SECTION HAC

HEATER & AIR CONDITIONING CONTROL SYSTEM

CONTENTS

MANUAL AIR CONDITIONER

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:0000000001722288

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-4, "Description & Inspection".

>> GO TO 3.

3.GO TO APPROPRIATE TROUBLE DIAGNOSIS

Go to appropriate trouble diagnosis (Refer to HAC-63, "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:0000000001722289

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-28, "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-9, "System Description".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Go to diagnosis procedure. Refer to HAC-22, "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-26, "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-32, "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-64, "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 >> END.
NO >> Go to diagnosis procedure. Refer to HAC-65, "Inspection procedure".

FUNCTION DIAGNOSIS

COMPRESSOR CONTROL FUNCTION

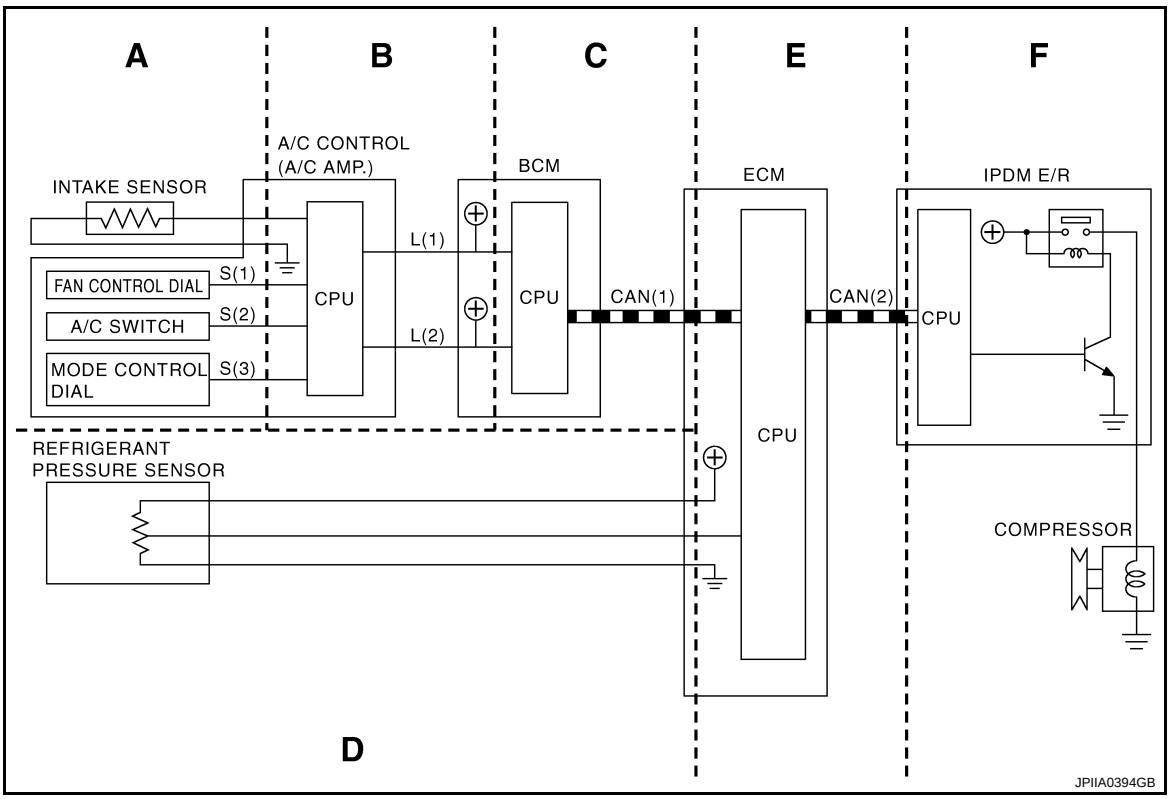
Description

INFOID:0000000001722290

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

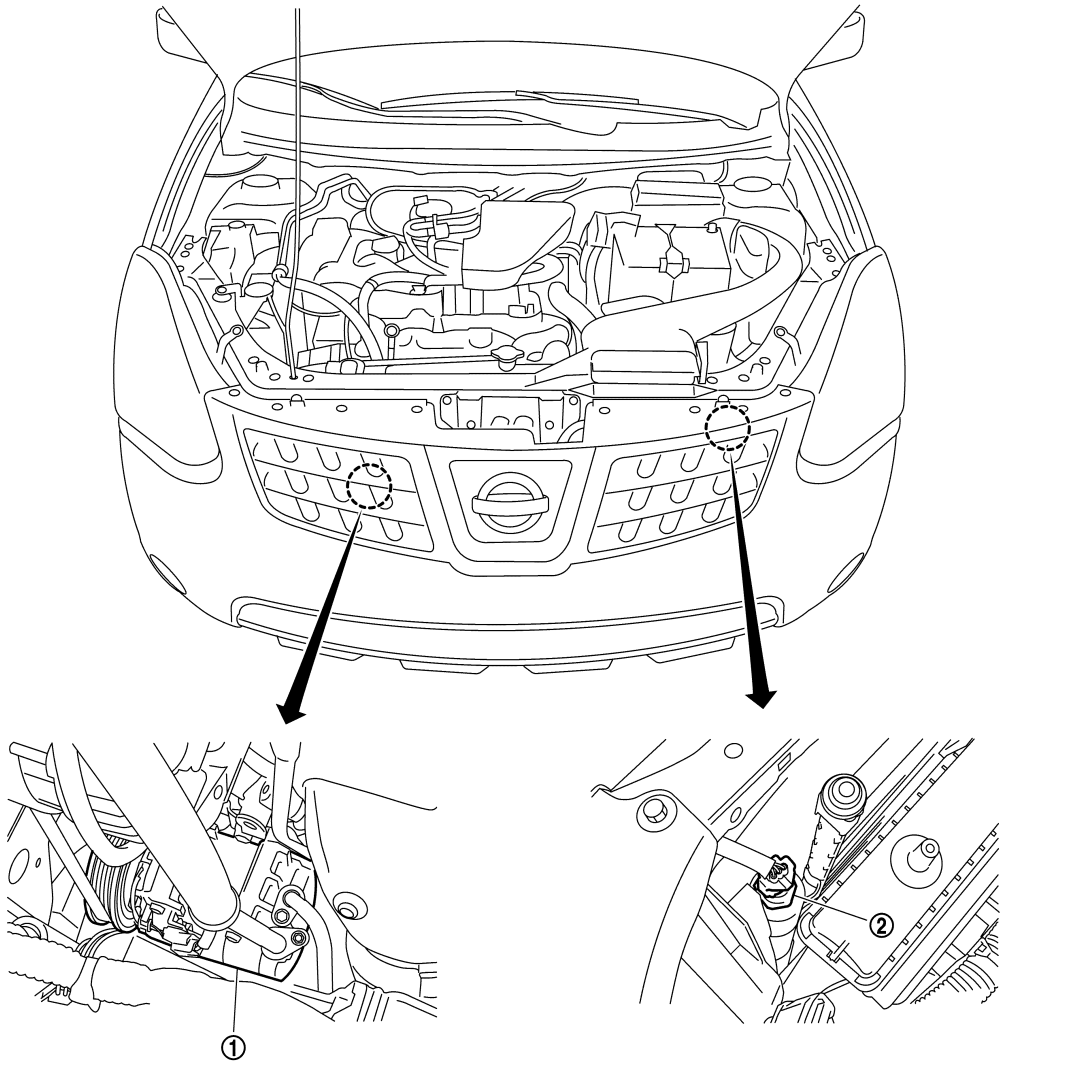
Functional initial inspection chart

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

Component Part Location

INFOID:0000000001722291

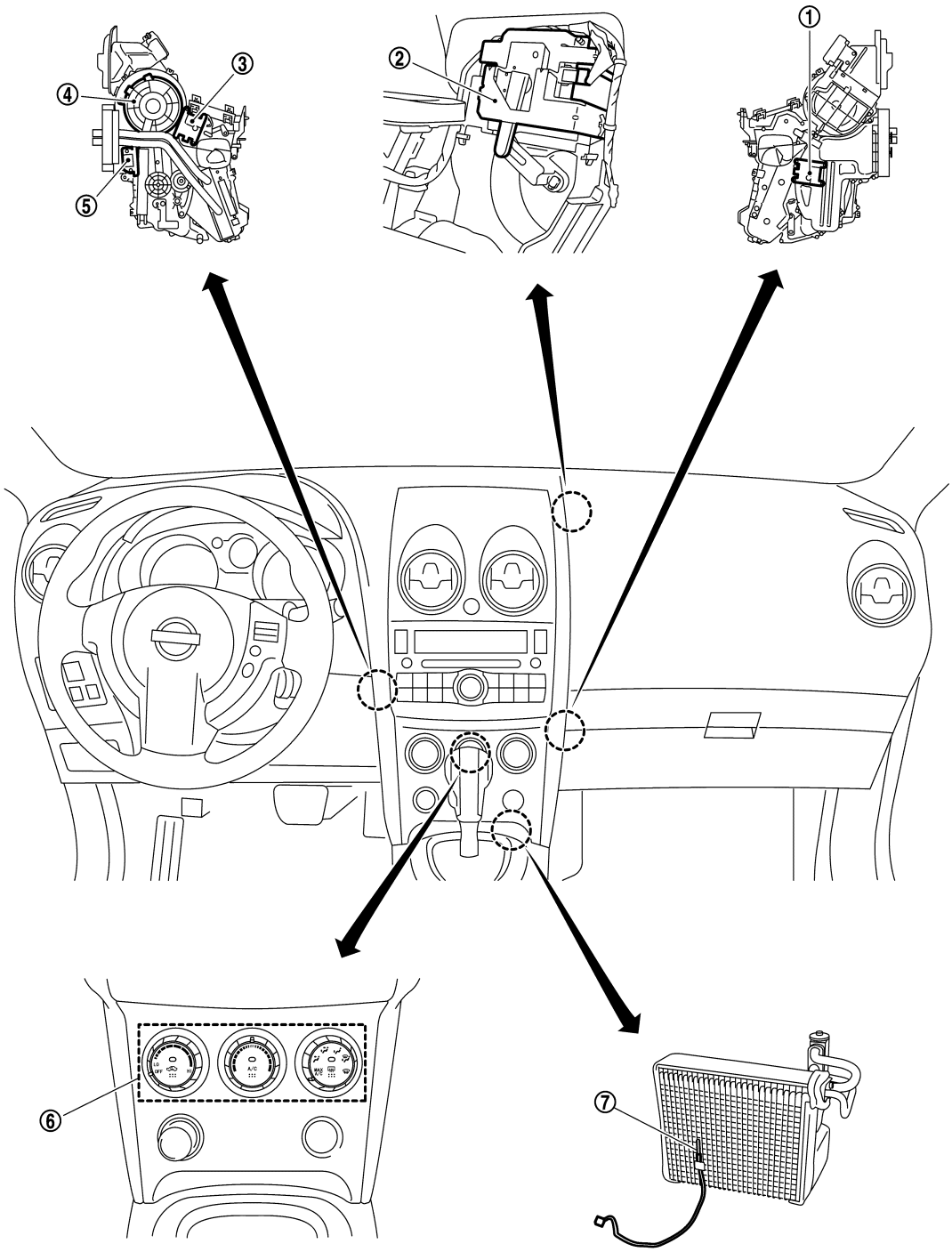
ENGINE COMPARTMENT



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:0000000001722292

Component	Reference
Air mix door motor	HAC-24, "Description"
A/C control (A/C amp.)	HAC-38, "Description"
Blower motor	HAC-28, "Description"
Compressor (Magnet clutch)	HAC-32, "Description"
Fan control amp.	HAC-28, "Description"
Intake door motor	HAC-26, "Description"
Intake sensor	HAC-36, "Description"
Mode door motor	HAC-22, "Description"
Refrigerant pressure sensor	EC-434, "Description" (FOR CALIFORNIA), EC-865, "Description" [FOR USA (FEDERAL) AND CANADA] or EC-1222, "Description" (FOR MEXICO)

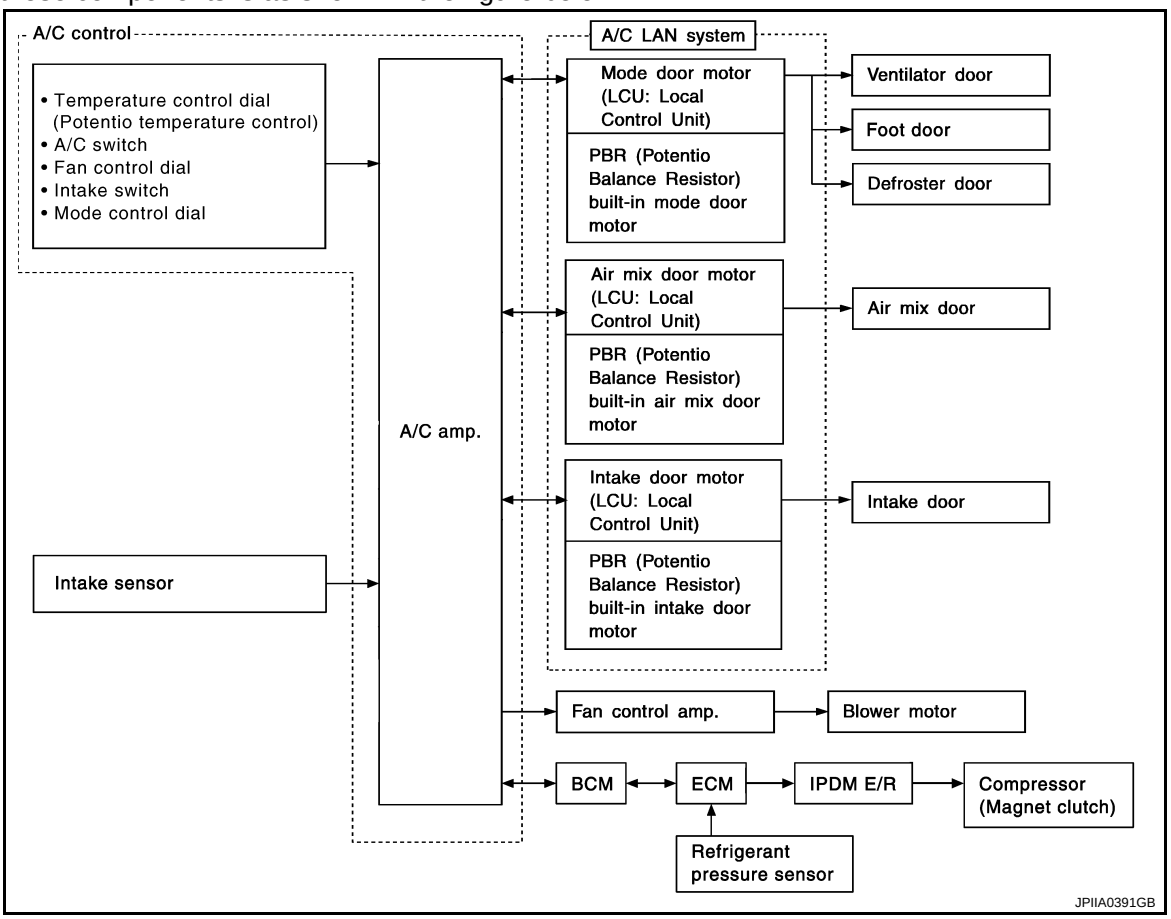
MANUAL AIR CONDITIONER SYSTEM

System Diagram

INFOID:0000000001722293

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:

