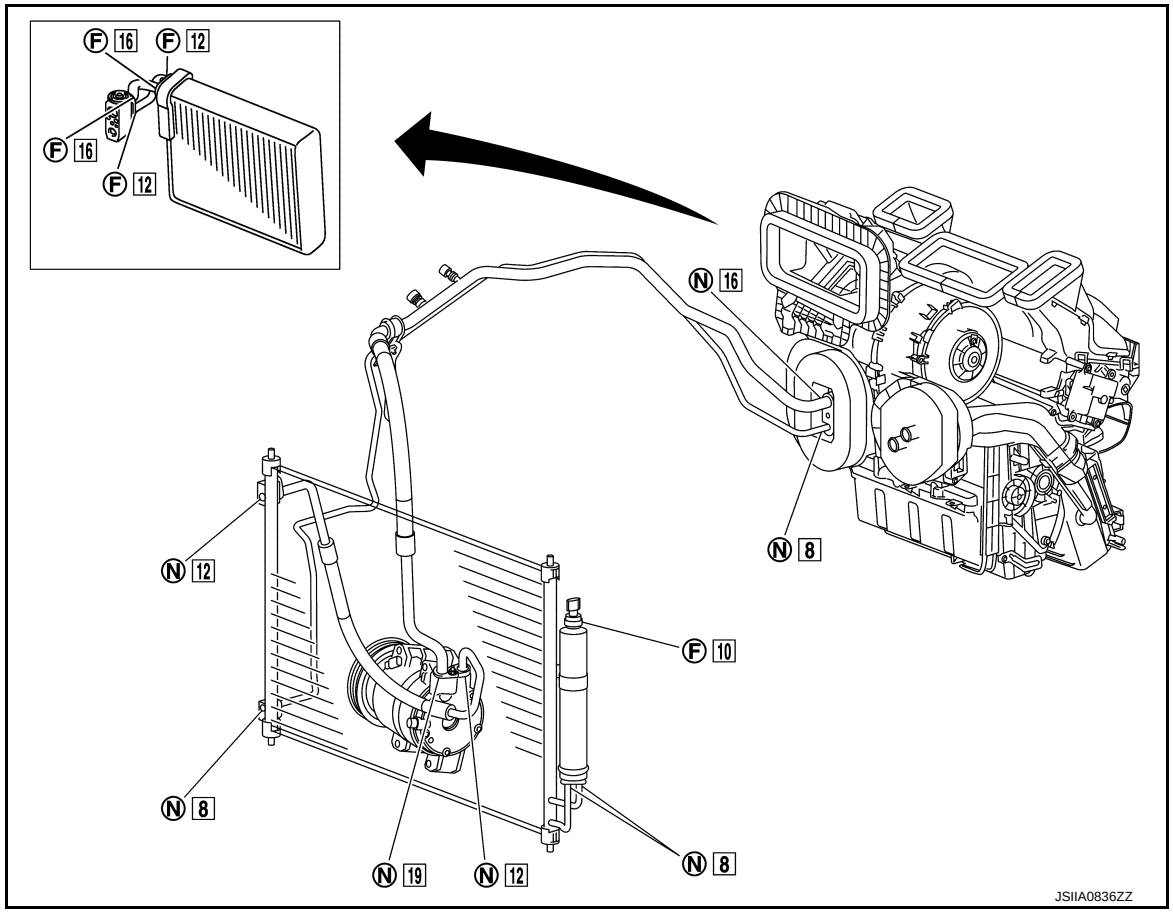
FOR USA AND CANADA : Refrigerant Connection

INFOID:0000000006601205

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

- Expansion valve to evaporator
- Refrigerant pressure sensor to liquid tank

O-RING AND REFRIGERANT CONNECTION



F. Former type refrigerant connection N. New type refrigerant connection

□: O-ring size

CAUTION:

The new and former refrigerant connections use different O-ring configurations. Never confuse O-rings since they are not interchangeable. Refrigerant may leak at the connection if a wrong O-ring is installed.

O-Ring Part Numbers and Specifications

Connection type	Piping connection point		Part number	QTY	O-ring size
New	Low-pressure flexible hose to expansion valve		92473 N8210	1	16
	Compressor to low-pressure flexible hose		92474 N8210	1	19
	Compressor to high-pressure flexible hose		92472 N8210	1	12
	Condenser to high-pressure flexible hose		92472 N8210	1	12
	Condenser to high-pressure pipe		92471 N8210	1	8
	High-pressure pipe to expansion valve		92471 N8210	1	8
	Liquid tank to condenser	Inlet	92471 N8210	1	8
		Outlet		1	
Former	Refrigerant pressure sensor to liquid tank		J2476 89956	1	10
	Evaporator pipe assembly	High-pressure side	92475 71L00	1	12
		Low-pressure side	92475 72L00	1	16

WARNING:

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

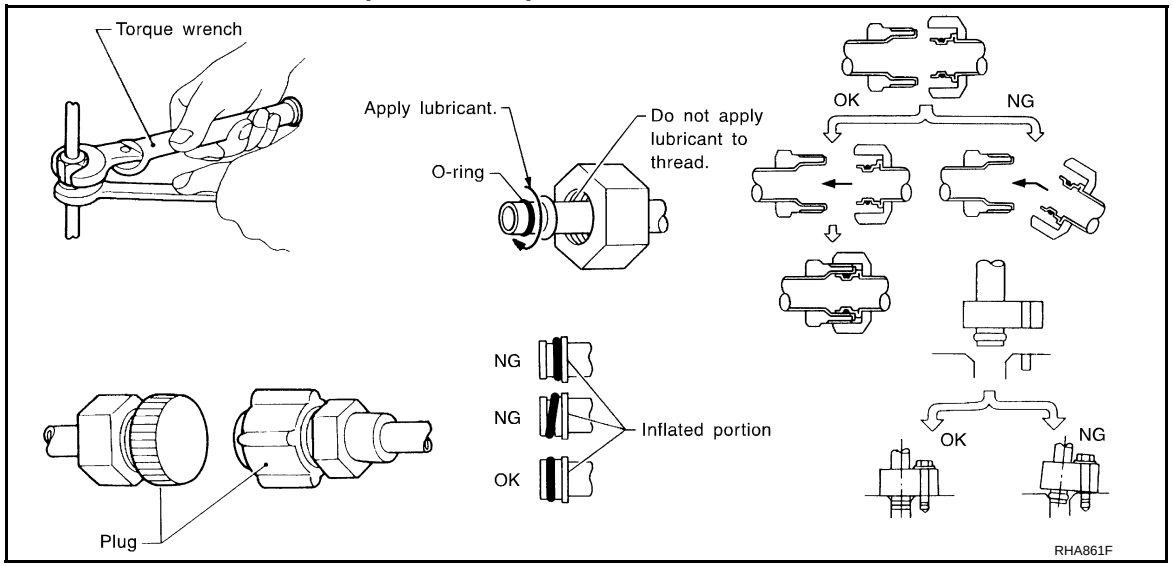
CAUTION:

Observe the following when replacing or cleaning refrigerant cycle components.

- **Store it in the same way at it is when mounted on the car when the compressor is removed. Failure to do so causes lubricant to enter the low-pressure chamber.**
- **Use always a torque wrench and a back-up wrench when connecting tubes.**
- **Plug immediately all openings to prevent entry of dust and moisture after disconnecting tubes.**
- **Connect the pipes at the final stage of the operation when installing an air conditioner in the vehicle. Never remove the seal caps of pipes and other components until just before required for connection.**
- **Allow components stored in cool areas to warm to working area temperature before removing seal caps. This prevents condensation from forming inside A/C components.**
- **Remove thoroughly moisture from the refrigeration system before charging the refrigerant.**
- **Replace always used O-rings.**
- **Apply lubricant to circle of the O-rings shown in illustration when connecting tube. Be careful not to apply lubricant to threaded portion.**

Name : NISSAN A/C System Oil Type S

- **O-ring must be closely attached to the groove portion of tube.**
- **Be careful not to damage O-ring and tube when replacing the O-ring.**
- **Connect tube until a click can be heard. Then tighten the nut or bolt by hand. Check that the O-ring is installed to tube correctly.**
- **Perform leakage test and make sure that there is no leakage from connections after connecting line. Disconnect that line and replace the O-ring when the refrigerant leaking point is found. Then tighten connections of seal seat to the specified torque.**



FOR USA AND CANADA : Service Equipment

INFOID:0000000006601206

RECOVERY/RECYCLING EQUIPMENT

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

ELECTRICAL LEAK DETECTOR

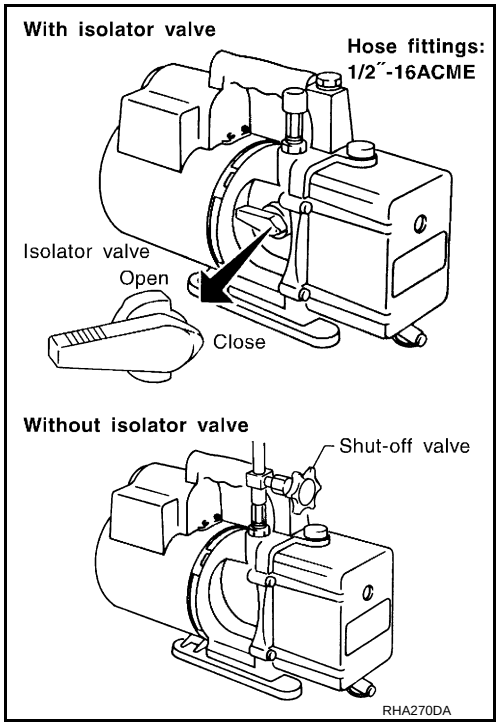
Be certain to follow the manufacturer's instructions for tester operation and tester maintenance.

VACUUM PUMP

The lubricant contained inside the vacuum pump is not compatible with the specified lubricant for HFC-134a (R-134a) A/C systems. The vent side of the vacuum pump is exposed to atmospheric pressure. So the vacuum pump lubricant may migrate out of the pump into the service hose. This is possible when the pump is switched OFF after evacuation (vacuuming) and hose is connected to it.
To prevent this migration, use a manual valve placed near the hose-to-pump connection, as per the following.

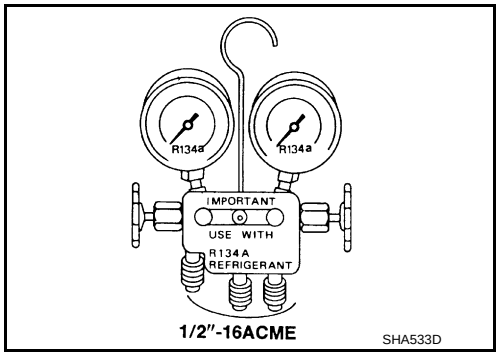
- Vacuum pumps usually have a manual isolator valve as part of the pump. Close this valve to isolate the service hose from the pump.
- Use a hose equipped with a manual shut-off valve near the pump end for pumps without an isolator. Close the valve to isolate the hose from the pump.
- Disconnect the hose from the pump if the hose has an automatic shut-off valve. As long as the hose is connected, the valve is open and lubricating oil may migrate.

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



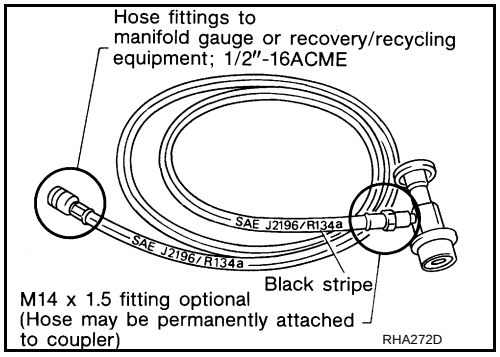
MANIFOLD GAUGE SET

Be certain that the gauge face indicates HFC-134a or R-134a. Be 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) and specified lubricants.



SERVICE HOSES

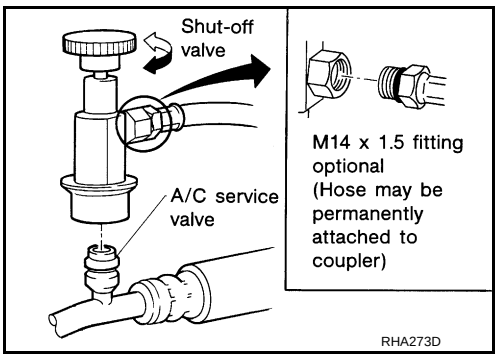
Be certain that the service hoses display the markings described (colored hose with black stripe). All hoses must equip positive shut-off devices (either manual or automatic) near the end of the hoses opposite to the manifold gauge.



SERVICE COUPLERS

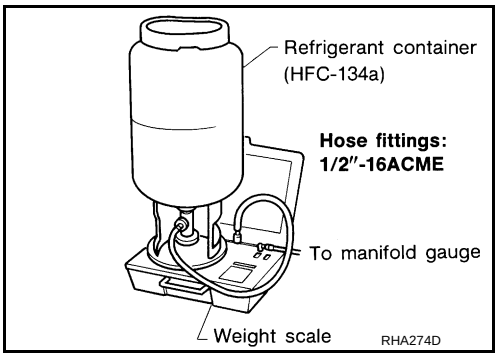
Never attempt to connect HFC-134a (R-134a) service couplers to a CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers do not properly connect to the CFC-12 (R-12) system. However, if an improper connection is attempted, discharging and contamination may occur.

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



REFRIGERANT WEIGHT SCALE

Verify that no refrigerant other than HFC-134a (R-134a) and specified lubricants have been used with the scale. The hose fitting must be 1/2″-16 ACME if the scale controls refrigerant flow electronically.



CHARGING CYLINDER

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

FOR MEXICO

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

INFOID:0000000006601207

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. Information necessary to service the system safely is included in the "SRS AIR BAG" and "SEAT BELT" 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 "SRS AIR BAG".**
- **Never 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 Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never 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.**

FOR MEXICO : Precaution Necessary for Steering Wheel Rotation After Battery Dis-

connect

INFOID:0000000006601208

NOTE:
- This Procedure is applied only to models with Intelligent Key system and NVIS/IVIS (NISSAN/INFINITI VEHICLE IMMOBILIZER SYSTEM - NATS).
- Remove and install all control units after disconnecting both battery cables with the ignition switch in the ″LOCK″ position.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If DTC is detected, perform trouble diagnosis according to self-diagnostic results.

For models equipped with the Intelligent Key system and NVIS/IVIS, an electrically controlled steering lock mechanism is adopted on the key cylinder.
For this reason, if the battery is disconnected or if the battery is discharged, the steering wheel will lock and steering wheel rotation will become impossible.
If steering wheel rotation is required when battery power is interrupted, follow the procedure below before starting the repair operation.

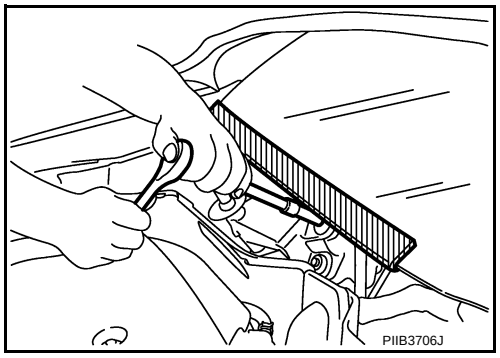
OPERATION PROCEDURE

1. Connect both battery cables.
   NOTE:
   Supply power using jumper cables if battery is discharged.
2. Use the Intelligent Key or mechanical key to turn the ignition switch to the ″ACC″ position. At this time, the steering lock will be released.
3. Disconnect both battery cables. The steering lock will remain released and the steering wheel can be rotated.
4. Perform the necessary repair operation.
5. When the repair work is completed, return the ignition switch to the ″LOCK″ position before connecting the battery cables. (At this time, the steering lock mechanism will engage.)
6. Perform a self-diagnosis check of all control units using CONSULT-III.

FOR MEXICO : Precaution for Procedure without Cowl Top Cover

INFOID:0000000006601209

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



FOR MEXICO : Precautions For Xenon Headlamp Service

INFOID:0000000006601210

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

CAUTION:
Comply with the following cautions to prevent any error and malfunction.
- **Install the xenon bulb securely. (Insufficient bulb socket installation may melt the bulb, the connector, the housing, etc. by high-voltage leakage or corona discharge.)**
- **Never perform HID circuit inspection with a tester.**

- **Never touch the xenon bulb glass with hands. Never put oil and grease on it.**
- **Dispose of the used xenon bulb after packing it in thick vinyl without breaking it.**
- **Never wipe out dirt and contamination with organic solvent (thinner, gasoline, etc.).**

FOR MEXICO : Working with HFC-134a (R-134a)

INFOID:0000000006601211

CAUTION:

- **CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. Compressor malfunction is likely to occur if the refrigerants are mixed, refer to "CONTAMINATED REFRIGERANT" below. To determine the purity of HFC-134a (R-134a) in the vehicle and recovery tank, use Refrigerant Recovery/Recycling Recharging equipment and Refrigerant Identifier.**
- **Use only specified lubricant for the HFC-134a (R-134a) A/C system and HFC-134a (R-134a) components. Compressor malfunction is likely to occur if lubricant other than that specified is used.**
- **The specified HFC-134a (R-134a) lubricant rapidly absorbs moisture from the atmosphere. The following handling precautions must be observed:**
- **Cap (seal) immediately the component to minimize the entry of moisture from the atmosphere when removing refrigerant components from a vehicle.**
- **Never remove the caps (unseal) until just before connecting the components when installing refrigerant components to a vehicle. Connect all refrigerant loop components as quickly as possible to minimize the entry of moisture into system.**
- **Use only the specified lubricant from a sealed container. Reseal immediately containers of lubricant. Lubricant becomes moisture saturated and should not be used without proper sealing.**
- **Never allow lubricant (NISSAN A/C System Oil Type S) to come in contact with styrene foam parts. Damage may result.**

CONTAMINATED REFRIGERANT

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

- Explain to the customer that environmental regulations prohibit the release of contaminated refrigerant into the atmosphere.
- Explain that recovery of the contaminated refrigerant could damage service equipment and refrigerant supply.
- Suggest the customer return the vehicle to the location of previous service where the contamination may have occurred.
- In case of repairing, recover the refrigerant using only **dedicated equipment and containers. Never recover contaminated refrigerant into the existing service equipment.** Contact a local refrigerant product retailer for available service if the facility does not have dedicated recovery equipment. This refrigerant must be disposed of in accordance with all federal and local regulations. In addition, replacement of all refrigerant system components on the vehicle is recommended.
- The air conditioner warranty is void if the vehicle is within the warranty period. Please contact Nissan Customer Affairs for further assistance.

FOR MEXICO : General Refrigerant Precaution

INFOID:0000000006601212

WARNING:

- **Never breath A/C refrigerant and lubricant vapor or mist. Exposure may irritate eyes, nose and throat. Use only approved recovery/recycling equipment to discharge HFC-134a (R-134a) refrigerant. Ventilate work area before resuming service if accidental system discharge occurs. Additional health and safety information may be obtained from refrigerant and lubricant manufacturers.**
- **Never release refrigerant into the air. Use approved recovery/recycling equipment to capture the refrigerant each time an air conditioning system is discharged.**
- **Wear always eye and hand protection (goggles and gloves) when working with any refrigerant or air conditioning system.**
- **Never store or heat refrigerant containers above 52°C (126°F).**
- **Never heat a refrigerant container with an open flame; Place the bottom of the container in a warm pail of water if container warming is required.**
- **Never intentionally drop, puncture, or incinerate refrigerant containers.**
- **Keep refrigerant away from open flames: poisonous gas is produced if refrigerant burns.**
- **Refrigerant displaces oxygen, therefore be certain to work in well ventilated areas to prevent suffocation.**
- **Never pressure test or leakage test HFC-134a (R-134a) service equipment and/or vehicle air conditioning systems with compressed air during repair. Some mixtures of air and HFC-134a (R-134a)**

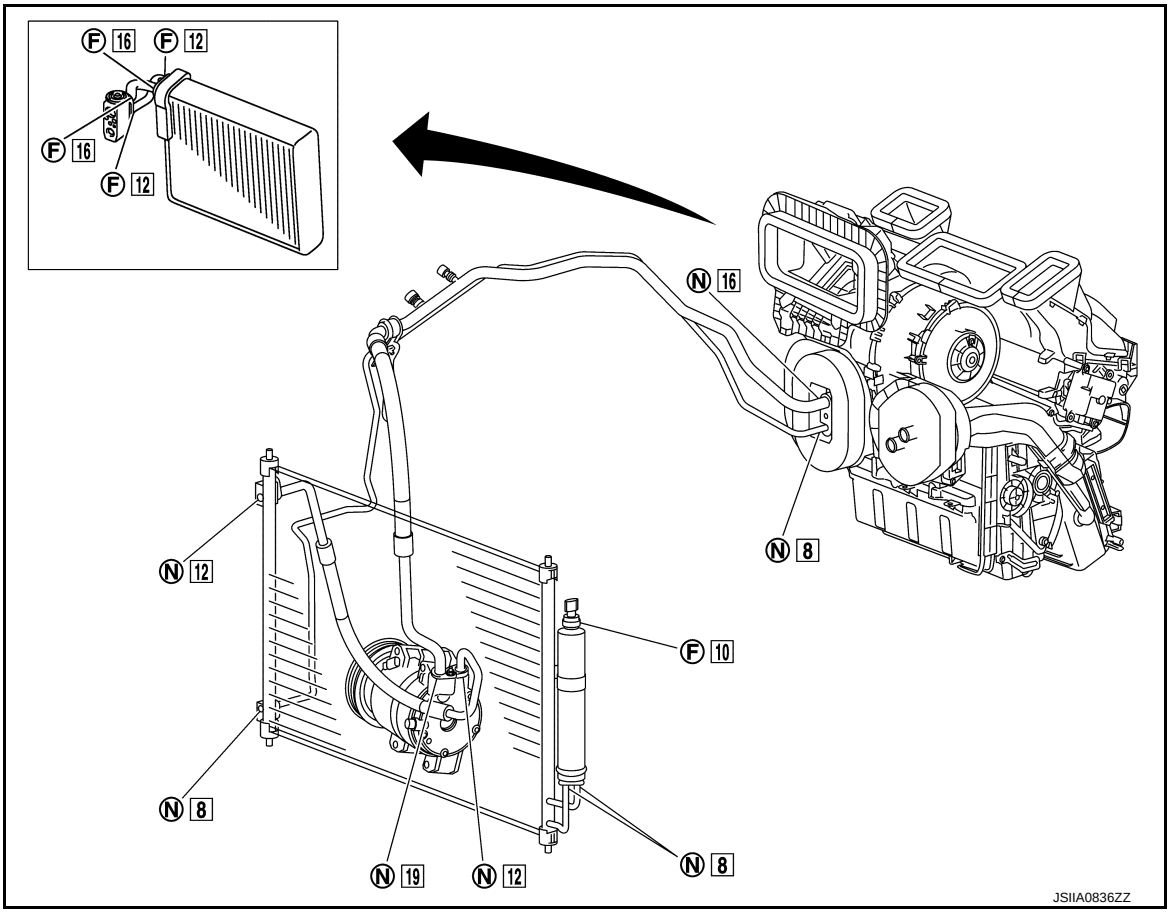
have been shown to be combustible at elevated pressures. These mixtures, if ignited, may cause injury or property damage. Additional health and safety information may be obtained from refrigerant manufacturers.

FOR MEXICO : Refrigerant Connection

INFOID:0000000006601213

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

O-RING AND REFRIGERANT CONNECTION



F. Former type refrigerant connection N. New type refrigerant connection

□: O-ring size

CAUTION:

The new and former refrigerant connections use different O-ring configurations. Never confuse O-rings since they are not interchangeable. Refrigerant may leak at the connection if a wrong O-ring is installed.

O-Ring Part Numbers and Specifications

Connection type	Piping connection point		Part number	QTY	O-ring size
New	Low-pressure flexible hose to expansion valve		92473 N8210	1	16
	Compressor to low-pressure flexible hose		92474 N8210	1	19
	Compressor to high-pressure flexible hose		92472 N8210	1	12
	Condenser to high-pressure flexible hose		92472 N8210	1	12
	Condenser to high-pressure pipe		92471 N8210	1	8
	High-pressure pipe to expansion valve		92471 N8210	1	8
	Liquid tank to condenser	Inlet	92471 N8210	1	8
		Outlet		1	
Former	Refrigerant pressure sensor to liquid tank		J2476 89956	1	10
	Evaporator pipe assembly	High-pressure side	92475 71L00	1	12
		Low-pressure side	92475 72L00	1	16

WARNING:

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

CAUTION:

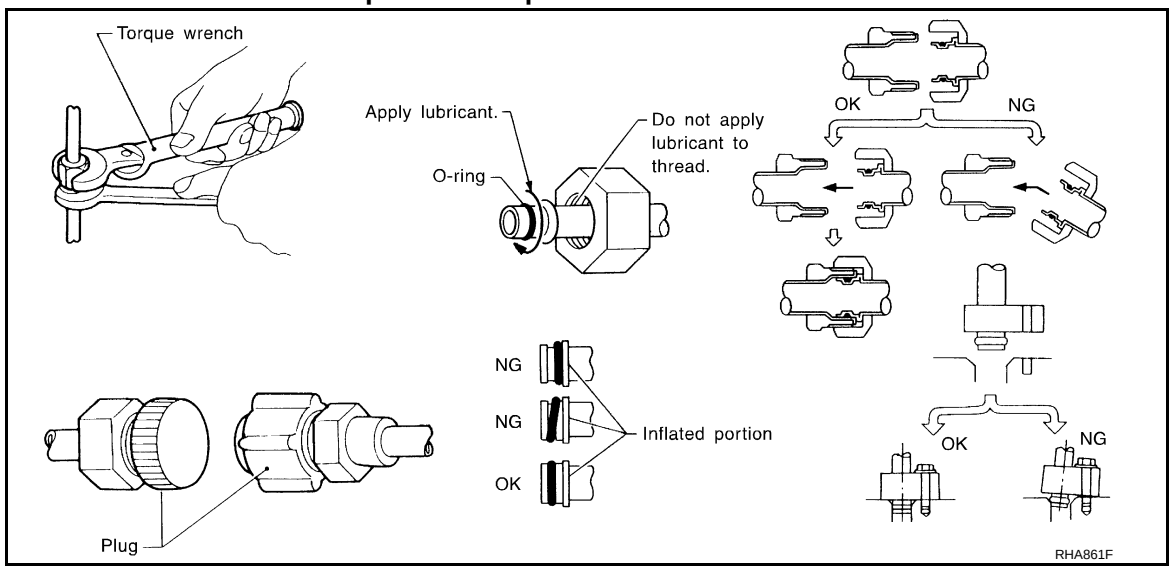
Observe the following when replacing or cleaning refrigerant cycle components.

- **Store it in the same way at it is when mounted on the car when the compressor is removed. Failure to do so causes lubricant to enter the low-pressure chamber.**
- **Use always a torque wrench and a back-up wrench when connecting tubes.**
- **Plug immediately all openings to prevent entry of dust and moisture after disconnecting tubes.**
- **Connect the pipes at the final stage of the operation when installing an air conditioner in the vehicle. Never remove the seal caps of pipes and other components until just before required for connection.**
- **Allow components stored in cool areas to warm to working area temperature before removing seal caps. This prevents condensation from forming inside A/C components.**
- **Remove thoroughly moisture from the refrigeration system before charging the refrigerant.**
- **Replace always used O-rings.**
- **Apply lubricant to circle of the O-rings shown in illustration when connecting tube. Be careful not to apply lubricant to threaded portion.**

Name : NISSAN A/C System Oil Type S

- **O-ring must be closely attached to the groove portion of tube.**
- **Be careful not to damage O-ring and tube when replacing the O-ring.**
- **Connect tube until a click can be heard. Then tighten the nut or bolt by hand. Check that the O-ring is installed to tube correctly.**

- **Perform leakage test and make sure that there is no leakage from connections after connecting line. Disconnect that line and replace the O-ring when the refrigerant leaking point is found. Then tighten connections of seal seat to the specified torque.**



FOR MEXICO : Service Equipment

INFOID:0000000006601214

RECOVERY/RECYCLING EQUIPMENT

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

ELECTRICAL LEAK DETECTOR

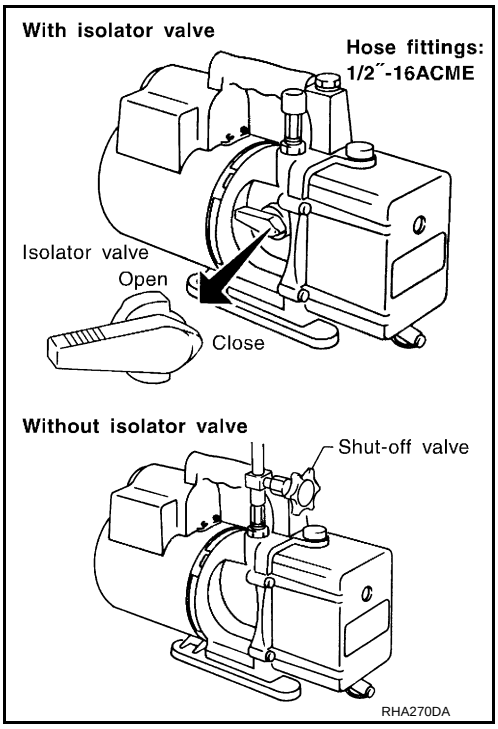
Be certain to follow the manufacturer's instructions for tester operation and tester maintenance.

VACUUM PUMP

The lubricant contained inside the vacuum pump is not compatible with the specified lubricant for HFC-134a (R-134a) A/C systems. The vent side of the vacuum pump is exposed to atmospheric pressure. So the vacuum pump lubricant may migrate out of the pump into the service hose. This is possible when the pump is switched OFF after evacuation (vacuuming) and hose is connected to it.
To prevent this migration, use a manual valve placed near the hose-to-pump connection, as per the following.

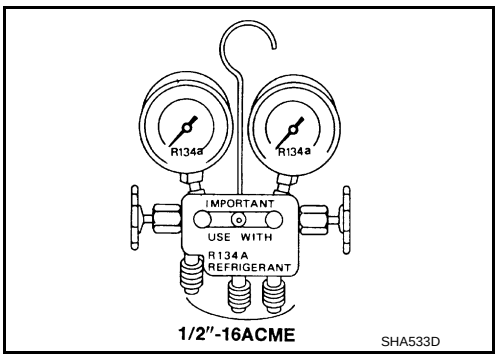
- Vacuum pumps usually have a manual isolator valve as part of the pump. Close this valve to isolate the service hose from the pump.
- Use a hose equipped with a manual shut-off valve near the pump end for pumps without an isolator. Close the valve to isolate the hose from the pump.
- Disconnect the hose from the pump if the hose has an automatic shut-off valve. As long as the hose is connected, the valve is open and lubricating oil may migrate.

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



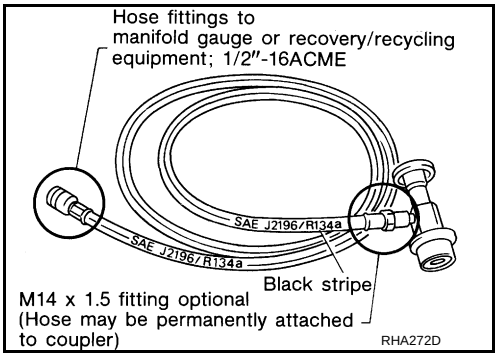
MANIFOLD GAUGE SET

Be certain that the gauge face indicates HFC-134a or R-134a. Be 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) and specified lubricants.



SERVICE HOSES

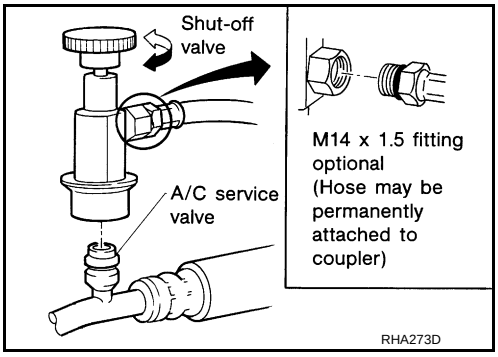
Be certain that the service hoses display the markings described (colored hose with black stripe). All hoses must equip positive shut-off devices (either manual or automatic) near the end of the hoses opposite to the manifold gauge.



SERVICE COUPLERS

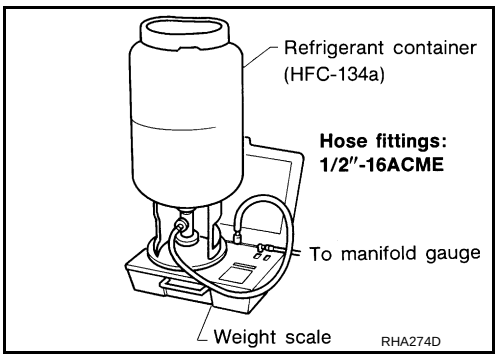
Never attempt to connect HFC-134a (R-134a) service couplers to a CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers do not properly connect to the CFC-12 (R-12) system. However, if an improper connection is attempted, discharging and contamination may occur.

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



REFRIGERANT WEIGHT SCALE

Verify that no refrigerant other than HFC-134a (R-134a) and specified lubricants have been used with the scale. The hose fitting must be 1/2″-16 ACME if the scale controls refrigerant flow electronically.



