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# **HEATER & AIR CONDITIONING CONTROL SYSTEM**

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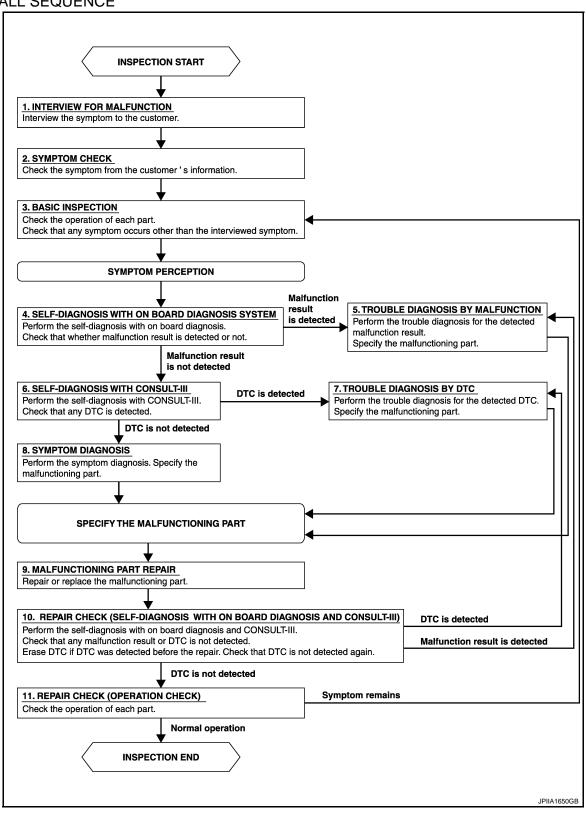
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## **BASIC INSPECTION**

## DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

### **OVERALL SEQUENCE**



**DETAILED FLOW** 

## DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

[AUTOMATIC AIR CONDITIONING]

## 1.INTERVIEW FOR MALFUNCTION

Interview the symptom to the customer.

>> GO TO 2.

## 2.SYMPTOM CHECK

Check the symptom from the customer's information.

>> GO TO 3.

## 3.BASIC INSPECTION

Check the operation of each part. Check that any symptom occurs other than the interviewed symptom.

>> GO TO 4.

## 4. SELF-DIAGNOSIS WITH ON BOARD DIAGNOSIS SYSTEM

Perform the self-diagnosis with on board diagnosis. Check that whether malfunction result is detected or not. Refer to HAC-26, "Diagnosis Description".

#### Is any malfunction result detected?

YES >> GO TO 5.

NO >> GO TO 6.

## 5. TROUBLE DIAGNOSIS BY MALFUNCTION

Perform the trouble diagnosis for the detected malfunction result. Specify the malfunction part.

>> GO TO 6.

## 6.SELF-DIAGNOSIS WITH CONSULT-III

Perform the self-diagnosis with CONSULT-III. Check that any DTC is detected.

#### Is any DTC detected?

YES >> GO TO 7.

NO >> GO TO 8.

## 7. TROUBLE DIAGNOSIS BY DTC

Perform the trouble diagnosis for the detected DTC. Specify the malfunctioning part.

>> GO TO 8.

## 8.SYMPTOM DIAGNOSIS

Perform the symptom diagnosis. Specify the malfunctioning part.

>> GO TO 9.

## 9. MALFUNCTION PART REPAIR

Repair or replace the malfunctioning part.

>> GO TO 10.

## 10.REPAIR CHECK (SELF-DIAGNOSIS WITH ON BOARD DIAGNOSIS AND CONSULT-III)

Perform the self-diagnoses with on board diagnosis and CONSULT-III. Check that any DTC or malfunction result is not detected. Erase DTC if DTC is detected before the repair. Check that DTC is not detected again.

### Is any or malfunction result or DTC detected?

YES-1 >> If malfunction result is detected, GO TO 5.

YES-2 >> If DTC is detected, GO TO 7.

NO >> GO TO 11.

## **DIAGNOSIS AND REPAIR WORK FLOW**

< BASIC INSPECTION >

[AUTOMATIC AIR CONDITIONING]

11		
-11.	REPAIR CHECK	(OPERATION CHECK)

Check the operation of each part.

Does it operate normally?

YES >> INSPECTION END

NO >> GO TO 3.

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## **INSPECTION**

## **Description & Inspection**

INFOID:0000000005490027

#### DESCRIPTION

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

#### Check condition : Engine running at normal operating temperature.

## 1. CHECK MEMORY FUNCTION

- 1. Start the engine.
- 2. Set the temperature to 32°C (90°F) by operating the temperature control switch.
- 3. Press OFF switch.
- 4. Turn ignition switch OFF.
- 5. Turn ignition switch ON.
- 6. Press AUTO switch.
- 7. Check that the set temperature is maintained.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Memory function malfunction. Refer to <a href="HAC-140">HAC-140</a>, "Inspection Procedure".

## 2.CHECK BLOWER MOTOR

- 1. Start the engine.
- 2. Operate the fan control switch. Check that the fan speed changes. Check the operation for all fan speeds.
- 3. Leave blower on maximum speed.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Blower motor system malfunction. Refer to <u>HAC-56</u>, "<u>Diagnosis Procedure</u>".

# 3. CHECK DISCHARGE AIR

- 1. Operate MODE switch and DEF switch to each position.
- Check that the air outlets change according to each indicated air outlet by placing a hand in front of the outlets. Refer to <u>VTL-2</u>, "System <u>Description"</u>.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Mode door system malfunction. Refer to <a href="HAC-49">HAC-49</a>, "Diagnosis Procedure".

## 4. CHECK INTAKE AIR

- 1. Press REC switch to set the air outlet to recirculation.
- The REC indicator turns ON.
- 3. Listen to intake sound and confirm air inlets change.
- 4. Press FRE switch again to set the air outlet to fresh air intake.
- 5. The FRE indicator turns ON.
- Listen to intake sound and confirm air inlets change.

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Intake door system malfunction. Refer to <u>HAC-52</u>, "<u>Diagnosis Procedure</u>".

## 5.CHECK A/C SWITCH

- 1. Press the A/C switch.
- Check that the indicator of the A/C switch turns ON. Check visually and by sound that the compressor operates.
- Press the A/C switch again.
- Check that the indicator of the A/C switch turns OFF. Check that the compressor stops.

## Is the inspection result normal?

YES >> GO TO 6.

NO >> Magnet clutch system malfunction. Refer to HAC-61, "Diagnosis Procedure".

## INSPECTION

### < BASIC INSPECTION >

### [AUTOMATIC AIR CONDITIONING]

# 6. CHECK DISCHARGE AIR TEMPERATURE

Operate the temperature control switch. Check that the discharge air temperature changes.

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Air mix door system malfunction. Refer to HAC-46, "Diagnosis Procedure".

## 7. CHECK TEMPERATURE DECREASE

- 1. Operate the compressor.
- 2. Operate the temperature control switch to lower temperature setting at 18°C (60°F).
- 3. Check that the cool air blows from the outlets.

#### Is the inspection result normal?

YES >> GO TO 8.

NO >> Insufficient cooling. Refer to <u>HAC-135</u>, "<u>Diagnosis Procedure</u>".

## 8. CHECK TEMPERATURE INCREASE

- 1. Turn temperature control switch to raise temperature setting at 32°C (90°F) after warming up the engine.
- 2. Check that warm air blows from outlets.

### Is the inspection result normal?

YES >> GO TO 9.

NO >> Insufficient heating. Refer to <u>HAC-137</u>, "<u>Diagnosis Procedure</u>".

## 9. CHECK AUTO MODE

- 1. Press AUTO switch to confirm that "AUTO" is indicated on the display.
- Operate the temperature control switch to check that the fan speed or air outlet changes (the air flow temperature or fan speed varies depending on the ambient temperature, in-vehicle temperature, and set temperature).

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Refer to <u>HAC-134</u>, "<u>Diagnosis Chart By Symptom</u>" and perform the appropriate diagnosis.

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## AUXILIARY MECHANISM

## **Temperature Setting Trimmer**

INFOID:0000000005490028

#### DESCRIPTION

If the temperature felt by the customer is different than the air flow temperature controlled by the temperature setting, the A/C auto amp. control temperature can be adjusted to compensate for the temperature setting.

### **OPERATING PROCEDURES**

- 1. Begin self-diagnosis STEP 5 mode. Refer to HAC-26, "Diagnosis Description".
- Press fan control switch (up: +) to enter the set temperature setting trimmer mode from STEP 5, and then display shows "0°C (0°F)".
- The indication temperature will be changed by 1°C (1°F) in range of −3°C (−6°F) to +3°C (+6°F) by pressing the temperature control switch each time.

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Temperature control switch operation	Display	Correction (°F)
▲ 6 time pressing	6 +6	
▲ 5 time pressing	5	+5
▲ 4 time pressing	4	+4
▲ 3 time pressing	3	+3
▲ 2 time pressing	2	+2
▲ 1 time pressing	1	+1
Initial status	0	0
▼ 1 time pressing	AUTO 1	-1
▼ 2 time pressing	AUTO 2	-2
▼ 3 time pressing	AUTO 3	-3
▼ 4 time pressing	AUTO 4	-4
▼ 5 time pressing	AUTO 5	-5
▼ 6 time pressing	AUTO 6	-6
Canada models		
Temperature control switch operation	Display	Correction (°C)
▲ 3 time pressing	3	+3
▲ 2 time pressing	2	+2
▲ 1 time pressing	1	+1
Initial status	0	0
▼ 1 time pressing	AUTO 1	-1
▼ 2 time pressing	AUTO 2	-2
▼ 3 time pressing	AUTO 3	-3

## NOTE:

- When -3°C (-6°F) is corrected on the temperature setting set as 25°C (75°F), the temperature controlled by A/C auto amp. is 25°C (75°F) 3°C (6°F) = 22.0°C (69°F) and the temperature becomes lower than the temperature setting.
- When the battery cable is disconnected from the negative terminal or when the battery voltage becomes 10
  V or less, the setting of the difference between the set temperature and control temperature may be cancelled.

## **AUXILIARY MECHANISM**

### < BASIC INSPECTION >

[AUTOMATIC AIR CONDITIONING]

## **Inlet Port Memory Function**

INFOID:0000000005490029

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## **DESCRIPTION**

- Inlet port setting can be memorized when ignition switch is turned OFF.
- Inlet port setting can be selected from FRE (fresh air intake), REC (recirculation), or "Do not perform the memory" when ignition switch is turned ON.

### OPERATING PROCEDURES

- Begin self-diagnosis STEP 5 mode. Refer to HAC-26, "Diagnosis Description".
- 2. Press fan control switch (up: +) two times to change the mode to the temperature setting trimmer from self-diagnosis STEP 5, and then the display shows "70".
- 3. The setting of inlet port memory function can be selected from "70" to "73" by pressing the FRE switch.

EDE switch operation	FRE switch operation Display	Memory function		
TINE SWILCH OPERATION		Manual REC	Manual FRE	
_	70 <sup>*</sup>	Shall be memorized	Shall not be memorized	
1 time pressing	71	Shall not be memorized	Shall not be memorized	
2 time pressing	72	Shall be memorized	Shall be memorized	
3 time pressing	73	Shall not be memorized	Shall be memorized	

<sup>\*:</sup> Initial status

#### NOTE:

- When FRE switch is pressed four times, display shows "70" again.
- When the battery cable is disconnected from the negative terminal or when the battery voltage becomes 10 V or less, the setting of the inlet port memory function may be cancelled.

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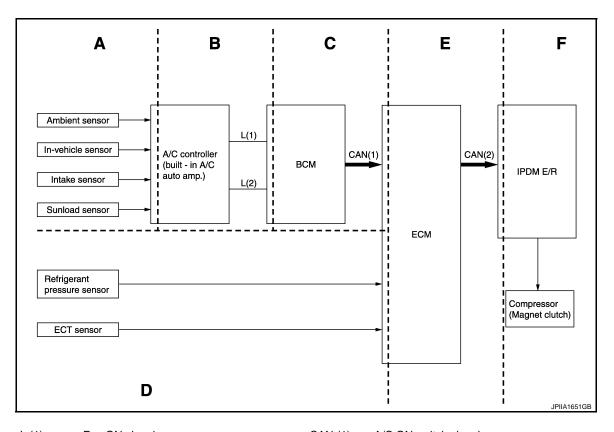
# SYSTEM DESCRIPTION

## **COMPRESSOR CONTROL FUNCTION**

Description INFOID:000000005490030

## PRINCIPLE OF OPERATION

Functional Circuit Diagram



L (1) : Fan ON signal CAN (1) : A/C ON switch signal : Blower fan ON signal

L (2) : A/C switch signal CAN (2) : A/C compressor request signal

## **Functional Initial Inspection Chart**

x: Applicable

Control unit	A Diagnosis item				Loc	ation		
Control unit	Diag	nosis item	Α	В	С	D	Е	F
A/C auto amp.	On board self-diagnosis		×	_	_	_	_	_
BCM	©"DCM AID COND"	Self-diagnosis	_	_	×	_	_	_
BCIVI	"BCM-AIR COND"	Data monitor	_	×	_	_	_	_
ECM (F) "ENGINE"	Self-diagnosis (CAN communication line)		_	_	_	×	_	
		Data monitor	_	_	×	×	_	_
IPDM E/R		Self-diagnosis (CAN communication line)		_	_	_	_	×
		Data monitor	_	_	_	_	×	_
	Auto active test			_	_	_	_	×

## **Component Parts Location**

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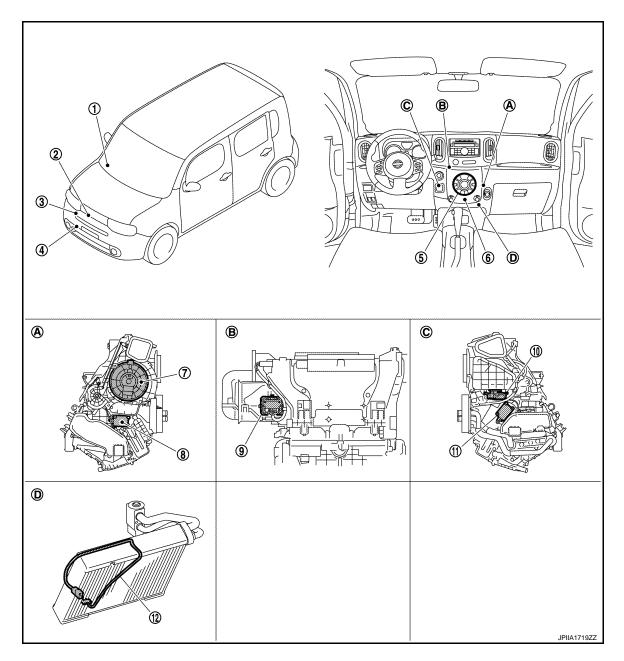
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- 1. Sunload sensor
- 4. Refrigerant pressure sensor
- Blower motor
- 10. Intake door motor
- A. Located in the right side of A/C unit assembly
- D. Located on the evaporator
- Ambient sensor
- 5. A/C control (A/C auto amp.)
- 8. Mode door motor
- 11. Air mix door motor
- Located in the back of A/C unit assembly
- Magnet clutch
- In-vehicle sensor
- Power transistor
- 12. Intake sensor
- C. Located in left side of A/C unit assembly

## Component Description

INFOID:0000000005490032

Component	Description
Sunload sensor	HAC-43, "Description"
Ambient sensor	HAC-35, "Description"

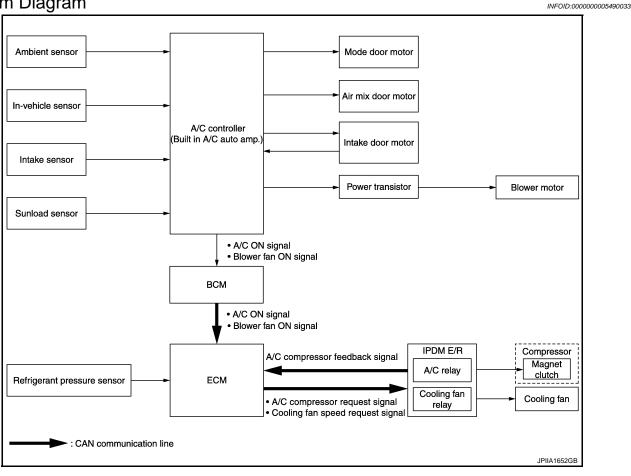
## **COMPRESSOR CONTROL FUNCTION**

## < SYSTEM DESCRIPTION >

## [AUTOMATIC AIR CONDITIONING]

Component	Description
Magnet clutch	HAC-61, "Description"
Refrigerant pressure sensor	EC-415, "Description"
A/C control (A/C auto amp.)	HAC-70. "Description"
In-vehicle sensor	HAC-38, "Description"
Blower motor	HAC-56, "Description"
Air mix door motor	HAC-46, "Description"
Power transistor	HAC-56, "Description"
Intake sensor	HAC-41, "Description"
Mode door motor	HAC-49, "Description"
Intake door motor	HAC-52, "Description"

System Diagram



## System Description

**OUTLINE** 

Automatic air conditioner system is controlled by each function of A/C auto amp., ECM, BCM and IPDM E/R.

Control by A/C auto amp.

- Air outlet control
- Temperature control
- Air inlet control
- Air flow control
- Compressor control
- Door motor control (LCU communication control)

Control by BCM

- Compressor control

Control by ECM

- Cooling fan control. Refer to <u>EC-61, "System Description"</u>.
- Air conditioning cut control. Refer to EC-45, "System Description".
- Compressor control

Control by IPDM E/R

- Relay control. Refer to <u>PCS-4, "System Description"</u> (WITH I-KEY) or <u>PCS-35, "System Description"</u> (WITH-OUT I-KEY).
- Cooling fan control. Refer to <u>PCS-4, "System Description"</u> (WITH I-KEY) or <u>PCS-35, "System Description"</u> (WITHOUT I-KEY).
- Each A/C system can be operated by A/C controller (built-in A/C auto amp.).

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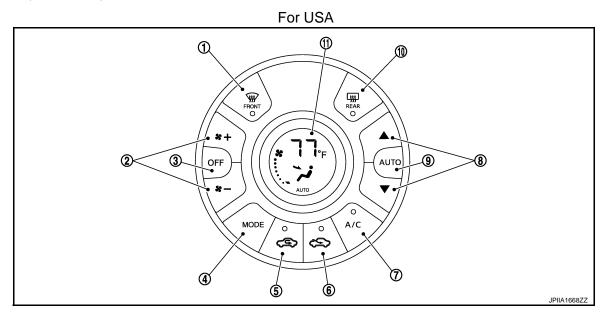
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## **OPERATION**

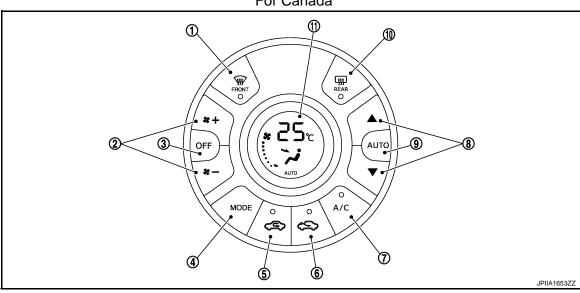
Controller (A/C Control)



- DEF switch
- MODE switch
- A/C switch 7.
- 10. Rear window defogger switch
- Fan control switch
- 5. **REC** switch
- 8. Temperature control switch
- 11. A/C display

- OFF switch
- 6. FRE switch
- 9. **AUTO** switch

## For Canada



- DEF switch
- MODE switch 4.
- 7. A/C switch
- 10. Rear window defogger switch
- Fan control switch 2.
- 5. **REC** switch
- 8. Temperature control switch
- 11. A/C display

- OFF switch 3.
- FRE switch 6.
- 9. **AUTO** switch

Switch Operation

< SYSTEM DESCRIPTION >

## [AUTOMATIC AIR CONDITIONING]

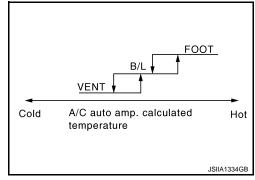
	<ul> <li>DEF switch indicator is turned ON ⇔ OFF by pressing DEF switch each time.</li> <li>When DEF switch is operated while air conditioner system is activated, the system becomes the</li> </ul>
	following states Compressor: ON
	<ul> <li>Air inlet: Fresh air intake</li> <li>Blower fan: Auto control (if blower fan is set to manual mode before pressing DEF switch, it be-</li> </ul>
	comes manual mode) - When DEF mode set to OFF, air conditioner system returns previous condition which is set to DEF
DEF switch	<ul> <li>when DEF switch is operated while air conditioner system is inactivation, the system becomes the following states.</li> <li>Air conditioner system: ON</li> </ul>
	- Compressor: ON - Air inlet: Fresh air intake
	<ul> <li>Blower fan: Auto control</li> <li>When DEF mode set to OFF, all air conditioner system is OFF.</li> </ul>
	NOTE:
	When DEF mode is set to ON during auto control of air conditioner system, the system becomes manual control.
	Fan speed is selected within a range between 1st – 7th speed by pressing this switch.  NOTE:
an control switch	<ul> <li>When air conditioner system is OFF, air conditioner system is set to ON by pressing this switch.</li> <li>When fan control switch is operated during auto control of air conditioner system, the system becomes manual mode.</li> </ul>
	<ul> <li>Air conditioner system is turned OFF by pressing this switch.</li> <li>When the air conditioner system becomes OFF, air inlet and outlet are set as follows:</li> </ul>
OFF switch	<ul><li>- Air inlet: FRE (except REC is manually selected)</li><li>- Air outlet: FOOT</li></ul>
	<ul> <li>Mode position is changed in order of VENT ⇒ B/L ⇒ FOOT ⇒ D/F ⇒ VENT by operating this switch each time.</li> </ul>
	When D/F is selected while blower motor is activated, air conditioner system becomes the following states.
Node switch	- Compressor: ON - Air inlet: Fresh air intake
	NOTE:
	When MODE switch is operated during auto control of air conditioner system, the system becomes manual mode.
	Air inlet is selected to recirculation (REC) by pressing this switch.  • REC indicator ON
	FRE indicator OFF NOTE:
REC switch	Even if the air conditioner system is OFF, air inlet can be selected.
	<ul> <li>When mode position is D/F or DEF, recirculation (REC) cannot be selected.</li> <li>When REC switch is selected, the compressor is turned ON.</li> </ul>
	<ul> <li>When REC indicator is ON, pressing the REC switch for approximately 1.5 seconds or more, and then the FRE and REC switch indicators blink twice and the system is switched to the automatic control.</li> </ul>
	Air inlet is selected to fresh air intake (FRE) by pressing this switch.  • FRE indicator: ON  • REC indicator: OFF
	NOTE:
RE switch	<ul> <li>Even if the air conditioner system is OFF, air inlet can be selected.</li> <li>When mode position is D/F or DEF, air inlet is set to FRE forcibly.</li> <li>When FRE indicator is ON, pressing the FRE switch for approximately 1.5 seconds or more, and</li> </ul>
	then the FRE and REC switch indicators blink twice and the system is switched to the automatic control.
	Setting temperature is selected within a range between 18°C (60°F) – 32°C (90°F) by pressing this switch.
emperature control	• ▲ : Increase
witch	• ▼ : Decrease
	<b>NOTE:</b> Even if air conditioner system is OFF, setting temperature can be selected by pressing these switch

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A/C switch	The compressor control (switch indicator) is turned between ON ⇔ OFF by pressing this switch each time only when blower fan is activated.  NOTE:  • When blower fan is inactivation, compressor control can not be turned ON.  • When mode position is D/F or DEF, A/C switch is turned ON forcibly.
Rear window defogger switch	Rear window defogger (switch indicator) is turned between ON ⇔ OFF by pressing this switch each time.  Rear window defogger system details. Refer to DEF-4, "System Description".

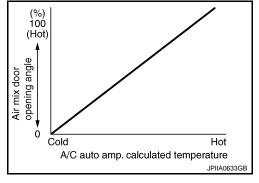
#### AIR OUTLET CONTROL

- While air outlet is in automatic control, A/C auto amp. selects the mode door position depending on a target air mix door angle and outlet air temperature calculated from sunload.
- If ambient temperature is excessively low, D/F is selected to prevent windshield fogging when air outlet is set to FOOT.



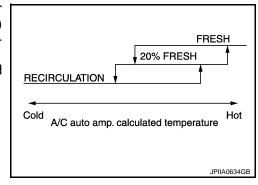
### TEMPERATURE CONTROL

- When ignition switch is in the ON position, A/C auto amp. always automatically controls temperature regardless of air conditioner operational state.
- A/C auto amp. calculates the target air mix door opening angle depending on set temperature, in-vehicle temperature, ambient temperature, and sunload.
- Air mix door is controlled depending on the comparison of current air mix door opening angle and target air mix door opening angle.
- Regardless of in-vehicle temperature, ambient temperature, and sunload, air mix door is fixed at the fully cold position when set temperature is 18°C (60°F), and at the fully hot position when set temperature is 32°C (90°F).



#### AIR INLET FUNCTION

- While air inlet is in automatic control, A/C auto amp. selects air inlet (fresh air intake, 20% fresh air intake, or recirculation) depending on set temperature, in-vehicle temperature, and ambient temperature.
- Air inlet is fixed to 80% FRE, only when the conditions are satisfied as follows:
- Air inlet is FOOT or D/F
- Ambient temperature is 2°C (36°F) or less
- Maximum fan speed



#### AIR FLOW CONTROL

#### Description

- A/C auto amp. changes duty ratio of blower motor drive signal and controls air flow continuously. When air flow is increased, duty ratio of blower motor drive signal gradually increases to prevent a sudden increase in air flow.
- In addition to manual control and automatic control, air flow control is compose of starting fan speed control, low coolant temperature starting control, high in-vehicle temperature starting control, and blower speed control at door motor operation.

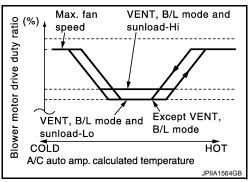
#### Automatic Air Flow Control

A/C auto amp. decides target air flow depending on target air mix door opening angle.

## < SYSTEM DESCRIPTION >

## [AUTOMATIC AIR CONDITIONING]

- A/C auto amp. changes duty ratio of blower motor drive signal and controls air flow continuously so that air flow matches to target air flow.
- When air outlet is VENT or B/L, the minimum air flow is changed depending on sunload.

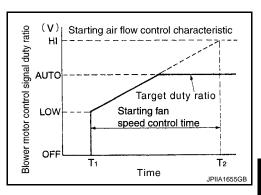


#### Starting Fan Speed Control

When blower motor is activated, A/C auto amp. gradually increases duty ratio of blower fan drive signal to prevent a sudden increase in discharge air flow.  $(T_1 - T_2 = approximately 10 seconds)$ 

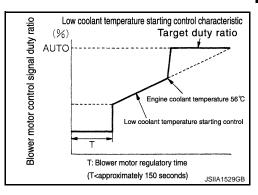
#### NOTE:

Do not perform the starting air flow control when the discharge outlet is set to DEF.



#### Low Coolant Temperature Starting Control

If the engine coolant temperature is 56°C (133°F) or less, to prevent a cold discharged air flow, A/C auto amp. suspends blower motor activation for the maximum 150 seconds depending on target air mix door opening angle. After this, blower fan drive signal is increased gradually, and blower motor is activated.



#### Fan speed Control at Door Motor Operation

When mode door motor is activated while air flow is more than the specified value, A/C auto amp. reduces temporarily fan speed so that mode door moves smoothly.

#### High In-vehicle Temperature Starting Control

When evaporator temperature is high [intake air temperature sensor value is 35°C (95°F) or more], to prevent a hot discharged air flow, A/C auto amp. suspends blower motor activation for approximately 3 seconds so that evaporator is cooled by refrigerant.

#### COMPRESSOR CONTROL

### Description

- When the compressor activation condition is satisfied while blower motor is activated, A/C auto amp. transmits A/C ON signal and blower fan ON signal to BCM.
- BCM transmits A/C ON signal and blower fan ON signal to ECM via CAN communication.
- ECM judges that the compressor can be activated depending on each sensors state (refrigerant pressure sensor signal, throttle opening angle sensor signal, and others). And transmits A/C relay control signal to IPDM E/R via CAN communication.
- IPDM E/R turns A/C relay ON and activates the compressor depending on request from ECM.

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Compressor Protection Control at Pressure Malfunction

When high-pressure side value that is detected by refrigerant pressure sensor is as per the following state, ECM requests IPDM E/R to turn A/C relay OFF and stops the compressor.

- 3.12 MPa (31.8 kg/cm<sup>2</sup>, 452 psi) or more (When the engine speed is less than 1,500 rpm)
- 2.74 MPa (27.9 kg/cm<sup>2</sup>, 397 psi) or more (When the engine speed is 1,500 rpm or more)
- 0.14 MPa (1.4 kg/cm<sup>2</sup>, 20 psi) or less

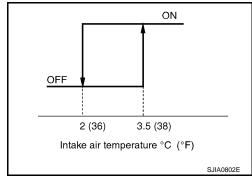
### Compressor Oil Circulation Control

When the engine starts while the engine coolant temperature is 56°C (133°F) or less, ECM activates the compressor for approximately 6 seconds and circulates the compressor lubricant once.

### Low Temperature Protection Control

When intake sensor detects that evaporator surface temperature is 2°C (36°F) or less, A/C auto amp. requests ECM to turn the compressor OFF, and stops the compressor.

When the air temperature returns to 3.5°C (38°F) or more, the compressor is activated.



#### Operating Rate Control

When set temperature is other than fully cold or air outlet is "VENT", "B/L" or "FOOT" A/C auto amp. controls the compressor activation depending on ambient temperature.

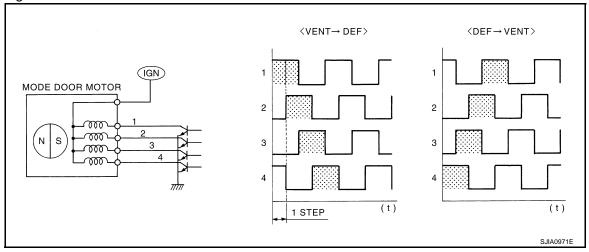
#### Air Conditioner Cut Control

When the engine is running in excessively high load condition, ECM requests IPDM E/R to turn A/C relay OFF, and stops the compressor. Refer to EC-45, "System Description" for details.

#### DOOR MOTOR CONTROL

#### Mode Door Motor

The A/C auto amp. receives data from each sensors. When a drive signal is input from A/C auto amp. to door motor, a step motor built into the door motor rotates according to the drive signal, and then stops at the position of target door.

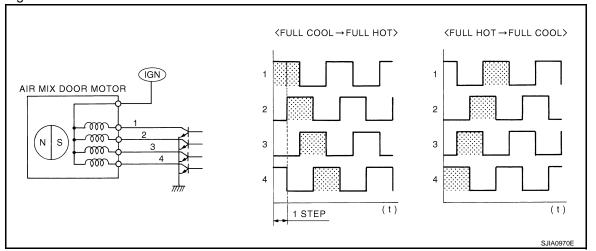


Air Mix Door Motor

## < SYSTEM DESCRIPTION >

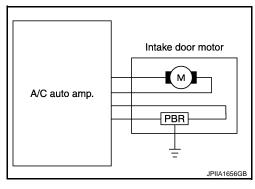
## [AUTOMATIC AIR CONDITIONING]

The A/C auto amp. receives data from each sensors. When a drive signal is input from A/C auto amp. to door motor, a step motor built into the door motor rotates according to the drive signal, and then stops at the position of target door.



Intake Door Motor

The A/C auto amp. receives data from each sensor, and converts them to control signal. The A/C auto amp. sends the control signal to Intake door motor. When intake door motor receives the control signal, intake door is moved to appropriate position by PBR opening angle indication signal.



SWITCHES AND THEIR CONTROL FUNCTIONS

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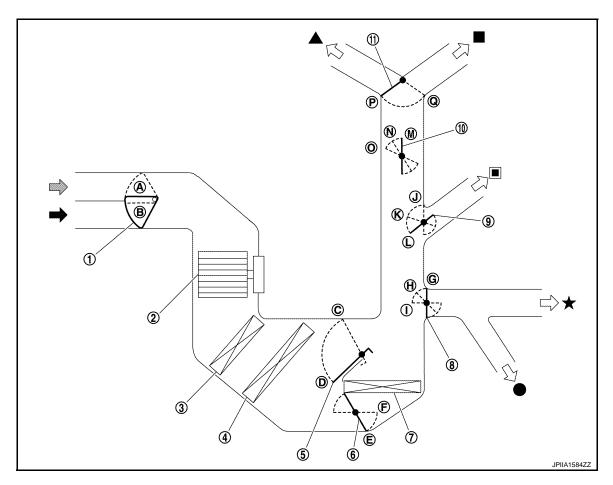
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- 1. Intake door
- 4. Evaporator
- 7. Heater core
- 10. Sub defroster door
- Fresh air intake
- Center ventilator
- Rear foot

- 2. Blower motor
- 5. Upper air mix door
- 8. Foot door
- 11. Center ventilator and defroster door
- ← Recirculation air
- Side ventilator

- 3. In-cabin microfilter
- 6. Lower air mix door
- 9. Side ventilator door
- Defroster
- **★** Foot

		Door position						
Switch բ	position	Center ventilator and defroster door	Sub defroster door	Side ventilator door	Foot door	Intake door	Upper air mix door	Lower air mix door
AUTO switch	AUTO				AUTO	1	I	

< SYSTEM DESCRIPTION >

## [AUTOMATIC AIR CONDITIONING]

						Door position						
Switch position		Center ventilator and defroster door	Sub defroster door	Side ventilator door	Foot door	Intake door	Upper air mix door	Lower air mix door				
	•	j	Р	М	L	G						
MODE switch	<b>3</b>	К	Н									
WODE SWIGH	•	j		0		1	_		l			
	9	į	Q	N	J						_	_
DEF switch	<b>(4)</b>	*		М		G						
REC switch*	Œ	*					А					
FRE switch*	0	*					В					
		cold (60°F)	_	_	_		_		D	E		
Temperature con- trol switch	19°C - (61°F -	- 31°C - 89°F)					_	AUTO	AUTO			
		hot (90°F)						С	F			
OFF switch	OI	FF	Q	0	J	G	В	_	_			

<sup>\*:</sup> Inlet status is displayed by indicator during activating automatic control

## AIR DISTRIBUTION

	Discharge air flow				
Made position indication		Air outlet/o	distribution		
Mode position indication	Ventilator	Front foot	Rear foot	Defroster	
*;	100%	_	_	_	
Ÿ	57%	29%	14%	_	
ų,	19%	44%	19%	18%	
₩;	17%	40%	17%	26%	
₩	18%	_	_	82%	

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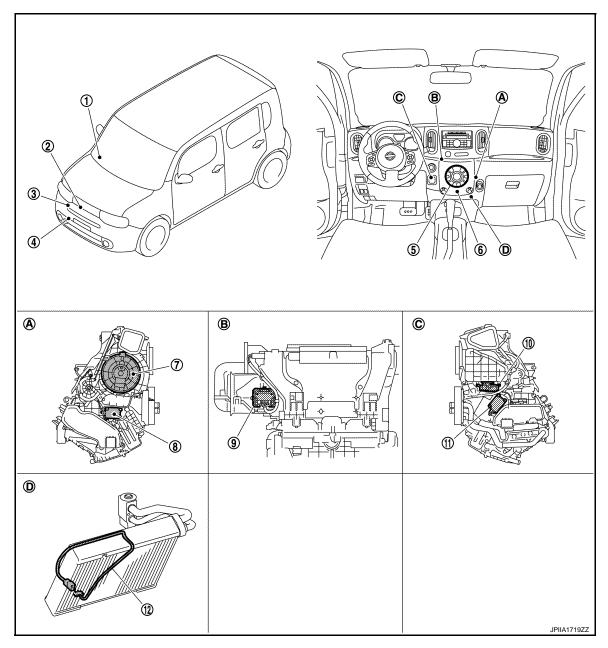
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## **Component Parts Location**

INFOID:0000000005490035



- 1. Sunload sensor
- 4. Refrigerant pressure sensor
- 7. Blower motor
- 10. Intake door motor
- A. Located in the right side of A/C unit assembly
- D. Located on the evaporator
- 2. Ambient sensor
- 5. A/C control (A/C auto amp.)
- 8. Mode door motor
- 11. Air mix door motor
- B. Located in the back of A/C unit assembly
- Magnet clutch
- 6. In-vehicle sensor
- Power transistor
- 12. Intake sensor
- Located in left side of A/C unit assembly

## Component Description

INFOID:0000000005490036

Component	Description
Sunload sensor	HAC-43, "Description"
Ambient sensor	HAC-35, "Description"

## < SYSTEM DESCRIPTION >

## [AUTOMATIC AIR CONDITIONING]

Component	Description
Magnet clutch	HAC-61, "Description"
Refrigerant pressure sensor	EC-415, "Description"
A/C control (A/C auto amp.)	HAC-70, "Description"
In-vehicle sensor	HAC-38, "Description"
Blower motor	HAC-56, "Description"
Air mix door motor	HAC-46, "Description"
Power transistor	HAC-56, "Description"
Intake sensor	HAC-41, "Description"
Mode door motor	HAC-49, "Description"
Intake door motor	HAC-52, "Description"

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## **Diagnosis Description**

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### ON BOARD SELF-DIAGNOSIS SYSTEM

On board self-diagnosis system is built into A/C auto amp. to quickly locate the case of malfunctions. The self-diagnosis system diagnoses sensor, door motor, blower motor, etc. and also can make the setting of auxiliary mechanism.

Diagnosis item	Diagnosis content	Diagnosis part
STEP 1: Indicator check	Switch indicator and display indication are checked.	A/C control (A/C auto amp.)
STEP 2: Sensor diagnosis	The circuit diagnoses of each sensor and intake door motor are performed. A/C auto amp. indicates the result on the display.	Ambient sensor     In-vehicle sensor     Intake sensor     Sunload sensor     Intake door motor (PBR)
STEP 3: Door motor diagnosis	The circuit diagnoses of mode door motor and air mix door motor are performed. A/C auto amp. indicates the result on the display.	Mode door motor     Air mix door motor
STEP 4: Operation check	Operational check of each part is performed.	<ul> <li>Mode door motor</li> <li>Intake door motor</li> <li>Air mix door motor</li> <li>Blower motor</li> <li>Compressor</li> <li>Condenser fan</li> </ul>
STEP 5: Each sensor recognition temperature check	Each sensor recognition temperature is indicated on the display.	<ul><li>Ambient sensor</li><li>In-vehicle sensor</li><li>Intake sensor</li></ul>
STEP 6: Temperature setting trimmer	Temperature setting trimmer is performed.	_
STEP 7: Inlet port memory function	Inlet port memory function is performed.	_

#### SELF-DIAGNOSIS PROCEDURE

Self-diagnosis Mode Entry

The self-diagnosis is started by pressing the OFF switch at 5 seconds or more within 10 seconds after starting engine.

## NOTE:

If battery voltage drops below 12 V during diagnosis STEP-3, door motor speed becomes slower and as a result, the system may generate an error even when operation is normal. Start engine before performing this diagnosis to avoid this.

Changes of Step up and Step down

- The changes of STEP 1 5 can be performed by pressing the temperature control switch.
- The change of STEP 6 7 can be performed by pressing the fan control switch during the condition of STEP-5.

Self-diagnosis Cancellation

By AUTO switch is pressed or ignition switch is turned OFF, the self-diagnosis is canceled.

#### STEP-1: INDICATOR CHECK

#### Description

A/C switch indicator and A/C display indication are checked.

Normal: All switch indicator and display indication are turned ON.

Malfunction: Malfunctioning part indicator is not turned ON.

#### STEP-2: SENSOR DIAGNOSIS

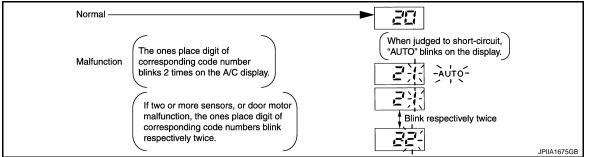
#### < SYSTEM DESCRIPTION >

## [AUTOMATIC AIR CONDITIONING]

Description

When STEP-2 is selected, "2" is indicated on the display for 3 seconds, in this period, sensor diagnosis is started.

Normal: "20" is displayed.



Malfunction: The ones place digit of corresponding code number blinks 2 times on the A/C display. When short-circuit error, "AUTO" blinks on the display.

#### NOTE:

If two or more sensors, or door motor malfunction, the ones place digit of corresponding code numbers blink respectively twice.

#### Diagnosis Result

Code No.	Corresponding sensor	Malfunctionin	Reference	
or door motor		Open	Short	Reference
21 / AUTO 21	Ambient sensor	-42°C (-44°F) or less	100°C (212°F) or more	HAC-35, "Diagnosis Procedure"
22 / AUTO 22	In-vehicle sensor	-42°C (-44°F) or less	100°C (212°F) or more	HAC-38, "Diagnosis Procedure"
24 / AUTO 24	Intake sensor	-42°C (-44°F) or less	100°C (212°F) or more	HAC-41, "Diagnosis Procedure"
25 / AUTO 25	Sunload sensor*	33 W/m <sup>2</sup> (28 kcal/m <sup>2</sup> ·h)	1677 W/m <sup>2</sup> (1442 kcal/m <sup>2</sup> ·h)	HAC-43, "Diagnosis Procedure"
26 / AUTO 26	Intake door motor (PBR)	PBR angle 30% or less	PBR angle 50% or more	HAC-52, "Diagnosis Procedure"

<sup>\*:</sup> Perform the self-diagnosis under sunshine. When performing indoors, aim a light (more than 60 W) at sunload sensor, otherwise code NO. 25 indicates despite that sunload sensor is functioning normally.

### NOTE:

- When ambient sensor has the malfunction of open-circuit, the sensor judges that ambient temperature is extremely cold, and controls the in vehicle temperature to warmly.
- When performing the diagnosis of intake door motor, the target angle of PBR is set at 40%.
- The error judgment status of intake door motor is not decided by open or short circuit, it is decided by the voltage value as follows:
- Short: 2.5 V or more
- Open: 1.5 V or less

### STEP-3: DOOR MOTOR DIAGNOSIS

#### Description

When STEP-3 is selected, "3" is indicated on the display for 1 second, in this period, door motor diagnosis is started

The check of door motor is performed by A/C auto amp. transmitting output signal to each door motor.

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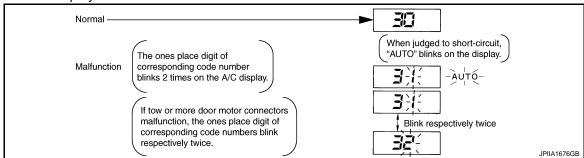
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### < SYSTEM DESCRIPTION >

[AUTOMATIC AIR CONDITIONING]

Normal: "30" is displayed.



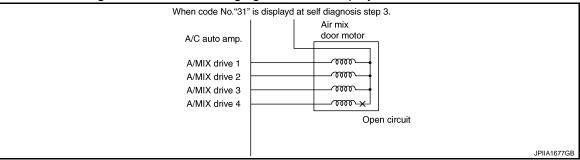
Malfunction: The ones place digit of corresponding code number blinks 2 times on the A/C display. When short-circuit error, "AUTO" blinks on the display.

#### NOTE:

If two or more door motor connectors malfunction, the ones place digit of corresponding code numbers blink respectively twice.

#### NOTE:

When the malfunctioning condition as following figure, "31" is displayed.



#### Diagnosis Result

Code No.	Corresponding door motor	Malfunctioning judgment condition	Reference
31 / AUTO 31		Short or open circuit of air mix door drive signal terminal 4	
32 / AUTO 32	Air mix door motor	Short or open circuit of air mix door drive signal terminal 1	HAC-46, "Diagnosis Procedure"
33 / AUTO 33	All fills door filotor	Short or open circuit of air mix door drive signal terminal 2	- IAC-40, Diagnosis Procedure
34 / AUTO 34		Short or open circuit of air mix door drive signal terminal 3	
35 / AUTO 35		Short or open circuit of mode door drive signal terminal 4	
36 / AUTO 36	Mode door motor	Short or open circuit of mode door drive signal terminal 1	HAC-49, "Diagnosis Procedure"
37 / AUTO 37	WOOLE GOOT MOTOL	Short or open circuit of mode door drive signal terminal 2	TINO-43, Diagnosis Plucedule
38 / AUTO 38		Short or open circuit of mode door drive signal terminal 3	

#### NOTE

- If all four terminals of each door motor show an open circuit, there is probably a disconnected connector or an open circuit in door motor drive power supply harness.
- If a short circuit occurs in harness between terminals for each door motor drive signal, although it cannot be detected by self-diagnosis, door motor will vibrate when it operates.

### Door Motor Starting Position Reset

 Pressing DEF switch during STEP-3 will send a reset signal to air mix door and mode door motor to reset them to starting position.

### < SYSTEM DESCRIPTION >

## [AUTOMATIC AIR CONDITIONING]

• During reset operation, DEF switch indicator and "30" blink for approximately 9 seconds.

### STEP-4: OPERATION CHECK

#### Description

When STEP-4 is selected, each part operation is started with indicating "4" on the display.

Each time DEF switch is pressed, the display will change to  $41 \rightarrow 42 \rightarrow 43 \rightarrow 44 \rightarrow 45 \rightarrow 46 \rightarrow 41$ .

#### **Operation Contents**

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

Code No.	Mode door posi- tion	Intake door posi- tion	Air mix door posi- tion	Magnet clutch	Blower fan motor (voltage)	Condenser fan ON signal
41	VENT	REC	Full cold	ON	5 V	ON
42	B/L	REC	Full cold	ON	10.5 V	ON
43	B/L	20% FRE	Medium (50%)	ON	8.5 V	ON
44	FOOT	80% FRE	Medium (50%)	OFF	8.5 V	OFF
45	D/F	FRE	Full hot	OFF	8.5 V	OFF
46	DEF	FRE	Full hot	ON	Battery voltage	ON

#### STEP-5: EACH SENSOR RECOGNITION CHECK

### Description

When STEP-5 is selected, "5" is indicated on the display.

Each time DEF switch is pressed, each sensor recognition temperature is changed in order of the following:  $5 \rightarrow \text{Ambient temperature} \rightarrow \text{In-vehicle temperature} \rightarrow \text{Intake temperature} \rightarrow 5$ .

#### NOTE:

Each sensor recognition temperature is not displayed in less than –30°C (–22°F) or more than 55°C (131°F).

#### STEP-6: TEMPERATURE SETTING TRIMMER

#### Description

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

#### Setting Procedure

Refer to HAC-10, "Temperature Setting Trimmer".

## STEP-7: INLET PORT MEMORY FUNCTION

#### Description

- Inlet port setting can be memorized when ignition switch is turned OFF.
- Inlet port setting can be selected from FRE (fresh air intake), REC (recirculation), or "Do not perform the memory" when ignition switch is turned ON.

#### Setting Procedure

Refer to HAC-11, "Inlet Port Memory Function".

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## DIAGNOSIS SYSTEM (BCM) (WITH INTELLIGENT KEY SYSTEM) [AUTOMATIC AIR CONDITIONING]

< SYSTEM DESCRIPTION >

## DIAGNOSIS SYSTEM (BCM) (WITH INTELLIGENT KEY SYSTEM) **COMMON ITEM**

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

INFOID:0000000005490038

#### APPLICATION ITEM

CONSULT-III performs the following functions via CAN communication with BCM.

Diagnosis mode	Function Description			
Work Support	Changes the setting for each system function.			
Self Diagnostic Result	Displays the diagnosis results judged by BCM.			
CAN Diag Support Monitor	Monitors the reception status of CAN communication viewed from BCM. Refer to CONSULT-III operation manual.			
Data Monitor	The BCM input/output signals are displayed.			
Active Test	The signals used to activate each device are forcibly supplied from BCM.			
Ecu Identification	The BCM part number is displayed.			
Configuration	<ul> <li>Read and save the vehicle specification.</li> <li>Write the vehicle specification when replacing BCM.</li> </ul>			

### 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.

x: Applicable item

System	Sub system selection item	Diagnosis mode		
System	Sub system selection item	Work Support	Data Monitor	Active Test
Door lock	DOOR LOCK	×	×	×
Rear window defogger	REAR DEFOGGER		×	×
Warning chime	BUZZER		×	×
Interior room lamp timer	INT LAMP	×	×	×
Remote keyless entry system	MULTI REMOTE ENT*1	×	×	×
Exterior lamp	HEAD LAMP	×	×	×
Wiper and washer	WIPER	×* <sup>2</sup>	×	×
Turn signal and hazard warning lamps	FLASHER	×	×	×
_	AIR CONDITONER*3			
<ul><li>Intelligent Key system</li><li>Engine start system</li></ul>	INTELLIGENT KEY	×	×	×
Combination switch	COMB SW		×	
Body control system	BCM	×		
NVIS - NATS	IMMU		×	×
Interior room lamp battery saver	BATTERY SAVER	×	×	×
Back door opener system	TRUNK		×	×
Vehicle security system	THEFT ALM	×	×	×
RAP system	RETAINED PWR		×	
Signal buffer system	SIGNAL BUFFER		×	×
TPMS	TPMS (AIR PRESSURE MONITOR)	×	×	×

## NOTE:

**HAC-30** Revision: 2009 October 2010 Z12

<sup>• \*1:</sup> At models with Intelligent Key system this item is displayed, but is not used.

<sup>• \*2:</sup> At models with rain sensor this mode is displayed, but is not used.

## DIAGNOSIS SYSTEM (BCM) (WITH INTELLIGENT KEY SYSTEM) [AUTOMATIC AIR CONDITIONING]

## < SYSTEM DESCRIPTION >

• \*3: This item is displayed, but is not used.

## FREEZE FRAME DATA (FFD)

The BCM records the following vehicle condition at the time a particular DTC is detected, and displays on CONSULT-III.

CONSULT screen item	Indication/Unit	Description			
Vehicle Speed	km/h	Vehicle speed of the moment a particular DTC is detected			
Odo/Trip Meter	km	Total mileage (Odometer value) of the moment a particular DTC is detected			
	SLEEP>LOCK		While turning BCM status from low power consumption mode to normal mode (Power supply position is "LOCK")		
	SLEEP>OFF			While turning BCM status from low power consumption mode to normal mode (Power supply position is "OFF".)	L
	LOCK>ACC		While turning power supply position from "LOCK" to "ACC"	 E	
	ACC>ON		While turning power supply position from "ACC" to "IGN"		
	RUN>ACC		While turning power supply position from "RUN" to "ACC" (Vehicle is stopping and selector lever is except P position.)	F	
	CRANK>RUN		While turning power supply position from "CRANKING" to "RUN" (From cranking up the engine to run it)		
	RUN>URGENT		While turning power supply position from "RUN" to "ACC" (Emergency stop operation)		
	ACC>OFF		While turning power supply position from "ACC" to "OFF"	_	
	OFF>LOCK	Power position status of the moment a particular DTC is detected	While turning power supply position from "OFF" to "LOCK"	-	
Vehicle Condition (	OFF>ACC		While turning power supply position from "OFF" to "ACC"		
	ON>CRANK		While turning power supply position from "IGN" to "CRANKING"		
	OFF>SLEEP			While turning BCM status from normal mode (Power supply position is "OFF".) to low power consumption mode	HA
	LOCK>SLEEP		While turning BCM status from normal mode (Power supply position is "LOCK".) to low power consumption mode		
	LOCK		Power supply position is "LOCK" (Ignition switch OFF with steering is locked.)		
	OFF		Power supply position is "OFF" (Ignition switch OFF with steering is unlocked.)	k	
	ACC		Power supply position is "ACC" (Ignition switch ACC)		
	ON		Power supply position is "IGN" (Ignition switch ON with engine stopped)	L	
	ENGINE RUN		Power supply position is "RUN" (Ignition switch ON with engine running)	N	
	CRANKING		Power supply position is "CRANKING" (At engine cranking)		
IGN Counter	0 - 39	<ul> <li>The number of times that ignition switch is turned ON after DTC is detected</li> <li>The number is 0 when a malfunction is detected now.</li> <li>The number increases like 1 → 2 → 338 → 39 after returning to the normal condition whenever ignition switch OFF → ON.</li> </ul>			
		The number is fixed to	o 39 until the self-diagnosis results are erased if it is over 39.		

## AIR CONDITIONER

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

INFOID:0000000005490039

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**DATA MONITOR** Display Item List

**HAC-31** Revision: 2009 October 2010 Z12

## DIAGNOSIS SYSTEM (BCM) (WITH INTELLIGENT KEY SYSTEM) [AUTOMATIC AIR CONDITIONING]

## < SYSTEM DESCRIPTION >

Monitor Iter	m [Unit]	Contents
FAN ON SIG	[On/Off]	Displays the blower fan status as jugged from the A/C auto amp.
AIR COND SW	[On/Off]	Displays [COMP (On)/COMP (Off)] status as judged from the A/C auto amp.

## DIAGNOSIS SYSTEM (BCM) (WITHOUT INTELLIGENT KEY SYSTEM) [AUTOMATIC AIR CONDITIONING]

< SYSTEM DESCRIPTION >

## DIAGNOSIS SYSTEM (BCM) (WITHOUT INTELLIGENT KEY SYSTEM) **COMMON ITEM**

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

INFOID:0000000005490040

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### 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-142, "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	<ul> <li>Read and save the vehicle specification.</li> <li>Write the vehicle specification when replacing BCM.</li> </ul>		
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.

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

×: Applicable item

System	CONSULT-III	Diagnosis mode		
System	sub system selection item	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	ırn signal and hazard warning lamps FLASHER		×	×
Air conditioner	AIR CONDITONER		×	
_	INTELLIGENT KEY*			
Combination switch	COMB SW		×	
_	BCM	×		
Immobilizer	mmobilizer IMMU		×	×
Interior room lamp battery saver	BATTERY SAVER	×	×	×
Back door open	TRUNK		×	×
Vehicle security system	rity system THEFT ALM		×	×
RAP system	P system RETAINED PWR		×	×
Signal buffer system	Signal buffer system SIGNAL BUFFER		×	×
_	FUEL LID*			
_	TPMS*			
Panic alarm system	PANIC ALARM			×

<sup>\*:</sup> This item is displayed, but is not function.

### AIR CONDITIONER

**HAC-33** Revision: 2009 October 2010 Z12

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## **DIAGNOSIS SYSTEM (BCM) (WITHOUT INTELLIGENT KEY SYSTEM)** [AUTOMATIC AIR CONDITIONING]

< SYSTEM DESCRIPTION >

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

## **DATA MONITOR** Display Item List

Monitor Item [Unit]		Contents	
IGN SW	[On/Off]	Displays ignition switch position status as judged from ignition switch signal.	
FAN ON SIG	[On/Off]	Displays the blower fan status as jugged from the A/C auto amp.	
AIR COND SW	[On/Off]	Displays [COMP (On)/COMP (Off)] status as judged from the A/C auto amp.	

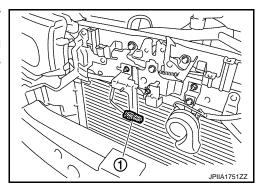
## DTC/CIRCUIT DIAGNOSIS

## AMBIENT SENSOR

Description INFOID:0000000005490042

#### COMPONENT DESCRIPTION

- The ambient sensor (1) is installed on the middle of radiator upper
- The ambient sensor converts the ambient temperature detected with thermistor into the voltage, and the A/C auto amp. inputs this voltage.



### AMBIENT TEMPERATURE CORRECTION

- The A/C auto amp. inputs the temperature detected with the ambient sensor as the ambient temperature.
- Perform the correction of the temperature detected with the ambient sensor for air conditioner control and for ambient temperature display.
- Since the engine heat influences on the ambient sensor during idling condition, the A/C auto amp. retards the ambient temperature indication of the combination meter to avoid the effect of steep temperature
- Select and use the initial value of ambient temperature data depending on the coolant temperature when turning the ignition switch from OFF to ON. Use the detection temperature of the ambient sensor at low coolant temperature [less than approximately 56°C (133°F)]. Use the memory data (before the ignition switch is OFF) when the engine is warming up [approximately 56°C (133°F) or more].
- Do not perform the correction of the ambient temperature when the detection temperature of the ambient temperature is less than approximately -20°C (-4°F).