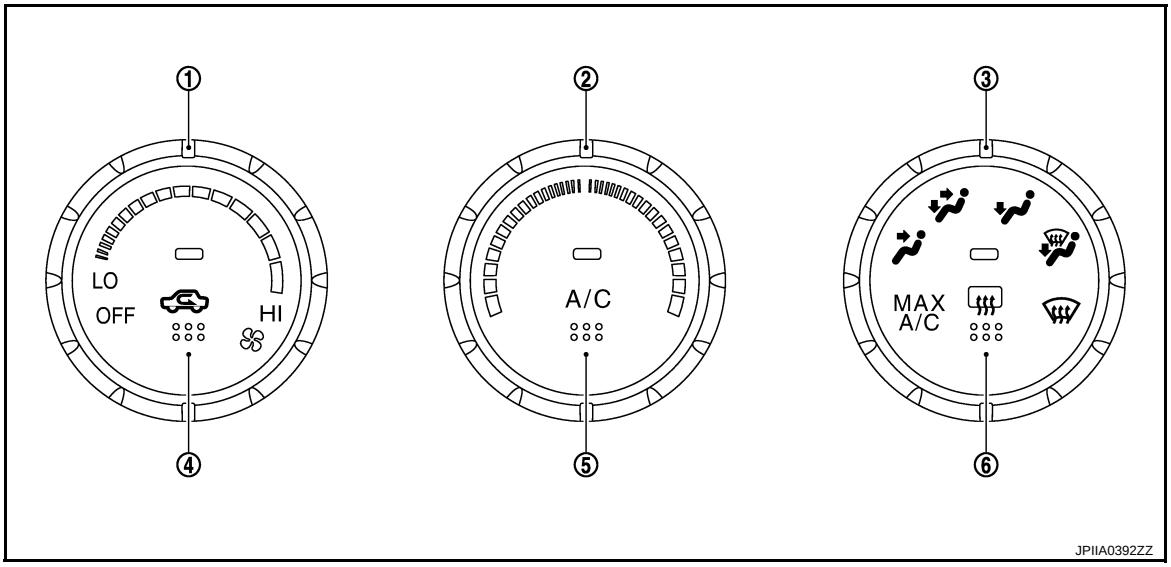


System Description

INFOID:0000000001722294

CONTROL OPERATION

A/C control



1. Fan control dial
2. Temperature control dial
3. Mode control dial
4. Recirculation (REC) 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. Recirculation (REC) 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.

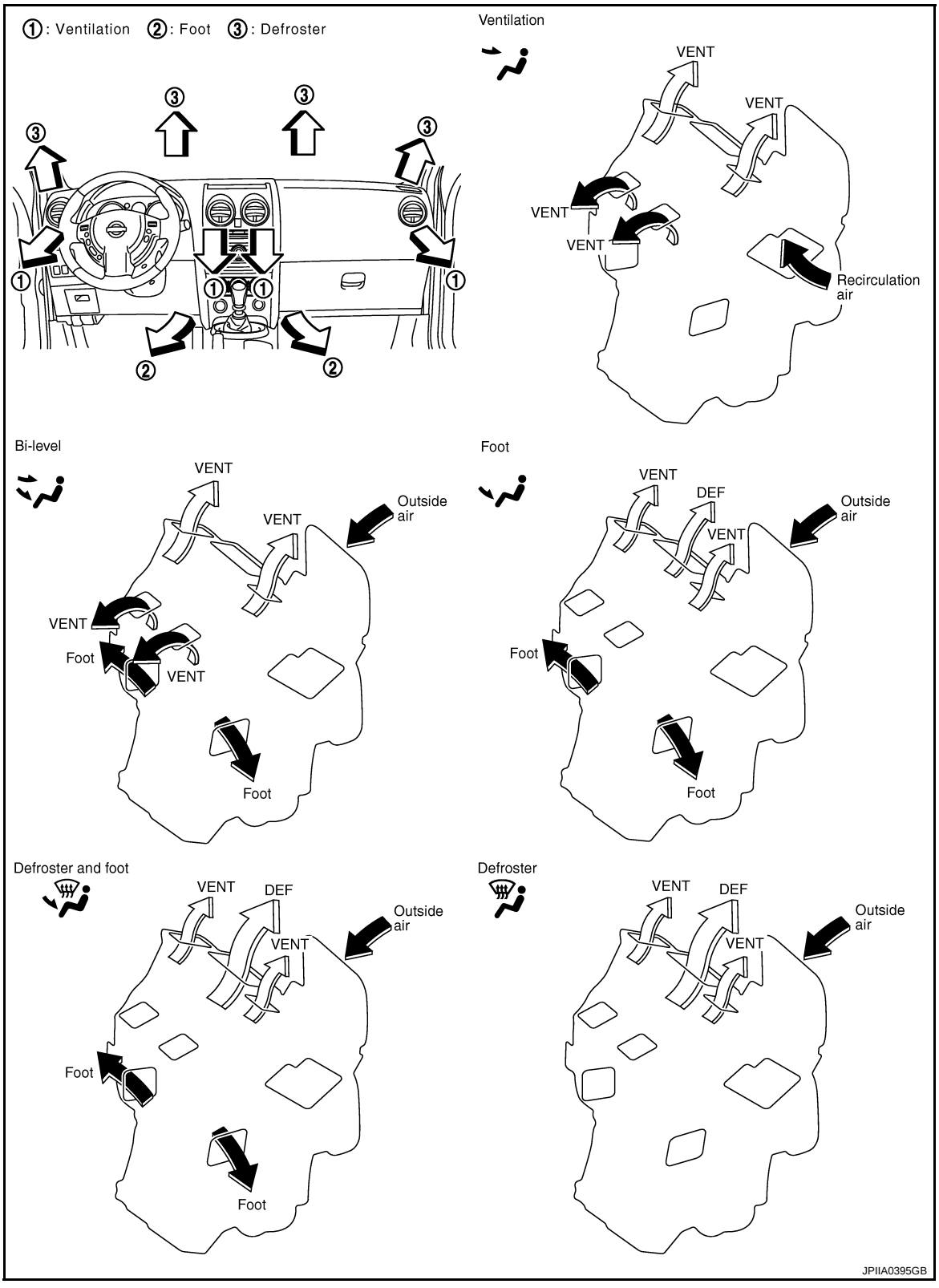
5. A/C Switch

- 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%

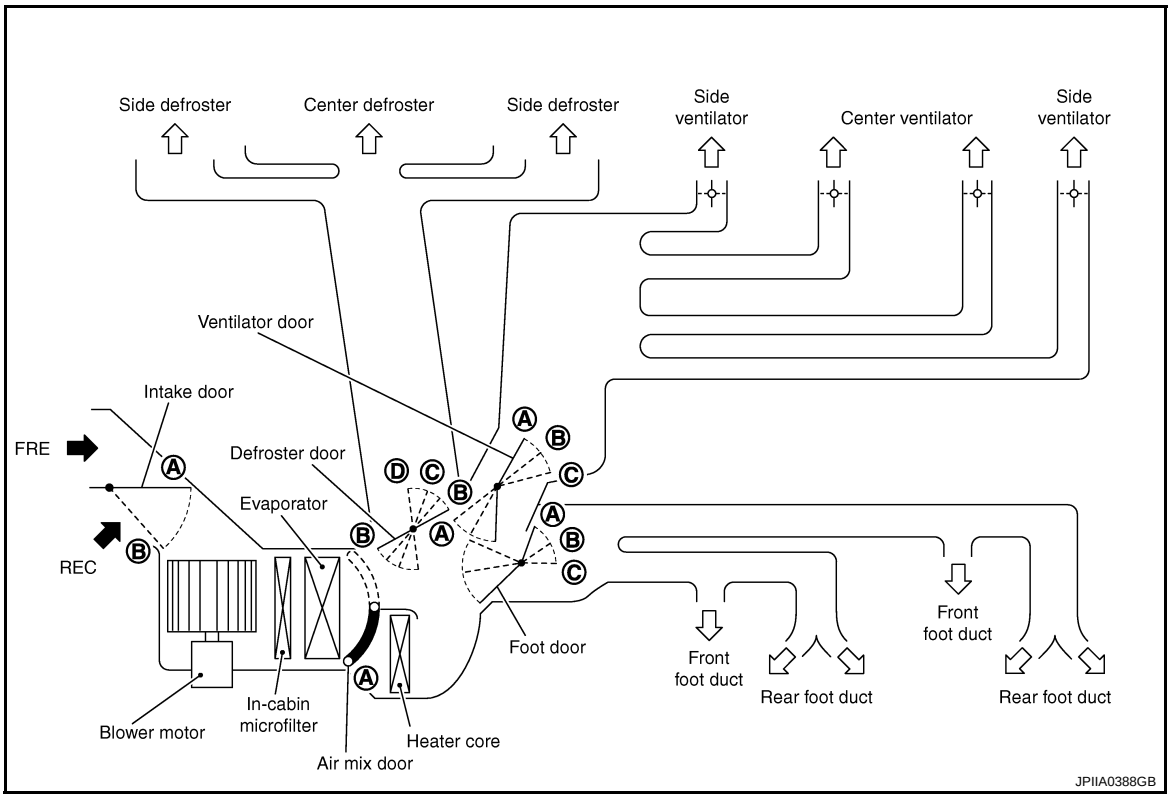
JPIIA0387GB

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%

JPIIA0386GB

SWITCHES AND THEIR CONTROL FUNCTION



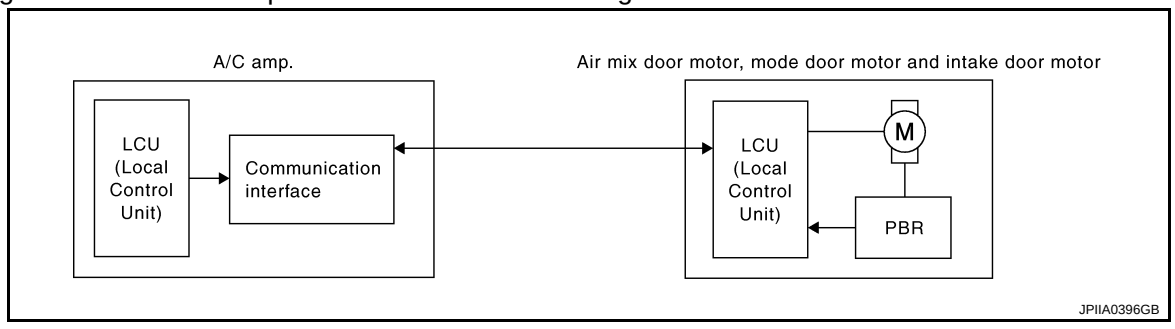
NOTE:
Ventilator door has center ventilator openings and side ventilator openings, side ventilator opening cannot be completely closed.

Position or switch / Door	Mode control dial								Intake switch		Temperature control dial		
	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	—								—		Ⓐ	—	Ⓑ

JPIIA0390GB

AIR CONDITIONER LAN CONTROL SYSTEM

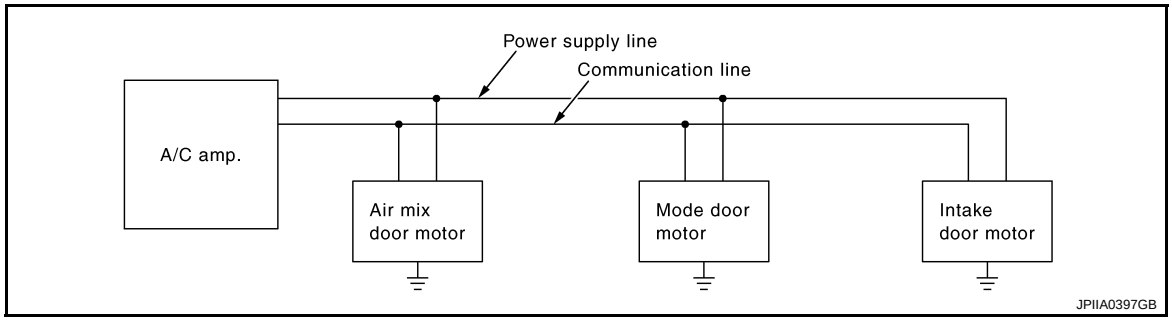
The LAN (Local Area Network) system consists of A/C amp., mode door motor, air mix door motor and intake door motor.
A configuration of these components is as shown in the figure below.