CHARGING CYLINDER

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

COMPRESSOR

General Precautions

INFOID:0000000006484402

CAUTION:

- **Plug all openings to prevent moisture and foreign matter from entering.**
- **Store it in the same way at it is when mounted on the car when the compressor is removed.**
- **Follow “LUBRICANT ADJUSTING PROCEDURE FOR COMPRESSOR REPLACEMENT” exactly when replacing or repairing compressor. Refer to HA-34, "Maintenance of Lubricant Quantity".**
- **Keep friction surfaces between clutch and pulley clean. Wipe it off by using a clean waste cloth moistened with thinner if the surface is contaminated with lubricant.**
- **Turn the compressor shaft by hand more than five turns in both directions after compressor service operation. This distributes equally lubricant inside the compressor. Let the engine idle and operate the compressor for one hour after the compressor is installed.**
- **Apply voltage to the new one and check for normal operation after replacing the compressor magnet clutch.**

FLUORESCENT LEAK DETECTOR

General Precautions

INFOID:0000000006484403

CAUTION:

- **The A/C system contains a fluorescent leak detection dye used for locating refrigerant leakages. An ultraviolet (UV) lamp is required to illuminate the dye when inspecting for leakages.**
- **Wear always fluorescence enhancing UV safety goggles to protect eyes and enhance the visibility of the fluorescent dye.**
- **The fluorescent dye leak detector is not a replacement for an electrical leak detector (SST). The fluorescent dye leak detector should be used in conjunction with an electrical leak detector (SST) to pinpoint refrigerant leakages.**
- **Read and follow all manufacture's operating instructions and precautions prior to performing the work for the purpose of safety and customer's satisfaction.**
- **A compressor shaft seal should not necessarily be repaired because of dye seepage. The compressor shaft seal should only be repaired after confirming the leakage with an electrical leak detector (SST).**
- **Remove always any remaining dye from the leakage area after repairs are completed to avoid a misdiagnosis during a future service.**
- **Never allow dye to come into contact with painted body panels or interior components. Clean immediately with the approved dye cleaner if dye is spilled. Fluorescent dye left on a surface for an extended period of time cannot be removed.**
- **Never spray the fluorescent dye cleaning agent on hot surfaces (engine exhaust manifold, etc.).**
- **Never use more than one refrigerant dye bottle [1/4 ounce (7.4 cc)] per A/C system.**
- **Leak detection dyes for HFC-134a (R-134a) and CFC-12 (R-12) A/C systems are different. Never use HFC-134a (R-134a) leak detection dye in CFC-12 (R-12) A/C system, or CFC-12 (R-12) leak detection dye in HFC-134a (R-134a) A/C system, or A/C system damage may result.**
- **The fluorescent properties of the dye remains for three years or a little over unless a compressor malfunction occurs.**

IDENTIFICATION

NOTE:

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

IDENTIFICATION LABEL FOR VEHICLE

Vehicles with factory installed fluorescent dye have the identification label on the front side of hood.

PREPARATION

PREPARATION

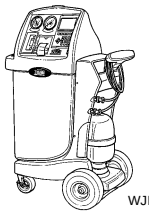
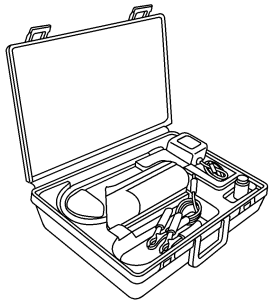
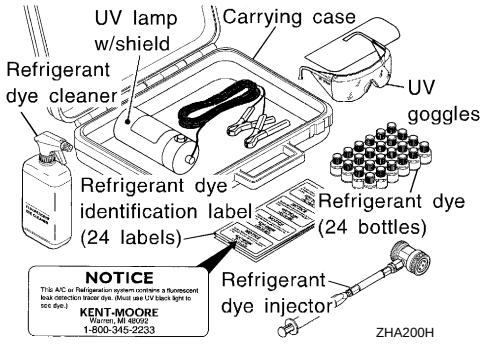
Special Service Tool

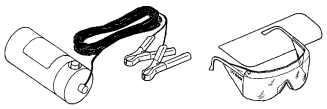
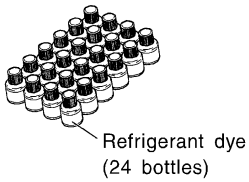
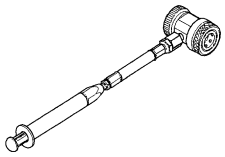
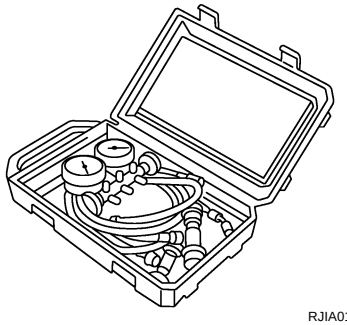
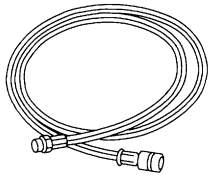
INFOID:0000000006601189

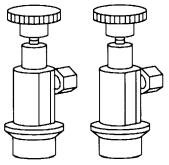
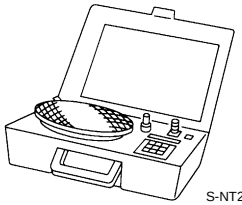
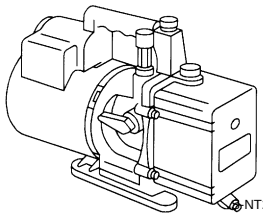
The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

HFC-134a (R-134a) Service Tool and Equipment

- Never mix HFC-134a (R-134a) refrigerant and/or its specified lubricant with CFC-12 (R-12) refrigerant and/or its lubricant.
- Separate and non-interchangeable service equipment must be used for handling each type of refrigerant/lubricant.
- Refrigerant container fittings, service hose fittings and service equipment fittings (equipment which handles refrigerant and/or lubricant) are different between CFC-12 (R-12) and HFC-134a (R-134a). This is to avoid mixed use of the refrigerants/lubricant.
- Never use adapters that convert one size fitting to another: refrigerant/lubricant contamination occurs and compressor malfunction may result.

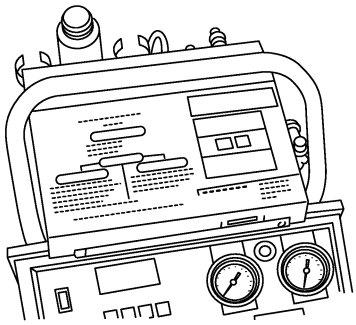
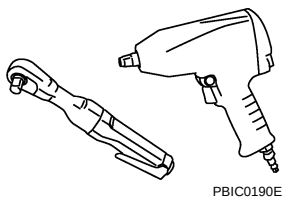
Tool number (Kent-Moore No.) Tool name		Description
(ACR2005-NI) ACR5 A/C Service Center	 WJIA0293E	Function: Refrigerant recovery, recycling and recharging
(J-41995) Electrical leak detector	 AHA281A	Power supply: DC 12 V (Battery terminal)
(J-43926) Refrigerant dye leak detection kit Kit includes: (J-42220) UV lamp and UV safety goggles (J-41459) HFC-134a (R-134a) dye injector Use with J-41447, 1/4 ounce bottle (J-41447) HFC-134a (R-134a) fluorescent leak detection dye (Box of 24, 1/4 ounce bottles) (J-43872) Refrigerant dye cleaner	 ZHA200H	Power supply: DC 12 V (Battery terminal)

Tool number (Kent-Moore No.) Tool name		Description
(J-42220) UV lamp and UV safety goggles	 SHA438F	Power supply: DC 12 V (Battery terminal) For checking refrigerant leakage when fluorescent dye is equipped in A/C system Includes: UV lamp and UV safety goggles
(J-41447) HFC-134a (R-134a) fluorescent leak detection dye (Box of 24, 1/4 ounce bottles)	 Refrigerant dye (24 bottles) SHA439F	Application: For HFC-134a (R-134a) PAG oil Container: 1/4 ounce (7.4 cc) bottle (Includes self-adhesive dye identification labels for affixing to vehicle after charging system with dye.)
(J-41459) HFC-134a (R-134a) dye injector Use with J-41447, 1/4 ounce bottle	 SHA440F	For injecting 1/4 ounce of fluorescent leak detection dye into A/C system
(J-43872) Refrigerant dye cleaner	 SHA441F	For cleaning dye spills
(J-39183) Manifold gauge set (with hoses and couplers)	 RJIA0196E	Identification: • The gauge face indicates HFC-134a (R-134a). Fitting size: Thread size • 1/2″-16 ACME
Service hoses • High-pressure side hose (J-39501-72) • Low-pressure side hose (J-39502-72) • Utility hose (J-39476-72)	 S-NT201	Hose color: • Low-pressure side hose: Blue with black stripe • High-pressure side hose: Red with black stripe • Utility hose: Yellow with black stripe or green with black stripe Hose fitting to gauge: • 1/2″-16 ACME

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

Commercial Service Tool

INFOID:0000000006601190

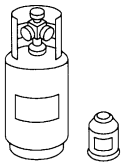
Tool name		Description
Refrigerant identifier equipment	 RJIA0197E	Checking for refrigerant purity and system contamination
Power tool	 PBIC0190E	For loosening bolts and nuts

Sealant or/and Lubricant

INFOID:0000000006601191

HFC-134a (R-134a) Service Tool and Equipment
- Never mix HFC-134a (R-134a) refrigerant and/or its specified lubricant with CFC-12 (R-12) refrigerant and/or its lubricant.
- Separate and non-interchangeable service equipment must be used for handling each type of refrigerant/lubricant.

- Refrigerant container fittings, service hose fittings and service equipment fittings (equipment which handles refrigerant and/or lubricant) are different between CFC-12 (R-12) and HFC-134a (R-134a). This is to avoid mixed use of the refrigerants/lubricant.
- Never use adapters that convert one size fitting to another: refrigerant/lubricant contamination occurs and compressor malfunction may result.

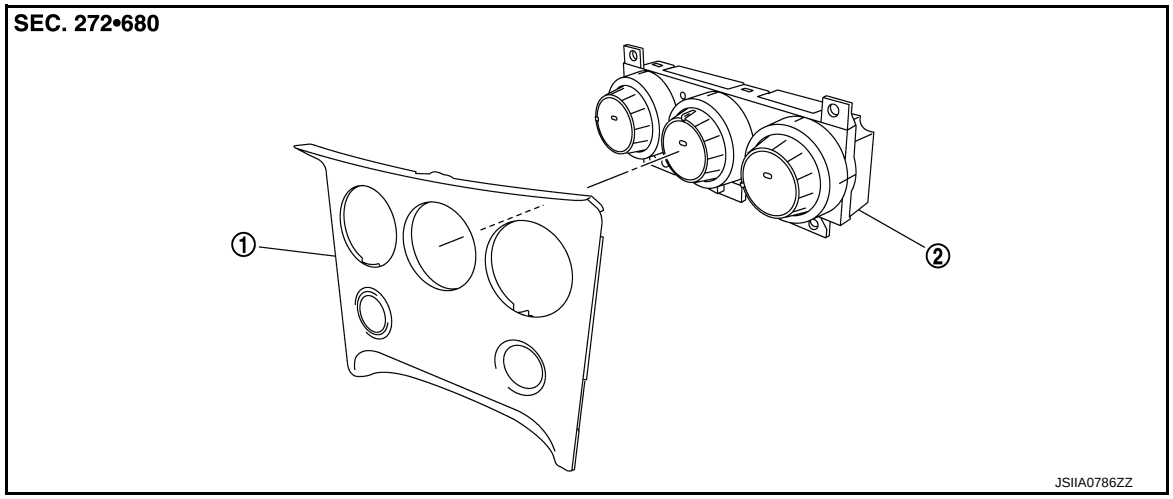
Tool name	Description
HFC-134a (R-134a) refrigerant  S-NT196	Container color: Light blue Container marking: HFC-134a (R-134a) Fitting size: Thread size • Large container 1/2″-16 ACME
NISSAN A/C System Oil Type S (DH-PS)  S-NT197	Type: Polyalkylene glycol oil (PAG), type S (DH-PS) Application: HFC-134a (R-134a) swash plate compressors (Nissan only) Capacity: 40 m ℓ (1.4 US fl oz., 1.4 Imp fl oz.)

REMOVAL AND INSTALLATION

A/C CONTROL

Exploded View

INFOID:0000000006582682



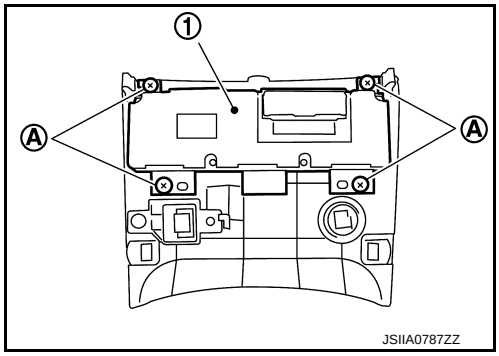
1. Cluster lid D
2. A/C Control (A/C amp.)

Removal and Installation

INFOID:0000000006582683

REMOVAL

1. Remove cluster lid D. Refer to IP-13, "Exploded View".
2. Remove mounting screws (A), and then remove A/C control (1).



INSTALLATION

Installation is basically the reverse order of removal.

AMBIENT SENSOR

Removal and Installation

INFOID:0000000006582693

REMOVAL

1. Remove front grille. Refer to EXT-19, "Removal and Installation".
2. Disconnect ambient sensor connector, and then remove ambient sensor.

INSTALLATION

Installation is basically the reverse order of removal.

IN-VEHICLE SENSOR

Removal and Installation

INFOID:0000000006582695

REMOVAL

1. Remove cluster lid D. Refer to IP-14, "Removal and Installation".
2. Remove mounting screw, and then remove in-vehicle sensor.

INSTALLATION

Installation is basically the reverse order of removal.

SUNLOAD SENSOR

Removal and Installation

INFOID:0000000006582697

REMOVAL

1. Remove tweeter grille RH. Refer to IP-14, "Removal and Installation".
2. Remove sunload sensor from tweeter grille RH.

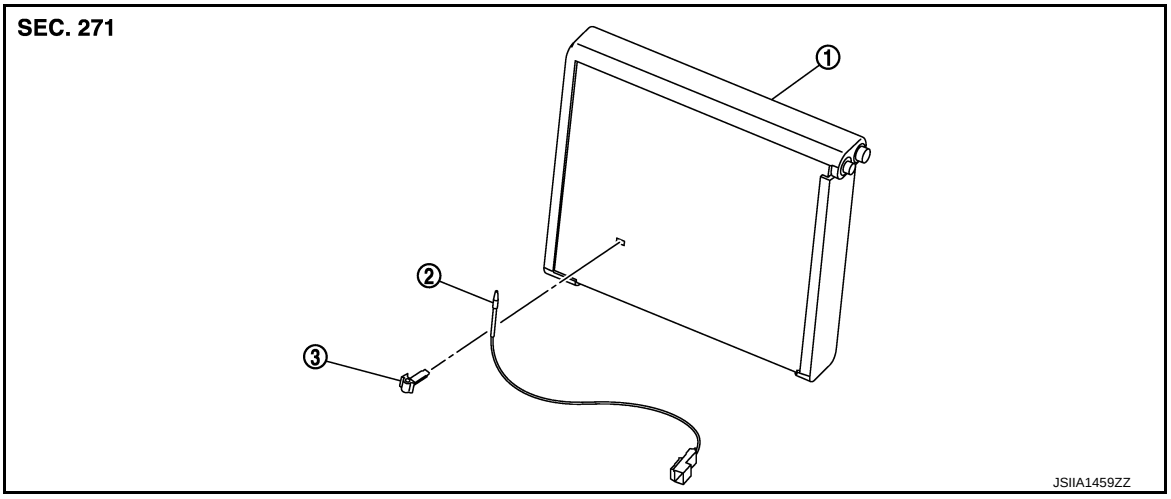
INSTALLATION

Installation is basically the reverse order of removal.

INTAKE SENSOR

Exploded View

INFOID:0000000006582684



1. Evaporator
2. Intake sensor
3. Intake sensor bracket

Removal and Installation

INFOID:0000000006582685

REMOVAL

1. Remove evaporator with expansion valve attached. Refer to HA-51, "Exploded View".
   CAUTION:
   Cap or wrap the joint of the A/C piping and expansion valve with suitable material such as vinyl tape to avoid the entry of air.
2. Remove intake sensor from evaporator.

INSTALLATION

Installation is basically the reverse order of removal.

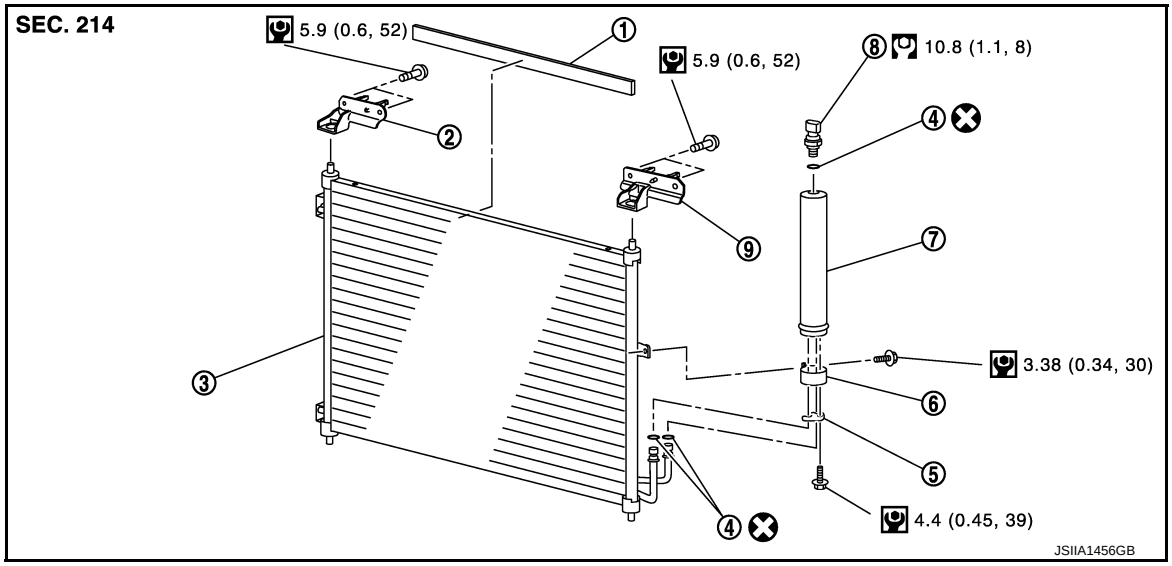
CAUTION:

- **Replace O-rings with new ones. Then apply compressor oil to them when installing.**
- **Mark the mounting position of intake sensor bracket prior to removal so that the reinstalled sensor can be located in the same position.**
- **Check for leakages when recharging refrigerant.**

REFRIGERANT PRESSURE SENSOR

Exploded View

INFOID:0000000006582686



1. Seal
2. Condenser upper bracket RH
3. Condenser
4. O-ring
5. Bracket
6. Liquid tank bracket
7. Liquid tank
8. Refrigerant pressure sensor
9. Condenser upper bracket LH

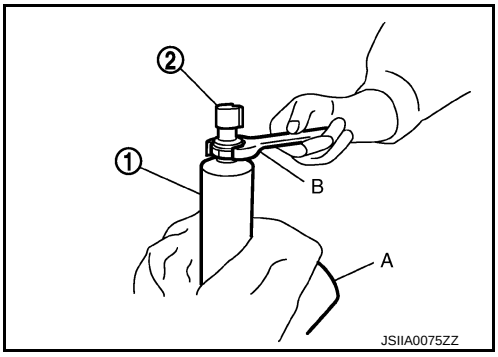
Refer to GI-4, "Components" for symbols in the figure.

Removal and Installation

INFOID:0000000006582687

REMOVAL

1. Remove liquid tank. Refer to HA-49, "Exploded View".
2. Fix the liquid tank (1) with a vise (A). Remove the refrigerant pressure sensor (2) with a wrench (B).
   CAUTION:
   Be careful not to damage liquid tank.



INSTALLATION

Installation is basically the reverse order of removal.

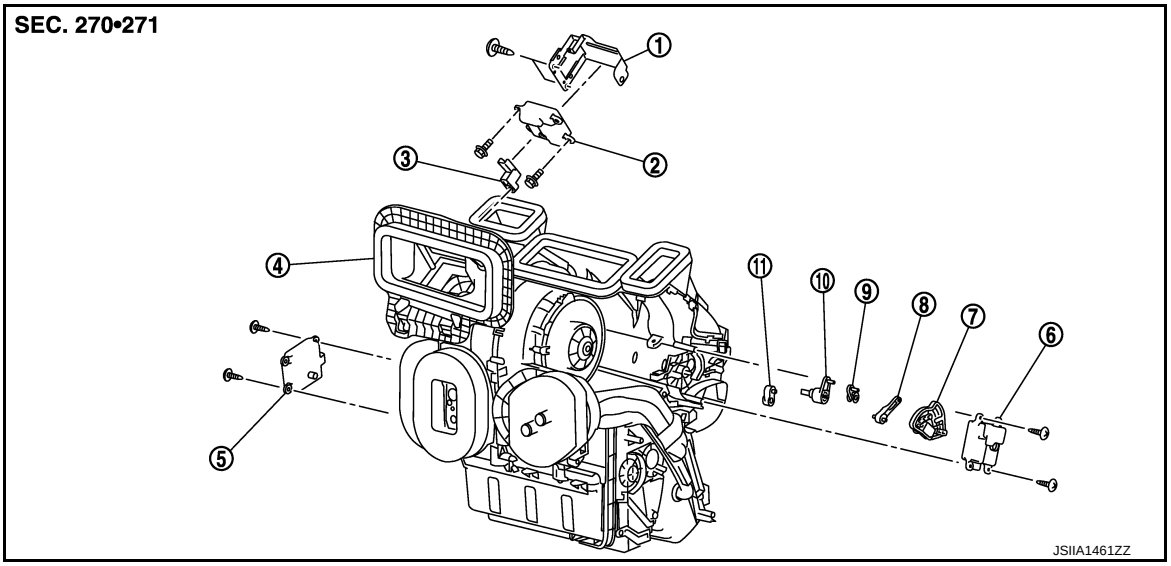
CAUTION:

- **Replace O-ring with new one. Then apply compressor oil to them when installing.**
- **Check for leakages when recharging refrigerant.**

DOOR MOTOR

Exploded View

INFOID:0000000006582688



1. Intake door motor bracket
2. Intake door motor
3. Intake door lever
4. A/C unit assembly
5. Air mix door motor
6. Mode door motor
7. Main link
8. Foot door link
9. Foot door lever
10. Ventilator door lever
11. Defroster door lever

INTAKE DOOR MOTOR

INTAKE DOOR MOTOR : Removal and Installation

INFOID:0000000006582689

REMOVAL

1. Remove instrument panel. Refer to IP-13, "Exploded View".
2. Remove mounting screws of intake door motor bracket, and then remove intake door motor with intake door motor bracket attached.
3. Disconnect intake door motor connector.
4. Remove mounting screws, and then remove intake door motor from intake door motor bracket.

INSTALLATION

Installation is basically the reverse order of removal.

MODE DOOR MOTOR

MODE DOOR MOTOR : Removal and Installation

INFOID:0000000006582690

REMOVAL

1. Remove front foot duct LH. Refer to VTL-10, "Exploded View".
2. Remove knee protector. Refer to IP-13, "Exploded View".
3. Remove mounting screws, and then remove mode door motor.
4. Disconnect mode door motor connector.

INSTALLATION

Installation is basically the reverse order of removal.

AIR MIX DOOR MOTOR

AIR MIX DOOR MOTOR : Removal and Installation

INFOID:0000000006582691

REMOVAL

1. Set the temperature to full cold position.
   CAUTION:
   The angle may be out, when installing the air mix door actuator to the air mix door, unless above procedure is performed.
2. Disconnect the battery cable from the negative terminal.
3. Remove front foot duct RH. Refer to VTL-10, "Exploded View".
4. Remove mounting screws, and then remove air mix door motor.
5. Disconnect air mix door motor connector.

INSTALLATION

Installation is basically the reverse order of removal.

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:0000000006200923

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-122, "Description & Inspection".

>> GO TO 3.

3.GO TO APPROPRIATE TROUBLE DIAGNOSIS

Go to appropriate trouble diagnosis (Refer to HAC-181, "Diagnosis Chart By Symptom" below).

>> GO TO 4.

4.REPAIR OR REPLACE

Repair or replace the specific parts.

>> GO TO 5.

5.FINAL CHECK

Final check.

Is the inspection result normal?

YES >> INSPECTION END
NO >> GO TO 3.

INSPECTION AND ADJUSTMENT

Description & Inspection

INFOID:0000000006200924

DESCRIPTION

The purpose of the operational check is to check that the individual system operates normally.

Conditions : Engine running at normal operating temperature

INSPECTION PROCEDURE

1.CHECKING BLOWER MOTOR

1. Turn fan control dial to 1st speed. Blower should operate on low speed.
2. Turn fan control dial to 2nd speed, and continue checking blower speed until all speeds are checked.
3. Leave blower on maximum speed.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Go to diagnosis procedure. Refer to HAC-146, "Diagnosis Procedure".

2.CHECKING DISCHARGE AIR

1. Turn mode control dial to each position.
2. Confirm that discharge air comes out according to the air distribution table. Refer to HAC-127, "System Description".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Go to diagnosis procedure. Refer to HAC-140, "Diagnosis Procedure".

3.CHECKING INTAKE AIR

1. Press REC switch. Recirculation indicator lamp turns ON.
2. Press REC switch again. Recirculation indicator lamp turns OFF.
3. Listen for intake door position change. (Slight change of blower sound can be heard.)

Is the inspection result normal?

YES >> GO TO 4.
NO >> Go to diagnosis procedure. Refer to HAC-144, "Diagnosis Procedure".

4.CHECKING A/C SWITCH

1. Turn fan control dial to 1st speed.
2. Press A/C switch. A/C switch indicator lamp turns ON.
3. Confirm that the magnet clutch engages (sound or visual inspection).

Is the inspection result normal?

YES >> GO TO 5.
NO >> Go to diagnosis procedure. Refer to HAC-150, "Diagnosis Procedure".

5.CHECKING TEMPERATURE DECREASE

1. Turn temperature control dial counterclockwise until full cold position.
2. Check for cool air at discharge air outlets.

Is the inspection result normal?

YES >> GO TO 6.
NO >> Go to diagnosis procedure. Refer to HAC-182, "Inspection procedure".

6.CHECKING TEMPERATURE INCREASE

1. Turn temperature control dial clockwise until full hot position.
2. Check for warm air at discharge air outlets.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Go to diagnosis procedure. Refer to HAC-183, "Inspection procedure".

SYSTEM DESCRIPTION

COMPRESSOR CONTROL FUNCTION

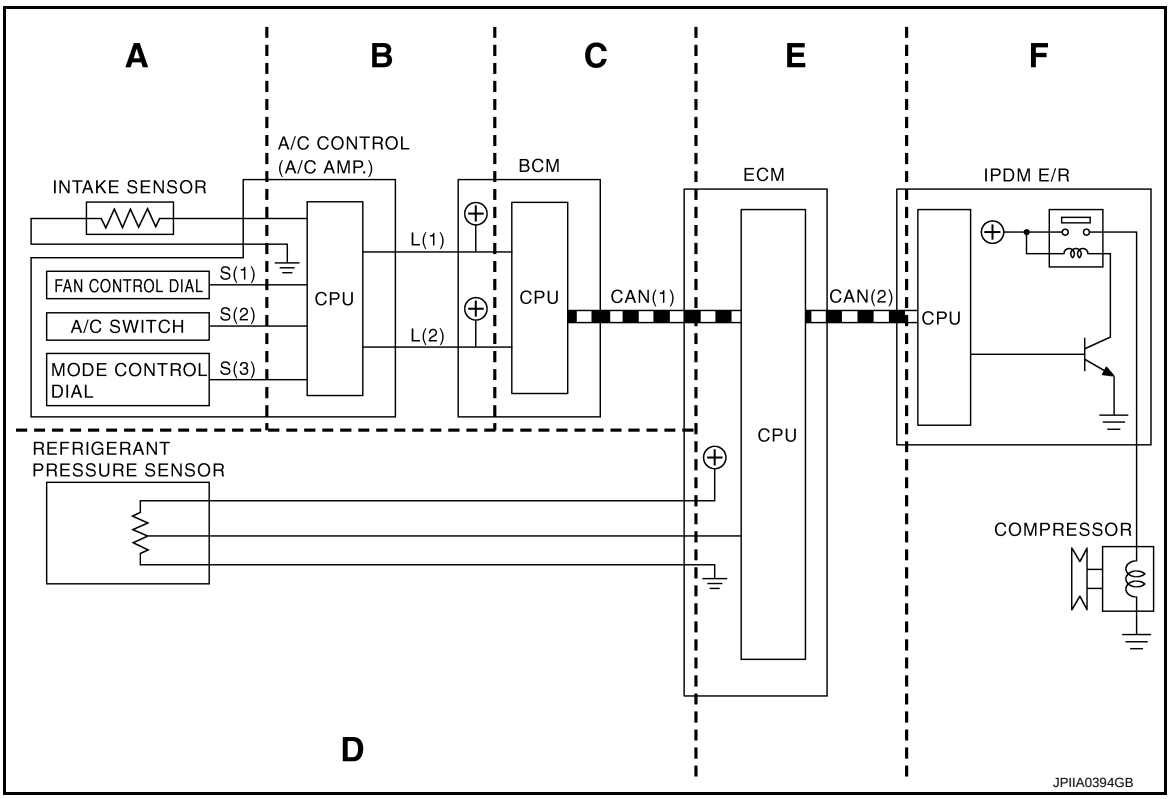
Description

INFOID:0000000006200925

PRINCIPLE OF OPERATION

Compressor is not activated.