#### SET TEMPERATURE CORRECTION

The A/C auto amp, performs the correction to the target temperature set by the temperature control switch so as to match the temperature felt by the passengers depending on the ambient temperature detected with the ambient sensor and controls it so that the interior air temperature is always the most suitable.

## Diagnosis Procedure

INFOID:0000000005490043

## 1. CHECK AMBIENT SENSOR POWER SUPPLY CIRCUIT

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

(+)		(–)	\
Ambient sensor			Voltage (Approx.)
Connector	Connector Terminal		<b>(11</b> /
E53	1	Ground	5 V

#### Is the inspection result normal?

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

Revision: 2009 October

# 2.CHECK AMBIENT SENSOR GROUND CIRCUIT CONTINUITY

- Turn the ignition switch OFF.
- Disconnect the A/C auto amp. connector. 2.
- Check continuity between ambient sensor harness connector and A/C auto amp harness connector.

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**HAC-35** 

## **AMBIENT SENSOR**

### [AUTOMATIC AIR CONDITIONING]

Ambient sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector Terminal		Continuity
E53	2	M50	6	Existed

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the harnesses or connectors.

## 3.CHECK AMBIENT SENSOR

Check the ambient sensor components. Refer to HAC-36, "Component Inspection".

## Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace the ambient sensor.

## 4. CHECK AMBIENT SENSOR OPEN CIRCUIT

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

Ambient sensor		A/C auto amp.		Continuity	
Connector	Terminal	Connector Terminal		Continuity	
E53	1	M51	22	Existed	

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair the harnesses or connectors.

## 5. CHECK AMBIENT SENSOR SHORT CIRCUIT

Check continuity between ambient sensor harness connector and the ground.

Ambient sensor		_	Continuity
Connector	Connector Terminal		Continuity
E53	1	Ground	Not existed

#### Is the inspection result normal?

YES >> Replace the A/C auto amp.

NO >> Repair the harnesses or connectors.

## Component Inspection

INFOID:0000000005490044

## 1. CHECK AMBIENT SENSOR

- Turn the ignition switch OFF.
- Remove the ambient sensor. Refer to <u>HAC-144</u>, "Exploded View".
- Check the resistance between the ambient sensor terminals. Refer to the applicable table for the normal value.

### **AMBIENT SENSOR**

### [AUTOMATIC AIR CONDITIONING]

Terminal	Condition	Desistance I/O	
reminai	Temperature: °C (°F)	Resistance: kΩ	
	-15 (5)	12.73	
	-10 (14)	9.92	
	-5 (23)	7.80	
	0 (32)	6.19	
	5 (41)	4.95	
	10 (50)	3.99	
1 2	15 (59)	3.24	
	20 (68)	2.65	
	25 (77)	2.19	
	30 (86)	1.81	
	35 (95)	1.51	
	40 (104)	1.27	
	45 (113)	1.07	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace the ambient sensor.

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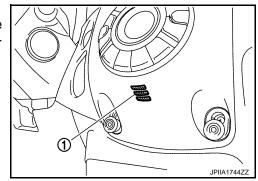
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### **IN-VEHICLE SENSOR**

Description INFOID:000000005490045

#### COMPONENT DESCRIPTION

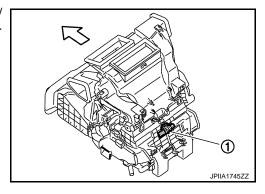
- The in-vehicle sensor (1) is installed to the finisher.
- The in-vehicle sensor converts the interior air temperature of the passenger room sucked by the aspirator detected with the thermistor into the voltage, and the A/C auto amp. inputs this voltage.

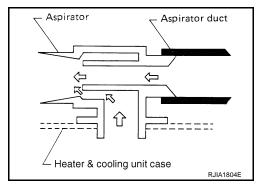


#### **ASPIRATOR**

The aspirator (1) generates the vacuum by the air blown from the A/C unit assembly and draws the air of the passenger room to the invehicle sensor area via the aspirator duct.







#### INTERIOR AIR TEMPERATURE CORRECTION

- The A/C auto amp. inputs the temperature detected with the in-vehicle sensor as the interior air temperature.
- Perform the correction of the temperature detected with the in-vehicle sensor for each air conditioner control.

### Diagnosis Procedure

INFOID:0000000005490046

# 1. CHECK IN-VEHICLE SENSOR POWER SUPPLY CIRCUIT

- Turn the ignition switch OFF.
- 2. Disconnect the in-vehicle sensor connector.
- Turn the ignition switch ON.
- 4. Check voltage between in-vehicle sensor harness connector and the ground.

(+)		(–)	V 16
In-vehic	In-vehicle sensor		Voltage (Approx.)
Connector	Terminal		(11 - 7
M41	1	Ground	5 V

### **IN-VEHICLE SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

### [AUTOMATIC AIR CONDITIONING]

### Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 4.

# 2.check in-vehicle sensor ground circuit continuity

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

In-vehicle sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	Continuity
M41	2	M50	6	Existed

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the harnesses or connectors.

### 3. CHECK IN-VEHICLE SENSOR

Check the in-vehicle sensor components. Refer to <a href="HAC-39">HAC-39</a>, "Component Inspection".

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace the in-vehicle sensor.

### 4. CHECK IN-VEHICLE SENSOR OPEN CIRCUIT

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

In-vehicle sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	Continuity
M41	1	M51	24	Existed

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair the harnesses or connectors.

### 5. CHECK IN-VEHICLE SENSOR SHORT CIRCUIT

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

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

### Is the inspection result normal?

YES >> Replace the A/C auto amp.

NO >> Repair the harnesses or connectors.

### Component Inspection

### 1. CHECK IN-VEHICLE SENSOR

- 1. Turn the ignition switch OFF.
- Remove the in-vehicle sensor. Refer to <u>HAC-145</u>, "Exploded View".
- 3. Check the resistance between the in-vehicle sensor terminals. Refer to the applicable table for the normal value.

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Та и		Condition	Decistor es IrO	
ien	minal	Temperature: °C (°F)	Resistance: kΩ	
		-15 (5)	12.73	
		-10 (14)	9.92	
		-5 (23)	7.80	
		0 (32)	6.19	
		5 (41)	4.95	
	1 2		10 (50)	3.99
1		15 (59)	3.24	
		20 (68)	2.65	
		25 (77)	2.19	
		30 (86)	1.81	
		35 (95)	1.51	
		40 (104)	1.27	
		45 (113)	1.07	

### Is the inspection result normal?

YES >> INSPECTION END

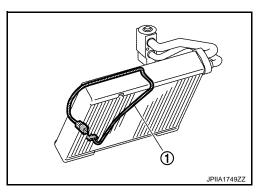
NO >> Replace the in-vehicle sensor.

### **INTAKE SENSOR**

Description INFOID:0000000005490048

#### COMPONENT DESCRIPTION

- Intake sensor (1) is located on the evaporator.
- The intake sensor converts the evaporator surface temperature detected with thermistor into the voltage, and the A/C auto amp. inputs this voltage.



#### INTAKE TEMPERATURE CORRECTION

- The A/C auto amp. inputs the temperature detected with the intake sensor as the evaporator surface tem-
- Perform the correction of the temperature detected with the intake sensor for air conditioner control.
- The A/C auto amp, performs the correction so that the recognition intake temperature changes depending on the difference between the detected intake temperature and the recognition intake temperature. If the difference is large, the changing is early. The changing becomes slow as the difference becomes small.

### Diagnosis Procedure

INFOID:0000000005490049

## 1. CHECK INTAKE SENSOR POWER SUPPLY CIRCUIT

- Turn the ignition switch OFF.
- Disconnect the intake sensor connector. 2.
- Turn the ignition switch ON.
- Check voltage between intake sensor harness connector and the ground.

(-	+)	(–)	Maltana
Intake sensor		_	Voltage (Approx.)
Connector	Terminal		( ) 1 - /
M42	1	Ground	5 V

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 4.

## 2.check intake sensor ground circuit continuity

- Turn the ignition switch OFF.
- Disconnect the A/C auto amp. connector. 2.
- Check continuity between intake sensor harness connector and A/C auto amp. harness connector.

Intake sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	Continuity
M42	2	M50	6	Existed

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the harnesses or connectors.

### 3.CHECK INTAKE SENSOR

Check the intake sensor components. Refer to HAC-42, "Component Inspection".

Is the inspection result normal?

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< DTC/CIRCUIT DIAGNOSIS >

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

### 4. CHECK INTAKE SENSOR OPEN CIRCUIT

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

Intake sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	Continuity
M42	1	M51	23	Existed

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair the harnesses or connectors.

### 5. CHECK INTAKE SENSOR SHORT CIRCUIT

Check continuity between intake sensor harness connector and the ground.

Intake sensor			Continuity
Connector	Terminal		Continuity
M42	1	Ground	Not existed.

#### Is the inspection result normal?

YES >> Replace the A/C auto amp.

NO >> Repair the harnesses or connectors.

### Component Inspection

### 1. CHECK INTAKE SENSOR

1. Turn the ignition switch OFF.

- 2. Disconnect the intake sensor connector.
- 3. Check the resistance between the intake sensor terminals. Refer to the applicable table for the normal value.

Ton	minal	Condition	Resistance: kΩ	
ien	IIIIIai	Temperature: °C (°F)	Nesistance. K22	
		-15 (5)	12.34	
		-10 (14)	9.62	
		-5 (23)	7.56	
		0 (32)	6.00	
	1 2		5 (41)	4.80
		10 (50)	3.87	
1		2	15 (59)	3.15
		20 (68)	2.57	
		25 (77)	2.12	
	35 (9	30 (86)	1.76	
		35 (95)	1.47	
		40 (104)	1.23	
		45 (113)	1.04	

#### Is the inspection result normal?

YES >> INSPECTION END

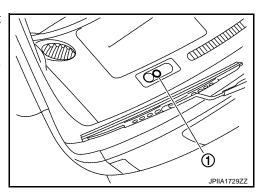
NO >> Replace the intake sensor.

### SUNLOAD SENSOR

Description INFOID:0000000005490051

#### COMPONENT DESCRIPTION

- The sunload sensor (1) is installed to the right side of instrument panel assembly.
- The sunload sensor converts the sunload amount (illuminance) into the current value with the photodiode. The A/C auto amp. calculates this current value to the voltage and inputs it.



#### SUNLOAD AMOUNT CORRECTION

- The A/C auto amp. inputs the sunload amount detected with the sunload sensor.
- Perform the correction of the sunload amount detected with the sunload sensor for each air conditioner con-
- When the sunload amount suddenly changes, for example when entering a tunnel, perform the correction so that the recognition sunload amount of the A/C auto amp. changes slowly.

### Diagnosis Procedure

INFOID:000000005490052

### ${f 1}$ .CHECK SUNLOAD SENSOR POWER SUPPLY CIRCUIT

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

(+)		(–)	N/alfana
Sunload sensor			Voltage (Approx.)
Connector	Terminal	_	( ) ,
M74	1	Ground	5 V

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 4.

### 2.CHECK SUNLOAD SENSOR GROUND CIRCUIT CONTINUITY

- 1. Turn the ignition switch OFF.
- 2. Disconnect the A/C auto amp. connector.
- Check continuity between sunload sensor harness connector and A/C auto amp. harness connector.

Sunload sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	Continuity
M74	2	M50	6	Existed

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the harnesses or connectors.

## 3. CHECK SUNLOAD SENSOR

- 1 Connect the sunload sensor connector.
- 2. Connect the A/C auto amp. connector.
- Check the sunload sensor components. Refer to HAC-44, "Component Inspection".

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### **SUNLOAD SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace the sunload sensor.

### 4. CHECK SUNLOAD SENSOR OPEN CIRCUIT

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

Sunload sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	Continuity
M74	1	M51	25	Existed

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair the harnesses or connectors.

### 5. CHECK SUNLOAD SENSOR SHORT CIRCUIT

Check continuity between sunload sensor harness connector and the ground.

Sunload sensor			Continuity
Connector	Terminal		Continuity
M74	1	Ground	Not existed

### Is the inspection result normal?

YES >> Replace the A/C auto amp.

NO >> Repair the harnesses or connectors.

### Component Inspection

INFOID:0000000005490053

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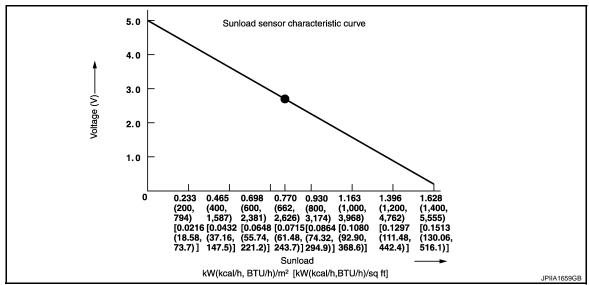
### 1. CHECK SUNLOAD SENSOR

- 1. Turn the ignition switch ON.
- 2. Check the input voltage from sunload sensor between A/C auto amp. harness connector and the ground. Refer to the applicable table for the normal value.

(-	(–)	
A/C au	_	
Connector Terminal		
M51	25	Ground

### **SUNLOAD SENSOR**

### [AUTOMATIC AIR CONDITIONING]



NOTE:

- When checking indoors, use a lamp of approximately 60 W. Move the lamp towards and away from the sensor to check.
- The sunload amount produced by direct sunshine in fair weather is equivalent to approximately 0.77 kW/m² (662 kcal/m²·h).

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace the sunload sensor.

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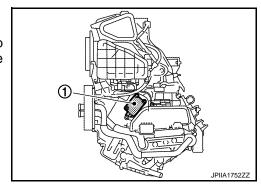
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### AIR MIX DOOR MOTOR

Description INFOID:000000005490054

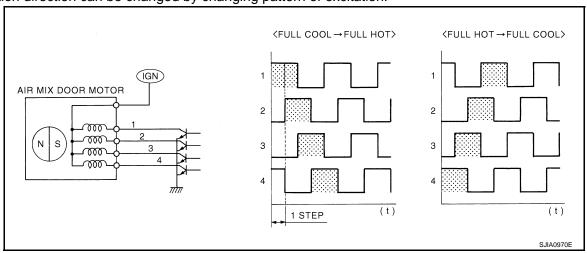
#### COMPONENT DESCRIPTION

- The air mix door motor (1) is installed to the A/C unit assembly.
- The step motor system is adopted for air mix door motor.
- When a drive signal is input from auto amp. to door motor, a step motor built into the door the door motor rotates according to the drive signal, and then stops at the position of target door.



#### DRIVE SYSTEM OF STEP MOTOR TYPE DOOR MOTOR

- · Motor is actuated in sequence by energizing four drive coils.
- Rotation direction can be changed by changing pattern of excitation.



### Diagnosis Procedure

INFOID:0000000005490055

### 1. CHECK FUSE

Check 10A fuse [No. 2, located in the fuse block (J/B)].

NOTE:

Refer to PG-97, "Fuse, Connector and Terminal Arrangement".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace fuse after repairing the applicable circuit.

# 2.CHECK POWER SUPPLY OF AIR MIX DOOR MOTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the air mix door motor connector.
- 3. Turn the ignition switch ON.
- 4. Check voltage between air mix door motor harness connector and the ground.

(+)		(-)	Mallana
Air mix door motor			Voltage (Approx.)
Connector	Terminal	_	(11 - )
M55	2	Ground	Battery voltage

### **AIR MIX DOOR MOTOR**

#### < DTC/CIRCUIT DIAGNOSIS >

### [AUTOMATIC AIR CONDITIONING]

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#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the harnesses or connectors.

# $3. \mathrm{check}$ continuity between A/C auto amp. and air mix door motor

- 1. Turn the ignition switch OFF.
- 2. Disconnect the A/C auto amp. connector.
- 3. Check continuity between air mix door motor harness connector and the ground.

Air mix door motor		A/C auto amp.		Continuity	
Connector	Terminal	Connector	Terminal	Continuity	
	3	M50	3 17	17	
M55	6		18	Existed	
	1		19	Existed	
	4		20		

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair the harnesses or connectors.

### f 4.CHECK CONTINUITY BETWEEN A/C AUTO AMP. AND GROUND

Check continuity between A/C auto amp. harness connector and the ground.

A/C auto amp.		_	Continuity
Connector	Terminal		Continuity
	17		Not Existed
M50	18	Ground	
	19	Glound	
	20		

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair the harnesses or connectors.

### 5. CHECK AIR MIX DOOR MOTOR

Perform the component inspection of air mix door motor. Refer to HAC-47, "Component Inspection".

#### Is the inspection result normal?

YES >> Replace the A/C auto amp.

NO >> Replace the air mix door motor.

### Component Inspection

Revision: 2009 October

## 1. CHECK AIR MIX DOOR MOTOR

- Turn the ignition switch OFF.
- Remove the air mix door motor. Refer to <u>HAC-151</u>, "Exploded View".
- 3. Check the resistance between air mix door motor terminals. Refer to the applicable table for the normal value.

Terr	minal	Resistance: Ω (Approx.)
	1	
2	3	90
	4	90
6		

. 0

INFOID:0000000005490056

- HAC-47 2010 Z12

### **AIR MIX DOOR MOTOR**

### < DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace the air mix door motor.

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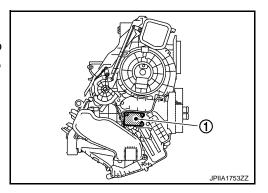
INFOID:0000000005490058

### MODE DOOR MOTOR

Description INFOID:000000005490057

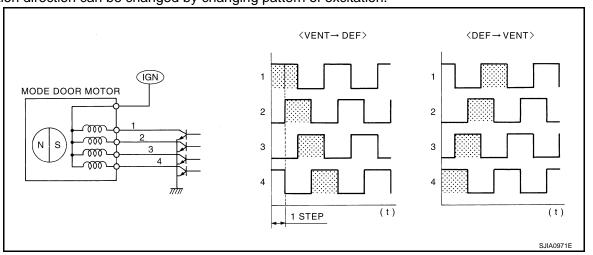
#### COMPONENT DESCRIPTION

- The mode door motor (1) is installed to the A/C unit assembly.
- Step motor system is adopted for the mode door motor.
- When a drive signal is input from auto amp. to door motor, a step motor built into the door motor rotates according to the drive signal, and then stops at the position of target door.



### DRIVE SYSTEM OF STEP MOTOR TYPE DOOR MOTOR

- Motor is actuated in sequence by energizing four drive coils.
- Rotation direction can be changed by changing pattern of excitation.



### Diagnosis Procedure

### 1.CHECK FUSE

Check 10A fuse [No. 2, located in the fuse block (J/B)].

NOTE:

Refer to PG-97, "Fuse, Connector and Terminal Arrangement".

Is inspection result normal?

YES >> GO TO 2.

NO >> Replace fuse after repairing the applicable circuit.

 $2.\mathsf{CHECK}$  POWER SUPPLY OF MODE DOOR MOTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the mode door motor connector.
- 3. Turn the ignition switch ON.
- 4. Check voltage between mode door motor harness connector and the ground.

(+)		(-)	Maltana
Mode door motor			Voltage (Approx.)
Connector	Terminal	_	(11 - 7
M56	5	Ground	Battery voltage

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Revision: 2009 October HAC-49 2010 Z12

### **MODE DOOR MOTOR**

#### < DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the harnesses or connectors.

# $3. \mathrm{check}$ continuity between A/C auto AMP. And mode door motor

- 1. Turn the ignition switch OFF.
- 2. Disconnect the A/C auto amp. connector.
- 3. Check continuity between mode door motor harness connector and A/C auto amp. harness connector.

Mode do	oor motor	A/C au	to amp.	Continuity
Connector	Terminal	Connector	Terminal	Continuity
	1	M51	32	
M56	2		31	Existed
	3		30	Existed
	4		29	

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair the harnesses or connectors.

### f 4.CHECK CONTINUITY BETWEEN A/C AUTO AMP. AND GROUND

Check continuity between A/C auto amp. harness connector and the ground.

A/C auto amp.		_	Continuity
Connector	Terminal	_	Continuity
M51	29		Not existed
	30	Ground	
	31	Glound	
	32		

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair the harnesses or connectors.

### 5. CHECK MODE DOOR MOTOR

Perform the component inspection of mode door motor. Refer to HAC-50, "Component Inspection".

#### Is inspection result normal?

YES >> Replace the A/C auto amp.

NO >> Replace the mode door motor.

### Component Inspection

INFOID:0000000005490059

## 1. CHECK MODE DOOR MOTOR

- Turn the ignition switch OFF.
- 2. Disconnect the mode door motor connector.
- Check the resistance between mode door motor terminals. Refer to the applicable table for the normal value.

Terr	ninal	Resistance: Ω (Approx.)
5	1	
	2	90
	3	90
	4	

### **MODE DOOR MOTOR**

### < DTC/CIRCUIT DIAGNOSIS >

### [AUTOMATIC AIR CONDITIONING]

### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

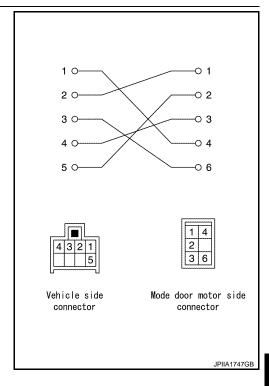
# 2.CHECK CONTINUITY MODE DOOR MOTOR SUB HARNESS

Check the sub harness continuity with the following figure.

#### Is the inspection result normal?

YES >> Replace the mode door motor.

NO >> Repair the harnesses or connectors.



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Description INFOID:000000005490060

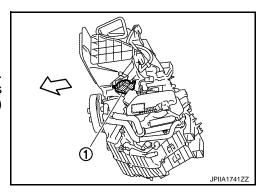
#### COMPONENT DESCRIPTION

The intake door motor (1) is installed to A/C unit assembly.

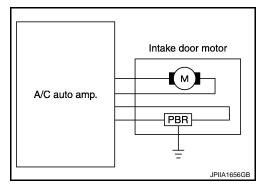
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 <!-- Compare the state of the state

The A/C auto amp. sends the control signal to Intake door motor.
 When intake door motor receives the control signal, intake door is moved to appropriate position by PBR (Potentio Balance Resistor) opening angle indication signal.



Intake door motor circuit



### Diagnosis Procedure

INFOID:0000000005490061

### POWER SUPPLY CIRCUIT

## 1.CHECK INTAKE DOOR MOTOR DRIVE SIGNAL

- 1. Turn the ignition switch ON.
- Check voltage between intake door motor harness connector and the ground when intake switch is operated.

| (         | (+)       |         |               | Valtaria             |
|-----------|-----------|---------|---------------|----------------------|
| Intake de | oor motor | _       | Condition     | Voltage<br>(Approx.) |
| Connector | Terminal  |         |               |                      |
| M54       | 5         | Ground  | $FRE \to REC$ | 12 V                 |
| WI34      | 6         | Giodila | $REC \to FRE$ | 12 V                 |

#### Is inspection result normal?

YES >> GO TO 4.

NO >> GO TO 2.

# 2.CHECK CONTINUITY BETWEEN A/C AUTO AMP. AND INTAKE DOOR MOTOR

- Turn the ignition switch OFF.
- 2. Disconnect the A/C auto amp. connector.
- 3. Disconnect the intake door motor connector.
- 4. Check continuity between A/C auto amp. harness connector and intake door motor harness connector.

#### < DTC/CIRCUIT DIAGNOSIS >

### [AUTOMATIC AIR CONDITIONING]

| Intake d  | oor motor | r motor A/C auto amp. |          | Continuity |
|-----------|-----------|-----------------------|----------|------------|
| Connector | Terminal  | Connector             | Terminal | Continuity |
| M54       | 5         | M50                   | 13       | Existed    |
| 10134     | M54 6     | IVISO                 | 12       | LXISIEU    |

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#### Is inspection result normal?

YES >> GO TO 3.

NO >> Repair the harnesses or connectors.

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## 3.check continuity between intake door motor and ground

Check continuity between intake door motor harness connector and the ground.

| Intake de | oor motor | _      | Continuity  |  |
|-----------|-----------|--------|-------------|--|
| Connector | Terminal  |        | Continuity  |  |
| M54       | 5         | Ground | Not existed |  |
| 10134     | 6         | Glound | Not existed |  |

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### Is inspection result normal?

YES >> Replace the A/C auto amp.

NO >> Repair the harnesses or connectors.

### 4. CHECK INTAKE DOOR MOTOR

Perform the intake door motor component inspection. Refer to <a href="HAC-55">HAC-55</a>, "Component Inspection".

#### Is inspection result normal?

YES >> Replace the A/C auto amp.

NO >> Replace the intake door motor.

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#### **PBR CIRCUIT**

### 1. CHECK POWER SUPPLY OF INTAKE DOOR MOTOR PBR

1. Turn the ignition switch ON.

Check voltage between intake door motor harness connector and the ground.

|  | ľ | ١ |  |
|--|---|---|--|
|  |   |   |  |
|  |   |   |  |
|  |   |   |  |
|  |   |   |  |
|  |   |   |  |

| (-                | +)       | (–)    | N/ 1/                |
|-------------------|----------|--------|----------------------|
| Intake door motor |          | _      | Voltage<br>(Approx.) |
| Connector         | Terminal |        | , , ,                |
| M54               | 1        | Ground | 5 V                  |

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#### Is inspection result normal?

YES >> GO TO 4.

NO >> GO TO 2.

### 2.CHECK CONTINUITY BETWEEN INTAKE DOOR MOTOR AND A/C AUTO AMP.-1

Turn the ignition switch OFF.

- 2. Disconnect the intake door motor connector.
- 3. Disconnect the A/C auto amp. connector.
- 4. Check continuity between intake door motor harness connector and A/C auto amp. harness connector.

| Intake de | Intake door motor |           | to amp.  | Continuity |
|-----------|-------------------|-----------|----------|------------|
| Connector | Terminal          | Connector | Terminal | Continuity |
| M54       | 1                 | M50       | 3        | Existed    |

#### Is inspection result normal?

YES >> GO TO 3.

NO >> Repair the harnesses or connectors.

#### < DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

# 3. CHECK CONTINUITY INTAKE DOOR MOTOR AND GROUND-1

Check continuity between intake door motor and the ground.

| Intake door motor |          |        | Continuity  |
|-------------------|----------|--------|-------------|
| Connector         | Terminal |        | Continuity  |
| M54               | 1        | Ground | Not existed |

#### Is inspection result normal?

YES >> Replace the A/C auto amp.

NO >> Repair the harnesses or connectors.

### 4. CHECK INTAKE DOOR MOTOR PBR GROUND

- Turn the ignition switch OFF.
- 2. Disconnect the A/C auto amp. connector.
- 3. Check continuity between intake door motor harness connector and the ground.

| Intake de | Intake door motor |           | to amp.  | Continuity |
|-----------|-------------------|-----------|----------|------------|
| Connector | Terminal          | Connector | Terminal | Continuity |
| M54       | 3                 | M50       | 6        | Existed    |

#### Is inspection result normal?

YES >> GO TO 5.

NO >> Repair the harnesses or connectors.

# 5.check intake door motor PBR feedback signal

- 1. Connect the A/C auto amp. connector.
- 2. Connect the intake door motor connector.
- 3. Turn the ignition switch ON.
- 4. Check voltage between A/C auto amp. and the ground when intake switch is operated.

| (         | +)             | (-)    |           | Valtage              |  |
|-----------|----------------|--------|-----------|----------------------|--|
| A/C au    | A/C auto amp.  |        | Condition | Voltage<br>(Approx.) |  |
| Connector | Terminal       | _      |           | (11 - )              |  |
| M54       | 1              | Ground | FRE       | 4.5 V                |  |
| IVIO      | WI34 I GIOURIU |        | REC       | 0.5 V                |  |

#### Is inspection result normal?

YES >> Replace the A/C auto amp.

NO >> GO TO 6.

### 6.CHECK CONTINUITY INTAKE DOOR MOTOR AND A/C AUTO AMP.-2

- 1. Turn the ignition switch OFF.
- 2. Disconnect the A/C auto amp. connector.
- 3. Disconnect the intake door motor connector.
- 4. Check continuity between intake door motor and A/C auto amp.

| Intake de | Intake door motor |           | ito amp. | Continuity |
|-----------|-------------------|-----------|----------|------------|
| Connector | Terminal          | Connector | Terminal | Continuity |
| M54       | 2                 | M51       | 26       | Existed    |

### Is inspection result normal?

YES >> GO TO 7.

NO >> Repair the harnesses or connectors.

### CHECK CONTINUITY INTAKE DOOR MOTOR AND GROUND-2

Check continuity between intake door motor harness connector and the ground.

### < DTC/CIRCUIT DIAGNOSIS >

### [AUTOMATIC AIR CONDITIONING]

| Intake door motor |          |        | Continuity  |
|-------------------|----------|--------|-------------|
| Connector         | Terminal | _      | Continuity  |
| M54               | 2        | Ground | Not existed |

### Is inspection result normal?

YES >> Replace the intake door motor.

NO >> Repair the harnesses or connectors.

### Component Inspection

# 1. CHECK INTAKE DOOR MOTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the intake door motor connector.
- 3. Supply to the intake door motor terminal directly, confirm the motor operation by listening the sound or by visually.

| Terr | minal | Operation |
|------|-------|-----------|
| (+)  | (-)   | Operation |
| 5    | 6     | To REC    |
| 6    | 5     | To FRE    |

#### Is inspection result normal?

YES >> INSPECTION END

NO >> Replace the intake door motor.

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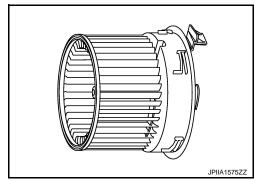
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### **BLOWER MOTOR**

Description INFOID.000000005490063

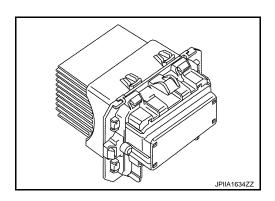
#### **BLOWER MOTOR**

- The blower motor is installed in the RH side of A/C unit assembly.
- The blower motor adopts the forcible air cooling system and onetouch installation system without any screws.

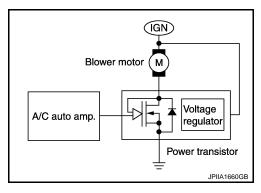


#### POWER TRANSISTOR

• The power transistor attached to A/C unit assembly.



- The power transistor controls the transmitting voltage to blower motor base on the gate voltage from A/C auto amp.
- The power transistor is set for low voltage drop, therefore it dose not require high relay while transmitting max voltage to blower motor.



### Component Function Check

INFOID:0000000005490064

## 1. CHECK OPERATION

- 1. Warm up the engine.
- 2. Operate the fan control switch. Check that the fan speed and indicator unit are switched for all fan speeds.

#### Does it operate normally?

YES >> INSPECTION END

NO >> Perform the diagnosis for the blower motor. Refer to HAC-56, "Diagnosis Procedure".

### Diagnosis Procedure

INFOID:0000000005490065

### 1. CHECK FUSE

Check 15A fuses [Nos. 15 and 17, located in the fuse block (J/B)].

NOIE

Refer to PG-97, "Fuse, Connector and Terminal Arrangement".

Is inspection result normal?

#### **BLOWER MOTOR**

#### < DTC/CIRCUIT DIAGNOSIS >

### [AUTOMATIC AIR CONDITIONING]

YES >> GO TO 2.

NO >> Replace the corresponding fuse.

# 2.CHECK POWER SUPPLY OF BLOWER MOTOR

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

| (            | +)                 | (-)    | Maltana              |
|--------------|--------------------|--------|----------------------|
| Blower motor |                    | _      | Voltage<br>(Approx.) |
| Connector    | Connector Terminal |        | , , ,                |
| M39          | 1                  | Ground | Battery voltage      |

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

### 3.CHECK BLOWER MOTOR RELAY

1. Turn the ignition switch OFF.

2. Check the blower motor relay. Refer to <u>HAC-59</u>, "Component Inspection".

#### Is inspection result normal?

YES >> Repair the harness or connector between blower motor and fuse.

NO >> Replace the blower motor relay.

### f 4.CHECK VOLTAGE BETWEEN POWER TRANSISTOR AND GROUND

- 1. Connect the blower motor connector.
- 2. Disconnect the power transistor connector.
- Turn the ignition switch ON.
- 4. Check voltage between power transistor harness connector and the ground.

| (                  | +) | (-)    | Maltana              |
|--------------------|----|--------|----------------------|
| Blower motor       |    |        | Voltage<br>(Approx.) |
| Connector Terminal |    |        | , , ,                |
| M82                | 1  | Ground | Battery voltage      |

#### Is inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

### ${f 5.}$ CHECK CONTINUITY BETWEEN BLOWER MOTOR AND POWER TRANSISTOR

- Turn the ignition switch OFF.
- 2. Disconnect the blower motor connector.
- Check continuity between blower motor harness connector and power transistor harness connector.

| Blowe     | Blower motor |           | Power transistor |            |
|-----------|--------------|-----------|------------------|------------|
| Connector | Terminal     | Connector | Terminal         | Continuity |
| M39       | 2            | M82       | 1                | Existed    |

#### Is the inspection result normal?

YES >> Replace the blower motor.

NO >> Repair the harnesses or connectors.

#### $oldsymbol{6}$ .CHECK VOLTAGE BETWEEN POWER TRANSISTOR AND GROUND

Check voltage between power transistor harness connector and the ground.

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#### < DTC/CIRCUIT DIAGNOSIS >

| (+)                |   | (-)    |                      |
|--------------------|---|--------|----------------------|
| Power transistor   |   |        | Voltage<br>(Approx.) |
| Connector Terminal |   |        | , , ,                |
| M82                | 4 | Ground | Battery voltage      |

### Is inspection result normal?

YES >> GO TO 7.

NO >> Replace the harness or connector between power transistor and fuse.

## 7.CHECK CONTINUITY BETWEEN POWER TRANSISTOR AND GROUND

Check continuity between power transistor harness connector and the ground.

| Blower motor |                    |        | Continuity |
|--------------|--------------------|--------|------------|
| Connector    | Connector Terminal |        | Continuity |
| M82          | 3                  | Ground | Existed    |

#### Is inspection result normal?

YES >> GO TO 8.

NO >> Repair the harnesses or connectors.

### 8.CHECK A/C AUTO AMP. OUTPUT SIGNAL

- 1. Connect the blower motor connector and the A/C auto amp. connector.
- 2. Turn the ignition switch ON.
- 3. Set the mode position to VENT.
- 4. Change fan speed from Lo to Hi, and check duty ratios between blower motor harness connector and the ground by using an oscilloscope.

#### NOTE:

Calculate the drive signal duty ratio as shown in the figure.

T2 = Approx. 1.6 ms

| (         | +)           | (-)    | Condition                               |     |                             |
|-----------|--------------|--------|---|-----|-----------------------------|
| Blowe     | Blower motor |        | Condition                               |     | Output waveform             |
| Connector | Terminal     | _      | — Fan speed (manual, VENT mode) (Approx |     |                             |
|           |              |        | 1st                                     | 26% |                             |
|           |              |        | 2nd                                     | 34% | (V)<br>15                   |
|           |              |        | 3rd                                     | 41% | 10                          |
| M82       | 2            | Ground | 4th                                     | 51% | 0 11-                       |
|           |              |        | 5th                                     | 62% | T2                          |
|           |              |        | 6th                                     | 73% | $\frac{1}{T2}X100=Duty(\%)$ |
|           |              |        | 7th                                     | 82% | JPIIA1646GB                 |

### Is the inspection result normal?

YES >> GO TO 10. NO >> GO TO 9.

### 9.CHECK CONTINUITY BETWEEN POWER TRANSISTOR AND A/C AUTO AMP.

- 1. Turn the ignition switch OFF.
- 2. Disconnect the power transistor connector.
- 3. Disconnect the A/C auto amp. connector.
- 4. Check continuity between power transistor harness connector and A/C auto amp. harness connector.

| Power t   | Power transistor A/C auto amp. |           | Continuity |            |
|-----------|--------------------------------|-----------|------------|------------|
| Connector | Terminal                       | Connector | Terminal   | Continuity |
| M82       | 2                              | M51       | 36         | Existed    |

#### Is the inspection result normal?

>> Replace the A/C auto amp.

NO >> Repair the harnesses or connectors.

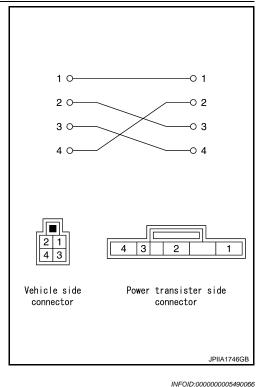
# 10.check continuity power transistor sub harness

Check the sub harness continuity with the following figure.

#### Is the inspection result normal?

YES >> Replace the power transistor.

NO >> Repair the harnesses or connectors.



### Component Inspection

#### **BLOWER MOTOR**

# 1. CHECK BLOWER MOTOR

- Remove the blower motor. Refer to VTL-13, "Exploded View".
- Check that there is not any mixing foreign object in the blower motor.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace the blower motor.

### 2.CHECK BLOWER MOTOR

Check that there is not breakage or damage in the blower motor.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace the blower motor.

### 3.CHECK BLOWER MOTOR

Check that the blower motor turns smoothly.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace the blower motor.

#### **BLOWER MOTOR RELAY**

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# 1. CHECK BLOWER MOTOR

1. Remove the blower motor relay. Refer to PG-97, "Fuse, Connector and Terminal Arrangement".

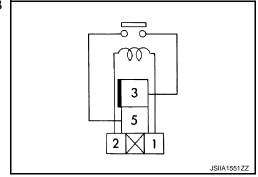
Check the continuity between the blower motor relay terminal 3 and 5 when the voltage is supplied between terminal 1 and 2.

| Blower motor relay |   | Voltage | Continuity  |  |
|--------------------|---|---------|-------------|--|
| Terminal           |   | voltage | Continuity  |  |
| 3                  | 5 | ON      | Existed     |  |
|                    | 3 | OFF     | Not existed |  |



YES >> INSPECTION END

NO >> Replace the blower motor relay.



### **MAGNET CLUTCH**

#### < DTC/CIRCUIT DIAGNOSIS >

#### [AUTOMATIC AIR CONDITIONING]

#### MAGNET CLUTCH Α Description INFOID:0000000005490067 The magnet clutch is the device that drives the compressor with the signal from IPDM E/R. В Compressor is driven by the magnet clutch which is charged magnetic force by electrified. IPDM E/R controls magnet clutch by turning the built in A/C relay to ON ⇔ OFF according to ECM request. Component Function Check INFOID:0000000005490068 CHECK MAGNET CLUTCH OPERATION Perform auto active test of IPDM E/R. Refer to PCS-11, "Diagnosis Description" (WITH I-KEY) or PCS-41, D "Diagnosis Description" (WITHOUT I-KEY). Does it operate normally? Е YES >> INSPECTION END NO >> Go to diagnosis procedure. Refer to HAC-61, "Diagnosis Procedure". Diagnosis Procedure INFOID:0000000005490069 1. CHECK MAGNET CLUTCH Turn the ignition switch OFF. Disconnect the magnet clutch connector. Directly apply the battery voltage to the magnet clutch. Check for operation visually and by sound. Does it operate normally? Н YES >> GO TO 2. NO >> Replace the compressor. 2.check magnet clutch circuit continuity HAC Turn the ignition switch OFF. 2. Disconnect the IPDM E/R connector. Check continuity between magnet clutch harness connector and IPDM E/R harness connector. IPDM E/R Magnet clutch Continuity Connector **Terminal** Connector Terminal E15 56 F17 1 Existed Is the inspection result normal? YES >> GO TO 3. NO >> Repair the harnesses and connectors. 3.CHECK FUSE M Check 10A fuse (No. 49, located in the IPDM E/R). NOTE: Refer to PG-99, "Fuse, Connector and Terminal Arrangement". N Is the inspection result normal? YES >> Replace the IPDM E/R.

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>> Replace the fuse after repairing the applicable circuit.

NO

### A/C ON SIGNAL

### Component Function Check

INFOID:0000000005490070

### 1. CHECK A/C ON SIGNAL

### (E)With CONSULT-III

- Turn the ignition switch ON.
- Select the "COMP REQ SIG" in "DATA MONITOR".
- 3. Check A/C ON signal when the A/C switch is operated.

| Monitor item             | Condition                    |                                | Status |
|--------------------------|------------------------------|--------------------------------|--------|
| COMP REQ SIG A/C control | A/C system ON (Indicator ON) | On                             |        |
| COMP REQ SIG             | A/C CONITO                   | A/C system OFF (Indicator OFF) | Off    |

#### Is inspection result normal?

YES >> INSPECTION END

NO >> Refer to <u>HAC-62</u>, "<u>Diagnosis Procedure</u>".

### Diagnosis Procedure

INFOID:0000000005490071

### 1. CHECK A/C SWITCH SIGNAL

- Turn the ignition switch ON.
- 2. Check output waveform between A/C auto amp. harness connector and the ground with using oscilloscope.

| (             | +)       | (-)    |               |  |
|---------------|----------|--------|---------------|--|
| A/C auto amp. |          |        | Condition     | Output waveform  |
| Connector     | Terminal | _      |               |  |
| M51           | 34       | Ground | A/C switch ON | (V)<br>3<br>2<br>1<br>0<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1 |

#### Is inspection result normal?

YES >> GO TO 2.

NO >> Replace the A/C auto amp.

### 2.CHECK CONTINUITY BETWEEN A/C AUTO AMP. AND BCM

- Turn the ignition switch OFF.
- Disconnect the A/C auto amp. connector.
- 3. Disconnect the BCM connector.
- 4. Check continuity between A/C auto amp. harness connector and BCM harness connector.

| A/C au    | to amp.  | BCM                                     |          | Continuity |
|-----------|----------|---|----------|------------|
| Connector | Terminal | Connector                               | Terminal | Continuity |
| M51       | 34       | M65 (WITHOUT I-KEY)<br>M68 (WITH I-KEY) | 27       | Existed    |

#### Is inspection result normal?

YES >> GO TO 3.

NO >> Repair the harnesses or connectors.

### A/C ON SIGNAL

### < DTC/CIRCUIT DIAGNOSIS >

### [AUTOMATIC AIR CONDITIONING]

# ${f 3.}$ CHECK THE CONTINUITY BETWEEN A/C AUTO AMP. AND GROUND

Check continuity between A/C auto amp. harness connector and ground.

| A/C auto amp.      |    | _      | Continuity  |
|--------------------|----|--------|-------------|
| Connector Terminal |    |        | Continuity  |
| M51                | 34 | Ground | Not existed |

#### Is inspection result normal?

YES >> Replace the BCM. Refer to <u>BCS-81, "Exploded View"</u> (WITH I-KEY) or <u>BCS-146, "Exploded View"</u> (WITHOUT I-KEY).

NO >> Repair the harnesses or connectors.

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### **BLOWER FAN ON SIGNAL**

### Component Function Check

INFOID:0000000005490072

### 1. CHECK BLOWER FAN ON SIGNAL

### (E)With CONSULT-III

- 1. Turn the ignition switch ON.
- 2. Select the "FAN REQ SIG" in "DATA MONITOR"
- 3. Check the fan ON signal when the fan control switch is operated.

| Monitor item | Con                  | Status              |     |
|--------------|----------------------|---------------------|-----|
| FAN REQ SIG  | Fan control switch   | OFF position        | Off |
|              | T all control switch | Except OFF position | On  |

#### Is inspection result normal?

YES >> INSPECTION END

NO >> Refer to <u>HAC-64</u>, "<u>Diagnosis Procedure</u>".

### Diagnosis Procedure

INFOID:0000000005490073

## 1. CHECK BLOWER FAN ON SIGNAL

- Turn the ignition switch ON.
- 2. Check output waveform between A/C auto amp. and ground with using the oscilloscope.

| (+) (-)<br>A/C auto amp. |          | (-)    |  |   |  |
|--------------------------|----------|--------|--|---|--|
|                          |          |        | Condition                                    | Output waveform                                   |  |
| Connector                | Terminal | _      |  |   |  |
| M51                      | 35       | Ground | Ignition switch ON     Fan speed: Manual 1st | (V)<br>15<br>10<br>5<br>0<br>++ 4 ms<br>SJIA1425J |  |

#### Is inspection result normal?

YES >> GO TO 2.

NO >> Replace the A/C auto amp.

### $2.\mathsf{CHECK}$ CONTINUITY BETWEEN A/C AUTO AMP. AND BCM

- 1. Turn the ignition switch OFF.
- 2. Disconnect the A/C auto amp. connector.
- 3. Disconnect the BCM connector.
- 4. Check continuity A/C auto amp. harness connector and BCM harness connector.

| A/C au    | ito amp. | ВСМ                                     | Continuity |            |
|-----------|----------|---|------------|------------|
| Connector | Terminal | Connector Terminal                      |            | Continuity |
| M51       | 35       | M65 (WITHOUT I-KEY)<br>M68 (WITH I-KEY) | 28         | Existed    |

#### Is inspection result normal?

YES >> GO TO 3.

NO >> Repair the harnesses or connectors.

### 3.CHECK CONTINUITY BETWEEN A/C AUTO AMP. AND GROUND

Check continuity between A/C auto amp. harness connector and ground.

### **BLOWER FAN ON SIGNAL**

### < DTC/CIRCUIT DIAGNOSIS >

### [AUTOMATIC AIR CONDITIONING]

| A/C au           | A/C auto amp. |        | Continuity  |
|------------------|---------------|--------|-------------|
| Connector        | Terminal      | _      | Continuity  |
| M51              | 35            | Ground | Not existed |
| Is inspection re | sult normal?  |        |             |

>> Replace the BCM. Refer to BCS-81, "Exploded View" (WITH I-KEY) or BCS-146, "Exploded YES View" (WITHOUT I-KEY).

NO >> Repair the harnesses or connectors. В

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< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

# POWER SUPPLY AND GROUND CIRCUIT A/C AUTO AMP.

A/C AUTO AMP.: Diagnosis Procedure

INFOID:0000000005490074

### 1. CHECK FUSE

Check 10A fuses [Nos. 2, 13 and 16, located in the fuse block (J/B)].

NOTE:

Refer to PG-97, "Fuse, Connector and Terminal Arrangement".

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace the fuse after repairing the applicable circuit.

### 2.CHECK A/C AUTO AMP. POWER SUPPLY CIRCUIT-1

- 1. Turn the ignition switch OFF.
- 2. Disconnect the A/C auto amp. connector.
- Check voltage between A/C auto amp. harness connector and the ground.

| (         | +)       | (-)     | Voltage                  |                 |                 |
|-----------|----------|---------|--------------------------|-----------------|-----------------|
| A/C au    | to amp.  |         | Ignition switch position |                 | on              |
| Connector | Terminal | _       | OFF                      | ACC             | ON              |
| M50       | 4        | Ground  | Battery voltage          | Battery voltage | Battery voltage |
| IVISO     | 5 Groun  | Giodila | Approx. 0 V              | Approx. 0 V     | Battery voltage |

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the harnesses or connectors.

## 3.CHECK A/C AUTO AMP. POWER SUPPLY CIRCUIT-2

Check voltage A/C auto amp. harness connector and the ground.

| (         | +)       | (-)    | Voltage                  |             |                 |
|-----------|----------|--------|--------------------------|-------------|-----------------|
| A/C au    | to amp.  |        | Ignition switch position |             | on              |
| Connector | Terminal | _      | OFF                      | ACC         | ON              |
| M50       | 9        | Ground | Approx. 0 V              | Approx. 0 V | Battery voltage |

#### Is inspection result normal?

YES >> GO TO 4.

NO >> GO TO 5.

### 4. CHECK A/C AUTO AMP. CIRCUIT CONTINUITY

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

| A/C auto amp. |          | _ | Continuity |
|---------------|----------|---|------------|
| Connector     | Terminal |   | Continuity |
| M50           | M50 16   |   | Existed    |

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair the harnesses or connectors.

### CHECK BLOWER MOTOR RELAY POWER SUPPLY

- 1. Turn the ignition switch OFF.
- Disconnect the blower motor relay from the fuse block (J/B). Refer to <u>PG-97</u>, "Fuse, Connector and Terminal Arrangement".

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

3. Turn the ignition switch ON.

4. Check voltage between the ground and the connector on the fuse block side where blower motor relay was installed. Refer to PG-95, "Description".

 (+)
 (-)
 Voltage (Approx.)

 Fuse block (J/B)
 —
 (Approx.)

 1
 Ground
 Battery voltage

Is inspection result normal?

YES >> GO TO 6.

NO >> Repair the power supply circuit. Refer to PG-6, "Wiring Diagram - BATTERY POWER SUPPLY -".

6. CHECK BLOWER MOTOR RELAY

Perform the blower motor component inspection. Refer to <a href="HAC-59">HAC-59</a>. "Component Inspection".

Is inspection result normal?

YES >> Repair the harness or connector between blower motor relay and A/C auto amp.

NO >> Replace blower motor relay.

BCM (BODY CONTROL SYSTEM) (WITH INTELLIGENT KEY SYSTEM)

BCM (BODY CONTROL SYSTEM) (WITH INTELLIGENT KEY SYSTEM): Diagnosis

Procedure

### 1. CHECK FUSE AND FUSIBLE LINK

Check that the following fuse and fusible link are not blown.

| Signal name          | Fuse and fusible link No. |
|----------------------|---------------------------|
| Pottony nower supply | L                         |
| Battery power supply | 10                        |

#### Is the fuse fusing?

YES >> Replace the blown fuse or fusible link after repairing the affected circuit if a fuse or fusible link is blown.

NO >> GO TO 2.

### 2.CHECK POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect BCM connectors.
- Check voltage between BCM harness connector and ground.

| (-        | +)       | (-)    | Voltage         |
|-----------|----------|--------|-----------------|
| BCM       |          |        | (Approx.)       |
| Connector | Terminal | Ground |                 |
| M118      | 1        | Glound | Battery voltage |
| M119      | 11       |        | Dattery Voltage |

#### Is the measurement value normal?

YES >> GO TO 3.

NO >> Repair harness or connector.

### 3. CHECK GROUND CIRCUIT

Check continuity between BCM harness connector and ground.

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[AUTOMATIC AIR CONDITIONING]

#### < DTC/CIRCUIT DIAGNOSIS >

| В         | CM       |        | Continuity |
|-----------|----------|--------|------------|
| Connector | Terminal | Ground | Continuity |
| M119      | 13       |        | Existed    |

#### Does continuity exist?

YES >> INSPECTION END

NO >> Repair harness or connector.

### BCM (BODY CONTROL SYSTEM) (WITHOUT INTELLIGENT KEY SYSTEM)

# BCM (BODY CONTROL SYSTEM) (WITHOUT INTELLIGENT KEY SYSTEM) : Diagnosis Procedure

### 1. CHECK FUSES AND FUSIBLE LINK

Check that the following fuses and fusible link are not fusing.

| Signal name           | Fuses and fusible link No. |
|-----------------------|----------------------------|
| Battery power supply  | 10                         |
|                       | J                          |
| ACC power supply      | 20                         |
| Ignition power supply | 1                          |

#### Is the fuse fusing?

YES >> Replace the blown fuse or fusible link after repairing the affected circuit if a fuse or fusible link is blown.

NO >> GO TO 2.

### 2. CHECK POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect BCM connectors.
- 3. Check voltage between BCM harness connector and ground.

| Terminals |          |         | Ignition switch position |                    |                    |
|-----------|----------|---------|--------------------------|--------------------|--------------------|
| (+)       |          |         | Ignition switch position |                    |                    |
| BCM       |          | (–) OFF |                          | ACC                | ON                 |
| Connector | Terminal |         | Oll                      | ACC                | ON                 |
| M109      | 70       | Ground  | Battery                  | Battery            | Battery            |
|           | 57       |         | voltage                  | voltage            | voltage            |
| M107      | 11       |         | Approx.<br>0 V           | Battery<br>voltage | Battery<br>voltage |
|           | 38       |         | Approx.<br>0 V           | Approx.<br>0 V     | Battery<br>voltage |

#### Is the measurement value normal?

YES >> GO TO 3.

NO >> Repair harness or connector.

# 3. CHECK GROUND CIRCUIT

Check continuity between BCM harness connector and ground.

| ВС        | CM       |        | Continuity |  |
|-----------|----------|--------|------------|--|
| Connector | Terminal | Ground | Continuity |  |
| M109      | 67       |        | Existed    |  |

#### Does continuity exist?

< DTC/CIRCUIT DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

YES >> INSPECTION END

NO >> Repair harness or connector.

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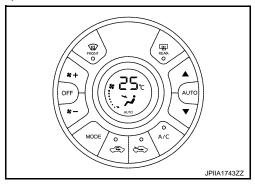
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### A/C AUTO AMP.

Description INFOID:000000005490077

#### A/C AUTO AMP. (AIR CONDITIONER AUTOMATIC AMPLIFIER)

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



### Component Function Check

INFOID:0000000005490078

### 1. CHECK OPERATION

- 1. Confirm that "AUTO" is indicated on the display by operating the AUTO switch.
- Operate the temperature control switch. Check that the fan speed or discharge air changes (the discharge air temperature or fan speed varies depending on the ambient temperature, in-vehicle temperature, and set temperature).

#### Does it operate normally?

YES >> INSPECTION END

NO >> Perform the diagnosis for the A/C auto amp. Refer to HAC-70, "Diagnosis Procedure".

### Diagnosis Procedure

INFOID:0000000005490079

### 1. CHECK A/C AUTO AMP. POWER SUPPLY CIRCUIT AND GROUND CIRCUIT

Check A/C auto amp. power supply circuit and ground circuit. Refer to <u>HAC-66, "A/C AUTO AMP. : Diagnosis</u> Procedure".

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace parts depending on the inspection results.

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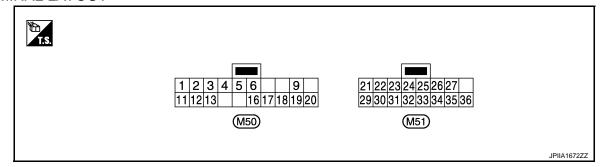
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# **ECU DIAGNOSIS INFORMATION**

A/C AUTO AMP.