SYSTEM CONSTRUCTION

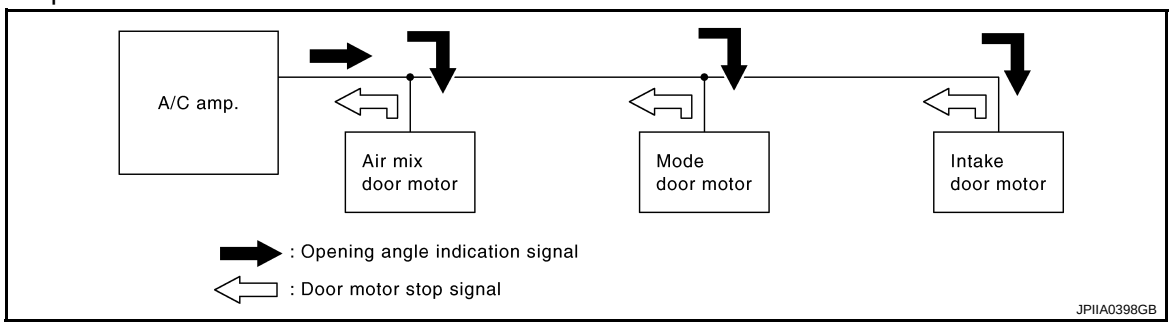
A small network is constructed between the A/C amp., mode door motor, air mix door motor and intake door motor. The A/C amp. and motors are connected by data transmission lines and motor power supply lines. The LAN network is built through the ground circuits of each door motor.
Addresses, motor opening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

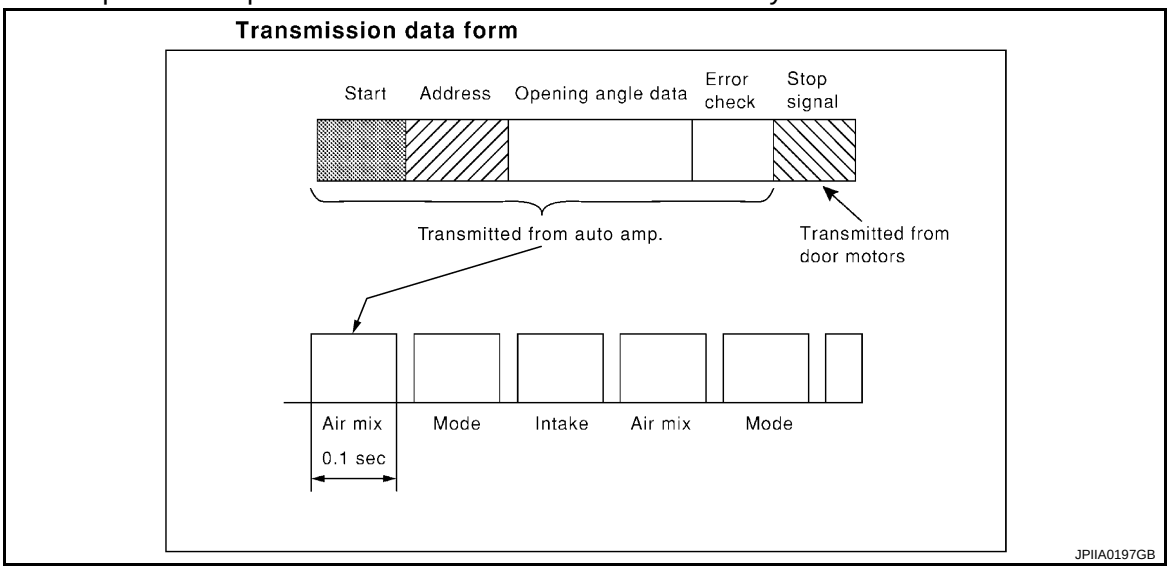
- Data sent from the A/C amp. are selected according to data-based decisions made by the mode door motor, air mix door motor and intake door motor.
- If the addresses are identical, the opening angle data and error check signals are received by the door motor LCUs. The LCUs then make the appropriate 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

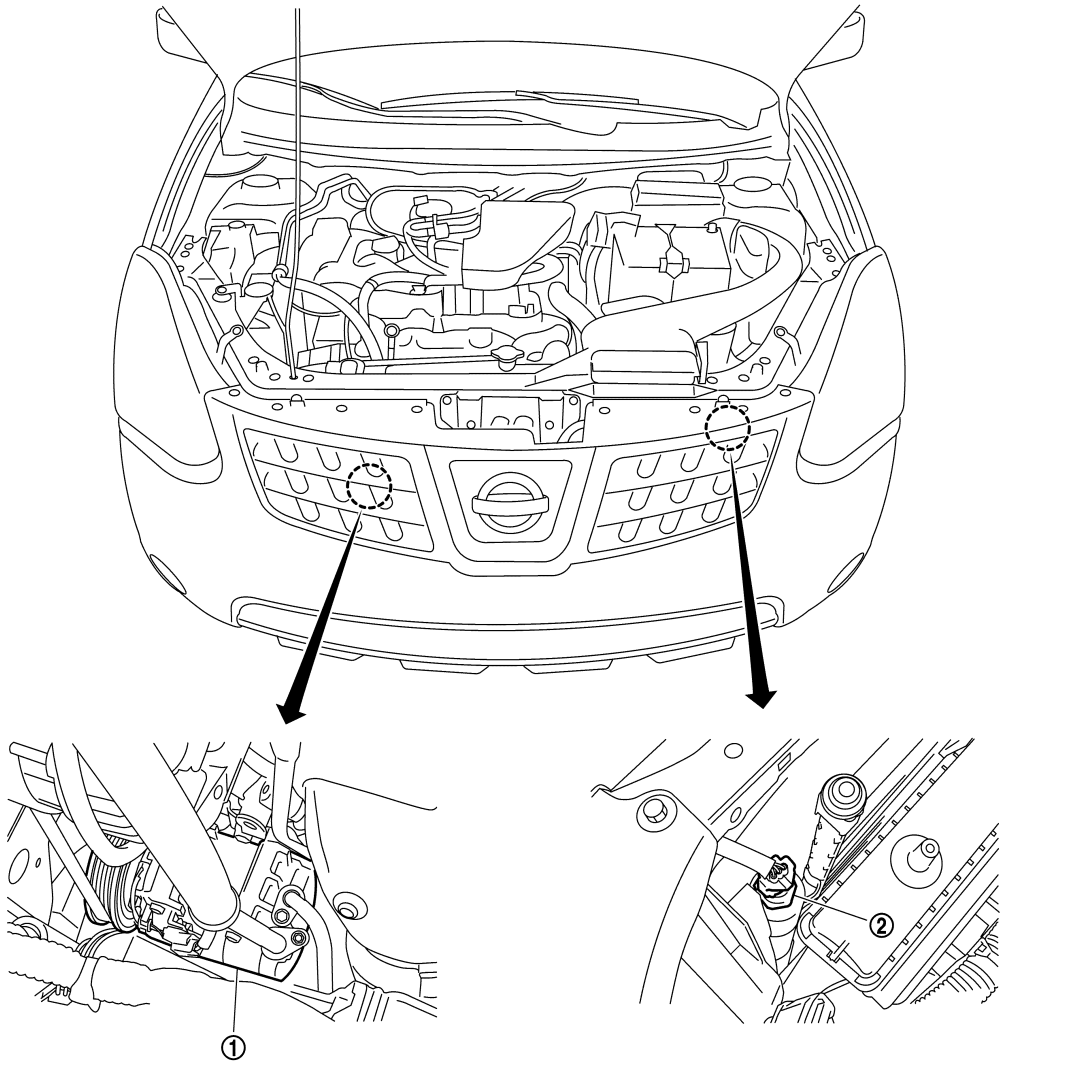
STOP SIGNAL:
- At the end of each transmission, a stop operation, in-operation, or internal malfunction message is delivered to the A/C amp. This completes one data transmission and control cycle.



Component Part Location

INFOID:0000000001734634

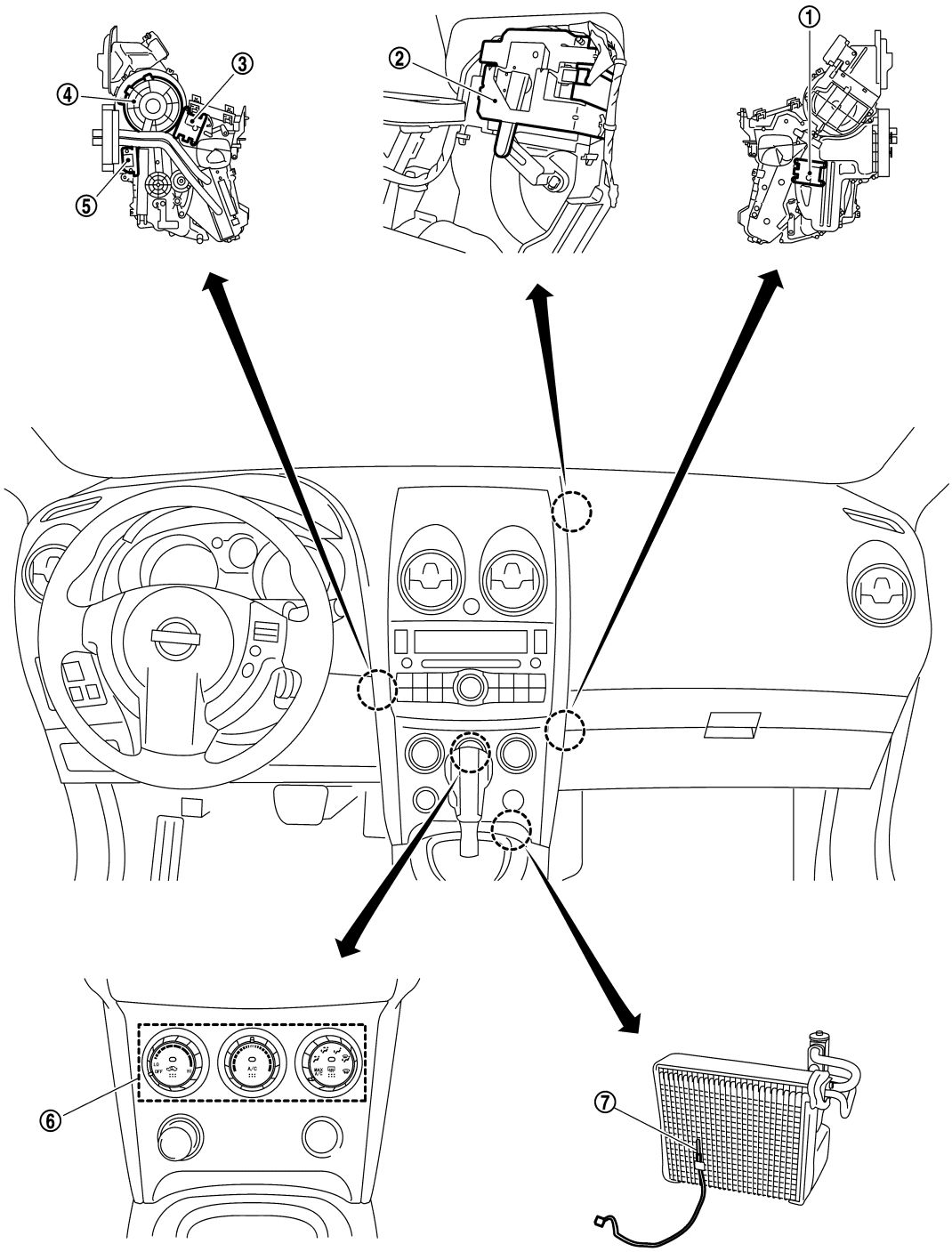
ENGINE COMPARTMENT



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:0000000001734635

Component	Reference
Air mix door motor	HAC-24, "Description"
A/C control (A/C amp.)	HAC-38, "Description"
Blower motor	HAC-28, "Description"
Compressor (Magnet clutch)	HAC-32, "Description"
Fan control amp.	HAC-28, "Description"
Intake door motor	HAC-26, "Description"
Intake sensor	HAC-36, "Description"
Mode door motor	HAC-22, "Description"
Refrigerant pressure sensor	EC-434, "Description" (FOR CALIFORNIA), EC-865, "Description" [FOR USA (FEDERAL) AND CANADA] or EC-1222, "Description" (FOR MEXICO)

DIAGNOSIS SYSTEM (BCM)

COMMON ITEM

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

INFOID:0000000001734669

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-63, "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:0000000001722302

DATA MONITOR

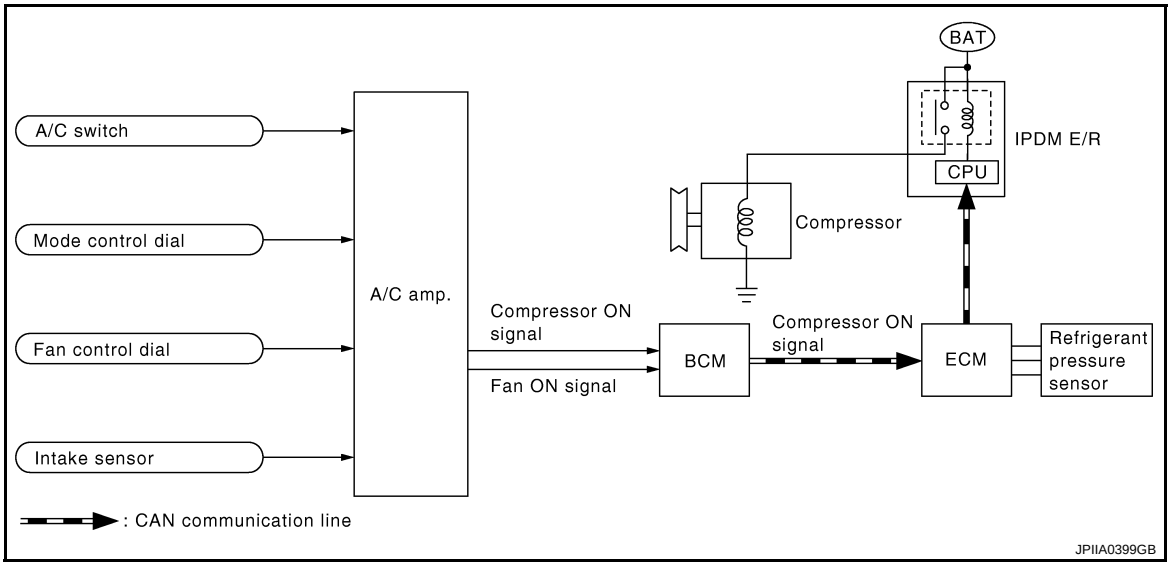
Display Item List

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:0000000001722311



System Description

INFOID:0000000001722312

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

SYSTEM OPERATION

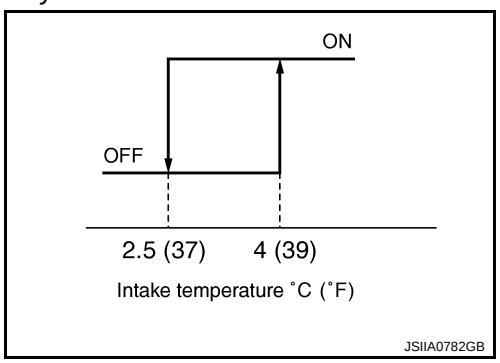
When A/C switch is pressed, turn fan control dial to ON or set mode control dial to MAX A/C position, A/C amp. transmits compressor ON signal to BCM.
BCM sends compressor ON signal to ECM, via CAN communication.
ECM judges whether compressor can be turned ON, based on each sensor status (refrigerant-pressure 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.