Functional circuit diagram



L (1)	: Fan ON signal	S (3)	: Defogger signal
L (2)	: A/C switch signal	CAN (1)	: A/C switch signal
S (1)	: Fan ON signal		: Blower fan motor switch signal
S (2)	: A/C switch signal	CAN (2)	: A/C compressor request signal

Functional Initial Inspection Chart

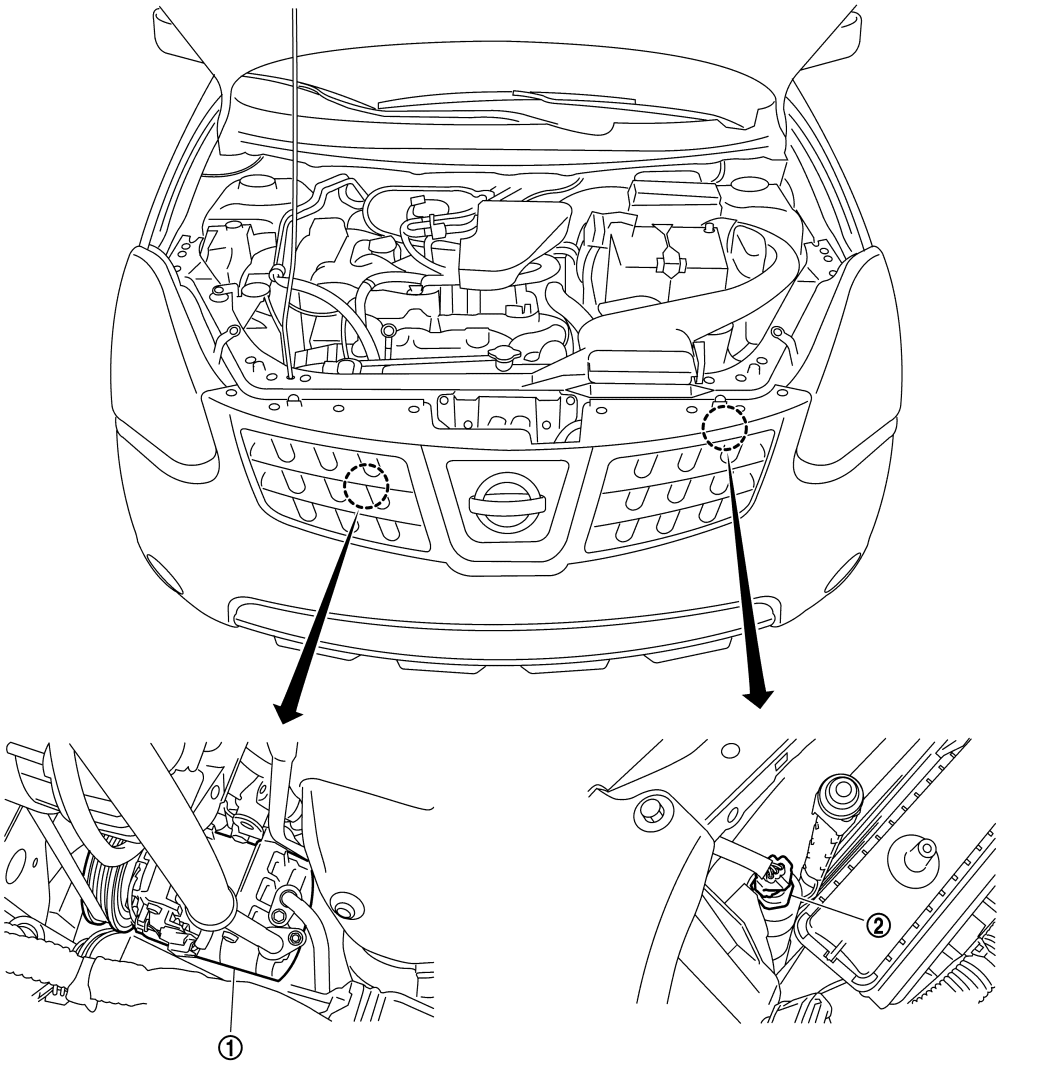
×: Applicable

Control unit	Diagnosis Item		Location					
			A	B	C	D	E	F
ECM	"ENGINE"	Self-diagnosis (CAN system diagnosis)	–	–	–	–	×	–
		Data monitor	–	–	–	×	×	–
BCM	"BCM"	Self-diagnosis (CAN system diagnosis)	–	–	×	–	–	–
		Data monitor	–	×	×	–	–	–
IPDM E/R	"IPDM E/R"	Self-diagnosis (CAN system diagnosis)	–	–	–	–	–	×
		Data monitor	–	–	–	–	×	–
	Auto active test		–	–	–	–	–	×

Component Part Location

INFOID:0000000006200926

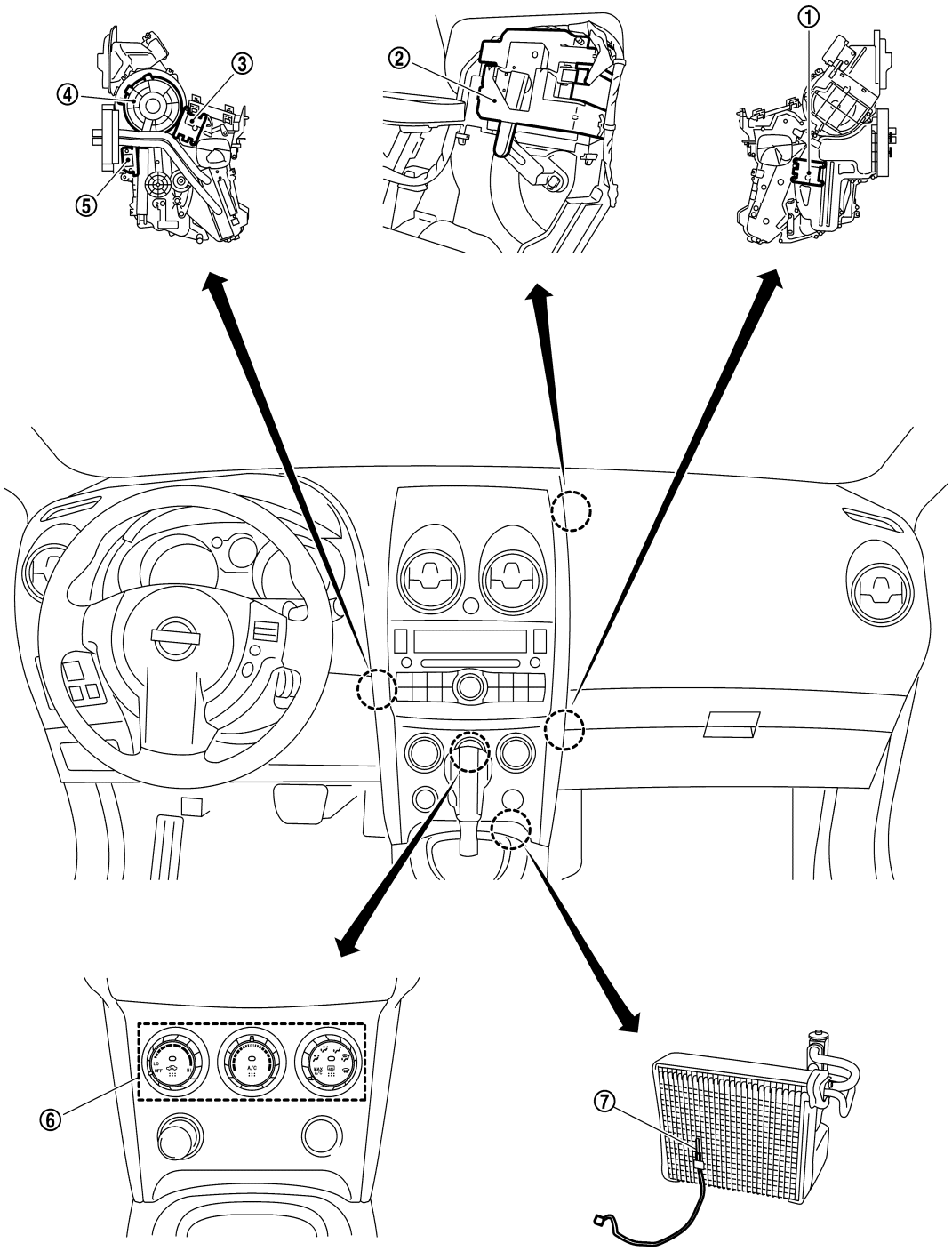
ENGINE COMPARTMENT



JSIIA0832ZZ

1. Compressor (Magnet clutch) 2. Refrigerant pressure sensor

PASSENGER COMPARTMENT



JSIIA0833ZZ

1. Air mix door motor
2. Intake door motor
3. Mode door motor
4. Blower motor
5. Fan control amp.
6. A/C control (A/C amp.)
7. Intake sensor

Component Description

INFOID:0000000006200927

Component	Reference
Air mix door motor	HAC-142, "Description"
A/C control (A/C amp.)	HAC-156, "Description"
Blower motor	HAC-146, "Description"
Compressor (Magnet clutch)	HAC-150, "Description"
Fan control amp.	HAC-146, "Description"
Intake door motor	HAC-144, "Description"
Intake sensor	HAC-154, "Description"
Mode door motor	HAC-140, "Description"
Refrigerant pressure sensor	EC-448, "Description" (FOR CALIFORNIA), EC-900, "Description" [FOR USA (FEDERAL) AND CANADA] or EC-1246, "Description" (FOR MEXICO)

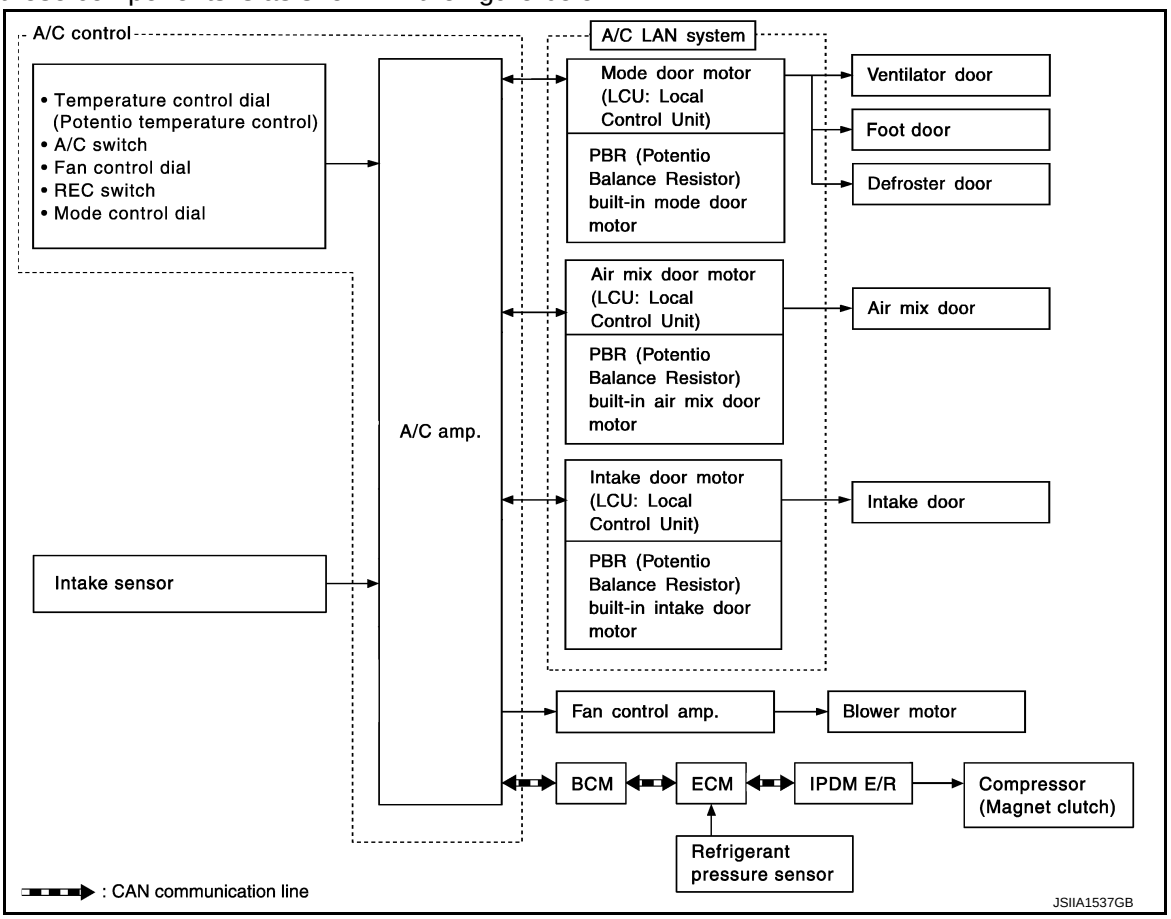
MANUAL AIR CONDITIONER SYSTEM

System Diagram

INFOID:0000000006200928

CONTROL SYSTEM

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

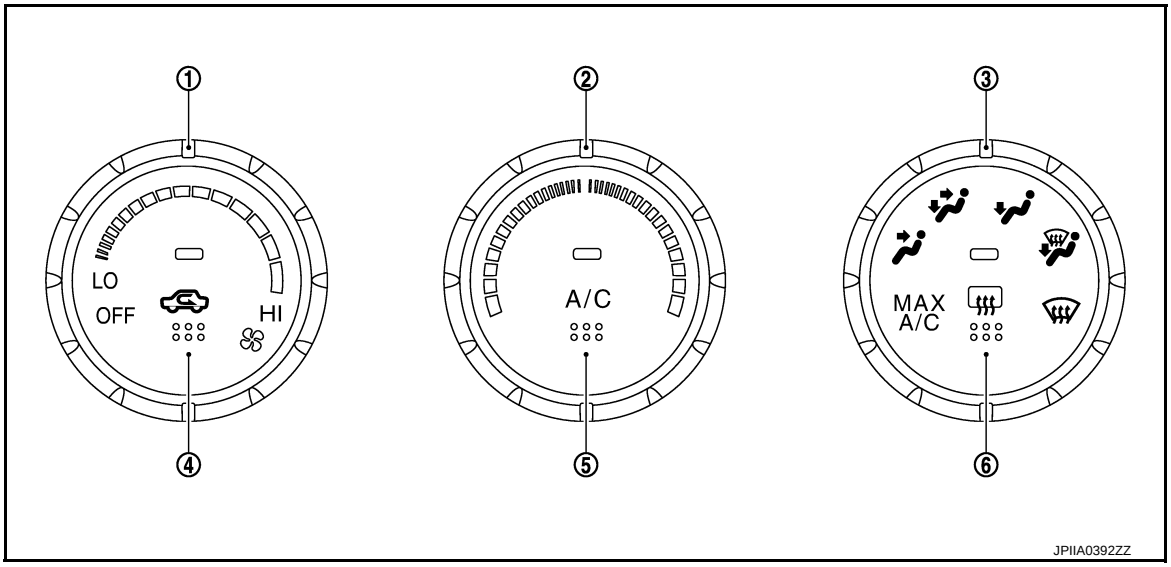


System Description

INFOID:0000000006200929

CONTROL OPERATION

A/C control



1. Fan control dial
2. Temperature control dial
3. Mode control dial
4. REC (Recirculation) switch
5. A/C switch
6. Rear window defogger switch

1. Fan Control Dial

The blower speed is manually controlled with this dial. Twenty-six speeds are available for manual control.

2. Temperature Control Dial (Potentio Temperature Control)

The set temperature is increased or decreased with this dial.

3. Mode Control Dial

- The air discharge outlets is controlled by this dial.
- The indicator lamp of A/C switch and REC switch turn ON when the fan control dial is ON by changing the mode control dial to MAX A/C position. In this state, the mode control dial and compressor return to the state that existed before selecting MAX A/C position by switching the air discharge outlets to any position other than MAX A/C.
- Switching the mode control dial from D/F position to FOOT position when the fan control dial is ON turns ON the indicator lamp of A/C switch, and then operates the compressor.

4. REC (Recirculation) Switch

- Pressing the REC switch switches REC (recirculation) and FRE (fresh air intake) when the air discharge outlets are VENT and B/L. The air inlets are fixed to REC (recirculation) when REC indicator lamp is turned OFF. They are fixed to FRE (fresh air intake) when REC indicator lamp is turned OFF.
- The indicator lamp of REC switch is turned OFF when the air discharge outlets are FOOT, D/F and DEF. The air inlets are fixed to FRE (fresh air intake). At this time, the inlets cannot be changed to REC (recirculation) by operating the REC switch.
- The indicator lamp of REC switch is turned ON when the air discharge outlets are at MAX A/C position. The air inlets are fixed to REC (recirculation). At this time, the inlets cannot be changed to FRE (fresh air intake) by operating the REC switch.

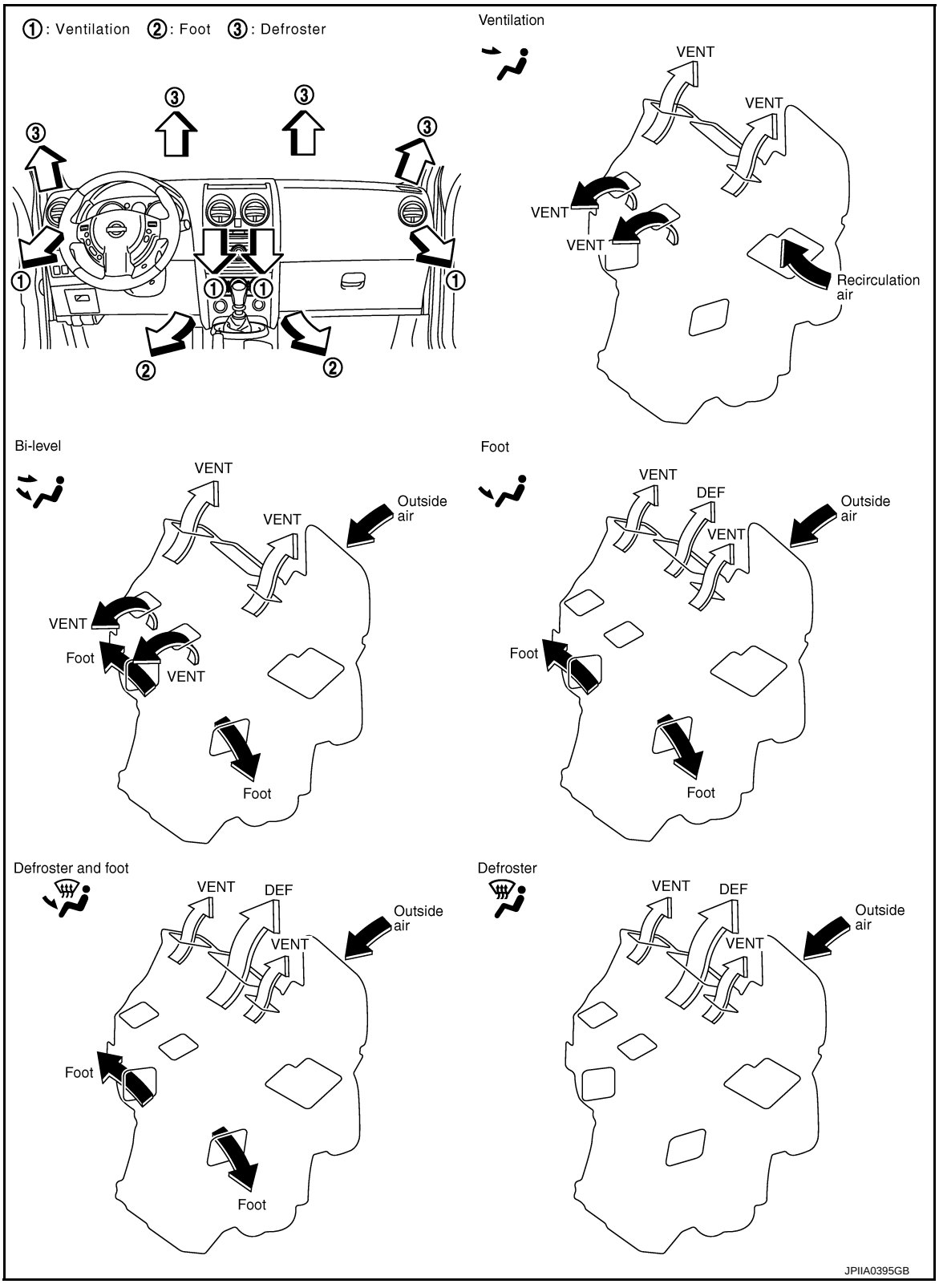
5. A/C Switch

- Compressor is ON or OFF with this switch.
  (Pressing the A/C switch when the fan control dial is ON turns OFF the A/C switch and compressor.)
- When the air discharge outlets are at MAX A/C position, the A/C switch is fixed to ON and cannot be switched to OFF.

6. Rear Window Defogger Switch

When illumination is ON, rear window is defogged.

DISCHARGE AIR FLOW



AIR DISTRIBUTION

Without Rear Foot Duct

Discharge air flow			
Mode door position	Air outlet/distribution		
	VENT	FOOT	DEF
	100%	—	—
	63%	37%	—
	13%	63%	24%
	12%	41%	47%
	18%	—	82%

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With Rear Foot Duct

Discharge air flow				
Mode door position	Air outlet/distribution			
	VENT	FOOT		DEF
		Front	Rear	
	100%	—	—	—
	60%	26%	14%	—
	13%	42%	24%	21%
	12%	28%	16%	44%
	18%	—	—	82%

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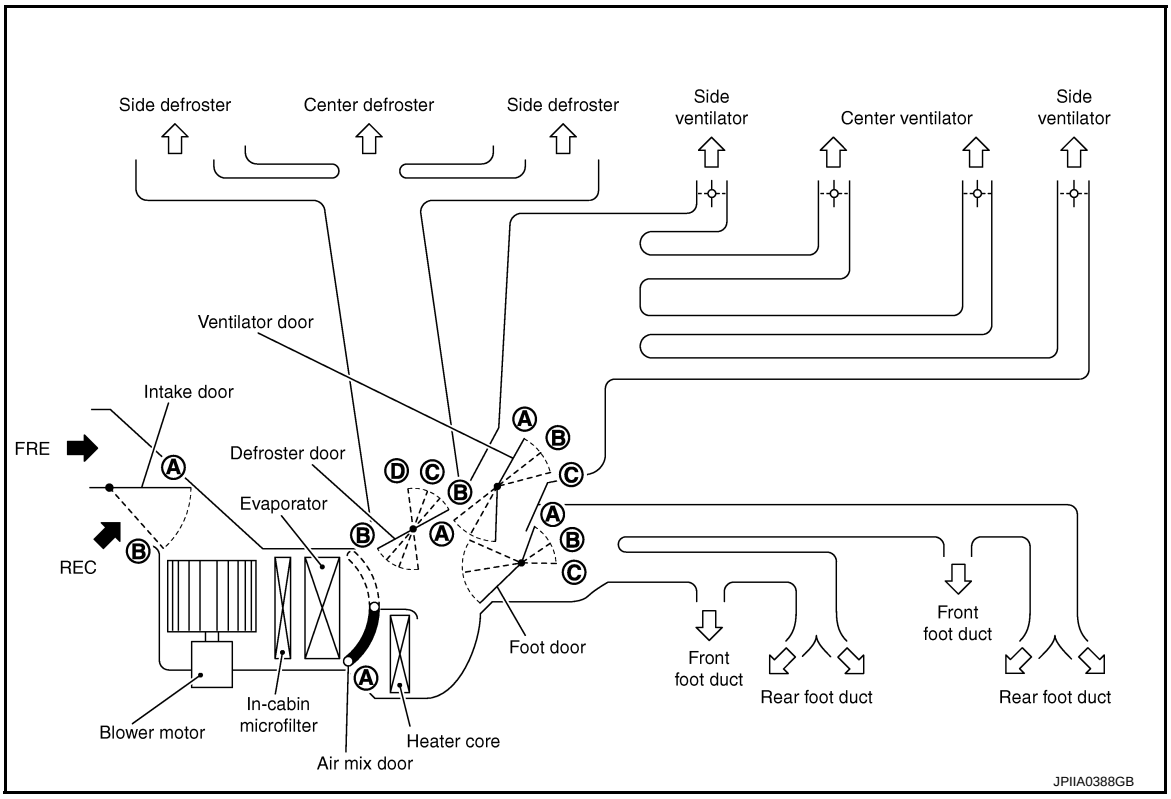
SWITCHES AND THEIR CONTROL FUNCTION



NOTE:
Ventilator door has center ventilator openings and side ventilator openings, side ventilator opening cannot be completely closed.

Door \ Position or switch	Mode control dial								Intake switch		Temperature control dial		
	MAX A/C	VENT	B/L	FOOT	FOOT2	D/F	D/F2	DEF	ON	OFF			
	MAX A/C				—		—						
											Full cold	⇔	Full hot
Ventilator door	Ⓐ	Ⓐ	Ⓑ	Ⓒ	Ⓒ	Ⓒ	Ⓒ	Ⓒ	—		—		
Foot door	Ⓐ	Ⓐ	Ⓑ	Ⓒ	Ⓒ	Ⓑ	Ⓑ	Ⓐ	—		—		
Defroster door	Ⓐ	Ⓐ	Ⓐ	Ⓑ	Ⓑ–Ⓒ	Ⓒ	Ⓒ–Ⓓ	Ⓓ	—		—		
Intake door	Ⓐ	—						Ⓑ	Ⓐ	Ⓑ	—		
Air mix door	—								—		Ⓐ	—	Ⓑ

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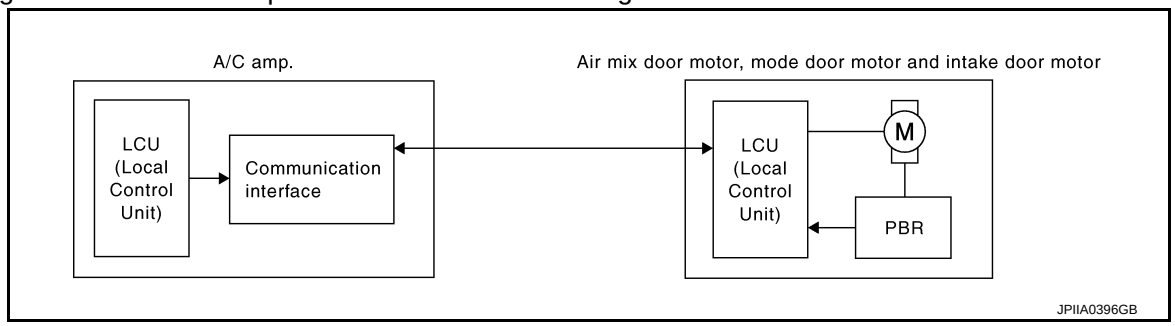
AIR CONDITIONER LAN CONTROL SYSTEM

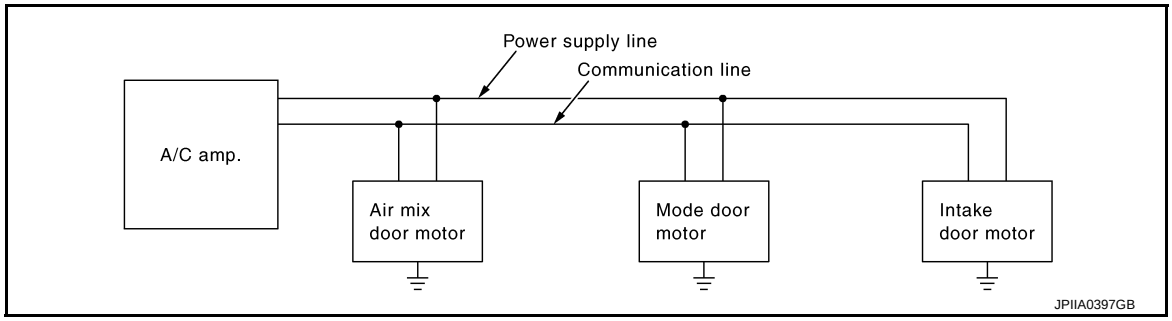
The LAN (Local Area Network) system consists of A/C amp., mode door motor, air mix door motor and intake door motor.
A configuration of these components is as shown in the figure below.



SYSTEM CONSTRUCTION

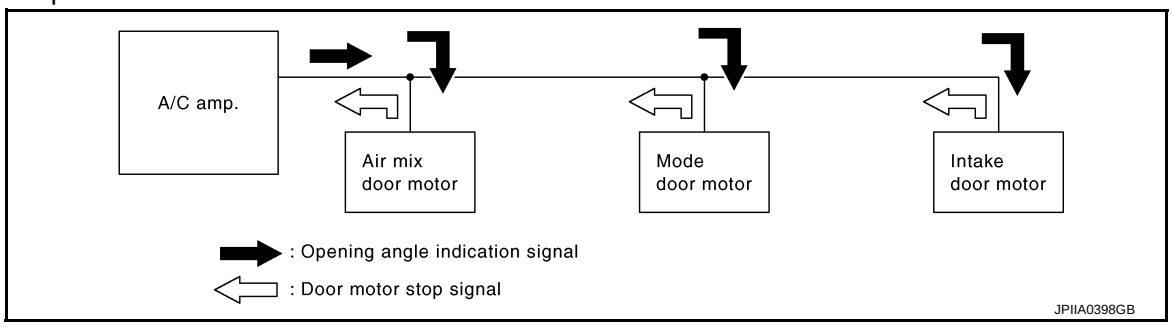
A small network is constructed between the A/C amp., mode door motor, air mix door motor and intake door motor. The A/C amp. and motors are connected by data transmission lines and motor power supply lines. The LAN network is built through the ground circuits of each door motor.
Addresses, motor opening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

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



Operation

The A/C amp. receives signals from its various dials and switches. The A/C amp. sends mode door, air mix door and intake door opening angle data to the mode door motor LCU, air mix door motor LCU 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 A/C amp. 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 A/C amp.



Transmission Data and Transmission Order

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

START:

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

ADDRESS:

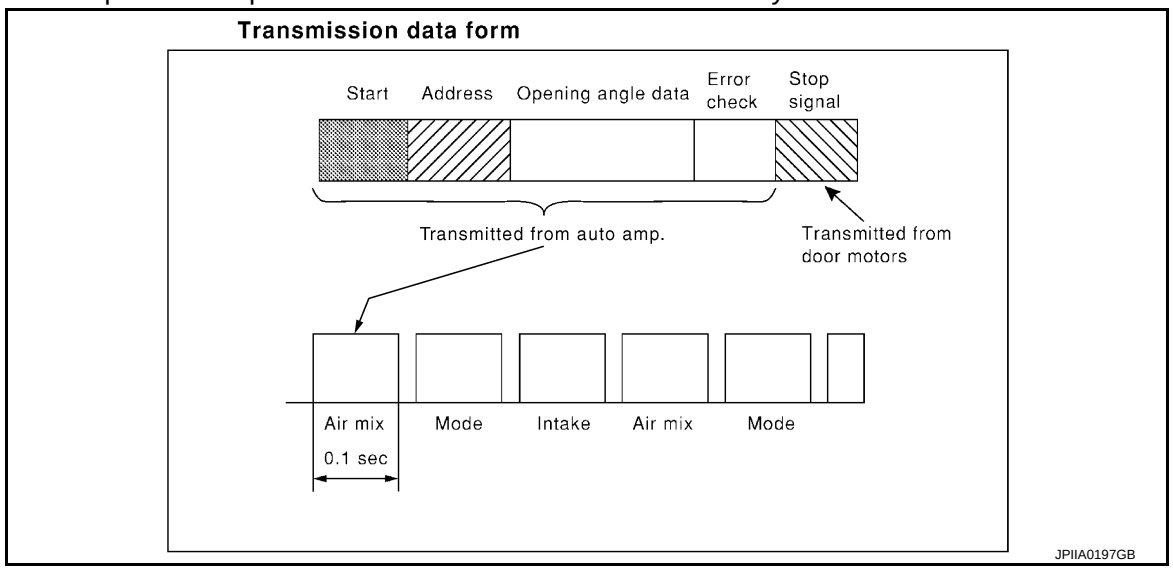
- Data sent from the A/C amp. are selected according to data-based decisions made by the mode door motor, air mix door motor and intake door motor.
- If the addresses are identical, the opening angle data and error check signals are received by the door motor LCUs. The LCUs then make the appropriate error decision. If the opening angle data is normal, door control begins.
- If an error exists, the received data are rejected and corrected data received. Finally, door control is based upon the corrected opening angle data.

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

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

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

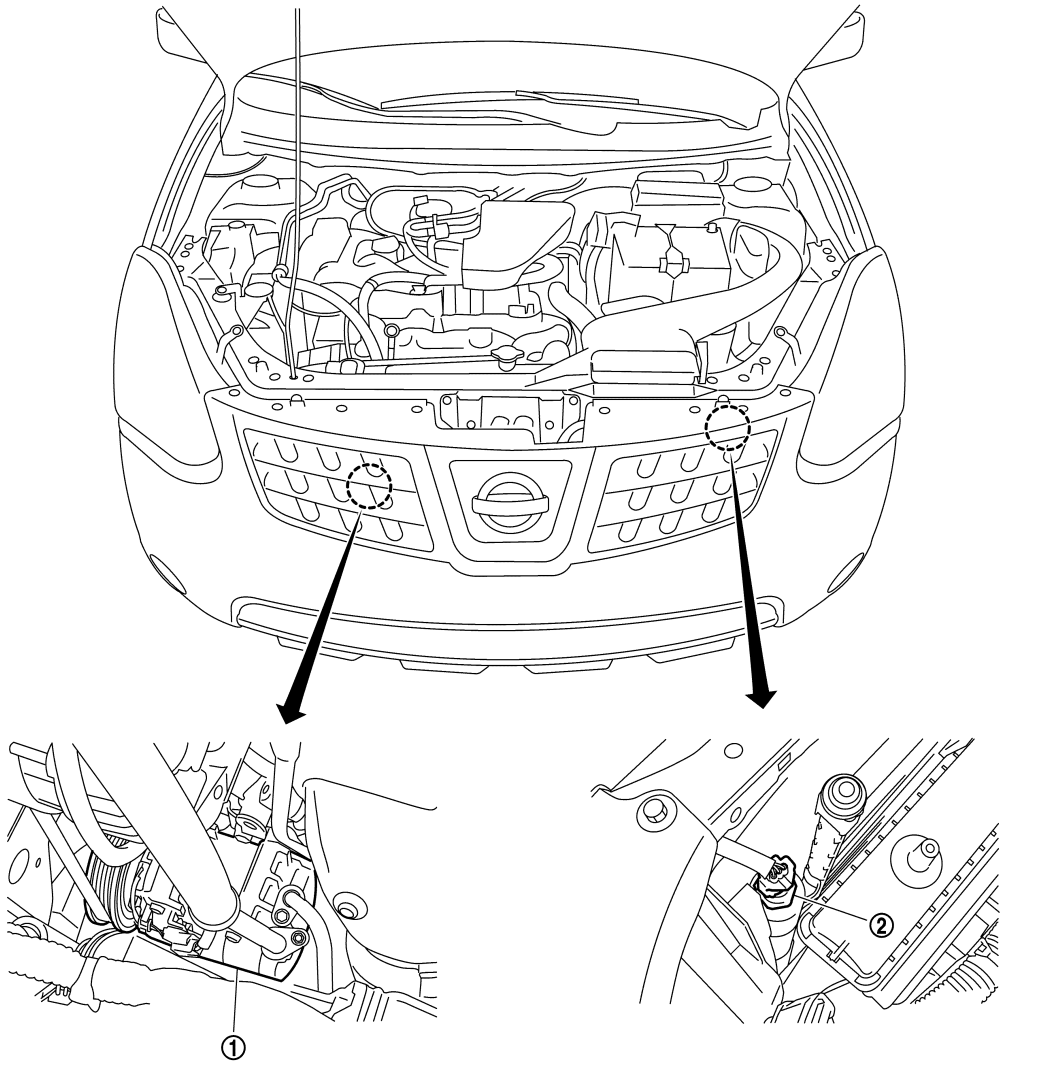
STOP SIGNAL:
- At the end of each transmission, a stop operation, in-operation, or internal malfunction message is delivered to the A/C amp. This completes one data transmission and control cycle.