Reference Value

### **TERMINAL LAYOUT**



### PHYSICAL VALUES

| Terminal No.<br>(Wire color) |                    | Description                                 |                                 |   |   | Value                      | G   |     |
|------------------------------|--------------------|---|---------------------------------|---|---|----------------------------|---|-----|
| +                            | _                  | Signal name                                 |                                 | Input/<br>Output  | Condition   | (Approx.)                  |   |     |
| 2<br>(R)                     | Ground             | A/C auto amp. connecting recognition signal |                                 | Output  | Ignition switch ON  | 5 V                        | Н   |     |
| 3<br>(R)                     | Ground             | Intake door motor PBR pow-<br>er supply     |                                 | Output  | Ignition switch ON  | 5 V                        | HA  |     |
| 4<br>(LG)                    | Ground             | Battery power supply                        |                                 | _   | Ignition switch OFF   | Battery voltage            |   |     |
| 5<br>(O)                     | Ground             | IGN power supply                            |                                 | _   | Ignition switch ON  | Battery voltage            | J   |     |
| 6<br>(R/W)                   | Ground             | Sensor ground                               |                                 | _   | Ignition switch ON  | 0 V                        | K   |     |
| 9<br>(Y)                     | Ground             | IGN2 power supply                           |                                 | _   | Ignition switch ON  | Battery voltage            |   |     |
| 12                           | 12<br>(L) Ground   | Intake door motor                           |                                 | <ul> <li>Ignition switch ON</li> <li>Intake switch REC → FRE</li> </ul> | 12 V  | L                          |   |     |
| (L)                          |                    | Ground                                      | drive signal                    | TIKE  | Output  | Output                     | <ul> <li>Ignition switch ON</li> <li>Intake switch FRE → REC</li> </ul> | 0 V |
| 13                           | 13<br>(G) Ground   | nd REC Intake door motor drive signal       | Intake door motor               | Output  | <ul> <li>Ignition switch ON</li> <li>Intake switch REC → FRE</li> </ul>     | 0 V                        | 10  |     |
| (G)                          |                    |   |                                 | <ul> <li>Ignition switch ON</li> <li>Intake switch FRE → REC</li> </ul> | 12 V  | N                          |   |     |
| 16<br>(B)                    | Ground             | Ground                                      |                                 | _   | Ignition switch ON  | 0 V                        |   |     |
| 17<br>(BR)                   | 18 (SB) (Ground 19 | A/MIX<br>drive 4                            | Air mix door motor drive signal | Output  | Ignition switch ON     Right after the temperature control switch operation | W                          |   |     |
| 18<br>(SB)                   |                    | A/MIX<br>drive 3                            |                                 |   |   | (V)<br>30<br>20<br>10<br>0 | F   |     |
| 19<br>(GR)                   |                    | A/MIX<br>drive 2                            |                                 |   |   |                            |   |     |
| 20<br>(P)                    |                    | A/MIX<br>drive 1                            |                                 |   |   | JPIIA1647GB                |   |     |

### A/C AUTO AMP.

### [AUTOMATIC AIR CONDITIONING]

| Terminal No.<br>(Wire color) |        | Description                                |                                 | Condition        | Value  |   |
|------------------------------|--------|--|---------------------------------|------------------|--|---|
| +                            | _      |  |                                 | Input/<br>Output | Condition  | (Approx.)   |
| 21<br>(BR)                   | Ground | Engine coolant temperature signal          |                                 | Input            | <ul> <li>Ignition switch ON</li> <li>Engine idling [Approximately 20°C (68°F)]</li> </ul>  | (V)<br>6<br>4<br>2<br>0<br>200 ms<br>PKID0590E                      |
|                              |        |  |                                 |                  | <ul> <li>Ignition switch ON</li> <li>Engine idling [Approximately 80°C (176°F)]</li> </ul> | (V)<br>6<br>4<br>2<br>0<br>*** 200ms<br>SKIB3651J                   |
| 22<br>(V/W)                  | Ground | Ambient sensor signal                      |                                 | Input            | _  | 0 – 4.8 V<br>Output voltage varies with ambient<br>temperature      |
| 23<br>(O)                    | Ground | Intake sensor signal                       |                                 | Input            | _  | 0 – 4.8 V<br>Output voltage varies with intake<br>temperature       |
| 24<br>(G)                    | Ground | In-vehicle sensor signal                   |                                 | Input            | _  | 0 – 4.8 V<br>Output voltage varies with in-vehi-<br>cle temperature |
| 25<br>(P)                    | Ground | Sunload sensor signal                      |                                 | Input            | _  | 0 – 4.8 V<br>Output voltage varies with sun load                    |
| 26                           | Ground | Intake door motor PBR feed-<br>back signal |                                 | Input            | Ignition switch ON     REC position  | 0.5 V   |
| (SB)                         |        |  |                                 |                  | Ignition switch ON     FRE position  | 4.5 V   |
| 29<br>(GR)                   |        | MODE<br>drive 4                            | Mode door motor<br>drive signal | Output           | Ignition switch ON     Right after MODE switch operation                                   | <b>₩</b>  |
| 30<br>(W)                    | Ground | MODE<br>drive 3                            |                                 |                  |  | 20  |
| 31<br>(Y)                    |        | MODE<br>drive 2                            |                                 |                  |  | 0 10 ms   |
| 32<br>(V)                    |        | MODE<br>drive 1                            |                                 |                  |  | JPIIA1647GB   |

### A/C AUTO AMP.

#### < ECU DIAGNOSIS INFORMATION >

# [AUTOMATIC AIR CONDITIONING]

| Termin<br>(Wire |        | Description                 |                  | Condition   | Value  |   |
|-----------------|--------|-----------------------------|------------------|---|--|---|
| +               | _      | Signal name                 | Input/<br>Output | Condition   | (Approx.)  | _ |
| 34<br>(Y/G)     | Ground | A/C ON signal               | Output           | <ul><li>Ignition switch ON</li><li>A/C switch: ON</li></ul> | (V) 3 2 1 0                                      | _ |
|                 |        |                             | Сира             | Ignition switch ON     A/C switch: OFF                      | (V)<br>15<br>10<br>5<br>0<br>** 4 ms             |   |
| 35<br>(G/W)     | Ground | Fan ON signal               | Output           | Ignition switch ON     Fan speed: 1st speed (manual)        | (V)<br>15<br>10<br>5<br>0<br>4 4 ms<br>SJIA1425J |   |
| 36<br>(GR/B)    | Ground | Blower motor control signal | Output           | Ignition switch ON     Fan speed: 1st speed (manual)        | (V)<br>15<br>10<br>5<br>0<br>++200 µs            |   |

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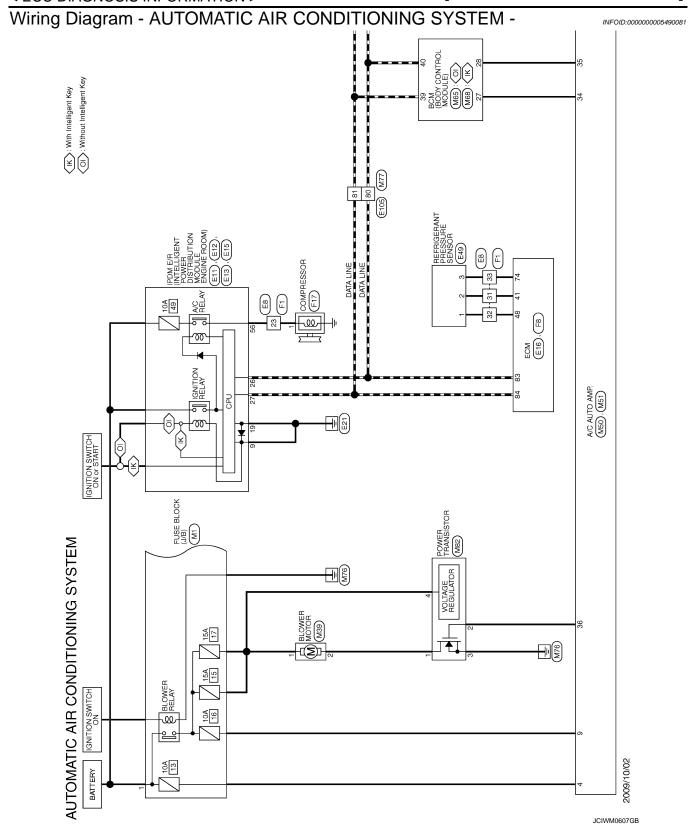
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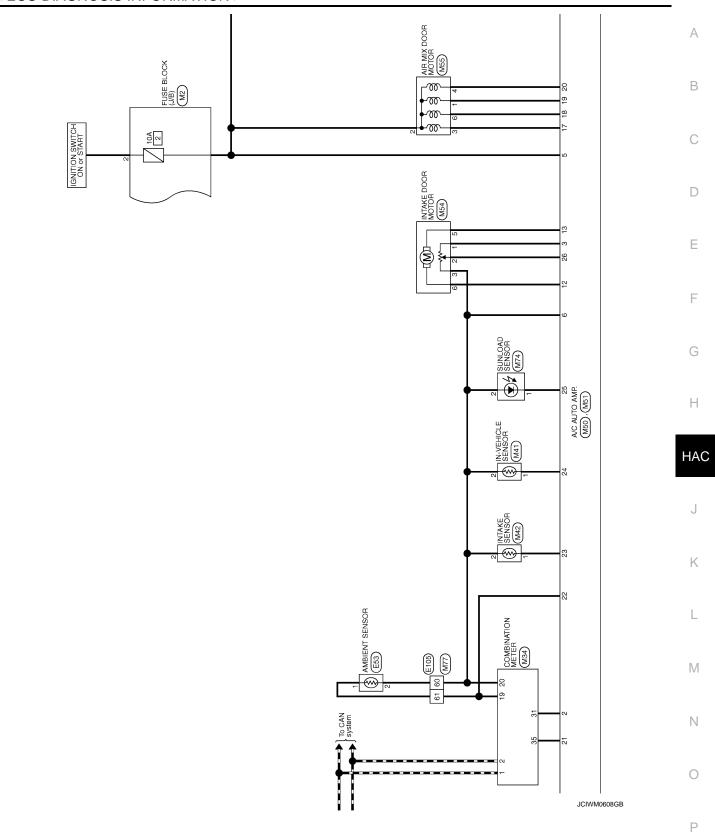
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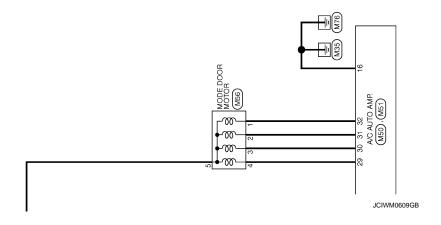
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|--|-------------|--|
| 4FB-RZ8-L-RH   4FB-RZ8-L-RH   4FB-RZ8-L-RH   105 104 105 115 110   105 104 105 115 110   105 104 105   105 104 105 110   105 104 105 110   105 104 105 110   105 104 105 110   105 104 105 110   105 104 105 110   105 104 105 110   105 104 105 110   105 104 105 110   105 104 105 110   105 104 105 110   105 104 105 110   105 104 105 110   105 104 105 110   105 104 105 110   105 104 105 110   105 104 105 110   105 104 105   1   | В           |  |
|  | С           |  |
| 61   W   62   L   Connector No.   E16   Connector Name   E0.   Connector Type   E18   E18   E19   E1   | D           |  |
| Prostribution woold.  [24 23] [24 23] [30 29] [30 29] [31 24 24] [31 26 25 24] [32 26 26 26 26 26 26 26 26 26 26 26 26 26  | Е           |  |
| Refr Pow Ref | F           |  |
|  | G           |  |
| Connector Name   Connector Type  | Н           |  |
| 1   10   9   14   13   12   14   13   12   14   13   12   14   15   15   15   15   15   15   15  | HAC         |  |
| E11  E11  FET  | J           |  |
| Connector Name   State   Sta   | К           |  |
| SS STATE OF THE ST | L           |  |
| Signal Name (Specification)   Sign   | М           |  |
| NWRE TO SAASONKE T | N           |  |
| AUTOMAT  Connector Name  Connector Type  In Manage  In  | 0           |  |
| A  | JCIWM0610GB |  |
|  | Р           |  |

| AUTOMATIC AIR CONDITIONING SYSTEM              | TEM  |        |                |          |                |                            |    |     |   |  |
|--|------|--------|----------------|----------|----------------|----------------------------|----|-----|---|--|
| Connector No. E49                              | 2    | W      | _              | 91       | Μ              | -                          | 32 | BR  | _ |  |
|  | 3    | SB     | 1              | 95       | Y              | 1                          | 33 | Μ   | 1 |  |
| Connector Name   RETRIGERANT   PRESSURE SENSOR | 4    | 9      | 1              | 93       | >              | 1                          | 34 | 57  | 1 |  |
| Connector Type RK03FB                          | 2    | а      | 1              | 94       | α              | 1                          | 35 | >   | 1 |  |
|  | 9    | œ      | 1              | 95       | H              | 1                          | 36 | >   | 1 |  |
|  | 7    | >      | ı              | 96       | 57             | 1                          | 37 | *   | ı |  |
|  | 8    | 0      | 1              | 97       | ┝              | -                          | 39 | g   | 1 |  |
| ₩ <b>2</b>                                     | 6    | Α.     | ı              | 86       | H              | -                          | 40 | ۵   | 1 |  |
|  | 10   | SB     | ı              | 66       | H              | -                          | 41 | 0   | 1 |  |
| (123)  | 31   | >      | i              | 100      | ╀              | 1                          | 45 | U   | 1 |  |
| )  | 32   | œ      | 1              |          |                |                            | 43 | œ   | 1 |  |
|  | 33   | S.     | 1              |          |                |                            | 44 | ۵   |   |  |
| Terminal Color                                 | 34   | ۵      | 1              | Conne    | Connector No.  | 13                         | 46 | æ   | 1 |  |
|  | 35   | . >    | 1              |          |                |                            | 47 | >   | 1 |  |
| t  | 98   | - 6    | 1              | Conne    | Connector Name | WIRE TO WIRE               | 84 | - g | 1 |  |
| 2 6  | 39   | SB     | i              | Conne    | Connector Type | SAA36FB-RS10-SJZ2          |    |     |   |  |
| 3 W  | 44   | œ      | 1              |          |                |                            |    |     |   |  |
| ł  | 45   | >      | 1              | 4        | _              |                            |    |     |   |  |
|  | 46   |        |                | ÷        |                | 987654321                  |    |     |   |  |
| Connector No F53                               | 47   | . 3    | 1              | H.S.     | જં             |                            |    |     |   |  |
|  | ;    |        |                |          |                | 25 24 23 22 21 20 19       |    |     |   |  |
| Connector Name AMBIENT SENSOR                  | 84 6 | ۱ ,    | T.             |          |                | 30 29 28 27 26             |    |     |   |  |
| - 1  | 64   | -      | 1              |          |                | 393837383534333331         |    |     |   |  |
| Connector Type RS02FB                          | 20   | *      | 1              |          |                |                            |    |     |   |  |
| á  | 51   | æ      | - [With CVT]   |          |                |                            |    |     |   |  |
| ほ  | 51   | В      | - [With M/T]   | Terminal | _              | Simol Nama [Snavification] |    |     |   |  |
| °E   | 53   | SB     | 1              | No.      | of Wire        |                            |    |     |   |  |
|  | 54   | W      | - [With CVT]   | -        | SB             | 1                          |    |     |   |  |
|  | 54   | 0      | - [With M/T]   | 2        | PC             | 1                          |    |     |   |  |
|  | 22   | FG     | 1              | 8        | ۳              | 1                          |    |     |   |  |
|  | 29   |        | 1              | 4        | >              | 1                          |    |     |   |  |
|  | 9    | С      | 1              | 7        | >              | 1                          |    |     |   |  |
| Terminal Color                                 | 9    | ۳      | 1              | ~        |                | 1                          |    |     |   |  |
|  | 69   | 3      |                |          | 9 8            |                            |    |     |   |  |
| t  | 700  | : .    |                | 0 5      | +              |                            |    |     |   |  |
| 5 0  | 00   | 7 6    | El control     | 2 ;      | <b>-</b>   ;   |                            |    |     |   |  |
|  | /0   | £ :    | [with CVI]     | = ;      | $^{+}$         |                            |    |     |   |  |
|  | /9   | >      | = [With M/ I ] | 12       | +              | 1                          |    |     |   |  |
|  | T    | a.     | 1              | 13       | 4              | 1                          |    |     |   |  |
| Connector No. E105                             | 70   | SHIELD | 1              | 14       | $\dashv$       | 1                          |    |     |   |  |
| Connector Name WIRE TO WIRE                    | 11   | GR     | 1              | 15       | $\dashv$       | 1                          |    |     |   |  |
|  | 72   | LG     | _              | 16       | Υ              | _                          |    |     |   |  |
| Connector Type TH80MW-CS16-TM4                 | 73   | ۵      | -              | 17       |                | 1                          |    |     |   |  |
|  | 74   | >      | 1              | 18       | BR             | 1                          |    |     |   |  |
| d  | 9/   | >      | 1              | 21       | g              | 1                          |    |     |   |  |
|  | 77   |        | 1              | 23       | ł              | 1                          |    |     |   |  |
|  | 20,2 | ì      |                | 20       | ╀              |                            |    |     |   |  |
| 28 28 28 28 28 28 28 28 28 28 28 28 28 2       | 2 6  | ,      |                | 7 6      | +              |                            |    |     |   |  |
| 38 G<br>38 G<br>38 G<br>38 G                   | 6 6  | 5 (    |                | 67       | +              |                            |    |     |   |  |
| 100  | 80   | 1      |                | 56       | +              | 1                          |    |     |   |  |
| 8  | 81   | _      | 1              | 27       | <u>"</u>       | 1                          |    |     |   |  |
|  | 82   | *      | 1              | 28       | $\dashv$       | 1                          |    |     |   |  |
| Terminal Color Simal Nama [Snacification]      | 83   | BR     | _              | 29       | -              |                            |    |     |   |  |
|  | 84   | В      | -              | 30       | H              | 1                          |    |     |   |  |
| - ^  | 87   | GR     | 1              | 31       | GR             | -                          |    |     |   |  |
|  |      |        |                |          |                |                            |    |     |   |  |

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| Г                             | I                 | П                     |   |   | А             |
|-------------------------------|-------------------|-----------------------|---|---|---------------|
| Connector No Mon              | e                 | Connector Type TM02FW | (1.8)   | Terminal Color Signal Name [Specification]  1   | B<br>C<br>D   |
|                               |                   |                       | 24 3 2 1<br>24 23 22 21   | on] PDULSE) NAL H SIGNAL CORTURE SIDE) SIGNAL SIGNAL SIGNAL SIGNAL SIGNAL ND NUID NUID NUID NUID NUID NUID NUID N   | E             |
|                               | COMBINATION METER | H40FW-NH              | 11 10 9 8 7 6 5 1 20 20 20 12 20 20 20 12 20 20 12 20 20 12 | Signal Name [Specification]  CAN-H  CAN-H  CAN-H  CAN-H  CAN-H  WEHICLE SPEED SIGNAL (3-PULSE)  FIGIL LEVEL SENSOR SIGNAL  AND BAG SIGNAL  SAN THE LEVEL SENSOR SIGNAL  BRANKE PLUD LEVEL SWITCH SIGNAL  BRANKE PLUD LEVEL SWITCH SIGNAL  AND SIGNAL  AMBIENT SIGNAL  RECURITY SIGNAL  AMBIENT SIGNAL  GROUND  GROUND | F             |
| Oceanoctor No.                | пе                | tor Type TH           | 20 119 118 177 15   | Color of Wire   Color of Wir  | G             |
| Conne                         | Connec            | Connec                | H.S.  | 7 empiral No. 1   | Н             |
| /STEM                         | 9                 | Connector Type RS01FB | HS<br>HS  | Terminal   Color   Signal Name [Specification]   No. of Wire   MAGNET CLUTCH POWER SUPPLY   | HAC<br>J<br>K |
| <u>16 SYS</u>                 |                   |                       |   |   | L             |
| AUTOMATIC AIR CONDITIONING SY |                   | BR-RZ8-L-RH           | 353741456495576666973777<br>3438424650 586266 77478<br>354394151558987 77175<br>384044882   | Signal Name [Specification]  TPS 1 TPS 1 TPS 1 TPS 2 GNDA-TPS KAK TAK GNDA-KNK PDPRES TF TA GNDA-TPRES TF TA GNDA-TPRES GNA-TPRES GAA- GNDA-TPRES GNDA-TPRES GAA- GNDA-TPRES GAB- FRASE GNDA-TPRES GAB- FRASE FRASE GNDA-CURSEN PRASE PRASE RUC-TPRES GNDA-CURSEN AVCC-PDRES AVCC-TPRES AVCC-TPRESEN AVCC-TPRESEN  | М             |
| TIC AIF                       | ECM               | RH40FBR               | 37 41 45 46<br>38 42 46 50<br>43 47 51<br>40 44 48 52   |   | N             |
| TOMA                          | Connector Name    | ector Type            | S. S  | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0   | 0             |
|                               | Conn              | Conn                  | E .   | Terminal  No No 33 33 34 36 36 36 37 37 37 37 37 47 47 47 47 47 47 47 47 47 47 47 47 47   | JCIWM0612GB   |
|                               |                   |                       |   |   | Р             |

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| AIR CONDITIONING SY                  |   |  |   | 201  |
|--------------------------------------|---|--|---|--|
| . M42                                | Connector No. M51   | Connector No. M55                          | Connector No.                             | M65  |
| Connector Name INTAKE SENSOR         | Connector Name A/C AUTO AMP.                                | Connector Name AIR MIX DOOR MOTOR          | Connector Name                            | BCM (BODY CONTROL MODULE)  |
| Connector Type TK02FBR               | Connector Type TK16FGY                                      | Connector Type MAA06FB                     | Connector Type                            | TH40FW-NH  |
|                                      | Œ   | <b>E</b>                                   | 匮   |  |
|                                      | ST.   | H.S.                                       | H.S.                                      |  |
| 12                                   | 21 22 23 24 25 86 27<br>29 30 31 32 33 34 35 36             | - <u>9</u>                                 | 21 22 23 23 23 23 23 23 23 23 23 23 23 23 | 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 24 55 56 77 58 19 40 24 55 56 77 58 19 40 24 55 56 77 58 19 40 24 55 56 77 58 19 40 24 56 56 77 58 19 40 24 56 56 77 58 19 40 24 56 56 77 58 19 40 24 56 56 77 58 19 40 24 56 56 77 58 19 40 24 56 56 77 58 19 40 24 56 56 77 58 19 40 24 56 56 77 58 19 40 24 56 56 77 58 19 40 24 56 56 77 58 19 40 24 56 56 77 58 19 40 24 56 56 78 58 78 58 58 58 58 58 58 58 58 58 58 58 58 58 |
| Golor Signal Name [Specification]    | Terminal Color Signal Name [Specification]                  | Terminal Color Signal Name [Specification] | Terminal Color<br>No. of Wire             | Signal Name [Specification]  |
| INI                                  | 21 BR WATER TEMPERATURE SIGNAL                              | 1 GR A/MIX DRIVE SIGNAL 2                  | 2 BR/W                                    | COMBI SW INPUT 5   |
| R/W SENSOR GROUND                    | 22 V/W AMBIENT SENSOR SIGNAL                                | 2 O IGNITION POWER SUPPLY                  | 3 GR                                      | COMBI SW INPUT 4   |
|                                      | 0 0   | £ a  | 2 - 2                                     | COMBI SW INPUT 2   |
| Connector No. M50                    | ۵   | 6 SB A/MIX DRIVE SIGNAL 3                  | 6<br>- L/R                                | COMBI SW INPUT 1   |
| Oppositor Name A / C ALITO AMP       | SB  |  | 7 W/R                                     | KEY CYL UNLOCK SW  |
| Т                                    | R REAR W  | Γ  | ^   | KEY CYL LOCK SW  |
| Connector Type TRZUFGY               | YS II   | Connector No. Mab                          | +   | STOP LAMP SW   |
|                                      | 30 W MODE DRIVE SIGNAL 3 31 Y MODE DRIVE SIGNAL 2           | Connector Name MODE DOOR MOTOR             | 1 N/L                                     | KEAR WINDOW DEFOGGER SW<br>ACC   |
|                                      | 32 V MODE DRIVE SIGNAL 1                                    | Connector Type TH08FW-NH                   | 12 SB                                     | PASSENGER DOOR SW  |
| <br> -<br> -                         | W/L REAR WIND   | ģ  | 13 GR/L                                   | REAR RH DOOR SW  |
| 3 to 0 to 9                          | Y/G   | 医  | $\dashv$                                  | OPTICAL SENSOR   |
| 11 12 13 16 17 18 19 20              | G/W   | K  | +   | TIRE PRESS WARNING CHECK SW  |
|                                      | 36 GR/R POWER TRANSISTOR CONTROL SIGNAL                     |  | 17 R/G                                    | OPTICAL SENSOR POWER SUPPLY  |
|                                      |   | 7  | +   | RECEIVER/ SEINSOR GIND   |
| Color Signal Name [Specification]    | Connector No. M54   | 2  | 20 G/Y                                    | KEYLESS EN IRY RECEIVER POWER SUPPLY KEYLESS ENTRY RECEIVER COMM   |
| W ILLUMINATION POWER SUPPLY          | Commeter Name INITAKE DOOD MOTOD                            |  | 21 P/L                                    | NATS ANTENNA AMP.  |
| Ħ                                    | П   | lal  | H   | SECURITY INDICATOR LAMP  |
| R INTAKE DOOR MOTOR PBR POWER SUPPLY | Connector Lype 98193-0001                                   | No. of Wire                                | 24 GR/R                                   | DONGLE LINK  |
|                                      | <b>1</b>  | 2 V MODE DRIVE SIGNAL 2                    | +   | THERMO CONTROL AMP   |
| ۸                                    |   | . M  | H   | A/C SW [With auto A/C]   |
| Y IGNITION POWER SUPPLY              |   | 4 GR MODE DRIVE SIGNAL 4                   | 27 Y/R                                    | A/C SW [With manual A/C]   |
| B/R ILLUMINATION GROUND              | 123 56  | 5 O IGNITION POWER SUPPLY                  | 28 G/W                                    | BLOWER FAN SW  |
| L FRE DRIVE SIGNAL                   | -11   |  | 29 L/W                                    | HAZARD SW  |
| G REC DRIVE SIGNAL                   |   |  | 31 G√Y                                    | FR DEFROSTER SW  |
|                                      |   |  | $\dashv$                                  | COMBI SW OUTPUT 5  |
|                                      | nal   |  |   | COMBI SW OUTPUT 4  |
|                                      | 9   |  | $\dashv$                                  | COMBI SW OUTPUT 3  |
|                                      | 1   |  | +   | COMBI SW OUTPUT 2  |
| P A/MIX DRIVE SIGNAL 1               | 1   |  | ┪   | COMBI SW OUTPUT 1  |
|                                      | 2 G INTAKE DOOR MOTOR PBR F/B SIGNAL [Except with auto A/C] |  | +   | KEY SWITCH   |
|                                      | M/M   |  | o .                                       | IGN  |
|                                      | 9   |  | +   | CAN-H  |
|                                      | 6 L FRE DRIVE SIGNAL  |  | 40 P                                      | CAN-L  |
|                                      |   |  |   |  |

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| ation] LOUTPUT ROL SIGNAL  | А           |
|--|-------------|
| MAEW-LC  Signal Name (Specification)  Signal Name (Specification)  BLOWER TRANSISTOR CONTROL OUTPUT  POWER TRANSISTOR CONTROL GROUND  IGNITION POWER SUPPLY  | В           |
|  | С           |
| Connector No.  Gonnector Type  Connector Type  H.S.  H.S.  A R. R.  A B B B B B B B B B B B B B B B B B B  | D           |
|  | Е           |
|  | F           |
| 41 BRA<br>48 L/O<br>50 DLW<br>51 BWW<br>52 BWW<br>62 BWW<br>63 BWW<br>64 BWW<br>65 BWW<br>65 BWW<br>66 BWW<br>67 BWW<br>68 BWW<br>69 CAR<br>69 CAR<br>69 CAR<br>69 CAR<br>69 CAR<br>69 CAR<br>69 CAR<br>69 CAR<br>69 CAR<br>69 CAR<br>60 CAR | G           |
| 4 4 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  | Н           |
| Signal Name [Specification]   | HA          |
| 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8  | K           |
|  | TX.         |
| 0<br>>   | 1           |
| Commerciary No.   Miss   | M           |
| IC AIR CONDITIONING M88  BOM GROPY CONTROL MODULE)  TH40FB-NH  Signal Name [Specification]  COMBI SW INPUT 3  COMBI SW INPUT 4  COMBI SW INPUT 1  COMBI SW INPUT 1  COMBI SW INPUT 2  COMBI SW INPUT 2  COMBI SW INPUT 2  COMBI SW INPUT 3  COMBI SW INPUT 1  TIRE PRESS WARNING CHECK SW  FRAY WINDOW DEFOGGER SW  FRAY WINDOW DEFO   | N           |
| Name   |             |
| Connector Type   Conn   | 0           |
|  | JCIWM0614GB |
|  | Р           |

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[AUTOMATIC AIR CONDITIONING]

# **BCM (BODY CONTROL MODULE)**

BCM (BODY CONTROL SYSTEM) (WITH INTELLIGENT KEY SYSTEM)

BCM (BODY CONTROL SYSTEM) (WITH INTELLIGENT KEY SYSTEM) : Reference Value

#### VALUES ON THE DIAGNOSIS TOOL

CONSULT-III MONITOR ITEM

| Monitor Item       | Condition   | Value/Status                     |
|--------------------|---|----------------------------------|
| FR WIPER HI        | Other than front wiper switch HI                    | Off                              |
| I IX WIF LIX III   | Front wiper switch HI                               | On                               |
| FR WIPER LOW       | Other than front wiper switch LO                    | Off                              |
| TR WII ER LOW      | Front wiper switch LO                               | On                               |
| FR WASHER SW       | Front washer switch OFF                             | Off                              |
| I I WASHER SW      | Front washer switch ON                              | On                               |
| FR WIPER INT       | Other than front wiper switch INT/AUTO              | Off                              |
| I IV VVII LIV IIVI | Front wiper switch INT/AUTO                         | On                               |
| FR WIPER STOP      | Front wiper is not in STOP position                 | Off                              |
| IN WIFER STOP      | Front wiper is in STOP position                     | On                               |
| INT VOLUME         | Wiper intermittent dial is in a dial position 1 - 7 | Wiper intermittent dial position |
| RR WIPER ON        | Other than rear wiper switch ON                     | Off                              |
| AR WIFER ON        | Rear wiper switch ON                                | On                               |
| RR WIPER INT       | Other than rear wiper switch INT                    | Off                              |
| XX WIFEX IIVI      | Rear wiper switch INT                               | On                               |
| RR WASHER SW       | Rear washer switch OFF                              | Off                              |
| NN WASHEN SW       | Rear washer switch ON                               | On                               |
| RR WIPER STOP      | Rear wiper is in STOP position                      | Off                              |
| RR WIPER STOP      | Rear wiper is not in STOP position                  | On                               |
| TURN SIGNAL R      | Other than turn signal switch RH                    | Off                              |
| TORN SIGNAL K      | Turn signal switch RH                               | On                               |
| TURN SIGNAL L      | Other than turn signal switch LH                    | Off                              |
| TURN SIGNAL L      | Turn signal switch LH                               | On                               |
| TAIL LAMP SW       | Other than lighting switch 1ST and 2ND              | Off                              |
| TAIL LAWIF SW      | Lighting switch 1ST or 2ND                          | On                               |
| HI BEAM SW         | Other than lighting switch HI                       | Off                              |
| UI DEAIN 200       | Lighting switch HI                                  | On                               |
| LIEAD I AMD CW/4   | Other than lighting switch 2ND                      | Off                              |
| HEAD LAMP SW 1     | Lighting switch 2ND                                 | On                               |
| LICAD LAMD CW/O    | Other than lighting switch 2ND                      | Off                              |
| HEAD LAMP SW 2     | Lighting switch 2ND                                 | On                               |
| DA CCINIC CIVI     | Other than lighting switch PASS                     | Off                              |
| PASSING SW         | Lighting switch PASS                                | On                               |
| ALITO LICHT CVV    | Other than lighting switch AUTO                     | Off                              |
| AUTO LIGHT SW      | Lighting switch AUTO                                | On                               |

# < ECU DIAGNOSIS INFORMATION >

### [AUTÓMATIC AIR CONDITIONING]

| Monitor Item     | Condition  | Value/Status |
|------------------|--|--------------|
| FR FOG SW        | Front fog lamp switch OFF  | Off          |
| -K FOG SW        | Front fog lamp switch ON   | On           |
| DOOR SW-DR       | Driver door closed   | Off          |
| DOOK SW-DK       | Driver door opened   | On           |
| DOOR SW AS       | Passenger door closed  | Off          |
| DOOR SW-AS       | Passenger door opened  | On           |
| DOOR SW-RR       | Rear RH door closed  | Off          |
| JOOR SW-RR       | Rear RH door opened  | On           |
| DOOR SW DI       | Rear LH door closed  | Off          |
| DOOR SW-RL       | Rear LH door opened  | On           |
| DOOD OW DIA      | Back door closed   | Off          |
| DOOR SW-BK       | Back door opened   | On           |
| SDL LOCK SW      | Other than power door lock switch LOCK                               | Off          |
| CDL LOCK SW      | Power door lock switch LOCK  | On           |
| CDL LINI OCK SW  | Other than power door lock switch UNLOCK                             | Off          |
| CDL UNLOCK SW    | Power door lock switch UNLOCK  | On           |
| ZEV CVL LIZ CW   | Other than driver door key cylinder LOCK position                    | Off          |
| KEY CYL LK-SW    | Driver door key cylinder LOCK position                               | On           |
| ZEV CVI LINI CVI | Other than driver door key cylinder UNLOCK position                  | Off          |
| KEY CYL UN-SW    | Driver door key cylinder UNLOCK position                             | On           |
| HAZARD SW        | Hazard switch is OFF   | Off          |
| TAZARD SW        | Hazard switch is ON  | On           |
|                  | Rear window defogger switch OFF                                      | Off          |
| REAR DEF SW      | Rear window defogger switch ON                                       | On           |
| FR/BD OPEN SW    | NOTE: The item is indicated, but not monitored.                      | Off          |
| FRNK/HAT MNTR    | NOTE: The item is indicated, but not monitored.                      | Off          |
|                  | Blower fan OFF   | Off          |
| FAN ON SIG       | Blower fan ON  | On           |
|                  | Air conditioner OFF (A/C switch indicator OFF)                       | Off          |
| AIR COND SW      | Air conditioner ON (A/C switch indicator ON)                         | On           |
|                  | LOCK button of the key is not pressed                                | Off          |
| RKE-LOCK         | LOCK button of the key is pressed                                    | On           |
| DIVE LINI COV    | UNLOCK button of the key is not pressed                              | Off          |
| RKE-UNLOCK       | UNLOCK button of the key is pressed                                  | On           |
| DVE TD/DD        | BACK DOOR OPEN button of the key is not pressed                      | Off          |
| RKE-TR/BD        | BACK DOOR OPEN button of the key is pressed                          | On           |
| DIVE DANIC       | PANIC button of the key is not pressed                               | Off          |
| RKE-PANIC        | PANIC button of the key is pressed                                   | On           |
| DIVE MODE OUG    | LOCK/UNLOCK button of the key is not pressed and held simultaneously | Off          |
| RKE-MODE CHG     | LOCK/UNLOCK button of the key is pressed and held simultaneously     | On           |
|                  | Bright outside of the vehicle  | Close to 5 V |
| OPTI SEN (DTCT)  | Dark outside of the vehicle  | Close to 0 V |

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### < ECU DIAGNOSIS INFORMATION >

| Monitor Item    | Condition  | Value/Status    |  |  |
|-----------------|--|-----------------|--|--|
| ODTI CEN /EUT)  | Bright outside of the vehicle (Lighting switch AUTO)   | Close to 5 V    |  |  |
| OPTI SEN (FILT) | Dark outside of the vehicle (Lighting switch AUTO)   | Close to 1.50 V |  |  |
| OPTICAL SENSOR  | NOTE: The item is indicated, but not monitored.  | Off             |  |  |
| RAIN SENSOR     | NOTE: The item is indicated, but not monitored.  | Off             |  |  |
| REQ SW -DR      | Driver door request switch is not pressed  | Off             |  |  |
| INEQ OW -DIN    | Driver door request switch is pressed  | On              |  |  |
| REQ SW -AS      | Passenger door request switch is not pressed   | Off             |  |  |
| NEQ OW NO       | Passenger door request switch is pressed   | On              |  |  |
| REQ SW -RR      | NOTE: The item is indicated, but not monitored.  | Off             |  |  |
| REQ SW -RL      | NOTE: The item is indicated, but not monitored.  | Off             |  |  |
| REQ SW -BD/TR   | Back door request switch is not pressed  | Off             |  |  |
| TILE OW DD/III  | Back door request switch is pressed  | On              |  |  |
| PUSH SW         | Push-button ignition switch (push switch) is not pressed   | Off             |  |  |
| - 0311 3W       | Push-button ignition switch (push switch) is pressed   | On              |  |  |
| CLUCH SW        | NOTE: The item is indicated, but not monitored.  | Off             |  |  |
| BRAKE SW 1      | Off  |                 |  |  |
| DRAKE SW I      | The brake pedal is depressed  The brake pedal is depressed when No. 7 fuse is blown  W 2  The brake pedal is not depressed when No. 7 fuse is blown, or No. 7 fuse |                 |  |  |
|                 | The brake pedal is depressed when No. 7 fuse is blown  | Off             |  |  |
| BRAKE SW 2      | The brake pedal is not depressed when No. 7 fuse is blown, or No. 7 fuse is normal   | On              |  |  |
| DETE/CANCL SW   | Selector lever in P position   | Off             |  |  |
| DETE/CANCL SW   | Selector lever in any position other than P  | On              |  |  |
| SFT PN/N SW     | Selector lever in any position other than P and N  | Off             |  |  |
| OF I PIN/IN OW  | Selector lever in P or N position  | On              |  |  |
| 0/L LOOK        | Steering is locked   | Off             |  |  |
| S/L -LOCK       | Steering is unlocked   | On              |  |  |
| C/L LINILOCK    | Steering is unlocked   | Off             |  |  |
| S/L -UNLOCK     | Steering is locked   | On              |  |  |
| C/L DELAY E/D   | Steering is unlocked   | Off             |  |  |
| S/L RELAY-F/B   | Steering is locked   | On              |  |  |
| INII K OEN DD   | Driver door is locked  | Off             |  |  |
| UNLK SEN -DR    | Driver door is unlocked  | On              |  |  |
|                 | Push-button ignition switch (push-switch) is not pressed   | Off             |  |  |
| PUSH SW -IPDM   | Push-button ignition switch (push-switch) is pressed   | On              |  |  |
| ON DIV4 5/D     | Ignition switch in OFF or ACC position   | Off             |  |  |
| GN RLY1 -F/B    | Ignition switch in ON position   | On              |  |  |
| DETE OW IDD::   | Selector lever in any position other than P  | Off             |  |  |
| DETE SW -IPDM   | Selector lever in P position   | On              |  |  |
| 0FT DN 18511    | Selector lever in any position other than P and N  | Off             |  |  |
| SFT PN -IPDM    | Selector lever in P or N position  | On              |  |  |

# < ECU DIAGNOSIS INFORMATION >

# [AUTÓMATIC AIR CONDITIONING]

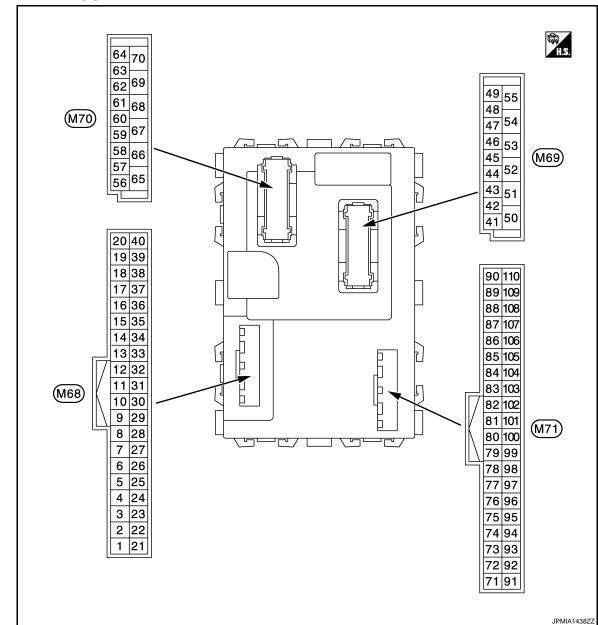
| Monitor Item  | Condition   | Value/Status                           |  |  |  |
|---|---|--|--|--|--|
| OFT D. MET  | Selector lever in any position other than P   | Off                                    |  |  |  |
| SFT P -MET  | Selector lever in P position  | On                                     |  |  |  |
| SFT N -MET  Selector lever in any position other than N  Selector lever in N position  On  Engine stopped  Stop |   |  |  |  |  |
| SFIN-MEI  | Selector lever in N position  | On                                     |  |  |  |
|   | Engine stopped  | Stop                                   |  |  |  |
| ENGINE CTATE  | While the engine stalls   | Stall                                  |  |  |  |
| ENGINE STATE  | At engine cranking  | Crank                                  |  |  |  |
|   | Engine running  | Run                                    |  |  |  |
| 0// 1 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1   | Steering is locked  | Off                                    |  |  |  |
| S/L LOCK-IPDM   | Steering is unlocked  | On                                     |  |  |  |
| 0.0.1.0.0.1.1.0.0.1   | Off   |  |  |  |  |
| S/L UNLK-IPDM   | On  |  |  |  |  |
| 0.4. D.T. W. D.T.   | Steering is unlocked  | Off                                    |  |  |  |
| S/L RELAY-REQ   | Steering is locked  | On                                     |  |  |  |
| VEH SPEED 1   | While driving   | Equivalent to speed-<br>ometer reading |  |  |  |
| VEH SPEED 2   | While driving   | Equivalent to speed-<br>ometer reading |  |  |  |
|   | Driver door is locked   | LOCK                                   |  |  |  |
| DOOR STAT-DR  | Wait with selective UNLOCK operation (5 seconds)  | READY                                  |  |  |  |
|   | Driver door is unlocked   | UNLOCK                                 |  |  |  |
|   | Passenger door is locked  | LOCK                                   |  |  |  |
| DOOR STAT-AS  | Wait with selective UNLOCK operation (5 seconds)  | READY                                  |  |  |  |
|   | Passenger door is unlocked  | UNLOCK                                 |  |  |  |
|   | Passenger door is unlocked  Steering is locked  Steering is unlocked                            |  |  |  |  |
| ID OK FLAG  | Steering is unlocked  | Set                                    |  |  |  |
|   | The engine start is prohibited  | Reset                                  |  |  |  |
| PRMT ENG STRT   | The engine start is permitted   | Set                                    |  |  |  |
| PRMT RKE STRT   | NOTE: The item is indicated, but not monitored.   | Reset                                  |  |  |  |
| RKE OPE COUN1   | During the operation of the key   | Operation frequency of the key         |  |  |  |
| RKE OPE COUN2   | NOTE: The item is indicated, but not monitored.   | _                                      |  |  |  |
| CONFRAIR  | The key ID that the key slot receives is not recognized by any key ID registered to BCM.        | Yet                                    |  |  |  |
| CONFRM ID ALL   | The key ID that the key slot receives is recognized by any key ID registered to BCM.            | Done                                   |  |  |  |
| CONFIDM ID 4  | The key ID that the key slot receives is not recognized by the fourth key ID registered to BCM. | Yet                                    |  |  |  |
| CONFIRM ID4   | The key ID that the key slot receives is recognized by the fourth key ID registered to BCM.     | Done                                   |  |  |  |
| CONFIDMICS  | The key ID that the key slot receives is not recognized by the third key ID registered to BCM.  | Yet                                    |  |  |  |
| CONFIRM ID3   | The key ID that the key slot receives is recognized by the third key ID registered to BCM.      | Done                                   |  |  |  |

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# < ECU DIAGNOSIS INFORMATION >

| Monitor Item    | Condition   | Value/Status                    |  |  |  |  |
|-----------------|---|---------------------------------|--|--|--|--|
| CONFIRM ID2     | The key ID that the key slot receives is not recognized by the second key ID registered to BCM.                                   | Yet                             |  |  |  |  |
| CONFIRM ID2     | The key ID that the key slot receives is recognized by the second key ID registered to BCM.                                       | Done                            |  |  |  |  |
| CONFIRM ID1     | The key ID that the key slot receives is not recognized by the first key ID registered to BCM.                                    | Yet                             |  |  |  |  |
| CONFIRMIDI      | The key ID that the key slot receives is recognized by the first key ID registered to BCM.  | Done                            |  |  |  |  |
| NOT DECISTEDED  | BCM detects non-registration key ID.  The ID of fourth key is not registered to BCM   |                                 |  |  |  |  |
| NOT REGISTERED  |   |                                 |  |  |  |  |
| TP 4            | The ID of fourth key is not registered to BCM   | Yet                             |  |  |  |  |
| 1               | The ID of fourth key is registered to BCM   | Done                            |  |  |  |  |
| TP 3            | The ID of third key is not registered to BCM  | Yet                             |  |  |  |  |
| 1173            | The ID of third key is registered to BCM  | Done                            |  |  |  |  |
| TP 2            | The ID of second key is not registered to BCM   | Yet                             |  |  |  |  |
| 172             | The ID of second key is registered to BCM  The ID of first key is not registered to BCM  The ID of first key is registered to BCM |                                 |  |  |  |  |
| TD 4            | The ID of first key is not registered to BCM  | Yet                             |  |  |  |  |
| TP 1            | The ID of first key is registered to BCM  | Done                            |  |  |  |  |
| AIR PRESS FL    | Ignition switch ON (Only when the signal from the transmitter is received)  | Air pressure of from<br>LH tire |  |  |  |  |
| AIR PRESS FR    |   |                                 |  |  |  |  |
| AIR PRESS RR    | Ignition switch ON (Only when the signal from the transmitter is received)  | Air pressure of rea             |  |  |  |  |
| AIR PRESS RL    | Ignition switch ON (Only when the signal from the transmitter is received)  | Air pressure of rea             |  |  |  |  |
| ID REGST FL1    | ID of front LH tire transmitter is registered   | Done                            |  |  |  |  |
| ID NEOST LE     | ID of front LH tire transmitter is not registered   | Yet                             |  |  |  |  |
| ID REGST FR1    | ID of front RH tire transmitter is registered   | Done                            |  |  |  |  |
| DICEGNITION     | ID of front RH tire transmitter is not registered   | Yet                             |  |  |  |  |
| ID REGST RR1    | ID of rear RH tire transmitter is registered  | Done                            |  |  |  |  |
| ID REGGI KKI    | ID of rear RH tire transmitter is not registered  | Yet                             |  |  |  |  |
| ID REGST RL1    | ID of rear LH tire transmitter is registered  | Done                            |  |  |  |  |
| ID NEOOT NET    | ID of rear LH tire transmitter is not registered  | Yet                             |  |  |  |  |
| WARNING LAMP    | Tire pressure indicator OFF   | Off                             |  |  |  |  |
| VVANINING LAWIF | Tire pressure indicator ON  | On                              |  |  |  |  |
| BUZZER          | Tire pressure warning alarm is not sounding   | Off                             |  |  |  |  |
| DUZZLIN         | Tire pressure warning alarm is sounding   | On                              |  |  |  |  |

#### **TERMINAL LAYOUT**



#### NOTE:

Connector color

M68, M70: BlackM69, M71: White

PHYSICAL VALUES

D

Е

Α

В

C

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G

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HAC

J

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M

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|             | nal No. | Description                       | l                |   |                          | Value  |
|-------------|---------|-----------------------------------|------------------|---|--------------------------|--|
| (Wire       | color)  | Signal name                       | Input/<br>Output |   | Condition                | (Approx.)  |
|             |         |                                   |                  |   | All switch OFF           | 0 V  |
|             |         |                                   |                  |   | Turn signal switch RH    |  |
|             |         |                                   |                  |   | Lighting switch HI       | (V)<br>15  |
| 2<br>(BR/W) | Ground  | Combination switch INPUT 5        | Input            | Combination switch (Wiper intermit-                       | Lighting switch 1ST      | 10<br>5<br>0<br>→ +10ms<br>PKIB4958J<br>1.0 V    |
|             |         |                                   |                  | tent dial 4)  | Lighting switch 2ND      | (V) 15 10 5                                      |
|             |         |                                   |                  |   | All switch OFF           | 0 V  |
| 3           |         | Ground Combination switch INPUT 4 | Input            | Combination<br>switch<br>(Wiper intermit-<br>tent dial 4) | Turn signal switch LH    | -  |
|             |         |                                   |                  |   | Lighting switch PASS     | (V)<br>15  |
|             |         |                                   |                  |   | Lighting switch 2ND      | 10<br>5<br>0<br>+10ms<br>PKIB4958J               |
| (GR)        | Ground  |                                   |                  |   |                          | 1.0 V  |
|             |         |                                   |                  |   | Front fog lamp switch ON | (V)<br>15<br>10<br>5<br>0<br>++10ms<br>PKIB4956J |
|             |         |                                   |                  |   |                          | 0.8 V  |
|             |         |                                   |                  |   | All switch OFF           | 0 V  |
|             |         |                                   |                  |   | Front wiper switch LO    | (V)  |
|             |         |                                   |                  | Combination   | Front wiper switch MIST  | (V)<br>15<br>10                                  |
| 4<br>(L/Y)  | Ground  | Combination switch INPUT 3        | Input            | switch<br>(Wiper intermit-                                | Front wiper switch INT   | 5  |
| (பர)        |         | INTUIS                            |                  | tent dial 4)  | Lighting switch AUTO     | → +10ms PKIB4958J                                |
|             |         |                                   |                  |   |                          | 1.0 V  |

### < ECU DIAGNOSIS INFORMATION >

|            | inal No. | Description                |                  |                    |   | Value                |  |
|------------|----------|----------------------------|------------------|--------------------|---|----------------------|--|
| +          | e color) | Signal name                | Input/<br>Output |                    | Condition   | (Approx.)            |  |
|            |          |                            |                  |                    | All switch OFF<br>(Wiper intermittent dial 4)   | 0 V                  |  |
|            |          |                            |                  |                    | Front washer switch (Wiper intermittent dial 4)   | (V)<br>15            |  |
|            |          |                            |                  |                    | Rear washer ON (Wiper intermittent dial 4)  | 15                   |  |
|            |          |                            |                  |                    | Any of the condition below with all switch OFF  | +-+10ms              |  |
| 5<br>(G)   | Ground   | Combination switch INPUT 2 | Input            | Combination switch | <ul><li>Wiper intermittent dial 1</li><li>Wiper intermittent dial 5</li><li>Wiper intermittent dial 6</li></ul> | PKIB4958J            |  |
|            |          |                            |                  |                    |   | (V)<br>15            |  |
|            |          |                            |                  |                    | Rear wiper switch ON  | 15<br>10<br>5        |  |
|            |          |                            |                  |                    | (Wiper intermittent dial 4)   | → +10ms              |  |
|            |          |                            |                  |                    |   | PKIB4956J  0.8 V     |  |
|            |          |                            |                  |                    | All switch OFF<br>(Wiper intermittent dial 4)   | 0 V                  |  |
|            |          |                            |                  |                    | Front wiper switch HI (Wiper intermittent dial 4)   | (V)<br>15            |  |
|            |          |                            |                  |                    | Rear wiper switch INT (Wiper intermittent dial 4)   | 15<br>10<br>5        |  |
|            |          |                            |                  |                    | Wiper intermittent dial 3   | → +10ms              |  |
|            |          |                            |                  |                    | (All switch OFF)  | PKIB4958J<br>1.0 V   |  |
|            |          |                            |                  |                    |   |                      |  |
| 6<br>(L/R) | Ground   | Combination switch         | Input            | Combination switch | Any of the condition below  | (V)<br>15<br>10<br>5 |  |
| (L/K)      |          | INPOT                      |                  | SWITCH             | <ul><li>with all switch OFF</li><li>Wiper intermittent dial 1</li><li>Wiper intermittent dial 2</li></ul>       | 0                    |  |
|            |          |                            |                  |                    | wiper intermittent dial 2   | PKIB4952J            |  |
|            |          |                            |                  |                    |   | 1.9 V                |  |
|            |          |                            |                  |                    | Any of the condition below  | (Y)<br>15<br>10<br>5 |  |
|            |          |                            |                  |                    | with all switch OFF  Wiper intermittent dial 6  Wiper intermittent dial 7                                       |                      |  |
|            |          |                            |                  |                    |   | ++10ms PKIB4956J     |  |
|            |          |                            |                  |                    |   | 0.8 V                |  |

|              | nal No. | Description                        |                  |                               |                                    | Value   |
|--------------|---------|------------------------------------|------------------|-------------------------------|------------------------------------|---|
| +            | color)  | Signal name                        | Input/<br>Output |                               | Condition                          | (Approx.)   |
| 7<br>(W/R)   | Ground  | Door key cylinder<br>switch UNLOCK | Input            | Door key cylin-<br>der switch | NEUTRAL position                   | (V) 15 10 5 0 + 10ms JPMIA0587GB                                  |
|              |         |                                    |                  |                               | UNLOCK position                    | 8.0 - 8.5 V<br>0 V  |
| 8            |         | Door key cylinder                  |                  | Door key cylin-               | NEUTRAL position                   | 12 V  |
| (W/B)        | Ground  | switch LOCK                        | Input            | der switch                    | LOCK position                      | 0 V   |
| 9            | Crownd  | Ston James quitab 4                | lanus            | Stop lamp                     | OFF (Brake pedal is not depressed) | 0 V   |
| (R)          | Ground  | Stop lamp switch 1                 | Input            | switch                        | ON (Brake pedal is depressed)      | Battery voltage   |
| 10<br>(V/W)  | Ground  | Tire pressure warning check switch | Input            | Ignition switch OFF           |                                    | (V)<br>15<br>10<br>5<br>0<br>10 ms<br>JPMIA0012GB                 |
| 11           | Ground  | ACC feedback                       | Input            | Ignition switch O             | FF                                 | 0 V   |
| (L/Y)        | Ground  | 7.00 recuback                      | mput             | Ignition switch A             | CC or ON                           | Battery voltage   |
| 12<br>(SB)   | Ground  | Passenger door switch              | Input            | Passenger door switch         | OFF (When passenger door closed)   | (V)<br>15<br>10<br>5<br>0<br>+ 10ms<br>PKIB4960J<br>7.0 - 8.0 V   |
|              |         |                                    |                  |                               | ON (When passenger door opened)    | 0 V   |
| 13<br>(GR/L) | Ground  | Rear RH door switch                | Input            | Rear RH door<br>switch        | OFF (When rear RH door closed)     | (V)<br>15<br>10<br>5<br>0<br>***+10ms<br>PKIB4960J<br>7.0 - 8.0 V |
|              |         |                                    |                  |                               | ON (When rear RH door opened)      | 0 V   |
| 14           | Ground  | Optical sensor                     | Input            | Ignition switch               | When bright outside of the vehicle | Close to 5 V  |
| (L/B)        |         | - F 2011201                        |                  | ON                            | When dark outside of the vehicle   | Close to 0 V  |

### < ECU DIAGNOSIS INFORMATION >

|             | nal No.         | Description                                |                           |                             |   | Volue   | A           |
|-------------|-----------------|--|---------------------------|-----------------------------|---|---|-------------|
| (Wire       | color)          | Signal name                                | Input/<br>Output          |                             | Condition   | Value<br>(Approx.)  | А           |
| 15<br>(W/L) | Ground          | Rear window defog-<br>ger switch           | Input                     | Rear window defogger switch |   | (V)<br>15<br>10<br>5<br>0<br>10 ms<br>JPMIA0012GB<br>1.0 - 1.5 V    | B<br>C      |
|             |                 |  |                           |                             | Pressed   | 0 V   |             |
| 17<br>(R/G) | Ground          | Optical sensor pow-<br>er supply           | Output                    | Ignition switch             | OFF, ACC  | 0 V<br>5 V  | Е           |
| 18<br>(V)   | Ground          | Receiver and sensor ground                 | Input                     | Ignition switch O           |   | 0 V   | F           |
| 19<br>(BR)  | Ground          | Remote keyless entry receiver power supply | Output                    | Ignition switch OFF         |   | (V)<br>15<br>10<br>5<br>0<br>                                       | G<br>H      |
| 20          | Ground          | Remote keyless en-                         | locut                     | Waiting                     |   | (V) 15 10 5 0 JMKIA3838GB   | HAC         |
| (G/Y)       | Cround try room |  | receiver commu-<br>cation | Signal receiving            |   | (V) 15 10 5 0 1 ms  JMKIA3841GB                                     | K<br>L<br>M |
| 21<br>(P/L) | Ground          | NATS antenna amp.                          | Input/<br>Output          | During waiting              | Ignition switch is pressed while inserting the key into the key slot. | Just after pressing ignition switch. Pointer of tester should move. | N           |
| 22<br>(W/G) | Ground          | Remote keyless entry receiver RSSI         | Input                     | Waiting Signal receiving    |   | 0 V  (V) 15 10 5 0 JMKIA3838GB                                      | O P         |

|               | nal No. | Description  |                  |                    |   | Value   |
|---------------|---------|--|------------------|--------------------|---|---|
| + (vvire      | color)  | Signal name  | Input/<br>Output |                    | Condition   | (Approx.)   |
|               |         |  |                  |                    | ON  | 0 V   |
| 23<br>(R/Y)   | Ground  | Security indicator lamp                              | Output           | Security indicator | Blinking (Ignition switch OFF)  | (V) <sub>15</sub> 10 5 0  → 1s  JPMIA0590GB                         |
|               |         |  |                  |                    | OFF   | 12.0 V<br>Battery voltage   |
| 24*<br>(GR/R) | Ground  | Dongle link  | Input/<br>Output | Ignition switch O  |   | 5 V   |
| 25<br>(LG)    | Ground  | NATS antenna amp.                                    | Input/<br>Output | During waiting     | Ignition switch is pressed while inserting the key into the key slot. | Just after pressing ignition switch. Pointer of tester should move. |
| 27<br>(Y/G)   | Ground  | d A/C switch   | Input            | Air conditioner    | OFF (A/C switch indicator:<br>OFF)                                    | (V)<br>15<br>10<br>5<br>0<br>10 ms<br>JPMIA0012GB                   |
|               |         |  |                  |                    | ON (A/C switch indicator:<br>ON)                                      | 0 V   |
|               |         |  |                  |                    | OFF   | 0 V   |
| 28<br>(G/W)   | Ground  | Blower fan switch                                    | Input            | Blower fan         | ON  | (V)<br>15<br>10<br>5<br>0<br>++10ms<br>PKIB4960J<br>7.0 - 8.0 V     |
| 29            | 0       | 11   | lanut            | Hannad avvitab     | OFF   | 12 V  |
| (L/W)         | Ground  | Hazard switch  | Input            | Hazard switch      | ON  | 0 V   |
| 31<br>(G/B)   | Ground  | Front door lock assembly driver side (Unlock sensor) | Input            | Driver door        | LOCK status (Unlock sensor switch OFF)                                | (V)<br>15<br>10<br>5<br>0<br>+ 10ms<br>PKIB4960J<br>7.0 - 8.0 V     |
|               |         |  |                  |                    | UNLOCK status (Unlock sensor switch ON)                               | 0 V   |