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).



COMPONENT DIAGNOSIS

MODE DOOR MOTOR

Description

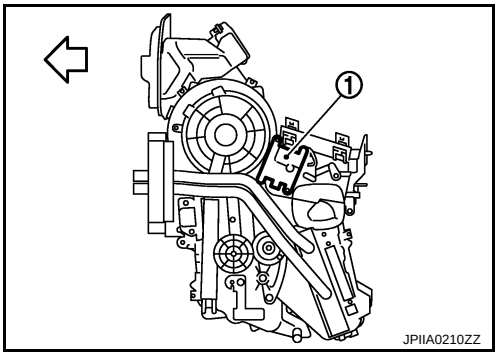
INFOID:0000000001722315

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:0000000001722316

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-9, "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 >> END.
NO >> Go to diagnosis procedure. Refer to HAC-22, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000001722317

1.CHECK MODE DOOR CONTROL LINKAGE

Check mode door control linkage. Refer to VTL-28, "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.

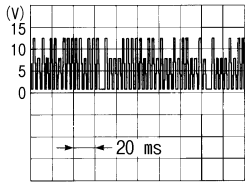
(+)		(–)	Voltage
Mode door motor		—	
Connector	Terminal		
M310	1	Ground	Battery voltage

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	 SJIA1453J

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

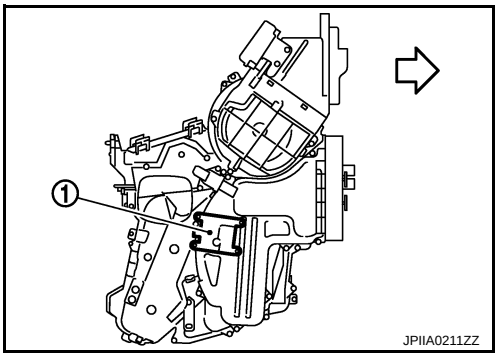
INFOID:0000000001722321

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:0000000001722322

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 >> END.
NO >> Go to diagnosis procedure. Refer to HAC-24, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000001722323

1. CHECK AIR MIX DOOR MOTOR

Check air mix door motor. Refer to VTL-29, "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.

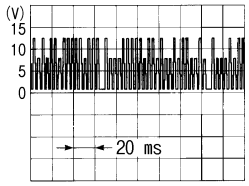
(+)		(–)	Voltage
Air mix door motor		—	
Connector	Terminal		
M306	1	Ground	Battery voltage

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	 SJIA1453J

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

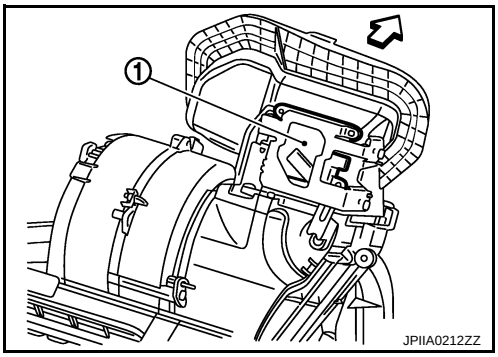
INFOID:0000000001722327

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:0000000001722328

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 >> END.
NO >> Go to diagnosis procedure. Refer to HAC-26, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000001722329

1.CHECK INTAKE DOOR CONTROL LINKAGE

Check intake door control linkage. Refer to VTL-26, "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.

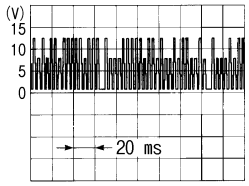
(+)		(–)	Voltage
Intake door motor		—	
Connector	Terminal		
M304	1	Ground	Battery voltage

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	 SJIA1453J

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

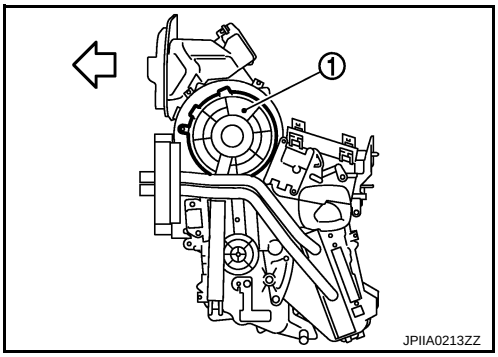
INFOID:0000000001722333

COMPONENT DESCRIPTION

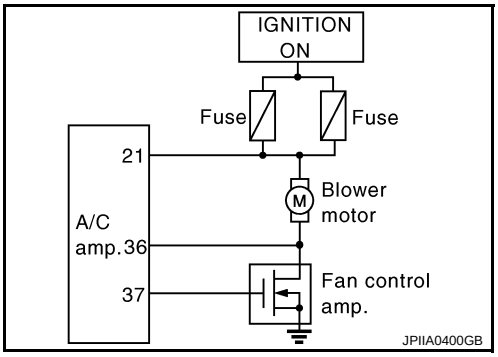
Blower Motor

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

⇦: Vehicle front

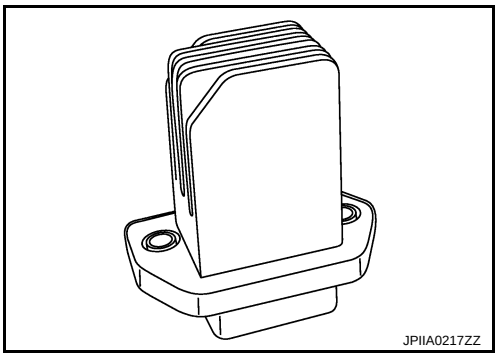


Blower Motor Circuit



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:0000000001722334

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 >> END.
NO >> Go to diagnosis procedure. Refer to HAC-28, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000001722335

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-83, "Fuse, Connector and Terminal Arrangement".
3. Turn ignition switch ON.
4. Check voltage between blower relay fuse block terminals and ground. Refer to PG-81, "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-70, "Diagnosis Procedure" (WITH INTELLIGENT KEY SYSTEM), DLK-347, "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-83, "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-83, "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-31, "Component Inspection (Blower Motor)".
NO >> Repair harness or connector.

11. CHECK CIRCUIT FAN CONTROL AMP.

Check fan control amp. Refer to HAC-31, "Component Inspection (Blower Motor)".

Is the inspection result normal?

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

Component Inspection (Blower Motor)

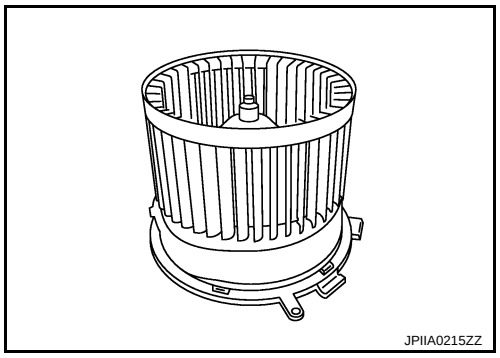
INFOID:0000000001722336

1. CHECK BLOWER MOTOR

1. Turn ignition switch OFF.
2. Remove blower motor. Refer to VTL-36, "Exploded View".
3. Confirm smooth rotation of the blower motor.

Is the inspection result normal?

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



Component Inspection (Fan Control Amp.)

INFOID:0000000001735267

1. CHECK FAN CONTROL AMP.

1. Turn ignition switch ON.
2. Remove fan control amp. Refer to VTL-37, "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 >> END.
NO >> Replace fan control amp.

MAGNET CLUTCH

Description

INFOID:0000000001722341

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

Component Function Check

INFOID:0000000001722342

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 >> END.
NO >> Go to Diagnosis Procedure. Refer to HAC-32, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000001722343

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 >> • WITH CONSULT-III: GO TO 5.
• 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	
E13	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-20, "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-67, "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-436, "Reference Value" (FOR CALIFORNIA), EC-867, "Reference Value" [FOR USA (FEDERAL) AND CANADA] or EC-1224, "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 >> • Ⓘ WITH CONSULT-III: GO TO 10.
• Ⓧ WITHOUT CONSULT-III: GO TO 11.

NO >> Refer to EC-434, "Diagnosis Procedure" (FOR CALIFORNIA), EC-865, "Diagnosis Procedure" [FOR USA (FEDERAL) AND CANADA] or EC-1222, "Diagnosis Procedure" (FOR MEXICO).

10. CHECK BCM INPUT (FAN ON) SIGNAL

Check fan ON signal in “Data monitor”. Refer to HAC-20, "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-67, "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-26, "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-14, "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).

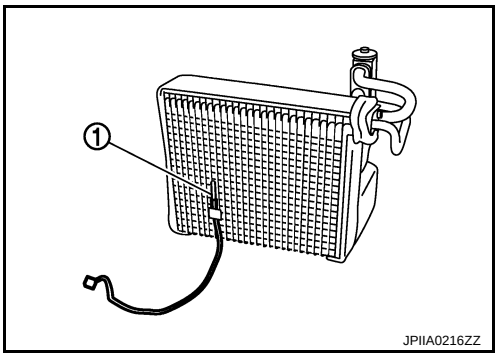
INTAKE SENSOR

Description

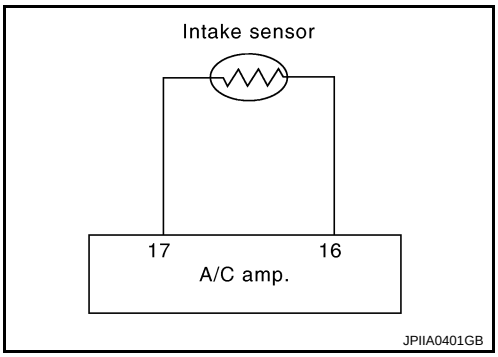
INFOID:0000000001722377

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:0000000001722379

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 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-37, "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?

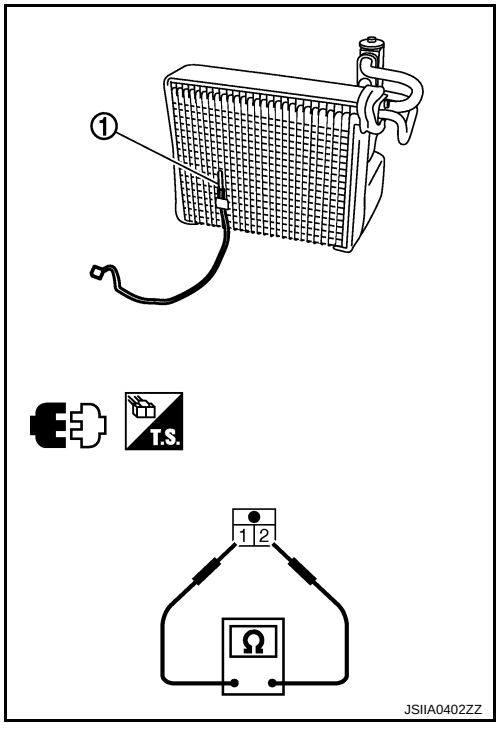
YES >> Replace A/C control.
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000001722380

1.CHECK INTAKE SENSOR

1. Turn ignition switch OFF.
2. Remove intake sensor. Refer to VTL-26, "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 >> END.
NO >> Replace intake sensor.

POWER SUPPLY AND GROUND CIRCUIT FOR A/C AMP.

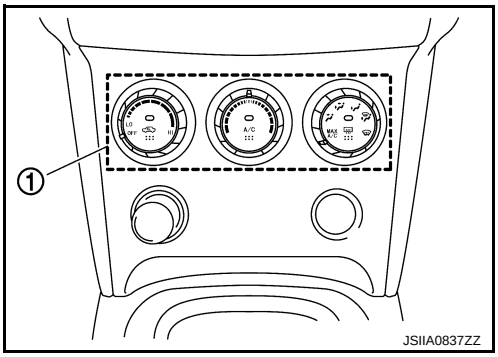
Description

INFOID:0000000001722385

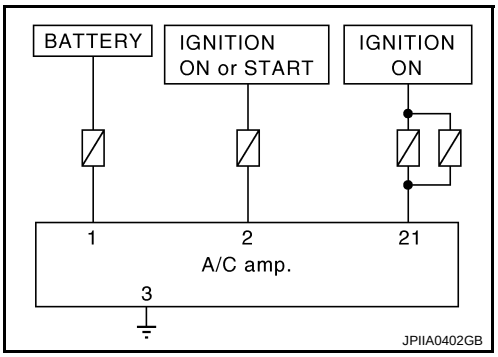
COMPONENT DESCRIPTION

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.