Component Part Location

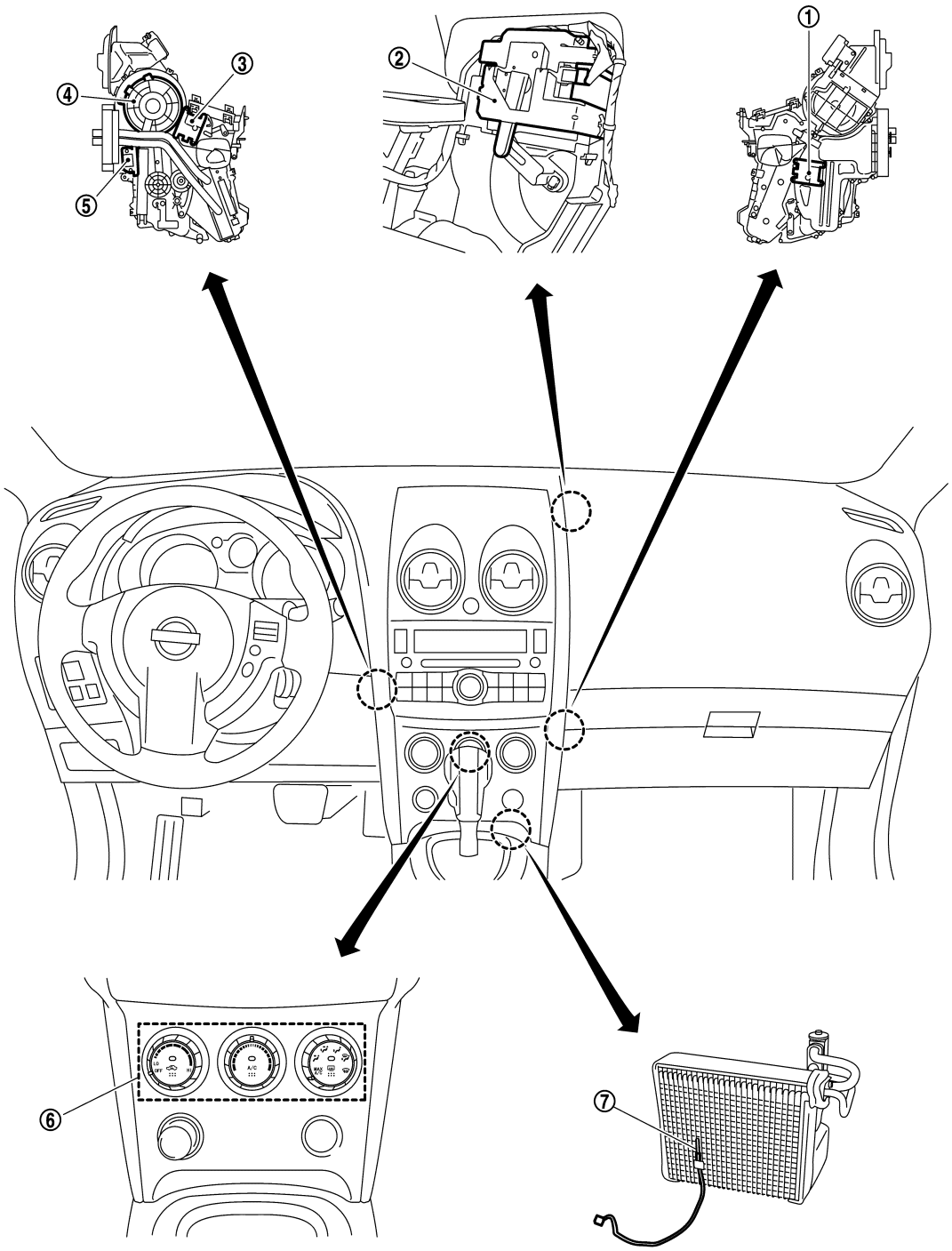
INFOID:0000000006200930

ENGINE COMPARTMENT



1. Compressor (Magnet clutch) 2. Refrigerant pressure sensor

PASSENGER COMPARTMENT



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1. Air mix door motor
2. Intake door motor
3. Mode door motor
4. Blower motor
5. Fan control amp.
6. A/C control (A/C amp.)
7. Intake sensor

Component Description

INFOID:0000000006200931

Component	Reference
Air mix door motor	HAC-142, "Description"
A/C control (A/C amp.)	HAC-156, "Description"
Blower motor	HAC-146, "Description"
Compressor (Magnet clutch)	HAC-150, "Description"
Fan control amp.	HAC-146, "Description"
Intake door motor	HAC-144, "Description"
Intake sensor	HAC-154, "Description"
Mode door motor	HAC-140, "Description"
Refrigerant pressure sensor	EC-448, "Description" (FOR CALIFORNIA), EC-900, "Description" [FOR USA (FEDERAL) AND CANADA] or EC-1246, "Description" (FOR MEXICO)

DIAGNOSIS SYSTEM (BCM)

COMMON ITEM

COMMON ITEM : CONSULT-III Function (BCM - COMMON ITEM)

INFOID:0000000006200932

APPLICATION ITEM

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

Diagnosis mode	Function description
ECU Identification	BCM part number is displayed.
Self-Diagnostic Result	Displays the diagnosis results judged by BCM. Refer to BCS-62, "DTC Index".
Data Monitor	BCM input/output signals are displayed.
Active Test	The signals used to activate each device are forcibly supplied from BCM.
Work Support	Changes the setting for each system function.
Configuration	• Read and save the vehicle specification. • Write the vehicle specification when replacing BCM.
CAN Diag Support Monitor	Monitors the reception status of CAN communication viewed from BCM.

SYSTEM APPLICATION

BCM can perform the following functions for each system.

NOTE:

It can perform the diagnosis modes except the following for all sub system selection items.

×: Applicable item

System	CONSULT-III sub system selection item	Diagnosis mode		
		Work Support	Data Monitor	Active Test
Door lock	DOOR LOCK	×	×	×
Rear window defogger	REAR DEFOGGER		×	×
Warning chime	BUZZER		×	×
Interior room lamp control	INT LAMP	×	×	×
Remote keyless entry system	MULTI REMOTE ENT	×	×	×
Exterior lamp	HEAD LAMP	×	×	×
Wiper and washer	WIPER	×	×	×
Turn signal and hazard warning lamps	FLASHER		×	×
Air conditioner	AIR CONDITONER		×	
Intelligent Key system	INTELLIGENT KEY		×	
Combination switch	COMB SW		×	
—	BCM	×		
Immobilizer	IMMU		×	×
Interior room lamp battery saver	BATTERY SAVER	×	×	×
Back door open	TRUNK		×	×
Vehicle security system	THEFT ALM	×	×	×
RAP system	RETAINED PWR	×	×	×
Signal buffer system	SIGNAL BUFFER		×	×
—	FUEL LID*			
TPMS	TPMS (AIR PRESSURE MONITOR)	×	×	×
Panic alarm system	PANIC ALARM			×

*: This item is displayed, but is not function.

AIR CONDITIONER

AIR CONDITIONER : CONSULT-III Function

INFOID:0000000006200933

DATA MONITOR

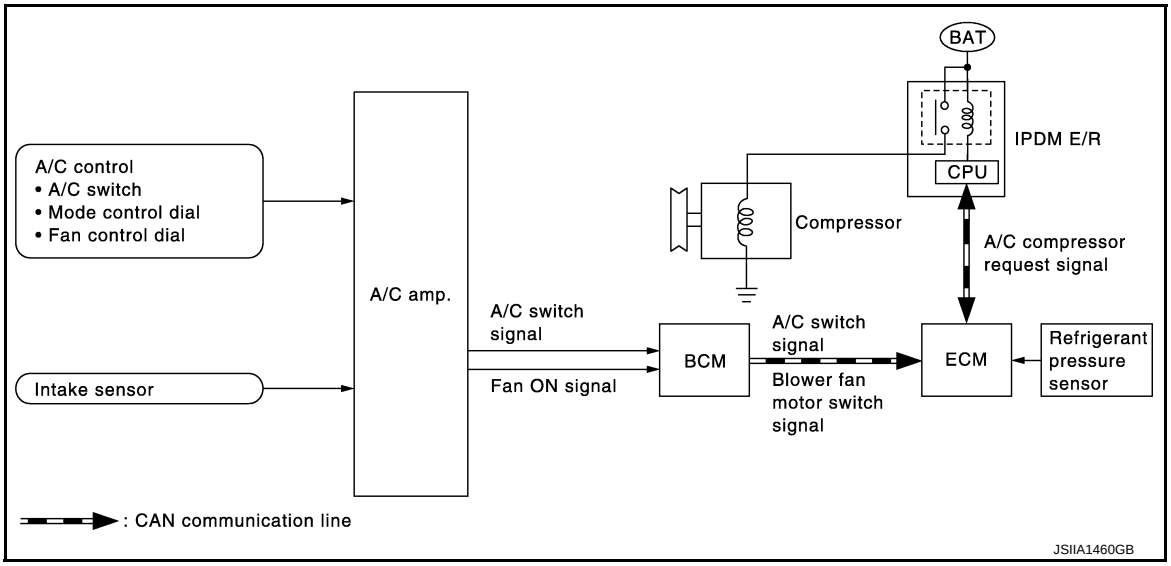
Display Item List

Monitor Item [Unit]		Contents
IGN SW	[On/Off]	Displays [ignition switch position (On)/OFF, ACC position (Off)] status as judged form ignition switch signal.
FAN ON SIG	[On/Off]	Displays [FAN (On)/FAN (Off)] status as judged form blower fan motor switch signal.
AIR COND SW	[On/Off]	Displays [COMP (On)/COMP (Off)] status as judged form air conditioner switch signal.

MAGNET CLUTCH CONTROL SYSTEM

System Diagram

INFOID:0000000006200934



System Description

INFOID:0000000006200935

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

SYSTEM OPERATION

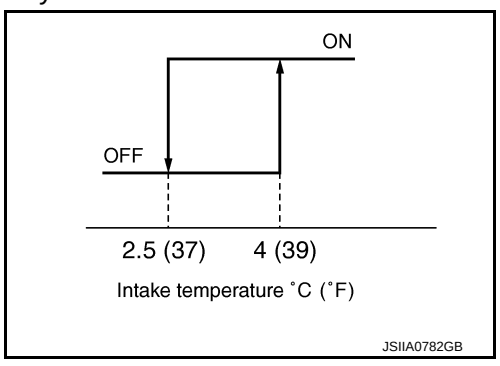
When A/C switch is pressed, turn fan control dial to ON or set mode control dial to MAX A/C position, A/C amp. transmits A/C switch signal to BCM.
BCM sends A/C switch signal to ECM, via CAN communication.
ECM judges whether compressor can be turned ON, based on each sensor status (refrigerant-pressure sensor signal, throttle angle, etc.). If it judges compressor can be turned ON, it sends A/C compressor request signal to IPDM E/R, via CAN communication.
Upon receipt of A/C compressor request signal from ECM, IPDM E/R turns air conditioner relay ON to operate compressor.

Compressor Protection Control

When the high-pressure side detected by the refrigerant pressure sensor is either approximately 2.74 MPa (approximately 27.9 kg/cm^2) or more, or approximately 0.14 MPa (approximately 1.4 kg/cm^2) or less, ECM turns the A/C relay OFF and stops the compressor.

Low Temperature Protection Control

A/C amp. turns compressor ON or OFF as judged by a signal detected by intake sensor.
When intake temperature is higher than 4°C (39°F), the compressor turns ON. The compressor turns OFF when intake temperature is lower than 2.5°C (37°F).



DTC/CIRCUIT DIAGNOSIS

MODE DOOR MOTOR

Description

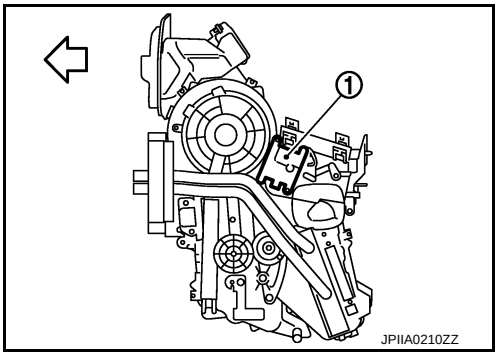
INFOID:0000000006200936

COMPONENT DESCRIPTION

Mode Door Motor

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

⇦: Vehicle front



Component Function Check

INFOID:0000000006200937

1.CONFIRM SYMPTOM BY PERFORMING THE FOLLOWING OPERATIONAL CHECK

1. Turn mode control dial to each position.
2. Confirm that discharge air comes out according to the air distribution table at below. Refer to HAC-127, "System Description".

NOTE:
Confirm that the magnet clutch is engaged (Sound or visual inspection) when MAX A/C is selected.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Go to diagnosis procedure. Refer to HAC-140, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006200938

1.CHECK MODE DOOR CONTROL LINKAGE

Check mode door control linkage. Refer to HAC-209, "Exploded View".

Is it installed normally?

YES >> GO TO 2.
NO >> Repair or adjust control linkage.

2.CHECK POWER SUPPLY FOR MODE DOOR MOTOR

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

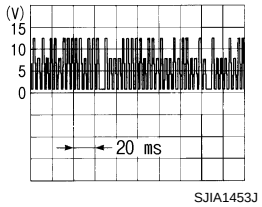
(+)		(–)	Voltage
Mode door motor		—	
Connector	Terminal		
M310	1	Ground	Battery voltage

Is the inspection result normal?

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

3.CHECK SIGNAL FOR MODE DOOR MOTOR

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

(+)		(–)	Voltage
Mode door motor		—	
Connector	Terminal		
M310	3	Ground	

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Is the inspection result normal?

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

4. CHECK MODE DOOR MOTOR GROUND CIRCUIT

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

Mode door motor		—	Continuity
Connector	Terminal		
M310	2	Ground	Existed

Is the inspection result normal?

YES >> Replace mode door motor.
NO >> Repair harness or connector.

AIR MIX DOOR MOTOR

Description

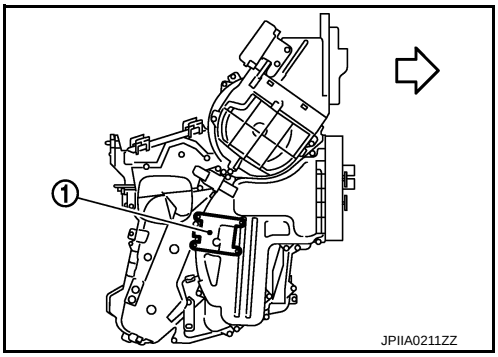
INFOID:0000000006200939

COMPONENT DESCRIPTION

Air Mix Door Motor

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

⇦: Vehicle front



Component Function Check

INFOID:0000000006200940

1. CONFIRM SYMPTOM BY PERFORMING THE FOLLOWING OPERATIONAL CHECK

1. Turn temperature control dial clockwise until full hot position after warming up the engine.
2. Check for warm air at discharge air outlets.
3. Turn temperature control dial counterclockwise until full cold position.
4. Check for cool air at discharge air outlets.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Go to diagnosis procedure. Refer to HAC-142, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006200941

1. CHECK AIR MIX DOOR MOTOR

Check air mix door motor. Refer to HAC-209, "Exploded View".

Is it installed normally?

YES >> GO TO 2.
NO >> Replace air mix door motor.

2. CHECK POWER SUPPLY FOR AIR MIX DOOR MOTOR

1. Turn ignition switch ON.
2. Check voltage between air mix door motor harness connector and ground.

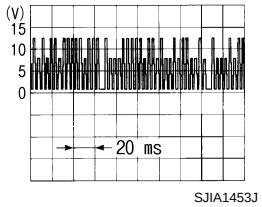
(+)		(–)	Voltage
Air mix door motor		—	
Connector	Terminal		
M306	1	Ground	Battery voltage

Is the inspection result normal?

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

3. CHECK SIGNAL FOR AIR MIX DOOR MOTOR

Confirm A/C LAN signal between air mix door motor harness connector and ground using an oscilloscope.

(+)		(–)	Voltage
Air mix door motor		—	
Connector	Terminal		
M306	3	Ground	

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Is the inspection result normal?

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

4. CHECK AIR MIX DOOR MOTOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect air mix door motor connector.
3. Check continuity between air mix door motor harness connector and ground.

Air mix door motor		—	Continuity
Connector	Terminal		
M306	2	Ground	Existed

Is the inspection result normal?

YES >> Replace air mix door motor.
NO >> Repair harness or connector.

INTAKE DOOR MOTOR

Description

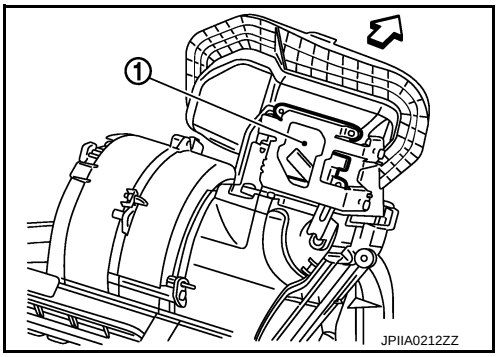
INFOID:0000000006200942

COMPONENT DESCRIPTION

Intake Door Motor

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

⇦: Vehicle front



Component Function Check

INFOID:0000000006200943

1.CONFIRM SYMPTOM BY PERFORMING THE FOLLOWING OPERATIONAL CHECK

1. Press REC switch. Recirculation indicator lamp turns ON.
2. Press REC switch again. Recirculation indicator lamp turns OFF.
3. Listen for intake door position change. (Slight change of blower sound can be heard.)

Is the inspection result normal?

YES >> INSPECTION END
NO >> Go to diagnosis procedure. Refer to HAC-144, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006200944

1.CHECK INTAKE DOOR CONTROL LINKAGE

Check intake door control linkage. Refer to HAC-209, "Exploded View".

Is it installed normally?

YES >> GO TO 2.
NO >> Repair or adjust control linkage.

2.CHECK POWER SUPPLY FOR INTAKE DOOR MOTOR

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

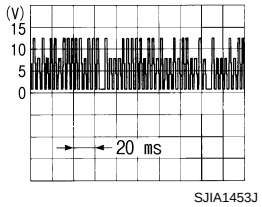
(+)		(–)	Voltage
Intake door motor		—	
Connector	Terminal		
M304	1	Ground	Battery voltage

Is the inspection result normal?

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

3.CHECK SIGNAL FOR INTAKE DOOR MOTOR

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

(+)		(–)	Voltage
Intake door motor		—	
Connector	Terminal		
M304	3	Ground	

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Is the inspection result normal?

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

4. CHECK INTAKE DOOR MOTOR GROUND CIRCUIT

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

Intake door motor		—	Continuity
Connector	Terminal		
M304	2	Ground	Existed

Is the inspection result normal?

YES >> Replace intake door motor.
NO >> Repair harness or connector.

BLOWER MOTOR

Description

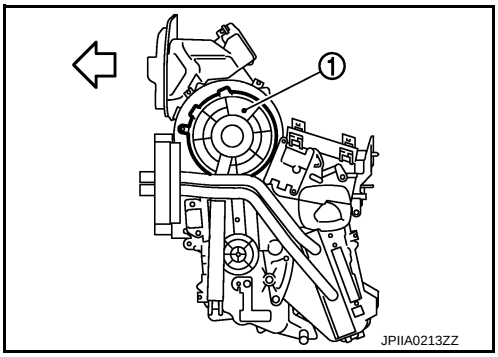
INFOID:0000000006200945

COMPONENT DESCRIPTION

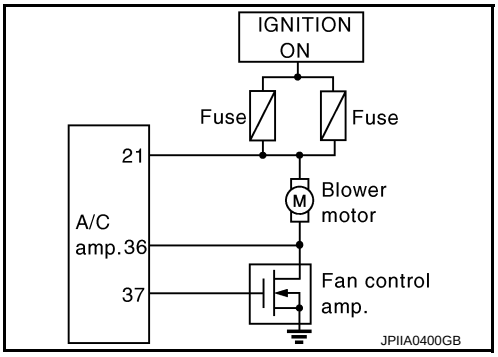
Blower Motor

The blower motor (1) utilizes a brush motor with a sirocco fan type.

⇦: Vehicle front

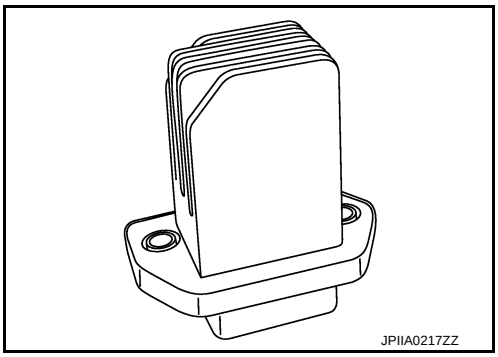


Blower Motor Circuit



Fan Control Amp.

- The fan control amp. is located on the A/C unit assembly.
- The fan control amp. receives a gate voltage from the A/C amp. to stepless maintain the blower fan motor voltage in the approximately 4 to 12 volt range.



Component Function Check

INFOID:0000000006200946

1. CONFIRM SYMPTOM BY PERFORMING THE FOLLOWING OPERATIONAL CHECK

1. Turn fan control dial clockwise to 1st speed. Blower should operate on low speed.
2. Turn fan control dial clockwise to 2nd speed, 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-146, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006200947

1. CHECK POWER SUPPLY FOR BLOWER MOTOR

1. Turn ignition switch ON.
2. Check voltage between blower motor harness connector and ground.

(+)		(–)	Voltage
Blower motor		—	
Connector	Terminal		
M312	1	Ground	Battery voltage

Is the inspection result normal?

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

2.CHECK POWER SUPPLY FOR FAN CONTROL AMP.

Check voltage between fan control amp. harness connector and ground.

(+)		(–)	Voltage
Fan control amp.		—	
Connector	Terminal		
M311	3	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 10.

3.CHECK BLOWER MOTOR CONTROL SIGNAL

1. Turn mode control dial to VENT.
2. Turn fan control dial to 1st speed.
3. Check voltage between fan control amp. harness connector and ground.

(+)		(–)	Voltage
Fan control amp.		—	
Connector	Terminal		
M311	2	Ground	Approx. 2.5 - 3.5 V

Is the inspection result normal?

YES >> GO TO 4.
NO-1 >> In the case of less than approximately 2.5 V: GO TO 11.
NO-2 >> In the case of more than approximately 8 V: Replace A/C control.

4.CHECK FAN CONTROL AMP. GROUND CIRCUIT

1. Disconnect fan control amp. connector.
2. Check continuity between fan control amp. harness connector and ground.

Fan control amp.		—	Continuity
Connector	Terminal		
M311	1	Ground	Existed

Is the inspection result normal?

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

5.CHECK BLOWER MOTOR FEEDBACK SIGNAL

1. Reconnect fan control amp. connector.
2. Turn ignition switch ON.
3. Turn fan control dial to 1st speed.
4. Check voltage between A/C amp. harness connector and ground.

(+)		(–)	Condition	Voltage
A/C amp.		—		
Connector	Terminal			
M50	36	Ground	Blower speed: 1st (Blower motor operate.)	Approx. 8.5 V

Is the inspection result normal?

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

6.CHECK POWER VOLTAGE OF BLOWER RELAY

1. Turn ignition switch OFF.
2. Remove blower relay. Refer to PG-99, "Fuse, Connector and Terminal Arrangement".
3. Turn ignition switch ON.
4. Check voltage between blower relay fuse block terminals and ground. Refer to PG-97, "Description" for relay terminal assignment.

(+)	(–)	Voltage
Blower relay	—	
1	Ground	Battery voltage
3		

Is the inspection result normal?

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

7.CHECK IGNITION SWITCH CIRCUIT

Check ignition switch circuit. Refer to DLK-69, "Diagnosis Procedure" (WITH INTELLIGENT KEY SYSTEM), DLK-309, "Diagnosis Procedure" (WITHOUT INTELLIGENT KEY SYSTEM).

Is the inspection result normal?

YES >> Repair harness or connector.
NG >> Replace malfunctioning parts.

8.CHECK BLOWER RELAY

1. Turn ignition switch OFF.
2. Install blower relay. Refer to PG-99, "Fuse, Connector and Terminal Arrangement".
3. Check operation sound of the blower relay after switching ignition switch ON.

Is the inspection result normal?

YES >> GO TO 9.
NO >> Replace blower relay.

9.CHECK FUSE

Check 15A fuse [Nos. 15 and 16, located in the fuse block (J/B)]. Refer to PG-99, "Fuse, Connector and Terminal Arrangement".

Is the inspection result normal?

YES >> Repair harness or connector.
NG >> Replace fuse.

10.CHECK CIRCUIT CONTINUITY BETWEEN BLOWER MOTOR AND FAN CONTROL AMP.

1. Turn ignition switch OFF.
2. Disconnect fan control amp. connector.
3. Check continuity between blower motor harness connector and fan control amp. harness connector.

Blower motor		Fan control amp.		Continuity
Connector	Terminal	Connector	Terminal	
M312	2	M311	3	Existed

Is the inspection result normal?

YES >> Check blower motor. Refer to HAC-149, "Component Inspection (Blower Motor)".
NO >> Repair harness or connector.

11. CHECK CIRCUIT FAN CONTROL AMP.

Check fan control amp. Refer to HAC-149, "Component Inspection (Blower Motor)".

Is the inspection result normal?

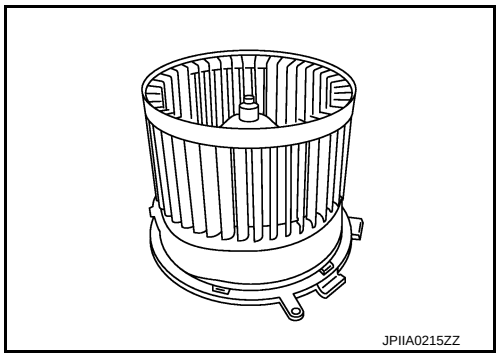
YES >> Replace A/C control.
NO >> Replace fan control amp.

Component Inspection (Blower Motor)

INFOID:0000000006200948

1. CHECK BLOWER MOTOR

1. Turn ignition switch OFF.
2. Remove blower motor. Refer to VTL-16, "Exploded View".
3. Confirm smooth rotation of the blower motor.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Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace blower motor.

Component Inspection (Fan Control Amp.)

INFOID:0000000006200949

1. CHECK FAN CONTROL AMP.

1. Turn ignition switch ON.
2. Remove fan control amp. Refer to VTL-17, "Exploded View".
3. Check continuity between the fan control amp. terminals using analog circuit tester.

Terminal		Continuity
(+)	(–)	
3	2	Existed
2	3	Not existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace fan control amp.

MAGNET CLUTCH

Description

INFOID:0000000006200950

Magnet clutch drives a compressor, by a signal of IPDM E/R.

Component Function Check

INFOID:0000000006200951

1.CONFIRM SYMPTOM BY PERFORMING THE FOLLOWING OPERATIONAL CHECK

1. Turn fan control dial to 1st speed.
2. Press A/C switch.
3. A/C switch indicator lamp turns ON. Confirm that the magnet clutch engages (sound or visual inspection).

Does the magnet clutch operate?

YES >> INSPECTION END
NO >> Go to Diagnosis Procedure. Refer to HAC-150, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006200952

1.PERFORM IPDM E/R AUTO ACTIVE TEST

Perform “IPDM E/R auto active test”. Refer to PCS-8, "Diagnosis Description".

Does the magnet clutch operate?

YES-1 >> Ⓗ WITH CONSULT-III: GO TO 5.
YES-2 >> Ⓧ WITHOUT CONSULT-III: GO TO 6.
NO >> Check 10A fuse (No. 51, located in IPDM E/R), and GO TO 2.

2.CHECK CIRCUIT CONTINUITY BETWEEN IPDM E/R AND COMPRESSOR

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and compressor connector.
3. Check continuity between IPDM E/R harness connector and compressor (magnet clutch) harness connector.

IPDM E/R		Compressor (Magnet clutch)		Continuity
Connector	Terminal	Connector	Terminal	
E15	55	F17	1	Existed

Is the inspection result normal?

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

3.CHECK CIRCUIT CONTINUITY BETWEEN COMPRESSOR GROUND

Check continuity between compressor (magnet clutch) harness connector and ground.

Compressor (Magnet clutch)		—	Continuity
Connector	Terminal		
F17	2	Ground	Existed

Is the inspection result normal?

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

4.CHECK MAGNET CLUTCH CIRCUIT

Check for operation sound when applying battery voltage direct current to terminal.

Is the inspection result normal?

YES >> Replace IPDM E/R.
NO >> Replace compressor.

5.CHECK BCM INPUT (A/C SWITCH) SIGNAL

Check A/C switch signal in “Data monitor”. Refer to HAC-138, "AIR CONDITIONER : CONSULT-III Function".

A/C SWITCH ON : AIR COND SW On
A/C SWITCH OFF : AIR COND SW Off

Is the inspection result normal?

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

6. CHECK CIRCUIT CONTINUITY BETWEEN BCM AND A/C AMP.

1. Turn ignition switch OFF.
2. Disconnect BCM harness connector and A/C amp. harness connector.
3. Check continuity between BCM harness connector and A/C amp. harness connector.

BCM		A/C amp.		Continuity
Connector	Terminal	Connector	Terminal	
M65	27	M50	40	Existed

Is the inspection result normal?

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

7. CHECK BCM

1. Connect BCM harness connector.
2. Turn ignition switch ON.
3. Check voltage between BCM harness connector and ground.

(+)		(–)	Voltage
BCM		—	
Connector	Terminal		
M65	27	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 8.
NO >> Replace BCM. Refer to BCS-66, "Exploded View".

8. CHECK A/C SWITCH SIGNAL

1. Turn ignition switch OFF.
2. Connect A/C amp. harness connector.
3. Turn ignition switch ON.
4. Check voltage between A/C amp. harness connector and ground.

(+)		(–)	Condition	Voltage
A/C amp.		—		
Connector	Terminal			
M50	40	Ground	A/C switch: ON (Blower motor operates.)	Approx. 0 V

Is the inspection result normal?

YES >> GO TO 9.
NO >> Replace A/C control.

9. CHECK REFRIGERANT PRESSURE SENSOR

WITH CONSULT-III

1. Start the engine.
2. Check voltage of refrigerant pressure sensor in “Data monitor”. Refer to EC-450, "Reference Value" (FOR CALIFORNIA), EC-902, "Reference Value" [FOR USA (FEDERAL) AND CANADA] or EC-1248, "Reference Value" (FOR MEXICO).

Ⓧ WITHOUT CONSULT-III
1. Start the engine.
2. Check voltage between ECM harness connector and ground.

(+)		(–)	Condition	Voltage
ECM		—		
Connector	Terminal			
F8	39	Ground	A/C switch: ON (Blower motor operates.)	Approx. 1.0 - 4.0 V

Is the inspection result normal?

YES-1 >> Ⓑ WITH CONSULT-III: GO TO 10.
YES-2 >> Ⓧ WITHOUT CONSULT-III: GO TO 11.
NO >> Refer to EC-448, "Diagnosis Procedure" (FOR CALIFORNIA), EC-900, "Diagnosis Procedure" [FOR USA (FEDERAL) AND CANADA] or EC-1246, "Diagnosis Procedure" (FOR MEXICO).

10. CHECK BCM INPUT (FAN ON) SIGNAL

Check fan ON signal in “Data monitor”. Refer to HAC-138, "AIR CONDITIONER : CONSULT-III Function".

FAN CONTROL DIAL ON : FAN ON SIG On
FAN CONTROL DIAL OFF : FAN ON SIG Off

Is the inspection result normal?

YES >> GO TO 14.
NO >> GO TO 11.

11. CHECK CIRCUIT CONTINUITY BETWEEN BCM AND A/C AMP.

1. Turn ignition switch OFF.
2. Disconnect BCM connector and A/C amp. connector.
3. Check continuity between BCM harness connector and A/C amp. harness connector.

BCM		A/C amp.		Continuity
Connector	Terminal	Connector	Terminal	
M65	28	M50	39	Existed

Is the inspection result normal?

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

12. CHECK BCM

1. Connect BCM harness connector.
2. Turn ignition switch ON.
3. Check voltage between BCM harness connector and ground.

(+)		(–)	Voltage
BCM		—	
Connector	Terminal		
M65	28	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 13.
NO >> Replace BCM. Refer to BCS-66, "Exploded View".

13. CHECK FAN ON SIGNAL

1. Turn ignition switch OFF.
2. Connect A/C amp. connector.
3. Turn ignition switch ON.
4. Check voltage between A/C amp. harness connector and ground.

(+)		(–)	Condition	Voltage
A/C amp.		—		
Connector	Terminal			
M50	39	Ground	Fan control dial: ON	Approx. 0 V

Is the inspection result normal?

YES >> GO TO 14.
NO >> Replace A/C control.

14. CHECK INTAKE SENSOR CIRCUIT

Check intake sensor circuit. Refer to HAC-144, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair or replace parts according to the inspection results.

15. CHECK CAN COMMUNICATION

Check CAN communication. Refer to LAN-15, "Trouble Diagnosis Flow Chart".

- ECM – IPDM E/R
- ECM – BCM

Is the inspection result normal?

YES >> Replace ECM.
NO >> Repair or replace malfunctioning part(s).