### < ECU DIAGNOSIS INFORMATION >

### [AUTÓMATIC AIR CONDITIONING]

|             | inal No. | Description                 |                  |                    |   | Value   | А      |
|-------------|----------|-----------------------------|------------------|--------------------|---|---|--------|
| +           | e color) | Signal name                 | Input/<br>Output |                    | Condition   | (Approx.)   |        |
|             | 20       |                             |                  |                    | All switch OFF<br>(Wiper intermittent dial 4)   | (V)<br>15<br>10<br>5<br>0<br>+ 10ms<br>PKIB4960J<br>7.0 - 8.0 V | B<br>C |
| 32<br>(LG)  | Ground   | Combination switch OUTPUT 5 | Output           | Combination switch | Front fog lamp switch ON (Wiper intermittent dial 4)  | ( <b>y</b> )  | Е      |
|             |          |                             |                  |                    | Rear wiper switch ON (Wiper intermittent dial 4)  | (V)<br>15<br>10<br>5  |        |
|             |          |                             |                  |                    | Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 2          | →   | F      |
|             |          |                             |                  |                    | <ul><li>Wiper intermittent dial 2</li><li>Wiper intermittent dial 6</li><li>Wiper intermittent dial 7</li></ul> | PKIB4956J<br>1.0 V  | G      |
|             |          |                             |                  |                    | All switch OFF (Wiper intermittent dial 4)  | (V)<br>15<br>10<br>5<br>0                                       | Н      |
|             |          |                             |                  |                    |   | PKIB4960J<br>7.0 - 8.0 V  | HAC    |
| 33<br>(Y/L) | Ground   | Combination switch OUTPUT 4 | Output           | Combination switch | Lighting switch 1ST (Wiper intermittent dial 4)   |   | - J    |
| , ,         |          |                             |                  |                    | Lighting switch AUTO (Wiper intermittent dial 4)  | (V)<br>15<br>10   | K      |
|             |          |                             |                  |                    | Rear wiper switch INT (Wiper intermittent dial 4)   | 5 0 + 10ms PKIB4958J  |        |
|             |          |                             |                  |                    | Any of the condition below with all switch OFF  |   | L      |
|             |          |                             |                  |                    | <ul><li>Wiper intermittent dial 1</li><li>Wiper intermittent dial 5</li><li>Wiper intermittent dial 6</li></ul> | 1.2 V   | M      |

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Р

|             | nal No. | Description                    |                  |   |   | Value   |
|-------------|---------|--------------------------------|------------------|---|---|---|
| + (vvire    | color)  | Signal name                    | Input/<br>Output |   | Condition   | (Approx.)   |
|             |         |                                |                  |   | All switch OFF<br>(Wiper intermittent dial 4)   | (V)<br>15<br>10<br>5<br>0<br>+ 10ms<br>PKIB4960J<br>7.0 - 8.0 V |
| 34<br>(W)   | Ground  | Combination switch OUTPUT 3    | Output           | Combination switch  | Lighting switch 2ND (Wiper intermittent dial 4)   |   |
|             |         |                                |                  |   | Lighting switch HI<br>(Wiper intermittent dial 4)   | (V)<br>15<br>10   |
|             |         |                                |                  |   | Rear washer switch ON (Wiper intermittent dial 4)   | 0   |
|             |         |                                |                  |   | Any of the condition below with all switch OFF  • Wiper intermittent dial 1  • Wiper intermittent dial 2  • Wiper intermittent dial 3 | PKIB4958J   |
|             | Ground  | Combination switch<br>OUTPUT 2 | Output           | Combination<br>switch<br>(Wiper intermit-<br>tent dial 4) | All switch OFF  | (V)<br>15<br>10<br>5<br>0<br>+ 10ms<br>PKIB4960J                |
| 35<br>(R/L) |         |                                |                  |   | Lighting switch 2ND   | 7.0 - 8.0 V   |
|             |         |                                |                  |   | Lighting switch PASS  | (V)<br>15   |
|             |         |                                |                  |   | Front wiper switch INT  | 10 5 0  |
|             |         |                                |                  |   | Front wiper switch HI   | ++10ms PKIB4958J  |
| 36          |         | Combination switch             |                  | Combination switch  | All switch OFF  | (V)<br>15<br>10<br>5<br>0<br>+ 10ms<br>PKIB4960J<br>7.0 - 8.0 V |
| (L/O)       | Ground  | OUTPUT 1                       | Output           | (Wiper intermit-<br>tent dial 4)                          | Turn signal switch RH   | 40  |
|             |         |                                |                  | GIR GIAI 4)   | Turn signal switch LH   | (V)<br>15<br>10   |
|             |         |                                |                  |   | Front wiper switch LO (Front wiper switch MIST)   | 5   |
|             |         |                                |                  |   | Front washer switch ON  | + 10ms  |
|             |         |                                |                  |   |   | PKIB4958J<br>1.2 V  |

# < ECU DIAGNOSIS INFORMATION >

| Terminal No.<br>(Wire color) |        | Description                           |                  |                               |  | Value  | Α. |
|------------------------------|--------|---------------------------------------|------------------|-------------------------------|--|--|----|
| (Wire                        | color) | Signal name                           | Input/<br>Output |                               | Condition  | (Approx.)  | Α  |
| 37                           |        | Selector lever P po-                  | -                |                               | P position                                       | 0 V  |    |
| (G/O)                        | Ground | sition switch                         | Input            | Selector lever                | Any position other than P                        | 12 V   | Е  |
| 38                           | Cravad | IGN feedback                          | lan. et          | lanition quitab               | OFF or ACC                                       | 0 V  |    |
| (O)                          | Ground | IGN leedback                          | Input            | Ignition switch               | ON   | Battery voltage  |    |
| 39<br>(L)                    | Ground | CAN-H                                 | Input/<br>Output |                               | _  | _  |    |
| 40<br>(P)                    | Ground | CAN-L                                 | Input/<br>Output |                               | _  |  |    |
| 43<br>(W)                    | Ground | Back door switch                      | Input            | Back door<br>switch           | OFF<br>(When back door closed)                   | (V)<br>15<br>10<br>5<br>0<br>+ 10ms<br>PKIB4960J<br>9.5 - 10.0 V | F  |
|                              |        |                                       |                  | ON<br>(When back door opened) | 0 V  |  |    |
|                              |        |                                       |                  |                               | Rear wiper stop position                         | 12 V   | -  |
| 44<br>(LG)                   | Ground | Rear wiper stop position              | Input            | Ignition switch<br>ON         | Any position other than rear wiper stop position | 0 V  |    |
| 45<br>(GR)                   | Ground | Door lock and unlock<br>switch LOCK   | Input            | Door lock and unlock switch   | NEUTRAL position                                 | (V)<br>15<br>10<br>5<br>0<br>10 ms<br>JPMIA0012GB<br>1.0 - 1.5 V | ŀ  |
|                              |        |                                       |                  |                               | LOCK position                                    | 0 V  |    |
| 46<br>(BR)                   | Ground | Door lock and unlock<br>switch UNLOCK | Input            | Door lock and unlock switch   | NEUTRAL position                                 | (V)<br>15<br>10<br>10 ms<br>JPMIA0012GB<br>1.0 - 1.5 V           | I. |
|                              |        |                                       |                  |                               | UNLOCK position                                  | 0 V  |    |
| 47<br>(BR/Y)                 | Ground | Driver door switch                    | Input            | Driver door<br>switch         | OFF (When driver door closed)                    | (V)<br>15<br>10<br>5<br>0<br>+ 10ms<br>PKIB4960J                 | F  |
|                              |        |                                       |                  |                               | ON (When driver door opened)                     | 7.0 - 8.0 V<br>0 V   |    |

|             | nal No. | Description                     |                  |   |   | Value  |
|-------------|---------|---------------------------------|------------------|---|---|--|
| (Wire       | color)  | Signal name                     | Input/<br>Output |   | Condition   | (Approx.)  |
| 48<br>(W/G) | Ground  | Rear LH door switch             | Input            | Rear LH door<br>switch  | OFF (When rear LH door closed)                            | (V)<br>15<br>10<br>5<br>0<br>+                     |
|             |         |                                 |                  |   | ON (When rear door LH opened)                             | 0 V  |
| 54          | Ground  | Rear wiper                      | Output           | Rear wiper  | OFF (Stopped)   | 0 V  |
| (L/W)       | Ground  | Real wiper                      | Odiput           | Real Wiper  | ON (Activated)  | 12 V   |
| 55          | Ground  | Rear door UNLOCK                | Output           | Rear door   | UNLOCK (Actuator is activated)                            | 12 V   |
| (G)         | Ground  | Real door one ook               | Output           | real door   | Other then UNLOCK (Actuator is not activated)             | 0 V  |
|             |         |                                 |                  | Interior room lamp battery saver is activated. (Cuts the interior room lamp power supply) |   | 0 V  |
| 56<br>(L)   | Ground  | Interior room lamp power supply | Output           | vated.  | p battery saver is not acti-<br>rior room lamp power sup- | 12 V   |
| 57<br>(Y)   | Ground  | Battery power sup-<br>ply       | Input            | Ignition switch OFF   |   | Battery voltage                                    |
| 59<br>(G)   | Ground  | Passenger door UN-<br>LOCK      | Output           | Passenger door  | UNLOCK (Actuator is activated)  Other then UNLOCK (Ac-    | 12 V   |
|             |         |                                 |                  |   | tuator is not activated)                                  | -  |
| 60<br>(W/B) | Ground  | Turn signal LH                  | Output           | Ignition switch<br>ON   | Turn signal switch OFF  Turn signal switch LH             | 0 V  (V) 15 10 5 0 PKIC6370E 6.0 V                 |
|             |         |                                 |                  |   | Turn signal switch OFF                                    | 0 V  |
| 61<br>(W/L) | Ground  | Turn signal RH                  | Output           | Ignition switch<br>ON   | Turn signal switch RH                                     | (V)<br>15<br>10<br>5<br>0<br>1s<br>1s<br>PKIC6370E |
| 63          |         | Interior room lamp              | •                | Interior room   | OFF   | 12 V   |
| (BR)        | Ground  | timer control                   | Output           | lamp  | ON  | 0 V  |

# < ECU DIAGNOSIS INFORMATION >

|             | nal No.<br>color) | Description                          |                  |                               | O - u distinu                                  | Value   |
|-------------|-------------------|--------------------------------------|------------------|-------------------------------|--|---|
| +           | -                 | Signal name                          | Input/<br>Output |                               | Condition                                      | (Approx.)                                       |
| 65          | Ground            | All doors LOCK                       | Output           | All doors                     | LOCK (Actuator is activated)                   | 12 V  |
| (V)         | Giodila           | All doors LOCK                       | Output           | All doors                     | Other then LOCK (Actuator is not activated)    | 0 V   |
| 66          | Ground            | Driver door UN-                      | Output           | Driver door                   | UNLOCK (Actuator is activated)                 | 12 V  |
| (L/B)       | Giodila           | LOCK                                 | Output           | Driver door                   | Other then UNLOCK (Actuator is not activated)  | 0 V   |
| 67<br>(B)   | Ground            | Ground                               | Output           | Ignition switch O             | N  | 0 V   |
| 68<br>(L)   | Ground            | P/W power supply (IGN)               | Output           | Ignition switch O             | N  | 12 V  |
| 69<br>(L/W) | Ground            | P/W power supply (BAT)               | Output           | Ignition switch O             | FF   | 12 V  |
| 70<br>(Y)   | Ground            | Battery power sup-<br>ply            | Input            | Ignition switch O             | FF   | Battery voltage                                 |
| 71<br>(B)   | Ground            | Tire pressure receiver communication | Input/<br>Output |                               | Standby state                                  | (V)<br>6<br>4<br>2<br>0<br>+ + 0.2s<br>OCC3881D |
| (R) Ground  |                   |                                      | Output           |                               | When receiving the signal from the transmitter | (V)<br>6<br>4<br>2<br>0<br>0.2s<br>OCC3880D     |
| 72          |                   | Back door lock actu-                 |                  | 5                             | LOCK (Actuator is activated)                   | 0 V   |
| (R/W)       | Ground            | ator relay control                   | Output           | Back door                     | Other than LOCK (Actuator is not activated)    | Battery voltage                                 |
| 75          | Ground            | Driver door request                  | Input            | Driver door re-               | ON (Pressed)                                   | 0 V   |
| (SB)        |                   | switch                               | L                | quest switch                  | OFF (Not pressed)                              | 12 V  |
| 76<br>(G)   | Ground            | Passenger door request switch        | Input            | Passenger door request switch | ON (Pressed)                                   | 0 V   |
|             |                   |                                      |                  | -                             | OFF (Not pressed) ON (Pressed)                 | 12 V<br>0 V                                     |
| 77<br>(W)   | Ground            | Back door request switch             | Input            | Back door re-<br>quest switch | ON (Pressed)  OFF (Not pressed)                | 12 V  |

|        | nal No. | Description                |                  |  |   | Value  |  |
|--------|---------|----------------------------|------------------|--|---|--|--|
| (Wire  | color)  | Signal name                | Input/<br>Output |  | Condition   | (Approx.)  |  |
| 78     | Ground  | Driver door antenna        |                  | When the driver<br>door request  | When Intelligent Key is not in the antenna detection area | (V)<br>15<br>10<br>5<br>0<br>500 ms<br>JMKIA3838GB |  |
| (LG)   | Clound  | (+)                        | Output           | switch is operated with ignition switch OFF  | When Intelligent Key is in the antenna detection area     | (V)<br>15<br>10<br>5<br>0<br>1 s<br>JMKIA3839GB    |  |
| 79     | Ground  | Driver door antenna<br>(-) | Output           | When the driver<br>door request<br>switch is operat-<br>ed with ignition<br>switch OFF | When Intelligent Key is not in the antenna detection area | (V)<br>15<br>10<br>5<br>0<br>500 ms<br>JMKIA3838GB |  |
| (V)    | Joane   |                            |                  |  | When Intelligent Key is in the antenna detection area     | (V)<br>15<br>10<br>5<br>0<br>1 s<br>JMKIA3839GB    |  |
| 80     | Ground  | Passenger door antenna (+) | Output           | When the passenger door request switch is operated with ignition switch OFF            | When Intelligent Key is not in the antenna detection area | (V)<br>15<br>10<br>5<br>0<br>500 ms<br>JMKIA3838GB |  |
| (BR/Y) | Ground  |                            |                  |  | When Intelligent Key is in the antenna detection area     | (V) 15 10 5 0 JMKIA3839GB                          |  |

### < ECU DIAGNOSIS INFORMATION >

|       | nal No.  | Description               |                  |  |   | Value                                      | А             |
|-------|----------|---------------------------|------------------|--|---|--|---------------|
| +     | e color) | Signal name               | Input/<br>Output |  | Condition   | (Approx.)                                  | $\wedge$      |
| 81    |          | Passenger door an-        |                  | When the passenger door re-  | When Intelligent Key is not in the antenna detection area | (V)<br>15<br>10<br>5<br>0<br>500 ms        | B<br>C<br>D   |
| (L/Y) | Ground   | tenna (-)                 | Output           | quest switch is operated with ignition switch OFF                                    | When Intelligent Key is in the antenna detection area     | (V)<br>15<br>10<br>5<br>0<br>JMKIA3839GB   | E             |
| 82    | 82       | Back door antenna<br>(+)  | Output           | When the back<br>door request<br>switch is operat-<br>ed with ignition<br>switch OFF | When Intelligent Key is not in the antenna detection area | (V) 15 10 500 ms  JMKIA3838GB              | G<br>H<br>HAC |
| (W/B) | Ground   |                           |                  |  | When Intelligent Key is in the antenna detection area     | (V)<br>15<br>10<br>5<br>0<br>JMKIA3839GB   | J<br>K<br>L   |
| 83    | Ground   | Back door antenna (-<br>) | Output           | When the back<br>door request<br>switch is operat-<br>ed with ignition<br>switch OFF | When Intelligent Key is not in the antenna detection area | (V) 15 10 5 0  MKIA3838GB                  | M             |
| (B/W) | Ground   |                           |                  |  | When Intelligent Key is in the antenna detection area     | (V)<br>15<br>10<br>0<br>1 s<br>JMKIA3839GB | Р             |

|         | nal No. | Description                            |                  |                        |   | Value   |
|---------|---------|--|------------------|------------------------|---|---|
| + (Wire | color)  | Signal name                            | Input/<br>Output |                        | Condition   | (Approx.)                                       |
| 84      | Ground  | Room antenna (+)                       |                  | Ignition switch        | When Intelligent Key is not in the antenna detection area | (V) 15 10 5 0 JMKIA3838GB                       |
| (Y/G)   | Glound  | (Instrument panel)                     | Output           | OFF                    | When Intelligent Key is in the antenna detection area     | (V) 15 10 5 0 JMKIA3839GB                       |
| 85      | Ground  | Room antenna (-)<br>(Instrument panel) | Output           | Ignition switch<br>OFF | When Intelligent Key is not in the antenna detection area | (V) 15 10 5 0  JMKIA3838GB                      |
| (Y/L)   | Clound  |  |                  |                        | When Intelligent Key is in the antenna detection area     | (V)<br>15<br>10<br>5<br>0<br>1 s<br>JMKIA3839GB |
| 86      | Ground  | d Luggage room antenna (+)             |                  | Ignition switch<br>OFF | When Intelligent Key is not in the antenna detection area | (V) 15 10 5 0  MKIA3838GB                       |
| (P)     | Ground  |  | Output           |                        | When Intelligent Key is in the antenna detection area     | (V) 15 10 5 0 JMKIA3839GB                       |

# < ECU DIAGNOSIS INFORMATION >

|              | nal No. | Description                                     | 1                |  |   | Value   | А      |
|--------------|---------|---|------------------|--|---|---|--------|
| + (vvire     | color)  | Signal name                                     | Input/<br>Output |  | Condition   | (Approx.)   | ^      |
|              |         |   | ·                |  | When Intelligent Key is not in the antenna detection area   | (V)<br>15<br>10<br>5<br>0   | В      |
| 87           | Ground  | Luggage room an-                                | Output           | Ignition switch                        |   | JMKIA3838GB   | D      |
| (L)          |         | tenna (-)                                       |                  | OFF                                    | When Intelligent Key is in the antenna detection area       | (V)<br>15<br>10<br>5<br>0   | E      |
|              |         |   |                  |  |   | 1 s   |        |
| 90           | Cround  | Push-button ignition                            | Output           | Push-button ig-<br>nition switch illu- | ON  | 12 V  | G      |
| (W/L)        | Ground  | switch illumination                             | Output           | mination                               | OFF   | 0 V   |        |
| 91           | Ground  | ACC/ON indicator                                | Output           | Ignition switch                        | OFF   | Battery voltage   | Н      |
| (Y)          | Giodila | lamp  | Output           | ignition switch                        | ACC or ON   | 0.5 V   |        |
|              |         |   |                  |  | OFF   | 0 V   | HAC    |
| 92<br>(BR/R) | Ground  | Push-button ignition switch illumination ground | Output           | Tail lamp                              | ON  | When the illumination brightening/dimming level is in the neutral position  (V) 15 10 | J      |
|              |         | ground  |                  |  |   | 10<br>5<br>0<br>10 ms<br>JPMIA1554GB  | K<br>L |
| 93           | Ground  | Intelligent Key warn-                           | Output           | Intelligent Key                        | Sounding  | 0 V   |        |
| (GR/W)       | Ciodila | ing buzzer                                      | Output           | warning buzzer                         | Not sounding  | 12 V  | M      |
| 94<br>(Y/R)  | Ground  | Steering lock unit communication                | Input/<br>Output | Steering lock                          | LOCK status  LOCK or UNLOCK                                 | 12 V  (V) 15 10 50 ms  JMKIA0066GB  | N<br>O |
|              |         |   |                  |  | For 15 seconds after UN-<br>LOCK  15 seconds or later after | 12 V  |        |
|              |         |   |                  |  | UNLOCK  | 0 V   |        |
| 95           | Ground  | Steering lock unit                              | Output           | Ignition switch                        | OFF or ACC  | 12 V  |        |
| (W/G)        | Giodila | power supply                                    | Output           | ignition switch                        | ON  | 0 V   |        |

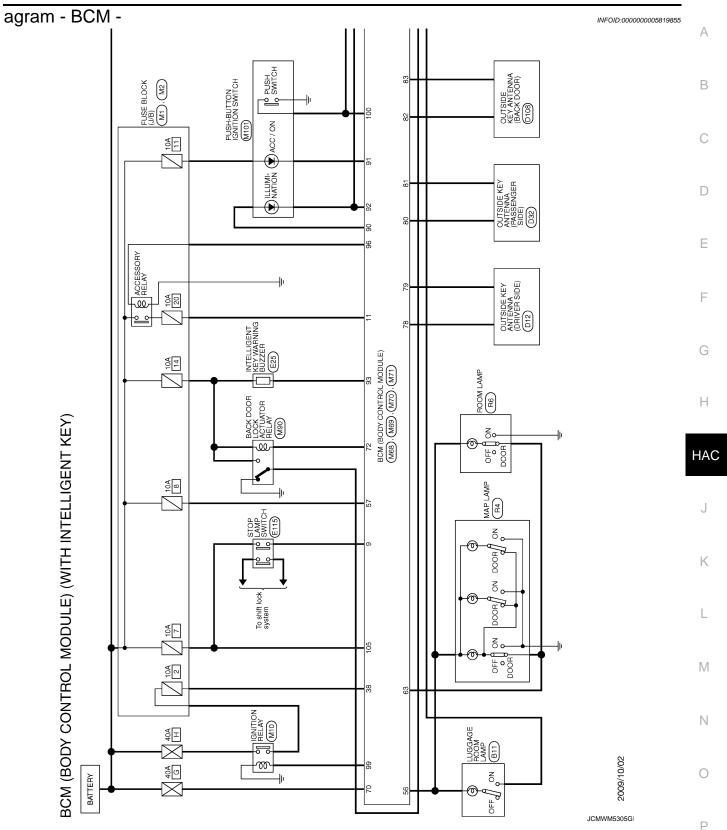
### < ECU DIAGNOSIS INFORMATION >

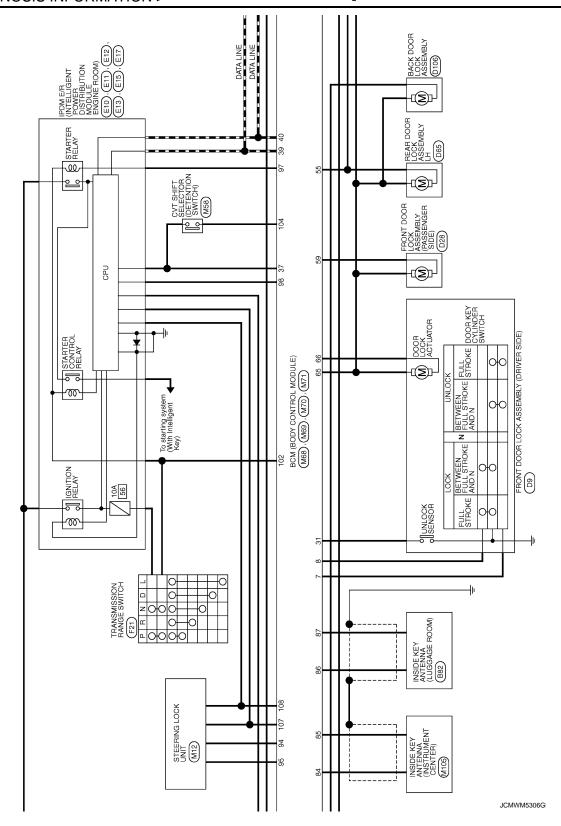
# [AUTÓMATIC AIR CONDITIONING]

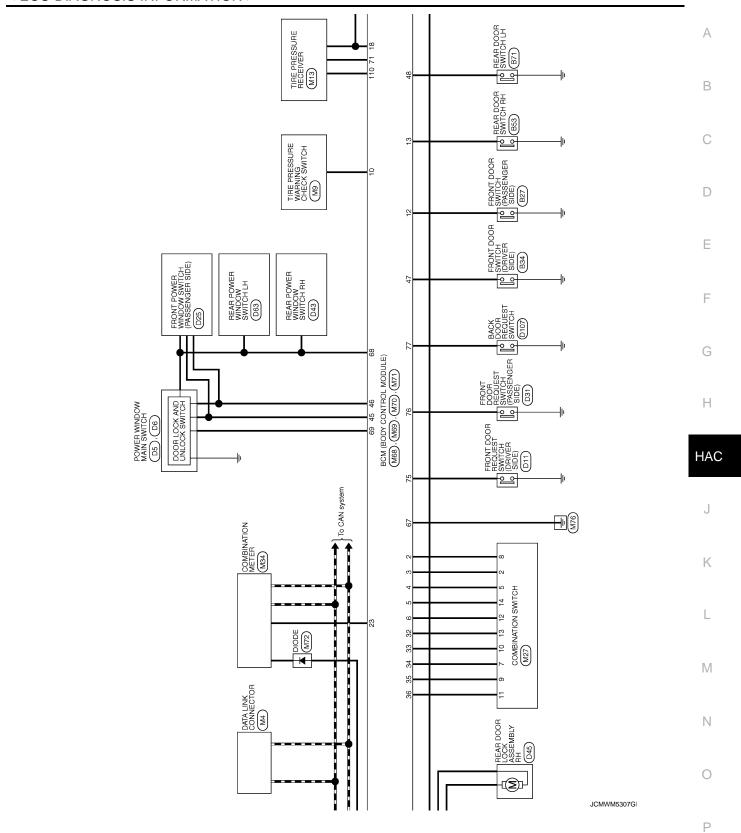
| Terminal No. |   | Description  |                  |                                |   | Value           |
|--------------|---|--|------------------|--------------------------------|---|-----------------|
| + (Wire      | color)  | Signal name  | Input/<br>Output | Condition                      |   | (Approx.)       |
| 96           | Craund  | ACC relevision trail                               | Outnut           | lanition quitab                | OFF   | 0 V             |
| (G)          | Ground  | ACC relay control                                  | Output           | Ignition switch                | ACC or ON                                     | 12 V            |
| 97           | Ground  | Ctartar ralay control                              | Output           | Ignition switch                | When selector lever is in P or N position     | Battery voltage |
| (L/R)        | Ground  | Starter relay control                              | Output           | ON                             | When selector lever is not in P or N position | 0 V             |
| 98           | Ground  | Ignition relay (IPDM                               | Output           | Ignition switch                | OFF or ACC                                    | 12 V            |
| (BR)         | Ground  | E/R) control                                       | Output           | ignition switch                | ON  | 0 V             |
| 99           | Cround  | lanition roley central                             | Output           | Ignition quitab                | OFF or ACC                                    | 0 V             |
| (W/R)        | Ground  | Ignition relay control                             | Output           | Ignition switch                | ON  | 12 V            |
| 100          |   | Push-button ignition                               |                  | Push-button ig-                | Pressed                                       | 0 V             |
| (L/O)        | Ground  | switch (push switch)                               | Input            | nition switch<br>(push switch) | Not pressed                                   | 12 V            |
| 102          | Ground  | Selector lever P/N                                 | Input            | Selector lever                 | P or N position                               | Battery voltage |
| (G)          | Giodila   | position   | iriput           | Selector level                 | Except P and N positions                      | 0 V             |
| 104<br>(Y/R) | Ground  | CVT shift selector (detention switch) power supply | Output           | Ignition switch ON             |   | 12 V            |
| 105<br>(B/O) | Ground  | Stop lamp switch 2                                 | Input            | Ignition switch OFF            |   | Battery voltage |
| 106          | Ground  | Blower fan motor re-                               | Output           | Ignition switch                | OFF or ACC                                    | 0 V             |
| (Y/B)        | Ground  | lay control  | Output           | ignition switch                | ON  | 12 V            |
| 107          | Ground  | Steering lock condi-                               | Input            | Steering lock                  | LOCK status                                   | 0 V             |
| (L/W)        | Giodila   | tion No. 1   | iriput           | Steering lock                  | UNLOCK status                                 | 12 V            |
| 108          | Ground  | Steering lock condi-                               | Input            | Steering lock                  | LOCK status                                   | 12 V            |
| (P/L)        | Ground  | tion No. 2   | input            | Steering lock                  | UNLOCK status                                 | 0 V             |
| 110          | Ground  | Tire pressure receiv-                              | Output           | Ignition switch                | OFF or ACC                                    | 0 V             |
| (BR/W)       | (BR/W) Ground er power supply Output Ignition swi |  | igilidon switch  | ON                             | 5 V   |                 |

<sup>\*:</sup> For Canada

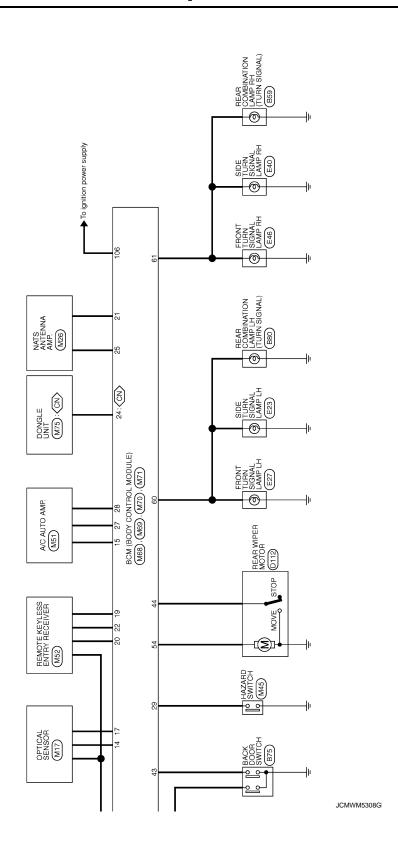
BCM (BODY CONTROL SYSTEM) (WITH INTELLIGENT KEY SYSTEM): Wiring Di-











| ш[ὄ]       | 3CM (BO        | BCM (BODY CONTROL MODULE) (WITH INTELLIGENT KEY) | E) (WITH IN | TELLI          | GENT KEY)  TIRE PRESS WARNING CHECK SW                          | Connector No   | M70  |   | H        |              | BACK DOOR ANT-                  |         |
|------------|----------------|--|-------------|----------------|---|----------------|--|---|----------|--------------|---------------------------------|---------|
| Õ          | Connector Name |  | 11          | +              | ACC F/B PASSENGER DOOR SW                                       | Connector Name |  | BCM (BODY CONTROL MODULE)   | 84 Y/G   |              | ROOM ANI+                       |         |
| Ő          | onnector Type  | TH16FW-NH  | 13          | Н              |   | Connector Ty   | Type FEA09FB-FHA6-SA                         | HA6-SA  | H        | Н            | LUGGAGE ROOM ANT                |         |
| <u>(42</u> | <b>1</b>       |  | 15          | K/B            | 1   | <b>4</b>       |  |   | 87<br>09 | +            | FINAL FILE PROBLEM SWITE POWER  | POWER   |
| '          | <b>1</b>       | [  | 17          | Н              | т   |                |  | - 11  | Ħ        | Н            | ACC/ON IND                      |         |
| •          | į              | 1 2 2  | 18          | +              | RECEIVER / SENSOR GND   | 113            | <b>7</b> 56 57 58 5                          | 56 57 58 59 60 61 62 63 64  | $^{+}$   | $\dashv$     | PUSH-BUTTON IGNITION SW ILL GND | ILL GND |
|            |                | 0 10 11 10 10                                    | 19          | H ≥            | KEYLESS ENTRY RECEIVER POWER SUPPLY KEYLESS ENTRY RECEIVER COMM |                | 99 59  | 67 68 69 70   | 93 GR/W  | +            | SZI LINIT GOMM                  |         |
|            |                | 0 3 10 11 0                                      | 21          | Н              | NATS ANTENNA AMP.   |                |  |   | Н        |              | S/L UNIT POWER SUPPI            | <u></u> |
| Ľ          |                |  | 22          | D/W            | KEYLESS ENTRY RECEIVER RSSI                                     | Ŀ              | -  |   | D 96     | 4            | ACC RELAY CONT                  |         |
|            | No. of Wire    | re Signal Name [Specification]                   | 23          | 7 8/8<br>8/8   | 1   | No. of         | of Wire                                      | Signal Name [Specification]   | +        | 1            | IGN RELAY (IPDM E/R) CONT       | INC     |
|            |                |  | 25          | 2              | NATS ANTENNA AMP.   | t              | L INTERIOR ROOM                              | ROOM LAMP POWER SUPPLY  | 99 W/R   | L            | GN RELAY CONT                   | Γ       |
| Ц          | 2 GR           |  | 27          | Y/R            | A/C SW  | 22             | <b>*</b>                                     | BAT (FUSE)  | 100 L/O  | Ц            | PUSH SW                         |         |
|            | 3 L            | WASHER (FR)                                      | 28          | $\dashv$       | BLOWER FAN SW   | $\dashv$       | $\dashv$                                     | PASSENGER DOOR UNLOCK OUTPUT  | Н        | Н            | SHIFT N/P                       |         |
|            | +              |  | 5           | +              | HAZARD SW   | +              | +  | JRN SIGNAL LH OUTPUT  | +        | +            | CVT SHIFT SELECTOR POWER SUPPLY | SUPPLY  |
|            | 6              |  | - S         | n (            | COMPLEM CINCIN SENSOR   | 0 8            | W/L 10                                       | DOOM I AMD TIMED CONTROL  | 106 8/0  | +            | STUP LAMP SW Z                  | TMOO    |
| 1_         | +              | OUTBILL  | 33 25       | 2 ×            | COMBI SW OUTPUT 4   | +              | ╀  | II DOOR LOCK OUTPUT   | W/ I 7/W | $\downarrow$ | S/1 CONDITION 1                 |         |
| _          | 8 BR/W         | N INPUT 5  | 34          | >              | COMBI SW OUTPUT 3   | H              | L/B DRIVE                                    | ER DOOR UNLOCK OUTPUT   | ╀        | ╀            | S/L CONDITION 2                 |         |
| _          | 9 R/L          |  | 35          | R/L            | COMBI SW OUTPUT 2   | 19             | В  | GND   | 110 BR/W |              | TIRE PRESS POWER SUPPLY         | PLY     |
| _          | 10 Y/L         | OUTPUT 4   | 36          | ٥/٦            | COMBI SW OUTPUT 1   | 89             | L POWER \                                    | WINDOW POWER SUPPLY (IGN)   |          |              |                                 |         |
| Ш          | Н              |  | 37          | 0/5            | SHIFT P   | H              | L/W POWER V                                  | POWER WINDOW POWER SUPPLY (BAT)   |          |              |                                 |         |
| _1         | 12 L/R         |  | 38          | 0              | IGN F/B   | 70             | <b>*</b>                                     | BAT (F/L)   |          |              |                                 |         |
|            | 13 LG          | OUTPUT 5   | 39          | _ [            | CAN-H   |                |  |   |          |              |                                 |         |
| ١          | 14             | INPUL 2  | 9           | 1              | CAN-L   | Connector No.  | M71  |   |          |              |                                 |         |
|            |                |  |             |                |   |                |  | 1   |          |              |                                 |         |
| ŏ          | Connector No.  | M68  | Conne       | Connector No.  | 69W   | Connector Name |  | BCM (BODY CONTROL MODULE)   |          |              |                                 |         |
| <u> </u>   | Connector Name | BCM (BODY CONTROL MODILIE)                       | Coppe       | Connector Name | BCM (BODY CONTROL MODILIE)                                      | Connector Type | pe TH40FW-NH                                 | I   |          |              |                                 |         |
| I          |                | Т  |             |                | 40 04111 111004111  | Œ.             |  |   |          |              |                                 |         |
| ا ا        | onnector Lype  | I H40FB-NH                                       | Count       | ctor I ype     | FEAUSTW-FHA0-SA   | 李              |  |   |          |              |                                 |         |
| W)         | 修              |  | E           |                |   |                |  | ŀ   |          |              |                                 |         |
|            | H.S.           |  | =           | ا<br>ا         |   | F 6            | 72 73 74 75 76 77 78<br>92 93 94 95 96 97 98 | 79 80 81 82 83 84 85 86 87 88 89 90<br>99 100 101 102 103 104 105 106 107 108 109 110 |          |              |                                 |         |
| •          | _              | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1   | 19 20       |                | 2 43 44 45 46 47 48   |                |  |   |          |              |                                 |         |
|            | 21 22 2        | 29 30 31 32 33 34 35 36 37 38                    | 39 40       | <b>]</b>       | 50 51 52 53 54 55   | - 1            |  |   |          |              |                                 |         |
|            |                |  |             |                |   | Terminal C     | Color Si                                     | Signal Name [Specification]   |          |              |                                 |         |
| Ľ          | erminal Color  | L  | Termi       | Color          |   | $^{+}$         |  | TIRE PRESS RECEIVER COMM  |          |              |                                 |         |
|            | No. of Wire    | Signal Name [Specification]                      | No.         | _              | Signal Name [Specification]                                     | 72             | >  | BK DR LOCK ACT RELAY CONT   |          |              |                                 |         |
| Ц          | 2 BR/W         |  | 43          | Μ              | BACK DOOR SW  | 75             | SB DRI                                       | DRIVER DOOR REQUEST SW  |          |              |                                 |         |
|            | 3 GR           |  | 44          | $\dashv$       | REAR WIPER STOP POSITION  | 76             |  | ENGER DOOR REQUEST SW   |          |              |                                 |         |
|            | 4 '            |  | 45          | g 8            | CENTRAL DOOR LOCK SW  | 77             |  | BACK DOOR REQUEST SW  |          |              |                                 |         |
|            | 5 -            | _  | 40          | ╀              | DENVER DOOR UNLOCK SW   | +              | 2 >  | DRIVER DOOR ANT-  |          |              |                                 |         |
| _          | 7 W/R          | KEY CYL UNLOCK SW                                | 48          | ╁              | REAR LH DOOR SW   | t              | BR/Y P,                                      | PASSENGER DOOR ANT+   |          |              |                                 |         |
| Ш          | 8 W/B          |  | 54          | N/N            | REAR WIPER OUTPUT   | 81             |  | ASSENGER DOOR ANT-  |          |              |                                 |         |
| Ц          | 9<br>R         |  | 22          | Н              | REAR DOOR UNLOCK OUTPUT   | Н              | W/B  | BACK DOOR ANT+  |          |              |                                 |         |
|            |                |  |             |                |   |                |  |   |          |              |                                 |         |
|            |                |  |             |                |   |                |  |   |          |              |                                 |         |
|            |                |  |             |                |   |                |  |   |          |              |                                 |         |
| JCN        |                |  |             |                |   |                |  |   |          |              |                                 |         |
| MW         |                |  |             |                |   |                |  |   |          |              |                                 |         |
| /M5        |                |  |             |                |   |                |  |   |          |              |                                 |         |
| 5309       |                |  |             |                |   |                |  |   |          |              |                                 |         |
| 9GI        |                |  |             |                |   |                |  |   |          |              |                                 |         |
|            |                |  |             |                |   |                |  |   |          |              |                                 |         |
|            |                |  |             |                |   |                |  |   |          |              |                                 |         |
|            |                |  |             |                |   |                |  |   |          |              |                                 |         |
|            |                |  |             |                |   |                |  |   |          |              |                                 |         |
|            |                |  |             |                |   |                |  |   |          |              |                                 |         |
|            | 0              | IV<br>N  | L           | K              | HA  | Н              | G  | E   | D        | С            | В                               | А       |

BCM (BODY CONTROL SYSTEM) (WITH INTELLIGENT KEY SYSTEM) : Fail-safe

INFOID:00000000005819856

FAIL-SAFE CONTROL BY DTC

BCM performs fail-safe control when any DTC are detected.

Revision: 2009 October **HAC-107** 2010 Z12

| Display contents of CONSULT | Fail-safe   | Cancellation  |
|-----------------------------|---|---|
| B2013: ID DISCORD BCM-S/L   | Inhibit engine cranking                           | When communication between BCM and steering lock unit are communicated normally.  |
| B2014: CHAIN OF S/L-BCM     | Inhibit engine cranking                           | When communication between BCM and steering lock unit are communicated normally.  |
| B2192: ID DISCORD BCM-ECM   | Inhibit engine cranking                           | Erase DTC   |
| B2193: CHAIN OF BCM-ECM     | Inhibit engine cranking                           | Erase DTC   |
| B2195: ANTI-SCANNING        | Inhibit engine cranking                           | Ignition switch ON → OFF  |
| B2196: DONGLE NG            | Inhibit engine cranking                           | Erase DTC   |
| B2198: NATS ANTENNA AMP     | Inhibit engine cranking                           | Erase DTC   |
| B2557: VEHICLE SPEED        | Inhibit steering lock                             | When the following CAN signal status (vehicle speed signal) becomes consistent  • Vehicle speed signal (ABS)  • Vehicle speed signal (Meter)  |
| B2601: SHIFT POSITION       | Inhibit steering lock                             | <ul> <li>500 ms after the following signal reception status becomes consistent</li> <li>Selector lever P position switch signal</li> <li>P range signal (CAN)</li> </ul>  |
| B2602: SHIFT POSITION       | Inhibit steering lock                             | <ul> <li>5 seconds after the following BCM recognition conditions are fulfilled</li> <li>Ignition switch is in the ON position</li> <li>Selector lever P position switch signal: Except P position (battery voltage)</li> <li>Vehicle speed: 4 km/h (2.5 MPH) or more</li> </ul>  |
| B2603: SHIFT POSI STATUS    | Inhibit steering lock                             | <ul> <li>500 ms after any of the following BCM recognition conditions are fulfilled</li> <li>Status 1</li> <li>Ignition switch is in the ON position</li> <li>Selector lever P position switch signal: Except P position (12 V)</li> <li>Selector lever P/N position signal: Except P and N positions (0 V)</li> <li>Status 2</li> <li>Ignition switch is in the ON position</li> <li>Selector lever P position switch signal: P position (0 V)</li> <li>Selector lever P/N position signal: P or N positions (12 V)</li> </ul> |
| B2604: PNP/CLUTCH SW        | Inhibit steering lock                             | <ul> <li>500 ms after any of the following BCM recognition conditions are fulfilled</li> <li>Status 1</li> <li>Ignition switch is in the ON position</li> <li>Selector lever P/N position signal: P or N position (12 V)</li> <li>Shift position signal (CAN): P or N position</li> <li>Status 2</li> <li>Ignition switch is in the ON position</li> <li>Selector lever P/N position signal: Except P and N positions (0 V)</li> <li>Shift position signal (CAN): Except P and N position</li> </ul>                            |
| B2605: PNP/CLUTCH SW        | Inhibit steering lock                             | 500 ms after any of the following BCM recognition conditions are fulfilled • Status 1 - Power position: IGN - Selector lever P/N position signal: Except P and N positions (0 V) - Interlock/PNP switch signal (CAN): OFF • Status 2 - Ignition switch is in the ON position - Selector lever P/N position signal: P or N position (12 V) - Interlock/PNP switch signal (CAN): ON   |
| B2608: STARTER RELAY        | Inhibit engine cranking                           | 500 ms after the following signal communication status becomes consistent  • Starter motor relay control signal  • Starter relay status signal (CAN)  |
| B2609: S/L STATUS           | Inhibit engine cranking     Inhibit steering lock | When the following steering lock conditions agree  BCM steering lock control status  Steering lock condition No. 1 signal status  Steering lock condition No. 2 signal status   |
| B260B: STEERING LOCK UNIT   | Inhibit steering lock                             | Erase DTC   |

#### < ECU DIAGNOSIS INFORMATION >

### [AUTOMATIC AIR CONDITIONING]

| Display contents of CONSULT | Fail-safe   | Cancellation  |
|-----------------------------|---|---|
| B260D: STEERING LOCK UNIT   | Inhibit steering lock                                     | Erase DTC   |
| B260F: ENG STATE SIG LOST   | Inhibit engine cranking                                   | When any of the following conditions are fulfilled  • Power position changes to ACC  • Receives engine status signal (CAN)  |
| B2612: S/L STATUS           | Inhibit engine cranking     Inhibit steering lock         | When any of the following conditions are fulfilled  Steering lock unit status signal (CAN) is received normally  The BCM steering lock control status matches the steering lock status recognized by the steering lock unit status signal (CAN from IPDM E/R) |
| B2619: BCM                  | Inhibit engine cranking                                   | 1 second after the steering lock unit power supply output control inside BCM becomes normal   |
| B26EF: STRG LCK RELAY OFF   | Inhibit engine cranking                                   | When the following conditions are fulfilled  • Steering lock relay signal (CAN): ON  • Steering lock unit status signal (CAN): ON   |
| B26F0: STRG LCK RELAY ON    | Inhibit engine cranking                                   | When the following conditions are fulfilled  • Steering lock relay signal (CAN): OFF  • Steering lock unit status signal (CAN): OFF   |
| B26F1: IGN RELAY OFF        | Inhibit engine cranking                                   | When the following conditions are fulfilled  Ignition switch ON signal (CAN: Transmitted from BCM): ON  Ignition switch ON signal (CAN: Transmitted from IPDM E/R): ON  |
| B26F2: IGN RELAY ON         | Inhibit engine cranking                                   | When the following conditions are fulfilled  Ignition switch ON signal (CAN: Transmitted from BCM): OFF  Ignition switch ON signal (CAN: Transmitted from IPDM E/R): OFF  |
| B26F3: START CONT RLY ON    | Inhibit engine cranking                                   | When the following conditions are fulfilled  • Starter control relay signal (CAN: Transmitted from BCM): OFF  • Starter control relay signal (CAN: Transmitted from IPDM E/R): OFF  |
| B26F4: START CONT RLY OFF   | Inhibit engine cranking                                   | When the following conditions are fulfilled  • Starter control relay signal (CAN: Transmitted from BCM): ON  • Starter control relay signal (CAN: Transmitted from IPDM E/R): ON  |
| B26F7: BCM                  | Inhibit engine cranking<br>by Intelligent Key sys-<br>tem | When room antenna and luggage room antenna functions normally   |
| U0415: VEHICLE SPEED        | Inhibit steering lock                                     | When vehicle speed signal (Meter) (CAN) is received normally  |

#### REAR WIPER MOTOR PROTECTION

BCM detects the rear wiper stopping position according to the rear wiper stop position signal.

When the rear wiper stop position signal does not change for more than 5 seconds while driving the rear wiper, BCM stops power supply to protect the rear wiper motor.

#### Condition of cancellation

- 1. More than 1 minute is passed after the rear wiper stop.
- 2. Turn rear wiper switch OFF.
- 3. Operate the rear wiper switch or rear washer switch.

# BCM (BODY CONTROL SYSTEM) (WITH INTELLIGENT KEY SYSTEM): DTC Inspection Priority Chart

If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.

| Priority | DTC   |
|----------|---|
| 1        | B2562: LOW VOLTAGE                                    |
| 2        | U1000: CAN COMM CIRCUIT     U1010: CONTROL UNIT (CAN) |

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| Priority |  | DTC |
|----------|--|-----|
| 3        | <ul> <li>B2192: ID DISCORD BCM-ECM</li> <li>B2193: CHAIN OF BCM-ECM</li> <li>B2195: ANTI-SCANNING</li> <li>B2196: DONGLE NG</li> <li>B2198: NATS ANTENNA AMP</li> </ul>  |     |
| 4        | <ul> <li>B2013: ID DISCORD BCM-S/L</li> <li>B2014: CHAIN OF S/L-BCM</li> <li>B2553: IGNITION RELAY</li> <li>B2555: STOP LAMP</li> <li>B2556: PUSH-BTN IGN SW</li> <li>B2557: VEHICLE SPEED</li> <li>B2601: SHIFT POSITION</li> <li>B2602: SHIFT POSITION</li> <li>B2603: SHIFT POSI STATUS</li> <li>B2604: PNP/CLUTCH SW</li> <li>B2605: PNP/CLUTCH SW</li> <li>B2608: STARTER RELAY</li> <li>B2609: S/L STATUS</li> <li>B2609: S/L STATUS</li> <li>B2600: STEERING LOCK UNIT</li> <li>B2600: STEERING LOCK UNIT</li> <li>B2600: STEERING LOCK UNIT</li> <li>B2601: STATUS</li> <li>B2612: S/L STATUS</li> <li>B2614: BCM</li> <li>B2615: BCM</li> <li>B2616: BCM</li> <li>B2618: BCM</li> <li>B2618: BCM</li> <li>B2619: BCM</li> <li>B2619: LOCK MALFUNCTION</li> <li>B26E9: LOCK MALFUNCTION</li> <li>B26E7: STRG LCK RELAY OFF</li> <li>B26F0: STRG LCK RELAY ON</li> <li>B26F1: IGN RELAY OFF</li> <li>B26F2: IGN RELAY ON</li> <li>B26F3: START CONT RLY ON</li> <li>B26F5: STRG LCK STS SW</li> <li>B26F6: BCM</li> <li>B26F6: BCM</li> <li>B26F7: BCM</li> <li>B26F8: BCM</li> <li>B26F7: WCL SPEED SIG ERR</li> <li>U0415: VEHICLE SPEED</li> </ul> |     |
| 5        | <ul> <li>C1704: LOW PRESSURE FL</li> <li>C1705: LOW PRESSURE FR</li> <li>C1706: LOW PRESSURE RR</li> <li>C1707: LOW PRESSURE RL</li> <li>C1708: [NO DATA] FL</li> <li>C1709: [NO DATA] FR</li> <li>C1710: [NO DATA] RR</li> <li>C1711: [NO DATA] RL</li> <li>C1716: [PRESSDATA ERR] FL</li> <li>C1717: [PRESSDATA ERR] FR</li> <li>C1718: [PRESSDATA ERR] RR</li> <li>C1719: [PRESSDATA ERR] RR</li> <li>C1734: CONTROL UNIT</li> </ul>  |     |
| 6        | B2621: INSIDE ANTENNA     B2622: INSIDE ANTENNA  |     |
| 7        | B2626: OUTSIDE ANTENNA     B2627: OUTSIDE ANTENNA  |     |

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[AUTOMATIC AIR CONDITIONING]

# BCM (BODY CONTROL SYSTEM) (WITH INTELLIGENT KEY SYSTEM): DTC Index

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#### NOTE:

The details of time display are as follows.

- CRNT: A malfunction is detected now.
- PAST: A malfunction was detected in the past.