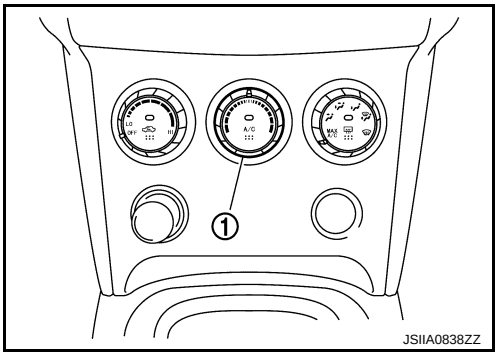


Power Supply and Ground Circuit for A/C Amp.



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:0000000001722386

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 >> END.
NO >> Go to Diagnosis Procedure. Refer to HAC-38, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000001722387

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-83, "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

BCM (BODY CONTROL MODULE)

Reference Value

INFOID:0000000001825945

VALUES ON THE DIAGNOSIS TOOL

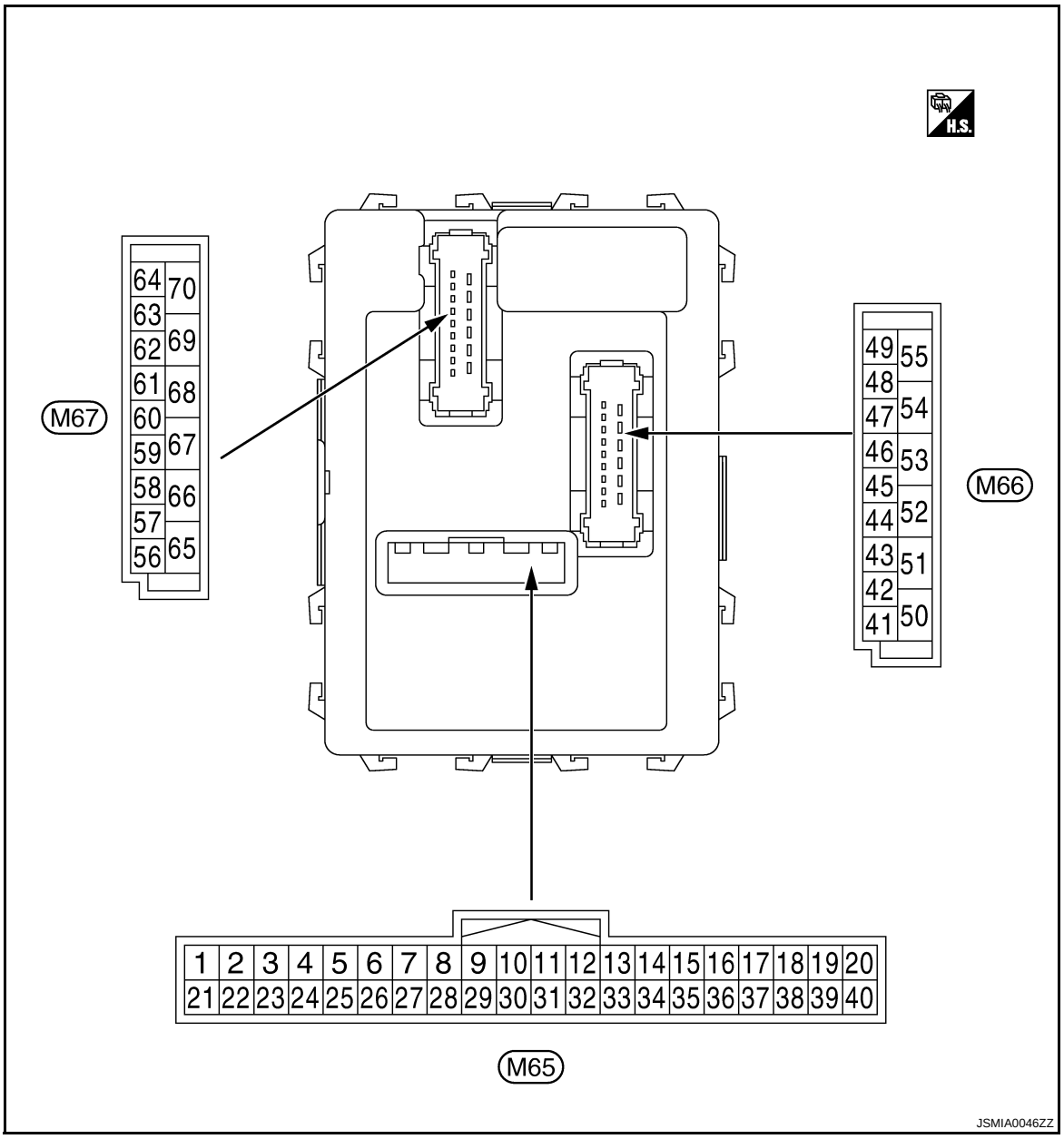
Monitor Item	Condition	Value/Status
IGN ON SW	Ignition switch OFF or ACC	Off
	Ignition switch ON	On
KEY ON SW	Mechanical key is removed from key cylinder	Off
	Mechanical key is inserted to key cylinder	On
CDL LOCK SW	Door lock/unlock switch does not operate	Off
	Press door lock/unlock switch to the lock 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

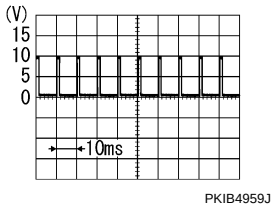
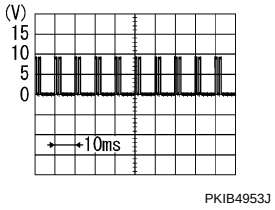
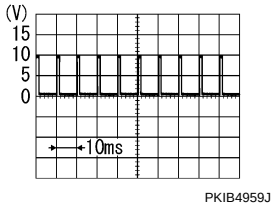
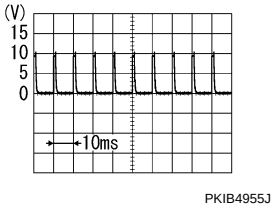
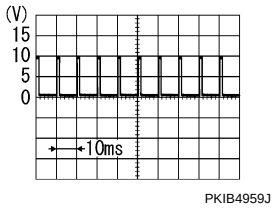


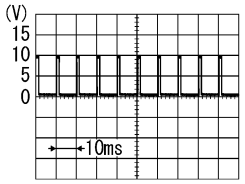
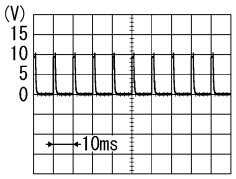
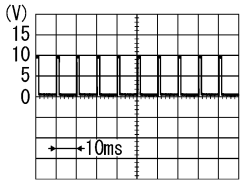
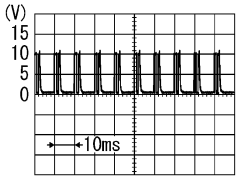
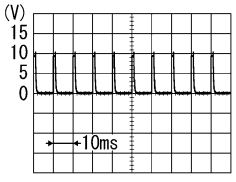
PHYSICAL VALUES

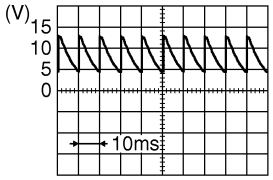
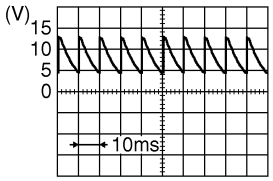
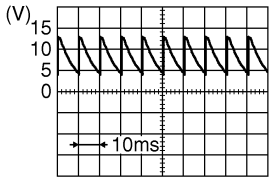
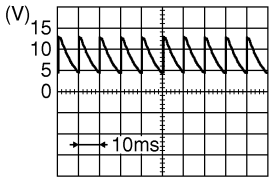
CAUTION:

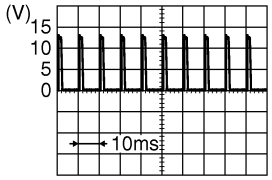
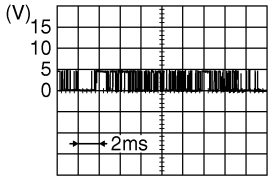
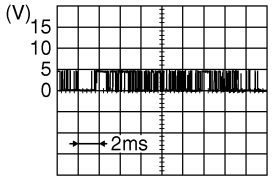
- **Check combination switch system terminal waveform under the loaded condition with lighting switch, turn signal switch and wiper switch OFF is not to be fluctuated by being overloaded.**
- **Turn wiper intermittent dial position to 4 except when checking waveform or voltage of wiper intermittent dial position. Wiper intermittent dial position can be confirmed on CONSULT-III. Refer to BCS-26, "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".**

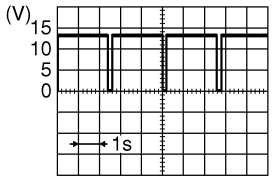
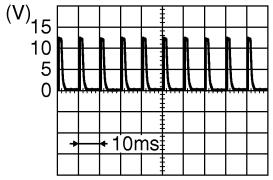
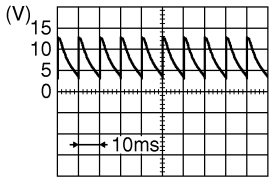
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
		Signal name	Input/ Output			
+	–					
1 (V)	Ground	Ignition key hole illumination control	Output	Ignition key hole illumination	OFF	Battery voltage
					ON	0 V

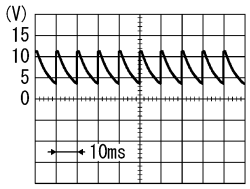
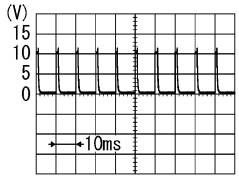
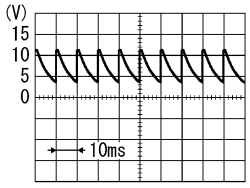
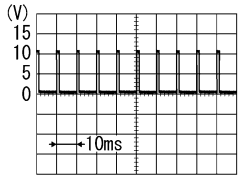
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
2 (G)	Ground	Combination switch INPUT 5	Input	Combination switch (Wiper intermittent dial 4)	All switch OFF	0 V
					Turn signal switch RH Lighting switch HI Lighting switch 1ST	 PKIB4959J 1.0 V
					Lighting 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

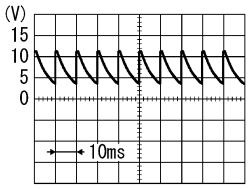
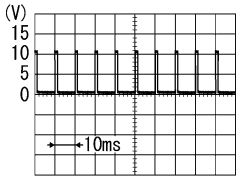
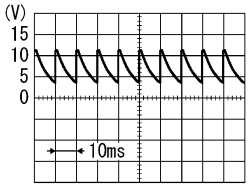
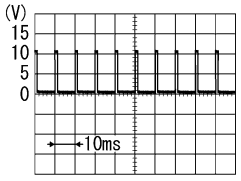
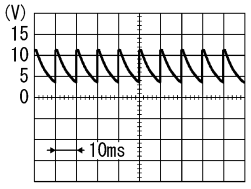
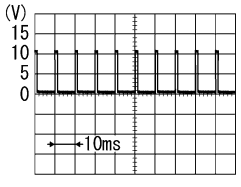
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
5 (R)	Ground	Combination switch INPUT 2	Input	Combination switch	All switch OFF (Wiper intermittent dial 4)	0 V
					Front washer switch (Wiper intermittent dial 4)	 PKIB4959J 1.0 V
					Rear washer ON (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

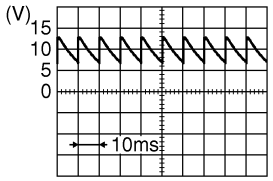
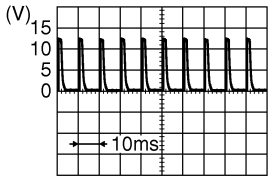
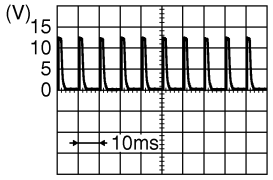
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
7 (L)	Ground	Door key cylinder switch UNLOCK signal	Input	Door key cylinder switch	NEUTRAL position	 JPMIA0587GB 8.0 - 8.5 V
					UNLOCK position	0 V
8 (R)	Ground	Door key cylinder switch LOCK signal	Input	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

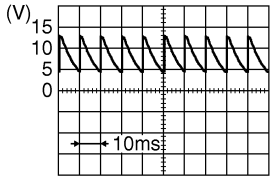
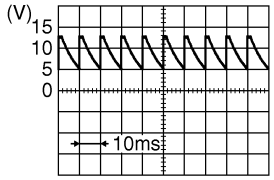
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
15*1 (O)	Ground	TPMS mode trigger switch	Input	Ignition switch OFF		 JPMIA0588GB 1.5 V
18*1 (O)	Ground	Remote keyless entry receiver ground	Input	Ignition switch ON		0 V
19*1 (V)	Ground	Remote keyless 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*1 (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

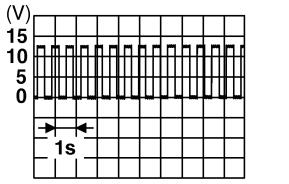
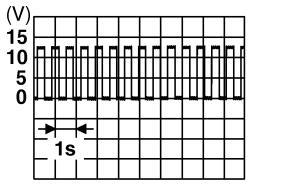
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
23 (B)	Ground	Security indicator signal	Input	Security indicator	ON	0 V
					Blinking (Ignition switch OFF)	 JPMIA0590GB 12.0 V
					OFF	Battery voltage
25 (BR)	Ground	Immobilizer antenna signal (Rx, Tx)	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 (R)*2 (P)*3	Ground	P/W power supply (BAT)	Output	Ignition switch OFF		Battery voltage
70 (Y)	Ground	Battery power supply	Input	Ignition switch OFF		Battery voltage

NOTE:

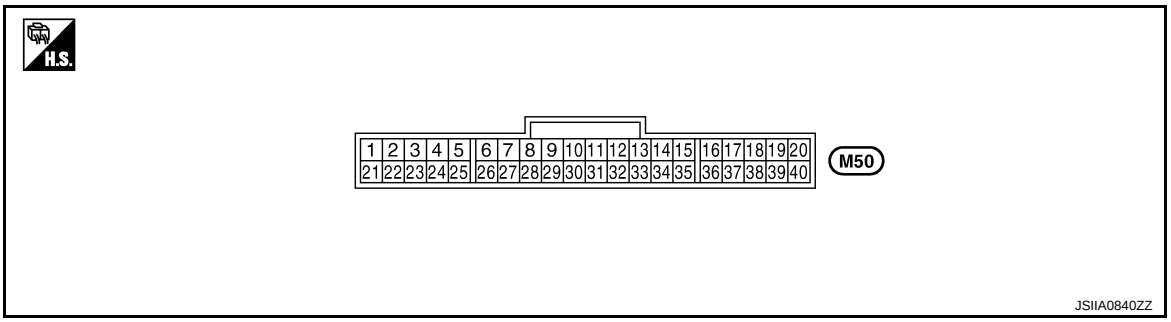
- *1: Except for Mexico
- *2: Without anti-pinch system
- *3: With anti-pinch system

A/C AMP.