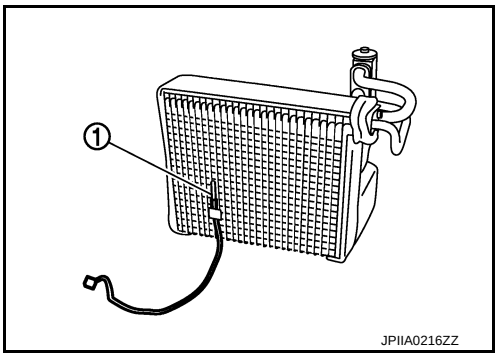
INTAKE SENSOR

Description

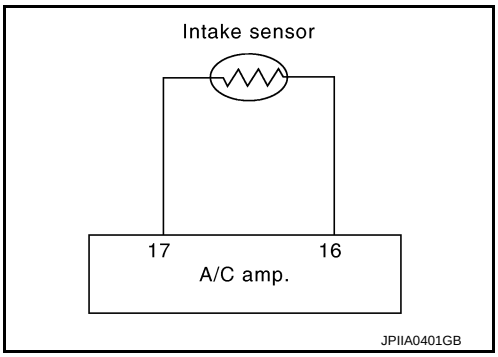
INFOID:0000000006200953

Intake Sensor

The intake sensor (1) is located on the evaporator. It converts air temperature after it passes through the evaporator into a resistance value which is then input to the A/C amp.



Intake Sensor Circuit



Diagnosis Procedure

INFOID:0000000006200954

1.CHECK VOLTAGE BETWEEN INTAKE SENSOR AND GROUND

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

(+)		(–)	Voltage
Intake sensor		—	
Connector	Terminal		
M42	1	Ground	Approx. 5 V

Is the inspection result normal?

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

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

1. Turn ignition switch OFF.
2. Disconnect A/C amp. connector.
3. Check continuity between intake sensor harness connector and A/C amp. harness connector.

Intake sensor		A/C amp.		Continuity
Connector	Terminal	Connector	Terminal	
M42	2	M50	16	Existed

Is the inspection result normal?

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

3.CHECK INTAKE SENSOR

Refer to HAC-155, "Component Inspection".

Is the inspection result normal?

YES >> Replace A/C control.
NO >> Replace intake sensor.

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

1. Turn ignition switch OFF.
2. Disconnect A/C amp. connector.
3. Check continuity between intake sensor harness connector and A/C amp. harness connector.

Intake sensor		A/C amp.		Continuity
Connector	Terminal	Connector	Terminal	
M42	1	M50	17	Existed

4. Check continuity between intake sensor harness connector and ground.

Intake sensor		—	Continuity
Connector	Terminal		
M42	1	Ground	Not existed

Is the inspection result normal?

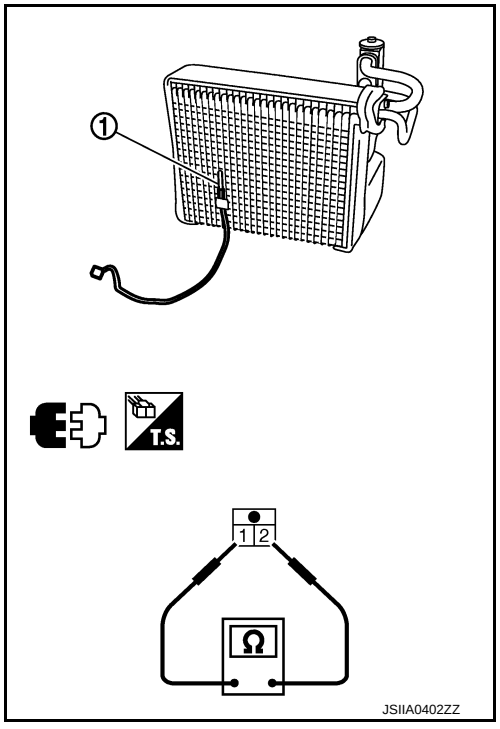
YES >> Replace A/C control.
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000006200955

1.CHECK INTAKE SENSOR

1. Turn ignition switch OFF.
2. Remove intake sensor. Refer to HAC-207, "Exploded View".
3. Measure resistance between terminals 1 and 2 at sensor side after disconnecting intake sensor (1) connector M42. Refer to table below.



Terminal		Temperature °C (°F)	Resistance kΩ
1	2	–15 (5)	17.73
		–10 (14)	13.46
		–5 (23)	10.33
		0 (32)	8.00
		5 (41)	6.26
		10 (50)	4.93
		15 (59)	3.92
		20 (68)	3.14
		25 (77)	2.54
		30 (86)	2.06
		35 (95)	1.69
		40 (104)	1.39
		45 (113)	1.15

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace intake sensor.

POWER SUPPLY AND GROUND CIRCUIT FOR A/C AMP.

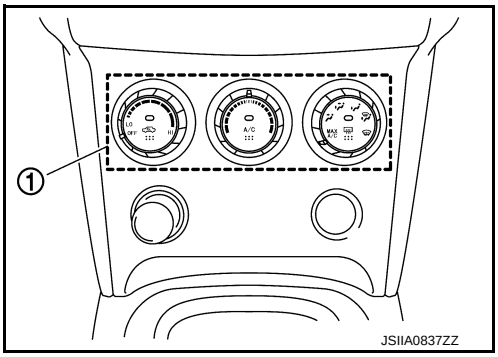
Description

INFOID:0000000006200956

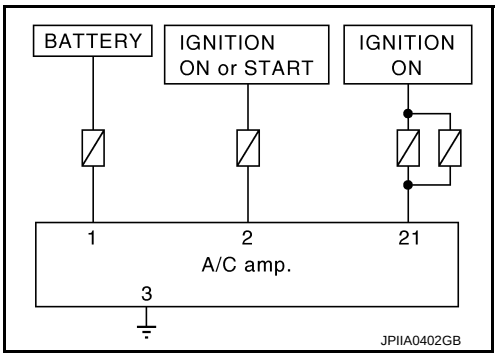
COMPONENT DESCRIPTION

A/C AMP. (Air Conditioner Amplifier)

- The A/C amp. (1) 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.
- The A/C amp. is unitized with control mechanisms. Signal from various switches and potentio temperature control (PTC) are directly entered into A/C amp.

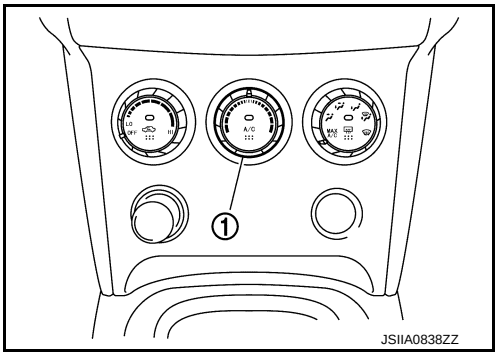


Power Supply and Ground Circuit for A/C Amp.



Potentio Temperature Control (PTC)

- The PTC (1) is built into the A/C amp.
- It can be set from cold to hot or any intermediate position by turning temperature control dial.



Component Function Check

INFOID:0000000006200957

1. CONFIRM SYMPTOM BY PERFORMING THE FOLLOWING OPERATIONAL CHECK

1. Turn fan control dial to 1st position.
2. Press A/C switch.
3. A/C switch indicator lamp turns ON. Confirm that the magnet clutch engages (sound or visual inspection).

Does magnet clutch engaged?

YES >> INSPECTION END
NO >> Go to Diagnosis Procedure. Refer to HAC-156, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006200958

1. CHECK POWER SUPPLY CIRCUIT FOR A/C AMP.

1. Disconnect A/C amp. connector.

2. Check voltage between A/C amp. harness connector and ground.

(+)		(–)	Ignition switch position		
A/C amp.		—	OFF	ACC	ON
Connector	Terminal				
M50	1	Ground	Battery voltage	Battery voltage	Battery voltage
	2		Approx. 0 V	Approx. 0 V	Battery voltage
	21		Approx. 0 V	Approx. 0 V	Battery voltage

Is the inspection result normal?

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

2.CHECK FUSE

Check 10A fuses [Nos. 1, 8, 15 and 16, located in the fuse block (J/B)]. Refer to PG-99, "Fuse, Connector and Terminal Arrangement".

Is the inspection result normal?

YES >> Check harness for open circuit. Repair or replace if necessary.
NO >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.

3.CHECK GROUND CIRCUIT FOR A/C AMP.

1. Turn ignition switch OFF.
2. Check continuity between A/C amp. harness connector and ground.

A/C amp.		—	Continuity
Connector	Terminal		
M50	3	Ground	Existed

Is the inspection result normal?

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

ECU DIAGNOSIS INFORMATION

BCM (BODY CONTROL MODULE)

Reference Value

INFOID:0000000006200959

VALUES ON THE DIAGNOSIS TOOL

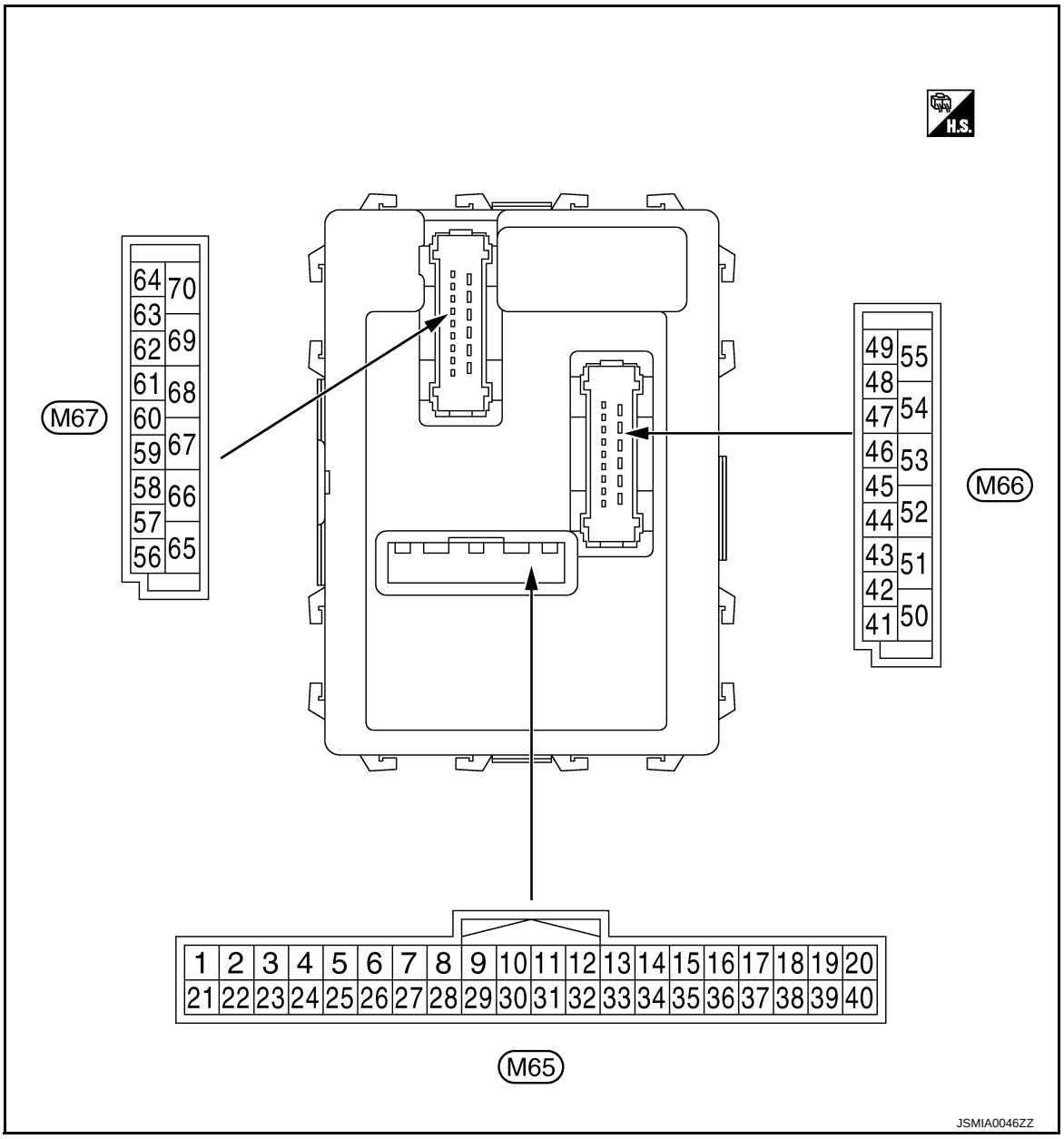
Monitor Item	Condition	Value/Status
IGN ON SW	Ignition switch OFF or ACC	Off
	Ignition switch ON	On
KEY ON SW	Mechanical key is removed from key cylinder	Off
	Mechanical key is inserted to key cylinder	On
CDL LOCK SW	Door lock/unlock switch does not operate	Off
	Press door lock/unlock switch to the lock side	On
CDL UNLOCK SW	Door lock/unlock switch does not operate	Off
	Press door lock/unlock switch to the unlock side	On
DOOR SW-DR	Driver's door closed	Off
	Driver's door opened	On
DOOR SW-AS	Passenger door closed	Off
	Passenger door opened	On
DOOR SW-RR	Rear RH door closed	Off
	Rear RH door opened	On
DOOR SW-RL	Rear LH door closed	Off
	Rear LH door opened	On
BACK DOOR SW	Back door closed	Off
	Back door opened	On
KEY CYL LK-SW	Other than driver door key cylinder LOCK position	Off
	Driver door key cylinder LOCK position	On
KEY CYL UN-SW	Other than driver door key cylinder UNLOCK position	Off
	Driver door key cylinder UNLOCK position	On
KEYLESS LOCK	“LOCK” button of key fob is not pressed	Off
	“LOCK” button of key fob is pressed	On
KEYLESS UNLOCK	“UNLOCK” button of key fob is not pressed	Off
	“UNLOCK” button of key fob is pressed	On
I-KEY LOCK	“LOCK” button of Intelligent Key or door request switch are not pressed	Off
	“LOCK” button of Intelligent Key or door request switch are pressed	On
I-KEY UNLOCK	“UNLOCK” button of Intelligent Key or door request switch are not pressed	Off
	“UNLOCK” button of Intelligent Key or door request switch are pressed	On
ACC ON SW	Ignition switch OFF	Off
	Ignition switch ACC or ON	On
REAR DEF SW	Rear window defogger switch OFF	Off
	Rear window defogger switch ON	On
LIGHT SW 1ST	Lighting switch OFF	Off
	Lighting switch 1ST	On

Monitor Item	Condition	Value/Status
BUCKLE SW	The seat belt (driver side) is unfastened. [Seat belt switch (driver side) OFF]	Off
	The seat belt (driver side) is fastened. [Seat belt switch (driver side) ON]	On
KEYLESS PANIC	PANIC button of key fob is not pressed	Off
	PANIC button of key fob is pressed	On
KEYLESS TRUNK	**NOTE:** The item is indicated, but not monitored.	Off
TRNK OPN MNTR	**NOTE:** The item is indicated, but not monitored.	Off
RKE LCK-UNLCK	LOCK/UNLOCK button of key fob is not pressed and held simultaneously	Off
	LOCK/UNLOCK button of key fob is pressed and held simultaneously	On
RKE KEEP UNLK	UNLOCK button of key fob is not pressed	Off
	UNLOCK button of key fob is pressed and held	On
HI BEAM SW	Lighting switch OFF	Off
	Lighting switch HI	On
HEAD LAMP SW 1	Lighting switch OFF	Off
	Lighting switch 2ND	On
HEAD LAMP SW 2	Lighting switch OFF	Off
	Lighting switch 2ND	On
AUTO LIGHT SW	**NOTE:** The item is indicated, but not monitored.	Off
PASSING SW	Other than lighting switch PASS	Off
	Lighting switch PASS	On
FR FOG SW	Front fog lamp switch OFF	Off
	Front fog lamp switch ON	On
RR FOG SW	**NOTE:** The item is indicated, but not monitored.	Off
TURN SIGNAL R	Turn signal switch OFF	Off
	Turn signal switch RH	On
TURN SIGNAL L	Turn signal switch OFF	Off
	Turn signal switch LH	On
ENGINE RUN	Engine stopped	Off
	Engine running	On
PKB SW	Parking brake switch is OFF	Off
	Parking brake switch is ON	On
CARGO LAMP SW	**NOTE:** The item is indicated, but not monitored.	Off
OPTICAL SENSOR	**NOTE:** The item is indicated, but not monitored.	0 V
IGN SW CAN	Ignition switch OFF or ACC	Off
	Ignition switch ON	On
FR WIPER HI	Front wiper switch OFF	Off
	Front wiper switch HI	On
FR WIPER LOW	Front wiper switch OFF	Off
	Front wiper switch LO	On

Monitor Item	Condition	Value/Status
FR WIPER INT	Front wiper switch OFF	Off
	Front wiper switch INT	On
FR WASHER SW	Front washer switch OFF	Off
	Front washer switch ON	On
INT VOLUME	Wiper intermittent dial is in a dial position 1 - 7	1 - 7
FR WIPER STOP	Any position other than front wiper stop position	Off
	Front wiper stop position	On
VEHICLE SPEED	While driving	Equivalent to speedometer reading
RR WIPER ON	Rear wiper switch OFF	Off
	Rear wiper switch ON	On
RR WIPER INT	Rear wiper switch OFF	Off
	Rear wiper switch INT	On
RR WASHER SW	Rear washer switch OFF	Off
	Rear washer switch ON	On
RR WIPER STOP	Rear wiper stop position	Off
	Other than rear wiper stop position	On
RR WIPER STP2	**NOTE:** The item is indicated, but not monitored.	Off
H/L WASH SW	**NOTE:** The item is indicated, but not monitored.	Off
HAZARD SW	Hazard switch OFF	Off
	Hazard switch ON	On
BRAKE SW	Brake pedal is not depressed	Off
	Brake pedal is depressed	On
FAN ON SIG	Blower fan motor switch OFF	Off
	Blower fan motor switch ON (other than OFF)	On
AIR COND SW	Compressor ON is not requested from auto amp. (A/C indicator OFF, blower fan motor switch OFF or etc.)	Off
	Compressor ON is requested from auto amp. (A/C indicator ON and blower fan motor switch ON).	On
I-KEY TRUNK	**NOTE:** The item is indicated, but not monitored.	Off
I-KEY PW DWN	UNLOCK button of Intelligent Key is not pressed	Off
	UNLOCK button of Intelligent Key is pressed and held	On
I-KEY PANIC	PANIC button of Intelligent Key is not pressed	Off
	PANIC button of Intelligent Key is pressed	On
PUSH SW	Return to ignition switch to “LOCK” position	Off
	Press ignition switch	On
TRNK OPNR SW	When back door opener switch is not pressed	Off
	When back door opener switch is pressed	On
TRUNK CYL SW	**NOTE:** The item is indicated, but not monitored.	Off
HOOD SW	Close the hood **NOTE:** Vehicles of except for Mexico are OFF-fixed	Off
	Open the hood	On

Monitor Item	Condition	Value/Status
OIL PRESS SW	• Ignition switch OFF or ACC • Engine running	Off
	Ignition switch ON	On
AIR PRESS FL	Ignition switch ON (Only when the signal from the transmitter is received)	Air pressure of front LH tire
AIR PRESS FR	Ignition switch ON (Only when the signal from the transmitter is received)	Air pressure of front RH tire
AIR PRESS RR	Ignition switch ON (Only when the signal from the transmitter is received)	Air pressure of rear RH tire
AIR PRESS RL	Ignition switch ON (Only when the signal from the transmitter is received)	Air pressure of rear LH tire
ID REGST FL1	ID of front LH tire transmitter is registered	Done
	ID of front LH tire transmitter is not registered	Yet
ID REGST FR1	ID of front RH tire transmitter is registered	Done
	ID of front RH tire transmitter is not registered	Yet
ID REGST RR1	ID of rear RH tire transmitter is registered	Done
	ID of rear RH tire transmitter is not registered	Yet
ID REGST RL1	ID of rear LH tire transmitter is registered	Done
	ID of rear LH tire transmitter is not registered	Yet
WARNING LAMP	Tire pressure indicator OFF	Off
	Tire pressure indicator ON	On
BUZZER	Tire pressure warning alarm is not sounding	Off
	Tire pressure warning alarm is sounding	On

TERMINAL LAYOUT

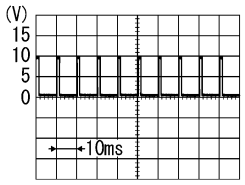
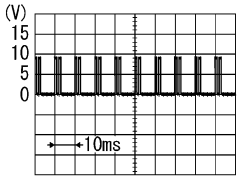
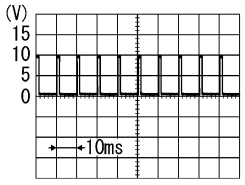
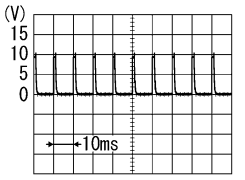
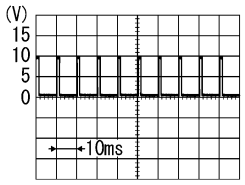


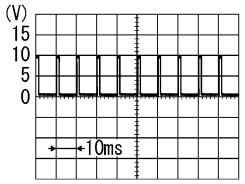
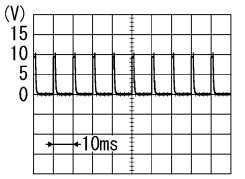
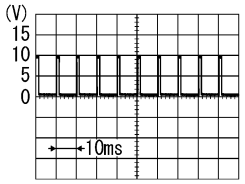
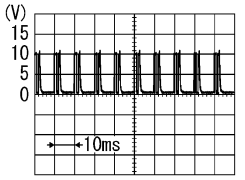
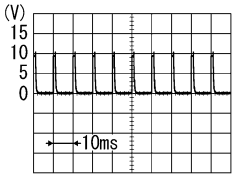
PHYSICAL VALUES

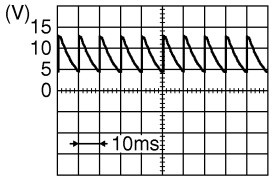
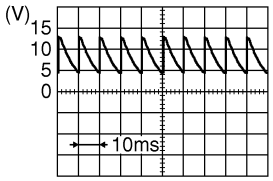
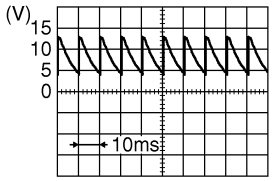
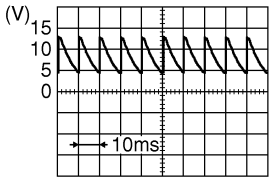
CAUTION:

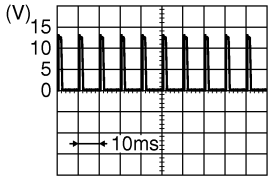
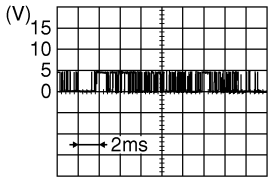
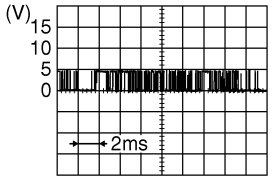
- **Check combination switch system terminal waveform under the loaded condition with lighting switch, turn signal switch and wiper switch OFF is not to be fluctuated by being overloaded.**
- **Turn wiper intermittent dial position to 4 except when checking waveform or voltage of wiper intermittent dial position. Wiper intermittent dial position can be confirmed on CONSULT-III. Refer to BCS-27, "COMB SW : CONSULT-III Function (BCM - COMB SW)".**
- **BCM reads the status of the combination switch at 10 ms internal normally. Refer to BCS-9, "System Diagram".**

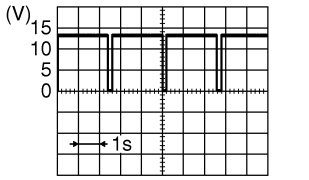
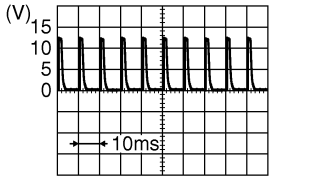
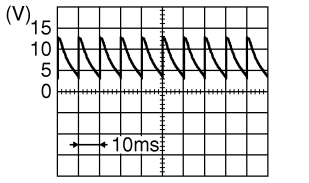
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
1 (V)	Ground	Ignition key hole illumination control	Output	Ignition key hole illumination	OFF	Battery voltage
					ON	0 V

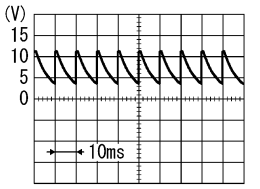
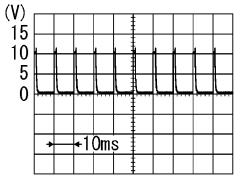
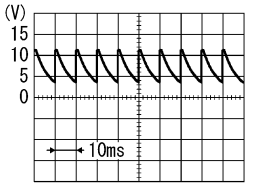
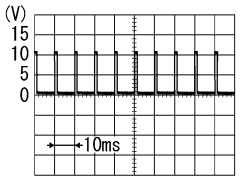
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
2 (G)	Ground	Combination switch INPUT 5	Input	Combination switch (Wiper intermittent dial 4)	All switch OFF	0 V
					Turn signal switch RH Lighting switch HI Lighting switch 1ST	 PKIB4959J 1.0 V
					Lighting switch 2ND	 PKIB4953J 2.0 V
3 (Y)	Ground	Combination switch INPUT 4	Input	Combination switch (Wiper intermittent dial 4)	All switch OFF	0 V
					Turn signal switch LH Lighting switch PASS Lighting switch 2ND	 PKIB4959J 1.0 V
					Front fog lamp switch ON	 PKIB4955J 0.8 V
4 (W)	Ground	Combination switch INPUT 3	Input	Combination switch (Wiper intermittent dial 4)	All switch OFF	0 V
					Front wiper switch LO Front wiper switch MIST Front wiper switch INT	 PKIB4959J 1.0 V

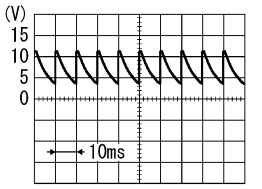
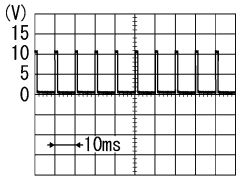
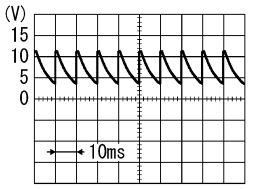
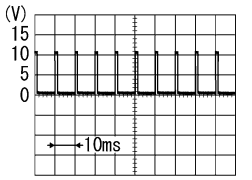
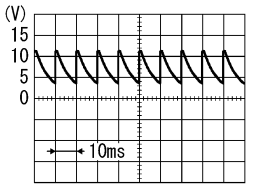
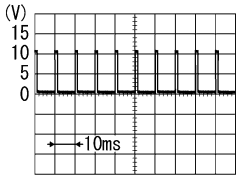
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
5 (R)	Ground	Combination switch INPUT 2	Input	Combination switch	All switch OFF (Wiper intermittent dial 4)	0 V
					Front washer switch (Wiper intermittent dial 4)	 PKIB4959J 1.0 V
					Rear washer ON (Wiper intermittent dial 4)	
					Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 5 • Wiper intermittent dial 6	
					Rear wiper switch ON (Wiper intermittent dial 4)	 PKIB4955J 0.8 V
6 (P)	Ground	Combination switch INPUT 1	Input	Combination switch	All switch OFF (Wiper intermittent dial 4)	0 V
					Front wiper switch HI (Wiper intermittent dial 4)	 PKIB4959J 1.0 V
					Rear wiper switch INT (Wiper intermittent dial 4)	
					Wiper intermittent dial 3 (All switch OFF)	
					Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 2	 PKIB4952J 1.7 V
					Any of the condition below with all switch OFF • Wiper intermittent dial 6 • Wiper intermittent dial 7	 PKIB4955J 0.8 V

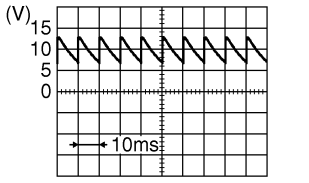
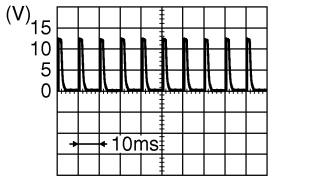
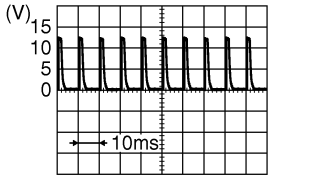
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
7 (L)	Ground	Door key cylinder switch UNLOCK signal	Input	Door key cylinder switch	NEUTRAL position	 JPMIA0587GB 8.0 - 8.5 V
					UNLOCK position	0 V
8 (R)	Ground	Door key cylinder switch LOCK signal	Input	Door key cylinder switch	NEUTRAL position	 JPMIA0587GB 8.0 - 8.5 V
					LOCK position	0 V
9 (R)	Ground	Stop lamp switch	Input	Stop lamp switch	OFF (Brake pedal is not depressed)	0 V
					ON (Brake pedal is depressed)	Battery voltage
10 (SB)	Ground	Rear window defogger switch	Input	Rear window defogger switch	Not pressed	Battery voltage
					Pressed	0 V
11 (SB)	Ground	Ignition switch ACC	Input	Ignition switch OFF		0 V
				Ignition switch ACC or ON		Battery voltage
12 (P)	Ground	Passenger door switch	Input	Passenger door switch	OFF (When passenger door closed)	 JPMIA0586GB 7.5 - 8.0 V
					ON (When passenger door opened)	0 V
13 (LG)	Ground	Rear door switch RH	Input	Rear door switch RH	OFF (When rear door RH closed)	 JPMIA0587GB 8.0 - 8.5 V
					ON (When rear door RH opened)	0 V

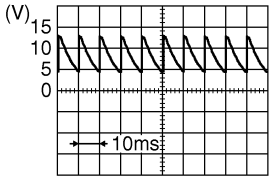
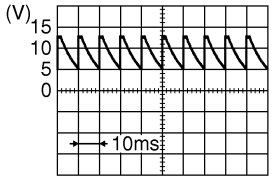
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
15* (O)	Ground	Tire pressure warning check switch	Input	Ignition switch OFF		 JPMIA0588GB 1.5 V
18* (O)	Ground	Remote keyless entry receiver ground	Input	Ignition switch ON		0 V
19* (V)	Ground	Remote keyless entry receiver power supply	Input	Without Intelligent Key system	At any condition	5 V
				With Intelligent Key system	• Ignition switch OFF • For 3 seconds after ignition switch OFF to ON	0 V
					3 seconds or later after ignition switch OFF to ON	5 V
20* (GR)	Ground	Remote keyless entry receiver signal	Input	Without Intelligent Key system	At any condition	 JPMIA0589GB **NOTE:** The wave form changes according to signal-receiving condition.
				With Intelligent Key system	• Ignition switch OFF • For 3 seconds after ignition switch OFF to ON	0 V
					3 seconds or later after ignition switch OFF to ON	 JPMIA0589GB **NOTE:** The wave form changes according to signal-receiving condition.
21 (G)	Ground	Immobilizer antenna signal (Clock)	Input/ Output	Ignition switch OFF		Battery voltage

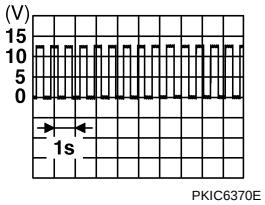
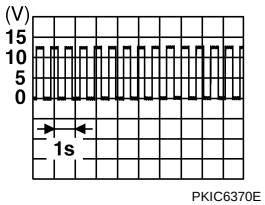
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
23 (B)	Ground	Security indicator signal	Input	Security indicator	ON	0 V
					Blinking (Ignition switch OFF)	 JPMIA0590GB 12.0 V
					OFF	Battery voltage
25 (BR)	Ground	Immobilizer antenna signal (Rx, Tx)	Input/ Output	Ignition switch OFF		Battery voltage
27 (Y)	Ground	A/C switch	Input	Ignition switch OFF		
				Ignition switch ON	A/C switch OFF	 JPMIA0591GB 1.6 V
					A/C switch ON	0 V
28 (LG)	Ground	Blower fan switch	Input	Ignition switch OFF		
				Ignition switch ON	Blower fan switch OFF	 JPMIA0592GB 7.0 - 7.5 V
					Blower fan switch ON	0 V
29 (W)	Ground	Hazard switch	Input	Hazard switch	OFF	Battery voltage
					ON	0 V
30 (G)	Ground	Back door opener switch	Input	Back door opener switch	Not pressed	Battery voltage
					Pressed	0 V

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
32 (BR)	Ground	Combination switch OUTPUT 5	Output	Combination switch	All switch OFF (Wiper intermittent dial 4)	 PKIB4960J 7.2 V
					Front fog lamp switch ON (Wiper intermittent dial 4)	 PKIB4956J 1.0 V
					Rear wiper switch ON (Wiper intermittent dial 4)	
					Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 2 • Wiper intermittent dial 6 • Wiper intermittent dial 7	
33 (GR)	Ground	Combination switch OUTPUT 4	Output	Combination switch	All switch OFF (Wiper intermittent dial 4)	 PKIB4960J 7.2 V
					Lighting switch 1ST (Wiper intermittent dial 4)	 PKIB4958J 1.2 V
					Rear wiper switch INT (Wiper intermittent dial 4)	
					Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 5 • Wiper intermittent dial 6	