IGN counter is displayed on Freeze Frame Data. For details of Freeze Frame Data, refer to BCS-18, "COM-MON ITEM: CONSULT-III Function (BCM - COMMON ITEM)".

| CONSULT display                                      | Fail-safe | Freeze Frame Data •Vehicle Speed •Odo/Trip Meter •Vehicle Condition | Intelligent Key<br>warning lamp ON | Tire pressure<br>monitor warning<br>lamp ON | Reference<br>page | D<br>E |
|--|-----------|---|------------------------------------|---|-------------------|--------|
| No DTC is detected. further testing may be required. | _         | _   | _                                  | _   | _                 | . –    |
| U1000: CAN COMM                                      | _         | _   | _                                  | _   | BCS-39            | F      |
| U1010: CONTROL UNIT (CAN)                            | _         | _   | _                                  | _   | BCS-40            |        |
| U0415: VEHICLE SPEED                                 | ×         | _   | ×                                  | _   | BCS-41            | G      |
| B2013: ID DISCORD BCM-S/L                            | ×         | ×   | ×                                  | _   | SEC-45            | -      |
| B2014: CHAIN OF S/L-BCM                              | ×         | ×   | ×                                  | _   | SEC-46            |        |
| B2192: ID DISCORD BCM-ECM                            | ×         | _   | _                                  | _   | SEC-35            | Н      |
| B2193: CHAIN OF BCM-ECM                              | ×         | _   | _                                  | _   | SEC-37            |        |
| B2195: ANTI-SCANNING                                 | ×         | _   | _                                  | _   | SEC-38            | HAG    |
| B2196: DONGLE NG                                     | ×         | _   | _                                  | _   | SEC-39            |        |
| B2198: NATS ANTENNA AMP                              | ×         | _   | _                                  | _   | SEC-41            |        |
| B2553: IGNITION RELAY                                | _         | ×   | ×                                  | _   | PCS-77            | J      |
| B2555: STOP LAMP                                     | _         | ×   | ×                                  | _   | SEC-49            |        |
| B2556: PUSH-BTN IGN SW                               | _         | ×   | ×                                  | _   | SEC-51            | K      |
| B2557: VEHICLE SPEED                                 | ×         | ×   | ×                                  | _   | SEC-53            |        |
| B2562: LOW VOLTAGE                                   | _         | ×   | _                                  | _   | BCS-42            |        |
| B2601: SHIFT POSITION                                | ×         | ×   | ×                                  | _   | SEC-54            | L      |
| B2602: SHIFT POSITION                                | ×         | ×   | ×                                  | _   | SEC-57            |        |
| B2603: SHIFT POSI STATUS                             | ×         | ×   | ×                                  | _   | SEC-60            | M      |
| B2604: PNP/CLUTCH SW                                 | ×         | ×   | ×                                  | _   | SEC-65            | IVI    |
| B2605: PNP/CLUTCH SW                                 | ×         | ×   | ×                                  | _   | SEC-68            |        |
| B2608: STARTER RELAY                                 | ×         | ×   | ×                                  | _   | SEC-70            | Ν      |
| B2609: S/L STATUS                                    | ×         | ×   | ×                                  | _   | SEC-72            |        |
| B260B: STEERING LOCK UNIT                            | ×         | ×   | ×                                  | _   | <u>SEC-75</u>     |        |
| B260C: STEERING LOCK UNIT                            | _         | ×   | ×                                  | _   | <u>SEC-76</u>     | 0      |
| B260D: STEERING LOCK UNIT                            | ×         | ×   | ×                                  | _   | <u>SEC-77</u>     | •      |
| B260F: ENG STATE SIG LOST                            | ×         | ×   | ×                                  |   | <u>SEC-78</u>     | Р      |
| B2612: S/L STATUS                                    | ×         | ×   | ×                                  | _   | <u>SEC-79</u>     |        |
| B2614: BCM   | _         | ×   | ×                                  | _   | PCS-79            |        |
| B2615: BCM   | _         | ×   | ×                                  | _   | PCS-82            |        |
| B2616: BCM   | _         | ×   | ×                                  |   | PCS-85            | _      |
| B2618: BCM   | _         | ×   | ×                                  | _   | PCS-88            |        |

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| CONSULT display           | Fail-safe    | Freeze Frame Data •Vehicle Speed •Odo/Trip Meter •Vehicle Condition | Intelligent Key<br>warning lamp ON | Tire pressure<br>monitor warning<br>lamp ON | Reference<br>page |
|---------------------------|--------------|---|------------------------------------|---|-------------------|
| B2619: BCM                | ×            | ×   | ×                                  | _   | SEC-82            |
| B261A: PUSH-BTN IGN SW    | _            | ×   | ×                                  | _   | PCS-89            |
| B2621: INSIDE ANTENNA     | _            | ×   | _                                  | _   | DLK-44            |
| B2622: INSIDE ANTENNA     | _            | ×   | _                                  | _   | DLK-46            |
| B2626: OUTSIDE ANTENNA    | _            | ×   | _                                  | _   | <u>DLK-48</u>     |
| B2627: OUTSIDE ANTENNA    | _            | ×   | _                                  | _   | <u>DLK-50</u>     |
| B2628: OUTSIDE ANTENNA    | _            | ×   | _                                  | _   | <u>DLK-52</u>     |
| B26E9: LOCK MALFUNCTION   | _            | ×   | × (Turn ON for 15 seconds)         | _   | SEC-83            |
| B26EF: STRG LCK RELAY OFF | ×            | ×   | ×                                  | _   | SEC-84            |
| B26F0: STRG LCK RELAY ON  | ×            | ×   | ×                                  | _   | SEC-86            |
| B26F1: IGN RELAY OFF      | ×            | ×   | ×                                  | _   | PCS-91            |
| B26F2: IGN RELAY ON       | ×            | ×   | ×                                  | _   | PCS-94            |
| B26F3: START CONT RLY ON  | ×            | ×   | ×                                  | _   | SEC-87            |
| B26F4: START CONT RLY OFF | ×            | ×   | ×                                  | _   | SEC-88            |
| B26F5: STRG LCK STS SW    | _            | ×   | ×                                  | _   | SEC-90            |
| B26F6: BCM                | _            | ×   | ×                                  | _   | PCS-97            |
| B26F7: BCM                | ×            | ×   | ×                                  | _   | SEC-93            |
| B26F8: BCM                | _            | ×   | ×                                  | _   | SEC-94            |
| B26FC: KEY REGISTRATION   | _            | ×   | ×                                  | _   | SEC-95            |
| C1704: LOW PRESSURE FL    | _            | _   | _                                  | ×   |                   |
| C1705: LOW PRESSURE FR    | _            | _   | _                                  | ×   |                   |
| C1706: LOW PRESSURE RR    | _            | _   | _                                  | ×   | <u>WT-30</u>      |
| C1707: LOW PRESSURE RL    | _            | _   | _                                  | ×   |                   |
| C1708: [NO DATA] FL       | _            | _   | _                                  | ×   |                   |
| C1709: [NO DATA] FR       | _            | _   | _                                  | ×   |                   |
| C1710: [NO DATA] RR       | _            | _   | _                                  | ×   | <u>WT-32</u>      |
| C1711: [NO DATA] RL       | _            | _   | _                                  | ×   |                   |
| C1716: [PRESSDATA ERR] FL | _            | _   | _                                  | ×   |                   |
| C1717: [PRESSDATA ERR] FR | _            | _   | _                                  | ×   | 14/               |
| C1718: [PRESSDATA ERR] RR | _            | _   | _                                  | ×   | <u>WT-35</u>      |
| C1719: [PRESSDATA ERR] RL | _            | _   | _                                  | ×   |                   |
| C1729: VHCL SPEED SIG ERR |              | _   | _                                  | ×   | <u>WT-37</u>      |
| C1734: CONTROL UNIT       | <del>_</del> | _   | _                                  | ×   | WT-39             |

BCM (BODY CONTROL SYSTEM) (WITHOUT INTELLIGENT KEY SYSTEM)

BCM (BODY CONTROL SYSTEM) (WITHOUT INTELLIGENT KEY SYSTEM) : Reference Value

VALUES ON THE DIAGNOSIS TOOL

# < ECU DIAGNOSIS INFORMATION >

## [AUTÓMATIC AIR CONDITIONING]

| Monitor Item     | Condition  | Value/Status                           |
|------------------|--|--|
| IGN ON SW        | Ignition switch OFF or ACC   | Off                                    |
| GIN OIN 3W       | Ignition switch ON   | On                                     |
| KEY ON SW        | Mechanical key is removed from key cylinder                                    | Off                                    |
| NET ON SW        | Mechanical key is inserted to key cylinder                                     | On                                     |
| CDL LOCK SW      | Door lock/unlock switch does not operate                                       | Off                                    |
| SDL LOCK SW      | Press door lock/unlock switch to the lock side                                 | On                                     |
| CDL LINII OCK SW | Door lock/unlock switch does not operate                                       | Off                                    |
| CDL UNLOCK SW    | Press door lock/unlock switch to the unlock side                               | On                                     |
| DOOR SW-DR       | Driver's door closed   | Off                                    |
| DOOK SW-DR       | Driver's door opened   | On                                     |
| DOOD 0W 40       | Passenger door closed  | Off                                    |
| DOOR SW-AS       | Passenger door opened  | On                                     |
|                  | Rear RH door closed  | Off                                    |
| DOOR SW-RR       | Rear RH door opened  | On                                     |
|                  | Rear LH door closed  | Off                                    |
| DOOR SW-RL       | Rear LH door opened  | On                                     |
|                  | Back door closed   | Off                                    |
| BACK DOOR SW     | Back door opened   | On                                     |
| LOCK STATUS      | NOTE: The item is indicated, but not monitored.                                | Off                                    |
| ACC ON SW        | Ignition switch OFF  | Off                                    |
|                  | Ignition switch ACC or ON  | On                                     |
|                  | "LOCK" button of key fob is not pressed  | Off                                    |
| KEYLESS LOCK     | "LOCK" button of key fob is pressed  | On                                     |
|                  | "UNLOCK" button of key fob is not pressed                                      | Off                                    |
| KEYLESS UNLOCK   | "UNLOCK" button of key fob is pressed  | On                                     |
| SHOCK SENSOR     | NOTE: The item is indicated, but not monitored.                                | NORMAL                                 |
|                  | Other than driver door key cylinder LOCK position                              | Off                                    |
| KEY CYL LK-SW    | Driver door key cylinder LOCK position   | On                                     |
|                  | Other than driver door key cylinder UNLOCK position                            | Off                                    |
| KEY CYL UN-SW    | Driver door key cylinder UNLOCK position                                       | On                                     |
| VEHICLE SPEED    | While driving  | Equivalent to speed-<br>ometer reading |
|                  | Rear window defogger switch OFF  | Off                                    |
| REAR DEF SW      | Rear window defogger switch ON   | On                                     |
|                  | NOTE:  | Off                                    |
| REVERSE SW CAN   | The item is indicated, but not used.   | On                                     |
|                  | Lighting switch OFF  | Off                                    |
| TAIL LAMP SW     | Lighting switch 1ST  | On                                     |
|                  | Front fog lamp switch OFF  | Off                                    |
| FR FOG SW        | Front fog lamp switch ON   | On                                     |
|                  | The seat belt (driver side) is fastened. [Seat belt switch (driver side) OFF]  | Off                                    |
| BUCKLE SW        | The seat belt (driver side) is unfastened. [Seat belt switch (driver side) ON] | On                                     |

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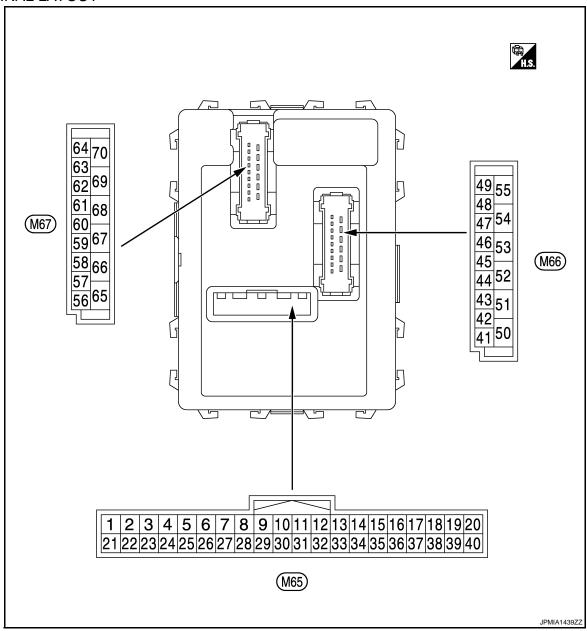
## < ECU DIAGNOSIS INFORMATION >

| Monitor Item     | Condition  | Value/Status    |
|------------------|--|-----------------|
| TRNK/HAT MNTR    | NOTE: The item is indicated, but not monitored.      | Off             |
| ACC SW           | Ignition switch OFF                                  | Off             |
| ACC SW           | Ignition switch ACC or ON                            | On              |
| (YLS TRNK/HAT    | NOTE: The item is indicated, but not monitored.      | Off             |
| KEYLESS PANIC    | PANIC button of key fob is not pressed               | Off             |
| RETLESS PAINIC   | PANIC button of key fob is pressed                   | On              |
| JI DEAM CW       | Lighting switch OFF                                  | Off             |
| HI BEAM SW       | Lighting switch HI                                   | On              |
| IEAD LAMB OW 4   | Lighting switch OFF                                  | Off             |
| HEAD LAMP SW 1   | Lighting switch 2ND                                  | On              |
|                  | Lighting switch OFF                                  | Off             |
| HEAD LAMP SW 2   | Lighting switch 2ND                                  | On              |
| NUTO LIGHT CH    | Lighting switch OFF                                  | Off             |
| AUTO LIGHT SW    | Lighting switch AUTO                                 | On              |
|                  | Other than lighting switch PASS                      | Off             |
| PASSING SW       | Lighting switch PASS                                 | On              |
| RR FOG SW        | NOTE: The item is indicated, but not monitored.      | Off             |
| TURN SIGNAL R    | Turn signal switch OFF                               | Off             |
| TORN SIGNAL K    | Turn signal switch RH                                | On              |
| TURN SIGNAL L    | Turn signal switch OFF                               | Off             |
| URN SIGNAL L     | Turn signal switch LH                                | On              |
| OKD CW           | Parking brake switch is OFF                          | Off             |
| PKB SW           | Parking brake switch is ON                           | On              |
| ENIONE DUN       | Engine stopped                                       | Off             |
| ENGINE RUN       | Engine running                                       | On              |
| 25TL 25NL (DT2T) | Bright outside of the vehicle                        | Close to 5 V    |
| OPTI SEN (DTCT)  | Dark outside of the vehicle                          | Close to 0 V    |
| 20T1 0EN (EUT)   | Bright outside of the vehicle (Lighting switch AUTO) | Close to 5 V    |
| OPTI SEN (FILT)  | Dark outside of the vehicle (Lighting switch AUTO)   | Close to 1.50 V |
| LIG SEN COND     | NOTE: The item is indicated, but not monitored.      | OFF             |
|                  | Ignition switch OFF or ACC                           | Off             |
| GN SW CAN        | Ignition switch ON                                   | On              |
| -D WIDED I "     | Front wiper switch OFF                               | Off             |
| R WIPER HI       | Front wiper switch HI                                | On              |
|                  | Front wiper switch OFF                               | Off             |
| R WIPER LOW      | Front wiper switch LO                                | On              |
|                  | Front wiper switch OFF                               | Off             |
| R WIPER INT      | Front wiper switch INT                               | On              |
|                  | Front washer switch OFF                              | Off             |
| FR WASHER SW     | Front washer switch ON                               | On              |
| INT VOLUME       | Wiper intermittent dial is in a dial position 1 - 7  | 1 - 7           |

## < ECU DIAGNOSIS INFORMATION >

| Monitor Item   | Condition  | Value/Status |   |
|--|--|--------------|---|
| R WIPER STOP   | Any position other than front wiper stop position  | Off          | _ |
| K WIF LK STOP  | Front wiper stop position  | On           | _ |
| RR WIPER ON  | Rear wiper switch OFF  | Off          |   |
| N WIFER ON   | Rear wiper switch ON   | On           |   |
| RR WIPER INT   | Rear wiper switch OFF  | Off          |   |
| KK WIPEK INT   | Rear wiper switch INT  | On           |   |
| DD WACHED CW   | Rear washer switch OFF   | Off          |   |
| RR WASHER SW   | Rear washer switch ON  | On           |   |
| OD WIDED STOD  | Rear wiper stop position   | Off          | _ |
| RR WIPER STOP  | Other than rear wiper stop position  | On           | _ |
| RAIN SENSOR  | NOTE: The item is indicated, but not monitored.  | Off          | _ |
| IAZADD OM  | Hazard switch OFF  | Off          | _ |
| HAZARD SW  | Hazard switch ON   | On           | _ |
| FAN ON SIG   | Blower control dial OFF  | Off          | _ |
| FAN ON SIG   | Other than blower control dial OFF   | On           | _ |
| AID COND CIA   | Air conditioner OFF (A/C switch indicator OFF) (Automatic air conditioner)     A/C switch OFF (Manual air conditioner)                       | Off          | _ |
| AIR COND SW  | <ul> <li>Air conditioner ON (A/C switch indicator ON) (Automatic air conditioner)</li> <li>A/C switch ON (Manual air conditioner)</li> </ul> | On           | _ |
| THERMO AMP   | Ignition switch ON   | Off          | _ |
| NOTE: At models with automatic air conditioner this item is not monitored. | Evaporator is extremely low temperature  | On           | _ |
|  | Other than A/C mode defroster ON position  | Off          | _ |
| FR DEF SW  | A/C mode defroster ON position   | On           | _ |
| KEYLESS TRUNK  | NOTE: The item is indicated, but not monitored.  | Off          | _ |
| TRNK OPNR SW   | NOTE: The item is indicated, but not monitored.  | Off          | _ |
| TRNK OPN MNTR  | NOTE: The item is indicated, but not monitored.  | Off          | _ |
| HOOD SW  | Close the hood   | Off          |   |
| HOOD SW  | Open the hood  | On           | _ |
| TDANIEDONDED   | Other than the ignition switch is ON by key registered to BCM.   | Off          | _ |
| TRANSPONDER  | The ignition switch is ON by key registered to BCM.  | On           | _ |
| NTELLI KEY   | NOTE: The item is indicated, but not used.   | Off          | _ |
| AUTO RELOCK  | NOTE: The item is indicated, but not monitored.  | Off          | _ |
| OIL PRESS SW   | Ignition switch OFF or ACC     Engine running  | Off          | _ |
|  | Ignition switch ON   | On           | _ |
|  | Brake pedal is not depressed   | Off          | _ |
| BRAKE SW   | Brake pedal is depressed   | On           | _ |

## TERMINAL LAYOUT



#### NOTE:

M65, M66: WhiteM67: Black

PHYSICAL VALUES

|             | nal No.<br>color)   | Description                | ı                |                                     |  | Value  | Α           |
|-------------|---------------------|----------------------------|------------------|-------------------------------------|--|--|-------------|
| +           | -                   | Signal name                | Input/<br>Output |                                     | Condition                                      | (Approx.)  |             |
|             |                     |                            |                  |                                     | All switch OFF                                 | 0 V  | В           |
|             |                     |                            |                  |                                     | Turn signal switch RH                          |  |             |
|             |                     |                            |                  |                                     | Lighting switch HI                             | (V)  | С           |
| 2<br>(BR/W) | 2<br>(DDAAA) Ground | Combination switch INPUT 5 | Input            | Combination switch (Wiper intermit- | Lighting switch 1ST                            | 10 5 0 PKIB4958J   | D           |
| , ,         |                     |                            |                  | tent dial 4)                        | Lighting switch 2ND                            | (V) 15 10 5 0  | E<br>F<br>G |
|             |                     |                            |                  |                                     | All switch OFF                                 | 0 V  |             |
|             |                     |                            |                  | Combination switch (Wiper intermit- | Turn signal switch LH                          |  | Н           |
|             |                     |                            |                  |                                     | Lighting switch PASS                           | (V)<br>15  |             |
| 3<br>(GR)   | Ground              | Combination switch INPUT 4 | Input            |                                     | Lighting switch 2ND                            | 10 5 0 PKIB4958J   | HAC<br>J    |
| (5.7)       |                     |                            |                  | tent dial 4)                        | Front fog lamp switch ON                       | (V)<br>15<br>10<br>5<br>0<br>+10ms<br>PKIB4956J<br>0.8 V | K<br>L      |
|             |                     |                            |                  |                                     | All switch OFF                                 | 0.8 V  | IVI         |
|             |                     |                            |                  |                                     | Front wiper switch LO                          | U V  |             |
| 4           | Ground              | Combination switch         | Input            | Combination switch                  | Front wiper switch MIST Front wiper switch INT | (V)<br>15<br>10<br>0                                     | N           |
| (L/Y)       |                     | INPUT 3                    |                  | (Wiper intermittent dial 4)         | Lighting switch AUTO                           | +10ms =  | 0           |
|             |                     |                            |                  |                                     |  | PKIB4958J<br>1.0 V                                       | Р           |

## < ECU DIAGNOSIS INFORMATION >

|            | nal No. | Description                |                  |                    |   | Value  |
|------------|---------|----------------------------|------------------|--------------------|---|--|
| + (vvire   | color)  | Signal name                | Input/<br>Output | Condition          |   | (Approx.)  |
| 5<br>(G)   | Ground  | Combination switch INPUT 2 | Input            | Combination switch | All switch OFF (Wiper intermittent dial 4) Front washer switch (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 5 • Wiper intermittent dial 6 | 0 V  (V) 15 10 5 0 PKIB4958J 1.0 V   |
|            |         |                            |                  |                    | Rear wiper switch ON<br>(Wiper intermittent dial 4)   | (V)<br>15<br>0<br>5<br>0<br>10ms<br>10ms<br>10ms<br>10ms<br>10ms<br>10ms<br>10ms<br>10 |
|            |         |                            |                  |                    | All switch OFF<br>(Wiper intermittent dial 4)   | 0 V  |
|            |         |                            |                  |                    | Front wiper switch HI (Wiper intermittent dial 4)  Rear wiper switch INT (Wiper intermittent dial 4)  | (V)<br>15<br>10<br>5   |
|            |         |                            |                  |                    | Wiper intermittent dial 3 (All switch OFF)  | → +10ms PKIB4958J  |
| 6<br>(L/R) | Ground  | Combination switch INPUT 1 | Input            | Combination switch | Any of the condition below with all switch OFF  • Wiper intermittent dial 1  • Wiper intermittent dial 2  | (V)<br>15<br>10<br>5<br>0<br>PKIB4952J<br>1.9 V  |
|            |         |                            |                  |                    | Any of the condition below with all switch OFF • Wiper intermittent dial 6 • Wiper intermittent dial 7  | (V)<br>15<br>10<br>5<br>0<br>10ms<br>PKIB4956J<br>0.8 V                                |

# < ECU DIAGNOSIS INFORMATION >

|              | inal No.<br>e color) | Description                        |                  |                               |                                    | Value   |
|--------------|----------------------|------------------------------------|------------------|-------------------------------|------------------------------------|---|
| +            | -                    | Signal name                        | Input/<br>Output |                               | Condition                          | (Approx.)   |
| 7<br>(W/R)   | Ground               | Door key cylinder<br>switch UNLOCK | Input            | Door key cylin-<br>der switch | NEUTRAL position                   | (V)<br>15<br>10<br>5<br>0<br>** 10ms<br>PKIB4960J<br>7.0 - 8.0 V  |
|              |                      |                                    |                  | l                             | UNLOCK position                    | 0 V   |
| 8            |                      | Door key cylinder                  |                  | Door key cylin-               | NEUTRAL position                   | 12 V  |
| (W/B)        | Ground               | switch LOCK                        | Input            | der switch                    | LOCK position                      | 0 V   |
| 9            | Organia I            | Cton lawsit-li                     | ln=t             | Stop lamp                     | OFF (Brake pedal is not depressed) | 0 V   |
| (R)          | Ground               | Stop lamp switch                   | Input            | switch                        | ON (Brake pedal is depressed)      | Battery voltage   |
| 10           | Ground               | Rear window defog-                 | Input            | Rear window                   | OFF (Not pressed)                  | 12 V  |
| (W/L)        | Giodila              | ger switch                         | input            | defogger switch               | ON (Pressed)                       | 0 V   |
| 11           | Ground               | Ignition switch ACC                | Input            | Ignition switch O             | FF                                 | 0 V   |
| (L/Y)        | Ground               | Igilition switch ACC               | input            | Ignition switch ACC or ON     |                                    | Battery voltage   |
| 12<br>(SB)   | Ground               | Passenger door<br>switch           | Input            | Passenger door<br>switch      | OFF (When passenger door closed)   | (V)<br>15<br>10<br>5<br>0<br>++10ms<br>PKIB4960J<br>7.0 - 8.0 V   |
|              |                      |                                    |                  |                               | ON (When passenger door opened)    | 0 V   |
| 13<br>(GR/L) | Ground               | Rear RH door switch                | Input            | Rear RH door switch           | OFF (When rear RH door closed)     | (V)<br>15<br>10<br>5<br>0<br>*** 10ms<br>PKIB4960J<br>7.0 - 8.0 V |
|              |                      |                                    |                  |                               | ON (When rear RH door opened)      | 0 V   |
| 14           | Ground               | Optical sensor                     | Input            | Ignition switch               | When bright outside of the vehicle | Close to 5 V  |
| (L/B)        |                      |                                    | '                | ON                            | When dark outside of the vehicle   | Close to 0 V  |

## < ECU DIAGNOSIS INFORMATION >

|             | nal No. | Description  |                  |                           |  | Value   |
|-------------|---------|--|------------------|---------------------------|--|---|
| + (Wire     | color)  | Signal name  | Input/<br>Output |                           | Condition  | (Approx.)   |
| 15<br>(V/W) | Ground  | Tire pressure warning check switch                 | Input            | Ignition switch OFF       |  | (V)<br>15<br>10<br>5<br>0<br>10 ms<br>JPMIA0012GB                   |
| 17<br>(R/G) | Ground  | Optical sensor pow-<br>er supply                   | Output           | Ignition switch           | OFF, ACC   | 1.0 - 1.5 V<br>0 V<br>5 V   |
| 18<br>(V)   | Ground  | Receiver and sensor ground                         | Input            | Ignition switch C         | N  | 0 V   |
|             |         |  |                  |                           | Insert mechanical key into ignition key cylinder                         | 0 V   |
|             |         | Remote keyless en-<br>try receiver power<br>supply |                  | Input Ignition switch OFF | Remove mechanical key<br>from ignition key cylinder<br>(Any door opened) | 5 V   |
| 19<br>(BR)  | Ground  |  | Input            |                           | Remove mechanical key<br>from ignition key cylinder<br>(Any door closed) | (V)<br>6<br>4<br>2<br>0<br>**0.2 \$<br>JPMIA0338JP                  |
|             |         |  |                  |                           | Insert mechanical key into ignition key cylinder                         | 0 V   |
| 20<br>(G/Y) | Ground  | Remote keyless entry receiver communication        | Input            | Ignition switch<br>OFF    | Waiting  | (V)<br>6<br>4<br>2<br>0<br>•••1.0ms                                 |
|             |         |  |                  |                           | Signal receiving   | (V)<br>6<br>4<br>2<br>0<br>••1.0ms                                  |
| 21<br>(P/L) | Ground  | Immobilizer anten-<br>na (Clock)                   | Input/<br>Output | During waiting            | Ignition switch is pressed while inserting the key into the key slot.    | Just after pressing ignition switch. Pointer of tester should move. |

## < ECU DIAGNOSIS INFORMATION >

# [AUTÓMATIC AIR CONDITIONING]

| Terminal No.<br>(Wire color) |        | Description  |                  |                    | 0 150   | Value   | • |  |
|------------------------------|--------|--|------------------|--------------------|---|---|---|--|
| +                            | –      | Signal name  | Input/<br>Output |                    | Condition   | (Approx.)   |   |  |
|                              |        |  |                  |                    | ON  | 0 V   |   |  |
| 23<br>(R/Y)                  | Ground | Ground Security indicator Input Security indicator tor |                  | Security indicator | Blinking (Ignition switch OFF)  | (V)<br>15<br>10<br>15<br>1 s  |   |  |
|                              |        |  |                  |                    | OFF   | 11.3 V<br>12 V  |   |  |
| 24<br>(GR/R)                 | Ground | Dongle link  | Input/<br>Output | Ignition switch O  | FF  | 5 V   | = |  |
| 25<br>(LG)                   | Ground | Immobilizer antenna (Rx, Tx)                           | Input/<br>Output | During waiting     | Ignition switch is pressed while inserting the key into the key slot. | Just after pressing ignition switch. Pointer of tester should move. |   |  |
| 26* <sup>1</sup>             | Ground | Thermo control amp.                                    | Input            | Ignition switch O  | N   | 0 V   |   |  |
| (GR)                         | 0.000  |  |                  | Evaporator is ext  | tremely low temperature   | 12 V  |   |  |
|                              |        | A/C switch (Auto-<br>matic air condition-<br>er)       |                  | A/C                | OFF (A/C switch indicator:<br>OFF)                                    | (V)<br>15<br>10<br>5<br>10 ms<br>JPMIA0012GB<br>1.0 - 1.5 V         | F |  |
| 27<br>(Y/G)* <sup>2</sup>    | Ground |  | Input            |                    | ON (A/C switch indicator: ON)   | 0 V   |   |  |
| (Y/R)* <sup>3</sup>          |        | A/C switch (Manual c air conditioner)                  |                  | A/C switch         | OFF   | (V)<br>15<br>10<br>5<br>0<br>10 ms<br>JPMIA0012GB<br>1.0 - 1.5 V    |   |  |
|                              |        |  |                  |                    | ON  | 0 V   |   |  |

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## < ECU DIAGNOSIS INFORMATION >

| Terminal No.<br>(Wire color) |        | Description   |                  |                       |  | Value   |
|------------------------------|--------|---|------------------|-----------------------|--|---|
| (Wire                        | color) | Signal name   | Input/<br>Output |                       | Condition  | (Approx.)   |
|                              |        |   |                  |                       | Blower fan switch OFF  | 0 V   |
| 28                           | Ground | Blower fan switch<br>(Automatic air condi-<br>tioner) | Input            | Fan switch            | Blower fan switch ON   | (V)<br>15<br>10<br>5<br>0<br>→ 10ms<br>PKIB4960J<br>7.0 - 8.0 V |
| (G/W)                        |        | Blower fan switch<br>(Manual air condi-<br>tioner)    |                  | Fan switch            | Blower fan switch OFF  | (V)<br>15<br>10<br>5<br>0<br>+ 10ms<br>PKIB4960J<br>7.0 - 8.0 V |
|                              |        |   |                  |                       | Blower fan switch ON   | 0 V   |
| 29                           | Ground | Hazard switch   | Input            | Hazard switch         | OFF  | Battery voltage   |
| (L/W)                        | 0.00   | . 1020. 0 0111011                                     |                  |                       | ON   | 0 V   |
|                              |        | Front defroster switch                                |                  |                       | A/C mode defroster ON position   | 0 V   |
| 31<br>(G/Y)                  | Ground |   | Input            | Ignition switch<br>ON | Other than A/C mode de-<br>froster ON position   | (V) 15 10 5 0 10 10 10 10 10 10 10 10 10 10 10 10 1             |
| 32                           |        | Combination switch                                    |                  | Combination           | All switch OFF<br>(Wiper intermittent dial 4)  | (V)<br>15<br>10<br>5<br>0<br>→ 10ms<br>PKIB4960J<br>7.0 - 8.0 V |
| (LG)                         | Ground | OUTPUT 5  | Output           | switch                | Front fog lamp switch ON (Wiper intermittent dial 4)  Rear wiper switch ON (Wiper intermittent dial 4)   | (V)<br>15<br>10   |
|                              |        |   |                  |                       | 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 | 5<br>0<br>→ +10ms<br>1.0 V                                      |

## < ECU DIAGNOSIS INFORMATION >

# [AUTÓMATIC AIR CONDITIONING]

| Terminal No.<br>(Wire color) |        | Description                 |                  |                    | 2 111   | Value   |
|------------------------------|--------|-----------------------------|------------------|--------------------|---|---|
| +                            | -      | Signal name                 | Input/<br>Output |                    | Condition   | (Approx.)   |
|                              |        |                             |                  |                    | All switch OFF<br>(Wiper intermittent dial 4)   | (V)<br>15<br>10<br>5<br>0<br>+ 10ms<br>PKIB4960J<br>7.0 - 8.0 V |
| 33<br>(Y/L)                  | Ground | Combination switch OUTPUT 4 | Output           | Combination switch | Lighting switch 1ST (Wiper intermittent dial 4)   |   |
| , ,                          |        |                             |                  |                    | Lighting switch AUTO (Wiper intermittent dial 4)  | (V)<br>15<br>10   |
|                              |        |                             |                  |                    | Rear wiper switch INT (Wiper intermittent dial 4)   | 0   |
|                              |        |                             |                  |                    | Any of the condition below with all switch OFF  • Wiper intermittent dial 1  • Wiper intermittent dial 5  • Wiper intermittent dial 6 | PKIB4958J 1.2 V   |
|                              |        |                             |                  |                    | All switch OFF<br>(Wiper intermittent dial 4)   | (V)<br>15<br>10<br>5<br>0<br>+ 10ms<br>PKIB4960J<br>7.0 - 8.0 V |
| 34<br>(W)                    | Ground | Combination switch OUTPUT 3 | Output           | Combination switch | Lighting switch 2ND (Wiper intermittent dial 4)   | 7.0 0.0 0   |
| ( • • )                      |        | 0011 01 0                   |                  | Switch             | Lighting switch HI (Wiper intermittent dial 4)  | (V)<br>15   |
|                              |        |                             |                  |                    | Rear washer switch ON (Wiper intermittent dial 4)   | 5 0   |
|                              |        |                             |                  |                    | Any of the condition below with all switch OFF  • Wiper intermittent dial 1  • Wiper intermittent dial 2  • Wiper intermittent dial 3 | ++10ms PKIB4958J 1.2 V  |

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## < ECU DIAGNOSIS INFORMATION >

|             | nal No. | Description                 |                  |  |  | Value   |
|-------------|---------|-----------------------------|------------------|--|--|---|
| + (Wire     | color)  | Signal name                 | Input/<br>Output |  | Condition  | (Approx.)   |
| 35          | Canada  | Combination switch          |                  |  | All switch OFF   | (V)<br>15<br>10<br>5<br>0<br>+ 10ms<br>PKIB4960J<br>7.0 - 8.0 V       |
| (R/L)       | Ground  | OUTPUT 2                    | Output           | (Wiper intermit-                                 | Lighting switch 2ND  |   |
|             |         |                             |                  | tent dial 4)                                     | Lighting switch PASS   | (V)<br>15   |
|             |         |                             |                  |  | Front wiper switch INT   | 10  |
|             |         |                             |                  |  | Front wiper switch HI  | 0<br>→ +10ms<br>PKIB4958J<br>1.2 V                                    |
| 36<br>(L/O) | Ground  | Combination switch OUTPUT 1 | Output           | Combination switch (Wiper intermittent dial 4)   | All switch OFF  Turn signal switch RH  Turn signal switch LH  Front wiper switch LO  (Front wiper switch MIST)  Front washer switch ON | (V)<br>15<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10 |
| 37<br>(R/W) | Ground  | Key switch                  | Input            | der  | al key into ignition key cylin-  | Battery voltage   |
| (13/77)     |         |                             |                  | Remove mechanical key from ignition key cylinder |  | 0 V   |
| 38          | Ground  | Ignition switch ON          | Input            | Ignition switch O                                |  | 0 V   |
| (O)         | 2.34.14 | .g                          |                  | Ignition switch O                                | N  | Battery voltage   |
| 39<br>(L)   | Ground  | CAN-H                       | Input/<br>Output |  | _  | _   |
| 40<br>(P)   | Ground  | CAN-L                       | Input/<br>Output |  | _  | _   |

## < ECU DIAGNOSIS INFORMATION >

# [AUTÓMATIC AIR CONDITIONING]

| Terminal No.<br>(Wire color) |          | Description                           |                  |                             |  | Value  | Α      |
|------------------------------|----------|---------------------------------------|------------------|-----------------------------|--|--|--------|
| +                            | - COIOT) | Signal name                           | Input/<br>Output |                             | Condition  | (Approx.)  | ^      |
| 43<br>(W)                    | Ground   | Back door switch                      | Input            | Back door<br>switch         | OFF (When back door closed)                      | (V)<br>15<br>10<br>5<br>0<br>→ 10ms<br>PKIB4960J                 | ВС     |
|                              |          |                                       |                  |                             | ON (When back door opened)                       | 7.0 - 8.0 V<br>0 V   | D      |
| 4.4                          |          | Deer winer step no                    |                  | Ignitian avvitab            | Rear wiper stop position                         | 12 V   | Е      |
| 44<br>(LG)                   | Ground   | Rear wiper stop position              | Input            | Ignition switch<br>ON       | Any position other than rear wiper stop position | 0 V  | F      |
| 45<br>(GR)                   | Ground   | Door lock and unlock<br>switch LOCK   | Input            | Door lock and unlock switch | NEUTRAL position                                 | (V)<br>15<br>10<br>5<br>0<br>10 ms<br>JPMIA0012GB<br>1.0 - 1.5 V | G<br>H |
|                              |          |                                       |                  |                             | LOCK position                                    | 0 V  | HAC    |
| 46<br>(BR)                   | Ground   | Door lock and unlock<br>switch UNLOCK | Input            | Door lock and unlock switch | NEUTRAL position                                 | (V)<br>15<br>10<br>5<br>0<br>10 ms<br>JPMIA0012GB<br>1.0 - 1.5 V | J<br>K |
|                              |          |                                       |                  |                             | UNLOCK position                                  | 0 V  | ı      |
| 47<br>(BR/Y)                 | Ground   | Driver door switch                    | Input            | Driver door<br>switch       | OFF (When driver door closed)                    | (V)<br>15<br>10<br>5<br>0<br>++10ms<br>PKIB4960J<br>7.0 - 8.0 V  | M      |
|                              |          |                                       |                  |                             | ON (When driver door opened)                     | 0 V  | 0      |

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## < ECU DIAGNOSIS INFORMATION >

|                          | nal No. | Description                     |                  |  |  | Value  |  |  |
|--------------------------|---------|---------------------------------|------------------|--|--|--|--|--|
| (Wire                    | color)  | Signal name                     | Input/<br>Output |  | Condition  | (Approx.)  |  |  |
| 48<br>(W/G)              | Ground  | Rear LH door switch             | Input            | Rear LH door<br>switch                                   |  |  |  |  |
|                          |         |                                 |                  |  | ON (When rear LH door opened)                          | 0 V  |  |  |
| 50* <sup>1</sup><br>(SB) | Ground  | A/C indicator                   | Output           | A/C indicator  | OFF<br>ON  | 12 V<br>0 V  |  |  |
| 54                       |         |                                 | •                | Ignition switch  | Rear wiper switch OFF                                  | 0 V  |  |  |
| (L/W)                    | Ground  | Rear wiper                      | Output           | ŎN   | Rear wiper switch ON                                   | 12 V   |  |  |
|                          |         |                                 |                  |  | np battery saver is activated. room lamp power supply) | 0 V  |  |  |
| 56<br>(L)                | Ground  | Interior room lamp power supply | Output           | Interior room lam<br>vated.<br>(Outputs the inte<br>ply) | 12 V   |  |  |  |
| 57<br>(Y)                | Ground  | Battery power sup-<br>ply       | Input            | Ignition switch O  | FF   | Battery voltage  |  |  |
| 59                       | Ground  | Driver door UN-                 | Output           | Driver door  | UNLOCK (Actuator is activated)                         | 12 V   |  |  |
| (L/B)                    | Ground  | LOCK                            | Output           | Driver door  | Other then UNLOCK (Actuator is not activated)          | 0 V  |  |  |
| 60<br>(W/B)              | Ground  | Turn signal LH                  | Output           | Ignition switch<br>ON                                    | Turn signal switch OFF  Turn signal switch LH          | 0 V  (V) 15 10 5 0 PKIC6370E 6.0 V                       |  |  |
|                          |         |                                 |                  |  | Turn signal switch OFF                                 | 0 V  |  |  |
| 61<br>(W/L)              | Ground  | Turn signal RH                  | Output           | Ignition switch<br>ON                                    | Turn signal switch RH                                  | (V)<br>15<br>10<br>5<br>0<br>18<br>18<br>18<br>PKIC6370E |  |  |
| 63                       |         | Interior room lamp              | 0                | Interior room  | OFF  | 12 V   |  |  |
| (BR)                     | Ground  | timer control                   | Output           | lamp   | ON   | 0 V  |  |  |

## < ECU DIAGNOSIS INFORMATION >

## [AUTOMATIC AIR CONDITIONING]

|             | nal No.  | Description               | ı                |                   |   | Value     | ۸ |
|-------------|----------|---------------------------|------------------|-------------------|---|-----------|---|
| + (Wire     | e color) | Signal name               | Input/<br>Output |                   | Condition                                     | (Approx.) | А |
| 65          | Cround   | All doors LOCK            | Output           | All doors         | LOCK (Actuator is activated)                  | 12 V      | В |
| (V)         | Ground   | All doors LOCK            | Output           | All doors         | Other then LOCK (Actuator is not activated)   | 0 V       |   |
| 66          | Ground   | Passenger door and        | Output           | Passenger door    | UNLOCK (Actuator is activated)                | 12 V      | С |
| (G)         | Giodila  | rear door UNLOCK          | Output           | and rear door     | Other then UNLOCK (Actuator is not activated) | 0 V       | D |
| 67<br>(B)   | Ground   | Ground                    | Output           | Ignition switch O | N   | 0 V       |   |
| 68<br>(L)   | Ground   | P/W power supply (IGN)    | Output           | Ignition switch O | N   | 12 V      | Е |
| 69<br>(L/W) | Ground   | P/W power supply (BAT)    | Output           | Ignition switch O | FF  | 12 V      | F |
| 70<br>(Y)   | Ground   | Battery power sup-<br>ply | Input            | Ignition switch O | Battery voltage                               |           |   |

<sup>• \*1:</sup> Only manual air conditioner

BCM (BODY CONTROL SYSTEM) (WITHOUT INTELLIGENT KEY SYSTEM): Wiring

HAC

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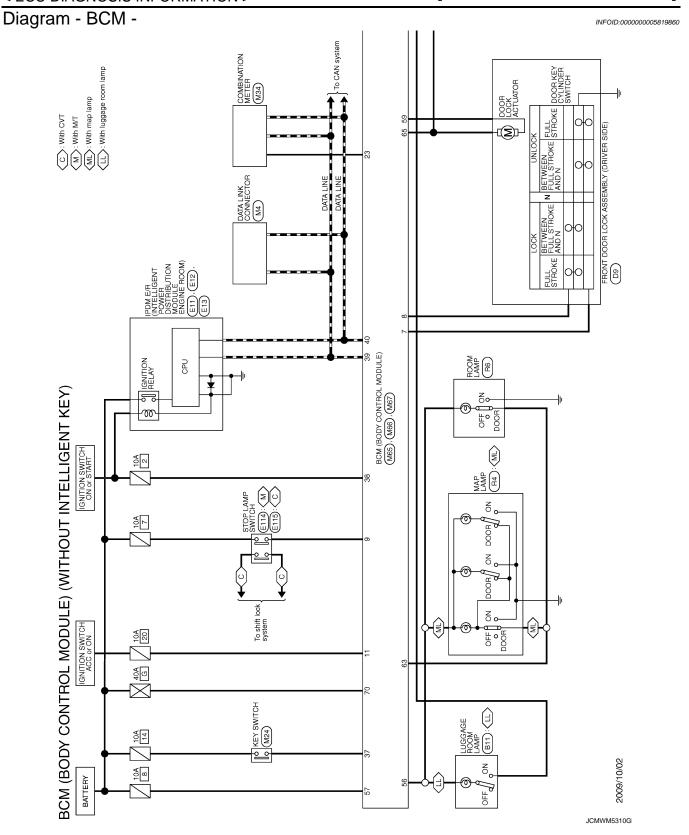
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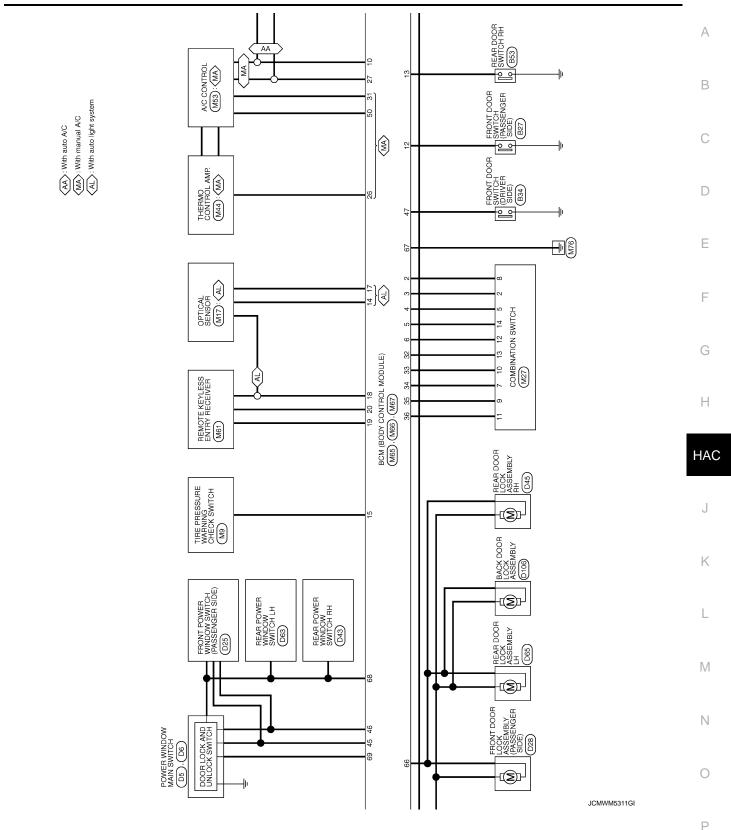
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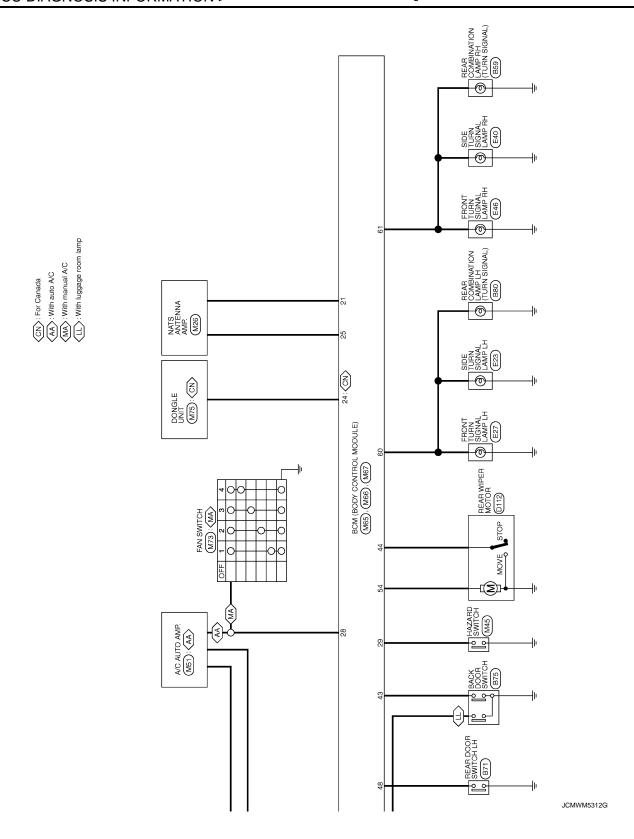
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<sup>• \*2:</sup> Automatic air conditioner

<sup>• \*3:</sup> Manual air conditioner







| 54 L/W REAR WIPER OUTPUT   | Connector No.   M67   | Superior of the state of the st | 65   66   67   68   69   70                           |                                       | Terminal Color   Signal Name [Specification]   No. of Wire | L INTERIOR RO                           | 59 Y BAT (FUSE) 59 L/B DRIVER DOOR UNLOCK OUTPUT | W/B               | 61 W/L TURN SIGNAL RH OUTPUT | <u></u>           | 66 G PASSENGER DOOR, REAR DOOR UNLOCK OUTPUT | В          | ٦        | 69 L/W POWER WINDOW POWER SUPPLY (BAT) | 70 Y BAT (F/L) |               |                           |                           |                 |   |          |                             | T                | T                        | Γ                    |                        |                   |                 |
|--|---|--|---|---------------------------------------|--|---|--|-------------------|------------------------------|-------------------|--|------------|----------|--|----------------|---------------|---------------------------|---------------------------|-----------------|---|----------|-----------------------------|------------------|--------------------------|----------------------|------------------------|-------------------|-----------------|
| ELLIGENT KEY)  REAR WINDOW DEFOGGER SW  ACC  PASSENGER DOOR SW   | DPTICAL SENSOR  OPTICAL SENSOR  TIRE PRESS WARNING CHECK SW | KEYLESS ENTRY RECEIVER COMM  | NATS ANTENNA AMP. SECURITY INDICATOR LAMP DONGLE LINK | NATS ANTENNA AMP. THERMO CONTROL AMP. | A/C SW [With auto A/C] A/C SW [With manual A/C]            | BLOWER FAN SW                           | FR DEFROSTER SW                                  | COMBI SW OUTPUT 5 | COMBI SW OUTPUT 4            | COMBI SW OUTPUT 2 | COMBI SW OUTPUT 1                            | KEY SWITCH | IGN      | CAN-H                                  | CAN-L          |               | M66                       | BCM (BODY CONTROL MODULE) | FEA09FW-FHA6-SA | 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55  |          | Signal Name [Specification] | Wis accordacy    | REAR WIPER STOP POSITION | CENTRAL DOOR LOCK SW | CENTRAL DOOR UNLOCK SW | DRIVER DOOR SW    | REAR LH DOOR SW |
| INTE   | GR/L<br>L/B<br>V/W  | S > 8 %  | P/L<br>GR/R   | S LG                                  | Y/B  | Λ/5                                     | <u>*</u> ≿                                       | re                | 7,7                          | . K               | 0/7  | R/W        | 0        | Г                                      | ۵              |               | or No.                    | Connector Name            | or Type         |   |          | ⊢                           | of Wire          | 2                        | S S                  | BR                     | BR/Y              | 9/M             |
|  | 1 1 2 2   | 18 18 20   | 21<br>23<br>24  | 25<br>26                              | 27<br>72   | 588                                     | 31 23  | 32                | 33                           | 32                | 36   | 37         | 38       | 39                                     | 40             |               | Connector No.             | Connecto                  | Connector Type  | ES  |          | Terminal                    | o<br>S           | 44                       | 42                   | 46                     | 47                | 48              |
| BCM (BODY CONTROL MODULE) (WITHOUT INTELLIGENT KEY           Journactor No.         M27         FEAR WINDOW DI           To ownstorn Name         I V/Y         FEAR WINDOW DI           ACD         I LVY         ACD           ACD         ACD         ACD | TH16FW-NH   | 7 8 9 10 11 12 13 14   | Signal Name [Specification]                           | WASHER (RR)                           | INPUT 4<br>WASHER (FR)                                     | NOIN NOIN NOIN NOIN NOIN NOIN NOIN NOIN | S LOGNI<br>GND                                   | OUTPUT 3          | INPUT 5                      | OUTPUT 4          | OUTPUT 1                                     | INPUT 1    | OUTPUT 5 | INPUT 2                                |                | М65           | BCM (BODY CONTROL MODULE) | TH40FW-NH                 |                 | 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 24 15 26 27 38 38 40 31 32 33 34 55 56 37 38 38 40 |          | rgio.                       | COMBI SW INPUT 5 | COMBI SW INPUT 3         | COMBI SW INPUT 2     | COMBI SW INPUT 1       | KEY CYL UNLOCK SW | KEY CYL LOCK SW |
| (BOD<br>r No.  | r Type  |  | Color   | of Wire<br>O                          | g –  | × .                                     | <u>_</u>   | М                 | BR/W                         | 1//<br>1//        | 0/7  | L/R        | ΓG       | 9                                      |                |               |                           | П                         |                 | 21 22 23 2  | Color    | of Wire                     | BR/W             | Ś                        | g                    | L/R                    | W/R               | M/B             |
| BCM (BO) Connector No.   | Connector Type  | S.<br>E.   | Terminal  | No.                                   | 3 2  | 4                                       | n 9  | 7                 | ω σ                          | 10                | 11   | 12         | 13       | 14                                     |                | Connector No. | Connector Name            | Connector Type            | 修               |   | Terminal | No.                         | 2 2              | 9                        | . 2                  | 9                      | 7                 | 8               |

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# BCM (BODY CONTROL SYSTEM) (WITHOUT INTELLIGENT KEY SYSTEM) : Fail-safe

## FAIL-SAFE CONTROL BY DTC

BCM performs fail-safe control when any DTC are detected.

#### < ECU DIAGNOSIS INFORMATION >

[AUTOMATIC AIR CONDITIONING]

| Display contents of CONSULT | Fail-safe               | Cancellation                         |
|-----------------------------|-------------------------|--------------------------------------|
| B2190: NATS ANTENNA AMP     | Inhibit engine cranking | Erase DTC                            |
| B2191: DIFFERENCE OF KEY    | Inhibit engine cranking | Erase DTC                            |
| B2192: ID DISCORD BCM-ECM   | Inhibit engine cranking | Erase DTC                            |
| B2193: CHAIN OF BCM-ECM     | Inhibit engine cranking | Erase DTC                            |
| B2195: ANTI SCANNING        | Inhibit engine cranking | Ignition switch $ON \rightarrow OFF$ |
| B2196: DONGLE NG            | Inhibit engine cranking | Erase DTC                            |

#### REAR WIPER MOTOR PROTECTION

BCM detects the rear wiper stopping position according to the rear wiper auto stop signal.

When the rear wiper auto stop signal does not change more than 5 seconds while driving the rear wiper, BCM stops power supply to protect the rear wiper motor.

#### Condition of cancellation

- Pass more than 1 minute after the rear wiper stop.
- Turn rear wiper switch OFF.
- 3. Operate the rear wiper switch or rear washer switch.

# BCM (BODY CONTROL SYSTEM) (WITHOUT INTELLIGENT KEY SYSTEM): DTC Inspection Priority Chart

If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.

| Priority | DTC  |
|----------|--|
| 1        | U1000: CAN COMM U1010: CONTROL UNIT (CAN)  |
| 2        | B2190: NATS ANTENNA AMP B2191: DIFFERENCE OF KEY B2192: ID DISCORD BCM-ECM B2193: CHAIN OF BCM-ECM B2195: ANTI SCANNING B2196: DONGLE NG   |
| 3        | C1735: IGN CIRCUIT OPEN  |
| 4        | <ul> <li>C1704: LOW PRESSURE FL</li> <li>C1705: LOW PRESSURE FR</li> <li>C1706: LOW PRESSURE RR</li> <li>C1707: LOW PRESSURE RL</li> <li>C1708: [NO DATA] FL</li> <li>C1709: [NO DATA] FR</li> <li>C1710: [NO DATA] RR</li> <li>C1711: [NO DATA] RL</li> <li>C1716: [PRESSDATA ERR] FL</li> <li>C1717: [PRESSDATA ERR] FR</li> <li>C1718: [PRESSDATA ERR] RR</li> <li>C1719: [PRESSDATA ERR] RR</li> <li>C1729: VHCL SPEED SIG ERR</li> <li>C1734: CONTROL UNIT</li> </ul> |

# BCM (BODY CONTROL SYSTEM) (WITHOUT INTELLIGENT KEY SYSTEM): DTC Index

#### NOTE:

Details of time display

- CRNT: Displays when there is a malfunction now or after returning to the normal condition until turning ignition switch OFF → ON again.
- 1 39: Displayed if any previous malfunction is present when current condition is normal. It increases like 1
   → 2 → 3...38 → 39 after returning to the normal condition whenever ignition switch OFF → ON. The counter

## < ECU DIAGNOSIS INFORMATION >

## [AUTOMATIC AIR CONDITIONING]

remains at 39 even if the number of cycles exceeds it. It is counted from 1 again when turning ignition switch OFF  $\rightarrow$  ON after returning to the normal condition if the malfunction is detected again.

| CONSULT display            | Fail-safe | Tire pressure<br>monitor warn-<br>ing lamp ON | Reference    |
|----------------------------|-----------|---|--------------|
| U1000: CAN COMM            | _         | _   | BCS-115      |
| U1010: CONTROL UNIT (CAN)  | _         | _   | BCS-116      |
| B2190: NATS ANTENNA AMP    | ×         | _   | SEC-219      |
| B2191: DIFFERENCE OF KEY   | ×         | _   | SEC-222      |
| B2192: ID DISCORD BCM-ECM  | ×         | _   | SEC-223      |
| B2193: CHAIN OF BCM-ECM    | ×         | _   | SEC-225      |
| B2195: ANTI SCANNING       | ×         | _   | SEC-226      |
| B2196: DONGLE NG           | ×         | _   | SEC-227      |
| C1704: LOW PRESSURE FL     | _         | ×   |              |
| C1705: LOW PRESSURE FR     | _         | ×   | MT 00        |
| C1706: LOW PRESSURE RR     | _         | ×   | <u>WT-30</u> |
| C1707: LOW PRESSURE RL     | _         | ×   |              |
| C1708: [NO DATA] FL        | _         | ×   |              |
| C1709: [NO DATA] FR        | _         | ×   | WT 00        |
| C1710: [NO DATA] RR        | _         | ×   | <u>WT-32</u> |
| C1711: [NO DATA] RL        | _         | ×   |              |
| C1716: [PRESS DATA ERR] FL | _         | ×   |              |
| C1717: [PRESS DATA ERR] FR | _         | ×   | WT 25        |
| C1718: [PRESS DATA ERR] RR | _         | ×   | <u>WT-35</u> |
| C1719: [PRESS DATA ERR] RL | _         | ×   |              |
| C1729: VHCL SPEED SIG ERR  | _         | ×   | <u>WT-37</u> |
| C1734: CONTROL UNIT        | _         | ×   | WT-39        |
| C1735: IGN CIRCUIT OPEN    | _         | _   | BCS-117      |

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## **AUTOMATIC AIR CONDITIONING SYSTEM**

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

# SYMPTOM DIAGNOSIS

## **AUTOMATIC AIR CONDITIONING SYSTEM**

## Diagnosis Chart By Symptom

INFOID:0000000005490091

#### **CAUTION:**

Perform the self-diagnoses with on board diagnosis and CONSULT-III before performing the symptom diagnosis. If any malfunction result or DTC is detected, perform the corresponding diagnosis.

| Sympto   | om                            | Corresponding malfunction part   | Check item/Reference                          |  |  |  |
|--|-------------------------------|--|---|--|--|--|
| A/C system does not activate.  | .1                            | Power supply circuit of A/C system     A/C control (built-in A/C auto amp.)  | HAC-66, "A/C AUTO AMP. : Diagnosis Procedure" |  |  |  |
| A/C system cannot be controlle   |                               | Blower motor     Power supply system of blower motor   |   |  |  |  |
| Blower motor operation is malfu  | unctioning.                   | <ul> <li>The circuit between blower motor<br/>and A/C auto amp.</li> <li>A/C auto amp.</li> </ul>  | HAC-56, "Diagnosis Procedure"                 |  |  |  |
| Magnet clutch does not operate   | <b>)</b> .                    | <ul> <li>Magnet clutch</li> <li>The circuit between magnet clutch and IPDM E/R</li> <li>IPDM E/R (A/C relay)</li> <li>The circuit between ECM and refrigerant pressure sensor</li> <li>Refrigerant pressure sensor</li> <li>CAN communication line</li> <li>A/C auto amp.</li> </ul> | HAC-61, "Diagnosis Procedure"                 |  |  |  |
| Insufficient cooling     No cool air comes out. (Air flo                                     | ow volume is normal.)         | <ul> <li>Magnet clutch control system</li> <li>Drive belt slipping</li> <li>Cooler cycle</li> <li>Air leakage from each duct</li> <li>Temperature setting trimmer</li> </ul>   | HAC-135, "Diagnosis Procedure"                |  |  |  |
| <ul><li>Insufficient heating</li><li>No warm air comes out. (Air to the comes out)</li></ul> | flow volume is normal.)       | <ul> <li>Engine cooling system</li> <li>Heater hose</li> <li>Heater core</li> <li>Air leakage from each duct</li> <li>Temperature setting trimmer</li> </ul>   | HAC-137, "Diagnosis Procedure"                |  |  |  |
|  | During compressor operation   | Cooler cycle   | HA-10, "Symptom Table"                        |  |  |  |
| Noise is heard when the A/C system operates.   | During blower motor operation | <ul> <li>Mixing any foreign object in blower<br/>motor</li> <li>Blower motor fan breakage</li> <li>Blower motor rotation inferiority</li> </ul>  | HAC-59, "Component Inspection"                |  |  |  |
| Memory function dose not op     Setting temperature dose not                                 |                               | <ul><li>Power supply system of A/C auto amp.</li><li>A/C auto amp.</li></ul>   | HAC-140, "Inspection Procedure"               |  |  |  |

#### INSUFFICIENT COOLING

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

## INSUFFICIENT COOLING

Description INFOID:000000005490092

Symptom

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

## **Diagnosis Procedure**

#### 9

CAUTION:
Perform the self-diagnoses with on board diagnosis and CONSULT-III before performing symptom diagnosis. If any malfunction result or DTC is detected, perform the corresponding diagnosis.