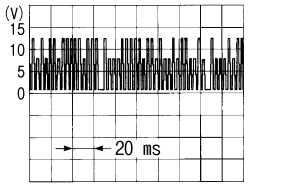
Reference Value

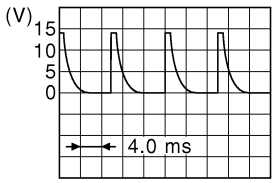
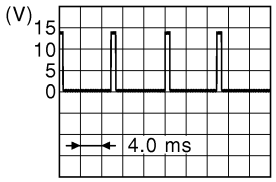
INFOID:0000000001722395

TERMINAL LAYOUT



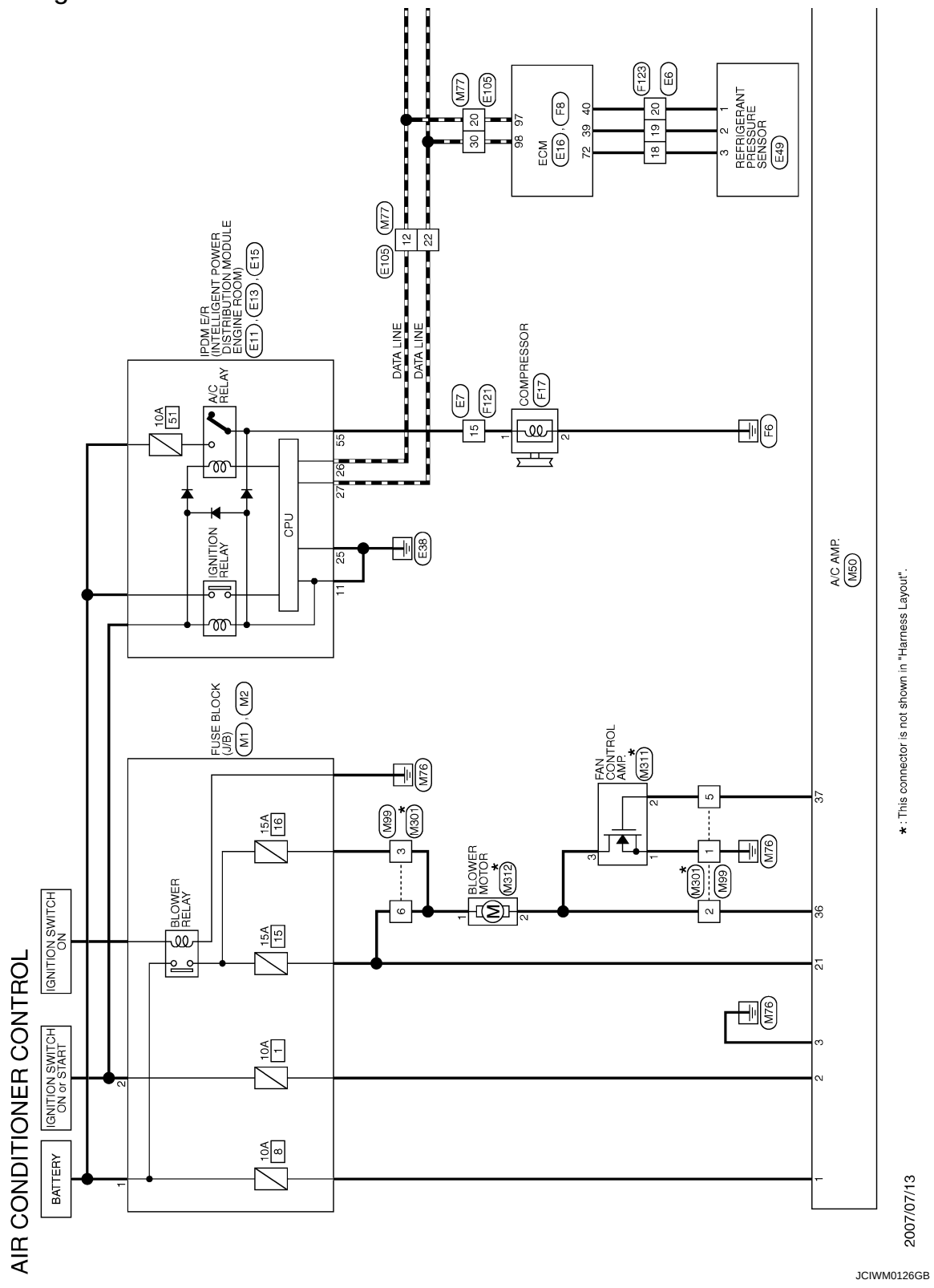
PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	–	Signal name	Input/ Output		
1 (LG)	Ground	Power supply for BATT	—	Ignition switch OFF	Battery voltage
2 (W)	Ground	Power supply for IGN	—	Ignition switch ON	Battery voltage
3 (B)	Ground	Ground	—	Ignition switch ON	0 V
16 (P)	Ground	Sensor ground	—	Ignition switch ON	0 V
17 (O)	Ground	Intake sensor	Input	—	—
18 (V)	Ground	LAN signal	—	—	 SJIA1453J
20 (GR)	Ground	Rear window defogger feed-back signal	Input	Rear window defogger switch: OFF	0 V
				Rear window defogger switch: ON	12 V
21 (Y)	Ground	Power supply from IGN 2	—	Ignition switch ON	Battery voltage
22 (G)	Ground	Power supply for each door motor	—	Ignition switch ON	Battery voltage
23 (GR)	Ground	Power supply for illumination	—	Light switch OFF	0 V
				Light switch ON	12 V
24 (SB)	Ground	Illumination ground	—	Light switch ON	0 V

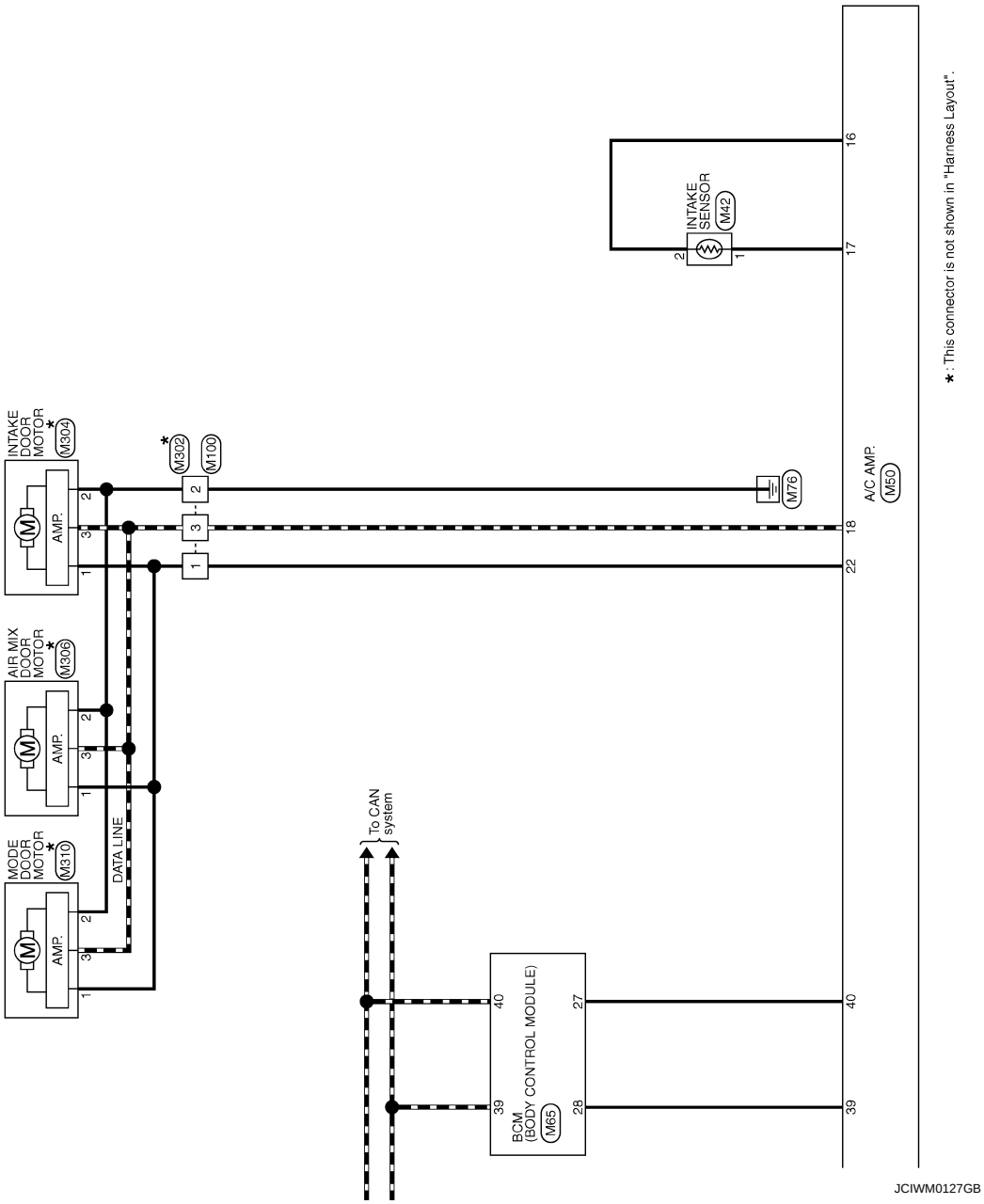
Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	–	Signal name	Input/ Output		
36 (R)	Ground	Blower motor feedback	Input	• Ignition switch ON • Blower speed: OFF	Battery voltage
				• Ignition switch ON • Blower speed: 1st	8.5 V
				• Ignition switch ON • Blower speed: 25th	0 V
37 (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
38 (SB)	Ground	Rear window defogger ON signal	Output	When rear window defogger switch is released.	12 V
				When rear window defogger switch is being pressed.	0 V
39 (LG)	Ground	Blower motor ON signal	Output	Fan control dial: OFF	 JSIIA0845GB
				Fan control dial: ON (Blower motor operate.)	0 V
40 (Y)	Ground	A/C (Compressor ON) signal	Output	Compressor OFF	 JPIIA0013GB
				Compressor ON	0 V

Wiring Diagram — AIR CONDITIONER CONTROL SYSTEM —

INFOID:0000000001722396

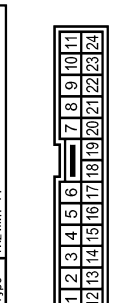


*: This connector is not shown in "Harness Layout".