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
34 (L)	Ground	Combination switch OUTPUT 3	Output	Combination switch	All switch OFF (Wiper intermittent dial 4)	 PKIB4960J 7.2 V
					Lighting switch 2ND (Wiper intermittent dial 4)	 PKIB4958J 1.2 V
					Lighting switch HI (Wiper intermittent dial 4)	
					Rear washer switch ON (Wiper intermittent dial 4)	
					Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 2 • Wiper intermittent dial 3	
35 (B)	Ground	Combination switch OUTPUT 2	Output	Combination switch (Wiper intermittent dial 4)	All switch OFF	 PKIB4960J 7.2 V
					Lighting switch 2ND	 PKIB4958J 1.2 V
					Lighting switch PASS	
					Front wiper switch INT	
					Front wiper switch HI	
36 (V)	Ground	Combination switch OUTPUT 1	Output	Combination switch (Wiper intermittent dial 4)	All switch OFF	 PKIB4960J 7.2 V
					Turn signal switch RH	 PKIB4958J 1.2 V
					Turn signal switch LH	
					Front wiper switch LO (Front wiper switch MIST)	
					Front washer switch ON	

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
37 (LG)	Ground	Key switch	Input	Insert mechanical key into ignition key cylinder		Battery voltage
				Remove mechanical key from ignition key cylinder		0 V
38 (G)	Ground	Ignition switch ON	Input	Ignition switch OFF or ACC		0 V
				Ignition switch ON or START		Battery voltage
39 (L)	Ground	CAN-H	Input/ Output	—		—
40 (P)	Ground	CAN-L	Input/ Output	—		—
43 (V)	Ground	Back door switch	Input	Back door switch	OFF (When back door closed)	 JPMIA0593GB 9.5 - 10.0 V
					ON (When back door opened)	0 V
44 (B)	Ground	Rear wiper auto stop	Input	Ignition switch ON	Rear wiper stop position	0 V
					Any position other than rear wiper stop position	Battery voltage
45 (P)	Ground	Door lock and unlock switch LOCK signal	Input	Door lock and unlock switch	NEUTRAL position	 JPMIA0591GB 1.6 V
					LOCK position	0 V
46 (BR)	Ground	Door lock and unlock switch UNLOCK signal	Input	Door lock and unlock switch	NEUTRAL position	 JPMIA0591GB 1.6 V
					UNLOCK position	0 V

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
47 (W)	Ground	Driver door switch	Input	Driver door switch	OFF (When driver door closed)	 JPMIA0587GB 8.0 - 8.5 V
					ON (When driver door opened)	0 V
48 (GR)	Ground	Rear door switch LH	Input	Rear door switch LH	OFF (When rear door LH closed)	 JPMIA0594GB 8.5 - 9.0 V
					ON (When rear door LH opened)	0 V
49 (L)	Ground	Back door lamp control	Output	Back door lamp switch DOOR position	Back door is closed (Back door lamp turns OFF)	Battery voltage
					Back door is opened (Back door lamp turns ON)	0 V
53 (V)	Ground	Back door open	Output	Back door opener switch	Not pressed (Back door actuator is activated)	0 V
					Pressed (Back door actuator is activated)	Battery voltage
55 (SB)	Ground	Rear wiper motor	Output	Ignition switch ON	Rear wiper switch OFF	0 V
					Rear wiper switch ON	Battery voltage
56 (Y)	Ground	Interior room lamp power supply	Output	After passing the interior room lamp battery saver operation time		0 V
				Any other time after passing the interior room lamp battery saver operation time		Battery voltage
57 (G)	Ground	Battery power supply	Input	Ignition switch OFF		Battery voltage
59 (L)	Ground	Driver door UNLOCK	Output	Driver door	UNLOCK (Actuator is activated)	Battery voltage
					Other then UNLOCK (Actuator is not activated)	0 V

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
60 (BR)	Ground	Turn signal LH	Output	Ignition switch ON	Turn signal switch OFF	0 V
					Turn signal switch LH	 PKIC6370E 6.0 V
61 (GR)	Ground	Turn signal RH	Output	Ignition switch ON	Turn signal switch OFF	0 V
					Turn signal switch RH	 PKIC6370E 6.0 V
63 (R)	Ground	Interior room lamp timer control	Output	Interior room lamp	OFF	Battery voltage
					ON	0 V
65 (V)	Ground	All doors LOCK	Output	All doors	LOCK (Actuator is activated)	Battery voltage
					Other then LOCK (Actuator is not activated)	0 V
66 (G)	Ground	Passenger door and rear door UNLOCK	Output	Passenger door and rear door	UNLOCK (Actuator is activated)	Battery voltage
					Other then UNLOCK (Actuator is not activated)	0 V
67 (B)	Ground	Ground	Output	Ignition switch ON		0 V
68 (L)	Ground	P/W power supply (RAP)	Output	Ignition switch ON		Battery voltage
69 (P)	Ground	P/W power supply (BAT)	Output	Ignition switch OFF		Battery voltage
70 (Y)	Ground	Battery power supply	Input	Ignition switch OFF		Battery voltage

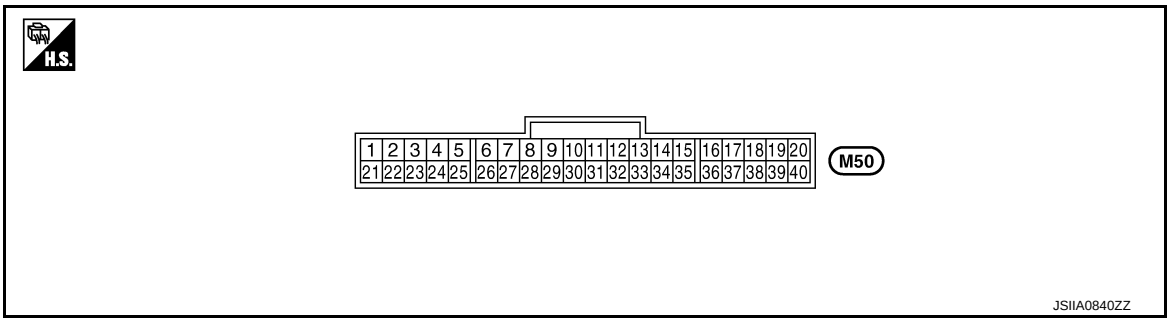
*: Except for Mexico

A/C AMP.

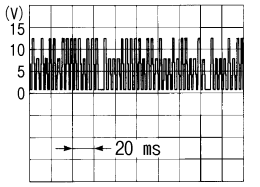
Reference Value

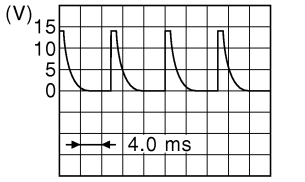
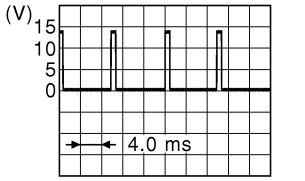
INFOID:0000000006200960

TERMINAL LAYOUT



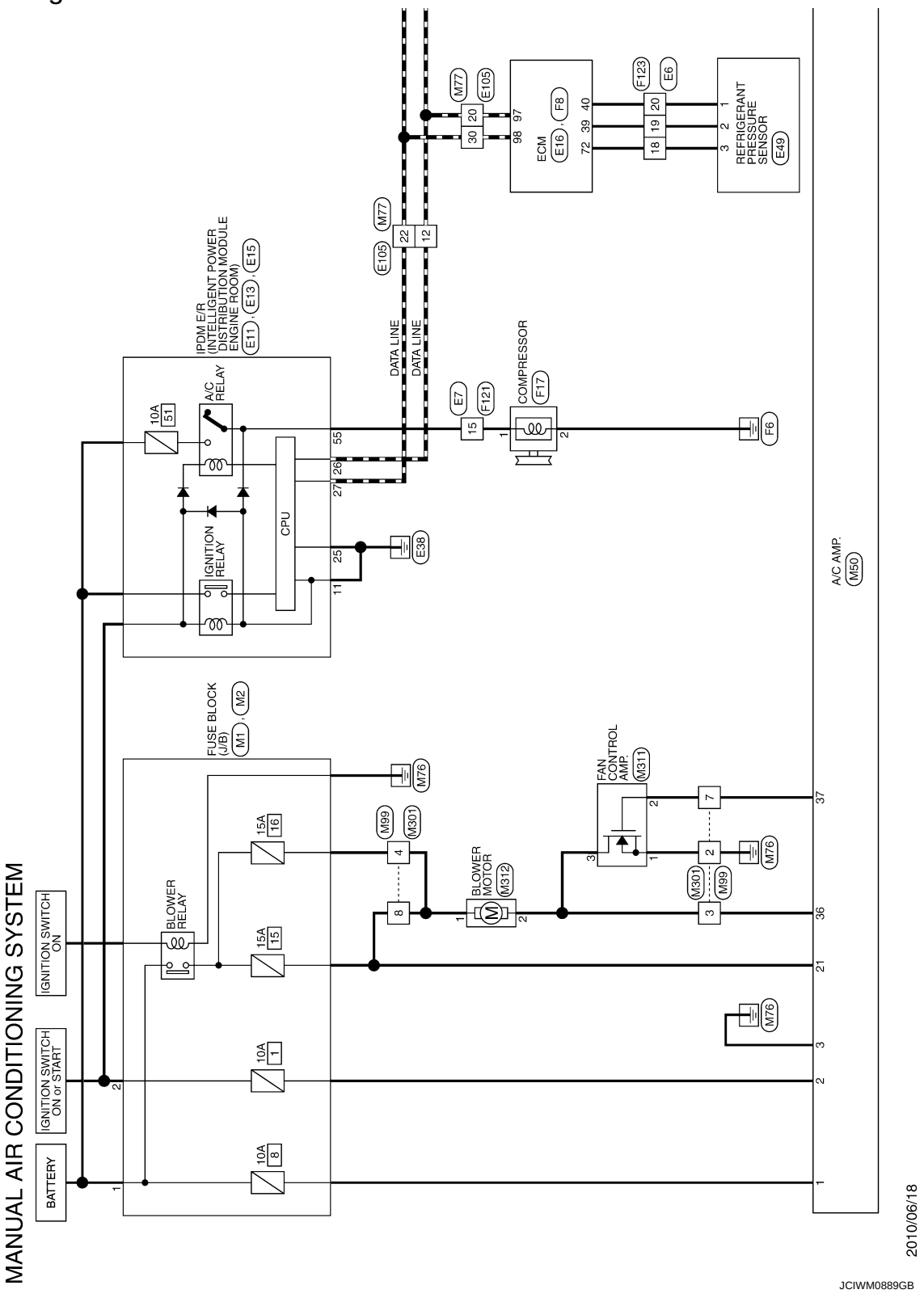
PHYSICAL VALUES

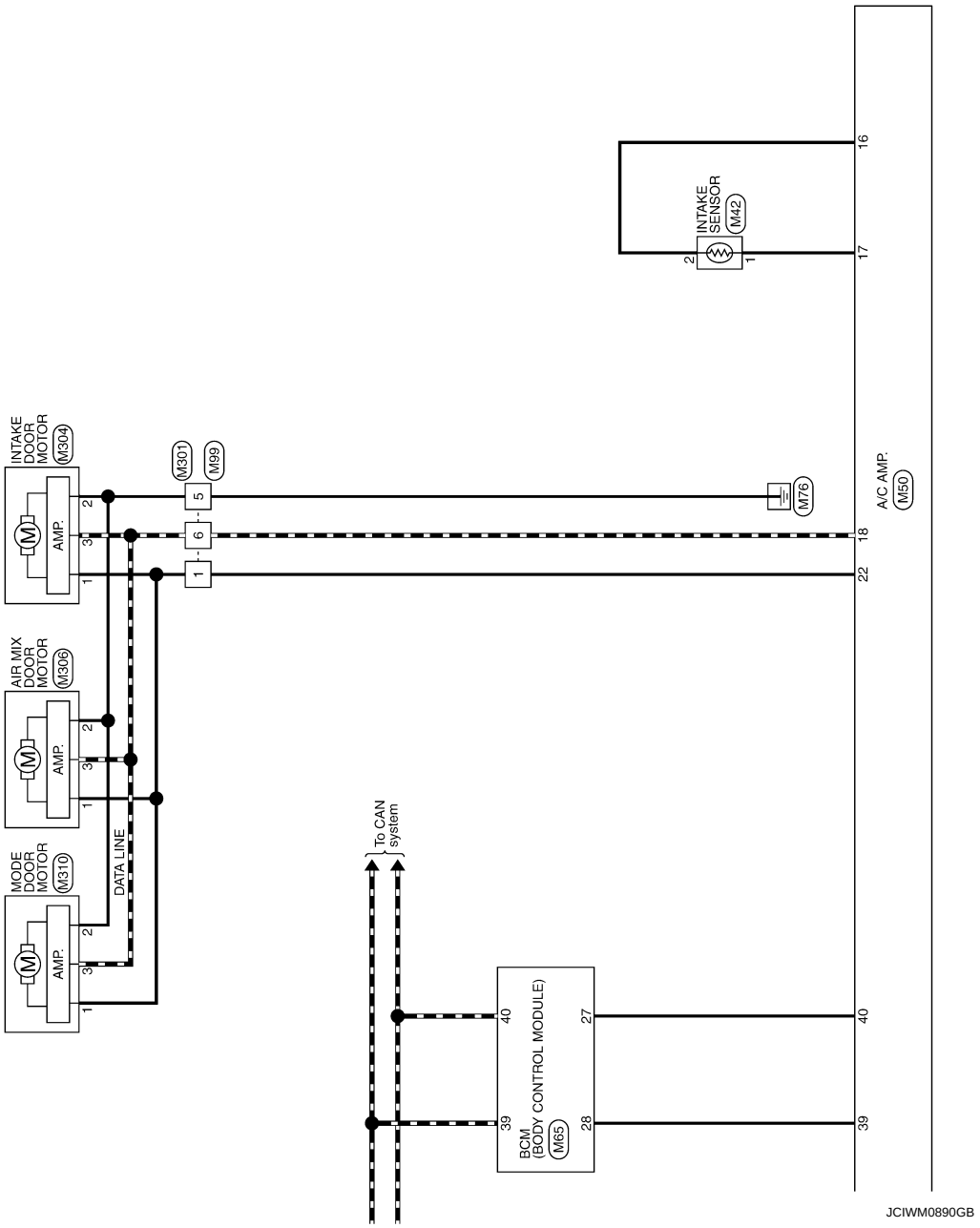
Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	–	Signal name	Input/ Output		
1 (LG)	Ground	Battery power supply	—	Ignition switch OFF	Battery voltage
2 (W)	Ground	Ignition power supply	—	Ignition switch ON	Battery voltage
3 (B)	Ground	Ground	—	Ignition switch ON	0 V
16 (P)	Ground	Intake sensor ground	—	Ignition switch ON	0 V
17 (O)	Ground	Intake sensor signal	Input	—	—
18 (V)	Ground	A/C LAN signal	—	—	 SJIA1453J
21 (Y)	Ground	Ignition 2 power supply	—	Ignition switch ON	Battery voltage
22 (G)	Ground	Each door motor power supply	—	Ignition switch ON	Battery voltage
36 (R)	Ground	Blower motor feedback signal	Input	• Ignition switch ON • Blower speed: OFF	Battery voltage
				• Ignition switch ON • Blower speed: 1st	8.5 V
				• Ignition switch ON • Blower speed: 25th	0 V

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	–	Signal name	Input/ Output		
37 (L)	Ground	Fan control amp. control signal	Output	• Ignition switch ON • Blower speed: OFF	0 V
				• Ignition switch ON • Blower speed: 1st - 24th	2.5 - 3.5 V
				• Ignition switch ON • Blower speed: 25th - 26th	8 V
39 (LG)	Ground	Fan ON signal	Output	Fan control dial: OFF	 JSIIA0845GB
				Fan control dial: ON (Blower motor operate.)	0 V
40 (Y)	Ground	A/C switch signal	Output	Compressor OFF	 JPIIA0013GB
				Compressor ON	0 V

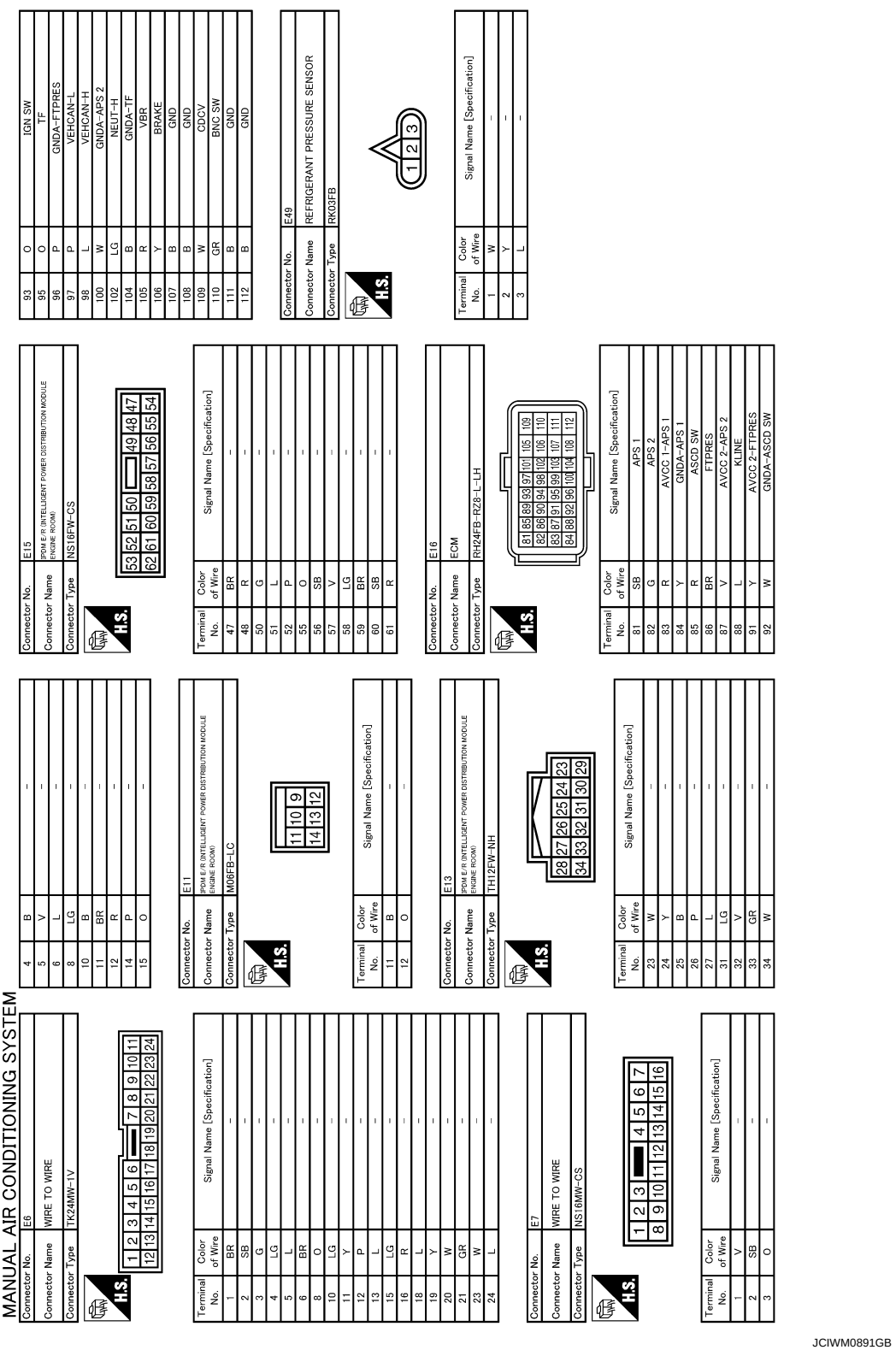
Wiring Diagram — AIR CONDITIONER CONTROL SYSTEM —

INFOID:0000000006200961




INTAKE SENSOR
M42
2
1
16
17
INTAKE DOOR MOTOR
M304
AMP.
M
2
3
1
M301
M99
5
6
1
M76
A/C AMP.
M50
18
22
AIR MIX DOOR MOTOR
M306
MODE DOOR MOTOR
M310
DATA LINE
To CAN system
BCM (BODY CONTROL MODULE)
M65
40
39
27
28
JCIWM0890GB

MANUAL AIR CONDITIONING SYSTEM



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MANUAL AIR CONDITIONING SYSTEM

Connector No.	E105
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
1	W	–
2	O	–
3	LG	–
4	V	–
5	Y	–
6	G	–
7	R	–
8	GR	–
9	BR	–
10	L	–
11	GR	–
12	P	–
14	L	–
15	V	–
19	R	–
20	P	–
21	L	–
22	L	–
24	LG	–
25	SB	–
30	L	–
31	BR	–
42	Y	–
43	SHIELD	–
51	L	–
52	W	–
53	BR	–
54	Y	–
60	O	–
61	BR	–
62	R	–
63	P	–
69	G	–
70	B	–
71	O	–
72	LG	–
78	L	–
79	V	–
80	Y	–
81	W	–
82	R	–
83	L	–
88	BR	–
89	R	–
90	GR	–
91	R	–
92	O	–
93	BR	–
94	W	–
96	BR	–
97	G	–
99	SB	–
100	L	–

Connector No.	F8
Connector Name	ECM
Connector Type	RH40FBR-RZ8-L-LH

H.S.

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

Terminal No.	Color of Wire	Signal Name [Specification]
33	P	O2SR 1
34	V	O2SR 2, 3RD O2S
35	L	GNDA–O2SR 1, 2, 3
36	R	GNDA–TPS–B 1
37	W	TPS 1–B 1
38	G	TPS 2–B 1
39	Y	PDPRES
40	W	GNDA–PDPRES
45	V	AF+1
46	P	TW
47	B	AVCC 1–TPS–B 1
49	LG	AF–1
50	BR	TA 1
52	O	GNDA–TW, SCVPOS
54	W	SCVPOS
56	R	QA–, GNDA–TA 1
58	L	QA 1+
59	V	AVCC 1–PHASE#1
60	B	GND–POS
61	W	KNK 1
64	Y	GND–PHASE#1
65	R	POS
67	SHIELD	GNDA–KNK 1
69	G	PHASE#1
72	L	AVCC 2–PDP, SCVPOS
76	P	AVCC 2–POS
77	R	BATT
78	O	CVTC#1

Connector No.	F17
Connector Name	COMPRESSOR
Connector Type	RH02FB

H.S.

1	2

Terminal No.	Color of Wire	Signal Name [Specification]
1	Y	–
2	B	–

Connector No.	F121
Connector Name	WIRE TO WIRE
Connector Type	NS16FW-CS

H.S.

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

Terminal No.	Color of Wire	Signal Name [Specification]
1	V	–
2	SB	–
3	O	–
4	B	–
5	V	–
6	L	–
8	LG	–
10	B	–
11	BR	–
12	R	–
14	P	–
15	Y	–

Connector No.	F123
Connector Name	WIRE TO WIRE
Connector Type	TK24FW-1V

H.S.

11	10	9	8	7		6	5	4	3	2	1
24	23	22	21	20	19	18	17	16	15	14	13	12

Terminal No.	Color of Wire	Signal Name [Specification]
1	BR	–
2	SB	–
3	G	–
4	Y	–
5	L	–
6	BR	–
8	O	–
10	P	–
11	R	–
12	P	–
13	L	–
15	LG	–
16	R	–
18	L	–
19	Y	–
20	W	–
21	GR	–
23	W	–
24	L	–

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MANUAL AIR CONDITIONING SYSTEM

Connector No.	M1
Connector Name	FUSE BLOCK (J/B)
Connector Type	–

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
1	L	–

Connector No.	M2
Connector Name	FUSE BLOCK (J/B)
Connector Type	–

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
2	P	–

Connector No.	M42
Connector Name	INTAKE SENSOR
Connector Type	C02FW

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
1	O	–
2	P	–

Connector No.	M50
Connector Name	A/C AMP.
Connector Type	SAB40FW

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
1	LG	–
2	W	BATTERY POWER SUPPLY
3	B	IGNITION POWER SUPPLY
16	P	GROUND
17	O	INTAKE SENSOR GROUND
18	V	INTAKE SENSOR SIGNAL
20	GR	A/C LAN SIGNAL
21	Y	RR DEF F/S
22	G	IGNITION 2 POWER SUPPLY
23	GR	EACH DOOR MOTOR POWER SUPPLY
24	SB	LIGHT+
36	R	LIGHT–
37	L	BLOWER MOTOR FEEDBACK SIGNAL
38	SB	FAN CONTROL AMP. CONTROL SIGNAL
39	LG	RR DEF SW
40	Y	FAN ON SIGNAL
		A/C SWITCH SIGNAL

Connector No.	M65
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FW-NH

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
1	V	–
2	G	–
3	Y	KEY RING OUTPUT
4	W	INPUT 5
5	R	INPUT 4
6	P	INPUT 3
7	L	INPUT 2
8	R	INPUT 1
9	R	KEY CYC UNLOCK
10	SB	KEY CYL LOCK SW
11	SB	BRAKE SW
12	P	RR DEF SW
13	LG	ACC
14	G	DR SW AS
17	W	DR SW RR
18	O	AUTO LIGHT SENS INPUT
19	V	SENS POWER SUPPLY
20	GR	KEYLESS TUNER SENS GND
21	G	KEYLESS TUNER POWER
23	B	KEYLESS TUNER SIGNAL
25	BR	IMMOBI ANT (CLOCK)
27	Y	SECURITY IND OUT PUT
28	LG	IMMOBI ANT (RX, TX)
29	W	AIRCON SW
30	G	BLOWER FAN SW
32	BR	HAZARD SW
33	GR	BACK DOOR OPEN SW
34	L	OUTPUT 5
35	B	OUTPUT 4
36	V	OUTPUT 3
37	LG	OUTPUT 2
38	G	OUTPUT 1
39	L	KEY SW
40	P	IGN
		CAN–H
		CAN–L

Connector No.	M77
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
1	BR	–
2	O	–
3	LG	–
4	Y	–
5	Y	–
6	G	–
7	R	–
8	GR	–
9	BR	–
10	L	–
11	GR	–
12	P	–
14	SB	–
15	V	–
19	R	–
20	P	–
21	O	–
22	L	–
24	BR	–
25	W	–
30	L	–
31	W	–
42	O	–
43	SHIELD	–
51	W	–
52	SB	–
53	L	–
54	Y	–
60	O	–
61	BR	–
62	G	–
63	P	–
69	W	–
70	B	–
71	P	–
72	O	–
78	SB	–
79	V	–
80	L	–
81	W	–
82	B	–
83	LG	–
88	BR	–
89	G	–
90	GR	–
91	R	–
92	L	–
93	P	–
94	W	–
96	BR	–
97	G	–
99	SB	–
100	Y	–

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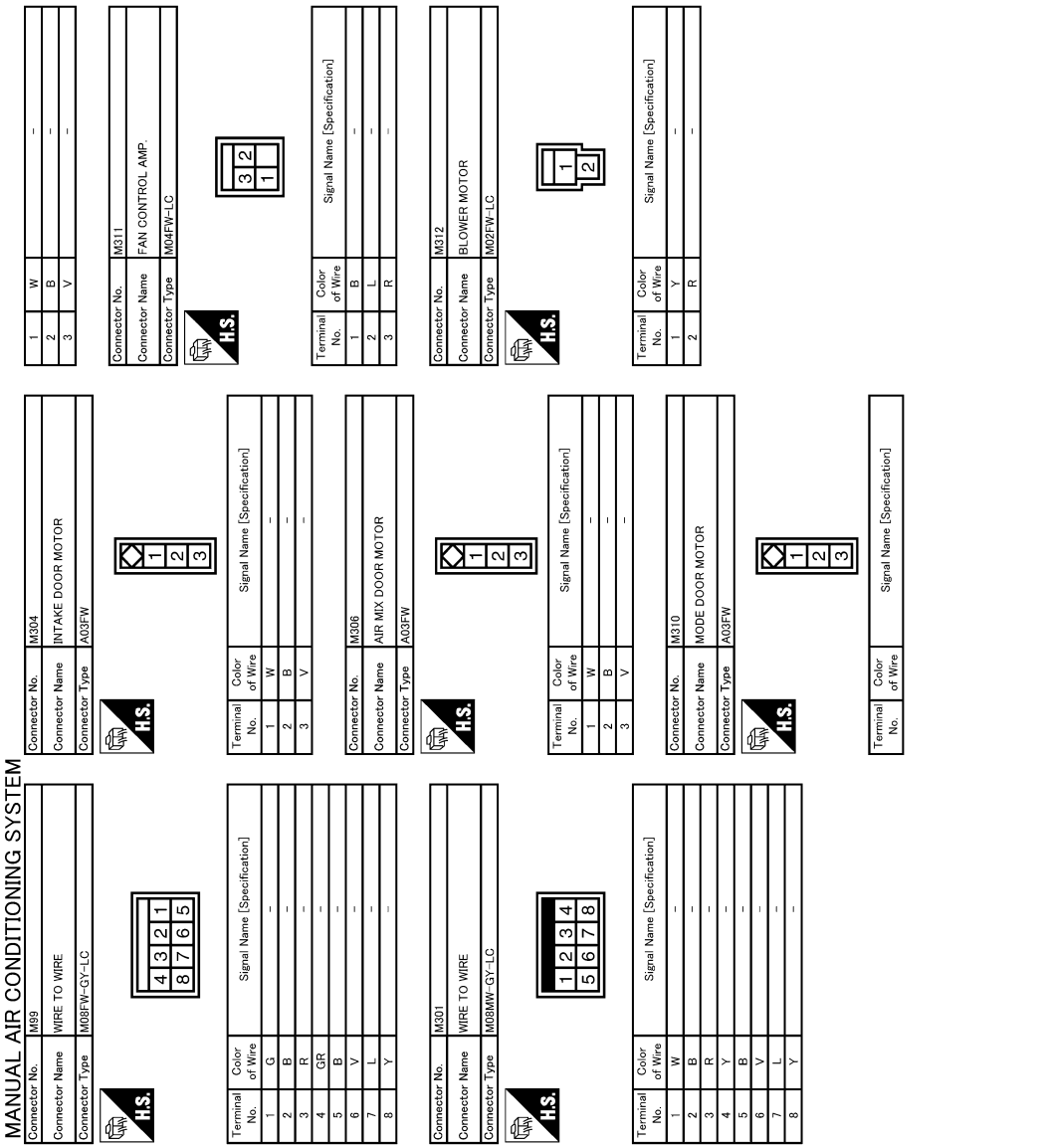
MANUAL AIR CONDITIONING SYSTEM



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SYMPTOM DIAGNOSIS

MANUAL AIR CONDITIONER SYSTEM

Diagnosis Chart By Symptom

INFOID:0000000006200962

Symptom	Reference	
A/C system does not activate.	Go to Trouble Diagnosis Procedure for A/C System.	HAC-156, "Diagnosis Procedure"
Air outlet does not change. Mode door motor does not operate normally.	Go to Trouble Diagnosis Procedure for Mode Door Motor. (LAN)	HAC-140, "Diagnosis Procedure"
Discharge air temperature does not change. Air mix door motor does not operate normally.	Go to Trouble Diagnosis Procedure for Air Mix Door Motor. (LAN)	HAC-142, "Diagnosis Procedure"
Intake door does not change. Intake door motor does not operate normally.	Go to Trouble Diagnosis Procedure for Intake Door Motor. (LAN)	HAC-144, "Diagnosis Procedure"
Blower motor operation is malfunctioning.	Go to Trouble Diagnosis Procedure for Blower Motor.	HAC-146, "Diagnosis Procedure"
Magnet clutch does not engage.	Go to Trouble Diagnosis Procedure for Magnet Clutch.	HAC-150, "Diagnosis Procedure"
Insufficient cooling No cool air come out. (Air flow volume is normal)	Go to Trouble Diagnosis Procedure for Insufficient Cooling.	HAC-182, "Inspection procedure"
Insufficient heating No warm air come out. (Air flow volume is normal)	Go to Trouble Diagnosis Procedure for Insufficient Heating.	HAC-183, "Inspection procedure"
Noise	Go to Trouble Diagnosis Procedure for Noise.	HAC-185, "Inspection procedure"

INSUFFICIENT COOLING

Description

INFOID:0000000006200963

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

Inspection procedure

INFOID:0000000006200964

1.CHECK WITH A GAUGE OF REFRIGERANT RECOVERY/RECYCLING RECHARGING EQUIPMENT

Connect the refrigerant recovery/recycling recharging equipment to the vehicle and perform the pressure inspection with the gauge.

Is there refrigerant?

YES >> GO TO 2.
NO-1 >> Check for refrigerant leakages with the refrigerant leakage detecting fluorescent leak detector. Refer to HA-39, "Inspection".
NO-2 >> GO TO 2 after repairing or replacing the parts according to the inspection results.

2.CHECK CHARGED REFRIGERANT AMOUNT

1. Connect refrigerant recovery/recycling recharging equipment to the vehicle and discharge the refrigerant.
2. Recharge with the proper amount of refrigerant and perform the inspection with the refrigerant leakage detecting fluorescent leak detector. Refer to HA-39, "Inspection".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Refill the refrigerant and repair or replace the parts according to the inspection results.

3.CHECK REFRIGERANT CYCLE PRESSURE

Connect refrigerant recovery/recycling recharging equipment to the vehicle and perform the performance test. Refer to HA-37, "Performance Chart".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Perform the diagnosis with the gauge pressure. Refer to HA-7, "Trouble Diagnosis For Unusual Pressure".

4.CHECK DRIVE BELT

Check the drive belt. Refer to EM-16, "Checking".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Adjust or replace the drive belt.