## 1. CHECK MAGNET CLUTCH OPERATION

- 1. Turn the ignition switch ON.
- 2. Operate the fan control switch.
- Press the A/C switch.
- 4. Check that the indicator of the A/C switch turns ON. Check visually and by sound that the compressor operates.
- 5. Press the A/C switch again.
- 6. Check that the indicator of the A/C switch turns OFF. Check that the compressor stops.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform the diagnosis of "COMPRESSOR DOSE NOT OPERATE" in "SYMPTOM DIAGNOSIS". Refer to <u>HAC-138</u>, "<u>Diagnosis Procedure</u>".

## 2.CHECK DRIVE BELT

Check tension of the drive belt. Refer to EM-13, "Checking".

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Adjust or replace drive belt depending on the inspection results.

# 3.check refrigerant cycle pressure

Connect the recovery/recycling recharging equipment to the vehicle and perform the pressure inspection with the gauge. Refer to HA-8, "Symptom Table".

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace the parts depending on the inspection results.

#### 4.CHECK AIR LEAKAGE FROM EACH DUCT

Check duct and nozzle, etc. of the air conditioner system for leakage.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace parts depending on the inspection results.

## ${f 5.}$ CHECK AMBIENT TEMPERATURE DISPLAY

Check that there is not much difference between actual ambient temperature and indicated temperature on information display in combination meter.

#### NOTE:

Actual ambient temperature is sensor recognition temperature of on board self-diagnosis STEP-5.

## Is the inspection result normal?

YES >> GO TO 6.

NO >> Perform the diagnosis for the A/C auto amp. connection recognition signal. Refer to <a href="MWI-48">MWI-48</a>, "Diagnosis Procedure".

## 6. CHECK SETTING OF TEMPERATURE SETTING TRIMMER

Check the setting value of temperature setting trimmer. Refer to <u>HAC-10, "Temperature Setting Trimmer"</u>.

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INFOID:0000000005490093

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## **INSUFFICIENT COOLING**

## < SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

Check that the temperature setting trimmer is set to "+ direction".NOTE:

The control temperature can be set with the setting of the temperature setting trimmer.

3. Set the difference between the set temperature and control temperature to "0".

#### Is inspection result normal?

YES >> INSPECTION END

NO >> Replace the A/C auto amp.

#### **INSUFFICIENT HEATING**

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

#### INSUFFICIENT HEATING Α Description INFOID:0000000005490094 В Symptom Insufficient heating No warm air comes out. (Air flow volume is normal.) Diagnosis Procedure INFOID:0000000005490095 **CAUTION:** Perform the self-diagnoses with on board diagnosis and CONSULT-III before performing symptom D diagnosis. If any malfunction result or DTC is detected, perform the corresponding diagnosis. CHECK COOLING SYSTEM Е Check the engine coolant level and check for leakage. Refer to CO-9, "Inspection". Check the radiator cap. Refer to CO-12, "RADIATOR CAP: Inspection". Check the water flow sounds of the engine coolant. Refer to CO-10, "Refilling". F Is the inspection result normal? YES >> GO TO 2. NO >> Refill the engine coolant and repair or replace the parts depending on the inspection results. 2 . CHECK HEATER HOSE Check the installation of heater hose by visually or touching. Is the inspection result normal? Н YES >> GO TO 3. NO >> Repair or replace parts depending on the inspection results. 3. CHECK HEATER CORE HAC 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:** Always perform the temperature inspection in a short period of time because the engine coolant temperature is very hot. K Is the inspection result normal? YES >> GO TO 4. NO >> Replace the heater core. Refer to HA-40, "Exploded View (Automatic Air Conditioner)". 4. CHECK AIR LEAKAGE FROM EACH DUCT Check duct and nozzle, etc. of the air conditioner system for air leakage. M Is the inspection result normal? YES >> GO TO 5. NO >> Repair or replace parts depending on the inspection results. N 5.CHECK SETTING OF TEMPERATURE SETTING TRIMMER 1. Check the setting value of temperature setting trimmer. Refer to <a href="HAC-10">HAC-10</a>, "Temperature Setting Trimmer". 2. Check that the temperature setting trimmer is set to "- direction". NOTE: The control temperature can be set by the temperature setting trimmer. 3. Set the difference between the set temperature and control temperature to "0". Р Are the symptoms solved?

NO >> Replace the A/C auto amp.

>> INSPECTION END

YES

### **COMPRESSOR DOSE DOT OPERATE**

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

## COMPRESSOR DOSE DOT OPERATE

Description INFOID:000000005490096

**SYMPTOM** 

Compressor dose not operate.

Diagnosis Procedure

#### INFOID:0000000005490097

#### **CAUTION:**

- Perform the self-diagnoses with on board diagnosis and CONSULT-III before performing symptom diagnosis. If any malfunction result or DTC is detected, perform the corresponding diagnosis.
- Check that the refrigerant is enclosed in cooler cycle normally. If the refrigerant amount is shortage from proper amount, perform the inspection of refrigerant leakage.

#### 1. CHECK MAGNET CLUTCH OPERATION

Check the magnet clutch. Refer to HAC-61, "Component Function Check".

#### Does it operate normally?

YES >> GO TO 2.

NO >> Repair or replace the malfunctioning parts.

## 2. CHECK REFRIGERANT PRESSURE SENSOR

Check the refrigerant pressure sensor. Refer to EC-415, "Diagnosis Procedure".

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace the malfunctioning parts.

## 3.CHECK BCM INPUT SIGNAL

#### (P)With CONSULT-III

Check the "COMP REQ SIG" or "FAN REQ SW" in "DATA MONITOR" of BCM.

| Monitor item | Condition               | Status |
|--------------|-------------------------|--------|
| COMP REQ SIG | A/C switch: OFF         | Off    |
|              | A/C switch: ON          | On     |
| FAN REQ SW   | Fan control switch: OFF | Off    |
|              | Fan control switch: ON  | On     |

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 5.

# 4.CHECK BCM OUTPUT SIGNAL

#### (P)With CONSULT-III

Check the "A/C ON SIG" or "FAN ON SIG" in "A/C RELAY SIG" of ECM.

| Monitor item | Condition               | Status |
|--------------|-------------------------|--------|
| COMP REQ SIG | A/C switch: OFF         | Off    |
|              | A/C switch: ON          | On     |
| FAN REQ SW   | Fan control switch: OFF | Off    |
|              | Fan control switch: ON  | On     |

## Is the inspection result normal?

YES >> Replace the IPDM E/R. Refer to <a href="PCS-34">PCS-34</a>, "Exploded View" (WITH I-KEY) or <a href="PCS-64">PCS-64</a>, "Exploded View" (WITHOUT I-KEY).

NO >> Replace the BCM. Refer to <u>BCS-81, "Exploded View"</u> (WITH I-KEY) or <u>BCS-146, "Exploded View"</u> (WITHOUT I-KEY).

## **COMPRESSOR DOSE DOT OPERATE**

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|-----|-----|-----|------|-------|-------|---|

| < SYMPTOM DIAGNOSIS >  | [AUTOMATIC AIR CONDITIONING] |
|--|------------------------------|
| 5.CHECK A/C ON SIGNAL  |                              |
| Check the A/C ON signal. Refer to HAC-62. "Compon                | ent Function Check".         |
| ls inspection result normal?                                     |                              |
| YES >> GO TO 6. NO >> Repair or replace the malfunctioning parts |                              |
| 6.CHECK BLOWER FAN ON SIGNAL                                     | <i>.</i>                     |
| Check the blower fan ON signal. Refer to <u>HAC-64, "C</u>       | omponent Function Check".    |
| ls the inspection result normal?                                 |                              |
| YES >> Replace the A/C auto amp.                                 |                              |
| NO >> Repair or replace the malfunctioning parts                 | 5                            |
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## **MEMORY FUNCTION DOES NOT OPERATE**

< SYMPTOM DIAGNOSIS >

[AUTOMATIC AIR CONDITIONING]

# MEMORY FUNCTION DOES NOT OPERATE

Description INFOID:000000005490098

#### **SYMPTOM**

- Memory function dose not operate normally.
- The setting is not maintained (It returns to initial condition).

## Inspection Procedure

INFOID:0000000005490099

# 1. CHECK MEMORY FUNCTION

- 1. Start the engine.
- 2. Set the temperature to 32°C (90°F) by operating the temperature control switch.
- 3. Press OFF switch.
- 4. Turn the ignition switch OFF.
- 5. Turn the ignition switch ON.
- 6. Press AUTO switch.
- 7. Check that the set temperature is maintained.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

# 2.CHECK POWER SUPPLY AND GROUND CIRCUIT OF A/C AUTO AMP.

Check power supply and ground circuit of A/C auto amp. Refer to HAC-70, "Diagnosis Procedure".

#### Is the inspection result normal?

YES >> Replace the A/C auto amp.

NO >> Repair or replace the malfunctioning parts.

# **PRECAUTION**

## **PRECAUTIONS**

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

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

#### **WARNING:**

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

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

#### **WARNING:**

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

Precaution Necessary for Steering Wheel Rotation after Battery Disconnect

#### NOTE:

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

For vehicle with steering lock unit, if the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

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

#### **OPERATION PROCEDURE**

Connect both battery cables.

#### NOTE:

Supply power using jumper cables if battery is discharged.

- 2. Turn the push-button ignition switch to ACC position. (At this time, the steering lock will be released.)
- 3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
- Perform the necessary repair operation.

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## **PRECAUTIONS**

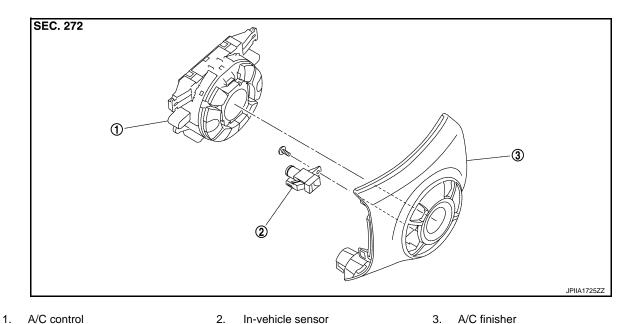
#### < PRECAUTION >

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

# REMOVAL AND INSTALLATION

A/C CONTROL (A/C AUTO AMP.)

**Exploded View** INFOID:0000000005490102



In-vehicle sensor

A/C finisher

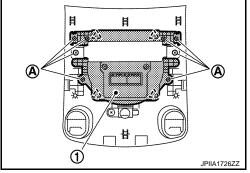
#### Removal and Installation

#### **REMOVAL**

- Remove A/C finisher. Refer to IP-12, "Exploded View".
- Remove mounting screws (A).

: Pawl د^′ے

Disengage the pawls, and then remove A/C control (1) from A/C finisher.



#### **INSTALLATION**

Installation is basically the reverse order of removal.

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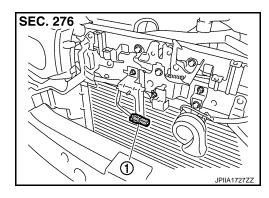
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## **AMBIENT SENSOR**

Exploded View

1. Ambient sensor



## Removal and Installation

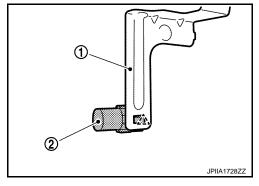
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#### **REMOVAL**

- 1. Remove the bumper fascia. Refer to EXT-12, "Exploded View".
- 2. Disengage the pawl, and then remove ambient sensor (2) from bracket (1).



3. Disconnect ambient sensor connector, and then remove the ambient sensor.



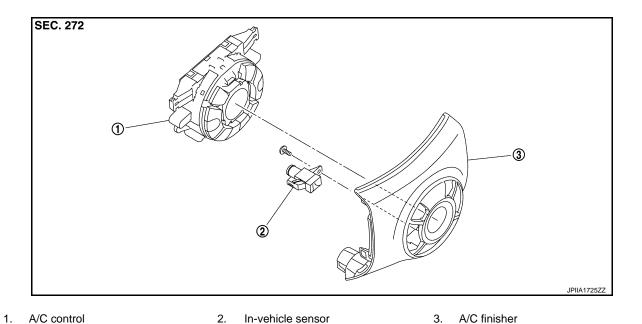
#### **INSTALLATION**

Installation is basically the reverse order of removal.

### [AUTOMATIC AIR CONDITIONING]

# **IN-VEHICLE SENSOR**

**Exploded View** 



Removal and Installation

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### **REMOVAL**

- 1. Remove A/C finisher. Refer to IP-12, "Exploded View".
- 2. Remove mounting screw, and then remove in-vehicle sensor from A/C finisher.

### **INSTALLATION**

Installation is basically the reverse order of removal.

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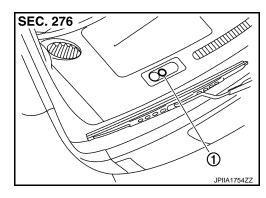
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# **SUNLOAD SENSOR**

# Exploded View

1. Sunload sensor



## Removal and Installation

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### **REMOVAL**

- 1. Insert the appropriate tool into the clearance between sunload sensor and instrument panel assembly to pull out sunload sensor upward.
- Disconnect sunload sensor connector to remove sunload sensor.

### **INSTALLATION**

Installation is basically the reverse order of removal.

### **INTAKE SENSOR**

### [AUTOMATIC AIR CONDITIONING]

# < REMOVAL AND INSTALLATION > INTAKE SENSOR Α **Exploded View** INFOID:0000000005490110 Refer to HA-40, "Exploded View (Automatic Air Conditioner)". В Removal and Installation INFOID:0000000005490111 **REMOVAL** Remove the evaporator assembly. Refer to HA-40, "Exploded View (Automatic Air Conditioner)". Remove the intake sensor from evaporator. D **INSTALLATION** Installation is basically the reverse order of removal. **CAUTION:** Е Replace O-rings with new ones. Then apply the compressor oil to them when installing. . Mark the mounting position of intake sensor bracket prior to removal so that the reinstalled sensor can be located in the same position. F • Never rotate the bracket insertion part when removing and installing the intake sensor. Check for leakages when recharging refrigerant. Refer to HA-22, "Leak Test". Н HAC K

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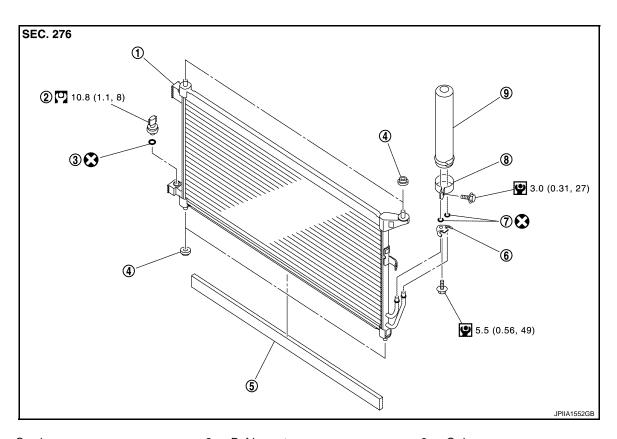
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## REFRIGERANT PRESSURE SENSOR

Exploded View



- Condenser
- 4. Grommet
- 7. O-ring

- 2. Refrigerant pressure sensor
- 5. Condenser seal
- 8. Liquid tank bracket
- 3. O-ring
- 6. Bracket
- 9. Liquid tank

Refer to  $\underline{\mbox{GI-4, "Components"}}$  for symbols in the figure.

### Removal and Installation

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### **CAUTION:**

Perform lubricant return operation before each refrigeration system disassembly. However, if a large amount of refrigerant or lubricant is detected, never perform lubricant return operation. Refer to <a href="#">HA-26, "Perform Lubricant Return Operation"</a>.

### **REMOVAL**

- 1. Use a refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant. Refer to <a href="HA-24">HA-24</a>, "Recycle Refrigerant".
- Clean refrigerant pressure sensor and its surrounding area, and then remove dust and rust from refrigerant pressure sensor.

### **CAUTION:**

Be sure to clean carefully.

3. Disconnect refrigerant pressure sensor connector.

### REFRIGERANT PRESSURE SENSOR

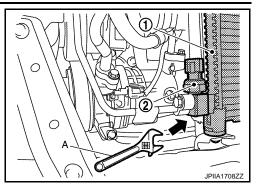
### < REMOVAL AND INSTALLATION >

### [AUTOMATIC AIR CONDITIONING]

4. Use a adjustable wrench (A) or other tool to hold the refrigerant pressure sensor mounting block, and then remove the refrigerant pressure sensor (2) from the condenser (1).

### **CAUTION:**

- Be careful not to damage liquid tank.
- Be careful not to damage core surface of condenser.
- Cap or wrap the joint of the condenser and liquid tank with suitable material such as vinyl tape to avoid the entry of air.



### **INSTALLATION**

Installation is basically the reverse order of removal.

### **CAUTION:**

- Replace O-ring with new one. Then apply compressor oil to them when installing.
- Check for leakages when recharging refrigerant. Refer to HA-22, "Leak Test".

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## POWER TRANSISTOR

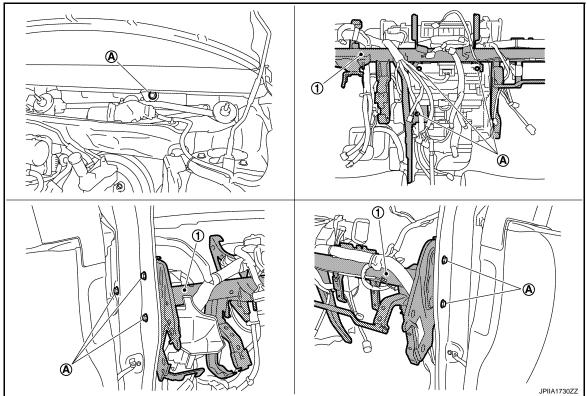
Exploded View

Refer to VTL-13, "Exploded View"

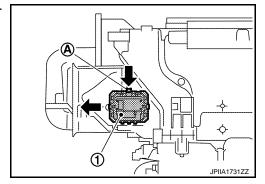
### Removal and Installation

### **REMOVAL**

- 1. Remove instrument panel assembly. Refer to IP-12, "Exploded View".
- 2. Remove cowl top extension. Refer to EXT-20, "Exploded View".
- 3. Remove instrument stay.
- 4. Remove mounting bolts (A), and then move steering member (1) to a position where it dose not inhibit work.



- Disconnect power transistor connector.
- 6. Press flange holding hook (A), and then slide heater core to leftward.
- 7. Remove power transistor (1) from the A/C unit assembly.



### **INSTALLATION**

Installation is basically the reverse order of removal.

# [AUTOMATIC AIR CONDITIONING]

# **DOOR MOTOR**

**Exploded View** 

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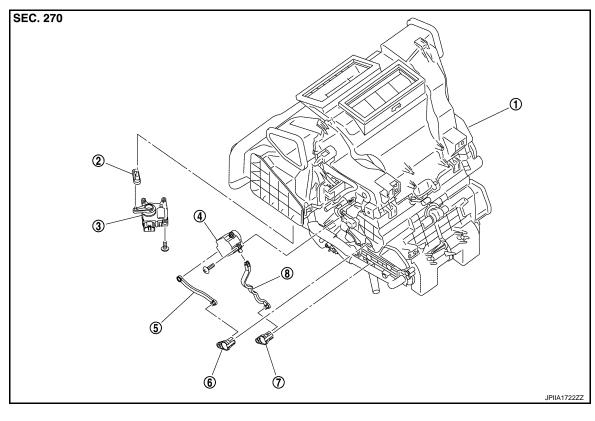
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### **LEFT SIDE**



- 1. A/C unit assembly
- 4. Air mix door motor
- 7. Lower air mix door lever
- 2. Intake door lever
- 5. Upper air mix door rod
- 8. Lower air mix door rod
- 3. Intake door motor
- 6. Upper air mix door lever

### **RIGHT SIDE**

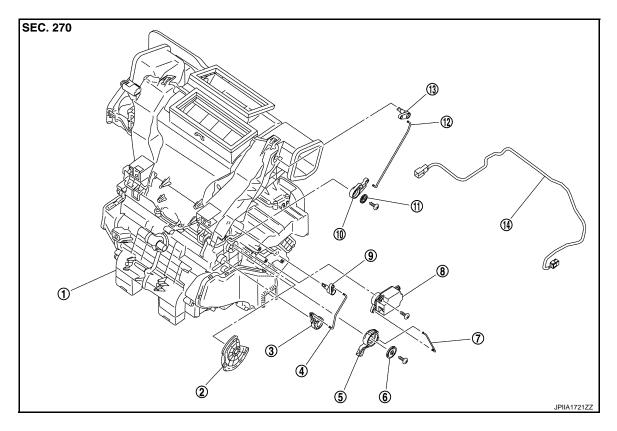
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- A/C unit assembly
- Sub defroster door rod
- Mode link rod
- 10. Center ventilator and defroster door 11. Plate
- 13. Center ventilator and defroster door 14. Sub harness (mode door motor)
- Main link
- 5. Mode link
- Mode door motor
- Sub defroster door link
- Sub defroster door lever
- 12. Center ventilator and defroster door

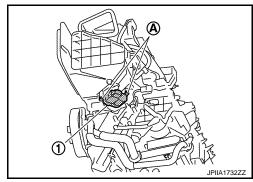
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### INTAKE DOOR MOTOR

## INTAKE DOOR MOTOR: Removal and Installation

**REMOVAL** 

- 1. Remove air mix door motor. Refer to HAC-151, "Exploded View".
- 2. Remove mounting screws (A), and then remove intake door motor (1).
- Disconnect intake door motor connector.



### **INSTALLATION**

Installation is basically the reverse order of removal.

### MODE DOOR MOTOR

### [AUTOMATIC AIR CONDITIONING]

### MODE DOOR MOTOR: Removal and Installation

#### INFOID:0000000005490118

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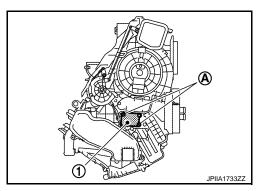
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### **REMOVAL**

- 1. Remove globe box assembly. Refer to IP-12, "Exploded View".
- 2. Remove mounting screws (A), and then remove mode door motor (1).
- 3. Disconnect mode door motor connector.



### INSTALLATION

Installation is basically the reverse order of removal.

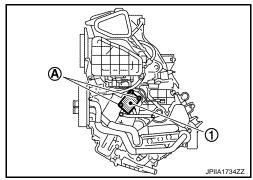
### AIR MIX DOOR MOTOR

### AIR MIX DOOR MOTOR: Removal and Installation

#### INFOID:0000000005490119

### **REMOVAL**

- 1. Remove foot duct LH. Refer to <a href="VTL-7">VTL-7</a>, "Exploded View".
- 2. Remove mounting screws (A), and then remove air mix door motor (1).
- 3. Disconnect air mix door motor connector.



### **INSTALLATION**

Installation is basically the reverse order of removal.

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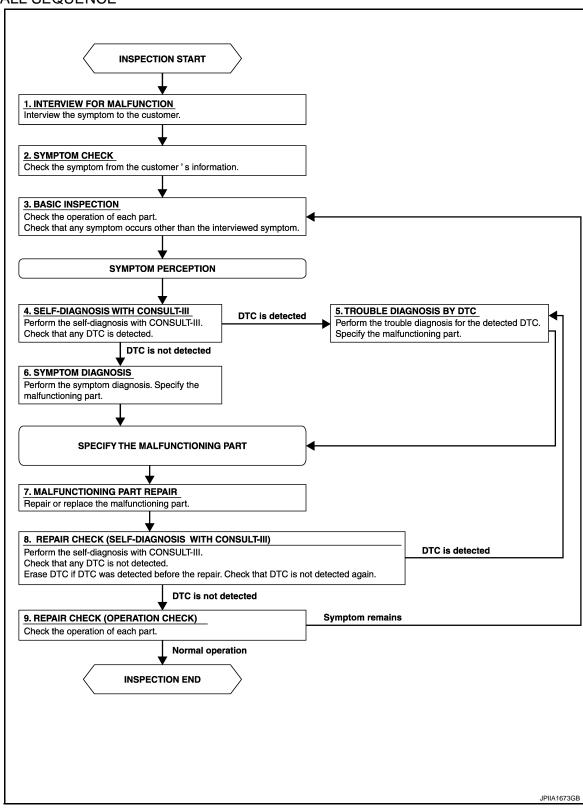
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# **BASIC INSPECTION**

# DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

### **OVERALL SEQUENCE**



# **DIAGNOSIS AND REPAIR WORKFLOW**

| < BASIC INSPECTION >  | [MANUAL AIR CONDITIONING]           |
|---|-------------------------------------|
| 1.INTERVIEW FOR MALFUNCTION   |                                     |
| Interview the symptom to the customer.  |                                     |
| >> GO TO 2.   |                                     |
| 2.SYMPTOM CHECK   |                                     |
| Check the symptom from the customer's information.  |                                     |
| >> GO TO 3.   |                                     |
| 3.BASIC INSPECTION  |                                     |
| Check the operation of each part. Check that any symptom occurs other   | r than the interviewed symptom.     |
| >> GO TO 4.   |                                     |
| 4.SELF-DIAGNOSIS WITH CONSULT-III   |                                     |
| Perform the self-diagnosis with CONSULT-III. Check that any DTC is de   | etected.                            |
| Is any DTC detected?  |                                     |
| YES >> GO TO 5.<br>NO >> GO TO 6.   |                                     |
| 5. TROUBLE DIAGNOSIS BY DTC   |                                     |
| Perform the trouble diagnosis for the detected DTC. Specify the malfund   | ctioning part.                      |
| >> GO TO 6.   |                                     |
| 6.SYMPTOM DIAGNOSIS   |                                     |
| Perform the symptom diagnosis. Specify the malfunctioning part.   |                                     |
| >> GO TO 7.   |                                     |
| 7.MALFUNCTION PART REPAIR   |                                     |
| Repair or replace the malfunctioning part.  |                                     |
| 37.2.   |                                     |
| >> GO TO 8.   |                                     |
| 8. REPAIR CHECK (SELF-DIAGNOSIS WITH CONSULT-III)   |                                     |
| Perform the self-diagnoses with CONSULT-III. Check that any DTC i detected before the repair. Check that DTC is not detected again. | s not detected. Erase DTC if DTC is |
| Is any or malfunction result or DTC detected?   |                                     |
| YES >> If DTC is detected, GO TO 5. NO >> GO TO 9.  |                                     |
| 9. REPAIR CHECK (OPERATION CHECK)   |                                     |
| Check the operation of each part.   |                                     |
| Does it operate normally?   |                                     |
| YES >> INSPECTION END   |                                     |
| NO >> GO TO 3.  |                                     |

## **INSPECTION**

## **Description & Inspection**

INFOID:000000005490121

#### DESCRIPTION

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

### Check condition : Engine running at normal operating temperature.

# 1. CHECK BLOWER MOTOR

- Start the engine.
- 2. Operate the fan control dial. Check that the fan speed changes. Check the operation for all fan speeds.
- Leave blower on maximum speed.

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Blower motor system malfunction. Refer to <u>HAC-175</u>, "<u>Diagnosis Procedure</u>".

# 2.CHECK DISCHARGE AIR

- 1. Operate MODE dial to each position.
- Check that the air outlets change according to each indicated air outlet by placing a hand in front of the outlets. Refer to <u>VTL-2</u>, "System <u>Description</u>".

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace the mode door cable.

## 3. CHECK INTAKE AIR

- 1. Operate MODE control dial to VENT position.
- Press intake switch to set the air outlet to recirculation.
- The intake switch indicator turns ON.
- 4. Listen to intake sound and confirm air inlets change.
- 5. Press intake switch again to set the air outlet to fresh air intake.
- The intake switch indicator turns OFF.
- 7. Listen to intake sound and confirm air inlets change.

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Intake door system malfunction. Refer to <a href="HAC-170">HAC-170</a>, "Diagnosis Procedure".

## 4. CHECK A/C SWITCH

- Press the A/C switch.
- Check that the indicator of the A/C switch turns ON. Check visually and by sound that the compressor operates.
- 3. Press the A/C switch again.
- Check that the indicator of the A/C switch turns OFF. Check that the compressor stops.

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Magnet clutch system malfunction. Refer to <u>HAC-179</u>, "<u>Diagnosis Procedure</u>".

## ${f 5.}$ CHECK TEMPERATURE DECREASE

- Operate the compressor.
- 2. Turn the temperature control dial to full cold position.
- Check that the cool air blows from the outlets.

### Is the inspection result normal?

YES >> GO TO 6.

NO >> Insufficient cooling. Refer to <a href="HAC-217">HAC-217</a>, "Diagnosis Procedure".

### **6.**CHECK TEMPERATURE INCREASE

1. Turn temperature control dial to full hot position after warming up the engine.

### **INSPECTION**

## < BASIC INSPECTION >

## [MANUAL AIR CONDITIONING]

2. Check that warm air blows from outlets.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Insufficient heating. Refer to <u>HAC-218</u>, "<u>Diagnosis Procedure</u>".

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# SYSTEM DESCRIPTION

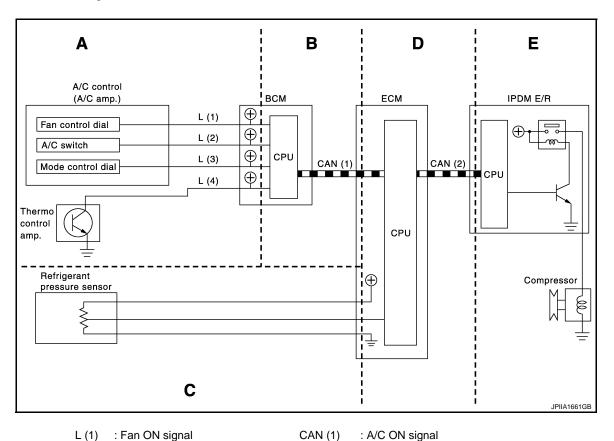
# **COMPRESSOR CONTROL FUNCTION**

Description INFOID:0000000005490122

### PRINCIPLE OF OPERATION

Compressor is not activated.

**Functional Circuit Diagram** 



: Fan ON signal L (1) CAN (1)

: Blower fan ON signal

L (2) : A/C switch signal L (3) : Defroster position switch 2

CAN (2) : A/C compressor request signal

L (4) : Thermo control amp. ON signal : A/C compressor feedback signal

### **Functional Initial Inspection Chart**

×: Applicable

| Control unit | Diag             | unania itam                                |   |   |   |   |   |
|--------------|------------------|--|---|---|---|---|---|
| Control unit | Diag             | nosis item                                 | Α | В | С | D | Е |
| BCM          | ©"DOM AID COND"  | Self-diagnosis                             | _ | × | _ | _ | _ |
| DCIVI        | "BCM-AIR COND"   | Data monitor                               | × | _ | _ | _ | _ |
| ECM          | (E) "ENGINE"     | Self-diagnosis<br>(CAN communication line) | _ | _ | _ | × | _ |
|              |                  | Data monitor                               | _ | × | × | _ | _ |
|              | ME(D) "IPDM E/R" | Self-diagnosis<br>(CAN communication line) | _ | _ | _ | _ | × |
| IPDM E/R     | Data monitor     | _  | _ | _ | × | _ |   |
|              | Auto active test |  | _ | _ | _ | _ | × |

# **Component Part Location**

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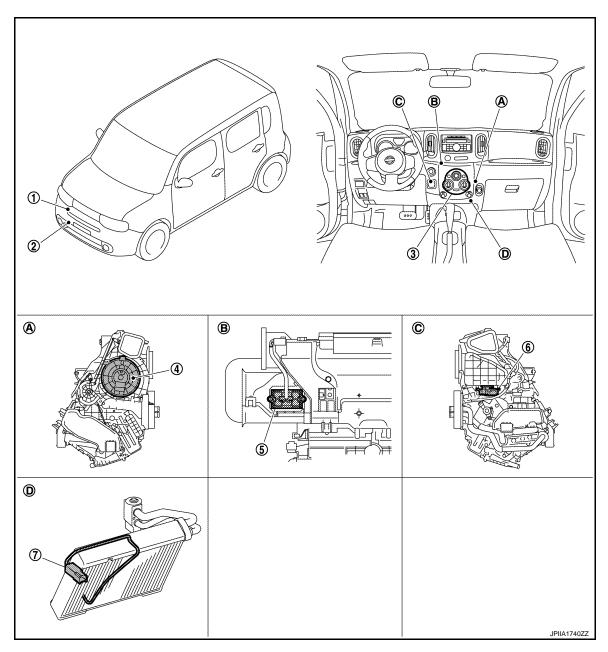
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- 1. Magnet clutch
- 4. Blower motor
- 7. Thermo control amp.
- A. Located in the right side of A/C unit B. assembly
- D. Located on evaporator

- 2. Refrigerant pressure sensor
- 5. Blower fan resistor
- Located in the back of A/C unit assembly
- A/C control
- 6. Intake door motor
- C. Located in the left side of A/C unit assembly

# Component Description

INFOID:0000000005490124

| Component                   | Reference/Function                     |  |
|-----------------------------|--|--|
| Magnet clutch               | HAC-179, "Description"                 |  |
| Refrigerant pressure sensor | EC-415, "Description"                  |  |
| A/C control                 | Controls the air conditioner function. |  |

## **COMPRESSOR CONTROL FUNCTION**

## < SYSTEM DESCRIPTION >

# [MANUAL AIR CONDITIONING]

| Component           | Reference/Function     |
|---------------------|------------------------|
| Blower motor        | HAC-175, "Description" |
| Blower fan resistor | HAC-175, "Description" |
| Intake door motor   | HAC-170, "Description" |
| Thermo control amp. | HAC-172, "Description" |

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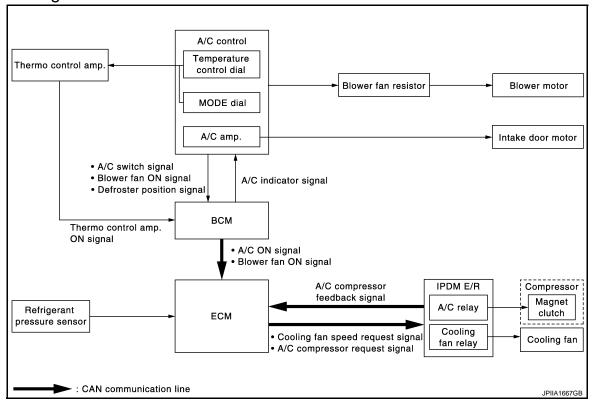
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# MANUAL AIR CONDITIONING SYSTEM

## System Diagram



## System Description

SYSTEM DESCRIPTION

Manual air conditioner system is controlled by each function of BCM, ECM or IPDM E/R.

Control by BCM

Compressor control

Control by ECM

- Compressor control
- Cooling fan control. Refer to EC-61, "System Description".
- Air conditioner cut control. Refer to EC-45, "System Description".

Control by IPDM E/R

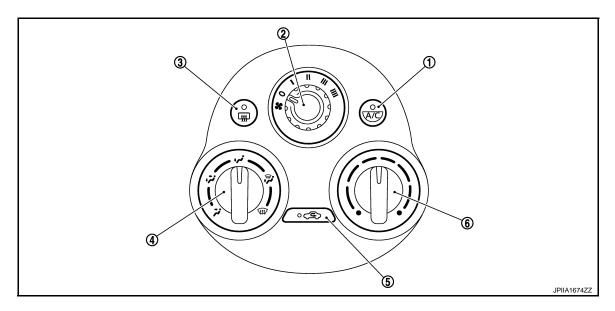
- Relay control. Refer to <u>PCS-35</u>, "System Description".
- Cooling fan control. Refer to PCS-35, "System Description".
- Fan speed of blower fan motor is changed by the combination of fan switch operation and blower fan resistor control.

### **OPERATION**

A/C Control

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- A/C switch
- 4. MODE dial

- 2. Fan control dial
- Intake switch

- Rear window defogger switch
- 6. Temperature control dial

| A/C switch                  | The compressor control (switch indicator) is turned ON ⇔ OFF each time by pressing this switch while the blower motor is activated.  NOTE:  when mode position is D/F or DEF, A/C switch is turned ON forcibly.   |
|-----------------------------|---|
| Fan control dial            | Fan speed can be adjusted within a range from 1st to 4th.   |
| Rear window defogger switch | <ul> <li>Rear window defogger (switch indicator) is turned ON</li></ul>   |
| MODE dial                   | <ul> <li>Mode position is selected to an optimal position by operating this dial.</li> <li>When DEF or D/F is selected while blower motor is activated, the air conditioner will automatically turn on and the air inlet becomes fresh air intake.</li> </ul> |
| Intake switch               | The air inlet changed ON ⇔ OFF each time by pressing this switch.  Indicator ON: Recirculation Indicator OFF: Fresh air intake  NOTE:  when mode position is D/F or DEF, air inlet is set to FRE forcibly.  |
| Temperature control dial    | The setting temperature can be selected to an optimum temperature by operating this dial.   |

### **COMPRESSOR CONTROL**

### Description

 BCM transmits the A/C ON signal and blower fan ON signal to ECM via CAN communication line only when the compressor operational condition is satisfied, and A/C indicator is turned ON.

#### NOTE:

Compressor operational condition

- Thermo control amp. signal ON
- Blower fan signal ON
- A/C switch signal ON
- ECM judges the conditions of each sensor (Refrigerant pressure sensor signal, accelerator position signal, etc.), and transmits the A/C compressor request signal to IPDM E/R via CAN communication line.
- By receiving the A/C compressor request signal from ECM, IPDM E/R turns the A/C relay to ON, and activates the compressor.

### Compressor Protection Control at Pressure Malfunction

The high-pressure side value that is detected by refrigerant pressure sensor is as per the following state, ECM requests IPDM E/R to turn A/C relay OFF and stop the compressor.

• 3.12 MPa (31.8 kg/cm<sup>2</sup>, 452 psi) or more (When the engine speed is less than 1,500 rpm)

### MANUAL AIR CONDITIONING SYSTEM

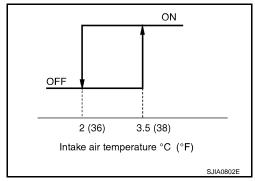
### < SYSTEM DESCRIPTION >

### [MANUAL AIR CONDITIONING]

- 2.74 MPa (27.9 kg/cm<sup>2</sup>, 397 psi) or more (When the engine speed is 1,500 rpm or more)
- 0.14 MPa (1.4 kg/cm<sup>2</sup>, 20 psi) or less

Low Temperature Protection Control

- When the thermo control amp. detects that evaporator surface temperature is 2°C (36°F) or less, thermo control amp. signal becomes OFF, and stops the compressor.
- When the air temperature returns to 3.5°C (38°F) or more, the compressor is activated.



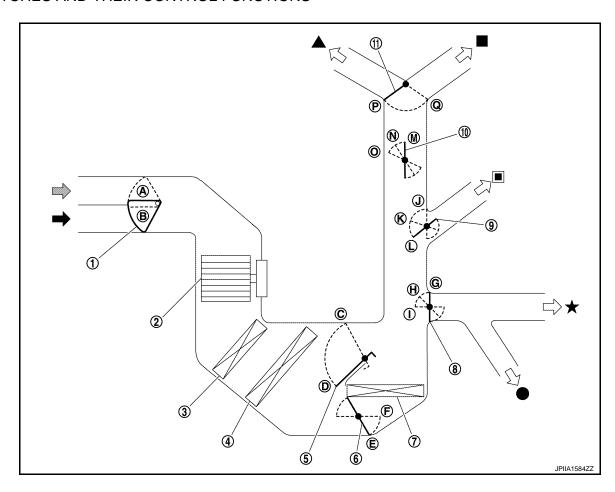
**Operating Rate Control** 

- Thermo control amp. detects the positions of air temperature control dial and MODE dial.
- Thermo control amp. corrects the stopping temperature of A/C compressor depending on the condition of A/C operation, and prevents too much heating by turning thermo control amp. ON ⇔ OFF.

Air conditioner Cut Control

When the engine condition is high load, ECM makes the A/C relay to OFF, and stops the compressor. Refer to EC-45, "System Description".

### SWITCHES AND THEIR CONTROL FUNCTIONS



- 1. Intake door
- Evaporator
- 7. Heater core
- 10. Sub defroster door
- 2. Blower motor
- Upper air mix door
- Foot door
- 11. Center ventilator and defroster door
- 3. In-cabin microfilter
- Lower air mix door
- 9. Side ventilator door

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Revision: 2009 October **HAC-163** 2010 Z12

## MANUAL AIR CONDITIONING SYSTEM

### < SYSTEM DESCRIPTION >

## [MANUAL AIR CONDITIONING]

Fresh air intake

Recirculation air

Defroster

Center ventilator

Side ventilator

★ Foot

Rear foot\*

\*With rear foot duct

|                  |                  |     |                                      |                    |                      | Door position | 1           |                    |                    |
|------------------|------------------|-----|--------------------------------------|--------------------|----------------------|---------------|-------------|--------------------|--------------------|
| Switci<br>posi   |                  |     | Center ventilator and defroster door | Sub defroster door | Side ventilator door | Foot door     | Intake door | Upper air mix door | Lower air mix door |
|                  | -                | j i | Р                                    | М                  | L                    | G             |             |                    |                    |
|                  | į                | į   | F                                    | IVI                | K                    | Н             |             |                    |                    |
| MODE dial        | •                | j   |                                      | 0                  | _                    |               |             |                    |                    |
|                  | 9                | Z.  | Q                                    | N                  | J                    | •             |             | _                  | _                  |
|                  | V                | P   |                                      | М                  |                      | G             |             |                    |                    |
| Intake switch    | વિ               | *   |                                      |                    |                      |               | А           |                    |                    |
| IIIIake Switch   | Œ                | 0   | _                                    | _                  | _                    | _             | В           |                    |                    |
| Temperature con- | Temperature con- |     |                                      |                    |                      |               |             | D                  | Е                  |
| trol dial        | Full             | hot |                                      |                    |                      |               | _           | С                  | F                  |

## AIR DISTRIBUTION

Without Rear Foot Duct

|                          | Discharg                | e air flow |           |  |  |
|--------------------------|-------------------------|------------|-----------|--|--|
| Made position indication | Air outlet/distribution |            |           |  |  |
| Mode position indication | Ventilator              | Foot       | Defroster |  |  |
| *;                       | 100%                    | _          | _         |  |  |
| Ÿ                        | 63%                     | 37%        | _         |  |  |
| , i                      | 16%                     | 64%        | 20%       |  |  |
| <b>30</b> 7              | 14%                     | 55%        | 31%       |  |  |
| ₩                        | 18%                     | _          | 82%       |  |  |

With Rear Foot Duct

|                          |                         | Discharge air flow |           |           |  |  |
|--------------------------|-------------------------|--------------------|-----------|-----------|--|--|
| Made position indication | Air outlet/distribution |                    |           |           |  |  |
| Mode position indication | Ventilator              | Front foot         | Rear foot | Defroster |  |  |
| *;                       | 100%                    | _                  | _         | _         |  |  |
| Ÿ                        | 57%                     | 29%                | 14%       | _         |  |  |
| · i                      | 19%                     | 44%                | 19%       | 18%       |  |  |
| <b>#</b>                 | 17%                     | 40%                | 17%       | 26%       |  |  |
| ₩                        | 18%                     | _                  | _         | 82%       |  |  |

# **Component Part Location**

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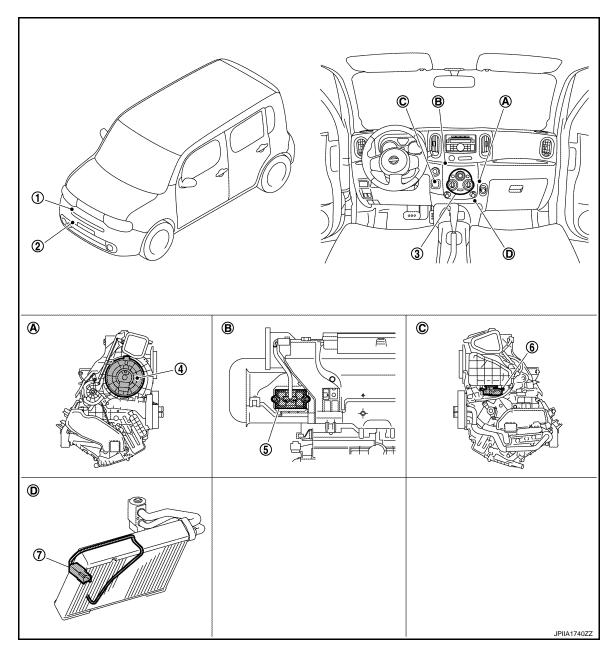
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- 1. Magnet clutch
- 4. Blower motor
- 7. Thermo control amp.
- A. Located in the right side of A/C unit B. assembly
- D. Located on evaporator

- 2. Refrigerant pressure sensor
- Blower fan resistor
- Located in the back of A/C unit assembly
- A/C control
- 6. Intake door motor
- C. Located in the left side of A/C unit assembly

# Component Description

INFOID:0000000005490128

| Component                   | Reference/Function                     |  |
|-----------------------------|--|--|
| Magnet clutch               | HAC-179, "Description"                 |  |
| Refrigerant pressure sensor | EC-415, "Description"                  |  |
| A/C control                 | Controls the air conditioner function. |  |

## MANUAL AIR CONDITIONING SYSTEM

## < SYSTEM DESCRIPTION >

# [MANUAL AIR CONDITIONING]

| Component           | Reference/Function     |
|---------------------|------------------------|
| Blower motor        | HAC-175, "Description" |
| Blower fan resistor | HAC-175, "Description" |
| Intake door motor   | HAC-170, "Description" |
| Thermo control amp. | HAC-172, "Description" |

## **DIAGNOSIS SYSTEM (BCM)**

< SYSTEM DESCRIPTION >

[MANUAL AIR CONDITIONING]

# **DIAGNOSIS SYSTEM (BCM)**

**COMMON ITEM** 

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

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### APPLICATION ITEM

CONSULT-III performs the following functions via CAN communication with BCM.

| Diagnosis mode           | Function Description   |
|--------------------------|--|
| Work Support             | Changes the setting for each system function.  |
| Self Diagnostic Result   | Displays the diagnosis results judged by BCM.  |
| CAN Diag Support Monitor | Monitors the reception status of CAN communication viewed from BCM. Refer to CONSULT-III operation manual.             |
| Data Monitor             | The BCM input/output signals are displayed.  |
| Active Test              | The signals used to activate each device are forcibly supplied from BCM.   |
| Ecu Identification       | The BCM part number is displayed.  |
| Configuration            | <ul><li>Read and save the vehicle specification.</li><li>Write the vehicle specification when replacing BCM.</li></ul> |

### 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   | Sub system calcution item   | Diagnosis mode |              |             |  |
|--|-----------------------------|----------------|--------------|-------------|--|
| System   | Sub system selection item   | 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                     |                | ×            | ×           |  |
| <ul><li>Automatic air conditioner</li><li>Manual air conditioner</li></ul> | AIR CONDITONER              |                | ×            | ×           |  |
| Combination switch   | COMB SW                     |                | ×            |             |  |
| Body control system  | ВСМ                         | ×              |              |             |  |
| NVIS - NATS  | IMMU                        | ×              | ×            | ×           |  |
| Interior room lamp battery saver   | BATTERY SAVER               | ×              | ×            | ×           |  |
| Back door  | TRUNK                       |                | ×            |             |  |
| Vehicle security system  | THEFT ALM                   | ×              | ×            | ×           |  |
| RAP system   | RETAINED PWR                |                | ×            | ×           |  |
| Signal buffer system   | SIGNAL BUFFER               |                | ×            | ×           |  |
| TPMS   | TPMS (AIR PRESSURE MONITOR) | ×              | ×            | ×           |  |
| Panic alarm system   | PANIC ALARM                 |                |              | ×           |  |

# **AIR CONDITIONER**

Revision: 2009 October HAC-167 2010 Z12

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# **DIAGNOSIS SYSTEM (BCM)**

< SYSTEM DESCRIPTION >

## [MANUAL AIR CONDITIONING]

# AIR CONDITIONER: CONSULT-III Function

INFOID:0000000005490130

# DATA MONITOR Display Item List

| Monitor Item [Unit] |   | Contents   |  |
|---------------------|---|--|--|
| IGN SW              | [On/Off]  | Displays ignition switch position status as judged form ignition switch signal.    |  |
| FAN ON SIG          | [On/Off]  | Displays the blower fan 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 sw |  |  |
| THERMO AMP          | [On/Off]  | Displays the thermo control amp. status as judged form thermo control amp. signal. |  |
| FR DEF SW           | [On/Off]  | Displays the DEF status as judged from defroster position switch signal.           |  |

## **POWER SUPPLY AND GROUND CIRCUIT**

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONING]

# DTC/CIRCUIT DIAGNOSIS

# POWER SUPPLY AND GROUND CIRCUIT

**BCM** 

**BCM**: Diagnosis Procedure

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## 1. CHECK FUSES AND FUSIBLE LINK

Check that the following fuses and fusible link are not fusing.

| Signal name           | Fuses and fusible link No. |
|-----------------------|----------------------------|
| Battery power supply  | 10                         |
| battery power supply  | J                          |
| ACC power supply      | 20                         |
| Ignition power supply | 1                          |

### Is the fuse fusing?

YES >> Replace the blown fuse or fusible link after repairing the affected circuit if a fuse or fusible link is blown.

NO >> GO TO 2.

# 2.CHECK POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.

Disconnect BCM connectors.

3. Check voltage between BCM harness connector and ground.

| Terminals |          |        | Ignition switch position |                    |                    |
|-----------|----------|--------|--------------------------|--------------------|--------------------|
| (+)       |          |        | ignition switch position |                    |                    |
| BCM       |          | (-)    | OFF                      | ACC                | ON                 |
| Connector | Terminal |        | OFF                      | ACC                | ON                 |
| M109      | 70       |        | Battery                  | Battery            | Battery            |
|           | 57       |        | voltage                  | voltage            | voltage            |
| M107      | 11       | Ground | Approx.<br>0 V           | Battery<br>voltage | Battery<br>voltage |
|           | 38       |        | Approx.<br>0 V           | Approx.<br>0 V     | Battery<br>voltage |

### Is the measurement value normal?

YES >> GO TO 3.

NO >> Repair harness or connector.

# 3. CHECK GROUND CIRCUIT

Check continuity between BCM harness connector and ground.

| ВС        | CM       |        | Continuity |
|-----------|----------|--------|------------|
| Connector | Terminal | Ground | Continuity |
| M109 67   |          |        | Existed    |

### Does continuity exist?

YES >> INSPECTION END

NO >> Repair harness or connector.

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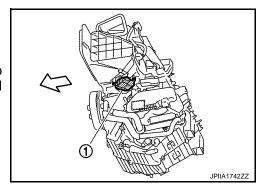
## INTAKE DOOR MOTOR

Description INFOID:000000005490132

### INTAKE DOOR MOTOR

• The intake door motor (1) is installed to A/C unit assembly.

• The A/C control (built in A/C amp.) sends the control signal to Intake door motor. When intake door motor receives the control signal, intake door is moved to appropriate position.



## Diagnosis Procedure

INFOID:0000000005490133

### POWER SUPPLY CIRCUIT

# ${f 1}$ .CHECK INTAKE DOOR MOTOR DRIVE SIGNAL

- 1. Turn the ignition switch ON.
- Check voltage between intake door motor harness connector and the ground when intake switch is operated.

| (+)               |          | (-)     |               | Maltana              |
|-------------------|----------|---------|---------------|----------------------|
| Intake door motor |          |         | Condition     | Voltage<br>(Approx.) |
| Connector         | Terminal |         |               | , , ,                |
| M54               | 2        | Ground  | $FRE \to REC$ | 12 V                 |
| IVI34             | 6        | Giodila | $REC \to FRE$ | 12 V                 |

### Is inspection result normal?

YES >> GO TO 4.

NO >> GO TO 2.

# 2.check continuity between A/C control and intake door motor

- Turn the ignition switch OFF.
- 2. Disconnect the A/C control connector.
- 3. Disconnect the intake door motor connector.
- Check continuity between A/C control harness connector and intake door motor harness connector.

| Intake de | oor motor | A/C control |          | Continuity |
|-----------|-----------|-------------|----------|------------|
| Connector | Terminal  | Connector   | Terminal | Continuity |
| M54       | 2         | M53         | 8        | Existed    |
| WIJ4      | 6         | IVIOS       | 16       | LXISIEU    |

### Is inspection result normal?

YES >> GO TO 3.

NO >> Repair the harnesses or connectors.

## ${f 3.}$ CHECK CONTINUITY BETWEEN INTAKE DOOR MOTOR AND GROUND

Check continuity between intake door motor harness connector and the ground.

## **INTAKE DOOR MOTOR**

### < DTC/CIRCUIT DIAGNOSIS >

# [MANUAL AIR CONDITIONING]

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| < DTC/CIRCUI                                | I DIAGNOSIS  | >                |                     |   |
|---|--|------------------|---------------------|---|
|   |  |                  |                     |   |
| Intake do                                   | oor motor  |                  | Continuity          |   |
| Connector                                   | Terminal   | _                | Continuity          |   |
| M54   | 2  | Ground           | Not existed         |   |
| 1013-4                                      | 6  | Giodila          | Not existed         |   |
| s inspection res                            | sult normal?   |                  |                     |   |
|   | place the A/C of   |                  |                     |   |
| . ·   |  | ses or connecto  | ors.                |   |
|   | AKE DOOR MO  |                  |                     |   |
|   |  | component ins    | pection. Refer to   | HAC-171, "Component Inspection".                |
| s inspection res                            |  |                  |                     |   |
|   | place the A/C on the color of t |                  |                     |   |
| •   |  | e door motor.    |                     |   |
| Component                                   | Inspection   |                  |                     | INFOID:000000005490134                          |
| .CHECK INTA                                 | AKE DOOR MO  | OTOR             |                     |   |
| . Turn the igr                              | nition switch Of   | FF.              |                     |   |
| . Disconnect                                | the intake doo   | r motor connec   |                     |   |
| <ul> <li>Supply to the visually.</li> </ul> | ne intake door   | motor terminal ( | directly, confirm t | he motor operation by listening the sound or by |
|   |  |                  |                     |   |
| Tern  | ninal  |                  | •                   |   |
| (+)   | (–)  | - Operation      |                     |   |
| 2   | 6  | To REC           | -                   | ŀ   |
| 6   | 2  | To FRE           | -                   | -   |
| s inspection res                            | sult normal?   |                  | _                   |   |
|   | SPECTION EN  |                  |                     |   |
| NO >> Rep                                   | place the intake   | e door motor.    |                     |   |
|   |  |                  |                     |   |
|   |  |                  |                     |   |
|   |  |                  |                     |   |
|   |  |                  |                     |   |
|   |  |                  |                     |   |
|   |  |                  |                     |   |
|   |  |                  |                     |   |

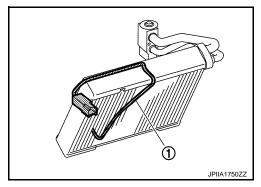
Revision: 2009 October HAC-171 2010 Z12

## THERMO CONTROL AMPLIFIER

Description INFOID:000000005490135

### COMPONENT DESCRIPTION

- Thermo control amp. (1) is composed of thermistor and amplifier.
   Thermistor is installed on evaporator, and amplifier is attached to foot duct (left).
- When the thermistor detecting temperature which passing through evaporator is extremely low, thermo control amp. sends the thermo control amp. OFF signal to BCM, and stops the compressor.



### **OPERATING RATE CONTROL**

- Thermo control amp. detects the positions of air temperature control dial and MODE dial.
- Thermo control amp. corrects the stopping temperature of A/C compressor depending on the condition of A/C operation, and prevents too much heating by turning thermo control amp. ON ⇔ OFF.

## Component Function Check

INFOID:0000000005490136

# 1. CHECK THERMO CONTROL AMP. SIGNAL

### (P)With CONSULT-III

- 1. Turn the ignition switch ON.
- 2. Select the "THERMO AMP" on "DATA MONITOR" in BCM.
- 3. Check the thermo control amp. signal when the ignition switch is operated.

| Monitor item | Con             | Status |     |
|--------------|-----------------|--------|-----|
| THERMO AMP   | Ignition switch | ON     | On  |
|              | ignition switch | OFF    | Off |

### Is inspection result normal?

YES >> INSPECTION END

NO >> Refer to <u>HAC-172</u>, "<u>Diagnosis Procedure</u>".