INTAKE SENSOR
M42
INTAKE DOOR MOTOR
M304
AIR MIX DOOR MOTOR
M306
MODE DOOR MOTOR
M310
AMP.
M302
M100
M76
A/C AMP.
M50
DATA LINE
To CAN system
BCM (BODY CONTROL MODULE)
M65
16
17
18
22
40
39
27
28
✱: This connector is not shown in "Harness Layout".
JCIWM0127GB

AIR CONDITIONER CONTROL

Connector No.	E6
Connector Name	WIRE TO WIRE
Connector Type	TK24MW-1Y



Terminal No.	Color of Wire	Signal Name [Specification]
18	L	–
19	Y	–
20	W	–

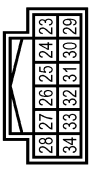
Connector No.	E7
Connector Name	WIRE TO WIRE
Connector Type	NS16MW-CS

Terminal No.	Color of Wire	Signal Name [Specification]
15	O	–

Connector No.	E11
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	M06FB-LC

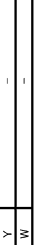
Terminal No.	Color of Wire	Signal Name [Specification]
11	B	–

Connector No.	E13
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH12FW-NH



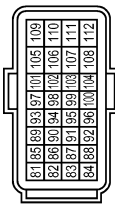
Terminal No.	Color of Wire	Signal Name [Specification]
25	B	–
26	P	–
27	L	–

Connector No.	E15
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS16FW-CS



Terminal No.	Color of Wire	Signal Name [Specification]
55	O	–

Connector No.	E16
Connector Name	ECM
Connector Type	MAA24FB-NMEAB-RH

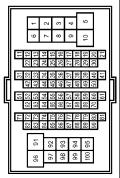


Terminal No.	Color of Wire	Signal Name [Specification]
97	P	VEHCAN-L
98	L	VEHCAN-H

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

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



Terminal No.	Color of Wire	Signal Name [Specification]
12	P	–
20	P	–
22	L	–
30	L	–

JCIWM0128GB

AIR CONDITIONER CONTROL

Connector No.	F8
Connector Name	ECM
Connector Type	MAA40FBR-MEA8-RH

Terminal No.	Color of Wire	Signal Name [Specification]
39	Y	PDPRES
40	W	GNDA-PDPRES
72	L	AVCC2-PDPSCVPOS

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

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

Connector No.	F17
Connector Name	COMPRESSOR
Connector Type	RH02FB

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

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

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

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

Terminal No.	Color of Wire	Signal Name [Specification]
15	Y	–

Connector No.	M42
Connector Name	INTAKE SENSOR
Connector Type	C02FW

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

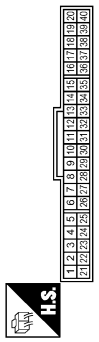
Connector No.	F123
Connector Name	WIRE TO WIRE
Connector Type	TK24FW-1V

Terminal No.	Color of Wire	Signal Name [Specification]
18	L	–
19	Y	–
20	W	–

JCIWM0129GB

AIR CONDITIONER CONTROL

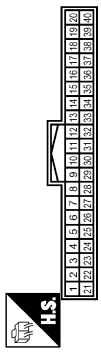
Connector No.	M50
Connector Name	A/C AMP.
Connector Type	SAB40FW



Terminal No.	Color of Wire	Signal Name [Specification]
1	LG	BAT
2	W	IGN
3	B	GND
16	P	SENS GND
17	O	INT SENS
18	V	COM(LAN SIG)
21	Y	IGN2
22	G	LAN PWR(VACTR)
36	R	FAN F./S
37	L	FAN GATE
39	LG	FAN ON

40	Y	COMP ON

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



Terminal No.	Color of Wire	Signal Name [Specification]
27	Y	AIRCON SW
28	LG	BLOWER FAN SW
39	L	CAN-H
40	P	CAN-L

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

Terminal No.	Color of Wire	Signal Name [Specification]
12	P	–
20	P	–
22	L	–
30	L	–

Connector No.	M99
Connector Name	WIRE TO WIRE
Connector Type	M06FW-LC

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

Connector No.	M100
Connector Name	WIRE TO WIRE
Connector Type	A03MW

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

Connector No.	M301
Connector Name	WIRE TO WIRE
Connector Type	M06MW-LC

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

Connector No.	M302
Connector Name	WIRE TO WIRE
Connector Type	A03FW

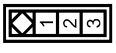
Terminal No.	Color of Wire	Signal Name [Specification]
1	W	–
2	B	–
3	V	–

JCIWM0130GB

AIR CONDITIONER CONTROL

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

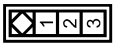
H.S.



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

Connector No.	M306
Connector Name	AIR MIX DOOR MOTOR
Connector Type	A03FW

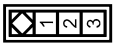
H.S.



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

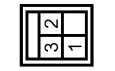
H.S.



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	–

JCIWM0131GB

SYMPTOM DIAGNOSIS

MANUAL AIR CONDITIONER SYSTEM

Diagnosis Chart By Symptom

INFOID:0000000001722399

Symptom	Reference	
A/C system does not activate.	Go to Trouble Diagnosis Procedure for A/C System.	HAC-38, "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-22, "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-24, "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-26, "Diagnosis Procedure"
Blower motor operation is malfunctioning.	Go to Trouble Diagnosis Procedure for Blower Motor.	HAC-28, "Diagnosis Procedure"
Magnet clutch does not engage.	Go to Trouble Diagnosis Procedure for Magnet Clutch.	HAC-32, "Diagnosis Procedure"
Insufficient cooling No cool air come out. (Air flow volume is normal)	Go to Trouble Diagnosis Procedure for Insufficient Cooling.	HAC-64, "Inspection procedure"
Insufficient heating No warm air come out. (Air flow volume is normal)	Go to Trouble Diagnosis Procedure for Insufficient Heating.	HAC-65, "Inspection procedure"
Noise	Go to Trouble Diagnosis Procedure for Noise.	HAC-67, "Inspection procedure"

INSUFFICIENT COOLING

Description

INFOID:0000000001722400

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

Inspection procedure

INFOID:0000000001722401

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-35, "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-35, "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-33, "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-15, "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-24, "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 >> END.
NO >> Repair or replace parts according to the inspection results.

INSUFFICIENT HEATING

Description

INFOID:0000000001722402

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

Inspection procedure

INFOID:0000000001722403

1.CHECK COOLING SYSTEM

1. Check engine coolant level and check for leakage. Refer to CO-9, "Inspection".
2. Check radiator cap. Refer to CO-13, "RADIATOR CAP : Inspection".
3. Check water flow sounds of engine coolant. Refer to CO-10, "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 >> END.
NO >> GO TO 3.

3.CHECK AIR MIX DOOR MOTOR

Check the air mix door motor. Refer to HAC-24, "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 VTL-38, "Exploded View".

Are the symptoms solved?

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

NOISE

Description

INFOID:0000000001722404

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

Inspection procedure

INFOID:0000000001722405

1.CHECK OPERATION

1. Operate the A/C system and check the operation. Refer to HAC-4, "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 >> END.

2.CHECK BLOWER MOTOR

1. Remove blower motor. Refer to VTL-36, "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 >> 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 >> 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 >> 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-15, "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:0000000003248391

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 AIRBAG” 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 the “SRS AIRBAG”.**
- **Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.**

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

INFOID:0000000003248392

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 knob 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.

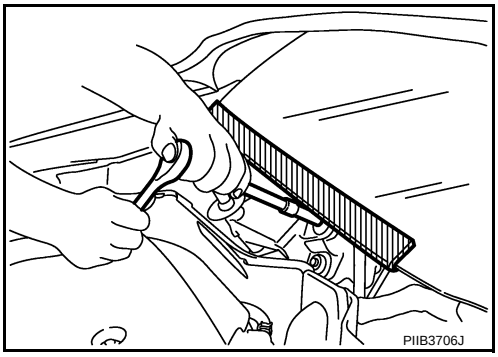
OPERATION PROCEDURE

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:0000000003248393

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:0000000003248394

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:0000000003248395

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:0000000003248396

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.**

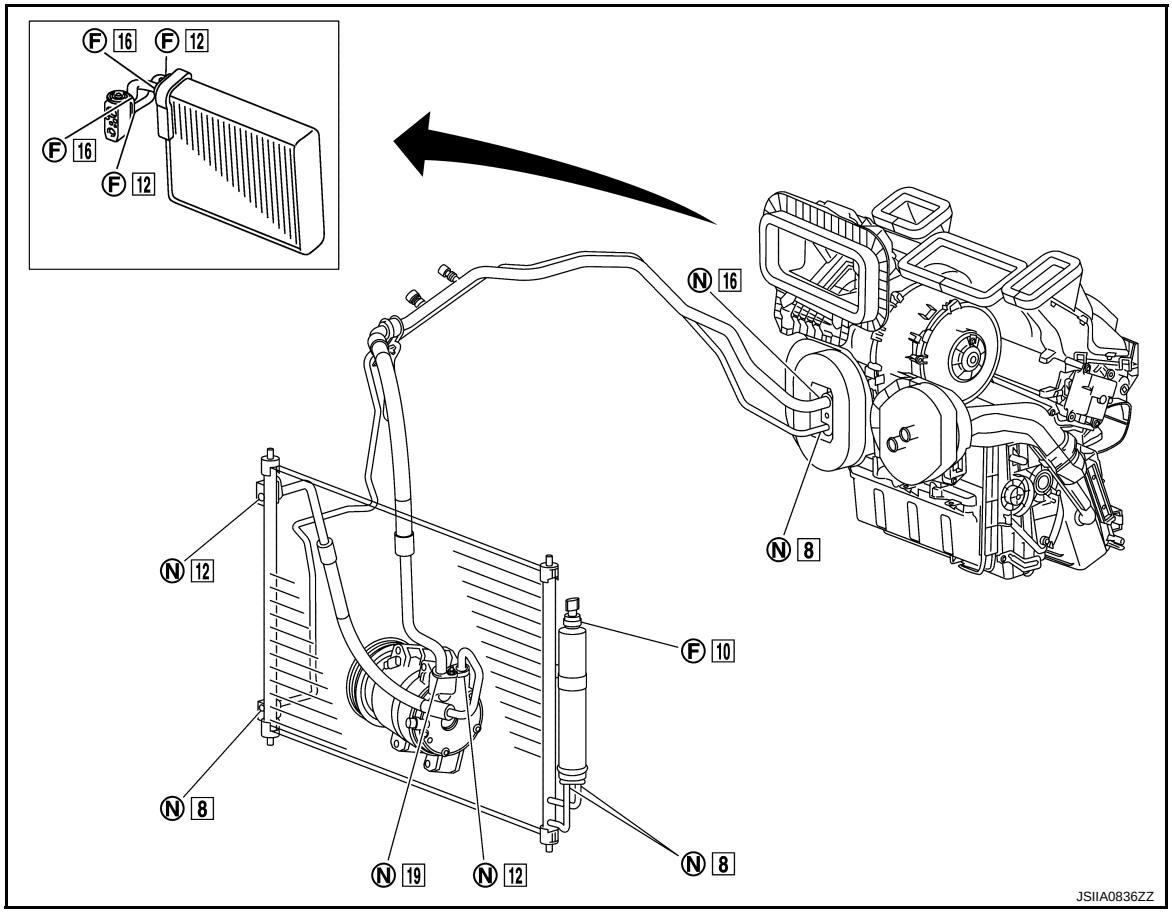
FOR USA AND CANADA : Refrigerant Connection

INFOID:0000000003248397

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.

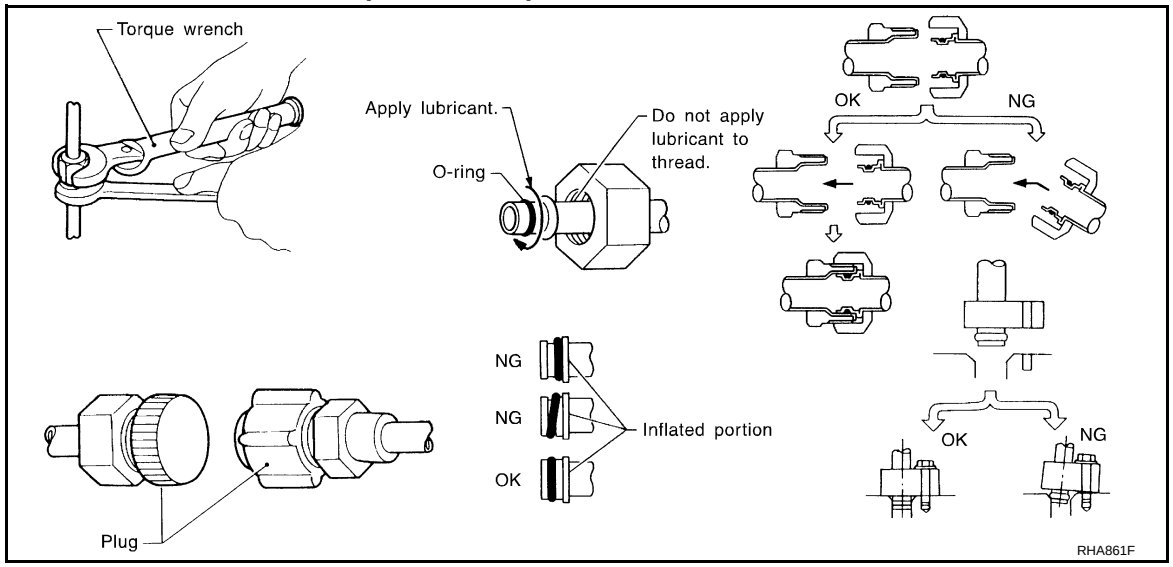
CAUTION:

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:0000000003248398

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

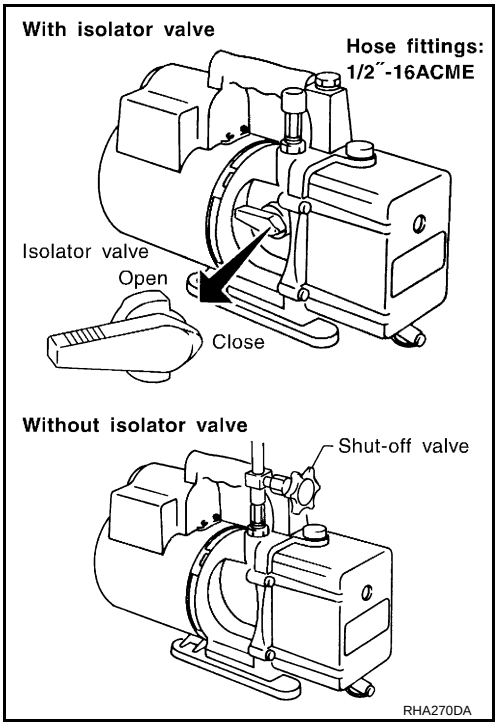
Be certain to follow the manufacturer's instructions for tester operation and tester maintenance.

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.