5.CHECK AIR MIX DOOR MOTOR

Check the air mix door motor. Refer to HAC-142, "Component Function Check".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair or replace parts according to the inspection results.

6.CHECK AIR LEAKAGE FROM DUCT

Check duct and nozzle, etc. of A/C system for air leakage.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair or replace parts according to the inspection results.

INSUFFICIENT HEATING

Description

INFOID:0000000006200965

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

Inspection procedure

INFOID:0000000006200966

1.CHECK COOLING SYSTEM

1. Check engine coolant level and check for leakage. Refer to CO-10, "Inspection".
2. Check radiator cap. Refer to CO-15, "RADIATOR CAP : Inspection".
3. Check water flow sounds of engine coolant. Refer to CO-11, "Refilling".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Refill the engine coolant and repair or replace the parts according to the inspection results.

2.CHECK OPERATION

1. Turn temperature control dial to full hot position after warming up the engine.
2. Check that warm air blows from outlets.

Is the inspection result normal?

YES >> INSPECTION END
NO >> GO TO 3.

3.CHECK AIR MIX DOOR MOTOR

Check the air mix door motor. Refer to HAC-142, "Component Function Check".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace parts according to the inspection results.

4.CHECK AIR LEAKAGE FROM DUCT

Check duct and nozzle, etc. of A/C system for air leakage.

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace parts according to the inspection results.

5.CHECK HEATER HOSE INSTALLATION CONDITION

Check the heater hose installation condition visually (for twist, crush, etc.).

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair or replace parts according to the inspection results.

6.CHECK TEMPERATURE OF HEATER HOSE

1. Check the temperature of inlet hose and outlet hose of heater core.
2. Check that the inlet side of heater core is hot and the outlet side is slightly lower than/almost equal to the inlet side.

CAUTION:
The temperature inspection should be performed in a short time because the engine coolant temperature is too hot.

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace the heater core after performing the procedures after the cooling system inspection again. GO TO 1.

7.REPLACE HEATER CORE

Replace the heater core. Refer to HA-51, "Exploded View".

Are the symptoms solved?

YES >> INSPECTION END
NO >> Perform the procedures after the cooling system inspection again. GO TO 1.

NOISE

Description

INFOID:0000000006200967

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

Inspection procedure

INFOID:0000000006200968

1.CHECK OPERATION

1. Operate the A/C system and check the operation. Refer to HAC-122, "Description & Inspection".
2. Check the parts where noise is occurring.

Can the parts where noise is occurring be checked?

YES-1 >> Noise from blower motor: GO TO 2.
YES-2 >> Noise from compressor: GO TO 3.
YES-3 >> Noise from expansion valve: GO TO 4.
YES-4 >> Noise from A/C piping (pipe, flexible hose): GO TO 6.
YES-5 >> Noise from drive belt: GO TO 7.
NO >> INSPECTION END

2.CHECK BLOWER MOTOR

1. Remove blower motor. Refer to VTL-16, "Exploded View".
2. Remove foreign materials that are in the A/C unit assembly.
3. Check the noise from blower motor again.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace blower motor.

3.REPLACE COMPRESSOR

1. Correct the refrigerant with refrigerant recovery/recycling recharging equipment.
2. Recharge with the proper amount of the collected refrigerant after recycling or new refrigerant.
3. Check for the noise from compressor again.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace compressor.

4.CHECK WITH GAUGE PRESSURE

Perform the diagnosis with the gauge pressure. Refer to HA-7, "Trouble Diagnosis For Unusual Pressure".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace malfunctioning part(s).

5.REPLACE EXPANSION VALVE

1. Correct the refrigerant with refrigerant recovery/recycling recharging equipment.
2. Recharge with the proper amount of the collected refrigerant after recycling or new refrigerant.
3. Check for the noise from expansion valve again.

Are the symptoms solved?

YES >> INSPECTION END
NO >> Replace expansion valve.

6.CHECK A/C PIPING (PIPE, FLEXIBLE HOSE)

1. Check A/C piping [pipe, flexible hose (for deformation and damage, etc.)].
2. Check the installation condition of clips and brackets, etc. of A/C piping (pipe, flexible hose).

Is the inspection result normal?

YES >> Fix the line with rubber or come vibration absorbing material.
NO >> Repair or replace parts according to the inspection results.

7.CHECK DRIVE BELT

Check tension of the drive belt. Refer to EM-16, "Checking".

Is the inspection result normal?

YES >> Check the noise from compressor: GO TO 3.
NO >> Adjust or replace the drive belt according to the inspection results.

PRECAUTION

PRECAUTIONS

FOR USA AND CANADA

FOR USA AND CANADA : Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:0000000006200969

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 “SRS AIR BAG” and “SEAT BELT” 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 that 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 “SRS AIR BAG”.**
- **Never 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 Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never 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.**

FOR USA AND CANADA : Precaution Necessary for Steering Wheel Rotation After Battery Disconnect

INFOID:0000000006200970

NOTE:

- This Procedure is applied only to models with Intelligent Key system and NVIS/IVIS (NISSAN/INFINITI VEHICLE IMMOBILIZER SYSTEM - NATS).
- Remove and install all control units after disconnecting both battery cables with the ignition switch in the ″LOCK″ position.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If DTC is detected, perform trouble diagnosis according to self-diagnostic results.

For models equipped with the Intelligent Key system and NVIS/IVIS, an electrically controlled steering lock mechanism is adopted on the key cylinder.
For this reason, if the battery is disconnected or if the battery is discharged, the steering wheel will lock and steering wheel rotation will become impossible.
If steering wheel rotation is required when battery power is interrupted, follow the procedure below before starting the repair operation.

OPERATION PROCEDURE

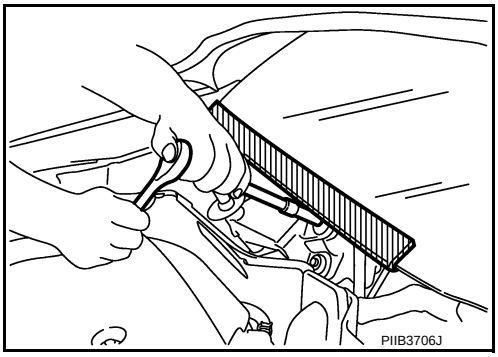
1. Connect both battery cables.
   NOTE:
   Supply power using jumper cables if battery is discharged.
2. Use the Intelligent Key or mechanical key to turn the ignition switch to the ″ACC″ position. At this time, the steering lock will be released.

3. Disconnect both battery cables. The steering lock will remain released and the steering wheel can be rotated.
4. Perform the necessary repair operation.
5. When the repair work is completed, return the ignition switch to the ″LOCK″ position before connecting the battery cables. (At this time, the steering lock mechanism will engage.)
6. Perform a self-diagnosis check of all control units using CONSULT-III.

FOR USA AND CANADA : Precaution for Procedure without Cowl Top Cover

INFOID:0000000006200971

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



FOR USA AND CANADA : Precautions For Xenon Headlamp Service

INFOID:0000000006200972

WARNING:

Comply with the following warnings to prevent any serious accident.

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

CAUTION:

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

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

FOR USA AND CANADA : Working with HFC-134a (R-134a)

INFOID:0000000006200973

CAUTION:

- **CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. Compressor malfunction is likely to occur if the refrigerants are mixed, refer to “CONTAMINATED REFRIGERANT” below. To determine the purity of HFC-134a (R-134a) in the vehicle and recovery tank, use Refrigerant Recovery/Recycling Recharging equipment and Refrigerant Identifier.**
- **Use only specified lubricant for the HFC-134a (R-134a) A/C system and HFC-134a (R-134a) components. Compressor malfunction is likely to occur if lubricant other than that specified is used.**
- **The specified HFC-134a (R-134a) lubricant rapidly absorbs moisture from the atmosphere. The following handling precautions must be observed:**
- **Cap (seal) immediately the component to minimize the entry of moisture from the atmosphere when removing refrigerant components from a vehicle.**
- **Never remove the caps (unseal) until just before connecting the components when installing refrigerant components to a vehicle. Connect all refrigerant loop components as quickly as possible to minimize the entry of moisture into system.**
- **Use only the specified lubricant from a sealed container. Reseal immediately containers of lubricant. Lubricant becomes moisture saturated and should not be used without proper sealing.**

- **Never allow lubricant (NISSAN A/C System Oil Type S) to come in contact with styrene foam parts. Damage may result.**

CONTAMINATED REFRIGERANT

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

- Explain to the customer that environmental regulations prohibit the release of contaminated refrigerant into the atmosphere.
- Explain that recovery of the contaminated refrigerant could damage service equipment and refrigerant supply.
- Suggest the customer return the vehicle to the location of previous service where the contamination may have occurred.
- In case of repairing, recover the refrigerant using only **dedicated equipment and containers. Never recover contaminated refrigerant into the existing service equipment.** Contact a local refrigerant product retailer for available service if the facility does not have dedicated recovery equipment. This refrigerant must be disposed of in accordance with all federal and local regulations. In addition, replacement of all refrigerant system components on the vehicle is recommended.
- The air conditioner warranty is void if the vehicle is within the warranty period. Please contact Nissan Customer Affairs for further assistance.

FOR USA AND CANADA : General Refrigerant Precaution

INFOID:0000000006200974

WARNING:

- **Never breath A/C refrigerant and lubricant vapor or mist. Exposure may irritate eyes, nose and throat. Use only approved recovery/recycling equipment to discharge HFC-134a (R-134a) refrigerant. Ventilate work area before resuming service if accidental system discharge occurs. Additional health and safety information may be obtained from refrigerant and lubricant manufacturers.**
- **Never release refrigerant into the air. Use approved recovery/recycling equipment to capture the refrigerant each time an air conditioning system is discharged.**
- **Wear always eye and hand protection (goggles and gloves) when working with any refrigerant or air conditioning system.**
- **Never store or heat refrigerant containers above 52°C (126°F).**
- **Never heat a refrigerant container with an open flame; Place the bottom of the container in a warm pail of water if container warming is required.**
- **Never intentionally drop, puncture, or incinerate refrigerant containers.**
- **Keep refrigerant away from open flames: poisonous gas is produced if refrigerant burns.**
- **Refrigerant displaces oxygen, therefore be certain to work in well ventilated areas to prevent suffocation.**
- **Never pressure test or leakage test HFC-134a (R-134a) service equipment and/or vehicle air conditioning systems with compressed air during repair. Some mixtures of air and HFC-134a (R-134a) have been shown to be combustible at elevated pressures. These mixtures, if ignited, may cause injury or property damage. Additional health and safety information may be obtained from refrigerant manufacturers.**

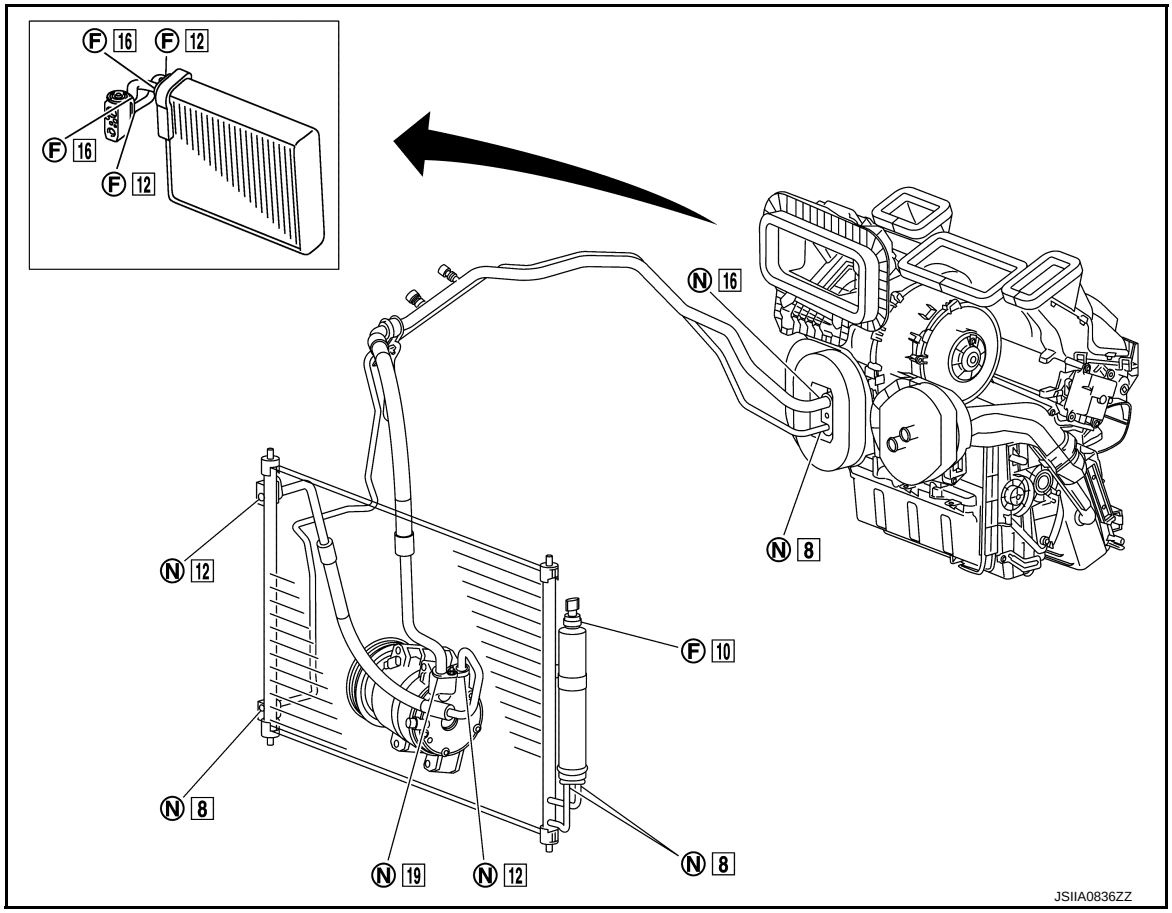
FOR USA AND CANADA : Refrigerant Connection

INFOID:0000000006200975

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

- Expansion valve to evaporator
- Refrigerant pressure sensor to liquid tank

O-RING AND REFRIGERANT CONNECTION



F. Former type refrigerant connection N. New type refrigerant connection

□: O-ring size

CAUTION:

The new and former refrigerant connections use different O-ring configurations. Never confuse O-rings since they are not interchangeable. Refrigerant may leak at the connection if a wrong O-ring is installed.

O-Ring Part Numbers and Specifications

Connection type	Piping connection point		Part number	QTY	O-ring size
New	Low-pressure flexible hose to expansion valve		92473 N8210	1	16
	Compressor to low-pressure flexible hose		92474 N8210	1	19
	Compressor to high-pressure flexible hose		92472 N8210	1	12
	Condenser to high-pressure flexible hose		92472 N8210	1	12
	Condenser to high-pressure pipe		92471 N8210	1	8
	High-pressure pipe to expansion valve		92471 N8210	1	8
	Liquid tank to condenser	Inlet	92471 N8210	1	8
		Outlet		1	
Former	Refrigerant pressure sensor to liquid tank		J2476 89956	1	10
	Evaporator pipe assembly	High-pressure side	92475 71L00	1	12
		Low-pressure side	92475 72L00	1	16

WARNING:

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

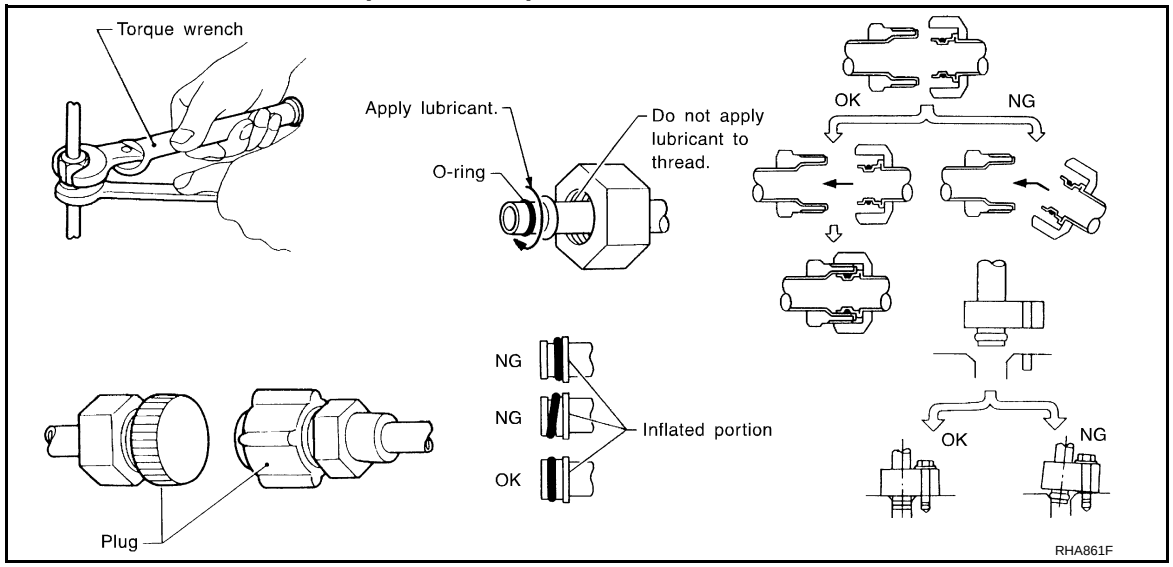
CAUTION:

Observe the following when replacing or cleaning refrigerant cycle components.

- **Store it in the same way at it is when mounted on the car when the compressor is removed. Failure to do so causes lubricant to enter the low-pressure chamber.**
- **Use always a torque wrench and a back-up wrench when connecting tubes.**
- **Plug immediately all openings to prevent entry of dust and moisture after disconnecting tubes.**
- **Connect the pipes at the final stage of the operation when installing an air conditioner in the vehicle. Never remove the seal caps of pipes and other components until just before required for connection.**
- **Allow components stored in cool areas to warm to working area temperature before removing seal caps. This prevents condensation from forming inside A/C components.**
- **Remove thoroughly moisture from the refrigeration system before charging the refrigerant.**
- **Replace always used O-rings.**
- **Apply lubricant to circle of the O-rings shown in illustration when connecting tube. Be careful not to apply lubricant to threaded portion.**

Name : NISSAN A/C System Oil Type S

- **O-ring must be closely attached to the groove portion of tube.**
- **Be careful not to damage O-ring and tube when replacing the O-ring.**
- **Connect tube until a click can be heard. Then tighten the nut or bolt by hand. Check that the O-ring is installed to tube correctly.**
- **Perform leakage test and make sure that there is no leakage from connections after connecting line. Disconnect that line and replace the O-ring when the refrigerant leaking point is found. Then tighten connections of seal seat to the specified torque.**



FOR USA AND CANADA : Service Equipment

INFOID:0000000006200976

RECOVERY/RECYCLING EQUIPMENT

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

ELECTRICAL LEAK DETECTOR

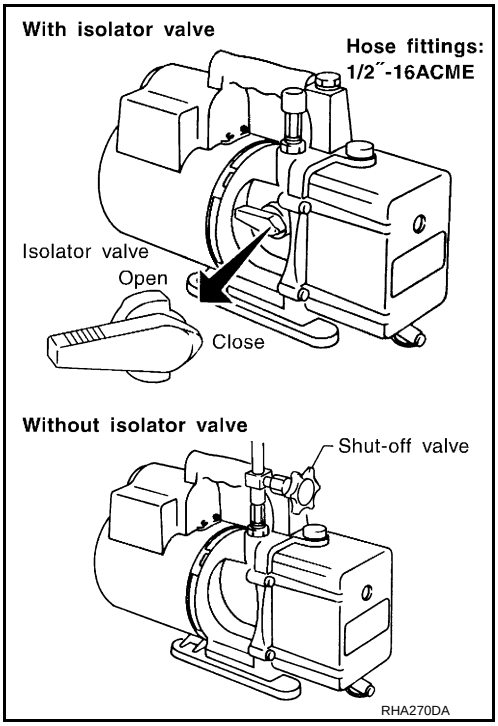
Be certain to follow the manufacturer's instructions for tester operation and tester maintenance.

VACUUM PUMP

The lubricant contained inside the vacuum pump is not compatible with the specified lubricant for HFC-134a (R-134a) A/C systems. The vent side of the vacuum pump is exposed to atmospheric pressure. So the vacuum pump lubricant may migrate out of the pump into the service hose. This is possible when the pump is switched OFF after evacuation (vacuuming) and hose is connected to it.
To prevent this migration, use a manual valve placed near the hose-to-pump connection, as per the following.

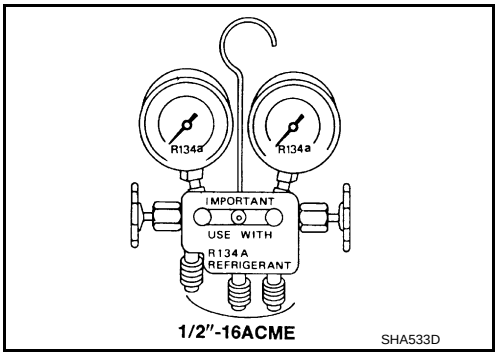
- Vacuum pumps usually have a manual isolator valve as part of the pump. Close this valve to isolate the service hose from the pump.
- Use a hose equipped with a manual shut-off valve near the pump end for pumps without an isolator. Close the valve to isolate the hose from the pump.
- Disconnect the hose from the pump if the hose has an automatic shut-off valve. As long as the hose is connected, the valve is open and lubricating oil may migrate.

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



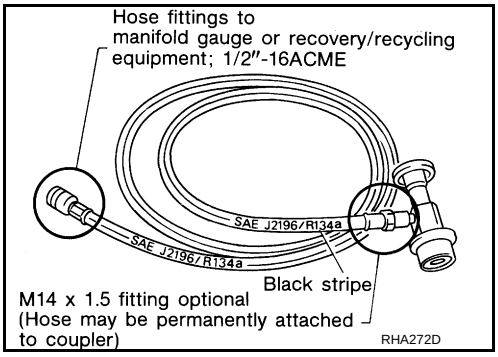
MANIFOLD GAUGE SET

Be certain that the gauge face indicates HFC-134a or R-134a. Be 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).



SERVICE HOSES

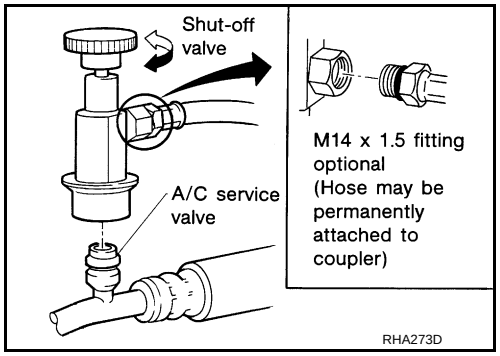
Be certain that the service hoses display the markings described (colored hose with black stripe). All hoses must equip positive shut-off devices (either manual or automatic) near the end of the hoses opposite to the manifold gauge.



SERVICE COUPLERS

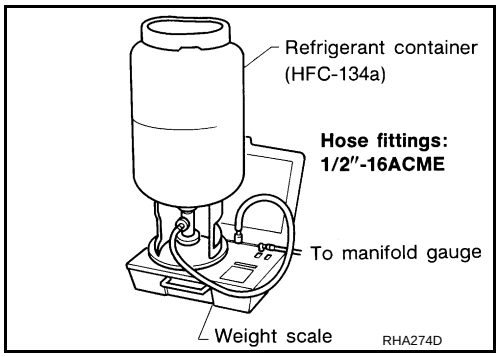
Never attempt to connect HFC-134a (R-134a) service couplers to a CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers do not properly connect to the CFC-12 (R-12) system. However, if an improper connection is attempted, discharging and contamination may occur.

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



REFRIGERANT WEIGHT SCALE

Verify that no refrigerant other than HFC-134a (R-134a) and specified lubricants have been used with the scale. The hose fitting must be 1/2″-16 ACME if the scale controls refrigerant flow electronically.



CHARGING CYLINDER

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

FOR MEXICO

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

INFOID:0000000006200977

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. Information necessary to service the system safely is included in the "SRS AIR BAG" and "SEAT BELT" 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 "SRS AIR BAG".**
- **Never 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 Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never 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.**

FOR MEXICO : Precaution Necessary for Steering Wheel Rotation After Battery Dis-

connect

INFOID:0000000006200978

NOTE:
- This Procedure is applied only to models with Intelligent Key system and NVIS/IVIS (NISSAN/INFINITI VEHICLE IMMOBILIZER SYSTEM - NATS).
- Remove and install all control units after disconnecting both battery cables with the ignition switch in the ″LOCK″ position.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If DTC is detected, perform trouble diagnosis according to self-diagnostic results.

For models equipped with the Intelligent Key system and NVIS/IVIS, an electrically controlled steering lock mechanism is adopted on the key cylinder.
For this reason, if the battery is disconnected or if the battery is discharged, the steering wheel will lock and steering wheel rotation will become impossible.
If steering wheel rotation is required when battery power is interrupted, follow the procedure below before starting the repair operation.

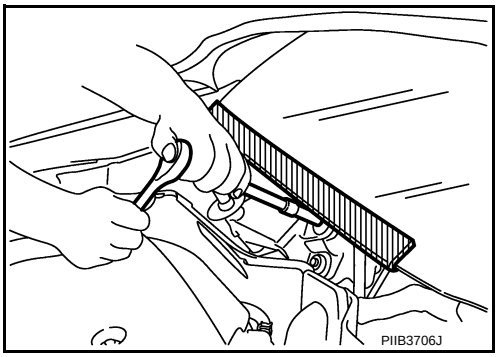
OPERATION PROCEDURE

1. Connect both battery cables.
   NOTE:
   Supply power using jumper cables if battery is discharged.
2. Use the Intelligent Key or mechanical key to turn the ignition switch to the ″ACC″ position. At this time, the steering lock will be released.
3. Disconnect both battery cables. The steering lock will remain released and the steering wheel can be rotated.
4. Perform the necessary repair operation.
5. When the repair work is completed, return the ignition switch to the ″LOCK″ position before connecting the battery cables. (At this time, the steering lock mechanism will engage.)
6. Perform a self-diagnosis check of all control units using CONSULT-III.

FOR MEXICO : Precaution for Procedure without Cowl Top Cover

INFOID:0000000006200979

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



FOR MEXICO : Precautions For Xenon Headlamp Service

INFOID:0000000006200980

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

CAUTION:
Comply with the following cautions to prevent any error and malfunction.
- **Install the xenon bulb securely. (Insufficient bulb socket installation may melt the bulb, the connector, the housing, etc. by high-voltage leakage or corona discharge.)**
- **Never perform HID circuit inspection with a tester.**

- **Never touch the xenon bulb glass with hands. Never put oil and grease on it.**
- **Dispose of the used xenon bulb after packing it in thick vinyl without breaking it.**
- **Never wipe out dirt and contamination with organic solvent (thinner, gasoline, etc.).**

FOR MEXICO : Working with HFC-134a (R-134a)

INFOID:0000000006200981

CAUTION:

- **CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. Compressor malfunction is likely to occur if the refrigerants are mixed, refer to "CONTAMINATED REFRIGERANT" below. To determine the purity of HFC-134a (R-134a) in the vehicle and recovery tank, use Refrigerant Recovery/Recycling Recharging equipment and Refrigerant Identifier.**
- **Use only specified lubricant for the HFC-134a (R-134a) A/C system and HFC-134a (R-134a) components. Compressor malfunction is likely to occur if lubricant other than that specified is used.**
- **The specified HFC-134a (R-134a) lubricant rapidly absorbs moisture from the atmosphere. The following handling precautions must be observed:**
- **Cap (seal) immediately the component to minimize the entry of moisture from the atmosphere when removing refrigerant components from a vehicle.**
- **Never remove the caps (unseal) until just before connecting the components when installing refrigerant components to a vehicle. Connect all refrigerant loop components as quickly as possible to minimize the entry of moisture into system.**
- **Use only the specified lubricant from a sealed container. Reseal immediately containers of lubricant. Lubricant becomes moisture saturated and should not be used without proper sealing.**
- **Never allow lubricant (NISSAN A/C System Oil Type S) to come in contact with styrene foam parts. Damage may result.**

CONTAMINATED REFRIGERANT

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

- Explain to the customer that environmental regulations prohibit the release of contaminated refrigerant into the atmosphere.
- Explain that recovery of the contaminated refrigerant could damage service equipment and refrigerant supply.
- Suggest the customer return the vehicle to the location of previous service where the contamination may have occurred.
- In case of repairing, recover the refrigerant using only **dedicated equipment and containers. Never recover contaminated refrigerant into the existing service equipment.** Contact a local refrigerant product retailer for available service if the facility does not have dedicated recovery equipment. This refrigerant must be disposed of in accordance with all federal and local regulations. In addition, replacement of all refrigerant system components on the vehicle is recommended.
- The air conditioner warranty is void if the vehicle is within the warranty period. Please contact Nissan Customer Affairs for further assistance.

FOR MEXICO : General Refrigerant Precaution

INFOID:0000000006200982

WARNING:

- **Never breath A/C refrigerant and lubricant vapor or mist. Exposure may irritate eyes, nose and throat. Use only approved recovery/recycling equipment to discharge HFC-134a (R-134a) refrigerant. Ventilate work area before resuming service if accidental system discharge occurs. Additional health and safety information may be obtained from refrigerant and lubricant manufacturers.**
- **Never release refrigerant into the air. Use approved recovery/recycling equipment to capture the refrigerant each time an air conditioning system is discharged.**
- **Wear always eye and hand protection (goggles and gloves) when working with any refrigerant or air conditioning system.**
- **Never store or heat refrigerant containers above 52°C (126°F).**
- **Never heat a refrigerant container with an open flame; Place the bottom of the container in a warm pail of water if container warming is required.**
- **Never intentionally drop, puncture, or incinerate refrigerant containers.**
- **Keep refrigerant away from open flames: poisonous gas is produced if refrigerant burns.**
- **Refrigerant displaces oxygen, therefore be certain to work in well ventilated areas to prevent suffocation.**
- **Never pressure test or leakage test HFC-134a (R-134a) service equipment and/or vehicle air conditioning systems with compressed air during repair. Some mixtures of air and HFC-134a (R-134a)**

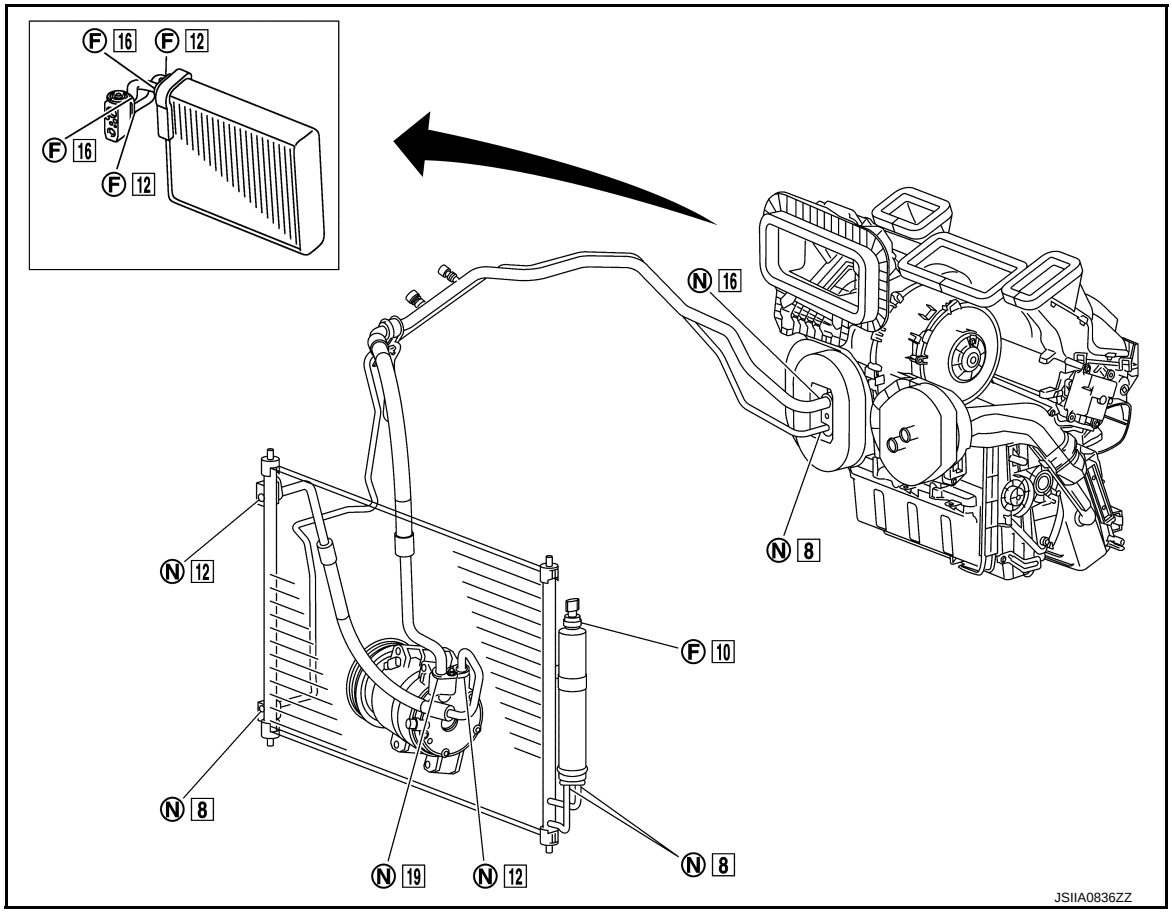
have been shown to be combustible at elevated pressures. These mixtures, if ignited, may cause injury or property damage. Additional health and safety information may be obtained from refrigerant manufacturers.