# Diagnosis Procedure

INFOID:0000000005490137

## 1.CHECK FUSE

Check 10A fuse [NO. 16, located in the fuse block (J/B)].

### NOTE:

Refer to PG-97, "Fuse, Connector and Terminal Arrangement".

### Is inspection result normal?

YES >> GO TO 2.

NO >> Replace fuse after repairing the applicable circuit.

# 2.CHECK THERMO CONTROL AMP. POWER SUPPLY CIRCUIT

- 1. Turn the ignition switch OFF.
- 2. Disconnect the thermo control amp. connector.
- Turn the ignition switch ON.
- 4. Check voltage between thermo control amp. harness connector and the ground.

### THERMO CONTROL AMPLIFIER

### < DTC/CIRCUIT DIAGNOSIS >

### [MANUAL AIR CONDITIONING]

| (                  | +)          | (-)    | Vales -              |  |
|--------------------|-------------|--------|----------------------|--|
| Thermo co          | ontrol amp. |        | Voltage<br>(Approx.) |  |
| Connector Terminal |             |        | , , ,                |  |
| M44                | 1           | Ground | Battery voltage      |  |

Is inspection result normal?

YES >> GO TO 3.

NO >> Repair the harness or connector between thermo control amp. and fuse.

# 3.check continuity thermo control amp. ground circuit

- 1. Turn the ignition switch OFF.
- 2. Check continuity between thermo control amp. harness connector and the ground.

| Thermo co          | ontrol amp. |        | Continuity |
|--------------------|-------------|--------|------------|
| Connector Terminal |             |        | Continuity |
| M44                | 3           | Ground | Existed    |

### Is inspection result normal?

YES >> GO TO 4.

NO >> Repair the harnesses or connectors.

# 4.CHECK VOLTAGE BETWEEN THERMO CONTROL AMP. AND GROUND

- 1. Turn the ignition switch ON.
- 2. Check voltage between thermo control amp. harness connector and the ground.

| (         | +)          | (-)    | V 16                 |  |
|-----------|-------------|--------|----------------------|--|
| Thermo co | ontrol amp. |        | Voltage<br>(Approx.) |  |
| Connector | Terminal    |        | , , ,                |  |
| M44 2     |             | Ground | 12 V                 |  |

### Is inspection result normal?

YES >> Replace the thermo control amp.

NO >> GO TO 5.

# 5.CHECK CONTINUITY BETWEEN THERMO CONTROL AMP. AND BCM

- 1. Turn the ignition switch OFF.
- 2. Disconnect the BCM connector.
- 3. Check continuity between thermo control amp. harness connector and BCM harness connector.

| Thermo control amp. |          | BCM       |          | Continuity |
|---------------------|----------|-----------|----------|------------|
| Connector           | Terminal | Connector | Terminal | Continuity |
| M44                 | 2        | M65       | 26       | Existed    |

### Is inspection result normal?

YES >> GO TO 6.

NO >> Repair the harnesses or connectors.

## 6. CHECK CONTINUITY BETWEEN THERMO CONTROL AMP. AND GROUND

Check continuity between thermo control amp. harness connector and the ground.

| Thermo control amp. |          |        | Continuity  |
|---------------------|----------|--------|-------------|
| Connector           | Terminal |        | Continuity  |
| M44                 | 2        | Ground | Not existed |

### Is inspection result normal?

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## THERMO CONTROL AMPLIFIER

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONING]

YES >> Repair the harnesses or connectors.

NO >> INSPECTION END

### [MANUAL AIR CONDITIONING]

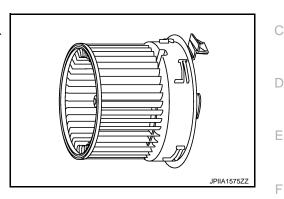
## **BLOWER MOTOR**

Description INFOID:000000005490138

### COMPONENT DESCRIPTION

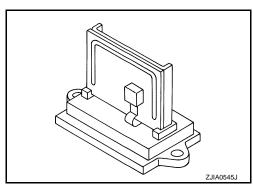
### **Blower Motor**

- The blower motor is installed in the RH side of A/C unit assembly.
- The blower motor adopts the forcible air cooling system and onetouch installation system without any screws.



### Blower Fan Resistor

- Compact and lightweight resistor is adopted with outstanding ventilation.
- Temperature fuse is installed to protects the blower motor circuit.



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# Diagnosis Procedure

### 1.CHECK FUSE

Check 15A fuses [Nos. 15 and 17, located in the fuse block (J/B)].

### NOTE:

Refer to PG-97, "Fuse, Connector and Terminal Arrangement".

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace fuse after repairing the applicable circuit.

## 2. CHECK POWER SUPPLY FOR BLOWER MOTOR

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

| (+)                |   | (–)    | Maltana              |
|--------------------|---|--------|----------------------|
| Blower motor       |   | _      | Voltage<br>(Approx.) |
| Connector Terminal |   |        | , , ,                |
| M39                | 1 | Ground | Battery voltage      |

### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 4.

# 3.CHECK BLOWER RELAY

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### **BLOWER MOTOR**

### < DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONING]

- 1. Turn the ignition switch OFF.
- Perform the component inspection of blower motor relay. Refer to HAC-177, "Component Inspection".

#### Is the inspection result normal?

YES >> Replace the harness or connector between blower motor and fuse.

NO >> Replace the blower relay.

# 4. CHECK FAN SWITCH GROUND CIRCUIT

- Turn the ignition switch OFF.
- 2. Disconnect the fan switch connector.
- 3. Check continuity between fan switch harness connector and the ground.

| Fan switch |          | _      | Continuity |
|------------|----------|--------|------------|
| Connector  | Terminal |        | Continuity |
| M73        | 3        | Ground | Existed    |

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair the harness or connector.

# ${f 5.}$ CHECK CONTINUITY BETWEEN FAN SWITCH AND BLOWER MOTOR

Check continuity fan switch harness connector and blower motor harness connector.

| Fan switch |          | Blower motor |          | Continuity |
|------------|----------|--------------|----------|------------|
| Connector  | Terminal | Connector    | Terminal | Continuity |
| M73        | 5        | M39          | 2        | Existed    |

### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair the harness or connector.

## 6.CHECK VOLTAGE BETWEEN BLOWER FAN RESISTOR AND GROUND

- Disconnect the blower fan resistor connector.
- 2. Turn the ignition switch ON.
- 3. Check voltage between blower fan resistor harness connector and the ground.

| (+)                 |          | (-)    | V. 1.                |
|---------------------|----------|--------|----------------------|
| Blower fan resistor |          |        | Voltage<br>(Approx.) |
| Connector           | Terminal | _      | ( 11 - 7             |
| M306                | 3        | Ground | 12 V                 |

### Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair the harness or connector between blower fan resistor and blower motor.

## .CHECK BLOWER FAN RESISTOR

- 1. Turn the ignition switch OFF.
- 2. Perform the component inspection of blower fan resistor. Refer to HAC-177, "Component Inspection".

### Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace the blower fan resistor.

### **O.**CHECK CIRCUIT CONTINUITY BETWEEN FAN SWITCH AND BLOWER FAN RESISTOR

Check continuity between fan switch harness connector and blower fan resistor.

| Fan                             | switch   | Blower fa | an resistor | Continuity |
|---------------------------------|----------|-----------|-------------|------------|
| Connector                       | Terminal | Connector | Terminal    | Continuity |
|                                 | 4        |           | 4           |            |
| M73                             | 1        | M306      | 1           | Existed    |
|                                 | 2        |           | 2           |            |
| a the inercetion recult nermal? |          |           |             |            |

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair the harness or connector.

9. CHECK FAN SWITCH

Perform the component inspection of fan switch. Refer to HAC-177, "Component Inspection".

Is the inspection result normal?

YES >> Replace the blower motor.

NO >> Replace the fan switch (A/C control).

Component Inspection

**BLOWER MOTOR** 

## 1. CHECK BLOWER MOTOR

1. Remove the blower motor. Refer to VTL-13, "Exploded View".

2. Check that there is not any mixing foreign object in the blower motor.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace the blower motor.

2. CHECK BLOWER MOTOR

Check that there is not breakage or damage in the blower motor.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace the blower motor.

3.CHECK BLOWER MOTOR

Check that the blower motor turns smoothly.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace the blower motor.

BLOWER MOTOR RELAY

### 1. CHECK BLOWER MOTOR

Remove the blower motor relay. Refer to <u>PG-97</u>, "Fuse, Connector and Terminal Arrangement".

2. Check the continuity between the blower motor relay terminal 3 and 5 when the voltage is supplied between terminal 1 and 2.

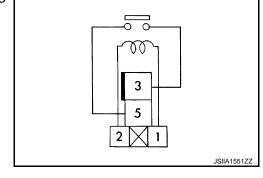
| Blower motor relay |   | - Voltage | Continuity  |
|--------------------|---|-----------|-------------|
| Terminal           |   |           |             |
| 3                  | 5 | ON        | Existed     |
|                    | 5 | OFF       | Not existed |

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace the blower motor relay.

#### BLOWER FAN RESISTOR



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INFOID:0000000005490140

Revision: 2009 October **HAC-177** 2010 Z12

### < DTC/CIRCUIT DIAGNOSIS >

# 1. CHECK BLOWER MOTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the blower fan resistor connector.
- 3. Check the resistance between blower fan resistor terminals. Refer to the applicable table for the normal value.

| Blower fan resistor |   | Resistance: Ω (Approx.) |  |
|---------------------|---|-------------------------|--|
| Terminal            |   |                         |  |
|                     | 4 | 0.43                    |  |
| 3                   | 1 | 1.03                    |  |
|                     | 2 | 3                       |  |

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace the blower fan resistor.

### **FAN SWITCH**

# 1. CHECK FAN SWITCH

- 1. Turn the ignition switch OFF.
- 2. Disconnect the fan switch connector.
- 3. Check the fan switch circuit continuity.

| Fan switch |   | Condition     | Continuity |  |
|------------|---|---------------|------------|--|
| Terminal   |   | Dial position | Continuity |  |
| 3          | 2 | 1st           |            |  |
|            | 1 | 2nd           | Existed    |  |
|            | 4 | 3rd           | LXISIEU    |  |
|            | 5 | 4th           |            |  |

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace the fan switch (A/C control).

### **MAGNET CLUTCH**

### < DTC/CIRCUIT DIAGNOSIS >

### [MANUAL AIR CONDITIONING]

#### MAGNET CLUTCH Α Description INFOID:0000000005490141 The magnet clutch is the device that drives the compressor with the signal from IPDM E/R. В · Compressor is driven by the magnet clutch which is charged magnetic force by electrified. IPDM E/R controls magnet clutch by turning the built in A/C relay to ON ⇔ OFF according to ECM request. Component Function Check INFOID:0000000005490142 PERFORM AUTO ACTIVE TEST Perform IPDM E/R auto active test. Refer to PCS-41, "Diagnosis Description". D Does the magnet clutch operate? YES >> INSPECTION END NO >> Refer to HAC-179, "Diagnosis Procedure". Diagnosis Procedure INFOID:0000000005490143 F 1. CHECK MAGNET CLUTCH Turn the ignition switch OFF. 2. Disconnect the magnet clutch connector. Directly apply the battery voltage to the magnet clutch. Check for operation visually and by sound. Does it operate normally? >> GO TO 2. YES Н NO >> Replace the compressor. 2.CHECK MAGNET CLUTCH CIRCUIT CONTINUITY HAC Turn the ignition switch OFF. 2. Disconnect the IPDM E/R connector. Check continuity between magnet clutch harness connector and IPDM E/R harness connector. IPDM E/R Magnet clutch Continuity Terminal Connector **Terminal** Connector F17 E15 56 1 Existed Is the inspection result normal? YES >> GO TO 3. NO >> Repair the harnesses and connectors. 3. CHECK FUSE M Check 10A fuse (No. 49, located in the IPDM E/R). NOTE: Refer to PG-99, "Fuse, Connector and Terminal Arrangement". N

Is the inspection result normal?

YES >> Replace the IPDM E/R.

NO >> Replace the fuse after repairing the applicable circuit.

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**HAC-179** Revision: 2009 October 2010 Z12

## A/C SWITCH

Description INFOID:0000000005490144

- Each signal is sent to BCM by pressing the A/C switch.
- BCM judges the recognition that A/C switch is ON or OFF according to input switch signal.

## Component Function Check

INFOID:0000000005490145

# 1. CHECK A/C SWITCH SIGNAL

## (I) With CONSULT-III

- Turn the ignition switch ON.
- 2. Select the "AIR COND SW" on "DATA MONITOR" in BCM.
- 3. Check the A/C switch signal when A/C switch is operated.

| Monitor item           | Condition         |               | Status |
|------------------------|-------------------|---------------|--------|
| AIR COND SW A/C switch | A/C switch        | While pushing | On     |
|                        | While not pushing | Off           |        |

### Is inspection result normal?

YES >> INSPECTION END

NO >> Refer to <u>HAC-180, "Diagnosis Procedure"</u>.

## Diagnosis Procedure

INFOID:0000000005490146

# 1. CHECK A/C SWITCH SIGNAL OUTPUT

- 1. Turn the ignition switch OFF.
- Disconnect the A/C control connector.
- 3. Turn the ignition switch ON.
- 4. Check output waveform between A/C switch harness connector and the ground with using oscilloscope.

| (+)       |             | (-)    | Output waveform  |  |
|-----------|-------------|--------|--|--|
| A/C o     | A/C control |        |  |  |
| Connector | Terminal    |        |  |  |
| M53       | 12          | Ground | (V)<br>15<br>10<br>5<br>0<br>10 ms<br>JPMIA0012GB<br>Approx. 1.0 ~ 1.5 V |  |

### Is inspection result normal?

YES >> GO TO 2.

NO >> GO TO 3.

# 2.CHECK CONTINUITY A/C CONTROL GROUND CIRCUIT

- 1. Turn the ignition switch OFF.
- Check continuity between A/C control harness connector and the ground.

| A/C control |          |        | Continuity |
|-------------|----------|--------|------------|
| Connector   | Terminal | _      | Continuity |
| M53         | 15       | Ground | Existed    |

## Is inspection result normal?

#### A/C SWITCH

#### < DTC/CIRCUIT DIAGNOSIS >

#### [MANUAL AIR CONDITIONING]

YES >> Replace the A/C switch (A/C control).

NO >> Repair the harness or connector.

# 3.CHECK CONTINUITY BETWEEN A/C CONTROL AND BCM

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

| A/C d     | control  | В         | CM       | Continuity |
|-----------|----------|-----------|----------|------------|
| Connector | Terminal | Connector | Terminal | Continuity |
| M53       | 12       | M65       | 27       | Existed    |

#### Is inspection result normal?

YES >> GO TO 4.

NO >> Repair the harness or connector.

# 4. CHECK CONTINUITY BETWEEN A/C CONTROL AND GROUND

Check continuity between A/C control harness connector and the ground.

| A/C control |          | _      | Continuity  |  |
|-------------|----------|--------|-------------|--|
| Connector   | Terminal |        | Continuity  |  |
| M53         | 12       | Ground | Not existed |  |

#### Is inspection result normal?

YES >> Replace the BCM. Refer to BCS-146, "Exploded View".

NO >> Repair the harness or connector.

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#### **DEFROSTER POSITION SIGNAL**

< DTC/CIRCUIT DIAGNOSIS >

[MANUAL AIR CONDITIONING]

### **DEFROSTER POSITION SIGNAL**

Description INFOID:0000000005490147

Each signal is sent to BCM by setting the D/F or DEF position.

 BCM judges the change of the air inlet and recognition of A/C switch ON or OFF according to input switch signal.

### Component Function Check

INFOID:0000000005490148

### 1. CHECK DEFROSTER POSITION SIGNAL

#### (II) With CONSULT-III

- 1. Turn the ignition switch ON.
- 2. Select the "FR DEF SW" on "DATA MONITOR" in BCM.
- Check the A/C switch signal when A/C switch is operated.

| Monitor item | Condition     |                   | Status |
|--------------|---------------|-------------------|--------|
| FR DEF SW    | MODE position | D/F or DEF        | On     |
| TR DET 3W    | MODE position | VENT, B/L or FOOT | Off    |

#### Is inspection result normal?

YES >> INSPECTION END

NO >> Refer to <u>HAC-182</u>, "<u>Diagnosis Procedure</u>".

### Diagnosis Procedure

INFOID:0000000005490149

# 1. CHECK VOLTAGE BETWEEN A/C CONTROL AND GROUND

- 1. Turn the ignition switch OFF.
- 2. Disconnect the A/C control connector.
- Turn the ignition switch ON.
- 4. Check voltage between A/C control harness connector and the ground.

| (-        | +)                 | (-)    | Maltana              |
|-----------|--------------------|--------|----------------------|
| A/C o     | control            |        | Voltage<br>(Approx.) |
| Connector | Connector Terminal |        | , , ,                |
| M53       | 6                  | Ground | 12 V                 |

#### Is inspection result normal?

YES >> Replace the A/C control.

NO >> GO TO 2.

# 2.CHECK CONTINUITY BETWEEN A/C CONTROL AND BCM

- Turn the ignition switch OFF.
- Disconnect the BCM connector.
- 3. Check continuity between A/C control harness connector and BCM harness connector.

| A/C d     | control  | В         | CM       | Continuity |
|-----------|----------|-----------|----------|------------|
| Connector | Terminal | Connector | Terminal | Continuity |
| M53       | 6        | M66       | 31       | Existed    |

#### Is inspection result normal?

YES >> GO TO 3.

NO >> Repair the harness or connector.

# 3.CHECK CONTINUITY BETWEEN A/C CONTROL AND GROUND

Check continuity between A/C control harness connector and the ground.

### **DEFROSTER POSITION SIGNAL**

#### < DTC/CIRCUIT DIAGNOSIS >

#### [MANUAL AIR CONDITIONING]

| A/C d     | A/C control |        | Continuity  |
|-----------|-------------|--------|-------------|
| Connector | Terminal    | _      | Continuity  |
| M53       | 6           | Ground | Not existed |

#### Is inspection result normal?

YES >> Replace the BCM. Refer to BCS-146, "Exploded View".

NO >> Repair the harness or connector.

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### A/C INDICATOR

### Component Function Check

INFOID:0000000005490150

### 1. PERFORM AUTO ACTIVE TEST OF A/C INDICATOR

- (P) With CONSULT-III
- 1. Select the "AIR COND IND" on "ACTIVE TEST" in BCM.
- Check the A/C indicator status.

On : A/C indicator ON
Off : A/C indicator OFF

#### Is inspection result normal?

YES >> INSPECTION END

NO >> Refer to <u>HAC-184, "Diagnosis Procedure"</u>.

### Diagnosis Procedure

INFOID:0000000005490151

### 1. DEFINE THE MALFUNCTION

Define the A/C indicator malfunction.

A/C indicator dose not turn ON>>GO TO 2.

A/C indicator dose not turn OFF>>GO TO 6.

### 2.CHECK FUSE

Check 10A fuse [No. 16, located in the fuse block (J/B)].

#### NOTE:

Refer to PG-97, "Fuse, Connector and Terminal Arrangement".

#### Is inspection result normal?

YES >> GO TO 3.

NO >> Replace fuse after repairing the applicable circuit.

## 3.CHECK VOLTAGE BETWEEN A/C CONTROL POWER SUPPLY

- 1. Turn the ignition switch ON.
- Check voltage between A/C control harness connector and the ground.

| (+)       |          | (-)    |                 |
|-----------|----------|--------|-----------------|
| A/C o     | control  |        | Voltage         |
| Connector | Terminal |        |                 |
| M53       | 14       | Ground | Battery voltage |

#### Is inspection result normal?

YES >> GO TO 4.

NO >> Repair the harness or connector between A/C control and fuse.

### 4. CHECK VOLTAGE BETWEEN A/C CONTROL AND GROUND

Check voltage between A/C control harness connector and the ground.

| (-        | +)       | (-)    | Maltana              |
|-----------|----------|--------|----------------------|
| A/C o     | control  |        | Voltage<br>(Approx.) |
| Connector | Terminal | _      | (     - /            |
| M53       | 13       | Ground | 12 V                 |

#### Is inspection result normal?

YES >> GO TO 5.

NO >> Replace the A/C control (A/C indicator).

#### A/C INDICATOR

#### < DTC/CIRCUIT DIAGNOSIS >

### [MANUAL AIR CONDITIONING]

# 5. CHECK CONTINUITY BETWEEN A/C CONTROL AND BCM

- 1. Turn the ignition switch OFF.
- 2. Disconnect the A/C control connector.
- 3. Disconnect the BCM connector.
- 4. Check continuity between A/C control harness connector and BCM harness connector.

| A/C d     | control  | В         | CM       | Continuity |
|-----------|----------|-----------|----------|------------|
| Connector | Terminal | Connector | Terminal | Continuity |
| M53       | 13       | M66       | 50       | Existed    |

#### Is inspection result normal?

YES >> GO TO 6.

NO >> Repair the harness or connector.

### 6. CHECK CONTINUITY BETWEEN A/C CONTROL AND GROUND

1. Check continuity between A/C control harness connector and the ground.

| A/C control |          | _      | Continuity  |
|-------------|----------|--------|-------------|
| Connector   | Terminal |        | Continuity  |
| M53         | 13       | Ground | Not existed |

#### Is inspection result normal?

YES >> Replace the BCM. Refer to BCS-146, "Exploded View".

NO >> Repair the harness or connector.

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### **BLOWER FAN ON SIGNAL**

## Component Function Check

# 1.CHECK BLOWER FAN ON SIGNAL

#### (P)With CONSULT-III

- Turn the ignition switch ON.
- 2. Select the "FAN ON SIG" on "DATA MONITOR" in BCM.
- 3. Check the fan ON signal when the fan control dial is operated.

| Monitor item | Condition        |                     | Status |
|--------------|------------------|---------------------|--------|
| FAN ON SIG   | Fan control dial | OFF position        | Off    |
| I AN ON SIG  | Fan control dial | Except OFF position | On     |

#### Is inspection result normal?

YES >> INSPECTION END

NO >> Refer to <u>HAC-186, "Diagnosis Procedure"</u>.

### Diagnosis Procedure

INFOID:0000000005490153

INFOID:000000005490152

# 1. CHECK BLOWER FAN ON SIGNAL OUTPUT

- 1. Turn the ignition switch OFF.
- Disconnect the fan switch connector.
- 3. Turn the ignition switch ON.
- 4. Check output waveform between fan switch harness connector and the ground with using oscilloscope.

| (         | (+)        |        |                                    |  |
|-----------|------------|--------|------------------------------------|--|
| Fan       | Fan switch |        | Output waveform                    |  |
| Connector | Terminal   | _      |                                    |  |
| M73       | 6          | Ground | (V) 15 10 5 0  Approx. 1.5 ~ 2.0 V |  |

#### Is inspection result normal?

YES >> Replace the fan switch (A/C control).

NO >> GO TO 2.

# 2.check continuity between fan switch and bcm

- 1. Turn the ignition switch OFF.
- Disconnect the BCM connector.
- 3. Check continuity between fan switch harness connector and BCM harness connector.

| Fan       | switch   | В         | СМ       | Continuity |
|-----------|----------|-----------|----------|------------|
| Connector | Terminal | Connector | Terminal | Continuity |
| M73       | 6        | M65       | 28       | Existed    |

#### Is inspection result normal?

YES >> GO TO 3.

NO >> Repair the harness or connector.

3.check continuity between fan switch and ground

### **BLOWER FAN ON SIGNAL**

#### < DTC/CIRCUIT DIAGNOSIS >

#### [MANUAL AIR CONDITIONING]

Check continuity between fan switch harness connector and the ground.

| Fan       | switch   |        | Continuity  |
|-----------|----------|--------|-------------|
| Connector | Terminal | _      | Continuity  |
| M73       | 6        | Ground | Not existed |

#### Is inspection result normal?

YES >> Replace the BCM. Refer to BCS-146, "Exploded View".

NO >> Repair the harness or connector.

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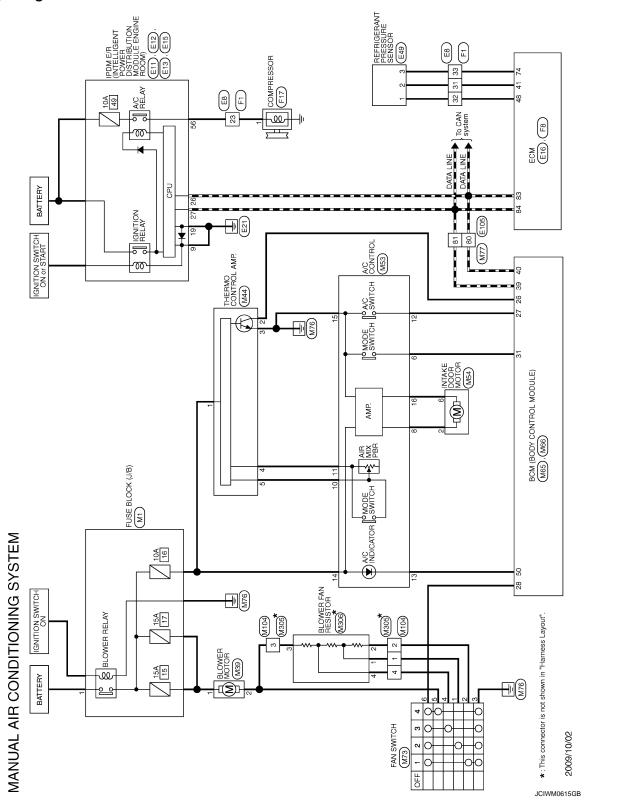
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INFOID:0000000005490154

## MANUAL AIR CONDITIONING SYSTEM

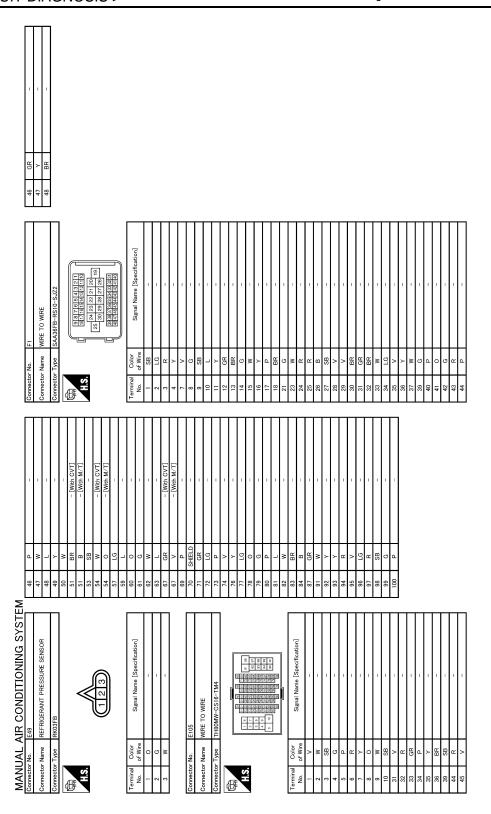
Wiring Diagram — MANUAL AIR CONDITIONING SYSTEM —



## [MANUAL AIR CONDITIONING]

|                              |  |   | [cation]   |  | А           |
|------------------------------|--|---|--|--|-------------|
|                              | 1 1  | 8-L-RH  | Signal Name (Specification) Signal Name (Specification) CAN-H K LINE ICANSW ASCIDSW GNDA-ASCIDSW GNDA-ASCIDSW BRAKE BNCSW BNCSC-APSZ AVCC-APSZ   | GNDA-APS2<br>ORD<br>AVCC-APS1<br>GND<br>APS1<br>GNDA-APS1  | В           |
|                              |  | E16<br>ECM<br>RH24FB-RZ   | 88   |  | С           |
|                              | 61 W<br>62 L   | Connector No. Connector Name Connector Type   | Terminal Color No. 7 Wiles 1 Color No. 83 P P LG 84 LG 88 P LG 94 SB 95 Wiles 100 SB 1 | +++++  | D           |
|                              | NODULE NODULE  |   | andown   | 477<br>554   | E           |
|                              | E13 PDM E.R. (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) TH12FW—NH | 26 25 24 23<br>32 31 30 29  | E15  | NS16PW-CS   Signal Name   Specification   Signal Name   Specification   Signal Name   Specification   Signal Name   Specification   Specification   Signal Name   Specification   Specification   Specification   Signal Name   Specification   Specification   Signal Name   Specification   Specification   Specification   Signal Name   Specification    | F           |
|                              |  | 34 33 3   |  |  | G           |
|                              | Connector No. Connector Name Connector Type                                | H.S.  | No. of Wire 124 LG 25 Y 26 P 26 P 27 P 28 P 28 P 28 P 30 SB 31 W 31 Q 24 R R Connector Name Connector Name   | Commetter Type   Color   Commetter Type   Color   Co |             |
|                              | ПП   |   |  | П  | Н           |
|                              |  | STRIBUTION MODULE   | Specification]   | 15<br>Specification  | HAC         |
|                              |  | Е11<br>МОБЕВ-LC   | Signal Name [Specification]  |  | J           |
|                              |  | 1 1   | δ <u>±</u> ≥   |  |             |
|                              | 44 R<br>46 W<br>47 G<br>48 BR  | ector N<br>ector T  | Contract   Color   C   | Commetter Type   Commetter Type   Commetter Type   Color   No.   Color   Col | K           |
| EM                           |  | Com Com   |  | New  | ı           |
| SYST                         |  |   | 2  |  | L           |
| ONING                        |  |   |  | CCVT]  | M           |
| DITIO                        | RE<br>S10-SJZ2   | 12 3 4 5 6 7 8 9<br>10 11 12 13 4 5 6 7 18 9<br>20 21 22 23 24 25<br>20 27 28 29 30 25<br>31 32 32 32 4 38 37 38 39<br>40 11 22 4 4 4 5 6 7 7 8 |  |  |             |
| MANUAL AIR CONDITIONING SYST | E8<br>WIRE TO WIRE<br>SAA36MB-RS10-  | 10 20 2<br>19 26 2<br>313233<br>4041423   |  |  | N           |
| JAL AI                       | No. Rame W   |   | of Wire BR SB  |  |             |
| MAN                          | Connector No. Connector Name Connector Type                                | 服.S.  | No. 1  | 2 2 2 2 2 2 2 2 2 3 3 3 3 3 3 3 4 4 5 4 4 5 4 4 5 5 6 5 6 6 6 6 6 6 6 6  | 0           |
|                              |  |   |  |  | JCIWM0616GB |
|                              |  |   |  |  | Р           |

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JCIWM0617GB

## [MANUAL AIR CONDITIONING]

|                              |                                  |                           |   | Y. J. St. Supply (Note and a Ave (S)   | А   |
|------------------------------|----------------------------------|---------------------------|---|--|-----|
|                              | в мотов                          |                           | 3 5 6   | Signal Name (Specification) Signal Name (Specification) MITAKE DOOR MOTOR PERR POWER SUPPRINTE SIGNAL RECEIVED FROM THE SIGNAL FRE DRIVE SIGNAL FRE DRIVE SIGNAL   | В   |
| M54                          | Connector Name INTAKE DOOR MOTOR | Connector Type 98193-0001 | 1 2 3   | Color Signature Boote Marke Doole Marke Do | С   |
| Connector No.                | Connector N                      | Connector T               | H.S.  | 1  | D   |
|                              |                                  |                           |   | ification]   | Е   |
|                              | THERMO CONTROL AMP.              |                           | 3 1 2 4 4 5   | Signal Name [Specification]  MS3  A/C CONTROL  THI6FW-NH  Signal Name [Specification]  Signal Name [Specification]   | F   |
| or No.                       | ЭE                               | ector Type S06FW          |   |  | G   |
| Connector No.                | Connect                          | Connect                   | H.S.  | Terminal   Comector No.   Connector No.   Connector No.   Connector No.   Connector Type    | Н   |
|                              |                                  |                           | <b>S</b>  | Signal Name (Specification]  MAGNET GLUTCH POWER SUPPLY  Signal Name [Specification]   | HAC |
| 7                            | COMPRESSOR                       | RS01FB                    |   | Signal Name  BLOWER MOTOR  BLOWER MOTOR  SLOWER MOTOR CONTR  SLOWER MOTOR CONTR  SENSOR GROUND II   | J   |
| Connector No. F17            | e e                              | ector Type                | 是<br>H.S.   | Terminal Color No. Of Wire TUSS Connector Type TWO. Of Wire TUSS CONNECTOR TYPE TWO. Of Wire TUSS COLOR TYPE TWO. Of Wire TUSS COLOR TYPE TWO. Of Wire TUSS CO. OF TUSS C | К   |
| SYSTEM                       |                                  |                           |   |  | L   |
| MANUAL AIR CONDITIONING SYST |                                  | 7Z8-L-RH                  | 55 57 61 65 69 73 77<br>58 62 66 74 78<br>55 59 63 71 75<br>64 68 72 76       | Signal Name (Specification)  TPS 1 TPS 1 TPS 2 TNMA-TPS TWK TW GNNA-TPRES TPPES TPPE | M   |
| AIR COI                      |                                  | RH40FBR-RZ8-L-RH          | 33 37 41 45 49 53 5<br>34 38 42 46 50 5<br>35 43 47 51 55 5<br>36 40 44 48 52 |  | Ν   |
| MANUAL<br>Connector No.      | Connector Name                   | Connector Type            | ∑ vi  | Color   Color  | 0   |
| ≥[8                          | ું<br>હ                          | <u></u>                   | 匮二  | JCIWM0618GB  |     |
|                              |                                  |                           |   |  | Р   |

**HAC-191** Revision: 2009 October 2010 Z12

| MANU,          | AL AIR      | MANUAL AIR CONDITIONING SYSTEM            |            |                   |   |  |          |                |                             |  |
|----------------|-------------|---|------------|-------------------|---|--|----------|----------------|-----------------------------|--|
| Connector No.  | No. M65     | 2   | Con        | Connector No.     | M66 Connector No. M77                                 |  | 73       | œ              | 1                           |  |
| Connector Name |             | BCM (BODY CONTROL MODULE)                 | Con        | Connector Name    | BCM (BODY CONTROL MODULE) Connector Name WIRE TO WIRE | Щ  | 74       | \ .            |                             |  |
| Connector Type | Т           | TH40FW-NH                                 | Son        | Connector Type    | FFA09FW-FHA6-SA Connector Type TH80FW-CS16-TM4        | 6-TM4                                    | 77       | GR/R           |                             |  |
|                | 1           |   | <u>] [</u> |                   |   |  | 78       | 0              | 1                           |  |
| C C            |             |   | Ø          | _                 |   |  | 79       | 97             | 1                           |  |
| É              |             |   | _          | É                 |   | 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  | 80       | ۵              | 1                           |  |
|                |             | 7   | •          | <u>-</u>          | 97 92 84 94 94 94 94 94 94 94 94 94 94 94 94 94       |  | 81       | ٦              | -                           |  |
| - 3            | 2 3 4 5     | 6 7 8 9 10 11 12 13 14 15 16 17 18        |            |                   |   | 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  | 82       | GR             | -                           |  |
| 2              | 22 23 24 25 | 26 27 28 29 30 31 32 33 34 35 36 37 38 39 |            |                   |   | 0.0 1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0. | 83       | G/R            | -                           |  |
|                |             |   |            |                   | <u> </u>  | 9 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8  | 84       | В              | 1                           |  |
|                |             |   | Į          |                   |   |  | 87       | ŋ              | 1                           |  |
| lal            | Color       | Signal Name [Specification]               | Ter        | Ja J              | nal Color   | Signal Name [Specification]              | 91       | ~              | 1                           |  |
| No.            | of Wire     | Figure 100 dollars in 180                 | -          | •                 | No. of Wire   | riosponio del cupi.                      | 92       | 0              | t                           |  |
| 2              | BR/W        | COMBI SW INPUT 5                          | 1          | +                 | BACK DOOR SW 1 B/0                                    | 1  | 93       | >              | ı                           |  |
| င              | GR          | COMBI SW INPUT 4                          | <u> </u>   | +                 | 5   | 1  | 94       | R/B            | 1                           |  |
| 4              | 7           | COMBI SW INPUT 3                          | *          | $\dashv$          | e   | 1  | 92       | Λ              | -                           |  |
| ┨              | ŋ           | COMBI SW INPUT 2                          | Ý          | ┨                 | CENTRAL DOOR UNLOCK SW 4 G/B                          | 1  | 96       | >              | ſ                           |  |
| 9              | L/R         | COMBI SW INPUT 1                          | 4          | 47 BR/Y           | DRIVER DOOR SW 5 L                                    | _  | 97       | _              | 1                           |  |
| 7              | W/R         | KEY CYL UNLOCK SW                         | 7          | 48 W/G            | REAR LH DOOR SW 6 L                                   | _  | 86       | BR/W           | -                           |  |
| H              | W/B         | KEY CYL LOCK SW                           | ,<br>,     | Н                 | Т 7   | 1  | 66       | W              | -                           |  |
| 6              | œ           | STOP LAMP SW                              |            | 54 L/W            | REAR WIPER OUTPUT 8 G/W                               | 1  | 100      | G/R            | 1                           |  |
| ┝              | M/L         | REAR WINDOW DEFOGGER SW                   |            |                   | 1// 6   | 1  |          |                |                             |  |
| H              | ۲           | ACC                                       |            |                   | 10 W  | 1  |          |                |                             |  |
| 12             | SB          | PASSENGER DOOR SW                         | ő          | Connector No.     | M73 31 GR/L   | 1  | Connec   | Connector No.  | M104                        |  |
| H              | GR/L        | REAR RH DOOR SW                           |            |                   |   | 1  | ď        | N              | Г                           |  |
| H              | L/B         | OPTICAL SENSOR                            | 5          | Connector Name    | ⊦   | 1  | Conne    | Connector Name | WIRE TO WIRE                |  |
| H              | L           | TIRE PRESS WARNING CHECK SW               | Con        | Connector Type    | ┝   | 1  | Conne    | Connector Type | M04FW-LC                    |  |
| Н              |             | OPTICAL SENSOR POWER SUPPLY               |            |                   | 35 BR   | 1  | ľ        |                |                             |  |
| 18             | _           | RECEIVER/SENSOR GND                       | Ø          | _                 | ┢   | 1  | 6        |                |                             |  |
| H              | -           | KEYLESS ENTRY RECEIVER POWER SUPPLY       | _          | ٤                 | 39 L/R  | 1  | Ŧ        | ,              |                             |  |
| H              | _           | KEYLESS ENTRY RECEIVER COMM               | 1          | 2                 | <u> </u>  | 1  | 2        | 2              | <u></u>                     |  |
| H              | L           | NATS ANTENNA AMP.                         |            |                   | ┝   | 1  |          |                | 7 7                         |  |
| t              | ₽.          | SECURITY INDICATOR LAMP                   |            |                   | 4 5 6 46 GR/W   | 1  |          |                | 4 3                         |  |
| H              | GR/R        | DONGLE LINK                               |            |                   | H   | 1  |          |                |                             |  |
| H              | re          | NATS ANTENNA AMP.                         |            |                   | t   | 1  |          |                |                             |  |
| 56             | GR          | THERMO CONTROL AMP.                       | Ter        | Terminal Color    |   | 1  | Terminal | Color          |                             |  |
| H              | 5/A         | A/C SW [With auto A/C]                    | Z          | _                 | ┢   | 1  | N        | _              | Signal Name [Specification] |  |
| H              | Y/R         | A/C SW [With manual A/C]                  |            | -<br>-            | - 51 B/W  | 1  | -        | œ              | 1                           |  |
| H              | G/W         | BLOWER FAN SW                             | Ĺ          | 2 W               | = 53 R/L  | 1  | 2        | Α              | 1                           |  |
| H              | N/1         | HAZARD SW                                 | Ĺ          | 3<br>B            | - 54 0  | 1  | က        | _              | 1                           |  |
| H              | 7⁄2         | FR DEFROSTER SW                           | Ĺ          | 4                 | - 57 GR   | 1  | 4        | >              | 1                           |  |
| 32             | LG          | COMBI SW OUTPUT 5                         | Ľ          | 5 L               | - 29 ^  | 1  |          |                |                             |  |
| H              | 1//L        | COMBI SW OUTPUT 4                         | Ĺ          | W/D               | - 60 R/W  | 1  |          |                |                             |  |
| H              | ×           | COMBI SW OUTPUT 3                         |            | $\left\{ \right.$ | H   | 1  |          |                |                             |  |
| ┝              | R/L         | COMBI SW OUTPUT 2                         |            |                   | ┢   | 1  |          |                |                             |  |
| H              | 97          | COMBI SW OUTPUT 1                         |            |                   | 63 W/B  | 1  |          |                |                             |  |
| ┝              | R/W         | KEY SWITCH                                |            |                   | 67 Y/R  | 1  |          |                |                             |  |
| 38             | 0           | NDI                                       |            |                   | 5T 69   | 1  |          |                |                             |  |
| 39             | _           | CAN-H                                     |            |                   | 70 SHIELD   | 1  |          |                |                             |  |
| 40             | _           | CAN-L                                     |            |                   | 71 P/B  | ı  |          |                |                             |  |
|                |             |   |            |                   | H   |  |          |                |                             |  |

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| MANUAL AIR CONDITIONING SYSTEM Connector No. M305 Connector Name WIRE TO WIRE Connector Type M04MW  1 2 3 4 | Signal Name (Specification)   | Signal Name [Specification] |
|---|---|-----------------------------|
| Name Type   | 28 11 1   | Color of Wire G             |
| MANUAL Connector No. Connector Name Connector Type  | Termina   Colour   Colour | Terminal No.                |

# **ECU DIAGNOSIS INFORMATION**

# BCM (BODY CONTROL MODULE)

Reference Value

#### VALUES ON THE DIAGNOSIS TOOL

| Monitor Item            | Condition   | Value/Status                           |
|-------------------------|---|--|
| IGN ON SW               | Ignition switch OFF or ACC                          | Off                                    |
| IGN ON SW               | Ignition switch ON                                  | On                                     |
| KEY ON SW               | Mechanical key is removed from key cylinder         | Off                                    |
| KET ON SW               | Mechanical key is inserted to key cylinder          | On                                     |
| CDL LOCK CW             | Door lock/unlock switch does not operate            | Off                                    |
| CDL LOCK SW             | Press door lock/unlock switch to the lock side      | On                                     |
| CDL UNLOCK SW           | Door lock/unlock switch does not operate            | Off                                    |
| CDL UNLOCK SW           | Press door lock/unlock switch to the unlock side    | On                                     |
| DOOD CW DD              | Driver's door closed                                | Off                                    |
| DOOR SW-DR              | Driver's door opened                                | On                                     |
| DOOD CW AC              | Passenger door closed                               | Off                                    |
| DOOR SW-AS              | Passenger door opened                               | On                                     |
| D00D 0W DD              | Rear RH door closed                                 | Off                                    |
| DOOR SW-RR              | Rear RH door opened                                 | On                                     |
| DOOD OW DI              | Rear LH door closed                                 | Off                                    |
| DOOR SW-RL              | Rear LH door opened                                 | On                                     |
| BACK DOOR SW            | Back door closed                                    | Off                                    |
| BACK DOOR SW            | Back door opened                                    | On                                     |
| LOCK STATUS             | NOTE: The item is indicated, but not monitored.     | Off                                    |
| 400 011 0111            | Ignition switch OFF                                 | Off                                    |
| ACC ON SW               | Ignition switch ACC or ON                           | On                                     |
| VEV/1 500 1 00V         | "LOCK" button of key fob is not pressed             | Off                                    |
| KEYLESS LOCK            | "LOCK" button of key fob is pressed                 | On                                     |
| 1/E)// E00 I IN II 001/ | "UNLOCK" button of key fob is not pressed           | Off                                    |
| KEYLESS UNLOCK          | "UNLOCK" button of key fob is pressed               | On                                     |
| SHOCK SENSOR            | NOTE: The item is indicated, but not monitored.     | NORMAL                                 |
|                         | Other than driver door key cylinder LOCK position   | Off                                    |
| KEY CYL LK-SW           | Driver door key cylinder LOCK position              | On                                     |
|                         | Other than driver door key cylinder UNLOCK position | Off                                    |
| KEY CYL UN-SW           | Driver door key cylinder UNLOCK position            | On                                     |
| VEHICLE SPEED           | While driving                                       | Equivalent to speed-<br>ometer reading |
| DEAD DEE OW             | Rear window defogger switch OFF                     | Off                                    |
| REAR DEF SW             | Rear window defogger switch ON                      | On                                     |
|                         | NOTE:   | Off                                    |
| REVERSE SW CAN          | The item is indicated, but not used.                | On                                     |

# < ECU DIAGNOSIS INFORMATION >

## [MANUAL AIR CONDITIONING]

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| Monitor Item      | Condition  | Value/Status    |
|-------------------|--|-----------------|
| TAIL LAMP SW      | Lighting switch OFF  | Off             |
| TAIL LAWF 3W      | Lighting switch 1ST  | On              |
| FR FOG SW         | Front fog lamp switch OFF  | Off             |
| FR FOG SW         | Front fog lamp switch ON   | On              |
| BUCKLE SW         | The seat belt (driver side) is fastened. [Seat belt switch (driver side) OFF]  | Off             |
| BOCKLE SW         | The seat belt (driver side) is unfastened. [Seat belt switch (driver side) ON] | On              |
| TRNK/HAT MNTR     | NOTE: The item is indicated, but not monitored.                                | Off             |
| ACC SW            | Ignition switch OFF  | Off             |
| ACC 3VV           | Ignition switch ACC or ON  | On              |
| KYLS TRNK/HAT     | NOTE: The item is indicated, but not monitored.                                | Off             |
| KEVLESS DANIC     | PANIC button of key fob is not pressed   | Off             |
| KEYLESS PANIC     | PANIC button of key fob is pressed   | On              |
| LI DEAM CW        | Lighting switch OFF  | Off             |
| HI BEAM SW        | Lighting switch HI   | On              |
| HEAD LAMP SW 1    | Lighting switch OFF  | Off             |
| HEAD LAIVIP SVV I | Lighting switch 2ND  | On              |
| LIEAD LAMB OW 2   | Lighting switch OFF  | Off             |
| HEAD LAMP SW 2    | Lighting switch 2ND  | On              |
| ALITO LICLIT CW   | Lighting switch OFF  | Off             |
| AUTO LIGHT SW     | Lighting switch AUTO   | On              |
| PASSING SW        | Other than lighting switch PASS  | Off             |
| PASSING SW        | Lighting switch PASS   | On              |
| RR FOG SW         | NOTE: The item is indicated, but not monitored.                                | Off             |
| TURN SIGNAL R     | Turn signal switch OFF   | Off             |
| TURN SIGNAL R     | Turn signal switch RH  | On              |
| TUDNI CIONIAL I   | Turn signal switch OFF   | Off             |
| TURN SIGNAL L     | Turn signal switch LH  | On              |
| PKB SW            | Parking brake switch is OFF  | Off             |
| PKD 3VV           | Parking brake switch is ON   | On              |
| ENCINE DUN        | Engine stopped   | Off             |
| ENGINE RUN        | Engine running   | On              |
| ODTI CEN (DTCT)   | Bright outside of the vehicle  | Close to 5 V    |
| OPTI SEN (DTCT)   | Dark outside of the vehicle  | Close to 0 V    |
| OPTI SEN (FILT)   | Bright outside of the vehicle (Lighting switch AUTO)                           | Close to 5 V    |
| OPTI SEN (FILI)   | Dark outside of the vehicle (Lighting switch AUTO)                             | Close to 1.50 V |
| LIG SEN COND      | NOTE: The item is indicated, but not monitored.                                | OFF             |
| ICNI SIM CANI     | Ignition switch OFF or ACC   | Off             |
| IGN SW CAN        | Ignition switch ON   | On              |
| ED WIDED III      | Front wiper switch OFF   | Off             |
| FR WIPER HI       | Front wiper switch HI  | On              |
| ED 1440ED : 6:::  | Front wiper switch OFF   | Off             |
| FR WIPER LOW      | Front wiper switch LO  | On              |

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# < ECU DIAGNOSIS INFORMATION >

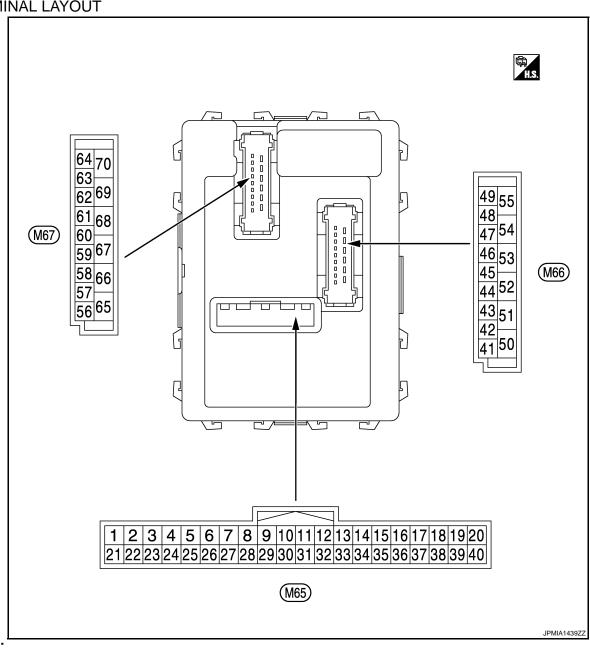
| Monitor Item  | Condition  | Value/Status |
|---|--|--------------|
| ED WIDED INT  | Front wiper switch OFF   | Off          |
| FR WIPER INT  | Front wiper switch INT   | On           |
| ED WACHED CW  | Front washer switch OFF  | Off          |
| FR WASHER SW  | Front washer switch ON   | On           |
| INT VOLUME  | Wiper intermittent dial is in a dial position 1 - 7  | 1 - 7        |
| ED WIDED STOD   | Any position other than front wiper stop position  | Off          |
| FR WIPER STOP   | Front wiper stop position  | On           |
| DD WIDED ON   | Rear wiper switch OFF  | Off          |
| RR WIPER ON   | Rear wiper switch ON   | On           |
| DD WIDED INT  | Rear wiper switch OFF  | Off          |
| RR WIPER INT  | Rear wiper switch INT  | On           |
| DD WAGUED OW  | Rear washer switch OFF   | Off          |
| RR WASHER SW  | Rear washer switch ON  | On           |
| DD WIDED OTOD   | Rear wiper stop position   | Off          |
| RR WIPER STOP   | Other than rear wiper stop position  | On           |
| RAIN SENSOR   | NOTE: The item is indicated, but not monitored.  | Off          |
|   | Hazard switch OFF  | Off          |
| HAZARD SW   | Hazard switch ON   | On           |
| 54N 0N 010  | Blower control dial OFF  | Off          |
| FAN ON SIG  | Other than blower control dial OFF   | On           |
| AIR COND SW   | Air conditioner OFF (A/C switch indicator OFF) (Automatic air conditioner)     A/C switch OFF (Manual air conditioner)                       | Off          |
| AIR COND 3W   | <ul> <li>Air conditioner ON (A/C switch indicator ON) (Automatic air conditioner)</li> <li>A/C switch ON (Manual air conditioner)</li> </ul> | On           |
| THERMO AMP  | Ignition switch ON   | Off          |
| NOTE:<br>At models with automatic<br>air conditioner this item is<br>not monitored. | Evaporator is extremely low temperature  | On           |
| FR DEF SW   | Other than A/C mode defroster ON position  | Off          |
| FR DEF 3W   | A/C mode defroster ON position   | On           |
| KEYLESS TRUNK   | NOTE: The item is indicated, but not monitored.  | Off          |
| TRNK OPNR SW  | NOTE: The item is indicated, but not monitored.  | Off          |
| TRNK OPN MNTR   | NOTE: The item is indicated, but not monitored.  | Off          |
| HOOD SW   | Close the hood   | Off          |
| HOOD SW   | Open the hood  | On           |
| TDANCDONDED   | Other than the ignition switch is ON by key registered to BCM.   | Off          |
| TRANSPONDER   | The ignition switch is ON by key registered to BCM.  | On           |
| INTELLI KEY   | NOTE: The item is indicated, but not used.   | Off          |
| AUTO RELOCK   | NOTE: The item is indicated, but not monitored.  | Off          |

#### < ECU DIAGNOSIS INFORMATION >

#### [MANUAL AIR CONDITIONING]

| Monitor Item | Condition                                     | Value/Status |
|--------------|---|--------------|
| OIL PRESS SW | Ignition switch OFF or ACC     Engine running | Off          |
|              | Ignition switch ON                            | On           |
| BRAKE SW     | Brake pedal is not depressed                  | Off          |
| DRAKE SW     | Brake pedal is depressed                      | On           |

### **TERMINAL LAYOUT**



#### NOTE:

• M65, M66: White • M67: Black

PHYSICAL VALUES

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|             | nal No. | Description                |                  |   |  | Value   |
|-------------|---------|----------------------------|------------------|---|--|---|
| (Wire       | color)  | Signal name                | Input/<br>Output |   | Condition                                      | Value<br>(Approx.)                              |
| -           |         |                            |                  |   | All switch OFF                                 | 0 V   |
|             |         |                            |                  |   | Turn signal switch RH                          |   |
|             |         |                            |                  |   | Lighting switch HI                             | (V)<br>15                                       |
| 2<br>(BR/W) | Ground  | Combination switch INPUT 5 | Input            | Combination switch (Wiper intermit-       | Lighting switch 1ST                            | 10<br>5<br>0<br>→ +10ms<br>PKIB4958J<br>1.0 V   |
|             |         |                            |                  | tent dial 4)                              | Lighting switch 2ND                            | (V) 15 10 5 0                                   |
|             |         |                            |                  |   | All switch OFF                                 | 0 V   |
|             |         |                            |                  |   | Turn signal switch LH                          |   |
|             |         |                            |                  |   | Lighting switch PASS                           | (V)<br>15                                       |
|             |         |                            |                  | Combination                               | Lighting switch 2ND                            | 10<br>5<br>0<br>•••10ms                         |
| 3<br>(GR)   | Ground  | Combination switch INPUT 4 | Input            | switch<br>(Wiper intermit-                |  | 1.0 V   |
| ( 7         |         | -                          |                  | tent dial 4)                              | Front fog lamp switch ON                       | (V)<br>15<br>10<br>5<br>0<br>+10ms<br>PKIB4956J |
|             |         |                            |                  |   | All switch OFF                                 | 0.8 V<br>0 V                                    |
|             |         |                            |                  |   | Front wiper switch LO                          | U V   |
| 4<br>(L/Y)  | Ground  | Combination switch INPUT 3 | Input            | Combination<br>switch<br>(Wiper intermit- | Front wiper switch MIST Front wiper switch INT | (V)<br>15<br>10<br>5<br>0                       |
|             |         |                            |                  | tent dial 4)                              | Lighting switch AUTO                           | → +10ms PKIB4958J                               |
|             |         |                            |                  |   |  | 1.0 V   |

## < ECU DIAGNOSIS INFORMATION >

|       | inal No. | Description        |                  | Constitues  |   | Value              |  |
|-------|----------|--------------------|------------------|-------------|---|--------------------|--|
| +     | e color) | Signal name        | Input/<br>Output |             | Condition   | (Approx.)          |  |
|       |          |                    |                  |             | All switch OFF (Wiper intermittent dial 4)                                    | 0 V                |  |
|       |          |                    |                  |             | Front washer switch (Wiper intermittent dial 4)                               | ( <u>y)</u>        |  |
|       |          |                    |                  |             | Rear washer switch ON (Wiper intermittent dial 4)                             | 15<br>10<br>5<br>0 |  |
|       |          |                    |                  |             | Any of the condition below with all switch OFF                                | → +10ms            |  |
| 5     | Ground   | Combination switch | Input            | Combination | <ul><li>Wiper intermittent dial 1</li><li>Wiper intermittent dial 5</li></ul> | PKIB4958J          |  |
| (G)   |          | INPUT 2            |                  | switch      | Wiper intermittent dial 6   | 1.0 V              |  |
|       |          |                    |                  |             |   | (V)<br>15<br>10    |  |
|       |          |                    |                  |             | Rear wiper switch ON (Wiper intermittent dial 4)                              | 5                  |  |
|       |          |                    |                  |             | ,   | → -10ms            |  |
|       |          |                    |                  |             |   | PKIB4956J<br>0.8 V |  |
|       |          |                    |                  |             | All switch OFF (Wiper intermittent dial 4)                                    | 0 V                |  |
|       |          |                    |                  |             | Front wiper switch HI (Wiper intermittent dial 4)                             | (V)                |  |
|       |          |                    |                  |             | Rear wiper switch INT (Wiper intermittent dial 4)                             | 15                 |  |
|       |          |                    |                  |             |   | 0                  |  |
|       |          |                    |                  |             | Wiper intermittent dial 3 (All switch OFF)                                    | PKIB4958J          |  |
|       |          |                    |                  |             |   | 1.0 V              |  |
| 6     |          | Combination switch |                  | Combination | Any of the condition halow  | (V)<br>15          |  |
| (L/R) | Ground   | INPUT 1            | Input            | switch      | Any of the condition below with all switch OFF • Wiper intermittent dial 1    | 10 5 0             |  |
|       |          |                    |                  |             | Wiper intermittent dial 2   | + +10ms            |  |
|       |          |                    |                  |             |   | рків4952J<br>1.9 V |  |
|       |          |                    |                  |             |   | (V)<br>15          |  |
|       |          |                    |                  |             | Any of the condition below with all switch OFF                                | 15                 |  |
|       |          |                    |                  |             | <ul><li>Wiper intermittent dial 6</li><li>Wiper intermittent dial 7</li></ul> | → +10ms            |  |
|       |          |                    |                  |             |   | PKIB4956J          |  |
|       |          |                    |                  |             |   | 0.8 V              |  |