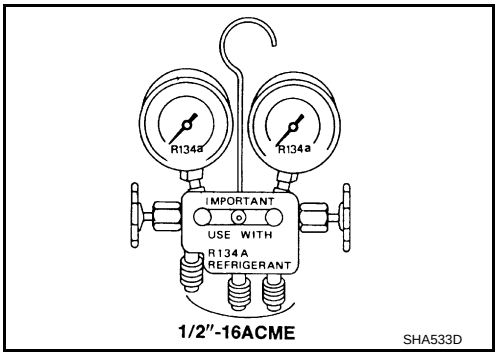
- Vacuum pumps usually have a manual isolator valve as part of the pump. Close this valve to isolate the service hose from the pump.
- Use a hose equipped with a manual shut-off valve near the pump end for pumps without an isolator. Close the valve to isolate the hose from the pump.
- Disconnect the 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.



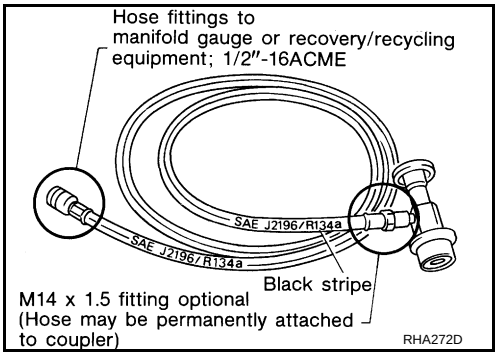
MANIFOLD GAUGE SET

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

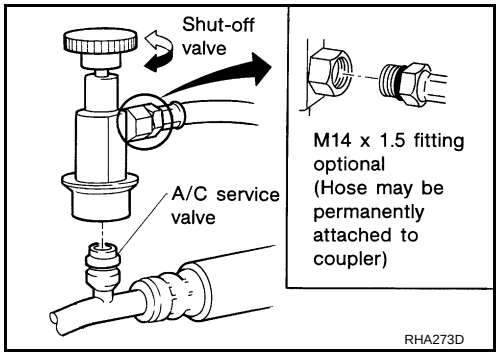
Be certain that the service hoses display the markings described (colored hose with black stripe). All hoses must equip positive shut-off devices (either manual or automatic) near the end of the hoses opposite to the manifold gauge.



SERVICE COUPLERS

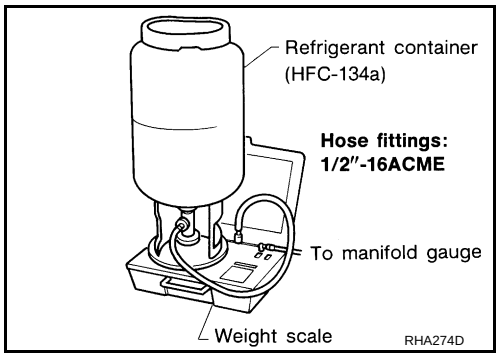
Never attempt to connect HFC-134a (R-134a) service couplers to a CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers do not properly connect to the CFC-12 (R-12) system. However, if an improper connection is attempted, discharging and contamination may occur.

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:0000000003248399

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 AIRBAG" 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 the "SRS AIRBAG".**
- **Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.**

FOR MEXICO : Precaution Necessary for Steering Wheel Rotation After Battery Disconnect

INFOID:0000000003248400

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 knob 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.

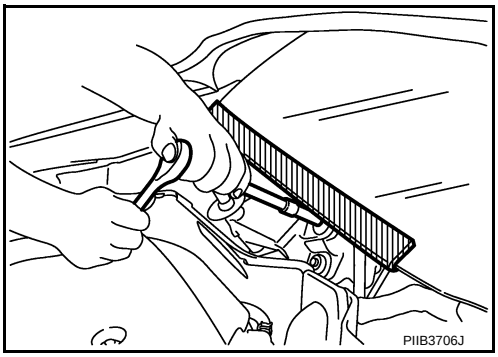
OPERATION PROCEDURE

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:0000000003248401

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:0000000003248402

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:0000000003248403

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:0000000003248404

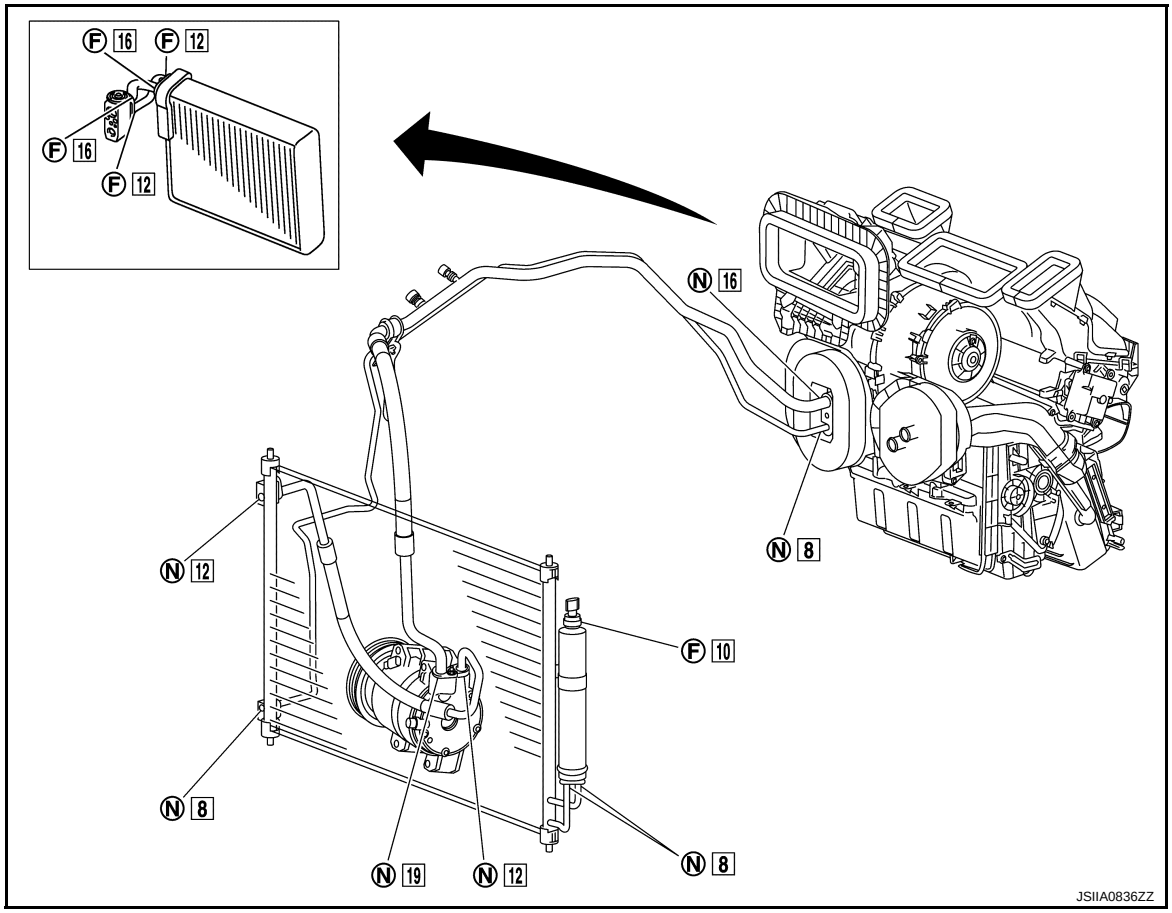
WARNING:
- **Never breath A/C refrigerant and lubricant vapor or mist. Exposure may irritate eyes, nose and throat. Use only approved recovery/recycling equipment to discharge HFC-134a (R-134a) refrigerant. Ventilate work area before resuming service if accidental system discharge occurs. Additional 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:0000000003248405

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.

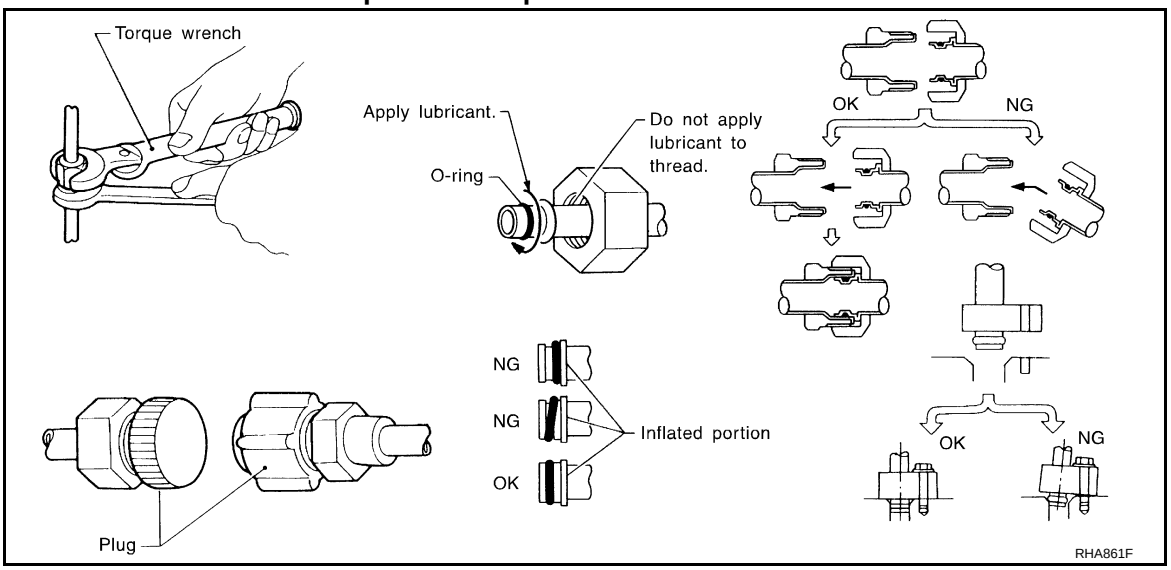
CAUTION:

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:0000000003248406

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

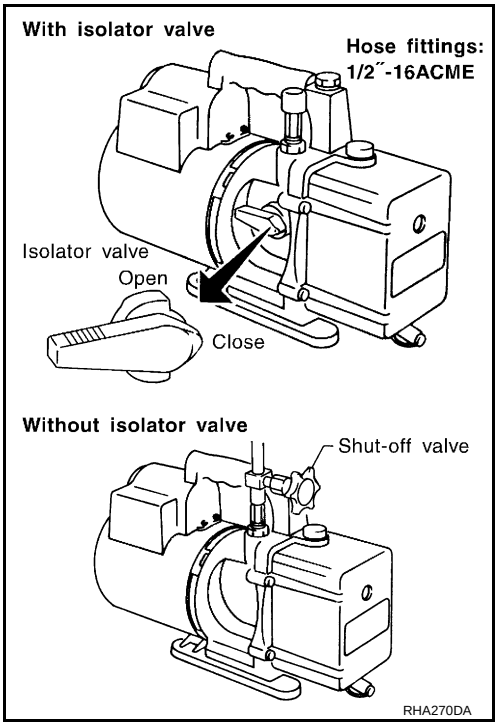
Be certain to follow the manufacturer's instructions for tester operation and tester maintenance.

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.

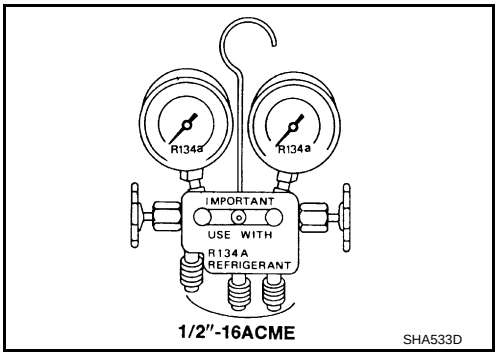
- Vacuum pumps usually have a manual isolator valve as part of the pump. Close this valve to isolate the service hose from the pump.
- Use a hose equipped with a manual shut-off valve near the pump end for pumps without an isolator. Close the valve to isolate the hose from the pump.
- Disconnect the 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.



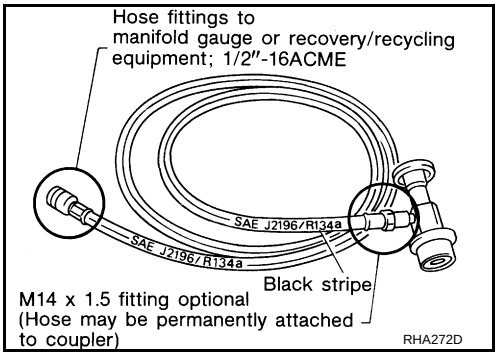
MANIFOLD GAUGE SET

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

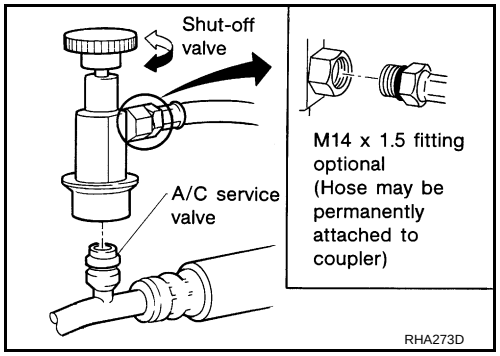
Be certain that the service hoses display the markings described (colored hose with black stripe). All hoses must equip positive shut-off devices (either manual or automatic) near the end of the hoses opposite to the manifold gauge.



SERVICE COUPLERS

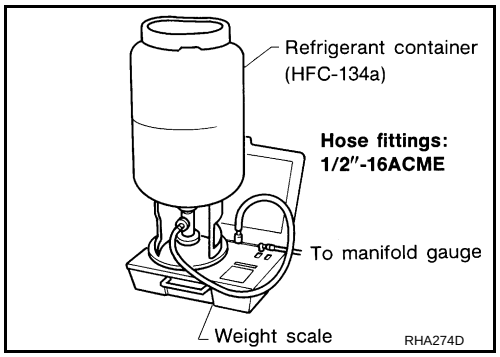
Never attempt to connect HFC-134a (R-134a) service couplers to a CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers do not properly connect to the CFC-12 (R-12) system. However, if an improper connection is attempted, discharging and contamination may occur.

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:0000000001825942

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-30, "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:0000000001825943

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.