FOR MEXICO : Refrigerant Connection

INFOID:0000000006200983

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

O-RING AND REFRIGERANT CONNECTION



F. Former type refrigerant connection N. New type refrigerant connection

□: O-ring size

CAUTION:

The new and former refrigerant connections use different O-ring configurations. Never confuse O-rings since they are not interchangeable. Refrigerant may leak at the connection if a wrong O-ring is installed.

O-Ring Part Numbers and Specifications

Connection type	Piping connection point		Part number	QTY	O-ring size
New	Low-pressure flexible hose to expansion valve		92473 N8210	1	16
	Compressor to low-pressure flexible hose		92474 N8210	1	19
	Compressor to high-pressure flexible hose		92472 N8210	1	12
	Condenser to high-pressure flexible hose		92472 N8210	1	12
	Condenser to high-pressure pipe		92471 N8210	1	8
	High-pressure pipe to expansion valve		92471 N8210	1	8
	Liquid tank to condenser	Inlet	92471 N8210	1	8
		Outlet		1	
Former	Refrigerant pressure sensor to liquid tank		J2476 89956	1	10
	Evaporator pipe assembly	High-pressure side	92475 71L00	1	12
		Low-pressure side	92475 72L00	1	16

WARNING:

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

CAUTION:

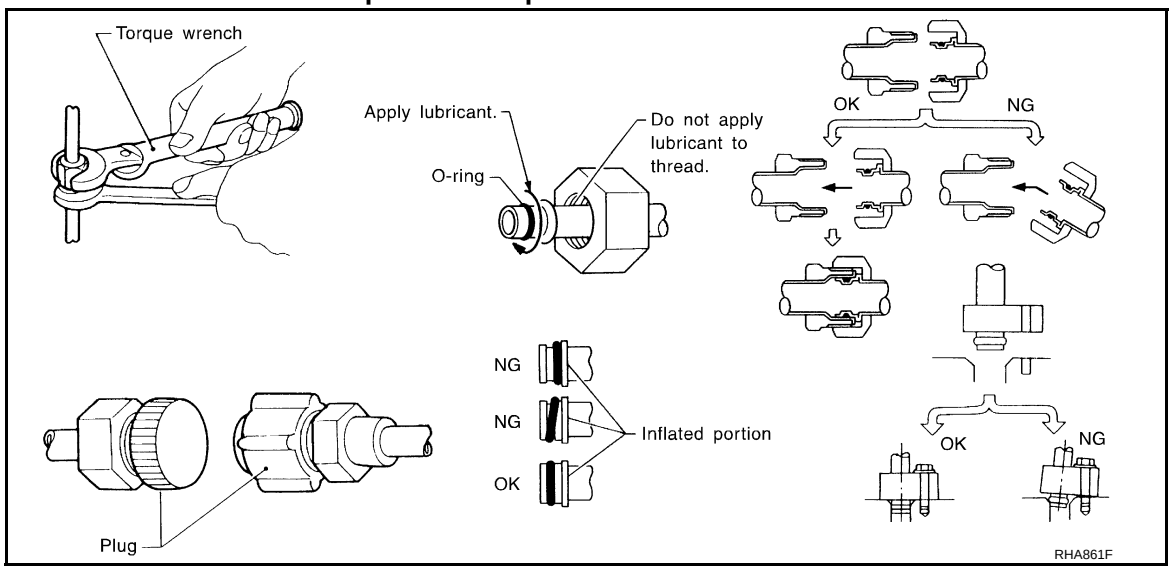
Observe the following when replacing or cleaning refrigerant cycle components.

- **Store it in the same way at it is when mounted on the car when the compressor is removed. Failure to do so causes lubricant to enter the low-pressure chamber.**
- **Use always a torque wrench and a back-up wrench when connecting tubes.**
- **Plug immediately all openings to prevent entry of dust and moisture after disconnecting tubes.**
- **Connect the pipes at the final stage of the operation when installing an air conditioner in the vehicle. Never remove the seal caps of pipes and other components until just before required for connection.**
- **Allow components stored in cool areas to warm to working area temperature before removing seal caps. This prevents condensation from forming inside A/C components.**
- **Remove thoroughly moisture from the refrigeration system before charging the refrigerant.**
- **Replace always used O-rings.**
- **Apply lubricant to circle of the O-rings shown in illustration when connecting tube. Be careful not to apply lubricant to threaded portion.**

Name : NISSAN A/C System Oil Type S

- **O-ring must be closely attached to the groove portion of tube.**
- **Be careful not to damage O-ring and tube when replacing the O-ring.**
- **Connect tube until a click can be heard. Then tighten the nut or bolt by hand. Check that the O-ring is installed to tube correctly.**

- **Perform leakage test and make sure that there is no leakage from connections after connecting line. Disconnect that line and replace the O-ring when the refrigerant leaking point is found. Then tighten connections of seal seat to the specified torque.**



FOR MEXICO : Service Equipment

INFOID:0000000006200984

RECOVERY/RECYCLING EQUIPMENT

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

ELECTRICAL LEAK DETECTOR

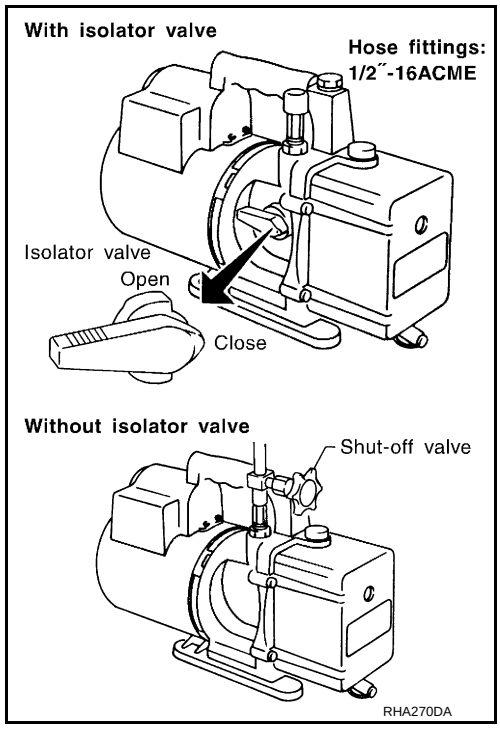
Be certain to follow the manufacturer's instructions for tester operation and tester maintenance.

VACUUM PUMP

The lubricant contained inside the vacuum pump is not compatible with the specified lubricant for HFC-134a (R-134a) A/C systems. The vent side of the vacuum pump is exposed to atmospheric pressure. So the vacuum pump lubricant may migrate out of the pump into the service hose. This is possible when the pump is switched OFF after evacuation (vacuuming) and hose is connected to it.
To prevent this migration, use a manual valve placed near the hose-to-pump connection, as per the following.

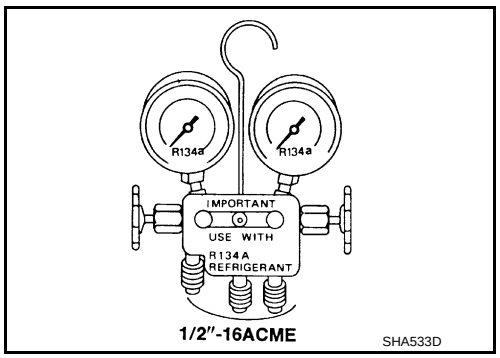
- Vacuum pumps usually have a manual isolator valve as part of the pump. Close this valve to isolate the service hose from the pump.
- Use a hose equipped with a manual shut-off valve near the pump end for pumps without an isolator. Close the valve to isolate the hose from the pump.
- Disconnect the hose from the pump if the hose has an automatic shut-off valve. As long as the hose is connected, the valve is open and lubricating oil may migrate.

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



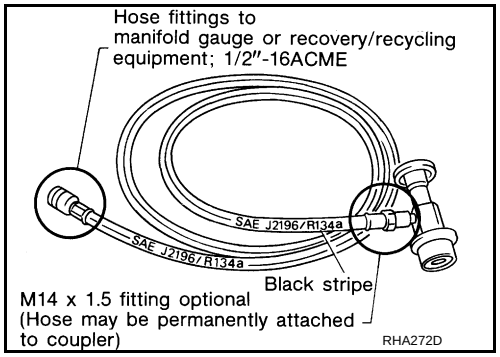
MANIFOLD GAUGE SET

Be certain that the gauge face indicates HFC-134a or R-134a. Be 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) and specified lubricants.



SERVICE HOSES

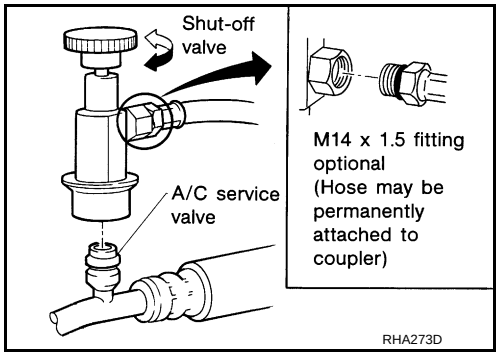
Be certain that the service hoses display the markings described (colored hose with black stripe). All hoses must equip positive shut-off devices (either manual or automatic) near the end of the hoses opposite to the manifold gauge.



SERVICE COUPLERS

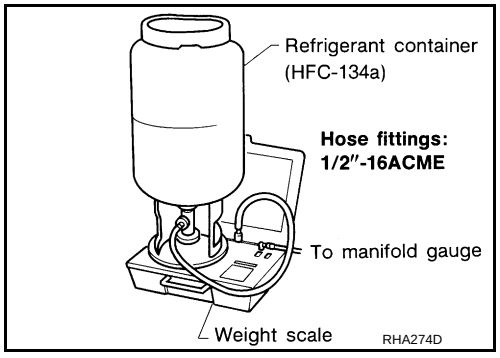
Never attempt to connect HFC-134a (R-134a) service couplers to a CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers do not properly connect to the CFC-12 (R-12) system. However, if an improper connection is attempted, discharging and contamination may occur.

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



REFRIGERANT WEIGHT SCALE

Verify that no refrigerant other than HFC-134a (R-134a) and specified lubricants have been used with the scale. The hose fitting must be 1/2″-16 ACME if the scale controls refrigerant flow electronically.



CHARGING CYLINDER

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

COMPRESSOR

General Precautions

INFOID:0000000006200985

CAUTION:

- **Plug all openings to prevent moisture and foreign matter from entering.**
- **Store it in the same way at it is when mounted on the car when the compressor is removed.**
- **Follow “LUBRICANT ADJUSTING PROCEDURE FOR COMPRESSOR REPLACEMENT” exactly when replacing or repairing compressor. Refer to HA-34, "Maintenance of Lubricant Quantity".**
- **Keep friction surfaces between clutch and pulley clean. Wipe it off by using a clean waste cloth moistened with thinner if the surface is contaminated with lubricant.**
- **Turn the compressor shaft by hand more than five turns in both directions after compressor service operation. This distributes equally lubricant inside the compressor. Let the engine idle and operate the compressor for one hour after the compressor is installed.**
- **Apply voltage to the new one and check for normal operation after replacing the compressor magnet clutch.**

FLUORESCENT LEAK DETECTOR

General Precautions

INFOID:0000000006200986

CAUTION:

- **The A/C system contains a fluorescent leak detection dye used for locating refrigerant leakages. An ultraviolet (UV) lamp is required to illuminate the dye when inspecting for leakages.**
- **Wear always fluorescence enhancing UV safety goggles to protect eyes and enhance the visibility of the fluorescent dye.**
- **The fluorescent dye leak detector is not a replacement for an electrical leak detector (SST: J-41995). The fluorescent dye leak detector should be used in conjunction with an electrical leak detector (SST: J-41995) to pin-point refrigerant leakages.**
- **Read and follow all manufacture's operating instructions and precautions prior to performing the work for the purpose of safety and customer's satisfaction.**
- **A compressor shaft seal should not necessarily be repaired because of dye seepage. The compressor shaft seal should only be repaired after confirming the leakage with an electrical leak detector (SST: J-41995).**
- **Remove always any remaining dye from the leakage area after repairs are completed to avoid a misdiagnosis during a future service.**
- **Never allow dye to come into contact with painted body panels or interior components. Clean immediately with the approved dye cleaner if dye is spilled. Fluorescent dye left on a surface for an extended period of time cannot be removed.**
- **Never spray the fluorescent dye cleaning agent on hot surfaces (engine exhaust manifold, etc.).**
- **Never use more than one refrigerant dye bottle [1/4 ounce (7.4 cc)] per A/C system.**
- **Leak detection dyes for HFC-134a (R-134a) and CFC-12 (R-12) A/C systems are different. Never use HFC-134a (R-134a) leak detection dye in CFC-12 (R-12) A/C system, or CFC-12 (R-12) leak detection dye in HFC-134a (R-134a) A/C system, or A/C system damage may result.**
- **The fluorescent properties of the dye remains for three years or a little over unless a compressor malfunction occurs.**

IDENTIFICATION

NOTE:

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

IDENTIFICATION LABEL FOR VEHICLE

Vehicles with factory installed fluorescent dye have the identification label on the front side of hood.

PREPARATION

PREPARATION

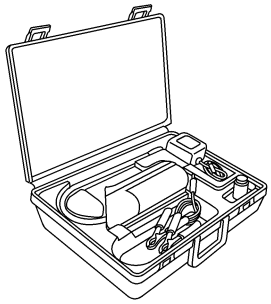
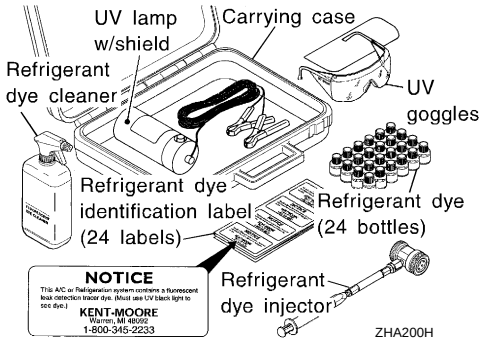
Special Service Tool

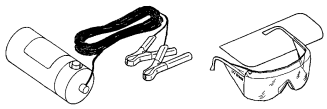
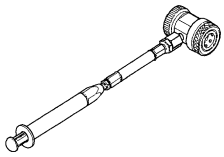
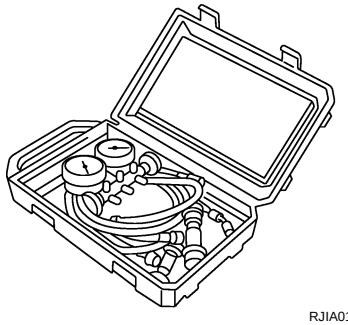
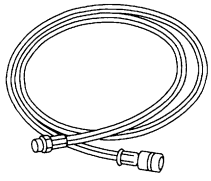
INFOID:0000000006200987

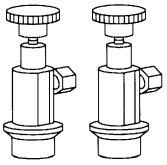
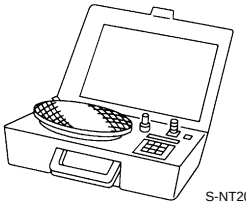
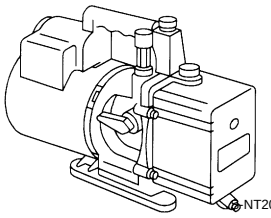
The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

HFC-134a (R-134a) Service Tool and Equipment

- Never mix HFC-134a (R-134a) refrigerant and/or its specified lubricant with CFC-12 (R-12) refrigerant and/or its lubricant.
- Separate and non-interchangeable service equipment must be used for handling each type of refrigerant/lubricant.
- Refrigerant container fittings, service hose fittings and service equipment fittings (equipment which handles refrigerant and/or lubricant) are different between CFC-12 (R-12) and HFC-134a (R-134a). This is to avoid mixed use of the refrigerants/lubricant.
- Never use adapters that convert one size fitting to another: refrigerant/lubricant contamination occurs and compressor malfunction may result.

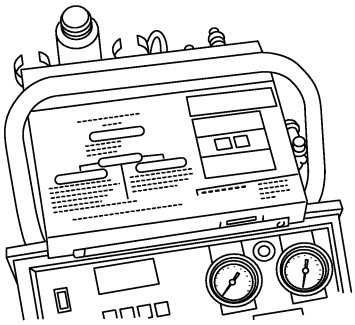
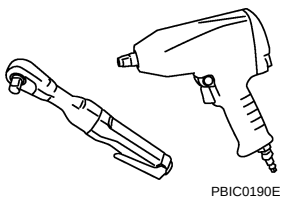
Tool number (Kent-Moore No.) Tool name		Description
(ACR2005-NI) ACR5 A/C Service Center	 WJIA0293E	Function: Refrigerant recovery, recycling and recharging
(J-41995) Electrical leak detector	 AHA281A	Power supply: DC 12 V (Battery terminal)
(J-43926) Refrigerant dye leak detection kit Kit includes: (J-42220) UV lamp and UV safety goggles (J-41459) HFC-134a (R-134a) dye injector Use with J-41447, 1/4 ounce bottle (J-41447) HFC-134a (R-134a) fluorescent leak detection dye (Box of 24, 1/4 ounce bottles) (J-43872) Refrigerant dye cleaner	 ZHA200H	Power supply: DC 12 V (Battery terminal)

Tool number (Kent-Moore No.) Tool name		Description
(J-42220) UV lamp and UV safety goggles	 SHA438F	Power supply: DC 12 V (Battery terminal) For checking refrigerant leakage when fluorescent dye is equipped in A/C system Includes: UV lamp and UV safety goggles
(J-41447) HFC-134a (R-134a) fluorescent leak detection dye (Box of 24, 1/4 ounce bottles)	 Refrigerant dye (24 bottles) SHA439F	Application: For HFC-134a (R-134a) PAG oil Container: 1/4 ounce (7.4 cc) bottle (Includes self-adhesive dye identification labels for affixing to vehicle after charging system with dye.)
(J-41459) HFC-134a (R-134a) dye injector Use with J-41447, 1/4 ounce bottle	 SHA440F	For injecting 1/4 ounce of fluorescent leak detection dye into A/C system
(J-43872) Refrigerant dye cleaner	 SHA441F	For cleaning dye spills
(J-39183) Manifold gauge set (with hoses and couplers)	 RJIA0196E	Identification: • The gauge face indicates HFC-134a (R-134a). Fitting size: Thread size • 1/2″-16 ACME
Service hoses • High-pressure side hose (J-39501-72) • Low-pressure side hose (J-39502-72) • Utility hose (J-39476-72)	 S-NT201	Hose color: • Low-pressure side hose: Blue with black stripe • High-pressure side hose: Red with black stripe • Utility hose: Yellow with black stripe or green with black stripe Hose fitting to gauge: • 1/2″-16 ACME

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

Commercial Service Tool

INFOID:0000000006200988

Tool name		Description
Refrigerant identifier equipment	 RJIA0197E	Checking for refrigerant purity and system contamination
Power tool	 PBIC0190E	For loosening bolts and nuts

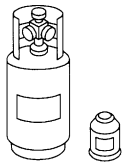
Sealant or/and Lubricant

INFOID:0000000006200989

HFC-134a (R-134a) Service Tool and Equipment

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

- Refrigerant container fittings, service hose fittings and service equipment fittings (equipment which handles refrigerant and/or lubricant) are different between CFC-12 (R-12) and HFC-134a (R-134a). This is to avoid mixed use of the refrigerants/lubricant.
- Never use adapters that convert one size fitting to another: refrigerant/lubricant contamination occurs and compressor malfunction may result.

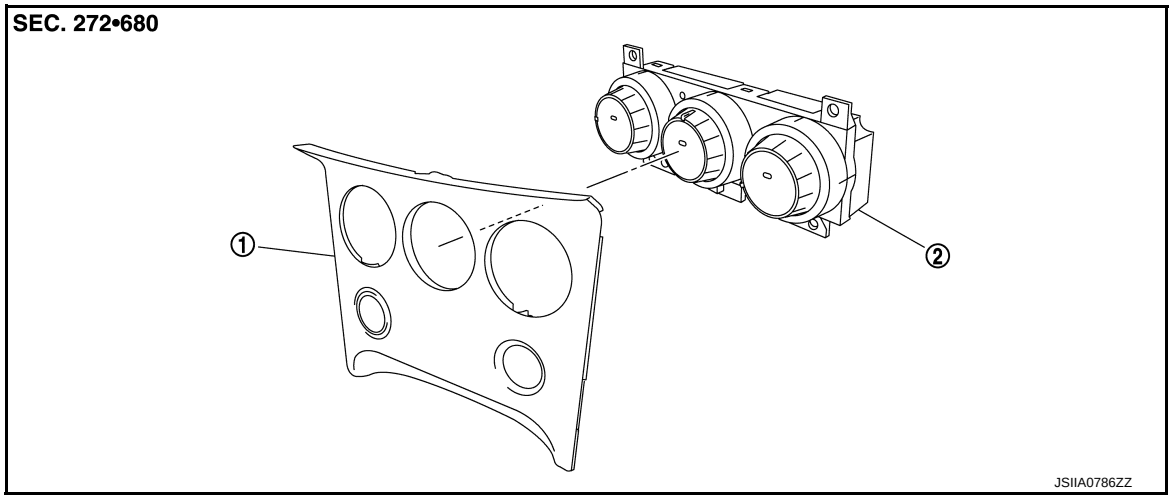
Tool name	Description
HFC-134a (R-134a) refrigerant  S-NT196	Container color: Light blue Container marking: HFC-134a (R-134a) Fitting size: Thread size • Large container 1/2″-16 ACME
NISSAN A/C System Oil Type S (DH-PS)  S-NT197	Type: Polyalkylene glycol oil (PAG), type S (DH-PS) Application: HFC-134a (R-134a) swash plate compressors (Nissan only) Capacity: 40 m ℓ (1.4 US fl oz., 1.4 Imp fl oz.)

REMOVAL AND INSTALLATION

A/C CONTROL

Exploded View

INFOID:0000000006200990



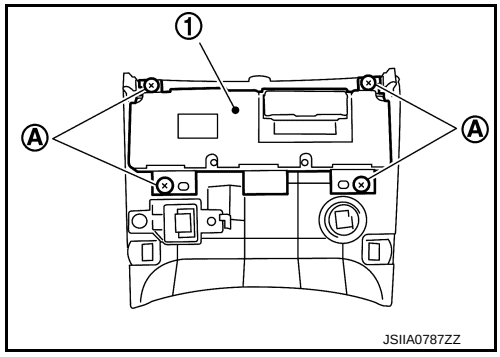
1. Cluster lid D
2. A/C Control (A/C amp.)

Removal and Installation

INFOID:0000000006200991

REMOVAL

1. Remove cluster lid D. Refer to IP-13, "Exploded View".
2. Remove mounting screws (A), and then remove A/C control (1).



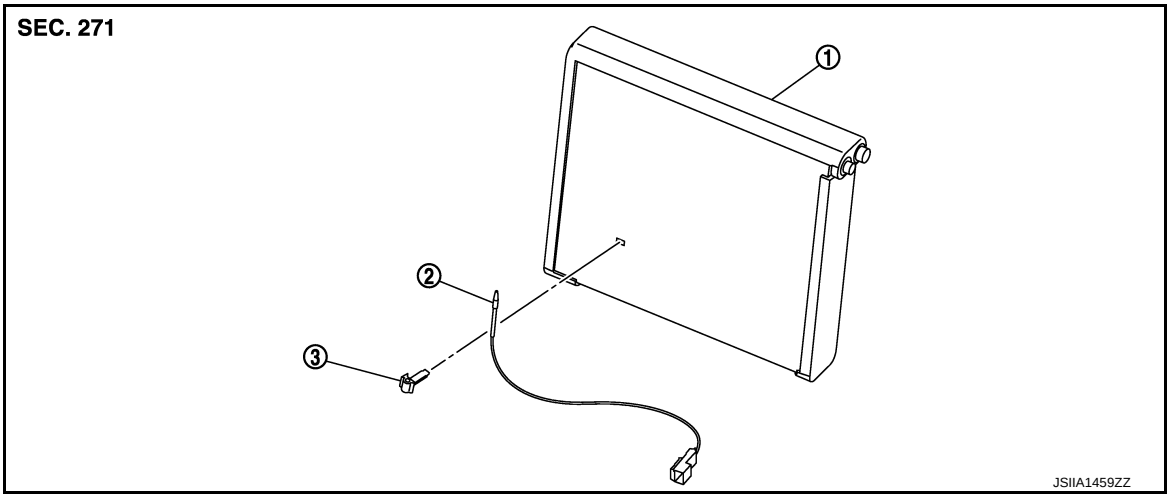
INSTALLATION

Installation is basically the reverse order of removal.

INTAKE SENSOR

Exploded View

INFOID:0000000006200992



1. Evaporator
2. Intake sensor
3. Intake sensor bracket

Removal and Installation

INFOID:0000000006200993

REMOVAL

1. Remove evaporator with expansion valve attached. Refer to HA-51, "Exploded View".
   CAUTION:
   Cap or wrap the joint of the A/C piping and expansion valve with suitable material such as vinyl tape to avoid the entry of air.
2. Remove intake sensor from evaporator.

INSTALLATION

Installation is basically the reverse order of removal.

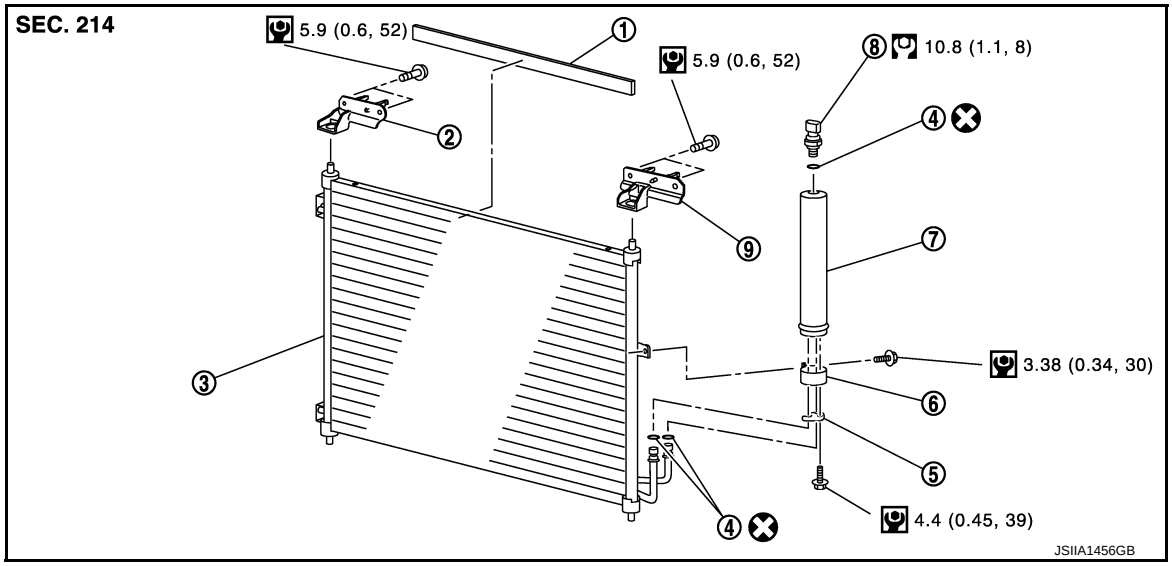
CAUTION:

- **Replace O-rings with new ones. Then apply compressor oil to them when installing.**
- **Mark the mounting position of intake sensor bracket prior to removal so that the reinstalled sensor can be located in the same position.**
- **Check for leakages when recharging refrigerant.**

REFRIGERANT PRESSURE SENSOR

Exploded View

INFOID:0000000006200994



1. Seal
2. Condenser upper bracket RH
3. Condenser
4. O-ring
5. Bracket
6. Liquid tank bracket
7. Liquid tank
8. Refrigerant pressure sensor
9. Condenser upper bracket LH

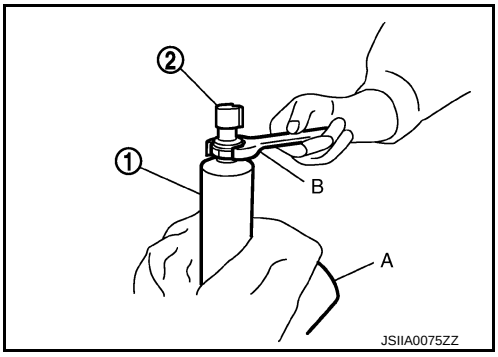
Refer to GI-4, "Components" for symbols in the figure.

Removal and Installation

INFOID:0000000006200995

REMOVAL

1. Remove liquid tank. Refer to HA-49, "Exploded View".
2. Fix the liquid tank (1) with a vise (A). Remove the refrigerant pressure sensor (2) with a wrench (B).
   CAUTION:
   Be careful not to damage liquid tank.



INSTALLATION

Installation is basically the reverse order of removal.

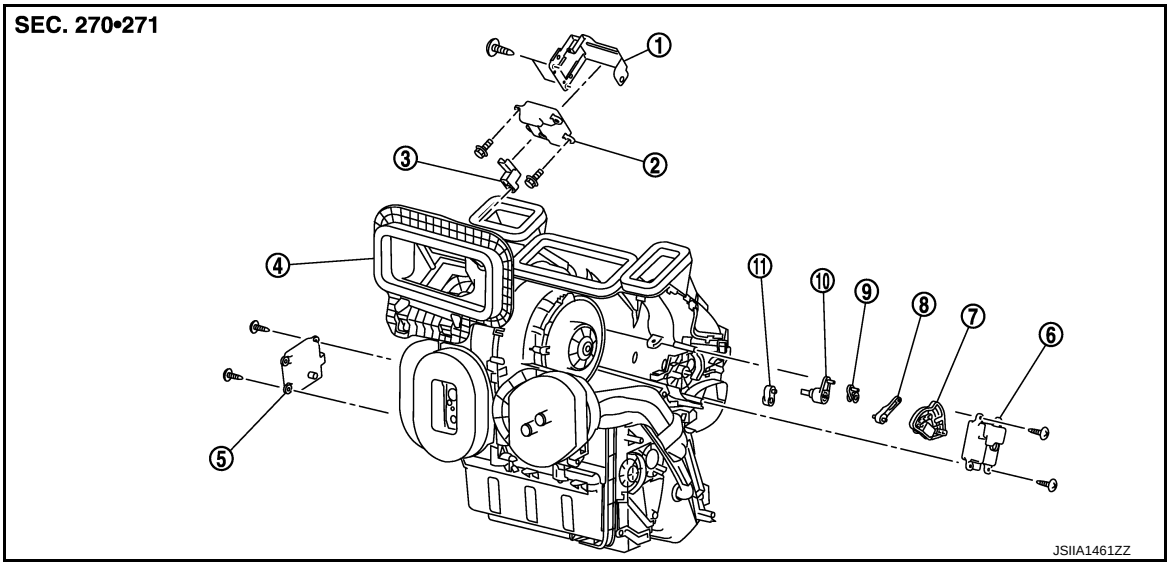
CAUTION:

- **Replace O-ring with new one. Then apply compressor oil to them when installing.**
- **Check for leakages when recharging refrigerant.**

DOOR MOTOR

Exploded View

INFOID:0000000006200996



1. Intake door motor bracket
2. Intake door motor
3. Intake door lever
4. A/C unit assembly
5. Air mix door motor
6. Mode door motor
7. Main link
8. Foot door link
9. Foot door lever
10. Ventilator door lever
11. Defroster door lever

INTAKE DOOR MOTOR

INTAKE DOOR MOTOR : Removal and Installation

INFOID:0000000006200997

REMOVAL

1. Remove instrument panel. Refer to IP-13, "Exploded View".
2. Remove mounting screws of intake door motor bracket, and then remove intake door motor with intake door motor bracket attached.
3. Disconnect intake door motor connector.
4. Remove mounting screws, and then remove intake door motor from intake door motor bracket.

INSTALLATION

Installation is basically the reverse order of removal.

MODE DOOR MOTOR

MODE DOOR MOTOR : Removal and Installation

INFOID:0000000006200998

REMOVAL

1. Remove front foot duct LH. Refer to VTL-10, "Exploded View".
2. Remove knee protector. Refer to IP-13, "Exploded View".
3. Remove mounting screws, and then remove mode door motor.
4. Disconnect mode door motor connector.

INSTALLATION

Installation is basically the reverse order of removal.

AIR MIX DOOR MOTOR

AIR MIX DOOR MOTOR : Removal and Installation

INFOID:0000000006200999

REMOVAL

1. Set the temperature to full cold position.
   CAUTION:
   The angle may be out, when installing the air mix door actuator to the air mix door, unless above procedure is performed.
2. Disconnect the battery cable from the negative terminal.
3. Remove front foot duct RH. Refer to VTL-10, "Exploded View".
4. Remove mounting screws, and then remove air mix door motor.
5. Disconnect air mix door motor connector.

INSTALLATION

Installation is basically the reverse order of removal.