# < ECU DIAGNOSIS INFORMATION >

|              | nal No. | Description                        |                  |                               |                                    | Value   |
|--------------|---------|------------------------------------|------------------|-------------------------------|------------------------------------|---|
| + (Wire      | color)  | Signal name                        | Input/<br>Output |                               | Condition                          | (Approx.)   |
| 7<br>(W/R)   | Ground  | Door key cylinder<br>switch UNLOCK | Input            | Door key cylin-<br>der switch | NEUTRAL position                   | (V)<br>15<br>10<br>5<br>0<br>+-10ms<br>PKIB4960J<br>7.0 - 8.0 V |
|              |         |                                    |                  |                               | UNLOCK position                    | 0 V   |
| 8            |         | Door key cylinder                  | _                | Door key cylin-               | NEUTRAL position                   | 12 V  |
| (W/B)        | Ground  | switch LOCK                        | Input            | der switch                    | LOCK position                      | 0 V   |
| 9            | 0       | Oten James switch                  | la a d           | Stop lamp                     | OFF (Brake pedal is not depressed) | 0 V   |
| (R)          | Ground  | Stop lamp switch                   | Input            | switch                        | ON (Brake pedal is depressed)      | Battery voltage   |
| 10           | Ground  | Rear window defog-                 | Input            | Rear window OFF (Not pressed) |                                    | 12 V  |
| (W/L)        | Giodila | ger switch                         | iriput           | defogger switch               | ON (Pressed)                       | 0 V   |
| 11           | Ground  | Ignition switch ACC                | Input            | Ignition switch OFF           |                                    | 0 V   |
| (L/Y)        | Ground  | ignition switch 7.00               | mpat             | Ignition switch ACC or ON     |                                    | Battery voltage   |
| 12<br>(SB)   | Ground  | Passenger door<br>switch           | Input            | Passenger door<br>switch      | OFF (When passenger door closed)   | (V)<br>15<br>10<br>5<br>0<br>+                                  |
|              |         |                                    |                  |                               | ON (When passenger door opened)    | 0 V   |
| 13<br>(GR/L) | Ground  | Rear RH door switch                | Input            | Rear RH door<br>switch        | OFF (When rear RH door closed)     | (V)<br>15<br>10<br>5<br>0<br>++10ms<br>PKIB4960J<br>7.0 - 8.0 V |
|              |         |                                    |                  |                               | ON (When rear RH door opened)      | 0 V   |
| 14           | Ground  | Optical sensor                     | Input            | Ignition switch               | When bright outside of the vehicle | Close to 5 V  |
| (L/B)        | Cidana  |                                    | put              | ON                            | When dark outside of the vehicle   | Close to 0 V  |

### < ECU DIAGNOSIS INFORMATION >

|             | nal No. | Description                                | ı                |                        | 0 100  | Value   |     |  |          |
|-------------|---------|--|------------------|------------------------|--|---|-----|--|----------|
| + (vvire    | color)  | Signal name                                | Input/<br>Output |                        | Condition  | (Approx.)   |     |  |          |
| 15<br>(V/W) | Ground  | Tire pressure warning check switch         | Input            | Ignition switch C      | )FF  | (V)<br>15<br>10<br>5<br>0<br>10 ms<br>JPMIA0012GB                   |     |  |          |
| 17<br>(R/G) | Ground  | Optical sensor pow-                        | Output           | Ignition switch        | OFF, ACC   | 1.0 - 1.5 V<br>0 V<br>5 V   |     |  |          |
| 18<br>(V)   | Ground  | Receiver and sensor ground                 | Input            | Ignition switch C      |  | 0 V   |     |  |          |
| (*/         |         | 3.54                                       |                  |                        | Insert mechanical key into ignition key cylinder                         | 0 V   |     |  |          |
|             |         |  |                  |                        | Remove mechanical key<br>from ignition key cylinder<br>(Any door opened) | 5 V   |     |  |          |
| 19<br>(BR)  | Ground  | Remote keyless entry receiver power supply | Input            | Ignition switch<br>OFF | Remove mechanical key<br>from ignition key cylinder<br>(Any door closed) | (V)<br>6<br>4<br>2<br>0<br>***0.2 S<br>JPMIA0338JP                  |     |  |          |
|             |         |  |                  |                        | Insert mechanical key into ignition key cylinder                         | 0 V   |     |  |          |
| 20          | Ground  | Remote keyless entry receiver commu-       | Input            | Ignition switch        | Waiting  | (V)<br>6<br>4<br>2<br>0   |     |  |          |
| (G/Y)       |         | nication                                   |                  | OFF                    | OFF  | OFF   | OFF |  | (V)<br>6 |
|             |         |  |                  |                        | Signal receiving   | 4 2 0   |     |  |          |
| 21<br>(P/L) | Ground  | Immobilizer anten-<br>na (Clock)           | Input/<br>Output | During waiting         | Ignition switch is pressed while inserting the key into the key slot.    | Just after pressing ignition switch. Pointer of tester should move. |     |  |          |

# < ECU DIAGNOSIS INFORMATION >

|                           | nal No. | Description                            |                  |                    |   | Value   |
|---------------------------|---------|--|------------------|--------------------|---|---|
| + (vvire                  | color)  | Signal name                            | Input/<br>Output |                    | Condition   | (Approx.)   |
|                           |         |  |                  |                    | ON  | 0 V   |
| 23<br>(R/Y)               | Ground  | Security indicator                     | Input            | Security indicator | Blinking (Ignition switch OFF)  | (V)<br>15<br>10<br>5<br>0<br>1 s<br>JPMIA0014GB                     |
|                           |         |  |                  |                    | OFF   | 11.3 V<br>12 V  |
| 24<br>(GR/R)              | Ground  | Dongle link                            | Input/<br>Output | Ignition switch O  |   | 5 V   |
| 25<br>(LG)                | Ground  | Immobilizer antenna (Rx, Tx)           | Input/<br>Output | During waiting     | Ignition switch is pressed while inserting the key into the key slot. | Just after pressing ignition switch. Pointer of tester should move. |
| 26* <sup>1</sup>          | Ground  | Thermo control amp.                    | Input            | Ignition switch O  | N   | 0 V   |
| (GR)                      | Ground  | memo control amp.                      | Прис             | Evaporator is ext  | tremely low temperature   | 12 V  |
|                           |         | A/C switch (Automatic air conditioner) |                  | A/C                | OFF (A/C switch indicator: OFF)                                       | (V)<br>15<br>10<br>5<br>0<br>10 ms<br>JPMIA0012GB<br>1.0 - 1.5 V    |
| 27<br>(Y/G)* <sup>2</sup> | Ground  |  | Input            |                    | ON (A/C switch indicator: ON)   | 0 V   |
| (Y/R)* <sup>3</sup>       |         | A/C switch (Manual c air conditioner)  |                  | A/C switch         | OFF   | (V)<br>15<br>10<br>5<br>0<br>10 ms<br>JPMIA0012GB<br>1.0 - 1.5 V    |
|                           |         |  |                  |                    | ON  | 0 V   |

# < ECU DIAGNOSIS INFORMATION >

| Terminal No. Description (Wire color) |          |   |                  |                       | Value  |   |   |
|---------------------------------------|----------|---|------------------|-----------------------|--|---|---|
| + (VVire                              | e color) | Signal name   | Input/<br>Output |                       | Condition  | (Approx.)   |   |
|                                       |          |   | · ·              |                       | Blower fan switch OFF  | 0 V   |   |
| 28                                    | Crowd    | Blower fan switch<br>(Automatic air condi-<br>tioner) |                  | Fan switch            | Blower fan switch ON   | (V)<br>15<br>10<br>5<br>0<br>+ 10ms<br>PKIB4960J<br>7.0 - 8.0 V |   |
| (G/W)                                 | Ground   | Blower fan switch<br>(Manual air condi-<br>tioner)    | Input            | Fan switch            | Blower fan switch OFF  | (V)<br>15<br>10<br>5<br>0<br>+ 10ms<br>PKIB4960J<br>7.0 - 8.0 V |   |
|                                       |          |   |                  |                       | Blower fan switch ON   | 0 V   |   |
| 29<br>(L/W)                           | Ground   | Hazard switch   | Input            | Hazard switch         | OFF  | Battery voltage   |   |
| (L/ VV)                               |          |   |                  |                       | ON A/C mode defroster ON   | 0 V   |   |
|                                       |          |   |                  |                       | position   | 0 V   | ŀ |
| 31<br>(G/Y)                           | Ground   | Front defroster switch                                | Input            | Ignition switch<br>ON | Other than A/C mode de-<br>froster ON position   | (V) 15 10 5 0 PMIA0589GB 8.0 - 9.0 V                            |   |
|                                       |          |   |                  |                       | All switch OFF<br>(Wiper intermittent dial 4)  | (V)<br>15<br>10<br>5<br>0<br>++10ms<br>PKIB4960J                |   |
| 32                                    |          | Combination switch                                    |                  | Combination           |  | 7.0 - 8.0 V   |   |
| (LG)                                  | Ground   | OUTPUT 5  | Output           | switch                | Front fog lamp switch ON (Wiper intermittent dial 4)   | 40  |   |
|                                       |          |   |                  |                       | Rear wiper switch ON (Wiper intermittent dial 4)   | (V)<br>15<br>10   |   |
|                                       |          |   |                  |                       | 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 | 5<br>0<br>+-10ms<br>PKIB4956J<br>1.0 V                          |   |

### < ECU DIAGNOSIS INFORMATION >

|             | nal No. | Description                 |                  |                    |   | Value   |  |
|-------------|---------|-----------------------------|------------------|--------------------|---|---|--|
| + (vvire    | color)  | Signal name                 | Input/<br>Output |                    | Condition   | (Approx.)   |  |
|             |         |                             |                  |                    | All switch OFF<br>(Wiper intermittent dial 4)   | (V)<br>15<br>10<br>5<br>0<br>→ 10ms<br>PKIB4960J<br>7.0 - 8.0 V |  |
| 33<br>(Y/L) | Ground  | Combination switch OUTPUT 4 | Output           | Combination switch | Lighting switch 1ST (Wiper intermittent dial 4)   |   |  |
| , ,         |         |                             |                  |                    | Lighting switch AUTO (Wiper intermittent dial 4)  | (V)<br>15<br>10   |  |
|             |         |                             |                  |                    | Rear wiper switch INT (Wiper intermittent dial 4)   | 5   |  |
|             |         |                             |                  |                    | Any of the condition below with all switch OFF  • Wiper intermittent dial 1  • Wiper intermittent dial 5  • Wiper intermittent dial 6 | PKIB4958J 1.2 V   |  |
|             |         |                             |                  |                    | All switch OFF<br>(Wiper intermittent dial 4)   | (V)<br>15<br>10<br>5<br>0<br>+ 10ms<br>PKIB4960J<br>7.0 - 8.0 V |  |
| 34<br>(W)   | Ground  | Combination switch OUTPUT 3 | Output           | Combination switch | Lighting switch 2ND (Wiper intermittent dial 4)   |   |  |
|             |         |                             |                  |                    | Lighting switch HI (Wiper intermittent dial 4)  | (V)<br>15<br>10   |  |
|             |         |                             |                  |                    | Rear washer switch ON (Wiper intermittent dial 4)   | 5   |  |
|             |         |                             |                  |                    | Any of the condition below with all switch OFF  • Wiper intermittent dial 1  • Wiper intermittent dial 2  • Wiper intermittent dial 3 | PKIB4958J   |  |

# < ECU DIAGNOSIS INFORMATION >

## [MANUAL AIR CONDITIONING]

| Terminal No. Description (Wire color) |          | ı                           |                  |  | Value   |   |
|---------------------------------------|----------|-----------------------------|------------------|--|---|---|
| +                                     | e color) | Signal name                 | Input/<br>Output |  | Condition   | (Approx.)   |
|                                       |          |                             |                  | Combination                                | All switch OFF  | (V)<br>15<br>10<br>5<br>0<br>+ 10ms<br>PKIB4960J                  |
| 35<br>(R/L)                           | Ground   | Combination switch OUTPUT 2 | Output           | switch<br>(Wiper intermit-<br>tent dial 4) | Lighting switch 2ND Lighting switch PASS Front wiper switch INT                             | 7.0 - 8.0 V   |
|                                       |          |                             |                  |  | Front wiper switch HI   | 0 + 10ms PKIB4958J  |
| 36                                    |          | Combination switch          |                  | Combination switch                         | All switch OFF  | (V)<br>15<br>10<br>5<br>0<br>*** 10ms<br>PKIB4960J<br>7.0 - 8.0 V |
| (L/O)                                 | Ground   | OUTPUT 1                    | Output           | (Wiper intermittent dial 4)                | Turn signal switch RH Turn signal switch LH Front wiper switch LO (Front wiper switch MIST) | (V)<br>15<br>10<br>5<br>0   |
|                                       |          |                             |                  | Insert mechanica                           | Front washer switch ON  al key into ignition key cylin-                                     | 1.2 V  Battery voltage  |
| 37<br>(R/W)                           | Ground   | Key switch                  | Input            |  | nical key from ignition key   | 0 V   |
| 38<br>(O)                             | Ground   | Ignition switch ON          | Input            | Ignition switch O Ignition switch O        |   | 0 V<br>Battery voltage  |
| 39<br>(L)                             | Ground   | CAN-H                       | Input/<br>Output | -  | _   |   |
| 40<br>(P)                             | Ground   | CAN-L                       | Input/<br>Output |  | _   | _   |

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|              | nal No.<br>color) | Description                           |                  |                             | 0  | Value  |
|--------------|-------------------|---------------------------------------|------------------|-----------------------------|--|--|
| +            | -                 | Signal name                           | Input/<br>Output |                             | Condition  | (Approx.)  |
| 43<br>(W)    | Ground            | Back door switch                      | Input            | Back door<br>switch         | OFF (When back door closed)                      | (V)<br>15<br>10<br>5<br>0<br>+ 10ms<br>PKIB4960J<br>7.0 - 8.0 V  |
|              |                   |                                       |                  |                             | ON (When back door opened)                       | 0 V  |
| 44           |                   | Poor winer step no                    |                  | Ignition switch             | Rear wiper stop position                         | 12 V   |
| (LG)         | Ground            | Rear wiper stop position              | Input            | ON SWITCH                   | Any position other than rear wiper stop position | 0 V  |
| 45<br>(GR)   | Ground            | Door lock and unlock<br>switch LOCK   | Input            | Door lock and unlock switch | NEUTRAL position                                 | (V)<br>15<br>10<br>5<br>0<br>10 ms<br>JPMIA0012GB<br>1.0 - 1.5 V |
|              |                   |                                       |                  |                             | LOCK position                                    | 0 V  |
| 46<br>(BR)   | Ground            | Door lock and unlock<br>switch UNLOCK | Input            | Door lock and unlock switch | NEUTRAL position                                 | (V)<br>15<br>10<br>5<br>0<br>10 ms<br>JPMIA0012GB                |
|              |                   |                                       |                  |                             | UNLOCK position                                  | 0 V  |
| 47<br>(BR/Y) | Ground            | Driver door switch                    | Input            | Driver door<br>switch       | OFF (When driver door closed)                    | (V)<br>15<br>10<br>5<br>0<br>+-10ms<br>PKIB4960J<br>7.0 - 8.0 V  |
|              |                   |                                       |                  |                             | ON (When driver door opened)                     | 0 V  |

# < ECU DIAGNOSIS INFORMATION >

| Terminal No. Description (Wire color) |        | Description                     |                  |                        | Value   |   |
|---------------------------------------|--------|---------------------------------|------------------|------------------------|---|---|
| (Wire                                 | color) | Signal name                     | Input/<br>Output |                        | Condition   | (Approx.)   |
| 48<br>(W/G)                           | Ground | Rear LH door switch             | Input            | Rear LH door<br>switch | OFF (When rear LH door closed)                              | (V)<br>15<br>10<br>5<br>0<br>+ 10ms<br>PKIB4960J<br>7.0 - 8.0 V |
|                                       |        |                                 |                  |                        | ON (When rear LH door opened)                               | 0 V   |
| 50* <sup>1</sup>                      | Ground | A/C indicator                   | Output           | A/C indicator          | OFF   | 12 V  |
| (SB)                                  | Cround | 7 C maioator                    | Catput           | 7 V O III albatol      | ON  | 0 V   |
| 54                                    | Ground | Rear wiper                      | Output           | Ignition switch        | Rear wiper switch OFF                                       | 0 V   |
| (L/W)                                 | 2.300  | 25                              |                  | ON                     | Rear wiper switch ON  | 12 V  |
|                                       |        |                                 |                  | (Cuts the interio      | np battery saver is activated.<br>r room lamp power supply) | 0 V   |
| 56<br>(L)                             | Ground | Interior room lamp power supply | Output           | vated.                 | np battery saver is not acti-<br>erior room lamp power sup- | 12 V  |
| 57<br>(Y)                             | Ground | Battery power sup-<br>ply       | Input            | Ignition switch C      | DFF   | Battery voltage   |
| 59                                    | Ground | Driver door UN-                 | Output           | Driver door            | UNLOCK (Actuator is activated)                              | 12 V  |
| (L/B)                                 | Cround | LOCK                            | Output           | Dilver door            | Other then UNLOCK (Actuator is not activated)               | 0 V   |
| 60<br>(W/B)                           | Ground | Turn signal LH                  | Output           | Ignition switch<br>ON  | Turn signal switch OFF  Turn signal switch LH               | 0 V  (V) 15 10 5 0 PKIC6370E 6.0 V                              |
|                                       |        |                                 |                  |                        | Turn signal switch OFF                                      | 0 V   |
| 61<br>(W/L)                           | Ground | Turn signal RH                  | Output           | Ignition switch<br>ON  | Turn signal switch RH                                       | (V)<br>15<br>10<br>5<br>0<br>1s                                 |
|                                       |        |                                 |                  |                        |   | 6.0 V   |
| 63                                    | Ground | Interior room lamp              | Output           | Interior room          | OFF   | 12 V  |
| (BR)                                  | Cround | timer control                   | Jaipai           | lamp                   | ON  | 0 V   |

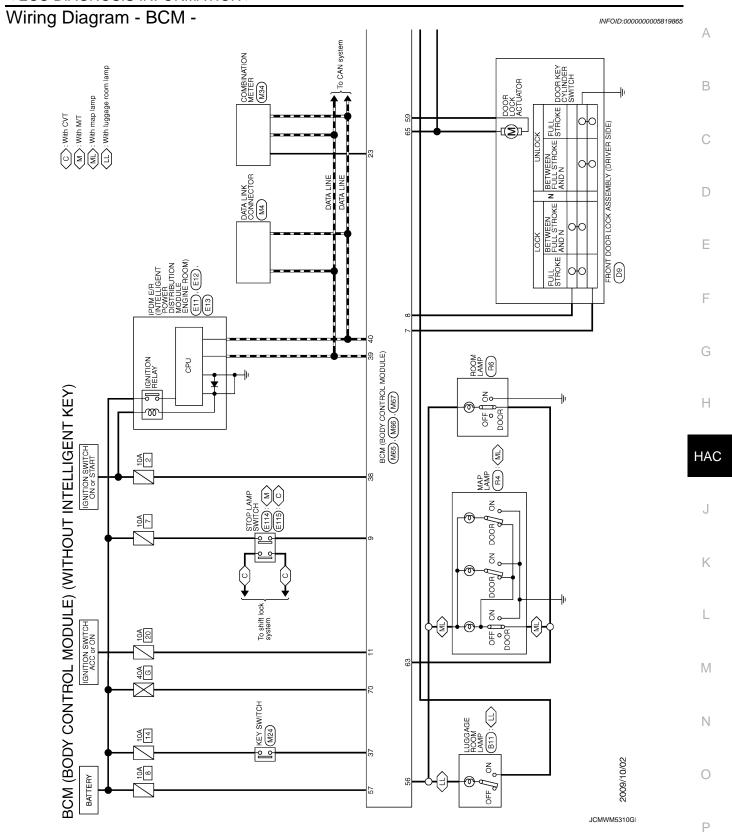
### < ECU DIAGNOSIS INFORMATION >

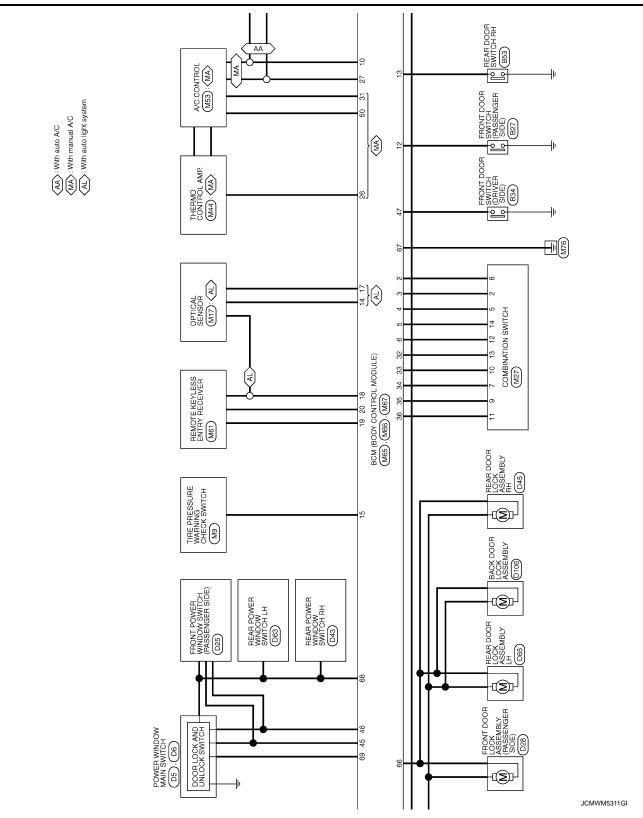
|             | nal No. | Description               |                  |                     |   | Value           |
|-------------|---------|---------------------------|------------------|---------------------|---|-----------------|
| + (Wire     | color)  | Signal name               | Input/<br>Output | Condition (Approx.) |   |                 |
| 65          | Ground  | All doors LOCK            | Output           | All doors           | LOCK (Actuator is activated)                  | 12 V            |
| (V)         | Ground  | All doors LOCK            | Output           | All doors           | Other then LOCK (Actuator is not activated)   | 0 V             |
| 66          | Ground  | Passenger door and        | Output           | Passenger door      | UNLOCK (Actuator is activated)                | 12 V            |
| (G)         | Giodila | rear door UNLOCK          | Output           | and rear door       | Other then UNLOCK (Actuator is not activated) | 0 V             |
| 67<br>(B)   | Ground  | Ground                    | Output           | Ignition switch O   | N   | 0 V             |
| 68<br>(L)   | Ground  | P/W power supply (IGN)    | Output           | Ignition switch O   | N   | 12 V            |
| 69<br>(L/W) | Ground  | P/W power supply (BAT)    | Output           | Ignition switch OFF |   | 12 V            |
| 70<br>(Y)   | Ground  | Battery power sup-<br>ply | Input            | Ignition switch O   | FF  | Battery voltage |

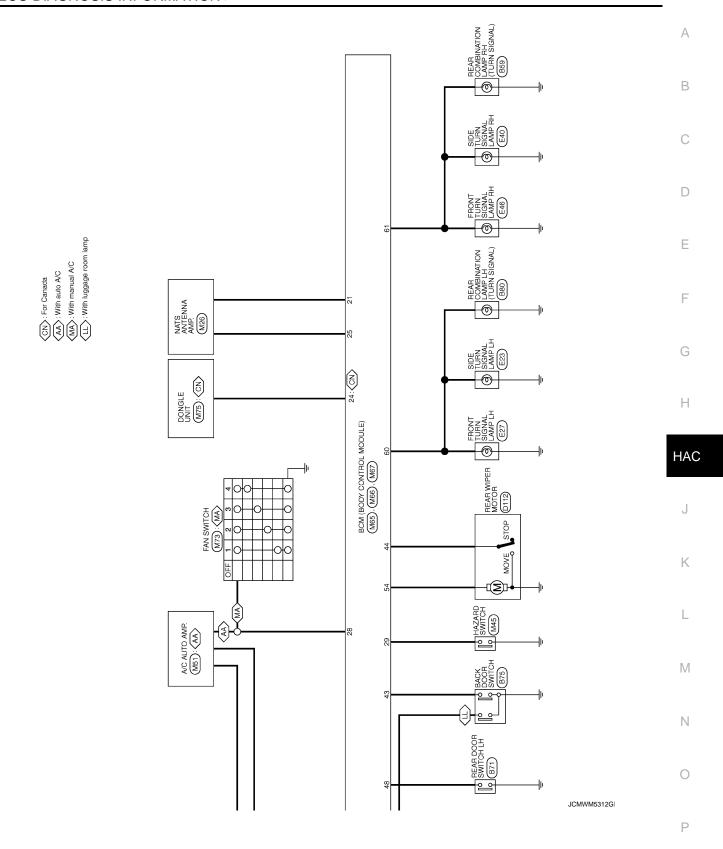
<sup>• \*1:</sup> Only manual air conditioner

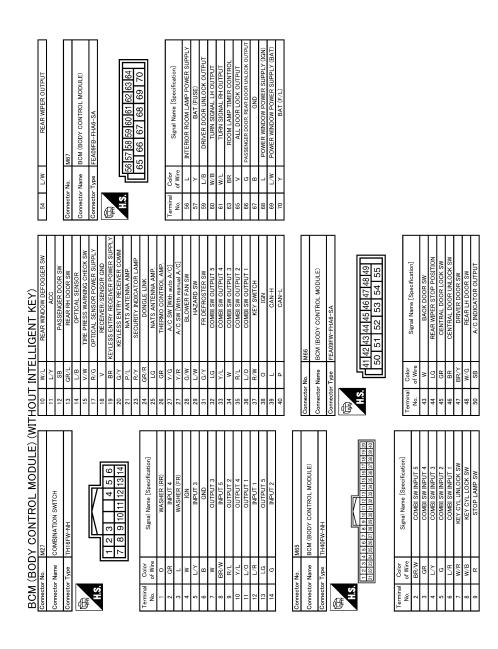
<sup>• \*2:</sup> Automatic air conditioner

<sup>• \*3:</sup> Manual air conditioner









JCMWM5313G

INFOID:0000000005819866

### Fail-safe

#### FAIL-SAFE CONTROL BY DTC

BCM performs fail-safe control when any DTC are detected.

#### < ECU DIAGNOSIS INFORMATION >

#### [MANUAL AIR CONDITIONING]

| Display contents of CONSULT | Fail-safe               | Cancellation             |  |
|-----------------------------|-------------------------|--------------------------|--|
| B2190: NATS ANTENNA AMP     | Inhibit engine cranking | Erase DTC                |  |
| B2191: DIFFERENCE OF KEY    | Inhibit engine cranking | Erase DTC                |  |
| B2192: ID DISCORD BCM-ECM   | Inhibit engine cranking | Erase DTC                |  |
| B2193: CHAIN OF BCM-ECM     | Inhibit engine cranking | Erase DTC                |  |
| B2195: ANTI SCANNING        | Inhibit engine cranking | Ignition switch ON → OFF |  |
| B2196: DONGLE NG            | Inhibit engine cranking | Erase DTC                |  |

#### REAR WIPER MOTOR PROTECTION

BCM detects the rear wiper stopping position according to the rear wiper auto stop signal.

When the rear wiper auto stop signal does not change more than 5 seconds while driving the rear wiper, BCM stops power supply to protect the rear wiper motor.

#### Condition of cancellation

- Pass more than 1 minute after the rear wiper stop.
- Turn rear wiper switch OFF.
- 3. Operate the rear wiper switch or rear washer switch.

### DTC Inspection Priority Chart

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If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.

| Priority | DTC  |  |
|----------|--|--|
| 1        | U1000: CAN COMM U1010: CONTROL UNIT (CAN)  |  |
| 2        | <ul> <li>B2190: NATS ANTENNA AMP</li> <li>B2191: DIFFERENCE OF KEY</li> <li>B2192: ID DISCORD BCM-ECM</li> <li>B2193: CHAIN OF BCM-ECM</li> <li>B2195: ANTI SCANNING</li> <li>B2196: DONGLE NG</li> </ul>  |  |
| 3        | C1735: IGN CIRCUIT OPEN  |  |
| 4        | <ul> <li>C1704: LOW PRESSURE FL</li> <li>C1705: LOW PRESSURE FR</li> <li>C1706: LOW PRESSURE RR</li> <li>C1707: LOW PRESSURE RL</li> <li>C1708: [NO DATA] FL</li> <li>C1709: [NO DATA] FR</li> <li>C1710: [NO DATA] RR</li> <li>C1711: [NO DATA] RL</li> <li>C1716: [PRESSDATA ERR] FL</li> <li>C1717: [PRESSDATA ERR] FR</li> <li>C1718: [PRESSDATA ERR] RR</li> <li>C1719: [PRESSDATA ERR] RL</li> <li>C1729: VHCL SPEED SIG ERR</li> <li>C1734: CONTROL UNIT</li> </ul> |  |

DTC Index

#### NOTE:

Details of time display

CRNT: Displays when there is a malfunction now or after returning to the normal condition until turning ignition switch OFF → ON again.

1 - 39: Displayed if any previous malfunction is present when current condition is normal. It increases like 1
 → 2 → 3...38 → 39 after returning to the normal condition whenever ignition switch OFF → ON. The counter
 remains at 39 even if the number of cycles exceeds it. It is counted from 1 again when turning ignition switch
 OFF → ON after returning to the normal condition if the malfunction is detected again.

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| CONSULT display            | Fail-safe | Tire pressure<br>monitor warn-<br>ing lamp ON | Reference      |
|----------------------------|-----------|---|----------------|
| U1000: CAN COMM            | _         | _   | BCS-115        |
| U1010: CONTROL UNIT (CAN)  | _         | _   | BCS-116        |
| B2190: NATS ANTENNA AMP    | ×         | _   | SEC-219        |
| B2191: DIFFERENCE OF KEY   | ×         | _   | SEC-222        |
| B2192: ID DISCORD BCM-ECM  | ×         | _   | SEC-223        |
| B2193: CHAIN OF BCM-ECM    | ×         | _   | <u>SEC-225</u> |
| B2195: ANTI SCANNING       | ×         | _   | <u>SEC-226</u> |
| B2196: DONGLE NG           | ×         | _   | SEC-227        |
| C1704: LOW PRESSURE FL     | _         | ×   |                |
| C1705: LOW PRESSURE FR     | _         | ×   | WEO            |
| C1706: LOW PRESSURE RR     | _         | ×   | <u>WT-30</u>   |
| C1707: LOW PRESSURE RL     | _         | ×   |                |
| C1708: [NO DATA] FL        | _         | ×   |                |
| C1709: [NO DATA] FR        | _         | ×   | WEO            |
| C1710: [NO DATA] RR        | _         | ×   | <u>WT-32</u>   |
| C1711: [NO DATA] RL        | _         | ×   |                |
| C1716: [PRESS DATA ERR] FL | _         | ×   |                |
| C1717: [PRESS DATA ERR] FR | _         | ×   | WEG            |
| C1718: [PRESS DATA ERR] RR | _         | ×   | <u>WT-35</u>   |
| C1719: [PRESS DATA ERR] RL | _         | ×   |                |
| C1729: VHCL SPEED SIG ERR  | _         | ×   | <u>WT-37</u>   |
| C1734: CONTROL UNIT        | _         | ×   | <u>WT-39</u>   |
| C1735: IGN CIRCUIT OPEN    | _         | _   | BCS-117        |

< SYMPTOM DIAGNOSIS >

[MANUAL AIR CONDITIONING]

# SYMPTOM DIAGNOSIS

# MANUAL AIR CONDITIONING SYSTEM

## Diagnosis Chart By Symptom

#### **CAUTION:**

Perform the self-diagnosis with CONSULT-III before performing the symptom diagnosis. If any malfunction result or DTC is detected, perform the corresponding diagnosis.

| Sympt   | om                            | Corresponding malfunction part   | Check item/Reference                                   |
|---|-------------------------------|--|--|
| Blower motor operation is malfunctioning.   |                               | <ul> <li>Blower motor</li> <li>Power supply system of blower motor</li> <li>The circuit between blower motor and fan switch.</li> <li>The circuit between blower motor and blower fan resistor.</li> <li>Blower fan resistor.</li> <li>Fan switch (A/C control).</li> </ul>      | HAC-175, "Diagnosis Procedure"                         |
| A/C indicator dose not indicate. (Compressor is normal)   |                               | A/C indicator (A/C control)     The circuit between A/C control and BCM     BCM  | HAC-184, "Diagnosis Procedure"                         |
| Magnet clutch does not operate.<br>(Compressor is normal)   |                               | Magnet clutch     The circuit between magnet clutch and IPDM E/R     IPDM E/R (A/C relay)     The circuit between ECM and refrigerant pressure sensor     Refrigerant pressure sensor     CAN communication line     A/C switch     Blower fan ON signal     Thermo control amp. | HAC-219, "Diagnosis Procedure"                         |
| <ul> <li>Insufficient cooling</li> <li>No cool air comes out. (Air flow volume is normal.)</li> </ul> |                               | <ul> <li>Magnet clutch control system</li> <li>Drive belt slipping</li> <li>Cooler cycle</li> <li>Air leakage from each duct</li> </ul>  | HAC-217, "Diagnosis Procedure"                         |
| <ul> <li>Insufficient heating</li> <li>No warm air comes out. (Air flow volume is normal.)</li> </ul> |                               | Engine cooling system     Heater hose     Heater core     Air leakage from each duct   | HAC-218, "Diagnosis Procedure"                         |
| Noise is heard when the A/C system operates.  | During compressor operation   | Cooler cycle   | HA-10, "Symptom Table"                                 |
|   | During blower motor operation | Mixing any foreign object in blower motor     Blower motor fan breakage     Blower motor rotation inferiority  | HAC-177, "Component Inspection"                        |
| Air inlet dose not change.  |                               | A/C control     Intake door motor     Intake door  | HAC-170, "Diagnosis Procedure"                         |
| Discharge air temperature dose not change.  |                               | A/C control     Air mix door cable     Air mix door  | Check the air mix door installation and door operation |

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### < SYMPTOM DIAGNOSIS >

| Symptom   | Corresponding malfunction part                | Check item/Reference                                |
|---|---|---|
| Air outlet dose not change.   | A/C control     Mode door cable     Mode door | Check the mode door installation and door operation |
| When the MODE dial is set to D/F or DEF, there is the mal-<br>functions as follows:  • The A/C switch indicator dose not turn ON.  • Air inlet does not becomes REC to FRE. | A/C control     BCM                           | HAC-186, "Diagnosis Procedure"                      |

# **INSUFFICIENT COOLING**

## < SYMPTOM DIAGNOSIS >

[MANUAL AIR CONDITIONING]

| < SYMPTOM DIAGNOSIS >   | [MANUAL AIR CONDITIONING]                |
|---|--|
| INSUFFICIENT COOLING  |  |
| Description   | INFOID:000000005490160                   |
|   |  |
| <ul><li>Symptom</li><li>Insufficient cooling</li><li>No cool air comes out. (Air flow volume is normal.)</li></ul>                      |  |
| Diagnosis Procedure   | INFOID:000000005490161                   |
| CAUTION: Perform the self-diagnosis with CONSULT-III before performing tion result or DTC is detected, perform the corresponding diagno |  |
| 1. CHECK MAGNET CLUTCH OPERATION  1. Turn the ignition switch ON.   |  |
| 2. Turn the fan control dial ON.  |  |
| <ol> <li>Press the A/C switch.</li> <li>Check that the indicator of the A/C switch turns ON. Check visu</li> </ol>                      | ually and by sound that the compressor   |
| operates. 5. Press the A/C switch again.  |  |
| 6. Check that the indicator of the A/C switch turns OFF. Check that t   | he compressor stops.                     |
| Is the inspection result normal? YES >> GO TO 2.  |  |
| NO >> Perform the diagnosis of "COMPRESSOR DOSE NOT C<br>Refer to <u>HAC-219</u> , " <u>Diagnosis Procedure</u> ".                      | PERATE" in "SYMPTOM DIAGNOSIS".          |
| 2.CHECK DRIVE BELT  | _  |
| Check tension of the drive belt. Refer to EM-13, "Checking".  | ——— н                                    |
| Is the inspection result normal?  | _  |
| YES >> GO TO 3. NO >> Adjust or replace drive belt depending on the inspection r  | esults                                   |
| 3.CHECK REFRIGERANT CYCLE PRESSURE  |  |
| Connect the recovery/recycling recharging equipment to the vehicle at the gauge. Refer to HA-8, "Symptom Table".                        | and perform the pressure inspection with |
| Is the inspection result normal?  |  |
| YES >> GO TO 4. NO >> Repair or replace parts depending on the inspection resul   | ite                                      |
| 4.CHECK AIR LEAKAGE FROM EACH DUCT  | 10.                                      |
| Check duct and nozzle, etc. of the air conditioner system for leakage.  |  |
| Is the inspection result normal?  |  |
| YES >> Check the air mix door cable installation and air mix door NO >> Repair or replace parts depending on the inspection result.     |  |
|   |  |
|   |  |
|   |  |
|   |  |

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#### INSUFFICIENT HEATING

< SYMPTOM DIAGNOSIS >

[MANUAL AIR CONDITIONING]

## INSUFFICIENT HEATING

Description INFOID:000000005490162

#### Symptom

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

## **Diagnosis Procedure**

INFOID:0000000005490163

#### **CAUTION:**

Perform the self-diagnosis with CONSULT-III before performing symptom diagnosis. If any malfunction result or DTC is detected, perform the corresponding diagnosis.

# 1. CHECK COOLING SYSTEM

- 1. Check the engine coolant level and check for leakage. Refer to CO-9, "Inspection".
- 2. Check the radiator cap. Refer to CO-12, "RADIATOR CAP: Inspection".
- Check the water flow sounds of the engine coolant. Refer to <u>CO-10, "Refilling"</u>.

## Is the inspection result normal?

YES >> GO TO 2.

NO >> Refill the engine coolant and repair or replace the parts depending on the inspection results.

# 2. CHECK HEATER HOSE

Check the installation of heater hose by visually or touching.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace parts depending on the inspection results.

# 3. CHECK HEATER CORE

- 1. Check the temperature of inlet hose and outlet hose of heater core.
- 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:**

Always perform the temperature inspection in a short period of time because the engine coolant temperature is very hot.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace the heater core. Refer to HA-42, "Exploded View (Manual Air Conditioner)".

## 4.CHECK AIR LEAKAGE FROM EACH DUCT

Check duct and nozzle, etc. of the air conditioner system for air leakage.

#### Is the inspection result normal?

YES >> Check the air mix door cable installation and air mix door operation.

NO >> Repair or replace parts depending on the inspection results.

#### **COMPRESSOR DOSE DOT OPERATE**

< SYMPTOM DIAGNOSIS >

[MANUAL AIR CONDITIONING]

## COMPRESSOR DOSE DOT OPERATE

Description INFOID:000000005490164

**SYMPTOM** 

Compressor dose not operate.

Diagnosis Procedure

#### **CAUTION:**

- Perform the self-diagnosis with CONSULT-III before performing symptom diagnosis. If any malfunction result or DTC is detected, perform the corresponding diagnosis.
- Check that the refrigerant is enclosed in cooler cycle normally. If the refrigerant amount is shortage from proper amount, perform the inspection of refrigerant leakage

## 1. CHECK A/C INDICATOR

- 1. Turn the ignition switch ON.
- 2. Operate the blower motor.
- 3. Check that A/C indicator is turned ON when pressing the A/C switch.
- 4. Check that A/C indicator is turned OFF when pressing the A/C switch again.

#### Is inspection result normal?

YES >> GO TO 2.

NO >> GO TO 5.

# 2.CHECK MAGNET CLUTCH OPERATION

Check the magnet clutch. Refer to HAC-179, "Component Function Check".

#### Does it operate normally?

YES >> GO TO 3.

NO >> Repair or replace the malfunctioning parts.

# 3.check refrigerant pressure sensor

Check the refrigerant pressure sensor. Refer to EC-415, "Diagnosis Procedure".

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace the malfunctioning parts.

# f 4.CHECK BCM OUTPUT SIGNAL

#### (P)With CONSULT-III

Check the "A/C ON SIG" or "FAN ON SIG" or "A/C RELAY SIG" in ECM.

| Monitor item   | Condition             | Status |
|--|-----------------------|--------|
| COMP REQ SIG  A/C switch: OFF  A/C switch: ON          | A/C switch: OFF       | Off    |
|  | On                    |        |
| FAN REQ SW  Fan control dial: OFF Fan control dial: ON | Fan control dial: OFF | Off    |
|  | On                    |        |

### Is the inspection result normal?

YES >> Replace the IPDM E/R. Refer to PCS-64, "Exploded View".

NO >> Replace the BCM. Refer to BCS-146, "Exploded View".

## 5. CHECK A/C SWITCH

Check the A/C switch. Refer to HAC-180, "Diagnosis Procedure".

#### Is inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace the malfunctioning parts.

## **6.**CHECK BLOWER FAN ON SIGNAL

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## **COMPRESSOR DOSE DOT OPERATE**

#### < SYMPTOM DIAGNOSIS >

[MANUAL AIR CONDITIONING]

Check the blower fan ON signal. Refer to <a href="HAC-186">HAC-186</a>, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace the malfunctioning parts

7.CHECK THERMO CONTROL AMP.

Check the thermo control amp. Refer to HAC-172, "Diagnosis Procedure".

Is the inspection result normal?

YES >> Replace the BCM. Refer to BCS-146, "Exploded View".

NO >> Repair or replace the malfunctioning parts

# **PRECAUTION**

## **PRECAUTIONS**

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

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

#### **WARNING:**

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision 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 AIR BAG".
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

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

#### **WARNING:**

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

Precaution Necessary for Steering Wheel Rotation after Battery Disconnect

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#### NOTE:

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

For vehicle with steering lock unit, if the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

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

#### OPERATION PROCEDURE

Connect both battery cables.

#### NOTE:

Supply power using jumper cables if battery is discharged.

- 2. Turn the push-button ignition switch to ACC position. (At this time, the steering lock will be released.)
- 3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
- Perform the necessary repair operation.

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## **PRECAUTIONS**

#### < PRECAUTION >

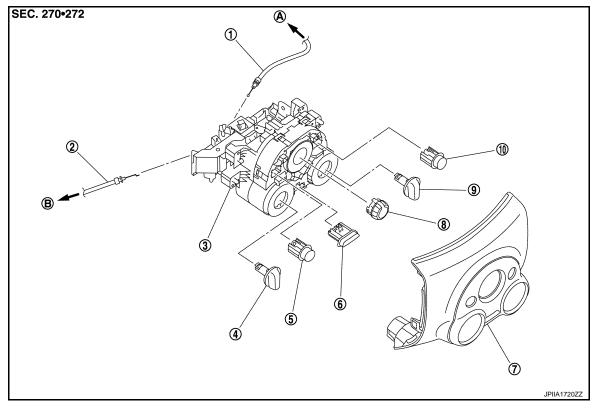
### [MANUAL AIR CONDITIONING]

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

# REMOVAL AND INSTALLATION

# A/C CONTROL

Exploded View



- Mode door cable
- 4. Mode dial
- 7. A/C finisher
- 10. A/C switch
- A. To mode door link

- 2. Air mix door cable
- 5. Rear window defogger switch
- Fan control dial
- B. To air mix door link

- 3. A/C control
- 6. Intake switch
- 9. Temperature dial

#### Removal and Installation

**REMOVAL** 

- 1. Remove A/C finisher. Refer to IP-12, "Exploded View".
- Remove the A/C control mounting screws.
- 3. Remove the air mix door cable from the A/C unit assembly. Refer to <u>HAC-231, "AIR MIX DOOR CABLE :</u> Removal and Installation".
- 4. Remove the mode door cable from the A/C unit assembly. Refer to <u>HAC-231, "MODE DOOR CABLE : Removal and Installation".</u>
- Disconnect harness connector.

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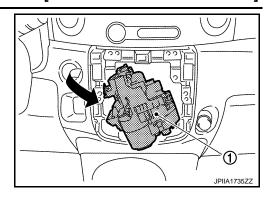
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## A/C CONTROL

## < REMOVAL AND INSTALLATION >

# [MANUAL AIR CONDITIONING]

- 6. Turn the A/C control (1) as the following figure.
- 7. Remove the A/C control.



## **INSTALLATION**

Installation is basically the reverse order of removal.

## THERMO CONTROL AMPLIFIER

< REMOVAL AND INSTALLATION >

[MANUAL AIR CONDITIONING]

## THERMO CONTROL AMPLIFIER

Exploded View

Refer to HA-42, "Exploded View (Manual Air Conditioner)".

Removal and Installation

# REMOVAL

- 1. Remove the evaporator. Refer to HA-42, "Exploded View (Manual Air Conditioner)".
- Remove the thermo control amp. from the evaporator.

#### **INSTALLATION**

Installation is basically the reverse order of removal.

#### **CAUTION:**

- Replace O-ring with new one. Then apply compressor oil to them when installing.
- When install the thermo control amp., set the same position before replacement.
- When remove the thermo control amp., never turn the bracket which is equipped the top of the thermo control amp.
- Check for the leakages when recharging refrigerant. Refer to <u>HA-22, "Leak Test"</u>.

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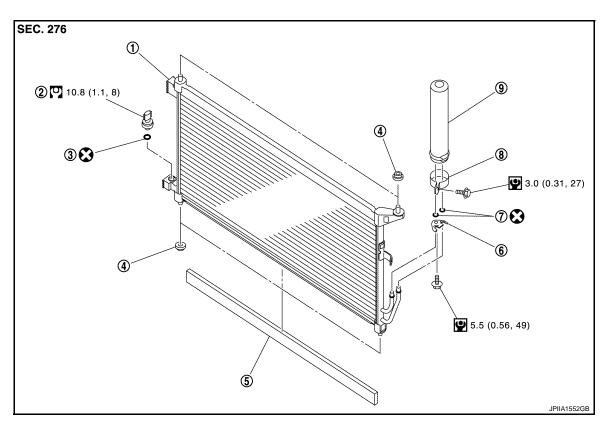
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## REFRIGERANT PRESSURE SENSOR

Exploded View



- Condenser
- 4. Grommet
- 7. O-ring

- 2. Refrigerant pressure sensor
- 5. Condenser seal
- 8. Liquid tank bracket
- 3. O-ring
- 6. Bracket
- 9. Liquid tank

Refer to  $\underline{\text{GI-4.}}$  "Components" for symbols in the figure.

#### Removal and Installation

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### **CAUTION:**

Perform lubricant return operation before each refrigeration system disassembly. However, if a large amount of refrigerant or lubricant is detected, never perform lubricant return operation. Refer to <a href="#">HA-26, "Perform Lubricant Return Operation"</a>.

#### **REMOVAL**

- 1. Use a refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant. Refer to <a href="HA-24">HA-24</a>, "Recycle Refrigerant".
- 2. Clean refrigerant pressure sensor and its surrounding area, and then remove dust and rust from refrigerant pressure sensor.

#### **CAUTION:**

Be sure to clean carefully.

3. Disconnect refrigerant pressure sensor connector.

## REFRIGERANT PRESSURE SENSOR

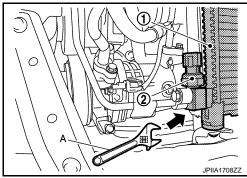
#### < REMOVAL AND INSTALLATION >

### [MANUAL AIR CONDITIONING]

4. Use a adjustable wrench (A) or other tool to hold the refrigerant pressure sensor mounting block, and then remove the refrigerant pressure sensor (2) from the condenser (1).

#### **CAUTION:**

- Be careful not to damage liquid tank.
- Be careful not to damage core surface of condenser.
- Cap or wrap the joint of the condenser and liquid tank with suitable material such as vinyl tape to avoid the entry of air.



#### **INSTALLATION**

Installation is basically the reverse order of removal.

#### **CAUTION:**

- Replace O-ring with new one. Then apply compressor oil to them when installing.
- Check for leakages when recharging refrigerant. Refer to HA-22, "Leak Test".

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# **BLOWER FAN RESISTOR**

Exploded View

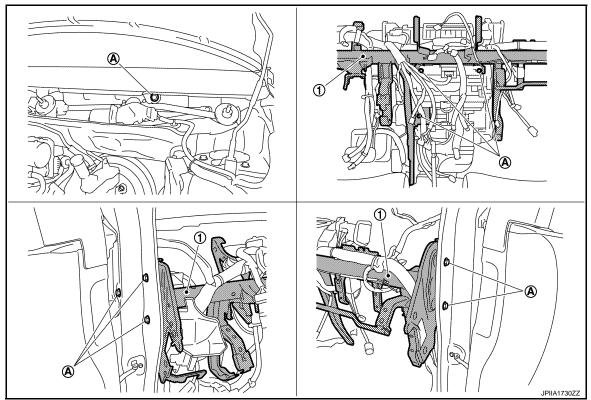
Refer to VTL-13, "Exploded View"

## Removal and Installation

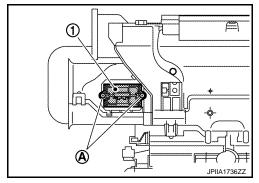
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#### **REMOVAL**

- 1. Remove instrument panel assembly. Refer to IP-12, "Exploded View".
- 2. Remove cowl top extension. Refer to EXT-20, "Exploded View".
- 3. Remove instrument stay.
- 4. Remove mounting bolts (A), and then move steering member (1) to a position where it dose not inhibit work.



- Disconnect blower fan resistor connector.
- 6. Remove mounting screws (A), and then remove blower fan resistor (1).



## **INSTALLATION**

Installation is basically the reverse order of removal.

## [MANUAL AIR CONDITIONING]

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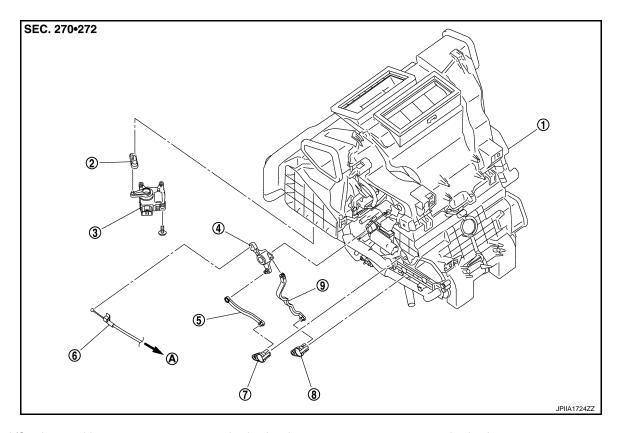
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# INTAKE DOOR MOTOR

Exploded View



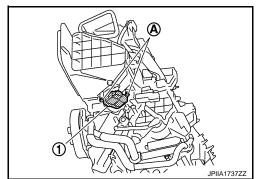
- 1. A/C unit assembly
- 4. Air mix door link
- 7. Upper air mix door lever
- A. To A/C control

- 2. Intake door lever
- 5. Upper air mix door rod
- 8. Lower air mix door lever
- 3. Intake door motor
- 6. Air mix door cable
- 9. Lower air mix door rod

#### Removal and Installation

#### **REMOVAL**

- 1. Remove foot duct LH. Refer to <a href="VTL-7">VTL-7</a>, "Exploded View".
- 2. Remove mounting screws (A), and then remove intake door motor (1).
- 3. Disconnect intake door motor connector.



#### **INSTALLATION**

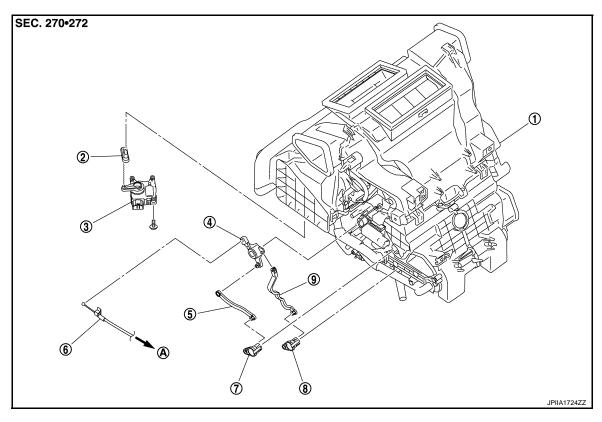
Installation is basically the reverse order of removal.

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# **DOOR CABLE**

Exploded View

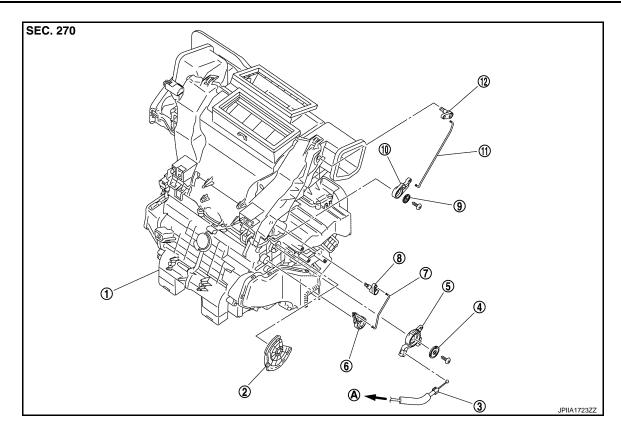
## **LEFT SIDE**



- 1. A/C unit assembly
- 4. Air mix door link
- 7. Upper air mix door lever
- A. To A/C control

- 2. Intake door lever
- 5. Upper air mix door rod
- 8. Lower air mix door lever
- 3. Intake door motor
- 6. Air mix door cable
- 9. Lower air mix door rod

# RIGHT SIDE



- A/C unit assembly
- Sub defroster door rod
- A. To A/C control

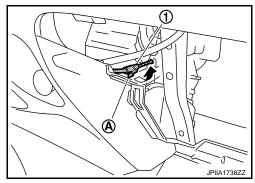
- Main link
- 5. Mode door link
- Sub defroster door lever
- Mode door cable
- Sub defroster door link
- 9. Plate
- 10. Center ventilator and defroster door 11. Center ventilator and defroster door 12. Center ventilator and defroster door

# MODE DOOR CABLE

## MODE DOOR CABLE: Removal and Installation

Disconnect mode door cable from A/C control. Refer to <u>HAC-223</u>, "Exploded View".

- 2. Remove glove box assembly. Refer to IP-12, "Exploded View".
- Remove the clamp (A) in the direction shown by the arrow, and the remove mode door cable (1) from the A/C unit assembly.



#### **INSTALLATION**

Installation is basically the reverse order of removal.

#### AIR MIX DOOR CABLE

#### AIR MIX DOOR CABLE: Removal and Installation

Disconnect air mix door cable from A/C control. Refer to HAC-223, "Exploded View".

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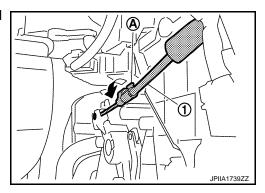
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# [MANUAL AIR CONDITIONING]

- 2. Remove foot duct LH. Refer to VTL-7, "Exploded View".
- 3. Remove the clamp (A) in the direction shown by the arrow, and then remove air mix door cable (1) from the A/C unit assembly.



#### **INSTALLATION**

Installation is basically the reverse order of removal.